

BEFORE THE NATIONAL GREEN TRIBUNAL (EZ), KOLKATA

(Under Section 18(1) read with Sections 14 & 15 of National Green Tribunal
Act 2010)

Application No. 93 & 95 2024 & MA No. 23 of 2024(EZ)

Ashish Kothari

....Applicant

v.

MoEFCC and Anr.

...Respondents

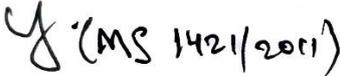
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|----|------|--|---------|

Certified to be true copies of the respective originals.

Dated on this the 21st day of July, 2025

 (MS 1421/2021)

A Yogeshwaran

Counsel for the Applicant

Ph: 9566254546

Email: yogeshwaranadv@gmail.com

BEFORE THE NATIONAL GREEN TRIBUNAL (EZ), KOLKATA

(Under Section 18(1) read with Sections 14 & 15 of National Green Tribunal Act
2010)

Application No. 93 & 95 2024 & MA No. 23 of 2024(EZ)**Between:**

Ashish Kothari
S/o Rajni Kothari,
G1 Chaitraban Residency, Aundh,
Pune 411007
Email: yogeshwaranadv@gmail.com
Phone No. : 9566254546

....Applicant

Vs.

1. The Ministry of Environment, Forest and Climate Change
Rep by its Secretary
Indira Paryavaran Bhavan ,Jor Bagh Road, New Delhi 110003
Email: mefcc.gov.in, Phone: +91-11-23014243
2. Andaman and Nicobar Islands Integrated
Development Corporation Limited (ANIIDCO Ltd)
Rep by its Managing Director
Vikas Bhawan, PB No,1B0,
Port Blair, Andaman & Nicobar Islands
Pin – 744101
Phone : 236086, 234108, Email : aniidco@gmail.com

...Respondents

**REJOINDER FILED BY THE APPLICANT TO AFFIDAVIT OF 1ST
RESPONDENT DATED 05.07.2025**

The Applicant respectfully submits as follows:

1. The following reply is tendered in response to the additional affidavit filed by the Ministry of Environment, Forest and Climate Change (MoEFCC) dated 05.07.2025. The contents of this affidavit are similar to the previous counter

affidavit filed by the MoEFCC, and the contents of the application and rejoinder dated 11.11.2024 may be read as part of this reply as well.

2. The contents of paragraphs 1, 2, 3, and 4 of the affidavit are either for the information of the Hon'ble Tribunal or extracts of orders of this Hon'ble Tribunal, and call for no reply.
3. The contents of paragraph 5 are denied as false, and it is submitted that the OM dated 13.04.2023 is not in compliance with the judgment dated 03.04.2023 and the first Respondent has defeated the exercise directed by the Hon'ble Tribunal by framing truncated and erroneous terms of reference which were tailor-made to preclude any meaningful exhaustive reassessment/ reappraisal of the clearance by the Authorities. This Hon'ble Tribunal had held at paragraph 33 of the judgment dated 03.04.2023, that there are some unanswered deficiencies pointed out by the appellants which need to be addressed, and 'by way of instance' listed three such grounds. The MoEF&CC further watered down these three instances and framed terms of reference in the said OM, which has vitiated the entire process.
4. The contents of paragraphs 6, 7, and 8 are denied as false and it is submitted that even the minutes of these meetings have not been produced by the first Respondent. It is surprising that the MoEFCC has claimed that the re-examination process is top secret, while the process resulting in the grant of the original clearance was in public domain. In other words, when the original Environmental Clearance dated 11.11.2022, the EIA reports, and other project documents are in public domain and were granted without a shroud of secrecy, it defies logic and is arbitrary to contend that the revisit/

re-examination of the above clearance, pursuant to an order of Court is sought to be kept secret. Obviously, this is done to avoid any meaningful scrutiny and cannot be countenanced.

5. Insofar as the content of paragraph 7(a) is concerned, it is seen that the High Powered Committee (HPC) has merely agreed with the recommendations of Zoological Survey of India (ZSI) on the translocation of 16,150 coral colonies. The fact that the destruction of corals is a prohibited activity as per Clause 3(i) of the Island Coastal Regulation Zone (ICRZ) Notification, 2019, and translocation per se is not a permissible activity under the ICRZ Notification, 2019, has admittedly not been considered by the HPC. It is necessary to note that coral reefs in the project area were marked even in the EIA report of the project proponent. The draft CZMP land use plans prepared under the 2019 Notification marked the coral reefs along the coast, including Galathea bay and it is reliably learnt that the approved land use plan prepared under the Island Protection Zone (IPZ) Notification, 2011 also marked coral reefs along the coast where the port is proposed. However, in the approved 2019 ICRZ plan, all the coral reefs along the coastline have magically disappeared, and are now marked only as patches in the sea. The fact that reefs surround the island is a matter of record and it is futile to contend otherwise. The very basis of the ZSI's report is flawed, and the HPC has simply accepted the statements in the said report without any critical examination.
6. The first Respondent's repeated emphasis on schemes and projects to be implemented during the execution of the project is irrelevant to the conservation of this sensitive, dynamic, biodiverse ecosystem, especially

when the law mandates absolute protection of these ecologically sensitive areas.

7. Insofar as the contents of paragraph 7(b) are concerned, they are denied as false, and it is demonstrated as a fact that the first Respondent and its HPC have chosen to ignore the law at the cost of the environment in favour of the project. The contention that the Environment Impact Assessment (EIA) Guidance Manual for Ports and Harbours mentions one season's data, owing to which the HPC concluded, "*...that the EIA Notification, 2006 do not prescribe either rapid or comprehensive EIA studies*" (sic), is proof that the HPC has not even considered the applicable law, i.e. the ICRZ Notification, 2019 and the OM dated 03.11.2009 of the 1st Respondent Ministry on ports.
8. In the OM dated 03.11.2009, the 1st Respondent has clearly mandated 'comprehensive environment impact assessment including physical and mathematical modelling and ground verification,' for port projects of more than 5 MT per annum in the Andaman and Nicobar Islands and Lakshadweep Islands. Thus, a comprehensive EIA is the legal mandate for any port project, including the subject 20 million TEU mega port. The EIA guidance manual for ports includes this OM.
9. It is a fact that the coastland of the Great Nicobar Island has undergone serious alterations after the 2004 Tsunami. The shoreline has also been subjected to serious erosion due to various natural factors. The Indian Space Research Organisation's (ISRO) Space Application Centre (SAC) mapped erosion in the island as a part of its shoreline change atlas of the Indian coast. The maps for Great Nicobar were published in volume 6. Sheet No.

88F13SW and Sheet No. 88F13SE pertinent to the southern part of the island i.e. Galathea Bay, where the port is proposed. It can be seen from the ISRO's map that a significant portion of the eastern flank of the bay, where the port is proposed, is marked in red, i.e. an area where erosion has occurred. Therefore, the fact that the coast is an eroding coastline cannot be disputed.

10. Clause 8(i)(c) of the ICRZ Notification, 2019 mandates comprehensive EIA with cumulative studies for projects located in low and medium-eroding stretches of the coast. In fact, ports are prohibited in high eroding stretches. Though the shoreline has eroded at a rate of more than 1 metre per year, where ports are prohibited, even considering the stretch as only a low or medium eroding stretch, the legal mandate is for the conduct of comprehensive EIA with cumulative studies. A comprehensive EIA involves collection of 3 seasons' baseline data, i.e. for a whole year at least, as opposed to a rapid EIA which is based on only one season's data. The importance of conducting a comprehensive EIA has been eloquently stated by the then Minister for Environment in the Lok Sabha, which has already been filed by the Applicant along with the rejoinder dated 11.11.2024 as Annexure A5.
11. It is pertinent to note that even the sector specific manual referred to by the first Respondent in paragraph 7(b) states at 4.4 of the manual that the oceanographic data such as currents, waves, tides, etc. need to be measured for at least two seasons. The manual further states at Annexure 6 that physical, chemical and bio-local data has to be collected in two to three seasons so as to understand their impacts in different seasons, like pre and post monsoon. Further, Annexure 12 of this sector specific manual

solely relied on by the 1st Respondent and its HPC contains the OM dated 03.11.2009, which unambiguously mandates comprehensive EIA for ports proposed in the Andaman and Nicobar Islands.

12. Therefore, the contention of the 1st Respondent, that comprehensive EIA is not necessary, since the EIA guidance manual requires only one season's data collection is contrary to the very manual and to the mandate of the ICRZ Notification, 2019 and cannot be countenanced.
13. Insofar as the contention in paragraph 7(c) is concerned, it is preposterous that the 1st Respondent and its HPC contend that no part of the proposed project falls under CRZ I-A. Ecologically sensitive areas (ESAs) such as turtle nesting grounds, nesting grounds of birds, biologically active mudflats, coral reefs, mangroves, etc., do not magically disappear. The 1st Respondent appears to have forgotten that an area becomes entitled for protection under CRZ I-A due to its ecological sensitivity, and not by virtue of its demarcation as CRZ I-A. These areas are provided the maximum protection of the law because they serve extremely critical ecological functions.
14. The 1st respondent and the HPC have failed to appreciate the fact that the presence of ICRZ I-A areas within the project layout was an admitted fact. The revised layout submitted by the 2nd respondent which was considered and recommended by the A&NCZMA on 08.07.2022 stand testimony to the fact that a total of 7.07 sq km of the project area fell under ICRZ I-A. The port component admittedly contains 0.57 sq km and reclamation area of the port contains 0.06 sq km of ICRZ I-A, while the

airport contains 0.60 sq km, the township for defense is spread across 0.81 sq km and the township over 5.03 sq km of ICRZ I-A areas. The respondents are estopped from now contending that the project layout does not contain any area classified as ICRZ I-A. The ICRZ Notification, 2019 categorically prohibits any of the above activities in or over ecologically sensitive areas classified as ICRZ I-A. Ecologically Sensitive Areas or features in the subject areas such as turtle nesting grounds (the Galathea Bay is acknowledged as the largest leatherback turtle nesting ground in India by the National Marine Turtle Action Plan issued by the 1st respondent), nesting ground of birds (megapode nesting ground), corals and mangroves cannot be relocated. Any conversion of these areas would destroy them, rendering the area unfit to serve these ecological purposes. This is the reason the law places a complete prohibition on such projects or activities in ICRZ I-A areas.

15. Evidence of turtle nesting grounds, megapode nesting grounds, etc. have been filed along with the application as well as the rejoinder previously filed and are not repeated in the interest of brevity. The 1st Respondent's contention that National Centre for Sustainable Coastal Management (NCSCM) has concluded that no part of the project area falls under the CRZ I-A is irrelevant in the eyes of law apart from being factually and legally incorrect. NCSCM is the project proponent's consultant who has generated reports for this very project. The 1st Respondent has ignored scientific publications, its own conservation plans, and other evidence of turtle nesting, megapode nesting, etc., in favour of a report submitted by a consultant.

16. It is therefore submitted that the directions of this Hon'ble Tribunal dated 03.04.2023 have not been complied with, and the revisit/ re-examination of the EC directed by this Hon'ble Tribunal was never carried out in letter and spirit by the Respondents. It appears that the conclusion was foregone, and the 1st Respondent has simply gone through the motions.
17. The following annexures are filed along with this reply:
- a. Copy of the relevant maps from ISRO's shoreline change atlas and the merged map are annexed as **Annexure A29.**
 - b. Copy of the relevant maps from the draft CZMP Land use plan prepared under the 2019 Notification and the merged map are annexed as **Annexure A30.**
 - c. Copy of the relevant maps from the approved CZMP prepared under the 2019 Notification and the merged map are annexed as **Annexure A31.**
 - d. Copy of the relevant maps from the approved CZMP land use plan prepared under the 2019 Notification and the merged map are annexed as **Annexure A32.**
 - e. Information received by the office of the Additional PCCF, A&N dated 24.04.2025 under RTI is annexed as **Annexure A33.**
 - f. Extracts from EIA Guidance manual for Ports relied on by the 1st respondent is annexed as **Annexure A34.**
 - g. Extract from ZSI edited publication titled "Faunal Ecology and Conservation of the Great Nicobar Biosphere Reserve" is annexed as **Annexure A35.**

18. The contents of paras 8, 9 and 10 are denied as false. It is submitted that the contention that the HPC deliberated on several other issues, such as whether funding was issued to organisations and other such aspects, do not concern the legality of the project, which was to be tested by the committee constituted by this Hon'ble Tribunal. It is submitted that the HPC itself is constituted of authorities who granted the EC, and by the authorities who are consultants for the project. No other outcome could have been countenanced in the face of such conflict of interest.
19. Insofar as the OM dated 17.08.2023 filed as Annexure R1(2) is concerned, it is submitted that the OM merely states that the report of the HPC needs to be taken into account by the project proponent. Since the HPC anyway did not revisit the EC, the said OM has no relevance to the questions sought to be adjudicated in the present application.
20. Insofar as the contents of para 10 are concerned, it is submitted that by simply constituting committees of the same officers under different names such as high powered committee, overarching committee etc., the 1st Respondent is trying to supply non-existent legality to its actions. The mere fact that such a committee was constituted does not enure in favour of the Respondents, nor does it extinguish the illegalities perpetrated in the issuance of environmental clearance to the project, and the legal prohibitions which have been ignored by the 1st Respondent in complete abdication of its legal duty as the authority responsible for enforcement of the ICRZ Notification, 2019 and the EIA Notification, 2006.
21. It is reiterated that the so-called overarching committee consists of officials of the project proponent themselves, and officers belonging to

organisations who have served as paid consultants to the project proponent. Such composition strikes at the very root of fairness and smacks of arbitrariness.

22. The contents of para 11 are denied as false. It is submitted that the 1st Respondent has repeated its contentions from the previous paragraphs, and the contentions are irrelevant to the questions raised in the present application.

23. Insofar as the contents of para 12 are concerned, it is reiterated that when the original process of granting EC was in the public domain, the 1st Respondent is trying to avoid any and all scrutiny in an attempt to cover up all the illegalities that have evidently been committed in the process, by stating that the report of the HPC has been submitted to this Hon'ble Tribunal in a sealed cover. It has been observed by the Hon'ble Supreme Court in *Madhyamam Broadcasting Limited v. Union of India* (2023 13 SCC 401) as follows:

113... Before addressing whether the non-disclosure of the relevant material would be in the interest of national security, it is our constitutional duty to mention the cavalier manner in which the Union of India has raised the claim of national security. Other than merely claiming that national security is involved, both in the affidavit that was filed before the High Court and in the submissions before us, the Union of India made no attempt to explain how non-disclosure would be in the interest of national security.

24. It is submitted that similar to the above case, the 1st Respondent herein has provided no justification for why the report of the HPC cannot be disclosed, when the EC process itself was in the public domain, and the 1st

Respondent has invoked the ground of national security without any reasons. It is submitted that the contents of the report of the HPC have to be placed in the public domain, so that it may be tested as per the cornerstone of its legal mandate. Even the order, if any, vide which the present 130 sq km tourism township, mega commercial port, power plant and dual use airport have altogether been classified as "national security" and exempt from disclosure has not been produced.

25. It is submitted that the only endeavour in this proceeding is to ensure compliance with the law, and this exercise cannot be scuttled by Respondents attempting to portray a tourism township, a power plant, a commercial port under the bogey of national security. However, in light of the pleadings made and the office memorandum, the illegalities perpetrated are evident, and the fact that the HPC has not looked into the applicable laws and prohibitions contained therein, vitiates the entire exercise. It is therefore evident that:
- A. The CRZ I-A areas included in the project site have to be excluded
 - B. No comprehensive EIA has been conducted, and the entire process has been vitiated
 - C. Unless this Hon'ble Tribunal enforces the ICRZ Notification, 2019 and protects ecologically sensitive areas such as turtle nesting grounds, megapode nesting grounds, corals and other features, they will all be destroyed by the implementation of the 2nd Respondent's project, and the purpose of the ICRZ Notification, 2019 will be defeated.



It is therefore prayed that this Hon'ble tribunal may be pleased to allow the applications as prayed for in the interest of justice.

Ashish Kothari
x

APPLICANT

VERIFICATION

I, Ashish Kothari, the applicant herein, do hereby verify that the contents in the above paragraphs are true to the best of my knowledge and based on legal advice and that I have not suppressed any material fact.

Date : 20.07.2025

Place : Pune

Ashish Kothari
x

Signature of the Applicant

I DO SWEAR IN THE NAME OF GOD SOLEMNLY AFFIRM THAT THIS IS MY NAME & SIGNATURE (OR MARK) AND THAT THE CONTENTS OF THE AFFIDAVIT ARE TRUE

Ashish Kothari

BEFORE ME

HAP 21-7-25

L. A. PARANJAPE
NOTARY, STATE OF MAHARASHTRA
PUNE DISTRICT



Noted and Registered at Serial Number

4/25

~~525~~

ANNEXURE A29

SHORE LINE CHANGE ATLAS OF THE INDIAN COAST

(Volume-VI)

Lakshadweep, Andaman and Nicobar Islands



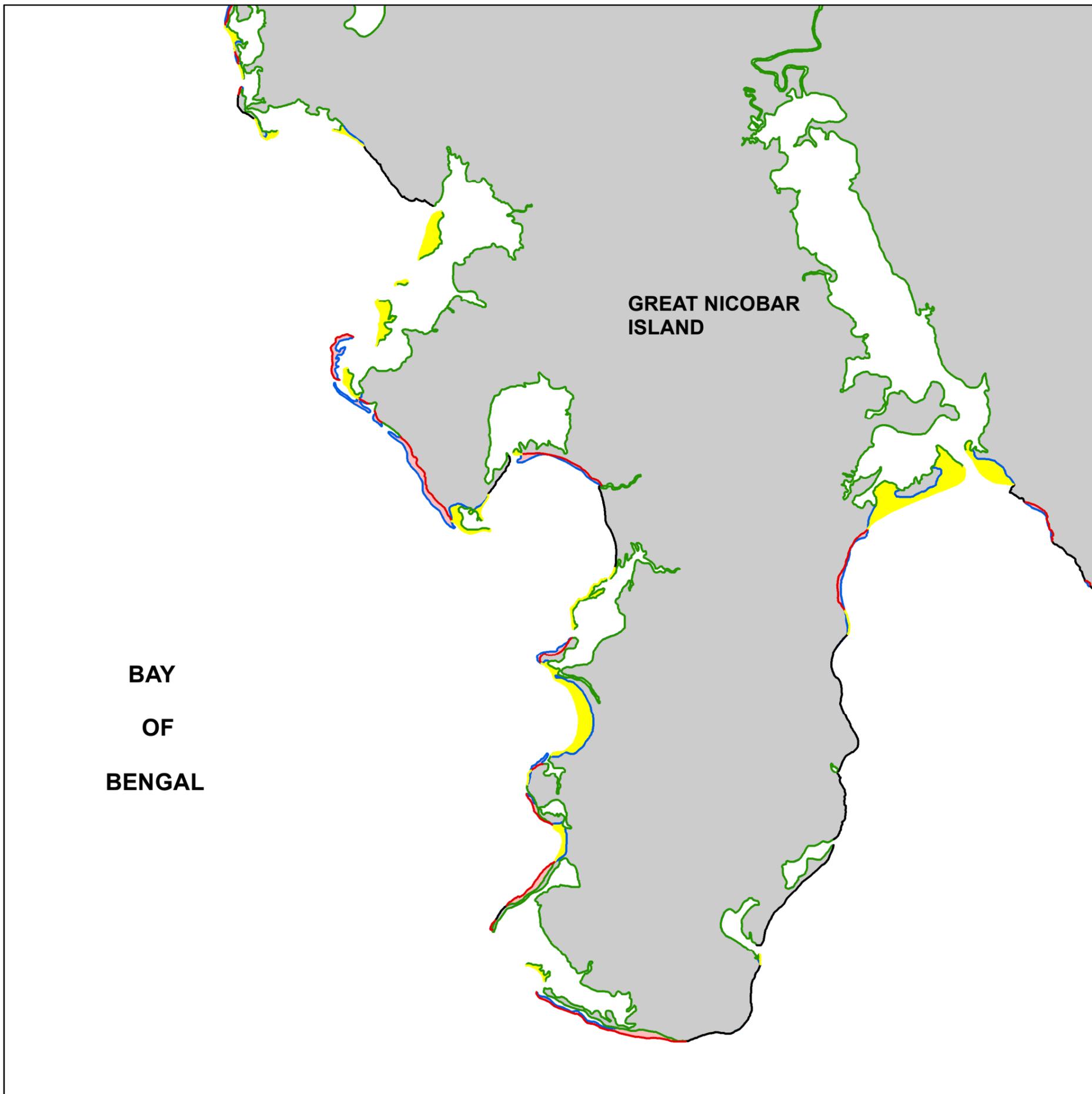
SPACE APPLICATIONS CENTRE, ISRO
Ahmedabad

