

# Environmental and Social Due Diligence Report

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Project Number: 47083-004  
December 2019

## INDIA: Accelerating Infrastructure Investment Facility in India – Tranche 3 Mytrah Vayu (Krishna) Private Limited (Part 1 of 10)

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## **Due Diligence Report on Environment and Social Safeguards**

**By**

**India Infrastructure Finance Company Limited (IIFCL)  
(A Govt. of India Enterprise)**

**Sub-Project: 132.6 MW Wind farm at Burgula, Kurnool District, Andhra Pradesh  
and Savalsang, Bijapur District, Karnataka, India**






**September 2019**

**SUB PROJECT: 132.6 MW Wind farm at Burgula, Kurnool District, Andhra Pradesh and Savalsang, Bijapur District, Karnataka, India**

**Mytrah Vayu (Krishna) Private Limited (MVKPL)**

**Environmental and Social Safeguards Due Diligence Report  
(ESDDR)**

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**CONTENTS**

<b>PROJECT BACKGROUND .....</b>	<b>5</b>
<b>1. PURPOSE OF THE REPORT: .....</b>	<b>6</b>
<b>2. SUB-PROJECT:.....</b>	<b>6</b>
<b>3. SUB-PROJECT BACKGROUND: .....</b>	<b>6</b>
<b>4. SUB-PROJECT LOCATION:.....</b>	<b>6</b>
<b>5. SUB-PROJECT TECHNICAL DETAILS: .....</b>	<b>7</b>
<b>6. MAJOR COMPONENTS: .....</b>	<b>8</b>
<b>7. O&amp;M CONTRACT: .....</b>	<b>8</b>
<b>8. IIFCL FUNDING: .....</b>	<b>8</b>
<b>9. STATUS OF PROJECT IMPLEMENTATION:.....</b>	<b>8</b>
<b>DUE DILIGENCE ON ENVIRONMENTAL SAFEGUARDS .....</b>	<b>9</b>
<b>10. ABOUT THE PROJECT .....</b>	<b>10</b>
<b>11. APPROACH TO THE ENVIRONMENT SAFEGUARDS DUE DILIGENCE REPORT: ..</b>	<b>10</b>
<b>12. COMPLIANCE OF MVKPL TO THE ESSF OF IIFCL: .....</b>	<b>11</b>
<b>13. POLICY, LEGAL AND REGULATORY REQUIREMENT:.....</b>	<b>11</b>
<b>14. IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT PLANS:.....</b>	<b>14</b>
<b>15. HEALTH AND SAFETY:.....</b>	<b>59</b>
<b>16. INSTITUTIONAL FRAMEWORK &amp; GRIEVANCE REDRESSAL .....</b>	<b>59</b>
<b>17. ENVIRONMENTAL SENSITIVITY: .....</b>	<b>59</b>
<b>18. PROJECT AGAINST THE PROHIBITED INVESTMENT ACTIVITIES LIST: .....</b>	<b>60</b>
<b>19. CATEGORIZATION OF SUB-PROJECT: .....</b>	<b>60</b>
<b>20. SITE VISIT OBSERVATIONS:.....</b>	<b>60</b>
<b>21. CONCLUSIONS AND RECOMMENDATIONS: .....</b>	<b>62</b>
<b>DUE DILIGENCE ON SOCIAL SAFEGUARDS.....</b>	<b>64</b>
<b>22. OBJECTIVE OF SOCIAL SAFEGUARDS DUE DILIGENCE REPORT: .....</b>	<b>65</b>
<b>23. SCOPE OF THE SUB-PROJECT: .....</b>	<b>65</b>
<b>24. PROJECT AGAINST THE PROHIBITED INVESTMENT ACTIVITIES LIST .....</b>	<b>65</b>
<b>25. APPROACH AND METHODOLOGY:.....</b>	<b>65</b>
<b>26. SOCIAL IMPACT OF THE PROJECT .....</b>	<b>66</b>
<b>25.1 LAND ACQUISITION IN THE PROJECT .....</b>	<b>66</b>
<b>25.2 IMPACT ON STRUCTURE .....</b>	<b>67</b>
<b>25.3 REHABILITATION AND RESETTLEMENT IMPACT IN THE SUB-PROJECT.....</b>	<b>67</b>
<b>25.4 IMPACT ON INDIGENOUS PEOPLE .....</b>	<b>67</b>
<b>25.5 IMPACT ON RELIGIOUS PROPERTIES: .....</b>	<b>67</b>
<b>27. PUBLIC CONSULTATION &amp; STAKEHOLDERS MEETING:.....</b>	<b>67</b>
<b>28. GRIEVANCE MECHANISM AT THE PROJECT:.....</b>	<b>67</b>
<b>29. EMPLOYMENT GENERATION AND INCOME RESTORATION: .....</b>	<b>68</b>
<b>30. COMMUNITY DEVELOPMENT ACTIVITIES:.....</b>	<b>68</b>
<b>31. SITE VISIT OBSERVATION:.....</b>	<b>69</b>
<b>32. CONCLUSION: .....</b>	<b>69</b>

**LIST OF TABLES**

<b>Table 1: Project Description in Brief.....</b>	<b>7</b>
<b>Table 2: Commissioning Dates for WTGs at MVKPL.....</b>	<b>8</b>
<b>Table 3: Status of Regulatory Clearances Obtained related to Environmental Safeguards.....</b>	<b>12</b>
<b>Table 4: Manpower Details at MVKPL.....</b>	<b>14</b>

<b>Table 5: Status of Implementation of E&amp;S Gap Assessment–Burgula Site.....</b>	<b>16</b>
<b>Table 6: Status of Implementation of E&amp;S Gap Assessment – Savalsang Site.....</b>	<b>35</b>
<b>Table 7: Status of Implementation of EMP at MVKPL.....</b>	<b>55</b>
<b>Table 8: Status of Implementation of Community Health and Safety Management Plan during Operation phase at MVKPL.....</b>	<b>57</b>

### **ANNEXURES**

<b>Annexure I</b>	<b>ESDDR – Burgula (July 2016)</b>
<b>Annexure II</b>	<b>ESDDR – Savalsang (July 2016)</b>
<b>Annexure III</b>	<b>Government Order on Andhra Pradesh Wind Power Policy, 2015</b>
<b>Annexure IV</b>	<b>Hazardous Waste Disposal Sample Burgula</b>
<b>Annexure V</b>	<b>Hazardous Waste Disposal Sample Savalsang</b>
<b>Annexure VI</b>	<b>CEIG Inspection Burgula</b>
<b>Annexure VII</b>	<b>CEIG Inspection Savalsang</b>
<b>Annexure VIII</b>	<b>Sample Carcass Monitoring Report</b>
<b>Annexure IX</b>	<b>ESMS</b>
<b>Annexure X</b>	<b>Monthly EHS Audit Checklist Sample</b>
<b>Annexure XI</b>	<b>Monthly EHS Report Sample</b>
<b>Annexure XII</b>	<b>VCS Project Design Report</b>
<b>Annexure XIII</b>	<b>Carbon &amp; Water Footprint Report</b>
<b>Annexure XIV</b>	<b>Organogram – Burgula</b>
<b>Annexure XV</b>	<b>Emergency Contact Numbers Burgula</b>
<b>Annexure XVI</b>	<b>Grievance Redressal Framework</b>
<b>Annexure XVII</b>	<b>EHS Induction Wind - MEIPL</b>
<b>Annexure XVIII</b>	<b>Stakeholder Engagement Framework</b>
<b>Annexure XIX</b>	<b>Organogram – Savalsang</b>
<b>Annexure XX</b>	<b>Emergency Response Plan</b>
<b>Annexure XXI</b>	<b>Sample Monitoring Report – Savalsang</b>
<b>Annexure XXII</b>	<b>Community Health Safety Management Plan (CHSMP)</b>
<b>Annexure XXIII</b>	<b>Sample copy of land allotment letter</b>
<b>Annexure XXIV</b>	<b>Sample copy of the Lease deed</b>

### **PHOTOPLATES**

#### **Photoplate I : Site Visit Photographs**

## **PROJECT BACKGROUND**

## 1. PURPOSE OF THE REPORT:

1. This Environmental and Social Due Diligence Report (ESDDR) has been carried out by India Infrastructure Finance Company Limited (IIFCL) in consultation with the developer, Mytrah Vayu (Krishna) Private Limited (MVKPL) to assess the adequacy of the project with the applicable national safeguards and ADB's SPS (2009) compliance. The report has been prepared as per the documents/information received from the developer and on the basis of site visit observations. This ESDDR is updated version of the environment and social due diligence study submitted by Consultants in July 2016 (**Annexure I & II for Burgula & Savalsang site, respectively**). The status of implementation of the corrective measures identified in the ESDDR dated July 2016 to achieve compliance is given in the present ESDDR.

## 2. SUB-PROJECT:

2. The sub-project includes operation and maintenance of 132.6 MW wind power projects in Andhra Pradesh and Karnataka in India. The total capacity at Burgula site In Andhra Pradesh is 37.4 MW (44 X 0.85 MW) and Savalsung Site in Karnataka state is 95.2 MW (112 X 0.85 MW). The WTGs were commissioned during the year 2014/2015.

## 3. SUB-PROJECT BACKGROUND:

3. Mytrah Vayu (Krishna) Private Limited (hereinafter referred as MVKPL), a subsidiary company of M/s Mytrah Energy (India) Private Limited (MEIPL) has set up 132.6 MW (156 wind turbine generator x 0.85 MW) wind power project at Burgula, District Kurnool, Andhra Pradesh and Savalsang, District Bijapur, Karnataka. Operation and maintenance of the project is executed through M/s Gamesa Wind Turbines Private Limited. MVKPL has signed power purchase agreement (PPA) with M/s Andhra Pradesh Central Power Distribution Company Ltd. (APCPDCL) for Burgula site and M/s Bangalore Electricity Supply Company Ltd. (BESCOM) for Savalsang site.

## 4. SUB-PROJECT LOCATION:

4. The sub-project Burgula site (37.4 MW) is located in three villages namely Burgula, Kunkuntla and Racherla in Kurnool district, Andhra Pradesh.
5. The Savalsang site (95.2 MW) is spread over in villages namely Hadalasang, Inchageri, Jigjivanagi, Kannur, Kolurgi, Inchageri, Mahaveeranagar, Satalago in District Bijapur, Karnataka.

## 5. SUB-PROJECT TECHNICAL DETAILS:

6. Sub-project description for both Burgula and Savalsang sites in brief is given in Table 1.

**Table 1: Project Description in Brief**

Sub-project Developer	Mytrah Vayu (Krishna) Private Limited (MVKPL) 132.60 MW	
Project Site	Burgula Site	Savalsang Site
Project Coordinates	Latitude : 15°19' N Longitude- 77°95' E	Latitude : 17°06' N Longitude : 75°44' E
Project Capacity	37.4 MW	95.2 MW
Number of WTGs	44	112
Capacity of each turbine	0.85 MW each	0.85 MW each
Model of wind turbine	Gamesa G58	Gamesa G58
Rotor Diameter	58 m	58 m
Hub Height	65 m	65 m
Commercial Operational Date	21 <sup>st</sup> February 2014 (First WTG commissioning date)	29 <sup>th</sup> April, 2014 (First WTG commissioning date)
Sensitive area	The sub-project is not located in vicinity of any protected area or ecologically sensitive area	The sub-project is not located in vicinity of any protected area or ecologically sensitive area
Type of land	39.91 acres (Revenue Land: 37.91 acres and Private Land: 2 acres)	223.51 acres (Private Land)
Land use Type	Barren Waste land	Barren and un-cultivated land
Forest Land Involved	No Forest land involved	No Forest land involved
Power Evacuation	132 KV Racherla substation of APTRANSCO located at 6 Kms from the plant	220KV KPTCL's Indi substation located 25 Kms from the plant
PPA	PPA was signed with APCPDCL for the entire capacity for 25 years from COD (February 21, 2014) at a fixed tariff of ₹ 4.70 per kwh. PPA is extendible upon mutual agreement on expiry. The residual tenor of PPA is around 23.5 years.	PPAs were signed with BESCOM for the entire capacity for 20 years from COD (April 29, 2014) at a fixed tariff of ₹ 4.50 per kwh and is renewable up to another 10 years on expiry. The residual tenor of the PPA is around 18.5 years.
Total Cost of Project	₹ 956.87 crore	

## 6. MAJOR COMPONENTS:

7. M/s MVKPL has used WTGs of Gamesa G58 model for the project.
8. The WTG make G58 has 58 m rotor diameter and hub height of 65 m. Each WTG has a rated capacity of 0.85 MW. This has tubular tower with three numbers of blades with a rotor swept area of 2642 sq m.
9. MVKPL has signed PPA with Andhra Pradesh Central Power Distribution Company Ltd. (APCPDCL) for Burgula site and with Bangalore Electricity Supply Company Ltd. (BESCOM) for Savalsang site. The power generated from MVKPL is being transmitted to Racherla and Indi Substation from Burgula and Savalsang sites, respectively.

## 7. O&M CONTRACT:

10. The O&M agreement between MVKPL and Gamesa Wind Turbines Private Limited for wind farm at Burgula and Savalsang was signed on 8<sup>th</sup> May 2013. Gamesa Wind Turbines Private Limited is responsible for operation and maintenance of the wind farm.

## 8. IIFCL FUNDING:

11. The total project cost of MVKPL is ₹ 956.87 crores. The project is financed by IIFCL under Takeout Finance Scheme. IIFCL has sanctioned and disbursed an amount of ₹ 287 crore towards MVKPL.

## 9. STATUS OF PROJECT IMPLEMENTATION:

12. The sub-project is under operation. The sub-project WTGs were commissioned during the period as detailed in **Table 2**.

**Table 2: Commissioning Dates for WTGs at MVKPL**

MVKPL Burgula Site		
No of WTGs	Capacity (MW)	Date of Commissioning
26	22.10	21 <sup>st</sup> February 2014
18	15.30	15 <sup>th</sup> March 2014
<b>Total : 44</b>	<b>37.40 MW</b>	
MVKPL Savalsang Site		
No of WTGs	Capacity (MW)	Date of Commissioning
67	57.00	29 <sup>th</sup> April 2014
16	13.60	2 <sup>nd</sup> June 2014
19	16.20	26 <sup>th</sup> July 2014
10	8.50	23 <sup>rd</sup> January 2015
<b>Total : 112</b>	<b>95.20 MW</b>	

## **DUE DILIGENCE ON ENVIRONMENTAL SAFEGUARDS**

## 10. ABOUT THE PROJECT

13. Mytrah Vayu (Krishna) Private Limited (MVKPL) has set up a total of 132.6 MW wind power plants at two locations Burgula in Kurnool District in Andhra Pradesh and Savalsang in District Bijapur in Karnataka State. MVKPL is the project company owned by MEIPL. There are total 156 WTGs having 0.85 MW capacity each.
14. At Burgula site, The 44 WTGs are spread over three villages – Burgula, Kunkuntla and Racherla in Kurnool District in Andhra Pradesh. The total land for this project site is approximately 39.91 acres, of which 37.91 acres is revenue land and rest 2 acres is private land. Burgula site is on barren waste land. 42 nos. of WTGs are located on revenue land while only 2 WTGs are located on private land.
15. At Savalsang site, the 112 WTGs are spread over in eight villages namely Hadalasang, Inchageri, Jigjivanagi, Kannur, Kolurgi, Inchageri, Mahaveeranagar, Satalago in District Bijapur in Karnataka. The total land for this project site is 223.51 acres which is spread over these eight villages. The entire land for the 122 WTGs is private land. The private land acquired for the sub-project location was barren and uncultivated.

## 11. APPROACH TO THE ENVIRONMENT SAFEGUARDS DUE DILIGENCE REPORT:

7. The Environmental Due Diligence Report reviews the available documents/information and includes site visit observations. It also assesses the compliance of the sub-project with the respect to environmental safeguards, implementation of environmental management measures and institutional arrangement for implementing environmental measures. The baseline environment condition at the sub-project site was covered in the ESDDR dated July 2016, therefore not repeated in the present ESDDR. The ESDDR is an updation to the earlier ESDDR.
8. The following documents were referred in order to prepare Environmental Safeguards Due-Diligence Report:
  - ESDDR dated July 2016
  - Project Information Memorandum (PIM)
  - ESMS
  - Project Statutory Approvals/Permits
  - Project HSE documents
  - EMP implementation status documents
  - Labour License and insurance
  - Contract Documents
  - Grievance redressal mechanism
  - On-site Emergency Plan
  - Community Health and Safety Management Plan

9. The environmental safeguard due-diligence study was carried out for the sub-project on the basis of site visit observations and understanding project scope based on information and documents provided by Concessionaire. A detailed discussion on the environmental and social safeguards related issues was also carried out with the team of the sub-project at site.

## **12. COMPLIANCE OF MVKPL TO THE ESSF OF IIFCL:**

10. The Environmental and Social Safeguard Framework (ESSF) provides the enabling mechanism to IIFCL to deliver its policy objectives and applies to projects funded by IIFCL throughout the project cycle. The ESSF defines procedures, roles, and responsibilities, at various project milestones for managing the adverse environmental impacts.
11. The environmental due diligence for MVKPL has been done as per requirements of take-out scheme. The environmental safeguard risks during operational phase have been assessed. In case of MVKPL, no outstanding legal or legacy issues are pending and no significant outstanding risks for either IIFCL or DFI involved. The environmental management plans (EMPs) are being implemented during the operational phase of sub-project.
12. The environmental safeguard due-diligence study has been carried out for the sub-project on the basis of site visit observations and based on information and documents provided by Concessionaire. A detailed discussion on the environmental and social safeguards related issues was also carried out with the team of the sub-project. It can be concluded that MVKPL is compliant to the requirements of IIFCL's ESSF under takeout scheme and has adequate EMP implementation on site.

## **13. POLICY, LEGAL AND REGULATORY REQUIREMENT:**

13. Wind power projects are not listed in Schedule I of the EIA Notification, 2006 that lists projects or activities requiring prior environmental clearance and hence these are exempt from obtaining Environmental Clearance. As per the categorization of industries by the Central Pollution Control Board and its Office Memorandum to all State Pollution Control Boards, wind power generation comes under white category of industry.
14. MVKPL is required to comply with the applicable guidelines relating to the environment, occupational health and safety in addition to complying with local laws and regulations. The statutory clearances related to environmental aspects obtained from regulatory authorities as part of the MVKPL development were assessed and current status of availability of such clearances are given in **Table 3** below:

**Table 3: Status of Regulatory Clearances Obtained related to Environmental Safeguards**

S.No.	Clearances	Statutory Authority	Current Status of Clearance	
			Burgula Site	Savalsang Site
1.	Environmental Clearance	Ministry of Environment, Forests & Climate Change (MoEF&CC), New Delhi	Not applicable, as Wind Power project development is not listed in Schedule I of the MoEF&CC's EIA Notification 2006, that lists projects or activities requiring prior environmental clearance and hence this is exempted from obtaining the same.	
2.	Forest Clearance	MoEF&CC and State Forest Department	Not applicable, as the sub-project does not involve any forest land.	
3.	Wildlife Clearance	MoEF&CC	The Project area does not lie within an Ecologically Sensitive Area and is not located within 10 km of any National Park/Wildlife Sanctuary. The location of Project does not contravene any international biodiversity or ecosystem conservation conventions. Therefore, it does not require wildlife clearance or permission.	
4.	Consent to Establish/Operate	Andhra Pradesh Pollution Control Board (APPCB), Andhra Pradesh  Karnataka Pollution Control Board (KPCB), Karnataka	As regards, Burgula site of MVKPL, in the operation phase, consent from the APPCB is not required pursuant to Government Order on Andhra Pradesh Wind Power Policy, 2015 dated 13.2.2015 ( <b>Annexure III</b> ). With regard to the applicability of taking consent prior to 2015, the developer has provided substantial clarifications. Developer has informed that in general, Consents under Air (Prevention and Control of Pollution) Act, 1981 and Water (Prevention and Control of Pollution) Act, 1974 are required for the industries which cause air and water pollution, whereas wind farm operations do not result in air and water pollution. However, in the initial stages of evolution of the wind energy sector, there was no uniform policy across different States in the matter of treatment of the sector from pollution perspective. This resulted in multiple views and practices in that regard and lead the wind developers to continuously represent to the MoEF&CC, CPCB, SPCB for specifically exempting wind power projects from the requirement of obtaining any consent from the SPCBs for establishment or operation. Eventually MoEF&CC declared Wind industry as Green Industry in line with MNRE and subsequently CPCB changed it to White category status vide circular dated 7.3.2016, which was circulated to all SPCBs. Thus there	As reported in the ESDDR of July 2016, as per Karnataka Renewable Energy Policy 2014-21, wind farm project is exempted from obtaining clearances of Pollution Control Board (reference Table 4.1; page 49 of ESDD, 2016)

			was neither a practice of obtaining Consent from SPCBs by the wind developers nor did the SPCBs insist such consents at that time. It is pertinent to note that all the wind power projects are setup pursuant to Power Purchase Agreements signed with State / Central Utilities. The third party ESDDR for Burgula site also mentions at page 34, Table 4-1 that “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.	
5.	Authorization under Hazardous Waste (Management, Handling & Transboundary Movement) Rules, 2008	Andhra Pradesh Pollution Control Board (APPCB), Andhra Pradesh Karnataka Pollution Control Board (KPCB), Karnataka	Developer has informed that responsibility of hazardous waste disposal lies with O&M contractor and all the formalities led down in the rules are followed. MVKPL as principal employer ensures the same. Sample copy of forms for disposal of hazardous waste to authorised vendors is given as <b>Annexure IV and V</b> for Burgula and Savalsang, respectively.	
6.	Power Evacuation	Transmission Corporation of Andhra Pradesh Limited (APTRANSCO) Karnataka Power Transmission Corporation Limited (KPTCL)	Power evacuation approval was given by Transmission Corporation of Andhra Pradesh Limited (APTRANSCO). Power is being evacuated to 132 KV Racherla substation of APTRANSCO located at 6 Kms from the Burgula plant. The external transmission line does not fall under the scope of MVKPL.	Power evacuation approval was given by Karnataka Power Transmission Corporation Limited (KPTCL). The power is being evacuated through 25 Kms transmission line to 220kV KPTCL's Indi substation. The external transmission line does not fall under the scope of MVKPL.
7.	CEIG Approval	Electrical Inspector, Directorate of Electrical Safety, Government of Andhra Pradesh & Karnataka	CEIG Approvals have been taken for electrical safety of the site. Sample of approval from Chief Electrical Inspector, Directorate of Electrical Safety, Government of Andhra Pradesh approval are attached as <b>Annexure VI</b> .	CEIG Approval from Government of Karnataka for Savalsang site is attached as <b>Annexure VII</b> .

#### 14. IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT PLANS:

15. In the ESDDR (July 2016), the WTGs and associated facilities within 2 km buffer area were considered as study area for assessment of impact. Developer has informed that the ESDD Consultant has done a primary survey and also included certain information based on secondary data of the region.
16. The sub-project also has adequate institutional arrangement for implementation of EMP. The staff understood their commitment towards safeguards. O&M contractor also has designated staff for taking care of EHS aspects. The manpower details for both the sites is given in Table 4 below:

**Table 4: Manpower Details at MVKPKL**

Site	No. of Mytrah Employees	No. of Contractor Employees	No. of Security Employees	Total
Burgula Site	01	25	17	43
Savalsang Site	02	49	37	88
<b>Total</b>	<b>03</b>	<b>74</b>	<b>54</b>	<b>131</b>

17. There were certain gaps identified in the ESDDRs (July 2016) and an ESMP was suggested for operational phase. The status of corrective actions suggested in gap assessment and ESMP implementation is given in **Table 5, 6 and 7** on the basis of information received from the developer and site visit.
18. Specific issues as an updation to the ESDDR dated July 2016 are given in subsequent tables and paras.
19. Bird and bat carcass monitoring is constantly done at site. Developer informed during site visit that the security staff are trained, but so far no bird mortality are observed in the sub-project site. It is further informed that the avian population in the sub-project areas comprise of sparrows which have a very low flight path. Developer has also confirmed that till date no critically endangered species were observed and evidenced by local stakeholders. Carcass surveys are done at site on regular basis and records maintained at site. Sample carcass monitoring report is attached as **Annexure VIII**.
20. The EMP is being implemented at MVKPL site during the operation phase and is found to be adequate. The records are maintained by Gamesa O&M team and Mytrah EHS team. The status of EMP implementation during operation phase of MVKPL based on information shared by MVKPL and site visit is presented in **Table 7**. Environmental monitoring at the sub-project is being done annually for air, water and noise levels.
21. MEIPL has a well-established ESMS (**Annexure IX**). The procedures of the ESMS are being followed at Mytrah projects. EHS Audit is conducted annually at MVKPL as per procedures laid

down in the ESMS. Monthly EHS reports are being maintained at site. Sample copy of monthly EHS audit checklist is enclosed as **Annexure X**. The monthly EHS report covers incident overview, near miss details, oil, water, electricity, water, paper, waste generation and disposal, safety equipment stock details, training details etc. Sample copy of monthly EHS report is attached as **Annexure XI**.

22. During site visit it was informed by sub-project staffs that about 175 and 2375 saplings were planted in and around Burgula and Savalsang site. The survival records of plantation are kept at site. Site staff also informed that the survival rate of plantation is about 90%.
23. MVKPL is certified under the Verified Carbon Standard programme. The project developer has been issued tradable GHG credits called verified carbon units (VCU). The VCUs can be sold in open market or can be used to offset their own emissions. The project design under VCS is attached as **Annexure XII**.
24. Mytrah reports its Carbon and Water footprint, which includes MVKPL, Burgula and Savalsang sites. Sample report is attached as **Annexure XIII**. The carbon and water footprint report covers greenhouse gas accounting and water inventory. The report is shared with the employees to create awareness on carbon and water footprint approach. Mytrah takes the outcome of the report for learning and improvement at project level.

**Table 5: Status of Implementation of E&S Gap Assessment – Burgula Site**

S.No.	Performance Standards		Observation	Gaps	Recommendation	Status - Burgula
	<b>IFC PS1: Assessment and Management of Environmental and Social Risks and Impacts</b>	<b>ADB SPS Environmental Safeguards</b>				
1.1	<b>ESMS Policy:</b> 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.	The client should establish an ESMS and implement corrective action plan based on safeguards compliance audit.	<p>MVKPL is committed to implement an effective ESMS based on dynamic process and through involvement of its vendor, client, employee, local communities and stakeholders. MVKPL 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 Charge.</p> <p>Site staffs are given Basic Safety Training as per the training records reviewed at site.</p> <p>The O &amp; M Contractor of the project SGSL also has a well- established HSE policy in line with OHSAS,</p>		ESMS needs to be reviewed periodically to address changes in the organization, process or regulatory requirements.	<p>ESMS is established and reviewed (<b>Annexure IX</b>).</p> <p>Developer has informed that it will be updated in time in case of change in the organization and major regulatory requirements applicable to renewable industry.</p>

S.No.	Performance Standards		Observation	Gaps	Recommendation	Status - Burgula
			18001 and ISO 14000 standards.			
1.2	<b>Environment and Social Impact Assessment:</b> 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.	The wind power projects do not require Environmental clearance as per the EIA Notification SO 1533 dated 14 <sup>th</sup> September, 2006 and its subsequent amendments.		Environmental and Social Impact assessment (ESIA) study has not been undertaken for this project.	Environment Management Plan (EMP) should be implemented based on ESDD study.	Environmental and Social Management Plan (ESMP) developed based on ESDD study is being implemented. Status of ESMP is given in <b>Table 7</b> .
1.3	<b>Identification of environmental and social risks:</b> MVKPL 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.		Gamesa 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.	Before commencement of proposed project Environmental and Social Screening has not been carried out.	Findings of the ESDD study to be considered for identification of environmental and social risks associated with the operation of the project.	ESDD study was duly considered in identification of environmental and social risks during operation phase.
1.4	<b>Legal Compliance:</b> 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 has not obtained authorization from APPCB for storage of Hazardous waste. There is no collection facility for municipal solid waste.	The guideline of APPCB should be complied with respect to hazardous waste storage and transport.  E-waste to be managed as per APPCB guidelines.  Municipal solid waste to be collected and disposed off properly. Waste Batteries to be disposed off through	MVKPL project is a turnkey project, where O&M Contractor is responsible for hazardous waste management. As a principal employer, MVKPL is ensuring the safe disposal of hazardous waste under the Hazardous and other Waste Management Rules, 2016 ( <b>Annexure IV</b> ).  Further, OEM is responsible for E- waste management. However,

S.No.	Performance Standards		Observation	Gaps	Recommendation	Status - Burgula
					authorised vendor.	insignificant E-waste (laptop, battery) being generated by MVKPL is stored separately and sent to the head office for further disposal through authorized vendors.  Waste batteries being generated are disposed of by O&M contractor as per the Batteries Waste Management Rules, 2001.
1.5	<b>Management Programme:</b> 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.	MVKPL is committed to implement an effective ESMS based on dynamic process and through involvement of its vendor, client, employee, local communities and stakeholders. MVKPL has established an ESMS system based on Quality, Safety, Health and Environment (QHSE) policy of the company.	The standard operating procedure should be specific to the project.	Project specific environmental and social management plan should be developed on the basis of findings of ESDD study.	Environmental and Social Management Plan (ESMP) was proposed to mitigate the environmental and social risks and impacts and is being implemented at the project site.
1.6	<b>Organization Structure:</b> The Client should establish, maintain and strengthen as necessary, an organizational structure that defines roles, responsibilities, and authority to implement the ESMS.		MVKPL 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 MVKPL and subcontractors is informal.	Project specific organization structure shall be included under corporate communication, policy implementation team and other environment and sustainable related report.	Organization structure for implementation of environment and social management system is enclosed as <b>Annexure XIV</b> .

