

**STATE PROJECT IMPLEMENTATION UNIT, NCRMP II, RELIEF AND
REHABILITATION DEPARTMENT, GOVERNMENT OF
MAHARASHTRA**

**Conversion of High Tension & Low Tension Over Head Distribution
Network into HT & LT Underground Cable System in Ratnagiri Town
Area & Nearby Villages of coastal belt in District Ratnagiri Under
NCRMP-II Project, Maharashtra
(IN-RRD-MAH-2621-CW-RFB)**

Executive Summary - Environmental Impact Assessment

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EXECUTIVE SUMMARY

1.0 INTRODUCTION

The National Cyclone Risk Mitigation Project (NCRMP) is initiated by Ministry of Home Affairs, Government of India with the World Bank assistance for creating suitable infrastructure to mitigate the effects of cyclones in the coastal states of India. NCRMP focus is on ex-ante disaster risk mitigation in cyclone prone coastal states and union territories. Project is being implemented by the National Disaster Management Authority (NDMA) with support from the Ministry of Home Affairs Government of India.

The main objective of the NCRMP project are:

- a. To minimize risk and vulnerabilities of coastal to cyclones
- b. To strengthen the structural and non-structural cyclone mitigation efforts through creation of appropriate infrastructure which can help to mitigate the adverse impacts of cyclones
- c. To strengthen the cyclone warning systems enabling quick and effective dissemination of warning and advisories at all levels
- d. To build capabilities and capacities of people for cyclone risk mitigation in harmony with the conservation of coastal ecosystems.

The project has identified 13 cyclone prone States and Union Territories ('UTs'), with varying levels of vulnerability. Maharashtra is one of the 13 states covered in two Phases. Government of India has approved NCRMP Phase-II in July, 2015 for five years up to March, 2020 covering States of Goa, Gujarat, Karnataka, Kerala, Maharashtra and West Bengal at an outlay of Rs 2361.35Cr with the World Bank funding amounting to Rs1881.20Cr.

NCRMP Maharashtra Project Components:

The project components in Maharashtra include conversion of overhead electrical cable network to underground system in Alibagh, Ratnagiri, and Satpathi towns and rehabilitation of select embankments and construction of Multipurpose Cyclone Shelters.

This EIA reports relates to "conversion of the overhead cable network to underground cable network for Ratnagiri town".

An SPIU has been formed under the Relief and Rehabilitation Department, Government of Maharashtra for implementing the NCRMP- II project in Maharashtra state which will implement the project in coordination with various government agencies like MSEDCL, Harbour Division of PWD, Kharland Development Authority, and State Disaster Management Authority.

2.0 BRIEF DESCRIPTION OF THE PROJECT

Project Components

Proposed project involves conversion of overhead electrical cable network (HT & LT) to underground cable network for Ratnagiri town & adjoining coastal villages, upgradation of electrical system to match the requirement of UG cabling network and dismantling of existing overhead cable system. Ratnagiri town is not completely covered under this project. Areas of the town which are being covered under the project includes Nachane, Bhagwati fort area, Pethkilla, Sadanand Wadi, Tilak Ali and Sanmitra Nagar along with the adjoining impacted coastal villages like Karla, Sadmirya, Mirya and Shirgaon. Salient features of the project are given in the table below and the project area is represented in the **Figure 1.1**.

- Laying of armoured underground cable (HT & LT) through trenching and through trenchless methods (HDD).

- Installation of Ring Main Units in the Electrical network (Incoming & Outgoing Feeders)-123nos.
- Provision of other support components of UG electrical network like LT distribution boxes, LT Feeder Pillars, LT Mini Pillar Box, distribution boxes etc.
- Augmentation (replacement) of capacity of existing pole mounted distribution transformers (17nos) and improvement of existing electrical infrastructure to be retained, i.e. provision of new DP structure with fuse for existing DTs (46 nos), GI fencing for transformers & RMU etc
- Installation of 4 new pole mounted distribution transformers (proposed on provisional basis)
- Provision of new street lights (1999 nos)
- Shifting of existing 1 Ph consumer meter outside premises and connecting cable to multi-consumer buildings for 37336 consumers
- Dismantling of overhead electrical network & transportation to nearest collection area

Salient Features of Project

S. No.	Features	Description
1	EHV Sub-station	100/33 KV at Kuwarbao
2	Substations serving project area	3 nos (Harbour, Nachane and Zadhgaon)
3	Geographical Coordinates of Substations serving project area	Harbour s/s: 16°59'43.07"N, 73°17'16.56"E Zadhgaon Substation: 17° 0'13.18"N, 73°18'24.23"E Nachane Substation: 16°59'18.25"N, 73°19'1.82"E
4	Project Area	Ratnagiri Town and Coastal villages (section 3.1)
5	Type of Cable System	Underground with some sections overhead ¹
6	Incoming 33kV Feeder Length considered for project	6.34 km
7	Outgoing HT Feeder Length considered for project	57.91 km
8	LT Feeder Length considered for project	154.27 km (UG: 150.55 km & OH: 3.72 km)
9	Nos. of Distribution Transformer	191 (provision of additional 4 is made but it will be installed only as per requirement by MSEDCL)
10	Nos. of feeder	Outgoing: 9 nos. Incoming: 3 nos.
11	Cable laying methodology	Trenching and Trenchless (Horizontal Directional Drilling)
12	Depth of trench	0.8-1.2 m below ground level
13	Width of trench	800 mm-1000 mm

¹Cable remains overhead in some areas Mandavi (1.475 km), Sai Nagar (0.312 km), Bhagwati (0.392 km), Ramnaka (0.015), Mirya Bandar (0.76 km), Zadhgaon (0.199 km), Shirgaon (0.581 km), Karla urban (0.198 km), Karla rural (0.03 km).

