

Environmental and Social Due Diligence Report

Project Number: 47083-004
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INDIA: Accelerating Infrastructure Investment Facility in India – Tranche 3 Mytrah Vayu (Pennar) Private Limited (Part 2 of 9)

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Table 3-3: SO₂ concentration at different monitoring site

SO ₂	Chabala Village	Gadeyahoturu Village	Urvakonda Village
Min	9.3	6.3	6.2
Max	10.5	6.9	6.6
98th percentile	10.5	6.9	6.6

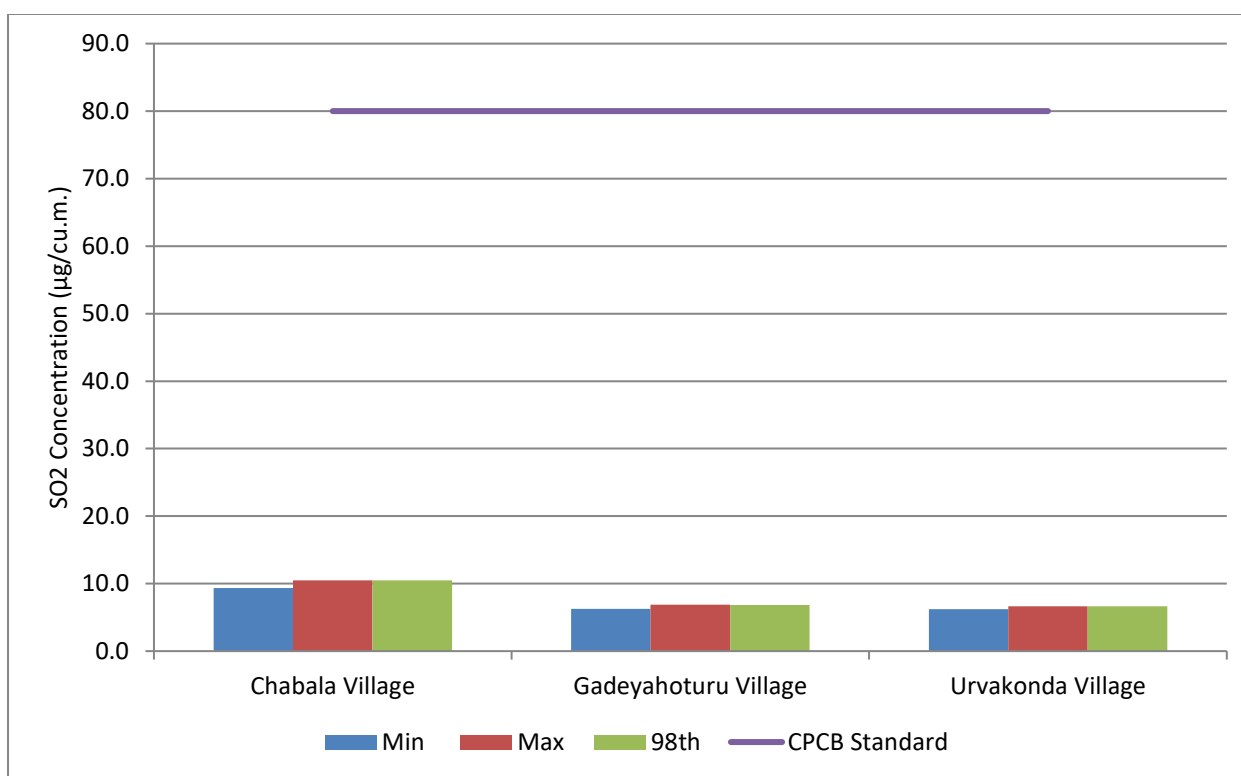


Figure 3-3: SO₂ concentration at different monitoring site

Table 3-4: NO₂ concentration at different monitoring site

NO ₂	Chabala Village	Gadeyahoturu Village	Urvakonda Village
Min	18.5	17.8	16.7
Max	20.2	19.4	17.4
98th	20.1	19.4	17.3

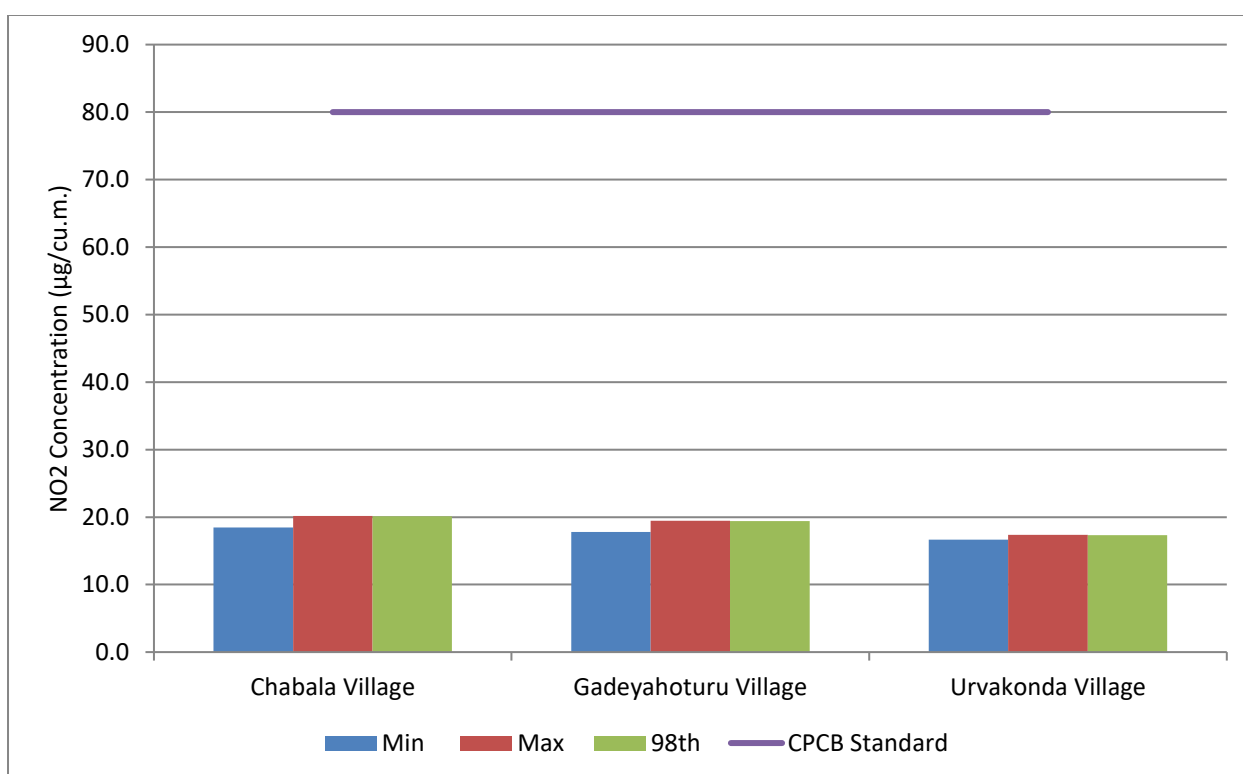


Figure 3-4: NO₂ concentration at different monitoring site

3.6 NOISE ENVIRONMENT

Location for noise monitoring has been selected as per guidelines of Central Pollution Control Board and as per the requirements of MoEFCC. Two noise monitoring locations (Village Chabala and Village Velligonda) have been selected based on the nearest distance from the WTGs. Chabala village and velligonda village are within 500 m distance from WTG VAR 108 and VAR 206, respectively. As per the noise level data collection and analysis, day and night time noise levels are well within prescribed limit as per the standard of CPCB. The results of noise monitoring are mentioned in table 3.5.

Table 3-5: Noise monitoring results at different monitoring site

	Leq DAY	Leq NIGHT	Leq DAY NIGHT
Chabala Village	52.9	38.2	51.8
Velligonda	54.8	39.6	53.6

3.7 SURFACE WATER QUALITY

One surface water samples were collected from Canal water near Pottypadu Vajrakarur Road. Surface water in the project area is found to be slightly alkaline in nature. The water quality monitoring results are shown in table 3.6. The water quality parameters were found to be comparable with C Class water quality standards of CPCB. Presence of insecticide was observed in the water.

Table 3-6: Surface water quality monitoring results

Sr.No	Parameter	Units	IS:2296	SW 1
			Class C Limits	Pottypadu Vazrakarur Road Canal Water
1	pH at 25 deg C	-	6.5 – 8.5	8.14
2	Color	Hazen units	300	100
3	Conductivity at 25 deg C	mS/cm	\$	810
4	Dissolved Oxygen	mg/L	4 min	5.4
5	BOD (3 days at 27°C)	mg/L	3	84
6	Total Dissolved Solids	mg/L	1500	502
7	Total Hardness	mg/L	\$	130
8	Chloride as Cl	mg/L	600	90
9	Fluorides as F ⁻	mg/L	1.5	0.7
10	Sulphate as SO ₄ ⁻	mg/L	400	191.7
11	Alkalinity	mg/L	\$	70
12	Nitrates as NO ₃	mg/L	\$	4.7
13	Cyanides as CN	mg/L	0.05	<0.001
14	Calcium as Ca	mg/L	\$	28
15	Magnesium as Mg	mg/L	\$	14.4
16	Sodium as Na	mg/L	\$	122.4
17	Potassium as K	mg/L	\$	2.7
18	Iron as Fe	mg/L	50	0.14
19	Chromium as Cr	mg/L	0.05	0.014
20	Cadmium as Cd	mg/L	0.01	0.022
21	Lead as Pb	mg/L	0.1	0.004
22	Copper as Cu	mg/L	1.5	0.082
23	Arsenic as As	mg/L	0.2	<0.001

Sr.No	Parameter	Units	IS:2296	SW 1
24	Selenium as Se	mg/L	0.05	<0.001
25	Phenolics as C ₆ H ₅ Oh	mg/L	0.005	0.02
26	Zinc as Zn	mg/L	5	1.12
27	Mercury as Hg	mg/L	\$	<0.0002
28	Aluminum as Al	mg/L	\$	<0.001
29	Anionic detergents as MBAS	mg/L	0.12	0.045
30	Oil and grease	mg/L	0.3	1.3
31	Sodium Absorption Ratio	meq/L	-	4.1
32	Insecticides	mg/L	Absent	Present
33	Coliform Organisms	MPN/100 ml	Should not exceed 5000	2*10 ⁵

3.8 GROUND WATER QUALITY

Ground water samples were collected from Bore wells at Urvakonda villages. Ground water in the project area is slightly alkaline in nature which may be due to quality of aquifer present in this area. However, concentration of calcium, magnesium and other all parameters are under the prescribed limit of regulatory guidelines.

Table 3-7: Groundwater quality monitoring results

S.No	Parameter	Unit	GW	CPCB Standards
			8.16	6.5-8.5
2	Turbidity	NTU	<1.0	5-10
3	Conductivity at 25 deg C	μMho/cm	495	
4	TSS	mg/L	2.5	
5	TDS	mg/L	306	
6	Total Alkalinity as CaCO ₃	mg/L	190	
7	Chlorides as Cl ⁻	mg/L	20	250-1000
8	Sulphates as SO ₄ ⁻²	mg/L	21.4	200-400
9	Nitrates as NO ₃	mg/L	3.7	40-100
10	Phosphates as PO ₄	mg/L	<0.02	
11	Total Hardness as CaCO ₃	mg/L	120	200-600
12	Calcium as Ca	mg/L	24	75-200
13	Magnesium as Mg	mg/L	14.4	30-100
14	Sodium as Na	mg/L	54.9	
15	Potassium as K	mg/L	2.3	
16	Flourides as F ⁻	mg/L	0.3	1-1.5
17	Iron as Fe	mg/L	0.1	0.3-1
18	Phenolic Compounds	mg/L	<0.001	0.001-0.002
19	Cyanide as CN ⁻	mg/L	<0.001	0.005

			GW	CPCB Standards
20	Residual Chlorine as Cl ⁻	mg/L	<0.001	0.2
21	Cadmium as Cd	mg/L	<0.001	0.01
22	Total Chromium as Cr	mg/L	<0.001	0.05
23	Lead as Pb	mg/L	<0.02	0.05
24	Zinc as Zn	mg/L	0.01	5-15
25	Manganese as Mn	mg/L	<0.001	30-100
26	Copper as Cu	mg/L	0.014	0.05-1.5
27	Nickel as Ni	mg/L	<0.001	3.0-5.0
28	Colour	Hazen	<01	5.00
29	Taste	-	Agreeable	Agreeable
30	Odor	-	Unobjectionable	Unobjectionable
31	Boron	mg/L	<0.001	1.00
32	Anionic Detergents	mg/L	<0.001	0.20
33	Mineral Oil	mg/L	<0.001	0.01
34	Aluminium as Al	mg/L	<0.001	0.03
35	Mercury as Hg	mg/L	<0.0002	0.00
36	Pesticides	mg/L	<0.001	Absent

3.9 SOIL ENVIRONMENT

Soil sample from barren land near project site was collected. Characterizations of soil samples was performed by adopting methods prescribed under relevant parts of IS: 2720, "Indian Standard Methods of Test for Soils". The analysis results for soil shows that soil is slightly alkaline in nature and texture is silty clay, no rocks or boulders are present. The sodium and Magnesium content is moderate, calcium content is low. The soil of project site is mostly clay in nature.

Table 3-8: Soil monitoring results

Sr. No.	PARAMETERES	UNIT	RESULTS
1	Texture	=	Clay
	Sand	%	22
	Silt	%	24
	Clay	%	54
2	pH (10% Slurry)	-	9.4
3	Conductivity	μmhos/cm	280
4	Moisture	%	5.2
5	Organic Matter	%	3.6
6	Bulk density	gram/cc	1.38
7	Porosity	% v/v	48
8	S.A.R	meq/kg	0.14
9	Infiltration capacity	mm/h	23.8
10	Carbonates	mg/kg	4.2
11	Sodium as Na	mg/kg	1.14
12	Potassium as K	%	1.8
13	Phosphorus as P	%	0.74

14	Chloride as Cl	mg/kg	2.5
15	Zinc as Zn	mg/kg	3.6
16	Copper as Cu.	mg/kg	0.12
17	Iron as Fe	mg/kg	0.1
18	Nitrogen as N	%	8.23
19	Sulphate as SO ₄	mg/kg	0.24
20	Boron as B	mg/kg	0.1

3.10 ECOLOGY AND BIODIVERSITY

Ecological study was carried out to understand floral and faunal profile of the region. No endangered species in the project area was noticed. Being a wind power plant project, project activities is not expected to have any significant adverse effect on any living flora or fauna around the project site except avifauna population commonly associated with wind power projects. The study-area represents a tract of fairly degraded southern tropical dry deciduous forest and southern tropical thorn forest (thorny scrub and Euphorbiaceae scrubs), with their natural vegetation profile modified to varying extents from place to place. Water is a scarce resource in the area and no major lakes/ponds or any other natural water body was observed in the study area during the course of survey. Much of the study area is a modified habitat comprising agricultural lands and scattered villages.