S.No.	Performance Standards		Observation	Gaps	Recommendation	Status - Burgula
1.7	<b>Training:</b> Trainings to employees and contractors with direct responsibilities for activities related to the project's social and environmental performance.	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 MVKPL employee, which should be an integral part of HR policy.	Training/workshops should be undertaken for the project and corporate staffs as per their training requirements at regular intervals.	Corporate as well as site employees are provided with periodic training as per their requirements and records are being maintained at site.
1.8	<b>Emergency Preparedness Plan:</b> The client should establish and maintain an emergency preparedness and response system so that the MVKPL 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.	On site Emergency plan is available which depicts the emergency team members and emergency contact numbers ( <b>Annexure XV</b> ).
1.9	<b>Monitoring and Review:</b> 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 activities.	Implement the EMP and Monitor its effectiveness, documentation of monitoring results, including the development 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.	Internal audits such as ESMS audit, EHS audit, and OMS audit are being carried out on annual basis. Developer has further informed that, as an ISO certified company, third party ISO audit is also planned once in three years for this project.
1.10	<b>Stake Holder Engagement:</b> 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	Focus Group Discussion, Community Consultation, Household survey, & other stakeholder meetings have been carried out. A fruitful result of consultation was observed as	MVKPL 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.	Developer has informed that a Stakeholder Engagement Plan is framed as per ESMS in order to engage various stakeholders and address the community issues. Stakeholder consultation is

S.No.	Performance Standards		Observation	Gaps	Recommendation	Status - Burgula
		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 people’s concerns and grievances regarding the project’s environmental performance.	the outcomes of primary survey. Different CSR activities are executed at project level.			conducted every quarter.
1.11	<b>External Communications and Grievance Mechanisms:</b> 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, MVKPL 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.	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.	Grievance Redressal Mechanism is in place to register any complaints regarding community issues. Grievance register is maintained at site. GRM is enclosed as <b>Annexure XVI</b> .
2	<b>PS 2: Labour and Working Conditions</b>	<b>ADB Environmental Safeguards</b>				
2.1	<b>Human Resources (HR) Policies and Procedures:</b> The client should adopt and implement human resource policies appropriate to its size and		Both MVKPL and Gamesa have an established HR Policy. The hiring of human resource	Internal audits are not undertaken to assess the implementation of	Internal audits need to be undertaken to maintain adherence to the HR policies at site	Internal audits are carried out annually to assess the implementation of policies at corporate as well as site.

S.No.	Performance Standards		Observation	Gaps	Recommendation	Status - Burgula
	workforce that sets out an approach to managing workers consistent with the requirements of this performance standard and the national law.		is as per the HR policies and their guidelines.	contact conditions between MVKPL and its subcontractors.	office of the applicable stake holder.	
2.2	<b>Working Conditions and Terms of Employment:</b> 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. MVKPL should ensure that workers of different turnkey contractors are aware of national labour and employment law and any other applicable agreements.	Employees are explained clearly regarding terms of employment, employee rights and other benefits during induction program. Records are kept for the same. Details of induction programme are attached <b>Annexure XVII</b> .
2.3	<b>Workers' Organization:</b> Where law recognizes workers right to form and join workers organizations of their choice	Right to Organize and Collective Bargaining Convention, 1949 (No.98). This Convention provides or protection against anti-union discrimination, for protection of workers and employers organizations against acts of interference by each other, and for measures to promote and encourage collective bargaining.	It was observed that there were no policies by MVKPL or Gamesa restricting formation of a union or collective bargaining.		Provide for an appropriate forum for the employees for collective bargaining.	Developer has informed that MVKPL respects the worker rights and has not restricted on formation of labour union.
2.4	<b>Migrant Workers:</b> 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, MVKPL should pre-qualify each contractor according to its performance on EHS standards so as to satisfy MVKPL's ESMS standards.	Developer has informed that MVKPL ascertains that their contractor's performance is in accordance with the EHS standards.
2.5	<b>Non Discrimination and Equal Opportunity:</b> The client should not make employment decisions on the	The key anti-discrimination suggestions for ethnic discrimination identified by	Based on requirement and relevant educational qualification with experience,		Prior to assigning any contract, MVKPL should pre-qualify	Developer has informed that MVKPL ascertains that their contractor's performance is in

S.No.	Performance Standards		Observation	Gaps	Recommendation	Status - Burgula
	basis of personal characteristics unrelated to inherent job requirements. MVKPL should base the employment relationship on the principle of equal opportunity and fair treatment, and shall not discriminate	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. 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.	the opportunity of different job is getting closed.		each contractor according to its performance on EHS standards so as to satisfy MVKPL's ESMS standards.	accordance with the EHS standards.
2.6	<b>Grievance Mechanism:</b> 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.	MVKPL and Gamesa have a system to address the workplace concerns and grievances of its employees.	MVKPL 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.	Employees are informed about their rights, compensation and how to address the issues through grievance redressal mechanism.
2.7	<b>Child Labour:</b> 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 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	No child labor was observed at site during the site visit.		Prior to assigning any contract, MVKPL should pre-qualify each contractor according to its performance on EHS standards so as to satisfy MVKPL's ESMS standards.	According to Mytrah's policy, the contractor should not engage any kind of child labour as well as forced labour. Mytrah has an Integrated HR policy in place, which is applicable to all its projects.

S.No.	Performance Standards		Observation	Gaps	Recommendation	Status - Burgula
		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).				
2.8	<b>Forced Labour:</b> MVKPL 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 to 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 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.	No forced labour was observed at site during the site visit.		Prior to assigning any contract, MVKPL should pre-qualify each contractor according to its performance on EHS standards so as to satisfy MPKPL’s ESMS standards.	According to Mytrah’s policy, the contractor should not engage any kind of forced labour as well as forced labour. Mytrah has an Integrated HR policy in place, which is applicable to all its projects.
2.9	<b>Occupational Health and Safety:</b> 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 MVKPL’s work areas, including physical, chemical, biological, and radiological hazards, and specific threats to women.	Special care needs to be taken in projects to ensure the health and safety of all workers, including members of minorities. In many cases, minority workers are unable to read safety instructions or to understand safety and health	Hazard identification and risk assessment manual has identified and recorded the health and safety risks associated with O & M operations. Measures to deal with emergency condition have been displayed at project site.	Non usage of PPEs shows a behavior based issue in this aspect.	An annual EHS assessment/audit needs to be undertaken. Usage of PPEs should be enforced through penalties for not using PPEs or incentive for adhering to the criteria.	EHS audit is being carried out annually. Sample copy EHS audit checklist is attached as <b>Annexure X.</b> Personnel Protective Equipment and safety items are mandatory for working at site.

S.No.	Performance Standards	Observation	Gaps	Recommendation	Status - Burgula
		training given to other workers. Provide workers with safe and healthy working conditions including easily comprehensible safety. Information on-site training, provisions of Personal Protective Equipment etc.	First aid box with necessary kits were observed to be put on at an easy accessible place. PPEs have been provided to the workers. It was informed that work permits are issued before going for maintenance works. Maintenance work is supervised by dedicated engineer for the same. In case of medical emergencies employees are taken to nearest hospital in Uravakonda town.		
<b>3.</b>	<b>PS 3: Resource Efficiency and Pollution Prevention</b>	<b>ADB Environmental Safeguards</b>			
<b>3.1</b>	<b>Resource Efficiency:</b> 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, 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.	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.	Developer has informed that awareness campaigns are conducted on various occasions such as World Environment Day, National Safety week, World Water Day, World earth day etc regarding the significance of the natural resources and their conservation.
<b>3.2</b>	<b>Water Consumption:</b> when the project is potentially significant consumer of water, the client shall adopt measures to reduce water consumption of the project.		The project is not a significant consumer of water. Domestic water requirement is the only water demand for the project. Potable water requirement is fulfilled through packaged drinking water supply. As reported non potable domestic water requirement is	Awareness should be built among the employees about importance of conservation of natural resources.	Developer has informed that awareness campaigns are conducted on various occasions such as World Environment Day, National Safety week, World Water Day, World earth day etc regarding the significance of the natural resources and their conservation.

S.No.	Performance Standards		Observation	Gaps	Recommendation	Status - Burgula
			fulfilled though tanker water supply.			
3.3	<p><b>Wastes and Hazardous Materials Management:</b> To avoid and minimize generation of hazardous and non-hazardous waste 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>MVKPL should avoid, or where avoidance is not possible, should minimize or control the generation of hazardous and non-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, MVKPL 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, MVKPL should use contractors that are Reputable and legitimate enterprises licensed by the relevant regulatory agencies.</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>E-waste was stored in open only.</p> <p>Garbage and recyclable waste to be collected separately.</p>	<p>There is no proper provision for storage of hazardous waste at the project site.</p> <p>There is no provision for MSW collection.</p>	<p>The guideline of APPCB should be complied with respect to hazardous waste storage and transport.</p> <p>E-waste to be disposed off through authorized E-waste processor only.</p> <p>MSW to be collected as per the guideline of MSW Rule, 2016.</p> <p>Recyclable waste to be sold to authorized vendor.</p> <p>Garbage to be disposed off properly.</p>	<p>Burgula project is a turnkey project, where OEM is responsible for hazardous waste management. As a principal employer, MVKPL is ensuring the safe disposal of hazardous waste under the Hazardous and other Waste Management Rules, 2016. Further, OEM is responsible for E-waste management. However, insignificant E-waste (laptop, battery) being generated by MVKPL is stored separately and sent to the head office for further disposal through authorized vendors. Garbage and recyclable waste are collected separately. Recyclable waste is disposed through SPCB authorized vendors. Garbage is properly disposed as per SWM rules, 2016.</p>
3.4	<p><b>Greenhouse Gases:</b> MVKPL should consider alternatives and implement technically and financially feasible and 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>MVKPL should promote the reduction of project-related anthropogenic greenhouse gas emissions in a manner 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 MVKPL should quantify direct emissions from the</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 greenhouse gas emissions.</p>	<p>Awareness programs are conducted as a part of World Environment Day to describe the impacts of greenhouse gas emissions</p>

S.No.	Performance Standards		Observation	Gaps	Recommendation	Status - Burgula
		facilities within the physical project boundary and indirect emissions associated with the off-site production of power used by the project. MVKPL should conduct quantification and monitoring of greenhouse gas emissions annually in accordance with internationally recognized methodologies. In addition, MVKPL will evaluate technically and financially feasible and cost-effective options to reduce or offset project-related greenhouse gas emissions during project design and operation, and pursue appropriate options.				
3.5	<b>Release of pollutants:</b> MVKPL 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. To address potential adverse project impacts on existing ambient conditions, MVKPL should consider relevant factors, including, for example existing ambient conditions, etc.	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. 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	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.	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.	Hazardous waste disposal lies with O&M contractor. As a principal employer MVKPL ensures that the waste is disposed as per Hazardous and other Waste Management Rules, 2016.  Suitable storage yard for storing segregated hazardous and solid waste is ensured. The storage space is an impervious paved surface and has a secondary containment area and spill control toolkit. Waste is being disposed of through approved vendors in accordance with standard norms. It was confirmed that hazardous waste is stored in contained area with impervious surface.

S.No.	Performance Standards	Observation	Gaps	Recommendation	Status - Burgula
		parties, and the polluter pays principle.			
3.6	<b>Pesticide Use and Management:</b> 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. MVKPL'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 needed, to institutional capacity development, to help regulate and monitor the distribution and use of pesticides and enhance the application of integrated pest management.	No use of pesticides or insecticides noticed during site visit.	Awareness should be built among employees about health and environmental risks associated with synthetic chemical pesticide.	No pesticides or insecticides are used for the plantation in and around the project area.
4	<b>IFCPS4: Community Health &amp; Safety &amp; Security:</b>				
4.1	<b>Community Health and Safety:</b> MVKPL 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.	MVKPL should identify and assess the risks to, and potential impacts on, the safety of affected communities during the design, construction, operation and	The project includes risks due to electrical hazards, and continuous exposure to turbine noise. The project site is situated within agricultural field and is	Environmental and Social Impact assessment (ESIA) study has not been undertaken for this project.	Environment Management Plan (ESMP) should address anticipated impact and risk associated with this particular project
					Environmental and Social Management Plan (ESMP) was proposed to mitigate the environmental and social risks and impacts. ESMP is being implemented at the sub-

S.No.	Performance Standards	Observation	Gaps	Recommendation	Status - Burgula	
	MVKPL 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 consideration differentiated exposure to and higher sensitivity of vulnerable groups.	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 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. MVKPL 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.	at a considerable distance from the village settlements. However, communities working at the neighboring fields are vulnerable to H & S risks.	and their processes.	project and status is given in <b>Table 7.</b>	
4.2	<b>Hazardous Materials Management and Safety:</b> MVKPL 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. Hazardous waste is disposed of to TSDF facility through authorized vendor.	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.	Burgula project is a turnkey project, where OEM is responsible for hazardous waste management. As a principal employer, MVKPL is ensuring the safe disposal of hazardous waste under the Hazardous and other waste management Rules, 2016.
4.3	<b>Emergency Preparedness and Response:</b> MVKPL should document	Establish preventive and emergency preparedness and	Emergency contact numbers, specific team member	The onsite emergency	Annual monitoring and evaluation report	On site Emergency plan is available which depicts the

S.No.	Performance Standards	Observation	Gaps	Recommendation	Status - Burgula
	its emergency preparedness and response activities, resources, and responsibilities, and should disclose appropriate information to Affected Communities, relevant government agencies or other relevant parties.	response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities.	responsibility and key elements of emergency plan were observed to be displayed in the site office.	response plan and emergency contact numbers were not displayed in local languages.	should be submitted. emergency team member, emergency contact numbers, which are displayed at site.
4.4	<b>Security Personnel:</b> 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 to ensure that those providing securities are not implicated in past abuses; will train them adequately in the use of force.		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, MVKPL should pre-qualify each security personnel so as to satisfy MVKPL's ESMS standards.	MVKPL through contractor prequalifies each security personnel before assigning the contract.
5	<b>IFC PS5: Land Acquisition and Involuntary Resettlement</b>	<b>Involuntary Resettlement Safeguards</b>			
5.1	<b>Project design:</b> 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.	Burgula Site : The total land required for this project is approximately 39.91 acres. Of the total land 2 acres is private land rest is revenue land. The project does not involve any re-settlement and rehabilitation of local population.		The project site is identified in such a way that it does not involve any resettlement activities.
5.2	<b>Compensation and Benefits for Displaced Persons:</b> MVKPL should provide unavoidable displaced PAPs with compensation for loss of assets at full replacement cost to help them restore their standards of living or livelihoods; Where livelihood is land-based or collectively owned, MVKPL should offer land-based compensation where	Pay compensation and provide other resettlement entitlements before physical or economic displacement. Implement the resettlement plan under close supervision throughout project implementation	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 been purchased on willing seller-willing buyer basis directly from the land owners		Land was purchased on willing buyer willing seller basis and hence project does not involve any resettlement activities.

S.No.	Performance Standards		Observation	Gaps	Recommendation	Status - Burgula
	feasible; MVKPL should provide opportunities to PAPs to derive appropriate development benefits from the project.		with the help of local land facilitator. The sellers have no complaint against the compensation paid.			
5.3	<b>Community Engagement:</b> 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.	Carry out meaningful consultations with affected persons, host communities, and concerned nongovernment organizations. Inform all displaced persons of their entitlements and resettlement options. Disclose a draft resettlement plan, including documentation of the consultation process in a timely manner, before project appraisal, in an accessible place and a form and language(s) understandable to affected persons and other stakeholders. 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. Improve or at least restore, the livelihoods of all displaced persons 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.	The primary survey, consultation and review of other relevant document have been carried out. No major social issue has been envisaged for this project.  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 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.	MVKPL do not have a formal stakeholder engagement plan to address community needs.	Stakeholder engagement plan needs to be formulated to address the community needs through turnkey contractor.	Stakeholder Engagement Plan is framed as per ESMS in order to engage various stakeholders and address the community issues.

S.No.	Performance Standards		Observation	Gaps	Recommendation	Status - Burgula
5.4	<b>Grievance Redressal Mechanism:</b> MVKPL 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.		Grievance Redressal mechanism is followed to address any community related issues. Grievance register comprises of action taken and status with supporting documents.
5.5	<b>Resettlement and Livelihood Restoration Planning and Implementation:</b> 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.	The project is devoid of any resettlement activities.
5.6	<b>Displacement:</b> <b>Physical Displacement:</b> The Client shall develop resettlement action plan of physical displacement. The plan will be designed to mitigate the negative impacts of displacement. <b>Economic Displacement:</b> 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 project does not involve any resettlement activities as land of the project is devoid of any commercial or residential structures. 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.		In case of resettlement baseline data of actual eligible persons for compensation to be maintained.	The project is devoid of any resettlement activities.
6	<b>PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</b>					
6.1	<b>Impacts on Biodiversity:</b> Assess significance of project impacts on all levels of biodiversity as an integral part of social and	MVKPL should assess thesignificance of project impacts and risks on biodiversity and natural	Burgula Site : The proposed site is on a barren waste land.  The major ecological impact	No formal procedure to record impact on avifauna has been	It is suggested to undertake a periodic bird/bat carcass survey in the project by site	The project area is not falling under any migratory route path and hence, bird collision is not envisaged.

S.No.	Performance Standards		Observation	Gaps	Recommendation	Status - Burgula
	environmental assessment process.	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 invasive alien species, and on the use of natural resources in an unsustainable manner.	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 or fauna. The project area and its surroundings do not fall under any major flyway or migratory routes.	formulated.	personal in the core study area. Standard operating procedure should also highlight emergency measures to be undertaken in case of bird and bat hitting to WTG or electrocution.	Till date no bird carcass was observed / reported in the project area.
6.2	<b>Legally Protected Areas:</b> 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.	No legally protected areas are observed with in the project area.
6.3	<b>Maintenance of Natural habitat:</b> 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, including Affected Communities, with respect to the extent of conversion and degradation; and, (iii) any conversion or degradation is mitigated.	As above	The proposed site is an agricultural land. The activities related to project are not expected to change natural habitat around the project area except anticipated impact to bat and avifauna population.	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.	Natural habitat condition and vegetation beyond WTG footprint is not disturbed.
7	<b>IFC PS7: Indigenous Peoples (Scheduled Tribes in Indian Context)</b>	<b>Indigenous People (Scheduled tribe)'s Safeguards</b>				
7.1	<b>Assessment of Impact:</b> 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	No indigenous people are reported from the project area.		Rights of indigenous people should be protected, if any.	No indigenous people are reported from the project area.

S.No.	Performance Standards	Observation	Gaps	Recommendation	Status - Burgula
		(Scheduled Tribes) are likely.			
7.2	<b>Avoidance of Adverse Impacts:</b> 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, MVKPL 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.	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 affected Indigenous Peoples prefer in relation to the provision of project benefits and the design of mitigation measures.	The project did not impact any indigenous population.	Rights of indigenous people should be protected, if any.	No indigenous people are reported from the project area.
7.3	<b>Participation and Consent:</b> MVKPL 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, 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	The project did not impact any indigenous population.	Rights of indigenous people should be protected, if any.	The project did not impact any indigenous people.

S.No.	Performance Standards	Observation	Gaps	Recommendation	Status - Burgula
		communities in a culturally appropriate manner.			
<b>8</b>	<b>IFC PS8: Cultural Heritage</b>				
<b>8.1</b>	<b>Protection of Cultural Heritage:</b> MVKPL 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.	MVKPL 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.	No cultural heritage has been observed within the 10 km study area.
<b>8.2</b>	<b>Community Access:</b> 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.	Developer has confirmed that the sub-project does not involve any impact on any cultural or religious structures.
<b>8.3</b>	<b>Chance Find:</b> MVKPL 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.	No chance find has been reported/observed till date. In case of any chance find, MVKPL will report to the statutory authorities.

**Table 6: Status of Implementation of E&S Gap Assessment – Savalsang Site**

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
		<b>Requirements under Public Communications Policy, 2011</b>				
		<p>Information Disclosure to Stakeholders: The borrower (i.e. MVKPL in this case) should provide relevant environmental information in a timely manner, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. For illiterate people, other suitable communication methods should be used.</p> <p>Consultation and Participation: MVKPL should carry out meaningful consultation with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation.</p> <p>Timing and Frequency for consultation and participation: Meaningful consultation begins early in the project preparation stage and is carried out on an ongoing basis throughout the project cycle.</p>	MVKPL is already having regular interaction with the stakeholders.	MVKPL should further extend the consultation and disclosure process for operation phase.		Periodic consultation with affected people and other stakeholders is being carried out for disclosure of information. The records of consultation with stakeholders are kept at site. Developer is running programmes in the area as part of CSR initiative wherein stakeholders are engaged regularly. The stakeholder engagement framework of Mytrah is attached as <b>Annexure XVIII</b> .
	<b>IFC PS1: Assessment and Management of Environmental</b>	<b>ADB SPS Environmental Safeguards</b>				

S.No.	IFC Requirements in context of MVKPL and Social Risks and Impacts	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
1.1	<b>MVKPL</b> 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.	MVKPL should establish an ESMS and implement corrective action plan based on safeguards compliance audit.	Based on Categorization of the project an ESDD during operational phase is being conducted. ESDD will be reviewed to ensure its adequacy in-line with standard requirements. Based on the ESDD outcome, ESMS will be formed to mitigate all adverse impacts.	MVKPL is committed to implement an effective ESMS based on dynamic process and through involvement of its vendor, client, employee, local communities and stakeholders.	Periodic monitoring and evaluation shall be carried out.	A well-established ESMS has been developed and implemented by MEIPL, same is being followed by MVKPL sites ( <b>Annexure IX</b> ). .
	Environment and Social Impact Assessment <ul style="list-style-type: none"> <li>• Management program</li> <li>• Organizational capacity</li> <li>• Training</li> <li>• Community engagement</li> <li>• Monitoring</li> <li>• Reporting</li> </ul>		Detailed ESDD is carried out to assess the potential impact and risk associated with this particular project and their processes.	ESIA study was not conducted at the inception stage of the project. At this stage, Detailed ESDD is conducted which also includes EMP.	Aspects like management programme in different criteria, training, and community engagement during the project operation, monitoring and periodic reporting of compliance should be carried out.	ESDD study was duly considered in identification of environmental and social risks during operation phase and Environmental and Social Management Plan was proposed in order to mitigate the impacts. Status of ESMP implementation is given in <b>Table 7</b> .
1.2	MVKPL should establish an overarching policy defining the environmental and social objectives and principles that guide the project to achieve sound environmental and social performance. MVKPL should communicate the policy to all levels of its organization.		MVKPL as part of the ESMS has established an EHS policy. As part of the ESDD, evaluation of effectiveness and communication of the policy has been studied.	The designed policy of EHS has covered all the aspects which lead towards sound and environmental performance.	Onsite training for better implementation of EHS&S. Display of same is being carried out on project site and each desk of employee.	Mytrah has developed Environment policy, Health and safety policy as a part of ESMS to ensure environmentally sound management.

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
1.3	MVKPL 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.	A screening process should be followed for proposed project, as early as possible to determine the appropriate extent and type of environmental assessment so that appropriate study is undertaken.	MEIL already identified risk using the tool HIRA and Aspect / impact study using the ISO integrated system.	The proposed project falls Under Category- B. ESDD study has been conducted for the same.		ESDD study was duly considered in identification of environmental and social impacts. HIRA and Aspect/ Impact study are also conducted.
1.4	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.		All the applicable law and regulations is being considered and should be followed for entire project cycle.		The project is in accordance with the applicable laws and regulations of the host country.
1.5	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.		The proposed project does not attract need of any R&R and other environmental and social risk. However, in the ESDD report the management plan is being deliberated in detail.		The proposed project did not involve any resettlement activities. No indigenous people are reported from the project area.
1.6	MVKPL should establish, maintain and strengthen as necessary, an organizational structure that defines roles, responsibilities, and authority to implement the ESMS.	The requirement is subsumed within the ESMS and EMP		MVKPL as a whole has a well-established team to coordinate the site activities.	Shall be included under corporate communication, policy implementation team and other environment and sustainable related report.	A well-defined organizational structure is already in place. The organizational structure for Savalsang site is enclosed as <b>Annexure XIX</b> .

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
1.7	Trainings to employees and contractors with direct responsibilities for activities related to the project's social and environmental performance.	This requirement is subsumed within the ESMS or EMP		Need based training should be organized for MVKPL employee, which should be an integral part of HR policy.		Need based training is identified and imparted to the employees. Training and mock drills records are maintained at site and Mytrah Head Office.
1.8	MVKPL should establish and maintain an emergency preparedness and response system so that the MVKPL 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.	Please refer to Occupational and Community Health and Safety		MVKPL should follow their onsite emergency plan prepared under the EHS guidelines.	Annual monitoring and evaluation report should be submitted.	Onsite emergency plan is prepared under the EHS guidelines and is duly implemented. Site specific Emergency Response Plan is attached as <b>Annexure XX</b> .
1.9	MVKPL 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 activities.	Implement the EMP and Monitor its effectiveness, documentation of monitoring results, including the development implementation of corrective actions, and disclose monitoring reports.		Compliance submission of the project to ensure the implementation of proper management, documentation, and implementation of corrective actions required.		Internal audits such as ESMS audit, EHS audit, and OMS audit are being carried out on annual basis. Further, as an ISO certified company, third party ISO audit is also planned once in three years for this project.
1.10	MVKPL should engage Stakeholder 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		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.		Periodic consultation with affected people and other stakeholders is being conducted at site.

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
		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 people's concerns and grievances regarding the project's environmental performance.				
1.11	MVKPL 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, MVKPL 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.		Primary survey in different mode was carried out and the same is deliberated in ESDD chapter.		ESDD study was duly considered in identification of environmental and social risks during operation phase and Environmental and Social Management Plan was proposed in order to mitigate the impacts. The status of EMP implementation is given in Table 7.
2	<b>PS 2: Labour and Working Conditions</b>	<b>ADB Environmental Safeguards</b>				
2.1	The MVKPL should adopt and implement human resource policies appropriate to its size and workforce that sets out an			The hiring of human resource is as per HR policies and their guidelines.		The employee recruitment process is in-line with the HR policies and their

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
	approach to managing workers consistent with the requirements of this performance standard and the national law.					guidelines.
2.2	MVKPL should provide workers with documented information that is clear and understandable, regarding their rights under national labour and employment law and any applicable agreements			During the offer letter / contract agreement should specifies all the applicable rules and regulation.		At the time of recruiting employees, induction program is provided to make themselves aware of their rights under law in a documented format. Each new joinee is provided with a checklist of the same.
2.3	MVKPL will provide reasonable working conditions and terms of employment.	Right to Organize and Collective Bargaining Convention, 1949 (No.98). This Convention provides or protection against anti-union discrimination, for protection of workers and employers organizations against acts of interference by each other, and for measures to promote and encourage collective bargaining.		The working condition and terms of employment are regulated by Admin department and HR respectively.		Employees are provided with decent working conditions, terms of employment is detailed in a documented format and provided at the time of recruitment
2.4	MVKPL 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.		MVKPL should provide equal opportunity and facilities to their employee.		MVKPL's employment relationship is based on the principle of equal opportunity, fair treatment and non-discrimination.
2.5	Where accommodation services are provided to workers covered by the scope of this performance standard, MVKPL will put in place and implement policies on the quality and management of the			Daily wage laborers are hired from local villages, if required, through a Turnkey contractor.		MVKPL hires daily wage laborers through appropriate turnkey contractor.

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
	accommodation and provision of the basic services. This also includes the applicable requirements of the IFC guidelines on worker accommodation.					
2.6	MVKPL should not make employment decisions on the basis of personal characteristics unrelated to inherent job requirements. MVKPL should base the employment relationship on the principle of equal opportunity and fair treatment, and shall not discriminate	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. Challenging stereotypes of minorities to ensure equal opportunity and treatment. Encouraging minority groups/organizations to form and join groups / organizations representing their interests. Protecting migrant workers especially if they are members of ethnic minorities.		Mytrah always provide the equal opportunity of employment to job seekers. Based on requirement and relevant educational qualification with experience, the opportunity of different job is get close. Mytrah group's HR policy is being followed by MVKPL. The other facilities are being provided as per the HR policy.		All the facilities are being provided as per the HR policy. Mytrah group's HR policy is being followed by MVKPL.
2.7	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.		MVKPL has prepared a framework to address all the issues related to grievance mechanism.	Should be included under HR Policy is not there.	Grievance Redressal Mechanism is prepared to address any complaints regarding discrimination, harassment or other concerns at workplace (Annexure XVI).
2.8	MVKPL 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		MVKPL should comply these obligations.		MVKPL has not engaged any child labour.

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
		elimination of child labour, and the basic 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).				
2.9	MVKPL 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 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		MVKPL should comply these obligations.		MVKPL’s employees/ labour voluntarily enter into contract agreement and the individuala are not subjected to threat or force or penalty.

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
		punishment for having participated in strikes.				
2.10	MVKPL will provide a safe and healthy work environment, taking into account inherent risks in its particular sector and specific classes of hazards in MVKPL's work areas, including physical, chemical, biological, and radiological hazards, and specific threats to women.	<ul style="list-style-type: none"> <li>Special care needs to be taken in projects to ensure the health and safety of all workers, including members of minorities.</li> <li>In many cases, minority workers are unable to read safety instructions or to understand safety and health training given to other workers.</li> <li>Provide workers with safe and healthy working conditions including easily comprehensible safety.</li> <li>Information on-site training, provisions of Personal Protective Equipment etc.</li> </ul>		The aspects involved in proposed project do not contain any hazard things which can harm the occupational health.		Workers are provided with Personnel Protective Equipment (PPE) at site and if they are dealing with any critical activities.
2.11	With respect to contracted workers MVKPL will take commercially reasonable efforts to ascertain that the third parties who engage these workers are reputable and legitimate enterprises and have an appropriate ESMS. Impacts associated with supply chains will be considered where low labour cost is a factor in competitiveness of the item supplied.	Compliance with national requirements with respect to minimum wage and other social benefits (e.g. payment of ESI, provident fund, etc.) MVKPL to ensure that provisions to meet ILO core labor standards are stipulated in contractors and subcontractors contracts and that these		Mytrah Group always tries to give opportunity to those vendors (third party) who are fulfilling all the needful statutory requirements.	Shall be carried out as per QMS	Mytrah engages reputed third parties.

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
<b>3.</b>	<b>PS 3: Resource Efficiency and Pollution Prevention</b>	<b>ADB Environmental Safeguards</b>				
<b>3.1</b>	During the design, 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.	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.		During operational stage no such aspect is anticipated which can be harmful for nearby environment.		Renewable energy projects are considered as white category industry as per CPCB Notification. In the project lifecycle pollution is not generated and anticipated.
<b>3.2</b>	MVKPL should refer to The EHS Guidelines, when evaluating and selecting resource efficiency and pollution prevention and control techniques for the project.	Apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines.		EHS guidelines include all the relevant features applicable for resource efficiency and pollution prevention.		A detailed EHS guideline is documented and is put in practice.
<b>3.3</b>	MVKPL 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.	Processes and good energy efficiency practices. Avoid pollution, or, when avoidance is not possible, minimize or control the intensity or load of pollutant emissions and discharges, including direct and indirect greenhouse gases emissions, waste generation, and release of hazardous materials from their production, transportation, handling and storage.		The proposed project falls under white category. Very less amount of water is required during operational phase.		There is no consumption of water during the power generation. Only domestic purpose, water would be required which is utilized judiciously.
<b>3.4</b>	MVKPL should consider alternatives and implement technically and financially feasible and cost effective options to	MVKPL should promote the reduction of project-related anthropogenic greenhouse gas emissions in a manner	Project is a renewable energy project not includes the GHG emission.	Proposed project operation does not involve any such activities which release the GHG emissions.		No GHG emissions would be released during the operational phase. In return, project offsets

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
	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.	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 MVKPL 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. MVKPL should conduct quantification and monitoring of greenhouse gas emissions annually in accordance with internationally recognized methodologies. In addition, MVKPL will evaluate technically and financially feasible and cost-effective options to reduce or offset project related greenhouse gas emissions during project design and operation, and pursue appropriate options.				Carbon dioxide emissions.
3.5	MVKPL 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. To address potential adverse project impacts on existing	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. Prepare an environmental management plan (EMP) that includes the proposed mitigation measures,		EMP was developed to mitigate environmental measures. Impacts are not assessed at ESDD stage.		ESDD study was duly considered in identification of environmental and social risks during operation phase and Environmental and Social Management Plan was proposed in order to mitigate the impacts.