14	Height of pole mounted transformer	1.5 m above ground level
15	Land Acquired and R & R	Nil. Project components will be within the government's land (mostly in RoW of roads) ²

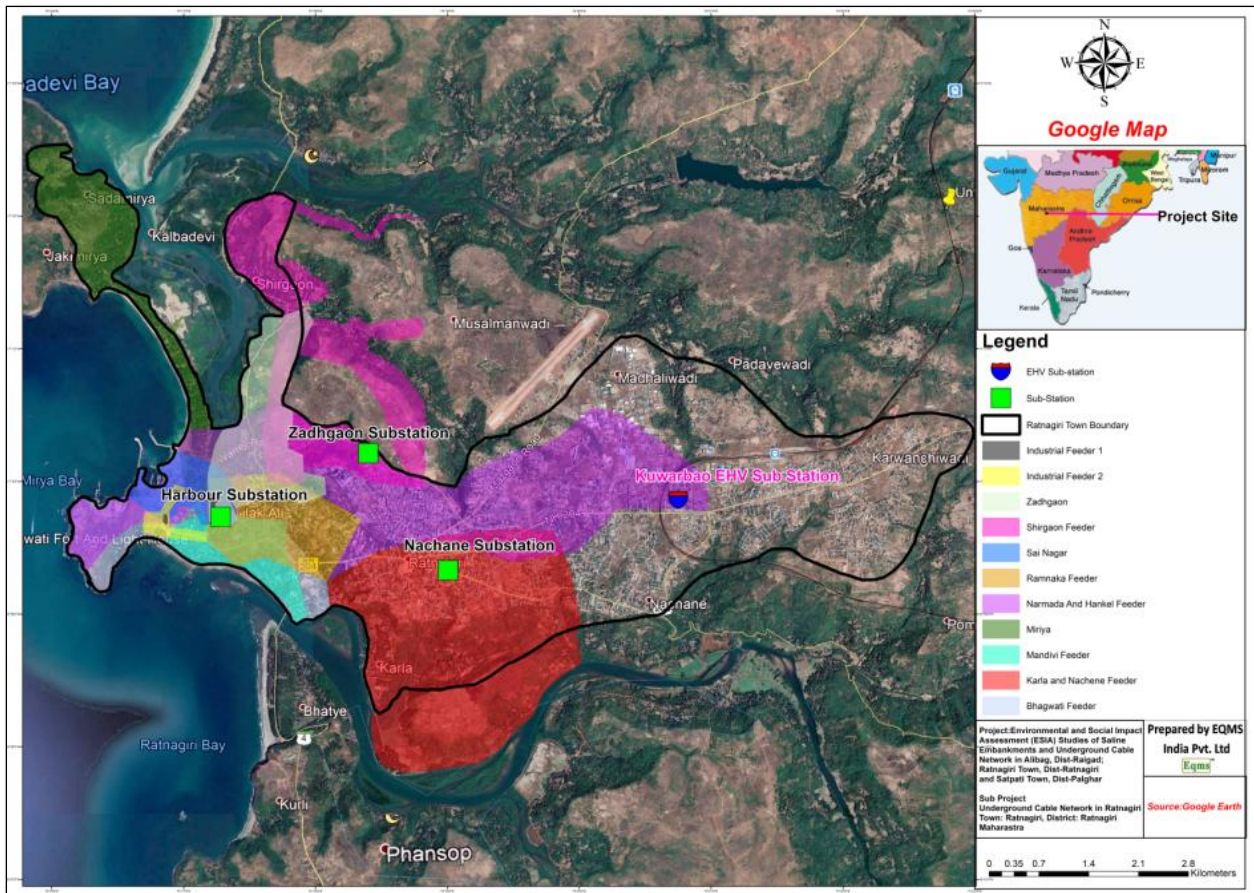


Figure 1.1 : Map of Project Area (Feeders, Switching Station and Sub-station)

Ratnagiri is port city on the Arabian sea coast in Ratnagiri District of Maharashtra. Ratnagiri town is headquarters of the district. Ratnagiri is one of the six konkan region and is located at Latitude 17°N and Longitude 73°19'E. Ratnagiri town area is very well connected. NH-204 connects the town with other areas. NH-204 connects to NH-66. A 12 m wide road runs along the boundary of the town and connects Ratnagiri town with Shirgaon and Mirya. Jetties exist along the coast line which is being used for passenger and material transportation. Nearest station is Ratnagiri railway station and nearest commercial airport is Goa airport. Location map of sub project area is given in **Figure 1.2**. Town has highly uneven topography and have combination of hills, plains and valley. Ratnagiri town is bordered by the Sahyadri Hills on the East and Arabian Sea on the West.

²There may be temporary requirement of land for setting up construction camp site, labour camp site, debris disposal site etc