August-2021

SHORELINE CHANGE MAP

FOR OFFICIAL USE ONLY

NICOBAR ISLANDS ANDAMAN AND NICOBAR ISLANDS SHEET NO. 88F13SW



Legend

- EROSION
- ACCRETION
- HIGH-TIDE LINE 2014-16
- HIGH-TIDE LINE 2004-06
- STABLE

INDEX TO SHEETS

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| 88F09NE | 88F13NW | 88F13NE |
| SEA | 88F13SW | 88F13SE |
| SEA | SEA | SEA |

INDIA

ANDAMAN AND NICOBAR ISLANDS

DATA SOURCE:
IRS LISS4 IMAGES OF 2004-06 & 2014-16

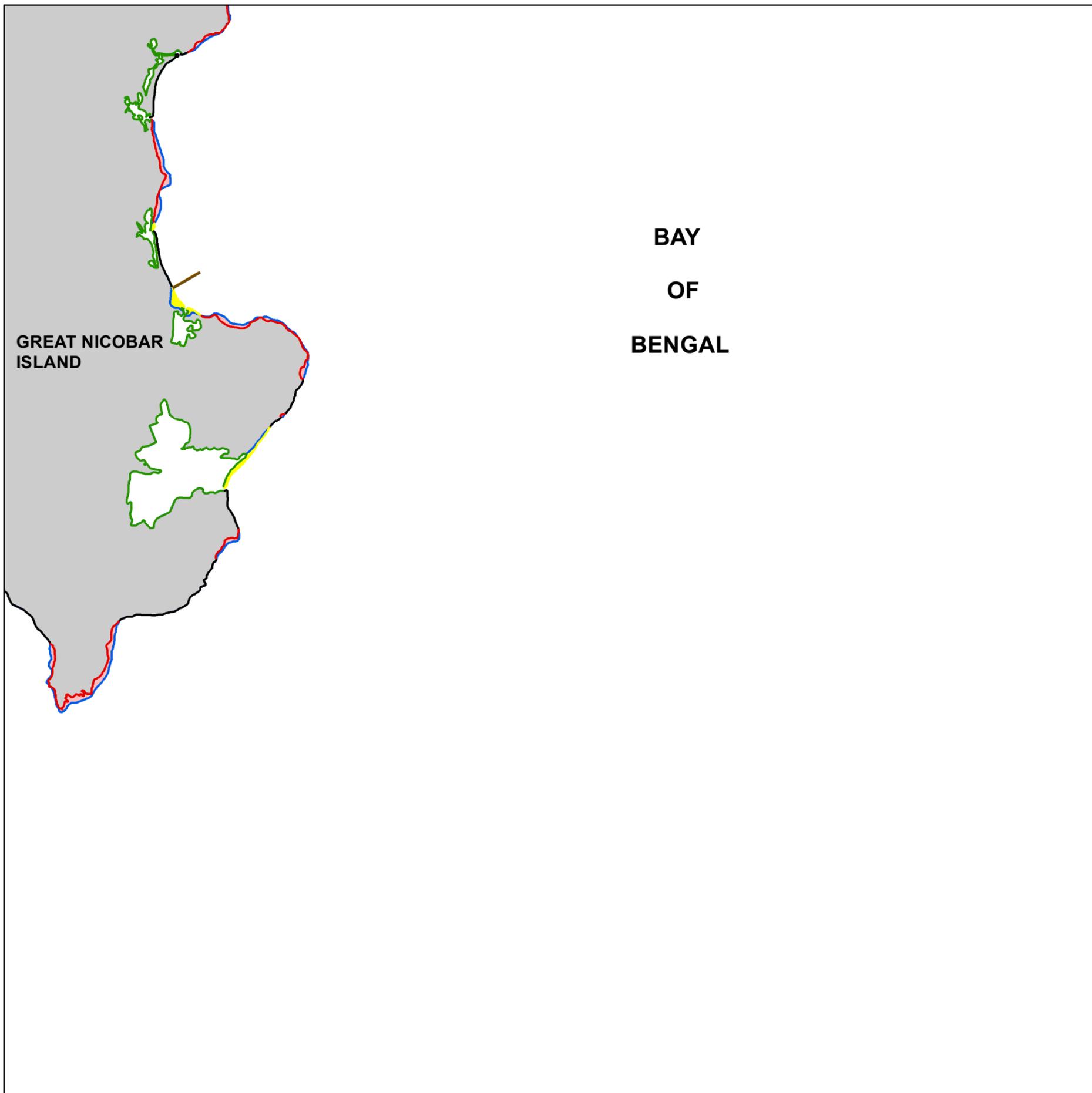
PREPARED BY:
SPACE APPLICATIONS CENTRE, ISRO, AHMEDABAD
AND CENTRAL WATER COMMISSION, NEW DELHI



SHORELINE CHANGE MAP

FOR OFFICIAL USE ONLY

NICOBAR ISLANDS **ANDAMAN AND NICOBAR ISLANDS** SHEET NO. 88F13SE



Legend

- EROSION
- ACCRETION
- HIGH-TIDE LINE 2014-16
- HIGH-TIDE LINE 2004-06
- STABLE
- JETTY

INDEX TO SHEETS

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| 88F13SW | 88F13SE | SEA |
| SEA | SEA | SEA |

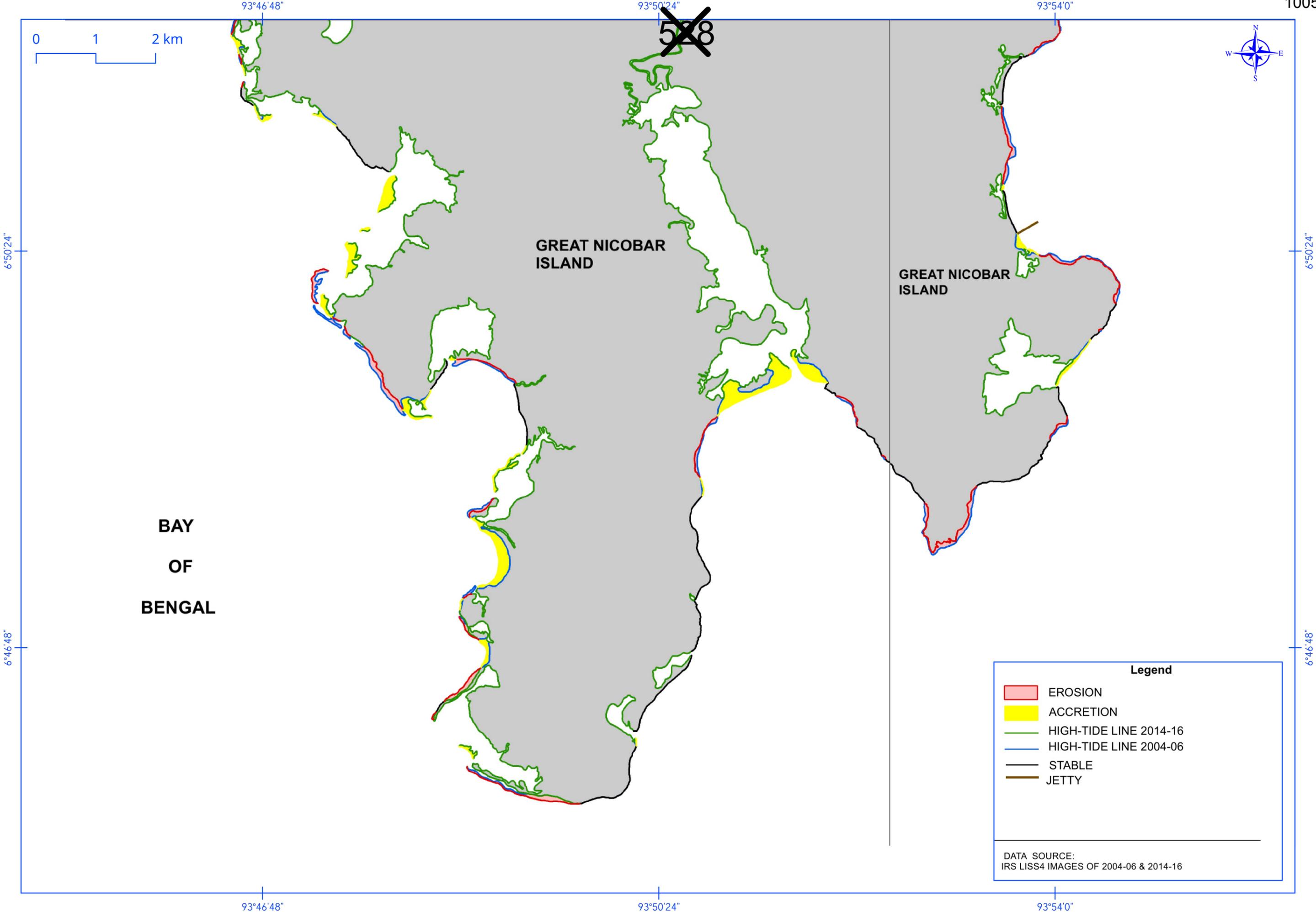
INDIA

ANDAMAN AND NICOBAR ISLANDS

DATA SOURCE:
IRS LISS4 IMAGES OF 2004-06 & 2014-16

PREPARED BY:
SPACE APPLICATIONS CENTRE, ISRO, AHMEDABAD
AND CENTRAL WATER COMMISSION, NEW DELHI





Legend

- EROSION
- ACCRETION
- HIGH-TIDE LINE 2014-16
- HIGH-TIDE LINE 2004-06
- STABLE
- JETTY

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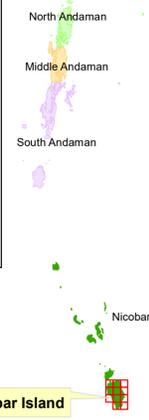
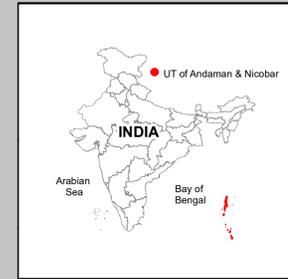
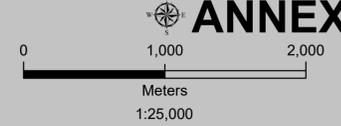
DRAFT COASTAL LAND USE MAP
GREAT NICOBAR ISLAND
UNION TERRITORY OF ANDAMAN & NICOBAR

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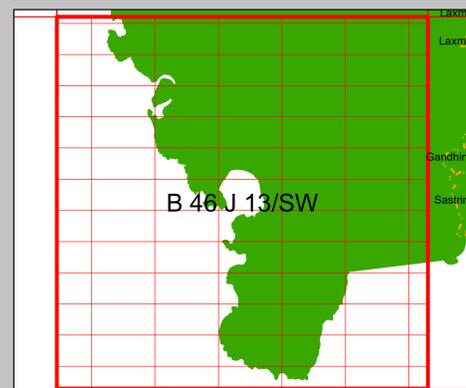
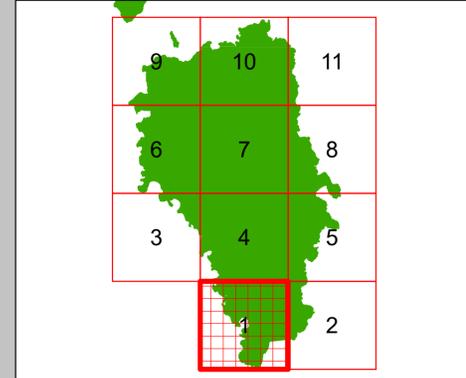
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Projection :- UTM Datum :- WGS 1984

ANNEXURE A30



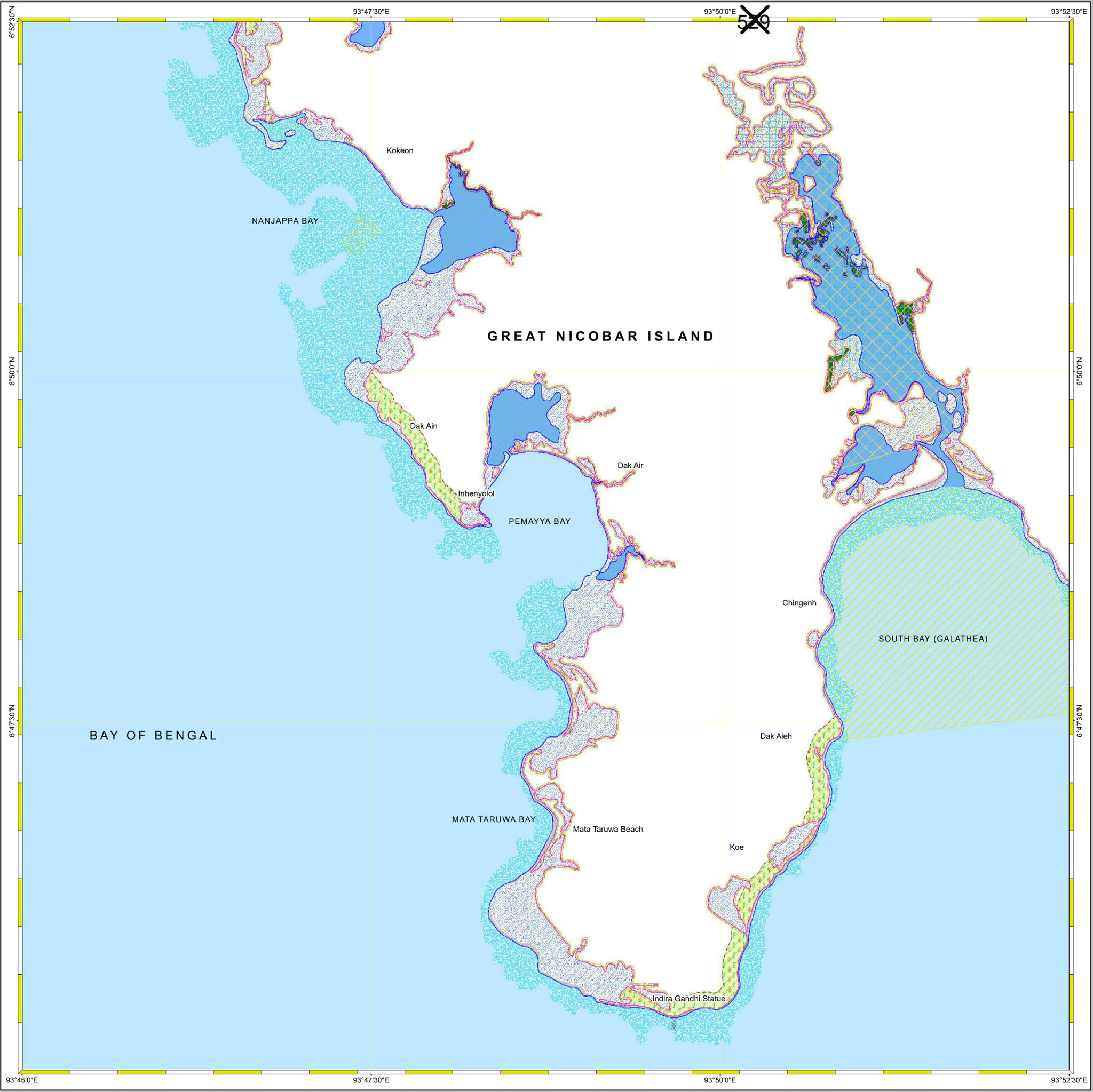
- Legend**
- Lighthouse
 - Fish Landing Centre
 - School
 - 200m ICRZ Line
 - ICRZ Line for Creek or River
 - 20m ICRZ Line for Bay
 - Road
 - High Tide Line
 - Low Tide Line
 - Village Boundary
 - Jetty
 - Habitation or Settlement
 - Agricultural Land
 - Tribal Reserve
 - Biosphere Reserve
 - National Park
 - Wildlife Sanctuary
 - Protected Forest
 - 20m Mangroves Buffer Zone
 - Mangroves
 - Beach or Sand patch
 - Coral Reefs
 - Inter Tidal Zone
 - Creek or River



DATA SOURCE

I) National Center for Sustainable Coastal Management
 1) HTL, LTL;
 2) Infrastructure facilities such as Road, Lighthouse, Breakwater or Jetty etc.

II) Union Territory of Andaman and Nicobar Administration
 1) Administrative Boundaries; Fish landing Centre; National Park; Wild Life Sanctuaries; Biosphere Reserve; Tribal and Jarawa Reserve Boundaries, etc



PREPARED AS PER ICRZ NOTIFICATION 2019

Prepared by



National Centre for Sustainable Coastal Management
(Ministry of Environment, Forest & Climate Change)
Chennai - 600 025

Prepared for



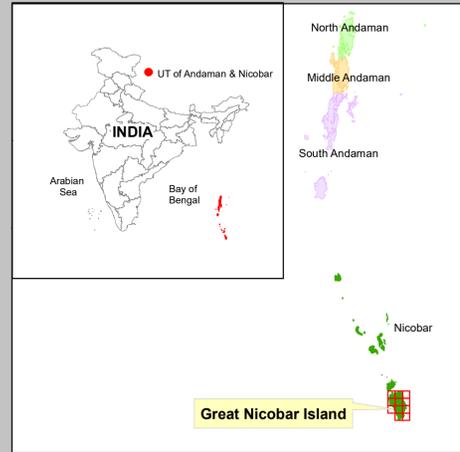
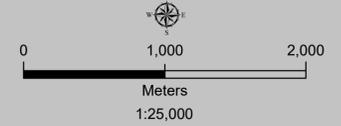
UNION TERRITORY OF ANDAMAN & NICOBAR ADMINISTRATION

DRAFT COASTAL LAND USE MAP GREAT NICOBAR ISLAND UNION TERRITORY OF ANDAMAN & NICOBAR

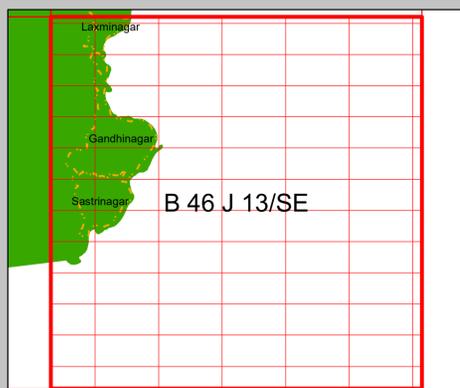
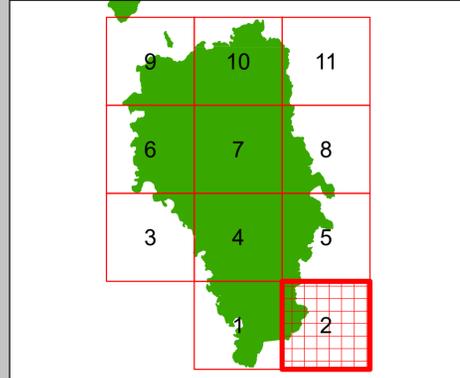
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Map No: GN 2