3.10.1 Flora population:

The list of common flora found in the study area is mentioned below:

Table 3-9: Common flora found in the study area

Scientific name	Habit
<i>Abutilon indicum</i>	Shrub
<i>Acacia nilotica</i>	Tree
<i>Azadirachta indica</i>	Tree
<i>Borassus flabellifer</i>	Tree
<i>Cadaba fruticosa</i>	Climber
<i>Calotropis procera</i>	Shrub
<i>Capparis sepiaria</i>	Tree
<i>Carissa carandas</i>	Shrub
<i>Catunaregam spinosa</i>	Shrub
<i>Croton bonplandianus</i>	Herb
<i>Cryptostegia grandiflora</i>	Climber
<i>Dichrostachys cinerea</i>	Tree
<i>Euphorbia antiquorum</i>	Shrub
<i>Grewia tenax</i>	Shrub
<i>Jatropha gossypifolia</i>	Shrub
<i>Phoenix sylvestris</i>	Tree
<i>Prosopis cineraria</i>	Tree
<i>Prosopis juliflora</i>	Tree

<i>Securinega leucopyrus</i>	Shrub
<i>Senna auriculata</i>	Shrub
<i>Tamarindus indica</i>	Tree
<i>Tephrosia purpurea</i>	Herb
<i>Ziziphus mauritiana</i>	Tree
<i>Aristolochia bracteolata</i>	Herb
<i>Asparagus racemosus</i>	Climber
<i>Argemone mexicana</i>	Herb
<i>Boerhavia diffusa</i>	Herb
<i>Cleome viscosa</i>	Herb
<i>Commelina sp.</i>	Herb
<i>Cucumis myriocarpus</i>	Climber
<i>Cyanotis sp.</i>	Herb
<i>Datura metel</i>	Herb
<i>Euphorbia hirta</i>	Herb
<i>Euphorbia ligularia</i>	Shrub
<i>Haplanthodes sp.</i>	Herb
<i>Heliotropium europaeum</i>	Herb
<i>Indigofera cordifolia</i>	Herb
<i>Lagascea mollis</i>	Herb
<i>Lepidagathis cristata</i>	Herb
<i>Leucas aspera</i>	Herb
<i>Ocimum sp.</i>	Shrub
<i>Parthenium hysterophorus</i>	Herb
<i>Rivea hypocrateriformis</i>	Climber
<i>Solanaceae sp.</i>	Shrub
<i>Tribulus terrestris</i>	Herb

3.10.2 Faunal Diversity

No protected areas like National Park, Wildlife Sanctuary/ Reserve within the 10 sq km radius. The list of common fauna and avifauna found in the study area is mentioned below:

Table 3-10: Common fauna found in the study area

Scientific Name	Common Name
Mammal	
<i>Macaca radiata</i>	Bonnet Macaque
<i>Semnopithecus entellus</i>	Northern Plains
<i>Semnopithecus priam</i>	Anchies Tufted
<i>Panthera pardus</i>	Common Leopard
<i>Melursus ursinus</i>	Sloth Bear
<i>Vulpes bengalensis</i>	Indian Fox
<i>Hyaena hyaena</i>	Striped Hyena

Scientific Name	Common Name
<i>Canis aureus</i>	Jackal LC
<i>Muntacus muntjak</i>	Indian Muntjac
<i>Rusa unicolor</i>	Sambar V
<i>Axis axis</i>	Spotted Deer
<i>Boselaphus tragocamelus</i>	Nilgai LC
<i>Tetracerus quadricornis</i>	Four-horned Antelope
<i>Gazella benettii</i>	Indian Gazelle
<i>Antelope cervicapra</i>	Blackbuck NT
<i>Sus scrofa</i>	Wild Pig
<i>Canis lupus</i>	Grey Wolf
<i>Felis chaus</i>	Jungle Cat
<i>Prionailurus rubiginosus</i>	Rusty-spotted Cat
<i>Viverricula indica</i>	Small Indian
<i>Paradoxurus hermaphroditus</i>	Common Palm
<i>Herpestes smithii</i>	Grey Mongoose
<i>Herpestes edwardsii</i>	Grey Mongoose
<i>Mellivora capensis</i>	Honey Badger
<i>Tatera indica</i>	Indian Gerbil
<i>Manis crassicaudata</i>	Indian Pangolin
<i>Lepus nigricollis</i>	Indian Hare
<i>Anathana ellioti</i>	Madras Tree
<i>Suncus murinus</i>	House Shrew
<i>Suncus etruscus</i>	Pygmy Shrew
<i>Hystrix indica</i>	Indian Crested
<i>Funambulus palmarum</i>	Three-striped Palm
<i>Bandicota indica</i>	Large Bandicoot-rat
<i>Bandicota bengalensis</i>	Lesser Bandicoot-rat
<i>Rattus rattus</i>	House Rat
<i>Millardia meltada</i>	Soft-furred Field
<i>Madromys blanfordi</i>	White-tailed Wood
<i>Golunda ellioti</i>	Indian Bush
<i>Vandeleuria oleracea</i>	Asiatic Long-tailed
<i>Mus musculus</i>	House Mouse
<i>Mus phillipsi</i>	Wroughton's Mouse
<i>Mus platythrix</i>	Spiny Field
<i>Mus terricolor</i>	Pygmy Field
Bird Species	
<i>Francolinus pondicerianus</i>	Grey Francolin
<i>Coturnix chinensis</i>	King Quail
<i>Perdicula asiatica</i>	Jungle Bush
<i>Perdicula argoondah</i>	Rock Bush
<i>Galloperdix spadicea</i>	Red Spurfowl
<i>Galloperdix lunulata</i>	Painted Spurfowl

Scientific Name	Common Name
<i>Gallus sonneratii</i>	Grey Junglefowl
<i>Pavo cristatus</i>	Indian Peafowl
<i>Dendrocygna javanica</i>	Lesser Whistling-
<i>Nettapus coromandelianus</i>	Cotton Pygmy-goose
<i>Anas poecilorhyncha</i>	Indian Spot-Billed
<i>Tachybaptus ruficollis</i>	Little Grebe
<i>Mycteria leucocephala</i>	Painted Stork
<i>Ciconia episcopus</i>	Woolly-necked Stork
<i>Anastomus oscitans</i>	Asian Openbill
<i>Threskiornis melanocephalus</i>	Black-headed Ibis
<i>Pseudibis papillosa</i>	Red-naped Ibis
<i>Platalea leucorodia</i>	Eurasian Spoonbill
<i>Butorides striata</i>	Striated Heron
<i>Nycticorax nycticorax</i>	Black-crowned Night
<i>Ardeola grayii</i>	Indian Pond
<i>Ardea cinerea</i>	Grey Heron
<i>Ardea purpurea</i>	Purple Heron
<i>Egretta intermedia</i>	Intermediate Egret
<i>Bubulcus ibis</i>	Cattle Egret
<i>Casmerodius albus</i>	Great Egret
<i>Egretta garzetta</i>	Little Egret
<i>Microcarbo niger</i>	Little Cormorant
<i>Falco chicquera</i>	Red-necked Falcon
<i>Falco jugger</i>	Laggar Falcon
<i>Elanus caeruleus</i>	Black-winged Kite
<i>Milvus migrans</i>	Black Kite
<i>Haliastur indus</i>	Brahminy Kite
<i>Pernis ptilorhynchus</i>	Oriental Honey-buzzard
<i>Neophron percnopterus</i>	Egyptian Vulture
<i>Gyps bengalensis</i>	White-rumped Vulture
<i>Gyps indicus</i>	Indian Vulture
<i>Sarcogyps calvus</i>	Red-headed Vulture
<i>Circaetus gallicus</i>	Short-toed Snake
<i>Spilornis cheela</i>	Crested Serpent
<i>Accipiter badius</i>	Shikra LC
<i>Butastur teesa</i>	White-eyed Buzzard
<i>Aquila rapax</i>	Tawny Eagle
<i>Aquila fasciata</i>	Bonelli's Eagle
<i>Nisaetus cirrhatus</i>	Crested Hawk-eagle
<i>Ardeotis nigriceps</i>	Great Indian
<i>Sypheotides indicus</i>	Lesser Florican
<i>Turnix sylvaticus</i>	Small Buttonquail
<i>Amaurornis akool</i>	Brown Crake

Scientific Name	Common Name
<i>Amaurornis phoenicurus</i>	White-breasted Waterhen
<i>Turnix suscitator</i>	Barred Buttonquail
<i>Fulica atra</i>	Eurasian Coot
<i>Gallinula chloropus</i>	Common Moorhen
Bat Species	
<i>Pteropus giganteus</i>	Indian Flying
<i>Rousettus leschenaultia</i>	Fulvous Fruit
<i>Cynopterus sphinx</i>	Greater Short-nosed
<i>Taphozous nudiventris</i>	Naked-rumped Tomb
<i>Taphozous longimanus</i>	Long-winged Tomb
<i>Rhinolophus rouxii</i>	Rufous Horseshoe
<i>Rhinolophus lepidus</i>	Blyth's Horseshoe
<i>Rhinolophus pusillus</i>	Least Horseshoe
<i>Hipposideros speoris</i>	Schneider's Leaf-nosed
<i>Hipposideros fulvus</i>	Fulvous Leaf-nosed
<i>Hipposideros galeritus</i>	Cantor's Leaf-nosed
<i>Megaderma lyra</i>	Greater FALSE
<i>Rhinolophus beddomei</i>	Lesser Woolly
<i>Tadarida plicata</i>	Wrinkle-lipped Free- tailed
<i>Scotophilus heathii</i>	Asiatic Greater
<i>Murina cyclotis</i>	Round-eared Tube-nosed
<i>Pipistrellus coromandra</i>	Indian Pipistrelle
<i>Pipistrellus abramus</i>	Japanese Pipistrelle
<i>Pipistrellus tenuis</i>	Indian Pygmy
<i>Pipistrellus ceylonicus</i>	Kelaart's Pipistrelle
<i>Pipistrellus dormeri</i>	Dormer's Bat
<i>Pipistrellus javanicus</i>	Javan Pipistrelle
<i>Pipistrellus affinis</i>	Chocolate Pipistrelle
<i>Hesperoptenus tickelli</i>	Tickell's Bat
<i>Eonycteris spelaea</i> Lesser	Dawn Bat
<i>Kerivoula picta</i>	Painted Bat

3.11 SOCIOECONOMIC PROFILE

The key objective of the present study is to assess possible impact of the project on socio-economic life of the people in the neighborhood of the project. The study has been conducted based on primary and secondary data. Primary data has been collected through group discussions and the individual interviews in the project village with the help of open-ended questionnaire and check-list. Secondary data has been collected from the administrative records of the Government of Andhra Pradesh, Census of India 2011, district statistical hand book, state and district portal. The details regarding population composition, number of literates, workers, etc. have been collected from secondary sources, Census of India 2011. The data collected during the above survey was analysed to evaluate the prevailing socio-economic

profile of the area. The impact from the project (Wind Farm) is very minimal and limited to maximum 1 km from the project boundary.

3.11.1 BASELINE OF THE STUDY AREA

3.11.1.1 State Profile: Andhra Pradesh

Andhra Pradesh is one of India's Southern states and is situated on the South-Eastern coast of the country. Also known as the Rice Bowl of India, because of being one of the highest producers of rice in the state. The population of Andhra Pradesh as per Census 2011, before the formation of Telangana as a separate state was 84,580,777 of which male and female are 42,442,146 and 42,138,631 respectively. In 2001, total population was 76,210,007 in which males were 38,527,413 while females were 37,682,594. The total population growth in this decade was 10.98 percent while in previous decade it was 13.86 percent. The population of Andhra Pradesh forms 6.99 percent of India in 2011. In 2001, the figure was 7.41 percent. The state covered an area of 275,045 sq. km before formation of Telangana. But now, the state is spread across 160,205 sq. km and has a population of 49,378,776.

3.11.1.2 District Profile: Anantapur

Anantapur district is a part of the Rayalaseema region which is generally known as a drought prone district of Andhra Pradesh and lies between 13° 41' to 15° 14' North latitudes and 76° 47' to 78° 26' East longitudes. The district is bounded on the North by Kurnool district, East by Y.S.R. district, South-east by Chittoor district and South-west by Karnataka State. The total area of the district is 19,130 Sq. Km and ranks 1st position contributing 6.96% area of the State.

Demographic Profile

As per Census 2011, Anantapur district has a population of 4081148 and a population density of 213 persons/sq. km which is growing at a decadal growth rate of 12.1% from 2001. The district possessed 977 females per 1,000 males, while it was 958 in 2001 Census. It is less than the State average sex ratio 993. Also, the district has nearly 968160 households with an average household size of four to five members and largely dominated by rural population comprising of 71.92% of the total district population.

As per district Census Handbook 2011, out of the total population, (religion-wise) there are 35,99,372 (88.20%) Hindus, 4,43,456 (10.87%) Muslims, 20,463 (0.50%) Christians, 932 Sikhs, 341 Buddhists and 1,417 persons are Jains. Other religious members inclusive of unclassified are 309. The members who were not stated the religion are 14,858.

Literacy

The district has a literacy rate of 63.57%, which is less than the literacy rate of the state (literacy rate of 67%). The Literacy rate of male in the district is 73.02% with respect to male population while female literacy is 53.97% with respect to female population creating 19.05% of gender gap in the district.

Scheduled Caste and Scheduled Tribes

Out of total district population of 40,81,148, Scheduled Castes constitute 14.29 per cent and Scheduled Tribe constitutes 3.78 percent of the population respectively. Out of the total rural population 29,35,437, Scheduled Caste is 16.21 per cent and Scheduled Tribes are 4.3 percent.

