

**F.No. IA3-12/15/2021-IA.III(E-157369)**  
**Government of India**  
**Ministry of Environment, Forest and Climate Change**  
**IA.III Section (CRZ)**

Indira Paryavaran Bhawan,  
Jor Bagh Road,  
New Delhi-110003  
Dated: 12<sup>th</sup> October, 2023

To,

1. **All the Seven Authorized Agencies  
(as per list)**
2. **Member Secretaries of all the 13 Coastal States/UT.  
(as per list)**

**Subject: Standard Operating Procedure (SOP) for Seven Authorized Agencies and related issues for uniformity in preparation of CRZ Maps -regarding.**

Madam / Sir,

Please find attached herewith the Final SOP for Preparation of Site Specific CRZ Maps on 1:4000 Scale and 7 km Radius CRZ Map on 1:25,000 Scale as per CRZ Notification, 2011/2019 and IPZ/CRZ Notification, 2011/2019 for compliance.

2. This issues with approval of the Competent Authority.

Encl: As above.

Yours faithfully,



(Dr. H. Kharkwal)  
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Copy to:

1. Director, NCSCM Chennai.
2. Office Copy / Guard File.
3. NIC-Parivesh, MoEFCC
4. Website, MoEFCC for uploading





# STANDARD OPERATING PROCEDURE

for Preparation of Site Specific CRZ Maps on 1:4000 Scale and  
7 km Radius CRZ Map on 1:25,000 Scale as per CRZ Notification, 2011/2019  
and IPZ/ICRZ Notification, 2011/2019

**Ministry of Environment, Forest and Climate Change**  
Government of India

September 2022



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on 1:4000 Scale and 7 km Radius CRZ Map  
on 1:25,000 Scale as per CRZ Notification,  
2011/2019 and IPZ/ICRZ Notification,  
2011/2019

Ministry of Environment, Forest and Climate Change  
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**Publication Information**

STANDARD OPERATING PROCEDURE for Preparation of Site Specific CRZ Maps on 1:4000 Scale and 7 km Radius CRZ Map on 1:25,000 Scale as per CRZ Notification, 2011/2019 and IPZ/ICRZ Notification, 2011/2019

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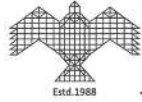
Government of India, 2022

**Citation:** MoEFCC, (2022), Standard Operating Procedure for Preparation of Site Specific CRZ Maps on 1:4000 Scale and 7 km Radius CRZ Map on 1:25,000 Scale as per CRZ Notification, 2011/2019 and IPZ/ICRZ Notification, 2011/2019. Ministry of Environment, Forest and Climate Change, New Delhi. 52 pp.

ISBN No.

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# FOREWORD



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## FOREWORD

Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India has taken several policy initiatives and enacted various laws for protecting the dynamic coastal zone of India while enabling developmental activities in a regulated manner. One such legislation is the Environment (Protection) Act, 1986. Under this Act, the Coastal Regulation Zone (CRZ) Notifications have been issued from time to time since 1991.

Two sets of regulations, one for the mainland (CRZ Notification 2011/2019) and the other for the islands (IPZ/ICRZ Notification, 2011/2019) have been issued. The Notifications regulate establishment and expansion of any industry, operations or processes and manufacture or handling or storage or disposal of hazardous substances in the CRZ, with a view to ensuring livelihood security to the fisher communities and other local communities living in the coastal areas, and to conserve and protect coastal stretches and its unique environment. These Notifications promote sustainable development based on scientific principles taking into account the likely impact of natural hazards in the coastal areas and sea level rise due to global warming.

In coastal regions of India, the project proponents need to obtain clearance for carrying out any proposed activities specifically for the project location with respect to the CRZ. To ensure clarity and uniformity in preparation of CRZ maps as per the approved Coastal Zone Management Plans (CZMPs) prepared under the Coastal Regulation Zone (CRZ) Notification, 2019, this manual containing Standard Operating Procedures (SOP) has been prepared.

This is a very important initiative of the Ministry to harmonize the methodology for the preparation of site specific CRZ Maps and 7 km Radius CRZ Map as per provisions under the CRZ Notification, 2011/2019 and IPZ/ICRZ Notification, 2011/2019. I complement the CZMP Technical Scrutiny Committee in bringing out this valuable publication. Thanks are due to Shri Tanmay Kumar, Additional Secretary and Dr. Sujit Bajpayee, Joint Secretary for their contribution and value addition to this SOP.

Dr. Shailesh R Nayak,  
Director, National Institute of Advanced Studies, Bengaluru &  
Chairman, CZMP Technical Scrutiny Committee







# ACKNOWLEDGEMENT

On behalf of the Committee for Preparation of the Standard Operating Procedure (SOP) for Preparation of Site Specific CRZ Maps on 1:4000 Scale and 7 km Radius CRZ Map on 1:25,000 Scale as per CRZ Notification, 2011/2019 and IPZ/ICRZ Notification, 2011/2019 (SOP on CRZ Mapping), the names of contributors listed below, are acknowledged for their technical expertise and contributions to the proceedings of the Committee, preparing the SOP Manual and for reviewing the draft SOP on CRZ Mapping.

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We are thankful to the Technical Scrutiny Committee and the authorized agencies for providing their expert inputs in the preparation of the SOP.



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# LIST OF ABBREVIATIONS

CRZ	Coastal Regulation Zone
CVCA	Critically Vulnerable Coastal Area
CZMP	Coastal Zone Management Plan
CZMA	Coastal Zone Management Authority
DEM	Digital Elevation Models
ESA	Ecologically Sensitive Areas
GIS	Geographic Information System
HTL	High Tide Line
IESWM	Institute of Environmental Studies & Wetland Management
IMP	Integrated Management Plan
IIMP	Integrated Island Management Plans
IPZ	Island Protection Zone
ICRZ	Island Coastal Regulation Zone
IRS	Institute of Remote Sensing
LTL	Low Tide Line
LWL	Low Water Level
MOEF&CC	Ministry of Environment, Forest and Climate Change
MOES	Ministry of Earth Sciences
NCESS	National Centre for Earth Science Studies
NCSCM	National Centre for Sustainable Coastal Management
NCZMA	National Coastal Zone Management Authority
NDZ	No Development Zone
NHO	National Hydrographic Office
NIO	National Institute of Oceanography
NIOT	National Institute of Ocean Technology
SAC	Space Applications Centre
SoI	Survey of India
SOP	Standard Operating Procedure









# 1

## INTRODUCTION



## 1

## Introduction

The Ministry of Environment, Forest & Climate Change (MoEF&CC), Government of India issued the Coastal Regulation Zone (CRZ) Notification, 2019 on 18th January 2019. The CRZ Notification 2019 defines the CRZ areas to include the land area from HTL to 500 m on the landward side along the seafront as well as the land area between HTL to 50 m or width of the creek, whichever is less, on the landward side along tidal influenced water bodies connected to the sea. The CRZ also includes the entire water and the bed area between the LTL to the territorial water limit (12 Nm) in case of sea and the water and the bed area between LTL at the bank and the LTL on the opposite side of the bank, of tidal influenced water bodies. The SOP contains guidelines for preparation of CRZ maps as per the approved Coastal Zone Management Plans (CZMPs) prepared under the Coastal Regulation Zone (CRZ) Notification, 2019.

The Ministry of Environment, Forest & Climate Change (MoEF&CC), Government of India had earlier issued the CRZ Notification, 2011 on the 6th of January 2011, the Island Protection Zone (IPZ) Notification, 2011 and the Island Coastal Zone Regulation (ICRZ) Notification, 2019, for the environmental management of Andaman and Nicobar and Lakshadweep Islands. Provisions of CRZ Notification, 2011, CRZ Notification,

2019, IPZ Notification, 2011 and ICRZ Notification, 2019 have been included separately in the Standard Operating Procedure (SOP), to help prepare the CRZ maps as per the CRZ Notification, 2011, IPZ Notification, 2011 and ICRZ Notification, 2019, as the case may be and as per the corresponding approved CZMPs/ICRZ plans/IIMPs. Thus, the SOP is equally applicable to CRZ Notification, 2011, IPZ Notification, 2011 and ICRZ Notification, 2019.

### 1.1. Objectives

The objectives set out in the CRZ notification, 2019 are as follows:

- To conserve and protect the unique environment of coastal stretches and marine areas.
- To ensure livelihood security to the fisher communities and other local communities in the coastal areas.
- To promote sustainable development based on scientific principles taking into account the dangers of natural hazards and sea level rise due to global warming.

The Objective of the SOP is to enable preparation of CRZ maps as per the approved Coastal Zone Management Plans (CZMP) prepared under the Coastal Regulation Zone (CRZ) Notification, 2019.

## 1.2. Background and Elements of the Standard Operating Procedures (SOP)

As per the CRZ notification 2019, the following, among others, are the requirements for CRZ clearance for permissible and regulated activities.

- CRZ map in 1:4000 scale, drawn up by any of the agencies identified by the Ministry of Environment, Forest and Climate Change vide its Office Order Number J-17011/8/92-IAIII, dated the 8th August 2019, using the demarcation of the HTL or LTL, as carried out by NCSCM.
- Project layout superimposed on the CRZ map indicating the project boundaries and the CRZ category of the project location as per the approved Coastal Zone Management Plan prepared under this notification.
- The CRZ map normally covering 7 km radius around the project site also indicating the CRZ-I, II, III and IV areas including other notified ecologically sensitive areas.