Projection :- UTM Datum :- WGS 1984



| Legend | |
|--------|------------------------------|
| | Lighthouse |
| | Fish Landing Centre |
| | School |
| | 200m ICRZ Line |
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| | High Tide Line |
| | Low Tide Line |
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| | Jetty |
| | Habitation or Settlement |
| | Agricultural Land |
| | Tribal Reserve |
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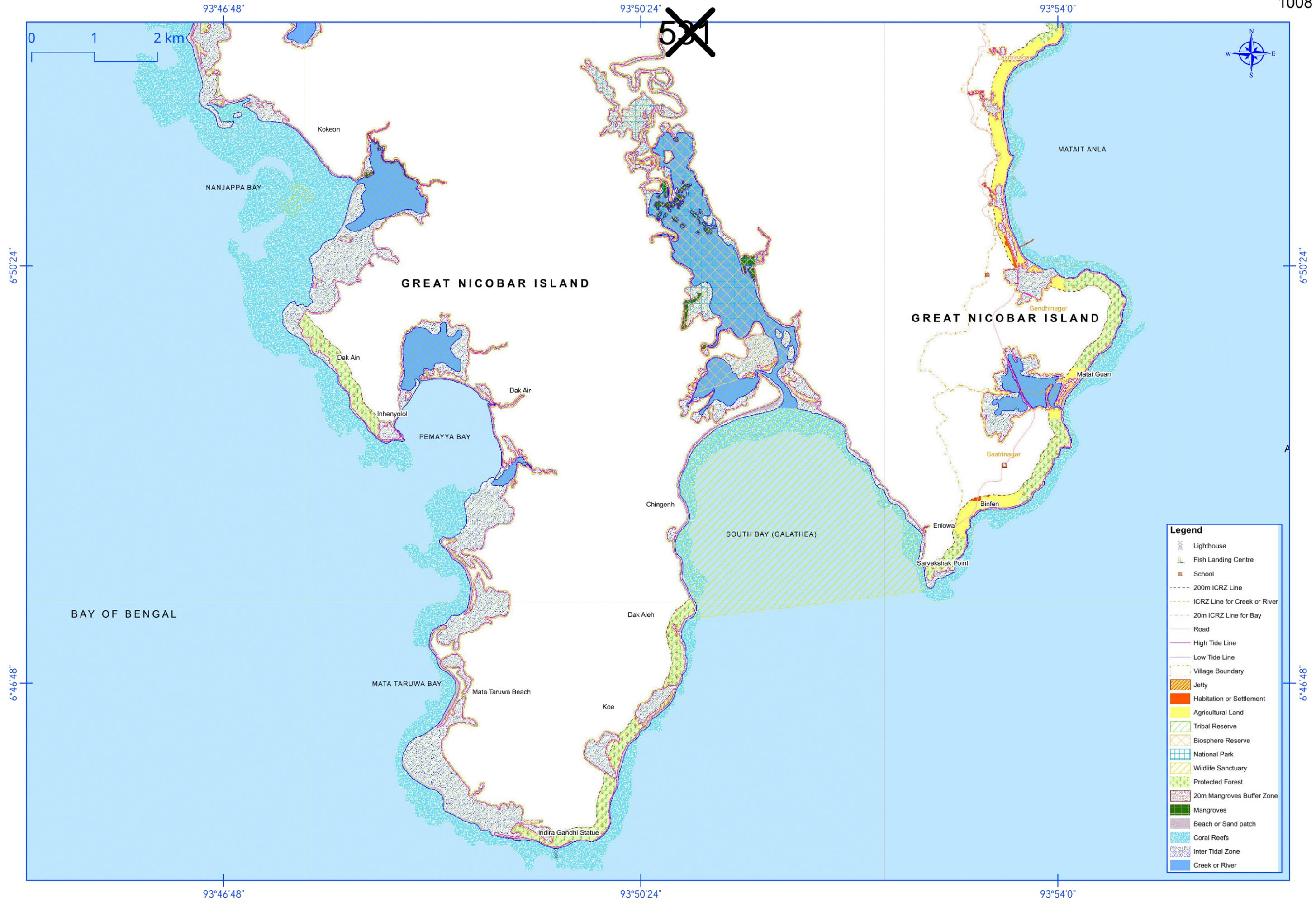
National Centre for Sustainable Coastal Management
 (Ministry of Environment, Forest & Climate Change)
 Chennai - 600 025

Prepared for



UNION TERRITORY OF ANDAMAN & NICOBAR ADMINISTRATION





6°50'24"

6°50'24"

6°46'48"

6°46'48"

93°46'48"

93°50'24"

93°54'0"

93°46'48"

93°50'24"

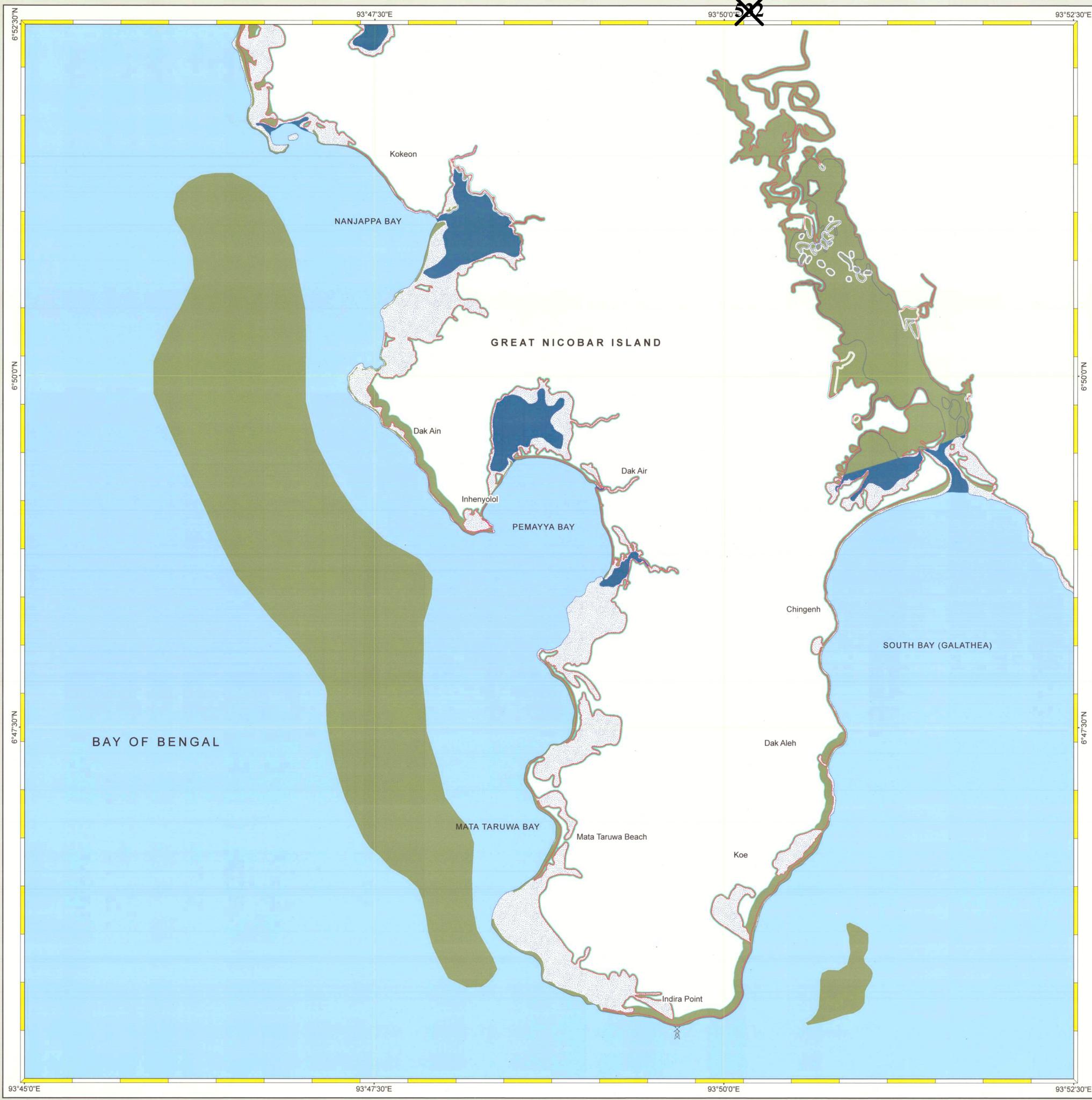
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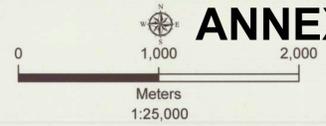
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- Wildlife Sanctuary
- Protected Forest
- 20m Mangroves Buffer Zone
- Mangroves
- Beach or Sand patch
- Coral Reefs
- Inter Tidal Zone
- Creek or River

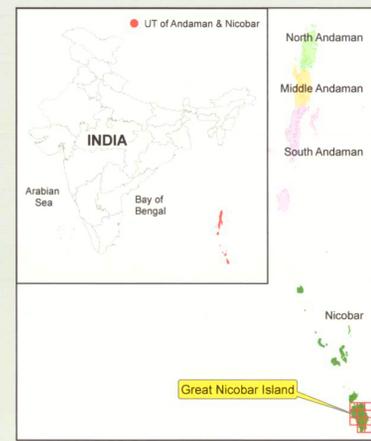


**ISLAND COASTAL REGULATION ZONE PLAN
GREAT NICOBAR ISLAND
ANDAMAN & NICOBAR ISLANDS**

Sheet No: B 46 J 13/SW
Edition - 1: June, 2021 Projection - UTM Datum - WGS 1984 Map No: GN 1



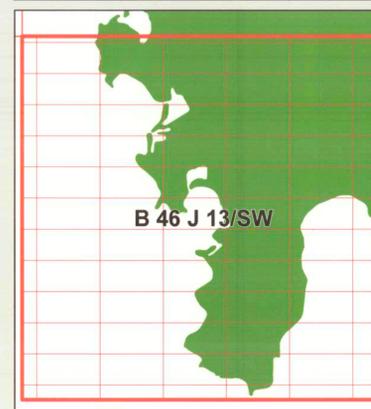
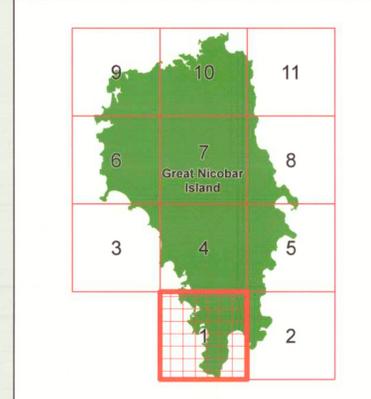
ANNEXURE A31



- LEGEND**
- Lighthouse
 - Fish Landing Centre
 - School
 - Road
 - High Tide Line
 - Low Tide Line
 - Survey Plots
 - Village Boundary
 - Jetty

- ICRZ Lines & Boundary**
- 20m ICRZ Line - NDZ for Eco-Tourism Activities
 - 50m ICRZ Line - NDZ
 - ICRZ Boundary (100m Line, 20m for Bay, 20 m or width of the creek whichever is less along the tidal influenced water bodies)

- ICRZ CATEGORY ICRZ - I**
- ICRZ - IA
 - 20m Mangrove Buffer Zone
 - ICRZ - IB
- ICRZ - III**
- No Development Zone
 - 50m to 100m from HTL
- ICRZ - IV**
- ICRZ - IVA
 - ICRZ - IVB



Note: Mangroves in private land will not require a buffer zone

DATA SOURCE

I) National Centre for Sustainable Coastal Management
1) HTL, LTL; 2) ICRZ Lines; 3) ICRZ Categories;
4) Infrastructure facilities such as Road, Lighthouse, Jetty etc.

II) Union Territory of Andaman and Nicobar Administration
1) Administrative Boundaries; Fish Landing Centre; National Park; Biosphere Reserved; Turtle Nesting Ground; Nesting Ground of Bird; Tribal Reserve, etc

ABBREVIATIONS
ICRZ - Island Coastal Regulation Zone
NDZ - No Development Zone

Mapped During 2017-18

PREPARED AS PER ICRZ NOTIFICATION, 2019

| Scrutinized by | Certified by | Concurred by | Approved by |
|---|---|---|--|
| | | | |
| Technical Scrutiny Committee National Centre for Sustainable Coastal Management, MoEF & CC | DIRECTOR National Centre for Sustainable Coastal Management, MoEF&CC | Principal Chief Conservator of Forests Andaman & Nicobar Islands Port Blair | Secretary, Government of India, New Delhi |

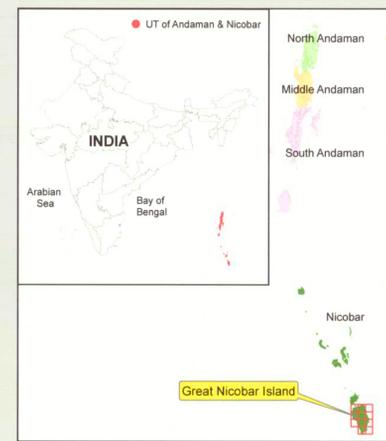
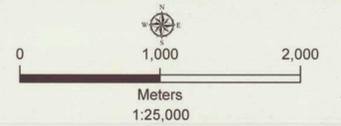
Prepared by
National Centre for Sustainable Coastal Management
(Ministry of Environment, Forest & Climate Change)
Chennai - 600 025

DEPARTMENT OF ENVIRONMENT & FORESTS
ANDAMAN & NICOBAR ADMINISTRATION

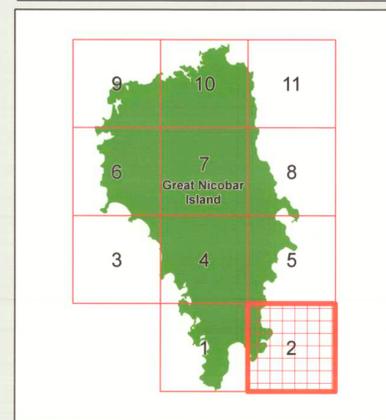


**ISLAND COASTAL REGULATION ZONE PLAN
GREAT NICOBAR ISLAND
ANDAMAN & NICOBAR ISLANDS**

Sheet No: B 46 J 13/SE
Edition - 1: June, 2021 Projection :- UTM Datum :- WGS 1984 Map No: GN 2

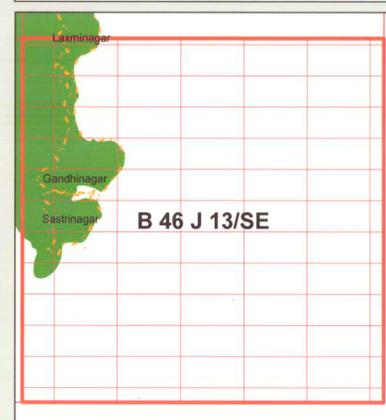


- LEGEND**
- Lighthouse
 - Fish Landing Centre
 - School
 - Road
 - High Tide Line
 - Low Tide Line
 - Survey Plots
 - Village Boundary
 - Jetty



- ICRZ Lines & Boundary**
- 20m ICRZ Line - NDZ for Eco-Tourism Activities
 - 50m ICRZ Line - NDZ
 - ICRZ Boundary (100m Line, 20m for Bay, 20 m or width of the creek whichever is less along the tidal influenced water bodies)

- ICRZ CATEGORY ICRZ - I**
- ICRZ - IA
 - 20m Mangrove Buffer Zone
 - ICRZ - IB
- ICRZ - III**
- No Development Zone
 - 50m to 100m from HTL
- ICRZ - IV**
- ICRZ - IVA
 - ICRZ - IVB



Note: Mangroves in private land will not require a buffer zone

DATA SOURCE

I) National Centre for Sustainable Coastal Management
1) HTL, LTL; 2) ICRZ Lines; 3) ICRZ Categories;
4) Infrastructure facilities such as Road, Lighthouse, Jetty etc.

II) Union Territory of Andaman and Nicobar Administration
1) Administrative Boundaries; Fish Landing Centre; National Park; Biosphere Reserved; Turtle Nesting Ground; Nesting Ground of Bird; Tribal Reserve, etc

ABBREVIATIONS
ICRZ : Island Coastal Regulation Zone
NDZ : No Development Zone

Mapped During 2017-18

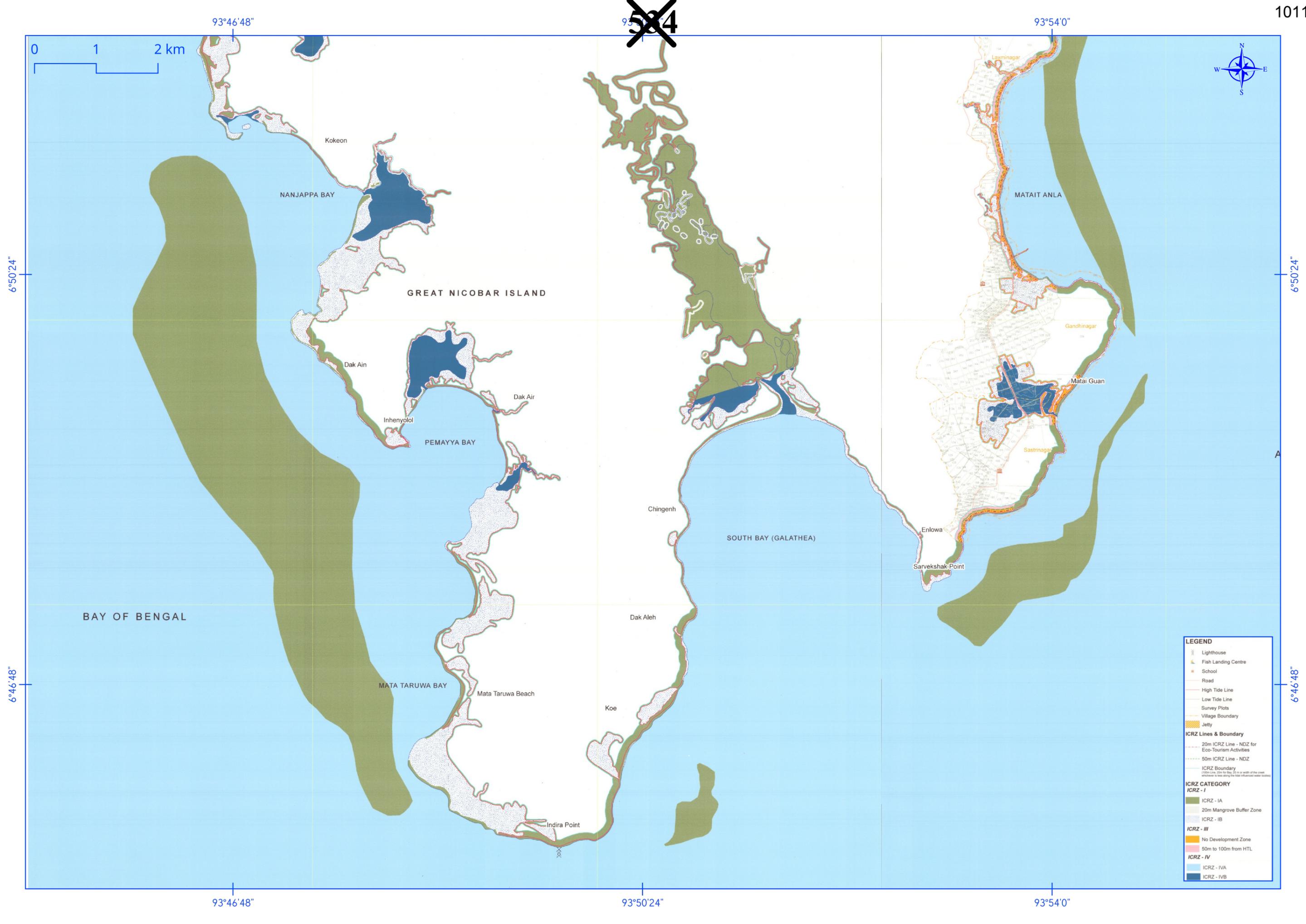
PREPARED AS PER ICRZ NOTIFICATION, 2019

| Scrutinized by | Certified by | Concurred by | Approved by |
|---|---|---|--|
| Technical Scrutiny Committee National Centre for Sustainable Coastal Management, MoEF & CC | DIRECTOR National Centre for Sustainable Coastal Management, MoEF & CC | Principal Chief Conservator of Forests Andaman & Nicobar Islands Port Blair | Secretary Department of Environment, Forest & Climate Change Govt. of India, New Delhi |

Prepared by National Centre for Sustainable Coastal Management
(Ministry of Environment, Forest & Climate Change)
Chennai - 600 025

**DEPARTMENT OF ENVIRONMENT & FORESTS
ANDAMAN & NICOBAR ADMINISTRATION**

~~SECRET~~



LEGEND

- Lighthouse
- Fish Landing Centre
- School
- Road
- High Tide Line
- Low Tide Line
- Survey Plots
- Village Boundary
- Jetty

ICRZ Lines & Boundary

- 20m ICRZ Line - NDZ for Eco-Tourism Activities
- 50m ICRZ Line - NDZ
- ICRZ Boundary
(Green Line, 20m to 25m or width of the creek whichever is less along the total influenced water bodies)