Work Participation Rate

As per Census 2011, average Work Participation Rate of the district is 49.89% (2036166) in which males are 58.53% with respect to male population and females are 41.04% with respect to female population. Out of total worker 82.49% are categorized as Main Workers and 17.51% as Marginal Workers. Further main workers are categorized as Cultivator, Agricultural labourers, Household Industries and Other worker. In main worker, most of the people are involved in agricultural labourers (38.87%) followed by other workers with 33.46%, cultivators with 22.46% and household industries with 5.19%. Likewise, in marginal workers most of the people are involved in agricultural labourers (63.50%) and other workers (21.30%).

Economy of the district

Anantapur receives very less rainfall due to its location in the rain shadow area of Indian Peninsula. Prominent crops grown in the district are cereals paddy, jowar, ragi, ground nut, sunflower, cotton, maize, chillies, sesame and sugarcane. Silk trade, limestone quarrying, iron and diamond mining are the main trade of the district. Anantapur town is known as Groundnut City in reference to the neighbouring Bangalore being called as Garden City.

3.11.1.3 Project Influence Area

The existing 63 MW Vajrakarur Wind Power Project is spread in 5 revenue villages namely Chabala, Uravakonda, P.C.Pyapili, Gadehothur and Veligonda of Vajrakarur Mandal and Anantapur District. The social study area for the project comprises of project villages; which are being affected (positive or negative) by the project activities during project operation phase.

Population

As per Census of India 2011, the total population of the study area is 43735 in which 50.35% are males and 49.65% are females creating an average gender ratio of 986 females per 1000 males. Most part of the study area falls under rural settlement except Uravakonda. Total population of Uravakonda is 35565 which are 81.32% of total population of the study area. Approximately 10.65% of the total population belongs to 0-6 age group. The sex ratio of this age group is 912 female children per 1000 male children. Village-wise break-up of population data for the study area has been presented in Table 1 of Annexure I.

Households and Household Size

The entire population of the study area has been grouped into 9736 households and the average size of household is approximately 4.5 persons/ household. During site visit it was observed and noted that most of the houses of the study area are made of bricks and cement and of semi-pacca type while in Uravakonda most of the houses are pacca. Village-wise break-up of household size for the study area has been presented in Table 1 of Annexure I

Schedule Caste and Schedule Tribes

Total population of Scheduled Caste is 6332 (14.48%) of the total population of the study area in which males are 3026 (47.79%) and females are 3306 (52.21%). Total population of Scheduled Tribes in the study area is 838 (1.92%) in which male and female are 483 (57.64%) and 355 (42.36%) respectively. Village-wise break up of distribution of Scheduled Caste and Scheduled Tribe population in the project area is shown in Table 2 of Annexure I.

Literacy Rate

Literacy, as defined in Census data, is the ability to read and write with understanding in any language and literacy rate is a key indicator of the level of education prevalent amongst the sample population. It is also considered as one of the key factors of socio-economic progress.

The average literacy rate of the study area is 70.34% (27486) in which male's literacy is 80.17% with respect to the male population as against 60.46% for females with respect to the female population, creating a gender gap of 19.70%. The break up distribution of literacy, literacy rate and gender gap in literacy rate in the project area (village-wise) is shown in Table 3 of Annexure I.

Workers and Work Participation Rate

Total number of workers in the study area is 18630 and WPR is 42.60% in which males are 54.37% with respect to the male population and females are 30.66% with respect to female population creating a 23.71% of gender gap in WPR. Among the total workers 81.67% are main workers and the remaining 18.33% are marginal workers.

Further main worker has been categorized in Cultivator, Agricultural Labourers, Household Industrial Workers and Other Workers. As per Table 6 of Annexure I, most of the main workers of the study area are other workers with 55.30% followed by agricultural labourers 24.55%, household industrial worker 10.82% and cultivator 9.33%. Likewise, in marginal worker, most of the workers are other workers with 48.52% followed by agricultural labourers with 38.65%.

Considering the Table 6 and 7 of Annexure I, it appears that livelihood in rural area is depend on agriculture and agricultural labouring while in urban area (Uravakonda) it is other workers. Details of work participation rate and work culture of the study area have been presented in Table 4, 5, 6 and 7 of Annexure I.

Drinking Water Facility

As reported during consultation, there is acute shortage of water in the villages of the study area. In every village, there is water tank constructed by villages panchayat and water for drinking and other domestic use has been supplied by pipeline. It was also reported that Sri Sathya Sai Drinking Water Project is functioning in the project area and water for drinking purposes are being supplied by it.

Health

As per Census 2011, 2 numbers of Government Primary Health Centres (Gade Hothur and Uravakonda) and 1 Veterinary Hospital (Uravakonda) are available in the study area of the

project. The state run 108 Emergency Ambulance Service is fully functional in the area. Details of health infrastructure with doctors have been presented in the Table 8 of Annexure I. During consultation with local villagers, it was reported that no any major diseases prevailing in the study area.

Education

Considering the educational facilities in the study area, Govt. Primary School, Upper Primary School and Anganwadiis are available in every villages of the study area. As per Census 2011, there are 31 Govt. Primary School, 14 Govt. Middle School, 4 Govt. Secondary School, 1 Govt. Senior Secondary School and 2 Degree College are available in the villages of the study area. Details of existing educational institutes have been presented in the Table 9 of Annexure I.

3.12 PUBLIC CONSULTATION

A site visit was undertaken by the Environmental and Social safeguard specialists from May 20 to May 21, 2016 for field verification and environment and social safeguards related aspects of the projects. During the site visit, the project O&M team which included Site In-charge of Mytrah Vayu (Pennar) Private Limited (MVPPL), Suzlon's Site In-charge and Safety officer were consulted regarding environmental and social safeguards related measures implemented at the project sites. The site visit photographs are given in Photo Log annexed as Annexure II.

The consultant team has also conducted focussed group discussion (FGD)/public consultation with local villagers, village sarpanch, panchayat members and daily wages labourers in Chabala and Gade Hothur village of the study area. During consultation with the local community, it was found out that the land sold to MVPPL was rain fed and one crop yielding agricultural land. Agriculture is dependent on rain water and it yield one crop/year. Jowar, bajra, wheat, maize, ragi, cotton and ground nut are the main crops grown in the study area. Land procurement process was done on willing seller willing buyer basis. All the land purchase deed has completed and compensation for land has been deposited in the account of land seller. No complaint were reported during the community consultations regarding land purchase deal between MVPPL and land seller, shadow flickering and noise generation due to WTGs operational. It was reported by villagers of Chabala that approximately 30 persons of Chabala village got job as security personnel in the existing wind farm Vajrakarur. It was also revealed by local community that no community development activity has been implemented by project proponent till the time of site visit. There is a temple of Sri Chandrakeshwar of 11th century in village Chabala.

3.13 LAND PROCUREMENT

As informed by MVPPL during site visit, total land required for 63 MW Wind Farm are 157.87 acres in which 120.25 acres are private land and 37.62 acres are government land. Suzlon has got land allotment from Andhra Pradesh Government for 37.62 Acres through Rc. No: E3/2751/2010 Dated 27.08.2010. Rest 120.25 acres private land has been procured from farmers of village Chabala, Uravakonda, P.C. Pyapili, Gade Hothur and Veligonda on willing seller-willing buyer basis. Based on discussions with villagers and local community, it was recorded that the land sold to MVPPL by the land sellers was one crop yielding rain fed

agricultural. Furthermore, this project does not involve any resettlement in terms of physical and economical aspects hence do not attract Resettlement plan as per applicable national/state legislation. The land price was decided after considering willing seller and willing buyer negotiation. Also land procurement did not involve land of any indigenous people.

After the identification of the sites, negotiations were carried out with the interested parties. The land title documents and land title clearance certificate was sought for and post satisfactory perusal of the documents, the sale deed were registered in the Company's name and the possession of the land was taken by the Project Team after paying the compensation for the land to the landholder. The land procurement team of the project handled the mutation process for the land, wherever required.

As informed by the developer, the land titles were transferred in the name of the Company after the purchase of land from the title-holders. The Title Deeds in the name of Company is deposited with Security Trustee which is appointed by the lenders and is the custodian of all the securities of the company including the land title, on behalf of the lender. The Company has carried out legal vetting from Legal department internally before acquiring the land. This was followed by preparation of Title search report of the Project land by empaneled lawyer of the Bankers to the Project. At time of registration of sale deed, witnesses have signed on the sale deed which may also be considered as third party confirmation on payment to seller of land on 'willing buyer willing seller' basis.

3.13.1 Compensation for the Land

The land for the proposed projects is private owned land which was purchased by MVPPL on willing seller-willing buyer process. The land originally was agricultural with one crop yielding rain fed. The land was procured by MVPPL directly from land owners. As informed by the project in-charge, the compensation was decided based on the prevailing market rate, in consensus with the land owners. No grievances were reported during the stakeholder consultations with the Village Head and local villagers, regarding the land transaction and compensation which indicated broad community support for these projects.

3.13.2 Resettlement Impact

The existing Wind Farm is located on open agricultural land. It was reported by local villagers and MVPPL that there were no inhabitants on the project land. The projects did not had any impact on the settlement area and no cultural and community property was affected due to the projects. Hence relocation of settlements was not required for the projects.

3.13.3 Impact on Indigenous People

As information provided by MVPPL, the existing 63 MW Wind Farm did not involve land acquisition from indigenous people and thus these projects do not have any impact on the indigenous people.

3.14 GRIEVANCE REDRESSAL MECHANISM

As informed by the site in-charge, the grievance register has been maintained for recording the grievances, request, demands etc. of the local community, which is shared by them as sample copy. The grievances, if received, are addressed by the site in-charge. It has also been informed by the site in-charge that till date no grievances have been received from the local people.

3.15 COMMUNITY DEVELOPMENT ACTIVITY

MVPPL actively participate in community development activity for the area. Some of the major community development activity undertaken for the area has been highlighted below:

Eye Camp: Eye checkup camp is regularly undertaken for the nearby villagers. Eye checkup camp was undertaken for nearby community members of Gandikota, Gadehotur, Pottipadu, Chayapuram, konakondle, Dharampuri, Ragulpadu, PC Pyapili, kadamalkunta and Kottalapalli villages. Eye screening for cataract and refractive errors was undertaken for the villagers. They were provided with appropriate spectacles as well as some were provided with cataract operation facilities in association with nearby Hospital.

Sports kit distribution:

Sports kits were distributed for the school children in active collaboration with school management at Dharampuri Village with an objective to reduce school dropout rate by promoting sports and games for students.

Health Camp:

Health camp was organized at Chabala and Ragulpadu village and oriented to the villagers about eye care and medicine supported to the patients.

Cleanliness Drive:

Cleanliness drive was undertaken at different schools at Gadehotur, Ragulpadu, PC Pyapili and Kadamalakunta village with active involvement of community members to create awareness about sanitation needs.

4 LEGISLATIVE FRAMEWORK

4.1 INTRODUCTION

This section highlights the environmental and social regulations applicable to the proposed Wind farm project. The section broadly focuses on the institutional framework, applicable environment, health and safety and social legislative requirements and ADB Safeguard Policy Statement relevant to the proposed Project. At the outset, it should be emphasized that this administrative framework focuses on:

- Applicable environmental and social regulations and policies in India and the state of Andhra Pradesh;
- Institutional framework for the implementation of the regulations; and
- International Standards and conventions including:
 - i. Applicable Indian National, state and local regulatory requirements;
 - ii. ADB safeguard policy statement, 2009;
 - iii. ADB policy on Social Protection Strategy, 2001;
 - iv. ADB policy on Public Communication Policy, 2011;
 - v. IFC Performance Standard, 2012;
 - vi. IFC and World Bank General EHS Guidelines, 2007;
 - vii. IFC and World Bank EHS Guidelines for wind Energy Project, 2007;
 - viii. IFC and World Bank EHS Guidelines for Electric Power Transmission and Distribution, 2007; and
 - ix. Relevant ILO conventions rectified by Host country covering core labour standards and basic terms and conditions of employment (limited to operational phase of the proposed project).

4.2 NATIONAL REGULATIONS

As per EIA Notification, 2006 and its amendments, the Wind Power Project does not require any environmental clearances from the MOEF & CC or Andhra Pradesh State Environmental Impact Assessment Authority (SEIAA). As per the revised classification of industries into Red, Orange and Green Category, issued by Central Pollution Control Board dated 4th June 2012, the solar power generation through solar photovoltaic cell, Wind Power & mini hydel power (<25 MW) are classified under Green Category Industries and require Consent to Establish and Consent to Operate under Water (Prevention and Control of Pollution) Act, 1974.

However, as per order issued by Government of Andhra Pradesh dated 13th February 2015 under Andhra Pradesh wind power policy 2015- “Wind power projects” have been exempted from obtaining NOC/ Consent for Establishment under pollution control laws from Andhra Pradesh Pollution Control Board.

Applicability analysis of existing legislative framework in context of the proposed project has been elaborated in Table below.

Table 4-1 : Environmental Regulations and Legislations

S. No	Act/Law	Description/purpose	Responsible Authority	Applicability
A	ENVIRONMENT & FOREST			
A-1	Environmental (Protection) Act, 1986 and subsequent amendments	It is a comprehensive act covering overall objective to improve environment by prevention and control of air, water, soil pollution etc. Clearances from different authorities are independently obtained.	MoEFCC	No. Permissible limit for AAQ, Water Quality, Noise limits has been laid down by CPCB under EP Act, 1986 which are enforced by SPCB. Wind power projects being exempted from Consent procedure it is not being enforced by SPCB.
A-2	Environmental Impact Assessment (EIA) Notification, 2006 and subsequent amendments	Environmental Impact Notification S.O.1533 (E), dt.14th September 2006, as amended in 2009, issued under Environment (Protection) Act 1986, establishes the guideline for EIA clearance of projects.	MoEFCC and SEIAA	No. As per the EIA notifications 2006, wind power projects are exempted from obtaining prior environmental clearance
A-3	Forests (Conservation) Act, 1980 and Rules 1981 as amended 2004	The Act restricts the powers of the State in respect of de-reservation of forests and the use of forestlands for non-forest purposes. No State Government, or other authority shall, except with the prior approval of the Central Government, make any order directing: De-reservation of a reserved forest; Use any forest land for any non -forest purpose; Assign any forest land to any private person or entity not controlled by the Government; Clear any forest land of naturally grown trees for the purpose of using it for reforestation	State Forest Dept./ MoEFCC	Not applicable to site. No forest land has been taken either for construction or for substation and transmission line pathway.

