BEFORE THE NATIONAL GREEN TRIBUNAL

SOUTHERN ZONE, CHENNAI

Original Application No. 136 of 2024 (SZ)

In the matter of:
K.Saravanan,
Chennai. …Applicant

Versus

The Commissioner of Fisheries and Fishermen Welfare,
Chennai and Others …Respondent(s)

The High Court of Judicature at Madras
Writ Petition No: 30507 of 2022

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Through
Dr. D. Shanmuganathan
Standing Counsel for Tamil Nadu
National Green Tribunal
Southern Zone, Chennai
Date: 26.11.2024

(16)

IN THE HIGH COURT OF JUDICATURE AT MADRAS

(Special Original Jurisdiction)

W.P.No. 30507 of 2022

MeenavaThanthaiK.R.Selvaraj Kumar
MeenavarNalaSangam
Represented by its president,
M.R.THIYAGARAJAN ,
Having Office at No.48,
East MathaKoil Street,
Royapuram,
Chennai - 600 013 **... Petitioner**

VS

1. The Secretary of Govt.
   Ministry of Environment, Forest & Climate Change,
   (MoEF&CC), Govt. of India,
   Indira ParyavaranBhavan, JorBagh Road,
   Aliganj, New Delhi - 110003,

2. The Chief Secretary of Tamil Nadu,
   Secretariat,
   Chennai-600 009.

3. The Principal Secretary Of Tamil Nadu,
   Environment Department,
   Secretariat,
   Chennai- 600 009.

4. The Chair Person,
   Environment Department,
   PanagalMaligai, Saidapet,
   Chennai- 600 115.

5. The Chairman,
   National Coastal Zone Management Authority,
   Paryavaran Bhavan, CGO Complex,
   Lodhi Road, New Delhi - 110003,

(11)

6. The Director,
National Centre for Sustainable Coastal Management
(NCSCM),
Ministry of Environment, Forest & Climate Change
(MoEF&CC), Govt. of India,
Anna University Campus,
Chennai- 600025,

7. The State of Tamil Nadu
Represented by its secretary to Government
Fisheries Department,
Fort St. George,
Chennai-600 009.

8. The State of Tamil Nadu
Represented by its secretary to Government
Public Works Department,
Fort St. George,
Chennai-600 009. ... Respondents

AFFIDAVIT OF M.R.THIYAGARAJAN

I, M.R.Thiyagarajan, (Aadhar No.299725775745) Son of Late Mr.C.RAJALINGAM, aged about 53 Years, President of MEENAVA THANTHAI K.R.SELVARAJ KUMAR MEENAVAR NALA SANGAM having office at No.48, East Madha Church Street, Royapuram, Chennai-600 013, do hereby solemnly affirm and sincerely state as follows:

1. I submit that, I am the President of "MEENAVA THANTHAI K.R.SELVARAJ KUMAR MEENAVAR NALA SANGAM" (Association PAN Number: AAEAM9234H) and it is a registered body under section 10 of the Tamil Nadu Societies Act, 1975 (Tamil Nadu Act 27 of 1975) on the file of the Registrar of Societies, Chennai North in Sl.No. 205 of 2015 dated

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26.06.2015. I submit that the association named "MEENAVA THANTHAI K.R. SELVARAJKUMAR MEENAVAR NALA SANGAM" has been formed for the welfare of the fishermen community and other communities living along the coastal stretch of Tamil Nadu, as well as for the purpose of protecting and addressing the issues related to Environment, Forest, Ecology and etc.,

2. I further state that the association is not an income tax assessee and had not filed returns. I submit that the petitioner association has constantly striving for the upliftment and improvement of conditions of the life of the fishermen community in the State of Tamil Nadu. The Applicant association has approached this Hon'ble High Court of Madras as well as this Hon'ble Tribunal on several occasions, raising serious concerns regarding the protection of the coastal environment and ecology and illegal construction in the CRZ Area in Tamil Nadu. The Applicant Association on several occasions has involved its activities for the protection of lake and ensure that there will no encroachments or harm to the eco system. Vide resolution dated 26.4.2016, the Applicant Association has authorized its President, M.R. Thiyagarajan to represent the Applicant before this Hon'ble Court.

3. I submit that, I am the petitioner herein and as such I am well aware of the facts and circumstances of this case. I hereby declare that I do not have any personal interest directly or indirectly in the subject matter of the above Writ Petition. I have not filed Public Interest Litigation earlier against the same cause of action. I undertake that I will pay the cost, if any, if the above Writ Petition is found to be intended for gain or oblique motive. I have filed the above Writ Petition out of my own funds. I am filing

the above Writ Petition based on my personal knowledge. Since the issue involved in this Writ Petition is to safeguard the public interest in large, it has become necessary for me to approach this Honourable Court by invoking the extraordinary jurisdiction of this Hon'ble Court under Article 226 of the Constitution of India. I am a business man and my income from business is Rupees Four Lakhs Per Annum. I further state that since I have involved much in the environmental activities and had filed conducted several environmental cases in the National Green bench Tribunal (southern region) against the forcible polluters and environmental exploiters.

4. I further respectfully state that though initially I was an active basic activist against the environmental polluters, Illegals, environmental destroyers, Seawater pollutants, lakes, ponds polluters and environmental exploiters. Subsequently an association was formed in the name of MEENAVA THANTHAI K.R.SELVARAJ KUMAR MEENAVAR NALA SANGAM and I was nominated as the president of the said association and till date I am holding office of the State President of the association and discharging my duties as a president to the best of ability.

5. I further submit that the coastline is subjected to erosion due to various hydrodynamic effects of ocean phenomena such as waves, tides, ocean currents, shortage of sediment and deflation etc. This hydrodynamic effect results in considerable movement of sediment, which ultimately causes changes in the morphology of the coast. The wave is one of the major factors, which causes erosion and accretion along the coast. When the waves approach at an angle to the coast in the vicinity of nearshore region, waves

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stir-up the bed material due to breaking action and keep the same in suspension. This suspended material is carried along the shore by the component of wave parallel to shore, while the component perpendicular to the shore moves the material onshore-offshore of the beach. This movement of the material results in change in the near shore bathymetry.

6. I further state that the sea shore erosion of the beaches takes place due to establishment of many factories, housing and tourism along the coast there is exploitation of ocean resources. This has resulted in reclamation of coastal inlets for commercial purpose or removing of beach sand for construction, which has destabilized eco-system of the ocean. Construction of unplanned structures has resulted changes of the adjacent coast leading to increase of erosion. For a country like India having a long coastline, it has been reported that about 1200 km of coastline is under the threat of erosion. In order to mitigate erosion effectively for such a long coast, it is necessary to develop various methodologies for shore protection or anti-sea erosion. It should be such that, it will be economical, easy to construct, makes use of locally available material and can be constructed in minimum period.

7. I further state that the sea shore erosion has badly affected the viability of the fishermen family and occupation. Tidal waves damage their house and boats constantly. With alternative arrangements for parking their boats elsewhere not available, they are forced to pull the boats further inshore to escape the havoc caused by the waves. I further state that Protective Structures (Hard solution) such as Seawalls Relatively massive structures, parallel to the shoreline and Use of Geo-synthetic

Tubes or Bags - Geo-synthetic Tubes or bags filled with sand can be used for beach protection, detached seawalls, anti-sea erosion bunds can be formed using sand-filled Geo-synthetic Tubes or Bags.

8. I further state that the below mentioned coastal stretch is now in a critical situation.

SHORE EROSION PLACES IN TAMIL NADU COASTAL AREA

1. Kokilamedu Village in Chengalpattu District,
2. KadalorePeriyakuppam Village in Chengalpattu District.
3. KadaloreChinnakuppam Village in Chengalpattu District.
4. AlliKuppam Village in Chengalpattu District.
5. PazhayanaduKuppam Village in Chengalpattu District.
6. PudhunaduKuppam Village in Chengalpattu District.
7. AngalammanKuppam Village in Chengalpattu District.
8. Chemmencherry Village in Chengalpattu District.
9. Karikattukuppam Village in Chengalpattu District.
10. Pudhukalpakkam Village in Chengalpattu District.
11. Killai Village in Cuddalore District.
12. Periyakuppam Village in Cuddalore District.
13. Pudhukuppam Village in Cuddalore District.
14. Pillaichavadi Village in Villupuram District.
15. Nemmeli Village in Chengalpattu District.
16. KanathurReddykuppam Village in Chengalpattu District.
17. Nambiyar Nagar Village in Nagapattinam District

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18.Thirumullaivasal Village in Nagapattinam District

19.Puthukuppam Village in Mayiladuthurai District

20.Kuttiyandiyur Village in Mayiladuthurai District

21.Velankanni Village in Nagapattinam District

22.NagoreKeezhapattinachery Village in Nagapattinam District

23.Keechanpkuppam Village in Nagapattinam District

24.Manapad Village in Thoothukudi District

25.Periyathalai Village in Thoothukudi District

26.Veerapandyanpattinam Village in Thoothukudi District

27.Jeeva Nagar (Tiruchendur) Village in Thoothukudi District

28.Amali Nagar Village in Thoothukudi District

29.Kulasekarapattinam Village in Thoothukudi District

30.Punnakayal Village in Thoothukudi District

31.Mandapam North in Ramnathapuram District

32.Mandapam South in Ramanathapuram District

33.Puthenthurai village in Kanniyakumari District.

34.Kesavaputhenthurai village in Kanniyakumari District.

35.Keelamanakudy village in Kanniyakumari District.

36.Melamanakudy village in Kanniyakumari District.

37.Kodimunai village in Kanniyakumari District.

38.Simon colony village in Kanniyakumari District.

39.Kurumpanai village in Kanniyakumari District.

40. Keelakadiyapattina village in Kanniyakumari District.

41. Melakadiyapattinam village in Kanniyakumari District.

42. Annai Nagar village in Kanniyakumari District.

43. Eraynumanthurai village in Kanniyakumari District.

44. Pozhikarai village in Kanniyakumari District.

45. Singaravelar Colony in Kanniyakumari District.

46. Eraviputhenthurai in Kanniyakumari District.

47. Thoothur and Chinnathurai in Kanniyakumari District.

48. CuddaloreChinnakuppam Village, CheyyarTaluk, Chengalpattu District.

49. CuddalorePeriyakuppam Village, CheyyarTaluk, Chengalpattu District.

50. CuddaloreAlikuppam Village, CheyyarTaluk, Chengalpattu District

where due to the Tidal waves the soil erosion had made life difficult to the fishermen community people. Immediate steps has to be made for controlling the soil erosion in the above mentioned places for the life of thousands of families in and around the coastal area. Subsequently Fishermen Families inthe NTO Village, Chennai District, Thiruvottiyur taluk, Thiruvottiyur village had resided in the coastal area in survey No.166 for many years and due to the raise of sea level the entire Land in survey No.166 was sub merged into the sea. Hence the fishermen community had shifted their house to the land survey No.168. The said lands in Survey No.168 was classified as

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Poramboke land and due to the soil erosion and sea waves the fishermen community had been forced to shift their home from survey No.166 to 168. Then now the entire Land in the survey No.168 is submerged due to the raise of sea level. Hence subsequently the same had been shifted to Survey No.169 Belongs to national Highways and due to the plantation proceedings plan the National Highway Department had made steps to recover the land and had taken the possession from the fishermen community. the impact of the raise in sea level and soil erosion had impacted very strongly in the life of fishermen community. It is very much desperate to temporarily invoke the protective structures immediately for the life of fishermen community.

9. I further state that the Coastal Regulation Zone Notification, 2011 was notified on 6 January, 2011 for regulation of developmental activities along the coastal stretches and to ensure the livelihood security to the fisher communities and other local communities, living in the coastal areas, to conserve and protect coastal stretches. Subsequently CRZ Notification, 2011, the Coastal Regulation Zone Notification, 2019 was notified on 18th January, 2019 for regulation of developmental activities along the coastal stretches and to ensure the livelihood security to the fisher communities and other local communities, wing in the coastal areas, to conserve and protect coastal stretches, specifically focused on conservation and management plans of Ecologically Sensitive Areas (ESAS) which did not feature in the CRZ Notification, 2011.

10. It is Pertinent to point out that the department of Ocean Engineering Indian Institute of Madras Chennai, an expert

Committee has given an opinion on the instruction of the Fisheries department of government of Tamil Nadu on March, 2021 In which on para 6 a clear ideology with scientific approach was given by the Expert Committee which is reproduced below.

6.0 PROPOSED LAYOUT OF GROINS

A series of 7 groins have been proposed to protect the coastal stretch of Uyyalikuppam. The stretch of transition groins field will cover a length of 750m of the shoreline. The proposed solution is expected not only to serve as coastal protection measure but also is likely to enhance the rebuilding of the lost beach although it may take a few years,

- Two groins (G1, G7) of length 40m,
- Two groins (G2, G6) of length 60m
- Two groins (G3, G5) of length 80m and
- One groin (G4) of length 90m has been proposed.

Fig. 7 shows the layout of the proposed groin field and Plate 2 presents the layout in detail.

The layout comprises of 40m groins (G1) and (G7) extending upto a water depth of 1.0m and 1.5m respectively, 60m groins (G2) and (G6) extending upto a water depth of 1.5m and 2.0m respectively, similarly 80m groins (G3) and (G5) extending upto a water depth of 3.0m and 2.2m respectively. Further, the groin of length 90m (G4) will extend upto a water depth of 2.8m. All the groins will start from the high tide level of about +1.4m towards the seaside. The layout is as per the bathymetry survey conducted during the finalization of proposal. If the work gets

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delayed, it is mandatory to conduct atleast one line survey along the alignment of groins to ensure each of the groins reach the design water depth as indicated above. Note that the lengths are likely to change prior to installation as it depends on the water depth and hence, IITM must be informed prior to the commencement of the work.

11. However, this report which is very much relevant for the protection of the Sea erosion was not considered by the Hon'bleNGT. As a consequence, till today no steps had been taken by the respondents to protect the Sea Erosion on the sea shore. This is appropriate and peak time to take action on what putting manner to protect the sea erosion. Further the Hon'ble NGT in its order dated 11.04.2022 in O.A.No.4 of 2013 had fixed the time limit for implementing such scheme within Six months till today no improvement had shown by the respondents. Further I had made a application to the Environmental Department vide RTI questioning the effective steps taken after the said order passed by the Hon'ble NGT, but to the effect the Environmental department had replied vide its letter date 12.09.2022 no effective steps were taken for implementing the soft structure in the coastal stretch.

12. I further submit that I had made representation to the respondents regards the sea erosion in the coastal stretch vide representation dated 28.09.2022And the same was received by the respondents. Further the above writ petition is absolutely public interest litigation to protect the interest of the general public as there about 2000 hectares of land was submerged into the sea and now is the correct stage to take precautionary measures to implement the safe structure for controlling the soil

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erosion and I am spending my own money for this purpose. As already submitted I am the President of the above said sangam and I am making every effort to attend to the grievances of the local people and to alleviate their sufferings. Therefore if any favourable order is obtained from the Hon'ble court it will be in the interest of the common public. In case this Hon'ble court comes to the unlikely conclusion that there is some private interest in filing this writ petition then I am ready and willing to bear the cost that may be imposed by the Hon'ble Court. I have not filed any public interest litigation for this matter here and to my knowledge this is the first writ petition that is being filed before his Hon'ble court for the prayers sought for seeking direction from this Hon'ble Court.

13. I Submit that aggrieved under these circumstance and having no other remedy, I plead to invoke the extraordinary jurisdiction of this Honorable Court, under Article 226 of the Constitution of India for the interest of Public.

Therefore I pray that this Hon'ble Court may be pleased to issue a **WRIT OF MANDAMUS** or any other order or direction or any other appropriate writ to directing the respondent to protect the coastal stretch which starts from palaverkadu and ends at Kanyakumari, East coastal zone and pass further order as this Hon'ble Court may deem it fit and proper in the facts and circumstances of the case and thus render justice.

Solemnly affirmed and duly signed **BEFORE ME**

in my presence at Chennai this the

day of 7th day of November 2022 **ADVOCATE-CHENNAI**

(7)

MEMORANDUM OF WRIT PETITION

(Under Article 226 of the Constitution of India)

IN THE HIGH COURT OF JUDICATURE AT MADRAS

(Special Original Jurisdiction)

W.P.No. 30507 of 2022

MeenavaThanthaiK.R.Selvaraj Kumar
MeenavarNalaSangam
Represented by its president,
M.R.THIYAGARAJAN ,
Having Office at No.48,
East MathaKoil Street,
Royapuram, Chennai - 600 013 **... Petitioner**

VS

1. The Secretary of Govt.
   Ministry of Environment, Forest & Climate Change,
   (MoEF&CC), Govt. of India,
   Indira ParyavaranBhavan, JorBagh Road,
   Aliganj, New Delhi - 110003,

2. The Chief Secretary of Tamil Nadu,
   Secretariat,
   Chennai-600 009.

3. The Principal Secretary Of Tamil Nadu,
   Environment Department,
   Secretariat,
   Chennai- 600 009.

4. The Chair Person,
   Environment Department,
   PanagalMaligai, Saidapet,
   Chennai- 600 115.

5. The Chairman,
   National Coastal Zone Management Authority,
   ParyavaranBhavan, CGO Complex,
   Lodhi Road, New Delhi - 110003,

6. The Director,
National Centre for Sustainable Coastal Management
(NCSCM),
Ministry of Environment, Forest & Climate Change
(MoEF&CC), Govt. of India,
Anna University Campus, Chennai- 600025,

7. The State of Tamil Nadu
Represented by its secretary to Government
Fisheries Department,
Fort St. George, Chennai-600 009.

8. The State of Tamil Nadu
Represented by its secretary to Government
Public Works Department,
Fort St. George, Chennai-600 009. ... Respondents

WRIT PETITION

The address for service of all notices and process on the petitioner isthat of his Counsel M/s.A.KALAISELVAN, A.ANILAN, Office at No.155/319, 4th floor, Linghichetty street, parrys, Chennai-1.

The address for service of all notices and process on the respondent is the same as stated above.

For the reasons stated in the accompanying affidavit, it is prayed that this Hon'ble Court may be pleased to issue a **WRIT OF MANDAMUS** or any other order or direction or any other appropriate writ to directing the respondent to protect the coastal stretch which starts from palaverkadu and ends at Kanyakumari, East coastal zone and pass further order as this Hon'ble Court may deem it fit and proper in the facts and circumstances of the case and thus render justice.

Dated at Chennai on this the 7th day of November, 2022.

COUNSEL FOR PETITIONER

IN THE HIGH COURT OF JUDICATURE AT MADRAS
(Special Original Jurisdiction)

W.P.No. 30507 of 2022

MEENAVA THANTHAI
K.R.SELVARAJ KUMAR
MEENAVAR NALA SANGAM
Represented by its president,
M.R.THIYAGARAJAN ,
... Petitioner

-Vs-

1. Secretary of Govt.
   Ministry of Environment,
   Forest & Climate Change,
   and 4 others.

...Respondents

WRIT PETITION

M/s A.KALAISELVAN
E.NO.702/1987
A.ANILAN **E.NO.3121/09**
COUNSEL FOR PETITIONER
Contact No. 98941 73870

IN THE HIGH COURT OF JUDICATURE AT MADRAS

(Special Original Jurisdiction)

WMP No. of 2023

In

W.P. No. 30507 of 2022

K.Saravanan,
S/o Kasinathan,
No. 30, Urur Kuppam, Besant Nagar,
Chennai – 600090 ... Petitioner / Proposed respondent

Vs

1. MeenavaThanthai K. R. Selvaraj Kumar
MeenavarNalaSangam
Represented by its president,
M.R. Thiagarajan ,
Having Office at No.48, East MathaKoil Street,
Royapuram, Chennai - 600 013 ... Respondent / Petitioner

2. The Secretary of Govt.
Ministry of Environment, Forest & Climate Change,
(MoEF&CC), Govt. of India,
Indira ParyiavaranBhavan, JorBagh Road,
Aliganj, New Delhi - 110003,

3. The Chief Secretary of Tamil Nadu,
Secretariat,
Chennai-600 009.

4. The Principal Secretary Of Tamil Nadu.
Environment Department,
Secretariat,
Chennai- 600 009.

5. The Chairperson,
Environment Department,

Panagal Maligai, Saidapet,
Chennai- 600 115.

6. The Chairman,
National Coastal Zone Management Authority,
Paryavaran Bhavan, CGO Complex,
Lodhi Road, New Delhi - 110003,

7. The Director,
National Centre for Sustainable Coastal Management
(NCSCM),
Ministry of Environment, Forest & Climate Change
(MoEF&CC), Govt. of India,
Anna University Campus,
Chennai- 600025,

8. The State of Tamil Nadu
Represented by its secretary to Government
Fisheries Department,
Fort St. George,
Chennai-600 009.

9. The State of Tamil Nadu
Represented by its secretary to Government
Public Works Department,
Fort St. George,
Chennai-600 009. ... Respondents/ Respondents

AFFIDAVIT OF K. SARAVANAN

I, K. Sravanan Son of Kasinathan aged about... years old residing at No. 30, Urur Kuppam, Besant Nagar, Chennai – 600090 well versed with the facts and circumstances of the case and do solemnly affirm and sincerely states as follows:

1. I am a member of the fishing community and has been working on the protection of the coastal regions of Tamil Nadu for the last decade. I held positions of responsibility in the Fishing Panchayat of Urur

Kuppam, and is currently an elected office bearer of the Urur Kuppam Fishermen's Cooperative Society.

2. I submit that I have filed Public Interest litigation before this Hon'ble Court and before the National Green Tribunal for issues concerning protection of the Environment and fishers livelihoods. I have filed W.P No 30292 of 2022 seeking publication of Costal Zone Management Plans in Tamil which was allowed by this court on 19.12.2022. Previously I have filed W.P No. 30237 of 2018 aggrieved by destruction of Mangroves in the Ennore Wetlands, this Hon'ble court vide order dated 19.11.2018 issued interim orders preventing destruction of Mangroves and this Writ Petion was Pending. I have filed W.P 13499 of 2021 and 13266 of 2021 challenging orders of the National Green Tribunal transferring the Original application filed before the Ld' Chennai bench to Delhi bench, this Hon'ble court stayed vide order Dated 29.06.2021 I have filed several Appeals and applications before the Ld' Green Tribunal seeking to inter alia protecting the Ennore Wetlands.
3. I submit that I am seeking impleadment as a party Respondent in the present proceeding in order to bring to the notice of this Hon'ble Court the destruction caused to the coastline by hard structures such as sea walls and groynes.
4. In Tamil Nadu, the Public works Department and Fisheries Department have over the last two decades constructed around 251 hard structures across 134 k.m of coast line. This does not include break waters constructed for harbours training walls etc. these groynes and sea walls which were constructed as anti-erosion measures, in reality has caused severe erosion along the coast and as render the coast vulnerable to sea level raise, ingress of sea water

into coastal aqua fires and as resulted in the disappearance of sandy beach.

5. The sandy beach front is essential not only required for its ecological purposes but they are livelihood space for fishers who depend on sandy beach who park their boats, dry and mend their fishing nets and various purposes like drying fish etc.
6. Due to short sighted ill-advised and unscientific construction of sea walls and groynes, the coast of Tamil Nadu experiences severe erosion. According to the recent report by National Centre for Coastal Research (NCCR), out of the 991.47 km of Tamil Nadu's mapped coastline, a whopping 422.94 km (42.7%). According to a newsreport in the Indian Express newspaper on this report, NCCR director MV Ramana Murthy, who is also a member of Expert Appraisal Committee (CRZ) of Union environment ministry, is reported to have said "in recent years, the hard structures due to their negative impacts are discouraged, instead 'soft' alternatives like beach nourishment are becoming favourable."
7. Sea walls are nothing but dumping of rocks or tetrapods along the coast i.e these are horizontal structure build along the coast. Groynes are constructed at a perpendicular angle to the coast. When a coastal structure is erected in the path of the freely moving sand along the coast, the structures prevent the natural flow of sand in the same manner as a dam across the path of river interrupts the flow of water. In such an instance one part of the coast gets an excess of sand and the other side on the down-drift is starved of sediment. The side that is starved of sediment starts and keeps eroding as long as fresh input of sand is not provided.
8. This process is evident of one sees the coastline north of the Chennai port – there is no beach till Ennore.

9. It is submitted that aggrieved by the unscientific and ill-advised construction of seawalls and groynes and the resultant erosion of the coast, application No. 4 of 2013 was filed before the Hon'ble National Green Tribunal, Chennai. During the course of proceedings before the Tribunal, State Governments of Pondicherry, Tamilnadu etc prepared and filed shoreline management plans. The State of Tamilnadu had prepared a report using IIT Chennai's Ocean Engineering Department, which only suggested hard structures like Seawalls and Groynes. It is relevant to note that predominantly, the hard structures were constructed based on IIT Madras's reports. Unfortunately, the shoreline management plan was also prepared by the same institute.

10. Pondicherry also faced severe erosion due to hard structures. The entire beach by the promenade (Gandhi statue) eroded and NIOT prepared a shoreline management plan using soft solutions which do not increase erosion but actually save the beach.

11. The Hon'ble Tribunal passed a detailed judgment on 11.04.2022 after considering all these issues, directing all the respondent states, including Tamilnadu to prepare shoreline management plans following the NIOT model of adopting soft solutions like beach nourishment.

12. It is submitted that the recent NCCR report in 2022 also proves that severe erosion is caused near the hard structures built. The writ petition however, seems to advocate for the construction of seawalls and groynes. The writ petition is nothing but an attempt to once again build disastrous seawalls and groynes – the most affected people by this monumental folly are the fishers.

13. The writ petitioner has obviously failed to appreciate these issues and has filed the writ petition, which is a thinly veiled attempt to defeat the judgment of the NGT in OA No. 4 of 2013.

14. I submit that the respondent authorities ought to prepare a shoreline management plan following the NIOT model as directed by the Hon'ble NGT, which will save coastal villages and the coast from erosion and refrain from constructing any hard structures that will cause further damage to our sensitive coastal environment – affecting both people and the ecology. No prejudice will be caused to any party if I am impleaded as a party to the present proceedings. I am in possession of documents and information that will aid in the adjudication of the present lis.

It is therefore prayed that this Hon'ble Court may be pleased to implead the petitioner as a party respondent in the present writ petition and thus render justice.

Solemnly affirmed at Chennai

On this the 23rd day of January 2023

And signed his name in my presence

BEFORE ME

ADVOCATE : CHENNAI

IN THE HIGH COURT OF JUDICATURE AT MADRAS
(Special Original Jurisdiction)

W.P.No. 30501 **of 2022**

MEENAVA THANTHAI K.R.SELVARAJ KUMAR
MEENAVAR NALA SANGAM
Represented by its president,
M.R.THIYAGARAJAN ,
Having Office at No.48, East Madha Church Street,
Royapuram,
Chennai-600 013 ... **Petitioner**

-Vs-

1. The Secretary of Govt.
   Ministry of Environment, Forest & Climate Change,
   (MoEF&CC), Govt. of India,
   Indira ParyavaranBhavan, JorBagh Road,
   Aliganj, New Delhi – 110003
   and 7 others. ...**Respondents**

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8.		Copy of the Association Pan Card and Petitioner Aadhar Card	59-60
9.	26.04.2016	Copy of the Association Resolution	61-62

10.	11.04.2022	Copy of the order in Original Application.No.04/2013 by the TheHon'ble National Green Tribunal (SZ) .	63 - 119
11.	March. 2021	Report from department of Ocean Engineering, Indian institute of Technology Madras	120 - 168
12.	18.08.2022	RTI petition copy with translation copy	169 - 170
13.	12.09.2022	RTI reply copy with translation copy	171 - 173
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Certified that the above copies are true to the their original

Dated at Chennai on this the day of November, 2022

Counsel for Petitioner

(1)

IN THE HIGH COURT OF JUDICATURE AT MADRAS

(Special Original Jurisdiction)

W.P.No. of 2022

MEENAVA THANTHAI K.R.SELVARAJ KUMAR
MEENAVAR NALA SANGAM
Represented by its president,
M.R.THIYAGARAJAN ,
Having Office at No.48, East Madha Church Street,
Royapuram,Chennai-600 013

... Petitioner

-Vs-

1. Secretary of Govt.
   Ministry of Environment, Forest & Climate Change,
   (MoEF&CC), Govt. of India,
   Indira ParyavaranBhavan, JorBagh Road,
   Aliganj, New Delhi – 110003 and 7 others.

...Respondents

SYNOPSIS

- The Petitioner herein has filed the present Writ Petition in the nature of the WRIT OF MANDAMUS directing the respondent to protect the coastal stretch which ends at Kanyakumari, East coastal zone
- On 11.04.2022, The Hon'ble National Green Tribunal (SZ) disposed the Original Application.No.04/2013 with directions in respect of erosion control measures at shoreline.
- The Member Secretary, Department of Environment sent the letter to the District Collector, Chengelpattu, The District Environmental Engineer, Tamil Nadu Pollution Control Board and Fisheries Department dated 07.07.2022.

(2)

- The Petitioner's Association sent the RTI letter to the concerned authorities dated 18.08.2022.
- The Petitioner's Association sent the representation to the concerned authorities on 06.09.2022.
- The Public Information Officer, Environment department sent the reply letter dated 12.09.2022.
- But, till today no action is taken on the petitioner's representation.

Hence, the petitioner herein has approached this Hon'ble Court praying for a writ in the nature of the WRIT OF MANDAMUS directing the respondent to protect the coastal stretch which starts from Palaverkadu and ends at Kanyakumari, East coastal zone or pass any such further orders as this Hon'ble may deem fit and proper in the circumstances of the case and thus render justice.

Dated at Chennai this the 7th day of November, 2022.

A. Arul

COUNSEL FOR PETITIONER

(3)

IN THE HIGH COURT OF JUDICATURE AT MADRAS
(Special Original Jurisdiction)

W.P.No. of 2022

MEENAVA THANTHAI
K.R.SELVARAJ KUMAR
MEENAVAR NALA SANGAM
Represented by its president,
M.R.THIYAGARAJAN ,
... Petitioner

-Vs-

4. Secretary of Govt.
Ministry of Environment,
Forest & Climate Change,
and 4 others.
...Respondents

SYNOPSIS

M/s A.KALAISELVAN
E.NO.702/1987
A.ANILAN **E.NO.3121/09**
COUNSEL FOR PETITIONER
Contact No. 98941 73870

(4)

IN THE HIGH COURT OF JUDICATURE AT MADRAS

(Special Original Jurisdiction)

W.P.No. of 2022

MEENAVA THANTHAI K.R.SELVARAJ KUMAR
MEENAVAR NALA SANGAM
Represented by its president,
M.R.THIYAGARAJAN ,
Having Office at No.48, East Madha Church Street,
Royapuram,Chennai-600 013 **... Petitioner**

-Vs-

1. Secretary of Govt.
   Ministry of Environment, Forest & Climate Change,
   (MoEF&CC), Govt. of India,
   Indira ParyavaranBhavan, JorBagh Road,
   Aliganj, New Delhi – 110003and 7 others **...Respondents**

DATES AND EVENTS

Sl. No.	Date	Events
1.	26.05.2015	The Petitioner started the Association and registered the Association in the Tamil Nadu Societies Act
2.	11.04.2022	The Hon'ble National Green Tribunal (SZ) disposed the Original Application.No.04/2013 with directions.
3.	06.07.2022	The Member Secretary, Department of Environment sent the letter to the District Collector, Chengelpattu, The District Environmental Engineer, Tamil Nadu Pollution Control Board and Fisheries Department.
4.	18.08.2022	The Petitioner's Association sent the RTI letter to the Concerned authorities.
5.	06.09.2022	The Petitioner's Association sent the representation to the Concerned authorities.
6.	12.09.2022	The Public Information Officer, Environment department sent the reply letter dated 12.09.2022.

Dated at Chennai on this the 7th day of November, 2022.

COUNSEL FOR PETITIONER

(7)

MEMORANDUM OF WRIT PETITION

(Under Article 226 of the Constitution of India)

IN THE HIGH COURT OF JUDICATURE AT MADRAS

(Special Original Jurisdiction)

W.P.No. 30507 of 2022

MeenavaThanthaiK.R.Selvaraj Kumar
MeenavarNalaSangam
Represented by its president,
M.R.THIYAGARAJAN ,
Having Office at No.48,
East MathaKoil Street,
Royapuram, Chennai - 600 013 **... Petitioner**

VS

1. The Secretary of Govt.
   Ministry of Environment, Forest & Climate Change,
   (MoEF&CC), Govt. of India,
   Indira ParyavaranBhavan, JorBagh Road,
   Aliganj, New Delhi - 110003,

2. The Chief Secretary of Tamil Nadu,
   Secretariat,
   Chennai-600 009.

3. The Principal Secretary Of Tamil Nadu,
   Environment Department,
   Secretariat,
   Chennai- 600 009.

4. The Chair Person,
   Environment Department,
   PanagalMaligai, Saidapet,
   Chennai- 600 115.

5. The Chairman,
   National Coastal Zone Management Authority,
   ParyavaranBhavan, CGO Complex,
   Lodhi Road, New Delhi - 110003,

(8)

6. The Director,
National Centre for Sustainable Coastal Management
(NCSCM),
Ministry of Environment, Forest & Climate Change
(MoEF&CC), Govt. of India,
Anna University Campus, Chennai- 600025,

7. The State of Tamil Nadu
Represented by its secretary to Government
Fisheries Department,
Fort St. George, Chennai-600 009.

8. The State of Tamil Nadu
Represented by its secretary to Government
Public Works Department,
Fort St. George, Chennai-600 009. ... Respondents

WRIT PETITION

The address for service of all notices and process on the petitioner isthat of his Counsel M/s.A.KALAISELVAN, A.ANILAN, Office at No.155/319, 4th floor, Linghichetty street, parrys, Chennai-1.

The address for service of all notices and process on the respondent is the same as stated above.

For the reasons stated in the accompanying affidavit, it is prayed that this Hon'ble Court may be pleased to issue a **WRIT OF MANDAMUS** or any other order or direction or any other appropriate writ to directing the respondent to protect the coastal stretch which starts from palaverkadu and ends at Kanyakumari, East coastal zone and pass further order as this Hon'ble Court may deem it fit and proper in the facts and circumstances of the case and thus render justice.

Dated at Chennai on this the 7th day of November, 2022.

COUNSEL FOR PETITIONER

(9)

IN THE HIGH COURT OF JUDICATURE AT MADRAS
(Special Original Jurisdiction)

W.P.No. 30507 of 2022

MEENAVA THANTHAI
K.R.SELVARAJ KUMAR
MEENAVAR NALA SANGAM
Represented by its president,
M.R.THIYAGARAJAN ,
... Petitioner

-Vs-

1. Secretary of Govt.
   Ministry of Environment,
   Forest & Climate Change,
   and 4 others.

...Respondents

WRIT PETITION

M/s A.KALAISELVAN
E.NO.702/1987
A.ANILAN **E.NO.3121/09**
COUNSEL FOR PETITIONER
Contact No. 98941 73870

(10)

IN THE HIGH COURT OF JUDICATURE AT MADRAS

(Special Original Jurisdiction)

W.P.No. 30507 of 2022

MeenavaThanthaiK.R.Selvaraj Kumar
MeenavarNalaSangam
Represented by its president,
M.R.THIYAGARAJAN ,
Having Office at No.48,
East MathaKoil Street,
Royapuram,
Chennai - 600 013 **... Petitioner**

VS

1. The Secretary of Govt.
   Ministry of Environment, Forest & Climate Change,
   (MoEF&CC), Govt. of India,
   Indira ParyavaranBhavan, JorBagh Road,
   Aliganj, New Delhi - 110003,

2. The Chief Secretary of Tamil Nadu,
   Secretariat,
   Chennai-600 009.

3. The Principal Secretary Of Tamil Nadu,
   Environment Department,
   Secretariat,
   Chennai- 600 009.

4. The Chair Person,
   Environment Department,
   PanagalMaligai, Saidapet,
   Chennai- 600 115.

5. The Chairman,
   National Coastal Zone Management Authority,
   Paryavaran Bhavan, CGO Complex,
   Lodhi Road, New Delhi - 110003,

(11)

6. The Director,
National Centre for Sustainable Coastal Management
(NCSCM),
Ministry of Environment, Forest & Climate Change
(MoEF&CC), Govt. of India,
Anna University Campus,
Chennai- 600025,

7. The State of Tamil Nadu
Represented by its secretary to Government
Fisheries Department,
Fort St. George,
Chennai-600 009.

8. The State of Tamil Nadu
Represented by its secretary to Government
Public Works Department,
Fort St. George,
Chennai-600 009. ... Respondents

AFFIDAVIT OF M.R.THIYAGARAJAN

I, M.R.Thiyagarajan, (Aadhar No.299725775745) Son of Late Mr.C.RAJALINGAM, aged about 53 Years, President of MEENAVA THANTHAI K.R.SELVARAJ KUMAR MEENAVAR NALA SANGAM having office at No.48, East Madha Church Street, Royapuram, Chennai-600 013, do hereby solemnly affirm and sincerely state as follows:

1. I submit that, I am the President of "MEENAVA THANTHAI K.R.SELVARAJ KUMAR MEENAVAR NALA SANGAM" (Association PAN Number: AAEAM9234H) and it is a registered body under section 10 of the Tamil Nadu Societies Act, 1975 (Tamil Nadu Act 27 of 1975) on the file of the Registrar of Societies, Chennai North in Sl.No. 205 of 2015 dated

(12)

26.06.2015. I submit that the association named "MEENAVA THANTHAI K.R. SELVARAJKUMAR MEENAVAR NALA SANGAM" has been formed for the welfare of the fishermen community and other communities living along the coastal stretch of Tamil Nadu, as well as for the purpose of protecting and addressing the issues related to Environment, Forest, Ecology and etc.,

2. I further state that the association is not an income tax assessee and had not filed returns. I submit that the petitioner association has constantly striving for the upliftment and improvement of conditions of the life of the fishermen community in the State of Tamil Nadu. The Applicant association has approached this Hon'ble High Court of Madras as well as this Hon'ble Tribunal on several occasions, raising serious concerns regarding the protection of the coastal environment and ecology and illegal construction in the CRZ Area in Tamil Nadu. The Applicant Association on several occasions has involved its activities for the protection of lake and ensure that there will no encroachments or harm to the eco system. Vide resolution dated 26.4.2016, the Applicant Association has authorized its President, M.R. Thiyagarajan to represent the Applicant before this Hon'ble Court.

3. I submit that, I am the petitioner herein and as such I am well aware of the facts and circumstances of this case. I hereby declare that I do not have any personal interest directly or indirectly in the subject matter of the above Writ Petition. I have not filed Public Interest Litigation earlier against the same cause of action. I undertake that I will pay the cost, if any, if the above Writ Petition is found to be intended for gain or oblique motive. I have filed the above Writ Petition out of my own funds. I am filing

the above Writ Petition based on my personal knowledge. Since the issue involved in this Writ Petition is to safeguard the public interest in large, it has become necessary for me to approach this Honourable Court by invoking the extraordinary jurisdiction of this Hon'ble Court under Article 226 of the Constitution of India. I am a business man and my income from business is Rupees Four Lakhs Per Annum. I further state that since I have involved much in the environmental activities and had filed conducted several environmental cases in the National Green bench Tribunal (southern region) against the forcible polluters and environmental exploiters.

4. I further respectfully state that though initially I was an active basic activist against the environmental polluters, Illegals, environmental destroyers, Seawater pollutants, lakes, ponds polluters and environmental exploiters. Subsequently an association was formed in the name of MEENAVA THANTHAI K.R.SELVARAJ KUMAR MEENAVAR NALA SANGAM and I was nominated as the president of the said association and till date I am holding office of the State President of the association and discharging my duties as a president to the best of ability.

5. I further submit that the coastline is subjected to erosion due to various hydrodynamic effects of ocean phenomena such as waves, tides, ocean currents, shortage of sediment and deflation etc. This hydrodynamic effect results in considerable movement of sediment, which ultimately causes changes in the morphology of the coast. The wave is one of the major factors, which causes erosion and accretion along the coast. When the waves approach at an angle to the coast in the vicinity of nearshore region, waves

(14)

stir-up the bed material due to breaking action and keep the same in suspension. This suspended material is carried along the shore by the component of wave parallel to shore, while the component perpendicular to the shore moves the material onshore-offshore of the beach. This movement of the material results in change in the near shore bathymetry.

6. I further state that the sea shore erosion of the beaches takes place due to establishment of many factories, housing and tourism along the coast there is exploitation of ocean resources. This has resulted in reclamation of coastal inlets for commercial purpose or removing of beach sand for construction, which has destabilized eco-system of the ocean. Construction of unplanned structures has resulted changes of the adjacent coast leading to increase of erosion. For a country like India having a long coastline, it has been reported that about 1200 km of coastline is under the threat of erosion. In order to mitigate erosion effectively for such a long coast, it is necessary to develop various methodologies for shore protection or anti-sea erosion. It should be such that, it will be economical, easy to construct, makes use of locally available material and can be constructed in minimum period.

7. I further state that the sea shore erosion has badly affected the viability of the fishermen family and occupation. Tidal waves damage their house and boats constantly. With alternative arrangements for parking their boats elsewhere not available, they are forced to pull the boats further inshore to escape the havoc caused by the waves. I further state that Protective Structures (Hard solution) such as Seawalls Relatively massive structures, parallel to the shoreline and Use of Geo-synthetic

(15)

Tubes or Bags - Geo-synthetic Tubes or bags filled with sand can be used for beach protection, detached seawalls, anti-sea erosion bunds can be formed using sand-filled Geo-synthetic Tubes or Bags.

8. I further state that the below mentioned coastal stretch is now in a critical situation.

SHORE EROSION PLACES IN TAMIL NADU COASTAL AREA

1. Kokilamedu Village in Chengalpattu District,
2. KadalorePeriyakuppam Village in Chengalpattu District.
3. KadaloreChinnakuppam Village in Chengalpattu District.
4. AlliKuppam Village in Chengalpattu District.
5. PazhayanaduKuppam Village in Chengalpattu District.
6. PudhunaduKuppam Village in Chengalpattu District.
7. AngalammanKuppam Village in Chengalpattu District.
8. Chemmencherry Village in Chengalpattu District.
9. Karikattukuppam Village in Chengalpattu District.
10. Pudhukalpakkam Village in Chengalpattu District.
11. Killai Village in Cuddalore District.
12. Periyakuppam Village in Cuddalore District.
13. Pudhukuppam Village in Cuddalore District.
14. Pillaichavadi Village in Villupuram District.
15. Nemmeli Village in Chengalpattu District.
16. KanathurReddykuppam Village in Chengalpattu District.
17. Nambiyar Nagar Village in Nagapattinam District

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18. Thirumullaivasal Village in Nagapattinam District

19. Puthukuppam Village in Mayiladuthurai District

20. Kuttiyandiyur Village in Mayiladuthurai District

21. Velankanni Village in Nagapattinam District

22. NagoreKeezhapattinachery Village in Nagapattinam District

23. Keechanpkuppam Village in Nagapattinam District

24. Manapad Village in Thoothukudi District

25. Periyathalai Village in Thoothukudi District

26. Veerapandyanpattinam Village in Thoothukudi District

27. Jeeva Nagar (Tiruchendur) Village in Thoothukudi District

28. Amali Nagar Village in Thoothukudi District

29. Kulasekarapattinam Village in Thoothukudi District

30. Punnakayal Village in Thoothukudi District

31. Mandapam North in Ramnathapuram District

32. Mandapam South in Ramanathapuram District

33. Puthenthurai village in Kanniyakumari District.

34. Kesavaputhenthurai village in Kanniyakumari District.

35. Keelamanakudy village in Kanniyakumari District.

36. Melamanakudy village in Kanniyakumari District.

37. Kodimunai village in Kanniyakumari District.

38. Simon colony village in Kanniyakumari District.

39. Kurumpanai village in Kanniyakumari District.

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40. Keelakadiyapattina village in Kanniyakumari District.