Thus, a need was felt to prepare a Standard Operating Procedure (SOP) to ensure uniformity in preparation of CRZ Maps for the purpose of CRZ clearance, being prepared by the above mentioned seven authorised agencies. These standard operating procedures focus on the methods, processes, and requirements for preparation of the following CRZ mapping products:

- CRZ map of project site on 1:4000 scale.
- CRZ map on 1:25,000 scale covering an area of 7 km radius from the project site.
- CRZ report.

The following are the agencies authorised by the Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India, for demarcation of the High Tide Line (HTL), Low Tide Line (LTL) and Coastal Regulation Zone (CRZ).

1. Space Applications Centre (SAC), Ahmedabad
2. National Centre for Earth Science Studies (NCESS), Trivandrum
3. Institute of Remote Sensing (IRS), Anna University, Chennai
4. Institute of Environmental Studies & Wetland Management (IESWM), Kolkata
5. National Institute of Oceanography (NIO), Goa/ Mumbai
6. National Institute of Ocean Technology (NIOT), Chennai
7. National Centre for Sustainable Coastal Management (NCSCM), Chennai

## 1.3. Coastal Zone Management Plan (CZMP):

As per CRZ Notification 2019, Coastal Zone Management Plans (CZMP) have to be prepared by the coastal States/ UTs on 1: 25,000 scale, identifying and classifying the CRZ areas within the respective territories in accordance with the guidelines for preparation of the CZMP given in the Annex of the notification, which involves public consultation. All developmental activities listed in the notification shall be regulated by the State Government, Union Territory Administration, the local authority or the concerned CZMA within the framework of such approved CZMPs as the case may be, in accordance with provisions of the notification.



#### 1.4. CRZ for inland backwater islands and islands along mainland coast

As per provisions contained in para 10.2 of CRZ Notification, 2019, CRZ of 20 meters from the HTL on the landward side shall uniformly apply to the inland backwater islands and islands along mainland coast. Integrated Island Management Plans (IIMP), as applicable to smaller islands in Lakshadweep and Andaman & Nicobar Islands shall be formulated by respective States or Union Territory for all such islands and submitted to Ministry of Environment, Forest and Climate Change for approval and till the IIMPs are framed and approved, provisions of CRZ notification 2019 shall not apply and the CZMP as per provisions of CRZ Notification 2011 shall continue to apply.

Thus, CRZ of 500m/ 200m/ 100m/ 50m/ width of river and 20m from HTL and appropriate NDZ shall be marked in these Islands with a note that the NDZ of 20 m shall apply only after IIMPs are framed, and till then the provisions of CRZ Notification 2011 (500m/ 200 m/ 100m/ 50m / width of river) shall continue to apply.

#### 1.5. CRZ Map as per Approved CZMPs

As per CRZ Notifications 2019, the site- specific CRZ maps on 1:4000 scale for CRZ clearance for permissible and regulated activities, have to be prepared based on the approved CZMPs. The HTL, LTL and CRZ categories of the project site and adjoining areas have to be maintained the same as per the approved CZMPs.

#### 1.6. Present status of the site based on HTL/ LTL/ ESA

During the field survey and investigation carried out for CRZ mapping, if any change is noticed in the status of the project site in terms of the approved HTL, LTL & ESA, then these changes should be explained in the CRZ report with appropriate maps, for the CZMA/MoEFCC authorities to take decision regarding revision of the CZMP, if required. State CZMAs have to examine the reasons provided on changes in HTL/ LTL etc., observed in comparison to HTL/ LTL etc., and record their comments/ recommendations before forwarding to NCZMA for approval of changes in HTL/ LTL in the map. If reasons given by the agency which has drawn the map are unacceptable, SCZMA shall guide the concerned agency to redraw the HTL/ LTL appropriately/ to draw in accordance with approved CZMP.

However, as per the CRZ Notification 2019, the concerned Coastal Zone Management Authority shall examine the documents for CRZ clearance in accordance with the approved Coastal Zone Management Plans.







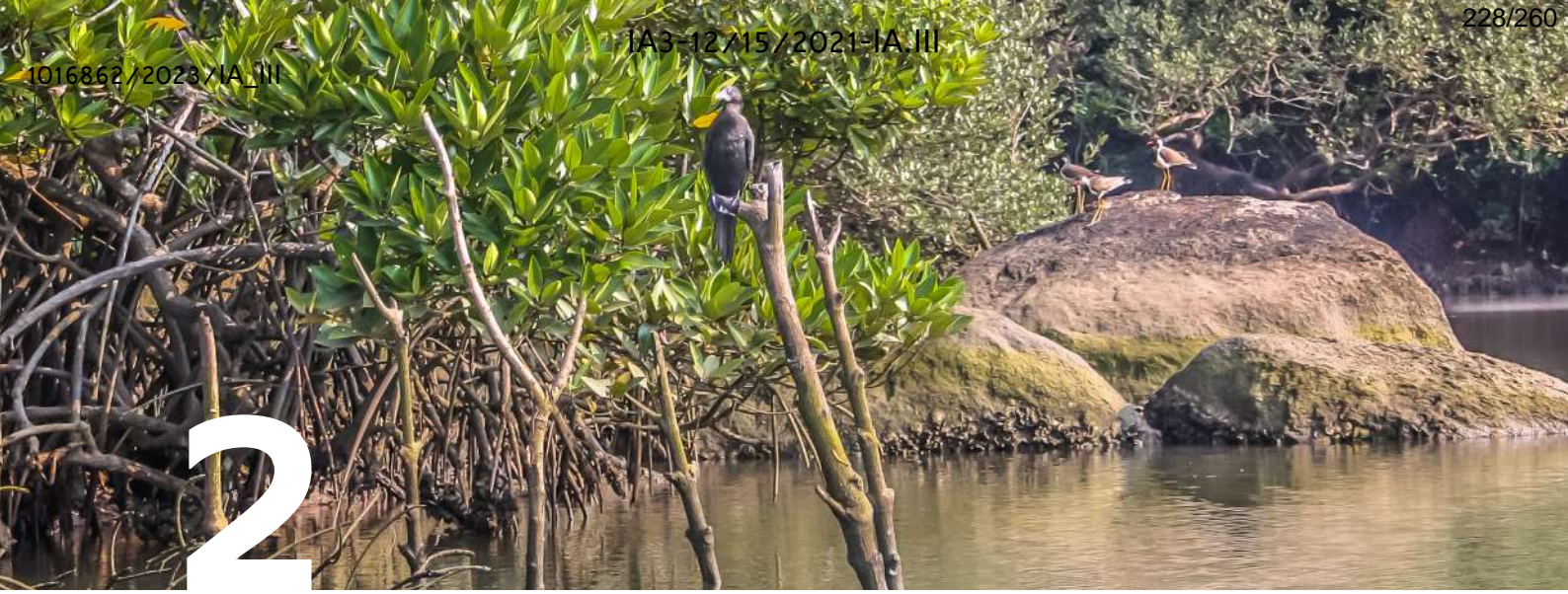




# 2

## COMPONENTS AND CONTENTS OF A CRZ MAP





## Components and Contents of a CRZ Map

The following are the cartographic components that are to be incorporated in a CRZ map layout.

- a. Data frame/body of map: The portion of the map that displays data.
- b. Legend: For decoding the symbology used in the data frame.
- c. Title: Description of the subject matter of the map such as “CRZ map of the ---- area for the ---- project” or “CRZ map covering 7 km radius around the project site of ....”.
- d. North arrow: For proper orientation.
- e. Scale: Ratio of map distance to ground distance. Both scale bar and scale ratio are given.
- f. Citation: Metadata such as source, datum, projection, caveats, foot notes etc are given.
- g. Border: is the frame of lines which encloses the map.
- h. Margin: is the space outside the border of a map.
- i. Inset: A smaller locator map featured in the same page as the main map. Shows an area in the main map on a larger scale.
- j. Outtrigger: Small areas extending to adjoining sheets/maps can be depicted as extensions in the same map, for the sake of continuity.
- k. Index to adjoining sheets: Index showing the relative positions/ numbers of all sheets/maps covering the area of interest (state/district/ project site etc).
- l. Certification by the authorized agency: CRZ Map has to be signed and certified by the authority of the concerned authorized agency.

‘Contents of a map’ refers to the various kinds of data that are displayed in the data frame/body of the map. In a CRZ map, the contents will include, among others, HTL, LTL, ESAs, CRZ categories, CVCAs, Cadastral information, other coastal land use such as roads, settlements etc, project layout plans, grid, labels/names/ descriptive remarks, latitudes/ longitudes etc.

### 2.1. High Tide Line (HTL) and Low Tide Line (LTL)

The CRZ Notification 2019 defines the High Tide Line (HTL) as the line on the land upto which the highest water line reaches during the spring tide. Typical geomorphologic features which are discernible in aerial photographs and satellite images can be used for HTL demarcation; e.g. berms, cliffs, sand dunes, headlands, etc. Other features like

line of permanent terrestrial vegetation, upper limit of mangroves and flotsam are indicators of the reach of tide into land. Coastal protection structures such as seawall, embankment, bunds and revetments also limit the intrusion of tide and can be easily detected in images. Such features are time tested to withstand the onslaught of the highest of the high spring tides. Hence, HTL (line of maximum reach of tide into the land during spring tide) can be demarcated with respect to these features.