S. No	Act/Law	Description/purpose	Responsible Authority	Applicability
A-4	Wildlife (Protection) Act 1972	All projects which are located within the distance of 10km of National Park and Sanctuaries must be placed before the standing Committee of the National Board for Wildlife constituted under the Wildlife (Protection) Act, 1972.	Chief Conservator Wildlife, State Forest Department & MoEFCC	Not applicable since no wild life / eco-sensitive zone has been reported within 10 km of the study area.
A-5	Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules, 2008 as amended in 2009 and 2010	The rules define responsibility of hazardous wastes generators, require safe handling practices and maintenance of manifest system during transport of hazardous waste and also describe technological aspects to be followed up by re-refiners and recyclers of hazardous wastes. The rules also cover liabilities of occupier, transporter and operator of a facility for any damages caused due to improper handling and disposal of hazardous wastes by reinstating or restoring environmental damages caused.	CPCB, SPCBs	Applicable. Hazardous waste is generated due to operation and maintenance work on WTGs.
A-6	Batteries (Management and Handling) Rules, 2001	Used Lead acid batteries if generated should not be disposed of in any manner other than depositing with the dealer, manufacturer, importer, assembler, registered recycler, reconditioned, or at the designated collection centers.	SPCB	Applicable. Batteries used as power back up is to be disposed of through Authorised vendor.
A-7	The Air (Prevention and Control of Pollution) Act, 1981	The Act prohibits the construction and operation of any industrial plant without the consent of SPCBs. The Act assigns powers and functions to the CPCB and the SPCBs for prevention and control of air pollution and all other related matters.	SPCBs	As per "Final document on revised classification of industrial sector under Red, Orange and White Categories published by CPCB (CPCB, 2016) Wind Projects fall under "White

S. No	Act/Law	Description/purpose	Responsible Authority	Applicability
				category". White category need not to obtain "Consent to Operate" from SPCB/PCC. Intimation to concerned SPCB / PCC only suffices the "Consent" Requirement. The copy of guidelines is attached as Annexure IV of this document. Moreover, as per "Wind Power Policy", issued by the Government of Andhra Pradesh vide G.O.Ms.No.48 dated 11.04.2008 and G.O.Ms.No.99 dated 09.09.2008 Wind power projects are exempted from obtaining any NOC/Consent for establishment under pollution control laws from AP Pollution Control Board.
A-8	The Noise Pollution (Regulation and Control) Rules, 2000 and the Noise	As per the Noise Pollution (Regulation and Control) Rules 2000, every operating facility is required to take all possible steps to meet the ambient noise level standards prescribed in the Rules.	SPCB	Exempted form CTE and CTO.

S. No	Act/Law	Description/purpose	Responsible Authority	Applicability
	Pollution (Regulation and Control) Amendment) Rules, 2010			
A-9	Water Prevention and Control of (Pollution) Act, 1974 and its various amendments	This Act provides for the prevention and control of water pollution and maintaining or restoring good water quality for any establishment.	SPCB	Exempted form CTE and CTO.
A-10	The Water Prevention and Control of Pollution), Cess Act, 1977	This Act provides for levy and collection of Cess on water consumed and water pollution caused.	SPCB	Not applicable. The certain category of projects specified in the Act required paying water cess.
A-11	Electricity Act, 2003	<p>The sections of the Electricity Act, 2003 that are relevant for laying (and repairs) of transmission lines for the supply of energy are described as following:</p> <p>Section 67 details the provisions (a) to open and break up the soil and pavement of any street, railway or tramway; (b) to open and break up any sewer, drain or tunnel in or under any street, railway or tramway; (c) to alter the position of any line or works or pipes, other than a main sewer pipe; (d) to lay down and place electric lines, electrical plant and other works;(e) to repair, alter or remove the same; (f) to do all other acts necessary for transmission or supply of electricity.</p> <p>Section 159 describes that no person shall be engaged in the generation, transmission, distribution, supply or use of electricity, in any way injure any railway, highway, airports, tramway, canal</p>	Electrical Inspector	Applicable. Construction and lying of transmission lines need to follow Electricity act.

S. No	Act/Law	Description/purpose	Responsible Authority	Applicability
		<p>or water-way or any dock, wharf or pier vested in or controlled by a local authority, or obstruct or interfere with the traffic on any railway, airway, tramway, canal or water-way.</p> <p>Section, 160(1) describes that every person generating, transmitting, distributing, supplying or using electricity (hereinafter in this section referred to as the "operator") shall take all reasonable precautions in constructing, laying down and placing his electric lines, electrical plant and other works and in working his system, so as not injuriously to affect, whether by induction or otherwise, the working of any wire or line used for the purpose of telegraphic, telephone or electric signaling communication, or the currents in such wire or line.</p> <p>Section 34 describes that every transmission licensee shall comply with such technical standards, of operation and maintenance of transmission lines, in accordance with the Grid Standards, as may be specified by the Authority.</p> <p>Section 53 (1) describes that the Authority may in consultation with the State Government, specify suitable measures for –(a) protecting the public (including the persons engaged in the generation, transmission or distribution or trading) from dangers arising from the generation, transmission or distribution or trading of electricity, or use of electricity supplied or installation, maintenance or use of any electric line or electrical plant; (b) eliminating or reducing the risks of personal injury to any person, or damage to property of any person or interference with use of such property ; (c) prohibiting the supply or transmission of electricity except by means of a system which conforms to the</p>		

S. No	Act/Law	Description/purpose	Responsible Authority	Applicability
		<p>specification as may be specified; (d) giving notice in the specified form to the Appropriate Commission and the Electrical Inspector, of accidents and failures of supplies or transmissions of electricity; (e) keeping by a generating company or licensee the maps, plans and sections relating to supply or transmission of electricity; (f) inspection of maps, plans and sections by any person authorized by it or by Electrical Inspector or by any person on payment of specified fee; (g) specifying action to be taken in relation to any electric line or electrical plant, or any electrical appliance under the control of a consumer for the purpose of eliminating or reducing a risk of personal injury or damage to property or interference with its use;</p> <p>Section 165 (1) In section 40, sub-section (1) of clause (b) and section 41, subsection (5) of the Land Acquisition Act, 1894, the term "work" shall be deemed to include electricity supplied or to be supplied by means of the work to be constructed. (2) The Appropriate Government may, on recommendation of the Appropriate Commission in this behalf, if it thinks fit, on the application of any person, not being a company desirous of obtaining any land for its purposes, direct that he may acquire such land under the provisions of the Land Acquisition Act, 1894 in the same manner and on the same conditions as it might be acquired if the person were a company.</p>		
A-12	Ancient Monuments and Archaeological Sites and Remains Act, 1958	All projects which are located within the distance of 10km of ASI protected monuments and or sites should take NOC from ASI.	ASI	Not applicable since no ASI protected monuments has been reported within 10 km

S. No	Act/Law	Description/purpose	Responsible Authority	Applicability
				of the study area.
A-13	Chemical Accidents (Emergency Planning, preparedness and response) Rules, 1996	Protection against chemical accident while handling any hazardous waste.	Yes	District and local crisis group headed by the DM and SDM
A14	E-waste Management Rule, 2011	As a bulk consumer, E-waste has to be disposed of through authorized recycler only.	Yes	SPCB
B. Land and Labor				
B-1	The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013	The act is applicable if land acquisition is more than 50 acres in urban area and in rural area is more than 100 acres. The Act aims to minimize displacement and other negative impacts originating due to land acquisition.	District Collectorate	Not applicable. Land for the project is being taken on Lease. No purchase or acquisition of land is involved for the project.
B-2	The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006 & rules 2007	The act basically vests the forest rights and occupation in forest land in forest dwellers (ST and other traditional forest dwellers) who have been residing in forests for generations but whose rights could not be recorded.	Ministry of Tribal Affairs Tribal Welfare Department	Not applicable as land procured do not belong to any scheduled tribe or traditional forest dwellers.
B-3	The Indian Factories Act, 1948 and State Rules	As per the provision of the Act a general policy with respect to H &S of the workers at work should be in the form of a written statement and brought to the notice of the workers. An occupier is to develop a safety policy and form safety committees and provide power to the Central Government to appoint inquiry committee if some extraordinary situation had occurred in the factory which is engaged in the hazardous process.	Directorate of Industrial Safety and Health (DISH)	Applicable. Premises wherein ten or more workers are working, or were working on any day of the preceding twelve months are covered under the Act.

S. No	Act/Law	Description/purpose	Responsible Authority	Applicability
B-4	Minimum Wages Act, 1948	Minimum Wages Act, 1948 requires the Government to fix minimum rates of wages and reviews this at an interval of not more than 5 years.	Ministry of Labor & Employment	Applicable
B-5	The Workmen's Compensation Act, 1923	The Workmen's Compensation Act, 1923 requires if personal injury is caused to a workman by accident arising out of and in the course of his employment, his employer shall be liable to pay compensation in accordance with the provisions of this Act.	Ministry of Labor & Employment	Applicable
B-6	The Contract Labor (Regulation & Abolition) Act, 1970 and Rules	As per the contract labor act, every principle employer is required to get the establishment registered before employing any contract labor. The contractors are also required to provide at minimum amenities like canteen, urinals, restrooms or alternate accommodation (if night halting labor), first aid, safe drinking water, etc.	Ministry of Labor & Employment	Applicable
B-7	The Child Labor (Prohibition and Regulation) Act, 1986	A child is defined as a person who has not completed 14years of age. The Act prohibits employment of children in certain occupation and processes. The Act also specifies conditions of work for children, if permitted to work.	Ministry of Labor & Employment	Applicable
B-8	ESI Act, 1948	The ESI Act provides for certain benefits to employees in case of sickness, maternity and employment injury.	Ministry of Labor & Employment	Applicable

5 GAP ANALYSIS WITH RESPECT TO APPLICABLE STANDARDS

Gap analysis activities were performed in respect to IFC Performance Standards and ADB Safeguard policies. Extensive assessment of the project was made in respect to these policy requirements. Detailed assessment is tabulated below.

Table 5-1: Environmental and Social Gap Assessment as per IFC Performance Standards (2012), ADB Safeguard

Sl. no.	Performance Standards	Observation	Gaps	Recommendation
	<p>IFC PS1: Assessment and Management of Environmental and Social Risks and Impacts</p>	<p>ADB SPS Environmental Safeguards</p>		
1.1	<p>ESMS Policy: The client should establish and maintain an Environmental and Social Management System (ESMS) appropriate to the nature and scale of the project and commensurate with the level of social and environmental risks and impacts.</p>	<p>The client should establish an ESMS and implement corrective action plan based on safeguards compliance audit.</p>	<p>MVPPL is committed to implement an effective ESMS based on dynamic process and through involvement of its vendor, client, employee, local communities and stakeholders. MVPPL has established an ESMS system based on Quality, Safety, Health and Environment (QHSE) policy of the company.</p> <p>Compliance of HSE activities of the company is guided by Corporate EHS head.</p> <p>Standard Operating Procedure (SOP) as per QHSE policy has been prepared and followed for coordinating site activities.</p> <p>HSE activities at site are controlled through Site In</p>	<p>ESMS needs to be reviewed periodically to address changes in the organization, process or regulatory requirements.</p>

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Sl. no.	Performance Standards	Observation	Gaps	Recommendation
		<p>Charge.</p> <p>Site staffs are given Basic Safety Training as per the training records reviewed at site.</p> <p>The O & M Contractor of the project SGSL also has a well-established HSE policy in line with OHSAS, 18001 and ISO 14000 standards.</p>		
1.2	<p>Environment and Social Impact Assessment: The IFC performance standard requires detailed impact assessment of environmental and social sensitivities in the area and preparation of a management plan for construction and operation phase.</p>	<p>The wind power projects do not require Environmental clearance as per the EIA notification SO 1533 dated 14th September, 2006 and its subsequent amendments.</p>	<p>Environmental and Social Impact assessment (ESIA) study has not been undertaken for this project.</p>	<p>Environment Management Plan (EMP) should be implemented based on ESDD study.</p>

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Sl. no.	Performance Standards	Observation	Gaps	Recommendation
1.3	Identification of environmental and social risks: MVPPL should establish and maintain a process for identifying the environmental and social risks and impacts of the project. The type, scale, and location of the project guide the scope and level of effort devoted to the risks and impacts identification process.	SGSL has identified and maintains records of health and safety risks associated with the routine activities and accordingly PPE has been identified. SOP has been developed for safety risks of regular O & M activities. MEIL has not identified the environmental and social risks associated with the project. ESIA study has been carried out for Phase-II of the project.	Before commencement of proposed project Environmental and Social Screening has not been carried out.	Findings of the Phase- II ESIA study as well as present ESDD study to be considered for identification of environmental and social risks associated with the operation of the project.
1.4	Legal Compliance: The project should comply with the applicable laws and regulations of the jurisdictions in which it is being undertaken, including those laws implementing host country obligations under international law.	The project should comply with host country's social and environmental laws and regulations, including those laws implementing host country obligations under international law. Wind power projects leads to generate hazardous waste such as used transformer oil, gear box oil and oil soaked cotton waste. Hazardous waste is not been stored securely. Storage area was in open, not weather protected and the siting ground was not been paved to prevent ground water pollution. Hazardous waste is disposed of to TSDF facility through authorized vendor.	The project should obtain Form 12 under Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008. The project has not obtained authorization from APPCB for storage of Hazardous waste.	The guideline of APPCB should be complied with respect to hazardous waste storage and transport. E-waste to be managed as per APPCB guideline. Waste Batteries to be disposed off through authorized