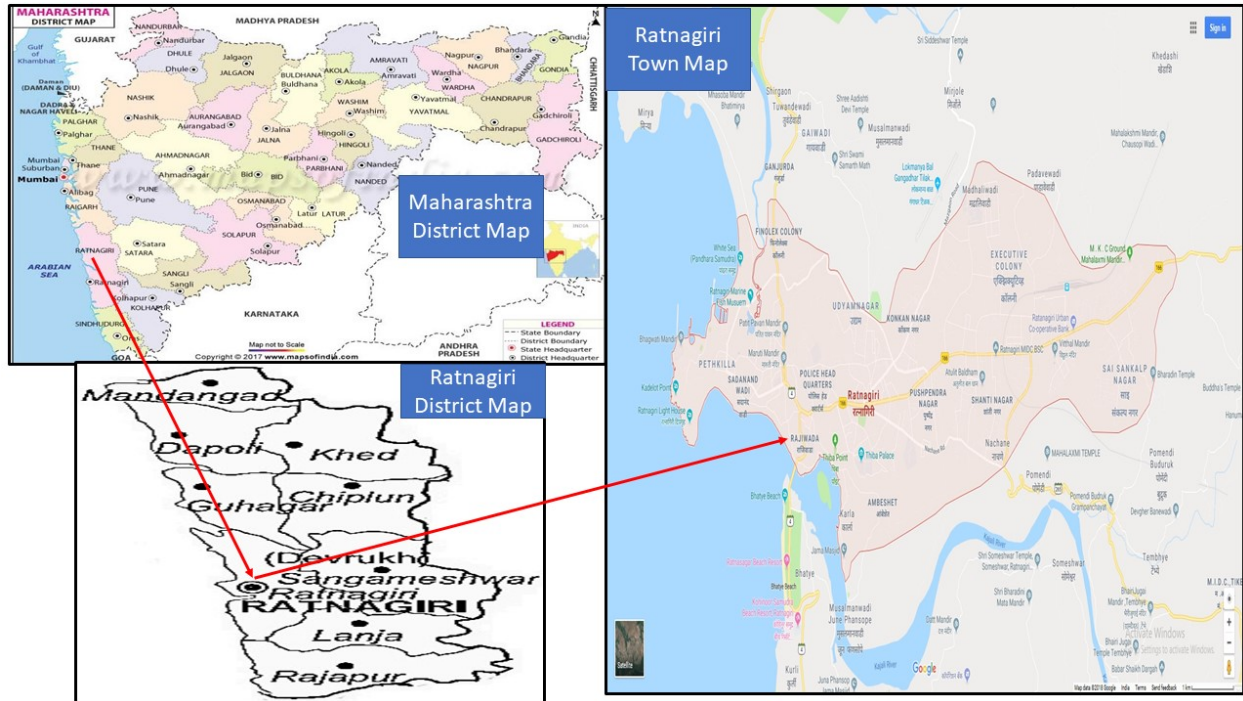


Figure 1.2 : Location map of the Project Area

Existing Utilities

No major private or public property will be affected due to the project. If any property is damaged accidentally during cable laying, provision of cost for restoration of steps/compound wall/underground utilities which may get accidentally damaged during cable laying has been made in DPR as per recommendation of SIA studies.

Underground utilities in town include drainage system, water supply pipeline and BSNL telecom cable. As per DPR, there is no interface of the proposed cable alignment with any of the underground utilities. But there could occur accidental damage of these utilities. Provision has also been made in DPR for restoration of the underground utilities as per recommendation of EIA/SIA studies. Provision with an emergency repair crew by the Contractors is also proposed as part of the project planning

Roads will be affected due to proposed trenching, different types of roads which will be affected includes: bitumen roads (14245.06 sq m), paver block (7798.37 sq m) and RCC road (338.89 sq m). Cost of restoration of roads is also included in the DPR.

Above ground utilities which may get affected are drains, manholes, roads and street lights. No drains or manholes are likely to be disrupted as per current planning but there are chances of accidental damage to these above ground utilities. Provision has been kept in DPR for restoration of these structures as per recommendation of EIA/SIA studies. Street light and transmission lines are provided on common poles in project area thus there is requirement of installation of new street lights if the existing poles will be dismantled. Provision is kept for new street in the DPR.

3.0 NEED AND BENEFITS OF THE PROJECT

The project is planned with a view of protecting the electrical infrastructure from the cyclone risks. Failure of the electrical infrastructure leads to disturbances to essential services in

cyclone induced emergency situations. The direct beneficiaries are the habitats of the project areawith a total population of 37336³.The technical and other benefits expected from the project are:

- Easy transmission of power across densely populated urban areas
- High life of the UG cable system, Reduced Transmission Loses and Better Monitoring System
- The system becomes Aesthetic with high public acceptance
- Protection against Electro Magnetic Radiations, fewer interruption and lower maintenance cost
- High level of personal and public safety, less seasonal impacts on the system, minimum land use

4.0 NEED FOR ENVIRONMENTAL IMPACT ASSESSMENT STUDY

As project involves lot of excavation, construction, dismantling works will have some impacts on overall environment of the area. EIA will support in identifying the potential environment and social impacts of the projects within influenced area and to recommends the mitigation and monitoring measures for eliminating or minimising these impacts in a systematic manner. EIA is conducted based on NDMA's Environment and Social Management Framework of the project. As per ESMF, the Ratnagiri underground cabling project requires preparation of Environment Impact Assessment Study. The World Bank Safeguard requirements as per OP 4.01 also requires preparation of Environmental Impact Assessment Study for all "Category A" project like the proposed Ratnagiri underground cabling project. Based on the mitigation and monitoring measures provided in EIA actions are planned during implementation and operation of the project

5.0 APPLICABILITY OF LEGAL AND REGULATORY FRAMEWORK ON PROJECT

The project has been evaluated for applicability of all National and State Laws, Rules and Regulations as well as Operational policies and guidelines of World Bank. The Acts, rules and guidelines applicable for the project are critically analysed to list out the statutory and regulatory requirements including permits/NOC to be obtained by MSEDCL/ SPIU during Planning phase and by Contractor during implementation phase. The detailed requirements under each rule/regulations are mentioned in main report. Some of the key important legislations and requirements applicable for the project are listed below.

i. Environment Protection Act-1986

Coastal Regulation Zone Notification 2011 Certain sections of proposed underground cabling project falls in CRZ requiring permission under this notification. Application has been submitted to Maharashtra Maharashtra Coastal Zone Management Authority (MCZMA) for grant of CRZ clearance for the project activities.

ii. The Forest (Conservation) Act, 1980 and amendments and Rules 1981 & Maharashtra Felling of Tree (Regulation) Act 1964

Existing cable traverses through forest area at three location (150 m in forest near Bhagawati fort area; 1.5 km in Shirgaon feeder area and 140 m in Karla feeder area). There would be requirement of dismantling of these conductors and related equipment from forest area. Also 2 nos of the RMUs are proposed to be installed along with the existing DTs. Permission is required from forest department for both the works. Also 883 nos of trees exists along the alignment but outside the operational area. At present, no impacts on these trees is anticipated. However, some of the tree species are protected under "Maharashtra Tree Felling Act. 1964"