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
	ambient conditions, MVKPL should consider relevant factors, including, for example existing ambient conditions, etc.	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 polluter pays principle.				The status of EMP implementation at site is given in <b>Table 7</b> .
3.6	To avoid and minimize generation of hazardous and non-hazardous waste materials as far as practicable. Where waste generation cannot be avoided, but has been minimized, MVKPL will recover and reuse wastes, where wastes cannot be recovered or reused; MVKPL should treat, destroy and dispose of in an environmentally sound manner. If the generated waste is considered hazardous, MVKPL will explore commercially reasonable alternatives for its environmentally sound disposal considering the limitations applicable to its trans-boundary movement.	MVKPL should avoid, or where avoidance is not possible, should minimize or control the generation of hazardous and non-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, MVKPL 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, MVKPL should use		No such waste generation is expected due to project operation. If any hazardous waste is generated, it is stored in secured containers and disposed off to the authorized vendor.		Hazardous waste was stored properly and disposed through authorized vendors. MVKPL ensures that the waste is properly disposed as per Hazardous and other waste management Rules, 2016 ( <b>Annexure V</b> ).

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
		contractors that are Reputable and legitimate enterprises licensed by the relevant regulatory agencies.				
3.7	MVKPL will avoid or, when avoidance is not possible, minimize and control the release of hazardous materials. In this context, the production, transportation, handling, storage, and use of hazardous materials for project activities should be assessed. MVKPL should consider less hazardous substitutes where hazardous materials are intended to be used in manufacturing processes or other operations.	MVKPL should avoid the manufacture, trade, and use of hazardous substances and materials subject to international bans or phase outs because of their high toxicity to living organisms, environmental persistence, potential for bioaccumulation, or potential for the ozone layer and will use of less hazardous substitutes for such chemicals and materials.		No such waste generation is expected due to project operation. The spent oil of DG set and the scrap panel is being sold to recyclers.	Should be regularly monitored by MVKPL in compliance stage	Hazardous waste was stored properly and disposed through authorized vendors. MVKPL ensures that the waste is properly disposed as per Hazardous and other waste management Rules, 2016.
3.8	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. MVKPL'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		No use of pesticides for the project		No pesticides or insecticides are used for the plantation in and around the project area.

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
		damage. The health & environmental risks associated with pest management should be minimized with support, as needed, to institutional capacity development, to help regulate and monitor the distribution and use of pesticides and enhance the application of integrated pest management.				
<b>4</b>	<b>IFCPS4: Community Health &amp; Safety &amp; Security:</b>					
<b>4.1</b>	MVKPL 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.	MVKPL 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 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		No PAPs have been reported within project site. Most of the impact associated with operation of proposed project is limited to the project site only.		Environmental and Social Management Plan (ESMP) also includes the impacts to the health and safety of the affected people, communities and the mitigation measures.

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
		result in injury to the community. MVKPL 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	MVKPL 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.		No such aspect is involved in this project.		MEIPL does not deal with exclusion list including materials which have been banned internationally.
4.3	MVKPL 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.		The emergency preparedness plan has been framed by MVKPL.		On site emergency plan is available to deal with any kind emergency. Site specific Onsite Emergency Plan is in place and displayed at site (Annexure XX).
4.4	MVKPL 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 consideration differentiated exposure to and higher sensitivity of vulnerable groups.			No such activities is involved which can contaminate the nearby water environment.		Wind power plant requires minimal quantity of water for meeting domestic needs and is being met through tankers. MEIPL ensures that the activities involved in contamination of water are not carried out.
4.5	Where MVKPL retains direct or contracted workers to provide security to safeguard its personnel and property, its security arrangements to those within and outside the project site.			The local persons may be engaged as security to safeguard the material on site.		Security guards were deployed at all WTG locations.

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
<b>5</b>	<b>IFC PS5: Land Acquisition and Involuntary Resettlement</b>	<b>Involuntary Resettlement Safeguards</b>				
<b>5.1</b>	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.		The proposed site does not have any settlement.		The project site is identified in such a way that it does not involve any resettlement activities.
<b>5.2</b>	MVKPL should provide unavoidable displaced PAPs with compensation for loss of assets at full replacement cost to help them restore their standards of living or livelihoods; Where livelihood is land-based or collectively owned, MVKPL should offer land-based compensation where feasible; MVKPL should provide opportunities to PAPs to derive appropriate development benefits from the project.	Pay compensation and provide other resettlement entitlements before physical or economic displacement. Implement the resettlement plan under close supervision throughout project implementation		The project does not involve any resettlement activities as land of the project is devoid of any commercial or residential structures.		The project does not involve any resettlement activities.
<b>5.3</b>	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.	Carry out meaningful consultations with affected persons, host communities, and concerned nongovernment organizations. Inform all displaced persons of their entitlements and resettlement options. Disclose a draft resettlement plan, including documentation of the consultation process in a		<ul style="list-style-type: none"> <li>• The primary survey, consultation and other relevant document has been carried out.</li> <li>• No social issue has been envisaged for this project.</li> <li>• The detail about land resource and social aspect around the project area is deliberated in ESDD chapter.</li> </ul>		Consultation with affected people and other stakeholders is being carried out at regular intervals.

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
		<p>timely manner, before 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>				
5.4	MVKPL 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.		MVKPL has prepared a framework to address all the issues related to grievance mechanism.		Grievance redressal mechanism is in place to address any community issues.
6	<b>PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</b>					
6.1	Assess significance of project impacts on all levels of biodiversity as an integral part of social and environmental assessment process.	MVKPL should assess the significance of project impacts and risks on biodiversity and natural resources as an integral part of the environmental		The proposed site is a rocky and unproductive land. The detail inventory of flora and fauna was carried out during ESDD Stage. The major	It is suggested to undertake a periodic bird/bat carcass survey in the project by site personal in the core study area.	The project area is not falling under any migratory route path and hence, bird collision is not envisaged. Developer has informed

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
		assessment process. The assessment will focus on the major threats to biodiversity, which include destruction of habitat and introduction of invasive alien species, and on the use of natural resources in an unsustainable manner.		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 or fauna. The project area and its surroundings do not fall under any major flyway or migratory routes.	Standard operating procedure should also highlight emergency measures to be undertaken in case of bird and bat hitting to WTG or electrocution.	that till date no bird carcass was observed/reported in the project area. Carcass surveys are done at site on regular basis and records maintained at site.
6.2	MVKPL should minimize impacts on modified habitat (areas managed for agriculture, forest plantations, reclaimed coastal zones and reclaimed wetlands) and implement mitigation measures as appropriate.	As above		The proposed site is a rocky, barren and unproductive land. Hence, the activities related to proposed project are not expected to change biotic habitat around the project area. The details about biodiversity are deliberated in ESDD report.		The proposed site is a rocky, barren and unproductive land. Hence, the activities related to proposed project were not expected to change biotic habitat around the project area.
6.3	MVKPL 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, including Affected Communities, with respect to the extent of conversion and degradation; and, (iii) any conversion or degradation is mitigated.	As above		No such impact is envisaged from proposed project.		The project activities did not alter or degrade any of the natural habitats.
7	<b>IFC PS7: Indigenous Peoples (Scheduled Tribes in Indian Context)</b>	<b>Indigenous People (Scheduled tribe)'s Safeguards</b>				

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
7.1	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.		No indigenous people are reported from the project area.
7.2	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, MVKPL 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.	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 affected Indigenous Peoples prefer in relation to the provision of project benefits and the design of mitigation measures.		Not applicable for this project as no indigenous people are likely to be affected by the proposed development.		Indigenous people are not present within the study area.
7.3	MVKPL should undertake an engagement process with the Affected Communities of Indigenous Peoples as required in Performance Standard 1. 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		Not applicable for this project as no indigenous people are likely to be affected by the proposed development.		Indigenous people are not present within the study area.

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
		organizations to solicit their participation (i) in designing, 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.				
7.4	MVKPL should prepare a plan that, may need to include where relevant; <ul style="list-style-type: none"> <li>A description of the government- provided entitlements of affected Indigenous Peoples;</li> <li>The measures proposed to bridge any gaps between such entitlements, and the requirements of this Performance Standard; and</li> <li>The financial and implementation responsibilities of the government agency and / or MVKPL.</li> </ul>	Avoid, to the maximum extent possible, any restricted access to and physical displacement from protected areas and natural resources. Where avoidance is not possible, ensure that the affected Indigenous Peoples communities participate in the design, implementation, and monitoring and evaluation of management arrangements for such areas and natural resources and that their benefits are equitably shared		Need based assessment has been carried out already. With an objective to strengthen the ongoing government schemes in project area, stakeholder consultation has been completed.		No indigenous people are reported from the project area.
<b>8</b>	<b>IFC PS8: Cultural Heritage</b>					
8.1	MVKPL 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.	MVKPL 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		No cultural heritage has been observed within the 10km study area.		No cultural heritage has been observed within the 10 km study area.

S.No.	IFC Requirements in context of MVKPL	ADB Requirements	Remarks (where required)	Observation /Gaps	Recommendation	Status - Savalsang
		assess the project's potential impacts on these resources using field-based survey as an integral part of the environmental assessment process.				
8.2	As part of MVKPL's ESMS, MVKPL 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.			Should be implemented in ESMS.		Mytrah's ESMS includes the implementation of chance find procedures whenever it is necessary.
8.3	MVKPL will consult with the Affected Communities to identify cultural heritage of importance, and to incorporate into MVKPL's decision making process the views of the Affected Communities on such cultural heritage.			The consultation was carried out to assess the local cultural heritage around the project site / consultation place.		The project is not having any impact on cultural heritage of the local people/ local communities.
8.4	Where MVKPL's project site contains cultural heritage, MVKPL will allow continued access to the cultural site or will provide an alternative access route, subject to overriding health, safety, and security considerations.			Not applicable for this project as no such cultural heritage is located within the proposed site.		No cultural heritage has been reported till date with in the project area.

**Table 7: Status of Implementation of EMP at MVKPL – Burgula & Savalsang Site**

Impact/Issues	Mitigation Measure	Timing / Frequency of Monitoring	Implementation responsibility	Reporting requirements	Status of Implementation of Mitigation Measures
Hazardous waste disposal	<ul style="list-style-type: none"> <li>Used oil to be securely stored and disposed of through CPCB/APPCB approved vendors as and when required.</li> <li>Transformer oil to be replaced and returned by the supplier of transformers</li> </ul>	Quarterly in principle review by site in charge	<ul style="list-style-type: none"> <li>Head – O&amp;M</li> <li>Operations Manager</li> <li>Deputed EHS Engineer of O &amp; M</li> </ul>	Report from EPC / O&M to EHS Manager	Used oil was safely stored and disposed through authorized CPCB/ APPCB/KPCB vendors.
• Recyclable Waste	• Municipal solid waste to be collected separately as recyclable and	Quarterly in principle review by	<ul style="list-style-type: none"> <li>Head – O&amp;M</li> <li>Operations Manager</li> </ul>	Report from EPC/ O&M to EHS	Municipal solid waste generated is handed over to the municipality.

<ul style="list-style-type: none"> <li>Garbage</li> </ul>	<ul style="list-style-type: none"> <li>biodegradable.</li> <li>Recyclable waste to be sold to authorized vendor.</li> <li>Garbage to be disposed of as per the provisions of MSW Rule, 2016.</li> </ul>	site in charge	Deputed EHS Engineer of O & M	Manager	
Electronic Waste	<ul style="list-style-type: none"> <li>Electronic waste to be collected separately other than Municipal solid waste.</li> <li>E waste to be disposed of through PCB authorized vendor.</li> </ul>	Quarterly in principle review by site in charge	<ul style="list-style-type: none"> <li>Head – O&amp;M</li> <li>Operations Manager</li> <li>Deputed EHS Engineer of O&amp;M</li> </ul>	Report from EPC/ O&M to EHS Manager	E- waste is stored separately and send to the head office where they disposed through authorized vendors by CPCB/ APPCB/KPCB.
Battery Waste	<ul style="list-style-type: none"> <li>Battery waste to be collected separately other than Municipal solid waste.</li> <li>Battery waste to be disposed of through PCB authorized vendor.</li> </ul>	Quarterly in principle review by site in charge	<ul style="list-style-type: none"> <li>Head – O&amp;M</li> <li>Operations Manager</li> <li>Deputed EHS Engineer of O&amp;M</li> </ul>	Report from EPC/ O&M to EHS Manager	Battery waste was safely stored and disposed through authorized vendors by CPCB/ APPCB/KPCB.
<ul style="list-style-type: none"> <li>Bird Kill</li> <li>Avian collision</li> </ul>	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.	Quarterly in principle review by site in charge	MVKPL to engage an expert to periodically assess bat and bird status. The expert shall also train the staff at site to address then incidents of bird hit / injury.	Report from EPC to EHS Manager	Adequate distance is provided in between the turbines to reduce the accidental collision of birds.
<ul style="list-style-type: none"> <li>Turbine noise</li> <li>Corona Discharge</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance and repair of turbines will be undertaken on annual basis/ as and when required.</li> <li>Transmission line to have conductors designed to minimize corona effects</li> <li>Implement a complaint resolution procedure to assure that any complaints regarding operational noise are promptly and adequately investigated and resolved.</li> <li>Optimization of turbine speed. In high wind, blade speed is controlled as per the</li> <li>desired criteria to avoid blade throw.</li> <li>Provision of Noise barrier in terms of green belt near to receptor, if noise level found crossing the standards during operation phase monitoring</li> </ul>	Half yearly in principle review by site in charge	<ul style="list-style-type: none"> <li>Head – O&amp;M</li> <li>Deputed EHS Engineer of O &amp; M/ Site Manager in consultation with deputed EHS Officer</li> </ul>	Report from EPC to EHS Manager	<ul style="list-style-type: none"> <li>Execution of maintenance is being carried out twice a year.</li> <li>Transmission lines are designed as per IE rules to reduce corona effects</li> <li>Grievance Redressal Mechanism is in place to register any complaints regarding community issues</li> <li>Wind turbines are fixed with sensors to optimize the wind speed so as to avoid blade throw</li> <li>Provision of noise barrier is not required since the noise levels are within the limits.</li> </ul>
<ul style="list-style-type: none"> <li>Working at Height</li> <li>Electrical</li> </ul>	<ul style="list-style-type: none"> <li>Work permit system shall be implemented of reworking at height.</li> <li>Personal protective equipment to be</li> </ul>	Quarterly in principle review by site in charge	<ul style="list-style-type: none"> <li>Site Manager</li> <li>Head O&amp;M</li> </ul>	Report from EPC to EHS Manager	<ul style="list-style-type: none"> <li>Work permit system is being adopted for all critical activities</li> <li>Personnel Protective Equipment</li> </ul>

hazards • Accidents leading to injury/fatality	provided for all personnel during maintenance work • 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. • Crane safety plan to be followed • 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				is provided to all the workers dealing with critical activities • Workers were trained in the aspects of Health & Safety and proper usage of Personal Protective Equipment. • Crane safety plan is not applicable for operation phase • Fire extinguishers, fire balls and sand buckets were placed at all strategic locations. • Periodic audit is being carried out
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**Table 8: Status of Implementation of Community Health and Safety Management Plan during Operation Phase at MVKPL**

Impact	Mitigation Measures	Monitoring Plan/ Training Requirements	Responsibility	Status as on August 2019
Increase in Noise levels due to operation of wind turbines.	<ul style="list-style-type: none"> <li>Periodic monitoring of ambient noise levels</li> <li>Periodic maintenance of WTGs</li> </ul>	SOP for Noise monitoring and Maintenance checklist	Site Incharge/EHS Incharge	<ul style="list-style-type: none"> <li>Ambient noise levels are being monitored on regular basis by internal as well as external party. Third party water, ambient air and noise monitoring report is enclosed as <b>Annexure XXI</b>.</li> <li>Periodic maintenance of WTGs is being carried out.</li> </ul>
Disturbance due to shadow flickering and blade glint caused by wind turbines	<ul style="list-style-type: none"> <li>Formal grievance redressal mechanism shall be in place for the local community so that any issues or concerns associated with shadow flicker are reported to the</li> </ul>	Grievance Redressal Mechanism	EHS Incharge/Site Incharge	<ul style="list-style-type: none"> <li>Well laid grievance redressal mechanism is in place record the community grievances. Till date no grievances have been received on shadow flickering.</li> <li>Not applicable as no settlements are existing nearby WTGs.</li> </ul>

	site staff. <ul style="list-style-type: none"> <li>• Provide curtain and blinds in households with open roof, and windows, doors facing WTGs.</li> <li>• Undertake plantation to hide shadow flicker near receptors (households) identified with significant impact.</li> </ul>			<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
Injury due to accidental blade throw	<ul style="list-style-type: none"> <li>• Ensure that lightning protection systems are properly installed and maintained.</li> <li>• Carry out periodic blade inspections and repair any defects that could affect blade integrity</li> </ul>	Blade inspection report	Site Incharge	<ul style="list-style-type: none"> <li>• All WTGs are provided with lightning protection.</li> <li>• Periodic blade inspection is being carried out.</li> </ul>
Impact on community due to improper transportation of waste	Training of staff on matters pertaining to hazardous materials that could be encountered on site and measures to be taken in case of a spill or road accident during waste transportation	Awareness campaign	Site Incharge/EHS Incharge	<p>Hazardous waste is stored and disposed to authorized CPCB vendors.</p> <p>Hazardous waste disposal lies with O&amp;M contractor. As a principal employer MVKPL ensures that proper training is given to staff for transportation of waste as per Hazardous and other Waste Management Rules, 2016.</p>

## 15. HEALTH AND SAFETY:

25. Mytrah has its own Occupational Health and Safety Policy. All staff and workers in Mytrah are made aware of the environment, health, safety and systems during induction training programme for each employee. During the induction programme all workers are made aware of the policies, roles & responsibilities, general safety rules at site, risk behaviour, housekeeping, signages, emergency evacuation, fire safety, grievance redressal mechanism etc. (**Annexure XVII**).
26. Mytrah has its own Community Health and Safety Management Plan (CHSMP) (**Annexure XXII**). The plan is guided by Mytrah's Environment Policy and Occupational Health and Safety policy. The implementation of the CHSMP is given in Table 8 above.
27. Mytrah has an On-site Emergency Plan (OEP), which is part of the Integrated Management System. The OEP defines clear procedures for wind farm safety and emergency preparedness plan. MVKPL follows the OEP and conducts safety training programmes/mock drills as defined in the procedures. Records for the mock drills and trainings are maintained at the sub-project site.

## 16. INSTITUTIONAL FRAMEWORK & GRIEVANCE REDRESSAL

28. Mytrah has adequate institutional arrangement for implementation of EMP, health & safety at the sub-project. The EHS team also oversees overall implementation of the health & safety by contractors, sub-contractors, conduct audits and inspection of all the project activities and record keeping. The organogram for both sites is attached as **Annexure XIV and XIX**.
29. MVKPL has a Grievance Redressal Framework (**Annexure XVI**). The procedures for grievance redressal are clearly well defined in the Framework with responsibility. Record of any grievance or demand received from locals is maintained at the site office.

## 17. ENVIRONMENTAL SENSITIVITY:

30. The environmental sensitivity of MVKPL has been assessed by reviewing various documents, supplemented by field visit and consultation with the developer. The sub-project was commissioned in the year 2014 and is in operation phase.
31. The environmental sensitivity assessment is given below:
  - The land procured for the sub-project for Burgula site is revenue and private land, whereas for Savalsang site it is entirely private land.
  - The sub-project sites are not located in any protected area like wildlife sanctuary / national park or in close proximity of any eco-sensitive area.

- No forest area is getting affected due to the sub-project.
- As informed by the concessionaire, no important cultural or heritage sites are getting affected due to the sub-project.
- The impacts of the sub-project are temporary in nature.
- The project area and its surroundings do not fall under any major flyway or migratory routes.

## **18. PROJECT AGAINST THE PROHIBITED INVESTMENT ACTIVITIES LIST:**

32. The sub-project does not involve any prohibited activity as per the Prohibited Investment Activities List (PIAL) of ADB.

## **19. CATEGORIZATION OF SUB-PROJECT:**

33. The sub-project can be classified as category B based upon ADB's EA requirements as per their Safeguard Policy Statement (2009). This classification is based on the review of the available documents and site visit with respect to the environmental sensitivity due to project activities.

## **20. SITE VISIT OBSERVATIONS:**

34. A site visit was undertaken by IIFCL's Staff from 5<sup>th</sup> – 7<sup>th</sup> August 2019. The site visit was undertaken to review the implementation of the project's environmental and social safeguards. During the site visit, following staff were mainly consulted regarding environmental safeguards related measures implemented at the project site:

- Mr Suranjan Sarkar, AVP, Head QSHE
- Mr Priyakant Upadhyay, Regional HSE In Charge, Mytrah
- Mr Sadanand Patil, Site In charge, MVKPL
- Mr Sharad More, O&M Team, MVKPL
- Mr Dhananjay, QSHE Deptt, Mytrah
- Mr Sivanand, EHS Officer, Savalsang site, MVKPL

35. Based on the discussions with above mentioned officials and visit, the site observations are given below:

- The area is generally devoid of vegetation and trees.
- The area has agricultural fields in the vicinity.
- The farmers are cultivating in the area. The famers were paid compensation for the entire land taken over by the sub-project. However, the farmers were allowed to grow

crops in the land belonging to Mytrah after leaving a buffer zone around the WTG and transformers.

- First aid boxes and fire fighting systems are maintained at WTGs and sub-station.
- There are EHS officer present at the site from O&M contractor. The engineers present at the site understood their commitments.
- All sewage water being generated at the sub-project premises is disposed in septic tanks/soak pits.
- It was informed by the developer during site visit that no groundwater is being utilized at site. Water requirement for various activities is being taken care by the private tankers.
- Rain water harvesting system has been developed at switchyard area at Savalsang site.
- On discussions with the site staff, it was informed that Health, Safety & Environment Induction is mandatory for everyone at site.
- Site staff informed that the entire site is a Personal Protective Equipment (PPE) zone. PPE like safety helmets, goggles, safety harnesses, safety shoes, hand gloves, ear plugs etc are provided to all staff and visitors. The staff at the site was seen wearing personal protective equipment such as helmets, jackets, boots, gloves etc.
- Vehicle movement discipline is maintained at site.
- Good housekeeping and good waste disposal facilities are maintained at site.
- Fire extinguishers, fire balls, sand buckets and first aid kits are available at all WTGs and sub-station.
- Tool box talk is done for labour as well as staff.
- Safety signages could be seen at designated locations.
- Safety induction training was done for workers as well as staff.
- Mock drills on fire safety are conducted regularly.
- Records of safety trainings, mock drills and various inspections/audits are maintained at site office.
- Vehicle movement in the premises was very limited.
- No oil spillage was observed at the site. Hazardous waste is stored in designated areas as elaborated in Table 5 & 6.
- Training and accident/incident records are maintained at site.
- Onsite emergency plan is displayed at the sites.
- Developer has informed that quarterly stakeholder consultation is being conducted at sites and photographic evidence of the same is kept for records.

- Currently there are no labour camps at the site.
- Emergency contact numbers have been displayed at appropriate locations.
- The sub-project has a proper grievance handling mechanism and records are maintained at site.

36. The site visit photographs are given in **Photoplate - I**.

## 21. CONCLUSIONS AND RECOMMENDATIONS:

37. It is concluded from the above analysis that the sub-project MVKPL, 132.60 MW wind power project in the District Kurnool of Andhra Pradesh and District Bijapur in Karnataka is unlikely to pose any adverse irreversible environmental risks given the nature of the activities and absence of any legally protected areas and cultural heritage sites located within and/or in close proximity to the sub-project. However, the sub-project activities have reversible environmental impacts which have been managed.

38. Based upon the available documents and site visit, it is concluded that the concessionaire has undertaken adequate environmental safeguard measures. The conclusions for the sub-project are given below:

- The sub-project has been planned as per the National and State Government requirement and not in anticipation to ADB operation.
- The sub-project has achieved Commercial Operation since the year 2014. IIFCL has funded the sub-project under Takeout finance scheme after achieving COD.
- The project site is not located in an ecologically sensitive area.
- The project does not involve diversion of forest land.
- The sub-project has the required national and local level permits and approvals for project in operation phase.
- Concessionaire has confirmed and provided status of implementation of corrective action plans suggested in the ESDD study conducted by third party during the year 2016.
- The sub-project also has a positive GHG emission reduction due to non-emission of pollutants during operation.
- The institutional arrangement available for the implementation of environment, health & safety at MVKPL is adequate.
- The main impacts were on land environment, water resources and waste management. However, most of the associated impacts were limited to the extent of construction

phase and were temporary in nature. The EMPs are undertaken to minimize any significant negative impact during project implementation.

- During site visit and discussion with the project developer, the implementation of EMP was found to be adequate.
- This nature of the project site coupled with the clean nature of wind power generation ensures that the Project will not cause any significant adverse environmental impacts during construction and operation. The same is evident from the site visit.
- After approval from the Bank the ESDDR will be uploaded for public disclosure.

39. Based on the site visit and due diligence findings, it can be deduced that the sub-project has no significant environmental safeguard issues. The sub-project, therefore, does not appear to involve any kind of reputational risk to ADB funding on environmental safeguards.

## **DUE DILIGENCE ON SOCIAL SAFEGUARDS**

## **22. OBJECTIVE OF SOCIAL SAFEGUARDS DUE DILIGENCE REPORT:**

40. This Social Safeguards due diligence for the project Mytrah Vayu (Krishna) Pvt. Ltd. (MVKPL), is a updated version of the ESDDR submitted by the Consultants in July 2016 (attached as Annexure-I &II) , has carried out to update the social monitoring compliance status of the project as per the applicable National policies/procedures followed in the project . The main objective of this Social Safeguard Due Diligence Report (SSDDR) is :

- To assess the likely social impacts and its minimization/mitigation majors adopted in the project with respect to land acquisition, compensation and involuntary resettlement, common properties, if any, in terms of displacement, loss of incomes, and community links:
- To ascertain, in case of any adverse impact, if appropriate mitigation measures have been taken during the project planning, designing and frameworks established for carrying out safeguard measures during the implementation stage of the project;

## **23. SCOPE OF THE SUB-PROJECT:**

41. The sub-project MVKPL includes operation and maintenance of 132.6 MW wind power projects in Andhra Pradesh and Karnataka in India. The total capacity at Burgula site In Andhra Pradesh is 37.4 MW (44 X 0.85 MW) and Savalsung Site in Karnataka state is 95.2 MW (112 X 0.85 MW). The WTGs were commissioned during the year 2014/2015.

## **24. PROJECT AGAINST THE PROHIBITED INVESTMENT ACTIVITIES LIST**

42. The sub project MVKPL does not involve any prohibited activity as per the Prohibited Investment Activities List (PIAL) of ADB.

## **25. APPROACH AND METHODOLOGY:**

43. The Social safeguard due diligence study for MVKPL has been carried out after reviewing the documents made available by the Concessionaire. On site visit to the project location by Environmental and Social Safeguards Specialist, discussion with the project developer MVKPL and various permits and approvals relating to the project to understand the salient features of the project and social concerns. The following documents/Reports/Licenses/permits and notifications were referred in order to prepare the Social Safeguard Due Diligence Report:

- Environment & Social Due Diligence reports ( July 2016 prepared by the Consultants) for both the sites;
- Project Information Memorandum (PIM)
- Land Allotment letter from Govt. of Andhra Pradesh
- ESMS
- Project Statutory Approvals/Permits

- Labour License and insurance
- Grievance redressal mechanism
- Community Health and Safety Management Plan

44. The social safeguards due-diligence study was carried out for the sub-project on the basis of site visit observations and understanding project scope based on information and documents provided by Concessionaire. The site visit was undertaken by IIFCL's Safeguard Specialists on 5<sup>th</sup> – 7<sup>th</sup> August 2019. During the visit a detailed discussion on the social safeguards was also carried out with the project team.

## 26. SOCIAL IMPACT OF THE PROJECT

### 25.1 Land Acquisition in the Project

45. MVKPL Project: The total land required for the project is 263.42 Acres.
46. Burgula site: The total land required for the Burgula site is 39.91 Acres out of which revenue land is 37.91 Acres and Private land is 2 Acres. This site is located in three villages namely Burgula, Kunkuntla and Racherla in Kurnool district, Andhra Pradesh.
47. Savalsang site: The total land required for Savalsang site is 223.51 Acres of private land. This site is spread over in villages namely Hadalasang, Inchageri, Jigjivanagi, Kannur, Kolurgi, Mahaveeranagar, Satalago in District Bijapur, Karnataka.
48. The private lands have been purchased directly from the land owners on willing seller- willing buyer basis, with direct negotiation from the farmers and the rate of land was based on negotiations with individual land owners. All the WTGs of the project are located on dry hilly area and away from community settlement. The project does not involve any resettlement and rehabilitation (R & R).
49. Govt. of Andhra Pradesh has allotted the land to the New Renewable Energy Development Corporation of Andhra Pradesh (NREDCAP) for a period of 25 Years, on lease basis on the market value of varies between Rs. 50000/- to 80000/- per Acres, A sample copy of land allotment letter is attached as **Annexure XXIII**. Further, NREDCAP has signed the lease agreement with MVKPL for a lease rent of 10% per acres on the market value per year. A sample copy of the Lease deed is attached as **Annexure-XXIV**.
50. As documented in the ESDD report 2016 and subsequent to the discussions with the project developer it was observed that, no complaints were received regarding the procurement/purchase of land parcel for the project MVKPL Further, it was found that the land sold to MVKPL was rain fed and unfertile agricultural land.

51. The land acquisition/allocation process was initiated in the year 2013-2014, prior to IIFCL involvement and not in anticipation of ADB financing and that IIFCL was not involved in the rehabilitation and resettlement activities of the project

### **25.2 Impact on Structure**

52. During the site visit and as documented in the ESDD-2016, it was observed that no structure is getting affected due to the project. The project does not involve any resettlement activities as land of the project is devoid of any commercial or residential structures.

### **25.3 Rehabilitation and Resettlement impact in the sub-project**

53. During the site visit and as documented in the ESDD-2016, it was observed that there was no rehabilitation and resettlement impact in the project.

