

**Executive Summary- ESIA for WESTERN REGION  
STRENGTHENING SCHEME-21 (WRSS-XXI)**

# Executive Summary

## Introduction

Adani Transmission Limited (herein after referred to as ATL) owns and operates various High voltage AC transmission lines and substations of 132kV, 220kV, 400kV, 765kV voltage level and also High Voltage DC transmission lines and substations of +/- 500kV voltage level. ATL has won the Western Region Strengthening Scheme – 21 (WRSS-21) Part A - Transmission System Strengthening Project on a Tariff-Based Competitive Bid.

This report intends to assess the Environmental and Social Impact Assessment (ESIA) of the proposed transmission line.

Based on the environmental and social impact identified and mitigation discussed the project is categorized as Category B. Category B projects are those with “potentially limited adverse social or environmental impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures”.

## Route of Transmission line

Western Region Strengthening Scheme–21 (WRSS-XXI) which includes of Lakadiya - Bhuj 765kV D/C transmission line (Route length in 107.6 km) and LILO of Bhachau – EPGL 400kV D/c (triple) transmission line (Route length in 38.5 Kms) and proposed Lakadia 765/400 KV Pooling Substations (involving area of 168 Acres). The proposed project in being set up in Kutch district of Gujarat.

## Need &Objective

The objective of the ESIA is

- To document various environmental and social impacts related to field activities that are being undertaken by ATL for laying of transmission line and
- To highlight the environmental and social management strategies, systems, and procedures being employed along the transmission line route and to meet the environmental and social requirements of the funding institutions.

## Project Description

The WRSS XII transmission line alignments traverse through the 37 villages located in 4 Tehsil of Kutch district. Out of 37 villages, LILO line is passing through 8 villages of Bhachau Tehsil and Lakadia-Bhuj is passing through 29 villages. The proposed Pooling substation is located in Shivilakha villages of Bhachau Tehsil.

The National Highway 341 and NH 15 cut across all the two TL alignments. In addition, two TL alignments also crossing the railway line. The total number of towers in the Bhuj Lakadia 765 kV D/C line would be 280. Among them, A, B, C, D types tower would be 216, 17, 17, 30 respectively. In the case of LILO line, the total number of towers would be 119. Among them, A, B, D types of tower would be 52, 22, 45 respectively.

All construction activities would be carried out within the Right of Way for the safe operation of the transmission lines as per IS: 5613.

The design, fabrication, testing, erection procedures, and materials to be used for the erection of towers, line materials, construction foundations, etc. will conform to the Bureau of Indian Standards (BIS), as amended up to date and provisions of the Indian Electricity Act Electricity rules and related statutory approval.

The tower construction would start after the setting of the concrete is complete. It is estimated that in WRSS XXI(A) project total of 399 numbers of towers (280 towers in 765 kV line and 119 towers in 400 kV LILLO line) would be constructed. Among them, 63 numbers of towers have been already erected and 173 numbers of foundation activity have been completed.

During the O&M stage of the project, ground patrolling would be carried out. The patrolling would monitor the growth of trees in violation of the minimum safety clearance, development of any house or settlement within the RoW. Roads and bridges constructed within the ROW would also reduce the minimum safety clearance so these would also be monitored.

The foundation construction team would have around 15-20 labours while the tower erection teams which would follow would have 15-20 people. Finally, the stringing team would also have around 20-25 people involved in the job. During the foundation and tower construction, approximately 10-15 teams would be working in parallel. Thus approximately 200-300 labours would be working at any time in the project.

The project implementation has been planned over a period of 18 months, this would include the Detailed design Phase as well as Construction (Detailed Surveys, material supply, foundation, erection of tower, stringing, testing and commissioning). The date of commissioning is December 2020; however, the Ministry of Power vide order dated: 27.07.2020 had extended all projects up to 5 Month hence revised SCOD is March 2022

#### **Pollution and control measures**

The pollution expected from construction activities includes fugitive dust emission due to excavation and project-related vehicular movement and waste debris from the casting of foundations. There is potential for disturbance to habitations in the proximity of the towers due to construction activities.

Implementation of suggested measures will enable suppression of dust generation, disposal of waste debris, and other adverse impacts.

#### **Baseline**

The baseline studies have profiled the environmental and social conditions along the transmissions line, covering, in general, a buffer distance of 500m of both sides of the alignment where any significant environmental sensitivity is identified. The studies were designed to collect information from secondary sources and to obtain primary information through site visits and consultation with local communities and other related stockholders. Overall the is reflective of the environmental and social landscape of the districts through which the alignment would pass.