iii. Air (Prevention and Control of Pollution) Act, 1981, 1987

³ No of consumers of the UG cabling of Ratnagiri Sub-project

- Many project activities involves air pollution generation and management for installation and operation of construction camp involving DG Set, Hot Mix Plants, etc. for road restoration and switching station construction. Under this consent is required from Maharashtra pollution control board.
- iv.** *Water (Prevention and Control of Pollution) Act, 1974, 1988*
Domestic sewage may generate from labour camps and also run-off from construction camp which may pollute the surface water bodies. Consent to Establish and Consent to operate for sewage and run-off generation from labour camp site and construction camp site required from Maharashtra pollution control board
- v.** *Noise Pollution (Regulation and Control Act) 2000 and amendment till date (Noise Rules 2010)*
Noise level monitoring is required to be done at baseline level and as per the standards Noise levels to be maintained at each activity.
- vi.** *Hazardous and Other Waste (Management and Transboundary Movement) Rules, 2016*
Many activities on site required oil/lubricants e.g. DG sets & machinery Transformer oil from old transformer from which used oil will be generated as waste. Authorization from Maharashtra pollution control board is required for the same.
Manufacture Storage, & Imports of Hazardous Chemicals (Amendment) Rules, 2000 Many a time's construction work may require storage of the hazardous substance like fuel for project activities or operation of DG sets. Permit for storage of hazardous material is required if the quantity of hazardous material exceeds the threshold limits defined in the Rules and applicable as and when required.
- vii.** *The Batteries (Management and Handling) Rules 2001*
Existing batteries may be discarded after development of upgraded switching station. In future, also there may be generation of battery waste. Registration for disposal is required with department for the same.
- viii.** *Construction and Demolition Waste Management Rules, 2016*
No specific permit is required. Just comply with the handling and disposal requirements of the rules
- ix.** *Central Motor Vehicle Act 1988 and amendment, Central Motor Vehicle Rules, 1989 and amendments till date Applicable, The Maharashtra Motor Vehicle Rules 1989*
Rule to be followed for all the vehicles at site during construction & operation phase. PUC is required for all vehicles at site.
- x.** *Maharashtra Minor, Mineral Extraction (Development and Regulation) Rules 2013*
Project need minor minerals (like sand, aggregate, murrum, etc). Authorizations and permissions required for excavation, use of sand etc. is required from district magistrate office.
- xi.** *The Gas Cylinder Rules 2016*
Applicable if contractor store more than the exempted quantity of gas cylinder. Gas cylinders will be required for the welding activity. Permission required from Chief Controller of explosives.
- xii.** *Ancient Monuments and Archaeological Sites and Remains Act, 1958*
Applicable, Thiba Place and Lokmanya Tilak Birth Place along cable alignment where underground cabling works are to be laid at distance more than 100 m from the prohibited area. Thus, permission or NOC from ASI should be taken prior undertaking any excavation or other activity

xiii. Building and Other Construction Workers (Regulation Of Employment And Conditions Of Service) Act, 1996

Mandatory for contractors to provide safety health and welfare measures for all construction labour as per the Act and Rules

The details of administrative authority for each above applicable legislation is given in chapter 2 of EIA.

Assessment is made wrt to the applicability of the World Bank Operational Policies on Project. It is found that OP 4.01, OP 4.36 and OP 4.11 are triggered for the project. Also IFC EHS general guidelines, IFC EHS guidelines for Electric Power Transmission and Distribution and IFC & EBRD guideline for Workers accommodation: processes and standards are applicable for the project. As per World Bank policy 4.01, project is categorized as "Category A" as the project is spread over large spatial extent and has impact of low to high significance. However, the anticipated impacts can be mitigated by taking appropriate mitigation measures. Environmental standards to be maintained during project implementation and operation stage includes the following

1. National Ambient Air Quality Standards, 2009
2. Noise Standards, CPCB
3. OSHAS Noise Exposure Limits for the Work Zone
4. Drinking water Quality Standards-IS:10500:2012

6.0 ANALYSIS OF ALTERNATIVE

Analysis of alternatives is carried out for analytical comparison of the operational effectiveness, costs and environmental and social risks of the proposed developmental options. It has been carried out for following three:

1. "With" and "Without Project" scenario considering the four major aspects, i.e. cyclone & earthquake resilient electrical cable network, uninterrupted power supply and reduced power losses
2. Planning of cable route and
3. Type of cable, poles and excavation methodology.

The selected alternatives were assessed in tandem with preparation of DPR and are included in the project design. It is found that the proposed underground cable system is cyclone and earthquake resilient and due to design improvement, power losses and power failure will be significantly reduced. Thus, the proposed UG cable system is found to be a better than the existing overhead cable system. The proposed UG cable system involve excavation or laying the cable through HDD may disturb the physical, biological and social environment. Such locations are bypassed in new proposed alignment. Thus, new proposed alignment is recommended for development of project due to minimal impact on sensitive receptors. RSJ poles are strongest among the options available and are adopted to be used for this project. Cable laying will be combination of both trenching & HDD method. HDD is preferred in the narrow and busy stretches to minimize the socio-economic impact

7.0 PROJECT IMPACT AREA

Project activities majorly involve excavation of trenches, installation of new DTs, installation of poles for AB/overhead cable across Khadtal river, digging of pilot holes for laying cable through HDD, and dismantling of existing electrical system. All these activities may have direct and indirect impact on the physical, biological and social environmental components.

As per the ESMF, direct project influence area due to cable laying operation can be considered equal to double the width of the cable laying trench.

Direct impact zones area considered are

- a. The maximum width of the trench is 1.2 m therefore an area of 2.4 m or say 2.5 m is considered as corridor of direct impact
- b. Pilot holes locations for HDD cabling,
- c. Switching station construction area,
- d. RMU installation locations and temporary usage areas viz construction/labour camps areas and material storage areas

Indirect impact zone is considered are

- a. The road width where trenching is proposed in case of single lane road or up to median in case of double lane road,
- b. The area likely to be impacted due to traffic diversions, traffic congestion in nearby habitats due to construction in whole of the town

8.0 ENVIRONMENTAL SCREENING OF PROJECT AREA

Environmental screening for project area has been carried out as per the guidelines provided in ESMF of NCRMP- II project and based on the primary field data collected secondary data. Following are the outcomes of the screening of the project area:

- a. **No national park, wildlife sanctuary, biosphere reserve, notified wetland or IBA** exists within 10 km radius area of Ratnagiri Town.
- b. Forest Area:
 - Existing cable traverses through the forest at three locations (Bhagwati Feeder Area: (150 m), Shirgan Feeder Area: (1.5 km), Karla Feeder: (140 m)). There would be requirement of dismantling of the conductors and related equipment from forest department.
 - There would be requirement of dismantling of the conductors and related equipment from forest department. These RMUs are located in Sai nagar feeder area, One is near Margualkar chawl (DT no 5 & 6) and other is near white sea (DT no 1 & 7) close to the chawl.
 - No reserve or protected forest is present in Ratnagiri as per Forest Working Plan of Ratnagiri. However, Mangroves are present in the project area which are declared as protected forest as per High Court Order.
 - 2 Nos of proposed RMUs (Sainagar Feeder) are located in forest area. There are 4 nos trenches required to be made for installation of RMUs. RMUs are located near Margualkar chawl (DT no 5 & 6) and other is near white sea (DT no 1 & 7) close to the chawl. The land is devoid of any significant vegetation
 - Proposed Line will not pass through the forest but will be laid on road along the forest area. Details are given below
 - Bhagwati Feeder – proposed feeder going along forest area:
 - HT-1 to HT 12 = 476.96 mtr. (trench)
 - HT 31 to HT 34 = 117.67 mtr. (trench)
 - RMU 8 / From DT-15 to DT-16 Pathanwadi 223.47 mtr. (trench)
 - Mirkawada Village to Bhagwati Fort 1542.94 mtr. (trench)
 - Shirgaon Feeder –
 - Total proposed HT-5 to HT-179 is 773 mtr. (trench)

- Karla Feeder - proposed feeder going along forest area
 - HT 16 – HT 27 = 130.43 mtrs. (trench)
 - HT 47 to HT 57 /DT 14 Adampur = 564.54 mtr. (trench)
- c. **Tree Cutting:** No tree cutting is anticipated at this stage.
- d. **Rivers:** Arabian Sea and Bhatiyee / Kalji river. UG cable does not have interface with sea or the river
- e. **CRZ Area and Mangroves:** The alignment falls under all the three category of CRZ category of CRZ 1,2 & 3. The existing HT and LT line passing to CRZ area are 12.85 and 49.64 Km respectively. The proposed HT/LT UG line in CRZ area is 13.85 and 40.96 Km respectively. No mangroves will be affected. Existing lines passes along mangroves areas. However proposed line will be on the road and away from mangroves. (Mangroves are falling in some portion of Karla, Shigaon, Bhagwati, Mirya, Ramnaka, Zadgaon and Mandvi feeders).
- f. **Archaeological and Historical Sites:** Thiba Place and Lokmanya Tilak Birth Place along cable alignment are archaeological sites. Bhagwati Fort is historical site which exists along the alignment. Existing cable run close (10-20 m) to these sites but proposed UG cable will be laid at distance more than 100 m from the prohibited area
- g. Cable is traversing through the roads having sensitive receptors like religious locations, educational institutes, health institutes, public buildings, trees, forest, mangroves, wetlands, ponds, lakes, rivers, private properties, archaeological structures and congested areas. However, none of these sensitive receptors are getting affected due to cable laying works. Access of these receptors and the other buildings will get affected so alternative access arrangements shall be made for these receptors and all the other buildings by the contractor. No structure (steps, boundary wall etc) is getting affected in UG cable laying process however, if any incidental or accidental damages occurs during execution, they shall be repaired and restored by the Contractor immediately. (At road crossing points, cable will be laid through HDD only. No trenching will be undertaken at crossings).

9.0 BASELINE DESCRIPTION

The environmental conditions of area to be affected due to proposed project were established through extensive literature review, field monitoring, laboratory analysis, stakeholder consultation and data interpretation.

Secondary data from literature search were also obtained from the Govt. sources i.e. Indian Meteorological Department, CPCB publications, CGWB and other Govt. Sources. Latest primary baseline environmental monitoring has been conducted for four weeks as per CPCB guidelines during October 2018. However, the strip maps are prepared for for 2.5 m of the corridor of direct impact and are given in Volume 1 of this report. Specific attention is given to collect the data pertaining to direct impact zone due to cable laying, HDD pilot hole area, material storage area, and proposed construction camps. Other than this, study area was extended upto 10km radius of activity area for identification of protected areas and other sensitive locations. Summary of baseline data along with pre-assessment of impacts of the project area is given below:

Environmental baseline Status

S. No.	Environmental Component	Baseline Scenario	Sensitivity Level of baseline scenario	Environmental Impact Probability due to Project Activities
1.	Connectivity & Traffic Pattern	Good road connectivity. Moderate Traffic Volume. No major congestion.	More congestion/blockage of routes due to excavation activities	Moderate
2.	Air quality	PM ₁₀ -52-83 µg/m ³ , PM _{2.5} -24 - 42 µg/m ³ , SO ₂ -6.0-8.8 µg/m ³ , NO ₂ -10.8 – 18.1 µg/m ³	The overall ambient air quality of the project area is within the prescribed National ambient air quality standard of 2009.	Moderate (project implementation phase only) (project is likely to generate dust during trenching which is likely to be site specific (trenching area only) and due to transportation and traffic diversions.
3.	Noise Level	Day Time Min Leq 55.3 d(B)A to 63.2dB(A) and Night Time Leq= 41.5 dB(A) to 50.4 dB(A)	Day time noise level marginally high at one location (0.3 to d(B)A above standard), night time noise level well within the prescribed Ambient Noise level standards	Moderate (project implementation phase only) (noise is likely to be generated only due to transportation and trenching activity confined to trenching area which is will be of maximum 500 m at a location.
4.	Seismicity	IV	High seismic risk zone	No direct impact from project activities,
5.	Topography	Undulating (0-138 m amsl) This is because the presence of small hillocks in eastern part of the study area.	--	Nil as project unlikely to change any topography aspects of the area
6.	Drainage	The slope of the project area is east to west. The drainage pattern of the Ratnagiri town is mainly controlled by Arabian Sea and Bhatiyee / Kalji river. Some areas are low lying and water logged. Storm water drainage system exists in the town.	No activity proposed within the river.	Low Drainage congestion may occur during construction stage temporarily if due measures are not taken
7.	Flora & Fauna	No scheduled-I flora and fauna within project activity areas. No protected area (wild life sanctuaries or national parks) exists within 10 km of project activity areas. No reserve and protected Forest present within the project area but unclassified forest is present in the project area. The existing cable is crossing the revenue (unclassified) forest (Existing line alignment passes through unclassified forests area at three locations (i) Bhagawati fort to Transformer before Ultratech near Mirya Bandar	No significant bio-diversity. No endangered or threatened species. Native species of trees.	No tree cutting required. However the dismantling activities in and around forest area can impact on forest areas if due caution not taken it may impact the flora and fauna. No reserve or protected forest is present but unclassified forest patches are present along the Bhagawati, Shirgaon and Mirya Bandar feeder however the cable laying shall be done along the road route. At three locations, existing