ICRZ CATEGORY

ICRZ - I

- ICRZ - IA
- 20m Mangrove Buffer Zone
- ICRZ - IB

ICRZ - III

- No Development Zone
- 50m to 100m from HTL

ICRZ - IV

- ICRZ - IVA
- ICRZ - IVB

6°50'24"

6°50'24"

6°46'48"

6°46'48"

93°46'48"

93°50'24"

93°54'0"

93°46'48"

93°50'24"

93°54'0"

BAY OF BENGAL

NANJAPPA BAY

GREAT NICOBAR ISLAND

PEMAYYA BAY

MATA TARUWA BAY

SOUTH BAY (GALATHEA)

MATAIT ANLA

Kokeon

Dak Ain

Inhenyolol

Dak Air

Mata Taruwa Beach

Dak Aleh

Koe

Chingenh

Enlowa

Sarvekshak Point

Gandhinagar

Matai Guan

Sastrinagar

Laxminagar

Indira Point

COASTAL LAND USE MAP GREAT NICOBAR ISLAND ANDAMAN & NICOBAR ISLANDS

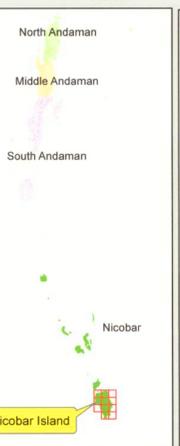
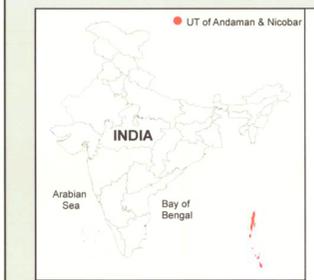
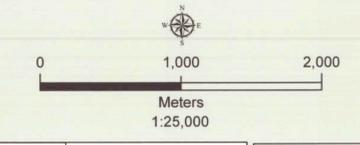
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Edition - 1: June, 2021

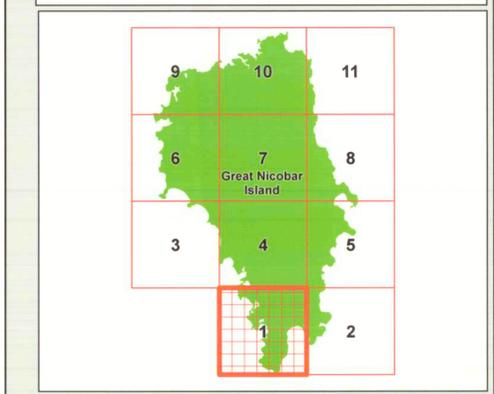
Projection :- UTM Datum :- WGS 1984

Map No: GN 1

ANNEXURE A32



- Legend**
- Lighthouse
 - Fish Landing Centre
 - School
 - Road
 - High Tide Line
 - Low Tide Line
 - 20m ICRZ Line for Bay
 - 100m ICRZ Line
 - ICRZ Line for Creek or River
 - Village Boundary



- LANDUSE CATEGORIES
ESA's**
- Mangrove
 - Coral Reef
 - Protected Forest
 - National Park
 - Biosphere Reserve
 - Turtle Nesting Ground
 - Megapod Nesting Ground
- Others**
- Agricultural Land
 - Habitation or Settlement
 - Beach or Sand patch
 - Jetty
 - Tribal Reserve
 - Creek or River
 - Intertidal Zone



DATA SOURCE

I) National Centre for Sustainable Coastal Management
1) HTL, LTL; 2) ICRZ Lines; 3) ICRZ Categories;
4) Infrastructure facilities such as Road, Lighthouse, Jetty etc.

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1) Administrative Boundaries; Fish landing Centre; National Park; Biosphere Reserved; Turtle Nesting Ground; Nesting Ground of Bird; Tribal Reserve, etc.

ABBREVIATIONS
ICRZ : Island Coastal Regulation Zone
NDZ : No Development Zone

Mapped During 2017-18

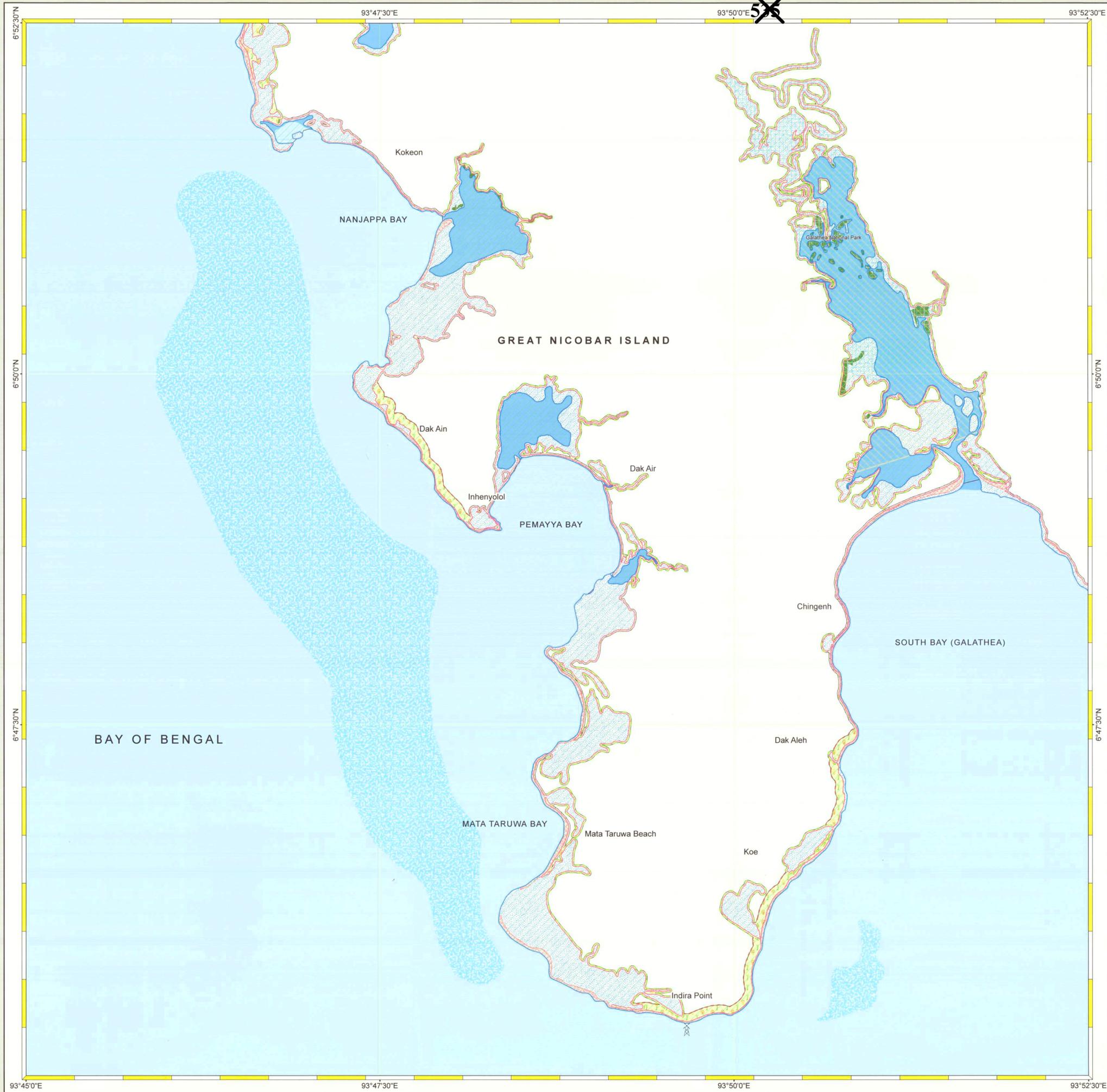
COASTAL LANDUSE MAP PREPARED ALONG WITH APPROVED ICRZP (AS PER ICRZ NOTIFICATION, 2019)



Prepared by
National Centre for Sustainable Coastal Management
(Ministry of Environment, Forest & Climate Change)
Chennai - 600 025



**DEPARTMENT OF ENVIRONMENT & FORESTS
ANDAMAN & NICOBAR ADMINISTRATION**





**COASTAL LAND USE MAP
GREAT NICOBAR ISLAND
ANDAMAN & NICOBAR ISLANDS**

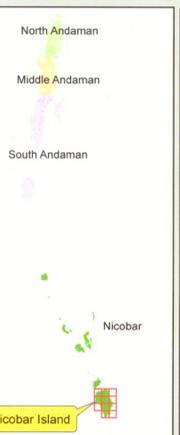
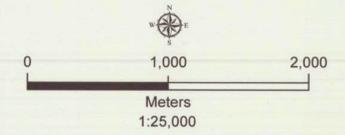
Sheet No: B 46 J 13/SE

Edition - 1: June, 2021

Projection :- UTM

Datum :- WGS 1984

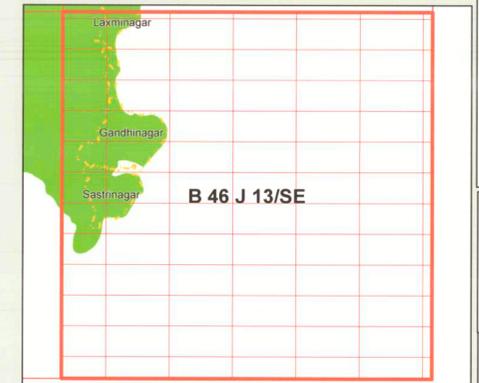
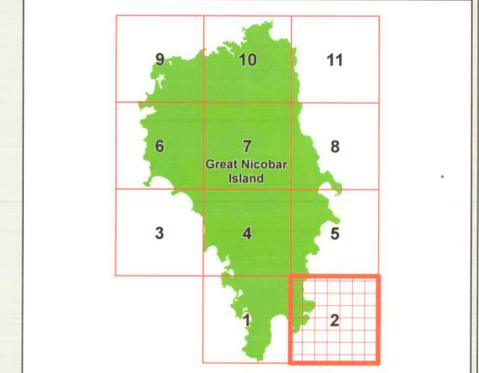
Map No: GN 2



- Legend**
- Lighthouse
 - Fish Landing Centre
 - School
 - Road
 - High Tide Line
 - Low Tide Line
 - 20m ICRZ Line for Bay
 - 100m ICRZ Line
 - ICRZ Line for Creek or River
 - Village Boundary

**LANDUSE CATEGORIES
ESA's**

- Mangrove
 - Coral Reef
 - Protected Forest
 - National Park
 - Biosphere Reserve
 - Turtle Nesting Ground
 - Megapod Nesting Ground
- Others**
- Agricultural Land
 - Habitation or Settlement
 - Beach or Sand patch
 - Jetty
 - Tribal Reserve
 - Creek or River
 - Intertidal Zone



DATA SOURCE

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 1) HTL, LTL; 2) ICRZ Lines; 3) ICRZ Categories;
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 1) Administrative Boundaries, Fish landing Centre, National Park, Biosphere Reserve, Turtle Nesting Ground, Nesting Ground of Bird, Tribal Reserve, etc.

ABBREVIATIONS
 ICRZ - Island Coastal Regulation Zone
 NDZ - No Development Zone

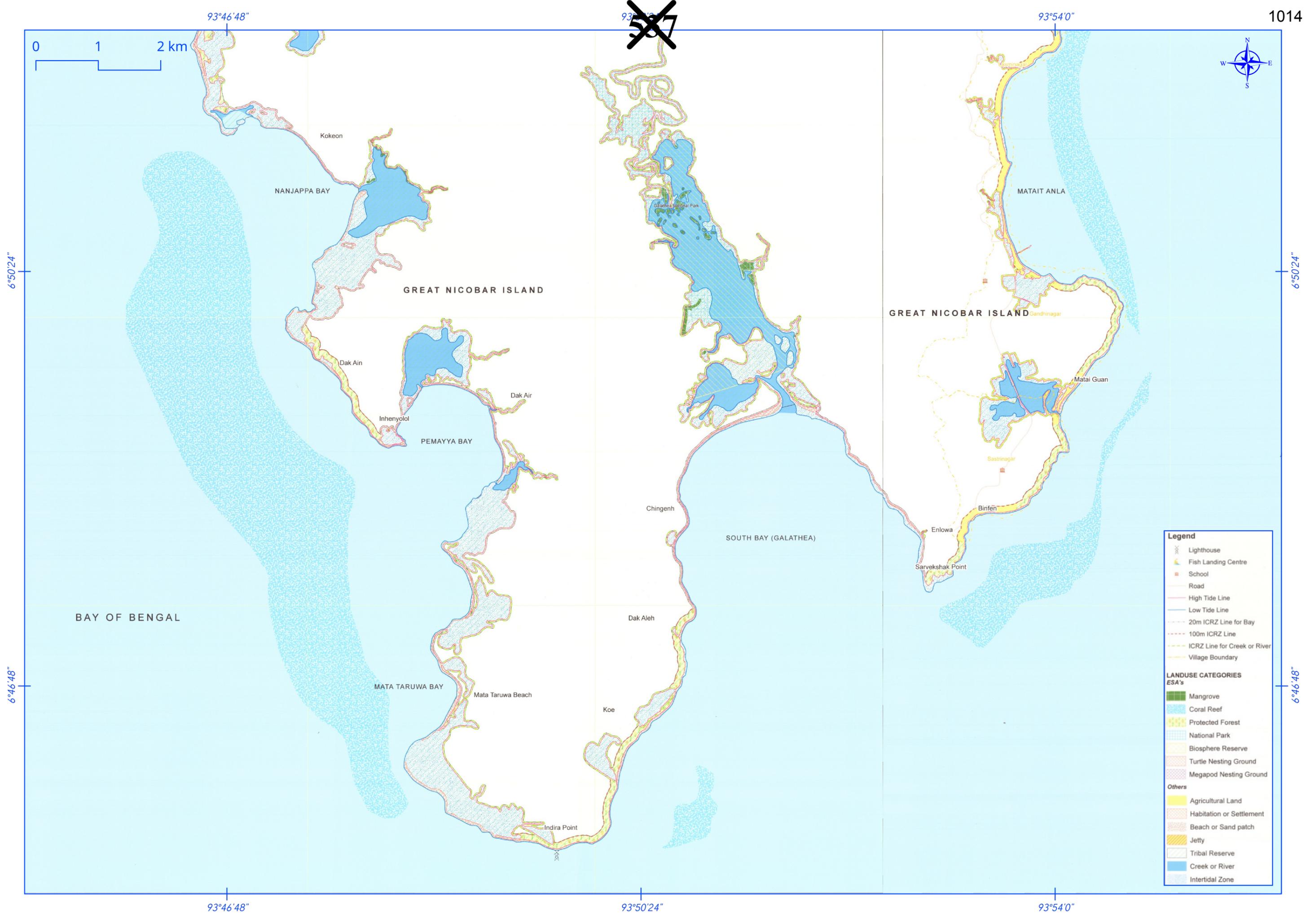
Mapped During 2017-18

COASTAL LANDUSE MAP PREPARED ALONG WITH APPROVED ICRZP (AS PER ICRZ NOTIFICATION, 2019)



Prepared by
NCSCM
National Centre for Sustainable Coastal Management
 (Ministry of Environment, Forest & Climate Change)
 Chennai - 600 025

DEPARTMENT OF ENVIRONMENT & FORESTS
ANDAMAN & NICOBAR ADMINISTRATION



Legend

- Lighthouse
- Fish Landing Centre
- School
- Road
- High Tide Line
- Low Tide Line
- 20m ICRZ Line for Bay
- 100m ICRZ Line
- ICRZ Line for Creek or River
- Village Boundary

LAND USE CATEGORIES

ESA's

- Mangrove
- Coral Reef
- Protected Forest
- National Park
- Biosphere Reserve
- Turtle Nesting Ground
- Megapod Nesting Ground

Others

- Agricultural Land
- Habitation or Settlement
- Beach or Sand patch
- Jetty
- Tribal Reserve
- Creek or River
- Intertidal Zone

F. No. APCCF(CRZ&FC)/R/2024/68

अतिरिक्त प्रधान मुख्य वन संरक्षण का कार्यालय

OFFICE OF THE ADDITIONAL PRINCIPAL CHIEF CONSERVATOR OF FORESTS

तटवर्ती अचल विनियम एव वन संरक्षण /

COASTAL REGULATION ZONE & FORESTS CONSERVATION

वन सदन हैडो / VAN SADAN HADDO

श्री विजयपुरम / Sri Vijaya Puram, दिनांक / Dated 24th April, 2025

To

Ms. Maitreyi Krishnan,
No. 18, 1st Floor, Bharat Bhavan,
No. 35, Infantry Road,
Opposite Balaji Plywoods, Shivaji Nagara
Bengaluru - 560001,

Sub: - Providing of Information under Right to Information Act, 2005 -Reg.

Ref: - 1. Your RTI Application dated 11.03.2025.

Sir/ Madam,

With reference to the letter cited above the information sought is
furnished herewith:-

| Sl. No. | Particulars of Requisite Information | Reply |
|---------|---|---|
| 1. | Copy of data pertaining to turtle nesting/ turtle nesting grounds provided by Department of Forests and Environment, Andaman and Nicobar Islands to Andaman & Nicobar Coastal Zone Management Authority for the preparation of the Coastal Zone Management Plans (CZMP) under the Island Regulation Zone Management Plan. | The required information available in 07 pages is enclosed. |
| 2. | Any data pertaining to turtle nesting/ turtle nesting grounds in the Great Nicobar Island available with the Andaman and Nicobar Coastal Zone Management Authority (A&NCZMA). | The available information is available in CD containing land use maps prepared by NCSCM, Chennai is enclosed. |
| 3. | Copy of plan for turtle conservation implemented in the Great Nicobar Island. | Information is not available with this office. |

The details of First Appellate Authority is as under: -

The Additional Principal Chief Conservator of Forest
(Administration and Vigilance)
O/o The Principal Chief Conservator of Forest
Van Sadan, Haddo
Sri Vijaya Puram - 744102

भवदीय / Yours faithfully

Encl: As above

Meera
24/4/25

(मीरा नांमवियार/ Meera Nambiar)

जन सूचना अधिकारी/ Public Information Officer

सहायक वन संरक्षक / Assistant Conservator of Forests

(तटवर्ती अचल विनियम एव वन संरक्षण)/(CRZ&FC)

वन सदन, हैडो, श्री विजयपुरम /Van Sadan, Haddo, Sri Vijaya Puram

Phone No. 03192 231492

24/4/25
24/4/25

~~589~~

424
VB

ACF (CRZ & FC)
FC

No. CWLW/G/149/542

प्रधान मुख्य वन संरक्षक का कार्यालय (वन्य प्राणी)

OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS (WILDLIFE)

अण्डमान तथा निकोबार द्वीप समूह / ANDAMAN AND NICOBAR ISLANDS

वन्य प्राणी भवन / VANYA PRANI BHAWAN

चथम / CHATHAM

पोर्ट ब्लेयर / PORT BLAIR dated the 25th January, 2021.



The Principal Chief Conservator of Forests (CRZ & FC)
Vansadan, Haddo.

Sub: 10th CZPM/ICRZ/IIMP Technical scrutiny Committee meeting on 14.12.2020
- reg.

Ref: Email received from PCCF(CRZ & FC) on 12.12.2020.

Sir,

In reference to your email cited under reference, I am directed to send herewith the shape file of the areas of Turtle Nesting, Magapode Nesting & coral reefs of Great Nicobar Island & Little Andaman Island for further necessary action at your end please.