41. Melakadiyapattinam village in Kanniyakumari District.

42. Annai Nagar village in Kanniyakumari District.

43. Eraynumanthurai village in Kanniyakumari District.

44. Pozhikarai village in Kanniyakumari District.

45. Singaravelar Colony in Kanniyakumari District.

46. Eraviputhenthurai in Kanniyakumari District.

47. Thoothur and Chinnathurai in Kanniyakumari District.

48. CuddaloreChinnakuppam Village, CheyyarTaluk, Chengalpattu District.

49. CuddalorePeriyakuppam Village, CheyyarTaluk, Chengalpattu District.

50. CuddaloreAlikuppam Village, CheyyarTaluk, Chengalpattu District

where due to the Tidal waves the soil erosion had made life difficult to the fishermen community people. Immediate steps has to be made for controlling the soil erosion in the above mentioned places for the life of thousands of families in and around the coastal area. Subsequently Fishermen Families inthe NTO Village, Chennai District, Thiruvottiyur taluk, Thiruvottiyur village had resided in the coastal area in survey No.166 for many years and due to the raise of sea level the entire Land in survey No.166 was sub merged into the sea. Hence the fishermen community had shifted their house to the land survey No.168. The said lands in Survey No.168 was classified as

(18)

Poramboke land and due to the soil erosion and sea waves the fishermen community had been forced to shift their home from survey No.166 to 168. Then now the entire Land in the survey No.168 is submerged due to the raise of sea level. Hence subsequently the same had been shifted to Survey No.169 Belongs to national Highways and due to the plantation proceedings plan the National Highway Department had made steps to recover the land and had taken the possession from the fishermen community. the impact of the raise in sea level and soil erosion had impacted very strongly in the life of fishermen community. It is very much desperate to temporarily invoke the protective structures immediately for the life of fishermen community.

9. I further state that the Coastal Regulation Zone Notification, 2011 was notified on 6 January, 2011 for regulation of developmental activities along the coastal stretches and to ensure the livelihood security to the fisher communities and other local communities, living in the coastal areas, to conserve and protect coastal stretches. Subsequently CRZ Notification, 2011, the Coastal Regulation Zone Notification, 2019 was notified on 18th January, 2019 for regulation of developmental activities along the coastal stretches and to ensure the livelihood security to the fisher communities and other local communities, wing in the coastal areas, to conserve and protect coastal stretches, specifically focused on conservation and management plans of Ecologically Sensitive Areas (ESAS) which did not feature in the CRZ Notification, 2011.

10. It is Pertinent to point out that the department of Ocean Engineering Indian Institute of Madras Chennai, an expert

(19)

Committee has given an opinion on the instruction of the Fisheries department of government of Tamil Nadu on March, 2021 In which on para 6 a clear ideology with scientific approach was given by the Expert Committee which is reproduced below.

6.0 PROPOSED LAYOUT OF GROINS

A series of 7 groins have been proposed to protect the coastal stretch of Uyyalikuppam. The stretch of transition groins field will cover a length of 750m of the shoreline. The proposed solution is expected not only to serve as coastal protection measure but also is likely to enhance the rebuilding of the lost beach although it may take a few years,

- Two groins (G1, G7) of length 40m,
- Two groins (G2, G6) of length 60m
- Two groins (G3, G5) of length 80m and
- One groin (G4) of length 90m has been proposed.

Fig. 7 shows the layout of the proposed groin field and Plate 2 presents the layout in detail.

The layout comprises of 40m groins (G1) and (G7) extending upto a water depth of 1.0m and 1.5m respectively, 60m groins (G2) and (G6) extending upto a water depth of 1.5m and 2.0m respectively, similarly 80m groins (G3) and (G5) extending upto a water depth of 3.0m and 2.2m respectively. Further, the groin of length 90m (G4) will extend upto a water depth of 2.8m. All the groins will start from the high tide level of about +1.4m towards the seaside. The layout is as per the bathymetry survey conducted during the finalization of proposal. If the work gets

(20)

delayed, it is mandatory to conduct atleast one line survey along the alignment of groins to ensure each of the groins reach the design water depth as indicated above. Note that the lengths are likely to change prior to installation as it depends on the water depth and hence, IITM must be informed prior to the commencement of the work.

11. However, this report which is very much relevant for the protection of the Sea erosion was not considered by the Hon'bleNGT. As a consequence, till today no steps had been taken by the respondents to protect the Sea Erosion on the sea shore. This is appropriate and peak time to take action on what putting manner to protect the sea erosion. Further the Hon'ble NGT in its order dated 11.04.2022 in O.A.No.4 of 2013 had fixed the time limit for implementing such scheme within Six months till today no improvement had shown by the respondents. Further I had made a application to the Environmental Department vide RTI questioning the effective steps taken after the said order passed by the Hon'ble NGT, but to the effect the Environmental department had replied vide its letter date 12.09.2022 no effective steps were taken for implementing the soft structure in the coastal stretch.

12. I further submit that I had made representation to the respondents regards the sea erosion in the coastal stretch vide representation dated 28.09.2022And the same was received by the respondents. Further the above writ petition is absolutely public interest litigation to protect the interest of the general public as there about 2000 hectares of land was submerged into the sea and now is the correct stage to take precautionary measures to implement the safe structure for controlling the soil

(21)

erosion and I am spending my own money for this purpose. As already submitted I am the President of the above said sangam and I am making every effort to attend to the grievances of the local people and to alleviate their sufferings. Therefore if any favourable order is obtained from the Hon'ble court it will be in the interest of the common public. In case this Hon'ble court comes to the unlikely conclusion that there is some private interest in filing this writ petition then I am ready and willing to bear the cost that may be imposed by the Hon'ble Court. I have not filed any public interest litigation for this matter here and to my knowledge this is the first writ petition that is being filed before his Hon'ble court for the prayers sought for seeking direction from this Hon'ble Court.

13. I Submit that aggrieved under these circumstance and having no other remedy, I plead to invoke the extraordinary jurisdiction of this Honorable Court, under Article 226 of the Constitution of India for the interest of Public.

Therefore I pray that this Hon'ble Court may be pleased to issue a **WRIT OF MANDAMUS** or any other order or direction or any other appropriate writ to directing the respondent to protect the coastal stretch which starts from palaverkadu and ends at Kanyakumari, East coastal zone and pass further order as this Hon'ble Court may deem it fit and proper in the facts and circumstances of the case and thus render justice.

Solemnly affirmed and duly signed **BEFORE ME**

in my presence at Chennai this the

day of 7th day of November 2022 **ADVOCATE-CHENNAI**

(22)

Form No. II

(See Rule 8 Of the TamilNadu Societies Registration Rules, 1978)

CERTIFICATE OF REGISTRATION UNDER SECTION 10 OF THE TAMIL NADU ACT, 1975 (TAMIL NADU ACT 27 OF 1975)

CERTIFICATE OF REGISTRATION OF SOCIETIES

Sl. No. : 205 /2015

I hereby Certify that

மின்வு தந்தை K.R. செல்வராஜ்குமார் மின்வர் நல சங்கம்

has this day been Registered Under The Tamil Nadu Societies Registration Act, 1975 (Tamil Nadu Act 27 of 1975).

Given under my hand at CHENNAI NORTH

this 26 th day of June 2015

Seal :

Station :

THE SEAL OF THE REGISTRAR OF SOCIETIES CHENNAI NORTH.

Signature of the Registrar

(23)

Form No.II

(See Rule 8 Of the Tamil Nadu Societies Registration Rules, 1978)

CERTIFICATE OF REGISTRATION UNDER SECTION 10 OF THE TAMIL NADU ACT, 1975 (TAMIL NADU ACT 27 OF 1975)

CERTIFICATE OF REGISTRATION OF SOCIETIES

Sl. No. 205 / 2015

I hereby Certify that மீனவ தந்தை K.R.செல்வராஜ்குமார் மீனவர் நல சங்கம் has this day been Registered Under The Tamil Nadu Societies Registration Act, 1975 (TAMIL NADU ACT 27 OF 1975)

Given under my hand at **CHENNAI NORTH** this **26th** day of **June 2015**.

Seal: -sd- 26/06/2015

Station: Signature of the Registrar

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BYE LAW

FORM No.1

(See Tamil Nadu Registration of Societies Act 27, Sub Section (7) of 1978).

Application for obtaining the Registration Certificate in according with Tamil Nadu Registration of Societies Act 27, Sub Section (7) of 1975).

From

Mr.K.Mageshwaran (President),
"Meenavar Thanthai K.R.Selvarajkumar
Fishermen Welfare Association"
No.15/8, Main Road,
A.J. Colony, Royapuram,
Chennai-600 013.

To

The Respected Registrar of Societies,
North Madras,
Chennai-600 001.

Respected Sir,

1. We have formed the Association in the name and style of "Meenavar Thanthai K.R.Selvarajkumar Fishermen Welfare Association" on 01.04.2015.

2. I have enclosed with this application, a true copy of our "Memorandum of Association".

3. I am paying along with this application Rs.2,550/- (Rupees Two Thousand and Five Hundred and Fifty Only) as the Registration Fees for the Association.

4. I am also a member of the Executive Committee of the Association.

(25)

5. I have been authorized by the Executive Committee to make this application and obtain the Registration Certificate.

6. I humbly request that you may be pleased to register our Association as a Society and give the Registration Certificate and oblige.

Date :

Place :

-Sd-
President/Secretary
Petitioner's Signature

BYE LAWS OF THE ASSOCIATION

Name of the Association : "Meenavar Thanthai K.R.Selvarajkumar Fishermen Welfare Association"

Objects :

1. This Association will bring all the Fishermen under one roof and will strive for their welfare and upliftment.

2. Will receive informations of daily problems faced by the Fishermen and will work to undertake the redressal measures.

3. This Association will discipline the procedure of the Government helping the Fishermen during natural calamities such as heavy rain, storm, flood and tsunami.

4. This Association will educate the Fishermen to take appropriate precautions during the occurrence of natural calamities.

5. This Association will take utmost care for the children of Fishermen Community, for their education, health and future growth.

6. This Association will assist Fishermen when ever they lose income for their daily life depending on the undependable sea weather.

(27)

7. This Association will meet the concerned Officers of the State to maintain our place of living with essential necessities and healthy surroundings.

8. This Association will encourage interactions between Fishermen for the betterment of their profession and livelihood.

9. This Association will do its best the remove ignorance and poverty prevalent among the Fishermen Community and provide them quality education, health facilities obtainable by them in accordance with law. Even in sports and Fishery related industries, this association will put the Fishermen in the best place.

-Sd-
President/Secretary

EXECUTIVE COMMITTEE

S.No.	Name	Signature	Occupation –Address
1.	K.MAGESHWARAN (President)	-Sd-	Advocate No.15, 5th Street, Ulaganathapuram, Ennore, Chennai-600 057.
2.	R.T.ASHWIN KUMAR (General Secretary)	-Sd-	Business: No.8, 6th Street C.G.Colony, Royapuram, Chennai-600 013.
3.	K.SUGANESHWARAN (Treasurer)	-Sd-	Business No.15, 5th Street, Ulaganathapuram, Ennore, Chennai-600 057.
4.	S.DANIEL (Administration Member)	-Sd-	Fishermen No.14, 3rd Street, Nettukuppam, Ennore, Chennai-600 057.
5.	M.R.THIYAGARAJAN (Administration Member)	-Sd-	Business: No.8, 6th Street C.G.Colony, Royapuram, Chennai-600 013.
6.	S.NAGARAJAN (Administration Member)	-Sd-	Fishermen No.10, Amman Koil Street, Kottai Kuppam, Pazhaverkadu -601205.
7.	S.ELAYARAJA (Administration Member)	-Sd-	Fishermen No.100/1, Bajanai Koil Street, Kottai Kuppam, Pazhaverkadu -601205.

(79)

S.No.	Name	Signature	Occupation –Address
1.	K.MAGESHWARAN (President)	-Sd-	Advocate No.15, 5th Street, Ulaganathapuram, Ennore, Chennai-600 057.
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7.	S.ELAYARAJA (Administration Member)	-Sd-	Fishermen No.100/1, Bajanai Koil Street, Kottai Kuppam, Pazhaverkadu -601205.

WITNESSES:

1. -Sd-
B.Senthil Kumar
S/o.M.Balasundaram,

2. -Sd-
M.Ruba Shankar
S/o.Marimuthu.

Date :
Place:

-sd-
President/Secretary

(30)

ARTICLES OF ASSOCIATION

A) Name of the Association : "Meenavar Thanthai K.R.Selvarajkumar Fishermen Welfare Association"

B) Address : No.15/8, Main Road, A.J. Colony, Royapuram, Chennai-600 013.

C) Initiated on : 01.04.2015

D) Registration Jurisdiction : North Chennai, Chennai

E) Working Hours : From 10.00 A.M. to 06.00 P.M.

F) **Objects :**

1. This Association will bring all the Fishermen under one roof and will strive for their welfare and upliftment.

2. Will receive informations of daily problems faced by the Fishermen and will work to undertake the redressal measures.

3. This Association will streamline the procedure of the Government helping the Fishermen during natural calamities such as heavy rain, storm, flood and tsunami.

4. This Association will educate the Fishermen to take appropriate precautions during the occurrence of such natural calamities.

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5. This Association will take utmost care for the children of Fishermen Community, for their education, health and future growth.

6. This Association will assist Fishermen when ever they lose income for their daily life.

7. This Association will meet the concerned Officers of the State to maintain our place of living with essential necessities and healthy surroundings.

8. This Association will encourage interactions between Fishermen for the betterment of their profession and livelihood.

9. This Association will do its best the remove ignorance and poverty prevalent among the Fishermen Community and provide them quality education, health facilities obtainable by them in accordance with law. Even in sports and Fishery related industries, this association will put the Fishermen in the best place.

G. Future Plans and Actions

1. This Association will work very hard to achieve the Fishermen in the fields of sports, literature, science, religious, social reforms, arts, handicrafts, hutment crafts, physical exercises, sports (including indoor games) entertainment, social welfare, cultural activities and useful knowledge in all the above fields.

2. Apart from the above functions this association will work with a single mind to do better service for the coming days.

H. **Litigations :**

If any litigation has to be initiated and conducted in any court of law or if any litigation is to be faced by the Association, all those will be done in the name of the President of the Association only.

I. **Daily Report :**

This Association Authorizes the President of the Association to order to right the Daily Reports of the daily activities of the associations.

J. **Admission of Members :**

(i) Qualification :

All social activists above the age of 18 years who are interested in serving for the cause of the welfare and growth of this association can be admitted as members. Those interested can apply by filling up the requisite form and submit it along with subscription, during the office hours. The Executive committee is the final authority for deciding to either admit the member or reject the application.

(ii) Subscription :

Each member shall pay annual subscription of Rs.100/-. This may be given in monthly installments

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between the 1st and the 10th day of every month and obtain the receipts.

(iii). Entrance Fees :

Every new member admitted shall have to pay Rs.10/- as entrance fees.

K. **Removal of Members and appeals :**

1. Those who do not pay two years subscription continuously will be removed from the membership. If however they pay the due amount within a year they will be readmitted on the recommendations of the Executive Committee.

2. Those who work against the principles and objects of the association will be removed from membership. Such members if pay appeal in writing to the General Body, the General Body will take up the appeal and decide on the issue of readmission.

3. Criminal proceedings : Criminal proceedings will be taken against those members who misappropriate the movable and immovable properties of the association and the funds of the association or in any way cause financial loss to the association will be removed and criminal proceedings will be taken against them.

L. **Rights and Duties of the Members :**

1. Every member should work tirelessly to achieve the objects of the association. They should pay the subscription amount regularly without fail. They

should treat the co-members of the association as true friends. They should function in a manner not objectionable by the rules and regulations of the association.

2. Members have the rights to take part in the General Body Meetings and elect their Executive committee in the General Body meetings and give their opinions about the litigations by the association or against the association for the benefit of the association.

3. For what ever reasons the members are removed from the association, such members who feel that the removal is not justifiable, can make their submissions in writing to the Executive committee along with the necessary evidences. Even those who have committed the wrongs inadvertently can tender their apologies and seek readmission.

M. **Activities of the Association :**

This Association will improve its financial status through subscriptions and donations. Such money will be utilize for the fulfillment of the objects of the association.

N. **Executive Committee :**

1. Management Structure :

The managing committee consists of 1 President, 1 General Secretary, 1 Treasurer, 4 Committee Members totaling to 7 Managing Committee Members.

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2. Executive Committee Meetings :

Executive Committee will meet once in every month on the 10th day of every month, Information of the meeting will be conveyed to the members before 3 days either registered post or in person. Attendance of 2/3rd of the 7 members will be the enough quorum. If enough members do not form the quorum the meeting will be held during the next week on the same day. For such postponed meetings quorum is not necessary. The proposals will be passed on the voting of the 2/3rd members.

3. Urgent Executive Committee Meeting :

Urgent Executive Committee Meetings can be held by two days advance notice. In this meeting urgent issues will be discussed and decided.

4. Activities :

Deciding on the applications for new memberships, taking actions against members who do not pay the subscription and deciding the date, venue and the subject of discussions for the General Body Meeting.

5. Tenure of Office :

As per Rule Section 15(2) the present managing committee will be in office for 3 years at the end of which new Executive Committee will be elected duly by the General Body. That Executive Committee will be in office for the next three years. The Present Executive Committee Members have the rights to

claim for being elected again as Executive Committee Members.

6. Duties of the Executive Committee Members :

(a) Those members who seek election to the Executive Committee should have impeccable conduct, behaviour and regular subscription payers.

(b) Should participate in the activities of the association with clean and good intentions.

(c) If a Executive Committee Member does not attend the three meetings continuously he will be removed from the Executive committee. If however such members tender their unconditional apology, they can be reinstated as Executive committee members on the decision of the Executive committee. Urgent General Body Meeting can be convened and the member shall be removed if the activities of the member is in any way detrimental to the aims and reputation of the association.

7. Duties of the Executive Committee Members :

a. President

The President will preside upon the meetings of the Executive committee and special meetings. He will instruct the other Executive committee members about their duties.

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b. General Secretary :

The General Secretary will be accountable to sending notices of all meetings to the concerned, check the registers of the association, preparing the resolutions to be adopted in the meetings. He will be taking the list of members who do not pay the subscriptions and submit it to the Executive committee on every month. Registration of members, safeguarding the properties of the association are also his duties. Further more he will act in accordance with the decisions taken by the Executive committee.

c. Treasurer :

Giving receipts for subscriptions, donations and such other money received by the association. He shall disburse the money through vouchers on the orders of the President and the General Secretary. He shall maintain the financial records of the association as per the Rules of the act.

d. Executive Committee Members :

The Executive Committee Members will be assisting the President and the Secretary in enforcing the resolutions passed in the meetings.

There will be no remuneration for the Honourary duties done by the Executive Committee Members.

O. **Preparing Documents to be submitted to the Registrar:**

1. It is the duty of the General Secretary to fillup the forms pertaining to Tamil Nadu Registration of Societies Act, Section No.(16) (3) (b) Rule No. (17) (2) Rule No.27, 26 and other sections and submit them to the Registrar of Societies along with the necessary fees within six months.

2. The accounts of the association will be submitted to the General Body and if the total expenditure and income is within Rs.2,500/-, it can be audited by two members of the General Body, (not the managing committee) who had their education completed until 10th Std

As per Rule No.21(3) of the Act, if the total of income and expenses account is between Rs.2,500/- and Rs.10,000/-, this will be audited by two qualified graduate members who are not managing committee members. If there are no graduates among the members the accounts will be audited by a qualified Chartered Accountant.

If the income and expenses total more than Rs.10,000/-, the accounts shall be audited by a qualified Chartered Accountant. As per Rule No.16 (2) of the Act The Chartered Accountant should certify the Accounts as correct and such certified accounts shall be submitted before the General Body to get the approval of the General Body. Within six months of

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the approval by the General Body, the accounts shall be submitted to the Registrar of Societies.

3. An affidavit stating that the accounts were well maintained during the last fiscal year and

4. The list of names of the General Body members, their professions, addresses and dates of admission of the members at the end of the previous fiscal year should be submitted.

5. If there was any change in Executive committee members at the end of the fiscal year that should be informed to the Registrar within 3 months in Form No.VII as per Rule No.17 (2) of the Act and also if any Special Resolution has been passed that should also be attached.

6. It is the duty of the General Secretary to provide any records of the association to the Registrar or any one authorized by the Registrar at the regular office hours.

7. It is duty of the past and the present President to provide any information as per section No.34 (2) of the Act or after the order by the Registrar after is perusing the documents submitted under Sections 34(1).

8. It is the duty of all present and past members to provide any accounts details with them and the books of accounts with them to the Enquiry Officer/Sub-Registrar.

9. The Association shall have its registered office with a clear address to send and receive all letters and notices concerned with the association.

10. The name board of the association should be displayed in the front of the office prominently written in Tamil.

11. If there is any change in the registered address of the association, it should be informed to the Registrar within 3 months through Form No.V.

12. Any documents of pledging to be added in the files of the Registrar, it is the duty of the General Secretary to submit such document to the Registrar within one month.

13. After the completing the payment pertaining to the pledging, that and closing certificate should also be submitted to the Registrar within one month by the General Secretary.

P. **Accounts and Auditing :**

1. The Financial year for the association will be from 1st April to 31st March every year. At the end of every financial year the accounts should be audited by the authorized auditor.

The Registers and Files to be maintain by the Association.

2. a) Cash Register

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This book will show the daily income and expenses and the balance at the end of the day.

b) Receipt Book :

Receipts for the amounts received as subscriptions and donations by the members and donors with space for their name and address and amount received will be in printed book forms which should be signed by the General Secretary and the Treasurer.

c) Debit file :

This file will be maintained with serial number and date. For expenses more than Rs.500/-, Revenue Stamp of Rs.1/- should be affixed and signature obtained from the receiver over the stamp. Once the amount is paid the "PAID" the rubber stamp has to be affixed in the debit slip.

d) Monthly Accounts Registers :

Individual incomes and expenses and also the total income and expenses of the association should be maintained in these registers with reference of page number of the cash book.

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e) Files pertaining to written communications :

All the letters sent by the Association and received by the Association shall be maintained these files.

f) Minute Book Registers:

Separate Minute Books should be maintained for Executive Committee Meetings and General Body Meetings

g) Members registers :

The details of the names, professions, addresses and the date of admission of member should be recorded in the register and maintained as per Form VI.

Q) **Regarding supply of copies of bye laws of the Association, incomes, expenses and balance sheet of accounts to the members.**

If any member applies for copies of bye laws of the Association, incomes, expenses and balance Sheet of accounts it can be given on payment of Rs.1/- per copy.

During the office hours the members can peruse through the members register without paying any fees. The members can take copies at their expenses.

R. **Examining the Association Registers and Resolution Registers :**

The General Secretary is accountable to examine the Registers and place his signature as per Rule No.(20) of the Act. Or otherwise one among the Executive committee members examine them and certify them that the details in the Register are true and correct.

S. **Funds of the Association, Investment in Properties, Special Reserve Funds**

1. The funds belonging to the Association shall be deposited in Co-Operative Banks, Nationalised Banks and Private Banks in savings accounts in the name of the association.

2. Money can be withdrawn through cheques signed jointly by two of three office bearers, the President, the General Secretary and the Treasurer.

3. Investments of the funds of the association :

   a. Power to spend the funds is there for the Executive committee for achieving the objects and the requirements stated in the bye laws of the association. The association should invest in movable and immovable properties and they should be maintained by the Executive committee.

b. The Treasurer can keep upto Rs.500/- with him for the day today expenses of the association. If more than that amount is required to be kept by the Treasurer, it should be as per the approval of the Executive committee.

T. **Special funds reservation :**

There is no provision to give money in the event of death of any member and no assistance to members requesting for financial assistance as per the decision of the Executive committee.

U. **Day today administrative functions of the Association :**

All the day today functions will be undertaken by the members of the Executive Committee and they will not be remunerated for this. Their works will be treated as Honaray service to the association. If required in future, workers can be appointed. The duties and salaries of such appointed workers will be decided by the Executive Committee.

V. **Annual General Body Meeting :**

This meeting will be held six months after the end of financial year i.e. around the month of September or on a date stated in the bye laws of the association and the following will be discussed and decided in that meeting.

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The balance sheet of the income and expenses of the previous year duly signed by the Auditor or the members appointed for the purpose should be submitted to the members of the General Body.

After getting the approval from the members of the General Body, the balance sheet should be certified by the President and submitted to the Registrar of Societies as per section No.16(3)(b).

a. Notice of General Body Meeting :

All members should be informed of the meeting 21 days in advance either by registered postal communication or by personal delivery or by publishing in daily news papers. Apart from this, the date, the place, the time and the subjects concerned with the meeting should also be informed to the members. A copy of the notices should pay placed in the notice Board of the Association. Approval of the General Body pertaining to the balance sheet for the previous year should be obtained. After obtaining the approval of the General Body this balance sheet account should be submitted to the Registrar of Societies with the requisite fee.

b. Objects to be discussed and decided in the General Body Meeting :

1. The Approval of the General Body should be obtained after discussing the last years accounts

balance sheet, auditor's report and the accounts report.

2. To appoint auditors to audit the accounts of the association for the next financial year.

3. The Annual Report of the activities of the Association should be submitted to the General Body in the meeting and get the approval of the General Body.

4. To make an estimation of approximate quantum of funds required for the next financial year.

5. If any special resolutions are to be passed, frame the resolutions to that effect.

6. If any ordinary resolution is to be passed about the future development plans for the Association, the details of it should be put down in writing.

7. If a new executive committee is to be elected, the subjects pertaining to that election.

c. Quorum for the General Body Meeting :

1. Attendance of 1/3rd of members of the Association can be the minimum quorum for the meeting. If even this quorum is not there, the meeting will be postponed for one hour. After that the quorum is not necessary. The attending members will be considered as the quorum.

2. Special General Body Meeting :

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The Executive Committee can call for the special General Body Meeting for the purpose of passing Special Resolutions. Or the meeting can be called for if 3/4th of the members submit a petition for calling the special meeting. For Special Meetings of the General Body quorum is not required. If the Special Meeting is not arranged by the Executive Committee, the Petitioners member have the power to call the meeting and such a meeting will be recognized as legitimate Special General Body Meeting. 21 Days notice is required for the Special General Body Meeting also.

3. Intentions required for passing Special Resolutions:

   a. To change the name of the Association through the Special Meeting Resolution with the further approval of the Registrar of Societies.

   b. For changing the Executive Structure of the Association.

   c. Managing the Association with less expense or more efficiently and even expanding the activities of the association for more good causes.

   d. To achieve the objects of the formation of the association through better ways and means.

   e. To join with other registered associations with common objects.

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f. To divide the association into more than one association and amend the byelaws accordingly.

g. For passing urgent resolutions and for bringing no confidence motion against the existing executive Committee.

h. To change or amend the byelaws of the Association.

i. To alter the Articles of Association or the bye laws of association and getting the alterations registered.

j. The subject of discussion in the Special General Body Meetings will be for only the subject for which the meeting is called. No other subjects will be discussed in the Special General Body Meeting.

Easy access to the records by the Members :

The register containing the details of the names, profession, addresses of the members should be kept for the perusal of all members.

The Registers pertaining to the day book and accounts of the association should be kept for the perusal of all the members.

During the office hours members can look at the records without pay any fee and also take copies of them at their expense.

W. **Special Resolution :**

Special Resolution is required for Change of name of the Association, amendments in the memorandum of association, articles of association and the byelaws of the association, joining with other registered Associations and dissolving the association.

X. **Special Resolution should be added in the files of the Registrar :**

1. Two copies of the passed special resolution should be signed by the General Secretary should be signed and submitted to the Registrar of societies within three months

Dissolving :

2. If because of any unforeseen circumstances the association has to be dissolved or the registration is withdrawn by the registrar of societies, the properties of association will be transferred to another association with the same objects of this association. For that purpose a special resolution should be passed. After that the Association should stop functioning.

General :

3. If anything to be described is left out in the above byelaws, they will be in accordance with the Tamil Nadu Societies Registration Act, 27/1975 and Rule 1978.

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Y. a. Election :

Procedures for Election of Office Bearers and Members of Executive Committee:

1. Three months before the election of Office Bearers and Executive Committee Members the voters list will be prepared in proper manner and displayed in the notice board and also be hanged in front of the registered office of the Association. Those members whose names have been left out in the voters list, can apply for getting the votting rights by applying within 15 days.

2. Two months before the end of the tenure of the Office Bearers, a notice will be sent to the members pertaining to the election of new Executive Committee and election officer and an assistant election officer will be decided in the General Body Meeting.

3. 40 Days before the expiry of the tenure of office of the present office bearers, an election officer and an assistant election officer will be elected by the General Body meeting.

4. After the election of the election officer and assistant election officer details of date of applying for nomination, last date of applying for nominations, last date of withdrawal of nominations, dates of perusal of nominations

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and the election date should be stated and displayed in the notice board of the association. Those who filed nominations should be the members of the Association.

5. The Election Officer will be functioning as efficiently as the election officers for assemblies and parliament and will follow the same salient principles in conducting the election of the office bearers and Executive Committee Members. In the absence of the election officer the assistant election officer will be functioning with the same powers of the election officer.

6.a. Those members contesting the election can obtain the applications for nominations in the office of the Association during the office hours.

b. The applications for nominations will be supplied for three days starting from 30 days before the election.

c. In that application the contestant must fill up the necessary details with one member proposing the nomination and another member seconding the nomination and submit it to the election officer within three days.

d. Those who have filed the nominations but not interested in contesting in the election can

withdraw their applications before 3 days until 5.00 p.m. in the evening.

e. The date, time, the venue and the names of the contestants will be informed by registered post to the General Members sufficiently before the election.

f. Voting will be held on the election date between 8.00 A.M. to 5.00 P.M. with an interval for lunch between 1.00 P.M. to 2.00 P.M.

g. Voting will be carried out at the supervision of the election officer. The election officer has the power to get another member to assist him in the election processes.

h. Each voting member will be provided with one Vote Card for each office bearer and one card for the Executive Committee. The Members can vote to any particular Executive Member and the ballet cards should be put in the boxes meant for the purpose. Any extra writing by the voting members on the ballet papers will render the ballet paper invalid.

i. After the voting hours the ballet papers will be counted and the election officer will announce the names of the winners. The election officer will make his report and get it signed by the winners and the losers and then issue the certificate of the result of the election.

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j. In the event of any errors and omissions in the description of the election procedure, the decision of the election officer is final and conclusive.

Z. General activities :

a. If because of any unforeseen circumstances the association has to be dissolved or the registration is withdrawn the properties of association will be transferred to another association with the same objects of this association.

b. If because of any unforeseen circumstances the association has to be dissolved, the profit and loss accounts of the association will be transferred to another association with the same objects of this association as per section 11 and section 80 G of Income Tax Act 1961.

c. The time to time income of the association will be invested in accordance with section 13(1) and section 11(5) Income Tax Act, 1961.

d. The Income of the association can in no way be used by general members or office bearers for any other purpose whatsoever. The income can used only for the achievement of objects of the association in accordance with Section 31(1) (c) of Income Tax Act 1961.

e. The income of the association cannot be used for the purposes such as religious matters, religious establishments, temples and other establishments not connected with the objects of the association.

f. The association will seek exemption from Income Tax under section 80GGA of Income Tax Act 1961 and use the money for raising research centers for the public.

g. The Association will obtain tax exemption as per Section No.35AC of Income Tax Act 1961 and use the money for doing services for the public.

h. Any change in the rules and procedures will be undertaken only after getting the consent of the concerned Income Tax Officer.

i. Buying properties, or selling properties by the association or putting the properties in any other encumbrances can be done only after getting the consent from the concerned Income Tax Officer.

j. The activities of the association will in no way be any under cover help for religious and such other private purposes. The aims/objects of association are noble and to serve the most backward communities in the state.

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k. The activities of the association will not be profit oriented. They will be for noble and fully justifiable causes.

l. At present however there is no movable or immovable properties belonging to the association. All the activities of the association will be confined to within the country. In the event of our activities extending beyond the borders of the country, the Association will do so only after getting the required permissions from the Income Tax Department.

-Sd-
President/Secretary

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FORM No. VI

(See Rule (16) of Tamil Nadu Registration of Societies Act 1978)

(The report pertaining to the Register to be maintained about the members under Section 27 Rule No.(14) Sub Section (1) of Tamil Nadu Societies Act 1975)

1. Name of the Association : "Meenavar Thanthai K.R.Selvarajkumar Fishermen Welfare Association"
2. Date of Registration : 26.06.2015
3. Registered Number & year : 205 of 2015
4. Submitted by (Name, Office, Association Name) : Mr.K.MAGESHWARAN (President)

S.No.	Name	Signature	Occupation - Address
1.	K.MAGESHWARAN (President)	-Sd-	Advocate No.15, 5th Street, Ulaganathapuram, Ennore, Chennai-600 057.
2.	R.T.ASHWIN KUMAR (General Secretary)	-Sd-	Business: No.8, 6th Street C.G.Colony, Royapuram, Chennai-600 013.
3.	K.SUGANESHWARAN (Treasurer)	-Sd-	Business No.15, 5th Street, Ulaganathapuram, Ennore, Chennai-600 057.
4.	S.DANIEL (Administration Member)	-Sd-	Fishermen No.14, 3rd Street, Nettukuppam, Ennore, Chennai-600 057.

5.	M.R.THIYAGARAJAN (Administration Member)	-Sd-	Business: No.8, 6th Street C.G.Colony, Royapuram, Chennai-600 013.
6.	S.NAGARAJAN (Administration Member)	-Sd-	Fishermen No:10, Amman Koil Street, Kottai Kuppam, Pazhaverkadu -601205.
7.	S.ELAYARAJA (Administration Member)	-Sd-	Fishermen No.100/1, Bajanai Koil Street, Kottai Kuppam, Pazhaverkadu -601205.

WITNESSES:

1. -Sd-
B.Senthil Kumar
S/o.M.Balasundaram,

2. -Sd-
M.Ruba Shankar
S/o.Marimuthu.

Date :
Place:

-Sd-
President/Secretary

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FORM No.7

1. Name of the Association : "Meenavar Thanthai K.R.Selvarajkumar Fishermen Welfare Association"

2. Address : No.15/8, Main Road, A.J. Colony, Royapuram, Chennai-600 013.

3. Registered Number & year : 205 / 2015

Sl. No.	Name	Office	Nature of Change	Date of Change
1.	K.Mageshwaran	President	Resigned during the annual general body meeting	26.04.2016
2.	M.R.Thiyagarajan	President	Elected through Annual General Body Meeting	"

(Present President)

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आयकर विभाग
INCOME TAX DEPARTMENT

भारत सरकार
GOVT. OF INDIA

MEENAVATHANTHAI K R SELVARAJ
KUMAR MEENAVA NALA SANGAM

26/06/2015

Permanent Account Number

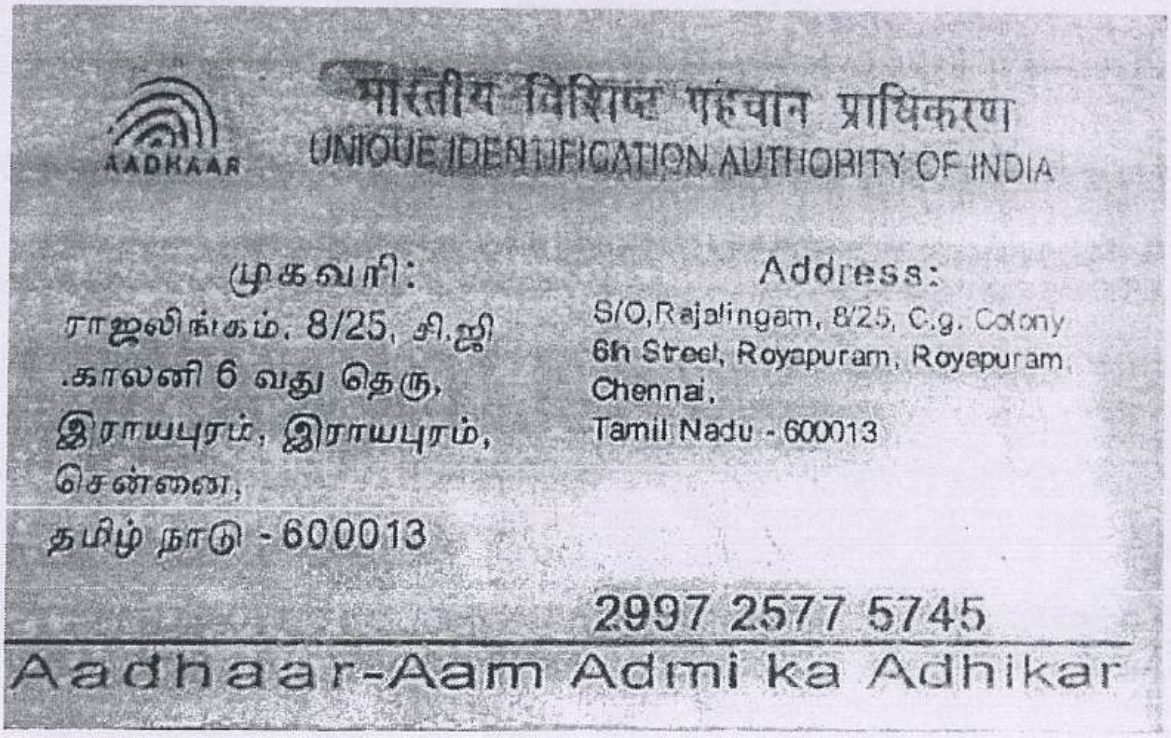
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(60)


GOVERNMENT OF INDIA
தியாகராஜன் ராஜலிங்கம்
Thiyagarajan Rajalingam
பிறந்த நாள்/ DOB: 07/03/1966
ஆண் / MALE
2997 2577 5745
ஆதார் - சாதாரண மனிதனின் அதிகாரம்


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இராயபுரம், இராயபுரம்,
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Aadhaar-Aam Admi ka Adhikar

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26:04:2016.

RESOLUTION

This Resolution is to Declare that the President of Meenava Thanthai K.R. Selvarajkumar Meenava Nala Sangam, Mr. M.R. Thiyagarajar has been given the Power to file any Petition before The Highcourt and The Tribunal.

This resolution has been executed Before all the executive Members.

S. Elavarasa
(S. ELAVARASA)

Daniel
(Daniel Srinivasan)

PRESIDENT
MEEN ... T'N
K.R.SE ... AR

Nagaraj
(NAGARAJAN)

R.T. Asho
(R.T. Ashokumar)

K. Ganesh
(K. GANESHWARAN)

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MEENAVA THANTHAI K.R.SELVARAJKUMAR
MEENAVAR NALA SANGAM

Office No.48, First Floor, East Madha Church Street, Royapuram, Chennai – 600013. Contact : 9841590984

26:04:2016

RESOLUTION

This Resolution is to declare that the President of Meenava Thanthai K.R.Selvarajkumar Meenavar Nala Sangam, Mr.M.R.Thiyagarajan has been given the power to file any petition before the High Court and the Tribunal This resolution has been executed before all the executive members.

-sd-
S.Elayaraja

-sd-
M.R.Thiyagarajan

-sd-
S.Daniel

-sd-
R.Nagarajan

-sd-
R.T.Ashwin Kumar

-sd-
M.R.Thiyagarajan

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Item Nos. 3 & 4 (Court No. 1)

BEFORE THE NATIONAL GREEN TRIBUNAL
SPECIAL BENCH

(By Video Conferencing)

Original Application No. 04/2013(SZ)
WITH
Appeal No.18/2017(SZ)

C. H. Balamohan — Applicant

Versus

Union of India and Ors. — Respondent(s)

Date of hearing: 11.04.2022

CORAM: **HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON**
HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE MS. JUSTICE PUSHPA SATHYANARAYANA, JUDICIAL MEMBER
HON'BLE DR. SATYAGOPAL KORLAPATI, EXPERT MEMBER
HON'BLE PROF. A SENTHIL VEL, EXPERT MEMBER

O.A. No. 04/2013(SZ)

For Applicant(s): Mr. A. Yogeshwaran, Advocate

For Respondent(s): Mr. G.M. Syed Nurullah Sheriff, Advocate for R1 & R5.
Dr. D. Shanmuganathan, Advocate for R6 to R8.
Mr. V. Balamurugan and Mr. Alex, Advocates for R9, R10, R12, R20.
M/s. Suvitha, Advocate for R13.
Mrs. Madhuri Donti Reddy, Advocate for R16.
Mrs. V.K. Rema Smrithi, Advocate for R17.

Appeal No. 18/2017(SZ)

For Appellant(s): Mr. A. Yogeshwaran, Advocate
For Respondent(s): Mr. G.M. Syed Nurullah Sheriff, Advocate for R1 & R2.
Dr. D. Shanmuganathan, Advocate for R3.

ORDER

1. This order will deal with O.A. No. 04/2013(SZ) and Appeal No. 18/2017(SZ) as the both matters involve common issue of protection of stretches of coastal line affected by the human induced erosion caused by hard structures.

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Introductory

2. O.A. No. 04/2013(SZ) was filed on 17.01.2013 raising the grievance of destruction of Puducherry and Tamil Nadu Coastal Environment due to construction of hard structures causing continuous erosion of the coast. It is submitted that not only the stretch in question but most parts of Indian Coastline - both on the East and West Coasts are under the influence of the Littoral Drift.

3. Appeal No. 18/2017(SZ) has been preferred against CRZ Clearance dated 06.10.2016 granted by the SEIAA, Tamil Nadu for proposed construction of series of 19 Groynes from Ennore to Ernavoorkuppam in Madhavaram Tuluk of Tiruvallur District, Tamil Nadu, by the Public Works Department (WRD). **The clearance has been granted subject to orders of this Tribunal in OA04/2013**. The said appeal was filed on 28.2.2017 and was admitted for consideration on 10.03.2017. To appreciate the issue involve, we may refer to some of the averments in the O.A.

Main contentions of the Applicant/Appellant

4. According to the applicant there is large scale human induced erosion and destruction. The Littoral Drift varies from one coastal compartment (or sediment cell) to another. Within each of these coastal compartments, the undisturbed coastal environment and habitat is usually in a state of equilibrium. For such a state of equilibrium to exist within a coastal compartment, the "sedimentary budget" within a compartment needs to be maintained. The sedimentary budget is something that has been arrived at and is determined by the prevailing natural phenomena along a particular coast. Just like the water level in

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a river is maintained and determined by the "water budget" of its catchment area, similarly the "sediment budget" of the "river of sand" along the coast is determined by the related factors within its sediment cell.

5. When the "sedimentary budget" within a coastal compartment is disturbed and upset, i.e. when the natural movement of sand is disturbed and interrupted for example by man-made coastal structures, a cascading effect takes place along the shores of a given sediment cell. When a coastal structure is erected in the path of the freely moving sand along the coast, the structures prevent the natural flow of sand in the same manner as a dam across the path of river interrupts the flow of water. In such an instance one part of the coast gets an excess of sand and the other side on the down-drift is starved of sediment. The side that is starved of sediment starts and keeps eroding as long as fresh input of sand is not provided.

6. Because coastal compartments and sediment cells are large, often larger than artificial boundaries such as politically determined state boundaries, one sediment cell may overlap two neighboring states. This is particularly true along the East coast of India, where for instance stretches of coastline of the States of Tamil Nadu and Puducherry are part of the same coastal compartment and sediment cell. This is particularly relevant in the case of Puducherry as its territory is fragmented and surrounded by the territories of Tamil Nadu. Thus, if the sediment budget within a coastal compartment that is shared by two states is upset, the impact of such interference will be felt across states.

7. The environmental destruction caused by the construction of hard structures on the coastline which negatively affect the coastal

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processes, the environment and the communities is a problem that is not confined to either the Union Territory of Puducherry, or to the State of Tamil Nadu. Rather, it is a situation in which the negligence and/or mismanagement of one government causes destruction both within its own jurisdiction and within the neighboring jurisdiction. Because **the damaging effects of these hard structures transcend state and union territory boundaries,** responsibility for preventing such damage rests equally with the Union Government of India, as well as with the governments of the Union Territory of Puducherry and Tamil Nadu.

8. The Puducherry Region of the Union Territory of Puducherry and large parts of the Tamil Nadu coastline, are situated on the east coast of India which has a sandy coastline and is therefore vulnerable to human-induced change and is thus ecologically sensitive and fragile. The coastal geomorphology and related ecosystems play a large and vital role in the economic development of the region, providing a large number of functions and services, from sustaining ecology, traditional fishing communities to attracting visitors to Puducherry's tourism industry. The severe and rapidly worsening coastal erosion is damaging the subsistence based, sustainable and lucrative sectors of the local economy making the affected region increasingly ecologically, socially and economically vulnerable.

9. Over the past two decades, Puducherry has suffered large scale coastal erosion induced by imprudent, ad hoc and unscientific construction of hard structures on the coast which have a constant, negative impact which is felt and aggravated with every single day that goes by. This problem of human-induced coastal erosion has not been addressed by the Government of Puducherry. Instead, the coastal

management measures adopted so far have only transferred and aggravated the problem of erosion down the coast to the neighbouring state of Tamil Nadu which has been facing the same ever-increasing problems of human-induced coastal erosion since over a decade.