		<p>(length of about 150m), (ii)Shrigaon Feeder (on Ratnagiri Ganpati Pule Highway after crossing the Rabbani mohalla -approx.. 200 m ahead) to pednekar Bag (about1500 m) and Karla Feeder (JijamataUdhanThiba Point to Grveyad near Adampur Jama Masjid Karla (about 140 m))but the proposed cable will not disturb the the forest. 2 Nos of RMUs are proposed in the forest land area however there are no vegetation in this area. There are 883 nos of tree along the alignment but none is present within the operational area.</p>	<p>cable crosses forest area</p> <ul style="list-style-type: none"> • Bhagwati Feeder Area: (150 m) • Shirgan Feeder Area: (1.5 km) • Karla Feeder:(140 m) <p>There would be requirement of dismantling of the conductors and related equipment from forest department.</p> <p>Also 2 nos of the RMUs are proposed to be installed along with the existing DTs. Land of proposed RMUs belong to forest department so permission will be required from forest department for installing RMUs. This location is devoid of the vegetation.These RMUs are located in Sai nagar feeder area, One is near Margualkar chawl (DT no 5 & 6) and other is near white sea (DT no 1 & 7) close to the chawl.</p> <p>Proposed Line however is planned to be laid outside the forest area on the road along forest area. Detail of the proposed line traversing the forest area are given below</p> <ul style="list-style-type: none"> • Bhagwati Feeder – proposed feeder going along forest area: <ul style="list-style-type: none"> ○ HT-1 to HT 12 = 476.96 mtr. (trench) ○ HT 31 to HT 34 = 117.67 mtr. (trench) ○ RMU 8 / From DT-15 to DT-16 Pathanwadi 223.47 mtr. (trench) ○ Mirkawada Village to Bhagwati Fort 1542.94 mtr. (trench)
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				<ul style="list-style-type: none"> • Shirgaon Feeder – Total proposed HT-5 to HT-179 is 773 mtr. (trench) • Karla Feeder - proposed feeder going along forest area <ul style="list-style-type: none"> ○ HT 16 – HT 27 = 130.43 mtrs. (trench) ○ HT 47 to HT 57 /DT 14 Adampur = 564.54 mtr. (trench) ○ Contractor should comply the condition given in the forest permission
8.	Demography	The project area is Ratnagiri and its outskirts. The proposed alignment of the cable network is distributed along the settlements, roads and streets. City area is populated. As per Census India 2011 the total population of Ratnagiri town is 76,229.	Urban and populated	Moderate (temporary impact to due to traffic diversions and inconvenience to habitat residing close to cable laying areas)
9.	SW quality	The river Kajli flows to a distance of 15 km in its water course. The tidal influence is confined to 11 km. It is a large estuary surrounded by small Villages (hamlets) all along the banks neighbouring Ratnagiri city.	Not Potable	Low
10.	GW Quality	The ground water quality of the study area is found well within the desired limits. No metallic and bacterial contaminations were observed in ground water samples.	Potable	Low
11.	Soil Quality	Sandy clay, slightly alkaline in nature and is moderately fertile	Not polluted	Low
12.	Geology	Rocks of Gneissic or Metamorphic series, Kalddgi, Quartzites, Deccan Trap, Ratnagiri plant Beds	--	None
13.	Land Use	Settlement (32.83%), open scrubs (27.15%), vegetation (26.26%), Agriculture land (8.96%), marshy land (3.16%) and water body (1.64%),	--	Low (land use will change temporarily for construction camp/labour camp area if installed on vacant land, however, it

				will get restored after the project completion)
14.	Climate (temperature, rainfall, wind speed, wind direction, humidity)	Diurnal Climate Max daily temp: 32.9 °C and Min daily Temp: 19.1 °C Relative humidity ranges between 55-90%. The annual total rainfall (average of 30 years) is 3118.1 mm The mean wind speed ranges from 6.1 to 9.6 kmph In May wind direction remains NW and W throughout the day and during Monsoon (June to September) wind direction remains W & SW throughout the day	--	None
15.	GW Levels	During pre monsoon varies from 5 mbgl to 10 mbgl and During post-monsoon period varied from 2 mbgl to 5 mbgl	--	During cable laying in post monsoon season extra care shall be taken due to rise in water level (up to 2 m).RCC trenches shall be laid in the water logged areas

10.0 ENVIRONMENTAL IMPACT ASSESSMENT

The impacts anticipated vary from low to high significance but most of the impacts are associated with construction phase and are short term, site specific and temporary in nature. Major impacts are anticipated on traffic, socio-economy & aesthetics and Occupational health and safety, air quality and noise during construction stage. The impacts envisaged are manageable and mitigable, if the suggested mitigation measures and environment management plan are implemented. During operation phase impacts are anticipated majorly on the occupational health and safety of the workers. Analysis of significance of the impacts pre & post implementation of the mitigation measures is given below:

Impact Assessment and Evaluation

S. No.	VECs	Impact Significance -Pre-mitigation measures	Impact Significance – Post mitigation measures
Project Implementation Phase			
1.	Due to Setting up of Construction Camp, material storage and debris disposal areas	Temporary, short term and moderate significance	Temporary, short term and low significance
2.	Due to Setting up of Labour camps	Temporary, short term and moderate significance	Temporary, short term and low significance
3.	Due to Material Sourcing and Transportation	Temporary, short term and moderate significance	Temporary, short term and low significance
4.	Due to Utility Shifting	Temporary, short term and moderate-high significance	Temporary, short term and low significance
5.	Occupational Health and Safety	Short term temporary and high significance.	Short term temporary and low significance.
6.	Due to Site Clearance and	Temporary, short term and	Temporary, short term

Executive Summary - EIA for Project "Conversion of Existing Overhead Distribution Network to Under Ground Cabling System for Ratnagiri Town at Dist-Ratnagiri, Maharashtra under NCRMP-II Project