Yours Sincerely

[Signature]
22/1/21

वन संरक्षक (वन्य प्राणी)

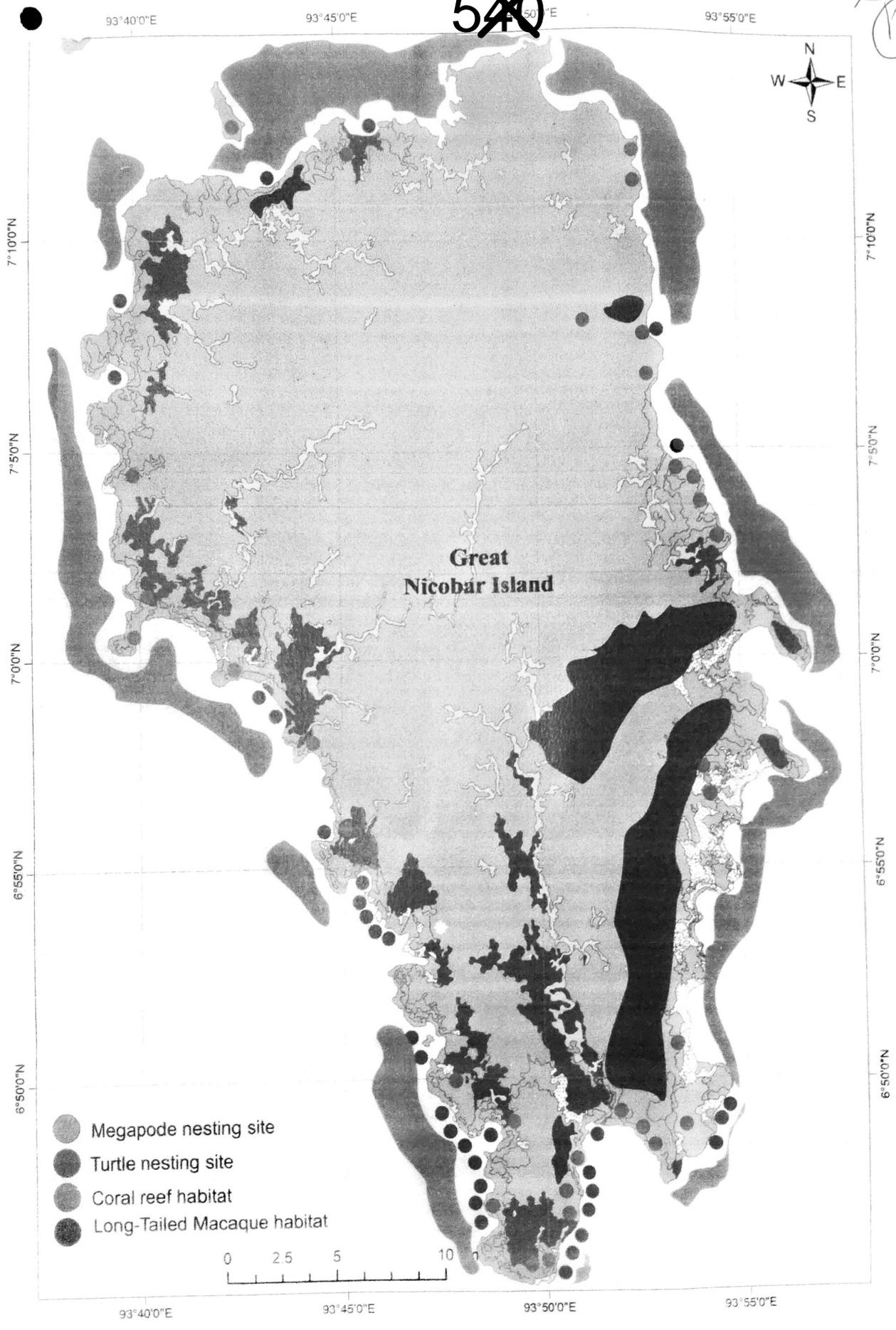
Conservator of Forests (Wildlife)

Encl.A/a

[Signature]
12/1/21

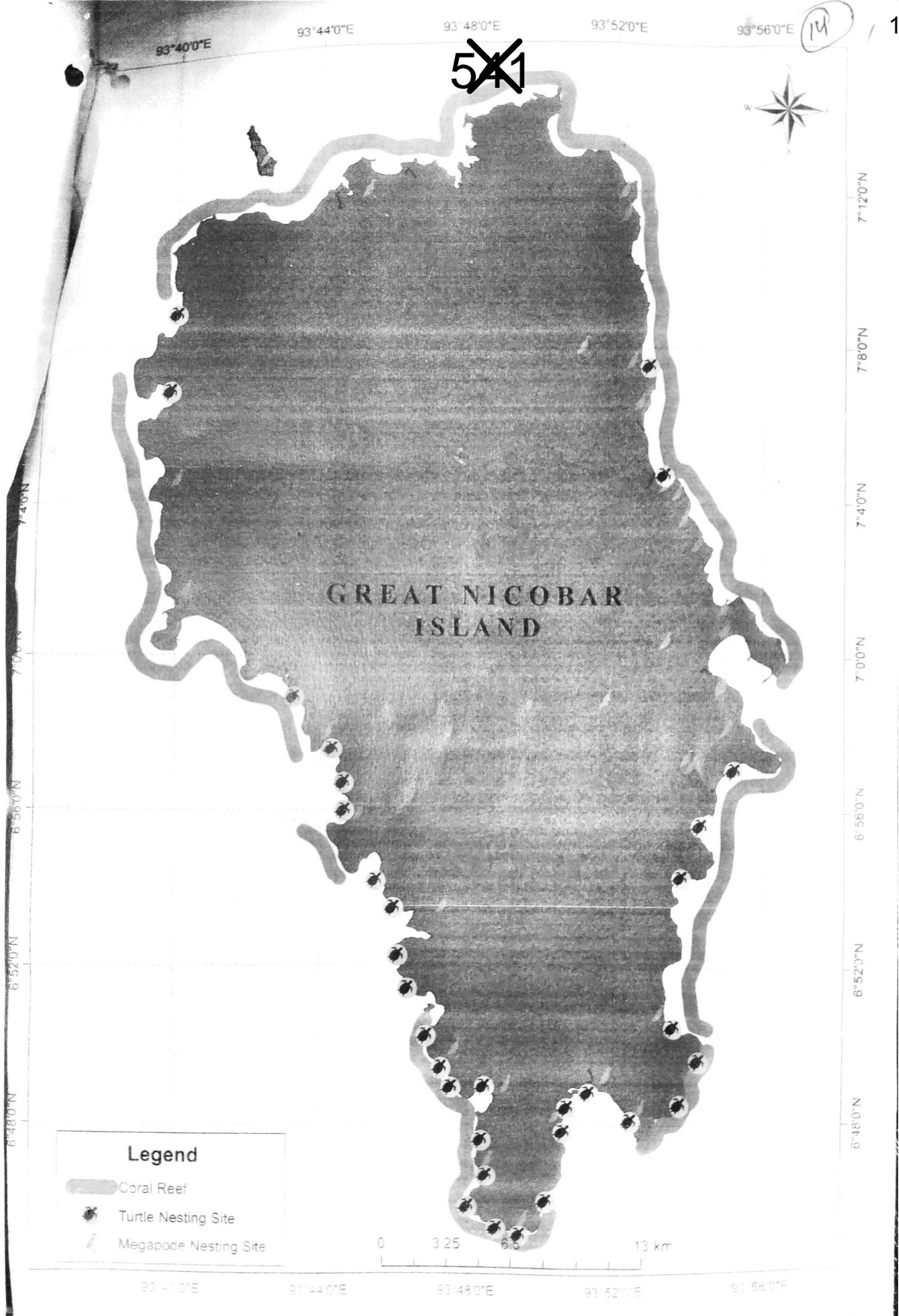
433
12

~~540~~



14

~~5/1~~



93°40'0"E

93°44'0"E

93°48'0"E

93°52'0"E

93°56'0"E

7°4'0"N

7°0'0"N

6°56'0"N

6°52'0"N

6°48'0"N

7°12'0"N

7°8'0"N

7°4'0"N

7°0'0"N

6°56'0"N

6°52'0"N

6°48'0"N

Legend

-  Coral Reef
-  Turtle Nesting Site
-  Megapode Nesting Site

0 3.25 6.5 13 km

93°40'0"E

93°44'0"E

93°48'0"E

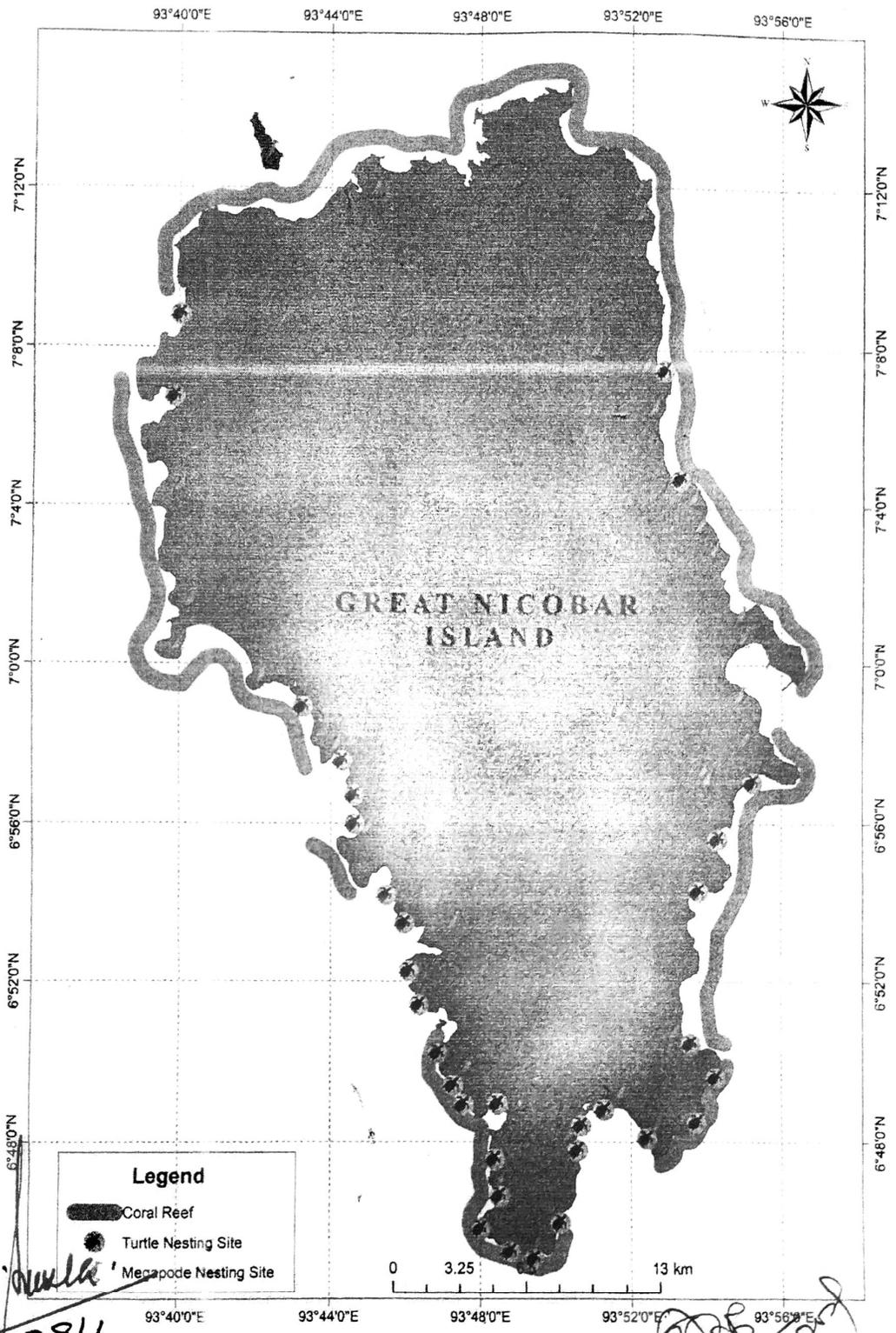
93°52'0"E

93°56'0"E

INDICATIVE MAP (Source: ZSI)

~~542~~

15
057



CS
 29/11

29-1-2011

TOPOGRAPHICAL SURVEY OF INDIA

प्रधान मुख्य वन संरक्षक (वन प्राणी)
 PRINCIPAL CHIEF CONSERVATOR OF FORESTS (WILDLIFE)
 प्रो मुं डे सं (वन प्राणी) का कार्यालय
 Office of the PCCF (Wildlife)
 वन्य प्राणी भवन, चाथम, पोर्ट ब्लेयर
 Vanya Prani Bhavan, Chatham, Port Blair

~~5/3~~



7° 00' N
7° 50' N
8° 40' N
9° 30' N

80° 00' E
80° 50' E
81° 40' E
82° 30' E

Great
Nicobar Island

-  Megapode nesting site
-  Turtle nesting site
-  Coral reef habitat
-  Long-Tailed Macaque habitat



80° 40' E

90° 45' E

81° 50' E



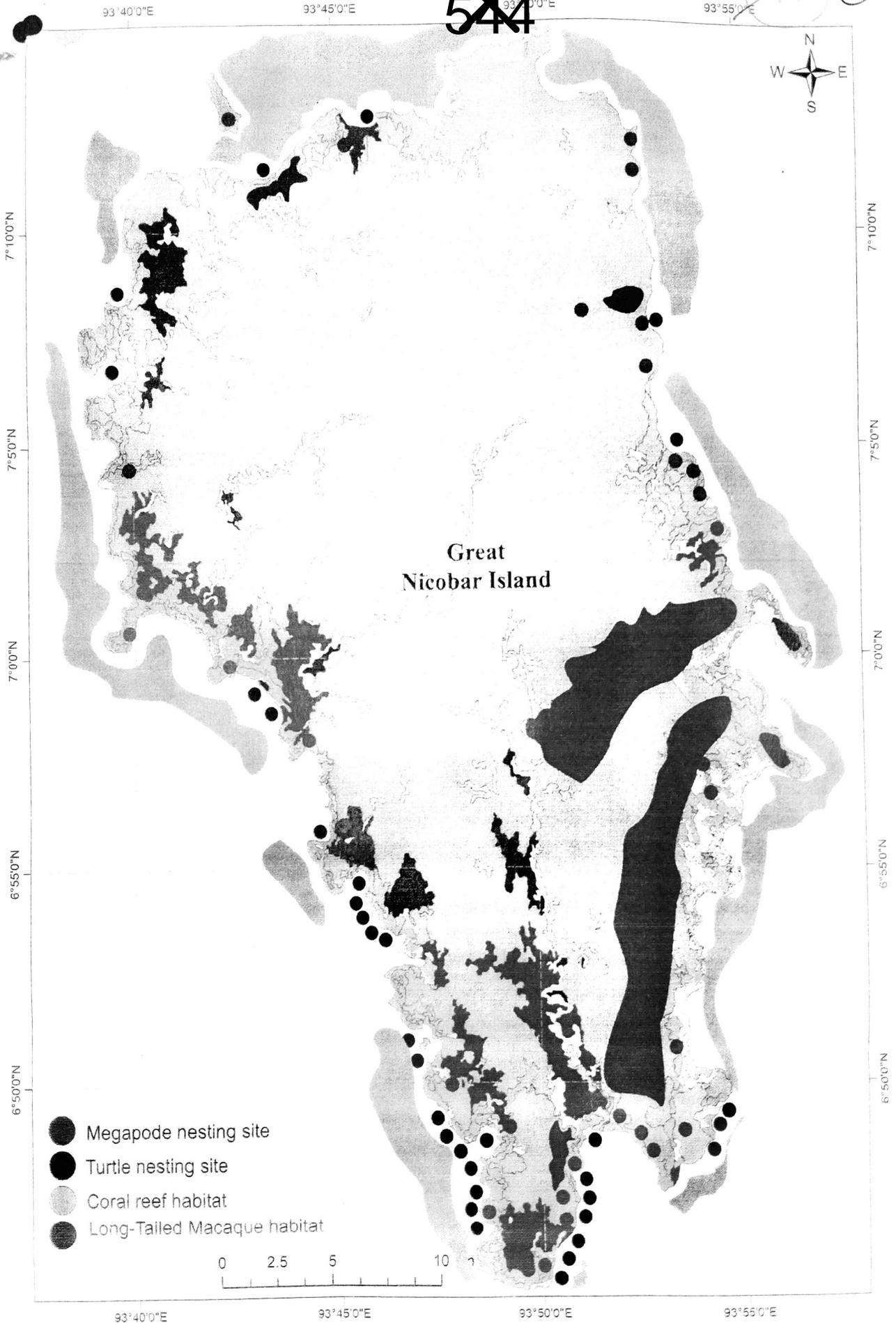
H. Heurle

C/S

| | |
|------|------|
| 20/1 | 20/1 |
|------|------|

1759
12

~~544~~



09/02/2021

Gmail - map of Great Nicobar

1022

~~545~~

462. 18

Gmail

APCCF CRZFC <apccf.crzfc@gmail.com>

map of Great Nicobar

vansadan port blair gis cell <giscellandaman@gmail.com>
To: "apccf.crzfc" <apccf.crzfc@gmail.com>

Thu, Feb 4, 2021 at 12:14 PM

I am directed to enclose the soft copy of letter no. F.10(G-I)/93(B)/560 dated 29.01.2021 along with two maps as enclosure to the above letter and the same two maps in jpg format, & kml format for kind information and further necessary action please

Regards
ACF Headquarters

8 attachments



Indicative map of Great Nicobar from ZSI.jpg
106K



ZSI map of GN showing Corals, Turtle & Megapode nesting site.jpg
6835K

-  **Covering letter of NITI aayog Project for holistic development.pdf**
275K
-  **Indicative map of Great Nicobar from ZSI (scanned).pdf**
692K
-  **ZSI map of GN showing Corals, Turtle & Megapode nesting site (scanned).pdf**
868K
-  **corals_GN.kmz**
10K
-  **Megapode Nesting sites GN.kmz**
3K
-  **Turtle Nesting sites GN.kmz**
3K

546

ANNEXURE A34



जहाँ है हरियाली ।
वहाँ है खुशहाली ॥

Ministry of Environment & Forests
GOVERNMENT OF INDIA, NEW DELHI

Environmental Impact Assessment Guidance Manual
for
PORTS & HARBORS



Prepared by



Administrative Staff College of India
Bellavista, Khairatabad, Hyderabad

February 2010



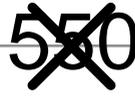
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the seawater within the harbor limits. This is likely to increase concentration/sedimentation of pollutants in the harbor area, which may migrate in time to the neighboring ground water. Also surface water from cargo stacks may percolate as leachets into the ground and may contaminate the ground water.

Baseline data for ground water quality and details of aquifer are to be established including data of pH, salinity, dissolved solids, BOD, coliform bacteria and other parameters to be decided based on the cargo to be handled. The description of water sampling locations and details of analysis may be given as in **Table 4.4 & 4.5** In case it is proposed to tap the ground water during construction and or operation stage(s), the same should be quantified, and source of water supply should be identified.

The stress, if any on local ground water availability should be studied and comprehensive water demand should be estimated. The salinity along the stretch of the port should be mapped.

4.3.2 Surface Water

Baseline data of sources of surface water like surface streams, lakes, tidal inlets, etc., along with their description, present quality is to be provided. The description of the water sampling locations and analysis values may be given as in **Table 4.6 & 4.7**. In case it is proposed to tap the surface water during construction and or operation stage(s), the same should be quantified, and source of water supply should be identified.

The stress, if any on surface water availability should be studied and comprehensive water demand should be estimated.

4.4 Marine Environment

4.4.1 Coastal Hydrology/Geomorphology

Coastal hydrology requires collection of oceanographic data during the study period covering the following parameters:

- ▶ Tides,
- ▶ Waves (wind waves and swells),
- ▶ Storm surges,
- ▶ Currents,
- ▶ Salinity,
- ▶ Sea water temperature
- ▶ Suspended load, and
- ▶ Seabed bathymetry

Tides move the water to high peaks usually twice each day and twice a month to much higher peaks. Tidal changes vary according to geographical location. To predict tidal changes data should be collected for a period of more than two weeks. It is also possible to estimate tidal parameters from tide tables published by National Hydrographic Office for many operating ports. Data of currents i.e., velocity and direction are required to obtain input data for simulation studies and model studies to estimate tidal flow and dispersion of pollutants. Wave observation is a prerequisite for reliable prediction of highest waves and littoral drift. Data on high waves is

important for the design of structures and long term wave data is important for analyzing the wave energy which effects beach erosion and accretion. The period of wave observation should be long enough to include rough sea conditions. National wave atlas published by National Institute of Oceanography may be helpful to get deep-water wave data of the regions covered therein. Survey of depth of sea bottom, littoral drifts distribution of sand particle size is also necessary for the assessment of shoreline changes.

Data of these oceanographic parameters are normally collected for evaluating engineering feasibility and carry out preliminary/detailed design as per corresponding criteria/ norms. Summary of such information shall be furnished in the EIA report in order to appreciate and assess their impact. As the location of port along a shore and layout of major port structures may affect the wave, current and sediment transport patterns, accuracy of the data of these oceanographic parameters is of vital importance in identifying and assessing corresponding impact. Guidance note for collection of oceanographic data are given in **Annexure 6**. While bathymetry is a one-time parameter, oceanographic data such as currents, waves, tides, etc need to be measured at least for two seasons.