10. The problem of large scale and rapid coastal erosion in Puducherry started in and around 1986 with the construction of an artificial harbour in Ariyankuppam estuary, situated 1.5 km to the south of the Puducherry town. The harbour was meant to provide an artificial channel from the open sea into the Ariyankuppam estuary to provide a safe entrance for barges and other sea-going crafts. The Harbour was finally commissioned in 1993.

11. To keep the mouth of the harbour open to the sea, two breakwaters were constructed to the south and north of the harbour mouth, at either side of the Ariyankuppam estuary. As a result, the northward flow of sediment along the coast was blocked at the southern breakwater, starving the coast to the north of the harbour of sand and causing severe erosion of the coast. The construction of breakwaters in the Puducherry harbour thus commenced the process of coastal erosion and, as a consequence, several kilometres of beach in Puducherry Town has been completely lost.

12. The process of massive erosion caused by the harbour construction was not unexpected. To the contrary, it was expressly anticipated by the studies and recommendations by Centre for Water, Power and Resource Studies ("CWPRS") and Consulting Engineering Services Private Limited ("CES"), which advised the Government of Puducherry while the project was still in the planning stage. Those studies accurately predicted that the breakwaters at the harbour

entrance could cause massive erosion to the north of the harbour, as the structure would block the natural, incessant migration of sand. The studies further predicted that sand would accumulate to the south of the breakwater and the harbour entrance would silt up due to littoral drift. The consultants warned that constant maintenance and dredging was required to clear the harbour mouth, to keep it open. The studies recommended that sand dredged from harbour mouth must be used for sand nourishment to the beaches north of the harbor in order to mitigate the negative impacts caused by the blockage of sand by the harbor breakwaters. The consultants further concluded that continuous sand by-passing -whereby sand blocked and accumulating at the southern breakwater would be mechanically transferred across the harbor mouth and allow it to resume its northward flow up the coast - was required to prevent and mitigate erosion of the coastline north of the harbour, where the town of Puducherry Town as well as several fishing hamlets are situated. An elaborate system of mechanical sand by-passing with dredgers to pump sand from the south side of the harbour to the north side, was therefore adopted when the port was constructed in order to mitigate the negative impacts of coastal erosion.

13. The planned process and system for mitigation which consisted of mechanical sand by-passing and beach nourishment was never efficiently operated by the Government of Puducherry as the system was never fully or properly implemented. Since 1993, when the Ariyankuppam harbour was formally commissioned and became fully operational, it is estimated that out of the total amount of maintenance dredging to be undertaken by the Government of Puducherry, less than about 25% of the total required volume of sand has been dredged till now. However, less than that (it is estimated about 50%) was used to

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nourish the beaches as the dredged sand was instead wrongfully either used for land reclamation, disposed of into the deep sea or pilfered by illegal sand miners. As a consequence, the massive human-induced erosion predicted by CWPRS and CES occurred precisely as they said it would, completely wiping-out 10 kilometres of beautiful and important sandy beach along the historic promenade of Puducherry town, the fishing hamlets of Kuruchikuppam, Vaithikuppam, Solai Nagar in Puducherry and the fishing hamlets of Soudanikuppam, Nadu Kuppam, Thandirayan Kuppam and Chinnamudaliarchavadi Kuppam in Tamil Nadu. Other coastal communities further to the north are also witnessing the shrinking of their beaches as the human-induced erosion threateningly moves northwards.

14. In 2002, long after the beach in Puducherry town had disappeared, following several representations made by members of the civil society as well as by experts, the Government of Puducherry instituted a program of sand by-passing and artificial beach nourishment, using sediment dredged from the harbour to provide northward flowing sand. Within a short period of time, small areas of beach began to re-form adjacent to the town. However, unfortunately this program was not sustained and the new areas of beach quickly disappeared when artificial beach nourishment ended.

15. The massive erosion process unleashed by construction of the harbour did not stop with the evisceration of the sand beach. Without the presence of the beach and its corresponding off-shore sand bar, the waves which once formed some distance from shore and broke gently on the slope of the beach now crashed directly onto the once-dry land. Goubert Avenue, more commonly known in Puducherry as "Beach

Road", which runs for 1.5 kilometres along the shore where the sandy beach used to stretch, was threatened as the land beneath it was undermined by the ongoing erosion. Because of scouring of sand below the promenade, the road started to crack and crumble and had to be entirely re-laid.

16. With the natural flow of sand blocked at the harbour and the system of sand bypass neglected, the erosion which eliminated the beach now threatened the very heart of Puducherry town, including the very government offices, the Chief Secretariat, in which the decision to build the ill-considered harbour was originally taken. Instead of activating the sand by-passing system to mitigate the erosion and nourish the beaches as originally intended, the government of Puducherry chose to create a rip-rap seawall along Beach road, dumping crores of tonnes of massive rocks, trucked-in from quarries in Tamil Nadu to "defend" the town against further erosion.

17. In August 2001, a Preliminary Report Submitted by NOIT-IIT to the Govt. of Puducherry proposed the construction of groynes along the coast of the Puducherry Town. This proposal was opposed by members of civil society groups as it was deemed to be detrimental to the coastal environment. A second opinion on the proposed project was sought by the Government. This proposal was subsequently shelved and thankfully never saw the light of day.

18. A groyne is an impermeable wall extending perpendicularly from land into the sea. Along the Puducherry coast the objective of a groyne is to capture the northward-moving sand along the southern side of the groyne. Indeed, tiny scalloped beaches have formed along the massive groynes; but these small gains have come at an enormous cost. Just as

the breakwater at the harbour trapped sand to the south and caused massive erosion to the north, the groynes rapidly accelerated the northward process of coastal erosion.

19. Clearly, groynes were faulty as a solution as they would only succeed in moving erosion northwards and were no substitute for beach nourishment. Several groups were opposed to this wasteful and environmentally unsustainable exercise and sought scientific opinion to buttress what was clearly common sensical. In October 2001 DELFT TECHNICAL UNIVERSITY in their expert opinion to INTACH, Pondicherry on NIOT's proposal stated that the NIOT's proposal did not prevent structural erosion in the area north of the groyne field nor did it take away the causes of siltation of the harbour entrance. The University further suggested that more studies were needed to be undertaken, an Integrated Coastal Zone Management Plan had to be prepared and alternative solutions such as sand bypassing and beach nourishment to mitigate the coastal problems was to be explored. Although all of this information and suggestions were shared with concerned Government authorities no suitable action was taken.

20. In April 2002, a civic group called Citizens Forum of Pondicherry also raised objections to this proposal. The construction of groynes was opposed as the groynes would merely transfer the erosion northwards and not solve the root cause of the problem, the disruption of the littoral drift by the harbour. They instead suggested that detailed studies should be undertaken which included the redesigning of the harbour entrance. They also objected to the NIOT/IIT's concept of conducting trials in the Ocean at the detriment of the environment. Heeding to all

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this criticism, the Government of Pondicherry sought a second opinion from Danish Hydraulics Institute (hereinafter referred to as "DHI").

21. Subsequently on October 2002, a Coastal Erosion Study was conducted by Study Group CF01 of DHI and they concluded as follows:

- Sand by-passing is the best solution.
- Construction of groynes is not a favorable solution.

The Study Group also recommended that:

- Viability of the harbour project was to be investigated.
- Preparation of an ICZMP.
- Dredging and by-pass were to be monitored closely.

DHI proposed to:

- Conduct site visit and review data.
- Assess annual sediment balance.
- Conduct preliminary design of Port entrance.
- Optimize port entrance layout.
- Prepare design for shoreline management scheme.
- Prepare guidelines for dredging and re-nourishment.

22. However, no suitable action was taken. Between 2002 and 2003, the Government of Puducherry constructed 6 kilometres of seawall along the Puducherry coast, at a cost of several crores of rupees. The decision to abandon the planned and existing mitigating measures of sand by-passing and beach nourishment in favour of seawalls were undertaken without conducting any detailed, comprehensive studies and were therefore undertaken on a purely ad hoc, arbitrary and unscientific manner. The construction of seawalls was undertaken in total disregard of the observation and recommendations made by Dr. Z.S. Tarapore and Dr. Vaidyarannan both erstwhile Directors of the CWPRS which were fully familiar with the design of the Puducherry harbor and Ariaynkuppam.

23. On 21 February 2003, Mr. P.P. Vaidyaraman, retired director of CWPRS, who was part of the design team of the Puducherry harbor at Ariyankuppam wrote to the GoP following his visit to Puducherry shortly after sand by-passing and beach nourishment had been undertaken at the Puducherry harbor. Mr. Vaidyaraman was not only extremely pleased with the results of beach nourishment, but also made several suggestions for the continuation of sand by-passing and beach nourishment which he stated should be replicated at several of the other Indian ports as well. However, few of his suggestions were implemented.

24. While the "hard structure" of the seawall has had the limited superficial effect of keeping the erosion from penetrating onto Beach Road, it accelerated two other erosion processes. First, the surf which now crashed against the hard barrier of the seawall carved-out and scoured the sea floor that was once safely beneath the sand beach. This would come to have dire effects on the quality of the drinking water in Puducherry, creating a short path for saline intrusion into the town's aquifers. It would also prevent any future beach from forming along that stretch of coast because the sea floor was now too deep and unstable to retain migrating sand, even if it had been allowed to flow as nature had intended.

25. The second erosion process accelerated by the seawall was to the north of the construction. At the end of the hard structure, the long shore currents form a powerful eddy, scooping-out the "unprotected" land in deep pockets of erosion. Thus began a vicious cycle of erosion and defense, more-erosion and more defenses. As the seawall transferred and spread the problem of erosion northward up the coast,

more and more beach was lost, more village land fell into the sea, and the disaster migrated further-and-further. Puducherry's coastal erosion problem had now become Tamil Nadu's problem as well.

26. In 2003 Tamil Nadu PWD initiated its own "hard structure" protection measures, in response to the erosion to its fishing villages caused by the hard structures built by its southern neighbor. Seawalls were built in Nadukuppam, then in Sothanaikuppam during 2005-2006, as the coastal erosion was forced northward. Today, these seawalls extend all the way to Kottakuppam and Chinnamudaliyar Chavadi and Tamil Nadu is passing the problem back to Puducherry, as the erosion now reaches the Union Territory enclave at Pillaichavadi and beyond.

27. The fishing villages along the coast to the north of Puducherry town lost more than just beach and village land as the erosionary process crept northward. They also lost their industry. As the seawall lengthened, fishermen could no longer launch their traditional skiffs and catamarans. The beaches from which they launched their boats into the sea and landed their catch back on land were gone. It is impossible to launch from the steep seawall, which has waves crashing hard against it. The loss of the beach space has also affected the livelihoods of the fishing communities in several other ways as the beaches are also used to dry fish, repair nets and carry out several other related activities. Fishing communities complained to the Government of Puducherry that without beaches to fish from, their livelihoods were lost.

28. In 2004, Dr. Z.S. Tarapore, retired director of CWPRS, who was part of the design team of the Puducherry harbor at Ariyankuppam wrote to the GoP following his visit to Puducherry and warned the GoP against construction of groynes. He warned that the construction of groynes was a "dangerous proposition" since the groynes would only transfer the problem of erosion further down drift, where there were heavily populated areas. Among other things he suggested to undertake "a massive nourishment programme" to control the problem of erosion to the north of the harbor. During the same time, in his address to the 6th CPDAC (Coastal Protection & Development Advisory Committee of the Central Water Commission), in the year 2004, the problem of erosion was discussed and it suggested that groynes and seawalls were not the answer. The erstwhile Chief Secretary of Puducherry advocated that "cost-effective and environment friendly technologies" should be adopted to address the on-going problem of erosion. During the 10th CPDAC meeting it was once again emphasized that "coastal protection works and the coastal zone management should go together since one had impact on the other. Also, the States should not think only of the sea walls as a protection measure to protect the shoreline but also adopt other new technologies which preserve the beaches and ecology as well."

29. In 2004, the Tsunami struck the East coast of India. The coastal populations of the Puducherry region did not suffer much damage as most of the inhabited areas were located in areas that were in significantly elevated from the level of the sea. However, with an abundance of funds flowing into the Government's coffers, as a knee-jerk reaction and a populist measure, large amounts of money were

spent to enlarge the seawalls along the Puducherry coast instead of spending those funds on the much required and planned beach nourishment that would have restored the beaches and protected the Puducherry town and coastal villages more effectively against any future Tsunamis.

30. In spite of expert views on the dangers of constructing groynes and the necessity of conducting detailed studies off the coast, the PWD drew a fresh proposal to construct groynes along the Pondicherry coastline. In November 2006, a 50 m long groyne was constructed just adjacent and north of the New Pier. From enquiries it was learnt that this groyne was built without any environmental clearance and its construction was abruptly halted upon enquiries.

31. Notwithstanding the severe erosion along the coasts of Puducherry, the Government of Puducherry did not resume the dredging and sand bypass operations that might restore some portion of beach to its coastline. Instead, under pressure from fishing villages to artificially recreate sandy beaches from which to fish, both the Government of Puducherry and the Government of Tamil Nadu began building groynes at intervals along the coast in 2005.

32. In April 2007, the Government of Tamil Nadu constructed two large groynes at Thandirayankuppam. The southern groyne is 100 m long and the northern groyne is 170 m long. These groynes triggered severe erosion of the coastline to the north. About 70 m wide beach was lost in the same year to the north of the groyne. Since the construction of these groynes, about 2.5 acres of beach has been lost severely affecting the villages of Chinnamudaliarchavadikuppam and Bommayarpalayam.

The village of Chinnamudaliarchavadikuppam lost several homes as a result of the human-induced erosion. Several other private and public properties have also been damaged.

33. On 20th July 2007, members of civil society groups met the officials of PWD & Port Secretary, Mr. Anbarasu and discussed the urgency for the Pondicherry Government to resume dredging and sand nourishment activities at Pondicherry Harbour entrance. When queried about the status of the proposed construction of groynes, Mr. Anbarasu stated that there was no definite proposal and he was seriously considering dredging and sand nourishment.

34. In July and August of 2007, elected representatives from the seven fishing villages of Anichankuppam, Chinnamudalyarchavady, Koonimedu, Mudhaliarkuppam, Nadukuppam, Notchikuppam and Pudhukuppam, which are located in the Kottakupam and Marakanam Blocks of the Villupuram District wrote to the Hon'ble Chief Ministers of Puducherry and Tamil Nadu and also submitted resolutions to inform them about their plight caused by the human induced erosion of the coast and also demanded that the beaches in front of their villages be restored so that they may pursue their livelihoods. Being located to the north of Puducherry and seeing the human induced erosion spread towards their beaches they were understandably deeply concerned about the future of their coastal environment and their livelihoods that depended on it. However, no action was taken to fulfill their demands and needs.

35. Following public outcry by several environment groups the construction of other groynes that were also planned was stopped. On

Nov. 3rd 2007 a public consultation meet was held in Auroville between Government officials of Puducherry, Tamil Nadu in the presence of experts (Governmental and Nongovernmental) and civil society groups. The following solutions and measures were unanimously agreed upon and proposed:

Immediate —

a. Activate sand by-passing system for nourishment and restoration of beach immediately north of Puducherry harbor.

b. Undertake model studies urgently to arrive at the best method of restoring the eroding beaches of Puducherry and Tamil Nadu. Study the impact of groyne fields with and without artificial nourishment, before embarking on new measures

c. Remodel the harbour entrance for maximizing natural sand by-passing:

i. Initially for the existing fishing harbour
ii. Later for proposed deep water commercial harbour

Long Term:

d. Restoration to include artificial nourishment, as universally accepted

e. Investigate off-shore sand deposits for nourishment

f. Identify suitable sand nourishment equipment to operate in wave environment

Administrative:

g. Coastal Zone Management Authorities (CZMA) of Tamil Nadu and Puducherry to coordinate and take up the issue of coastal erosion jointly

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h. Initiate Puducherry component of Integrated Coastal Zone Management Plan (ICZMP), in conjunction with Tamil Nadu's ICZMP.

i. Funds to be provided for modeling and hydrographic survey

36. On 7th December 2007, Mr. C.V. Shankar, IAS, Officer on Special Duty (RR) & Project Director (ETRP & TEAP), GoTN who had attended the consultation meet on 3rd Nov. 2007 wrote to the GoP with regards to proposed construction of groyne filed from Kuruchikuppam to Solai Nagar. He requests that this should be undertaken only after the preparation of a comprehensive plan for the coastline, that is sustainable, livelihood sensitive and eco-friendly.

37. On 26th December 2007, the Pondicherry Government inaugurated Capital Dredging, to be taken up at Harbour Entrance. However, when the capital dredging operations began it was shockingly and disappointingly learnt that the dredged sand was being disposed of in deep waters, off shore outside the littoral zone and not used for beach nourishment. Ironically, during the inauguration of capital dredging operations that was held with much fanfare at the New Pier premises, large banners publicizing Beach Nourishment were displayed in spite of the fact that no beach nourishment was being undertaken.

38. On 27th December 2007, members of civil society held meetings with the Port Director of Pondicherry and expressed disappointment that the sand dredged from the harbour entrance was being dumped into the deep waters instead of being used for beach nourishment. Members of civil society met the officials of Pondicherry port and the

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Secretary, PWD on 28th December 2007 on the issue of sand nourishment not being undertaken. The officials promised to look into the issue but however on 1st January 2008 the construction of groyne at Kuruchikuppam was resumed without any environmental clearance.

39. In January 2008, representations were made to the Secretary, MoEF about the on-going problem of human-induced erosion along the Pondicherry-Tamil Nadu coastline. The Secretary wrote to the GoP asking them to discuss matters of erosion with GoTN in order to find a viable solution and save the beaches. In total disregard of the observations, recommendation and conclusions of the Nov. 2007 meet, the Govt. of Puducherry initiated a project of construction of groynes along the coast of Kuruchikuppam and Solai Nagar. With construction of groynes continuing to damage the coastline, Jesuratinam, convenor of Coastal Action Network from Nagapattinam filed a writ petition in the High Court at Chennai (W.P. No.1452 of 2008) seeking a Writ of Mandamus, directing the Government of Puducherry (a) to forbear from constructing groyne fields in the coastal region of Puducherry, (b) to conduct appropriate scientific studies for development of a sustainable and comprehensive coastal management plan for the restoration of the Puducherry/Tamil Nadu coastline, and (c) to frame a suitable scheme to ensure that the natural movement of sand is restored so that the coastal areas of Puducherry and Tamil Nadu are protected from erosion. The Government of Tamil Nadu was also a respondent to that petition.

40. This writ petition was disposed on 13 February 2008, after the learned pleader for Government of Puducherry declared in open court

that the activity of construction of groyne field would not be undertaken without the prior permission from the Ministry of Environment and Forestry, Government of India. On this representation by the Government of Puducherry, the High Court dismissed the petition and made no orders with respect to the incidental and ancillary prayers. However, contrary to the undertaking given in Court, construction has begun without obtaining environmental clearance, causing grave irreversible damage.

41. Following the above writ petition, the MoEF constituted a three member committee to visit the Puducherry site proposed for groyne construction. The Committee visited Puducherry on 11th and 12th June 2008 and subsequently reported that as a long-term measure, the GoP should seriously consider sand by-passing of the required amount of sand as this was likely to mitigate the problem of erosion. The committee also suggested that a study covering both Puducherry and adjacent Tamil Nadu coast should be undertaken by a reputed organization. Neither of these have been implemented so far.

42. At the national level, coastal erosion has also been become an increasingly pressing issue with every coastal state facing some form of coastal erosion or the other.

43. In April 2009 the Asian Development Bank prepared a report for itself and the Government of India for India's sustainable coastal protection and management. In this report, the following significant points are made:

Change of philosophy:

"The change to sustainable and soft engineering measures for protection needs to be supported by an effective institutional framework including the Government at different levels, communities and also the private sector. To achieve the necessary levels of support requires a shift in Government policy with a clear mandate for the concerned organizations. A key technical issue is the diagnosis and identification of appropriate solutions for coastal protection works. The projects presently being implemented in the states are based almost entirely on the continued expansion and rehabilitation of rock protection works. This type of development is and will continue to have very serious environmental and social implications. There is a need to completely reshape the approach and philosophy to planning, design and implementation of coastal erosion works. Soft solutions for erosion control are now well developed and are already beginning to be implemented in India. There is need to help and guide a well-planned and programmed transition process as well as ensure the planning and designs for the proposed investment program meet the highest standard of environmentally and socially appropriate solutions. There is also a need to identify and address the causes of erosion, frequently these are manmade and the most appropriate solution is to address the cause rather than the effect. This requires an integrated and coordinated approach to the planning and development of all coastal infrastructure and shoreline uses."

Sector assessment:

"The coastal protection strategy in India is synonymous with a prime objective to protect the land; the concept of protecting the beach and the environment are relatively new concepts; coastal protection is not perceived within the wider context of the economic development of the coastline. The most frequently applied methods for coastal protection have been through the use of hard structures such as seawalls or groynes. Despite many failures and environmental damage seawalls and groynes have continued to be constructed which in many cases has simply shifted the problem to neighboring coastal areas or left the real problem to be solved by future generations. As the pressure on the coastal zone due to human-induced activities as well as relative sea level rise keeps expanding, there is an urgent need to find sustainable solutions for coastal protection."

"There is a general awareness of the impacts of hard structures. Rock wall comes easily and soft solutions are largely untried and the technologies are not well understood. The continued use of hard technologies for coastal protection are being questioned by decision makers and there is now a widespread interest and realization of a need to change to softer and appropriate solutions The move to softer solutions although an easy and acceptable solution in principle but in practice requires significant behavioral changes by all those involved. The transition from hard to soft structures will require an integrated program of awareness, training, capacity building and other support initiatives."

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"Presently measures to manage coastal erosion have generally been designed as a local emergency measure rather than sustainable and economically beneficial perspective. The most frequently applied protection methods are hard structures such as seawalls or groynes. Such interventions provide only land protection, and do not address the root cause of the problem; in many cases the protection structures actually accelerate erosion resulting in major losses of the beach."

Institutional arrangements:

"Central Water Commission (CWC), the technical arm of MoWR is the apex agency for shoreline protection / coastal erosion works in the country. CWC implements coastal protection works through two Directorates viz. the Coastal Erosion Directorate (CED) and the Beach Erosion Directorate (BED). The activities of the two directorates are not well coordinated and lateral communication between the two peer bodies is virtually non-existent. The apparent lack of an integrated approach to coastal erosion problems stems from this structural imbalance."

Policy:

"A major weakness in the current sector orientated sector development is the difficulty of addressing the processes and impacts of one sector on another. A prime cause of erosion is the interaction of coastal infrastructure on the natural coastal processes. To help this horizontal coordination is proposed to establish the CWC and the State Executing Agencies (SEA) as the lead group at National and State levels to coordinate coastal infrastructure activities. At National level the leading

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organization should be the CWC. The CWC remit is presently restricted to erosion control but there is a key requirement for the coastal erosion directorate to take on a wider coordination role of all coastal infrastructure works including erosion control, ports and harbors, dredging etc. At the State Level it is proposed to establish a Coastal Infrastructure Management Unit (CIMU) within the State Executing Agencies. This unit would be given a mandate to coordinate all coastal infrastructure programs.

"There is requirement for a policy document to support the process of shoreline management planning. The policy document for shoreline management planning should include:

(i) Charging the Coastal District Authorities to prepare Shoreline Management Plans (in coordination with the State Executing Agencies and agencies) over an agreed period. The shoreline plans would be advisory and non-statutory. The plans would be participative involving the stakeholders and local level stakeholders in the primary planning, as well as lateral involvement of different government departments / sector agencies.

(ii) Increasing the mandates of the SEA and the CWC to take on a lead coordination role in the overall coastal management specifically to coordinate and guide the development and management of all coastal infrastructure.

(iii) Ensuring that all shoreline developments and interventions are properly studied and subject rigorous technical analysis including numerical modeling. Projects should be supported by environmental assessments."

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44. In June 2009 an expert committee of the MoEF published the report "Final Frontier - Agenda to protect the ecosystem and habitat of India's coast for conservation and livelihood security." In this report the committee noted that currently, the shoreline of the country is undergoing a major change because of a large number of port and harbor projects. These projects involve large quantities of dredging, shore protection works, breakwaters, and reclamation. Experts are unanimous that each structure would impact the shoreline-particularly the beach formation. Already, many of these infrastructure projects have caused significant shoreline changes-like in Ennore, Puducherry, Alibag, Digha and Dahej. It is also observed that the shoreline is being impacted adversely by mining projects and by interventions like the building of shore-protection structures like groynes. The Committee was of the view that these developments have all led to serious threats to the coast, as especially beaches face severe erosion and shorelines are visibly changing. Given that the Central and state governments propose to construct several ports and harbours all along the shore in the coming years, these projects could have irreversible adverse impacts on the coast. The Committee recommended the following:

> "The government must immediately study the cumulative impacts of the individual projects on the coastline, pending which there should be a moratorium on expansion of existing ports and initiation of new projects."

45. Subsequently, in 2009 the MoEF assigned to the Ministry of Earth Sciences (MoES) to conduct a study for identifying the coastal stretches with regard to human-induced erosion/accretion caused by construction of shore protection measures and breakwaters of ports. Based on the discussions held with MoES, the study was initiated in

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two phases namely - (a) phase-I to submit a report based on existing data/information by 15 th October, 2009; (b) phase - II of the study involves micro level analysis that would be carried out for the entire country for the purpose of examining shoreline changes due to existing projects and identify suitable sites for development.

46. In October 2009, ICMAM and INCOIS, MoES, submitted a joint report to the MoEF in which they stated that:

"Coastal structures constructed for port operations and coastal protections works interfere with the littoral transport are found the most common cause of coastal erosion."

"A groyne just shifts the erosion problem to the downstream area..: The more efficient the groyne field is in protecting the shoreline within the groyne field, the more lee side erosion will be experienced downstream."

"When a breakwater is built on the shoreline it interferes with the littoral drift budget and the results are sedimentation and shoreline impact. Like a groyne, the breakwater acts as a blockage of the littoral transport, whereby it causes trapping of sand on the upstream side in the form of an accumulating sand filet, and the possible bypass causes sedimentation in the entrance. The sedimentation requires maintenance dredging and deposition of the dredged sand. The result is a deficit in the littoral drift budget which causes lee side erosion along the adjacent shoreline."

"The major interventions which lead to morphological impact are listed as:

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Coastal structures of any kind, which by their occupation directly impact the transport processes and thereby the coastal morphology. Such structures are typically the Ports and marinas, active coastal protection structures (groynes, breakwaters and all other structures occupying part of the foreshore and/or the shoreface), passive coastal protection structures (revetments, seawalls etc. which fix the coastline), reclamations and dikes, inlet jetties at tidal inlets and sea works at river mouths, embankments for bridges /runways, intake / outlet structures crossing the littoral zone."

The report also stated that about 23% or as much as 1248 km of shoreline along the Indian main land is affected by various degree of erosion varying from minor, moderate to severe.

47. In May 2010, the Department of Science, Technology and Environment (DSTE) and the Puducherry Coastal Zone Management Authority (PCZMA) of the Government of Puducherry held a consultation meeting on "Restoration and Protection of Puducherry Coastline" which was attended by various Government Departments, experts from the National Institute of Ocean Technology (NIOT), Anna University, members of the Auroville Foundation and of civil society. As reported in the Minutes of the Meeting "There was a consensus among the participants on the need to protect and nourish the coast of Puducherry and the adjoining areas by adopting site specific coastal protection and restoration techniques after carrying out scientific studies and in consultation with all stakeholders including fishermen community." However, no concrete measures have been implemented to date.

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48. A May 2010 document of the CWPRS states that of the various methods used for protection of the coast such as seawalls, revetments, bunds, groynes, offshore breakwaters, etc., the nourishment beach is the best method that should be used for shore protection. However, due to other considerations beach nourishment is still seldom used. Later in the same year, the Indian Journal of Geo-Marine Sciences publishes a paper on coastal erosion and mitigation methods. The author of that study concludes "The recent trends in coastal erosion mitigation is shifting towards soft, innovative, and pro-active methods, since the hard methods have their own repercussions on coastal land and beaches such as down-drift erosion, high cost, poor aesthetics etc. Hard structures such as seawalls and revetments, stop erosion of coastal lands, but refocus the erosion onto the beach. A number of soft methods are available now for erosion mitigation and are being used popularly all over the world. They are very eco-friendly, cheap and construction-friendly too. They may be necessarily adopted on a larger scale in the future erosion mitigation projects, and choice of the particular solution depending upon the local hydrodynamics and site conditions."

49. In October 2010, the PWD, GoP had commenced a Sea Wall project along the coast of Chinnakalapet Village, Puducherry without obtaining prior clearance under the Coastal Regulation Zone Notification, 1991. The site was inspected by members of the Puducherry Coastal Zone Management Authority and direction was issued on 13.10.2010 to the Chief Engineer, PWD under Section 5 of Environment Protection Act, 1986 to stop the sea wall construction immediately and submit necessary application to PCZMA for obtaining the Coastal Regulation

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Zone Clearance. PWD has complied and stopped the work. No further work has taken place since then.

50. In the month of November 2010 an official of the MoEF from the Southern Regional Office at Bangalore assessed the state of the coast of Puducherry in relation to the development of fishing harbor at Murthykuppam as it was being opposed by civil society groups. In this report it was observed that "For the old fishing harbor, it was informed that even though, on some earlier occasions, some of the concerned authorities have attempted to address the problem of coastal erosion, the measures taken for the old harbour remains inadequate and not comprehensive since the attempts made were too small and were on piecemeal basis, thus the efforts are not successful in controlling the erosion problems. In the new fishing harbor also a similar situation is arising. Now it is high time for the Government of Puducherry to prepare and launch a detailed implementation plan after due consultations with experts and by integrating all the concerned departments & stake holders for properly managing the coastline and to solve the issues arising out of developments which are taking place in the coast line of Puducherry and adjoining Tamil Nadu."

51. In the month of December 2010, the Project Implementation Agency for the Emergency Tsunami Reconstruction Project (PIA, ETRP) of the GoP issued a Tender for "Maintenance Dredging Works at Ariyankuppam River and the Sea Mouth for Puducherry Fishing Harbour" as part of the reconstruction and modernization of fishing harbor at Puducherry. The related maintenance dredging operations began in 2011 and are still continuing to date. However, while the dredging contractor is required to dispose the dredged material in the

ocean, the dredged material was instead dumped on the land and within the harbor limits. The dredged sand, estimated to be amounting to about 1,50,000 cubic meters is still lying on the land instead of being returned to the littoral drift. This subtraction of coastal sediment from the sedimentary budget of the Puducherry-Tamil Nadu coastal compartment and sediment cell is resulting in erosion of the coastline. Several representations to put the sand back into the sea to nourish the beaches have been made but no action has been taken till date.

52. In January 2011 the Puducherry PWD issued an Expression of Interest (EOI) for erosion control and reclamation of Puducherry beach with "soft solutions" such as geo tubes, clearly stating that all conventional "hard" measures such as "boulders, tetrapods, etc.," were excluded from the chosen solutions, as deemed harmful for the coastal environment. Additionally, it is stated that the proposed solution should have a short-term and long term perspective plan to ensure better coastal environment. Moreover, the proposed solutions should involve the authorities of neighbouring state and stake holders. Most importantly the consultant should "ensure that there is no adverse impact to the coastline due to the implementation of the project." This point is emphasized in the EOI repeating that "there is need to ensure that this does not affect the adjoining features of the coast line both in the state of Tamil Nadu and Puducherry." Finally, during the post-construction stage, the project proponent is supposed to achieve the objectives of coastal protection and reclamation in a "holistic manner." By undertaking such a project, the Government of Puducherry should be able to address its coastal erosion problems while ensuring that the

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neighbouring state and areas of Tamil Nadu not only do not get affected but also benefit from it.

53. On 18th August 2011 the Hon'ble Minister for Public Works Department, Govt. of Tamil Nadu writes to the Hon'ble Chief Minister of the Govt. of Puducherry to apprise him that the lack of sand by-passing and its effect on the littoral drift at the Ariyankuppam Harbour in Puducherry has caused severe erosion of the neighbouring Tamil Nadu coastline, as a result of which in the year 2006, 200 m of beach was eroded, several homes were destroyed and the life of a child was lost. The Hon'ble Minister draws the attention to an earlier letter from the Govt. of Tamil Nadu in which the GoP is requested not to continue construction of groynes without proper technical studies as it is likely to further affect the Tamil Nadu shoreline. He also informs that the proposed Deep Water Port would have a catastrophic effect on the shoreline of Villupuram District. He also requests the GoP to start sand by-passing and to desist going ahead with the proposed Deep-Water Port without obtaining the prior consent of the GoTN so that Tamil Nadu coastline is not further affected. On 29th November 2011, a second letter is sent to remind the GoP to start sand by-passing at the harbor and to stop further interruption of Littoral Drift that would take by construction of the proposed Deep Water Port which would further affect the Tamil Nadu coast and go against his Govt's interests.

54. On 29th Dec. 2011, the Secretary, Port Department, GoP held a stakeholder's meeting on restoration of Puducherry coastline as reported in the Minutes of the Meeting circulated on 23rd Feb 2012. During that the Secretary suggested that "all should work for a

sustainable solution to the problem of erosion." The Chief Engineer, PWD-cum Director of Ports-responded that "the PWD was called by the MoEF and had suggested that Geotubes be put up along the Puducherry coast towards restoring the coastline." During the meeting "all agreed that the rejuvenation of the lost beaches is of vital importance since it would not only help the fishermen but also facilitate tourism." To conclude, the Secretary assured that "a long term sustainable solution to the restoration of the coastline of Puducherry [was] for the benefit of one and all."

55. On 2nd February 2012 the Government of Puducherry constituted the Evaluation Committee for Assessing the consultant for the coastal protection work in Puducherry using Geotextile tubes. This committee is yet to meet.

56. In March 2012 the MoEF wrote to the Government of Tamil Nadu to enquire about the construction of groynes along the Chinnamudalyar Chavadi Kuppam coast based on a complaint against the proposed groynes that was made by the NGO Pondy CAN. No action was taken.

57. In its September 2012 report, the National Institute of Ocean Technology (NIOT) stated the following with regard to the groynes constructed in Puducherry and Tamil Nadu: "It is recognised that groynes should be used only to maintain existing conditions, rather than enhancing beach volume or eliminating erosion... But this should be used only after exhausting all other available options for restoration." The report also stated:

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"There is a need for a well-defined plan that seeks to treat the shoreline and the issue of erosion in a more integrated, sustainable and strategic manner."

"It is recommended to have a total and common shoreline management plan for the entire Puducherry and the adjacent Tamil Nadu coast so that short-term and long-term strategies can be drawn considering the coast in total. The short-term strategies required at specific sites can be designed and integrated in long-term strategies, if a shoreline management plan is prepared."

"As Puducherry is known for its tourism/recreation, it is advisable to restore the natural beach by implementing beach nourishment... The above option will not only help in gaining a natural beach but also help in controlling the erosion of the northern coast. The detailed design of beach nourishment scheme can be worked out based on discussions. Also, eco-friendly techniques and "soft engineering measures" to stabilize the coast could be implemented along with beach nourishment for retaining the sand and to restore the ecological functions and services that are provided by sandy beach ecosystems as well as enhance livelihood opportunities for the fishing communities and increase value to the coast." "A long term and permanent solution can be found if both the Tamil Nadu and Puducherry Governments jointly work towards a common, long-term and sustainable shore restoration strategy. Short-term solutions may need to be implemented, but these have to take into account the long-term solutions and should be "no-regret" solutions." "The general principle of "working with nature" would be a better

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approach for cost-effective and sustainable coastal protection measures. Puducherry needs to consider modern protection practices which achieve a more effective and sustainable means of coastal protection while also addressing local amenity and economic development aspects. It is most important to ensure that the natural movement and flow of sediment along the shoreline is maintained."

"The beach restoration will primarily benefit the coastal dwellers living along the Puducherry and nearby Tamil Nadu coast including fishing households, the owners, operators and employees of fishing boats, hotels and other tourism related businesses and their employees. But mostly it will benefit all the residents of this peaceful coastline whose young children have never even seen its beautiful beaches."

58. The report "The Challenged Coast of India" published in October 2012 also points out with regard to the performance of the groynes that were built along the Soudanikuppam-Thandiriayankuppam coast that for every square meter of beach that has been artificially gained with the use of groynes, about 4 square meters of beach space is damaged and lost on the down drift side of the groynes. Therefore, it is unequivocally demonstrated that groynes are causing more damage to the coast and that they are exacerbating the problem of erosion.

59. Neither the Government of Puducherry, nor the Government of Tamil Nadu examined any available options for beach restoration. Mechanical sand bypass was not implemented. More importantly, there is no record that the Government of Puducherry ever considered the simplest, most effective way to' restore the beaches, end the massive

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erosion of village land into the sea, restore the livelihoods of the local fishing communities, and reverse the trend of increasing saline infiltration into the local aquifers: to remove the damaging harbour at Ariyankuppam and allow the natural flow of sand to resume. When one compares the insignificant economic benefit conferred by the harbour with the enormous economic, social, and environmental cost of the ravaged coastline for 18 kilometres to the north (and moving ever-northward as hard structures proliferate), it is astonishing that the Government of Puducherry never considered this obvious alternative.

60. A comprehensive plan for coastal protection has not yet been considered in spite of the fact that both the Governments of Puducherry and Tamil Nadu are fully aware that the erosion is spreading northwards. Instead of taking proactive measures to mitigate the erosion, the erosion is instead allowed to go on, increase and further degrade the coastal environment. Both the governments jump into action only when it is too late and the erosion of the coast has become a manmade disaster in which the homes and livelihoods of the coastal communities have been destroyed. It is only in such belated circumstances that the concerned Government authorities resort to the construction of seawalls as emergency measures. Under these disastrous circumstances, the concerned authorities justify the construction of seawalls as their only option available. Such tardy actions, ad hoc-ism and poor planning and negligence only results in the destruction of a greater extent of the coastal environment.

61. The destruction of sandy beaches represents a very significant economic loss to Puducherry's tourism industry and to the traditional

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fishing industry all along the damaged coast. It is estimated that thousands of traditional fishermen have been unable to pursue their livelihoods since the beaches were lost and seawalls have come up; and thousands more are now forced to launch their boats from places outside their own villages. An estimated 300 acres of land mass has been taken by the sea, including numerous houses and other buildings in coastal villages. The governments of Puducherry and Tamil Nadu have spent hundreds of crores of rupees dumping boulders to create riprap seawalls and groynes. In addition to the environmental and aesthetic loss to the immediate coastline, this construction activity entails collateral environmental damage to the mountains from which the boulders are quarried and the energy used to transport them from mountain to seaside. The hard structures on the coastline have radically transformed the morphology and morphodynamics of the coast and intertidal marine zone. This has far-reaching consequences for the entire ecosystem.

62. The endangered Olive Ridley sea turtles which are listed under Schedule I of the Indian Wildlife Protection Act (1972) nest along the Puducherry-Tamil Nadu coastline. Olive Ridleys are known to return to their natal beaches to lay their eggs. But when man-made structures have been built in the place of their nesting beaches, as is the case in Puducherry and Tamil Nadu, these structures prevent sea turtles from continuing their innate life cycles. Coastal structures therefore directly threaten and further endanger sea turtles by reducing suitable nesting habitat and displacing turtles into less-than-optimal nesting areas. The destruction of the natural beach space and habitat by human induced erosion followed by the armouring of the coast with seawalls

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and groynes makes it impossible for sea turtles to make their nests on the beaches. The ad hoc and unscientific construction of seawalls and groynes along the coast is therefore directly endangering the existence of sea turtles.

63. The armouring of the coast with seawalls and groynes also results in the destruction of intertidal habitat that is required by marine flora and fauna such as planktons, crustaceans, bi-valves, mollusks, other invertebrates and even fishes. These flora and fauna also form part of the marine food chain which supports fish stocks. The destruction of inter-tidal habitat therefore impacts large numbers of marine species and ecosystems.

64. Without the beach providing the crucial sandy buffer between the sea and the land, erosion of the seabed at the coastal margin has resulted in salt water infiltration into the local aquifers. The Central Ground Water Board has reported that the ground water development in the Puducherry region is rather very high and no further groundwater development is to be encouraged. On the other hand, there is an urgent need for regulation of over-exploitation, protection and augmentation of ground water resources to recharge the depleted aquifer systems. An assessment of the vulnerability of seawater intrusion in Puducherry coastal region is indicating that both the northern and southern coasts of the Puducherry region are vulnerable to seawater intrusion. As the groundwater resources of the Puducherry region are already stressed, the increase of seawater intrusion due to human induced coastal erosion has to be avoided at all costs.

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65. The increased salinity in Puducherry's fresh water has resulted in hundreds of hectares of farm land becoming fallow. In addition to ruining the taste of the local drinking water, increased salinity is well-known to cause kidney disease. Several of the shallow wells along the coast on which the local communities depend for their freshwater requirements have already turned saline. The loss of freshwater resources is causing severe hardship to the local communities as they have to find alternative sources of freshwater.

66. It is also important to note that at the national level the coastline also represent the boundary of the nation and its territories. The indiscriminate, uncontrolled, and unnatural alteration of the coastline is resulting in the uncontrolled alteration of the national boundary, both on land as well as offshore, of the international maritime border and that of the Exclusive Economic Zone (EEZ). This is something that has political and economic implications which are of national concern.

67. The seawalls and groynes are being built without any carrying capacity studies. The coastal environment of the Puducherry-Tamil Nadu region is already heavily and to a large extent impacted by the on-going human induced erosion of the coast caused by the Puducherry harbor. Further armouring of the coast with seawalls and groynes will only result in reducing the carrying capacity of the coastal environment beyond the point of self-sustainability.

68. The coastal environment is a highly dynamic and therefore complex environment to manage. Experience has shown that the less one interferes with coastal processes, the lower is the likelihood of having coastal management problems. Across the world, increasingly

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the scientific community is of the opinion that particularly on the coast it is preferable to "work with Nature" rather to try to "fight against Nature." This approach is also akin to the approach of the Precautionary Principle which advocates that if the coastline is eroding, particularly due to human induced causes, it is preferable to address the root causes of the problem and try to return to the original, natural, stable state of the coastline, rather than to attempt to re-engineer the coastal environment which results in perpetual alteration of the coastal environment with all its accompanying negative impacts.

69. Despite the recognition by the Union and State Governments, as well as that of related Government agencies such as the CWPRS and the NIOT, private and professional consultancy firms, local communities, civil society groups that "soft" engineering measures such as beach nourishment, which are environmentally and socially friendly and increasingly adopted world-wide, should be adopted tackle coastal erosion, especially to mitigate and reverse human induced coastal erosion, there is however a lack of well-defined scientific and technically sound processes and systems for sand nourishment of eroding beaches which the Government and their respective agencies can follow or implement. As a result of the lack of such well-defined processes and systems, Governments and their agencies fall back upon past experience, even though it is obsolete and go about "business as usual." In this regard, it is also important to note that the "business as usual" favours vested interests, such as the consultants who get to design more and more coastal structures as they cause more and more erosion, the quarry owners, the transporters and the contractors who keep on benefitting

as long as coastal structures need to be built even though it is at the cost of the coastal environment.

70. Seeing the unwillingness of concerned agencies to restore and nourish the beaches, very often the local communities that have at first lost their livelihoods when their beaches have eroded, eventually get desperate when nothing is done to control the erosion particularly when they start losing their habitations. As a last and desperate measure to save their homes, these communities start to demand that their homes be immediately protected in whichever way possible, even with the use of hard structures such as seawalls and even if it is at the cost of the coastal environment. The measures, particularly those that are environmentally destructive, that are demanded in a state of desperation by the local communities and followed out of popular demand are not necessarily the best for their livelihoods, the environment, the society at large and the future generations, especially in the long term.

71. Since the construction of the harbor, seawalls and groynes commenced in Puducherry and Tamil Nadu, numerous civic groups, including Coastal Action Network, have complained to the Government of Puducherry and Government of Tamil Nadu and warned of the worsening environmental and economic disaster. Both governments have ignored these warnings and continued to build hard structures, in the Cuddalore, Puducherry and Villupuram Districts, disrupting the natural flow of coastal sediment, damaging their own coast and their neighbor's, in complete disregard of the economic, social, and environmental consequences of this construction.

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72. The Government of Tamil Nadu currently proposes to build a series of 12 more groynes from Chinnamudalaiyar Chavadi to Bommiyarpalayam, as well as additional seawalls and groynes to the south of Puducherry, as far south as Cuddalore. Some of the work has already commenced. The Government of Tamil Nadu has not sought or been given prior permission and approval by the Ministry of Environment and Forests, Government of India to construct these groynes.