The detailed methodology for demarcation of HTL and LTL are given in Chapter 2 of the 'Manual on Demarcation of High Tide Line and Low Tide Line and Preparation of CZMP of the Coast of India' published in the NCSCM website at [https://www.ncscm.res.in/cms/more/pdf/reports/htl\\_manual.pdf](https://www.ncscm.res.in/cms/more/pdf/reports/htl_manual.pdf). The manual was commissioned by the Ministry of Environment, Forest and Climate Change and has been prepared by a Committee comprising all authorised agencies and chaired by Dr Shailesh R Nayak, Former Secretary, MoES, Government of India.

## 2.2. Ecologically Sensitive Areas (ESA)

The following are the Ecologically Sensitive Areas (ESAs) notified in the CRZ Notification 2019.

- Mangroves, in case mangrove area is more than 1000 sq mts, a buffer of 50 meters along the mangroves shall be provided.
- Mangroves in private land will not require a buffer zone.
- Corals and coral reefs and associated biodiversity;
- Sand Dunes;
- Mudflats which are biologically active;
- National parks, marine parks, sanctuaries, reserve forests, wildlife

habitats and other protected areas under the provisions of Wild Life (Protection) Act, 1972 (53 of 1972), the Forest (Conservation) Act, 1980 (69 of 1980) or Environment (Protection) Act, 1986 (29 of 1986).

- Salt Marshes;
- Turtle nesting grounds;
- Horseshoe crab habitats;
- Sea grass beds;
- Nesting grounds of birds;
- Areas or structures of archaeological importance and heritage sites.
- Eco-Sensitive Zones.

As per the CRZ Notification, 2019, a detailed Environment Management Plan (EMP) shall be formulated by the States and Union Territories for such ecologically sensitive areas in respective territories, as mapped by the National Centre for Sustainable Coastal Management (NCSCM), Chennai, based on guidelines as contained in Annex-I to the CRZ Notification, 2019 and integrated with the CZMP.

## 2.3. Critically Vulnerable Coastal Areas (CVCA)

As per the CRZ Notification, 2019, Sundarban region of West Bengal and other ecologically sensitive areas identified as under Environment (Protection) Act, 1986 such as Gulf of Khambat and Gulf of Kachchh in Gujarat, Malvan, Achra-Ratnagiri in Maharashtra, Karwar and Coondapur in Karnataka, Vembanad in Kerala, Gulf of Mannar in Tamil Nadu, Bhaitarkanika in Odisha, Coringa, East Godavari and Krishna in Andhra Pradesh shall be treated as Critical Vulnerable Coastal Areas (CVCA) and managed with the involvement of coastal communities including fisherfolk who depend on coastal resources for their sustainable livelihood. For all the CVCA mentioned above, Integrated Management Plans (IMPs)



shall be prepared, which shall, inter alia, keep in view the conservation and management of mangroves, needs of local communities, such as dispensaries, schools, public rain shelter, community toilets, bridges, roads, jetties, water supply, drainage, sewerage and the impact of sea level rise and other natural disasters and the IMPs will be prepared in line with the guidelines for preparation of Coastal Zone Management Plan. The IMPs shall be prepared using the demarcation of CVCA as carried out by NCSCM, MoEF&CC and incorporated in the approved CZMPs.

#### 2.4. CRZ Categories

CRZ Notification 2019 contains details of classification of CRZ areas into CRZ-IA, CRZ-IB, CRZ-II, CRZ-III, CRZ-IIIA, CRZ-IIIB, CRZ-IVA, CRZ-IVB, including details about various No Development Zones (NDZ). A diagrammatic representation of the classification as per CRZ-2019 is given in Figure

It is to be noted that the 20 m CRZ/NDZ for Islands indicated in the Figure 2 for CRZ-2019 is applicable only after the IIMPs are framed for the Islands as per para 10.2 of CRZ notification, 2019. Until then the provisions of CRZ Notification 2011 (500m/200 m/100m/width of river/50m etc) shall continue to apply.

#### 2.5. Other Coastal Features

In addition to HTL, LTL, ESA and CRZ, and other coastal features such as Roads, Railways, Port, Harbour, jetty, built-up areas, parks, beach, water bodies etc. also have to be incorporated in the CRZ maps for proper referencing of the project site with respect to these coastal features.

#### 2.6. Cadastral Data/ Information

The Cadastral data certified by the Revenue departments should be used. The State Governments have digitized the cadastral maps and the same digital data can be used. NCSCM also has database of cadastral maps, except for Odisha and West Bengal. If there is no change in the status of the cadastral maps, the Cadastral maps/Survey plots data appearing in the approved CZMP may also be used. If the Cadastral maps are in hard copy format, then these need to be properly geo-referenced and digitised before incorporating in the CRZ maps.

#### 2.7. Project layout plans

Project layout plans may be obtained from the project proponents as geo-referenced Shapefiles/kml files. If the layout plans are in hard copy format, these need to be properly geo-referenced and digitised before incorporating in the CRZ maps.

#### 2.8. Map Design, Legend, Symbology and Layout

Map design is the process of creating the appearance of a map and applying the principles of cartography of how maps are used, to create a map that has both aesthetic appeal and practical utility. An optimum design of a map needs to be achieved to ensure consistency in the level of detail, accuracy and appearance. A prime goal is to help users read and interpret the maps quickly and easily. This concept applies equally to CRZ maps which play an important role in helping to maintain the integrity of the coast while promoting development at the same time.

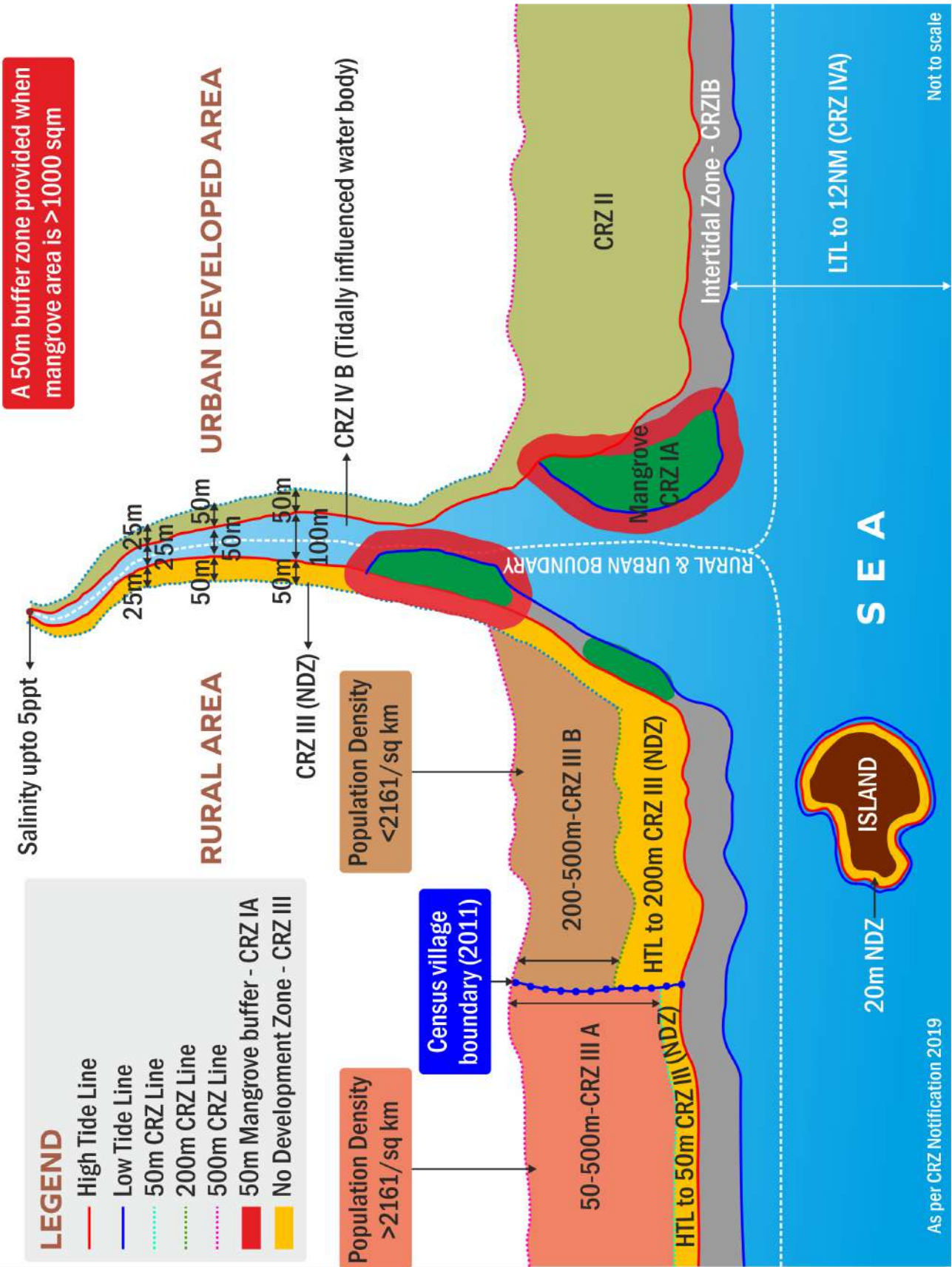


Figure 1 : Schematic representation of regulatory features in CRZ Notification 2019



A map symbol is a graphical device used to visually represent a real-world phenomenon on a map. Symbols are small pictures that stand for different features on a map. A symbol is often drawn to look like what it represents. Symbols are of different kinds, such as point symbols, line symbols, area symbols, planar symbols (e.g. a dot '.' representing a location), profile symbols (e.g. a tree symbol), conventional symbols and as-surveyed symbols.