### **25.4 Impact on Indigenous people**

54. As informed by the project developer no indigenous people are affected.

### **25.5 Impact on Religious Properties:**

55. No religious properties are affected in the project.

## **27. PUBLIC CONSULTATION & STAKEHOLDERS MEETING:**

56. The project got commissioned during February- 2014 (Burgula) & April 2014 (Salvalsang) and already in operation. During the site visit it was told that informal public consultation and stakeholders meetings were conducted during the project planning and construction stage of project. Prior to project set up and during the construction of project the subproject developer has invited stakeholders in the project region to explain about the proposed project activity and benefits associated with the project. Project authority has discussed with the Gram Panchayats for setting up of the MVKPL.

## **28. GRIEVANCE MECHANISM AT THE PROJECT:**

57. During the site visit it was observed that the project authority has formed their own institutional arrangements to deal with any issues/concerns in the site. Grievance Redressal Mechanism with the help of project site official is in place which comprises of the member of Project Head, Deputy Manager (Administration) and Environmental & Health Safety Officers.

58. The Grievance Redressal Committee (GRC) was formed at the project site to ensure that any affected person's grievances are adequately addressed and to facilitate timely project implementation.

59. Further, it was informed that no Grievance has been received.

## **29. EMPLOYMENT GENERATION AND INCOME RESTORATION:**

60. It has been confirmed by the project developer that employment opportunities has provided to the local people for various unskilled and semi-skilled activities like security guards and office assistants. There are 54 local people are employed in the project.

## **30. COMMUNITY DEVELOPMENT ACTIVITIES:**

The concessionaire has carried out community development activities based on the demands made by the local people / nearby village. Under Grameen Mytrah scheme the project developer has engaged with the community through different activities with local people covering Eight project villages as below:

- Integrated Livestock Development (ILD), establishment of one ILD covering 18 villages benefited by 1069 farmers availed artificial insemination services for their cattle result results 394 calves born,
- Establishment of RO Water unit in Domnal village covering 1248 people from 312 families managed by the society. The water unit is run by inverter.
- Promotion of Fodder cultivation benefited by 126 farmers of Eight villagers which improves the quality of fodder result higher milk yields;
- Establishment of Farmer Producer Organization (FPO), 150 members registered in 3 FPO under societies act.
- Registration of Farmer Producer Company at Savalsung for the benefit of surrounding villages
- Integrated Livestock Development Centre developed covering 18 villages at Savalsung, where 1069 farmers availed artificial insemination services for their cattle
- Skill development training to identified local youth, results 58 youths trained from 5 villages and 39 youths are employed/self employed like Mobile repairing, data entry operator, motor winding,, bike repair, drivers and tailoring.
- Organizing general health camp in Savalsang village. Total 85 villagers benefited from this health camp
- Awareness programs on Swachh gram panchayat, beat plastic pollution etc were given to school children in nearby villages.
- Massive community plantation involving various stakeholders including school children was carried out on Environment day

### 31. SITE VISIT OBSERVATION:

61. A site visit was undertaken by IIFCL's Environmental and Social Safeguard Specialists on 5<sup>th</sup> – 7<sup>th</sup> August 2019. A detailed discussion on the social safeguards related issues was also carried out with the project team.

62. During the site visit it was observed that :

- Fire extinguishers and first aid kits are available at identified locations for emergency use.
- Emergency contact numbers have been displayed at the prominent places for easy reference.
- The Operation and maintenance workers and staff at the site were seen wearing personal protective equipment such as helmets, jackets, boots, gloves etc.
- The sub-project has a proper grievance handling mechanism and records are maintained at site.
- The area is generally devoid of vegetation and trees and has agricultural fields in the vicinity.
- Existing vegetation, farming, plantation are continued by the farmers. After land acquisition, farmers were paid compensation for the entire land taken over by the sub-project developer, however, the farmers were allowed to grow crops in the land belonging to Mytrah after leaving a buffer zone around the WTG and transformers.
- First aid boxes and firefighting systems are maintained at office premises.
- Since the project is in operation, no labour camps are there in the project site.

### 32. CONCLUSION:

63. Based upon the available documents and site visits it appears that the subproject developer has undertaken social safeguard measures for better and on time implementation of the sub-project. The key observations on due diligence on the social impacts are summarized as follows:

- The sub-project has been prepared by the New Renewable Energy Development Corporation of Andhra Pradesh Government of Andhra Pradesh and Karnataka as per the national and state government requirement and not in anticipation to ADB operation.
- The Commercial Operation Date (COD) of the project has achieved during 2014/2015,
- IIFCL has funded the sub-project under Takeout finance scheme after successful commercial operation of the project.

- The project does not involve any resettlement activities as land of the project is devoid of any commercial or residential structures.
- The land procured for the project doesn't result in involuntary resettlement in terms of physical and economical displacement of people.
- No cultural and community property was affected due to the project.
- There was no involuntary land acquisition or restriction on land use or on access to legally designated parks and protected areas.
- The project was disclosed to the project affected people by the project developer through informal public consultation and discussions with local panchayats.
- The subproject does not impact any Indigenous people get affected due to proposed project;
- Employment opportunities are being provided to the local people for various unskilled and semi-skilled activities like security guards and office assistants.
- After approval from the Bank the ESDDR will be uploaded for public disclosure.

64. Based on the site visit and due diligence findings, it can be concluded that the sub-project has no significant social safeguard issues. The sub-project, therefore, does not appear to involve any kind of reputational risk to ADB funding on social safeguards.



**ENVIRONMENTAL AND SOCIAL  
DUE DILIGENCE (ESDD) REPORT  
FOR  
37.4 MW WIND FARM AT  
BURGULA, KURNOOL, ANDHRA  
PRADESH**

*Prepared by*

**ENVIRONMENTAL AND SOCIAL  
DUE DILIGENCE REPORT  
FOR  
37.4 MW WIND FARM AT BURGULA, KURNOOL, ANDHRA  
PRADESH**

<b>Project Name:</b>	Environmental and Social Due Diligence (ESDD) Report for 37.4 MW Wind Power Plant at Burgula, District Kurnool, Andhra Pradesh
<b>Project Code:</b>	GUR/15-16/1608/EMS
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## ABBREVIATIONS

AAQ	Ambient Air Quality
ADB	Asian Development Bank
APTRANSCO	Transmission Corporation of Andhra Pradesh limited
BOD	Biological Oxygen Demand
CGWA	Central Ground Water Authority
CGWB	Central Ground Water Board
CPCB	Central Pollution Control Board
CSR	Corporate Social Responsibility
CTE	Consent to Operate
CTO	Consent to Establish
DISH	Directorate of Industrial Safety and Health
EAC	Expert Appraisal Committee
EHS	Environment, Health and Safety
EPC	Engineering Procurement and Construction
ESDD	Environmental and Social Due Diligence
ESIA	Environmental and Social Impact assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
FGD	Focus Group Discussions
GHG	Green House Gas
GoI	Government of India
HR	Human resource
HSE	Health, Safety and Environment
IFC	International Finance Corporation
IMD	Indian Meteorological Department
IPM	Integrated pest management
IPP	Independent Power Producer
IVM	Integrated Vector Management
mbgl	Metre below ground level
MEIL	Mytrah Energy (India) Limited
MoEF & CC	Ministry of Environment, Forests & Climate Change
MSL	Mean Sea Level
MVKPL	Mytrah Vayu (Krishna) Private Limited
MW	Mega watt
NAAQS	National Ambient Air Quality Standards
NABL	National Accreditation Board for Testing and Calibration Laboratories
NOC	No Objection Certificate
O&M	Operation and Maintenance
OBC	Other Backward Caste
OHSAS	Occupational Health and Safety Management Systems
PAF	Project Affected Family
PAP	Project Affected Population

PHC	Primary Health Centre
PPA	Power Purchase Agreement
PPE	Personal Protective Equipment
PS	Performance Standard
QHSE	Quality, Health, Safety and Environment
R & R	Restoration and Rehabilitation
RTFCTLARR	Right to Fair Compensation and Transparency in Land Acquisition and Rehabilitation & Resettlement
SC	Scheduled Caste
SEIAA	State Environment Impact Assessment Authority
SEMS	Social and Environmental Management System
EHS	Environment, Health and safety
SPCB	State Pollution Control Board
SOP	Standard Operating Procedure
SPS	Safeguard Policy Statement
SPV	Special Purpose Vehicle
ST	Scheduled Tribe
ST	Scheduled Tribe
TDS	Total Dissolved Solid
TSDF	Treatment, Storage & Disposal Facilities
VSPL	Voyants Solutions Pvt. Ltd.
WBG	World Bank Group
WPR	Work Participation Ratio
WTG	Wind Turbine Generator

## TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>9</b>
1.1	Project background.....	9
1.2	OBJECTIVE OF THE STUDY.....	9
1.3	Scope of Work.....	9
1.4	APPROACH and methodology.....	10
1.5	project documents reviewed.....	11
1.6	LIMITATIONS .....	11
<b>2</b>	<b>PROJECT DESCRIPTION.....</b>	<b>12</b>
2.1	Salient Features .....	12
2.2	Project Location .....	12
2.3	Technical Components of Project .....	14
2.4	Current status .....	14
2.5	ORGANIZATIONAL STRUCTURE.....	14
2.6	Project Categorization .....	15
2.6.1	<i>ADB Categorization Criteria.....</i>	<i>15</i>
2.6.2	<i>IFC Categorization Criteria.....</i>	<i>15</i>
<b>3</b>	<b>BASELINE CONDITION OF PROJECT AREA.....</b>	<b>17</b>
3.1	Terrain.....	17
3.2	Geomorphology .....	17
3.3	Climate & Meteorology .....	17
3.4	Hydrogeology.....	17
3.5	Air Environment.....	17
3.6	Noise Environment .....	21
3.7	ground Water quality.....	22
3.8	Soil Environment.....	23
3.9	Ecology and Biodiversity .....	24
3.9.1	<i>Flora population: .....</i>	<i>24</i>
3.9.2	<i>Faunal Diversity .....</i>	<i>24</i>
3.10	Socioeconomic Profile .....	24

3.10.1	<i>BASELINE OF THE STUDY AREA</i> .....	25
3.10.2	<i>PUBLIC CONSULTATION</i> .....	28
3.10.3	<i>LAND PROCUREMENT</i> .....	29
3.10.4	<i>REHABILITATION AND RESETTLEMENT IMPACT</i> .....	29
3.10.5	<i>IMPACT ON INDIGENOUS PEOPLE</i> .....	29
3.10.6	<i>GRIEVANCE REDRESSAL MECHANISM</i> .....	29
3.10.7	<i>COMMUNITY DEVELOPMENT ACTIVITY</i> .....	30
<b>4</b>	<b>Legislative Framework</b> .....	<b>31</b>
4.1	INTRODUCTION.....	31
4.2	NATIONAL REGULATIONS.....	31
<b>5</b>	<b>Gap analysis with respect to APPLICABLE standards</b> .....	<b>41</b>
<b>6</b>	<b>PROPOSED ENVIRONMENT MANAGEMENT PLAN WITH BUDGETARY PROVISIONS</b> .....	<b>73</b>
6.1	REGULATORY AGENCIES.....	73
6.2	ENVIRONMENT & SOCIAL MANAGEMENT SYSTEM (ESMS).....	73
6.3	ENVIRONMENTAL MONITORING PLAN.....	77
6.4	ENVIRONMENTAL BUDGET.....	78

**Annexures**

## LIST OF TABLES

Table 2-1: Project Salient Features .....	12
Table 2-2: WTG locations .....	12
Table 2-3: WTG Technical details.....	14
Table 3-1: PM <sub>10</sub> concentration at different monitoring site .....	18
Table 3-2: PM <sub>2.5</sub> concentration at different monitoring site .....	19
Table 3-3: SO <sub>2</sub> concentration at different monitoring site .....	20
Table 3-4: NO <sub>2</sub> concentration at different monitoring site .....	21
Table 3-5: Noise monitoring results at different monitoring site .....	21
Table 3-6: Groundwater quality monitoring results .....	22
Table 3-7: Soil Monitoring results.....	23
Table 3-8: List of some common flora found in the region .....	24
Table 3-9: List of some common fauna found in the study area .....	24
Table 4-1 : Environmental Regulations and Legislations .....	32
Table 5-1: Environmental and Social Gap Assessment as per IFC Performance Standards(2012), ADB Safeguard .....	42
Table 6-1: Environmental Monitoring Plan.....	77
Table 6-2: EMP Budget.....	78
Table 6-3: Environment and Social Management Plan for Operation Phase .....	79

## LIST OF FIGURES

Figure 2-1: Location Map of the project Site .....	13
Figure 3-1: PM 10 concentration at different monitoring site .....	18
Figure 3-2: PM <sub>2.5</sub> concentration at different monitoring site .....	19
Figure 3-3: SO <sub>2</sub> concentration at different monitoring site .....	20
Figure 3-4: NO <sub>2</sub> concentration at different monitoring site .....	21

## 1 INTRODUCTION

### 1.1 PROJECT BACKGROUND

**Mytrah Vayu (Krishna) Private Limited** (herein after referred as 'MVKPL'), is a subsidiary of Mytrah Energy (India) Limited (herein after referred as 'MEIL') engaged Voyants Solutions Private Limited (here in after referred as 'Consultant') to undertake an Environmental and Social Due Diligence (ESDD) Study in line with applicable National and International Guide lines for 37.4 MW Wind Plant (herein after referred as 'Project') located in village Burgula, District Kurnool in the State of Andhra Pradesh.

MVKPL has installed 44 Wind Turbine Generators (WTGs), with total capacity of 37.4 MW. The project extended over three villages namely Racherla & Burgula of Peapully Mandal and Kunukuntla of Owk Mandal, Kurnool District in the State of Andhra Pradesh. Gamesa is the EPC contractor and is also responsible for the Operation and Maintenance of the project.

### 1.2 OBJECTIVE OF THE STUDY

The Environment and Social Due Diligence study has been carried out by VSPL in consultation with MVKPL to assess the compliance of the project in line with the requirement of IFC performance standard, Equator principles, Asian Development Bank (ADB) safe guards, World Bank Group's (WBG) Environmental, Health and Safety Guidelines covering General EHS matters and applicable national environmental and social regulatory compliance requirement. The report has been prepared as per the documents received from project developer and site observations. The objective of this report stands with following but not limited to:

- Articulate the baseline condition through primary and/or secondary sources and independent assessment of the project against IFC, Equator Principle, World Bank and ADB requirements.
- Assessment of existing EHS system implemented at specific projects with action plan
- Assessment of compliances related with Environment and Safety aspects considering specific project
- Recommendation of corrective action plan against compliance gaps based on ADB's SPS requirements, IFC requirements and applicable Environmental, Health, safety and social laws of Government of India
- Specifically addressing foreseeable risks and mitigation measures in order to support the investor's investment decision and follow up approach.

### 1.3 SCOPE OF WORK

The due diligence report for project has the following scope of work:

- i. Project description including details of adopted technology for wind power generation
- ii. Baseline status of environmental and social profile of project area based on primary and secondary information and detailed site visits
- iii. To list out flora and fauna at the project and surroundings based on primary and

- secondary survey
- iv. Review of land documents and land acquisition process adopted for the project and impact of land acquisition
  - v. Environmental and Social impact (if any) for any applicable ROW
  - vi. Check and confirm if the project is properly following to the Environmental and Social good practices.
  - vii. Check and confirm if the project is compiling with the applicable Environmental and Social regulatory requirements.
  - viii. Assessment of EMP of proposed activity
  - ix. Public consultation with villagers and stakeholders considering EHS and Social impact
  - x. Review of Grievance redress mechanism policies
  - xi. Assessment of community development programme details
  - xii. Review of Disaster Management Plan

## 1.4 APPROACH AND METHODOLOGY

The due diligence report has been prepared based on the scope of work of the consultancy service; Environmental and Social Safeguards Framework (ESSF) of IFC and operational policy documents of the ADB. The methods followed for the preparation of due diligence report has been discussed under following sections-

### **Activity 1: Review of documents**

During site visit available reports and relevant documents related to environment and social safeguards with the developer have been reviewed. The documents included Information, Memorandum, Detailed Project Report, HSE documents, Training Schedules etc.

### **Activity 2: Consultations with the Developer**

Two-stage consultation process has been conducted towards preparation of the due diligence report: -

- Consultation prior to the site visit to appraise about the project, and
- Consultation after the site visit to ascertain the compliance procedures adopted or planning to be adopted by the developer for various safeguard issues observed at the site.

### **Activity 3: Site visit and on-site observations**

Visit to the project site is treated as an integral part of the preparation of due diligence report. Consultant team visited the project site on 30th May 2016 – 2nd June 2016 to collect all the relevant information related to this study. The visited team comprises of Environmental specialist, Social and R&R Specialist, Ecology and Biodiversity expert, Laboratory professional and project proponent.

#### **Activity 4: Public Consultation and Stakeholders meeting**

Stakeholders Consultation was carried out to obtain their opinion about the project. During consultation with village panchayat member and other people, the time and venue was scheduled as per the convenience of the stakeholders

#### **Activity 5: Baseline environmental monitoring**

Environmental monitoring was carried out to compare baseline conditions with regulatory standards

### **1.5 PROJECT DOCUMENTS REVIEWED**

The following documents were reviewed during present study:

- QHSE policy of MEIL;
- O & M Contract between MEIL /MVKPL and Gamesa;
- Road Safety Policy of Gamesa
- HR Policy of MEIL and Gamesa;
- Social and Environment Management system of MEIL/Gamesa
- Onsite EHS Procedures:
  - Records of work permits and tool box talks for Gamesa staff
  - Incidents Report and documentation of near misses
  - PPE Records and Register
  - Emergency Contact Number
  - Standard Operating Procedures
  - Hazard Identification and Risk Assessment Manual
  - Record of mock fire drills conducted
- Power evacuation plan;
- Commissioning certificate from Inspector of AP State Electricity Board;
- Attendance record of employees at site;
- Visitor's record register;
- Details of Sub-contractors working at site and a sample copy of their agreement;
- Training Records maintained by Gamesa for their staff;
- Legal register maintained by Gamesa;
- Results of last conducted noise monitoring at the project site;
- Onsite Emergency Preparedness Plan of Gamesa;
- Sample sale deed of the private land acquired for the project;
- Sample of land conversion certificate (for non-agricultural purpose); and
- Sample letter of possession lease agreement for revenue land involved in the Project.
- Grievance redressal mechanism

### **1.6 LIMITATIONS**

The ESDD study was carried out on the basis of the available documents, discussions with the community and visual observations at the time of site visit.

## 2 PROJECT DESCRIPTION

### 2.1 SALIENT FEATURES

The project is based on the wind turbine technology of Power Generation. The various salient features of the project in respect to site and technology are presented in Table below.

**Table 2-1: Project Salient Features**

S. No.	Salient Features	Details
1.	Location of site	<b>Villages-</b> Racherla, Burgula and Kunukuntla <b>Mandals-</b> Peapally and Owk Mandal <b>District-</b> Kurnool District
2.	Geographical Location of the Project	Latitude-15°19' N Longitude- 77°95' E
3.	Total Project Capacity	37.4 MW (44 WTG X 0.85 MW)
4.	Project commissioning date	22.1 MW: 21.02.2014 15.3 MW: 15.03.2014
5.	Life time	20 years
6.	Eco-Sensitive area/receptor	None
7.	Total Available Land	39.91 acres (Revenue Land: 37.01 acres and Private Land: 2.0acres)
8.	Power Evacuation	Central Power Distribution Company of AP Ltd. (APCPDCL), Government of Andhra Pradesh
9.	Altitude above MSL	548 m
10.	Land use of the site	Barren Waste land
11.	Nearest Road & Highways	Bangalore-Hyderabad Highway is about 20 km from site
12.	Nearest Railway Station	Dhone railway Station (about 22 km from site)
13.	Nearest Airport	Hyderabad Airport (about 250 km from site)
14.	Cultural/Pilgrimage center	Not any within 10 km from the site

### 2.2 PROJECT LOCATION

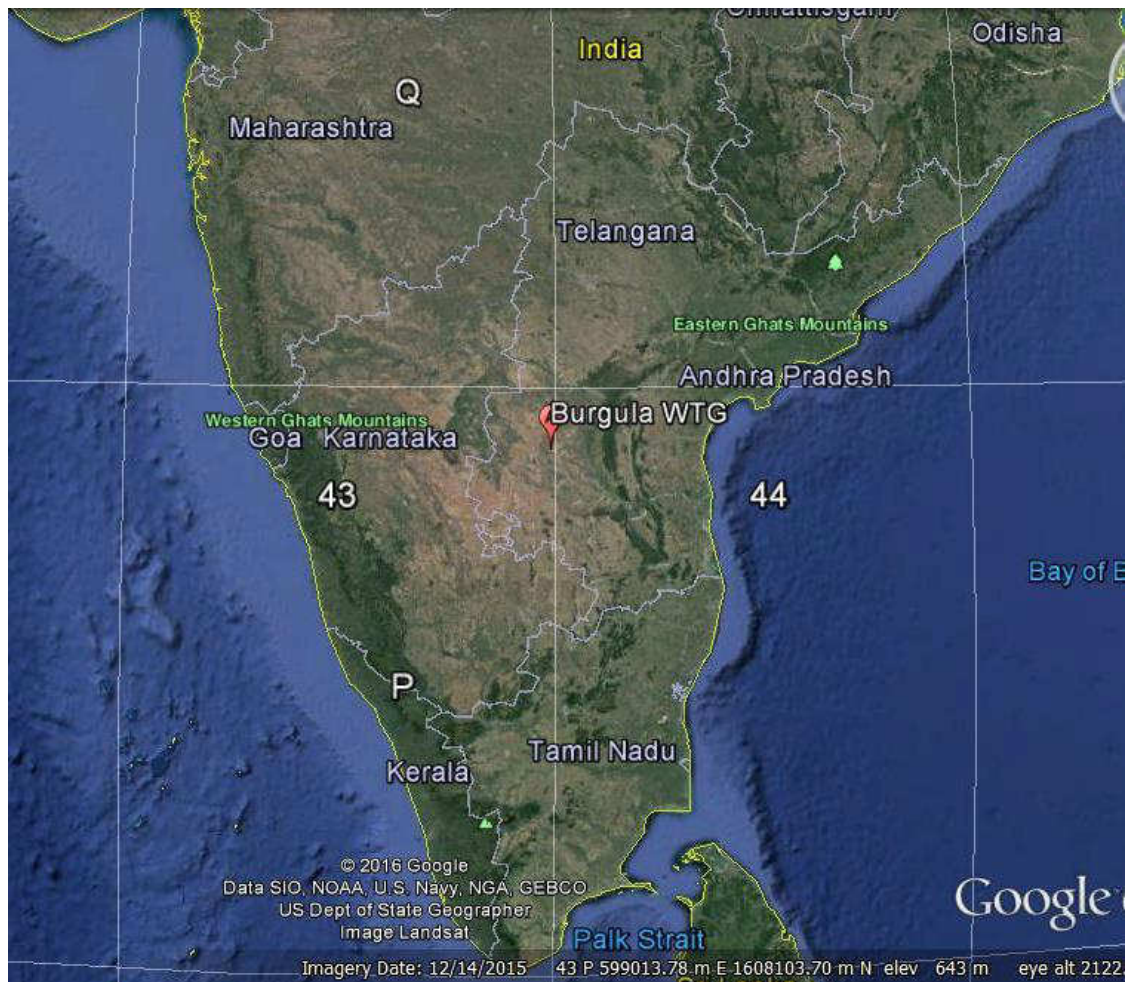
44 WTGs are spread over three villages namely Burgula, Kunkuntla and Racherla in Kurnool district, Andhra Pradesh. The total land required for this project is approximately 39.91acres. Of the total land 2.0 acres is private land rest is revenue land. The location details of various WTGs are shown in table 2.2

**Table 2-2: WTG locations**

Sl.No.	Village Name	Sy.No.	Land Status	WTG No.	Capacity MW
1	Racherla	Hill Block	Revenue	12	11.05
2	Kunukuntla	916	Revenue	1	
3	Kunukuntla	916,953	Revenue	1	4.25
4	Kunukuntla	916	Revenue	1	

Sl.No.	Village Name	Sy.No.	Land Status	WTG No.	Capacity MW
5	Kunukuntla	953	Revenue	3	
6	Kunukuntla	953	Revenue	7	5.95
7	Kunukuntla	953	Revenue	7	7.65
8	Kunukuntla	953,722	Revenue	2	
9	Kunukuntla	953	Revenue	4	8.5
10	Burugala	881,882	Private land	1	
11	Burugala	880,882	Private land	1	
12	Burugala	888	Revenue	2	
13	Burugala	974,975	Revenue	1	
			TOTAL	44	37.4

The private lands have been purchased directly from the land owners on willing seller- willing buyer basis. The project does not involve any resettlement and rehabilitation (R & R) issue. The Location of map the project is shown in figure 2.1.



**Figure 2-1: Location Map of the project Site**

## 2.3 TECHNICAL COMPONENTS OF PROJECT

After thorough technical evaluation 44 Nos of Gamesa G58 with 850 kW capacity Wind Energy Converters was selected for this project. The technical details of the WTGs are highlighted in table 2.3.

**Table 2-3: WTG Technical details**

Technical Aspect	Details
Rotor diameter	58.0 m
Maximum electrical output	850 KW
Cut-in wind speed	4.0 m/s
Cut-out wind speed	25 m/s
Rated wind speed	12 m/s
Rotor swept area	2642 m <sup>2</sup>
Rotational speed	19.44 to 30.8 rpm.
Rotor material	Hub – Cast iron as per EN-GJS-400-18U-LT Blade – Fiber glass pre-impregnated with epoxy resin.
Power Regulation	Pitch System
Generator	Doubly fed machine
Rated output	850 KW
Operating voltage	690 V (+/-10%)
Frequency	50 Hz
Protection class	IP 54
Cooling system	Air Cooled; Forced Air-Air Cooled.
Slip Control	Flexi Slip Control System
Gear box	1 Planetary stage, 2 Helical stages
Gear ratio	1:61.74
Yaw drive system	Active electric yaw drive having electric motor with brake, gearbox & pinion
Yaw bearing	Slide bearing with gear ring
Aerodynamic Brake	Three simultaneous pitching blades
Mechanical brake	Hydraulic Disc brake, activated by Hydraulic Pressure
Tower	Tubular tower with welded steel plates
Type	Steel Tubular Tower
Certifications	CWET

## 2.4 CURRENT STATUS

At the time of the study the project was fully operational. During site visit, it was reported that about 2 engineers of MVKPL and 12 engineers of turnkey contractors are deputed at site. Besides there are employees employed at site as security personnel and other different support staff.

## 2.5 ORGANIZATIONAL STRUCTURE

The site in charge is overall responsible for Environment, Health and Safety Management System at the project site. The site engineer from MVKPL is designated with additional

responsibility of supervising and coordinating Environment, Health and Safety Management System at project activities at site.

## 2.6 PROJECT CATEGORIZATION

### 2.6.1 ADB Categorization Criteria

The projects are screened on the following criteria for the project classification system of ADB and to establish ADB's safeguard requirements:

**Environment:** Proposed project is screened according to type, location and scale of the project, as well as sensitivity and magnitude of their potential environmental impacts including direct, indirect, induced and cumulative impacts.

**Involuntary Resettlement:** The involuntary resettlement impacts of an ADB funded projects considered significant if 200 or more persons are physically displaced from home or lose 10% or more of their productive or income generating assets.

The projects which involve involuntary resettlement, a resettlement plan are need to be prepared that should be commensurate with the extent and degree of the impacts.

**Indigenous People:** The impacts of an ADB funded project on indigenous people is determined by assessing the magnitude of impacts in terms of:

- Customary right of use and access to land and natural resources;
- The right of cultural and communal integrity;
- The level of vulnerability of the affected Indigenous people's community;
- Socio-economic status;
- Health, education, livelihood and social security status; and
- The recognition of indigenous people

As per these criteria projects are classified into four categories: A, B, C and F1 which are described as follows:

**Category A Projects:** Projects which are likely to have significant adverse environmental and social impacts that are irreversible, diverse, or unprecedented.

**Category B Projects:** Projects with potential adverse environmental and social impacts that are less in number, generally site-specific, mostly reversible and readily addressed through mitigation measures;

**Category C Projects:** Projects with minimal or no adverse environmental and social impacts;

**Category FI Projects:** Projects which involve investment of ADB funds to or through a financial intermediary.

### 2.6.2 IFC Categorization Criteria

As part of its review of a project's expected social and environmental impacts, IFC uses a system of social and environmental categorization. This categorization is used to reflect the size of impacts understood as a result of the client's social and environmental assessment and to specify IFC's institutional requirements. The following categories are used by the IFC:

**Category A Projects:** Projects with potential significant adverse environmental and social impacts that are diverse, irreversible or unprecedented;

**Category B Projects:** Projects with potential limited adverse social or environmental impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures;

**Category C Projects:** Projects with minimal or no adverse social or environmental impacts, including certain financial intermediary (FI) projects with minimal or no adverse risks;

**Category FI Projects:** All Financial Intermediary (FI) projects excluding those that are Category C projects.

IFC therefore categorizes projects primarily according to the significance and nature of impacts. IFC defines the project's area of influence as the primary project site(s) and related facilities that the client (including its contractors) develops or controls; associated facilities that are not funded as part of the project (funding may be provided separately by a client or a third party including the government), and whose viability and existence depend exclusively on the project and whose goods or services are essential for the successful operation of the project; areas potentially impacted by cumulative impacts from further planned development of the project; and areas potentially affected by impacts from unplanned but predictable developments caused by the project that may occur later or at a different location. The area of influence does not include potential impacts that would occur without the project or independently of the project.

The major observations of the proposed project are as follows.

- The project is a greenfield project. No resettlement and rehabilitation or involuntary resettlement is proposed for the project.
- The land for the project is devoid of any natural forest or ecology of great concern. Hence no significant impact on ecological balance of the area is expected. The project is located away (10km surrounding the project boundary) from all ecologically sensitive areas like national parks, wildlife sanctuaries, scheduled areas and critically polluted areas.
- No specific group of community is likely to be get affected by the project.
- The site is devoid of any settlement. Hence, no impact on nearby settlement is expected due to project activities.

On the basis of above observations project is categorized as 'Category B'.

### **3 BASELINE CONDITION OF PROJECT AREA**

#### **3.1 TERRAIN**

The proposed Burgula Site lies on the edge of a Plateau sloping with an elevation of 548m. It was observed that the proposed area has a differential elevation of around 28m towards the west.

#### **3.2 GEOMORPHOLOGY**

The district is underlain by different geological formations ranging in age from Archaean to recent. The major part of the district in west is occupied by granite gneisses, while the eastern part is underlain by quartzites, shales and limestones of cuddapah and kurnool group. The recent alluvium is confined to the major stream and river courses like Krishna, Tungabhadra, Gundlakamma and Kuderu.