73. On or about 18 November 2012, the Government of Tamil Nadu began dumping rocks on the coast at Chinnamudalaiyar Chavadi, thereby commencing construction of a planned 180m groyne. This activity will cause further damage to the coastline, and to the lives and livelihoods of those who live along the coastline, if it is allowed to proceed. The Government has, without considering the hazards of undertaking such activity has commenced and is continuing with the construction of the groyne, the fact that the detriment caused to the coastal environment is not limited only to that particular sector has not, even been considered. No proper environmental impact assessment has been done by the concerned authorities, in violation of governing laws and violating rights guaranteed under Article 21 of the Indian Constitution. The economic consequences of the damage caused by the construction of the groyne will be disastrous.

74. On 27th December 2012 the Puducherry Coastal Zone Management Authority (PCZMA) wrote to the MoEF requesting it to impress upon the Government of Tamil Nadu to refrain from undertaking ad hoc coastal protection measures such as seawalls and groynes without consulting and taking the consent of the Government

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of Puducherry and required CRZ clearances. The PCZMA also expressed its apprehension that the proposed and on-going coastal protection measures erected in adjacent Tamil Nadu would cause erosion of the Puducherry coastline. Moreover, the PCZMA also expressed the need to follow the recommendations of the stated NIOT report which suggests that a common shoreline management plan for the entire Puducherry and adjacent Tamil Nadu coastline should be prepared so that short-term and long-term strategies can be drawn considering the coast in total.

75. According to the CRZ Notification 2011, Section 3, (iv), activities that disturb the natural course of seawater such as for erosion control are prohibited if constructed without an Environmental Impact Assessment study. Section 4.2, (i), (c) of the same notification also states that the procedure for clearance of such activities should be undertaken after comprehensive EIA with cumulative studies for projects in the stretches classified as low and medium eroding by MoEF based on scientific studies and in consultation with the State Governments and Union territory Administration. The seawalls and groynes being built by the GoTN at Chinnamudalaiyar Chavadi Kuppam and in Villupuram District and Devanampattinam in Cuddalore District are being undertaken without an EIA, neither with a comprehensive EIS with cumulative studies and without consultation with the State Governments and Union territory Administration and are therefore in violation of CRZ Notification 2011.

76. According to the Environmental Impact Assessment Notification 2006, the construction of seawalls and groynes being built by the GoTN at Chinnamudalaiyar Chavadi Kuppam and in Villupuram District and Devanampattinam in Cuddalore District are classified as "Category A"

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projects as they fall within 10 km of the inter-state boundary and would therefore require an EIA. The natural flow of sediment and beach sand along the coast is an essential phenomenon and process which supports natural habitats, flora and fauna, human populations and their fundamental right to life and livelihood. Coastal sediment is a public good that forms the very foundation of the sandy coastal environment, without which none of the sandy coastal environments can be sustained. The human induced loss of sediment from the coast and the resulting erosion and destruction of coastal habitats therefore directly results in the violation of the fundamental right to life and livelihood of all that which is dependent on coastal sediment. Just as water, food, air, light, etc., are an essential part of the life and livelihood of every citizen of this country, similarly coastal sediment is equally an essential public good which is a part of the life and livelihood of all that which depends on the coastal environment. The human induced loss of coastal sediment within and even across state boundaries therefore results in the violation of the fundamental right to life and livelihood of all that which depends on the coastal environment. Numerous representations on the above issues described above, particularly such as the human induced coastal erosion, mitigation and restoration through sand nourishment, restoration of the sandy beach ecosystems and the livelihoods of the local communities, etc., spanning a period of more than a decade have been made by several citizen and civil society groups. However, not only is the human induced erosion of the coast increasing unabated, but it is even being aggravated by adhoc, unscientific and unsustainable coastal management measures which are arbitrary and illegal. The Respondents have not undertaken any scientific studies with regard to the exacerbation of erosion due to the

groynes already constructed, and erosion is rapidly progressing with no intervention to prevent the same on the part of the statutory authorities.

77. On 29th Sep 2012, a representation was submitted to the District Collector, Cuddalore, the 2nd applicant submitted representation to several authorities including the respondents herein. On 06th Jan 2012, a representation was submitted to the Government of Tamil Nadu, requesting them to refrain from construction of groynes. On 20th Nov 2012 and 12th Dec 2012, further representations were made by the applicants to the authorities, requesting them to take appropriate action. However, no reply has been received from the authorities and the damage caused to the environment due to the indiscriminate construction of hard structures along the coast continues to this day.

Stand of Puducherry Coastal Zone Management Authority (PCZMA) and MoEF&CC

78. Replies have been filed by contesting respondents. It is not necessary to refer to all the replies. It will suffice to refer to the affidavit filed by Puducherry Coastal Zone Management Authority (PCZMA) on 06.10.2021 and the reply filed by the MoEF&CC. PCZMA refers to comprehensive Shoreline Management Plan (SMP) for Puducherry in May, 2015 by the National Institute of Ocean Technology (NIOT), Ministry of Earth Sciences, after monitoring the coastal processes responsible for the shoreline changes from 2012. The SMP was submitted to the MoEF&CC. NIOT designed a hybrid solution for the first time in the country with two reefs and sand nourishment for restoring the eroding beach along Puducherry town. The proposed hybrid solution involved the following:-

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i. Construction of one Nearshore Wedge Reef opposite to the Chief Secretariat on the north end of Puducherry town foreshore, with the crest at Chart Datum.

ii. Construction of one Offshore Reef placed at the south end, at 300 m north of the pier, with the crest at 1 m above Chart Datum.

iii. Sand nourishment using 4,50,000 m3 of sand between northern and southern reef along the Coastline of Pondichery Town and Gandhi Statue

79. The above project has been adopted in Puducherry for which CRZ Clearance has been granted.

80. The executive summary in the report of the NIOT is as follows:-

"Many beaches along East coast of India are subjected to erosion, which threatens habitat; property, public infrastructure, and the tourist industry. Loss of sand can be attributed natural changes (sea level rise, storms, and more recently persistent low pressures due to climate change) and man-made activities (harbors, jetties, seawalls, groins, dredging of tidal inlets and damning of rivers). Pondicherry coast is not exceptional and after construction of Pondicherry harbour, coast north of harbour 1s subjected to sea erosion. Initially, sand bypassing was carried out by harbour authorities to prevent down drift erosion and to maintain channel free from siltation. Later, discontinuing of sand bypassing due to various technical reasons, lead to erosion on Pondicherry city. UT Pondicherry and Tamil Nadu State Government resorted to short term measures to protect the coast from erosion. Seawall of length 6 Km was constructed by UT Pondicherry, which covers city of Pondicherry and the coastal stretch (2 km) from Sodhanaikuppam to Thanthriyankuppam was protected groin field combined with seawall by Tamil Nadu government. The erosion problem shifted further north, Chinnamudalaiyar Chavadi is experiencing increased erosion and many buildings were lost to sea. Highly eroding fishing hamlet, north of Chinnamudalaiyar Chavadi, and Chinnakalapettai village in UT Pondicherry were also protected by seawall. As on date, 8 km length of the coast was protected by seawall and groin field along Pondicherry coast by UT Pondicherry and Tamil Nadu Government. The above solutions could protect the coast under threat but the authorities and stake holders need an integrated long-term solution for protection of coast and restoration of natural beach.

Since, the available information on Pondicherry coast is not sufficient for working out suitable strategies; NIOT was consulted by both UT Pondicherry and Tamil Nadu government to work out long

term/ short term strategies for management of coast from erosion and impact of cyclones. NIOT has initiated studies to evolve strategies for protection of Pondicherry coast under the project "Demonstration of Shore Protection Measures through Pilot project", with financial support from Ministry of Earth Sciences. NIOT has taken p task of developing strategies for protection of Pondicherry coast with objectives: 1) Assessment of status of existingprotection measures and its performance 2) To Understanding the processes responsible for shoreline changes through monitoring waves, tides, currents, sediment characteristics and coastal morphology 3) Analysis of long/short term trends of shoreline along Pondicherry coast and 4) Development of shore protection measures through numerical models. The first three activities were completed and documented in the present report. The final report with strategies for protection of coast will be arrived at based on the discussion with the governments of Tamil Nadu and UT Pondicherry and stake holders.

The study aims at understanding various dynamical aspects of coast (water level variations, currents & circulation, tides, waves, bathymetric variations, sediment transport, shoreline changes etc.) to develop hind cast, now cast and forecast models on shoreline changes in priority areas for identification of vulnerable areas of erosion/ accretion to arrive at remedial measures for protection of coastline from natural and human perturbations. The strategy proposed in the present study aims at obtaining a comprehensive picture on shoreline changes along Pondicherry coast and to take remedial measures for shoreline management along the stretch.

The study area with coastline length of 18 km was divided into four distinct zones, namely 1) Pondicherry harbour and adjoining areas, 2 km 2) Pondicherry city, protected by seawall, 6 km 3) Groin field, 2 km and 4) Open coast, 8 km. The shoreline changes in these four zones were analyzed using remote sensing data and field measurements. The result indicate that the average rate of erosion and accretion is 4m/yr and 5m/yr respectively and the coast needs immediate attention for its protection from natural causes or man-1made activities. The estimated rate of net drift would be in the order of 0.28 -0.30 million cum, which needs to be confirmed by detailed shoreline monitoring.

Coastal processes responsible for shoreline changes were monitored during 2012, where data on winds, waves, tides, currents, sediments, bathymetry etc. were collected between Pondicherry Port and Kalapettai village, covering a coastline of 18 km. Seasonal variations on water levels, wave climate, currents and circulation sediment transport, shoreline changes etc. were studied. The measurements made indicated that the tide propagates from south to north. Currents measured upto a depth of 20 m were found to be seasonal, northerly during SW monsoon and southerly during NE monsoon. The average currents during SW and NE monsoon would be 0.3m/s and 0.5m/s. The near shore currents generated by waves follow pattern of coastal Currents In Tamil Nadu coast, which is added

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advantage in developing snore protection measures. Wave climate indicate that 70% of the waves approach the coast from SE direction and the remaining 30% from NE direction.

Pondicherry, known for tourism/recreation, has lost its natural beach due to construction of seawall. ***It is advisable to restore natural beach by implementing beach nourishment. Initial estimates indicate that sand to extent of 3.0 million cum need to be placed north of harbour for length of 600 m near the Gandhi statue. The above option not only helps in gaining natural beach but also helps in controlling the erosion of northern coast. The detailed design of beach nourishment scheme can be worked based on the discussions. Also, eco-friendly techniques and "soft engineering measures" could be implemented along with beach nourishment for retaining of sand and also to restore ecological functions of the coast.***

Short-term solutions may need to be implemented, but these solutions have to take into account the long-term solutions and should be "no-regret" solutions.

A long-term and permanent solution ean be found if both the Tamil Nadu and Pondicherry governments jointly work towards a common, long-term and sustainable shore restoration strategy."

81. Summary and recommendations in the report are as follows:-

"Summary and Reeommendations

The coast along Pondicherry and the adjacent areas of the Villupuram district has been experiencing severe erosion for the past 20 years. Natural causes interception of littoral drift by the harbour at Ariyankuppam village, Pondicherry constructed in 1990 and the subsequent construction of coastal defence structures such as seawalls and groins caused erosion in this and groins regions. Pondicherry and Tamil Nadu governments made several attempts to protect the coast under threat using options like seawalls and groins. Though these protection measures have offered some relief to the coast under threat, adjacent parts of coast areas are eroding, more unstable and are constantly under threat.

There is a need for a well-defined plan that seeks to treat the shoreline and the issue of erosion in a more integrated, sustainable and strategic manner. This can be achieved by a Shoreline Management Plan (SMP), which considers the issues at a reasonable scale and focuses on restoring the natural sandy beaches. Policy makers, engineers and stakeholders seek a long term solution to restore the sandy beaches of this entire affected region. The basic questions which need to be answered and understood before attempting any such coastal restoration scheme are following:

1. Present status of coast (geomorphic setting and functional performance of already implemented protection measures)
2. Coastal processes along this coast in relation to proposed coastal restoration schemes.
3. Priorities of policy makers and stakeholders
4. Requirements of stakeholders
5. Economical, environmental and social sustainability of proposed restoration measures.

Considering the above, the overall objective of the coastal restoration projeet should be to address the coastal restoration needs through the implementation of economically viable restoration works using environmental and socially appropriate solutions. This report describes the present status of the coast and the performance of existing coastal protection schemes. The data on sea bathymetry, land topography, hydrodynamics (tides, waves, currents and sediment characteristics) and shoreline changes was collected for analyzing the coastal processes. A joint meeting with Tamil Nadu and Pondicherry governments is required to draw strategies for coastal restoration measures where various technical alternatives can be analysed in relation to the priorities of the government keeping in view that the solution adopted should be sustainable, long term and permanent without affecting the coastline located further north.

The analysis of long-term shoreline change data indicate that the average rate of Shoreline recession and progression over a period of 30 years is in order of 4 m/yr and 5 7yr respectively. However, localized shoreline change rates. recession specifically, of 50 1n in a season were observed. However, the rate of shoreline change and/or erosion is dependent on gradient of sediment transport along the coast, which is dependent on Configuration of the coast, near shore current and availability of the sediments.

The 18 km length of coastline of Pondicherry was divided into four zones for analysis. The first zone (Zone A) covering a length of 3.5 km represents the zone of direct influence of the Pondichery harbour. The sand has accumulated up to the tip of the south breakwater with maximum accretion of 180 m and the sediment started bypassing to the north. The northern side of the harbour is protected by a seawall and sediment deposition is noticed, during the NE monsoon due to the southerly drift. The maximum erosion is about 40 m at distance of 600 m from north breakwater from 1991 to 2000. The second zone (Zone B- 4 km), which is part of Pondicherry township is protected by a seawall. Securing at the foot of the seawall is noticed during active monsoon. The third zone (Zone C- 2.5 km) is protected by a series of disjointed groins. These groins were constructed during 2005-2007 and. accretion to an extent of 90 m is noticed at northern longest groin located at Thathiriyankuppam. The accretion at all groin compartments indicate availability of sediments along the Pondicherry coast during both monsoons.

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The CWPRS (1978) has reported that the net drift was estimated to be about 500,000 cu.m. at the time of design of Pondicherry Harbour but the present estimated rate of net drift by us would be in the order of 2,00,000 - 2,80,000 cu m, which needs to be confirmed by detailed shoreline monitoring. The coast north of longest groin at Chinnamudalaiyar Chavadi village has experienced increased erosion and shoreline recession during2008to an extent of 70 m. South of this coast regained some lost material during 2012 due to southerly drift and bypassing of sediments from the groin with a net accretion of 20 m. The Zone D with a length of 8 km is not protected by major scheme and maximum erosion observed 1991-2010 is around 25m. A sea wall of length 165 m was constructed at village Chinnakalapettai to protect the coast from erosion.

The following are major observations for arriving at coastal restoration strategies for both the Pondicherry and adjacent Tamil Nadu coast.

- *Pondicherry has been known as a beautiful beach town. The beaches here, particularly along the famous beach road were used for all kinds of activities by a large cross-section of people. Children chased crabs and looked for interesting shells. The famous Masi Magam festival of Pondicherry relied on the big beach where the chariots of all the gods from all the temples near and far would come. With the beach almost gone and the rocky sea wall, all these little everyday pleasures of each and every resident of Pondicherry and all those who throng to its shores, have been snatched away.*

- *The basic objective of shore restoration projects moderate the long-term average erosion rate and shoreline change from man-made causes, which can be achieved only if the natural dynamics of the coast is well understood.*

- *The medium term analysis of shoreline change data from 1991 -2012, indicate that this region needs immediate attention.*

- *Protection schemes till date have been implemented in isolation both in Pondicherry and Tamil Nadu, a common phenomenon even in developed countries. This has happened because of various constraints like scientific/engineering understanding of nature, economics of the scheme t be implemented, institutional issues, lack of interstate coordination and acceptance by stakeholders. It is recommended that short-term and long-term strategies can be drawn.considering the coast in total by Pondicherry and Tamil Nadu Government. The short-term strategies required at specific sites can be designed and*

integrated in long-term strategies, if a shoreline management plan is prepared.

- Pondicherry harbour is causing a deficit in sediment supply to the northern coast. Sand bypassing carried out by harbour authorities for certain period could maintain the beach north of the harbour. Later, discontinuing the sand bypassing resulted in loss of beaches in the northern coast. The recent analysis of satellite data suggests that parts of the littoral sediments are bypassed naturally to northern coast. While designing the shore restoration scheme for Pondicherry coast, the configuration of harbour and its relation to natural bypassing of sand at harbour should be studied.

- Pondicherry wave climate is influenced by both the SE and NE waves With occasional cyclonic storms crossing the coast. The maximum surge level observed above tide is 0.7m with a tidal range of 1.2 m. The waves approaches from SE direction from April September with mean direction 135 deg, while during NE mo1nsoon. the direction is 90 deg. The coastal currents are seasonal, directed to north during SW monsoon and south during NE monsoon. The average currents during SW and NE monsoon would be 0.3m/s and 0.5 m/s. The near shore currents generated by waves follow similar pattern like coastal currents in Tamil Nadu coast, which is an added advantage in developing Common shore restoration measures. A detailed study conducted at Vellar estuary and Ennore shows shoreline change governed by wave climate and tidal influence is insignificant. Low pressure systems 1ike events of 2007 can cause significant damage to coast and some of its changes could be permanent. The coastal protection scheme seawall built along the Pondicherry town for length of 6 km need to be assed carefully to avoid further damage during cyclone or low pressure periods.

- Pondicherry is known for its tourism/recreation, it is advisable t0 restore the natural beach by implementing beach nourishment. At Ennore, sand dredged from harbour to an extent of 3.5 million cum was placed. on, north of harbour to prevent down drift erosion. The performance of beach nourishment was assessed based on long-term data at Ennore which shows nourishment has supplied sand to northern coast for period of 5 years and coastline was stable even after the construction of harbour. Initial estimates indicate that sand to the extent: of 3.0 million cum needs to be placed north of the harbor for length of600mnearthe Gandhi statue. The above option will not only help in gaining a natural beach but also help in controlling the erosion of the northern coast. The detailed design of beach nourishment scheme can be worked out based on discussions. Also, eco-friendly techniques and "soft

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engineering measures" to stabilize the coast could be implemented along with beach nourishment for retaining the sand and to restore the ecological functions and services that are provided by sandy beach ecosystems as well as enhance livelihood opportunities for the fishing communities and increase value to the coast.

- *A long term and permanent solution can be found if both the Tamil Nadu and Pondicherry Governments jointly work towards a common; long-term and sustainable shore restoration strategy.*

- *Short-term solutions may need to be implemented, but these have to take into account the long-term solutions and should be "no-regret" solutions.*
- *Worldwide there is now increasing examples of replacement of hard structures like seawalls with softer options Such as beach nouishment, Sand bypassing, dune planting and offshore submerged reefs. Thus, the general principle of "working with nature" Would be a better approach for cost-effective and sustainable coastal protection measures. Pondicherry needs to consider modern protection practices which achieve more effective and sustainable means of coastal protection while also addressing local amenity and economic development aspects. It is most important to ensure that the natural movement and flow of sediment along the shoreline is maintained.*

- *All Shore protection schemes should be monitored scientifically under technical guidance of expert institutes by Tamil Nadu and Pondicherry governments for improvement in its performance. The crest of berm data collected by Tamil Nadu PWD do not cover any location along Pondicherry coast. The closest locations considered for analyzing the data along this coast are Devanampattinam and Oyyalikuppam at south and north of Pondicherry respectively.*

- *Given the social and economical importance of the Pondicherry beaches, the coastal restoration option should consider the protection of land, buildings, groundwater, ecology, livelihoods and public and private infrastructure against future loss and damage caused by erosion and storms.*

- *The beach restoration will primarily benefit the coastal dwellers living along the Pondicherry and nearby Tamil Nadu coast including fishing households, the owners, operators and employees of fishing boats, hotels and other tourism related businesses and their employees. But mostly it will benefit all the residents of this peaceful coastline whose young children have never even seen its beautiful beaches. No One expected that waves due to monsoon or cyclone take away the natural beach."*

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Reply of MoEF&CC

82. Reply of the MoEF&CC dated 02.02.2021 deals with the status of updation/revision of CZMPs as follows:-

> *"2. That in exercise of the powers conferred by the sub-section (1) and Clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 read with clause (d) of the sub-rule 5 of the Environment (Protection) Rules, 1986, Ministry of Environment and Forest had notified the Coastal Regulation Zone Notification, 1991 on 19th February, 1991, which, inter-alia, provided classification of Coastal Regulation Zone (hereinafter referred to as CRZ) areas and norms for regulating developmental activities therein. This Notification was subsequently amended from time to time.*
>
> *3. That it is submitted that in supersession of the* ***CRZ Notification, 1991, the Coastal Regulation Zone Notification, 2011 was notified on 6 January, 2011 for regulation of developmental activities along the coastal stretches and to ensure the livelihood security to the fisher communities and other local communities, living in the coastal areas, to conserve and protect coastal stretches.***
>
> *4. The validity of the Coastal Zone Management Plans (hereinafter referred to as CZMPs) approved under CRZ Notification, 1991 was extended from time to time, the last such extension being upto 31.07.2018, pending preparation and subsequent approval of fresh CZMPs under the CRZ Notification, 2011. All the developmental activities in the CRZ areas of coastal States were required to be regulated as per the above mentioned notifications and within the framework of approved CZMPs.*
>
> *5. It is humbly submitted that the CZMPs of all coastal States except State of Goa has been approved under the provisions of the CRZ Notification, 2011.*
>
> *6. That it is submitted that in supersession of the CRZ Notification, 2011, the Coastal Regulation Zone Notification, 2019 was notified on 18th January, 2019 for regulation of developmental activities along the coastal stretches and to ensure the livelihood security to the fisher communities and other local communities, living in the coastal areas; to conserve and protect coastal stretches, specifically focused on conservation and management plans of Ecologically Sensitive Areas (ESAs) which did not feature in the CRZ Notification,2011.*
>
> *7. It is humbly submitted that the High Tide Line (HTL) has been mapped out and standardized for the entire coast of the country unlike the HTL earlier allowed to be demarcated by one of the seven authorized agencies, that too only for identified stretches/sites, and*

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thereby bringing in standardization and authenticity and removing arbitrariness.

8. It is submitted that the Hazard Line for the entire coast of the country has also been mapped and is required to be incorporated in CZMPs of the coastal States or Union territories.

9. It is humbly submitted that the CRZ Notification, 2019 shall, however, come in force only after the respective CZMP framed to the CRZ Notification, 2011 have been revised/updated by the States/UTs, as per the provisions of the new CRZ Notification and approved by the Ministry of Environment, Forest & Climate Change. Para 6 (i) of CRZ Notification, 2019 inter alia states as under:

> *"All coastal States and Union territory administrations shall revise or update their respective coastal zone management plan (CZMP) framed under CRZ Notification, 2011 number S.O 19(E), dated 6th January, 2011, as per provisions of this notification and submit to the Ministry of Environment, Forest and Climate Change for approval at the earliest and all the project activities attracting the provisions of this notification shall be required to be appraised as per the updated CZMP under this notification and until and unless the CZMPs is so revised or updated, provisions of this notification shall not apply and the CZMP as per provisions of CRZ Notification, 2011 shall continue to be followed for appraisal and CRZ clearance to such projects."*

Before finalizing the CZMP concerned State/ Union Territories/ Coastal Zone Management Authorities are required to adopt due procedure in preparation of CZMPs as stipulated in Para 6 (ii) of CRZ Notification, 2019 which includes public consultation. Para 6 (iii) of said notification inter alia states as under:

> *"The coastal States and Union territories shall prepare draft CZMP in 1:25,000 scale map identifying and classifying the CRZ areas within the respective territories in accordance with the guidelines given in Annexure-IV to this notification, which involve public consultation."*

A true copy of CRZ Notification, 2019 is annexed herewith and marked as ANNEXURE-R/1.

10. It is humbly submitted that the National Centre for Sustainable Coastal Management (hereinafter referred to as NCSCM) made a presentation on the status of the updation/revision of CZMPs) prepared based on provisions of CRZ Notification, 2019, in the 40 meeting of National Coastal Zone Management Authority (NCZMA) held on 28.08.2020, as under:

S.No.	State/UT	Status of Approved CZMP2011	Status of Draft CZMP 2019	Agency preparing CZMP-2019	Time Required to Complete
1.	Maharashtra	Approved	COMPLETED Public hearing completed in all districts other than Palghar and Sindhudurg districts	NCSCM	COMPLETED
2.	Odisha	Approved	COMPLETED Public hearing completed	ORSAC/ SAC	COMPLETED
3.	Andhra Pradesh	Approved	80% work Completed including Buffering of CRZ boundaries	NCSCM	4 MONTHS-DEC 2020
4.	Karnataka	Approved	50% work Completed including Buffering of CRZ boundaries	NCSCM	4 MONTHS-DEC 2020
5.	Puducherry	Approved	30% work Completed including Buffering of CRZ boundaries	NCSCM	3 MONTHS-NOV 2020
6.	Daman&Diu	Approved	50% work Completed including Buffering of CRZ boundaries	NCSCM	3 MONTHS-NOV 2020
7.	Tamil Nadu	Approved	20% work completed	NCSCM	5 MONTHS-JAN 2021
8.	Gujarat	Approved	20% work completed	NCSCM	6 MONTHS-FEB 2021
9.	Kerala	Approved	In progress Being monitored by Kerala High Court	NCSCM	Status to be obtained from NCESS
10	West Bengal	Approved	Pending. Status not known	IESWM	Status to be obtained from IESWM
11	Goa	Draft published in website for public hearing. Revision based on amendments, in	Pending	Not Known	Amendments to CRZ Notification 2011 notified on 1st May 2020

		progress (NCSCM)			
12.	Andaman & Nicobar Islands	ICRZ pans:9 Islands IIM Plans:5 Islands Approved	ICRZ Plans of Great Nicobar & Little Andaman Islands completed and submitted to ANCZMA for public hearing	NCSCM	6 MONTHS-FEB 2021
13.	Lakshadweep Islands	Approved	Revision of IIMPs of Suheli, Kadamat & Minicoy Islands in progress	NCSCM	6 MONTHS-FEB 2021

11. It is humbly submitted that the answering Ministry is yet to receive the draft CZMPs updated/revised as per the provisions of the CRZ Notification, 2019 from all the coastal State Governments for further consideration and approval.

12. It is further humbly submitted that the CRZ Regulations are to be implemented and monitored including violations thereof by the concerned State Coastal Zone Management Authority in accordance with the proved CZMPs of the respective region of the coastal state."

Consideration of the Issue, finding and Directions

83. We have given due consideration to the issue of protection of the beaches from human induced erosion caused by hard structures. It is a fact that these hard structures may prevent erosion at the said stretch temporarily but the adverse impact of such measures are felt upstream or downstream where erosion starts. Thereby such hard measures only transfer the problem of shoreline change until and unless a holistic study is undertaken keeping in view that sediment cells and appropriate scientific measures taking into consideration both soft and hard. The problem exhaustively highlighted by the applicant, noted above raises substantial question of environment. We are satisfied that the same needs to be addressed by all coastal States/UTs for protection of beaches from human induced erosion caused by hard structures. We find that

Puducherry model of SMP based on report of NIOT submitted in March 2015 addresses the issue comprehensively and can be adopted subject to any suitable change based on further study in terms of the recommendations in the said report. As suggested in the report, there is need to replace hard structures like seawalls, Groynes etc. with softer options such as beach nourishment, sand bypassing, dune planting, offshore submerged reefs, etc. Thus, the general principle of "working with nature" would be a better approach for cost-effective and sustainable coastal protection measures. There is no objection to the said model by any of the appearing parties. Further, the Tribunal also notes that depiction of high, Medium and low erosion stretches along the coast line is mandatory in the CZMPs. The CRZ Notification, 2019 regulates foreshore developmental activities based on these parameters as well. Like ports and harbours are prohibited in high erosion stretches. We also note that inspite of the CRZ Notification being issued in Jan, 2019, the CZMPs have not been finalized and approved for 11 State/UT. This is gross violation of Hon'ble Supreme Court judgment in *Indian Council For Enviro Legal ... vs Union of India & Ors.*, (1996) 5 SSC 281. Accordingly, we direct Chief Secretaries of the Costal State/UT to finalise the CZMP and get them approved by MoEF within 2 months. The approved CZMP shall contain the parameters as listed in the CRZ 2019 Notification including High, Medium and Low erosion stretches for such erosion prone areas. SMP shall be prepared as illustrated by NIOT for such erosion prone areas. We further direct preparation/updation of their SMPs for such identified eroding stretches shown in the CZMPs within six months. Pending preparation/updation of such SMPs by the Coastal States/UTs, no further hard structures for erosion control be raised or constructed.

The application is disposed of.

A copy of this order be forwarded to all the Coastal States/UTs and MoEF&CC for compliance by e-mail.

Appeal No. 18/2017 (SZ)

84. As noted earlier challenge in the appeal is to the proposed construction of series of 19 Groynes from Ennore to Ernavoorkuppam in Madhavaram Tuluk of Tiruvallur District, Tamil Nadu by the Public Works Department (WRD). The main ground challenge of the CRZ Clearance is that construction of groynes in coastal area has adverse impact by obstructing littoral drift. The impugned clearance ignores this aspect. The impugned CRZ clearance itself mentions that the same is subject to further orders in O.A. 04/2013 which was pending on the date when CRZ Clearance was granted.

85. While dealing with the O.A. No. 4/2013 (SZ), we have approved the report of the NIOT recommending preparation of SMP which should be environmentally compatible, in the manner suggested and discussed above. We have also directed all the Coastal States/UTs in the Country to prepare their respective SMPs accordingly. The impugned CRZ Clearance is not sustainable in view of above discussion. The same is accordingly set aside without prejudice to fresh clearance being granted in accordance with the approved SMP.

The appeal is allowed in above terms.

Adarsh Kumar Goel, CP

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K. Ramakrishnan, JM

Sudhir Agarwal, JM

Pushpa Sathyanarayana, JM

Dr. Satyagopal Korlapati, EM

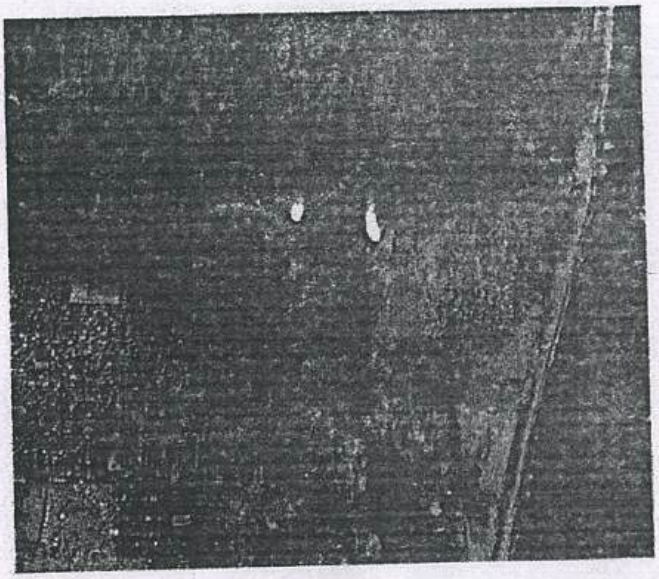
Prof. A. Senthil Vel, EM

April 11, 2022
O.A. No. 04/2013(SZ)
With Appeal No.18/2017(SZ)
A



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CONSTRUCTION OF GROIN FIELD FOR SHORE PROTECTION WORK IN UYYALIKUPPAM, CHENGALPATTU DISTRICT, TAMILNADU



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March 2021

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1.0 INTRODUCTION

Fisheries Department of Government of Tamilnadu has requested the Department of Ocean Engineering, Indian Institute of Technology Madras to suggest suitable coastal protection measures that could possibly limit the coastal erosion process at the site specified by them in the Uyyalikuppam village. The coastal site is located at Uyyalikuppam village (12°29'9.28"N, 80°09'46.72"E) of Chengalpattu district. The Fisheries Department of Tamilnadu have entrusted the work of establishing the bathymetry and topography survey of the area prior to the commencement of preventive measures. The location of Uyyalikuppam village is shown in Fig.1.

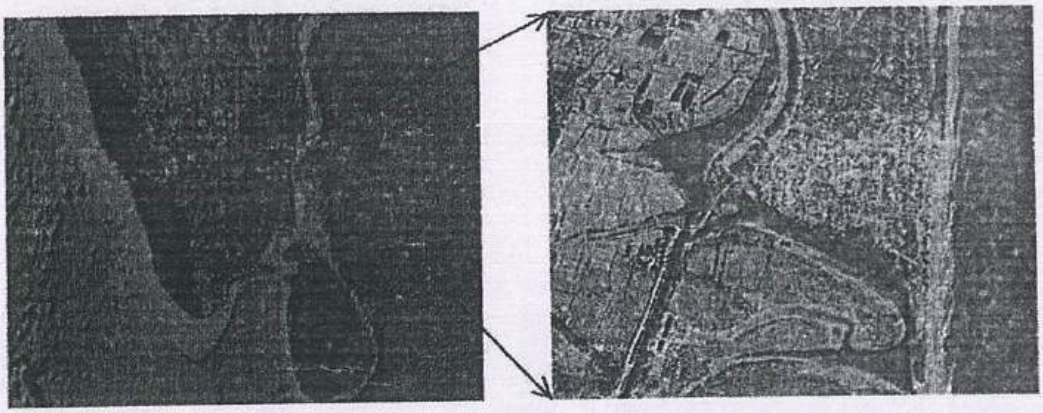


Fig. 1 Location of Uyyalikuppam site

2.0 OBJECTIVE & SCOPE OF WORK

The objectives of the present study include,

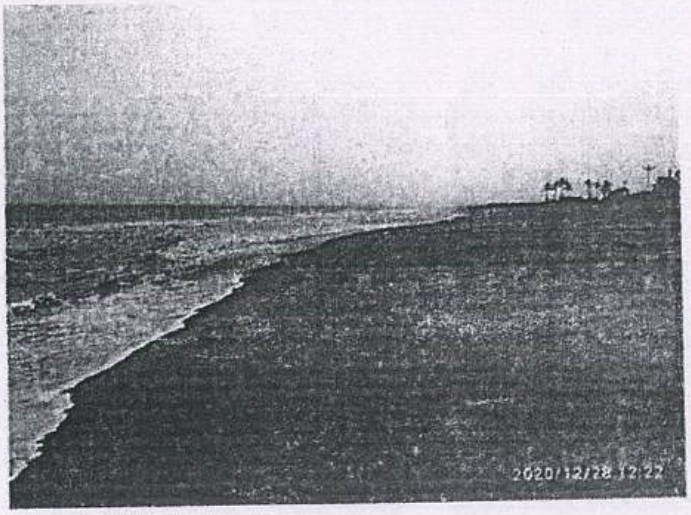
1. Offshore annual wave climate shall be established using the best available data sources.
2. Investigation of shoreline erosion rate along the specified coastal stretch due to waves.
3. The shoreline changes due to the proposed structure i.e., accretion or erosion shall be established.
4. Layout of groin field suitable for Uyyalikuppam coast.
5. Wave tranquility to identify the wave characteristics in the proposed location.
6. Design of groins and cross sections.

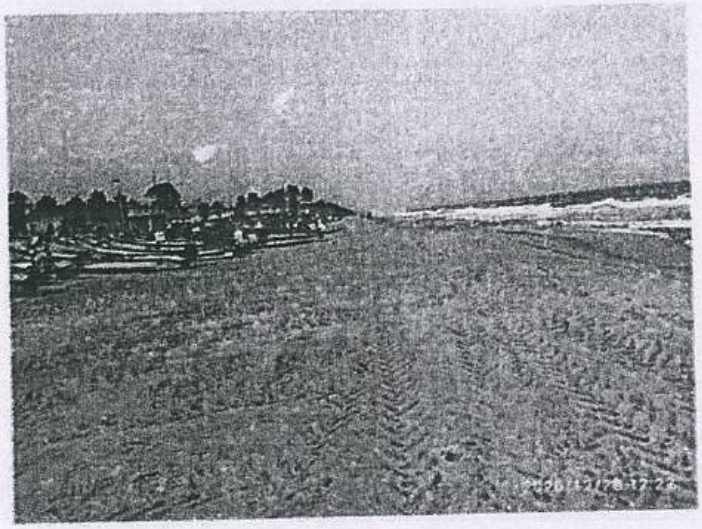
3.0 BATHYMETRY

A Bathymetry survey has been conducted on 29th December 2020 and the shore line measurements were taken on 29th December 2020 during the High Tide using ODOM ECHOTRAC MKIII. In addition, the soil samples were also collected near the shore. The detailed bathymetry is given in **Plate 1**.

3.1 Site Condition

The three site photos depict the actual erosion that has occurred at the Uyyalikuppam site and the immediate need to protect the coast from further erosion. The site condition and erosion at Uyyalikuppam village is shown in **Fig. 2**.





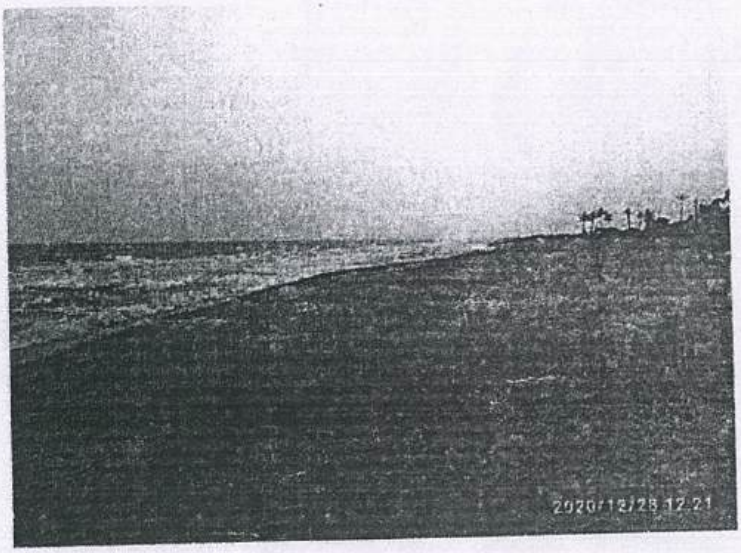


Fig. 2 Site Condition and Erosion at Uyyalikuppam village

4.0 OFFSHORE WAVE CHARACTERISTICS

The wave characteristics such as significant wave height, mean wave period and mean wave direction at a deep-water location (12°30'0.00"N, 80°15'0.00"E) off Uyyalikuppam (12° 29'9.28"N, 80° 09'46.72"E) have been extracted at every 6 hours interval from the European Centre for Medium-Range Weather Forecasts (ECMWF).

Table 1 Wave characteristics for the present study

Month	Deep water wave direction (θ_o) w.r.t North	Wave height, H(m)	Wave period, T(sec)
January	73	0.8	5
February	101	0.7	5
March	134	0.8	6
April	149	0.8	5
May	151	0.9	6
June	175	0.9	6
July	192	0.8	6
August	183	0.8	6
September	154	0.9	7
October	146	0.8	6
November	94	0.9	6
December	80	0.9	6

5.0 LITTORAL DRIFT ESTIMATE

Distribution of Sediment Transport

The offshore wave climate provided in the above table is transformed to the near shore location of Uyyalikuppam coast using Snell's law. The average breaking wave characteristics were derived from the available wave data. The monthly distribution of mean breaker wave height for the study area is shown in Fig. 3. The results indicate that the mean breaker height varies from about 0.8m to 1.20m. The breaker height is observed to be a maximum during the month of September. The monthly distribution of the mean breaker

wave angle with respect to shore normal is shown in **Fig. 4**. From the results, it is seen that for the study area, the breaker angle with respect to shore normal and longshore current velocity are directed towards North from February to October. The average surf width in which the long shore drift is predominant is further estimated from the breaker wave height for the given bathymetry and is projected in **Fig. 5** for the different months. It shows that the maximum surf width of about 75m occur during the month of September.

Further, the derived wave characteristics were applied to calculate the long shore sediment transport. Three different methods CERC (1984), Komar (1976a), and by integrating the distribution across the surf zone (Komar, 1976b) have been adopted to calculate the alongshore sediment transport rate. The average sediment transport rate for the different months is shown in **Fig. 6**. All the three methods have yielded similar order sediment transport rate. The net drift is found to be about 0.25 million m^3 per annum and directed towards the North.