The transmission line is located in Kutch District in Gujarat. Bhuj is located on a "porous" sandstone which acts like a "sponge". The surface rain waters flow towards Hamirsar and the other city lakes. The shale layer, below the sandstone, is waterproof and makes sure that the water doesn't flow out of Bhuj Area underground. The Kutch region has a unique climate influenced by the Arabian Sea in the South and the harsh climate of the Rann in the Northern and Eastern Boundary. The area has quite high temperatures during summer and moderate cold in winter. The average annual maximum temperature is 34.3°C while the average annual minimum temperature is 19.3°C. The Kutch area experiences very low rainfall with a total rainfall of about 276.4 mm (as per IMD 30 year's average data) with 13.9 numbers rainy days. The annual average wind speed recorded at the IMD weather station at Rudramata Aerodrome, Bhuj indicates that the highest monthly wind speed is 5.0 m/s in June followed by 4.7 m/s in May. The lowest windspeed was recorded in December 0.3 m/s.

Existing sources of generation of particulate matter and gaseous air pollutants is primarily because of the transportation of vehicles through adjoining road considering this context, the ambient quality is expected to be well within the National Air Quality Standards for all parameters. The soils found in Kutch district can broadly be grouped into four types, i.e., Shallow Black soils, Residual Sandy soils, Coastal Alluvial soils and Desert soils. The depth to water was monitored by the Central Groundwater Board and it was found that in the pre- monsoon period (2012) the depth to groundwater is 2-5 m bgl along the alignment between Adipur Jn and Anjar. In regions near Bhuj the water level was 5-10 m bgl (below ground level). However, in the post-monsoon (2012) groundwater levels indicate that they are 5-10 m bgl across the entire alignment.

## Details Forest Along the Alignment within AOI

Forest of Kutch district classified under the Type 6B- Northern Tropical Thorn Forest, as per the forest classification of Champion and Seth (1968). These forests are also known as Open scrub thorn forests due to poor canopy formation. This can be further divided into 5/D-Dry deciduous Scrub, 6/E4 -Salvadora scrub, 6B/C-Desert Thorn Forest, 6B/DS2-Tropical Euphorbia scrub, 6B/ DS1- Zizyphus sp. scrub, and Capparis sp. association 5/E3 -Babul (*Acacia nilotica*) forest, 5/DS5-Dry Savannah type vegetation (*Acacia nilotica*- *Salvadora* sp. association, 6/E2-Gorad (*Acacia Senegal*)). However, the invasion of *Prosopis juliflora* in these forests, has changed the floral composition and vegetation structure. The transmission line-wise protected/reserve/social forest area are given below:

1. 765 KV D/C Bhuj to Lakadia Transmission Line: Within this segment of the transmission line 3.0916ha forest land is present under Kutch-East Division and Kutch SF Division, in Kutch District. Within three villages namely Meghpar (Kunjisar) - 0.1406ha, Lodai - 2.6666ha and Loriya 0.2844ha, the forest land is present.
2. 400 KV D/C LILO Transmission Line 1 & 2: Within this segment, the transmission line is crossing through the social forest area (road site) of Kutch district. and. Total 0.7507ha forest land is present under Kutch SF Division, in Kutch District. Within two villages namely Lakadiaya - 0.3821ha and Shamkhiyali- 0.3686ha, the forest land is present.

Both transmission lines have been passed through social forest area and Stage I forest clearance for these social forest segments has already been granted by MoEF&CC.

### Wild Ass Sanctuary IBA (IBA Code IN097):

The east portion of 765 KV D/C Bhuj to Lakadia Transmission Line, i.e. Shivilakha (Substation area) is situated approximately 24km east-southeast away from the Wild Ass Sanctuary.

The southern portion (Jangi) of 400 KV D/C LILO Transmission Line, is situated approximately 8km North-northwest away from the Wild Ass Sanctuary.

### Flora

Sixty-five (65) floristic species were recorded collectively at the sampling sites. The study area comprises of 18 tree species belonging to 9 families, 10 shrubs species belonging to 8 families and 35 herbs species belonging to 14 families. Most common species were *Azadirachta indica*, *Prosopis cineraria*, *Prosopis juliflora*, *Salvadora oleoides*, *Ziziphus nummularia*, *Blumea* sp., *Aristida* sp.