A map legend is a visual explanation of the symbols used on the map. It typically includes a sample of each symbol (point, line, or area) and a short description of what the symbol means. The legend is a graphical representation of information.

A well designed CRZ map with appropriate level of detail, labels, symbology, legend, other mapping components and layout will help in taking decisions for CRZ clearance for permissible and regulated activities in CRZ areas. A sample legend showing the various symbols in a CRZ map is enclosed as Annex-2. A sample CRZ map is enclosed as Annex-3. The checklist of CRZ map features is at Annex-4.

NCSCM will provide a standard map document (. mxd)/GIS layout with standard set of legends to which the authorized agencies can incorporate additional features, as per site-specific requirements.















# 3

## CRZ MAPPING PROCESS





# 3

## CRZ Mapping Process

### 3.1. Collection of project layout plans and other project related data

- Proposed Project Site Boundary authenticated by authorities, proposed project layout, cadastral map/base map etc to be collected from the client
- Collection of approved CZMP/IIMP/ICRZ Maps including revised editions if any.
- Collection of SOI topographical map sheet, Hydrographic chart, Satellite imagery, etc.

### 3.2. Preparation of pre-field draft CRZ map on 1:4000 scale

- Geo rectification of raster images and processing
- Delineation/extracting of HTL, LTL, ESAs, etc as per approved CZMPs/IIMP/ICRZP.
- Demarcation of CRZ lines such as 500m, 200, 50m etc as applicable as per the CRZ/ ICRZ notification 2019 applicable for the project site.
- Classification of CRZ as per approved CZMPs/IIMP/ICRZP.
- Superimposition of HTL, LTL, ESAs, CRZ lines and CRZ classification etc on the cadastral map
- Preparation of pre-field draft CRZ

- map on 1:4000 scale using standard colour codes, symbols and legend.

### 3.3. Field investigation

- Field survey date/month to be noted.
- Equipment used for the field investigations such as GPS, DGPS, Optical instruments, salinometer, etc to be arranged.
- Collection of coordinates of HTL, ESAs, land use/geomorphological features, in case there are changes in the ground with respect to the approved CZMP.
- Survey of existing infrastructure, etc.
- Ground Control Point data collection for cadastral maps, proposed project boundary and project layout.
- Verifying the pre-draft CRZ Map in the field.
- Supporting photographs from CRZ point of view relevant to the field site and also to show changes in HTL/ESA/LTL etc.
- Additional information may be collected during the field investigations, to show the changes in the ground with respect to the approved CZMP.



### 3.4. Preparation of post-field revised draft CRZ map on 1:4000 scale

- Processing of the GPS/DGPS/Other instrument data and verifying/ comparing data/ features mapped in the pre-draft CRZ map in GIS software (ArcMap)
- Pre-draft CRZ map to be modified based on the field information
- Preparation of draft CRZ Map on 1:4000 scale using standard colour codes, symbols and legend.
- Place names, forest boundaries, roads etc may be taken from SOI topo sheets.
- Comparing the CRZ map with the approved CZMP/IIMP/ICRZ map.
- If major changes are observed on ground with respect to HTL/LTL/ESAs, these changes should be explained in the CRZ report with appropriate maps, tables and photographs, for the CZMA authorities to take a decision regarding revision of the CZMP, if required.
- However, as per the CRZ Notification 2019 the concerned Coastal Zone Management Authority shall examine the documents for CRZ clearance in accordance with the approved Coastal Zone Management Plans/ ICRZ plans/IIMPs, as the case may be.

### 3.5. Review by the Client

- The draft CRZ map is subsequently sent to the client for comments and acceptance. Acceptance by the Client is limited only to the project details such as project layout plans, boundaries etc and not for HTL/LTL/ ESA/CRZ.

### 3.6. Preparation of 7 km radius CRZ Map on 1:25000 scale

- The 7 km radius CRZ Map on

1:25000 scale will be prepared as per the approved CZMPs, superimposing the proposed project site boundary/ layout.

- For large project sites such as highways, a series of '7 km radius CRZ maps' has been prepared on 1: 25,000 scale, to cover the entire project site.
- The approved CZMP maps which are also on 1:25,000 scale can be used for this purpose.
- Care must be taken to ensure that the 7 km radius CRZ maps on 1:25,000 scale cover all areas of the project site as well as areas which are within 7 km from the boundary of the project site.
- The project layout plans also need to be superimposed on the 7 km radius CRZ maps on 1:25,000 scale.
- For large project sites, an index map also has to be prepared with proper numbering system, showing the entire project site and the incidence of the series of CRZ maps.

### 3.7. Finalisation of the site specific CRZ map on 1:4000 scale and 7 km radius CRZ map on 1: 25,000 scale

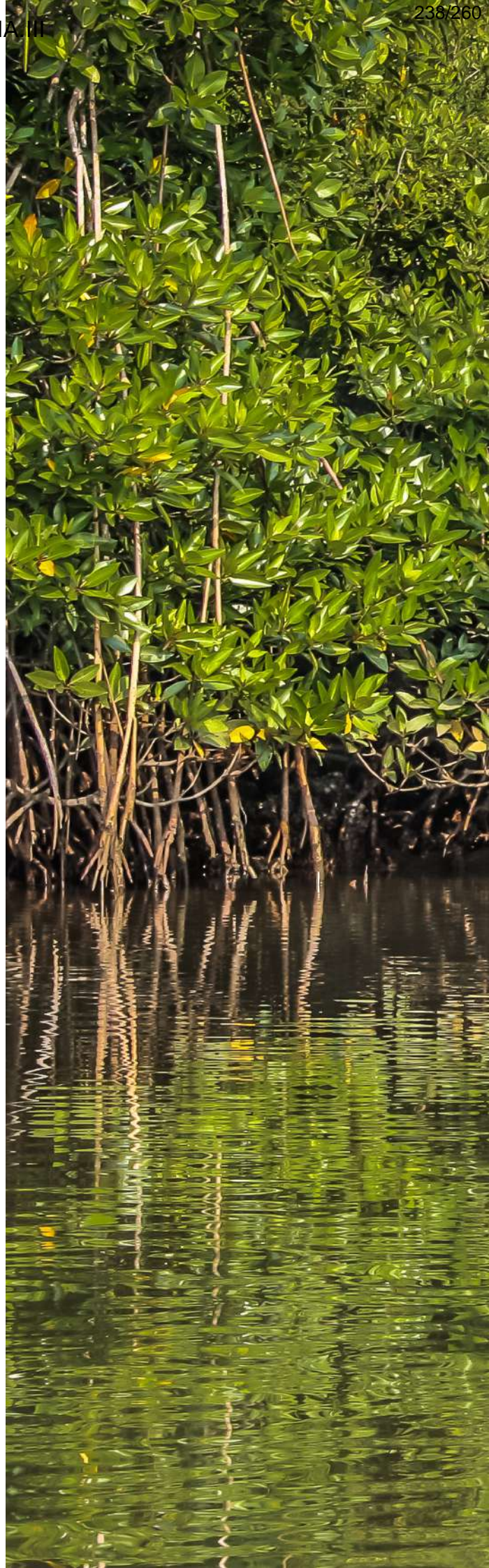
- The comments or the suggestions received from the client will be reviewed as per the provisions of the CRZ/IPZ/ICRZ Notification 2019 and the draft maps will be modified accordingly, if necessary.
- After acceptance draft CRZ map by the client, the final CRZ map on 1:4000 scale and 7 km radius CRZ map on 1:25000 scale will be finalized using standard colour codes, symbols, legends, etc. Acceptance by the Client is only with respect to the project details such as project layout plans, boundaries etc and not for HTL/LTL/ ESA/CRZ.
- The final CRZ Maps have to be signed and certified by the authority of the concerned authorized agency.



- Land use / land cover maps may be prepared along with the CRZ maps.

### 3.8. Preparation of CRZ report

- The draft CRZ report will be prepared based on the format given below and sent to the client for acceptance/comments/suggestions. Acceptance by the Client is only for the project details such as project layout plans, boundaries etc and not for HTL/LTL/ESA/CRZ.
- If major changes are observed on ground with respect to the approved HTL/LTL/ ESAs, these changes should be explained in the CRZ report with appropriate maps, tables and photographs, for the CZMA/MoEFCC authorities to take a decision regarding revision of the CZMP, if required.
- However, as per the CRZ notification 2019 the concerned Coastal Zone Management Authority shall examine the documents for CRZ clearance in accordance with the approved Coastal Zone Management Plans/ICRZ plans/IIMPs, as the case may be.
- After incorporating the acceptable comments/suggestions received from the client, the final report will be submitted to the client along with CRZ map on 1:4000 Scale and 7km radius CRZ map on 1:25000 scale.
- It should be mentioned in the CRZ report that the site specific CRZ map has been prepared using the demarcation of the HTL or LTL, as carried out by NCSCM (par 8.1 (e) of the CRZ Notification 2019) and the CRZ categories are as per the categorisation provided in the approved and published CZMP (par 8.1 (e) of the CRZ Notification 2019).









