

Coastal Disaster Risk Reduction Project
with World Bank Loan Assistance
(Credit No 5279 -IN)

Conversion of Overhead line system into Under Ground Cable system
In Nagapattinam Town (Package 4, 5, 6 and 7)

Risk assessment and Disaster Management Report

Risk assessment and Disaster Management

1. Risk Assessment

1.1 Need for Risks assessment

The purpose of this assessment is to offer guidance on those factors that should be addressed by TANGEDCO or by the Contractor and their personnel during construction and operation phase to ensure that the Health, Safety and Environment risks to personnel or assets are minimized. This project is of the nature of cable laying in the excavated trench of minimum depth of 1.2 metres and necessary risk response strategies have been considered by avoiding high-risk activities, adding resources or time, adopting a familiar approach instead of an innovative one. The activities undertaken in the project have very low potential for hazards and disasters during various operations. Effective action at the appropriate time can minimize or avoid the potential loss caused due to accidents. The mitigation scopes are incorporated in Environment Management Plan (EMP) appropriately considering the likely probability of the risk and its consequences.

1.2 Occupational Health and Safety Management System:

1.2.1 During implementation phase

HSE management system will be in place for ensuring whether proper attention is paid to the health and safety of individuals working in the Project as well as protection of environment from the environmental impacts associated with underground cable laying works. Training will be imparted on OHS issues prior to commencement of works. Necessary provision has also been made for periodic health check-up of the work force and proper monitoring mechanisms will be in place during implementation and operation phase.

1.2.2 Planning the work :

Excavation work should be properly managed to control risks through planning the work based on cable plans available and adopting practices. Most underground utility services such as sewage, Water pipelines and Communication lines belongs to Government utilities such as Municipality, TWAD Board etc. and underground communication service cables and gas pipelines belongs to private network operators. If a pipeline/ cable recorded in the route of proposed Underground cable, appropriate assistance or advice should be sought from the concerned utility. If digging has to start before such assistance or advice has been obtained, extreme care should be taken. Careful planning and risk assessments are essential before the work starts. Risk assessments should consider how the works are to be carried out, ensuring local circumstances are taken into account.

1.2.3 Safe digging practices

Excavation work should be carried out carefully and follow recognized safe digging practices. For locating below ground service lines routes, excavation shall be taken with trial pits at 200 metres intervals that will be dug using suitable hand tools only. Final exposure of the service by horizontal digging is recommended, as the force applied to hand tools can be controlled more effectively.

During laying of Underground Cables all trenches when left open for the period of time shall have safety barricades. Necessary protective equipment is to be provided to all work forces who are engaged in laying of underground cables. No materials/ cables are to be placed or stacked near the edge of any excavation. No load is to be placed or moved near the edge of excavation, where it is likely to cause collapse on the work side. Safe distance shall be maintained from the edge of trench. No load/ personnel movement across trench is encouraged. Manual handling awareness will be spread for load and electrical cables.

1.2.4 Safety towards Working in the Vicinity of Traffic:

When working on road or in the vicinity of traffic, traffic management must be carried out. Prior to commencing underground cable laying works, approval shall be obtained from the agency responsible for the care, control and management of the roads and traffic. Action should also be taken to ensure that all other required authorizations are obtained prior to the commencement of works to avoid increasing the risk of undesired traffic incidents. In addition, other agencies such as emergency services, police, public transport etc. in the area need to be informed well in advance of starting the underground cable laying works. Where the proposed traffic management involves modification to existing signal phasing, number of traffic lanes and / or timing on roads, the proposed changes are to be approved through traffic police.

1.2.5 Public Safety:

Cable route markers shall be installed to indicate the route of all underground power cables. Compaction to specified standard site, clearing of debris and refuse, Restoration of site after laying underground cables are essential. Proper marking with danger board sign over electrical cable route and emergency contact numbers are to be displayed.

1.2.6 Occupational Health & Safety During Maintenance phase:

A hazard assessment must be carried out by the work crew prior to commencement of maintenance work to ensure that all hazards have been identified and assessed. The appropriate controls have been put in place to mitigate the hazards. All members of the work crew are aware of the hazards. The safety of the public and other workers has been ensured. TANGEDCO will notify the concern utility if they have any proposed work in the vicinity of underground services of other utility. Necessary personnel safety equipment shall be provided to workers. No workers shall physically handle a distribution cable of any type, if its condition is suspect or doubtful unless the cable is proved to be de-energized.

No personnel shall physically handle a high-voltage cable, while it is live unless it is completely surrounded by an earthed sheath or screen, or both, and precautions are taken, where necessary, to avoid danger from induced voltages and transferred earth potentials. Also, it is essential to prevent public access to the underground cable site or substation property with effective fencing and clear sign board indicating the dangers of the different facilities. The public will be kept clear of all equipment maintenance area. Only EB Persons should access or operate electrical equipments that must be kept locked.