### Mammals

At least thirty-five (35) species of mammals have reported ranges that include the Study Area. With respect to the IUCN Red List, one (01) of these species is designated as endangered and two near threatened. With respect to the WPA Schedules, eight (08) of these species are listed under Schedule I. Six (06) species of mammals were observed and six (06) recorded from consultation as part of the primary data.

### Birds

One hundred sixty-two (162) species of birds have reported ranges that include the Study Area. These include seventy-nine (79) species that are resident with respect to the Study Area and Eighty-three (83) species, which are migratory with respect to the Study Area. With respect to the IUCN Red List, out of 79 resident bird species, one vulnerable (Sarus Crane) and one near-threatened birds (Black-necked Stork) have reported ranges in the study area. Out of 83 migratory birds' species one endangered, three vulnerable and five near-threatened birds' species have reported ranges along the study area

### Reptiles

At least twenty-three (22) species of reptiles have reported ranges that include the Study Area. With respect to the IUCN Red List, one (01) of these species is designated as vulnerable. With respect to the WPA Schedules, one (01) of these species is listed under Schedule I. Two (02) species of reptiles were observed and five (05) recorded from consultation as part of the primary data.

## Amphibians

At least six (06) species of amphibians have reported ranges that include the Study Area. With respect to the IUCN Red List, none of these species are designated as globally threatened. With respect to the WPA Schedules, none of these species are listed under Schedule I. No species of amphibians were observed as part of the primary data and, two (02) recorded from primary consultation.

## Social Issues and Management

The community had raised concern on issues with regards to health and safety and potential exposure to electromagnetic fields during operation, especially during the rainy season. Besides, the community also had raised concern for adequate compensation for land use along with the tower footprint since the current government circle rate was reported to be much lower than the prevailing market rates. In lieu of the MoP guidelines, the project has addressed the situation and land valuation was carried out through a committee formed by the District Magistrate in consultation with the affected landowners. The land value was reported to be 15 times higher than the prevailing government rate. The Project has completed payment compensation to about 100 affected landowners for restriction on land use and still ongoing. No issues and objection were reported on the project regarding the project activities, the local community were positive of the project and are willing to support the project.

Embedded measure maintaining minimum ground clearance is mandatory as per guidelines, Electrical inspectorate from Central Electricity Authority would visit the line before charging and after certification, only the line shall be charged. Further, line will be strictly monitored during the operational stage to avoid any risk of exposure to any kind of safety hazards. A site engineer will be appointed by the project who will undertake a regular inspection of all lines from time to time.

## Impact Assessment

Potential impacts of proposed transmission line during:

The construction phase for casting of foundation, tower erection and stringing activities will be mainly disturbance to fauna and flora, traffic hazards, noise, safety issues and waste disposal. Socio-economic issues will be due to restricted use of land and loss of crop.

The operational phase involves disturbances to vegetation and noise etc. The social impacts will be from movement along the corridor, expectation management and perception about the generation of the electromagnetic field. Mitigation to counter adverse impacts are discussed in the Environmental and social management plan.

## Environmental and Social Management Plan

The ESMP provides a delivery mechanism to address potential adverse impacts, instruct contractors and introduce standards of good practice to be adopted for project activities taken up during construction and operation phases of the project. Inspection and monitoring of the environmental and social components phase activities will increase the effectiveness of suggested mitigations.

Through the process of inspection, audit and monitoring ATL will ensure that all the contractors comply with the requirements of conditions of forest clearance, and other permits including suggested action plans.

The inspection and audits will be done by trained team ATL's Environment, Health and Safety (EHS) department as well subject to be reviewed and conducted by external agencies/experts. The entire process of inspections and audits is being documented. The inspection and audit findings are to be implemented by the contractors in their respective areas.

## Conclusion

The ESIA has assessed the overall acceptability of environmental and social impacts likely to arise as a result of the construction and operation of the transmission line for WRSS project. The proposed project is categorized as category

B as the social or environmental impacts are assessed as limited, few in number, site-specific, largely reversible, and readily addressed through mitigation measures.

The project is likely to generate some environmental and social impacts both during construction and operation. During the construction phase, the environmental impacts expected from the project include disturbance to fauna and flora, construction waste of disposal, increase of noise level, and social impacts mainly from the engagement of land and loss of crop. During the operation phase, the impacts include disturbance to vegetation, noise generation and social impacts of restricted activities within the corridor.

The environmental and social management plan describes implementation mechanism for recommended mitigation measures during construction and operation phase to verify overall project performance.