4

Coastal hydrology cited here includes factors concerning currents, tidal flow, littoral drifts, beach erosion, water drainage, sediment deposition, groundwater flow, and other physical phenomena in the shore zone.

The location of a port, construction of breakwaters and **capital dredging** may cause changes in current patterns and littoral drifts. The change of littoral drifts may lead to erosion or accretion in shore zones. The creation of the port may cause changes in river flow and water front drainage. A study on likely changes in littoral drift and sediment transport due to the project activity should be taken up through modeling.

Baseline data of above parameters at the project area and the neighborhood areas should be ascertained by proper surveys, frequency distribution of surface wind, wind direction, frequency of tropical cyclones (depressions, storms, typhoons) and associated hazards, other atmospheric disturbances, rainfall and temperature, climatological normal and extremes. Base line data should extend at least to water depths of more than 10 m of proposed deepening of the harbor approach and basin as per master plan of the port proposed. Base line data should also include details of existing mangroves, marshy lands, coastal vegetation, sand dunes, coastal stability, seismic characteristics, history of any endangered species, coastal erosion, shoreline changes, if any etc.

4.4.2 Bed Sediment Contamination

Bottom contamination encompasses many kinds of contamination of bottom sediments by toxic or harmful substances, oils, oily mixture and other hazardous materials. Contamination of bottom sediment is often measured by the size of sediment particles, pH, color, smell, oil and grease, organic materials, and concentration of organic nitrogen, phosphorus, sulphide, and toxic substances such as heavy metals and pesticides including toxic components of antifouling paints.

Location of a port, construction of breakwaters and dredging may accelerate sediment deposition in stagnant water behind structures and cause contamination of the sea bottom. Sediment deposition covers bottom biota and physical habitat. Baseline data of above parameters at the project area and the neighborhood areas should to be ascertained by proper surveys.

regarding track of cyclones, the velocity of maximum winds, duration, pressure drop at the cyclone center and speed of movement of cyclone center can be obtained from the IMD.

Ambient Air Quality

Baseline data for the parameters - particulate matter size less than 10µm or PM₁₀ µg/m³, particulate matter size less than 2.5µm or PM_{2.5} µg/m³, sulphur dioxide (µg/m³), nitrogen dioxide (µg/m³), carbon monoxide (µg/m³) and heavy metals (keeping in view of cargo proposed to be handled), extending an area up to 5km from the project boundary should be generated for one season other than monsoon as per the CPCB norms. The monitoring locations and the results should be presented as per **Table 4.8 & 4.9**. Specific importance is to be attached to areas in close proximity of project say up to 1 km and areas of habitat, recreation places and sensitive zones such as schools and hospitals in the neighborhood, if any. The values shall be compared with National Ambient Air Quality Standards (**Annexure 8**)

The number of monitoring stations can be selected based on the general criteria as mentioned in the **Annexure 9**, duly giving consideration to the sensitive environmental receptors in the study area.

4.7 Noise

Baseline data at the project area and the neighborhood habitat areas is to be monitored as per CPCB protocol. Noise pollution generated by road traffic, cargo operations, ship traffic and other port activities also cause nuisances to local people. Hourly monitoring of noise levels (Leq) should be recorded for 24 hours by using noise level meter for 15 minutes during each hour. Noise standards have been designated for different types of land use, i.e. residential, commercial, industry areas and silence zones as per the Noise Pollution (Regulation and Control) Rules, 2000 notified by the Ministry of Environment and Forests (**Annexure 10**). The noise environment studies can be restricted up to 1km from project boundary or distance to nearest habitation whichever is more. The description of noise monitoring locations may be give as in **Table 10**.

4.8 Socio-economic and Occupational Health Environment

Building or expanding a port often requires relocation of the local community, sometimes causing conflicts with local people and may change the cultural traditions of the local community. Oil and oily wastes discharged from ships may reach nearby beaches and spoil recreational activities, which cause serious damage to tourism. Ship traffic may disturb pleasure boat cruising and fishery boat operations. The possibility of accidents in the ship traffic becomes a worry to local people. Ship calls create many related jobs including pilotage, tug services, stevedoring, bunkering and crew services; however, they may bring considerable changes in the life style of local people.

Socio-cultural impact includes all kinds of influence on the local community and people's life style such as relocation of villages, industrialization, population growth, and the formation of slums. It may have impact on fisheries. **Annexure 11** gives the illustrative types of socio-economic impact due to port activity for reference.

Baseline date of above parameters at the project area and the demography, particularly on human settlements, health status of the communities, existing infrastructure facilities in the proposed area and area of impact due to the proposed activity should be collected. Information on fish production, total catch, as well as number of fisherman and their income should be collected.

Annexure 6

Guidance Note for Collection of Oceanographic Data

General Information

Oceanographic baseline data has to be collected in the area proposed for the construction of the port, which includes the main entrance channel, the breakwaters and other proposed infrastructure facilities. The EIA report should give analysis of this baseline data. The parameters to be collected include:

- ▶ **Physical** (waves, currents, tides, alongshore currents, beach profiles, temperature, salinity, density, etc),
- ▶ **Chemical** (pH, Dissolved Oxygen, Biological Oxygen Demand, Nutrients analysis, PHCs, Trace Metals in sediments, Total Suspended Matter, etc),
- ▶ **Biological** (Micro-biological, Phytoplankton, Zooplankton, Macro, Micro and Meio-Benthic communities, Bacterial load, Bio-fouling studies, Fishery Potential and the maximum sustainable load, etc),
- ▶ **Seabed** bathymetry, Sub-surface layer information, Sea floor scanned images, Geo-technical properties of the sediments up to the depth of the proposed channels from bore hole data
- ▶ Surface (grab) and core samples in the proposed channel should be collected to study the geo-technical properties of the subsurface sediments at suitable station interval
- ▶ **Historical** data on wind, rainfall, visibility, cyclones, depressions, storm surges, etc has to be compiled from sources like IMD
- ▶ It may be ideal to establish an automatic weather station in the vicinity of the proposed study area to collect present weather data
- ▶ In addition site specific data on endangered species like turtles, coral reefs, etc has to be collected

Dimension of the Study Area

In general a rectangular grid with the longer length parallel to the coast has to be selected for collection of oceanographic data. The exact dimensions of this grid depends the water depth of the proposed Entrance Channel, the alignment of the breakwaters, etc. As an example, if the proposed water depth is 20m and if the distance of the 20m contours is approximately 5 kms from the coast, then it may be ideal if a 6 x 7 kms grid is selected with the longer length parallel to the coast. Sometimes it may also be necessary to collect oceanographic data in adjacent areas like the tidal creeks, lagoons that are connected to the sea.

Equipments and Calibration

Collection of Oceanographic data necessitates utilization of a variety of equipments from simple ones like a Niskin water sampler and biological net to Current Meters, Tide Gauges, Automatic Weather Station, echo sounder, sub-bottom profiler, side scan sonar and sometimes even a magnetometer, where the structure of the shallow basement is to be ascertained. All equipments need to be calibrated before the start of the survey, following standard method given for each equipment



Position Fixing at Sea

All oceanographic parameters should be collected using a high-resolution navigational system, preferably a Differential Global Position System (DGPS) with an accuracy of few centimeters.

Mode of Collection

In general, underway data like bathymetry, seismic and side scan sonar need to be collected continuously at a regular profile interval. Data need to be collected along profiles both parallel and perpendicular to the coast. The line spacing has to be selected to obtain as much information as possible and at the same time avoiding too much detail.

Other oceanographic data like physical, chemical and biological has to be collected at selected stations covering the demarcated rectangular grid. The station interval has to be selected in such a way that the entire area is covered. Data like currents has to be collected along a vertical profile at each station, say at surface, 10 and 20m, by deploying a Current Meter Array.

While geological/geophysical data like bathymetry, seismic and side scan sonar can be collected only at one time, physical, chemical and biological data has to be collected in two to three seasons so as to understand their impact in different seasons like pre- and post monsoon.

Corrections to the Observed Data

All basic data has to be corrected for removing any erroneous values, regional gradient, etc., so as to bring out the anomalies in the ocean parameters in the study area. For example, the bathymetry data has to be reduced with reference to the Chart Datum.

Additional Data Collection

The same procedures have to be followed for data collection during post-monitoring stage also and in case of maintenance dredging. In case studies are to be carried out at any stage for meeting some emergency situations like unexpected disasters (cyclones, tsunamis, oil spills, etc), some additional parameters specific to the nature of the disaster have to be included in the survey. Parameters like beach profiles, littoral drift may have to be continued for longer periods to understand the post- construction impact like, impact of breakwaters on the littoral drift, etc.

Presentation of Data

It is preferable to present the results from the final analysis of all parameters on a uniform scale and including the basic features of the coastline. However, representative sections for each parameter need separate scale and presentation. CRZ Maps for example have to be submitted only in two scales 1:5000 and 1:25,000



Annexure 12

New Policy on expansion of existing ports and initiation of new projects

Copy of No.15-3/2009-IA-III of Government of India, Ministry of Environment & Forests (IA-III Division), Room No.744, Paryavaran Bhawan, CGO Complex, Lodhi Road, New Delhi-110 003

Dated the 3rd November, 2009

OFFICE MEMORANDUM

Sub: New Policy on expansion of existing ports and initiation of new projects along the coastline - regarding.

The Ministry of Environment and Forests had constituted an Expert Committee under the Chairmanship of Prof. M. S. Swaminathan to review the comments received on the draft Coastal Management Zone 2008. The Committee in its Report* dated 16th July, 2009 at para 7.4 had recommended an immediate study to be undertaken to examine the cumulative impact of port projects on the coastline, pending which there should be a moratorium on expansion of existing ports and initiation of new projects.

2. Accordingly, the Ministry issued an Office Memorandum (OM) dated 21st August, 2009 in which it was decided to defer consideration of proposals pertaining to development the ports and its expansion projects received in the Ministry after 31st July, 2009 and not to accept any new projects seeking environmental/CRZ clearance till a policy is finalized.

3. As a part of the above decision a study was assigned to the Ministry of Earth Sciences (MoES) for identifying the coastal stretches with regard to erosion/accretion. Based on the discussions held with MoES, the study was initiated in two phases namely,- (a) phase-I to submit a report based on existing data/information by 15th 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.

4. Ministry of Environment and Forests has now received a report from the Chennai based, Integrated Coastal and Marine Area Management (ICMAM), MoES on the phase-I of the programme. The copy of the Report is available on Ministry's website (<http://moef.nic.in/downloads/public-information/icmam-proposal.pdf>). The Report has analyzed time series satellite images of the certain stretches of the coastline where data were available.

* Report of Expert Committee (Final Frontier) on the draft Coastal Management Zone (CMZ) Notification, constituted by the Ministry of Environment and Forests, under the Chairmanship of Prof. M. S. Swaminathan dated 16th July, 2009 (available on the Ministry's website).

** <http://moef.gov.in>

5. Ministry has examined and accepted the above Report of ICMAM and accordingly stipulates the following, for undertaking development with regard to ports and harbor

A. Expansion of existing ports and harbors, jetties etc., within their notified port limits shall be undertaken subject to the condition that:-

- (i) The hydro-dynamic studies indicate that the expansion activities of the existing port do not have significant impact to the shoreline abutting the project; and
- (ii) Has no significant impact on the ecologically sensitive areas along the stretch

B. New projects to be located at the sites indicated in **Table 1**, shall be subjected to **Comprehensive Environment Impact Assessment**, based on a minimum of **3 seasons data**, and Environment Impact Assessment report prepared based on actual field measurements, appropriate modeling studies etc.

C. With regard to the hotspots stretches viz. those areas which are prone for high erosion above 1 meter per year (identified by the concerned Central/State Government agencies), locations identified within 10 km on either side of the eco-sensitive areas categorized as Coastal Regulation Zone-I(i) and water bodies with high bio-diversity, shall not be considered for locating ports and harbors. However, fishing jetties/embarkation facilities for local communities could be set-up with Environment Impact Assessment as per Environment Impact Assessment, 2006.

D. With regard to Andaman & Nicobar and Lakshadweep Islands the port and harbor projects shall be undertaken in accordance with Coastal Regulation Zone Notification, 1991 and approved Coastal Zone Management Plans. The port projects of more than 5 Million Tones per annum in these islands, which are to be located in these islands, shall be subjected to Comprehensive Environment Impact Assessment including physical and mathematical modeling and ground verification.

6. The Ministry has initiated phase-II of the project through Institute for Ocean Management (IOM), Chennai and ICMAM, to identify the shoreline changes at micro level and map them in at least 1:25000 scale map. This study would involve analysis of time series satellite images from 1960 onwards. Based on the above study Report, further stipulations if any, shall be indicated for development of foreshore facilities along the Indian coast. A decision in this regard will be taken by 31st October 2010.

7. Based on the above study, a National policy on setting-up of new projects pertaining to development of ports and harbors would be drawn up in consultation with concerned Ministries/Agencies.

8. Till such time, the consideration of the projects related to development of ports and harbour projects could be considered as per A to D of the para 5 above.

This issues with the approval of Minister of State (Independent Charge) for Environment and Forests.

(Dr. A. Senthil Vel)
Additional Director



Table:1 – Sites along the Coastal Stretches where Shoreline changes has been Observed

| S.No | Name of State | Districts / Division / locations of critical erosion |
|------|-------------------|---|
| 1. | Gujarat | Valsad, Navsari, Surat, Bharuch |
| 2. | Maharashtra | Mumbai, Suburban, Thane, Raigad, Ratanagiri, Sindhudurg |
| 3. | Goa | South Goa, North Goa |
| 4. | Karnataka | Mangalore, Udupi, Kundapur, Bhaktal, Honnavar, Kumta, Ankola, Karwar |
| 5. | Kerala | Thiruvananthapuram, Alappuzha, Thale, Manjeri, Kozhi, Kasargod |
| 6. | Tamil Nadu | Chennai north, Kovalam, Devanampattinam, Poomuhar, Tharangambadi, Kanyakumari |
| 7. | Andhra Pradesh | Uppada, Chinnagollapalem. |
| 8. | Orissa | Gopalpur, Rushikulya, Puri, Satbhaya, Chandabali |
| 9. | West Bengal | Digha, Shridarnagar, Buraburirttat, Gobardhanpur Frezerganj, Shibpur, Beguakhali, Kusumtala |
| 10. | Pondicherry | Along Gandhi Statue stretch |
| 11. | Andaman & Nicobar | - |
| 12. | Lakshadweep | Agatti, Amini, Androth, Bitra, Chetlat, Kadmat, Kiltan, Kalpeni, Kavratti, Minicoy |

(Source: <http://www.envfor.nic.in>)

Chandrakasan Sivaperuman
Dhriti Banerjee
Basudev Tripathy
Kailash Chandra *Editors*

Faunal Ecology and Conservation of the Great Nicobar Biosphere Reserve

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of the Great Nicobar Biosphere Reserve

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Dhriti Banerjee • Basudev Tripathy •
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Editors

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*Editors*

Chandrakasan Sivaperuman
Andaman & Nicobar Regional Centre
Zoological Survey of India
Port Blair, India

Dhriti Banerjee
Zoological Survey of India
Kolkata, India

Basudev Tripathy
Western Regional Centre
Zoological Survey of India
Maharashtra, India

Kailash Chandra
Zoological Survey of India
Kolkata, India

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Foreword



I am delighted to write the foreword for the book titled *Faunal Ecology and Conservation of the Great Nicobar Biosphere Reserve*. The Andaman and Nicobar Islands are known for their rich biodiversity resources. There are 836 islands, islets and rocks, which can be distinguished geographically into two groups, i.e. Andamans and Nicobars. The Andaman Islands are the extension of the submerged Arakan Yoma Mountain range of Myanmar and the Nicobars are the continuation of the Mentawai Islands to the south and southeast of Sumatra. The *Ten Degree Channel* isolates Andaman Islands from Nicobar Islands.

The Great Nicobar Biosphere Reserve is one of the 18 Biosphere Reserves in India recognizing its importance in high degree endemism and diverse flora and fauna. The Great Nicobar Biosphere Reserve is included in the UNESCO-MAB Network of Man and Biosphere Reserve (MAB) during May 2013. It represents the tropical rain forests in Andaman and Nicobar Islands of the biogeographic region. This reserve is known for its unique biodiversity and houses rich genetic germplasm resources. The important faunal elements of the Reserve include the Nicobar Tree Shrew, Nicobar Wild Boar, Long-tailed Macaque, Nicobar Civet, Nicobar Pigeon, Nicobar Megapode, Great Nicobar Serpent Eagle, Leatherback Sea Turtle and Reticulated Python.

This book exemplifies 32 research chapters covering both terrestrial and marine ecosystems of the Great Nicobar Biosphere Reserve. This is a welcome step on the conservation of faunal communities in the tropical forest ecosystem especially in the

Biosphere Reserves. I congratulate the editors *Drs. Chandrakasan Sivaperuman, Dhriti Banerjee, Basudev Tripathy and Kailash Chandra* for their earnest effort to bring this volume with a treasure of knowledge to the public domain.

It is my hope and expectation that this book will provide an effective tool on the faunal diversity of the Great Nicobar Biosphere Reserve and reference resource for materials for students, researchers, academic institutions and managers.

(Shri. Bhupender Yadav)

Environment, Forest and Climate Change,
and Labour and Employment,
Government of India
New Delhi, India
Date: 05.06.2022

Bhupender Yadav



Preface

India is very rich in resources due to its diversified habitat and climatic conditions and reported 7.5% of the total animal species of the world. Biosphere reserves are areas of terrestrial and coastal or marine ecosystems or its amalgamation. Biosphere reserves are sites established by countries and recognized under UNESCO's "*Man and Biosphere*" (MAB) programme to promote sustainable development based on local community efforts and thorough science. The concept of "*Biosphere Reserves*" was initiated by the United National Educational Scientific and Cultural Organizations (UNESCO) in the year 1970 in order to facilitate the resolution of increasing conflict between people and the Protected Area under its Man and Biosphere Programme (MAB). The Government of India has designated 18 Biosphere Reserve until 2020, of which 11 are part of the World Network of Biosphere Reserves. The total area of Biosphere Reserves is 86,480.58 km², which is 2.54% of India's total geographical area. The first biosphere reserve of the world was established in 1979. According to UNESCO, as of July 2021, there are 714 biosphere reserves across 129 countries in the world which also include 21 trans-boundary sites.

Andaman and Nicobar Islands are the mountain chains of 836 islands, islets and rocky outcrops located between the Bay of Bengal and Andaman Sea of the Indian Ocean at a length of 800 km with a coastline of 962 km. Andaman and Nicobar group of islands are separated by 150 km wide Ten Degree Channel. The total landmass of these Islands is 8249 km². The Great Nicobar Biosphere Reserve is one of the 18 Biosphere Reserves created under the Man and Biosphere Programme of the Ministry of Environment, Forest and Climate Change, Government of India. The total area of the Great Nicobar Island is 1044 km². It is a tropical and sub-tropical moist broadleaf forest biome and located in the Indo-Malayan bio-geographic zone. The Great Nicobar Biosphere Reserve is included in the UNESCO-MAB Network during May 2013. The Great Nicobar Biosphere Reserve represents the tropical rain forests and is rich in species composition. The Great Nicobar houses 650 species of angiosperms, ferns and gymnosperms. The fauna consists of over 2050 species of animals. The important faunal elements of the Biosphere Reserve include the Nicobar Tree Shrew, Nicobar Wild Boar, Long-tailed Macaque, Nicobar Civet, Nicobar Pigeon, Nicobar Megapode, Great Nicobar Serpent Eagle, Leatherback



Turtle and Reticulated Python. This biosphere reserve is also the habitat of two tribes of Indo-Mongoloid stock, namely the Nicobarese and Shompen.

This is an outcome of the expedition conducted in the Great Nicobar Biosphere Reserve and also our previous research works carried out in this region. The target audience for this volume comprises research scholars, students and wildlife managers. We sincerely hope that the results of this book will be widely accessible to readers of all backgrounds. We would like to express our sincere gratitude to all the authors who have contributed chapters to this book; also we thank everyone who has supported directly and indirectly to this book.