#### **3.3 CLIMATE & METEOROLOGY**

The area lies in the tropical climate zone; hence it is hot in summer. The climatological information of the area has been obtained from the Indian Meteorological Department (IMD), Gol. Kurnool District summer highest day temperature is in between 30°C to 39.8°C. The average annual rainfall of the district is 665.5mm, which ranges from nil rainfall in January and December to 139.6 mm in September. August and September are the wettest months. The mean seasonal rainfall distribution is 459.1mm in southwest monsoon (June-September), 133.7mm in northeast monsoon (Oct-Dec), 1.9 mm rainfall in Winter (Jan-Feb) and 70.8 mm in summer (March-May).

#### **3.4 HYDROGEOLOGY**

The district consists of two distinct physiographic provinces viz., the undulatory gneissic terrain with low denudational hills in the west and a sedimentary terrain with structural plateaus and homoclinal ridges and valleys in the east. The Western part of Kurnool district exposes Archaean granitic gneisses, migmatites and granitoids which are grouped together as Peninsular Gneissic Complex (PGC). Amidst the gneissic terrain, narrow linear greenstone belts (Dharwar) of Gadwal and Jonnagiri occur. The Cuddapah Supergroup of rocks (Middle Proterozoic) unconformably resting over the crystallines, comprise of conglomerate, quartzite, shale limestone/dolomite and chert. Basic volcanic flows and sills are also present with in these sediments. The Kurnool Group (Upper Proterozoic) of sediments which lie unconformably over the Cuddapah Supergroup, occupy a large area in the east and are represented by quartzite, limestone and shale. The main structural features noticed in the area are folds and faults. The Cuddapah sediments show double plunging anticlines and synclines in the eastern part of the district.

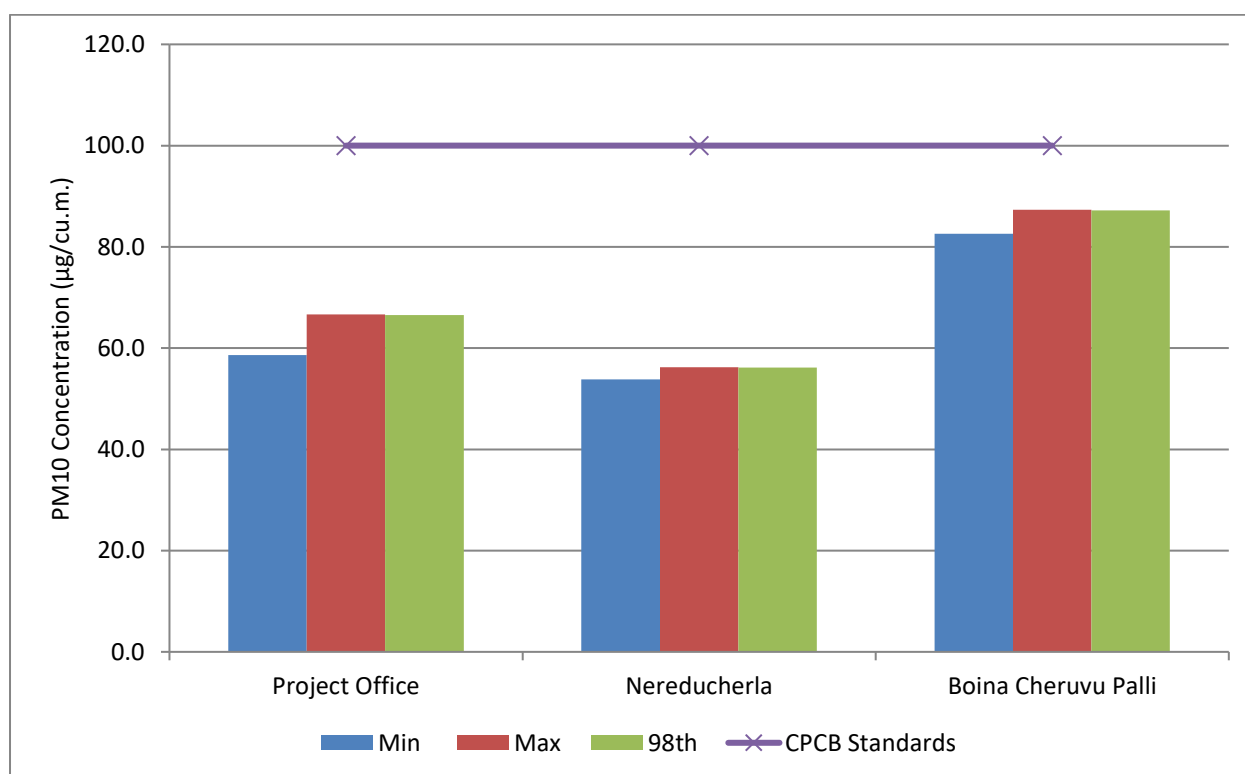
#### **3.5 AIR ENVIRONMENT**

The monitoring of the ambient air quality (AAQ) in and around the project site has been carried out for oneweek from 24.05.2016 to 30.05.2016. Sampling at each location and analysis has been carried out as per guidelines of Central Pollution Control Board and as per the

requirements of MoEFCC. All the parameters of ambient air quality are well within prescribed limit. The results of ambient air quality monitoring stations have been highlighted in Table 3.1 to 3.4 and figure 3.1 to 3.4.

**Table 3-1: PM<sub>10</sub> concentration at different monitoring site**

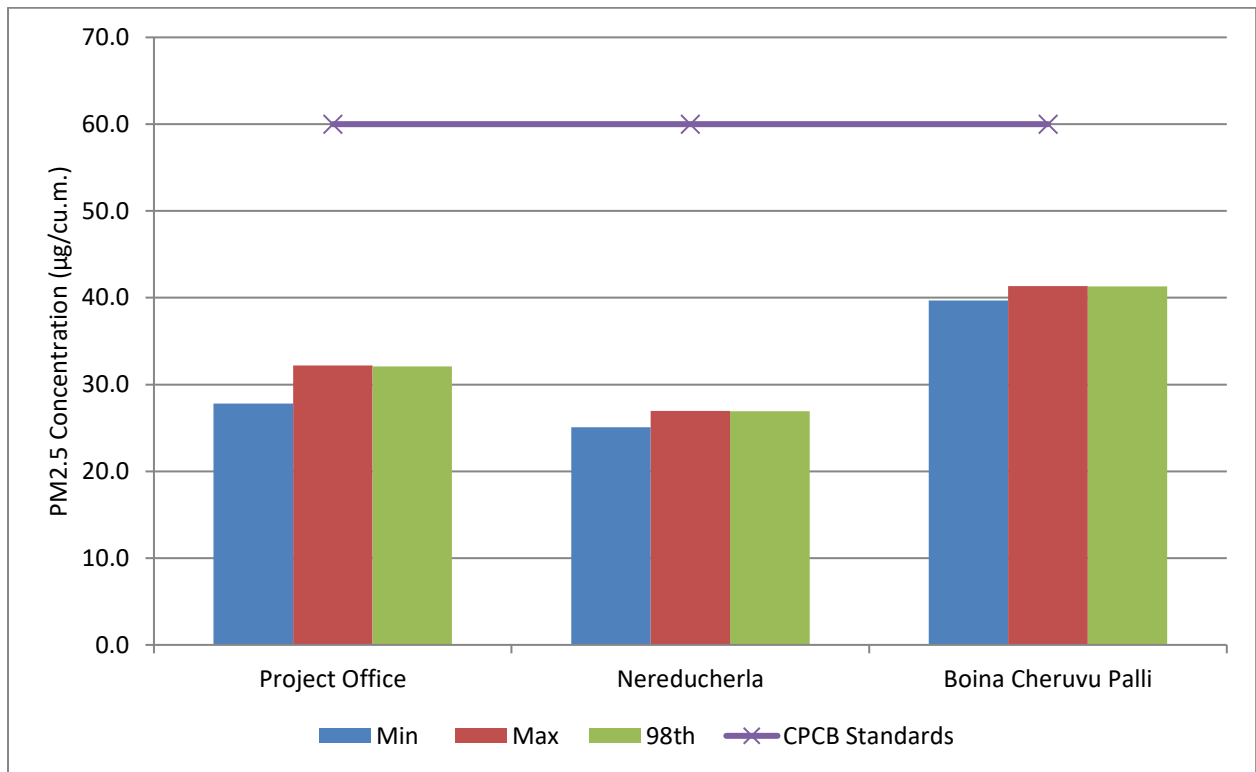
PM <sub>10</sub>	Project Office	Nereducherla	Boina Cheruvu Palli
<b>Min</b>	58.6	53.8	82.6
<b>Max</b>	66.7	56.2	87.3
<b>98th</b>	66.5	56.2	87.2



**Figure 3-1: PM 10 concentration at different monitoring site**

**Table 3-2: PM<sub>2.5</sub> concentration at different monitoring site**

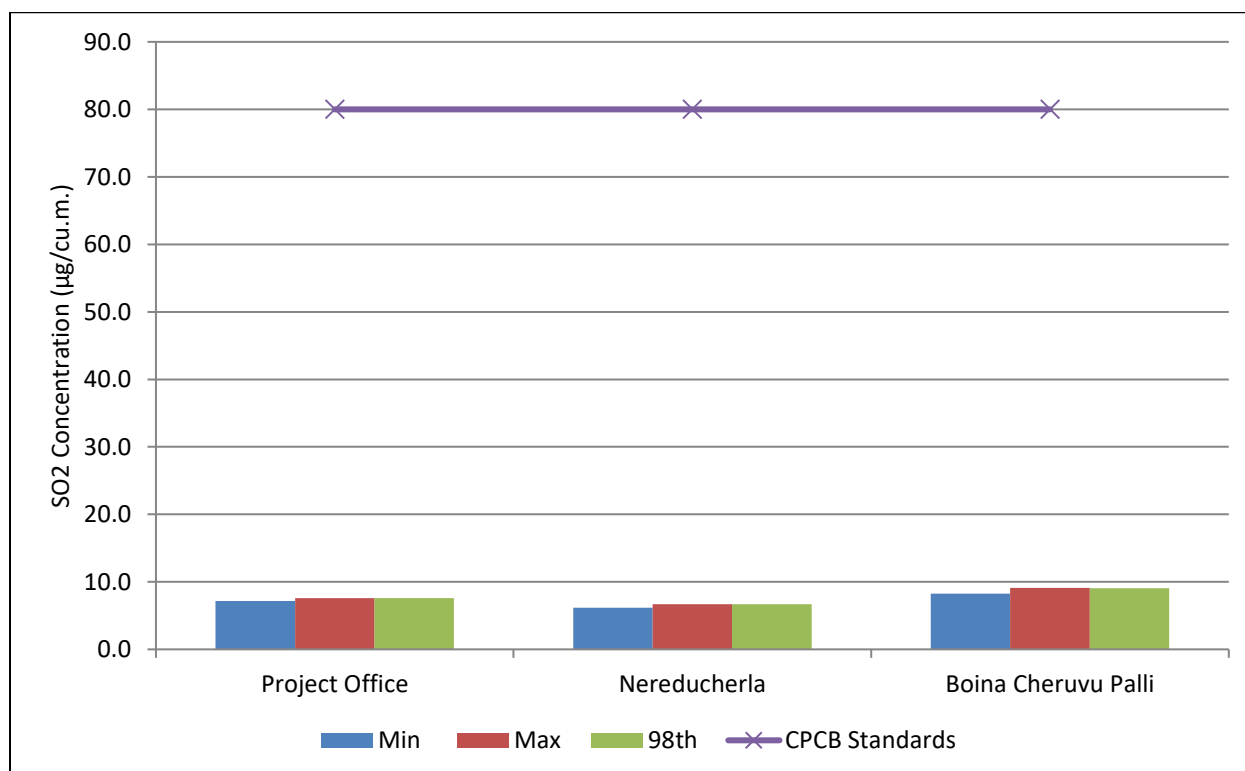
PM <sub>2.5</sub>	Project Office	Nereducherla	Boina Cheruvu Palli
Min	27.8	25.1	39.7
Max	32.2	27.0	41.3
98th	32.1	26.9	41.3



**Figure 3-2: PM<sub>2.5</sub> concentration at different monitoring site**

**Table 3-3: SO<sub>2</sub> concentration at different monitoring site**

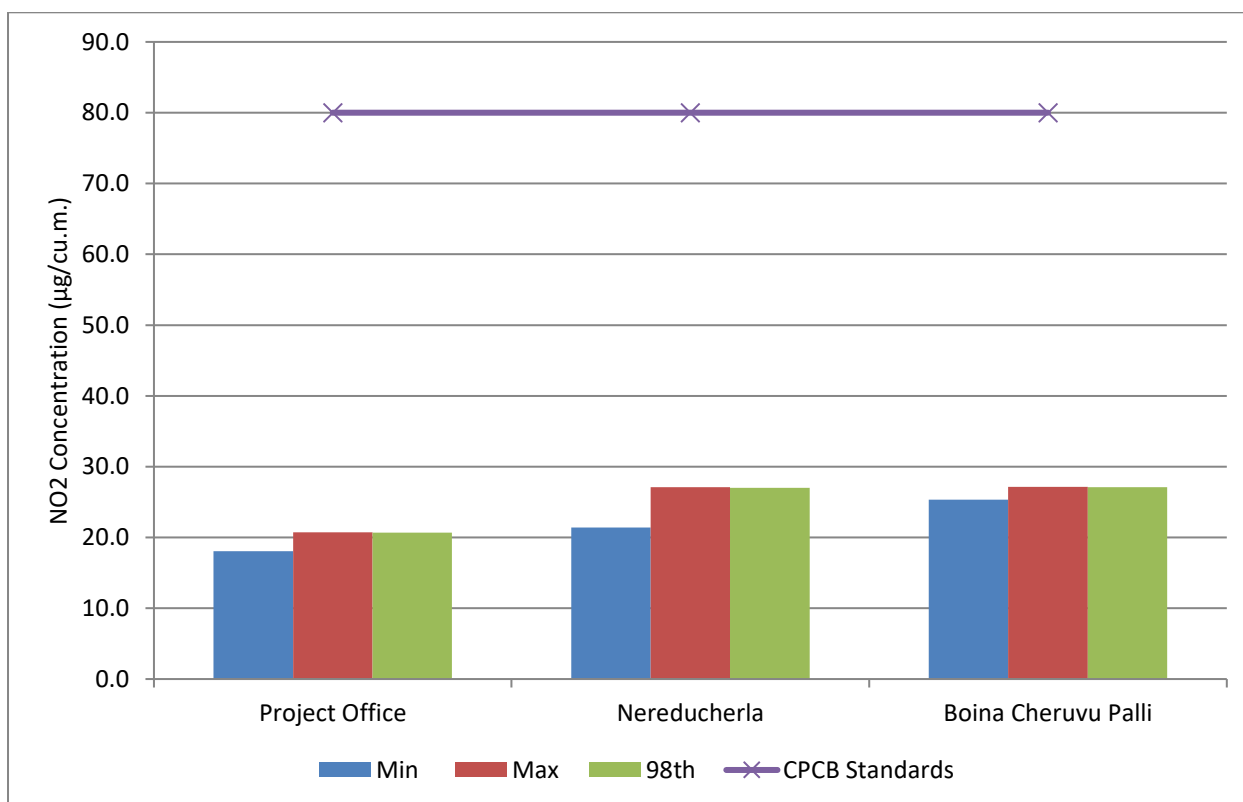
SO <sub>2</sub>	Project Office	Nereducherla	Boina Cheruvu Palli
Min	7.2	6.2	8.3
Max	7.6	6.7	9.1
98th	7.6	6.7	9.1



**Figure 3-3: SO<sub>2</sub> concentration at different monitoring site**

**Table 3-4: NO<sub>2</sub> concentration at different monitoring site**

NO <sub>2</sub>	Project Office	Nereducherla	Boina Cheruvu Palli
<b>Min</b>	18.1	21.4	25.4
<b>Max</b>	20.7	27.1	27.2
<b>98th</b>	20.7	27.0	27.1



**Figure 3-4: NO<sub>2</sub> 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 Nereducherla and project site office) have been selected based on the nearest distance from the WTGs. Nereducherla village is located about 2.5 km away from nearest WTG. 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
Neraducherla	<b>53.4</b>	<b>39.1</b>	<b>52.4</b>
Near Project Site Office	55.6	40.7	54.5

### 3.7 GROUND WATER QUALITY

Ground water samples were collected from Bore wells at Nerducherla village and Boina Cheruvu Palli Village. 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 3-6: Groundwater quality monitoring results**

S.No	Parameter	Unit	Neruducherla	Boina Cheruvu Palli	Range
1	pH at 25 deg C	--	7.08	8.34	6.5-8.5
2	Turbidity	NTU	1.28	2.16	5-10
3	Conductivity at 25 deg C	μMho/cm	896	1126	
4	TSS	mg/L	2.3	4.5	
5	TDS	mg/L	556	698	
6	Total Alkalinity as CaCO <sub>3</sub>	mg/L	300	450	
7	Chlorides as Cl <sup>-</sup>	mg/L	55	50	250-1000
8	Sulphates as SO <sub>4</sub> -2	mg/L	59	31.2	200-400
9	Nitrates as NO <sub>3</sub>	mg/L	5	5.6	40-100
10	Phosphates as PO <sub>4</sub>	mg/L	<0.02	<0.02	
11	Total Hardness as CaCO <sub>3</sub>	mg/L	250	50	200-600
12	Calcium as Ca	mg/L	80	12	75-200
13	Magnesium as Mg	mg/L	12	4.8	30-100
14	Sodium as Na	mg/L	86.5	230.9	
15	Potassium as K	mg/L	3.1	3.5	
16	Flourides as F <sup>-</sup>	mg/L	0.5	0.8	1-1.5
17	Iron as Fe	mg/L	0.12	0.14	0.3-1
18	Phenolic Compounds	mg/L	<0.001	<0.001	0.001-0.002
19	Cyanide as CN <sup>-</sup>	mg/L	<0.001	<0.001	0.005
20	Residual Chlorine as Cl <sup>-</sup>	mg/L	<0.001	<0.001	0.2
21	Cadmium as Cd	mg/L	<0.001	<0.001	0.01
22	Total Chromium as Cr	mg/L	<0.001	<0.001	0.05
23	Lead as Pb	mg/L	<0.02	<0.02	0.05
24	Zinc as Zn	mg/L	0.036	0.08	5-15
25	Manganese as Mn	mg/L	<0.001	<0.001	30-100
26	Copper as Cu	mg/L	0.04	0.048	0.05-1.5
27	Nickel as Ni	mg/L	<0.001	<0.001	3.0-5.0
28	Colour	Hazen	<01	<01	5.00

S.No	Parameter	Unit	Neruducherla	Boina Cheruvu Palli	Range
29	Taste	-	Agreeable	Agreeable	Agreeable
30	Odor	-	Unobjectionable	Unobjectionable	Unobjectionable
31	Boron	mg/L	<0.001	<0.001	1.00
32	Anionic Detergents	mg/L	<0.001	<0.001	0.20
33	Mineral Oil	mg/L	<0.001	<0.001	0.01
34	Aluminium as Al	mg/L	<0.001	<0.001	0.03
35	Mercury as Hg	mg/L	<0.0002	<0.0002	0.00
36	Pesticides	mg/L	<0.001	<0.001	Absent

### 3.8 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 3-7: Soil Monitoring results**

Sr. No.	PARAMETERES	UNIT	RESULTS
1	Texture	-	Sandy Clay
	Sand	%	32
	Silt	%	26
	Clay	%	42
2	pH (10% Slurry)	-	8.26
3	Conductivity	µmhos/cm	164
4	Moisture	%	<1.0
5	Organic Matter	%	3.86
6	Bulk density	gram/cc	1.4
7	Porosity	% v/v	36
8	S.A.R	meq/kg	1.4
9	Infiltration capacity	mm/h	32.2
10	Carbonates	mg/kg	36
11	Sodium as Na	mg/kg	1.24
12	Potassium as K	%	1.1
13	Phosphorus as P	%	0.65
14	Chloride as Cl	mg/kg	1.68
15	Zinc as Zn	mg/kg	3.1
16	Copper as Cu.	mg/kg	0.09
17	Iron as Fe	mg/kg	0.12
18	Nitrogen as N	%	7.62

19	Sulphate as SO <sub>4</sub>	mg/kg	0.12
20	Boron as B	mg/kg	0.22

### 3.9 ECOLOGY AND BIODIVERSITY

Physio graphically the area is barren waste land and supports a very sparse floral population. 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 are 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.

#### 3.9.1 Flora population:

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

**Table 3-8: List of some common flora found in the region**

Scientific Name	Common Name
Terminalia bellirica	Tandra
Dolichandrone crista	Neerudhi
Zizyphus xylopyrus	Gotiki
Acacia chundra	Sundra
Albizia amara	Chingara
Cymbopogon coloratus	Bodda gaddi
Paspalum flavidum	uda gaddi

#### 3.9.2 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 3-9: List of some common fauna found in the study area**

Common Name
Hare
Black Buck
Wild boar
Indian Fox
Wild Cat
Indian Peafowls
Quail-Kamju

### 3.10 SOCIOECONOMIC PROFILE

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.

### **3.10.1 BASELINE OF THE STUDY AREA**

#### **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.

#### **District Profile: Kurnool**

Kurnool District in the state of Andhra Pradesh, India, is located in the west-central part of the state and is bounded by Mahabubnagar district of Telangana in the north, Raichur district of Karnataka in the northwest, Bellary district of Karnataka in the west, Ananthapur district in the south, YSR Kadapa district in the South East and Prakasham district in the east. The city of Kurnool is the headquarters of the district. Telugu is the official as well as the most widely spoken language in Kurnool. Languages such as Kannada and Urdu are spoken by a tiny minority of the population in Kurnool.

In this district, there are 54 Mandals with 898 villages. Among these 870 are inhabited villages and remaining 28 villages are un-inhabited.

#### **Demographic Profile**

As per Census of India, 2011, the total population of Kurnool district is 40,53,463 with 20,39,227 males and 20,14,236 females. The total number of normal Households in the district are 8,87,652. The decadal growth of population from Census 2001 to 2011 is 14.8%. Gender Ratio of the district is 988 females per thousand males while it was 965 in Census 2001. Out of the total population of the district 29,04,177 persons constituting 71.65% are residing in rural areas and the remaining 11,49,286 persons i.e. 28.35% are residing in urban areas. The proportion of urban to total population regarded as an index of urbanization, and it is 28.4% for this district.

In this district out of the total population, religion wise there are 33,28,380 (82.11%) Hindus, 6,70,737 (16.55%) Muslims, 33,165 (0.82%) Christians, 737 Sikhs, 255 Buddhists and 2,235 persons are Jains. Other religious members inclusive of unclassified are 434. The members who were not stated the religion are 17,520.

**Literacy**

Average literacy rate of the district of Kurnool is 59.97% in which male literacy is 70.10% with respect to the male population and female literacy is 49.78% with respect to female population creating 20.31% of gender gap between male and female.

**Scheduled Caste and Scheduled Tribes**

Out of total district population of 4053463, Scheduled Castes constitute 18.21 per cent and Scheduled Tribe constitutes 2.04 percent of the population respectively. Out of the total rural population 2904177, Scheduled Caste is 19.59 per cent and Scheduled Tribes are 2.23 percent.

**Work Participation Rate**

As per Census 2011, average Work Participation Rate of the district is 50.07% (2029425) in which males are 57.09% with respect to male population and females are 42.96% with respect to female population. Out of total worker 86.60% are categorized as Main Workers and 13.40% as Marginal Workers. Further main workers are categorised as Cultivator, Agricultural Labourers, Household Industries and Other worker. In main worker, most of the people are involved in agricultural labourers (49.45%) followed by other workers with 31.07%, cultivators with 16.73% and household industries with 2.75%. Likewise, in marginal workers most of the people are involved in agricultural labourers (61.87%) and other workers (27.31%).

**Economy of the district**

Kurnool is endowed with good mineral resources. The important minerals are Iron ore, Dolomite, lime stone, ochre, quartz stealite and silica. Livelihood of the most of the people depends on agriculture. Prominent crops grown in the district are paddy, jowar, ragi, ground nut, cotton and maize.

**Project Influence Area**

The existing 37.4 MW Burgula Wind Power Project is spread in 3 villages namely Burgula, and Recherla of Peapally Mandal and Koilakuntala of Koilakuntla Mandal of Kurnool District, Andhra Pradesh. The social study are comprises of project villages; which are being affected (positive or negative) by the project activities during project operation phase. The project area falls under dry hill.

**Population:**

As per Census of India 2011, the total population of the study area is 32956 in which 49.36% are males and 50.64% are females creating an average gender ratio of 1026 females per 1000 males. The study area falls under rural settlement. Approximately 11% of the total population belongs to 0-6 age group. The sex ratio of this age group is 940 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 7883 households and the average size of household is approximately 4 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. 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 5061 (15.36%) of the total population of the study area in which males are 2431 (48.03%) and females are 2630 (51.97%). Total population of Scheduled Tribes in the study area is 1724 (5.23%) in which male and female are 859 (49.83%) and 865 (50.17%) 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 68.03% (19957) in which male's literacy is 77.38% with respect to the male population as against 59.02% for females with respect to the female population, creating a gender gap of 18.36%. 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 14971 and WPR is 45.43% in which males are 55.41% with respect to the male population and females are 35.70% with respect to female population creating a 19.71% of gender gap in WPR. Among the total workers 81.76% are main workers and the remaining 18.24% 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 43.78% followed by agricultural labourers 41.61%, cultivator 11.52% and household industrial worker with 3.09%. Likewise, in marginal worker, most of the workers are agricultural labourers with 56.04% followed by other workers with 25.02%, cultivators with 15.60% and cultivators with 3.33%.

Considering the Table 6 and 7 of Annexure I, it appears that most of the people of the study area involved in agriculture, agricultural labourers and 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:**

The study area falls in dry hilly station. Water for drinking and other domestic purposes at MVKPL site office has been supplied by vender through tankers.

There is acute shortage of water during summer season. In every village, there is water tank constructed by village's panchayat and water for drinking and other domestic use has been supplied by pipeline.

**Health:**

As per Census 2011, 2 numbers of Government Community/Primary Health Centres (Burgula and Koilakuntala) and 1 Veterinary Hospital (Koilkuntala) 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 15 numbers of Govt. Primary School, 9 Govt. Middle School, 9 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.

**3.10.2 PUBLIC CONSULTATION**

A site visit was undertaken by the Environmental and Social safeguard specialists from May 18 to May 20, 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 (Krishna) Private Limited (MVKPL), Gamesa 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/public consultation with local villagers, village sarpanch, panchayat members and daily wages labourers in Racherla and Burgula villages of the study area. Total land procured for the project is 39.9 acres in which 2 acres are private land and rest 37.91 are revenue land. Land procurement process was done on willing seller willing buyer basis with direct negotiation with farmers. All the land purchase deed has completed and compensation for land has been deposited in the account of land seller. **No complaints were reported during the community consultations regarding land purchase deal between MVKPL and land seller. During consultation with the local community, it was found out that the land sold to MVKPL was rain fed and unfertile agricultural land. Agriculture of the study area 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. All the WTGs of the project are located on dry hilly area and away from community settlement. Therefore, no complaint regarding noise and shadow flicker due to WTGs has been reported during consultation.** It was also revealed by local community that no community development activity has been implemented by project proponent till the time of site visit.

### **3.10.3 LAND PROCUREMENT**

As informed by MVKPL during site visit, total land required for 37.4 MW Wind Farm are 39.91 acres in which 37.91 are revenue land and rest 2.0 acres are private land. Revenue land has been procured on lease from state government while 2 acres of private land has been procured from farmers of village Koilkuntala on willing seller-willing buyer basis. Based on discussions with villagers and local community, it was recorded that the land sold to MVKPL by the land sellers was rain fed, unfertile 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.

#### **Compensation for the Land**

Most part of the land required for the project has been taken from revenue department on lease basis while 2 acres of private land has been procured from farmers on willing seller-willing buyer process. The land originally was unfertile agricultural with one crop yielding rain fed. Private land was procured by MVKPL 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 stakeholders consultations with the Village Head and local villagers, regarding the land transaction and compensation which indicated broad community support for these projects.

### **3.10.4 REHABILITATION AND RESETTLEMENT IMPACT**

The existing Wind Farm is located on dry hilly area and away from community settlement. It was reported by local villagers and MVKPL that there were no inhabitants on the project land. The projects did not have any impact on the settlement area and no cultural and community property was affected due to the projects. Hence rehabilitation and resettlement was not required for the projects.

### **3.10.5 IMPACT ON INDIGENOUS PEOPLE**

As information provided by MVKPL, the existing 37.4 MW Wind Farm did not involve land acquisition from indigenous people. Most part of the land has been procured on lease basis from State Government. And thus this project did not have any impact on the indigenous people.

### **3.10.6 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. Till date, only nine complaints/query has been registered in which 2 were regarding balance payment of land which was resolved and rest are regarding job opportunity in the plant.

### **3.10.7 COMMUNITY DEVELOPMENT ACTIVITY**

As informed by Site In-charge, MVKPL has not yet conducted any community development activity in and around the project impact area.

## **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 focus 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 Green and White Category, issued by Central Pollution Control Board, 2016, the solar power generation through solar photovoltaic cell, Wind Power & mini hydel power (<25 MW) are classified under White Category Industries and not 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 13<sup>th</sup> 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
<b>A</b>	<b>ENVIRONMENT &amp; FOREST</b>			
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	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
		for reforestation		
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 shall be 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)	As per the Noise Pollution (Regulation and Control) Rules 2000, every operating facility is required to take all possible steps to	SPCB	Exempted from CTE and

S. No	Act/Law	Description/purpose	Responsible Authority	Applicability
	Rules, 2000 and the Noise Pollution (Regulation and Control) Amendment) Rules, 2010	meet the ambient noise level standards prescribed in the Rules.		CTO.
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,</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>in any way injure any railway, highway, airports, tramway, canal 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</p>		

S. No	Act/Law	Description/purpose	Responsible Authority	Applicability
		<p>such property ; (c) prohibiting the supply or transmission of electricity except by means of a system which conforms to the 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>		

S. No	Act/Law	Description/purpose	Responsible Authority	Applicability
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 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
A-14	E-waste Management Rule, 2011	As a bulk consumer, E-waste has to be disposed of through authorized recycler only.	Yes	SPCB
<b>B. Land and Labor</b>				
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	Directorate of Industrial Safety and Health	Applicable. Premises wherein ten or more workers are working, or were working on any

S. No	Act/Law	Description/purpose	Responsible Authority	Applicability
		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.	(DISH)	day of the preceding twelve months are covered under the Act.
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 14 years 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**

	Description of Standard	Observation	Gaps	Recommendation
<b>1</b>	<b>IFC PS1: Assessment of Environmental and Social Risks and Impacts</b>	<b>ADB SPS Environmental Safeguards</b>		
1.1	<b>ESMS Policy:</b> 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>The client should establish an ESMS and implement corrective action plan based on safeguards compliance audit.</p> <p>MVKPL is committed to implement an effective ESMS based on dynamic process and through involvement of its vendor, client, employee, local communities and stakeholders. MVKPL 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 Charge.</p>		ESMS needs to be reviewed periodically to address changes in the organization, process or regulatory requirements.