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Sl. no.	Performance Standards	Observation	Gaps	Recommendation
				vendor.
1.5	Management Programme: Management programme with defined desired outcomes as measurable events to mitigate and implement improvement measures and actions that address identified social and environmental risks and impacts.	Prepare an Environmental Management Plan, Resettlement Plan, and / or Indigenous Peoples Plan to address identified environmental and social risks and impacts.	MVPPL is committed to implement an effective ESMS based on dynamic process and through involvement of its vendor, client, employee, local communities and stakeholders. MVPPL has established an ESMS system based on Quality, Safety, Health and Environment (QHSE) policy of the company.	Environmental and Social Impact assessment (ESIA) study has not been undertaken for this project.
1.6	Organization Structure: The Client should establish, maintain and strengthen as necessary, an organizational structure that defines roles, responsibilities, and authority to implement the ESMS.		MVPPL as a whole has a well-established team to coordinate the site activities. The organization structure as well as their responsibility was displayed at notice board	The internal reporting mechanism between MVPPL and subcontractors is informal.
1.7	Training: Trainings to employees and contractors with direct responsibilities for activities related to the	This requirement is subsumed within the ESMS or EMP	Training calendar has specific training schedule for EHS. Training participation record is maintained.	Need based training should be organized for MVPPL employee, which should be an integral part of HR policy.
				Project specific environmental and social management plan should be developed on the basis of findings of ESDD and Phase-II ESIA study.
				Project specific organization structure shall be included under corporate communication, policy implementation team and other environment and sustainable related report.
				Training/workshops should be undertaken for the project and

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Sl. no.	Performance Standards	Observation	Gaps	Recommendation
	project's social and environmental performance.			corporate staffs as per their training requirements at regular intervals.
1.8	Emergency Preparedness Plan: The client should establish and maintain an emergency preparedness and response system so that the MVPPL shall be prepared to respond to accidental and emergency situations associated with the project in a manner appropriate to prevent and mitigate any harm to people and / or the environment.	Emergency contact numbers, specific team member responsibility and key elements of emergency plan were observed to be displayed in the site office.	The onsite emergency response plan and emergency contact numbers were not displayed in local languages.	Annual monitoring and evaluation report should be submitted.
1.9	Monitoring and Review: The Client should establish procedures to monitor and measure the effectiveness of the management program, as well as compliance with any related legal and / or contractual obligations and regulatory requirements participate in monitoring	Implement the EMP and Monitor its effectiveness, documentation of monitoring results, including the development and implementation of corrective actions, and disclose monitoring reports.	Project site related EHS activities are regulated by corporate office. Documents pertaining to incident reporting, work permits and SOP were verified at site.	Compliance submission of the project to ensure the implementation of proper management, documentation, and implementation of corrective actions required.
				Internal/third party audits need to be undertaken periodically.

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Sl. no.	Performance Standards		Observation	Gaps	Recommendation
	activities				
1.10	Stake Holder Engagement: the client should engage Stake holder engagements for building strong, constructive, and responsive relationships that are essential for the successful management of a project's environmental and social impacts.	Carry out meaningful consultation with affected people and facilitate their informed participation. Ensure women's participation in consultation. Involve stakeholders, including affected people and concerned nongovernment organizations, early in the project preparation process and ensure that their views and concerns are made known to and understood by decision makers and taken into account. Continue consultations with stakeholders throughout project implementation as necessary to address issues related to environmental assessment. Establish a grievance redressal mechanism to receive and facilitate resolution of the affected	Focus Group Discussion, Community Consultation, Household survey, & other stakeholder meetings have been carried out. A fruitful result of consultation was observed as the outcomes of primary survey. Different CSR activities are executed at project level.	MVPPL do not have a formal stakeholder engagement plan to address community needs.	A stakeholder engagement plan needs to be formulated to address the community needs through self or through turnkey contractor.

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Sl. no.	Performance Standards		Observation	Gaps	Recommendation
		people’s concerns and grievances regarding the project’s environmental performance.			
1.11	External Communications and Grievance Mechanisms: The client should implement and maintain procedure for external communications that includes methods to: (i) receive and register external communications from the public; (ii) screen and assess the issues raised and determine how to address them. In addition, MVPPL should encourage making publicly available periodic reports on their environmental and social sustainability.	Disclose a draft Environmental assessment (including the EMP) in a timely manner, before project appraisal, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. Disclose the final environmental assessment, and its updates if any, to affected people and other stakeholders.	A register was been found to be maintained at site to record grievances. A transport process of grievance redressal mechanism is followed for the regular employees.	No formal grievance redressal mechanism is followed. Register of grievance record do not have any documentation of further action plan to be executed to address the grievances.	Formulate a formal grievance redress mechanism/system for addressing grievance through self-developed process or through turnkey contractor and the grievance redressal should be linked to grievance record register.
2	PS 2: Labour and Working Conditions	ADB Environmental Safeguards			
2.1	Human Resources (HR) Policies and Procedures: The client should adopt and		Both MEIL and SGSL have an established HR Policy.	Internal audits are not undertaken to assess the implementation of contract	Internal audits need to be undertaken to maintain adherence

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	implement human resource policies appropriate to its size and workforce that sets out an approach to managing workers consistent with the requirements of this performance standard and the national law.	The hiring of human resource is as per the HR policies and their guidelines.	conditions between MVPPL and its subcontractors.	to the HR policies at site office of the applicable stake holder.
2.2	Working Conditions and Terms of Employment: The client should provide Workers with documented information that is clear and understandable, regarding their rights under national labour and employment law and any applicable agreements	Terms of employment, employee rights and benefits entitled are clearly spelled out in appointment letter. Safe drinking water, sanitary conveniences, canteen facilities, rest room has been provided for the project site workers.	There is no formal procedure to educate about employee rights. Workers are not aware of their rights and compensation.	Workers should be educated about their rights and compensation. MVPPL should ensure that workers of different turnkey contractors are aware of national labour and employment law and any other applicable agreements.
2.3	Workers' Organization: Where law recognizes workers right to form and join workers organizations of	Right to Organize and Collective Bargaining Convention, 1949 (No.98). This Convention provides or protection against anti-union	It was observed that there were no policies by MVPPL or SGSL restricting formation of a union or collective bargaining.	Provide for an appropriate forum for the employees for collective

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	their choice	discrimination, for protection of workers and employers organizations against acts of interference by each other, and for measures to promote and encourage collective bargaining.			bargaining.
2.4	Migrant Workers: The client should identify Migrant workers and ensure that they are engaged on substantially equivalent terms and conditions to non-migrant workers carrying out similar work.	In order to strengthen non-Discrimination in a project, ADB requires that migrant workers should be protected on an equal basis by national legislates on and that they have the same human rights as national workers.	No discrimination was observed or reported by any workers at site.		Prior to assigning any contract, MVPPL should pre-qualify each contractor according to its performance on EHS standards so as to satisfy MVPPL's ESMS standards.
2.5	Non Discrimination and Equal Opportunity: The client should not make employment decisions on the basis of personal characteristics unrelated to inherent job requirements. MVPPL should base the employment relationship on the principle of equal opportunity and fair	The key anti-discrimination suggestions for ethnic discrimination identified by ADB as part of their Core Labour Standards (CLS) hand book applicable are: Complaints committee for resolution of complaints of discrimination, harassment, or other working condition concerns.	Based on requirement and relevant educational qualification with experience, the opportunity of different job is getting closed.		Prior to assigning any contract, MVPPL should pre-qualify each contractor according to its performance on EHS standards so as to satisfy MVPPL's ESMS standards.

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	treatment, and shall not discriminate	Challenging stereotypes of minorities to ensure equal opportunity and treatment Occupational health and safety for all including minorities, Health insurance and social security for all Encouraging minority groups/organizations to form and join groups / organizations representing their interests. Protecting migrant workers especially if they are members of ethnic minorities.			
2.6	Grievance Mechanism: Grievance mechanism for workers where they can raise reasonable workplace concerns	There should be a mechanism within projects for the resolution of complaints of discrimination, harassment, or other working condition concerns.	MVPPL and SEL have a system to address the workplace concerns and grievances of its employees.	MVPPL has prepared a framework to address all the issues related to grievance mechanism.	Awareness should be built among the employees about their rights and compensation.
2.7	Child Labour: The client will not employ children in any manner	The ILO Minimum Age Convention, 1973 (No. 138) and its accompanying Recommendation (No. 146) set the goal of elimination of child labour, and the basic	No child labor was observed at site during the site visit.		Prior to assigning any contract, MVPPL should pre-qualify each contractor according to its performance on EHS

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		minimum age for employment or work (in developing countries at 14 years of age or the end of compulsory schooling, whichever is higher; and 15 or the end of compulsory schooling for developed countries). The Convention sets a minimum age of 2 years younger for “light work” i.e., 12 and 13 years, respectively; and a higher minimum age for dangerous or hazardous work (basically 18 years of age, but 16 in certain circumstances).			standards so as to satisfy MVPPL’s ESMS standards.
2.8	Forced Labour: MVPPL will not employ forced labour, which consists of any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty.	Elimination of all forms of forced or compulsory labour. According the Forced Labour Convention, 1930 (No.29), the ILO defines forced labour for the purposes of international law as “all work or service which is exacted from any person under the menace of any penalty and for which the said person has	No forced labour was observed at site during the site visit.		Prior to assigning any contract, MVPPL should pre-qualify each contractor according to its performance on EHS standards so as to satisfy MPKPL’s ESMS standards.

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		not offered himself voluntarily". The other fundamental ILO instrument, the Abolition of Forced Labour Convention, 1957 (No. 105), specifies that forced labour can never be used for the purpose of economic development or as a means of political education, discrimination, labour discipline, or punishment for having participated in strikes.		
2.9	Occupational Health and Safety: The client will provide a safe and healthy work environment, taking into account inherent risks in its particular sector and specific classes of hazards in MVPPL's work areas, including physical, chemical, biological, and radiological hazards, and specific threats to women.	<p>Special care needs to be taken in projects to ensure the health and safety of all workers, including members of minorities.</p> <p>In many cases, minority workers are unable to read safety instructions or to understand safety and health training given to other workers.</p> <p>Provide workers with safe and healthy working conditions including easily</p>	<p>Hazard identification and risk assessment manual has identified and recorded the health and safety risks associated with O & M operations.</p> <p>Measures to deal with emergency condition have been displayed at project site.</p> <p>First aid box with necessary kits were observed to be put on at</p>	<p>Non usage of PPEs shows a behavior based issue in this aspect.</p> <p>An annual EHS assessment/audit needs to be undertaken.</p> <p>Usage of PPEs should be enforced through penalties for not using PPEs or incentive for adhering to the criteria.</p>

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		comprehensible safety Information on-site training, provisions of Personal Protective Equipment etc.	<p>an easy accessible place.</p> <p>PPEs have been provided to the workers.</p> <p>It was informed that work permits are issued before going for maintenance works.</p> <p>Maintenance work is supervised by dedicated engineer for the same.</p> <p>In case of medical emergencies employees are taken to nearest hospital in Uravakonda town.</p>		
3	PS 3: Resource Efficiency and Pollution Prevention	ADB Environmental Safeguards			
3.1	Resource Efficiency: The client will implement technically and financially feasible and cost effective measures for improving efficiency in its consumption of energy, water as well as other resources and material inputs. During the design,	Examine alternatives to the project's location, design, technology, and components and their potential environmental and social impacts and document the rationale for selecting the particular alternative proposed. Also consider the no project alternative.	Resource efficiency measures have been incorporated in the design stage of the project itself.		Awareness should be built among the employees about importance of conservation of natural resources.

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	construction, operations and decommissioning of the project (project lifecycle), the client is to consider ambient conditions and apply pollution prevention and control technologies and techniques.				
3.2	Water Consumption: when the project is potentially significant consumer of water, the client shall adopt measures to reduce water consumption of the project.		<p>The project is not a significant consumer of water.</p> <p>Domestic water requirement is the only water demand for the project.</p> <p>Potable water requirement is fulfilled through packaged drinking water supply.</p> <p>As reported non potable domestic water requirement is fulfilled though tanker water supply.</p>		Awareness should be built among the employees about importance of conservation of natural resources.
3.3	Wastes and Hazardous Materials Management: To avoid and minimize generation of hazardous and non-hazardous waste	MVPPL should avoid, or where avoidance is not possible, should minimize or control the generation of hazardous and non-	Wind power projects leads to generate hazardous waste such as used transformer oil, gear box oil and oil soaked cotton waste. Hazardous waste is not	There is no proper provision for storage of hazardous waste at the project site.	The guideline of APPCB should be complied with respect to hazardous waste storage and

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	<p>materials as far as practicable. Where waste generation cannot be avoided, but has been minimized, the client will recover and reuse wastes, where wastes cannot be recovered or reused; the client should treat, destroy and dispose of in an environmentally sound manner. If the generated waste is considered hazardous, the client will explore commercially reasonable alternatives for its environmentally sound disposal, considering the limitations applicable to its trans-boundary movement.</p>	<p>hazardous wastes and the release of hazardous materials resulting from project activities. Where waste cannot be recovered or reused, it will be treated, destroyed, and disposed-off in an environmentally sound manner. If the generated waste is considered hazardous, MVPPL should explore reasonable alternatives for its environmentally sound disposal considering the Limitations applicable to its Trans boundary movement. When waste disposal is conducted by third parties, MVPPL should use contractors that are Reputable and legitimate enterprises licensed by the relevant regulatory agencies.</p>	<p>been stored securely. Storage area was in open, not weather protected and the siting ground was not been paved to prevent ground water pollution.</p> <p>Hazardous waste is disposed off to TSDF facility through authorized vendor.</p> <p>E-waste was stored in open only.</p> <p>Garbage and recyclable waste to be collected separately.</p>	<p>transport.</p> <p>E-waste to be disposed off through authorized E-waste processor only.</p> <p>Garbage and recyclable waste to be collected separately.</p> <p>Recyclable waste to be sold to authorized vendor.</p> <p>Garbage to be properly disposed off.</p>
3.4	<p>Greenhouse Gases: MVPPL should consider alternatives and implement technically and financially feasible and</p>	<p>MVPPL should promote the reduction of project-related anthropogenic greenhouse gas emissions in a manner</p>	<p>Project is a renewable energy project and do not produce the GHG emissions.</p>	<p>Awareness to be developed among employees regarding effects of</p>