An aerial photograph of a coastline. The top half shows clear turquoise ocean water with white foam from waves washing onto a wide, golden sandy beach. Below the beach is a strip of land with sparse, low-lying green and brown vegetation. At the bottom, a darker, more turbulent body of water, possibly a bay or inlet, is visible. A large, semi-transparent white number '4' is overlaid on the lower-left portion of the image.

# 4

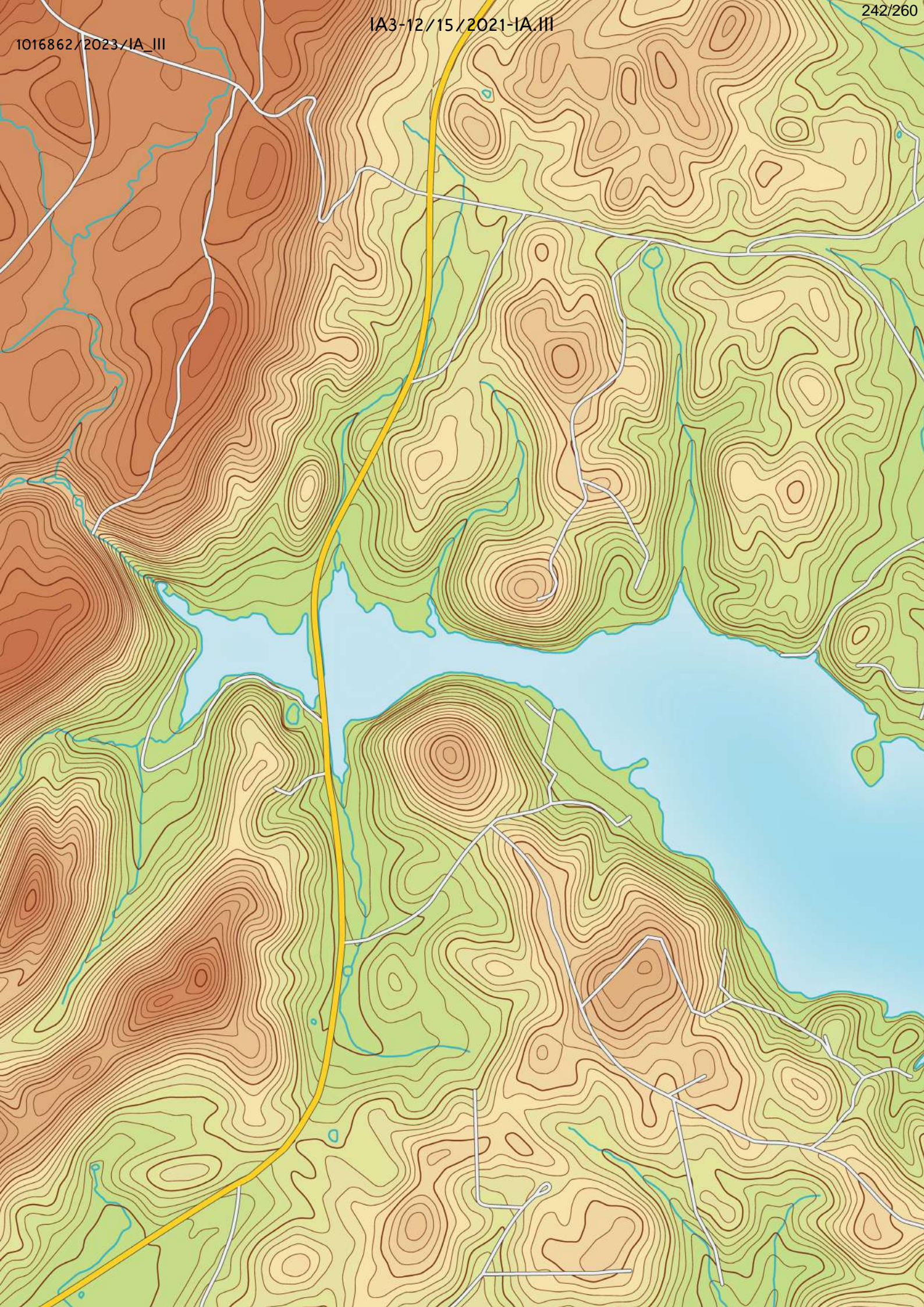
## FORMAT OF CRZ REPORT



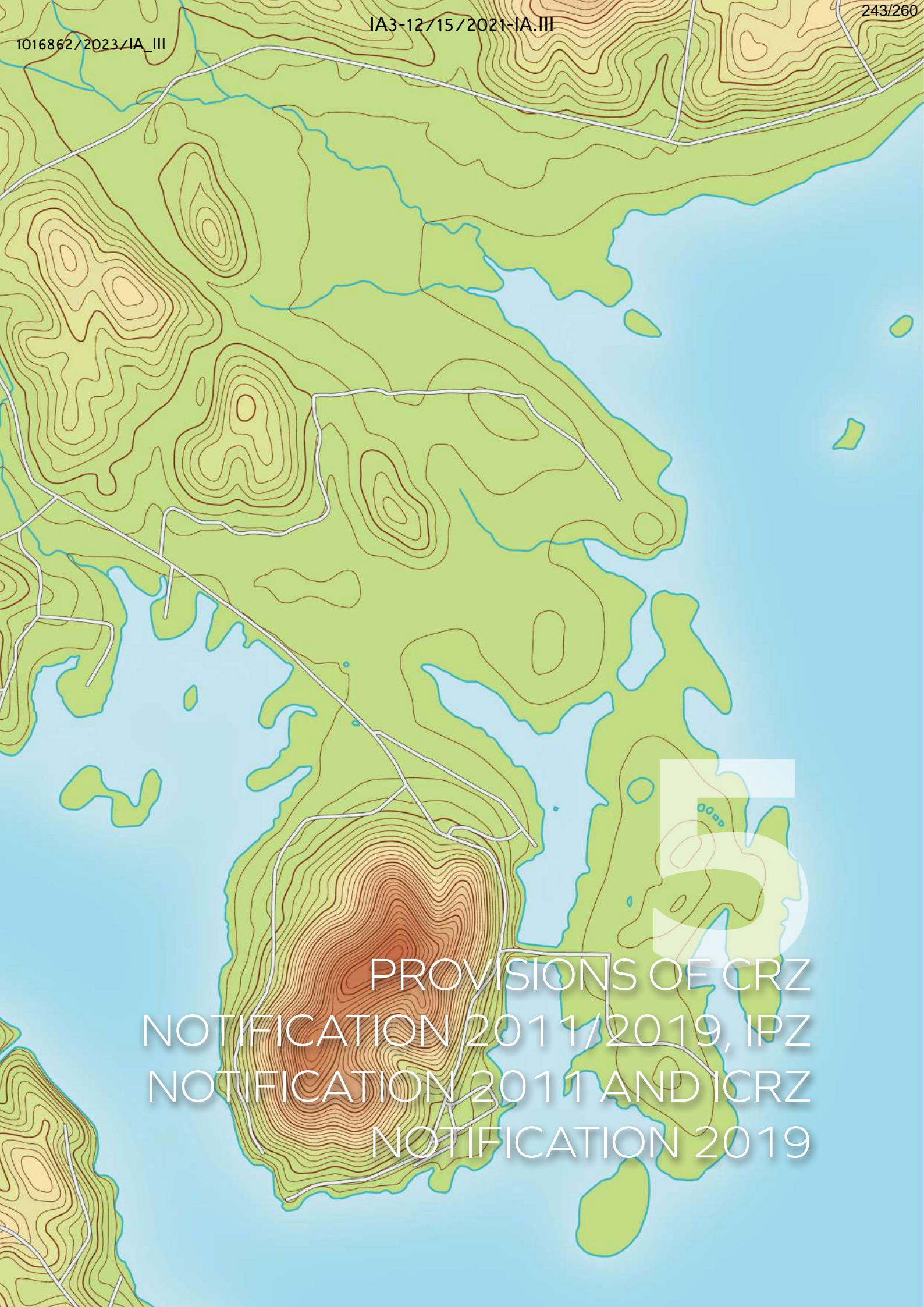
## Format of CRZ Report

- Introduction (Brief Description of the project)
- Objective(s)
- Project Location (Map/Figure with Lat. Long of the project site)
- Approach & Methodology (About CRZ/ICRZ/ IIMP Notification 2019)
- Base map (Description about Cadastral maps used)
- Data Used
- Tide (Nearest Tide data/NHO tide chart)
- Field investigations
- Land use, land cover and geomorphology
- Approved HTL, LTL ESA with respect to the project site, with corresponding map
- Coastal Regulation Zone map of the project site
- Proposed Project Activities
- CRZ/IIMP/ICRZ Map with respect to the approved CZMP/IIMP/ICRZ Plans
- Present status of the site based on HTL/LTL/ESA
- Summary and Conclusions
- Plates/Field Photos, Figures/Maps and Appendix.
- References