	Description of Standard		Observation	Gaps	Recommendation
			<p>Site staffs are given Basic Safety Training as per the training records reviewed at site.</p> <p>The O &amp; M Contractor of the project SEL also has a well-established HSE policy in line with OHSAS, 18001 and ISO 14000 standards.</p>		
1.2	<b>Environment and Social Impact Assessment:</b> 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.	The wind power projects do not require Environmental clearance as per the EIA notification SO 1533 dated 14 <sup>th</sup> September, 2206 and its subsequent amendments.		Environmental and Social Impact assessment (ESIA) study has not been undertaken for this project.	Environment Management Plan (EMP) should be implemented based on ESDD study.

	Description of Standard		Observation	Gaps	Recommendation
1.3	<b>Identification of environmental and social risks:</b> MVKPL/Gamesa 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.		Gamesa 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.	Before commencement of proposed project Environmental and Social Screening has not been carried out.	Findings of the present ESDD study to be considered for identification of environmental and social risks associated with the operation of the project.
1.4	<b>Legal Compliance:</b> 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 off to TSDF facility through authorized vendor.	The project has not obtained authorization from APPCB for storage of Hazardous waste.  There is no collection facility for municipal solid 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.  Municipal solid waste to be collected and disposed off properly.

	Description of Standard		Observation	Gaps	Recommendation
					Waste Batteries to be disposed off through authorized vendor.
1.5	<b>Management Programme:</b> 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.	MVKPL is committed to implement an effective ESMS based on dynamic process and through involvement of its vendor, client, employee, local communities and stakeholders. MVKPL has established an ESMS system based on Quality, Safety, Health and Environment (QHSE) policy of the company.	The standard operating procedure should be specific to project.	Project specific environmental and social management plan should be developed on the basis of findings of ESDD study.
1.6	<b>Organization Structure:</b> The Client should establish, maintain and strengthen as necessary, an organizational structure that defines roles, responsibilities, and authority to implement the ESMS.		MVKPL 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 MVKPL and subcontractors is informal.	Project specific organization structure shall be included under corporate communication, policy implementation team and other environment and sustainable related report.
1.7	<b>Training:</b> Trainings to employees and contractors with direct responsibilities	This requirement is subsumed within the ESMS or EMP	Training calendar has specific training schedule for EHS. Training participation record is	Need based training should be organized for MVKPL employee, which should be an	Training/workshops should be undertaken for the

	Description of Standard		Observation	Gaps	Recommendation
	for activities related to the project's social and environmental performance.		maintained.	integral part of HR policy.	project and corporate staffs as per their training requirements at regular intervals.
1.8	<b>Emergency Preparedness Plan:</b> The client should establish and maintain an emergency preparedness and response system so that the MVKPL 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	<b>Monitoring and Review:</b> 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	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.

	Description of Standard		Observation	Gaps	Recommendation
	participate in monitoring activities				
1.10	<p><b>Stake Holder Engagement:</b> 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.</p>	<p>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.</p> <p>Establish a grievance redressal mechanism to receive and facilitate</p>	<p>Focus Group Discussion, Community Consultation, Household survey, &amp; other stakeholder meetings have been carried out.</p> <p>A fruitful result of consultation was observed as the outcomes of primary survey.</p> <p>Different CSR activities are executed at project level.</p>	<p>MVKPL do not have a formal stakeholder engagement plan to address community needs.</p>	<p>A stakeholder engagement plan needs to be formulated to address the community needs through self or through turnkey contractor.</p>

	Description of Standard		Observation	Gaps	Recommendation
		resolution of the affected people's concerns and grievances regarding the project's environmental performance.			
1.11	<b>External Communications:</b> 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, MVKPL should encourage making publicly available periodic reportson 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.	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	<b>PS 2: Labour and Working Conditions</b>	<b>ADB Environmental Safeguards</b>			
2.1	<b>Human Resources (HR) Policies and Procedures:</b> The client		Both MVKPL and Gamesa have an established HR Policy.	Internal audits are not undertaken to assess the implementation of contact	Internal audits need to be undertaken to maintain adherence

	Description of Standard		Observation	Gaps	Recommendation
	should adopt and 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 MVKPL and its subcontractors.	to the HR policies at site office of the applicable stake holder.
2.2	<b>Working Conditions and Terms of Employment:</b> 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. MVK PL should ensure that workers of different turnkey contractors are aware of national labour and employment law and any other applicable agreements.
2.3	<b>Workers' Organization:</b> Where law recognizes workers right to form and join workers organisations of their choice	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 MVKPL or Gamesa restricting formation of a union or collective bargaining.	The working condition and terms of employment should be regulated by Admin department and HR respectively.	Provide for an appropriate forum for the employees for collective bargaining.

	Description of Standard		Observation	Gaps	Recommendation
		discrimination, for protection of workers and employers organizations against acts of interference by each other, and for measures to promote and encourage collective bargaining.			
2.4	<b>Migrant Workers:</b> 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, MVKPL should pre-qualify each contractor according to its performance on EHS standards so as to satisfy MVKPL's ESMS standards.
2.5	<b>Non Discrimination and Equal Opportunity:</b> The client shouldnot make employment decisions on the basis of personal characteristics unrelated to inherent job requirements. MVKPL shouldbase 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. Challenging stereotypes of	Based on requirement and relevant educational qualification with experience, the opportunity of different job is getting closed.		Prior to assigning any contract, MVKPL should pre-qualify each contractor according to its performance on EHS standards so as to satisfy MVKPL's ESMS standards.

	Description of Standard		Observation	Gaps	Recommendation
	treatment, and shall not discriminate	<p>minorities to ensure equal opportunity and treatment</p> <p>Occupational health and safety for all including minorities, Health insurance and social security for all</p> <p>Encouraging minority groups/organizations to form and join groups / organizations representing their interests.</p> <p>Protecting migrant workers especially if they are members of ethnic minorities.</p>			
2.6	<b>Grievance Mechanism:</b> 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.	MVKPL and Gamesa have a system to address the workplace concerns and grievances of its employees.	MVKPL 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	<b>Child Labour:</b> 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 minimum age for employment or work (in	No child labour was observed at site during the site visit.		Prior to assigning any contract, MVKPL should pre-qualify each contractor according to its performance on EHS standards so as to satisfy MVKPL's

	Description of Standard		Observation	Gaps	Recommendation
		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).			ESMS standards.
2.8	<b>Forced Labour:</b> MVKPL 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 not offered himself voluntarily”. The other	No forced labour was observed at site during the site visit.		Prior to assigning any contract, MVKPL should pre-qualify each contractor according to its performance on EHS standards so as to satisfy MVKPL’s ESMS standards.

	Description of Standard		Observation	Gaps	Recommendation
		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	<b>Occupational Health and Safety:</b> 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 MVKPL's work areas, including physical, chemical, biological, and radiological hazards, and specific threats to women.	Special care needs to be taken in projects to ensure the health and safety of all workers, including members of minorities. In many cases, minority workers are unable to read safety instructions or to understand safety and health training given to other workers. Provide workers with safe and healthy working conditions including easily comprehensible safety information on-site training, provisions of	Hazard identification and risk assessment manual has identified and recorded the health and safety risks associated with O & M operations.  Measures to deal with emergency condition have been displayed at project site.  First aid box with necessary kits were observed to be put on at an easy accessible place.  PPEs have been provided to the	Non usage of PPEs shows a behavior based issue in this aspect.	An annual EHS assessment/audit needs to be undertaken.  Usage of PPEs should be enforced through penalties for not using PPEs or incentive for adhering to the criteria.

	Description of Standard		Observation	Gaps	Recommendation
		Personal Protective Equipment etc.	<p>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 Dhone about 25 km from site.</p>		
<b>3</b>	<b>PS 3: Resource Efficiency and Pollution Prevention</b>	<b>ADB Environmental Safeguards</b>			
3.1	<p><b>Resource Efficiency:</b> 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.</p> <p>During the design, construction, operations and decommissioning of the</p>	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.

	Description of Standard		Observation	Gaps	Recommendation
	project (project lifecycle), the client is to consider ambient conditions and apply pollution prevention and control technologies and techniques.				
3.2	<b>Water Consumption:</b> 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>Non potable domestic water requirement is fulfilled through tanker water supply.</p>		Awareness should be built among the employees about importance of conservation of natural resources.
3.3	<b>Wastes and Hazardous Materials Management:</b> To avoid and minimize generation of hazardous and non-hazardous waste materials as far as practicable. Where waste generation cannot be avoided, but has been	MVKPL should avoid, or where avoidance is not possible, should minimize or control the generation of hazardous and non-hazardous wastes and the release of hazardous materials resulting from project activities. Where	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	<p>There is no proper provision for storage of hazardous waste at the project site.</p> <p>There is no provision for MSW collection.</p>	<p>The guideline of APPCB should be complied with respect to hazardous waste storage and transport.</p> <p>E-waste to be disposed off through</p>

	Description of Standard		Observation	Gaps	Recommendation
	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.	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, MVKPL 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, MVKPL should use contractors that are Reputable and legitimate enterprises licensed by the relevant regulatory agencies.	ground water pollution.  Hazardous waste is disposed off to TSDF facility through authorized vendor.  E-waste was stored in open only.  Garbage and recyclable waste to be collected separately.		authorized E-waste processor only.  MSW to be collected as per the guideline of MSW Rule, 2016.  Recyclable waste to be sold to authorized vendor.  Garbage to be disposed off properly.
3.4	<b>Greenhouse Gases:</b> MVKPL should consider alternatives and implement technically and financially feasible and cost effective options to reduce project- related GHG emissions during the design and operation of the project.	MVKPL should promote the reduction of project-related anthropogenic greenhouse gas emissions in a manner appropriate to the nature and scale of project operations and impacts. during the development or	Project is a renewable energy project and do not produce the GHG emissions.		Awareness to be developed among employees regarding effects of greenhouse gas emissions.

	Description of Standard		Observation	Gaps	Recommendation
	These options may include, but are not limited to, alternative project locations, adoption of renewable or low carbon energy sources.	operation of projects that are expected to or currently produce significant quantities of greenhouse gases, the MVKPL 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. MVKPL should conduct quantification and monitoring of greenhouse gas emissions annually in accordance with internationally recognized methodologies. In addition, MVKPL will evaluate technically and financially feasible and cost-effective options to reduce or offset project-related greenhouse gas emissions during project design and operation, and pursue appropriate options.			
3.5	<b>Release of pollutants:</b> MVKPL should avoid the	Avoid, and where avoidance is not possible, minimize,	Wind power projects leads to generate hazardous waste such	There is no proper provision for storage of hazardous	The guideline of APPCB should be

	Description of Standard		Observation	Gaps	Recommendation
	<p>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, MVKPL should consider relevant factors, including, for example existing ambient conditions, etc.</p>	<p>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 polluter pays principle.</p>	<p>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>waste at the project site.</p>	<p>complied with respect to hazardous waste storage and transport.</p>
3.6	<p><b>Pesticide Use and Management:</b> Formulate and implement an integrated</p>	<p>The environmental assessment will ascertain that any pest and/or vector</p>	<p>No use of pesticides or insecticides noticed during site visit.</p>		<p>Awareness should be built among employees about</p>

	Description of Standard		Observation	Gaps	Recommendation
	pest management (IPM) and or integrated vector management (IVM) approach to pest management	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. MVKPL'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 needed, to institutional capacity development, to help regulate and monitor the distribution and use of pesticides and enhance the			health and environmental risks associated with synthetic chemical pesticide.

	Description of Standard		Observation	Gaps	Recommendation
		application of integrated pest management			
<b>4</b>	<b>IFCPS4: Community Health &amp; Safety &amp; Security:</b>				
4.1	<p><b>Community Health and Safety:</b> MVKPL 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>MVKPL 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 consideration differentiated exposure to and higher sensitivity of vulnerable groups.</p>	<p>MVKPL 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 given to potential exposure to both accidental and natural hazards, especially where the structural elements of the project are</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 &amp; 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>

	Description of Standard		Observation	Gaps	Recommendation
		accessible to members of the affected community or where their failure could result in injury to the community. MVKPL 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	<b>Hazardous Materials Management and Safety:</b> MVKPL 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.  Hazardous waste is disposed off to TSDF facility through authorized vendor.	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.
4.3	<b>Emergency Preparedness and Response:</b> MVKPL	Establish preventive and emergency preparedness	Emergency contact numbers, specific team member	The onsite emergency response plan and emergency	Annual monitoring and evaluation report

	Description of Standard		Observation	Gaps	Recommendation
	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.	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.	responsibility and key elements of emergency plan were observed to be displayed in the site office.	contact numbers were not displayed in local languages.	should be submitted.
4.4	<b>Security Personnel:</b> 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 to ensure that those providing securities are not implicated in past abuses; will train them adequately in the use of force.		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, MVKPL should pre-qualify each security personnel so as to satisfy MVKPL's ESMS standards.
5	<b>IFC PS5: Land Acquisition</b>	<b>Involuntary Resettlement</b>			

	Description of Standard		Observation	Gaps	Recommendation
	and Resettlement	Involuntary Safeguards			
5.1	<b>Project design:</b> 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 onto 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.	The total land required for this project is approximately 39.91 acres. Of the total land 2 acres is private land rest is revenue land. The project does not involve any re-settlement and rehabilitation of local population.		
5.2	<b>Compensation and Benefits for Displaced Persons:</b> MVKPL should provide unavoidable displaced PAPs with compensation for loss of assets at full replacement cost to help them restore their standards of living or livelihoods; Where livelihood is land-based or collectively owned, MVKPL should offer land-based compensation where	Pay compensation and provide other resettlement entitlements before physical or economic displacement. Implement the resettlement plan under close supervision throughout project implementation	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 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.		

	Description of Standard		Observation	Gaps	Recommendation
	feasible; MVKPL should provide opportunities to PAPs to derive appropriate development benefits from the project.				
5.3	<b>Community Engagement:</b> 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.	Carry out meaningful consultations with affected persons, host communities, and concerned nongovernment organizations. Inform all displaced persons of their entitlements and resettlement options. Disclose a draft resettlement plan, including documentation of the consultation process in a timely manner, before project appraisal, in an accessible place and a form and language(s) understandable to affected persons and other stakeholders. The resettlement should elaborate upon displaced	The primary survey, consultation and review of other relevant document have been carried out. No major social issue has been envisaged for this project.  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 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.	MVKPL do not have a formal stakeholder engagement plan to address community needs.	Stakeholder engagement plans need to be formulated to address the community needs through turnkey contractor.

	Description of Standard		Observation	Gaps	Recommendation
		<p>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>			
5.4	<p><b>Grievance Redressal Mechanism:</b> MVKPL to establish grievance redressal mechanism consistent with PS 1 to address concerns raised by PAPs</p>	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.	
5.5	<p><b>Resettlement and Livelihood Restoration</b></p>		The project does not involve any resettlement activities as		In case of resettlement, census

	Description of Standard	Observation	Gaps	Recommendation
	<b>Planning and Implementation:</b> 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.	land of the project is devoid of any commercial or residential structures.		should be carried out to collect appropriate socio-economic baseline data of actual eligible persons and records of compensation to be maintained.
5.6	<b>Displacement:</b> <b>Physical Displacement:</b> The Client shall develop resettlement action plan of physical displacement. The plan will be designed to mitigate the negative impacts of displacement. <b>Economic Displacement:</b> 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	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 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		In case of resettlement baseline data of actual eligible persons for compensation to be maintained.

	Description of Standard		Observation	Gaps	Recommendation
	other assistance that meet the objective.		against the compensation paid.		
<b>6</b>	<b>PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</b>				
6.1	<b>Impacts on Biodiversity:</b> Assess significance of project impacts on all levels of biodiversity as an integral part of social and environmental assessment process.	MVKPL 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 invasive alien species, and on the use of natural resources in an unsustainable manner.	<p>The proposed site is on a barren waste land.</p> <p>The major ecological impact associated with the project is the risk of bird collision which is common with Wind power projects.</p> <p>There is no report of the project area supporting any "Endangered" category of flora or fauna.</p> <p>The project area and its surroundings do not fall under any major flyway or migratory routes.</p>	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 case of bird and bat hitting to WTG or electrocution.
6.2	<b>Legally Protected Areas:</b> If located within legally protected areas, to act in a manner consistent with the protected area	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.

	Description of Standard		Observation	Gaps	Recommendation
	management plan, consult stakeholder, implement additional programme to promote and enhance conservation aims.				
6.3	<b>Maintenance of Natural habitat:</b> The proponent shouldnot 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, including Affected Communities, with respect to the extent of conversion and degradation; and, (iii) any conversion or degradation is mitigated.	As above	The proposed site is anagricultural land. The activities related to project are not expected to change natural habitat around the project area except anticipated impact to bat and avifauna population.	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.
<b>7</b>	<b>IFC PS7: Indigenous Peoples (Scheduled Tribes in Indian Context)</b>	<b>Indigenous People (Scheduled tribe)'s Safeguards</b>			
7.1	<b>Assessment of Impact:</b> Assessment needs to be done for identification of	Screen early on to determine (i) whether Indigenous Peoples (Scheduled tribes)	No indigenous people are reported from the project area.		Rights of indigenous people should be protected, if any.

	Description of Standard		Observation	Gaps	Recommendation
	indigenous groups (Scheduled tribes) and the expected social, cultural and environmental impacts on them.	are present in, or have collective attachment to, the project area; and (ii) whether project impacts on Indigenous Peoples (Scheduled Tribes) are likely.			
7.2	<b>Avoidance of Adverse Impacts:</b> 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, MVKPL 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	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 affected Indigenous Peoples prefer in relation to the provision of project benefits and the design of mitigation measures.	The project did not impact any indigenous population.	.	Rights of indigenous people should be protected, if any.
7.3	<b>Participation and Consent:</b> MVKPL should	Identify social and economic benefits for affected	The project did not impact any indigenous population.		Rights of indigenous people should be

	Description of Standard		Observation	Gaps	Recommendation
	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.	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, 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.			protected, if any.
8	IFC PS8: Cultural Heritage				

	Description of Standard		Observation	Gaps	Recommendation
8.1	<b>Protection of Cultural Heritage:</b> MVKPL 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.	MVKPL 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.
8.2	<b>Community Access:</b> 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		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.

	Description of Standard		Observation	Gaps	Recommendation
	provide an alternative access route.				
8.3	<b>Chance Find:</b> MVKPL 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.

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

MVKPL 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, MVKPL has initiated the revision of its HR Policy. The updated HR policy is reported to include:

- MVKPL'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;
- 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 MVKPL 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 MVKPL 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 MVKPL'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**

MVKPL 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. MVKPL shall also submit annual monitoring reports to ADB on the progress of implementation of the ESMP. MVKPL 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. MVKPL shall ensure effective implementation of these corrective actions and submit periodic monitoring reports to ADB. MVKPL 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
<b>Ambient Air</b>	At 3 locations (1 inside the complex and one	RSPM, SO <sub>2</sub> , NO <sub>x</sub>	Annual monitoring

<b>Quality</b>	each in nearest two villages)		
<b>Ambient Noise</b>	At 3 locations (1 inside the complex and one each in nearest two villages)	Day and night equivalent noise level	Annual monitoring
<b>Ground Water</b>	One near project site office	IS 10500	Annual monitoring
<b>Soil</b>	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)
1.	Municipal Solid waste storage& disposal	0.5
2.	Centralized waste storage area for Hazardous waste/E-waste/MSW	0.5
3.	Environmental Monitoring	1.2
4.	EHSS audit	4.0
	Total	6.2

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

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

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

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

Issue	Suggested Mitigation	Monitoring/ Training	Management Responsibility
<ul style="list-style-type: none"> <li>Upgrades to Local Infrastructure</li> <li>Grazing land</li> </ul>	<ul style="list-style-type: none"> <li>Collaborate with local government/ Non government for any community development programs to share their sources and cut cost;</li> <li>Grazing area to be retained with fencing limited to transformer areas</li> </ul>	<ul style="list-style-type: none"> <li>Any community development activity is being guided and implemented in accordance with group CSR Policy.</li> </ul>	<ul style="list-style-type: none"> <li>Head - CSR</li> <li>O &amp; M – Head</li> </ul>

## 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

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
<b>Vison Labs, Hyderabad (NABL and MoEF &amp; CC Accredited)</b>			
4.	Mr. Laxmikanth Reddy	Overall responsible for coordinating, collecting the sampling and analysis of environmental parameters of the study area	
5.	Mr. Vijay 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.	Burugula	878	4.65	4085	2061	2024	982.05
2.	Koilkuntla	5810	4.11	23859	11606	12253	1055.75
3.	Racherla	1195	4.19	5012	2599	2413	928.43
Total		7883	4.18	32956	16266	16690	1026.07

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.	Burugula	657	333	324	16.08	721	341	380	17.65
2.	Koilkuntla	3874	1822	2052	16.24	754	386	368	3.16
3.	Racherla	530	276	254	10.57	249	132	117	4.97
Total		5061	2431	2630	15.36	1724	859	865	5.23

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.	Burugula	1785	1022	763	49.53	56.78	42.29	14.48
2.	Koilkuntla	15702	8610	7092	73.52	83.37	64.30	19.07
3.	Racherla	2470	1510	960	56.50	66.49	45.69	20.80
Total		19957	11142	8815	68.03	77.38	59.02	18.36

Source: Census of India, 2011

**Table 4: Work Participation Rate of the Study Area**

S. No.	Village	Total Worker			Work Participation Rate			Gender Gap in WPR
		Total	Male	Female	Total	Male	Female	
1.	Burugula	2352	1219	1133	57.58	59.15	55.98	3.17
2.	Koilkuntla	9770	6228	3542	40.95	53.66	28.91	24.75
3.	Racherla	2849	1566	1283	56.84	60.25	53.17	7.08
Total		14971	9013	5958	45.43	55.41	35.70	19.71

Source: Census of India, 2011

**Table 5: Main Worker and Marginal Worker**

S. No.	Village	Main Worker				Marginal Worker			
		Total	Male	Female	%age	Total	Male	Female	%age
1.	Burugula	1622	889	733	68.96	730	330	400	31.04
2.	Koilkuntla	8098	5556	2542	82.89	1672	672	1000	17.11
3.	Racherla	2521	1495	1026	88.49	328	71	257	11.51
Total		12241	7940	4301	81.76	2730	1073	1657	18.24

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.	Burugula	201	12.39	1073	66.15	33	2.03	315	19.42
2.	Koilkuntla	782	9.66	2472	30.53	320	3.95	4524	55.87
3.	Racherla	427	16.94	1549	61.44	25	0.99	520	20.63
Total		1410	11.52	5094	41.61	378	3.09	5359	43.78

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.	Burugula	335	45.89	364	49.86	3	0.41	28	3.84
2.	Koilkuntla	70	4.19	1072	64.11	88	5.26	442	26.44
3.	Racherla	21	6.40	94	28.66	0	0.00	213	64.94
Total		426	15.60	1530	56.04	91	3.33	683	25.02

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.	Burugula	1	2	0	0	0	0
2.	Koilkuntla	1	2	0	0	1	1
3.	Racherla	0	0	0	0	0	0
Total		2	4	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)	Govt./Private Arts, Science and Commerce Degree College (Numbers)
1.	Burugula	4	2	2	0	0
2.	Koilkuntla	7	6	6	1	2
3.	Racherla	4	1	1	0	0
Total		15	9	9	1	2

Source: Census of India, 2011

## ANNEXURE II: PHOTOLOG OF PROJECT AREA



Consultation with village community in Racherla village



Consultation with village community in Racherla village



Consultation with village community in Burgula Village



Consultation with village community in Burgula Village



D.P Yard Area



Inspection of WTGs Location



Hazardous Waste on Open area



Hazardous Waste on Open area



Approach road to site office



Assembly area in case of emergency



Display of emergency contact no.



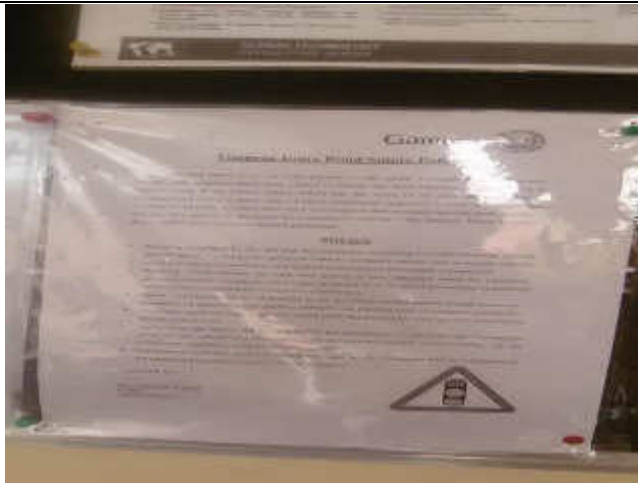
Display of onsite emergency plan



Personal Protective Equipment



Fire aid kit



Gamesa Road Safety Policy



Display of MEIL QHSE Policy



Closing Meeting with Gamesa and MVKPL Personnel



Closing Meeting with Gamesa and MVKPL Personnel

**Annexure III****AMBIENT AIR QUALITY MONITORING & ANALYSIS TEST REPORT**

<b>Issued to:</b> <b>M/S. Mytrah Vayu Krishna Pvt Ltd.</b> <b>Burgula Site, Near Nereducherla pally(M),</b> <b>Kurnool, Andhra Pradesh</b> <b>C/o. Voyants Solutions Private Limited (VSPL)</b>		<b>Issued Date</b>	04.06.2016
		<b>Our Ref No</b>	VL/AAQ/160514651485
		<b>Work Order No</b>	VSPL/EMI/04/2016-17
		<b>Your Ref Date</b>	18.05.2016
<b>Sample collection date</b>	26.05.2016	<b>Sample condition of testing</b>	Found Ok
<b>Sample Registration date</b>	28.05.2016		
<b>Monitoring conducted by VISON LABS</b>			

Monitoring Station : Near Project Office  
 Ambient Temperature °C : 36 (Average)  
 Wind Direction : SE  
 Weather Condition : Clear  
 Flow Rate of Gases (LPM) : 0.2

**TEST RESULTS**

S.No.	Parameters	Units	Test Results	National Ambient Air Quality Standards (NAAQS)	Analysis Method
1.	Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	66.7	<100	Respirable Dust Sampler method (IS : 5182 P 23 - 2006)
2.	Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	32.2	<60	EPA - Quality Assurance Guidance Document 2.12
3.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	7.6	<80	Improved West and Geake method (IS : 5182 P 11 - 2001)
4.	Oxides of Nitrogen (NO <sub>2</sub> )	µg/m <sup>3</sup>	20.7	<80	Jacob and Hochheiser modified (Na-Arsenite) method (IS : 5182 P VI - 2001)

Page 1 of 1

Note: -

- The results of the monitored data indicate that the ambient air quality of the region in general is conformity with respect to norms of National Ambient Air Quality standards
- Sampling & Analysis were done as per standard method prescribed by CPCB

  
 Engineer/Analyzed by


Authorized Signature

VL/QEHS/5.10/TR

H.No. 16-11-23/37/A, Flat No. 205, 2nd Floor, Opp. R.T.A. Office, Musarambagh, Malakpet, Hyderabad - 500 036.  
 Te : 040 24544320 / 65792001. Mob : 98491 10010 / 94408 41338, E-mail : info@visionlabs.com, vision\_labs@gmail.com

NOTE : This Report is subject to the terms and conditions mentioned overleaf



## AMBIENT AIR QUALITY MONITORING & ANALYSIS TEST REPORT

<b>Issued to:</b> M/S. Mytrah Vayu Krishna Pvt Ltd. Burgula Site, Near Nereduchera pally(M), Kurnool, Andhra Pradesh C/o. Voyants Solutions Private Limited (VSPL)		Issued Date	04.06.2016
		Our Ref No	VL/AAQ/160514651485/01
		Work Order No	VSPL/EME/04/2016-17
		Your Ref Date	18.05.2016
Sample collection date	27.05.2016	Sample condition of testing	Found Ok
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Monitoring conducted by VISON LABS			

Monitoring Station : Near Project Office  
 Ambient Temperature °C : 36 (Average)  
 Wind Direction : SE  
 Weather Condition : Clear  
 Flow Rate of Gases (LPM) : 0.2

### TEST RESULTS

S.No.	Parameters	Units	Test Results	National Ambient Air Quality Standards (NAAQS)	Analysis Method
1.	Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	58.6	<100	Respirable Dust Sampler method (IS : 5182 P 23 - 2006)
2.	Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	27.8	<60	EPA - Quality Assurance Guidance Document 2.12
3.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	7.2	<80	Improved West and Geake method (IS : 5182 P 11 - 2001)
4.	Oxides of Nitrogen (NO <sub>x</sub> )	µg/m <sup>3</sup>	18.1	<80	Jacob and Hochheiser modified (Na-Arsenite) method (IS : 5182 P VI - 2001)

Page 1 of 1

Note: -

- The results of the monitored data indicate that the ambient air quality of the region in general is conformity with respect to norms of National Ambient Air Quality standards
- Sampling & Analysis were done as per standard method prescribed by CPCB

Engineer/Analyzed by



Authorized Signature

VL/QEHS/5.10/TR

11 No. 16-11-23/37/A, Flat No. 205, 2nd Floor, Opp. R.T.A. Office, Musarambagh, Malakpet, Hyderabad - 500 036.  
 Tel : 040-24544320 / 65792001, Mob : 98491 10019 / 94406 41338, E-mail : info@visionlabs.com, vision.labs@gmail.com

NOTE : This Report is subject to the terms and conditions mentioned overleaf.



## AMBIENT AIR QUALITY MONITORING & ANALYSIS TEST REPORT

<b>Issued to:</b> <b>M/S. Mytrah Vayu Krishna Pvt Ltd.</b> Burgula Site, Near Nereducherla pally(M), Kurnool, Andhra Pradesh <b>C/o. Voyants Solutions Private Limited (VSPL)</b>		Issued Date	04.06.2016
		Our Ref No	VL/AAQ/160514651486
		Work Order No	VSPL/EMF/04/2016-17
		Your Ref Date	18.05.2016
Sample collection date	24.05.2016	Sample condition of testing	Found Ok
Sample Registration date	28.05.2016		
Monitoring conducted by <b>VISION LABS</b>			

Monitoring Station : **Nereducherla (AAQ 2)**  
 Ambient Temperature °C : **34 (Average)**  
 Wind Direction : **SE**  
 Weather Condition : **Clear**  
 Flow Rate of Gases (LPM) : **0.2**


### TEST RESULTS

S.No.	Parameters	Units	Test Results	National Ambient Air Quality Standards (NAAQS)	Analysis Method
1.	Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	56.2	<100	Respirable Dust Sampler method (IS : 5182 P 23 - 2006)
2.	Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	27.0	<60	EPA - Quality Assurance Guidance Document 2.12
3.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	6.7	<80	Improved West and Geake method (IS : 5182 P II - 2001)
4.	Oxides of Nitrogen (NO <sub>2</sub> )	µg/m <sup>3</sup>	21.4	<80	Jacob and Hochheiser modified (Na-Arsenite) method (IS : 5182 P VI - 2001)

Page 1 of 1

#### Note: -

- The results of the monitored data indicate that the ambient air quality of the region in general is conformity with respect to norms of National Ambient Air Quality standards
- Sampling & Analysis were done as per standard method prescribed by CPCB

  
 Engineer/Analyzed by



Authorized Signature

VL/QEHS/5.10/TR

H.No. 16-11-23/37/A, 1st No. 205, 2nd Floor, Opp. R.T.A. Office, Musarambagn, Malakpet, Hyderabad - 500 036.