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	<p>cost effective options to reduce project- related GHG emissions during the design and operation of the project. These options may include, but are not limited to, alternative project locations, adoption of renewable or low carbon energy sources.</p>	<p>appropriate to the nature and scale of project operations and impacts. during the development or operation of projects that are expected to or currently produce significant quantities of greenhouse gases, the MVPPL should quantify direct emissions from the facilities within the physical project boundary and indirect emissions associated with the off-site production of power used by the project. MVPPL should conduct quantification and monitoring of greenhouse gas emissions annually in accordance with internationally recognized methodologies. In addition, MVPPL will evaluate technically and financially feasible and cost-effective options to reduce or offset project-related greenhouse gas emissions during project</p>		<p>greenhouse gas emissions.</p>

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		design and operation, and pursue appropriate options.			
3.5	<p>Release of pollutants: MVPPL should avoid the release of pollutants to air, water and land due to routine, non-routine, and accidental circumstances with the potential for local, regional, and trans boundary impacts or, minimize and/or control the intensity and mass flow of their release.</p> <p>To address potential adverse project impacts on existing ambient conditions, MVPPL should consider relevant factors, including, for example existing ambient conditions, etc.</p>	<p>Avoid, and where avoidance is not possible, minimize, mitigate, and / or offset adverse impacts and enhance positive impacts by means of environmental planning and management.</p> <p>Prepare an environmental management plan (EMP) that includes the proposed mitigation measures, environmental monitoring and reporting requirements, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. Key considerations for EMP preparation include mitigation of potential adverse impacts to the level of no significant harm to third parties, and the</p>	<p>Wind power projects leads to generate hazardous waste such as used transformer oil, gear box oil and oil soaked cotton waste. Hazardous waste is not been stored securely. Storage area was in open, not weather protected and the siting ground was not been paved to prevent ground water pollution.</p> <p>Hazardous waste is disposed off to TSDF facility through authorized vendor.</p>	<p>There is no proper provision for storage of hazardous waste at the project site.</p> <p>Approach road to the site should be hardscape area.</p> <p>Car Parking area is not having concrete built up area.</p>	<p>The guideline of APPCB should be complied with respect to hazardous waste storage and transport.</p> <p>Approach road to the site to be maintained properly.</p>

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		polluter pays principle.		
3.6	Pesticide Use and Management: Formulate and implement an integrated pest management (IPM) and or integrated vector management (IVM) approach to pest management	The environmental assessment will ascertain that any pest and/or vector management activities related to the project are based on integrated pest management approaches and aim to reduce reliance on synthetic chemical pesticides in agricultural and public health projects. MVPPL's integrated pest / vector management program should entail coordinated use of pest and environmental information along with available pest / vector control methods, including cultural practices, biological, genetic and, as a last resort, chemical means to prevent unacceptable levels of pest damage. The health & environmental risks associated with pest management should be minimized with support, as	Though a few plantations were seen around the grid substation, staff of MVPPL informed that no pesticides or insecticides are used.	Awareness should be built among employees about health and environmental risks associated with synthetic chemical pesticide.

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		needed, to institutional capacity development, to help regulate and monitor the distribution and use of pesticides and enhance the application of integrated pest management			
4	IFCPS4: Community Health & Safety & Security:				
4.1	<p>Community Health and Safety: MVPPL should evaluate risks and impacts to the health and safety of the affected Communities during the project life-cycle and will establish preventive and control measures.</p> <p>MVPPL should avoid or minimize the potential for community exposure to water-borne, water-based, water-related, and vector-borne diseases, and communicable diseases that could result from project activities, taking into</p>	<p>MVPPL should identify and assess the risks to, and potential impacts on, the safety of affected communities during the design, construction, operation and decommissioning of the project, and should establish preventive measures and plans to address them in a manner commensurate with the identified risks and impacts. These measures should favour the prevention or avoidance of risks and impacts over their minimization and reduction. Consideration should be</p>	<p>The project includes risks due to electrical hazards, and continuous exposure to turbine noise.</p> <p>The project site is situated within agricultural field and is at a considerable distance from the village settlements. However, communities working at the neighboring fields are vulnerable to H & S risks.</p>	<p>Environmental and Social Impact assessment (ESIA) study has not been undertaken for this project.</p>	<p>Environment Management Plan should address anticipated impact and risk associated with this particular project and their processes.</p>

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	consideration differentiated exposure to and higher sensitivity of vulnerable groups.	given to potential exposure to both accidental and natural hazards, especially where the structural elements of the project are accessible to members of the affected community or where their failure could result in injury to the community. MVPPL should avoid or minimize the exacerbation of impacts caused by natural hazards, such as landslides or floods that could result from land use changes due to project activities.			
4.2	Hazardous Materials Management and Safety: MVPPL should avoid or minimize the potential for community exposure to hazardous materials and substances that may be released by the project.	Avoid the use of hazardous materials subject to international bans or phase outs.	Wind power projects leads to generate hazardous waste such as used transformer oil, gear box oil and oil soaked cotton waste. Hazardous waste is not been stored securely. Storage area was in open, not weather protected and the siting ground was not been paved to prevent ground water pollution.	There is no proper provision for storage of hazardous waste at the project site.	The guideline of APPCB should be complied with respect to hazardous waste storage and transport.

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			Hazardous waste is disposed off to TSDF facility through authorized vendor.		
4.3	Emergency Preparedness and Response: MVPPL should document its emergency preparedness and response activities, resources, and responsibilities, and should disclose appropriate information to Affected Communities, relevant government agencies or other relevant parties.	Establish preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities.	Emergency contact numbers, specific team member responsibility and key elements of emergency plan were observed to be displayed in the site office.	The onsite emergency response plan and emergency contact numbers were not displayed in local languages.	Annual monitoring and evaluation report should be submitted.
4.4	Security Personnel: Where the client retains direct or contracted workers to provide security to safeguard its personnel and property, it will assess risks posed by its security arrangements to those within and outside the project site. The client will make reasonable enquiries		It was informed that the local persons are given opportunity to be engaged as security to safeguard the material on site.		Prior to assigning any contract, MVPPL should pre-qualify each security personnel so as to satisfy MVPPL's ESMS standards.

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	to ensure that those providing securities are not implicated in past abuses; will train them adequately in the use of force.			
5	IFC PS5: Land Acquisition and Involuntary Resettlement	Involuntary Resettlement Safeguards		
5.1	Project design: The project will consider feasible alternative project designs to avoid or at least minimize physical or economic displacement, while balancing environmental, social, and financial costs and benefits, paying particular attention to impacts on the poor and vulnerable.	Screen the project early on to identify past, present, and future involuntary resettlement impacts and risks. Determine the scope of resettlement planning through a survey and/or census of displaced persons, including a gender analysis, specifically related to resettlement impacts and risks.	Out of 30 WTGs, 27 are situated in private agricultural land. Although the project involves an economic displacement, the project does not involve any re-settlement and rehabilitation of local population.	
5.2	Compensation and Benefits for Displaced Persons: MVPPL should provide unavoidable displaced PAPs with compensation for loss of assets at full replacement	Pay compensation and provide other resettlement entitlements before physical or economic displacement. Implement the resettlement plan under close supervision throughout project	The project does not involve any resettlement activities as land of the project is devoid of any commercial or residential structures. It was informed that the private agricultural lands used in the project have	

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	<p>cost to help them restore their standards of living or livelihoods;</p> <p>Where livelihood is land-based or collectively owned, MVPPL should offer land-based compensation where feasible;</p> <p>MVPPL should provide opportunities to PAPs to derive appropriate development benefits from the project.</p>	<p>implementation</p> <p>been purchased on willing seller-willing buyer basis directly from the land owners with the help of local land facilitator.</p> <p>The sellers have no complaint against the compensation paid.</p>		
5.3	<p>Community Engagement: Facilitate informed participation of all PAFs in decision and entitlement making resettlement processes. Consultation to continue through the implementation, monitoring and evaluation of payment and resettlement.</p>	<p>Carry out meaningful consultations with affected persons, host communities, and concerned nongovernment organizations. Inform all displaced persons of their entitlements and resettlement options.</p> <p>Disclose a draft resettlement plan, including documentation of the consultation process in a timely manner, before</p>	<p>The primary survey, consultation and review of other relevant document have been carried out. No major social issue has been envisaged for this project.</p> <p>The project does not involve any resettlement activities as land of the project is devoid of any commercial or residential structures. The lands for the</p>	<p>MVPPL do not have a formal stakeholder engagement plan to address community needs.</p> <p>Stakeholder engagement plan needs to be formulated to address the community needs through turnkey contractor.</p>

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	<p>project appraisal, in an accessible place and a form and language(s) understandable to affected persons and other stakeholders.</p> <p>The resettlement should elaborate upon displaced persons' entitlements, the income and livelihood restoration strategy, institutional arrangements, monitoring and reporting framework, budget, and time-bound implementation schedule.</p> <p>Improve or at least restore, the livelihoods of all displaced persons</p> <p>Ensure that displaced persons without titles to land or any recognizable legal rights to land are eligible for resettlement assistance and compensation for loss of non-land assets</p>	<p>project have been purchased on willing seller-willing buyer basis directly from the land owners with the help of local land facilitator.</p> <p>The sellers have no complaint against the compensation paid.</p>		

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5.4	Grievance Redressal Mechanism: MVPPL to establish grievance redressal mechanism consistent with PS 1 to address concerns raised by PAPs	Establish a grievance redress mechanism to receive and facilitate resolution of the affected persons’ concerns.	A register was been found to be maintained at site to record grievances.	No formal grievance redressal mechanism is followed. Register of grievance record do not have any documentation of further action plan to be executed to address the grievances.	Maintain Record of action plan and completed actions with supporting documents.
5.5	Resettlement and Livelihood Restoration Planning and Implementation: where involuntary resettlement is unavoidable either as a result of a negotiated settlement or expropriation, a census will be carried out to collect appropriate socio-economic baseline data to identify the actual eligible persons for compensation.		The project does not involve any resettlement activities as land of the project is devoid of any commercial or residential structures.		In case of resettlement, census should be carried out to collect appropriate socio-economic baseline data of actual eligible persons and records of compensation to be maintained.
5.6	Displacement: Physical Displacement: The Client shall develop resettlement action plan of physical displacement. The plan will be designed to		The project does not involve any resettlement activities as land of the project is devoid of any commercial or residential structures.		In case of resettlement baseline data of actual eligible persons for compensation to be

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	mitigate the negative impacts of displacement. Economic Displacement: In case of projects involving economic displacement only, the client will develop a livelihood restoration plan to compensate affected persons and or communities and offer other assistance that meet the objective.	The lands for the project have been purchased on willing seller-willing buyer basis directly from the land owners with the help of local land facilitator. The sellers have no complaint against the compensation paid.		maintained.
6	PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources			
6.1	Impacts on Biodiversity: Assess significance of project impacts on all levels of biodiversity as an integral part of social and environmental assessment process.	MVPPL should assess the significance of project impacts and risks on biodiversity and natural resources as an integral part of the environmental assessment process. The assessment will focus on the major threats to biodiversity, which include destruction of habitat and introduction of	The proposed site is on an agricultural land. The major ecological impact associated with the project is the risk of bird collision which is common with Wind power projects. There is no report of the project area supporting any "Endangered" category of flora	No formal procedure to record impact on avifauna has been formulated. It is suggested to undertake a periodic bird/bat carcass survey in the project by site personal in the core study area. Standard operating procedure should also highlight emergency measures to be undertaken in

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		invasive alien species, and on the use of natural resources in an unsustainable manner.	or fauna. The project area and its surroundings do not fall under any major flyway or migratory routes.	case of bird and bat hitting to WTG or electrocution.
6.2	Legally Protected Areas: If located within legally protected areas, to act in a manner consistent with the protected area management plan, consult stakeholder, implement additional programme to promote and enhance conservation aims.	As above	There is no area of significance from conservation point of view within 10 km radius of the project.	Legally protected areas to be conserved, if any.
6.3	Maintenance of Natural habitat: The proponent should not significantly convert or degrade natural habitats, unless (i) no other viable alternatives within the region exist for development of the project on modified habitat; (ii) consultation has established the views of stakeholders,	As above	The proposed site is an agricultural land. ESIA has been conducted for Phase-II of the project; project site is almost contiguous with Phase I project site. The activities related to project are not expected to change natural habitat around the project area except anticipated impact to bat and	Environmental and Social Impact assessment (ESIA) study has not been undertaken for this project.
				Natural habitat condition should be maintained in and around the project site.

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	including Affected Communities, with respect to the extent of conversion and degradation; and, (iii) any conversion or degradation is mitigated.		avifauna population.		
7	IFC PS7: Indigenous Peoples (Scheduled Tribes in Indian Context)	Indigenous People (Scheduled tribe)'s Safeguards			
7.1	Assessment of Impact: Assessment needs to be done for identification of indigenous groups (Scheduled tribes) and the expected social, cultural and environmental impacts on them.	Screen early on to determine (i) whether Indigenous Peoples (Scheduled tribes) are present in, or have collective attachment to, the project area; and (ii) whether project impacts on Indigenous Peoples (Scheduled Tribes) are likely.	No indigenous people are reported from the project area.		Rights of indigenous people should be protected, if any.
7.2	Avoidance of Adverse Impacts: The impacts on Affected Communities of Indigenous Peoples (Scheduled Tribes) should be avoided where possible. Where alternatives have been explored and adverse impacts are unavoidable,	Undertake a culturally appropriate and gender-sensitive social impact assessment or use similar methods to assess potential project impacts, both positive and adverse, on Indigenous Peoples. Give full consideration to options the	The project did not impact any indigenous population.		Rights of indigenous people should be protected, if any.

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	MVPPL should minimize, restore, and / or compensate for these impacts, proposed actions will be developed with the Informed consultations and Participation of the Affected Communities of Indigenous Peoples and contained in a time-bound plan, such as an Indigenous Peoples Plan	affected Indigenous Peoples prefer in relation to the provision of project benefits and the design of mitigation measures.		
7.3	Participation and Consent: MVPPL should undertake an engagement process with the Affected Communities of Indigenous Peoples as required in Performance Standard1. Ensure that the grievance mechanism established for the project, as described in PS1, is culturally appropriate and accessible.	Identify social and economic benefits for affected Indigenous Peoples that are culturally appropriate and gender and inter generationally inclusive and develop measures to avoid, minimize, and / or mitigate adverse impacts on Indigenous Peoples. Undertake meaningful consultations with affected Indigenous Peoples communities and concerned Indigenous Peoples organizations to solicit their participation (i) in designing,	The project did not impact any indigenous population.	Rights of indigenous people should be protected, if any.