PROVISIONS OF CRZ  
NOTIFICATION 2011/2019, IPZ  
NOTIFICATION 2011 AND ICRZ  
NOTIFICATION 2019



# 5

## Provisions of CRZ Notification 2011/2019, IPZ Notification 2011 and ICRZ Notification 2019

The Ministry of Environment, Forest & Climate Change (MoEF&CC), Government of India issued the Coastal Regulation Zone (CRZ) Notification, 2011 on the 6th of January 2011, the IPZ Notification 2011 on the 6th of January 2011, the CRZ Notification, 2019 on 18th January, 2019 and the ICRZ Notification 2019 on the 8th of March, 2019. Various provisions contained in CRZ Notification 2011, CRZ Notification, 2019, IPZ Notification 2011 and ICRZ Notification 2019 are given below, to help prepare the CRZ maps as per CRZ Notification, 2011, IPZ Notification, 2011, CRZ Notification, 2019, and ICRZ Notification, 2019, as the case may be and as per the corresponding approved CZMPs/ICRZ plans/IIMPs. Thus, the SOP is equally applicable to CRZ Notification, 2011, IPZ Notification, 2011, CRZ Notification, 2019, and ICRZ Notification, 2019.

### 5.1. Provisions of CRZ Notification 2011

The CRZ Notification 2011 defines the CRZ areas to include the land area from HTL to 500 m on the landward side along the seafront as well as the land area between HTL to 100 m or width of the

creek, whichever is less, on the landward side along tidal influenced water bodies connected to the sea. The CRZ also includes the entire water and the bed area from the LTL to the territorial water limit (12 Nm) in case of sea and the water and the bed area from LTL at the bank to the LTL on the opposite side of the bank, of tidally influenced water bodies.

CRZ-2011 also provides for a No Development Zone of 200 m from the HTL along the seafront. CRZ - III areas along tidally influenced water bodies are also earmarked as "No Development Zone (NDZ)". NDZ shall not be applicable in such area falling within any notified port limits. Construction/reconstruction of dwelling units of traditional coastal communities including fisherfolk may be permitted between 100 and 200 meters from the HTL along the seafront. A buffer zone of 50 m along mangrove areas of more than 1000 sq mts, stipulated with a different colour distinguishing from the mangrove area, are to be marked as CRZ-IA. CRZ Notification 2011 may be referred to for further details of CRZ classifications and corresponding regulations. A diagrammatic representation of the classifications in respect of CRZ-2011 is given in Figure 2.



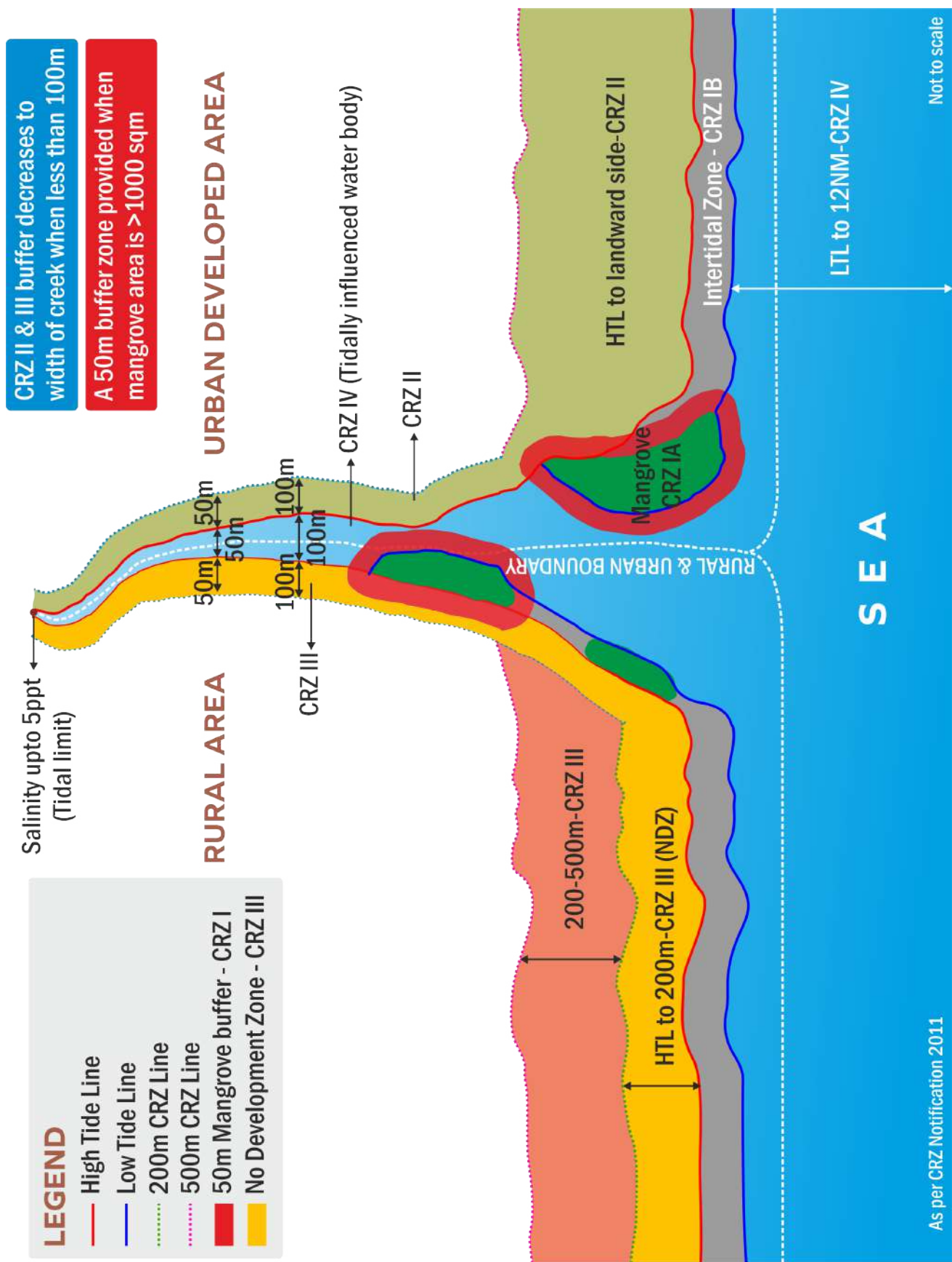


Figure 2: Schematic representation of regulatory features in CRZ Notification 2011



## 5.2. Comparison between CRZ Notifications 2011 and 2019 for CRZ mapping

Sl. No	Item	CRZ Notification 2011	CRZ Notification 2019
1	Authorised agency for demarcation of HTL, ESA & CVCA	-	NCSCM
2	CRZ (as NDZ) along the tidal-influenced water bodies	100 m or width of the water body, whichever is less	50 m or width of the water body, whichever is less
3	CRZ (as NDZ) for Islands in backwaters of Kerala)	50 m	20 m
4	CRZ for Offshore Islands of the mainland	500 m	20 m
5	Mangrove buffers for 1000 sq. m or more area	50 m	50 m only for Govt. land. No buffer for private Mangrove land
6	NDZ in CRZ-III	200 m	CRZ-IIIA (population density > 2161): 50 m  CRZ-IIIB (population density < 2161): 200 m
7.	Tourism activities in CRZ I	No	Eco-tourism activities such as mangrove walks, tree huts, nature trails, etc. permitted in CRZ-IA in accordance with the ecotourism plan. <u>Eco Tourism plan will be part of CZMP.</u>  Further subject to environmental safeguards and precautions related to the ESAs, as enlisted in the CZMP.
8.	Salt marshes	Doesn't make distinction between salt marshes based on the biodiversity they support. No mention of their conversion to salt pans.	Certain salt marshes which have less biodiversity, <u>identified by NCSCM and demarcated in Coastal Zone Management Plan</u> can be considered for salt pan activities.
9.	Construction of Temporary tourism facilities	NA	Allows temporary tourism facilities on beaches and NDZ subject to tourism plan. Tourism plan will be part of CZMP.  Further subject to environmental safeguards enlisted in the CZMP. Minimum distance of 10 meter from HTL shall be maintained for setting up of such facilities.  Allows construction of temporary tourism facilities on seaward side of a highway and resorts/hotels on landward side of a highway in NDZ as per conditions or guidelines at Annexure-III.  Resort/hotels would be permitted subject to the incorporation of tourism plan in the CZMP.