A high-voltage cable shall be isolated, earthed and proved to be de-energised on site prior to commencing maintenance work on the cable. Placing any pressure or load on exposed cables and/or cable joints is not permitted. This is inclusive of stepping on to or using the cable or cable joint for support whilst working on or near the asset. If this is physically impractical, it must be consulted on an alternate work method. Mitigation measures are required to minimise impacts and ensure safety of work force as well as public during dismantling of over head infrastructure that have been included in the contractor scope along with cost provisions wherever required.

Safe operating procedures will be laid down and the personnel will be informed of the safety protocol required. Employees will be given periodical training on various safety precautions to be followed during the operation of the plant. This training will make the workers safety conscious and make them confident to handle any type of emergency situation.

2. Hazard Risk and Vulnerability of the Project area:

The underground cable laying sub project is spread across Nagapattinam Town, which is under a low risk seismic zone (Zone II). The sub-project influence area is located on the beach ridge systems, effects of heavy rainfall and storm surge is imminent. The coastal

landforms of the sub-project are subjected to three seasonal meteorological cycles in a year such as North East monsoon (October–December), South West monsoon (June–September), and non-monsoon (January–May). In addition to the above yearly cycles, the coastline landscape is remoulded by the occasional cyclones usually in the northeast monsoon period.

2.1 Disaster Management:

This public utility services project, does not involve any super structures which warrant earthquake resistant designs. Historical data indicates September –December months are the most probable months for occurrence of hydro meteorological depressions, cyclones and severe cyclonic storms in Nagapattinam. Therefore, cable laying operations will be stalled for brief periods, in the event of any occurrence of cyclones/ inclement weather conditions during the implementation phase.

This UG cable work is proposed under Disaster Risk Reduction project with the aim to have a resilient underground electrical network, to counter damages, during and after cyclones, thunderstorm and other such natural calamities along coastline of Nagapattinam Town. The network is safer to public lives and property, particularly of people belonging to lower economic strata of society during natural calamities. Areas covered under this Project are expected to practically remain unaffected in future from power disruptions and associated implications during or after cyclone/ high winds or natural calamities/ inclement weather conditions, hence the project will not cause any impact on weather and climate. Also, the project does not involve large scale construction activities like area development or industrial or other infrastructure development projects, which can induce some impacts on the local climate.

The impacts and the required mitigation measures during construction and operation phase are incorporated in the EMP. The EMP is integrated in the contract/ bidding documents as mandatory contractual obligations. Hence, the contractor is expected to be fully conversant with the EMP requirements of CDRRP underground cable works.

2.2 Emergency Preparedness Plan:

- 1) Most electrical accidents occur because individuals are working on or near equipment which is thought to be dead but which is, in fact, live (or) working on or near equipment which is known to be live, but where those involved are without adequate training or appropriate equipment, or they have not taken adequate precautions. Hence only those

with adequate knowledge or experience should work in installation of electrical equipment that could cause danger or injury.

- 2) First aid facilities and free emergency care shall be provided to all workforce and no cost shall be recovered from them on this account.
- 3) Appropriate medical services should be taken up on war footing to limit post incident and to combat epidemics particularly water borne diseases
- 4) Water Quality monitoring mechanisms should be in place to prevent outbreak of epidemics and necessary provision made in EMP.
- 5) Arrangements will be made with local Police, Transport and Taluk administration in case of major accidents.
- 6) Adequate fire safety equipment and fire extinguishers with dry chemical, foam spray, water spray should be kept in the storage yard.
- 7) During natural calamities period the work force will be accommodated in the Multi-Purpose Evacuation Shelter constructed under CDRRP.
- 8) Mechanisms are in place within department to deal with inter- department co-operation on emergency response.

2.3 Contact number of the District Officers in case of emergency

Sl.No	District officials	Contact number	
1	District Officer (i/c), Fire and Rescue Services	04365 -249409	9445086428
2	Superintendent of Police	04365 -242888	9443147711
3	Revenue Divisional Office	04365 -253050 04365 -253048	9445000921
4	Superintending Engineer, TANGEDCO/ Nagapattinam	04365-224878	9443340723
5	Executive Engineer (O&M) TANGEDCO Nagapattinam	04365-242323	9445854310
6	Executive Engineer/General, Nagapattinam	-	9445854297
7	Divisional Engineer /Highways Nagapattinam	04365 -224360	94424 78732
8	Divisional Engineer (Rural Roads), Nagapattinam	04365 -252297 04365 -248094	94448-61405
9	Regional Transport Officer, Nagapattinam	04365 -224177 04365 -253088	-
10	Joint Director of Medical & Rural Health Services, Nagapattinam	04365 -242379	-
11	Medical Mobile Unit Deputy Director (Health), Nagapattinam	04365 -248734	98651469 50

12	Superintending Engineer,TWAD Board, Nagapattinam	04362-231721	-
----	---	--------------	---

2.4 List of the Multi-Purpose Evacuation Shelter

Sl.No	Location	Details
1	Sothikuppam	School building
2	Kudikadu H/O Eachankadu	Community Hall
3	Killai [North] MGR Thittu	Community Hall
4	Killai [North] Kozhaiayru	Community Hall
5	Veerankoilthittu	Community Hall