	Preparation for Excavation of Trenches	moderate significance	and low significance
7.	Due to Execution of Trenching Work and Restoration of Affected Utilities	Temporary, short term and moderate-high significance	Temporary, short term and low significance
8.	Due to Cable Pulling, Laying and Jointing at Inspection Chambers	Temporary, short term and low significance	Temporary, short term and low significance
9.	Due to Backfilling of Trenches and Road Restoration, Clean-up Operation and Restoration	Temporary, short term and low significance	Temporary, short term and low significance
10.	Due to Cable Laying through HDD	Temporary, short term and low significance	Temporary, short term and low significance
11.	Due to Preparation for and Laying of Overhead Cable and Installation of New Street Lights	Temporary, short term and moderate significance	Temporary, short term and low significance
12.	Due to Dismantling of Existing Overhead electrical Set-up	Temporary, short term and low significance	Temporary, short term and low significance
13.	Due to Blockage of Drainage System	Temporary, short term and moderate significance	Temporary, short term and low significance
14.	Due to Increased Traffic during Cable Laying and Dismantling Works	Temporary, short term and moderate significance	Temporary, short term and low significance
15.	Due to Waste Generation and Management	Temporary, short term and moderate significance	Temporary, short term and low significance
16.	Impact on Archaeological monuments	Temporary, short term and low significance	Temporary, short term and low significance
17.	Impact on Air Environment	Temporary, short term and low to moderate significance	Temporary, short term and low significance
18.	Impact on Noise Environment	Temporary, short term and low to low to high significance	Temporary, short term and low to moderate significance
19.	Impact on Water Quality	Short term temporary and low significance.	Short term temporary and low significance.
20.	Impact on Water Resources	Short term temporary and low significance.	Short term temporary and low significance.
21.	Impact on Land Use	Short term temporary and low significance.	Short term temporary and low significance.
22.	Impact on Soil Quality	Short term temporary and low significance.	Short term temporary and low significance.
23.	Impact on Ecology	Long term, permanent and moderate significance	Long term, permanent and low significance
24.	Impact due to Natural Disaster on Project Components	Short term, temporary, irreversible and high significance	Short term, temporary, irreversible and low-moderate significance
Operation Phase (Operation, Maintenance & Repair)			

1.	Occupational Health and Safety	long term, irreversible and significant	Short term temporary and low significance.
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11.0 PUBLIC CONSULTATION AND DISCLOSURE

Stakeholder's view and perception was assessed through informal and formal public consultation meetings in two stages. Stakeholders include general public, local bodies and Government Departments. Locals and local bodies voiced that the proposed project is overall beneficial for the project and will make the electrical system cyclone resilient. Not only resilience but the aesthetics of the town will improve significantly, and this will add to the economy generation through tourism as Ratnagiri is one of the known tourism destination in Maharashtra. The proposed project has overall positive impact on the socio-economy. Project is accepted to all the stakeholder but some suggestion was made by the public which are considered for inclusion in the environment management plan. Inclusion of these opinions has strengthened the EMP as the measures suggested directly address the issues which will be raised by public during project implementation and thus will enhance the social acceptability of the project.

Environment impact assessment report will be disclosed at the SPIU (NCRMP) website. Executive summary will also be disclosed in local language as well at SPIU and NCRMP website.

12.0 ENVIRONMENT MANAGEMENT PLAN AND BUDGET

The Environmental Management Plan (EMP) is synthesis of all proposed mitigation and monitoring actions, set to a time frame with specific responsibility assigned and follow-up actions defined. Prepared EMP is a plan of actions for avoidance, mitigation and management of the negative impacts assessed due to project activities. A detailed set of mitigation measures have been compiled in view of the likely impacts associated with the proposed project. EMP provides a management schedule of time and sequence of implementation of the proposed mitigation measures. It also includes plans for pollution prevention, environmental guidelines & standards, emergency management plan, institutional framework, grievance readdress mechanism, capacity building, environment monitoring plan and environment management budget.

Institutional Framework for EMP Implementation

Environmental and social management plan will be implemented by EHS cell of contractor (comprising of Environment and Safety Officer) under supervision of MSEDCL Ratnagiri TPQA and SPIU/PMC. MSEDCL already have functional safety cell which shall be named as EHS (Environment, Health and safety) cell. Safety Cell officer will be given additional responsibility of environment and social management plan implementation. These officials shall also be given required training for discharging additional responsibility of environmental and social management. Contractor will appoint Environment and Safety Officer for implementation of the EMP.