Sl. No	Item	CRZ Notification 2011	CRZ Notification 2019
10.	Houses in CRZ III	Allows construction of dwelling units for coastal communities after first 100 meters from HTL.	Allows construction of houses for local communities in CRZ III areas beyond the NDZ (50 m in CRZ-IIIA/200 m in CRZ-IIIB)
11.	Koliwadadas in Mumbai	To be demarcated as CRZ - III	Not mentioned.
12.	Khazan land	Khazans shall be mapped.  Mangroves along such as khazan land shall be protected.  No developmental activities shall be permitted in the khazan land.	NA
13	Low and medium Eroding areas	Comprehensive EIA with cumulative studies for projects in the stretches classified as low and medium eroding by MoEF based on scientific studies and in consultation with the State Governments and Union territory Administration.	Comprehensive EIA with cumulative studies for projects if located in low and medium eroding stretches, <u>as per the CZMP</u> to this notification.
14	Biologically active mudflats	-	Biologically active mudflats shall be identified by NCSCM in association with State Governments or Union territory administrations.
15	Areas requiring special consideration	CRZ areas falling within municipal limits of Greater Mumbai, Kerala, Goa and CVCAs.	CVCAs, inland backwater islands and islands along mainland coast and CRZ areas falling within municipal limits of Greater Mumbai.
16	CRZ-IVB	Water area of the tidal influenced water body from the mouth of the water body at the sea upto the influence of tide.	Water area and the bed area from LTL at the bank of the tidal influenced water body to the LTL on the opposite side of the bank, extending from the mouth of the water body at the sea up to the influence of tide.



### 5.3. Provisions of Island Protection Zone (IPZ) Notification 2011 (IPZ-2011)

The IPZ Notification 2011 provides for preparation of Island Coastal Regulation Zone (ICRZ) plans for the bigger Islands of Andaman and Nicobar Islands namely, Middle Andaman, North Andaman, South Andaman, Greater Nicobar, Baratang, Car Nicobar, Long Island, Little Andaman, Neil Island (Shaheed Dweep) and Havelock Island (Swaraj Dweep). The remaining Islands of the Andaman and Nicobar Islands and all Islands of the Lakshadweep Islands shall be managed based on the IIMPs to be prepared as per the guidelines given in the IPZ Notification 2011.

#### Island Coastal Regulation Zone Plan (ICRZP):

ICRZ has been defined as the land area from the HTL to 500 meters on the landward side along the sea front for the bigger Islands of Andaman and Nicobar Islands namely, Middle Andaman, North Andaman, South Andaman, Greater Nicobar, Baratang, Car Nicobar, Long Island, Little Andaman, Neil Island (Shaheed Dweep) and Havelock Island (Swaraj Dweep). The ICRZ shall also apply to the land area between HTL and 100 meters or width of the creek, whichever is less on the landward side along the tidal influenced water bodies that are connected to the sea. The ICRZ also includes the water and the bed area between the LTL and the territorial water limit (12 Nm) in case of sea and the water and the bed area from LTL at the bank to the LTL on the opposite side of the bank, of tidal influenced water bodies such as bays, estuaries, rivers, creeks, backwaters and lagoons.

### Integrated Island Management Plans (IIMP)

All the smaller Islands in the Andaman and Nicobar group other than those listed under the ICRZ categories and all Islands of the Lakshadweep, shall be managed through the respective Integrated Island Management Plans (IIMP), which shall be formulated by respective Union Territory administration for all such Islands as per guidelines contained in the notification. The IIMP shall be prepared indicating therein all present and future developments, conservation and preservation schemes with a time frame of ten years. The No Development Zone in the IIMP Islands will be demarcated based on vulnerability to human life and property based on elevation, geomorphology, sea level trends and horizontal line displacement. IPZ Notification 2011 may be referred to, for further details of preparation of ICRZ plans and IIMPs.

### 5.4. Provisions of ICRZ Notification 2019

The ICRZ Notification, 2019 declares the coastal stretches of the bigger Islands with geographical areas > 100 sq.km and the water and the bed area between the LTL and the territorial water limit (12 Nm) in case of sea and the water and the bed area between LTL at the bank and the LTL on the opposite side of the bank, of tidally influenced water bodies in such Islands, as the Island Coastal Regulation Zone (ICRZ). The ICRZ Notification, 2019 stipulates that Island Coastal Regulation Zone (ICRZ) plans are to be prepared for such ICRZ Islands on 1: 25,000 scale.

All the smaller Islands in Andaman and Nicobar and Lakshadweep, other than those listed under the ICRZ categories, shall be managed through the respective Integrated Island Management Plans (IIMPs). Integrated Island Management



Plans (IIMPs) shall be formulated by respective Union Territory administrations for all such Islands as per guidelines contained in Annexure-IV of the ICRZ Notification, 2019 and submitted to Ministry of Environment, Forest and Climate Change for approval.

### Island Coastal Regulation Zone Plan (ICRZP):

As per the ICRZ Notification, 2019, amended from time to time, the ICRZ Plans will be prepared on 1:25, 000 scale, for the bigger oceanic islands in Andaman and Nicobar (ICRZ Islands), grouped as follows:

**ICRZ Group-I:** Islands with geographical areas >1000 sq.km such as South Andaman, Middle Andaman, North Andaman.

**ICRZ Group-II:** Islands with geographical areas >100 sq.km but < 1000 sq.km such as Baratang, Little Andaman, Havelock and Car Nicobar and Great Nicobar.

ICRZ has been defined as the land area from the HTL to 200 meters on the landward side along the sea front for Group-I Islands and 100 meters on the landward side along the sea front for Group-II Islands. The ICRZ shall apply to the land area between HTL and 20 meters or width of the creek, whichever is less on the landward side along the tidal influenced water bodies that are connected to the sea. The ICRZ also includes water and the bed area between the LTL and the territorial water limit (12 Nm) in case of sea and the water and the bed area between LTL at the bank and the LTL on the opposite side of the bank, of tidal influenced water bodies such as bays, estuaries, rivers, creeks, backwaters and lagoons.

ICRZ Notification 2019 may be referred to, for detailed guidelines for preparation of ICRZ plans.

### Integrated Island Management Plans (IIMP)

All the smaller Islands in Andaman and Nicobar other than those listed under the ICRZ categories and all Islands of the Lakshadweep Islands, shall be managed through the respective Integrated Island Management Plans (IIMP), which shall be formulated by respective Union Territory administrations for all such Islands as per guidelines contained in the notification. The IIMP shall be prepared indicating therein all present and future developments, conservation and preservation schemes with a time frame of ten years. The No Development Zone in the IIMP Islands will be the land area from the HTL to 20m. IIMP maps shall be prepared on 1:25,000 scale for macro level planning and 1:10000 scale or cadastral scale for micro level planning.

ICRZ Notification 2019 may be referred to, for detailed guidelines for preparation of IIMPs.





# 6

## COST CONSIDERATIONS



## Cost Considerations

The following are the factors that are to be taken into consideration for estimation of the cost of CRZ Mapping of a project site.

S. No.	Tasks involved in producing CRZ Maps on 1: 4,000 & 1:25,000 scale	Cost
1	Travel for Field Investigation	Based on the location of the site
2	Per Diem for Field Investigation	Based on the number of field staff
3	Cost of Satellite images & other Material cost	Based on the area
4	Boat/Vehicle Hiring and other Contingent Expenditure for Field Investigation	As per field requirement
5	Man Days - Pre-processing	Based on the area
6	Man Days - Ground truth collection	Based on the area
7	Man Days - Post-processing	Based on the area
8	Total	
9	Institutional cost	15%
10	Total	
11	GST	18%
12	Total Cost (including GST)	



# Annex-1 / Proforma

## ISSUES RELATED TO PREPARATION OF CRZ MAPS

Name of the Authorised Agency: National Centre for Sustainable Coastal Management (NCSCM), Anna University Campus, Chennai.

Sl. No.	Details of work	Issues	Remarks
1.	HTL/LTL	Which HTL/LTL needs to be incorporated in the CRZ map?	The HTL/LTL appearing in the approved CZMP of the area has to be incorporated.  For any variance, please see para 1.6 of SoP.
2.	ESA/CVCA	Which ESA/ CVCA boundary needs to be incorporated in the CRZ map?	The ESA/CVCA appearing in the approved CZMP of the area has to be incorporated.
3.	CRZ categories	Which are the CRZ categories to be incorporated in the CRZ map?	The CRZ categories such as CRZ-IA, CRZ-IB, CRZ-II, CRZ-III, CRZ-IVA, CRZ-IVB appearing in the approved CZMP of the area have to be incorporated.
4.	Cadastral maps/Survey plots data	Which are the Cadastral maps/ Survey plots data to be incorporated in the CRZ map?	The latest Cadastral maps/Survey plots data to be obtained from the project proponent have to be incorporated. If there is no change in the status of the cadastral maps, then, the Cadastral maps/Survey plots data appearing in the approved CZMP may be used.
5.	Project layout plans	How to incorporate the project layout plans on the CRZ map?	Project layout plans may be obtained from the project proponents as geo-referenced Shapefiles/ kml files. If the layout plans are in hard copy formats, then these need to be properly geo-referenced and digitised before incorporating in the CRZ maps.
6.	CRZ map has to be prepared as per the approved CZMP.	How to incorporate the present status of the project site?	During the field survey and investigation carried out for CRZ mapping, if any change is noticed in the status of the project site in terms of the approved HTL, LTL & ESAs, then these changes should be explained in the CRZ report with appropriate maps, for the CZMA/MoEFCC authorities to take a decision regarding revision of the CZMP, if required.  However, as per the CRZ notification 2019 the concerned Coastal Zone Management Authority shall examine the documents for CRZ clearance in accordance with the approved Coastal Zone Management Plans/ICRZ plans/IIMPs, as the case may be.  The CRZ categories of the site such as CRZ-IA (including sub-categories/ESAs), CRZ-IB (including sub categories), CRZ-II, CRZ-III, CRZ-IVA, CRZ-IVB have to be as per the approved CZMP and cannot be changed without the approval of MoEF&CC.


