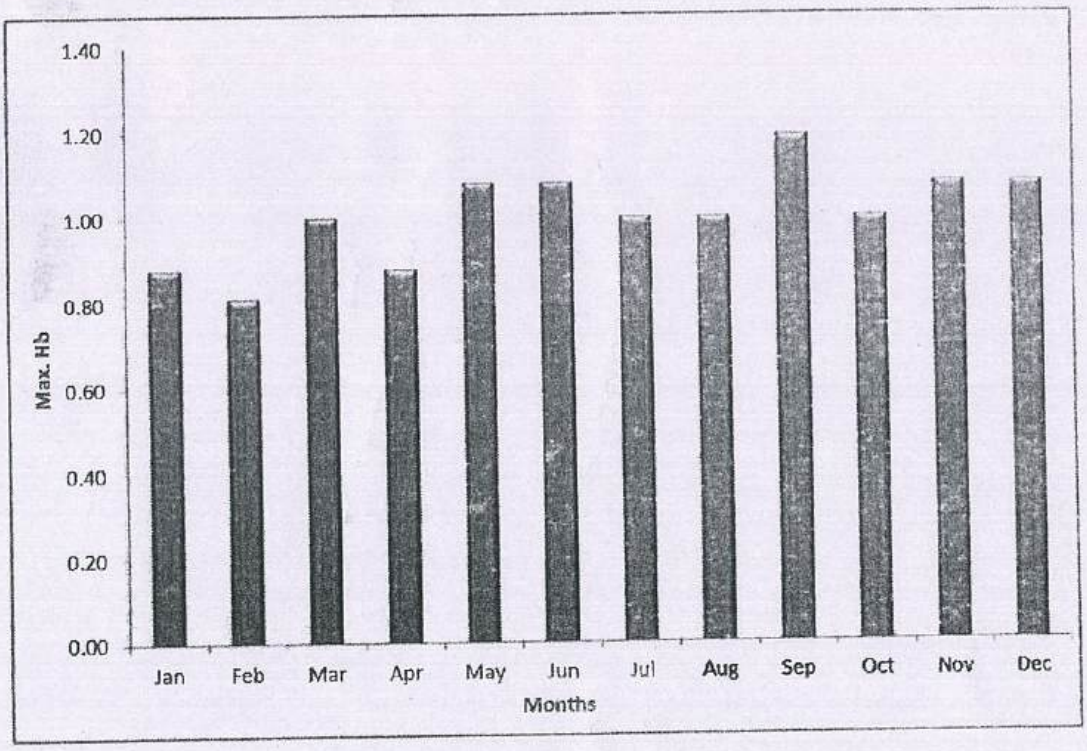


Fig. 3 Breaker wave heights

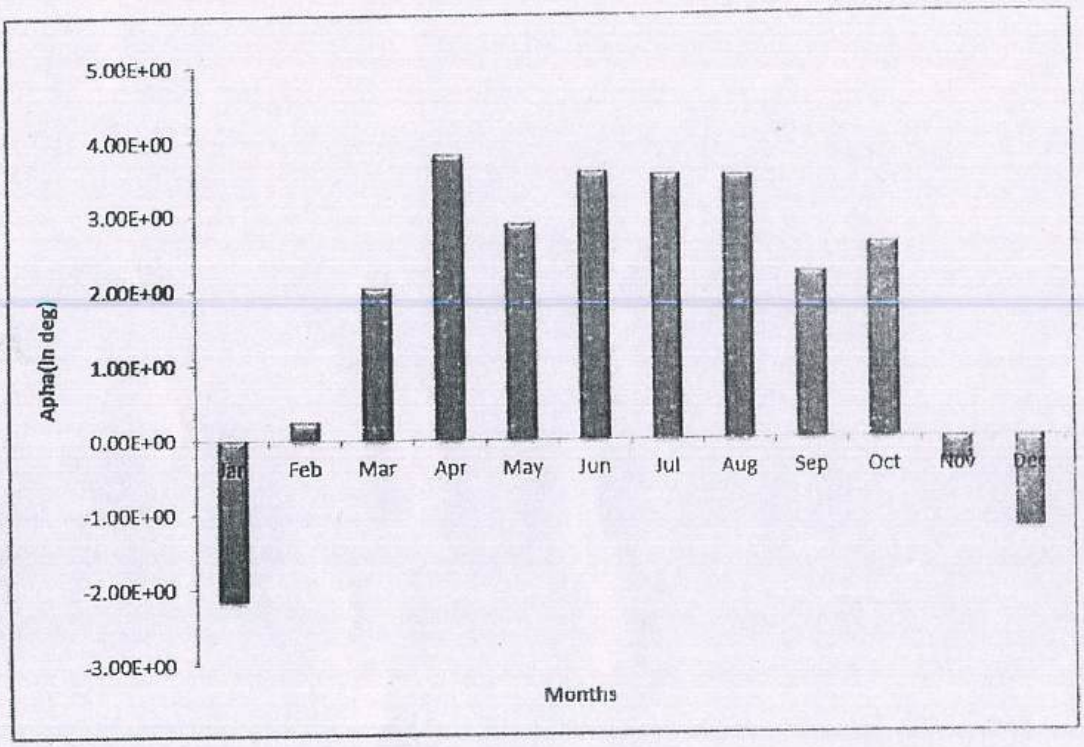


Fig. 4 Wave breaker angle

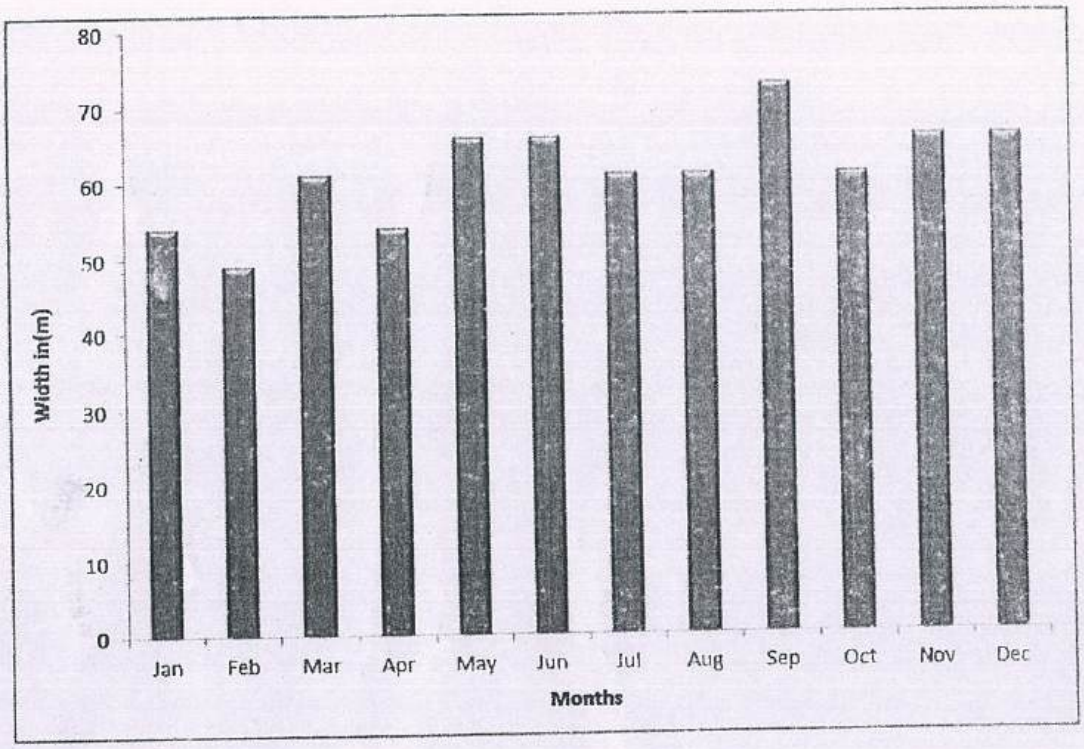


Fig. 5 Surf zone width

Table.2 Sediment transport rate

Methods	Rate (m3/year)
Komar	238251
CERC	248152
Distribution	238623

(130)

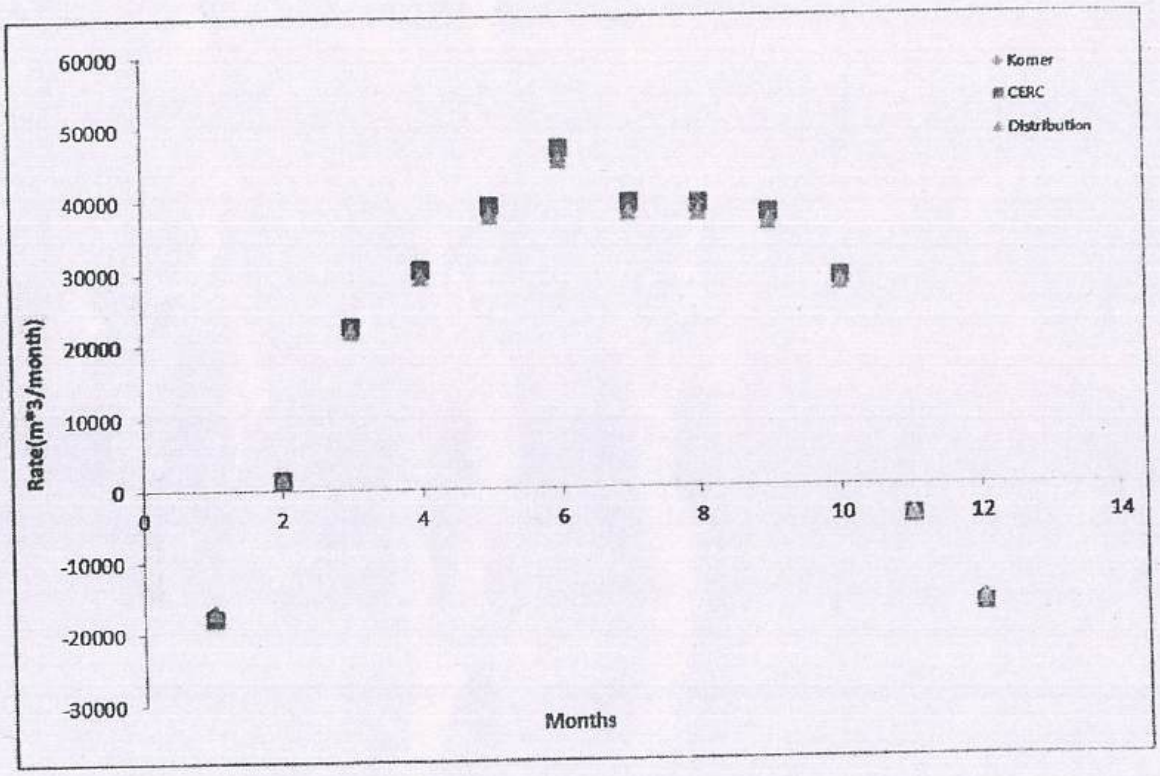


Fig. 6 Longshore Sediment transport rate

6.0 PROPOSED LAYOUT OF GROINS

A series of 7 groins have been proposed to protect the coastal stretch of Uyyalikuppam. The stretch of transition groins field will cover a length of 750m of the shoreline. The proposed solution is expected not only to serve as coastal protection measure but also is likely to enhance the rebuilding of the lost beach although it may take a few years.

- Two groins (G1, G7) of length 40m,
- Two groins (G2, G6) of length 60m
- Two groins (G3, G5) of length 80m and
- One groin (G4) of length 90m has been proposed.

Fig. 7 shows the layout of the proposed groin field and **Plate 2** presents the layout in detail. The layout comprises of 40m groins (G1) and (G7) extending upto a water depth of 1.0m and 1.5m respectively, 60m groins (G2) and (G6) extending upto a water depth of 1.5m and 2.0m respectively, similarly 80m groins (G3) and (G5) extending upto a water depth of 3.0m and 2.2m respectively. Further, the groin of length 90m (G4) will extend upto a water depth of 2.8m. All the groins will start from the high tide level of about +1.4m towards the seaside. The layout is as per the bathymetry survey conducted during the finalization of proposal. If the work gets delayed, it is mandatory to conduct atleast one line survey along the alignment of groins to ensure each of the groins reach the design water depth as indicated above. ***Note that the lengths are likely to change prior to installation as it depends on the water depth and hence, IITM must be informed prior to the commencement of the work.***

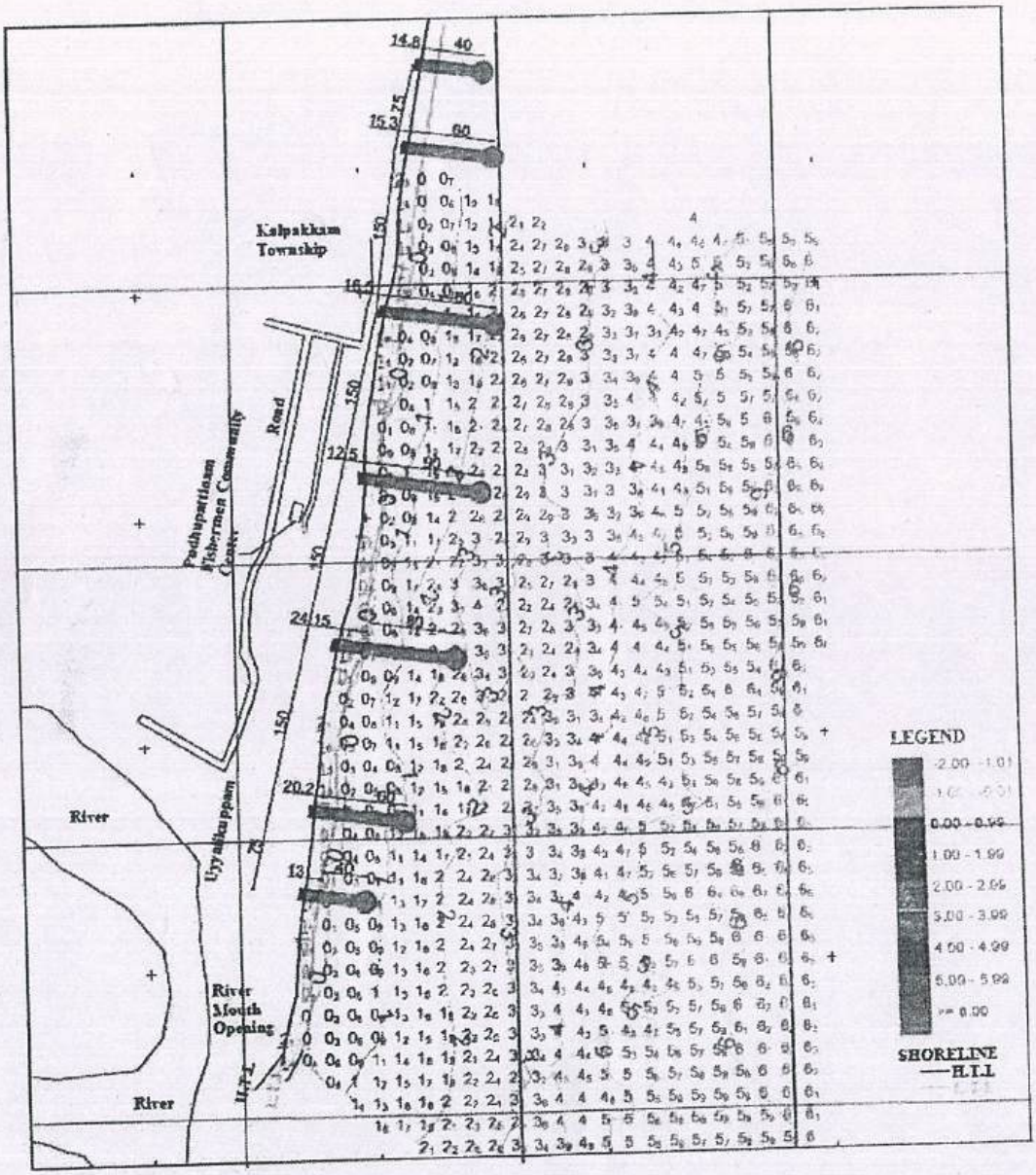


Fig. 7 Layout of groin field

7.0 NUMERICAL MODELLING FOR SHORELINE EVOLUTION

7.1 General

Structures in the near shore environment are built for different purposes, which may be for the formation of artificial harbors, shore protection measures, seawater intake systems, disposal of effluent, etc. There are several configurations of such structures with respect to the shoreline, among which, structures normal to the shore is most common.

The construction of a shore-connected structure often leads to changes in the shoreline. This warrants a study on the shoreline due to presence of the shore-connected structures. Such a study is very much essential in planning stage; so as to assess the impact of shore connected structures on the adjacent shoreline.

Numerical models offer the capability to study the effect of the wave characteristics, structure dimensions and other associated parameters in providing reasonable estimates of the shoreline response. As the ocean waves approaches the near shore it undergoes transformations like shoaling, refraction, diffraction and breaking.

The phenomena of wave breaking throw sediments to the surface due to the turbulence generated. The sediments in suspension are then driven by the wave-induced currents. Since the direction of waves in the near shore is oblique, the currents induced by them have two components.

One along the shore called longshore current mainly responsible for the long shore sediment transport, which plays an important role in the shoreline changes especially due to the shore connected structures. The other component is in the direction normal to the shore, in which case, the mode of sediment transport is called onshore-offshore sediment transport.

When a structure normal to the shoreline is constructed, it will intercept the free passage of longshore sediment transport, which results an imbalance in the quantity of sediment in the near shore especially near the structure. This leads to accretion on the up drift side and erosion on the down drift side of the structure.



7.2 Methodology

Kraus and Harikai (1983) proposed a numerical scheme to solve the one line model using Crank Nicholson implicit finite difference method. The non-dimensional equation of shoreline

$$y^*_{n,t^*+1} = B\left\{Q^*_{n,t^*+1} - Q^*_{n+1,t^*+1}\right\} + C_n$$

$$where\ B = \frac{\delta t^*}{2 \times \delta x^*}\ and\ C_n = B\left\{Q^*_{n,t^*} - Q^*_{n+1,t^*} + 2\delta x^* q^*_{n,t^*}\right\} + y^*_{n,t^*}$$

The non-dimensional shoreline is divided into 'n' grid points at equal non-dimensional interval, δx^*. Then shoreline changes over a non-dimensional time, δt^* is calculated using Crank-Nicholson finite difference scheme. The schematic diagram for finite difference scheme is shown in **Fig. 8.**

In this method, Q^* at the time interval $(t^* + 1)$ is expressed in terms of the shoreline co-ordinate of y*, first isolating the term involving α_{sp} (angle of shoreline normal to x-axis) using trigonometric identities. One of the term involving α_{sp} is then expressed as first order quantities in y* at time step (t*+1).

$$Q^* = K_D^2 \cos(\alpha_o)\sin(\alpha_b)$$

Where, $\alpha_o = \alpha - \alpha_{sp}$ and α is wave direction with respect to x-axis. The definition sketch showing the angles is shown in **Fig. 9.**

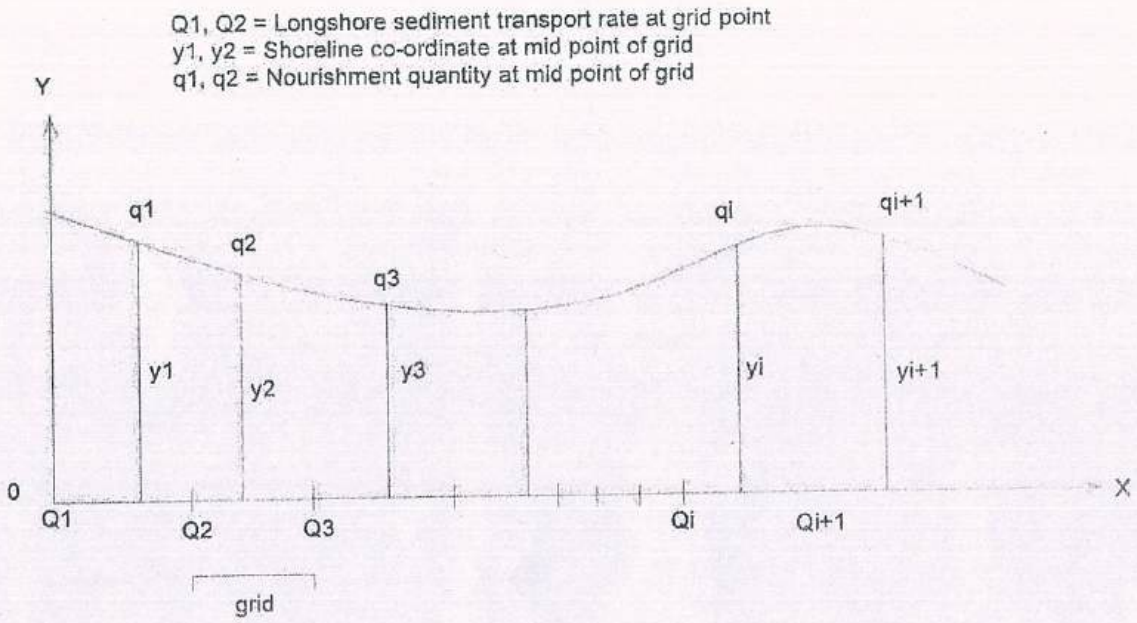


Fig. 8 Schematic diagram for finite difference scheme

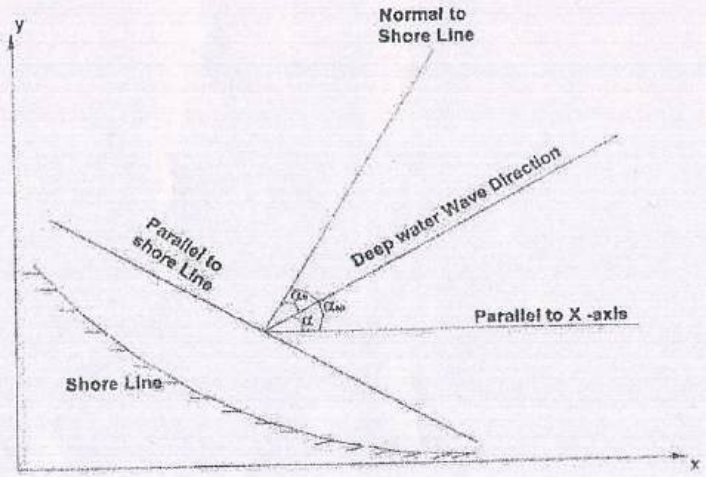


Fig. 9 Definition sketch of angles considered

The elliptical form of mild slope equation, which deals with combined refraction-diffraction.

$$Q^* = K_D^2 \cos(\alpha - \alpha_{sp}) \sin(\alpha_b) \quad (1)$$

$$Q^* = K_D^2 \sin(\alpha_b) \left\{\cos(\alpha)\sin(\alpha_{sp}) \cot(\alpha_{sp}) + \sin(\alpha) \sin(\alpha_{sp})\right\} \quad (2)$$

$$Q^* = E_n \left\{y_{n-1,t^*+1} - y^*_{n,t^*+1}\right\} + F_n \quad (3)$$

Where $E_n = K_D^2 \left\{\cos(\alpha)\sin(\alpha_{sp,t^*})\sin(\alpha_{b,t^*})\right\} / \delta x^*$ and $F_n = K_D^2 \left\{\sin(\alpha_{sp,t^*})\sin(\alpha_{b,t^*})\right\}$

By substituting above equations, it gives the final equation as given below

$$BE_n Q^*_{n-1,t^*+1} - (1+2BE_n) Q^*_{n,t^*+1} + BE_n Q^*_{n+1,t^*+1} = E_n [C_n - C_{n-1}] - F_n$$

The above equations represent a set of (N-1) linear equation for (N-1) unknowns. The end values are specified as boundary conditions, that is, $Q^*_1 = 0$ and $Q^*_{N+1} = Q^*_N$. The above equation results into a tridiagonal form which is solved for Q^*. This process is repeated for the entire duration and non-dimensional quantity is converted into real quantities using the corresponding scale factors. The program has been validated with published results.

7.3 Input and Output

The numerical model to predict the shoreline evolution due to the shore-connected structures has been used to predict the shoreline changes due to the proposed groins. The wave characteristics given as the input to the numerical model is as per given **Table 1**. The length of the groins, water depth at the end of the groins and the present status of the shore are to be given as the input to the numerical model.

The numerical model was executed for the most frequently occurring wave characteristics for the different months as stated earlier. The result on the predicted shoreline variations over years are projected in **Fig. 10**. The shoreline prediction has been made at the end of 1 year, 5years, 10years, 15 years, 20 years and 25 years after the construction of the groins and has been presented by superimposing the shoreline patterns.

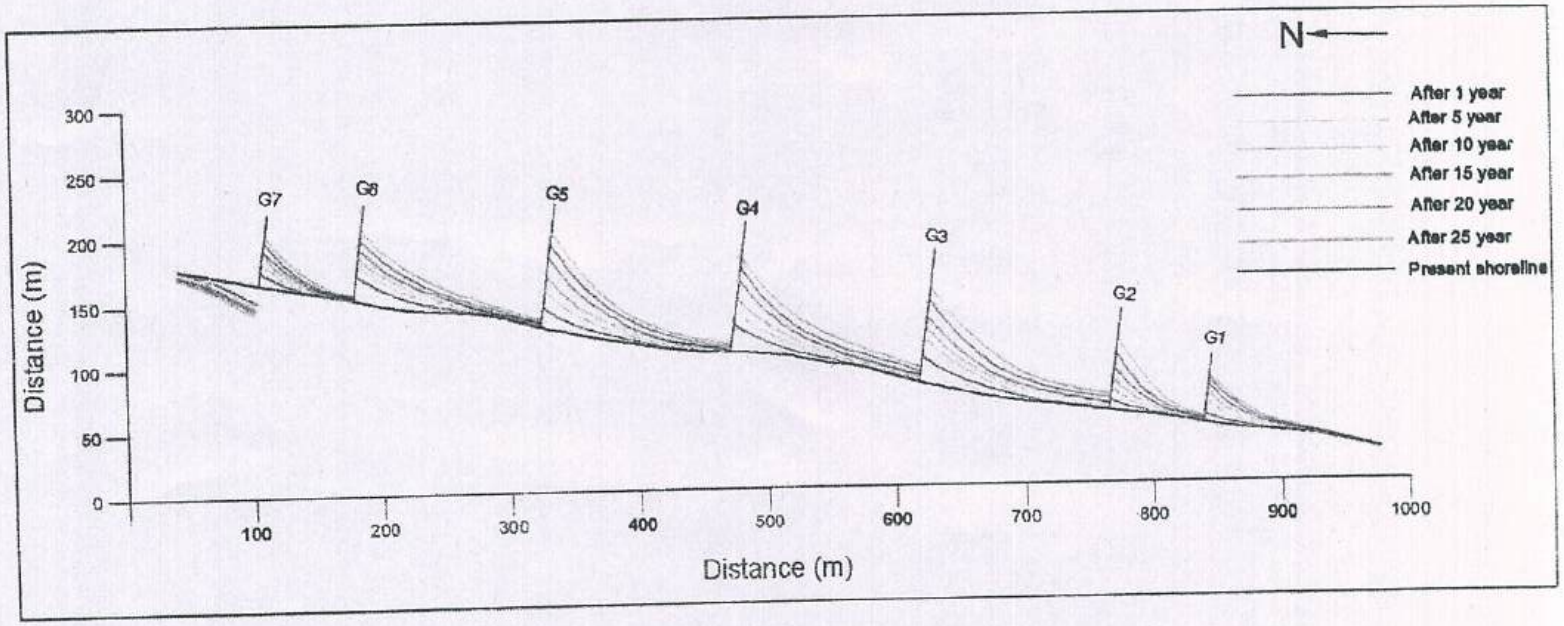


Fig. 10 Shoreline evolution

170

137



8.0 WAVE MODELLING

8.1 General

The study aims at providing an in-depth analysis on the wave characteristics of the proposed Groin Layout at Uyyalikuppam Village, Tamilnadu. A suitable numerical model is required in order to carry out this task. For the present simulation, the well-known CGWAVE model has been used.

The nonlinear wave propagation associated with most of the observed phenomenon in offshore region (e.g., wave reflection, refraction and diffraction) is generally represented by the shallow water mild slope equation.

$$\nabla.\left(C_p C_g \nabla \eta\right) + k^2 C_p C_g \eta = 0 \qquad (1)$$

Where,

C_p and C_g are the wave celerity and group celerity respectively.

η is the water surface elevation.

k is the wave number.

For the computation of near shore wave field, this model (Eqn. (1)) is subjected to the proper boundary conditions. This is provided by the bathymetry and the shore line.

8.2 Computational domain

The computational domain roughly approximates a semi-circle of radius 1.5 km. Fig.11 shows the domain where the computations are actually performed. The direction of the incident monochromatic wave is defined with respect to the geometric northern direction.

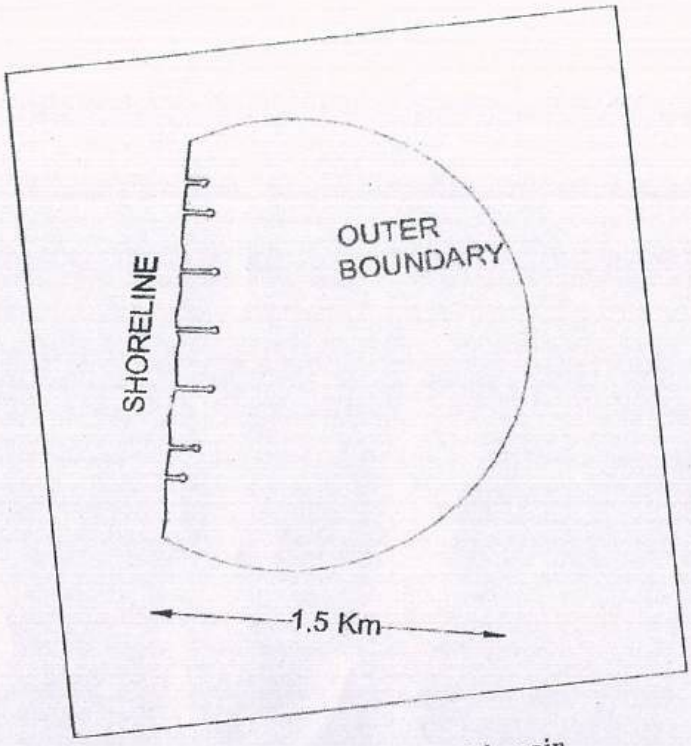


Fig. 11 Computational domain

A numerical method is required to solve the above Eqn. (1) for wave elevation. In this study, Finite Element Method (herein after abbreviated as FEM) is employed. This requires creating a mesh structure in the given computational domain. Upon creation of such a mesh, the domain is represented by nodal points which are connected with each other through the created mesh. The numerical solution of Eqn. (1) is sought in those nodes. This mesh has been generated using the commercial package GAMBIT. The procedure for generation of grid in GAMBIT as follows:

- Based on the region of the sea whose analysis is required add a path in Google earth software.
- Taking the two end nodes of the path draw a semicircle which would represent the domain for which the wave analysis is required.
- Choose the type of elements (tri/quad) and the sizing of mesh.
- Mesh will be generated from which we would be able to know significant wave height and phase at each node.



8.3 Detail of the mesh structure

The CGWAVE model utilizes triangular mesh units in the computational domain. Due to the complexity in the shoreline geometry, an unstructured mesh is desired. Hence a triangular unstructured mesh is generated in GAMBIT, mesh generation software. In such a mesh the nodal spacing is optimized so as to adapt to the nearby portion of the shoreline boundary. The outer semicircular periphery is modeled by 1176 nodes with a spacing of 2 m and the inner shoreline is modeled by nodes with a spacing of 2 m. Then an unstructured mesh is created with an average spacing of 2m inside the domain. This leads to a total number of 226372 nodes with 450556 numbers of triangular elements. The mesh is shown in Fig. 12.

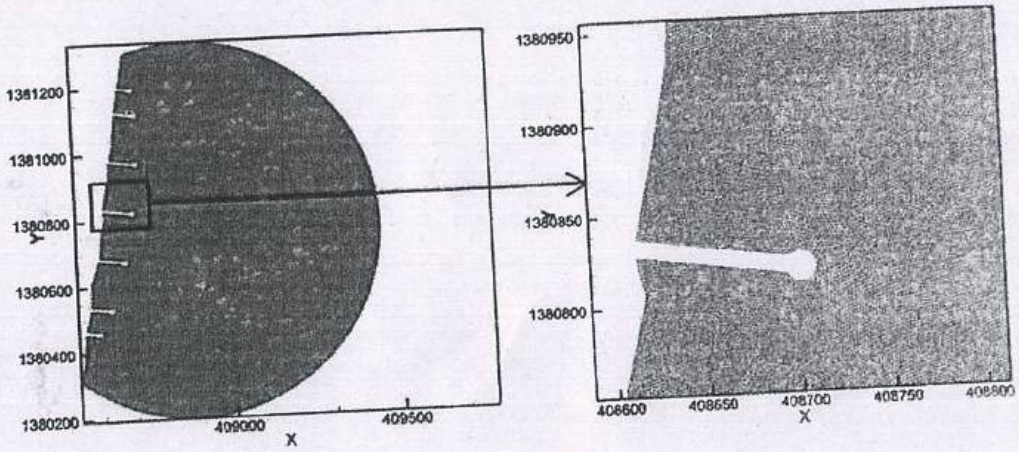


Fig. 12 Mesh Structure adopted for the wave propagation modeling

8.4 Results and discussion

A total number of five wave directions have been simulated in order to investigate the wave tranquility inside the proposed region. The wave directions are chosen such that these represent an annual year. The wave period of the computations is given as 6s-12s to observe the wave climate. The incident wave angle is varied to simulate different wave directional scenarios. The wave climates representing typical wave directions are presented. Fig. 13 to Fig. 17 reports the wave phase diagram and the wave height distribution for different wave approach angles of 60^0, 90^0, 115^0, 130^0 and 165^0 respectively.

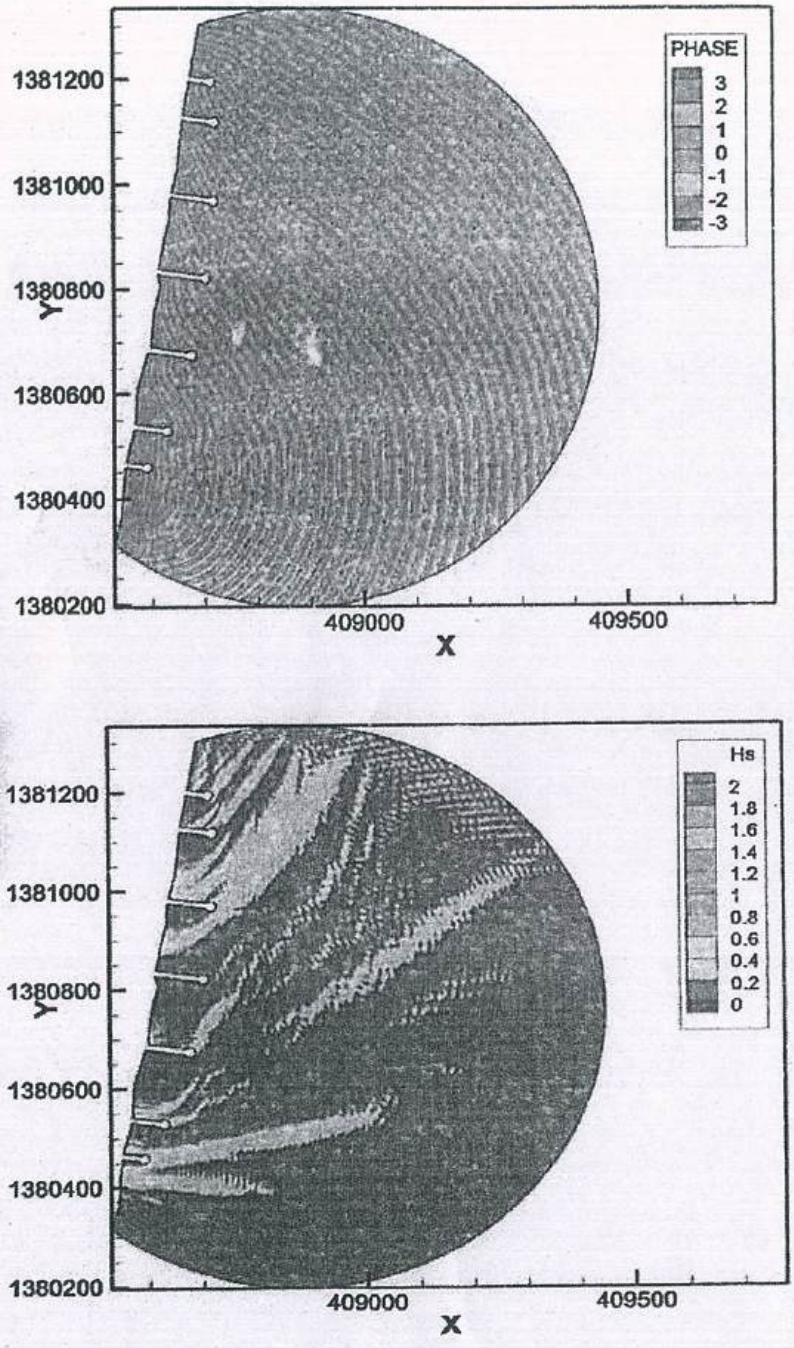


Fig. 13 Phase distributions and Wave height distribution for the wave approach angle from 60^0

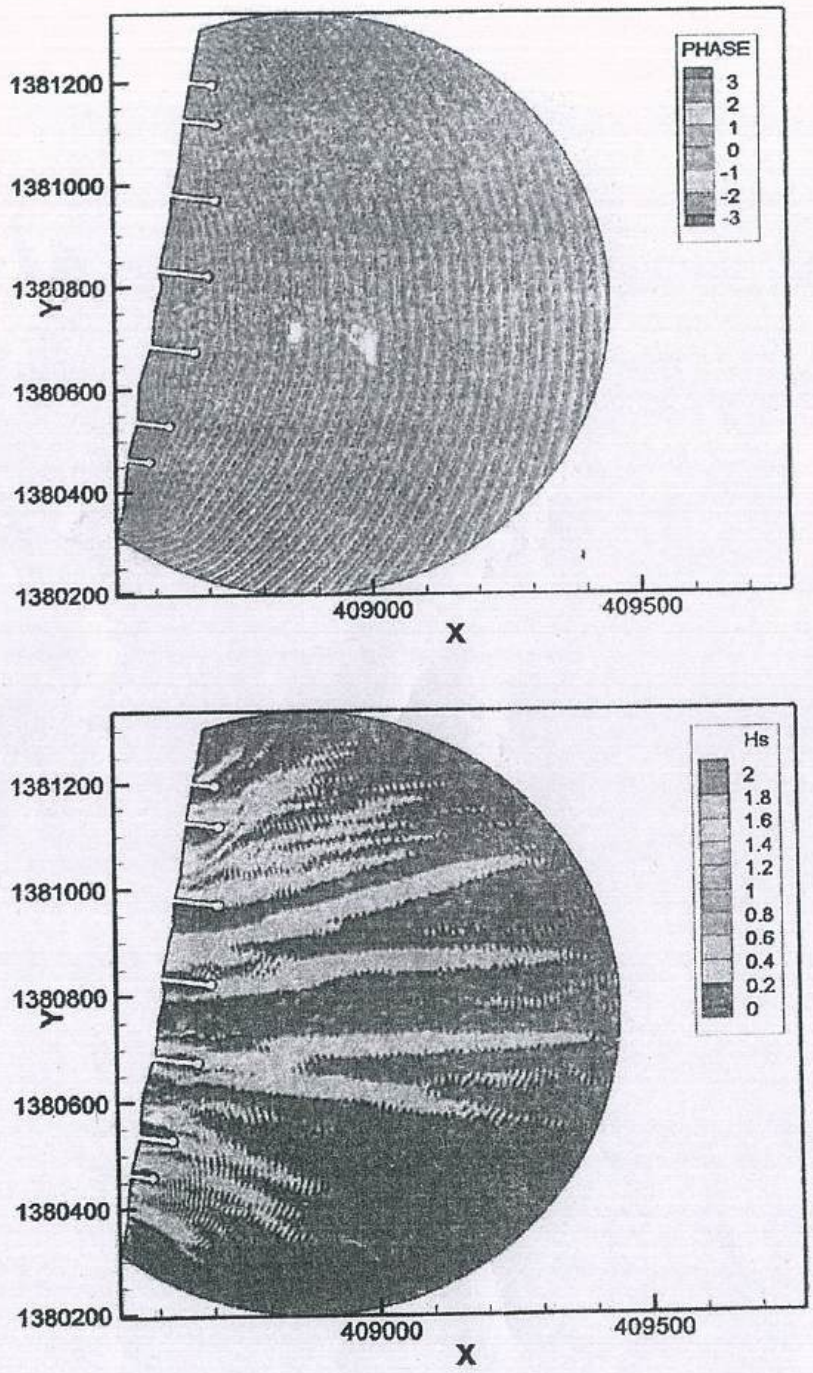


Fig. 14 Phase distributions and Wave height distribution for the wave approach angle from 90^0

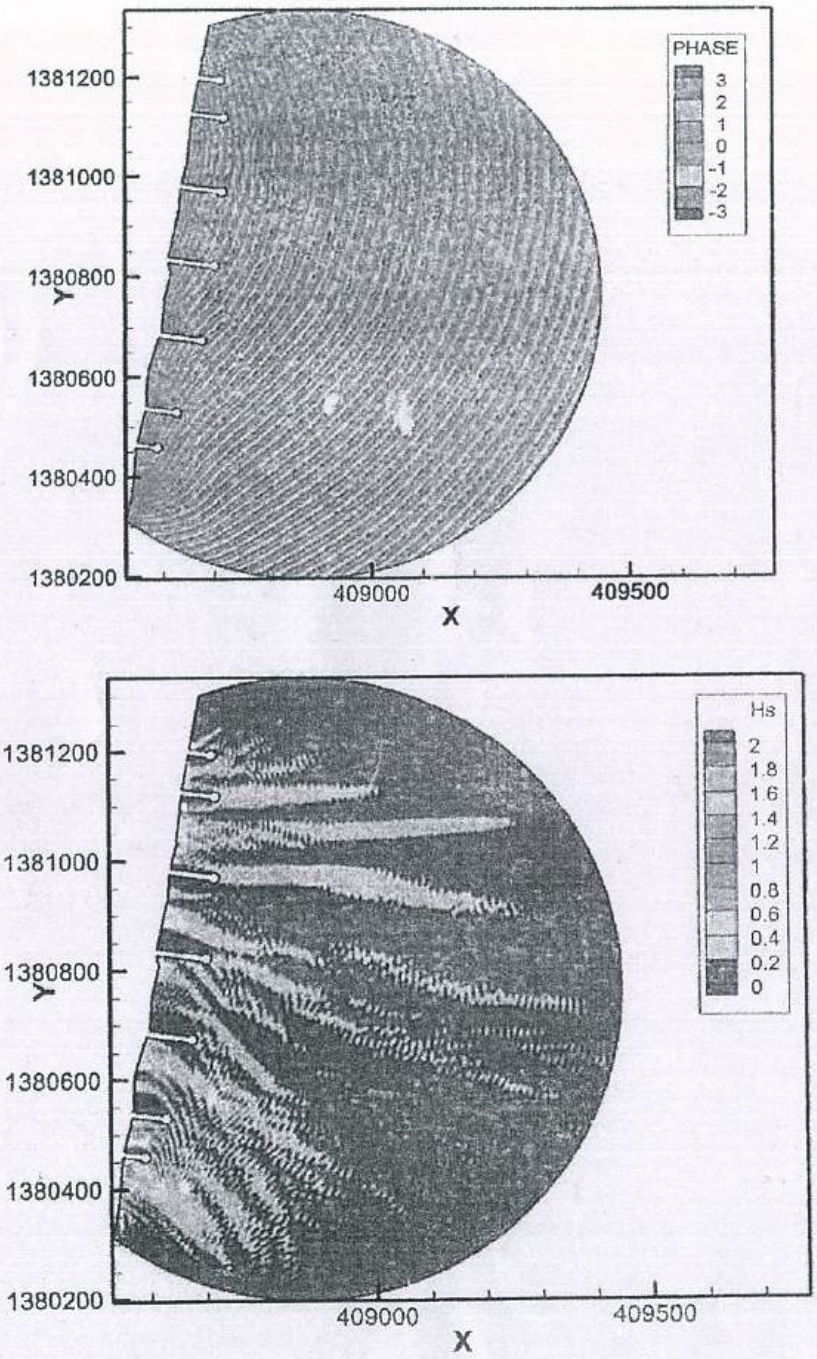


Fig. 15 Phase distributions and Wave height distribution for the wave approach angle from 115^0

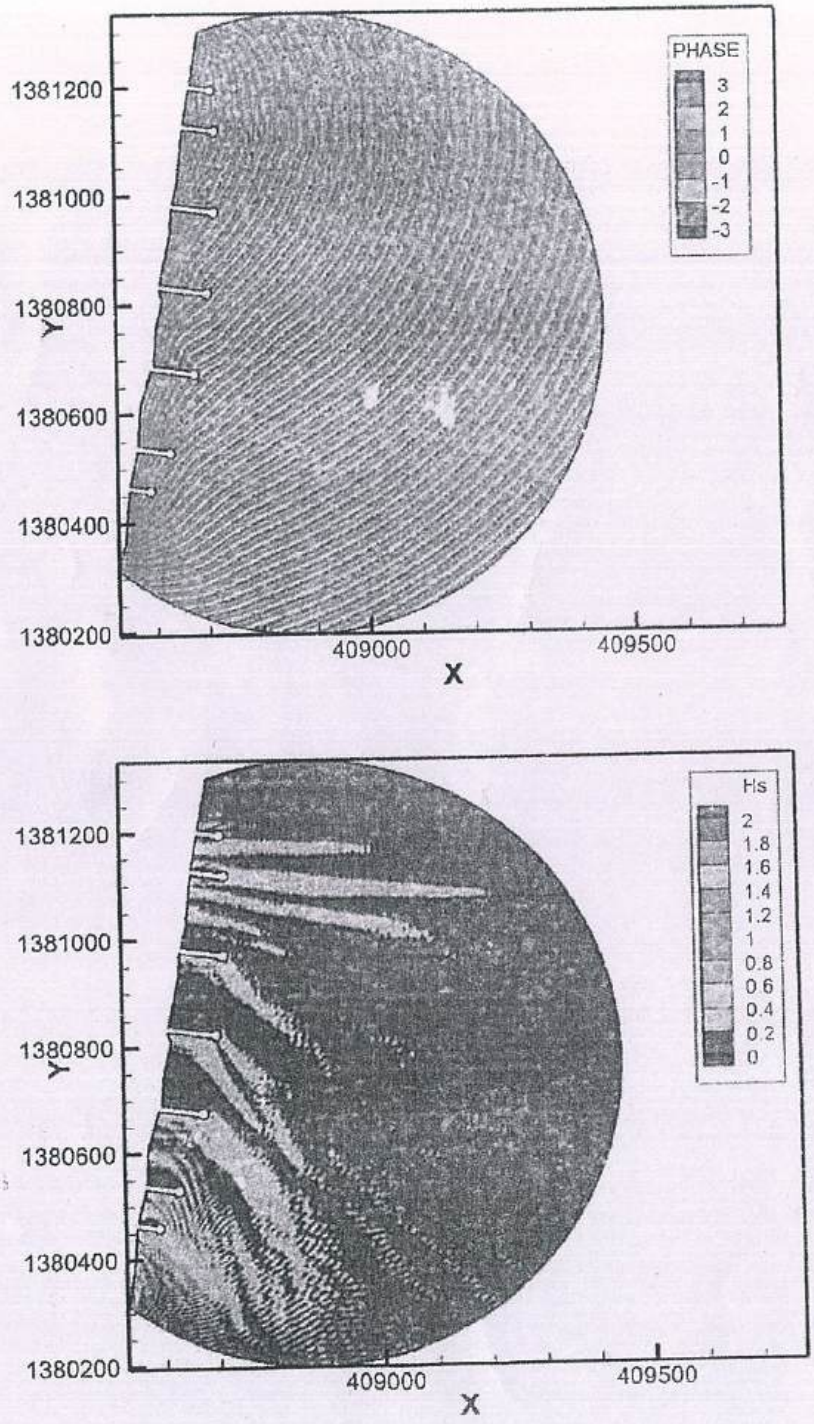


Fig. 16 Phase distributions and Wave height distribution for the wave approach angle from 130^0

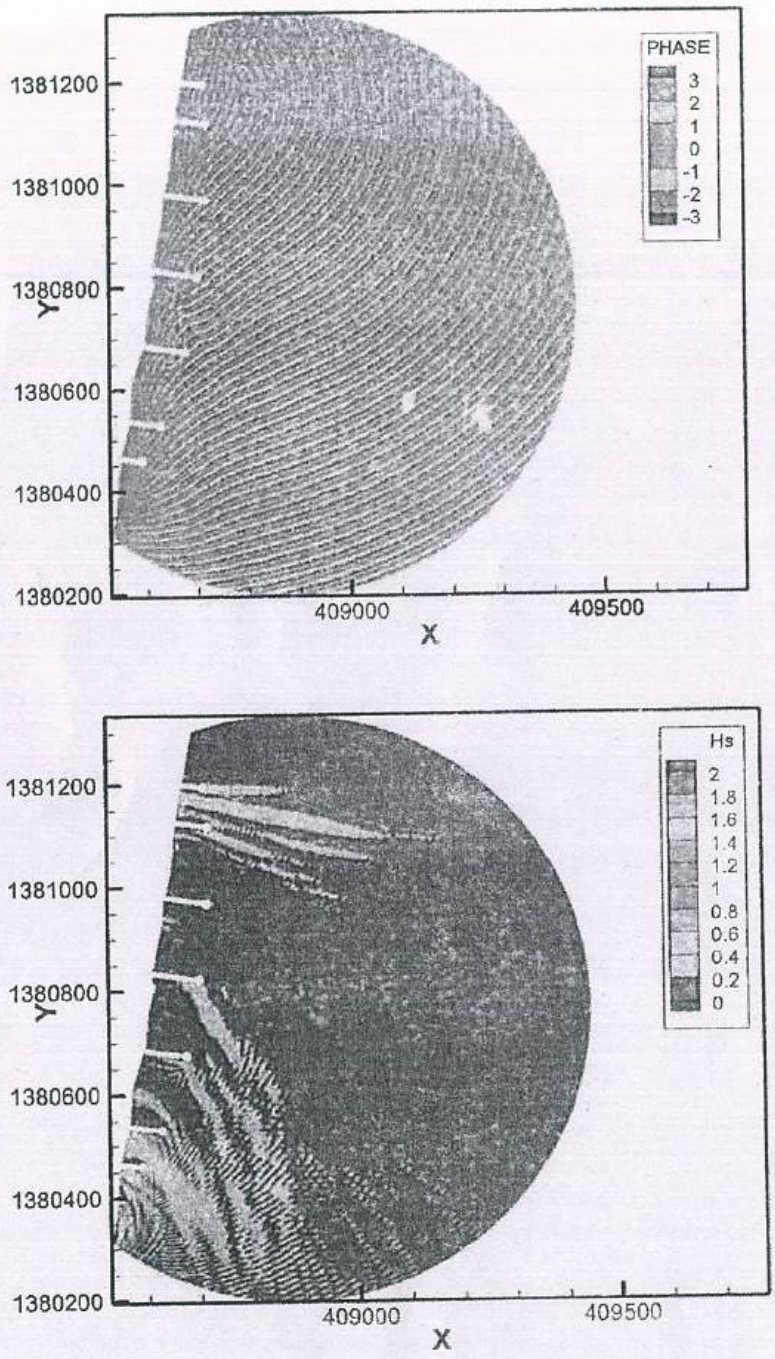


Fig. 17 Phase distributions and Wave height distribution for the wave approach angle from 165^0



9.0 DESIGN OF GROINS

9.1 Design water level

Following design data has been adopted for the design of tetrapod section. The Mean high water level was +1.40m CD. For the design of the section, MHWL is adopted as maximum water level.