Tel: 040-24544320 / 65792001, Mob: 98491 10019 / 94408 41338, E-mail: info@visionlabs.com, vision\_labs@gmail.com

NOTE: This Report is subject to the terms and conditions mentioned overleaf.



## AMBIENT AIR QUALITY MONITORING & ANALYSIS TEST REPORT

<b>Issued to:</b> <b>M/S. Mytrah Vayu Krishna Pvt Ltd.</b> Burgula Site, Near Nereducherla pally(M), Kurnool, Andhra Pradesh <b>C/o. Voyants Solutions Private Limited (VSPL)</b>		<b>Issued Date</b>	04.06.2016
		<b>Our Ref No</b>	VL/AAQ/160514651486/01
		<b>Work Order No</b>	VSPL/EME/04/2016-17
		<b>Your Ref Date</b>	18.05.2016
<b>Sample collection date</b>	25.05.2016	<b>Sample condition of testing</b>	<b>Found Ok</b>
<b>Sample Registration date</b>	28.05.2016		
<b>Monitoring conducted by</b> <b>VISION LABS</b>			

Monitoring Station : Nereducherla (AAQ 2)  
 Ambient Temperature °C : 34 (Average)  
 Wind Direction : SE  
 Weather Condition : Clear  
 Flow Rate of Gases (LPM) : 0.2

### TEST RESULTS

S.No.	Parameters	Units	Test Results	National Ambient Air Quality Standards (NAAQS)	Analysis Method
1.	Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	53.8	<100	Respirable Dust Sampler method (IS : 5182 P 23 - 2006)
2.	Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	25.1	<60	EPA - Quality Assurance Guidance Document 2.12
3.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	6.2	<80	Improved West and Geake method (IS : 5182 P 11 - 2001)
4.	Oxides of Nitrogen (NO <sub>2</sub> )	µg/m <sup>3</sup>	27.1	<80	Jacob and Hochheiser modified (Na-Arsenite) method (IS : 5182 P VI - 2001)

Page 1 of 1

Note: -

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- Sampling & Analysis were done as per standard method prescribed by CPCB

Engineer/Analysted by



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VL/QEHS/5.10/TR

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## AMBIENT AIR QUALITY MONITORING & ANALYSIS TEST REPORT

<b>Issued to:</b> <b>M/S. Mytrah Vayu Krishna Pvt Ltd.</b> <b>Burgula Site, Near Nereducherla pally(M),</b> <b>Kurnool, Andhra Pradesh</b> <b>C/o. Voyants Solutions Private Limited (VSPL)</b>		Issued Date	04.06.2016
		Our Ref No	VL/AAQ/160314651487
		Work Order No	VSPL/RME/04/2016-17
		Your Ref Date	18.05.2016
Sample collection date	24.05.2016	Sample condition of testing	Found Ok
Sample Registration date	28.05.2016		
Monitoring conducted by <b>VISION LABS</b>			

Monitoring Station : **Boina Cheruvu Palli (AAQ 3)**  
 Ambient Temperature °C : **34 (Average)**  
 Wind Direction : **SE**  
 Weather Condition : **Clear**  
 Flow Rate of Gases (LPM) : **0.2**

### TEST RESULTS

S.No.	Parameters	Units	Test Results	National Ambient Air Quality Standards (NAAQS)	Analysis Method
1.	Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	82.6	<100	Respirable Dust Sampler method (IS : 5182 P 23 - 2006)
2.	Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	39.7	<60	EPA - Quality Assurance Guidance Document 2.12
3.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	8.3	<80	Improved West and Gaeke method (IS : 5182 P 11 - 2001)
4.	Oxides of Nitrogen (NO <sub>x</sub> )	µg/m <sup>3</sup>	25.4	<80	Jacob and Hochheiser modified (Na-Arsenite) method (IS : 5182 P V1 - 2001)

Page 1 of 1

**Note: -**

- The results of the monitored data indicate that the ambient air quality of the region in general is conformity with respect to norms of National Ambient Air Quality standards
- Sampling & Analysis were done as per standard method prescribed by CPCB

  
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## AMBIENT AIR QUALITY MONITORING & ANALYSIS TEST REPORT

<b>Issued to:</b> <b>M/S. Mytrah Vayu Krishna Pvt Ltd,</b> Burgula Site, Near Nereducherla pally(M), Kumool, Andhra Pradesh <b>C/o. Voyants Solutions Private Limited (VSPL)</b>		Issued Date	04.06.2016
		Our Ref No	VL/AAQ/160514651487/01
		Work Order No	VSPL/EME/04/2016-17
		Your Ref Date	18.05.2016
Sample collection date	24.05.2016	Sample condition of testing	Found Ok
Sample Registration date	28.05.2016		
Monitoring conducted by <b>VISION LABS</b>			

Monitoring Station : **Boina Cheruvu Palli (AAQ 3)**  
 Ambient Temperature °C : 34 (Average)  
 Wind Direction : SE  
 Weather Condition : Clear  
 Flow Rate of Gases (LPM) : 0.2


### TEST RESULTS

S.No.	Parameters	Units	Test Results	National Ambient Air Quality Standards (NAAQS)	Analysis Method
1.	Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	87.3	<100	Respirable Dust Sampler method (IS : 5182 P 23 - 2006)
2.	Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	41.3	<60	EPA - Quality Assurance Guidance Document 2.12
3.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	9.1	<80	Improved West and Geake method (IS : 5182 P II - 2001)
4.	Oxides of Nitrogen (NO <sub>2</sub> )	µg/m <sup>3</sup>	27.2	<80	Jacob and Hochheiser modified (Na-Arsenite) method (IS : 5182 P VI - 2001)

Page 1 of 1

**Note: -**

- The results of the monitored data indicate that the ambient air quality of the region in general is conformity with respect to norms of National Ambient Air Quality standards
- Sampling & Analysis were done as per standard method prescribed by CPCB

  
 Engineer/Analyzed by


Authorized Signature

VL/QEHS/5.10/TR

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# VISON LABS

Environmental Consultants & Analytical Services

Recognised by NABL, NABET-QCI, MoEF&CC,  
ISO : 9001:2008, OHSAS : 18001:2007

## AMBIENT NOISE QUALITY MONITORING LEVELS

<b>Issued to:</b> <b>M/S. Mytrah Vayu Krishna Pvt Ltd,</b> <b>Burgula Site, Near Nereducherla pally(M),</b> <b>Kumool, Andhra Pradesh</b> <b>C/o. Voyants Solutions Private Limited (VSPL)</b>	<b>Issued Date</b>	04.06.2016
	<b>Our Ref No</b>	VL/ANAO/160514651488
	<b>Work Order No</b>	VSPL/EME/04/2016-17
	<b>Your Ref Date</b>	18.05.2016
Monitoring conducted by <b>VISON LABS</b>		

Total Average Results  
Units: dB (A)

S.NO	Monitoring Time	Nereducherla 25.05.2016 to 26.05.2016	Near Project Site Office 26.05.2016 to 27.05.2016
1.	06.00	43.6	45.3
2.	07.00	48.2	50.1
3.	08.00	50.2	52.2
4.	09.00	52.3	54.4
5.	10.00	56.2	58.4
6.	11.00	54.8	57.0
7.	12.00	53.4	55.5
8.	13.00	51.2	53.2
9.	14.00	50.3	52.3
10.	15.00	48.6	50.5
11.	16.00	52.3	54.4
12.	17.00	54.7	56.9
13.	18.00	56.9	59.2
14.	19.00	58.3	60.6
15.	20.00	52.3	54.4
16.	21.00	49.6	51.6
17.	22.00	42.1	43.8
18.	23.00	40.3	41.9
19.	24.00	43.6	40.1
20.	01.00	37.2	38.7
21.	02.00	38.6	40.1
22.	03.00	39.4	41.0
23.	04.00	39.7	41.3
24.	05.00	41.2	42.8

### Summary of the results

Name of location	Leq day dB(A)	Leq Night dB(A)	Leq Day Night dB(A)
Nereducherla	53.4	39.1	52.4
Near Project Site Office	55.6	40.6	54.5

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## TEST REPORT

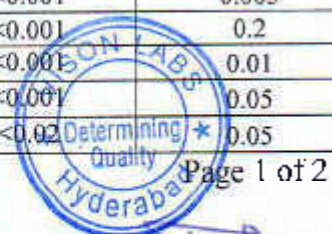
<b>Issued to:</b> <b>M/S. Mytrah Vayu Krishna Pvt Ltd.</b> Burgula Site, Near Nereducherla pally(M), Kurnool, Andhra Pradesh <b>C/o. Voyants Solutions Private Limited (VSPL)</b>		<b>Issued Date</b>	04.06.2016
		<b>Our Ref No</b>	VL/TML/W/160514651489
		<b>Work Order No</b>	VSPL/FMB/04/2016-17
		<b>Your Ref Date</b>	18.05.2016
<b>Sample description</b>	<b>Nereducherla Ground Water</b>	<b>Mode of Packing</b>	Pet bottle
<b>Appearance of the Sample</b>	Clear Liquid	<b>Sample condition of testing</b>	Found Ok
<b>Sample collection date</b>	27.05.2016	<b>Sample Quantity</b>	1 ltr
<b>Sample Collection Time</b>	08:30 am	<b>Analysis starting date</b>	27.05.2016
<b>Sample Registration date</b>	27.05.2016	<b>Analysis Completion date</b>	04.06.2016
<b>Sample collected by VISON LABS</b>			

### TEST RESULTS PHYSICAL PARAMETERS

S.No		Test Method	Units	Test Results	Drinking Water Limits As per IS: 10500:2012
1.	pH at 25 <sup>0</sup> C	IS:3025 part 11 1983 RA-2012	--	8.34	6.5 - 8.5
2.	Turbidity	IS: 3025 Part 10 1984 RA-2002	NTU	2.16	5 - 10
3.	Conductivity at 25 <sup>0</sup> C	IS: 3025 Part 14 1984 RA-2013	µMho/cm	1126	--
4.	Total Suspended Solids	IS: 3025 Part 17 1984 RA-2012	mg/L	4.5	--
5.	Total Dissolved Solids	IS: 3025 Part 16 1984 RA-2006	mg/L	698	--
6.	Colour	IS: 3025 Part 4 1983 RA-2006	Hazen	<01	5.00
7.	Taste	IS:3025 part 08 1984 RA-2002	-	Agreeable	Agreeable
8.	Odor	IS:3025 part 05 1983	-	Unobjectionable	Unobjectionable

### CHEMICAL PARAMETERS

9.	Total Alkalinity as CaCO <sub>3</sub>	IS: 3025 Part 25 1986, RA-2003	mg/L	450	--
10.	Chlorides as Cl <sup>-</sup>	IS: 3025 Part 32 1988, RA-2009	mg/L	50	250 - 1000
11.	Sulphates as SO <sub>4</sub> <sup>-2</sup>	IS: 3025 Part 24 1986, RA-2003	mg/L	31.2	200 - 400
12.	Nitrates as NO <sub>3</sub>	IS: 3025 Part 34 1988, RA-2003	mg/L	5.6	40 - 100
13.	Phosphates as PO <sub>4</sub>	IS: 3025 Part 31 1988, RA-2003	mg/L	<0.02	--
14.	Total Hardness as CaCO <sub>3</sub>	IS: 3025 Part 21 2009	mg/L	50	200 - 600
15.	Calcium as Ca	IS: 3025 Part 40 1991, RA-2009	mg/L	12	75 - 200
16.	Magnesium as Mg	IS: 3025 Part 46 1994, RA-2003	mg/L	4.8	30 - 100
17.	Sodium as Na	IS: 3025 Part 45 1993, RA-2009	mg/L	230.9	--
18.	Potassium as K	IS: 3025 Part 45 1993, RA-2009	mg/L	3.5	--
19.	Fluorides as F <sup>-</sup>	IS: 3025 Part 60 2008	mg/L	0.8	1 - 1.5
20.	Iron as Fe	IS: 3025 Part 53 2003, RA-2003	mg/L	0.14	0.3 - 1
21.	Phenolic Compounds	AP11A 22nd Edition 5330D	mg/L	<0.001	0.001 - 0.002
22.	Cyanide as CN <sup>-</sup>	IS 3025 Part 27 1986	mg/L	<0.001	0.005
23.	Residual Chlorine as Cl <sup>-</sup>	IS 3025 Part 26 1986	mg/L	<0.001	0.2
24.	Cadmium as Cd	IS 3025 Part 41 1992	mg/L	<0.001	0.01
25.	Total Chromium as Cr	IS 3025 Part 52 2003	mg/L	<0.001	0.05
26.	Lead as Pb	IS 3025 Part 47 1994	mg/L	<0.02	0.05



VL/QEHS/5.10/TR

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NOTE : This Report is subject to the terms and conditions mentioned overleaf.



Sample description	Nereducharla Ground Water
Our Ref No	VL/TML/W/160514651489

S.No		Test Method	Units	Test Results	Drinking Water Limits As per IS: 10500:2012
27.	Zinc as Zn	IS 3025 Part 49 1994	mg/L	0.08	5 - 15
28.	Manganese as Mn	IS: 3025 Part 24 2006	mg/L	<0.001	30 - 100
29.	Copper as Cu	IS 3025 Part 42 1992	mg/L	0.048	0.05 - 1.5
30.	Nickel as Ni	IS 3025 Part 54 2003	mg/L	<0.001	3.0 - 5.0
31.	Boron	IS 3025 Part 57 2005	mg/L	0.08	1.00
32.	Anionic Detergents	IS 13428 Annex K	mg/L	<0.001	0.20
33.	Mineral Oil	APHA 22 <sup>nd</sup> Edition 2012	mg/L	0.048	0.01
34.	Aluminium as Al	IS 3025 Part 55 2003	mg/L	<0.001	0.03
35.	Mercury as Hg	IS 3025 Part 48 1994	mg/L	<0.0002	0.00
36.	Pesticides	USEPA	µg/L	<0.001	Absent

Note: Sampling & Analysis were done as per standard methods prescribed by BIS.

  
Checked By

  
Authorized Signature



VL/QEHS/5.10/TR

H.No. 16-11-23/37/A, Flat No. 205, 2nd Floor, Opp. R.T.A. Office, Musarambagh, Malakpet, Hyderabad - 500 036.  
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## TEST REPORT

<b>Issued to:</b> <b>M/S. Mytrah Vayu Krishna Pvt Ltd.</b> <b>Burgula Site, Near Nereducherla pally(M),</b> <b>Kurnool, Andhra Pradesh</b> <b>C/o. Voyants Solutions Private Limited (VSPL)</b>		Issued Date	04.06.2016
		Our Ref No	VL/TML/W/160514651490
		Work Order No	VSPL/EME/04/2016-17
		Your Ref Date	18.05.2016
Sample description	<b>Boina Cheruvu Pali</b> <b>Ground Water</b>	Mode of Packing	Pet bottle
Appearance of the Sample	Clear Liquid	Sample condition of testing	Found Ok
Sample collection date	27.05.2016	Sample Quantity	1 ltr
Sample Collection Time	09:00 am	Analysis starting date	27.05.2016
Sample Registration date	27.05.2016	Analysis Completion date	04.06.2016
Sample collected by <b>VISON LABS</b>			

## TEST RESULTS

### PHYSICAL PARAMETERS

S.No		Test Method	Units	Test Results	Drinking Water Limits As per IS: 11500:2012
1.	pH at 25°C	IS:3025 part 11 1983 RA-2012	--	8.34	6.5 - 8.5
2.	Turbidity	IS: 3025 Part 10 1984 RA-2002	NTU	2.16	5 - 10
3.	Conductivity at 25°C	IS: 3025 Part 14 1984 RA-2013	µMho/cm	1126	--
4.	Total Suspended Solids	IS: 3025 Part 17 1984 RA-2012	mg/L	4.5	--
5.	Total Dissolved Solids	IS: 3025 Part 16 1984 RA-2006	mg/L	698	--
6.	Colour	IS: 3025 Part 4 1983 RA-2006	Hazen	<01	5.00
7.	Taste	IS:3025 part 08 1984 RA-2002	-	Agreeable	Agreeable
8.	Odor	IS:3025 part 05 1983	-	Unobjectionable	Unobjectionable

### CHEMICAL PARAMETERS

9.	Total Alkalinity as CaCO <sub>3</sub>	IS: 3025 Part 23 1986, RA-2003	mg/L	450	--
10.	Chlorides as Cl <sup>-</sup>	IS: 3025 Part 32 1988, RA-2009	mg/L	50	250 - 1000
11.	Sulphates as SO <sub>4</sub> <sup>2-</sup>	IS: 3025 Part 24 1986, RA-2003	mg/L	31.2	200 - 400
12.	Nitrates as NO <sub>3</sub>	IS: 3025 Part 34 1988, RA-2003	mg/L	5.6	40 - 100
13.	Phosphates as PO <sub>4</sub>	IS: 3025 Part 31 1988, RA-2003	mg/L	<0.02	--
14.	Total Hardness as CaCO <sub>3</sub>	IS: 3025 Part 21 2009	mg/L	50	200 - 600
15.	Calcium as Ca	IS: 3025 Part 40 1991, RA-2009	mg/L	12	75 - 200
16.	Magnesium as Mg	IS: 3025 Part 46 1994, RA-2003	mg/L	4.8	30 - 100
17.	Sodium as Na	IS: 3025 Part 45 1993, RA-2009	mg/L	230.9	--
18.	Potassium as K	IS: 3025 Part 45 1993, RA-2009	mg/L	3.5	--
19.	Fluorides as F <sup>-</sup>	IS: 3025 Part 60 2008	mg/L	0.8	1 - 1.5
20.	Iron as Fe	IS: 3025 Part 53 2003, RA-2003	mg/L	0.14	0.3 - 1
21.	Phenolic Compounds	APHA 22nd Edition, 5330D	mg/L	<0.001	0.001 - 0.002
22.	Cyanide as CN <sup>-</sup>	IS 3025 Part 27 1986	mg/L	<0.001	0.005
23.	Residual Chlorine as Cl <sup>-</sup>	IS 3025 Part 26 1986	mg/L	<0.001	0.2
24.	Cadmium as Cd	IS 3025 Part 41 1992	mg/L	<0.001	0.01
25.	Total Chromium as Cr	IS 3025 Part 52 2003	mg/L	<0.001	0.05
26.	Lead as Pb	IS 3025 Part 47 1994	mg/L	<0.02	0.05



# VISON LABS

Environmental Consultants & Analytical Services

Recognised by NABL, NABET-QCI, MoEF&CC,  
ISO : 9001:2008, OHSAS : 18001:2007

Sample description	Boina Cheruvu Palli Ground Water
Our Ref No	VL/TML/W/160514651490

S.No		Test Method	Units	Test Results	Drinking Water Limits As per IS: 10500:2012
27.	Zinc as Zn	IS 3025 Part 49 1994	mg/L	0.08	5 - 15
28.	Manganese as Mn	IS: 3025 Part 24 2006	mg/L	<0.001	30 - 100
29.	Copper as Cu	IS 3025 Part 42 1992	mg/L	0.048	0.05 - 1.5
30.	Nickel as Ni	IS 3025 Part 54 2003	mg/L	<0.001	3.0 - 5.0
31.	Boron	IS 3025 Part 57 2005	mg/L	<0.001	1.00
32.	Anionic Detergents	IS 13428 Annex K	mg/L	<0.001	0.20
33.	Mineral Oil	APHA 22 <sup>nd</sup> Edition 2012	mg/L	<0.001	0.01
34.	Aluminium as Al	IS 3025 Part 55 2003	mg/L	<0.001	0.03
35.	Mercury as Hg	IS 3025 Part 48 1994	mg/L	<0.0002	0.00
36.	Pesticides	USEPA	µg/L	<0.001	Absent

Page 2 of 2

Note: Sampling & Analysis were done as per standard methods prescribed by BIS.

  
Checked By



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Tel : 040-24544320 / 65792001, Mob : 98491 10019 / 94408 41338, E-mail : info@visonlabs.com, vison.labs@gmail.com

NOTE : This Report is subject to the terms and conditions mentioned overleaf.




## TEST REPORT

<b>Issued to:</b> M/S. Mytrah Vayu Krishna Pvt Ltd. Burgula Site, Near Nereducherla pally(M). Kurnool, Andhra Pradesh C/o. Voyants Solutions Private Limited (VSPL)		<b>Issued Date</b>	04.06.2016
		<b>Our Ref No</b>	VL/TML/W/160514651491
		<b>Work Order No</b>	VSPL/EME/04/2016-17
		<b>Your Ref Date</b>	18.05.2016
<b>Sample description</b>	<b>Near Substation Area</b>	<b>Mode of Packing</b>	<b>Selflock cover</b>
<b>Appearance of the Sample</b>	<b>Solid Sample</b>	<b>Sample condition of testing</b>	<b>Found Ok</b>
<b>Sample collection date</b>	<b>27.05.2016</b>	<b>Sample Quantity</b>	<b>1kg</b>
<b>Sample Collection Time</b>	<b>11:10 am</b>	<b>Analysis starting date</b>	<b>27.06.2016</b>
<b>Sample Registration date</b>	<b>27.05.2016</b>	<b>Analysis Completion date</b>	<b>04.06.2016</b>
<b>Sample collected by VISON LABS</b>			

## TEST RESULTS

S.No	Parameters	Units	Test results
1.	Texture	-	<b>Sandy Clay</b>
	Sand	%	32
	Silt	%	26
	Clay	%	42
2.	pH (10% Slurry)	-	8.26
3.	Conductivity	µmhos/cm	164
4.	Moisture	%	<1.0
5.	Organic Matter	%	3.86
6.	Bulk density	gram/cc	1.42
7.	Porosity	% v/v	36
8.	S.A.R	meq/kg	0.12
9.	Infiltration capacity	mm/h	32.2
10.	Carbonates	mg/kg	36
11.	Sodium as Na	mg/kg	1.24
12.	Potassium as K	%	1.1
13.	Phosphorus as P	%	0.65
14.	Chloride as Cl	mg/kg	1.68
15.	Zinc as Zn	mg/kg	3.1
16.	Copper as Cu.	mg/kg	0.09
17.	Iron as Fe	mg/kg	0.12
18.	Nitrogen as N	%	7.62
19.	Sulphate as SO <sub>4</sub>	mg/kg	0.12
20.	Boron as B	mg/kg	0.22

  
Checked By



VL/QEHS/5.10/TR

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NOTE : This Report is subject to the terms and conditions mentioned overleaf

Final Document  
on  
Revised  
Classification  
of  
Industrial Sectors  
Under

**Red, Orange, Green and White Categories**  
(February 29, 2016)



**Central Pollution Control Board**  
Delhi

# Executive Summary

## Categorization of Industrial Sectors under Red, Orange, Green and White Category

The Ministry of Environment, Forest and Climate Change (MoEFCC) had brought out notifications in 1989, with the purpose of prohibition/ restriction of operations of certain industries to protect ecologically sensitive Doon Valley. The notification introduced the concept of categorization of industries as "Red", "Orange" and "Green" with the purpose of facilitating decisions related to location of these industries. Subsequently, the application of this concept was extended in other parts of the country not only for the purpose of location of industries, but also for the purpose of Consent management and formulation of norms related to surveillance / inspection of industries.

The concept of categorization of industries continued to evolve and as different State Pollution Control Boards interpreted it differently, a need arose to bring about necessary uniformity in its application across the country. In order to harmonize the 'Criteria of categorization', Directions were issued by CPCB under Section 18(1)(b) of the Water (Prevention & Control of Pollution) Act, 1974 to all SPCBs/PCCs to maintain uniformity in categorization of industries as red, green and orange as per list finalized by CPCB, which identified 85 types of industrial sectors as 'Red', 73 industrial sectors as 'Orange' and 86 sectors as 'Green'.

The process of categorization thus far was primarily based on the size of the industries and consumption of resources. The pollution due to discharge of emissions & effluents and its likely impact on health was not considered as primary criteria. There was demand from the SPCBs / PCCs and industrial associations for categorization of the industrial sectors in a more transparent manner. Accordingly, the issue was discussed thoroughly during the national level conference of the Environment Ministers of the States, held in New Delhi during April 06-07, 2015 and a 'Working Group' comprising of the members from CPCB, APPCB, TNPCB, WBPCB, PPCB, MPPCB and Maharashtra PCB is constituted to revisit the criteria of categorization of industries and recommend measures for making the system transparent and rational.

The Working Group has developed the criteria of categorization of industrial sectors based on the Pollution Index which is a function of the emissions (air pollutants), effluents (water pollutants), hazardous wastes generated and consumption of resources. For this purpose the references are taken from the the Water (Prevention and Control of Pollution) Cess (Amendment) Act, 2003, Standards so far prescribed for various pollutants under Environment (Protection) Act, 1986 and Doon Valley Notification, 1989 issued by MoEFCC. The Pollution Index PI of any industrial sector is a number from 0 to 100 and the increasing value of PI denotes the increasing degree of pollution load from the industrial sector. Based on the series of brain storming sessions among CPCB, SPCBs and MoEFCC, the following criteria on 'Range of Pollution Index' for the purpose of categorization of industrial sectors is finalized.

- |   |                  |
|---|------------------|
| ○ Industrial Sectors having Pollution Index score of 60 and above | - Red category   |
| ○ Industrial Sectors having Pollution Index score of 41 to 59     | -Orange category |
| ○ Industrial Sectors having Pollution Index score of 21 to 40     | -Green category  |
| ○ Industrial Sectors having Pollution Index score incl.&upto 20   | -White category  |

The newly introduced White category of industries pertains to those industrial sectors which are practically non-polluting such as Biscuit trays etc. from rolled PVC sheet (using automatic vacuum forming machines), Cotton and woolen hosiers making (Dry process only without any dying/washing operation), Electric lamp (bulb) and CFL manufacturing by assembling only, Scientific and mathematical instrument manufacturing, Solar power generation through photovoltaic cell, wind power and mini hydel power (less than 25 MW).

The salient features of the 'Re-categorization' Exercise are as follows :

- Due importance has been given to relative pollution potential of the industrial sectors based on scientific criteria . Further, wherever possible, splitting of the industrial sectors is also considered based on the use of raw materials, manufacturing process adopted and in-turn pollutants expected to be generated.
- The Red category of industrial sectors would be 60.
- The Orange category of industrial sectors would be 83.
- The Green category of industrial sectors would be 63.
- Newly introduced White category contains 36 industrial sectors which are practically non-polluting.
- There shall be no necessity of obtaining the Consent to Operate'' for White category of industries. An intimation to concerned SPCB / PCC shall suffice.
- No Red category of industries shall normally be permitted in the ecologically fragile area / protected area.

The purpose of categorization is to ensure that the industry is established in a manner which is consistent with the environmental objectives. The new criteria will prompt industrial sectors willing to adopt cleaner technologies, ultimately resulting in generation of fewer pollutants. Another feature of the new categorization system lies in facilitating self-assessment by industries as the subjectivity of earlier assessment has been eliminated. This 'Re-categorization' is a part of the efforts, policies and objective of present government to create a clean & transparent working environment in the country and promote the Ease of Doing Business.

Other similar efforts include installation of Continuous Online Emissions/ Effluent Monitoring Systems in the polluting industries, Revisiting of the CEPI (Comprehensive Environment Pollution Index) concept for assessment of polluted industrial clusters, Revision of existing industrial Emission/Effluent discharge standards, initiation of special drive on pollution control activities in Ganga River basin and many more in coming future.

## **Revised Criteria of Categorization of Industries**

“Securing industrial pollution control in accordance with the Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981 by linking with categorization of industries, consent management and vigilance – ‘In context of Red, Orange, Green and White categories of industries”

### **A: Genesis of Categorization:**

- The Ministry of Environment, Forest and Climate Change (MoEFCC) had brought out notifications, which inter-alia refers to Prohibition/ Restriction on operation of industries to protect ecologically sensitive areas or areas of specific importance. This has for the first time brought the concept of categorization of industries to “Red”, “Orange” and “Green” and restrict their operation in certain areas of importance. Therefore, it is at-once interpreted that Red, Orange and Green categorization is linked with location specific needs.
- The notification of MoEF was first brought on 2<sup>nd</sup> February, 1989 in case of “Restriction on location of industries, mining operations and other developmental activities in Doon Valley in “Uttarakhand” and thereafter another notification on 24<sup>th</sup> February 1999 regarding restriction on the setting up of industries in Dahanu Taluka in Maharashtra. The categorization had been made mainly on the basis of size of the industries, man power and consumption of resources.
- However, in other parts of the country, there have been variations in context to the classification of industries under Red, Orange and Green categories. SPCBs / PCCs were following their own criteria in different States thereby creating confusion.
- In order to harmonize the ‘Criteria of categorization’, a ‘Working Group’ was formed as per resolution passed during the 57<sup>th</sup> Conference of the Chairmen & Member Secretaries of CPCB and SPCBs. Based on the recommendations of the Working Group, Directions dated 4/6/2012 under Section 18(1)(b) of the Water

(Prevention & Control of Pollution) , Act, 1974 were issued to all SPCBs/PCCs with the effects to maintain uniformity in categorization of industries as red, green and orange as per list finalized by the Working Group. This indicative list included 85 types of industrial sectors as 'Red', 73 industrial sectors as 'Orange' and 86 sectors as 'Green'. However, these identified categories have not been assigned with scores as per existing criteria/ or any new criteria

**B: Categorization criteria used by SPCBs/PCCs:**

SPCBs and PCCs use the criteria of Red, Orange and Green categories for consent management and vigilance purposes for carrying out inspections to verify compliance to the stipulated standards. However the above categorization do not emphasize on sector-specific plan for control of pollution in accordance with priority based on pollution index.

**C: Gap in the process:**

1. The categorization has been made mainly on the basis of size of the industries and consumption of resources. The pollution due to discharge of emissions & effluents and its impact on health was not considered as primary criteria.
2. Categorization was on random basis, no scoring system was adopted.