Port Blair, India
Kolkata, India
Pune, Maharashtra, India
Kolkata, India

Chandrakasan Sivaperuman
Dhriti Banerjee
Basudev Tripathy
Kailash Chandra



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Part I Terrestrial Ecosystem

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About the Editors

Chandrakasan Sivaperuman is currently working as Scientist-E and Officer-in-Charge at the Zoological Survey of India, Port Blair. He has been extensively involved in field surveys in different ecosystem of the country, i.e. Kole wetlands of Kerala, Southern Western Ghats, Eastern Ghats, Great Indian Desert, Andaman and Nicobar Islands. He has published more than 300 research papers in national and international journals and newsletters. He also authored/edited more than 35 books published by reputed national and international publishers. He has participated in the 36th Indian Scientific Expedition to Antarctica during 2016–2017 and carried out studies on the species abundance and distribution of birds and mammals in Antarctica.

Dhriti Banerjee is a first woman director in 100 years of Zoological Survey of India history. She has an illustrious career as a scientist, conducted research in taxonomy, zoogeography, morphology and molecular systematics. She has received several national and international grants for her master's and doctoral studies. She travelled extensively across the country, studying fauna diversity in tiger reserves, wildlife sanctuaries, nature reserves and ecosystems. In addition, she is involved in a long-term study on biodiversity in the Himalayas and examines the possible effects of climate change on the fauna of the Himalayas.

Basudev Tripathy Scientist-E, works at the Zoological Survey of India Pune, Maharashtra. He has specialized in freshwater molluscs and turtles. He has more than 20 years' experience in the field of conservation biology. He has published more than 60 research papers and books in the field of corals and its associated fauna and invertebrate.

Kailash Chandra is a Director (Retd.), Zoological Survey of India. He has more than 35 years' experience in the field of biodiversity conservation. He has worked in various ecosystems of our country, i.e. High Altitude, Islands, and Central India in various faunal groups especially on Coleopterans. He has contributed through various kind of publications, especially more than 40 books, 400 research papers

Present Status and Distribution of Nicobar Megapode *Megapodius nicobariensis* in Nicobar Islands

14

Chandrakasan Sivaperuman, Govindarasu Gokulakrishnan, and Kuppusamy Sivakumar

Abstract

Nicobar megapode surveys were conducted in the Nicobar group of islands during 2015–2018 to estimate the population. Different survey techniques were used to assess the population of megapode such as point transect and playback. A total of 149 active mounds were recorded, and about 300 megapodes were detected during the point-transect and playback surveys. The megapode was recorded in all seven islands of the Nancowry group of islands. *Megapodius nicobariensis abbotti* occurs in all of the southern groups of islands, and a total of 97 active mounds were observed.

Keywords

Density · Distribution · Megapode · Nicobar · Population

Introduction

The megapodes are a fascinating group of ground-dwelling birds that use environmental heat sources rather than body heat to incubate their eggs (Jones and Birks 1992; Jones et al. 1995). Megapodes belong to the family Megapodiidae under the order Galliformes. There are 22 living species distributed in different parts of the world (Jones et al. 1995). The Nicobar megapode is an endemic bird species in the Nicobar group of islands, occurring over 1600 km from its nearest congener

C. Sivaperuman (✉) · G. Gokulakrishnan
Andaman and Nicobar Regional Centre, Zoological Survey of India, Port Blair, India

K. Sivakumar
Department of Ecology, Pondicherry University, Puducherry, India

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(Olson 1980; BirdLife International 2000). There are two subspecies recognized in the Nicobar Islands, namely, *Megapodius nicobariensis* north of the Sombrero channel and *Megapodius nicobariensis abbotti* to the south (Abdulali 1965, 1967; Ali and Ripley 1969, 1980, 1983, 1998; Sivakumar 2007). This species is absent from Car Nicobar Island (Butler 1899, 1900) and Chaura Island (Baker 1924, 1930; Abdulali 1967). According to the IUCN, this species was listed as vulnerable (Birdlife International 2000) and Schedule-I of the Wildlife Protection Act (1972). The Nicobar megapode was amongst the worst affected species in Nicobar Islands and more than 850 incubation mounds in Great Nicobar, Little Nicobar and adjoining islands, and about 300 incubation mounds in the Nancowry group of islands have been lost during the tsunami 2004 (Sankaran 2005; Sivakumar 2007).

Studies on Nicobar megapode initiated by Blyth (1846) in his note on the description of various new or little-known species of birds based on the specimen collected by Reverend Jean Pierre Barbe. Later, few ornithologists carried out studies on the Nicobar Megapode. Ali and Ripley (1969) described megapode in their book on handbook of the birds of India and Pakistan. Status and breeding biology of the Nicobar megapode *Megapodius nicobariensis abbotti* on Great Nicobar Islands by Dekker (1988, 1990, 1992, 1997) and Dekker and McGowan (1995). Extensive studies on the status, distribution, breeding biology and diet of Nicobar megapode have been carried out by various authors (Sankaran 1993, 1995a, b, 1998a, b, c, 2003; Sankaran and Sivakumar 1997, 1999; Sivakumar 2000, 2003; Sivakumar and Sankaran 1996, 2000, 2002, 2003, 2005a, b). Sivakumar (2007) made an impact assessment of the population status of the Nicobar megapode aftermath tsunami 2004.

Study Area

The Nicobar group of islands is an archipelagic chain in the eastern Indian Ocean. Nicobar group is located south of Port Blair, and about 150 km north of Aceh on Sumatra, and separated from Thailand to the east by the Andaman Sea. The Nicobar groups are located 1300 km southeast of the Indian subcontinent, across the Bay of Bengal. The Indira Point (Lat. 6.756378°N; Long. 93.827765°E) is the southernmost point of Great Nicobar Islands and also lying about 150 km north of Sumatra, Indonesia. UNESCO has declared the Great Nicobar Islands as one of the World Network of Biosphere Reserves in the year 2013 (UNESCO 2013). The extent of the Nicobar group of islands is 1841 km² and comprises three distinct groups, namely, Northern group, Central group and Southern group (Figs. 14.1 and 14.2).

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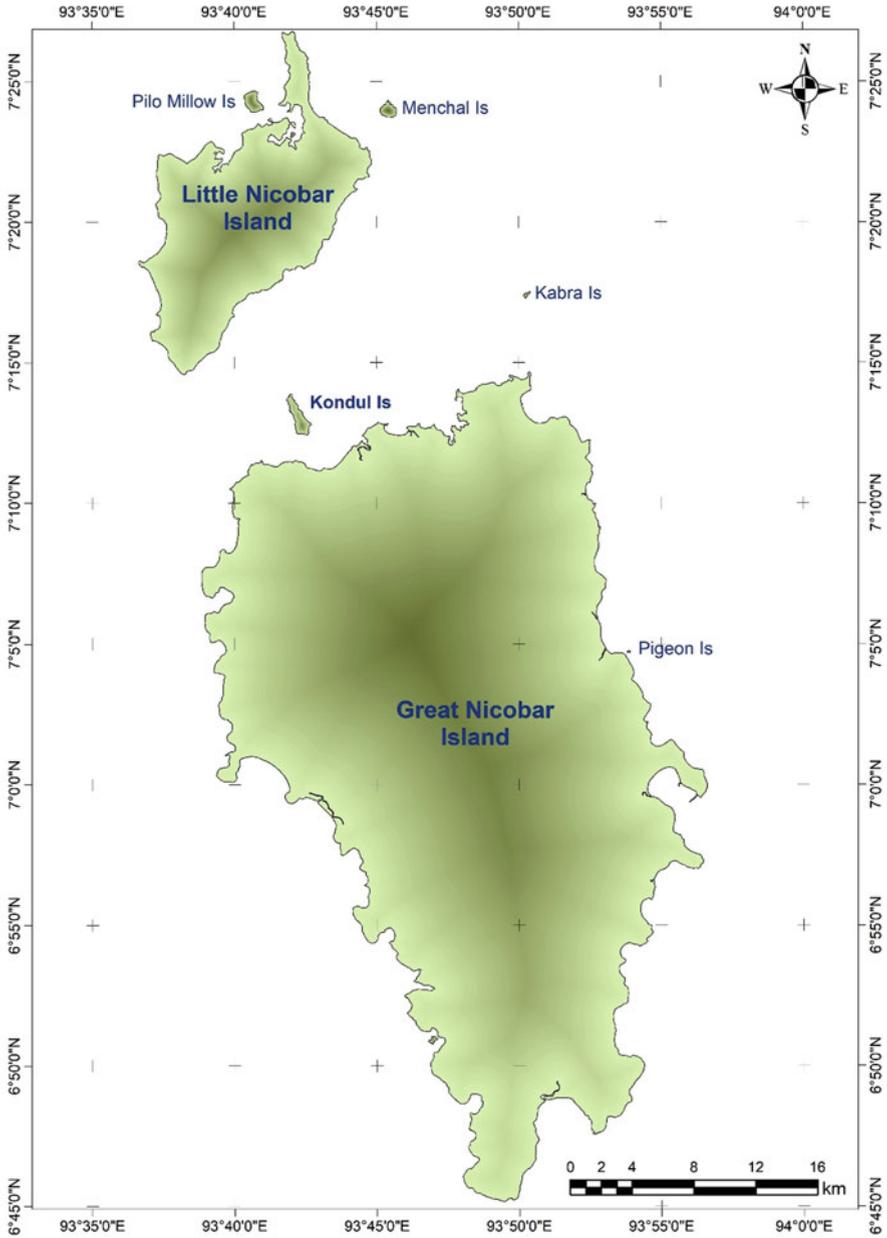


Fig. 14.1 Great Nicobar and Little Nicobar islands

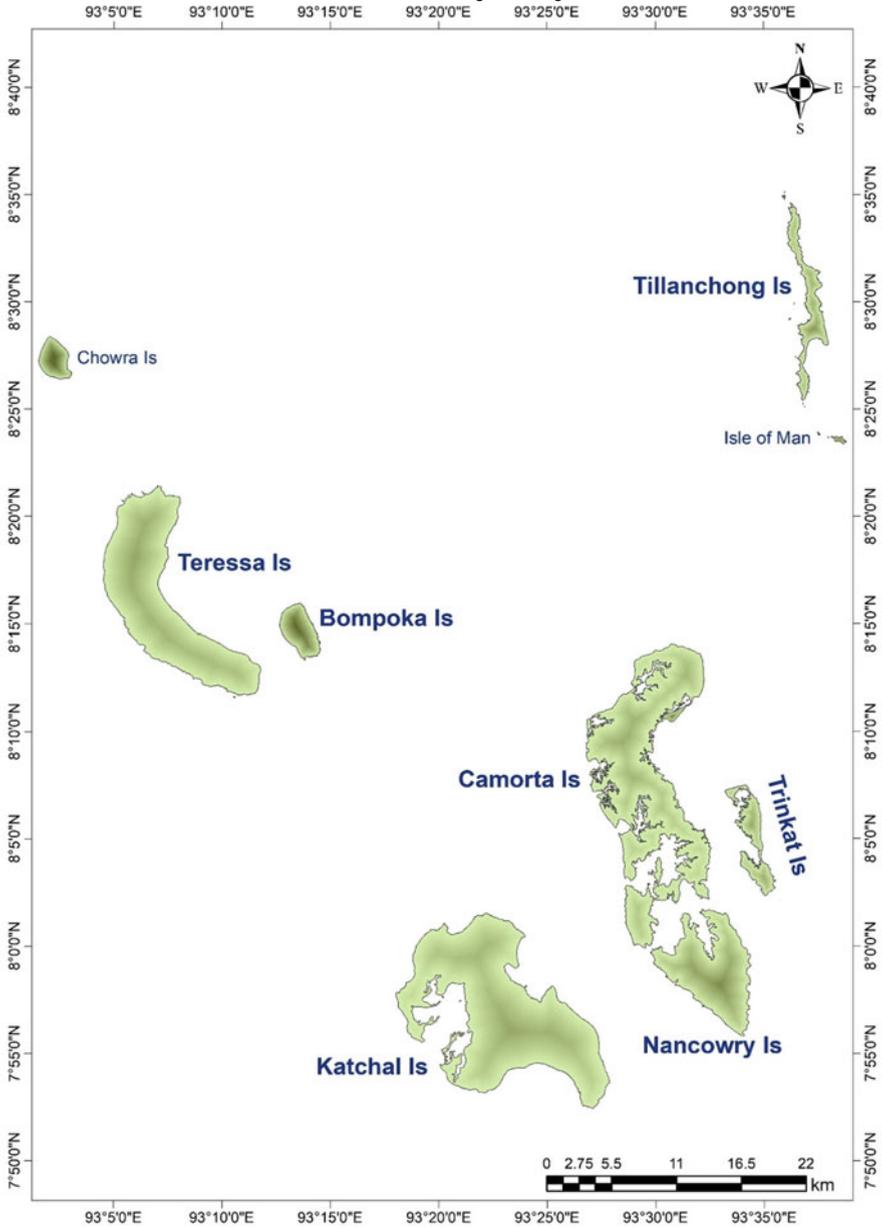


Fig. 14.2 Nancowry group of islands



Methods

Transect Surveys

Line-transect and point count method were used to estimate the population of the Nicobar Megapode (Burnham et al. 1980; Buckland and Elston 1993).

Playback surveys were also conducted along the transects (Buckland 2006). All surveys were conducted by a single observer. During surveys, digitally recorded Megapode calls were broadcasted. Pair duet calls were played on an electronic game caller for 1 min at each station. The observer then measured and recorded the horizontal distances of all megapodes heard and/or seen during a 4-min survey period (1 min of playbacks and 3 min of observation).

Camera Trap Survey

To determine the photographic encounter and activity pattern, the camera trap method was employed. The digital camera trap was placed in each grid of the transect. The cameras were placed 3–4 m away from the road or foot path, and the cameras were active 24 h with camera delay time of 60 s. Based on the data recorded in the camera trap, the relative abundance index (RAI) of megapodes was calculated (O'Brien et al. 2010; Kawanishi and Sunquist 2004).

Results and Discussion

A total of 99 transects and 156.8 km were travelled to assess the population of Nicobar megapode. Four hundred and sixty-six days were spent in the field in different parts of the Nicobar group (Table 14.1).

The survey was conducted to assess the population of Nicobar megapode from 2015 to 2018. A total of 149 active mounds were recorded, and about 300 megapodes were detected during the point-transect and playback surveys (Table 14.2; Fig. 14.3). The megapode was recorded in all seven islands of the Nancowry group of islands (Nancowry Island, Katchal, Kamorta, Tillanchang, Trinket, Teresa and Bompooka Islands). *Megapodius nicobariensis abbotti* occurs in all of the southern groups of islands; it was estimated 97 active mounds (Figs. 14.4, 14.5, and 14.6).

Comparative account of estimated mounds of Nicobar megapode with the available published information is presented in Table 14.3. Sankaran (1995a, b) reported 195 mounds in Great Nicobar Islands; however, only 95 mounds are recorded during the present study (Table 14.3). Similarly, overall, 849 numbers of active mounds are recorded by Sankaran (1995a, b), 296 active mounds sighted by Sivakumar (2007), and 125 mounds were recorded during the present study in Great and Little Nicobar Islands.

**Table 14.1** Survey details in different parts of the Nicobar group of islands

| S. No | Location (island) | Total area (km ²) | No. of transects | Length surveyed (km) | No. days spent for field survey |
|-------|-------------------|-------------------------------|------------------|----------------------|---------------------------------|
| 1. | Great Nicobar | 1045.1 | 58 | 102.8 | 368 |
| 2. | Kondul | 4.6 | 2 | 4 | 8 |
| 3. | Little Nicobar | 159.1 | 13 | 16 | 35 |
| 4. | Menchal | 2 | 2 | 1 | 10 |
| 5. | Nancowry | 66.9 | 4 | 5 | 12 |
| 6. | Teressa | 101.4 | 6 | 5 | 13 |
| 7. | Bompoka | 13.3 | 2 | 3 | 5 |
| 8. | Kamorta | 188.2 | 5 | 5 | 4 |
| 9. | Trinket | 36.3 | 3 | 8 | 2 |
| 10. | Katchal | 174.4 | 4 | 7 | 9 |
| | | 1791.3 | 99 | 156.8 | 466 |

Nicobar megapode surveys were conducted in the Nicobar group of islands during 2015–2018 to estimate the population. A combination of point-transect, playback and occupancy sampling was used to study the megapode populations. Megapodes were detected during surveys in Great Nicobar, Little Nicobar group and Nancowry group of islands. Generally, population estimates were lower than the previous studies (Sivakumar 2000; Sivakumar and Sankaran 2003). Sankaran (1995a, b) reported 195 mounds in Great Nicobar Islands; however, only 95 (approximately 200 estimated individuals) mounds recorded during the present study, and overall, about 400 estimated individuals were recorded from the entire Nicobar group of islands.

Similarly, overall, 849 numbers of active mounds recorded by Sankaran (1995a, b), 296 active mounds sighted by Sivakumar (2007) and 125 mounds were recorded during the present study in Great and Little Nicobar Islands. We believe the increased estimates are, in part, due to increased survey effort. More surveys are required to cover all parts of the islands, due to logistical constraints; we could not cover some western parts of the islands. Most of the western side of the Great Nicobar and little Nicobar Islands are difficult to access; therefore, we need to detail survey using Coast Guard ship or another ship. The population of the Nicobar megapode declined after the 2004 tsunami due to loss of coastal habitats; however, the population was very commonly observed in Bompoka because of less disturbance.