The design water level for the groin can thus be set as the sum of MHWS and the design water depth is,

d = 3+1.4+1.25= 5.65m

where +1.25m surge is considered.

Hmax = 0.78 x 5.65

= 4.4 m

Significant wave Height = Hmax /1.6 = 2.75m

Take Design wave height as 2.75m.

9.2 Design of layers

A typical design of groin is detailed below.

Armour Layer

The size of the armour stones for the groin section is calculated by using the Hudson formula, which is recommended by CERC (1984). Quarry stones are used as armour stones.

$$W = \frac{W_r H_D^3}{K_D (S_r - 1)^3 \cot\theta}$$

Where,

W=Weight of an individual armour unit in the primary cover layer.

W_r =Unit weight of Quarry stones, 2.65 T/m^3.

H_D =Design wave height at the structure site in meters,

S_r =Specific weight of armour unit relating to water at the structure

$S_r = (W_r / W_w)$

W_w =Unit weight of seawater = 1025 kg/m^3

θ =Angle of structure slope measured with the horizontal in degrees =1:2 (Chosen) for Head section, 1:1.5 (Chosen) for trunk sections

K_D =Stability coefficient is 2 for rough quarry stones in breaking condition.

From Hudson's formula, the weight of Stone is worked out to be 2.0T to 3.0T in two layer to withstand the design wave height of 2.75m at the maximum water depth.

The thickness of the armour layer is calculated by following,

$$t = nK\delta\left[\frac{w}{w_r}\right]^{\frac{1}{3}} = 1.82$$

1.96m thickness was adopted for armour layer.

Under layer

Rough angular quarry stones of weight 500 Kg to 800 Kg are suggested for toe layer for which W_r =2650 kg/m^3 with 1.25m thickness for the trunk and head portion.

Core layer

The size of stone in core layer is 100 kg to 300 kg rough angular quarry stones are suggested for core layer for which W_r =2650 kg/m^3.

Toe Mound

The size of stone in toe mound is taken as $W/10$ to $W/15$ (as per CERC, 1984).

Rough angular quarry stones of weight 500 Kg to 800 Kg are suggested for toe layer for which W_r =2650 kg/m^3 with 1.25m thickness for the trunk and head portion.

Crest width

Crest width, r is arrived from the formula

$$r = nK_\delta\left[\frac{W}{W_r}\right]^{\frac{1}{3}}$$



Where,

n= number of tetrapods or stones on the crest

K_δ =Layer coefficient

Hence, Crest Width = 4m

Crest elevation

The crest elevation of the groin is given by,

Crest elevation = MHWS + Design Water Level + free board

Free board may be adopted in calculating the design elevation to give free height for exceptional cases of storms and cyclone waves that hit the toe of the structure to avoid dangers. For groins, (+) 4.0m crest elevation is maintained up to (+) 1.5m cross sections.

Filter layer

The size of stone in filter layer is taken as 1 kg to 10 kg Rough angular quarry stones are for which W_r =2650 kg / m^3. The thickness of filter layer is 0.3m.

Geotextile layer

1.5mm to 10mm thick geotextile layer can be laid under the filter layer throughout the structure to retain the soil particles.

The detailed plan, longitudinal sections and cross sections of the groin are given in Plates 3 to 16.

10.0 BILL OF QUANTITY

10.1 Quantity of material for 40m length Groin (G1)

Uyyalikuppam -G1-40m Groin Armour layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Armour layer (Stones) Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)0.5m to (-)1.0m	19.62	26.25	21.63	23.94	469.75	328.82	871.38
0.0m to (-)0.5m	10.37	21.63	18.35	19.99	207.32	145.12	384.57
0.0m	10.00	18.35	18.35	18.35	183.51	128.46	340.42
0.0m to (+)0.5m	5.20	26.55	26.55	26.55	138.08	96.66	256.14
(+)0.5m to (+)1.0m	4.38	26.55	26.55	26.55	116.31	81.41	215.75
(+)1.0m to (+)1.5m	3.43	26.55	26.55	26.55	91.08	63.76	168.95
Shore anchor	18.00	22.94	22.94	22.94	412.92	289.04	765.97
						Total	3003.18

Uyyalikuppam -G1-40m Groin Core layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Core layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)0.5m to (-)1.0m	19.62	22.41	18.54	20.48	401.76	281.23	745.27
0.0m to (-)0.5m	10.37	18.54	13.45	15.99	165.85	116.09	307.65
0.0m	10.00	13.45	13.45	13.45	134.46	94.12	249.42
0.0m to (+)0.5m	5.20	13.45	13.45	13.45	69.92	48.94	129.70
(+)0.5m to (+)1.0m	4.38	13.45	13.45	13.45	58.89	41.23	109.25
(+)1.0m to (+)1.5m	3.43	13.45	13.45	13.45	46.12	32.28	85.55
Shore anchor	18.00	9.02	9.02	9.02	162.36	113.65	301.18
						Total	1928.02

Uyyalikuppam -G1-40m Groin Toe mound layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Toe mound layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)0.5m to (-)1.0m	19.62	16.33	15.70	16.02	314.28	219.99	582.98
0.0m to (-)0.5m	10.37	15.70	15.70	15.70	162.84	113.99	302.06
0.0m	10.00	15.70	15.70	15.70	157.03	109.92	291.28
						Total	1176.32

(190)

Uyyalikuppam -G1-40m Groin Filter layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Filter layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)0.5m to (-)1.0m	19.62	13.88	13.13	13.50	264.87	185.41	491.33
0.0m to (-)0.5m	10.37	13.13	12.38	12.75	132.22	92.55	245.26
0.0m	10.00	12.38	12.38	12.38	123.75	86.63	229.56
0.0m to (+)0.5m	5.20	9.38	9.38	9.38	48.75	34.13	90.43
(+)0.5m to (+)1.0m	4.38	9.38	9.38	9.38	41.06	28.74	76.17
(+)1.0m to (+)1.5m	3.43	9.38	9.38	9.38	32.16	22.51	59.65
Shore anchor	18.00	8.50	8.50	8.50	153.00	107.10	283.82
						Total	1476.22

Uyyalikuppam -G1-40m Groin - Geotextile layer			
Water depth(m)	Length (m)	Average Base length	Geo textile layer Area(m^2)
(-)0.5m to (-)1.0m	19.62	27.75	544.46
0.0m to (-)0.5m	10.37	26.25	272.21
0.0m	10.00	25.50	255.00
0.0m to (+)0.5m	5.20	19.50	101.40
(+)0.5m to (+)1.0m	4.38	19.50	85.41
(+)1.0m to (+)1.5m	3.43	19.50	66.89
Shore anchor	18.00	19.50	351.00
		Total	1676.36

Head portion (-1.00 m water depth)						
SPECIFICATIONS	h (m)	R (m)	r (m)	VOLUME (m^3)	VOLUME INCLUDIG POROSITY (m^3)	QUANTITY IN (TONNES)
Armour Layer	-	-	-	-	-	-
Armour Layer	3.75	10.50	3.00	591.69		
Armour Layer	1.79	6.12	2.54	111.38		
Total Armour layer					252.16	668.23
Toe mound layer	-	-	-	-	-	-
Toe mound	1.25	16.00	13.50	855.98		
Toe mound	1.25	8.62	6.12	215.24		
Total Toe mound layer					336.39	891.43
Core Material	3.04	8.50	2.54	319.11	167.54	443.97
Filter Layer	0.50	18.00	17.00	480.94	252.50	669.11
						Quantity in (m^2)
Geotextile layer						763

LENGTH OF GROYNE	QUANTITY IN TONNES				QUANTITY IN m^2
	ARMOUR LAYER (Stones)	CORE LAYER	TOE MOUND LAYER	FILTER LAYER	GEOTEXTILE LAYER
40m	3671	2372	2068	2145	2440

10.2 Quantity of material for 60m length Groin (G2)

Uyyalikuppam -G2-50m Groin Armour layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Armour layer (Stones) Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)1.0m to (-)1.5m	11.33	29.79	26.25	28.02	317.45	222.22	588.88
(-)0.5m to (-)1.0m	24.33	26.25	21.63	23.94	582.51	407.76	1080.57
0.0m to (-)0.5m	14.00	21.63	18.35	19.99	279.89	195.92	519.19
0.0m	10.34	18.35	18.35	18.35	189.75	132.83	351.99
0.0m to (+)0.5m	6.50	26.55	26.55	26.55	172.60	120.82	320.17
(+)0.5m to (+)1.0m	4.70	26.55	26.55	26.55	124.80	87.36	231.51
(+)1.0m to (+)1.5m	8.80	26.55	26.55	26.55	233.68	163.57	433.47
Shore anchor	18.00	22.94	22.94	22.94	412.92	289.04	765.97
						Total	4291.74

Uyyalikuppam -G2-50m Groin Core layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Core layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)1.0m to (-)1.5m	11.33	28.76	22.41	25.59	289.88	202.92	537.72
(-)0.5m to (-)1.0m	24.33	22.41	18.54	20.48	498.21	348.75	924.18
0.0m to (-)0.5m	14.00	18.54	13.45	15.99	223.90	156.73	415.34
0.0m	10.34	13.45	13.45	13.45	139.03	97.32	257.90
0.0m to (+)0.5m	6.50	13.45	13.45	13.45	87.40	61.18	162.13
(+)0.5m to (+)1.0m	4.70	13.45	13.45	13.45	63.20	44.24	117.23
(+)1.0m to (+)1.5m	8.80	13.45	13.45	13.45	118.32	82.83	219.49
Shore anchor	18.00	9.02	9.02	9.02	162.36	113.65	301.18
						Total	2935.17

Uyyalikuppam -G2-50m Groin Toe mound layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Toe mound layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)1.0m to (-)1.5m	11.33	16.33	16.33	16.33	185.06	129.54	257.90
(-)0.5m to (-)1.0m	24.33	16.33	15.70	16.02	389.72	272.80	162.13
0.0m to (-)0.5m	14.00	15.70	15.70	15.70	219.84	153.89	117.23
0.0m	10.34	15.70	15.70	15.70	162.36	113.66	301.19
						Total	838.44

Uyyalikuppam -G2-50m Groin Filter layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Filter layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)1.0m to (-)1.5m	11.33	14.63	13.88	14.25	161.45	113.02	299.49
(-)0.5m to (-)1.0m	24.33	13.88	13.13	13.50	328.46	229.92	609.28
0.0m to (-)0.5m	14.00	13.13	12.38	12.75	178.50	124.95	331.12
0.0m	10.34	12.38	12.38	12.38	127.96	89.57	237.36
0.0m to (+)0.5m	6.50	9.38	9.38	9.38	60.94	42.66	113.04
(+)0.5m to (+)1.0m	4.70	9.38	9.38	9.38	44.06	30.84	81.74
(+)1.0m to (+)1.5m	8.80	9.38	9.38	9.38	82.50	57.75	153.04
Shore anchor	18.00	8.50	8.50	8.50	153.00	107.10	283.82
						Total	2108.88

Uyyalikuppam -G2-50m Groin - Geotextile layer			
Water depth(m)	Length (m)	Average	Geo textile layer Area(m^2)
(-)1.0m to (-)1.5m	11.33	29.25	331.40
(-)0.5m to (-)1.0m	24.33	27.75	675.16
0.0m to (-)0.5m	14.00	26.25	367.50
0.0m	10.34	25.50	263.67
0.0m to (+)0.5m	6.50	19.50	126.75
(+)0.5m to (+)1.0m	4.70	19.50	91.65
(+)1.0m to (+)1.5m	8.80	19.50	171.60
Shore anchor	18.00	19.50	351.00
		Total	2378.73

Head portion (-1.5 m water depth)						
SPECIFICATIONS	h (m)	R (m)	r (m)	VOLUME (m^3)	VOLUME INCLUDIG POROSITY (m^3)	QUANTITY IN (TONNES)
Armour Layer						
Armour Layer	4.25	11.50	3.00	781.79		
Armour Layer	2.29	7.12	2.54	180.32		
Total Armour layer					315.78	836.80
Toe mound layer	-	-	-	-	-	-
Toe mound	1.25	17.00	14.50	975.69		
Toe mound	1.25	9.62	7.12	277.02		
Total Toe mound layer					366.80	972.03
Core Material	3.54	9.62	2.54	457.34	240.10	636.27
Filter Layer	0.50	19.00	18.00	537.46	282.17	
						Quantity in (m^2)
Geotextile layer						850.39

LENGTH OF GROYNE	QUANTITY IN TONNES				QUANTITY IN m^2
	ARMOUR LAYER (Stones)	CORE LAYER	TOE MOUND LAYER	FILTER LAYER	GEOTEXTILE LAYER
60m	5129	3571	1810	2109	3229



10.3 Quantity of material for 80m length Groin (G3)

Uyyalikuppam -G3-80m Groin Armour layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Armour layer (Stones) Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)2.5m to (-)3.0m	13.21	40.39	36.85	38.62	510.27	357.19	946.56
(-)2.0m to (-)2.5m	5.72	36.85	33.32	35.09	200.69	140.48	372.28
(-)1.5m to (-)2.0m	12.56	33.32	29.79	31.55	396.30	277.41	735.13
(-)1.0m to (-)1.5m	15.84	29.79	26.25	28.02	443.82	310.67	823.28
(-)0.5m to (-)1.0m	13.94	26.25	21.63	23.94	333.75	233.63	619.12
0.0m to (-)0.5m	10.56	21.63	18.35	19.99	211.11	147.78	391.62
0.0m	8.17	18.35	18.35	18.35	149.88	104.91	278.02
0.0m to (+)0.5m	8.40	26.55	26.55	26.55	223.05	156.14	413.76
(+)0.5m to (+)1.0m	4.00	26.55	26.55	26.55	106.22	74.35	197.03
(+)1.0m to (+)1.5m	11.75	26.55	26.55	26.55	312.01	218.41	578.78
Shore anchor	18.00	22.94	22.94	22.94	412.92	289.04	765.97
						Total	6121.55

Uyyalikuppam -G3-80m Groin Core layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Core layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)2.5m to (-)3.0m	13.21	52.28	43.69	47.98	634.02	443.82	1176.11
(-)2.0m to (-)2.5m	5.72	43.69	35.85	39.77	227.47	159.23	421.96
(-)1.5m to (-)2.0m	12.56	35.85	28.76	32.30	405.71	284.00	752.59
(-)1.0m to (-)1.5m	15.84	28.76	22.41	25.59	405.27	283.69	751.77
(-)0.5m to (-)1.0m	13.94	22.41	18.54	20.48	285.45	199.82	529.51
0.0m to (-)0.5m	10.56	18.54	13.45	15.99	168.89	118.22	313.28
0.0m	8.17	13.45	13.45	13.45	109.81	76.87	203.70
0.0m to (+)0.5m	8.40	13.45	13.45	13.45	112.95	79.06	209.52
(+)0.5m to (+)1.0m	4.00	13.45	13.45	13.45	53.78	37.65	99.77
(+)1.0m to (+)1.5m	11.75	13.45	13.45	13.45	157.99	110.59	293.07
Shore anchor	18.00	9.02	9.02	9.02	162.36	113.65	301.18
						Total	5052.47

Uyyalikuppam -G3-80m Groin Toe mound layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Toe mound layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)2.5m to (-)3.0m	13.21	16.33	16.33	16.33	215.82	151.07	400.34
(-)2.0m to (-)2.5m	5.72	16.33	16.33	16.33	93.43	65.40	173.31
(-)1.5m to (-)2.0m	12.56	16.33	16.33	16.33	205.15	143.61	380.55
(-)1.0m to (-)1.5m	15.84	16.33	16.33	16.33	258.72	181.11	479.93
(-)0.5m to (-)1.0m	13.94	16.33	15.70	16.02	223.29	156.30	414.21
0.0m to (-)0.5m	10.56	15.70	15.70	15.70	165.82	116.07	307.60
0.0m	8.17	15.70	15.70	15.70	128.24	89.77	237.89
						Total	2393.83

Uyyalikuppam -G3-80m Groin Filter layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Filter layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)2.5m to (-)3.0m	13.21	16.88	16.13	16.50	218.01	152.61	404.42
(-)2.0m to (-)2.5m	5.72	16.13	15.38	15.75	90.09	63.06	167.12
(-)1.5m to (-)2.0m	12.56	15.38	14.63	15.00	188.40	131.88	349.48
(-)1.0m to (-)1.5m	15.84	14.63	13.88	14.25	225.72	158.00	418.71
(-)0.5m to (-)1.0m	13.94	13.88	13.13	13.50	188.19	131.73	349.09
0.0m to (-)0.5m	10.56	13.13	12.38	12.75	134.64	94.25	249.76
0.0m	8.17	12.38	12.38	12.38	101.07	70.75	187.48
0.0m to (+)0.5m	8.40	9.38	9.38	9.38	78.75	55.13	146.08
(+)0.5m to (+)1.0m	4.00	9.38	9.38	9.38	37.50	26.25	69.56
(+)1.0m to (+)1.5m	11.75	9.38	9.38	9.38	110.16	77.11	204.34
Shore anchor	18.00	8.50	8.50	8.50	153.00	107.10	283.82
						Total	2829.85

Uyyalikuppam -G3-80m Groin - Geotextile layer			
Water depth(m)	**Length (m)**	**Average**	**Geo textile layer Area(m^2)**
(-)2.5m to (-)3.0m	13.21	33.75	445.94
(-)2.0m to (-)2.5m	5.72	32.25	184.47
(-)1.5m to (-)2.0m	12.56	30.75	386.22
(-)1.0m to (-)1.5m	15.84	29.25	463.32
(-)0.5m to (-)1.0m	13.94	27.75	386.84
0.0m to (-)0.5m	10.56	26.25	277.20
0.0m	8.17	25.50	208.26
0.0m to (+)0.5m	8.40	19.50	163.80
(+)0.5m to (+)1.0m	4.00	19.50	78.00
(+)1.0m to (+)1.5m	11.75	19.50	229.13
Shore anchor	18.00	19.50	351.00
		Total	**3174.17**

Head portion (-3.0 m water depth)						
SPECIFICATIONS	**h (m)**	**R (m)**	**r (m)**	**VOLUME (m^3)**	**VOLUME INCLUDIG POROSITY (m^3)**	**QUANTITY IN (TONNES)**
Armour Layer	-	-	-	-	-	-
Armour Layer	5.75	14.50	3.00	1581.32		
Armour Layer	3.79	10.12	2.54	533.82		
Total Armour layer					549.93	1457.32
Toe mound layer	-	-	-	-	-	-
Toe mound	1.25	20.00	17.50	1381.93		
Toe mound	1.25	12.62	10.12	509.46		
Total Toe mound layer					458.05	1213.83
Core Material	5.04	12.62	2.54	1043.28	547.72	1451.46
Filter Layer	0.50	22.00	21.00	725.86	381.08	1009.86
						Quantity in (m^2)
Geotextile layer						1140

LENGTH OF GROYNE	QUANTITY IN TONNES				QUANTITY IN m^2
	ARMOUR LAYER (Stones)	CORE LAYER	TOE MOUND LAYER	FILTER LAYER	GEOTEXTILE LAYER
80m	7579	6504	3608	3840	4315



10.4 Quantity of material for 90m length Groin (G4)

Uyyalikuppam -G4-90m Groin Armour layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Armour layer (Stones) Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)2.5 m to (-)2.8m	13.68	38.97	36.85	37.91	518.61	363.03	962.02
(-)2.0 m to (-)2.5m	10.43	36.85	33.32	35.09	365.94	256.16	678.83
(-)1.5m to (-)2.0m	18.40	33.32	29.79	31.55	580.56	406.39	1076.94
(-)1.0m to (-)1.5m	18.56	29.79	26.25	28.02	520.03	364.02	964.66
(-)0.5m to (-)1.0m	14.03	26.25	21.63	23.94	335.91	235.14	623.11
0.0 m to (-)0.5m	8.00	21.63	18.35	19.99	159.94	111.95	296.68
0m	6.90	18.35	18.35	18.35	126.62	88.64	234.89
0.0m to (+)0.5m	4.00	26.55	26.55	26.55	106.22	74.35	197.03
(+)0.5m to (+)1.0m	4.19	26.55	26.55	26.55	111.26	77.88	206.39
(+)1.0m to (+)1.5m	4.31	26.55	26.55	26.55	114.45	80.11	212.30
Shore anchor	18.00	22.94	22.94	22.94	412.92	289.04	765.97
						Total	6218.81

Uyyalikuppam -G4-90m Groin Core layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Core layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)2.5 m to (-)2.8m	13.68	48.75	43.69	46.22	632.32	442.62	1172.95
(-)2.0 m to (-)2.5m	10.43	43.69	35.85	39.77	414.78	290.35	769.42
(-)1.5m to (-)2.0m	18.40	35.85	28.76	32.30	594.35	416.04	1102.52
(-)1.0m to (-)1.5m	18.56	28.76	22.41	25.59	474.86	332.40	880.86
(-)0.5m to (-)1.0m	14.03	22.41	18.54	20.48	287.29	201.11	532.93
0.0 m to (-)0.5m	8.00	18.54	13.45	15.99	127.94	89.56	237.34
0m	6.90	13.45	13.45	13.45	92.78	64.94	172.10
0.0m to (+)0.5m	4.00	13.45	13.45	13.45	53.78	37.65	99.77
(+)0.5m to (+)1.0m	4.19	13.45	13.45	13.45	56.34	39.44	104.51
(+)1.0m to (+)1.5m	4.31	13.45	13.45	13.45	57.95	40.57	107.50
Shore anchor	18.00	9.02	9.02	9.02	162.36	113.65	301.18
						Total	5481.07

Uyyalikuppam -G4-90m Groin Toe mound layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Toe mound layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)2.5 m to (-)2.8m	13.68	16.33	16.33	16.33	223.44	156.41	414.49
(-)2.0 m to (-)2.5m	10.43	16.33	16.33	16.33	170.36	119.25	316.02
(-)1.5m to (-)2.0m	18.40	16.33	16.33	16.33	300.54	210.38	557.50
(-)1.0m to (-)1.5m	18.56	16.33	16.33	16.33	303.15	212.21	562.35
(-)0.5m to (-)1.0m	14.03	16.33	15.70	16.02	224.73	157.31	416.88
0.0 m to (-)0.5m	8.00	15.70	15.70	15.70	125.62	87.93	233.03
0m	6.90	15.70	15.70	15.70	108.35	75.84	200.99
						Total	2701.24

Uyyalikuppam -G4-90m Groin Filter layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Filter layer Average (m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)2.5 m to (-)2.8m	13.68	16.58	16.13	16.35	223.67	156.57	414.90
(-)2.0 m to (-)2.5m	10.43	16.13	15.38	15.75	164.27	114.99	304.73
(-)1.5m to (-)2.0m	18.40	15.38	14.63	15.00	276.00	193.20	511.98
(-)1.0m to (-)1.5m	18.56	14.63	13.88	14.25	264.48	185.14	490.61
(-)0.5m to (-)1.0m	14.03	13.88	13.13	13.50	189.41	132.58	351.35
0.0 m to (-)0.5m	8.00	13.13	12.38	12.75	102.00	71.40	189.21
0m	6.90	12.38	12.38	12.38	85.39	59.77	158.39
0.0m to (+)0.5m	4.00	9.38	9.38	9.38	37.50	26.25	69.56
(+)0.5m to (+)1.0m	4.19	9.38	9.38	9.38	39.28	27.50	72.87
(+)1.0m to (+)1.5m	4.31	9.38	9.38	9.38	40.41	28.28	74.95
Shore anchor	18.00	8.50	8.50	8.50	153.00	107.10	283.82
						Total	2922.37



Uyyalikuppam -G4-90m Groin - Geotextile layer			
Water depth(m)	**Length (m)**	**Average**	**Geo textile layer Area(m^2)**
(-)2.5 m to (-)2.8m	13.68	33.45	457.60
(-)2.0 m to (-)2.5m	10.43	32.25	336.37
(-)1.5m to (-)2.0m	18.40	30.75	565.80
(-)1.0m to (-)1.5m	18.56	29.25	542.88
(-)0.5m to (-)1.0m	14.03	27.75	389.33
0.0 m to (-)0.5m	8.00	26.25	210.00
0m	6.90	25.50	175.95
0.0m to (+)0.5m	4.00	19.50	78.00
(+)0.5m to (+)1.0m	4.19	19.50	81.71
(+)1.0m to (+)1.5m	4.31	19.50	84.05
Shore anchor	18.00	19.50	351.00
		Total	**3272.68**

Head portion (-2.8 m water depth)						
SPECIFICATIONS	**h (m)**	**R (m)**	**r (m)**	**VOLUME (m^3)**	**VOLUME INCLUDIG POROSITY (m^3)**	**QUANTITY IN (TONNES)**
Armour Layer	-	-	-	-	-	-
Armour Layer	5.55	14.10	3.00	1452.89		
Armour Layer	3.59	9.72	2.54	472.02		
Total Armour layer					**514.96**	1364.64
Toe mound layer	-	-	-	-	-	-
Toe mound	1.25	19.60	17.10	1323.68		
Toe mound	1.25	12.22	9.72	474.38		
Total Toe mound layer					**445.88**	1181.59
Core Material	4.84	12.22	2.54	946.40	496.86	1316.68
Filter Layer	0.50	21.60	20.60	699.11	367.03	972.64
						Quantity in (m^2)
Geotextile layer						1099.306125

LENGTH OF GROYNE	QUANTITY IN TONNES				QUANTITY IN m^2
	ARMOUR LAYER (Stones)	**CORE LAYER**	**TOE MOUND LAYER**	**FILTER LAYER**	**GEOTEXTILE LAYER**
90m	**7583**	**6798**	**3883**	**3895**	**4372**



10.5 Quantity of material for 80m length Groin (G5)

Uyyalikuppam -G5-80m Groin Armour layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Armour layer (Stones) Average (m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)2.0 m to (-)2.2m	12.19	34.73	33.32	34.03	414.77	290.34	769.40
(-)1.5m to (-)2.0m	17.75	33.32	29.79	31.55	560.05	392.04	1038.90
(-)1.0m to (-)1.5m	15.56	29.79	26.25	28.02	435.97	305.18	808.73
(-)0.5m to (-)1.0m	17.79	26.25	21.63	23.94	425.93	298.15	790.11
0.0 m to (-)0.5m	8.95	21.63	18.35	19.99	178.93	125.25	331.91
0m	7.76	18.35	18.35	18.35	142.41	99.68	264.16
0.0m to (+)0.5m	7.57	26.55	26.55	26.55	201.01	140.71	372.88
(+)0.5m to (+)1.0m	4.55	26.55	26.55	26.55	120.82	84.57	224.12
(+)1.0m to (+)1.5m	4.38	26.55	26.55	26.55	116.31	81.41	215.75
Shore anchor	18.00	22.94	22.94	22.94	412.92	289.04	765.97
						Total	5581.93

Uyyalikuppam -G5-80m Groin Core layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Core layer Average (m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)2.0 m to (-)2.2m	12.19	38.89	35.85	37.37	455.55	318.88	845.04
(-)1.5m to (-)2.0m	17.75	35.85	28.76	32.30	573.35	401.35	1063.57
(-)1.0m to (-)1.5m	15.56	28.76	22.41	25.59	398.10	278.67	738.48
(-)0.5m to (-)1.0m	17.79	22.41	18.54	20.48	364.29	255.00	675.76
0.0 m to (-)0.5m	8.95	18.54	13.45	15.99	143.14	100.20	265.52
0m	7.76	13.45	13.45	13.45	104.34	73.04	193.55
0.0m to (+)0.5m	7.57	13.45	13.45	13.45	101.79	71.25	188.81
(+)0.5m to (+)1.0m	4.55	13.45	13.45	13.45	61.18	42.83	113.49
(+)1.0m to (+)1.5m	4.38	13.45	13.45	13.45	58.89	41.23	131.65
Shore anchor	18.00	9.02	9.02	9.02	162.36	113.65	79.13
						Total	4295.00

Uyyalikuppam -G5-80m Groin Toe mound layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Toe mound layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)2.0 m to (-)2.2m	12.19	16.33	16.33	16.33	199.11	139.37	369.34
(-)1.5m to (-)2.0m	17.75	16.33	16.33	16.33	289.92	202.94	537.80
(-)1.0m to (-)1.5m	15.56	16.33	16.33	16.33	254.15	177.91	471.45
(-)0.5m to (-)1.0m	17.79	16.33	15.70	16.02	284.96	199.47	528.60
0.0 m to (-)0.5m	8.95	15.70	15.70	15.70	140.54	98.38	260.70
0m	7.76	15.70	15.70	15.70	121.85	85.30	226.04
						Total	2393.94

Uyyalikuppam -G5-80m Groin Filter layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Filter layer Average (m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)2.0 m to (-)2.2m	12.19	15.68	15.38	15.53	189.25	132.47	351.06
(-)1.5m to (-)2.0m	17.75	15.38	14.63	15.00	266.25	186.38	493.89
(-)1.0m to (-)1.5m	15.56	14.63	13.88	14.25	221.73	155.21	411.31
(-)0.5m to (-)1.0m	17.79	13.88	13.13	13.50	240.17	168.12	445.51
0.0 m to (-)0.5m	8.95	13.13	12.38	12.75	114.11	79.88	211.68
0m	7.76	12.38	12.38	12.38	96.03	67.22	178.14
0.0m to (+)0.5m	7.57	9.38	9.38	9.38	70.97	49.68	131.65
(+)0.5m to (+)1.0m	4.55	9.38	9.38	9.38	42.66	29.86	79.13
(+)1.0m to (+)1.5m	4.38	9.38	9.38	9.38	41.06	28.74	76.17
Shore anchor	18.00	8.50	8.50	8.50	153.00	107.10	283.82
						Total	2662.34

Uyyalikuppam -G5-80m Groin - Geotextile layer			
Water depth(m)	Length (m)	Average	Geo textile layer Area(m^2)
(-)2.0 m to (-)2.2m	12.19	31.80	387.64
(-)1.5m to (-)2.0m	17.75	30.75	545.81
(-)1.0m to (-)1.5m	15.56	29.25	455.13
(-)0.5m to (-)1.0m	17.79	27.75	493.67
0.0 m to (-)0.5m	8.95	26.25	234.94
0m	7.76	25.50	197.88
0.0m to (+)0.5m	7.57	19.50	147.62
(+)0.5m to (+)1.0m	4.55	19.50	88.73
(+)1.0m to (+)1.5m	4.38	19.50	85.41
Shore anchor	18.00	19.50	351.00
		Total	2987.82

Head portion (-2.2 m water depth)						
SPECIFICATIONS	h (m)	R (m)	r (m)	VOLUME (m^3)	VOLUME INCLUDIG POROSITY (m^3)	QUANTITY IN (TONNES)
Armour Layer						
Armour Layer	4.95	12.90	3.00	1109.30		
Armour Layer	2.99	8.52	2.54	315.09		
Total Armour layer					416.96	1104.95
Toe mound layer						
Toe mound	1.25	18.40	15.90	1156.48		
Toe mound	1.25	11.02	8.52	376.70		
Total Toe mound layer					409.38	1084.87
Core Material	4.24	11.02	2.54	691.79	363.19	962.45
Filter Layer	0.50	20.40	19.40	621.87	326.48	865.17
						Quantity in (m^2)
Geotextile layer						980.55

LENGTH OF GROYNE	QUANTITY IN TONNES				QUANTITY IN m^2
	ARMOUR LAYER (Stones)	CORE LAYER	TOE MOUND LAYER	FILTER LAYER	GEOTEXTILE LAYER
80m	6687	5257	3479	3528	3968

10.6 Quantity of material for 60m length Groin (G6)

Uyyalikuppam -G6-60m Groin Armour layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Armour layer (Stones) Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)1.5m to (-)2.0m	12.44	33.32	29.79	31.55	392.51	274.76	728.11
(-)1.0m to (-)1.5m	17.89	29.79	26.25	28.02	501.26	350.88	929.83
(-)0.5m to (-)1.0m	14.44	26.25	21.63	23.94	345.73	242.01	641.32
0.0 m to (-)0.5m	8.94	21.63	18.35	19.99	178.73	125.11	331.54
0m	6.29	18.35	18.35	18.35	115.34	80.74	213.96
0.0m to (+)0.5m	6.46	26.55	26.55	26.55	171.54	120.08	318.20
(+)0.5m to (+)1.0m	4.19	26.55	26.55	26.55	111.26	77.88	206.39
(+)1.0m to (+)1.5m	4.65	26.55	26.55	26.55	123.48	86.43	229.05
Shore anchor	18.00	22.94	22.94	22.94	412.92	289.04	765.97
						Total	4364.37

Uyyalikuppam -G6-60m Groin Core layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Core layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)1.5m to (-)2.0m	12.44	35.85	28.76	32.30	401.83	281.28	745.40
(-)1.0m to (-)1.5m	17.89	28.76	22.41	25.59	457.72	320.40	849.06
(-)0.5m to (-)1.0m	14.44	22.41	18.54	20.48	295.69	206.98	548.51
0.0 m to (-)0.5m	8.94	18.54	13.45	15.99	142.98	100.08	265.22
0m	6.29	13.45	13.45	13.45	84.51	59.16	156.77
0.0m to (+)0.5m	6.46	13.45	13.45	13.45	86.86	60.80	161.13
(+)0.5m to (+)1.0m	4.19	13.45	13.45	13.45	56.34	39.44	104.51
(+)1.0m to (+)1.5m	4.65	13.45	13.45	13.45	62.52	43.77	115.98
Shore anchor	18.00	9.02	9.02	9.02	162.36	113.65	301.18
						Total	3247.75

Uyyalikuppam -G6-60m Groin Toe mound layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Toe mound layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)1.5m to (-)2.0m	12.44	16.33	16.33	16.33	203.19	142.23	376.92
(-)1.0m to (-)1.5m	17.89	16.33	16.33	16.33	292.21	204.55	542.05
(-)0.5m to (-)1.0m	14.44	16.33	15.70	16.02	231.30	161.91	429.06
0.0 m to (-)0.5m	8.94	15.70	15.70	15.70	140.38	98.27	260.41
0m	6.29	15.70	15.70	15.70	98.69	69.09	183.08
						Total	**1791.51**

Uyyalikuppam -G6-60m Groin Filter layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Filter layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)1.5m to (-)2.0m	12.44	15.38	14.63	15.00	186.60	130.62	346.14
(-)1.0m to (-)1.5m	17.89	14.63	13.88	14.25	254.93	178.45	472.90
(-)0.5m to (-)1.0m	14.44	13.88	13.13	13.50	194.94	136.46	361.61
0.0 m to (-)0.5m	8.94	13.13	12.38	12.75	113.99	79.79	211.44
0m	6.29	12.38	12.38	12.38	77.78	54.45	144.28
0.0m to (+)0.5m	6.46	9.38	9.38	9.38	60.56	42.39	112.34
(+)0.5m to (+)1.0m	4.19	9.38	9.38	9.38	39.28	27.50	72.87
(+)1.0m to (+)1.5m	4.65	9.38	9.38	9.38	43.59	30.52	80.87
Shore anchor	18.00	8.50	8.50	8.50	153.00	107.10	283.82
						Total	**2086.27**

Uyyalikuppam -G6-60m Groin - Geotextile layer			
Water depth(m)	Length (m)	Average	Geo textile layer Area(m^2)
(-)1.5m to (-)2.0m	12.44	30.75	382.53
(-)1.0m to (-)1.5m	17.89	29.25	523.28
(-)0.5m to (-)1.0m	14.44	27.75	400.71
0.0 m to (-)0.5m	8.94	26.25	234.68
0m	6.29	25.50	160.27
0.0m to (+)0.5m	6.46	19.50	125.97
(+)0.5m to (+)1.0m	4.19	19.50	81.71
(+)1.0m to (+)1.5m	4.65	19.50	90.68
Shore anchor	18.00	19.50	351.00
		Total	**2350.82**



Head portion (-2.00 m water depth)						
SPECIFICATIONS	h (m)	R (m)	r (m)	VOLUME (m^3)	VOLUME INCLUDIG POROSITY (m^3)	QUANTITY IN (TONNES)
Armour Layer						
Armour Layer	4.75	15.50	3.00	1470.37		
Armour Layer	2.79	8.12	2.54	271.61		
Total Armour layer					629.35	1667.78
Toe mound layer						
Toe mound	1.25	18.00	15.50	1103.25		
Toe mound	1.25	10.62	8.12	346.65		
Total Toe mound layer					397.22	1052.63
Core Material	4.04	10.62	2.54	618.26	324.59	860.15
Filter Layer	0.50	20.00	19.00	597.12	313.49	830.75
						Quantity in (m^2)
Geotextile layer						942.477825

LENGTH OF GROYNE	QUANTITY IN TONNES				QUANTITY IN m^2
	ARMOUR LAYER (Stones)	CORE LAYER	TOE MOUND LAYER	FILTER LAYER	GEOTEXTILE LAYER
60m	6032	4108	2844	2917	3293

10.7 Quantity of material for 40m length Groin (G7)

Uyyalikuppam -G7-40m Groin Armour layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Armour layer (Stones) Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)1.0m to (-)1.5m	16.89	29.79	26.25	28.02	473.24	331.27	877.86
(-)0.5m to (-)1.0m	12.57	26.25	21.63	23.94	300.95	210.67	558.27
0.0 m to (-)0.5m	7.52	21.63	18.35	19.99	150.34	105.24	278.88
0m	3.02	18.35	18.35	18.35	55.42	38.79	102.81
0.0m to (+)0.5m	2.99	26.55	26.55	26.55	79.40	55.58	147.28
(+)0.5m to (+)1.0m	4.26	26.55	26.55	26.55	113.12	79.18	209.84
(+)1.0m to (+)1.5m	7.55	26.55	26.55	26.55	200.48	140.34	371.90
Shore anchor	18.00	22.94	22.94	22.94	412.92	289.04	765.97
						Total	3312.79

Uyyalikuppam -G7-40m Groin Core layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Core layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)1.0m to (-)1.5m	16.89	28.76	22.41	25.59	432.13	302.49	801.60
(-)0.5m to (-)1.0m	12.57	22.41	18.54	20.48	257.40	180.18	477.47
0.0 m to (-)0.5m	7.52	18.54	13.45	15.99	120.27	84.19	223.10
0m	3.02	13.45	13.45	13.45	40.61	28.42	75.33
0.0m to (+)0.5m	2.99	13.45	13.45	13.45	40.20	28.14	74.58
(+)0.5m to (+)1.0m	4.26	13.45	13.45	13.45	57.28	40.10	106.25
(+)1.0m to (+)1.5m	7.55	13.45	13.45	13.45	101.52	71.06	188.31
Shore anchor	18.00	9.02	9.02	9.02	162.36	113.65	301.18
						Total	2247.82

Uyyalikuppam -G7-40m Groin Toe mound layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Toe mound layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)1.0m to (-)1.5m	16.89	16.33	16.33	16.33	275.87	193.11	511.75
(-)0.5m to (-)1.0m	12.57	16.33	15.70	16.02	201.35	140.94	373.50
0.0 m to (-)0.5m	7.52	15.70	15.70	15.70	118.08	82.66	219.04
0m	3.02	15.70	15.70	15.70	47.42	33.20	87.97
						Total	1192.26

Uyyalikuppam -G7-40m Groin Filter layer							
Water depth(m)	Length (m)	Start chainage Area(m^2)	End chainage Area(m^2)	Filter layer Average(m^2)	Volume (m^3)	Volume including porosity (m^3)	Quantity in Tonnes
(-)1.0m to (-)1.5m	16.89	14.63	13.88	14.25	240.68	168.48	446.47
(-)0.5m to (-)1.0m	12.57	13.88	13.13	13.50	169.70	118.79	314.78
0.0 m to (-)0.5m	7.52	13.13	12.38	12.75	95.88	67.12	177.86
0m	3.02	12.38	12.38	12.38	37.37	26.16	69.33
0.0m to (+)0.5m	2.99	9.38	9.38	9.38	28.03	19.62	52.00
(+)0.5m to (+)1.0m	4.26	9.38	9.38	9.38	39.94	27.96	74.08
(+)1.0m to (+)1.5m	7.55	9.38	9.38	9.38	70.78	49.55	131.30
Shore anchor	18.00	8.50	8.50	8.50	153.00	107.10	283.82
						Total	1549.63

Uyyalikuppam -G7-40m Groin - Geotextile layer			
Water depth(m)	Length (m)	Average	Geo textile layer Area(m^2)
(-)1.0m to (-)1.5m	16.89	29.25	494.03
(-)0.5m to (-)1.0m	12.57	27.75	348.82
0.0 m to (-)0.5m	7.52	26.25	197.40
0m	3.02	25.50	77.01
0.0m to (+)0.5m	2.99	19.50	58.31
(+)0.5m to (+)1.0m	4.26	19.50	83.07
(+)1.0m to (+)1.5m	7.55	19.50	147.23
Shore anchor	18.00	19.50	351.00
		Total	1756.86

Head portion (-1.5 m water depth)						
SPECIFICATIONS	h (m)	R (m)	r (m)	VOLUME (m^3)	VOLUME INCLUDIG POROSITY (m^3)	QUANTITY IN (TONNES)
Armour Layer						
Armour Layer	4.25	11.50	3.00	781.79		
Armour Layer	2.29	7.12	2.54	180.32		
Total Armour layer					315.78	836.80
Toe mound layer						
Toe mound	1.25	17.00	14.50	975.69		
Toe mound	1.25	9.62	7.12	277.02		
Total Toe mound layer					366.80	972.03
Core Material	3.54	9.62	2.54	457.34	240.10	636.27
Filter Layer	0.50	19.00	18.00	537.46	282.17	747.75
						Quantity in (m^2)
Geotextile layer						850.3878

LENGTH OF GROYNE	QUANTITY IN TONNES				QUANTITY IN m^2
	ARMOUR LAYER (Stones)	CORE LAYER	TOE MOUND LAYER	FILTER LAYER	GEOTEXTILE LAYER
40m	4150	2884	2164	2297	2607



10.8 Overall Quantity of all Groins (G1 to G7)

UYYALIKUPPAM					
GROINS	QUANTITY IN TONNES				QUANTITY IN m^2
	ARMOUR LAYER (stones)	CORE LAYER	TOE MOUND LAYER	FILTER LAYER	GEOTEXTILE LAYER
(G1-G7)	40831	31495	19856	20731	24224

Dredging Quantity	
Groin number	Volume (m^3)
G1 (40m)	973.94
G2 (60m)	1152.73
G3 (80m)	1195.10
G4 (90m)	888.25
G5 (80m)	1003.58
G6 (60m)	940.12
G7 (40m)	893.95
Total	7047.67

11.0 FINAL RECOMMENDATION

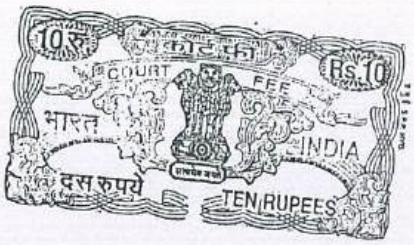
To combat the existing coastal erosion problem along the Tamilnadu coast at Uyyalikuppam, the necessary Oceanographic data dictating the direction of magnitude of the littoral that is responsible for the above stated perennial problem was collected. A rigorous and comprehensive data analysis was employed to derive the average wave characteristics, like breaker wave height and breaker angle, which in turn were employed in the assessment of the monthly variation of the long shore drift. In addition, an in-house developed wave model was used to study the penetration of waves from offshore to the near shore. The environmental aspects, the pros and cons of the proposed groin field of transition groin field was carefully planned and designed. The wave model as well as the shoreline evolution models were used to assess the shoreline evolution, the results of which prove to be a positive solution, in the sense, that coastal protection will not only solve the erosion problem but will also promote the formation of beach and retrieve the lost beach within a few years after the implementation of the solution. ***Note that the lengths are likely to change prior to installation as it depends on the water depth and hence, IITM must be informed prior to the commencement of the work.*** Further, IITM need to be consulted for the construction sequence before the starting the construction as it depends on the direction of littoral drift which is essential.