Sl. No.	Details of work	Issues	Remarks
7.	As per para 4.2 (i) (g) of the CRZ Notification, 2011, the CRZ map should normally cover 7km radius around the project site.	What is the scale of this map? (1:4000 scale CRZ map covers only the actual project site)	For all project sites, CRZ map on 1:25000 scale covering 7 km radius around Project site to be prepared. For large project sites such as highways, a series of '7 km radius CRZ maps' has be prepared on 1: 25,000 scale, to cover the entire project site. For large project sites, an index map also has to be prepared with proper numbering system, showing the entire project site and the incidence of the series of CRZ maps.
<b>Other issues</b>			
8.	Superimposition of project layout	Delay by the client in providing re-quired data such as project layout, cadastral map etc.	This leads to overall delay
9.	Acceptance of CRZ map by client only for project details such as project layout plans, boundaries etc and not for HTL/ LTL/ ESA/ CRZ.	No response after receiving the draft CRZ, perhaps due to unfavourable project feasibility	This leads to the project being withheld indefinitely.
10.	Acceptance of proposal	Undue delay in accepting proposal, issue of work order and making payment(s)	This leads to delay in commencement of the project



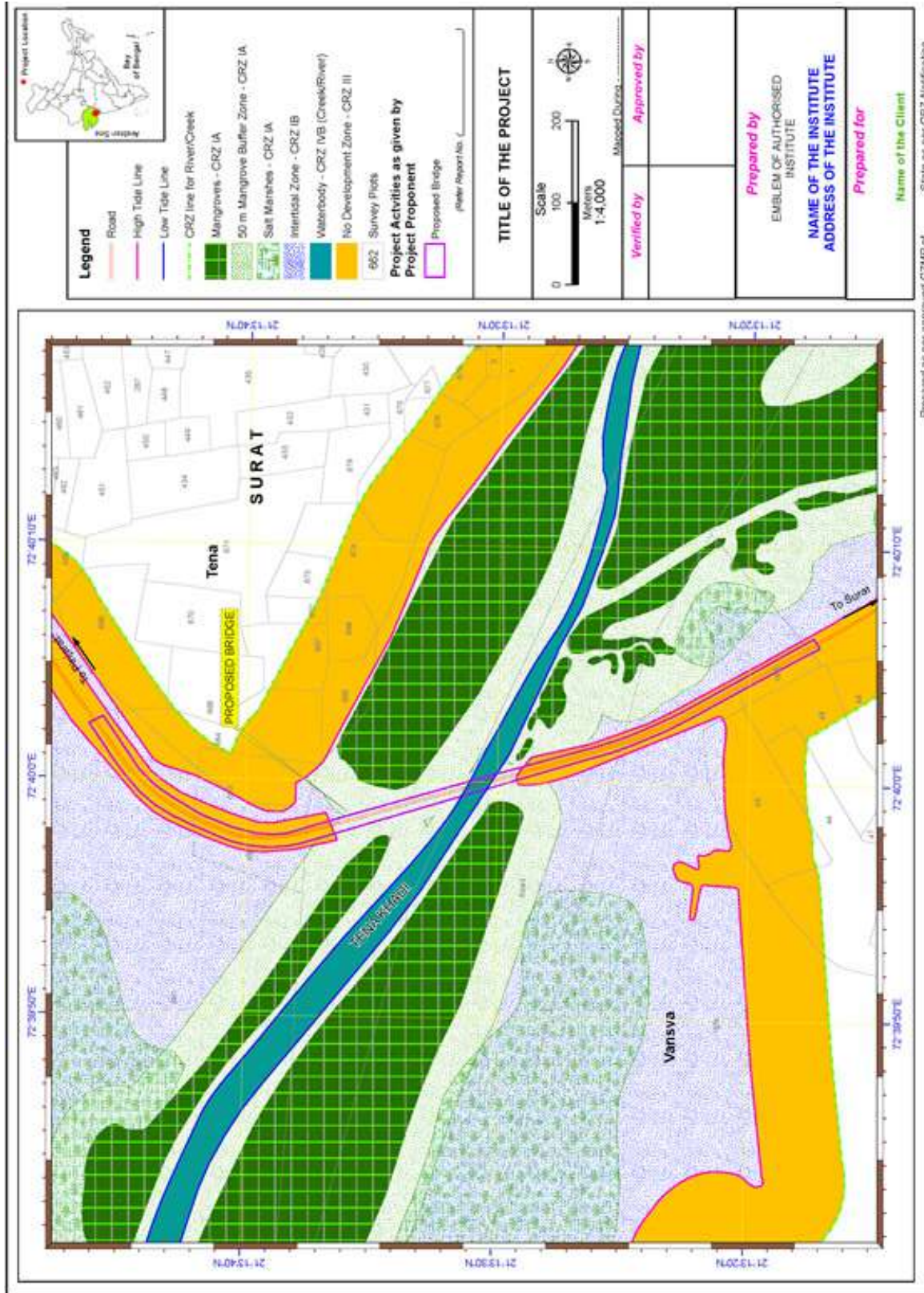
# Annex-2/Map Legend

## Legend

	High Tide Line		Nesting Grounds of Birds
	Low Tide Line		Archeological and Heritage Site - CRZ IA
	20 m CRZ Line for Islands		Saltpan - CRZ IB
	100 m CRZ Line for Bays		Aquaculture Pond - CRZ IB
	200 m CRZ Line - NDZ		Intertidal Zone - CRZ IB
	500 m CRZ Line		Urban or Developed Area - CRZ II
	CRZ Line for Rive/Creek		20 m No Development Zone
	Mangrove - CRZ IA		No Development Zone - CRZ III
	50 m Mangrove Buffer Zone - CRZ IA		50 - 500 m from HTL - CRZ IIIA
	Corals and Coral Reefs - CRZ IA		200 - 500 m from HTL - CRZ III
	Sand Dune - CRZ IA		200 - 500 m from HTL - CRZ IIIB
	Mudflats - CRZ IA		Waterbody - CRZ IVA
	Reserve Forest - CRZ IA		Waterbody - CRZ IVB
	Marine Protected Area - CRZ IA		Seaweeds - ICRZ IA
	Salt Marsh - CRZ IA		Preservation Zone
	Turtle Nesting Grounds - CRZ IA		Conservation Zone
	Horse Shoe Crab Habitats - CRZ IA		Regulated Development Zone
	Seagrass - CRZ IA		



# Annex-3 / Sample CRZ Map





# Annex-4 / Checklist

## CRZ Map Checklist

Sl. No	Item to check	Check appropriate box		
		YES	NO	NA
1	Continuity of HTL.			
2	Continuity of LTL.			
3	ESAs/CRZ-IA: Mangroves			
4	Corals and coral reefs			
5	Sand Dunes			
6	Mudflats which are biologically active			
7	National parks, marine parks, sanctuaries, reserve forests, wild-life habitats and other protected areas			
8	Salt Marshes			
9	Turtle nesting grounds			
10	Horseshoe crabs habitat			
11	Seagrass beds			
12	Nesting grounds of birds			
13	Areas or structures of archaeological importance and heritage sites			
14	CRZ-IB			
15	CRZ-II			
16	CRZ-III			
17	CRZ-IIIA (CRZ-2019)			
18	CRZ-IIIB (CRZ-2019)			
19	CRZ-IVA			
20	CRZ-IVB			
21	50 m Mangrove buffer (CRZ-2011)			
22	No buffer for Mangrove in private land (CRZ-2019)			
23	Port Limits			
24	No NDZ within Port Limits			
25	10 m NDZ for Blue Flag beaches			
26	50 m NDZ for CRZ-IIIA (CRZ-2019)			
27	200 m NDZ for CRZ-IIIB (CRZ-2019)			
28	20 m, 100 m/Width of creek & 500 m NDZ for inland Backwater Islands and Islands along the coast			
29	50 m CRZ (as NDZ) for Islands in backwaters of Kerala (CRZ-2011)			
30	10 m NDZ for construction of Temporary tourism facilities on beaches (CRZ-2019)			
31	100 m CRZ line in CRZ-III in the sea front (CRZ-2011)			
32	CVCA			



Sl. No	Item to check	Check appropriate box		
		YES	NO	NA
33	ICRZ-IA			
34	ICRZ-IB			
35	ICRZ-II			
36	ICRZ-III			
37	ICRZ-IVA			
38	ICRZ-IVB			
39	Conservation zone as per IIMP			
40	Preservation zone as per IIMP			
41	Regulated development zone as per IIMP			
42	No Development Zone as per IIMP			
43	CRZ Map as per approved CZMPs/ICRZPs/IIMPs			
44	Field investigation carried out			
45	Is there any Change in the status of the site with respect to the approved HTL/LTL/ESA?			
46	Present status of the site incorporated in the CRZ report?			
47	CRZ of 500m, 200 m, 100m/width of river/50mas per CRZ-2011 and 20 m as per CRZ-2019 marked in inland backwater Islands and Islands along the mainland coast for taking decision along with the approved IIMP of the Island, if framed?			