The Nicobar megapode prefers a sandyloam bed of coastal areas to construct the nests (Sivakumar 2000; Sivakumar and Sankaran 2003). Continuing the temperature for incubation at a static breadth, which is necessary for successful hatching (Sivakumar and Sankaran 2003), any alternations in seawater activities in the vicinity of mounds can work against the incubation process and thus a decline in

Table 14.2 Active mounds of Nicobar megapode recorded during the present study in Nicobar Islands (2015–2018)

| S. No. | Location | | | Active mounds | Estimated no. of breeding pairs |
|--------|-----------------------|------------|-----------|---------------|---------------------------------|
| | Great Nicobar Islands | | | | |
| 1. | Shastri Nagar | 93.8798330 | 6.8066500 | 4 | 8 |
| 2. | Galathea | 93.864317 | 6.820533 | 7 | 14 |
| 3. | Old Changam Basti | 93.845867 | 6.802600 | 8 | 16 |
| 4. | Indira Point | 93.827517 | 6.758900 | 4 | 8 |
| 5. | Landing Point | 93.810950 | 6.784067 | 7 | 14 |
| 6. | Pulobcha | 93.819800 | 6.816433 | 1 | 2 |
| 7. | Afra Bay | 93.755783 | 7.200783 | 1 | 2 |
| 8. | Pulobed | 93.669300 | 7.075850 | 2 | 4 |
| 9. | Dagmar | 93.674000 | 7.027817 | 1 | 2 |
| 10. | Pulokunji | 93.668650 | 7.009433 | 7 | 14 |
| 11. | Alexandra | 93.704833 | 6.995000 | 6 | 12 |
| 12. | Kosingdone | 93.752167 | 6.932283 | 8 | 18 |
| 13. | Dongi Nallah | 93.911783 | 7.050850 | 1 | 2 |
| 14. | Bada Hallpha | 93.905250 | 7.064933 | 2 | 4 |
| 15. | Jamun Nallah | 93.891233 | 7.075150 | 1 | 2 |
| 16. | Goal Tikrey | 93.902283 | 7.075000 | 1 | 2 |
| 17. | Pathar Nalli | 93.887050 | 7.109883 | 1 | 2 |
| 18. | Navy Dera | 93.883833 | 7.129867 | 4 | 8 |
| 19. | Laful | 93.879767 | 7.192067 | 2 | 4 |
| 20. | Trinket | 93.878317 | 7.201967 | 4 | 8 |
| 21. | Kondul | 93.718583 | 7.211783 | 2 | 4 |
| 22. | Gandhi Nagar | 93.888585 | 6.846710 | 1 | 2 |
| 23. | Vijay Nagar | 93.902826 | 6.952777 | 1 | 2 |
| 24. | Jogindar Nagar | 93.900954 | 6.955900 | 2 | 4 |
| 25. | Chingam Village | 93.919167 | 6.969083 | 2 | 4 |
| 26. | Magar Nala | 93.919659 | 6.990326 | 1 | 2 |
| 27. | Old East-West Road | 93.918730 | 7.012092 | 2 | 4 |
| 28. | Govind Nagar | 93.891389 | 7.006851 | 1 | 2 |
| 29. | East-West Road | 93.864650 | 6.981900 | 1 | 2 |
| 30. | Mt. Thullier | 93.853250 | 7.133933 | 2 | 4 |
| 31. | Laxman Beach | 93.917633 | 7.021400 | 1 | 2 |
| 32. | Pilo Bakka | 93.796342 | 6.831944 | 4 | 8 |
| 33. | Pulo bhabi | 93.790478 | 6.892524 | 2 | 4 |
| 34. | Kopen Heat | 93.737917 | 6.966813 | 2 | 4 |
| 35. | Shastri Nagar | 93.8798330 | 6.8066500 | 4 | 8 |
| | | | | 100 | 202 |
| | Little Nicobar | | | | |

(continued)

Table 14.2 (continued)

| S. No. | Location | | | Active mounds | Estimated no. of breeding pairs |
|--------|---------------------------|-----------|----------|---------------|---------------------------------|
| 36. | School Point | 93.718377 | 7.390995 | 1 | 2 |
| 37. | Pillo Milo | 93.689345 | 7.401589 | 1 | 2 |
| 38. | Pulo Patia | 93.730065 | 7.323828 | 2 | 4 |
| 39. | North Patia | 93.746592 | 7.354434 | 3 | 6 |
| 40. | Meroe | 93.542952 | 7.514463 | 3 | 6 |
| 41. | Pulopanja | 93.732300 | 7.390167 | 4 | 8 |
| 42. | Bahua | 93.638033 | 7.311500 | 1 | 2 |
| 43. | Muhincohin | 93.641433 | 7.278983 | 1 | 2 |
| 44. | Makachua | 93.707850 | 7.408000 | 1 | 2 |
| 45. | Menchal | 93.764483 | 7.395300 | 1 | 2 |
| | | | | 18 | 36 |
| | Nancowry group of islands | | | | |
| 46. | Nancowry Island | 93.562467 | 8.024433 | 2 | 4 |
| 47. | Kulo Miriey | 93.126267 | 8.315383 | 1 | 2 |
| 48. | Aluronga | 93.111567 | 8.307300 | 1 | 2 |
| 49. | Luxi | 93.164567 | 8.203117 | 1 | 2 |
| 50. | Kalasi | 93.114033 | 8.275033 | 2 | 4 |
| 51. | Bompoka | 93.220500 | 8.249683 | 15 | 30 |
| 52. | Kamorta (Kakana) | 93.495650 | 8.140983 | 1 | 2 |
| 53. | Trinket | 93.598467 | 8.043017 | 1 | 2 |
| 54. | Katchal (Jula) | 93.389192 | 8.016464 | 1 | 2 |
| 55. | Mus | 93.578349 | 7.943375 | 1 | 2 |
| 56. | Safed Balu | 93.563145 | 8.119489 | 5 | 10 |
| | | | | 31 | 62 |

mortality further offspring. We have observed human threats to the megapode, such as habitat degradation, hunting and egg collection, continuing in the Nicobar Islands. We found the largest population of *M. n. nicobariensis* on Bompoka, despite its smaller size, also observed evidence of megapode hunting there.

Threats

The prime hazard hanging over the megapode population of the Nicobars will be a suggestion to make Great Nicobar a free port and to create a dry dock and refuelling base for international shipping at the mouth of the Galathea River (Vijayan et al. 2000). Sankaran (1997) had recommended the need for a protected area network for the Nicobar group of islands. The tsunami of 2004 formed destruction in the coastal

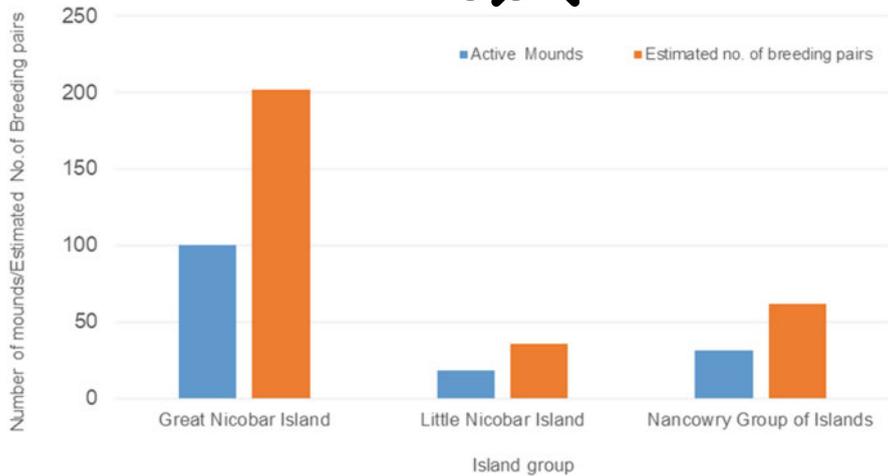


Fig. 14.3 Active mounds and the estimated number of breeding pairs of Nicobar megapode during the present study in Nicobar islands (2015–2018)

areas of Nicobar along with the uprooting of littoral forests and inundation of nest sites for these megapodes though renaissance parallel to the refurbishment of these sites can help in recovering the current scenario (Sivakumar 2007). Another possible threat for the Nicobar megapodes is ongoing road construction from Shastri Nagar to Indira Point via Galathea, which results in the loss of both micro- and macro-habitat as well as the surrounding environment needed to maintain the micro-climatic condition for the mounds.

Hunting of these birds for meat and egg collection by local inhabitants, predation by other larger reptiles and robber crab and the last one will be the diminishing size of their habitat, which will account for three most important threats for Nicobar megapode. An upsurge in the incoming mainlanders to these islands has provoked the process of habitat loss, and the effects can be seen most at the Nancowry group of islands. Having evolved in habitats free of large carnivores, megapodes are particularly vulnerable to predators (Dekker 1989). In Nicobars, introduced wild predators are absent, the water monitor lizard, the reticulated python, Nicobar cat snake and species of raptors like *Aviceda jerdoni*, *Haliaeetus leucogaster*, *Spilornis cheela*, *Spilornis klossi*, *Accipiter soloensis* and *Falco tinnunculus* are potential predators of megapodes and their eggs.

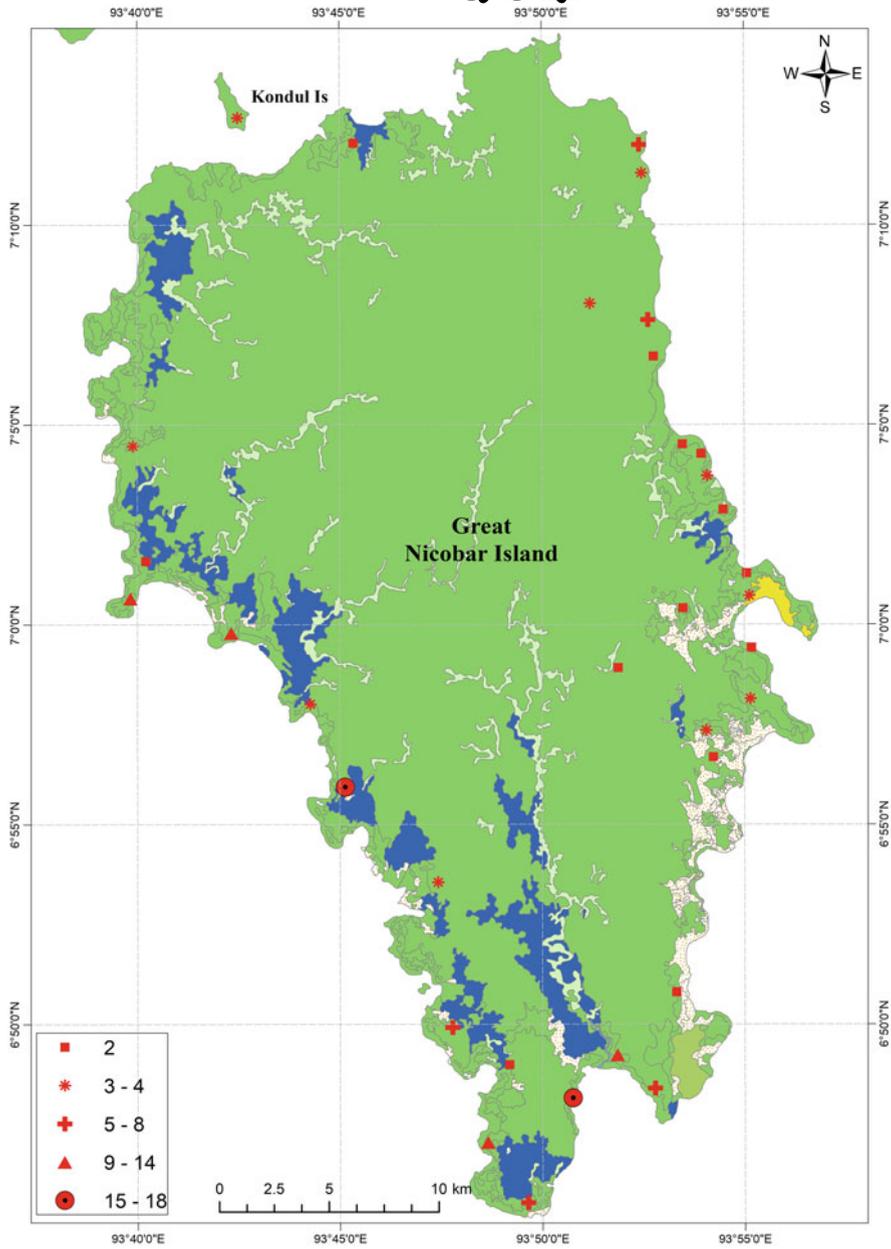


Fig. 14.4 Distribution of Nicobar megapode in Great Nicobar Islands

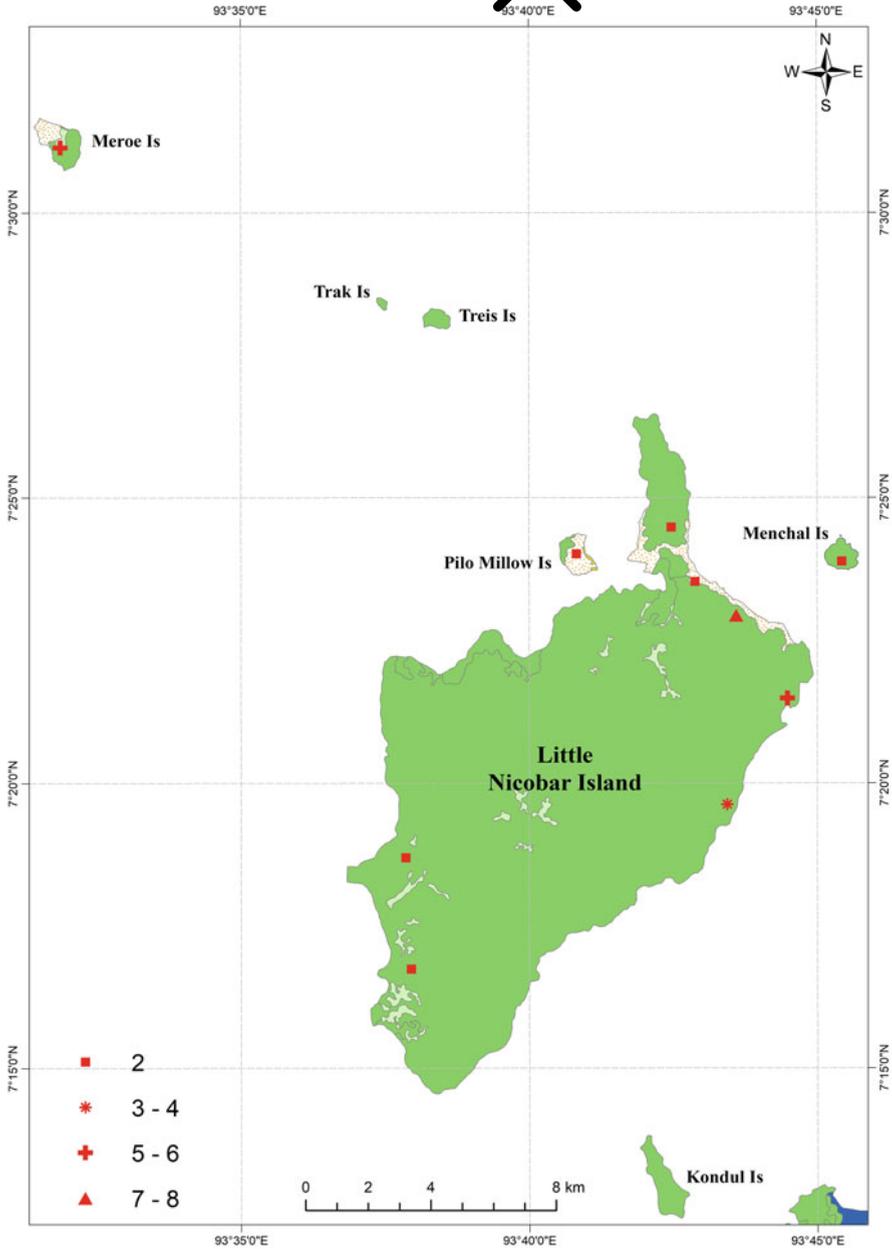


Fig. 14.5 Distribution of Nicobar megapode in Little Nicobar Island

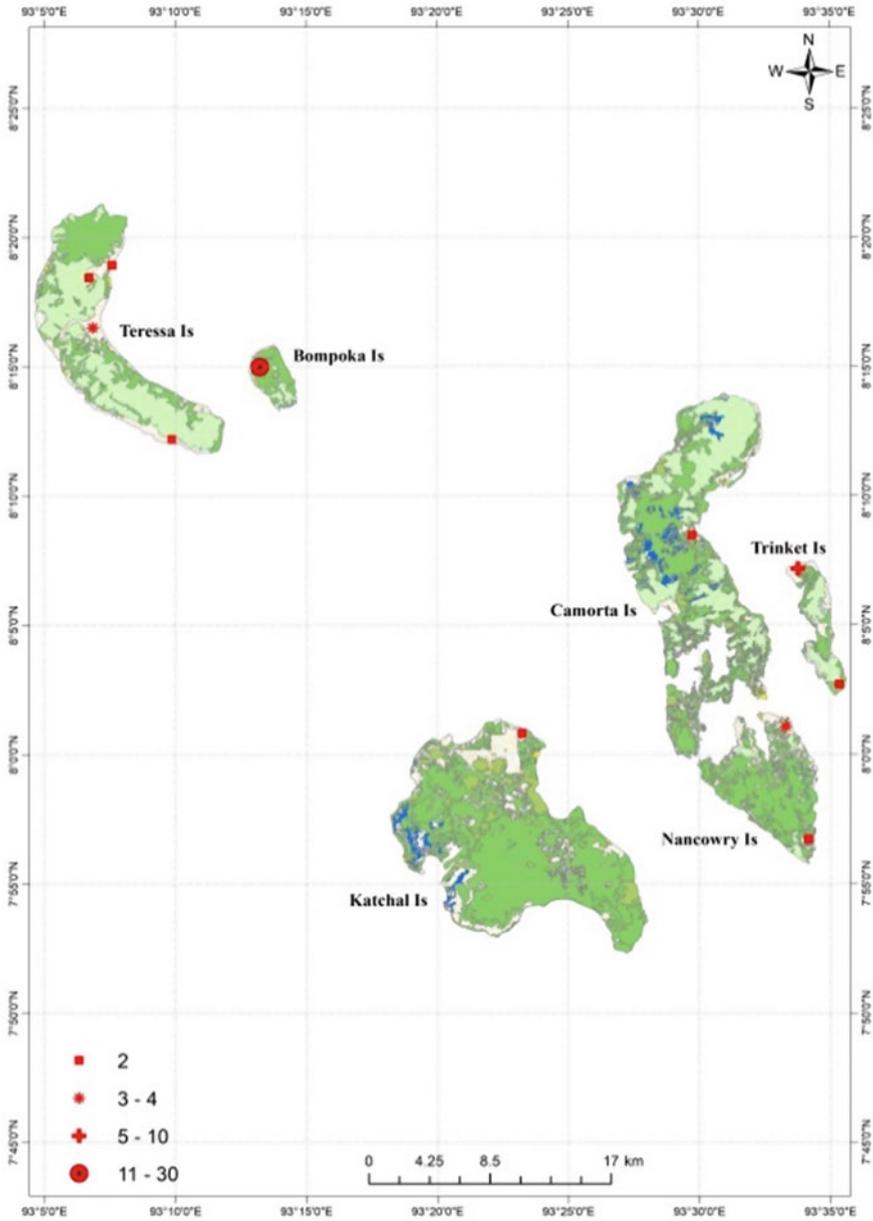


Fig. 14.6 Distribution of Nicobar megapode in the Nancowry group of islands

Table 14.3 Comparative account of the estimated number of Nicobar megapode mound in the Nicobar group of islands

| S. No. | Location | Estimated no. of active mounds | | | Estimated no. of breeding pairs | | |
|--|----------------|--------------------------------|-------------------|---------------|---------------------------------|-------------------|-------------------------------|
| | | 1994 ^a | 2006 ^a | Present study | 1994 ^a | 2006 ^a | Present study |
| <i>M. n. abbotti</i> (Great Nicobar and Little Nicobar group of islands) | | | | | | | |
| 1. | Great Nicobar | 515 | 203 | 97 | 1030–1803 | 203–406 | 97–194 |
| 2. | Megapode | 2 | 0 | 0 | 4–7 | 0 | Submerged during 2004 tsunami |
| 3. | Kondul | 11 | 1 | 4 | 22–39 | 1–2 | 4–8 |
| 4. | Little Nicobar | 311 | 82 | 18 | 622–1089 | 82–164 | 18–36 |
| 5. | Pillo Milo | 0 | 0 | 2 | 0 | 0 | 2–4 |
| 6. | Meroe | 1 | 2 | 3 | 2–4 | 2–4 | 2–6 |
| 7. | Treis | 4 | 3 | 0 | 0 | 0 | 0 |
| 8. | Trax | 3 | 0 | 0 | 6–11 | 0 | 0 |
| 9. | Menchal | 2 | 6 | 1 | 8–14 | 6–12 | 2–4 |
| | | 849 | 297 | 125 | | | |
| <i>M. n. nicobariensis</i> (Nancowry group of islands) | | | | | | | |
| 10. | Nancowry | 60 | 7 | 2 | 120–210 | 7–14 | 2–4 |
| 11. | Katchal | 69 | 9 | 2 | 138–242 | 9–18 | 2–4 |
| 12. | Kamorta | 20 | 7 | 2 | 40–70 | 7–14 | 2–4 |
| 13. | Tillanchang | 10 | 27 | 0 | 20–35 | 27–54 | 0 |
| 14. | Trinket | 8 | 26 | 4 | 16–28 | 26–56 | 4–8 |
| 15. | Teressa | 119 | 9 | 5 | 238–417 | 9–18 | 5–10 |
| 16. | Bompoka | 26 | 13 | 15 | 52–91 | 13–26 | 15–30 |
| | | 312 | 98 | 30 | | | |

^a Sankaran (1995a, b), Sivakumar (2007)

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Rejoinder of applicant to the additional affidavit of the 1st Respondent dated 05.07.2025 in OA No 93 of 2024, OA No 95 of 2024 and MA No 23 of 2024

1 message

Raghunandan Sriram <raghunandan.sriram.adv@gmail.com>

23 July 2025 at 10:57

To: legumjure@gmail.com, lmc.moefcc@gov.in, anidco@gmail.com, andaman@legaloptions.in, office@rschambers.net, suhasini@rschambers.net, rashmibothra24@gmail.com, Amrita Pandey <amritalegal@gmail.com>

Cc: Poongkhulali B <poongkhulali.b@gmail.com>, Yogeshwaran Amarneethi <yogeshwaranadv@gmail.com>

Respected sir/ma'am,

Please find attached the rejoinder filed in response to the additional affidavit of the 1st Respondent dated 05.07.2025, in the subject mentioned cases. Kindly treat this email as service of the rejoinder.

Regards,
Raghunandan Sriram
On behalf of Yogeshwaran A
Counsel for Applicant

--

Raghunandan Sriram
Advocate
Chennai

**Ashish Kothari rejoinder Nicobar final.pdf**

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