Prof. V. Sundar **Prof. S.A. Sannasiraj**

தகவல் அறியும் உரிமைச் சட்டம் 2005-ன் கீழ் தகவல் கோருவதற்கான விண்ணப்பம்

அனுப்புநர் நாள்: 18.08.2022

M.R. தியாகராஜன், B.A., L.L.B.,
தலைவர்,
மீனவத் தந்தை K.R. செல்வராஜ் குமார்,
மீனவ நலச்சங்கம்,
எண். 48, கிழக்கு மாதா கோயில் தெரு,
இராயபுரம், சென்னை- 600 013.
செல் : 9841590984, 7358520241



பெறுநர்

பொது தகவல் அதிகாரி
தலைவர், கடற்கரை ஒழுங்குமுறை ஆணையம்,
பனகல் மாளிகை, சைதாப்பேட்டை,
சென்னை -600 015.

ஐயா,

1. 11.04.2022 அன்று O.A.No. 4/2013 (SZ) National Green Tribunal (Special Bench) கடல் அரிப்பு தடுக்கும் Hard Structures தடை விதித்து Soft Structures அமைக்க ஆய்வு செய்ய NIOT-க்கு அனுமதி கடிதம் அனுப்பியிருப்பின் அதன் நகல் வழங்கவும்.

2. 11.04.2022 அன்று O.A.No.4/2013 (SZ) National Green Tribunal (Special Bench) Order Copy என்று உங்களுக்கு கிடைத்தது. அதன் மீது எடுக்கப்பட்ட நடவடிக்கை விவரம் தெரிவிக்கவும்.

தகவல் அறியும் உரிமைச் சட்டத்தின்படி தகவல்களை எனது மேற் குறிப்பிட்ட முகவரிக்கு தகவலறியும் உரிமைச் சட்ட "காலவரையறைக்குள்" வழங்குமாறு கேட்டுக்கொள்கின்றேன்.

நான் மேற்கூறிய தகவல்களுக்கு கட்டணமாக நீதிமன்ற கட்டணவில்லை ரூ.10/- இணைத்துள்ளேன்.

நன்றி

18 AUG 2022

தங்கள் உண்மையுள்ள

received
18/8/22

Translation copy

INFORMATION UNDER THE RIGHT TO INFORMATION ACT 2005

APPLICATION

From,

Dated 18.08.2022

M.R.THIYAGARAJAN ,
president,
Meenava Thanthai K.R.Selvaraj Kumar
Meenavar Nala Sangam
Having Office at No.48,
East Matha Koil Street,
Royapuram,
Chennai - 600 013
Cell : 9841590984, 7358520241

To,

The Public Information Officer,
Chairman,
Coastal Regulatory Authority,
Panagal House, Saidapet, Chennai -600 015.

sir,

1. On 1.11.04.2022 O.A.No 4/2013 (SZ) National Greeni Tribunal (Special Bench) has sent a copy of permission to NIOT for inspection to prohibit Hard Structures to prevent sea erosion and set up Sott Strictures.
2. You have received O.A.No.4/2013 (SZ) National Green Tribunal (Special Bench) Order Copy dated 2.11.04.2022. inform Details of action taken thereon

As per Right to Information Act I request to provide the information to me to the above mentioned address within the Right to Information Act, 2005 "Time Limit". I have affixed Rs. 10 court fees for the above information. I have enclosed Rs.10/-.

Thank you

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சுற்றுச்சூழல் துறை

அனுப்புநர்
திரு. கோ. கணேஷ்குமார்,
கணக்கு அலுவலர் /
பொதுத் தகவல் அலுவலர் (பொ),
சுற்றுச்சூழல் துறை,
தரைத்தளம், பனகல் மாளிகை,
சைதாப்பேட்டை, சென்னை – 600 015.

பெறுநர்,
திரு. எம். ஆர். தியாகராஜன்,
எண். 48, கிழக்கு மாதா கோயில் தெரு,
இராயபுரம், சென்னை – 600 013.

ந.க. எண். தி1/1821/2012, நாள். 12.09.2022

அய்யா,

பொருள்: சு.சூ.(ம)கா.நி.மா.துறை – O.A.No.4/2013ல் NGT (SZ)ன் 11.04.2022 அன்று வழங்கப்பட்ட ஆணை தொடர்பான தகவல்கள் – தகவல் அறியும் உரிமைச் சட்டம் 2005ன் கீழ் கோரியது – தொடர்பாக.

பார்வை: தங்களது 18.08.2022 நாளிட்ட தகவல் அறியும் உரிமைச்சட்டத்தின் கீழான விண்ணப்பம்

பார்வையில் காணும் தங்களது தகவல் அறியும் உரிமைச்சட்டத்தின் கீழான விண்ணப்பத்திற்கு கீழ்க்காணும் தகவல்கள் தெரிவித்துக் கொள்ளப்படுகின்றன.

வினா எண். 1 : 11.04.2022 அன்று மாண்பமை தேசிய பசுமைத் தீர்ப்பாயத்தில் வழக்கு எண்.4/2013ன் படி, கடலரிப்பு தடுக்கும் Hard Structuresக்குப் பதிலாக Soft Structure அமைக்க ஆய்வு செய்ய NIOT க்கு இத்துறையிலிருந்து கடிதம் ஏதும் அனுப்பப்படவில்லை.

வினா எண். 2 : மாண்பமை தேசிய பசுமைத் தீர்ப்பாயத்தின் வழக்கு எண்.4/2013ன் 11.04.2022 நாளிட்ட ஆணையின் நகல், இத்துறையினால் அரசு கடிதம் மூலம் 25.05.2022 அன்று பெறப்பட்டது. இவ்வாணையினைத் தொடர்ந்து, தொடர்புடைய கோப்பில், சில நடவடிக்கைகள் எடுக்கப்பட்டுள்ளன. இருப்பினும், நடவடிக்கை தொடர்பான தகவல்களைக் குறிப்பிட்டுக் கோரினால் மட்டுமே, அதுதொடர்பான விபரங்கள் அனுப்ப இயலும்.

மேற்கண்ட பதில் தொடர்பான மேல்முறையீடு ஏதும் செய்ய விரும்பினால், இக்கடிதம் கிடைக்கப்பெற்ற 30 நாட்களுக்குள் கீழ்க்காணும் மேல்முறையீட்டு அலுவலர்க்கு விண்ணப்பிக்குமாறு கேட்டுக்கொள்ளப்படுகிறது.

கூடுதல் இயக்குநர்,
சுற்றுச்சூழல் துறை, தரைத்தளம், பனகல் மாளிகை,
சைதாப்பேட்டை, சென்னை – 600 015.
மின்னஞ்சல் – tndoe@tn.nic.in இணையதள முகவரி : www.environment.tn.gov.in

பொதுத் தகவல் அலுவலர் (பொ)

Department of Environment

Mr. K. Ganesh Kumar.
Accounts Officer /
Public Information Officer (P)
Department of Environment.
Ground Floor,
Panagal Maligai.
Saidapet,
chennai 600 016,

Mr. M. R. Thiagarajan,
No. 48, East Matha kovil
Street, Royapuram,
Chennai - 600 013

.....

Na.ka.No.T1/1021/2022 Dated 12.09.2022

Sir,

Subject - Requested under Right to Information Act 2005 regarding order issued on O.A.No.4/2013 of NGT (S) dated 11.04-2022 - Information regarding

Application under the Right to Information Act dated 18:08-2022

The following information is provided for the application

Question No.1:

As per the order of the NGT in O.A.No.4 of 2013 dated 11.04.2022 direction was issued to the NIOT to study about the setting of soft structure instead of hard structure to stop soil erosion, No letter has been sent from this department.

Question No.2:

Copy of Order dated 11.04.2022 of Hon'ble National Green Tribunal in Case No. 4/2013. Received by the Department on 25.05.2022 through Government letter. Following the ritual. In the corresponding file, some steps have been taken. However. Information related to the activity can be sent only on specific request.

(183)

If you wish to file an appeal against the above posting within 30 days of receipt of this notification. See below. Improvement You are requested to apply.

xxxxx

Public Information Officer (P)

भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
(सड़क परिवहन और राजमार्ग मंत्रालय)
National Highways Authority of India
(Ministry of Road Transport and Highways)
परियोजना कार्यान्वयन इकाई
Project Implementation Unit-Chennai
"श्री टवरस,3rd मंजील,DP-34 (SP),इन्डस्टीयल एस्टेट,गिन्डी, चेन्नै - 600032.
'SRI TOWER'3rdFloor,DP 34 (SP) Industrial Estate,Guindy,Chennai -600 032.

दूरभाष/Phone : 91-44-2225 1000
फैक्स/Fax : 91-44-2225 1095
ईमेल/E-Mail : chennai@nhai.org
chennaipiu@gmail.com

NHAI /18011/195/2016/PIU.Chennai/ 2829 13th August 2018

To

Regional Officer,
National Highways Authority of India,
Chennai.

Sub: NHAI, PIU, Chennai –**Undertaking plantations along National Highways of Tamil Nadu State – Green Highways Project proposals - Green Highways Projects through empanelled Private Agencies /NGOs/Corporate under CSR Programme/ Forest Department/Government Agencies – Proposals submitted for approval - reg**

Ref: 1) M/s.Shri Lakshmi Agro Foods (P) Ltd., letter No. Nil dt.13.04.2018
2) M/s.TNRDC letter TNRDC/NHAI/EMRIP/1661/18 dt.17.04.2018
3) RO letter NHAI/11013/109/16/RO Chennai/446 dt.30.01.2018
4) RO letter NHAI/11013/109/16/RO Chennai/751 dt.19.02.2018

Sir,

It is to submit that vide ref.1st cited M/s.Shri Lakshmi Agro Foods (P) Ltd., Chennai has submitted a proposal for utilization of vacant land parcels for plantations Landscaping & Beautification in T.S.No.14 of Thiruvottiyur, Corporation Zone – I limit on Ennore Expressway from Km 2+625 to 2+804 both LHS & RHS. The proposal has been examined by Team Leader and recommended duly stating as follows :

2. **Submissions of Team Leader :**

(a) The stretch from km 5/800 to Km 7/500 (RHS) was identified by the then Project Director for plantation during the site inspection and to develop this stretch M/s Carborundum Universal Limited and M/s.MRF Limited may be invited.

(b) The stretch from km 2/625 to km 2/800 (both sides) which is highly vulnerable for encroachment due to the evicted fishermen and commercial people. To develop this, the adjacent business concern M/s.Shri Lakshmi Agro Foods (P) Ltd., Thiruvotiyur, Chennai is interested at their own cost and they propose to maintain continuously.

[Contd...2]

© The Director of M/s. Shri Lakshmi Agro Foods P.Ltd., informed that Barbed wire fencing will be provided to safe guard the plantation. The Highways land display Board "The Land Belongs to Highways" will be displayed at the suitable location. The above landscaping will not affect the visibility of Road Traffic and other vehicle movements. Any other displays hoarding will not be provided in the above said Highways vacant land.

(d) Further, the Director M/s. Shri Lakshmi Agro Foods P.Ltd., informed that if any road widening occurs in future, they will give back the possession of the landscaped area without claiming any compensation. The detailed site plan with the available vacant land duly marked in green colour is enclosed herewith.

3. Submissions of this office

(i) The location requested by M/s. Shri Lakshmi Agro Foods P.Ltd., for beautification is at Km 2/625 to 2/804 both sides of Ennore Express Way. The total available ROW in the above location is 57.30m on both sides. As per Contract Agreement four lane with service road has to be constructed in above location.

(ii) However, work could not be taken up & completed, since 447 encroachments belonging to fisherman were there and which was called as NTO Kuppam. Even after efforts at all level, the same could not be evicted due to stiff resistance. The matter was raised in PRAGATI portal for resolving the issue. At the time of issue of Substantial Completion Certificate w.e.f. 31.03.2015 by executing a Supplementary Agreement on 31.07.2015, a balance length of 1.205 Km to be completed including the stretch for a length of 300m of NTO Kuppam.

(iii) Possession of the above land was received on 04.10.2017 after shifting of 447 PAFs and the work in the above location on 29.05.2018. After completion of 4 lane carriageway with service road, vacant land is available for an average width of LHS – 12.00m and RHS 11.00m which is prone to be encroached by fisherman again. To avoid any further encroachment, we may consider the request of the agency for beautification purpose.

[Contd...3]

(iv) Further, it is to submit that vide ref.3rd and 4th cited, Regional Officer, NHAI, Chennai informed that fresh plantations is needed in those NH stretches wherein plantation is not part of Concession/ Contract Agreement and Densification (enrichment) of existing plantation is required where there is potential to take up additional plantation as per IRC:SP:21:2009. In both the cases, plantations may be taken up either through Forest Department / Forest Development Corporation or through private agencies which are empanelled with GHD and also requested to submit Green Highways Project proposals for obtaining approval of the Competent Authority.

(v) In this regard, the above stretch is a State Highways road which has been developed by CEPRCL a SPV consisting of NHAI, Government of Tamil Nadu, Chennai Port Trust and Kamarajar Port Limited as partners. Hence, we may submit the same to CEPRCL, NHAI, HQs for approval.

4. In view of the above, we may submit the proposal for plantation in the EMRIP project stretch so as to make the above said stretch a green Highway which would enhance not only driving experience and safety Highways and contribute towards the country's commitment of CoP21 to create additional carbon sink through the Green Highways by increasing the plantation subject to following conditions:

a) The applicant shall not erect any advertisement board except the board displaying "HIGHWAYS LAND".

b) The applicant shall not block the drainage of the project highway.

c) The applicant shall maintain the same at his cost initially for a period of 5 years which may be extended at discretion of Authority.

d) The applicant shall ensure the access of permission for CEPRCL.

e) Undertaking shall be obtained to the effect of the above land shall be handed over to CEPRCL within 15 days of notice and to remove the same at their cost in the event of approval of this proposal.

Yours faithfully,

13/08/18

(G.Athipathi)
Project Director
PIU-Chennai

Encl: Ref.1st and 2nd cited

Usha;F:D:Green Highways:ltr.

(1737)

அனுப்புநர்

நாள்: 28-09-2022

M.R. தியாகராஜன், B.A., L.L.B.,
தலைவர்,
மீனவத் தந்தை K.R. செல்வராஜ் குமார்,
மீனவ நலச்சங்கம்,
எண். 48, கிழக்கு மாதா கோயில் தெரு,
இராயபுரம், சென்னை- 600 013.
செல் : 9841590984, 7358520241

பெறுநர்

The Chief Secretary of Tamil Nadu,
Secretariat,
Chennai-600 009.

பொருள்: **National Green Tribunal Special Bench** 11.04.2022 அன்று **O.A.No.4of 2013** கடற்கரையில் **hard structures** (பாறைகள்) கடல் அரிப்பதை தடுப்பதற்காக பயன்படுத்தக் கூடாது என்றும் **Shore line Management Plan (SMP) High, Medium and low erosion structures for such erosion prone area.** இரண்டு மாதத்திற்குள் கண்டறிந்து கடல் அரிப்பை தடுக்க நடவடிக்கை எடுக்க வேண்டுமென்று **NGT Order** கூறப்பட்டிருந்தது. பூமியின் துருவப்பகுதியில் வெப்பத்தால் பனிப்பாறைகள் உருகி வருவதால் கடல் மட்டம் உயர்கிறது. இதனால் மீனவர்கள் வாழும் பகுதியில் கடல் அரிப்பு அதிகமாக உள்ளது. மீன்வளத்துறை **hard structures** பயன்படுத்தி கடல் அரிப்பை தடுக்க வரைவை சுற்றுசூழல் துறைக்கு அனுப்பப்பட்டது. சுற்றுச் சூழல் துறை **National Green Tribunal Special Bench** 11.04.2022 அன்று **O.A.No.4 of 2013** உத்தரவின் அடிப்படையில் கீழ் கண்ட உத்தரவின்படி 07.07.2022 அன்று மீன்வளத் துறைக்கு திருப்பி அனுபப்பட்டது.

(a) **construction of the fish landing centre and source protection work of Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.**

(b) **construction of the fish landing centre and source protection work of Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.**

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(c) construction of the fish landing centre and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengal pattu District.

மற்றும் 11.04.2022 அன்று **NGT Order** இரண்டு மாதத்திற்குள் **hard structures** மாற்று **Soft Structures** பயன்படுத்த வழிவகை செய்யவேண்டும் என்பதற்கு இதுவரை எந்த விதமான நடவடிக்கையும் எடுக்கவில்லை கடல் அரிப்பால் அழிந்து வரும் மீனவ கிராமங்கள் காப்பாற்ற **NGT Order dated 11.04.2022 O.A.No.4of 2013** வழக்கிற்கு தடை பெற்று **hard structures** பயன்படுத்த செய்ய கோருதல் தொடர்பாக.

ஐயா,

கடலை நம்பி வாழும் மீனவ குடும்பங்கள் கடல் அரிப்பினால் சொந்த வீடுகளை இழந்து தவிக்கிறார்கள். சில இடங்களில் hard structures பயன்படுத்தி கடல் அரிப்பு தடுக்கப்பட்டுள்ளது. இதுபோன்று

(a) construction of the fish landing centre and source protection work of Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

(b) construction of the fish landing centre and source protection work of Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

(c) construction of the fish landing centre and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District. கிராமங்கள் கடல் அரிப்பில் இருந்து காப்பாற்ற மீன்வளத்துறை திட்டத்தை நிராகரித்துள்ளது.

11.04.2022 அன்று O.A.No.4 of 2013 இரண்டு மாதத்திற்கு soft structure அனுமதிக்க வேண்டுமென்று சொல்லப்பட்டுள்ளது. இதுவரை

எந்த நடவடிக்கையும் மேற்கொள்ளவில்லை. அதுமட்டுமல்லாமல் சங்கத்தின் சார்பாக ஆய்வு செய்ததில் கடல் அரிப்பில் பாதிக்கப்பட்ட மீனவ கிராமங்கள் பின்வருமாறு.

SHORE EROSION PLACES IN TAMIL NADU COASTAL AREA

1. Kokilamedu Village in Chengalpattu District,
2. Kadalore Periyakuppam Village in Chengalpattu District.
3. Kadalore Chinnakuppam Village in Chengalpattu District.
4. Alli Kuppam Village in Chengalpattu District.
5. Pazhayanadu Kuppam Village in Chengalpattu District.
6. Pudhunadu Kuppam Village in Chengalpattu District.
7. Angalamman Kuppam Village in Chengalpattu District.
8. Chemmencherry Village in Chengalpattu District.
9. Karikattukuppam Village in Chengalpattu District.
10. Pudhukalpakkam Village in Chengalpattu District.
11. Killai Village in Cuddalore District.
12. Periyakuppam Village in Cuddalore District.
13. Pudhukuppam Village in Cuddalore District.
14. Pillaichavadi Village in Villupuram District.
15. Nemmeli Village in Chengalpattu District.
16. Kanathur Reddykuppam Village in Chengalpattu District.
17. Nambiyar Nagar Village in Nagapattinam District
18. Thirumullaivasal Village in Nagapattinam District
19. Puthukuppam Village in Mayiladuthurai District
20. Kuttiyandiyur Village in Mayiladuthurai District
21. Velankanni Village in Nagapattinam District
22. Nagore Keezhapattinachery Village in Nagapattinam District

23.Keechanpkuppam Village in Nagapattinam District

24.Manapad Village in Thoothukudi District

25.Periyathalai Village in Thoothukudi District

26.Veerapandyanpattinam Village in Thoothukudi District

27.Jeeva Nagar (Tiruchendur) Village in Thoothukudi District

28.Amali Nagar Village in Thoothukudi District

29.Kulasekarapattinam Village in Thoothukudi District

30.Punnakayal Village in Thoothukudi District

31.Mandapam North in Ramnathapuram District

32.Mandapam South in Ramanathapuram District

33.Puthenthurai village in Kanniyakumari District.

34.Kesavaputhenthurai village in Kanniyakumari District.

35.Keelamanakudy village in Kanniyakumari District.

36.Melamanakudy village in Kanniyakumari District.

37.Kodimunai village in Kanniyakumari District.

38.Simon colony village in Kanniyakumari District.

39.Kurumpanai village in Kanniyakumari District.

40.Keelakadiyapattina village in Kanniyakumari District.

41.Melakadiyapattinam village in Kanniyakumari District.

42.Annai Nagar village in Kanniyakumari District.

43.Eraynumanthurai village in Kanniyakumari District.

44.Pozhikarai village in Kanniyakumari District.

45.Singaravelar Colony in Kanniyakumari District.

46.Eraviputhenthurai in Kanniyakumari District.

47.Thoothur and Chinnathurai in Kanniyakumari District.

48. 48, Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

49. Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

50. Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District

மீனவ கிராமங்கள் திருவள்ளூர் மாவட்டம் NTO கிராமம் கடல் அரிப்பால் சொந்த இடங்களை இழந்து மேற்கு பகுதியில் அரசு இடம் ஒதுக்கி கொடுத்தது. 2016-ம் வருடம் நெடுஞ்சாலைத்துறை இது எங்களுககு சொந்தமான இடம் இந்த பகுதியில் சாலையோரம் செடி வளர்த்து அழகுப்படுத்த வேண்டுமென்று அரசு கொடுத்த இடத்தை மாவட்ட ஆட்சியாளர் அவர்களே மீனவர்கள் வசித்த வீடுகளை இடித்து தள்ளிவிட்டார்கள். இதனால் NTO கிராம மக்கள் தனது சொந்த நாட்டிலேயே அகதிகளாக அலைகிறார்கள். இந்நிலைமை மாற கடற்கரையில் வாழும் மக்களுக்கு போர்கால அடிப்படையில்

(a) construction of the fish landing centre and source protection work of Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

(b) construction of the fish landing centre and source protection work of Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

(c) construction of the fish landing centre and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District Hard Structures அனுமதிக்க நீதிமன்றத்தில் O.A.No.4of 2013 இடைக்கால தடை பெற்று மீனவ மக்களை கடல் அரிப்பிலிருந்து காப்பாற்றும் படி கேட்டுக்கொள்கிறோம்.

இப்படிக்கு

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அனுப்புநர்

நாள்: 28-09-2022

M.R. தியாகராஜன், B.A., L.L.B.,
தலைவர்,
மீனவத் தந்தை K.R. செல்வராஜ் குமார்,
மீனவ நலச்சங்கம்,
எண். 48, கிழக்கு மாதா கோயில் தெரு,
இராயபுரம், சென்னை- 600 013.
செல் : 9841590984, 7358520241

பெறுநர்

The Principal Secretary of Tamil Nadu,
Environment Department,
Secretariat,
Chennai-600 009.

பொருள்: **National Green Tribunal Special Bench** 11.04.2022 அன்று **O.A.No.4of 2013** கடற்கரையில் **hard structures** (பாறைகள்) கடல் அரிப்பதை தடுப்பதற்காக பயன்படுத்தக் கூடாது என்றும் **Shore line Management Plan (SMP) High, Medium and low erosion structures for such erosion prone area.** இரண்டு மாதத்திற்குள் கண்டறிந்து கடல் அரிப்பை தடுக்க நடவடிக்கை எடுக்க வேண்டுமென்று **NGT Order** கூறப்பட்டிருந்தது. பூமியின் துருவப்பகுதியில் வெப்பத்தால் பனிப்பாறைகள் உருகி வருவதால் கடல் மட்டம் உயர்கிறது. இதனால் மீனவர்கள் வாழும் பகுதியில் கடல் அரிப்பு அதிகமாக உள்ளது. மீன்வளத்துறை **hard structures** பயன்படுத்தி கடல் அரிப்பை தடுக்க வரைவை சுற்றுசூழல் துறைக்கு அனுப்பப்பட்டது. சுற்றுச் சூழல் துறை **National Green Tribunal Special Bench** 11.04.2022 அன்று **O.A.No.4 of 2013** உத்தரவின் அடிப்படையில் கீழ் கண்ட உத்தரவின்படி 07.07.2022 அன்று மீன்வளத் துறைக்கு திருப்பி அனுபப்பட்டது.

(a) construction of the fish landing centre and source protection work of Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

(b) construction of the fish landing centre and source protection work of Cuddalore

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Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

(c) construction of the fish landing centre and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District.

மற்றும் 11.04.2022 அன்று **NGT Order** இரண்டு மாதத்திற்குள் **hard structures** மாற்று **Soft Structures** பயன்படுத்த வழிவகை செய்யவேண்டும் என்பதற்கு இதுவரை எந்த விதமான நடவடிக்கையும் எடுக்கவில்லை கடல் அரிப்பால் அழிந்து வரும் மீனவ கிராமங்கள் காப்பாற்ற **NGT Order dated 11.04.2022 O.A.No.4of 2013** வழக்கிற்கு தடை பெற்று **hard structures** பயன்படுத்த செய்ய கோருதல் தொடர்பாக.

ஐயா,

கடலை நம்பி வாழும் மீனவ குடும்பங்கள் கடல் அரிப்பினால் சொந்த வீடுகளை இழந்து தவிக்கிறார்கள். சில இடங்களில் hard structures பயன்படுத்தி கடல் அரிப்பு தடுக்கப்பட்டுள்ளது. இதுபோன்று

(a) construction of the fish landing centre and source protection work of Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

(b) construction of the fish landing centre and source protection work of Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

(c) construction of the fish landing centre and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District. கிராமங்கள் கடல் அரிப்பில் இருந்து காப்பாற்ற மீன்வளத்துறை திட்டத்தை நிராகரித்துள்ளது.

11.04.2022 அன்று O.A.No.4 of 2013 இரண்டு மாதத்திற்கு soft structure அனுமதிக்க வேண்டுமென்று சொல்லப்பட்டுள்ளது. இதுவரை எந்த நடவடிக்கையும் மேற்கொள்ளவில்லை. அதுமட்டுமல்லாமல் சங்கத்தின் சார்பாக ஆய்வு செய்ததில் கடல் அரிப்பில் பாதிக்கப்பட்ட மீனவ கிராமங்கள் பின்வருமாறு.

SHORE EROSION PLACES IN TAMIL NADU COASTAL AREA

1. Kokilamedu Village in Chengalpattu District,
2. Kadalore Periyakuppam Village in Chengalpattu District.
3. Kadalore Chinnakuppam Village in Chengalpattu District.
4. Alli Kuppam Village in Chengalpattu District.
5. Pazhayanadu Kuppam Village in Chengalpattu District.
6. Pudhunadu Kuppam Village in Chengalpattu District.
7. Angalamman Kuppam Village in Chengalpattu District.
8. Chemmencherry Village in Chengalpattu District.
9. Karikattukuppam Village in Chengalpattu District.
10. Pudhukalpakkam Village in Chengalpattu District.
11. Killai Village in Cuddalore District.
12. Periyakuppam Village in Cuddalore District.
13. Pudhukuppam Village in Cuddalore District.
14. Pillaichavadi Village in Villupuram District.
15. Nemmeli Village in Chengalpattu District.
16. Kanathur Reddykuppam Village in Chengalpattu District.
17. Nambiyar Nagar Village in Nagapattinam District
18. Thirumullaivasal Village in Nagapattinam District
19. Puthukuppam Village in Mayiladuthurai District
20. Kuttiyandiyur Village in Mayiladuthurai District
21. Velankanni Village in Nagapattinam District

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22.Nagore Keezhapattinachery Village in Nagapattinam District

23.Keechanpkuppam Village in Nagapattinam District

24.Manapad Village in Thoothukudi District

25.Periyathalai Village in Thoothukudi District

26.Veerapandyanpattinam Village in Thoothukudi District

27.Jeeva Nagar (Tiruchendur) Village in Thoothukudi District

28.Amali Nagar Village in Thoothukudi District

29.Kulasekarapattinam Village in Thoothukudi District

30.Punnakayal Village in Thoothukudi District

31.Mandapam North in Ramnathapuram District

32.Mandapam South in Ramanathapuram District

33.Puthenthurai village in Kanniyakumari District.

34.Kesavaputhenthurai village in Kanniyakumari District.

35.Keelamanakudy village in Kanniyakumari District.

36.Melamanakudy village in Kanniyakumari District.

37.Kodimunai village in Kanniyakumari District.

38.Simon colony village in Kanniyakumari District.

39.Kurumpanai village in Kanniyakumari District.

40.Keelakadiyapattina village in Kanniyakumari District.

41.Melakadiyapattinam village in Kanniyakumari District.

42.Annai Nagar village in Kanniyakumari District.

43.Eraynumanthurai village in Kanniyakumari District.

44.Pozhikarai village in Kanniyakumari District.

45.Singaravelar Colony in Kanniyakumari District.

46.Eraviputhenthurai in Kanniyakumari District.

47.Thoothur and Chinnathurai in Kanniyakumari District.

48. Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

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49. Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

50. Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District

மீனவ கிராமங்கள் திருவள்ளூர் மாவட்டம் NTO கிராமம் கடல் அரிப்பால் சொந்த இடங்களை இழந்து மேற்கு பகுதியில் அரசு இடம் ஒதுக்கி கொடுத்தது. 2016-ம் வருடம் நெடுஞ்சாலைத்துறை இது எங்களுககு சொந்தமான இடம் இந்த பகுதியில் சாலையோரம் செடி வளர்த்து அழகுப்படுத்த வேண்டுமென்று அரசு கொடுத்த இடத்தை மாவட்ட ஆட்சியாளர் அவர்களே மீனவர்கள் வசித்த வீடுகளை இடித்து தள்ளிவிட்டார்கள். இதனால் NTO கிராம மக்கள் தனது சொந்த நாட்டிலேயே அகதிகளாக அலைகிறார்கள். இந்நிலைமை மாற கடற்கரையில் வாழும் மக்களுக்கு போர்கால அடிப்படையில்

(a) construction of the fish landing centre and source protection work of Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

(b) construction of the fish landing centre and source protection work of Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

(c) construction of the fish landing centre and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District Hard Structures அனுமதிக்க நீதிமன்றத்தில் O.A.No.4of 2013 இடைக்கால தடை பெற்று மீனவ மக்களை கடல் அரிப்பிலிருந்து காப்பாற்றும் படி கேட்டுக்கொள்கிறோம்.

இப்படிக்கு

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அனுப்புநர்

நாள்: 28-09-2022

M.R. தியாகராஜன், B.A., L.L.B.,
தலைவர்,
மீனவத் தந்தை K.R. செல்வராஜ் குமார்,
மீனவ நலச்சங்கம்,
எண். 48, கிழக்கு மாதா கோயில் தெரு,
இராயபுரம், சென்னை- 600 013.
செல் : 9841590984, 7358520241

பெறுநர்

உயர்திரு. தலைவர் அவர்கள்,
Environment Department,
பனகல் மாளிகை, சைதாப்பேட்டை,
Chennai-600 015.

பொருள்: **National Green Tribunal Special Bench** 11.04.2022 அன்று **O.A.No.4of 2013** கடற்கரையில் **hard structures** (பாறைகள்) கடல் அரிப்பதை தடுப்பதற்காக பயன்படுத்தக் கூடாது என்றும் **Shore line Management Plan (SMP) High, Medium and low erosion structures for such erosion prone area.** இரண்டு மாதத்திற்குள் கண்டறிந்து கடல் அரிப்பை தடுக்க நடவடிக்கை எடுக்க வேண்டுமென்று **NGT Order** கூறப்பட்டிருந்தது. பூமியின் துருவப்பகுதியில் வெப்பத்தால் பனிப்பாறைகள் உருகி வருவதால் கடல் மட்டம் உயர்கிறது. இதனால் மீனவர்கள் வாழும் பகுதியில் கடல் அரிப்பு அதிகமாக உள்ளது. மீன்வளத்துறை **hard structures** பயன்படுத்தி கடல் அரிப்பை தடுக்க வரைவை சுற்றுசூழல் துறைக்கு அனுப்பப்பட்டது. சுற்றுச் சூழல் துறை **National Green Tribunal Special Bench** 11.04.2022 அன்று **O.A.No.4 of 2013** உத்தரவின் அடிப்படையில் கீழ் கண்ட உத்தரவின்படி 07.07.2022 அன்று மீன்வளத் துறைக்கு திருப்பி அனுபப்பட்டது.

(a) construction of the fish landing centre and source protection work of Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

(b) construction of the fish landing centre and source protection work of Cuddalore

Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

(c) construction of the fish landing centre and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District.

மற்றும் 11.04.2022 அன்று **NGT Order** இரண்டு மாதத்திற்குள் **hard structures** மாற்று **Soft Structures** பயன்படுத்த வழிவகை செய்யவேண்டும் என்பதற்கு இதுவரை எந்த விதமான நடவடிக்கையும் எடுக்கவில்லை கடல் அரிப்பால் அழிந்து வரும் மீனவ கிராமங்கள் காப்பாற்ற **NGT Order dated 11.04.2022 O.A.No.4of 2013** வழக்கிற்கு தடை பெற்று **hard structures** பயன்படுத்த செய்ய கோருதல் தொடர்பாக.

ஐயா,

கடலை நம்பி வாழும் மீனவ குடும்பங்கள் கடல் அரிப்பினால் சொந்த வீடுகளை இழந்து தவிக்கிறார்கள். சில இடங்களில் hard structures பயன்படுத்தி கடல் அரிப்பு தடுக்கப்பட்டுள்ளது. இதுபோன்று

(a) construction of the fish landing centre and source protection work of Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

(b) construction of the fish landing centre and source protection work of Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

(c) construction of the fish landing centre and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District. கிராமங்கள் கடல் அரிப்பில் இருந்து காப்பாற்ற மீன்வளத்துறை திட்டத்தை நிராகரித்துள்ளது.

11.04.2022 அன்று O.A.No.4 of 2013 இரண்டு மாதத்திற்கு soft structure அனுமதிக்க வேண்டுமென்று சொல்லப்பட்டுள்ளது. இதுவரை எந்த நடவடிக்கையும் மேற்கொள்ளவில்லை. அதுமட்டுமல்லாமல் சங்கத்தின் சார்பாக ஆய்வு செய்ததில் கடல் அரிப்பில் பாதிக்கப்பட்ட மீனவ கிராமங்கள் பின்வருமாறு.

SHORE EROSION PLACES IN TAMIL NADU COASTAL AREA

1. Kokilamedu Village in Chengalpattu District,
2. Kadalore Periyakuppam Village in Chengalpattu District.
3. Kadalore Chinnakuppam Village in Chengalpattu District.
4. Alli Kuppam Village in Chengalpattu District.
5. Pazhayanadu Kuppam Village in Chengalpattu District.
6. Pudhunadu Kuppam Village in Chengalpattu District.
7. Angalamman Kuppam Village in Chengalpattu District.
8. Chemmencherry Village in Chengalpattu District.
9. Karikattukuppam Village in Chengalpattu District.
10. Pudhukalpakkam Village in Chengalpattu District.
11. Killai Village in Cuddalore District.
12. Periyakuppam Village in Cuddalore District.
13. Pudhukuppam Village in Cuddalore District.
14. Pillaichavadi Village in Villupuram District.
15. Nemmeli Village in Chengalpattu District.
16. Kanathur Reddykuppam Village in Chengalpattu District.
17. Nambiyar Nagar Village in Nagapattinam District
18. Thirumullaivasal Village in Nagapattinam District
19. Puthukuppam Village in Mayiladuthurai District
20. Kuttiyandiyur Village in Mayiladuthurai District
21. Velankanni Village in Nagapattinam District

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22.Nagore Keezhapattinachery Village in Nagapattinam District

23.Keechanpkuppam Village in Nagapattinam District

24.Manapad Village in Thoothukudi District

25.Periyathalai Village in Thoothukudi District

26.Veerapandyanpattinam Village in Thoothukudi District

27.Jeeva Nagar (Tiruchendur) Village in Thoothukudi District

28.Amali Nagar Village in Thoothukudi District

29.Kulasekarapattinam Village in Thoothukudi District

30.Punnakayal Village in Thoothukudi District

31.Mandapam North in Ramnathapuram District

32.Mandapam South in Ramanathapuram District

33.Puthenthurai village in Kanniyakumari District.

34.Kesavaputhenthurai village in Kanniyakumari District.

35.Keelamanakudy village in Kanniyakumari District.

36.Melamanakudy village in Kanniyakumari District.

37.Kodimunai village in Kanniyakumari District.

38.Simon colony village in Kanniyakumari District.

39.Kurumpanai village in Kanniyakumari District.

40.Keelakadiyapattina village in Kanniyakumari District.

41.Melakadiyapattinam village in Kanniyakumari District.

42.Annai Nagar village in Kanniyakumari District.

43.Eraynumanthurai village in Kanniyakumari District.

44.Pozhikarai village in Kanniyakumari District.

45.Singaravelar Colony in Kanniyakumari District.

46.Eraviputhenthurai in Kanniyakumari District.

47.Thoothur and Chinnathurai in Kanniyakumari District.

48.Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

49. Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

50. Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District

மீனவ கிராமங்கள் திருவள்ளூர் மாவட்டம் NTO கிராமம் கடல் அரிப்பால் சொந்த இடங்களை இழந்து மேற்கு பகுதியில் அரசு இடம் ஒதுக்கி கொடுத்தது. 2016-ம் வருடம் நெடுஞ்சாலைத்துறை இது எங்களுககு சொந்தமான இடம் இந்த பகுதியில் சாலையோரம் செடி வளர்த்து அழகுப்படுத்த வேண்டுமென்று அரசு கொடுத்த இடத்தை மாவட்ட ஆட்சியாளர் அவர்களே மீனவர்கள் வசித்த வீடுகளை இடித்து தள்ளிவிட்டார்கள். இதனால் NTO கிராம மக்கள் தனது சொந்த நாட்டிலேயே அகதிகளாக அலைகிறார்கள். இந்நிலைமை மாற கடற்கரையில் வாழும் மக்களுக்கு போர்கால அடிப்படையில்

(a) construction of the fish landing centre and source protection work of Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

(b) construction of the fish landing centre and source protection work of Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

(c) construction of the fish landing centre and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District Hard Structures அனுமதிக்க நீதிமன்றத்தில் O.A.No.4of 2013 இடைக்கால தடை பெற்று மீனவ மக்களை கடல் அரிப்பிலிருந்து காப்பாற்றும் படி கேட்டுக்கொள்கிறோம்.

இப்படிக்கு

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TRANSLATION COPY

From

M.R.THIYAGARAJAN ,
Meenava Thanthai K.R.Selvaraj Kumar
Meenavar Nala Sangam
Represented by its president,
Having Office at No.48,
East Matha Koil Street,
Royapuram, Chennai - 600 013
Cell : 9841590984, 7358520241

To

The Chief Secretary of Tamil Nadu,
Secretariat,
Chennai-600 009.

Sub: National Green Tribunal Special Bench had passed an order dated 11.04.2022 in O.A.No.4 of 2013 stating that hard structures (rocks) should not be used on the coast to prevent sea erosion and Shore line Management Plan (SMP) High, Medium and low erosion structures for such erosion prone area. The National Green Tribunal Special Bench had ordered that action should be taken to prevent sea erosion within two months. Sea levels are rising as the polar ice caps melt due to heat. As a result, sea erosion is high in the area where fishermen live. The Fisheries Department has sent a draft to the Environment Department to prevent sea erosion by using hard structures. Environment Department had referred the National Green Tribunal Special Bench order dated 11.04.2022 based on O.A.No.4 of 2013 order referred below to Fisheries Department on 07.07.2022.

(a)Construction of the fish landing center and source protection work of Cuddalore Chinna kuppam Village, Cheyyar Taluk, Chengalpattu District.

(b)construction of the fish landing centre and source protection work of Cuddalore

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Periyakuppam Village, Cheyyar Taluk, Chengal pattu District..

(c) construction of the fish landing center and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District.

In addition National Green Tribunal Special Bench vide its Order dated 11.04.2022 had insisted to take steps to replace hard structures with soft structures within two months. Till date no action has been takento save fishing villages that are being destroyed by sea erosion. .

Sir,

Fishermen families who depend on the sea for their livelihood are losing their homes due to sea erosion. In some places, sea erosion has been prevented by using hard structures.

(a) Construction of the fish landing center and source protection work of Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

(b) construction of the fish landing centre and source protection work of Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

(c) Construction of the fish landing center and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District. Fisheries department rejects plan to save villages from sea erosion.

It is stated stated that National Green Tribunal Special Bench vide its Order dated 11.04.2022 had insisted to take steps

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to replace hard structures with soft structures within two months. No action has been taken yet. Apart from that the following are the fishing villages affected by sea erosion during the survey on behalf of the association.

SHORE EROSION PLACES IN TAMIL NADUCOASTAL AREA

1. Kokilamedu Village in Chengalpattu District,
2. Kadalore Periyakuppam Village in Chengalpattu District.
3. Kadalore Chinnakuppam Village in Chengalpattu District.
4. Alli Kuppam Village in Chengalpattu District.
5. Pazhayanadu Kuppam Village in Chengalpattu District.
6. Pudhunadu Kuppam Village in Chengalpattu District
7. Angalamman Kuppam Village in Chengalpattu District.
8. Chemmencherry Village in Chengalpattu District.
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15. Nemmeli Village in Chengalpattu District.
16. Kanathur Reddykuppam Village in Chengalpattu District.
17. Nambiyar Nagar Village in Nagapattinam District
18. Thirumullaivasal Village in Nagapattinam District
19. Puthukuppam Village in Mayiladuthurai District
20. Kuttiyandiyur Village in Mayiladuthurai District
21. Velankanni Village in Nagapattinam District

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22.Nagore Keezhapattinachery Village in Nagapattinam District

23.Keechanpkuppam Village in Nagapattinam District

24.Manapad Village in Thoothukudi District

25. Periyathalai Village in Thoothukudi District

26. Veerapandyanpattinam Village in Thoothukudi District

27.Jeeva Nagar (Tiruchendur) Village in Thoothukudi District

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47.Thoothur and Chinnathurai in Kanniyakumari District.

48. Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

49. Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

50. Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District

Fishing Villages Tiruvallur District NTO village lost their land due to sea erosion and the government allotted land in the western part. In the year 2016, the Highways Department, had evicted the fishermen from the land stating that , the land belongs to their department. Had a plan to plant bush and to beautify the roadside in this area. As a result NTO villagers wander as refugees in their own country. This situation changed for the people living on the coast on a wartime basis.