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		implementing, and monitoring measures to avoid adverse impacts or, when avoidance is not possible, to minimize, mitigate, or compensate for such effects; and (ii) in tailoring project benefits for affected Indigenous Peoples communities in a culturally appropriate manner.		
8	IFC PS8: Cultural Heritage			
8.1	Protection of Cultural Heritage: MVPPL should identify and protect cultural heritage by ensuring that internationally recognized practices for the protection, field-based study, and documentation of cultural heritage are implemented.	MVPPL is responsible for siting and designing the project to avoid significant damage to physical cultural resources. Such resources likely to be affected by the project will be identified, and qualified and experienced experts will assess the project's potential impacts on these resources using field-based survey as an integral part of the environmental assessment process.	No cultural heritage has been observed within the 10km study area.	Local cultural heritage should be protected, if any.

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8.2	Community Access: Where the client's project site contains cultural heritage or prevents access to previously accessible cultural heritage sites being used by, or that have been used by the affected communities within living memory for long standing cultural purposes, the client will allow continued access to the cultural site or will provide an alternative access route.	A religious structure of local importance was observed to be located near turbine VAR-108. The access to the religious structure has not been restricted due to the project.		Local cultural heritage should be protected, if any.
8.3	Chance Find: MVPPL should develop provisions for managing chance finds through a chance find procedure which will be applied in the event that cultural heritage is subsequently discovered.	Excavation work of the project is completed and no chance find has been reported.		In case of chance find it should be reported to regulatory authority.

6 PROPOSED ENVIRONMENT MANAGEMENT PLAN WITH BUDGETARY PROVISIONS

An effective environmental management system is a dynamic, continuous process initiated by management and involving communication between the project proponent, the workers, and the local communities directly affected by the project. The EMP includes proposed mitigation measures, environmental monitoring and reporting requirements, training measures, implementation schedule and cost estimates.

MVPPL is committed to execute all operation related activities for the wind power project as per the best established environmental, health and safety standards and also it will be aligned with upcoming ESMS to be implemented at asset level. Some residual impact may however persist after the all mitigation measures are employed, the Environmental and Social Management Plan intends to delineate monitoring and management measures to minimize such impacts by allocating management responsibility and suggesting skill requirement for implementation of these measures during operational phase.

6.1 REGULATORY AGENCIES

The authorities/agencies to be coordinated for ESMP implementation include the following:

- District Administration;
- Land Revenue Department;
- Andhra Pradesh State Pollution Control Board;
- State Electricity Board;
- Factory Inspectorate;

6.2 ENVIRONMENT & SOCIAL MANAGEMENT SYSTEM (ESMS)

An Environment & Social Management System (ESMS) is already available to assist in developing a comprehensive mechanism at the asset level to lay down a rationalized procedure for assessing and managing social, environmental, health and safety issues at all stages of their activities. The corporate MEIL ESMS will guide the implementation at the project level compliance to the standards. The Environment and Social Management Plan (ESMP) provided in the subsequent sections will be operationalized within the framework of the management system. Mytrah is already ISO 9001, ISO 14001, ISO 18001 certified company and they are in process of ESMS to be approved by ADB in compliance with IFC Performance Standards and ADB Safeguard Policies 2009.

6.2.1 Organization, Roles and Responsibilities

The usual activities of the EHS manager and his team are as following:

- Ensuring availability of resources and appropriate institutional arrangements for implementation of ESMP;
- Compliance of legislative requirements and ADB safeguards;
- Carryout audits, and inspection of all the project activities through site engineer;

- Preparation of necessary documents and record keeping system through site engineer;
- Review and updating of ESMP for effective its implementation.

6.2.2 *Contractors Management*

Prior to assigning any contract, MVPPL pre-qualifies each contractor according to commercial, technical, quality assurance and its past performance on EHS standards so as to satisfy MVPPL 's requirements.

MVPPL ensures that the job specific training and EHS Induction Training needs are identified based on the specific requirements of ESMP and existing capacity of site and project personnel (including the Contractors and Sub-contractors) to undertake the required actions and monitoring activities.

General environmental awareness is being increased among the project's team to encourage the implementation of environmentally sound practices and compliance requirements of the project activities. This has helped in minimizing adverse environmental impacts, compliance with the applicable regulations and standards, and achieving performance beyond compliance. The same level of awareness and commitment is imparted to the contractors and sub-contractors prior to the commencement of the project.

An environmental and social management training programme is being conducted to ensure effective implementation of the management and control measures during operation of the project. The training programme ensures that all concerned members of the team understand the following aspects:

- Purpose of action plan for the project activities;
- Requirements of the specific Action Plans;
- Understanding of the sensitive environmental and social features within and surrounding the project areas; and
- Aware of the potential risks from the project activities;

A basic occupational training program and specialty courses are being provided, as needed, to ensure that workers are oriented to the specific hazards of individual work assignments.

Training is being provided to management, supervisors, workers, and occasional visitors to areas of risks and hazards. Workers with rescue and first-aid duties receive dedicated training so as not to inadvertently aggravate exposures and health hazards to themselves or their coworkers.

Through appropriate contract specifications and monitoring, the employer ensures that service providers, as well as contracted and subcontracted labor, are trained adequately before assignments begin.

As part of the ADB Social Protection Requirements and IFC Performance Standard-2 requirements, MVPPL has initiated the revision of its HR Policy. The updated HR policy is reported to include:

- MVPPL's position on child labour, forced labour, as well as commitment to favorable/safe working conditions;
- Applicability of the policy to indirect employees like contractors, contracted laborers or other stakeholders in the supply chain;
- Provide details of recruitment, induction, leave, termination, insurance, medical facility, training and incentives;
- Define leave policy;
- Provide measures against discrimination on basis of caste, religion or sex;
- Provide details of health benefits and insurance coverage;
- Provide for measures against sexual harassment;
- Provide for measures taken to ensure —Occupational Health and Safety|| is ensured for all employees on site;
- Provide for employee forums as an alternative to collective bargaining or registration with a trade union.

Although all employee related matters are documented and monitored at the corporate level, given the limited footprint and operations of the wind power plant, management of labour and employee relations can be one of the responsibilities of the plant manager who can be assisted by the on-site field supervisor in charge of implementing the social management systems on site. It is suggested that the revised human resource systems shall be applicable to the proposed project. However, the HR management systems framework would need to take the following into account:

- Awareness of the requirements under the ADB Social Protection Requirements and IFC Performance Standards 2 on Labour and Working Conditions, particularly with respect to training of contractors and occupational health and safety provisions;
- Providing all employees and labour with an access to an alternative collective bargaining or grievance redressal forum;
- Ensuring that all contractors and sub-contractors for whom MVPPL is the —principle employer|| are compliant for all applicable provisions of the Indian Labour Laws, particularly with regards to child labour, working houses, minimum wages, overtime etc. during the operations phase;

6.2.3 ESMP Review and Amendments

The ESMP provided with this report is an environment management tool which needs to be reviewed periodically to address changes in the organization, process or regulatory requirements.

6.2.4 Inspection, Monitoring & Audit

In order to implement the ESMP, the on-site team has developed a time-bound and action oriented Environmental and Social Action Plan to implement the mitigation measures provided for each of the identified environmental and social impacts. This ESMP will have to be monitored on a regular basis, quarterly or half-yearly and all outcomes would need to be audited in accordance with existing EHS commitments.

The monitoring process shall cover all stakeholders including contractors, labourers, suppliers and the local community impacted by the project activities and associated

facilities. Inspection and monitoring of the environmental and social impacts of operation phase activities increases the effectiveness of suggested mitigations. Through the process of inspection, audit, and monitoring MVPPL ensures that all the contractors comply with the requirements of conditions for all applicable permits including suggested action plans. The inspections and audits are done by MVPPL's trained team and external agencies/experts. The entire process of inspections and audits is documented. The inspection and audit findings are being implemented by the contractors in their respective areas.

6.2.5 Reporting and Review

MVPPL has developed and implemented a programme of reporting through all stages of the project - construction and commissioning, operation and decommissioning. Contractors are required to fully comply with the reporting requirements in terms of timely report submission with acceptable level of details. Reporting is being done in form of environmental, health, safety and social check list, incident record register, environmental, health, safety and social performance reports (quarterly basis).

6.2.6 External Reporting and Communication

All complaints and enquiries are appropriately dealt with and records are maintained in Complaint/Enquiry Register by delegated staff. MVPPL shall also submit annual monitoring reports to ADB on the progress of implementation of the ESMP. MVPPL shall undertake annual inspections in order to verify compliance with the ESMP and progress towards the expected outcomes. Necessary corrective actions shall be identified based on the verifications and a corrective action plan shall be formulated. MVPPL shall ensure effective implementation of these corrective actions and submit periodic monitoring reports to ADB. MVPPL shall also provide ADB with an annual report on its compliance with ADB's social protection requirements.

6.2.7 Internal Reporting and Communication

Inspection and audit observations along with their improvement program are to be regularly reported to the senior management for their consideration. The same are also to be communicated within the staff working on the project. To maintain open communication between the staff and management on EHS&S issues the following are being used:

- Team Briefings,
- On-site work group meetings;
- Work Specific Instructions; and
- Meeting with stakeholders.

6.2.8 Documentation and Record Keeping

Documentation and record keeping system is established to ensure updating and recording of requirements specified in ESMP. Responsibilities are assigned to relevant personnel for ensuring that the ESMP documentation system is maintained and that document control is ensured through access by and distribution to identified personnel in form of the following:

- Documented Environment management system;
- Legal Register;
- Operation control procedures;
- Work instructions;
- Incident reports;
- Emergency preparedness and response procedures;
- Training records;
- Monitoring reports;
- Auditing reports; and
- Complaints register and issues attended/closed.

6.2.9 *Proposed Environment and Social Management Plan*

An Environment and Social Management Plan has been developed following the delineation of impacts and mitigation measures. These measures are being adopted by the project proponent and imposed as conditions of contract of the sub-contractor employed for respective phases of the power project. The mitigation measures suggested during operation are made part of the regular maintenance and monitoring schedule. The ESMP includes the following:

- Mitigations suggested for adverse environmental and social impacts and associated risks;
- Institutional arrangement - management tools and techniques for the implementation of environmental impacts and risk mitigations;
- Monitoring and reporting of requirements and mechanisms for the effective implementation of the suggested mitigations;
- Monitoring arrangements for effective implementation of suggested mitigations for the proposed project; and
- Reporting requirement to the regulatory agencies and funding institutes

6.3 ENVIRONMENTAL MONITORING PLAN

It is imperative that the Project Authority set up regular monitoring stations to assess the quality of the surrounding environment after the commissioning of the project. An environmental monitoring programme is important as it provides useful information and helps to:

- Verify the predictions on environmental impacts,
- Assist in detecting the development of any unwanted environmental situation, and thus, provides opportunities for adopting appropriate control measures, and
- Evaluate the performance and effectiveness of mitigation measures proposed in the EMP and suggest improvements in management plan, if required,
- Satisfy the legal and statutory obligations.

The number and location of monitoring stations, frequency of sampling and parameters to be covered is summarized in Table 6.2.

Table 6-1: Environmental Monitoring Plan

Source	Monitoring Location	Parameters to be Monitored	Frequency
Ambient Air Quality	At 2 locations	RSPM, SO ₂ , NO _x	Annual monitoring
Ambient Noise	At 2 locations (one each in nearest two villages)	Day and night equivalent noise level	Twice in a year
Surface Water	One	IS 2296	Annual monitoring
Ground Water	One near project site office	IS 10500	Annual monitoring
Soil	One near project site office	Essential parameters	Annual monitoring

6.4 ENVIRONMENTAL BUDGET

The budget provisions have been kept for implementation of the EMP. The budgetary cost estimates for the EMP are given in Table 6.3.

Table 6-2: EMP Budget

Sl. no.	Item	Cost in INR (lacs) (Annual)
1.	Environmental Monitoring	1.5
2.	Municipal Solid waste storage	0.25
3.	Centralized waste storage area for Hazardous waste/E-waste/MSW (one time)	0.75
4.	EHSS Training for staffs	0.5
5.	EHS audit	4.0
	Total	7.0

Table 6:3: Environment and Social Management Plan for Operation Phase

Issue	Suggested Mitigation	Monitoring/ Training	Management Responsibility
Aesthetics and Visual Impact			
<ul style="list-style-type: none"> Visual intrusion 	<ul style="list-style-type: none"> Towers to be painted as per Standard Industry practice only. 		Head – Project
Hazardous Waste Disposal			
<ul style="list-style-type: none"> Used oil Transformer oil 	<ul style="list-style-type: none"> Used oil to be securely stored and disposed off through APPCB approved vendors as and when required. Transformer oil to be replaced and returned by the supplier of transformers. Guidelines of APPCB to be followed. 	<ul style="list-style-type: none"> O&M staff to be briefed and trained about the need for proper storage and disposal waste oil 	<ul style="list-style-type: none"> Head – O & M Operations Manager Deputed EHS Engineer of O & M
Municipal Solid Waste Disposal			
<ul style="list-style-type: none"> Recyclable Waste Garbage 	<ul style="list-style-type: none"> Municipal solid waste to be collected separately as recyclable and biodegradable. Recyclable waste to be sold to authorized vendor. Garbage to be disposed off as per the provisions of MSW Rule, 2016. 	<ul style="list-style-type: none"> O&M staff to be briefed and trained about the need for proper storage and disposal. 	<ul style="list-style-type: none"> Head – O & M Operations Manager Deputed EHS Engineer of O & M
E- Waste Disposal			
<ul style="list-style-type: none"> Electronic Waste 	<ul style="list-style-type: none"> Electronic waste to be collected separately other than Municipal solid waste. E waste to be disposed off through APPCB/CPCB authorized vendor. 	<ul style="list-style-type: none"> O&M staff to be briefed and trained about the need for proper storage and disposal. 	<ul style="list-style-type: none"> Head – O & M Operations Manager Deputed EHS Engineer of O & M
Battery Waste			

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Issue	Suggested Mitigation	Monitoring/ Training	Management Responsibility
<ul style="list-style-type: none"> Battery Waste 	<ul style="list-style-type: none"> Battery waste to be collected separately other than Municipal solid waste. Battery waste to be disposed off through APPCB/CPCB authorized vendor. 	<ul style="list-style-type: none"> O&M staff to be briefed and trained about the need for proper storage and disposal. 	<ul style="list-style-type: none"> Head – O & M Operations Manager Deputed EHS Engineer of O & M
Ecology			
<ul style="list-style-type: none"> Bird Kill Avian collision 	<ul style="list-style-type: none"> The turbine layout provides adequate spaces between each turbine for movement of birds which would reduce the potential for accidental collision. The site is devoid of any migratory bird route. Standard practice on turbine blades shall be considered to enhance visibility. 	<ul style="list-style-type: none"> It is suggested to have monitoring of bird and bats during project operations phase. Train the security staff on handling injured birds / bat and injured birds should be taken to nearest Veterinary hospital. 	<ul style="list-style-type: none"> MVPPL to engage an expert to periodically assess bat and bird status. The expert shall also train the staff at site to address the incidents of bird hit / injury.
Noise			
<ul style="list-style-type: none"> Turbine noise Corona Discharge 	<ul style="list-style-type: none"> Maintenance and repair of turbines will be undertaken on annual basis/ as and when required. Transmission line to have Conductors designed to minimize corona effects Implement a complaint resolution procedure to assure that any complaints regarding operational noise are promptly and adequately investigated and resolved. Optimization of turbine speed. In high wind, blade speed is controlled as per the desired criteria to avoid blade throw. Provision of Noise barrier in terms of green belt near 	<ul style="list-style-type: none"> Turbines certified as per IEC to be engaged. Monitor noise at all nearby village during operation phase. 	<ul style="list-style-type: none"> Head – O & M Deputed EHS Engineer of O & M/ Site Manager in consultation with deputed EHS officer.