Environment Monitoring Plan

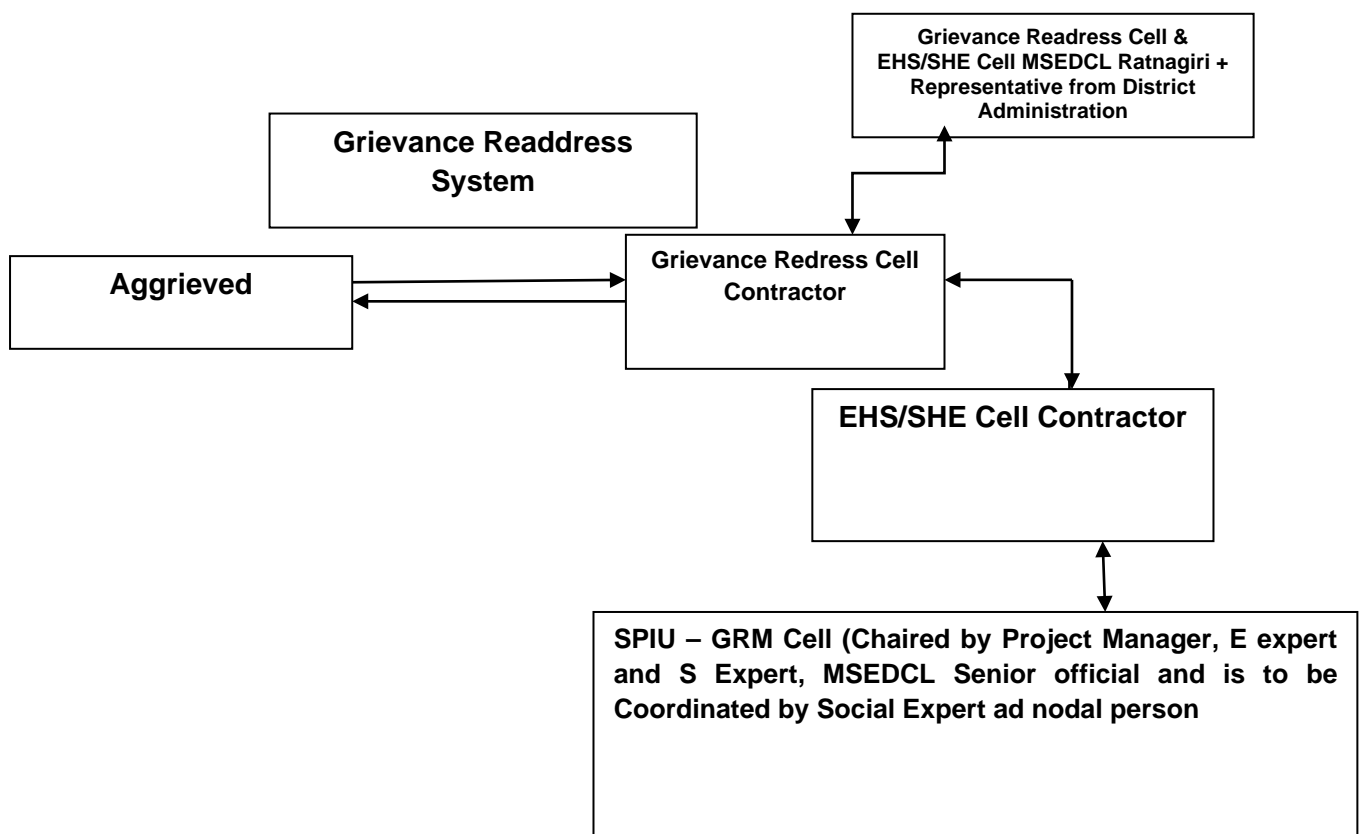
Key monitoring indicators are defined as the environmental parameters which may get impacted during different project stages and environment monitoring plan is prepared for these key indicators for e.g. drinking water quality, air quality, noise level, soil quality, occupational health & safety, community issues, solid waste disposal, sanitation, labour camps and construction camp

Environmental Management Budget

Adequate resources are allocated under the project for environmental management which will be part of construction and operation costs. The environmental budget for construction and operation phase has been budgeted.

13.0 GRIEVANCE REDRESS MECHANISM

The Grievance Redress Mechanism (GRM) will be established at each level with two tier structure. First tier will be MSDECL and second tier at SPIU level. The EHS cell of MSEDCL will be responsible to address the concerns of the aggrieved person at first stage. The EHS cell at MSEDCL shall have representative deputed by the District Collector who shall participate in the readdressal mechanism and facilitate early response of the grievance. EHS cell will designate a dedicated email, phone number for receipt of grievances. The response to the complaint with resolution will be communicated back to the aggrieved person within 15 days. In case, grievance cannot be resolved at MSDECL level, then it will be escalated to SPIU level for further resolution. SPIU will put up this to Grievance redress committee comprising of project Director, EHS officer SPIU, Chief Engineer (Infra) MSEDCL, representative deputed by the District Collector and EHS officer MSDECL. Any aggrieved person can send written communication to EHS cell of MSEDCL through email or using other modes of communication like phone call or drop his/her complain to drop box (to be installed at MSDCL office). The GRM will be displayed at each active site along with name of MSEDCL EHS officer, dedicated email and phone number. The GRM mechanism is shown at Figure below.



14.0 TRAINING AND CAPACITY BUILDING

The staff and workers at the site shall be given environmental trainings to enhance their understanding of EMP requirements and ensure effective implementation of EMP. Both Contractor/MSEDCL Ratnagiri should organise such training for EHS cell members and workers as the case be. These trainings shall be organized by contractor through third party or can take help of PMC for organizing the trainings

- Training for usage of personal protective equipment
- Training for usage of firefighting equipment
- Training for working on heights
- First aid training
- Training for quality and environment management systems
- Training for implementation of EMP
- Training for implementation of Emergency Response Plan

15.0 Reporting

Following reporting schedule is recommended.

- The contractor shall submit the monthly compliance report including various aspects such as material sourcing, waste disposal, compliance to statutory conditions, incident and accident public grievances, work progress, traffic management etc. to MSEDCL and MSEDCL shall forward the reports to SPIU and SPIU with the support of PMC shall review the reports
- TPQA shall undertake periodical Audits and provide orientation including status of EMP and SMP implementation and submit periodical reports to SPIU and PMC shall verify its reports and submit a quarterly report to SPIU on EMP compliance status.
- SPIU supported by PMC will submit a quarterly progress report to PIU and World Bank.

16.0 Documentation, Updation and Record Keeping

The following reference documents shall be maintained and available with contractor and PIU for implementation at construction site

1. EMP
2. Environmental Standards
3. SoPs and Method Statements for each project activity (to be prepared by contractor)

The EMP shall be updated regularly based on change in regulatory requirements, WB /IFC EHS guideline and finding of annual independent audit findings. List of records to be maintained at site is provided in main report.

17.0 Mechanism for Feedback And Adjustments

As part of the feedback mechanism, MSEDCL Ratnagiri and TPQA shall monitor project compliance based on monitoring reports, audit and inspection reports with respect EMP, EMoP and applicable laws, rules and regulations. MSEDCL Ratnagiri will report to SPIU/PMC on a quarterly basis. In case, any deviation from the contract requirements with respect to proposed EMP is observed, the same shall be corrected within a fortnight through contractor and TPQA

and records maintained for the same. MSEDCL The EHS officer will analyse the grievance received through interaction with representative deputed by the District Collector, contractor EHS officer along with TPQA and the contractor will also visit the site to verify the complaint. will also verify the facts reports through periodic site visits. If required SPIU/PMC shall verify the facts through site verification.

Public involvement shall be encouraged and ensured throughout the lifecycle of the project. The MSEDCL Ratnagiri shall gather and maintain information on any damage or public concern that may be raised by the local people, NGOs and local authorities. While immediate solutions are to be worked out with the help of contractor, a detailed report will be submitted to the SPIU for information or detailed consideration. The MSEDCL Ratnagiri and TPQA shall be responsible to bring it to the notice of the SPIU/PMC. Resulting decisions shall be communicated back to MSEDCL Ratnagiri and TPQA and contractor for correction and future implementation.