(a) Construction of the fish landing center and source protection work of Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

(b) construction of the fish landing centre and source protection work of Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

(c) Construction of the fish landing center and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District. We request to obtain interim injunction O.A.No.4 of 2013 to allow Hard Structures and save the fishermen from sea erosion.

Yours,

-Sd/-

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TRANSLATION COPY

From

M.R.THIYAGARAJAN ,
Meenava Thanthai K.R.Selvaraj Kumar
Meenavar Nala Sangam
Represented by its president,
Having Office at No.48,
East Matha Koil Street,
Royapuram, Chennai - 600 013
Cell : 9841590984, 7358520241

To

The Principal Secretary of Tamil Nadu,
Environment Department,
Secretariat,
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(d)Construction of the fish landing center and source protection work of Cuddalore Chinna kuppam Village, Cheyyar Taluk, Chengalpattu District.

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(e) construction of the fish landing centre and source protection work of Cuddalore Periya kuppam Village, Cheyyar Taluk, Chengal pattu District..

(f) construction of the fish landing center and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District.

In addition National Green Tribunal Special Bench vide its Order dated 11.04.2022 had insisted to take steps to replace hard structures with soft structures within two months. Till date no action has been takento save fishing villages that are being destroyed by sea erosion. .

Sir,

Fishermen families who depend on the sea for their livelihood are losing their homes due to sea erosion. In some places, sea erosion has been prevented by using hard structures.

(d) Construction of the fish landing center and source protection work of Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

(e) construction of the fish landing centre and source protection work of Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

(f) Construction of the fish landing center and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District. Fisheries department rejects plan to save villages from sea erosion.

(194)

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SHORE EROSION PLACES IN TAMIL NADUCOASTAL AREA

1. Kokilamedu Village in Chengalpattu District,
2. Kadalore Periyakuppam Village in Chengalpattu District.
3. Kadalore Chinnakuppam Village in Chengalpattu District.
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5. Pazhayanadu Kuppam Village in Chengalpattu District.
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41. Melakadiyapattinam village in Kanniyakumari District.
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44. Pozhikarai village in Kanniyakumari District.
45. Singaravelar Colony in Kanniyakumari District.
46. Eraviputhenthurai in Kanniyakumari District.

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47. Thoothur and Chinnathurai in Kanniyakumari District.

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49. Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

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(c) Construction of the fish landing center and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District. We request to obtain interim injunction O.A.No.4 of 2013 to allow Hard Structures and save the fishermen from sea erosion.

Yours,

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TRANSLATION COPY

From

M.R.THIYAGARAJAN ,
Meenava Thanthai K.R.Selvaraj Kumar
Meenavar Nala Sangam
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Having Office at No.48,
East Matha Koil Street,
Royapuram, Chennai - 600 013
Cell : 9841590984, 7358520241

To

The Chairman,
Environment Department,
Panagal Building, Saidapet,
Chennai-600 015.

Sub: National Green Tribunal Special Bench had passed an order dated 11.04.2022 in O.A.No.4 of 2013 stating that hard structures (rocks) should not be used on the coast to prevent sea erosion and Shore line Management Plan (SMP) High, Medium and low erosion structures for such erosion prone area. The National Green Tribunal Special Bench had ordered that action should be taken to prevent sea erosion within two months. Sea levels are rising as the polar ice caps melt due to heat. As a result, sea erosion is high in the area where fishermen live. The Fisheries Department has sent a draft to the Environment Department to prevent sea erosion by using hard structures. Environment Department had referred the National Green Tribunal Special Bench order dated 11.04.2022 based on O.A.No.4 of 2013 order referred below to Fisheries Department on 07.07.2022.

(g)Construction of the fish landing center and source protection work of Cuddalore Chinna kuppam Village, Cheyyar Taluk, Chengalpattu District.

(h) construction of the fish landing centre and source protection work of Cuddalore

Periyakuppam Village, Cheyyar Taluk, Chengal pattu District..

(i) construction of the fish landing center and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District.

In addition National Green Tribunal Special Bench vide its Order dated 11.04.2022 had insisted to take steps to replace hard structures with soft structures within two months. Till date no action has been takento save fishing villages that are being destroyed by sea erosion. .

Sir,

Fishermen families who depend on the sea for their livelihood are losing their homes due to sea erosion. In some places, sea erosion has been prevented by using hard structures.

(g) Construction of the fish landing center and source protection work of Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

(h) construction of the fish landing centre and source protection work of Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

(i) Construction of the fish landing center and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District. Fisheries department rejects plan to save villages from sea erosion.

It is stated stated that National Green Tribunal Special Bench vide its Order dated 11.04.2022 had insisted to take steps

to replace hard structures with soft structures within two months. No action has been taken yet. Apart from that the following are the fishing villages affected by sea erosion during the survey on behalf of the association.

SHORE EROSION PLACES IN TAMIL NADUCOASTAL AREA

1. Kokilamedu Village in Chengalpattu District,
2. Kadalore Periyakuppam Village in Chengalpattu District.
3. Kadalore Chinnakuppam Village in Chengalpattu District.
4. Alli Kuppam Village in Chengalpattu District.
5. Pazhayanadu Kuppam Village in Chengalpattu District.
6. Pudhunadu Kuppam Village in Chengalpattu District
7. Angalamman Kuppam Village in Chengalpattu District.
8. Chemmencherry Village in Chengalpattu District.
9. Karikattukuppam Village in Chengalpattu District.
10. Pudhukalpakkam Village in Chengalpattu District.
11. Killai Village in Cuddalore District.
12. Periyakuppam Village in Cuddalore District.
13. Pudhukuppam Village in Cuddalore District.
14. Pillaichavadi Village in Villupuram District.
15. Nemmeli Village in Chengalpattu District.
16. Kanathur Reddykuppam Village in Chengalpattu District.
17. Nambiyar Nagar Village in Nagapattinam District
18. Thirumullaivasal Village in Nagapattinam District
19. Puthukuppam Village in Mayiladuthurai District
20. Kuttiyandiyur Village in Mayiladuthurai District
21. Velankanni Village in Nagapattinam District

(209)

22.Nagore Keezhapattinachery Village in Nagapattinam District

23.Keechanpkuppam Village in Nagapattinam District

24.Manapad Village in Thoothukudi District

25. Periyathalai Village in Thoothukudi District

26. Veerapandyanpattinam Village in Thoothukudi District

27.Jeeva Nagar (Tiruchendur) Village in Thoothukudi District

28.Amali Nagar Village in Thoothukudi District

29.Kulasekarapattinam Village in Thoothukudi District

30.Punnakayal Village in Thoothukudi District

31.Mandapam North in Ramnathapuram District

32.Mandapam South in Ramanathapuram District

33.Puthenthurai village in Kanniyakumari District.

34.Kesavaputhenthurai village in Kanniyakumari District.

35.Keelamanakudy village in Kanniyakumari District.

36.Melamanakudy village in Kanniyakumari District.

37.Kodimunai village in Kanniyakumari District.

38.Simon colony village in Kanniyakumari District.

39.Kurumpanai village in Kanniyakumari District.

40.Keelakadiyapattina village in Kanniyakumari District.

41.Melakadiyapattinam village in Kanniyakumari District.

42.Annai Nagar village in Kanniyakumari District.

43.Eraynumanthurai village in Kanniyakumari District.

44.Pozhikarai village in Kanniyakumari District.

45.Singaravelar Colony in Kanniyakumari District.

46.Eraviputhenthurai in Kanniyakumari District.

47.Thoothur and Chinnathurai in Kanniyakumari District.

48. Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

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49. Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

50. Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District

Fishing Villages Tiruvallur District NTO village lost their land due to sea erosion and the government allotted land in the western part. In the year 2016, the Highways Department, had evicted the fishermen from the land stating that , the land belongs to their department. Had a plan to plant bush and to beautify the roadside in this area. As a result NTO villagers wander as refugees in their own country. This situation changed for the people living on the coast on a wartime basis.

(a) Construction of the fish landing center and source protection work of Cuddalore Chinnakuppam Village, Cheyyar Taluk, Chengalpattu District.

(b) construction of the fish landing centre and source protection work of Cuddalore Periyakuppam Village, Cheyyar Taluk, Chengalpattu District.

(c) Construction of the fish landing center and source protection work of Cuddalore Alikuppam Village, Cheyyar Taluk, Chengalpattu District. We request to obtain interim injunction 0.A.No.4 of 2013 to allow Hard Structures and save the fishermen from sea erosion.

Yours,

Isd/-

प्राप्ति-स्वीकृति (रसीद) ACKNOWLEDGEMENT

★ एक रजिस्ट्री / बीमा पत्र/पोस्टकार्ड/पैकेट/पार्सल प्राप्त हुआ

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மீனவர் நல சங்கம்
எண். 48, முதல் மாடி,
கீழக்கு மாதா கோயில் தெரு,
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* एक रजिस्ट्री / बीमा पत्र/पोस्टकार्ड/पैकेट/पार्सल प्राप्त हुआ
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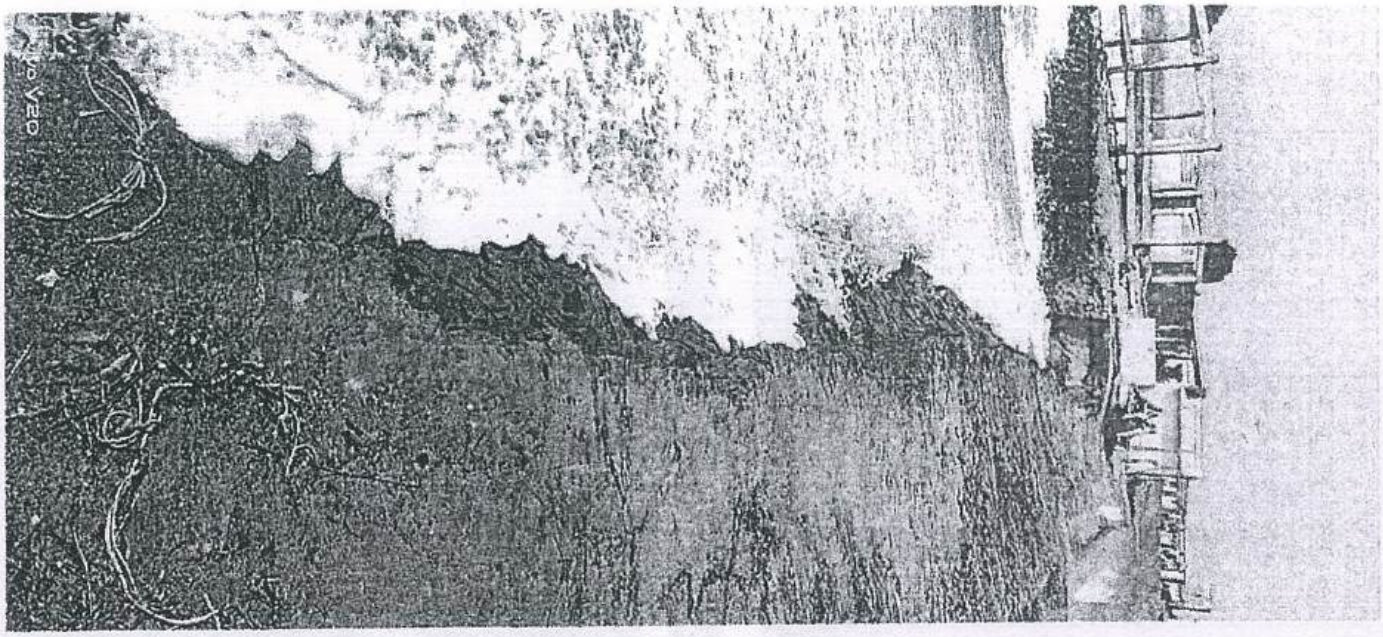
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மீனவர் நல சங்கம்
எண். 48, முதல் மாடி,
சிறுக்கு மாதா கோயில் தெரு,
இராயபுரம், சென்னை-600 013.

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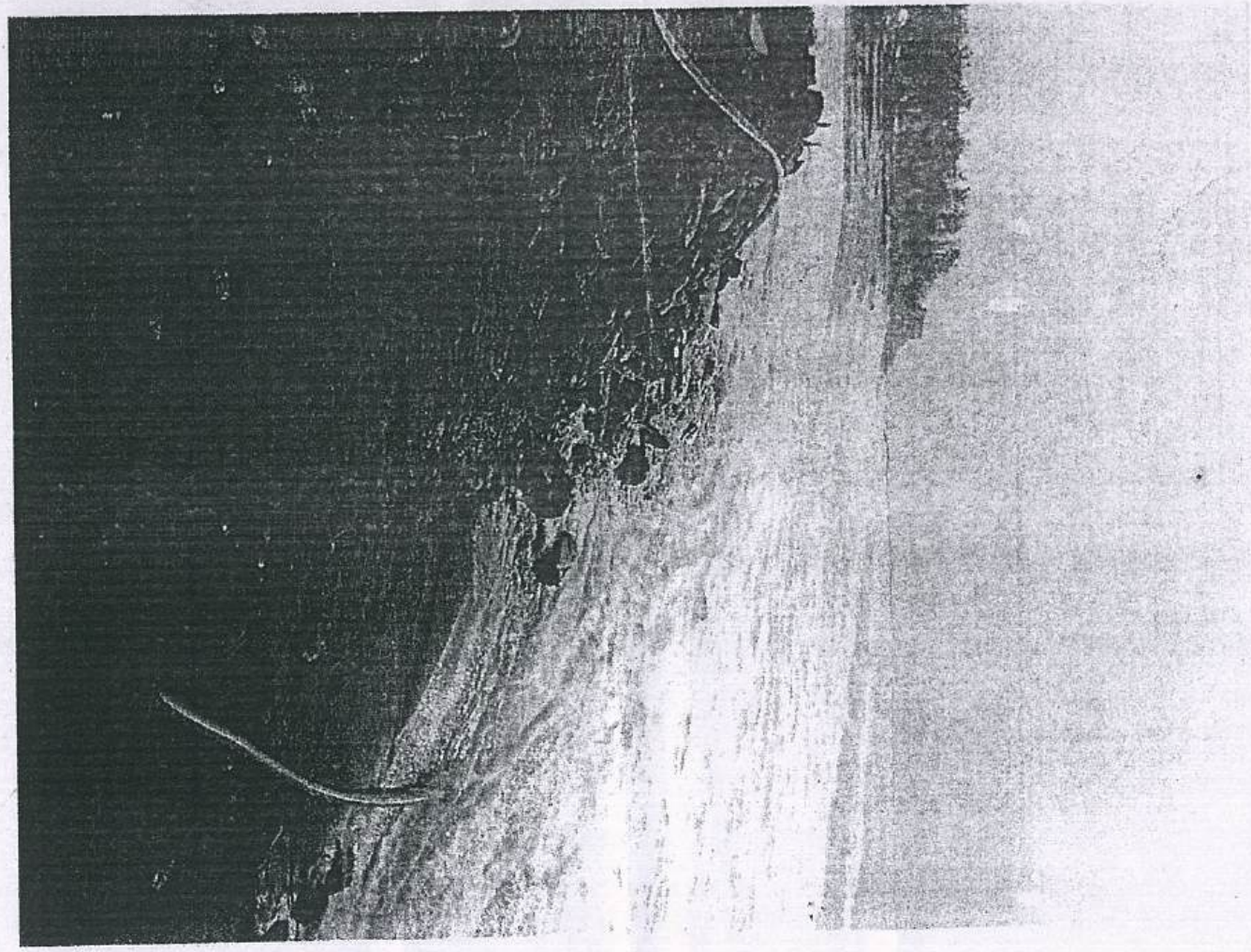
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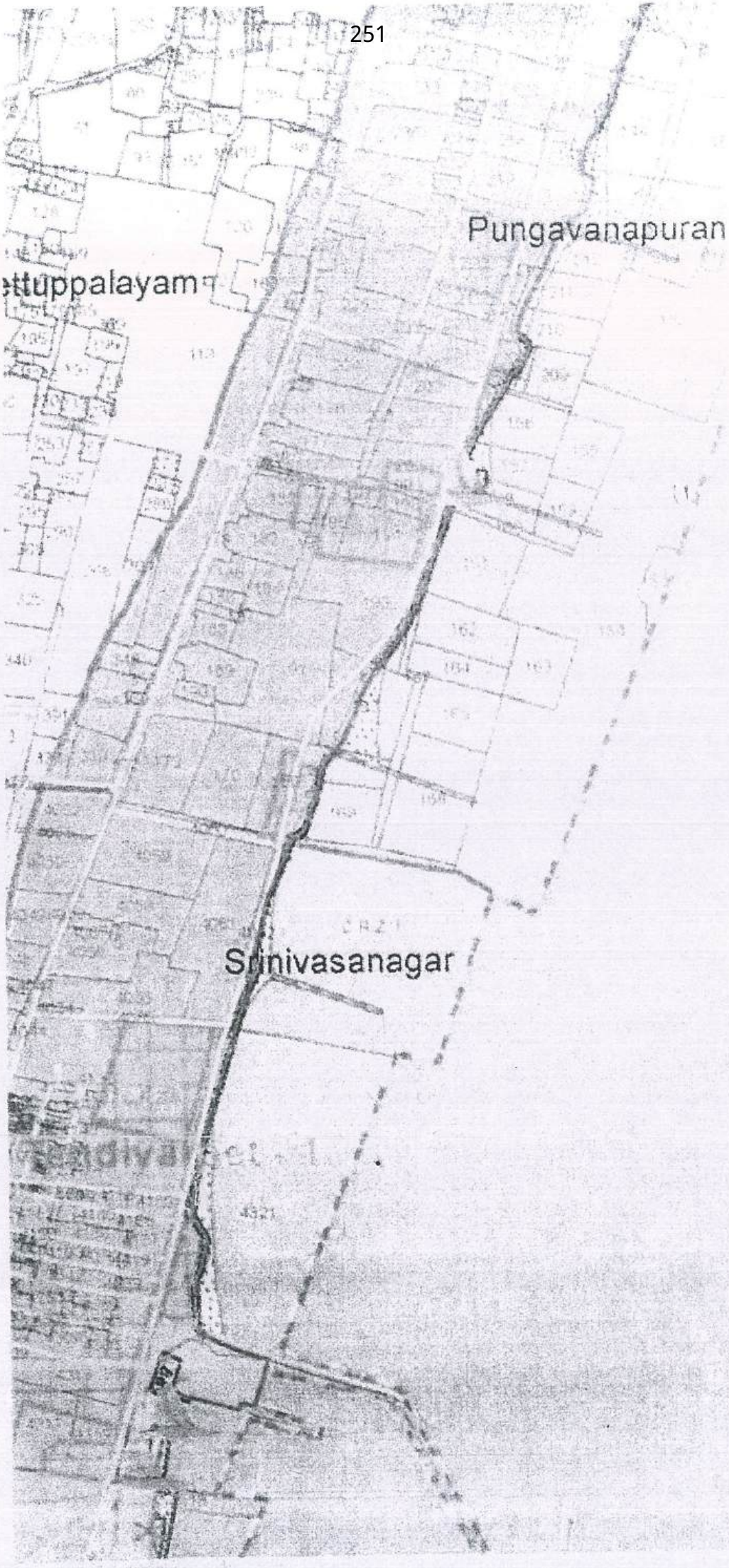









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AAb-9

Protect the Coastal Stretch Palaverkadu – Kattupalli

IN THE HIGH COURT OF JUDICATURE AT MADRAS
(Special Original Jurisdiction)

W.P.No. 3650 of 2022

Sea erosion to protect Coastal stretch Palaverkadu to Kattupalli

MEENAVA THANTHAI
K.E.SELVARAJ KUMAR
MEENAVAR NALA SANGAM
Represented by its president,
M.R.THIYAGARAJAN,
... Petitioner

17/11/22 ACJ & DKKJ - 4 weeks

-Vs-

24/1/2023 ACJ & DBCJ Adj to Not reached 27/1/23

3. Secretary of Govt.,
Ministry of Environment,
Forest & Climate Change
and 4 others.
...Respondents

1/2/23 ACJ & DBCJ Adj to 13/2/23 (NL)

3/4/23 ACJ & DBCJ Adj to 11/4/23

11/4/23 ACJ & DBCJ Adj to 20/4/23

P. Rajasekaran, AE
9487227237

M/s A.KALAISELVAN
E.NO.702/1987
A.ANILAN E.NO.3121/09
COUNSEL FOR PETITIONER
Contact No. 98941 73870

IN THE HIGH COURT OF JUDICATURE AT MADRAS

(Special Original Jurisdiction)

W.P. No. 30507 of 2022

Meenava Thanthai K.R. Selvaraj Kumar,
Meenavar Nala Sangam
Represented by its President,
M.R. Thiyagarajan,
Having office at No. 48,
East Mathakoil Street,
Royapuram, Chennai – 600 013. **.... Petitioner**

Vs

1. The Secretary of Government,
   Ministry of Environment, Forest & Climate Change
   (MoEF&CC), Government of India,
   Indira Paryavaran Bhavan, JorBagh Road,
   Aliganj, New Delhi – 110 003.

2. The Chief Secretary of Tamil Nadu,
   Secretariat, Chennai-600 009.

3. The Principal Secretary of Tamilnadu,
   Environment Department,
   Secretariat, Chennai-600 009.

4. The Chair Person,
   Environment Department,
   Panagal Maligai, Saidapet,
   Chennai – 600 115.

5. The Chairman,
   National Coastal Zone Management Authority,
   Paryavaran Bhavan, CGO Complex,
   Lodhi Road, New Delhi – 110 003.

Under Secretary to Government
Animal Husbandry, Dairying, Fisheries and
Fishermen Welfare Department
Secretariat, Chennai - 600 009

Joint Secretary to Government
Animal Husbandry, Dairying, Fisheries and
Fishermen Welfare Department,
Secretariat, Chennai - 600 009.

6. The Director,
National Centre for Sustainable
Coastal Management,(NCSCM)
Ministry of Environment, Forests & Climate Change
(MoEF& CC), Government of India,
Anna University Campus,
Chennai – 600 025.

7. The State of Tamil Nadu,
Represented by its Secretary to Government,
Fisheries Department,
Fort St. George,
Chennai-600 009.

8. The State of Tamil Nadu,
Represented by its Secretary to Government,
Public Works Department,
Fort St. George,
Chennai-600 009. **.... Respondents**

COUNTER AFFIDAVIT FILED ON BEHALF OF SEVENTH RESPONDENT

I, Molly R. Xavier W/o Russel J.Xavier, aged about 58 years employed as Joint Secretary to Government, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare Department, Secretariat, Chennai- 600 009 do solemnly affirm as given below:

1. I am the Joint Secretary to Government, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare Department, Secretariat, Chennai- 600 009 and I am well acquainted with the facts and circumstances of the case based on the records available. I am

Under Secretary to Government
Animal Husbandry, Dairying, Fisheries and
Fishermen Welfare Department
Secretariat, Chennai - 600 009

Joint Secretary to Government
Animal Husbandry, Dairying, Fisheries and
Fishermen Welfare Department,
Secretariat, Chennai - 600 009.

authorised to file this Counter Affidavit on behalf of the Additional Chief Secretary to Government, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare Department, Secretariat, Chennai - 600 009, and I am filing this Counter Affidavit on behalf of the 7th Respondent herein. I have perused the affidavit filed by the Petitioner in support of the above writ petition and I deny each and every averment and allegations contained therein save those that are specifically admitted herein.

2. I respectfully submit that the writ petitioner has filed the present writ petition with a prayer to issue a Writ of Mandamus or any other order or direction or any other appropriate writ directing the respondents to protect the coastal stretch which starts from Palaverkadu and ends at Kanniyakumari, East coastal zone.

3. With regard to the averments made in paragraphs 1 to 4 of the affidavit, I respectfully submit that the contentions of the petitioner are not related to Fisheries and Fishermen Welfare Department.

4. With regard to the averments made in para 5 of the affidavit, it is submitted that the sea erosion would start towards the village due to seasonal variation and severe wave action. Hence, the boats cannot be berthed. Therefore, only Shore Protection works will safeguard the

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Secretariat, Chennai - 600 009

Joint Secretary to Government
Animal Husbandry, Dairying, Fisheries and
Fishermen Welfare Department,
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fishermen and their belongings from sea erosion. Moreover, the Deposition of sand is a continuous process. The dredging and the groynes are required to protect the sea shore as an effective measure. Therefore, all such kind of works are being carried out by the Fisheries and Fishermen Welfare Department.

5. With regard to the averments made in para 6 of the affidavit, I respectfully submit that the contention of the petitioner is not correct. In order to safeguard the fishermen and their belongings, all the preventive measures are being carried out by all means of activities such as, construction of Fish Landing Centres, Development / Improvement of existing Fish Landing Centres, Shore Protection Works, Construction of Groynes, improvements and renovations of existing jetties, construction of protection walls, etc.,

6. With regard to the averments made in para 7 of the affidavit, I respectfully submit that the Engineers and the Assistant Director of Fisheries and Fishermen Welfare Department will visit the eroded portion of the sea shore area in the presence of the fishermen community and prepare a feasibility report and send it to the Indian Institute of Technology, Madras for preparation of Detailed Project Report regarding length, Breadth and Height of the Groynes and Length

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Joint Secretary to Government
Animal Husbandry, Dairying, Fisheries and
Fishermen Welfare Department,
Secretariat, Chennai - 600 009.

of Sea wall. The experts of the Indian Institute of Technology, Madras will inspect the location of the eroded area of Sea shore line and conducted various investigations and Modelling studies. Based on the test results, the length and height of the Groynes to be used will be provided by them. After receipt of the report of the Indian Institute of Technology, Madras, the detailed estimates will be prepared and sent to the Government to obtain the administrative approval from the Government. Based on the Government Order, the technical sanction will be obtained from the Chief Engineer, Fisheries and Fishermen Welfare Department, Chennai. Then only the shore protective works will be executed according to the site requirements and as per existing rules and regulations in force. This methodology is quite useful and technically standard one. The ultimate aim is to protect the sea shore from erosion.

7. I further respectfully submit that in order to safeguard the fishermen and to protect their fishing villages from erosion, the Government of Tamil Nadu has accorded Administrative Sanction of Rs.742.9693 crore for Providing Shore Protection works and Development / Improvement of Fishing Landing Centres at 44 fishing villages under National Bank for Agriculture and Rural Development (NABARD) vide G.O.(D).No.318, Animal Husbandry, Dairying, Fisheries

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Joint Secretary to Government
Animal Husbandry, Dairying, Fisheries and
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and Fishermen Welfare (FS-I) Department dated 13.12.2021 and G.O.(D).No.46, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare Department (FS-I) dated 25.01.2022. After due process of law, the above said works were allotted to the eligible and successful tenderers. The works were commenced and are in progress.

8. With regard to the averments made in para 8 of the affidavit, I respectfully submit that the Government of Tamil Nadu has taken several preventive measures by carrying out the following works based on the Detailed Project Report received from Indian Institute of Technology, Madras:-

Sl. No.	Name of fishing Village	Name of the work	Details of Government Order	Allotted amount (Rs. in Crore)
1.	Kokilamedu of Chengalpattu District	Construction of Fish Landing Centre and Shore Protection	G.O.(D)No. 318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 13.12.2021	10.00
2.	Kadalore Periyakuppam village in Chengalpattu District	Improvements to Fish Landing Centre and Providing Shore Protection	G.O.(D)No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 13.12.2021	9.00
3.	Kadalore ChinnaKuppam village in Chengalpattu District.	Construction of Fish Landing Centre and Shore Protection	G.O.(D)No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 13.12.2021	10.00

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4.	Alikuppam village in Chengalpattu District	Construction of Fish Landing Centre and Shore Protection	G.O.(D)No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 13.12.2021	10.00
5.	Pazhaya Nadukuppam in Chengalpattu District	Construction of Fish Landing Centre and Providing Shore Protection	G.O.(D)No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 13.12.2021	11.00
6.	Pudhu Nadukuppam in Chengalpattu District	Construction of Fish Landing Centre and Providing Shore Protection	G.O.(D)No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 13.12.2021	11.00
7.	Angalammankuppam in Chengalpattu District	Construction of Fish Landing Centre and Shore Protection	G.O.(D)No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 13.12.2021	9.00
8.	Chemmencherry Kuppam in Chengalpattu District	Construction of Fish Landing Centre and Shore Protection	G.O.(D)No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 13.12.2021	10.00
9.	Karikattukuppam in Chengalpattu District	Construction of Fish Landing Centre and Shore Protection	G.O.(D)No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 13.12.2021	16.00
10.	Pudhukalpakkam village in Chengalpattu District	Construction of Fish Landing Centre and Shore Protection	G.O (D) No.46, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 25.01.2022	9.70
11.	Killai in Cuddalore District	Construction of Fish Landing Centre and Permanent Stability of Bar mouth	G.O (D) No.46, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 25.01.2022	40.00

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Secretariat, Chennai - 600 009

Joint Secretary to Government
Animal Husbandry, Dairying, Fisheries and
Fishermen Welfare Department,
Secretariat, Chennai - 600 009.

12.	Periyakuppam in Cuddalore District	Construction of Fish Landing Centre and Shore Protection	G.O (D) No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 25.01.2022	12.00
13.	Pudhukuppam in Cuddalore District	Construction of Fish Landing Centre and Dredging of Approach Channel	G.O (D) No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 25.01.2022	8.00
14.	Pillaichavadi in Villupuram District	Construction of Fish Landing Centre and Shore Protection	G.O (D) No.46, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 25.01.2022	14.50
15.	Nambiyar Nagar Mini Fishing Habour in Nagapattinam District	Construction of Additional Groynes and Shore Protection	G.O (D) No.46, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 25.01.2022	10.00
16.	Thirumullaivasal in Mayiladuthurai District	Upgradation of Existing Fish Landing Centre	G.O.(D)No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 13.12.2021	18.00
17.	Puthukuppam village in Mayiladthurai District	Construction of Short Groynes in Northern side of Poombuhar Fishing Harbour	G.O.(D)No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 13.12.2021	9.00
18.	Kuttiyandiyur in Mayiladuthurai District	Construction of Fish Landing Centre and Shore Protection Works	G.O (D) No.406, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 25.07.2022	6.83

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Joint Secretary to Government
Animal Husbandry, Dairying, Fisheries and
Fishermen Welfare Department,
Secretariat, Chennai - 600 009.

19.	Manapad in Thoothukudi District	Providing Permanent Stability of Bar Mouth and Development of Fish Landing Centre	G.O.(D)No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 13.12.2021	45.00
20.	Veerapandyanpattinam in Thoothukudi District	Construction of Fish Landing Centre	G.O.(D)No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 13.12.2021	5.00
21.	Mandapam North in Ramanathapuram District	Providing Shore Protection	G.O (D) No.46, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 25.01.2022	30.00
22.	Mandapam South in Ramanathapuram District	Providing Shore Protection	G.O (D) No.46, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 25.01.2022	50.00
23.	Puthenthurai village in Kanniyakumari District	Construction of Additional Groynes for Shore Protection	G.O.(D)No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 13.12.2021	22.00
24.	Kesavanputhenthurai village in Kanniyakumari District	Construction of Additional Groynes for Shore Protection	G.O.(D)No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 13.12.2021	20.00
25.	Keelamanakudy village in Kanniyakumari District	Construction of Fish Landing Centre	G.O.(D)No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 13.12.2021	29.50

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Fishermen Welfare Department
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Joint Secretary to Government
Animal Husbandry, Dairying, Fisheries and
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26.	Melamanakudy village in Kanniyakumari District	Construction of Fish Landing Centre	G.O.(D)No.318, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 13.12.2021	29.50
27.	Kodimunai in Kanniyakumari District	Improvements to the Fish Landing Centre	G.O (D) No.46, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 25.01.2022	35.00
28.	Simon colony in Kanniyakumari District	Improvements to the Fish Landing Centre	G.O (D) No.46, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 25.01.2022	35.00
29.	Kurumpanai in Kanniyakumari District	Improvements to the Fish Landing Centre	G.O (D) No.46, Animal Husbandry, Dairying, Fisheries and Fishermen Welfare (FS-1) Department, Dated 25.01.2022	30.00

9. I respectfully submit that with reference to the averments made in para 8 of the Affidavit, in respect of the survey No.166 of Nalla Thanneer Odai village (NTO village), Thiruvottriyur Village of Chennai District, the Coastal stretch between Royapuram fishing harbour to Ennore Creek is being protected from sea erosion since 1991 by providing RMS (Rubble Mound Sea) Wall along the coast line and construction of series of 19 Numbers of Groynes from Ennore to

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Ernavoorkuppam, by Public Works / Water Resources Department. The Stretch between Tollgate to Bharathiyar Nagar i.e, from LS 4/700 to 13/100 km, along Ennore Express way has been handed over to the National Highways Authority of India for the "Development of Adequate Road connectivity to Chennai and Ennore ports" during 2004 and 2007 and the above stretch has not been returned to Public Works / Water Resources Department, till date. In the above stretch, the National Highways Authority of India had constructed 13 Groynes and protected the cost line from further erosion. The fishermen village namely Nalla Thanneer Odai Kuppam (NTO village) as mentioned in the affidavit is located in the above stretch near Tollgate in the Ennore Express way and protected from further erosion by constructing Groynes and Sea wall. The above stretch is being maintained by the National Highways Authority of India".

10. I respectfully submit that with reference to the averments made in para 9 of the Affidavit, the 4th respondent for himself and on behalf of 3rd respondent herein has filed detailed Counter Affidavit before this court.

11. With regard to the averments made in para 10 of the affidavit, I respectfully submit that the proposals are being prepared by

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Joint Secretary to Government
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the Fisheries and Fishermen Welfare Department based on the experts report of the Indian Institute of Technology, Madras. Earlier, groynes were laid in perpendicular to sea shore at equal distances. Nowadays, based on the design report of Indian Institute of Technology Madras, the advance method is being followed wherein the groyne at central point is longest and other groynes placed on either side of south and north of coastal villages are gradually smaller. By this method, the energy of the wave is dissipated and hence the velocity of sea erosion is controlled. Therefore, the wave energy cannot be transformed to any other adjoining coastal villages and further erosion is prevented. This helps to conserve the adjoining coastal villages from the effect of sea erosion. This methodology is highly effective.

12. With regard to the averments made in paras 11 and 12 of the affidavit, I respectfully submit that action is being taken to protect the coastal villages as well as their properties from the sea erosion and the villagers are frequently representing their grievances to be addressed. Therefore, action has been taken to prepare the estimates for the works as mentioned under paragraphs 4 and 5 supra according to the immediate needs and requirements. Hence necessary Government Orders were obtained during December, 2021 and January, 2022. Tender for these works were finalized after due process of law. The

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work orders were also issued to the successful tenderers. The works were commenced by following all the necessary procedures. The Fisheries and Fishermen Welfare Department is taking necessary and required steps in order to protect the fishermen and their belongings as well as to mitigate the sea erosion by adopting suitable advanced methodology.

In view of the reasons and circumstances stated above, it is humbly prayed that this Hon'ble Court may be pleased to dismiss the above writ petition, as devoid of merits and thus render justice.

Joint Secretary to Government
Animal Husbandry, Dairying, Fisheries and
Fishermen Welfare Department,
Secretariat, Chennai - 600 009.

Solemnly affirmed at Chennai on this
the day of 2023
and signed his name in my presence

BEFORE ME

Under Secretary to Government
Animal Husbandry, Dairying, Fisheries and
Fishermen Welfare Department
Secretariat, Chennai - 600 009

BEFORE THE HIGH COURT OF JUDICATURE AT MADRAS
(Special Original Jurisdiction)
W.P No. 30507 of 2022

Meenava Thanthai K.R. Selvaraj Kumar
Meenava Nala Sangam
Represented by its president,
M.R. THIYAGARAJAN,
Royapuram, Chennai - 13 ... Petitioner

Versus

1. The Secretary of Govt.
   Ministry of Environment, Forest & climate Change,
   (MoEF&CC), Govt. of India,
   Indira Paryavaran Bhavan, JorBagh Road,
   Aliganj, New Delhi – 110003,

2. The Chief Secretary of Tamil Nadu,
   Secretariat, Chennai – 600 009.

3. The Principal Secretary of Tamil Nadu,
   Environment Department,
   Secretariat, Chennai – 600 009.

4. The Chairperson,
   Environment Department,
   Panagal Malagi, Saidapet,
   Chennai – 600 115,

5. The Chairman,
   National Coastal Zone Management Authority,
   Paryavaran Bhavan, CGO Complex,
   Lodhi Road, New Delhi – 110003,

6. The Director,
   National Centre for Sustainable Coastal Management,
   (NCSCM),
   Ministry of Environment, Forest & Climate Change
   (MoEF&CC), Govt. of India,
   Anna University Campus, Chennai – 600025,

7. The State of Tamil Nadu,
   Represented by its secretary to Government
   Fisheries Department,
   Fort St. George, Chennai – 600 009.

ASSISTANT CONSERVATOR OF FORESTS
GREEN SQUAD,
O/o. DIRECTOR OF ENVIRONMENT
PANAGAL MALIGAI,
SAIDAPET, CHENNAI-600 015.

Director,
Department of Environment and Climate Change,
Chennai - 15

8. The State of Tamil Nadu,
   Represented by its secretary to Government
   Public Works Department,
   Fort St. George,
   Chennai – 600 009. - Respondents

REPLY AFFIDAVIT FILED BY 4TH RESPONDENT AND ON BEHALF OF THE 3RD RESPONDENT

I, Deepak. S. Bilgi, I.F.S, S/o Siddappa Bilgi about 44 years and having office at Ground Floor, Panagal Buildings, Saidapet, Chennai – 600 015 solemnly affirm and sincerely state as follows.

1. I humbly submit that, I am the Director, Department of Environment and Climate Change and also the Member Secretary, Tamil Nadu State Coastal Zone Management Authority and I am well acquainted with the facts of the case from the records available and I am filing this counter affidavit in my official capacity on behalf of 3rd and 4th respondent.
2. It is humbly submitted that, I have gone through the averments contained in the affidavit filed by the Petitioner and I deny all the averments except those that are specifically admitted herein and the Petitioner is put to strict proof of the same.

3. It is humbly submitted that, the grievance made by the Petitioner in the PIL is alleging the state government that, it has not taken any steps to protect the coasts of Tamil Nadu from erosion and neither is it initiating steps to do so as the Hon'ble NGT (SZ) has fixed the time limit for preparing Shoreline Management Plan within 6 months in O.A. No. 4 of 2013, dated 11.04.2022.

4. It is respectfully submitted that, the Department of Environment has taken necessary action for preparing "Comprehensive Shoreline Management Plan for entire coast of Tamil Nadu" from 2015, based on the order of the Hon'ble NGT (SZ), dated 04.09.2015.

ASSISTANT CONSERVATOR OF FORESTS
GREEN SQUAD,
O/o. DIRECTOR OF ENVIRONMENT
PANAGAL MALIGAI,
SAIDAPET, CHENNAI-600 015.

Director,
Department of Environment and Climate Change,
Chennai - 15

5. It is respectfully submitted that, an Application No. 4/2013 was filed by Thiru. O. Fernandes before the Hon'ble NGT (SZ) regarding the construction of shoreline protection structures by the PWD and other agencies. The Hon'ble NGT directed the Tamil Nadu State Coastal Zone Management Authority (TNSCZMA) to prepare a Comprehensive Shoreline Protection Management Plan / Scheme for the entire coast of Tamil Nadu engaging a reputed institution and the NGT has also issued direction preventing PWD or any other agency from proceeding with any work on shore protection until further orders till the approval of the said plan / Scheme by Ministry of Environment, Forest & Climate Change, Government of India (MoEF & CC, GoI), vide order dated 04.09.2015.

6. It is respectfully submitted that, furtherance to abide with the orders of the Hon'ble NGT, a draft Comprehensive Shoreline Protection Management Plan was prepared through Dr. V. Sundar, Professor, Department of Ocean Engineering, IIT Madras at a cost of Rs.50.60 lakhs and sent to the Ministry of Environment, Forests & Climate Change, Govt. of India, for approval, vide Government of Tamil Nadu letter dated 09.08.2016, which is the comprehensive plan for protecting the shoreline of Tamil Nadu from sea erosion.

7. Accordingly, the Ministry of Environment, Forests & Climate Change, Govt. of India has constituted an Expert Committee and the Committee recommended the draft Plan and instructed to circulate the Plan to the neighbouring States of Andhra Pradesh, Kerala and UT of Puducherry.

8. It is respectfully submitted that, after several reminders by the Department and the Govt. of Tamil Nadu, the State of Andra Pradesh, Kerala and U.T of Puducherry have sent their replies to the MoEF & CC, Govt. of India. Accordingly, the proposal on "the Comprehensive Shoreline Protection Management Plan for the entire Coast of Tamil Nadu" has been placed before the 255th

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Department of Environment and Climate Change,
Chennai - 15

meeting of the Expert Appraisal Committee (CRZ) of MoEF & CC, GoI held on 12.02.2021. The EAC has stated the following.

"It is noted that comments of State Governments of Andhra Pradesh, Kerala and UT of Puducherry forwarded to Project Proponent are still not incorporated in the report. The Committee suggested that the same should be incorporated and resubmitted. The Committee also proposed for site visit by the EAC (CRZ) Committee. Accordingly, the proposal was deferred for reconsideration at a later stage once the revised report is submitted and the site visit is carried out by this Ministry"

9. It is respectfully submitted that, the Hon'ble NGT (SZ) also observed the replies and views of the above States and conducted a meeting with the Chief Secretaries of Andhra Pradesh, Kerala, Tamil Nadu, Karnataka and Puducherry UT along with the respective Secretaries for Environment & Forests and also along with the Joint Secretary, MoEF & CC, GoI through Video Conferencing on 11.01.2022.

10. It is respectfully submitted that, in the meantime, the MoEF & CC, GoI constituted the sub. committee with the official from MoEF & CC, GoI and made site inspection from 7-9th April 2022 along the coast of Tamil Nadu for approving the "Shoreline Protection Management Plan". The Committee inspected the sites from Ennore to Puducherry border coast from 07.04.2022 to 09.04.2022.

11. It is respectfully submitted that, at this juncture, the Hon'ble NGT (SZ) has issued final orders in the Application No.04 of 2013 on 11.04.2022, as below.

"Shoreline Management Plan (SMP) shall be prepared as illustrated by NIOT for such erosion prone areas. Pending preparation/updation of such SMPs by the Coastal States/UTs, no further hard structures for erosion control be raised or constructed"

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Director,
Department of Environment and Climate Change,
Chennai - 15

12. Accordingly, it is submitted that, necessary proposals were sought from Dr. Sundar, Professor, Department of Ocean Engineering, IIT Madras and the National Centre for Coastal Research (NCCR) to send the proposal for preparing / updating the Shoreline Management Plan and necessary proposals were received from both the institutions.

13. It is respectfully submitted that, as per the instructions of the Government, the said two proposals have been scrutinized by the Expert Committee. The Expert Committee evaluated the proposals and submitted a report on 07.11.2022. Accordingly, the proposal to issue work order for preparation of Shoreline Management Plan has been sent to Government and the Government has issued orders vide G.O. (Ms) No. 69, Environment, Climate Change & Forest (EC.3) Department, dated 29.03.2023 for preparing the "Shoreline Management Plan" through National Centre for Coastal Research (NCCR).

14. It is respectfully submitted that, the Department of Environment and Climate Change and the Government of Tamil Nadu has been taking arduous efforts to complete the process of preparation of the Shoreline Management Plan. It is submitted that, since the Government Orders for preparation of the plan is issued, the work of completion of preparation of the Shoreline Management Plan shall be expedited and completed at the earliest.

It is therefore humbly prayed that, this Hon'ble High Court may be pleased to record the above-mentioned facts and pass such further order or orders as this Hon'ble Court may deem fit and proper in the interest of justice.

Director,
Department of Environment and Climate Change,
Chennai - 15

Solemnly affirmed at Chennai
This the 02nd day of May 2023
and signed his name in presence

BEFORE ME

ASSISTANT CONSERVATOR OF FORESTS
GREEN SQUAD,
O/o. DIRECTOR OF ENVIRONMENT
PANAGAL MALIGAI,
SAIDAPET, CHENNAI-600 015.

Director,
Department of Environment and Climate Change,
Chennai - 15

ASSISTANT CONSERVATOR OF FORESTS
GREEN SQUAD,
O/o. DIRECTOR OF ENVIRONMENT,
PANAGAL MALIGAI,
SAIDAPET, CHENNAI-600 015.

IN THE HON'BLE HIGH COURT OF
JUDICATURE AT MADRAS

(Special Original Jurisdiction)

Writ Petition No. 30507 of 2022

COUNTER AFFIDAVIT FILED BY THE **4th** RESPONDENT AND ON BEHALF OF **3rd** RESPONDENT

SPL. GOVERNMENT PLEADER