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Issue	Suggested Mitigation	Monitoring/ Training	Management Responsibility
	to receptor, if noise level found crossing the standards during operation phase monitoring		
Water Resource and Quality			
<ul style="list-style-type: none"> Water requirement for cleaning 	<ul style="list-style-type: none"> Tanker water will be used. 	<ul style="list-style-type: none"> Water consumption to be recorded and assessed on monthly basis for wastage 	<ul style="list-style-type: none"> Deputed EHS Engineer of O & M Plant Manager
Health and Safety			
<ul style="list-style-type: none"> Working at Height Use of Cranes Electrical hazards Accidents leading to injury/fatality 	<ul style="list-style-type: none"> Work permit system shall be implemented of reworking at height. Personal protective equipment to be provided for all personnel during maintenance work Crane safety plan to be followed Workers handling electricity and related components to be provided with shock resistant gloves, shoes and other protective gears. Adequate training regarding health and safety to be provided to the workers. The switchyard building to be provided with fire extinguishers and sand buckets at all strategic locations to deal with any incident of fire. Annual monitoring and evaluation of emergency preparedness plan should be executed. Periodic audit should be carried out at site to review implementation of Occupational Health and Safety standards 	<ul style="list-style-type: none"> Proper training of the workers regarding health and safety procedures Workers to be trained for use of Personal Protection Equipment and its importance. Engineer/ Supervisor/ Worker (as per the applicability) are being trained- Wind Safety Specific Training. 	<ul style="list-style-type: none"> Site Manager Head - O&M
Social			
<ul style="list-style-type: none"> Impacts on Local Economy 	<ul style="list-style-type: none"> The project shall try and involve local enterprises for procurement of material wherever possible. 	-	<ul style="list-style-type: none"> Procurement team

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Issue	Suggested Mitigation	Monitoring/ Training	Management Responsibility
			<ul style="list-style-type: none"> Head – O & M
<ul style="list-style-type: none"> Shadow Flicker 	<ul style="list-style-type: none"> All turbines located along the edges close to habitation to have a suitable set off of to negate the spread of any distinct shadow at the village. 	<ul style="list-style-type: none"> Fall of shadow from all turbines was observed and vegetative shield to be opted if required. 	<ul style="list-style-type: none"> Head – O & M
<ul style="list-style-type: none"> Upgrades to Local Infrastructure Grazing land 	<ul style="list-style-type: none"> Collaborate with local government/ Non government for any community development programs to share their sources and cut cost; Grazing area to be retained with fencing limited to transformer areas 	<ul style="list-style-type: none"> Any community development activity is being guided and implemented in accordance with group CSR Policy. 	<ul style="list-style-type: none"> Head - CSR O & M – Head

ABOUT THE CONSULTANTS

Voyants Solutions Pvt. Ltd. an ISO 9001:2000 certified company provides the vital function of effectively providing full range of engineering and supervision services from project conception and preliminary planning through project completion, also providing backward linkage to the project implementation function in the form of concepts, strategies, structuring, planning and designing infrastructure projects. A multi and cross disciplinary team of professionals offers solutions at each stage of the life cycle of a project.

Over the years VSPL evolved as an “End-to-End-Integrated” Solution Provider foraying into functional areas of Environmental /Social Services and Project Management, Solid, Hazardous and Biomedical waste management, Environment planning & management, Infrastructure Advisory, Marketing / Transactions (Real Estate), Investments, Planning and Architecture, Infrastructure Engineering, Integrated Infrastructure Development; Public Health Engineering (Water Supply, Sewerage & Drainage); Transportation, Roads & Bridges; Townships / Industrial Estates / SEZs / Buildings ; Theme based Developments; Real Estate & Buildings; Urban Reforms & Developmental Planning.

Voyants Solutions Pvt. Ltd. is a leading ISO9001; 2008, Consulting Engineers, Architect & Scientists and Project Manager Research based Organization at Gurgaon (Haryana) India having business operation in India, Sri Lanka, Ethiopia, East Africa, Middle East and Singapore.

VSPL is constantly striving towards excellence in terms of value addition to the projects being handled and in this endeavour we are broadening our horizons in terms of major sectors The Company has Seven Operational Verticals:

- Infrastructure Planning & Design (IPD)
- Architecture & Project Management (APM)
- Environment Management Service (EMS)
- Rail Infrastructure Division (RID)
- Transportation, Road & Bridges (TRB)
- Energy Division (ED)
- Water & Sanitation Division (WSD)

VSPL is an accredited consultant by NABET for eight sectors.

PROJECT TEAM

The project team consists of environmental expert, socio-economic/ R&R expert, ecologist and experts for environmental monitoring and laboratory analysis.

Table: Project Team

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Sl. No.	Name	Qualification	Role and Responsibilities
1.	Mr. Santoshkumar Kulkarni	Masters in Environmental Sciences	Overall responsible for coordinating the project.
2.	Mr. Sanjoy Maji	M. Tech. Energy and Environmental Management	Environmental due diligence
3.	Dr. Arvind Prakash Dubey	Ph. D. in Sociology	Social due diligence
Vison Labs, Hyderabad (NABL and MoEF & CC Accredited Laboratory)			
4.	Mr. Laxmikanth Reddy	Overall responsible for coordinating, collecting the sampling and analysis of environmental parameters of the study area	
5.	Mr. Mahesh Kumar	Responsible for collecting all samples of environmental parameters of the study area	

Third Party Laboratory was awarded the baseline work. Vison Labs, Hyderabad NABL and MoEF & CC Accredited conducted the baseline sampling as per the scope of work of the TOR.

ANNEXURE I: BASELINE DATA OF SOCIO-ECONOMIC

Table 1: Demographic Profile of the Study Area

S. No.	Village	Household	HH Size	Population			
				Total	Male	Female	Sex Ratio
1.	Chabala	904	4.40	3974	2052	1922	936.65
2.	Gade Hothur	510	4.69	2392	1256	1136	904.46
3.	Uravakonda (CT)	7950	4.47	35565	17788	17777	999.38
4.	Veligonda	372	4.85	1804	924	880	952.38
Total		9736	4.49	43735	22020	21715	986.15

Source: Census of India, 2011

Table 2: Demographic Profile of SC and ST of Study Area

S. No.	Village	Schedule Caste (SC)				Schedule Tribes (ST)			
		Total	Male	Female	% of SC	Total	Male	Female	% of ST
1.	Chabala	985	508	477	24.79	29	18	11	0.73
2.	Gade Hothur	307	153	154	12.83	0	0	0	0.00
3.	Uravakonda (CT)	4805	2249	2556	13.51	809	465	344	2.27
4.	Veligonda	235	116	119	13.03	0	0	0	0.00
Total		6332	3026	3306	14.48	838	483	355	1.92

Source: Census of India, 2011

Table 3: Literacy and Literacy of the Study Area

S. No	Village	Number of Literate			Literacy Rate			Gender Gap
		Total	Male	Female	Total	Male	Female	
1.	Chabala	2130	1339	791	59.61	71.87	46.26	25.62
2.	Gade Hothur	1114	716	398	52.95	65.27	39.52	25.75
3.	Uravakonda (CT)	23257	13037	10220	73.12	82.54	63.83	18.71
4.	Veligonda	985	608	377	61.79	73.34	49.28	24.06
Total		27486	15700	11786	70.34	80.17	60.46	19.70

Source: Census of India, 2011

Table 4: Work Participation Rate of the Study Area

S. No.	Village	Total Worker			Work Participation Rate (WPR)			Gender Gap in WPR
		Total	Male	Female	Total	Male	Female	
1.	Chabala	2275	1271	1004	57.25	61.94	52.24	9.70
2.	Gade Hothur	1405	770	635	58.74	61.31	55.90	5.41
3.	Uravakonda (CT)	13908	9399	4509	39.11	52.84	25.36	27.47
4.	Veligonda	1042	532	510	57.76	57.58	57.95	-0.38
Total		18630	11972	6658	42.60	54.37	30.66	23.71

Source: Census of India, 2011

Table 5: Main Worker and Marginal Worker

S. No.	Village	Main Worker				Marginal Worker			
		Total	Male	Female	%	Total	Male	Female	%
1.	Chabala	1932	1142	790	84.92	343	129	214	15.08
2.	Gade Hothur	1362	754	608	96.94	43	16	27	3.06
3.	Uravakonda (CT)	11160	7960	3200	80.24	2748	1439	1309	19.76
4.	Veligonda	761	441	320	73.03	281	91	190	26.97
Total		15215	10297	4918	81.67	3415	1675	1740	18.33

Source: Census of India, 2011

Table 6: Categorization of Main Worker

S. No.	Village	Categorization of Main Worker							
		Cultivators		Agricultural Labourers		Household Industrial Workers		Other Workers	
		Number	%age	Number	%age	Number	%age	Number	%age
1.	Chabala	597	30.90	1131	58.54	31	1.60	173	8.95
2.	Gade Hothur	79	5.80	1134	83.26	10	0.73	139	10.21
3.	Uravakonda (CT)	471	4.22	1082	9.70	1603	14.36	8004	71.72
4.	Veligonda	272	35.74	389	51.12	2	0.26	98	12.88
Total		1419	9.33	3736	24.55	1646	10.82	8414	55.30

Source: Census of India, 2011

Table 7: Categorization of Marginal Worker

S. No.	Village	Categorization of Main Worker							
		Cultivators		Agricultural Labourers		Household Industrial Workers		Other Workers	
		Number	%age	Number	%age	Number	%age	Number	%age
1.	Chabala	10	2.92	312	90.96	8	2.33	13	3.79
2.	Gade Hothur	0	0.00	36	83.72	1	2.33	6	13.95
3.	Uravakonda (CT)	103	3.75	785	28.57	261	9.50	1599	58.19
4.	Veligonda	54	19.22	187	66.55	1	0.36	39	13.88
Total		167	4.89	1320	38.65	271	7.94	1657	48.52

Source: Census of India, 2011

Table 8: Health Infrastructure in the Study Area

S. No.	Village	Primary Health Canters (Number)		Maternity And Child Welfare Centre (Numbers)		Veterinary Hospital (Numbers)	
		Hospital	Doctors	Hospital	Doctors	Hospital	Doctors
1.	Chabala	0	0	0	0	0	0
2.	Gade Hothur	1	3	0	0	0	0
3.	Veligonda	0	0	0	0	0	0
4.	Uravakonda (CT)	1	3	0	0	1	1
Total		2	6	0	0	1	1

Source: Census of India, 2011

Table 9: Educational Infrastructure in the Study Area

S. No.	Village	Govt. Primary School (Numbers)	Govt. Middle School (Numbers)	Govt. Secondary School (Numbers)	Govt. Sr. Secondary School (Numbers)	Arts, Science and Commerce Degree College (Numbers)
1.	Chabala	2	1	1	0	0
2.	Gade Hothur	1	1	0	0	0
3.	Veligonda	1	1	0	0	0
4.	Uravakonda (CT)	27	11	3	1	2
Total		31	14	4	1	2

Source: Census of India, 2011

ANNEXURE II: PHOTOLOG OF PROJECT AREA

	
<p>Physiography of the study area</p>	<p>Physiography of the study area</p>
	
<p>WTG Area</p>	<p>Substation Area</p>
	
<p>Consultation with village community in Chabala village</p>	<p>Consultation with village community in Chabala village</p>

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Consultation with village community in Gadehothur



Inspection of WTGs Location



Hazardous Waste in Open Area On ground



Hazardous Waste



Hazardous Waste on Ground



Hazardous Waste on Ground

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 <p>Approach Road</p> <p>20/05/2016</p>	 <p>Approach Road</p> <p>20/05/2016</p>
<p>Unpaved approach road to site office</p>	<p>Unpaved approach road connecting WTGs</p>
 <p>20/05/2016</p>	 <p>20/05/2016</p>
<p>Biodegradable waste is stored with Recyclable waste</p>	<p>Electronic Waste is stored in open area</p>
 <p>20/05/2016</p>	 <p>20/05/2016</p>
<p>Unpaved Vehicle Parking area</p>	<p>Debris of Waste in Open Area</p>

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 <p>20/05/2016</p>	 <p>20/05/2016</p>
<p>Fire Emergency plan</p>	<p>Display of emergency contact no.</p>
 <p>20/05/2016</p>	 <p>20/05/2016</p>
<p>Safety Equipment</p>	<p>Fire aid kit</p>
 <p>20/05/2016</p>	 <p>20/05/2016</p>
<p>Closing Meeting with Suzlon and MVPPL Personnel</p>	<p>Closing Meeting with Suzlon and MVPPL Personnel</p>