**D: Resolutions made during National Level Conferences**

The issue was discussed thoroughly during the following national level conferences held in New Delhi:

- Conference of the Environment Ministers of Central Government and State Governments during April 06-07, 2015
- 59<sup>th</sup> Conference of Chairmen & Member Secretaries of Pollution Control Boards / Pollution Control Committees held on April 08, 2015

Accordingly following resolutions were made during the Conferences:

1. A 'Working Group' comprising of the members from CPCB, APPCB, TNPCB, WBPCB, PPCB, MPPCB and Maharashtra PCB is constituted.
2. This WG shall revisit the categorization of industries that is based on pollution index criteria & environmental issues such as generation of emission, effluent and hazardous wastes.
3. The categorization will be done on the basis of composite score (0-100 marks) of Pollution Index given in accordance with the following weightage.

Air Pollution Score based on parameters namely PM, CO, NO <sub>x</sub> , SO <sub>x</sub> , HMs, Benzene, Ammonia and other toxic parameters relevant to the industry.	40 Marks
Water Pollution Score based on parameters namely pH, TSS, NH <sub>3</sub> -N, BOD, Phenol and other toxic pollutants relevant to the industry.	40 Marks
Hazardous wastes (land fillable, incinerable, recyclable) as generated by the industry.	20 Marks
Note : <ul style="list-style-type: none"> <li>• Parameters to be decided on the basis of the nature of the wastes generating from the industrial sector.</li> <li>• Industries having only either water pollution or air pollution, the score will be normalized wrt 100.</li> </ul>	

4. Based on the score of the Pollution Index, following categorization be made :
  - Type of industries, if scores 60 and above be categorized as Red
  - Type of industries, if scores from 30 to 59 be categorized as Orange
  - Type of industries, if scores from 15 to 29 be categorized as Green
  - Type of industries, if less than 15 be categorized as White or non-polluting industry.
5. SPCBs/PCCs may issue consent to the industries
  - Red category of industries for 5 years.
  - Orange category of industries for 10 years.
  - Green category of industries for 15 years.
  - No necessity of consent for non-polluting industries.
6. No red categories of industries will be permitted to establish in eco-sensitive areas and protected areas.

## **E: Follow-up Actions made on the Resolutions :-**

- Accordingly, a Committee comprising the Chairmen of CPCB, APPCB, TNPCB, MPPCB, MPCB, PPCB, WBPCB and MS, CPCB was constituted vide CPCB OM dated

23.04.2015 to review & classify industrial sectors into different categories based on criteria of respective pollution potential.

- The categorization is made on the basis of following:
  - Quality of emissions (air pollutants) generated
  - Quality of effluents ( water pollutants) generated
  - Types of hazardous wastes generated
  - Consumption of resources
- Reference is taken from the following :
  - The Water (Prevention and Control of Pollution ) Cess Act, 1977
  - Standards so far prescribed for various pollutants under the Environment (Protection) Act , 1986
  - Doon Valley Notification, 1989 issued by MoEF.

#### **F : Scoring Methodology :**

The details on the scoring methodology in respect of the aforesaid 3 components is presented in the following tables F-1 to F-4 .

**Table F-1 : Water Pollution Scoring Methodology**

Sl. No.	Activity / Types of Discharges	Score
Part A : Score W1 : Score based on types of expected criteria water-pollutants present in industrial processes waste waters. <b>Maximum of the following seven categories is to be taken.</b>		
W11	Waste-water which is polluted and the pollutants are - <ul style="list-style-type: none"> <li>• not easily biodegradable ( very high strength waste waters having BOD &gt; 5000 mg/l ); or</li> <li>• toxic; or</li> <li>• both toxic and not easily biodegradable.</li> </ul> (Presence of criteria water pollutants having prescribed standard limits up-to 10 mg/l or having BOD > 5000 mg/l). For details appendix 1 may be referred)	30
W12	Non-toxic high strength polluted waste-water having BOD in the range of 1000-5000 mg/l and the pollutants are biodegradable. <p align="center">(Presence of criteria water pollutants having prescribed standard limits from 11 mg/l to 250 mg/l and having BOD strength in the range of 1000-5000 mg/l) . For details appendix 1 may be referred)</p>	25
W13	Non toxic- polluted waste-water having BOD below 1000 mg/l and the pollutants are easily biodegradable. <p align="center">(Presence of criteria water pollutants having prescribed standard limits from 11mg/l to 250 mg/l and having BOD strength below 1000 mg/l) . For details appendix 1 may be referred)</p>	20
W14	Waste-water generated from the chemical processes and which is polluted due to presence of high TDS ( total dissolved solids) of inorganic nature. <p align="center">(Presence of criteria water pollutants having prescribed standard limits more than 250 mg/l. For details appendix 1 may be referred)</p>	15
W15	Waste-water generated from the physical unit operations / processes and which is polluted due to presence of TDS (total dissolved solids) of inorganic nature and of natural origin like fresh-water RO rejects, boiler blow-downs, brine solution rejects etc. <p align="center">(Presence of criteria water pollutants having prescribed standard limits more than 250 mg/l. For details appendix 1 may be referred)</p>	12
W16	Non-toxic polluted waste-water from those units which are: <ul style="list-style-type: none"> <li>• Having the overall waste-water generation less than 10 KLD and</li> <li>• The pollutants are easily bio-degradable having BOD below 200 mg/l which can be easily treated in a single stage ASP (activated</li> </ul>	12

	sludge process) based Effluent Treatment Plant. Note : This is a special category and is applicable to only those units having over-all liquid waste generation less than 10 KLD with low strength organic load.	
W17	Waste-water from cooling towers and cooling-re-circulation processes	10
Part B : Score W2 : Score based on huge discharges of any kind (Penalty Clause)		
W2	Industry having overall liquid waste generation of 100 KLD or more including industrial & domestic waste-water.	10
Overall Water Pollution Score $W = W1 + W2$		

## Appendix 1

- **Water Pollutants covered under Group W11:**

- ✓ Free available Chlorine , Total residual chlorine, Fluoride (as F), Sulphide (as S), Free Ammonical Nitrogen, Dissolved phosphates (as P), Free ammonia (as NH<sub>3</sub>), Nitrate Nitrogen, Mercury (As Hg), Selenium (as Se), Hexa-valent chromium (as Cr + 6), Lead (as Pb), Tin , Vanadium (as V), Cadmium (as Cd), Manganese (as Mn), Total chromium (as Cr), Copper (as Cu), Iron (as Fe), Nickel (as Ni), Zinc (as Zn), Benzene, Arsenic (as As), Benzo-a-pyrene, Cyanide (as CN), Phenolic compounds (as C<sub>6</sub>H<sub>5</sub>OH) , Adsorbable Organic Halogens (AOX), Boron and /or
- ✓ BOD strength of waste water > 5000 mg/l

- **Water Pollutants covered under Group W12:**

- ✓ Sodium Absorption Ratio (SAR) , Biochemical oxygen demand (3 days at 27°C), Total Kjeldahl nitrogen (TKN), Ammonical nitrogen (as N), Suspended solids, Total nitrogen (as N), Chemical oxygen demand, Oils & grease and
- ✓ BOD strength of waste water is in the range of 1000-5000 mg/l

- **Water Pollutants covered under Group W13:**

- ✓ Sodium Absorption Ratio (SAR), Biochemical oxygen demand (3 days at 27°C), Total Kjeldahl nitrogen (TKN), Ammonical nitrogen (as N), Suspended solids, Total nitrogen (as N), Chemical oxygen demand and
- ✓ BOD strength of waste water is below 1000 mg/l

- **Water Pollutants covered under Group W14 and W15:**

Chlorides as Cl, Colour , Total dissolved solids (TDS - Inorganic)

- **Water Pollutants covered under Group W16**

- ✓ BOD strength of waste water is below 200 mg/l and overall discharge is less than 10 KLD.

**Table F-2 : Air Pollution Score**

Sl. No.	Air Pollutants Group	'Range of Prescribed Standard ' of criteria pollutants	Marks
Part 1 : Score A1 = Score based on types of expected criteria Air Pollutants present in the emissions . Maximum of the following seven categories is to be taken. For details appendix 2 may be referred.			
1	Group A1A	Presence of criteria air pollutants having prescribed standard limits up - to 2 mg/Nm <sup>3</sup>	30
2	Group A1B	Presence of criteria air pollutants having prescribed standard from 3 to 10 mg/Nm <sup>3</sup>	25
3	Group A1C	Presence of criteria air pollutants having prescribed standard from 11 to 50 mg/Nm <sup>3</sup>	20
4	Group A1D	Presence of criteria air pollutants having prescribed standard from 51 to 250 mg/Nm <sup>3</sup>	15
5	Group A1E	Presence of criteria air pollutants having prescribed standard from 251 mg/Nm <sup>3</sup> & above.	10
6	Group A1F	<ul style="list-style-type: none"> <li>Generation of fugitive emissions of Particulate Matters which are: <ul style="list-style-type: none"> <li>Not generated as a result of combustion of any kind of fossil-fuel.</li> <li>Generated due to handling / processing of materials without involving the use of any kind of chemicals.</li> <li>Which can be easily contained /controlled with simple conventional methods</li> </ul> </li> </ul>	10
7	Group A1G	<ul style="list-style-type: none"> <li>Generation of Odours which are : <ul style="list-style-type: none"> <li>Generated due to application of binding gums / cements /adhesives /enamels</li> <li>Which can be easily contained /controlled with simple conventional methods</li> </ul> </li> </ul>	10
Part 2 : Score A2 = Score based on consumption of fuels and technologies required for air pollution control :			
6	Group A2F1	<ul style="list-style-type: none"> <li>All such industries in which the daily consumption of coal/fuel is more than 24 MT/day and the particular (Particulate/gaseous/process) emissions from which can be controlled only with high level equipments / technology like ESPs, Bag House Filters, High Efficiency chemical wet scrubbers etc.</li> </ul>	10
7	Group A2F2	<ul style="list-style-type: none"> <li>All such industries in which the daily consumption of coal/fuel is from 12 MT/day to 24 MT/day and the particular (Particulate/gaseous/process) emissions from which can be controlled with suitable proven technology.</li> </ul>	5
Overall Air Pollution Score -A = A1 + A2			

- Air pollutants covered under Group A1A:  
Cd+Th, Dioxins & Furans, Mercury, Asbestos
- Air Pollutants covered under Group A1B:  
HF, Nickel+ Vanadium, HBr, Manganese, Lead, H<sub>2</sub>S, P<sub>2</sub>O<sub>5</sub> as H<sub>3</sub>PO<sub>4</sub>
- Air Pollutants covered under Group A1C:  
Chlorine, Pesticide compounds, CH<sub>3</sub>Cl, TOC, Total Fluoride, Hydrocarbons, NH<sub>3</sub>, HCL vapour & Mist, H<sub>2</sub>SO<sub>4</sub> Mist, SO<sub>2</sub>
- Air Pollutants covered under Group A1D:  
CO, PM, CO, NO<sub>x</sub>
- Air Pollutants covered under Group A1E:  
NO<sub>x</sub> with liquid-fuel, SO<sub>2</sub> with liquid-fuel

**Table F-3: Hazardous Waste Generation Score**

Sl.No.	Types of Hazardous Waste Generated as per Schedule 1 / Schedule 2 of Hazardous Waste ( Management, Handling & Trans-boundary Movement) Rules , 2008 . <b>Maximum of the following four categories is to be taken</b>	Score
HW1	<ul style="list-style-type: none"> <li>Land disposable HW which require special care &amp; treatment for stabilization before disposal.</li> </ul>	20
HW2	<ul style="list-style-type: none"> <li>Incinerable HW</li> </ul>	15
HW3	<ul style="list-style-type: none"> <li>Land disposable HW which doesn't require treatment &amp; stabilization before disposal.</li> <li>High volume low effect wastes such as fly-ash, phspho-gypsum, red-mud, slags from pyro-metallurgical operations, mine tailings and ore beneficiation rejects)</li> </ul>	10
HW4	<ul style="list-style-type: none"> <li>Recyclable HW, which are easily recyclable with proven technologies.</li> </ul>	10

**Table F-4 : Calculation Sheet**  
Industrial Sector - .....

1. Water Pollution Score (W)			
Scores	Waste Water Category	Value	
Score on W1			
Score on W2			
Water Pollution Score = W1+W2			
2. Air Pollution Score (A)			
Scores	Air Pollutant Category	Value	
Score on A1			
Score on A2	-	-	
Air Pollution Score = A1+A2			
3. Hazardous Waste Score (HW)			
Score	HW Category	Value	
HW			
Grand Total = W + A + HW			

Note :

- Any of the industrial sector having only either air pollution (A) or water pollution (W) , the score will be normalized to 100 as per the following formula -

$$\text{Normalized Score} = \{100 \times W \text{ ( or A)}\} / 40$$

- Any of the industrial sector having air pollution (A) and water pollution (W) both but no hazardous waste generation (H) , the joint score of air & water pollution will be normalized to 100 as per the following formula -

$$\text{Normalized Score} = \{100 \times (W+A)\} / 80$$

- Any of the industrial sector having air pollution (A) & hazardous waste generation (H) but no water pollution (W), the joint score of air pollution & hazardous waste generation will be normalized to 100 as per the following formula -

$$\text{Normalized Score} = \{100 \times (A+H)\} / 60$$

- Any of the industrial sector having water pollution (W) and hazardous waste generation (H) but no air pollution (A), the joint score of water pollution & hazardous waste generation will be normalized to 100 as per the following formula -

$$\text{Normalized Score} = \{100 \times (W+H)\} / 60$$

## G : Developments :

- i. The existing Red ( 85 sectors) , Orange ( 73 sectors) and Green ( 86 sectors) i.e a total of 244 industrial sectors have been assessed as per the proposed formula by the Working Group. For this purpose, concerned Engineers / Scientists from the Member SPCBs were also involved & consulted during May 28-29, 2015.
- ii. After careful examination and consideration of the suggestions of concerned stake-holders the “Draft Document on Revised Concept of Categorization of Industrial Sectors ” was prepared by the Committee and circulated to all the SPCBs, PCCs and concerned Ministries for their information & comments. The ‘ Draft Document ’ was uploaded on the website of CPCB also for information & comments of one & all.
- iii. The matter was discussed during the 170<sup>th</sup> Board Meeting also and issues raised by the Board Members pertaining to some of the industrial sectors were clarified.
- iv. Responses were received from various concerned Ministries, SPCBs, Industrial Associations including individuals.
- v. Based on the above, final meeting was convened by the Secretary , MoEFCC with CPCB and senior officers of MoEFCC on January 06, 2016 to resolve the issues appropriately and finalize the ‘Re-categorization’. Accordingly , following modifications in the ‘Range of Pollution Index ‘for the purpose of categorization of industrial sectors were suggested :
  - Industrial Sectors having Pollution Index score of 60 and above – Red category
  - Industrial Sectors having Pollution Index score of 41 to 59 –Orange category
  - Industrial Sectors having Pollution Index score of 21 to 40 –Green category
  - Industrial Sectors having Pollution Index score incl.& upto 20 –White category
- vi. Based on the final criteria as described in v above , the final categorization is as follows :

Category of Industrial Sector	Existing Categorization	Proposed (New) categorization
Red	85	60
Orange	73	83
Green	86	63
White	---	36
Total	244	242

- vii. In the proposed categorization, some of the industrial sectors have been either deleted due to duplication or merged with similar type of sectors on account of same

characteristics of pollution generation. In a similar way, some of the industrial sectors are split into more sectors on account of variation in the raw materials / manufacturing process. As a result final totals of the existing and proposed categorization are different.

- viii. The industrial sector which doesn't fall under any of the above four categories ( Red, Orange, Green and White) , decision with regard to its categorization will be taken at the level of concerned SPCB/PCC by a committee headed by the Member Secretary , SPCB/PCC and comprising of two senior cadre Engineers / Scientists of the SPCB / PCC in accordance with the scoring-criteria specified in this document.
- ix. The summary is presented in the following Table G-1 and final lists of Red, Orange, Green and White categories of industries are presented in Tables G-2, G-3, G-4 and G-5 respectively, which are self explanatory.

**Table G-1: Final Summary Table Red , Orange, Green and White Categories of Industries (16-01-16)**

Sl No.	Original Categorization	Initial Nos.	Addition by Splitting into further classes	Deletion/ Shifting to foot-note due to vague term / Merger / other reasons	Re-categorization to Red	Re-categorization to Orange	Re-categorization to Green	Re-categorization to White	Check
			1	2	3	4	5	6	7
1	Red	85	11	7	60	26	3	Nil	96=96
2	Orange	73	2	3	Nil	51	19	2	75=75
3	Green	86	Nil	3+2=5	Nil	6	41	34	86=86
Final Categorization		244	13	15	60 (Red )	83 (Orange)	63 (Green)	36 (White)	257 =257 (Total categories including in foot-note)

**Table G-2 : Final List of Red Category of Industrial Sectors**

Sl No.	Orgnl Sl.No	Industry Sector	W1	W2	W	A1	A2	A	H	W+A+H	Revised Category	REMARKS
1.	38	Isolated storage of hazardous chemicals (as per schedule of manufacturing, storage of hazardous chemicals rules ,1989 as amended)									R-R	As per provisions of Rules, to be kept under Red category especially for safety purposes.
2.	4	Automobile Manufacturing (integrated facilities)	30	-	30	20	-	20	10	60	R-R	i. Such types of plants are having either one or combinations of polluting activities viz. washing, metal surface finishing operations, pickling, plating, electro-plating , phosphating, painting , heat treatment etc. ii. Some of such plants may outsource some /all of the polluting activities. In such cases, after thorough inspection of such units by concerned SPCB, re-categorization of the industry shall be made accordingly.
3.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW( M, H& TBM) rules, 2008 - Items namely - Spent cleared metal catalyst containing copper,, Spent cleared metal catalyst containing zinc,,	30	-	30	20	-	20	10	60	R-R	All the three types of pollutants are expected.
4.	44	Manufacturing of lubricating oils ,grease and petroleum based products	20	-	20	20	-	20	20	60	R-R	Generates all sorts of pollution.
5.	66 E	DG Set of capacity > 5 MVA	-	-	-	20	5	25	-	62.5	R-R	i. Mainly air polluting. ii. DG sets consume the diesel @ 0.21 litres/hr/KVA at full load. iii. Average running is taken @ 12 hrs / day although many of the DG sets run for more than this period.
6.	31	Industrial carbon including electrodes and graphite blocks, activated carbon, carbon black	10	-	-	20	5	25	10	62.5	R-R	Mainly air polluting. Air pollution score is normalized to 100.

7.	39	Lead acid battery manufacturing(excluding assembling and charging of lead-acid battery in micro scale)	10	-	10	25	-	25	10	62.5	R-R	<ul style="list-style-type: none"> <li>i. Mainly air polluting. Air pollution scores are normalized to 100.</li> <li>ii. Lead Acid Battery manufacturing consists of various stages which broadly involve (after producing or receiving lead oxide): Paste Mixing , Grid Casting , Grid Pasting &amp; Curing , Hydro-setting, parting &amp; enveloping , Stacking, grouping &amp; inter-cell welding ,Formation.</li> <li>iii. Exposure of workmen to lead during all or any of the processes outlined above exceeds the prescribed standards if appropriate equipment in this respect is not installed at any Battery Manufacturing Unit.</li> <li>iv. All of the above processes, some more than others, involve release of lead particles or fumes into the environment. Pollution from the above processes can be grouped into two possible types, viz: (a) Lead Oxide becomes airborne and there is Particulate Pollution (b) Fumes are generated and there is Gaseous Pollution</li> </ul>
8.	62	Phosphate rock processing plant	30	-	30	20	-	20	-	62.5	R-R	<ul style="list-style-type: none"> <li>i. The separation of phosphate rock from impurities and non-phosphate materials for use in fertilizer manufacture consists of beneficiation, drying or calcining at some operations, and grinding. Phosphate rock from the mines is first sent to beneficiation units to separate sand and clay and to remove impurities. Steps used in beneficiation depend on the type of rock.</li> <li>ii. The water &amp; air pollution scores are normalized to 100.</li> </ul>

9.	66	Power generation plant [except Wind and Solar renewable power plants of all capacities and Mini Hydel power plant of capacity <25MW]	10	-	10	15	10	25		62.5	R-R	1. Mainly air polluting. It uses a mixture of biomass (agro based) and coal ( < 10 %) as a fuel. Almost, round the year operation. 2. In case of DG sets of 5 MVA & more and emissions of SO <sub>2</sub> will take place due to use of liquid fuel. Air pollution score will be =20 + 10 = 30, Normalized score will be 75. 3. In case of 'Waste to Energy Plants' , water will be used for cooling and air score will be - 30+10 = 40.
10.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW( M, H& TBM) rules, 2008 - Items namely - Spent catalyst containing nickel, cadmium, Zinc, copper, arsenic, vanadium and cobalt,	30	-	30	25	-	25	10	65	R-R	All the three types of pollutants are expected.
11.	67	Processes involving chlorinated hydrocarbons	30	-	30	20	-	20	15	65	R-R	Chlorinated hydrocarbons are used in the manufacture of insecticides, pesticides and organo chloro pesticides. Effluents & emissions are toxic in nature.
12.	74	Sugar ( excluding Khandsari)	20	10	30	15	10	25	10	65	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Sugar mills generate all sorts of pollution problems.
13.	22	Fibre glass production and processing (excluding moulding)	-	-	-	20	-	20	20	67	R-R	i. The use of styrene in most methods of fiberglass production causes hazardous air pollution that is harmful to breathe at excessive levels. ii. It is mainly air polluting & HW generating industry. The air pollution & HW scores are normalized to 100. iii. In case of lead containing glass, the score of A1 will be 25 and final normalized score will be 75 and shall be categorized as Red.
14.	23	Fire crackers manufacturing and bulk storage facilities	-	-	-	20	-	20	20	67	R-R	i. This is the normalized score based on air pollution & HW generation. ii. Various hazardous chemicals are used in the manufacturing process. iii. These chemicals are namely Potassium Nitrate , Potassium per-chlorate, Barium Nitrate, Aluminium compounds, Copper Chloride etc.

												iv. These chemicals are highly hazardous and cause serious diseases among the workers. especially ability of blood to carry oxygen leading to headaches, methemoglobinemia and kidney problems , skin problems, thyroid metal fume etc.
15.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW( M, H& TBM) rules, 2008 - Items namely - Dismantlers Recycling Plants -- Components of waste electrical and electronic assemblies comprising accumulators and other batteries included on list A, mercury-switches, activated glass cullets from cathode-ray tubes and other activated glass and PCB-capacitors, or any other component contaminated with Schedule 2 constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in part C of this Schedule.	-	-	-	30	0	30	10	67	R-R	Mainly air polluting and hazardous waste generating. Air & HW pollution scores are jointly normalized to 100.
16.	47	Milk processes and dairy products(integrated project)	20	10	30	20	5	25	-	68.75	R-R	i. Water as well as air polluting due to use of boilers. ii. Water & air pollution scores are normalized to 100.
17.	63	Phosphorous and its compounds	30	-	30	25	-	25	-	68.75	R-R	Water pollution & air pollution containing compounds of phosphorous are expected
18.	61	Pulp & Paper ( waste paper based without bleaching process to manufacture Kraft paper)	20	10	30	15	10	25	0	68.75	R-R	Mainly water & air polluting . Water & air pollution scores are normalized to 100.
19.	13	Coke making , liquefaction, coal tar distillation or fuel gas making	30	-	30	20	-	20	20	70	R-R	It is a kind of petrochemical industry.

20.	41	Manufacturing of explosives, detonators, fuses including management and handling activities	30	-	30	20	-	20	20	70	R-R	<ul style="list-style-type: none"> <li>i. Explosives manufacture and use contribute some measure of hazardous waste to the environment.</li> <li>ii. Nitroglycerin produces several toxic byproducts such as acids, caustics, and oils contaminated with heavy metals. These must be disposed of properly by neutralization or stabilization and transported to a hazardous waste landfill.</li> <li>iii. The use of explosives creates large amounts of dust and particulate from the explosion, and, in some cases, releases asbestos, <b>lead</b>, and other hazardous materials into the atmosphere.</li> </ul>
21.	45	Manufacturing of paints varnishes, pigments and intermediate (excluding blending/mixing)	30	-	30	25	-	25	15	70	R-R	<ul style="list-style-type: none"> <li>i. The process may cause considerable emissions of volatile organic compounds (VOC). VOC contribute to the creation of ozone in the lower layers of the atmosphere (photochemical air pollution) and can present danger to health.</li> <li>ii. Dust and odour may also be a problem.</li> <li>iii. Washing of vessels will contribute waste-waters.</li> <li>iv. Large quantity of HWs are also produced.</li> </ul>
22.	56	Organic Chemicals manufacturing	30	-	30	20	-	50	20	70	R-R	Such types of industrial sectors generate all sorts of pollution.
23.	1	Airports and Commercial Air Strips	20	10	30	-	-	-	10	75	R-R	<ul style="list-style-type: none"> <li>i. The Airports are generating mainly the waste-waters.</li> <li>ii. This is the water pollution normalized score for airports having discharge more than 100 KLD.</li> <li>iii. The airports / strips having discharge less than 100 KLD will have score of 50 and hence orange category.</li> <li>iv. If the score is normalized wrt water + HW both, then all the airports will come under Orange category (score - 58.33).</li> </ul>
24.	3	Asbestos and asbestos based industries	-	-	-	30	-	30	10	75	R-R	<ul style="list-style-type: none"> <li>i. This is mainly air polluting industry.</li> <li>ii. Final score is based on air pollution score only.</li> <li>iii. Asbestos is carcinogenic and banned in many countries.</li> </ul>
25.	5	Basic chemicals and electro chemicals and its derivatives including manufacturing of acid	30	-	30	-	-	-	10	75	R-R	<ul style="list-style-type: none"> <li>i. Standards prescribed for Inorganic Chemicals are adopted.</li> <li>ii. It is mainly water polluting industry having effluents which are toxic and not easily biodegradable.</li> </ul>

												iii. Water pollution score normalized to 100 is undertaken. iv. The earlier Red category industrial sector namely "Hydrocyanic acid and its derivatives" is also merged under this industrial sector.
26.	7	Cement	-	-	-	20	10	30	-	75	R-R	This is mainly air polluting industry & hence normalized air pollution score.
27.	9	Chlorates, per-chlorates & peroxides	30	-	30	-	-	-	-	75	R-R	i. It is mainly water polluting industry having effluents which are toxic and not easily biodegradable. ii. Water pollution score normalized to 100 is undertaken.
28.	10	Chlorine, fluorine, bromine, iodine and their compounds	30	-	30	-	-	-	-	75	R-R	i. It is mainly water polluting industry having effluents which are toxic and not easily biodegradable. ii. Water pollution score normalized to 100 is undertaken.
29.	16	Dyes and Dye- Intermediates	30	-	30	20	5	25	20	75	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution.
30.	26	Health-care Establishment ( as defined in BMW Rules)	20	10	30	-	-	-	-	75	R-R	i. Mainly water polluting. ii. The water pollution score is normalized to 100 & valid for Hospitals having total waste-water generation > 100 KLD. iii. The hospitals with incinerator will be categorized as Red irrespective of the quantity of the waste-water generation. iv. The hospitals having total waste-water generation less than 100 KLD and without incinerator, the normalized water pollution score will be 50 and will be categorized as Orange category.
31.	29	Hotels having overall waste-water generation @ 100 KLD and more.	20	10	30	15	-	15	-	75	R-R	i. Mainly water polluting. Small boiler may be installed. ii. The water pollution score is normalized to 100 & valid for Hotels having waste-water generation > 100 KLD. iii. The hotels having more than 20 rooms and waste-water generation less than 100 KLD and having a coal / oil fired boiler , the pollution score will be 35/40 & are categorized as Orange. iv. The hotels having more than 20 rooms and waste-water generation less than 10 KLD and

												having no-boiler & no hazardous waste generation, the pollution score will be 20 & are categorized as Green.
32.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW( M, H& TBM) rules, 2008 - Items namely - Lead acid battery plates and other lead scrap/ashes/residues not covered under Batteries (Management and Handling) Rules, 2001. [ * Battery scrap, namely: Lead battery plates covered by ISRI, Code word "Rails" Battery lugs covered by ISRI, Code word "Rakes". Scrap drained/dry while intact, lead batteries covered by ISRI, Code word "rains".	30	-	30	25	--	25	20	75	R-R	All the three types of pollutants are generated.
33.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW( M, H& TBM) rules, 2008 - Items namely - Integrated Recycling Plants -- Components of waste electrical and electronic assemblies comprising accumulators and other batteries included on list A, mercury-switches, activated glass cullets from cathode-ray tubes and other activated glass and PCB-capacitors, or any other component contaminated with Schedule 2 constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in part C of this Schedule.	30	-	30	25	-	25	20	75	R-R	All the three types of pollutants are expected.
34.	43	Manufacturing of glue and gelatin	30	10	40	20	-	20	-	75	R-R	Highly water polluting & obnoxious air polluting.
35.	49	Mining and ore beneficiation	30	10	40	15	5	20	-	75	R-R	Both air and water polluting. Score is normalized with air & water pollution.

36.	52	Nuclear power plant	10	-	10	30	-	30	15	75	R-R	i. Mainly air polluting due to incinerator. Others - cooling water. ii. Air pollution score is normalized to 100.
37.	58	Pesticides (technical) (excluding formulation)	30	-	30	25	-	25	20	75	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution.
38.	64	Photographic film and its chemicals	30	-	30	-	-	-	-	75	R-R	i. Silver salts and other chemicals are used in preparation. Slight quantity of effluents is generated. ii. Water pollution scores are normalized to 100.
39.	68	Railway locomotive workshop/Integrated road transport workshop/Authorized service centers	20	10	30	-	-	-	10	75	R-R	i. Mainly water polluting industry. Water is used in the washing of locomotives, road transport vehicles during servicing. ii. This score is valid for those Centers having discharge more than 100 KLD. iii. Service Centers having waste-water generation < 100 KLD, the normalized score will be $= (100 \times 20) / 40 = 50$ .
40.	84	Yarn / Textile processing involving any effluent/emission generating processes including bleaching, dyeing, printing and colouring	30	10	40	15	-	15	20	75	R-R	In this sector all sorts of pollution are generated.
41.	8	Chlor Alkali	30	10	40	20	10	30	10	80	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Chlor-alkali units are having different section like NaOH, Cl <sub>2</sub> , SBP etc which are having toxic effluents. Additionally, fuel consumption is also on higher-side.
42.	70	Ship Breaking Industries	30	-	30	30	-	30	20	80	R-R	i. The ship-breaking industry creates numerous hazards for the coastal and marine environment. ii. Ship-breaking releases a large number of dangerous pollutants, including toxic waste, oil, poly-chlorinated biphenyls, and heavy metals, into the waters and sea bed. iii. While most of the oil is removed before a ship is scrapped, sand used to mop up the remaining oil is thrown into the sea. High concentrations of oil and grease are then found in the coastal waters, choking marine life.