




ABRIDGED ESIA	
Document Name.:	Abridged ESIA
Site:	150 MW, Solar plant at Taluka Khatav, District Satara of Maharashtra, India
Date of ESIA Study:	04 March 2021

Details		Reference to Page on the ESIA Report
Overview of Proposed		
Particulars	Description	Page 09
Capacity	150 MW	
Location of the Project	The proposed Solar power project site is located in Mol and Manjarwadi village, Khatav Taluka in Satara District, Maharashtra,	
Power Evacuation Scenario	Power generated from the solar plant will be evacuated through transmission, network of 220 kV to nearby 220/132/ 33 KV Phaltan Grid substation	
Land Requirement	~600 Acres	
Land Use	The land identified for the proposed project is on a plateau with generally flat terrain and has scrubs, bushes and scarce vegetation. According to government records, the land is classified as an agricultural land.	
Contractors	The solar park shall be developed by TS Wind Private Limited and RWE Solar India Private Limited as EPC.	
Site elevation	914- 939 m above mean sea level (amsl)	
Transmission line	Power evacuation to the substation shall occur via external transmission of approximately 16 km with ~45 nos. of towers.	
Location, Hydrogeology, Topography, Drainage		Page 62
From the review of Google Earth satellite imagery, it is observed that the proposed solar power plant area will be located on scrub land with maximum elevation of 935 m above mean sea level (amsl) in the east, lowest elevation of 829 amsl in the west. There are several hillocks surrounding the proposed project site.		
No river is present with 5 kms radius area of the proposed project site. There are few man-made water bodies within the study area. River Nira is located at distance of 40 kms in north direction.		Page 66
Alteration of Topography and Drainage The project site located on plateau is generally flat with north-south orientation as stated in the technical due diligence report.		Page 57
There is presence of natural water bodies and drainage channels in the study area. Therefore, it is likely that project activities (e.g., site development, construction of access roads) may cause alteration of the topography and drainage of this area		
Earthquake As per Natural Disaster maps published by Building Materials & Technology Promotion Council (BMTPC) the Project site is located in Moderate Damage Risk Zone (MSK VII).		Page 68
Wind Hazard As per Natural Disaster maps published by Building Materials & Technology Promotion Council (BMTPC) the Project site is located in Low Damage Risk Zone (wind velocity of less than 33 m/sec).		Page 68
Land Slide As per the data released by the Building Materials & Technology Promotion Council (BMTPC) of Government of India, the Project site is located in an area not liable to landslide.		Page 68
Drought Khatav taluka comes under drought prone area zones, as per District Irrigation Plan of Satara District, 2018.		Page 68
Flood As per Natural Disaster maps published by Building Materials & Technology Promotion Council (BMTPC), the Project site is located in an area that is not liable to flooding		Page 68
Water table is around 80-100 ft below ground level.		Page 22
According to the Report on Aquifer Maps and Ground Water Management Plan Khatav, Man, Phaltan, Satara and Wai Taluka Satara District, Maharashtra, 201814 by CGWB, pre-monsoon water levels between 20 to 30 m bgl (below ground level) were observed in Khatav Taluka. The depth to water levels in Satara district during November 2017 ranges between 0.1 mbgl (Dhuldev, Man taluka) and 19.0 mbgl (Khatav taluka).		Page 66

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As per Central Groundwater Authority (CGWA), Ministry of Jal Shakti, Notification dated 24 September 20208, industries will have to obtain authorisation from CGWA before abstraction and use of groundwater. However, please note that the proposed 150 MW Project Taluka Khatav is categorised as “Semi-Critical” by CGWB.	Page 45, Page 66
Schedule V Area: The Project Area does not fall under the Schedule V area. (https://pesadarpan.gov.in/en)	Page 29
Based on the consultation with the TS Wind team and review of the Planning Commission list of Schedule V Areas ¹ , it is understood that project land doesn't fall with the Schedule V area. Also, it has been confirmed through consultation with Client and community that no land has been procured from a Schedule Tribe household for the proposed project.	Page 59
Forest Land: As per the available information, no forest land has been procured for the project.	Page 29
The proposed site is located adjacent to Reserve Forest. A NOC from Forest Department will be required confirming that site is not falling under Reserve Forest area.	Page 41
Migratory bird activity The Satara District is located along the Central Asian Flyway. However, given that the primary survey was undertaken outside migratory season, no significant migratory and/or congregatory behaviour has been identified in the Study area. The review of secondary resources such as ebird.org confirmed moderate amount of migratory bird activity in the landscape. A migratory season survey may confirm the presence of congregatory and migratory species in and around the Project area.	Page 82
A total of forty-six (46) avifaunal species were observed from the 5 km study area for the Project. Two of the species identified in the area are migrants i.e. Eurasian Sparrowhawk (<i>Accipiter nisus</i>) and Common Kestrel (<i>Falco tinnunculus</i>). One IUCN threatened species i.e. Vulnerable Asian Woollyneck (<i>Ciconia episcopus</i>) (IUCN VU v 2021-1) was observed during the primary survey. In addition, five species viz. Black Eagle (<i>Ictinaetus malaiensis</i>), Black-winged Kite (<i>Elanus caeruleus</i>), Eurasian Sparrow hawk (<i>Accipiter nisus</i>), Indian Peafowl (<i>Pavo cristatus</i>) and Shikra (<i>Accipiter badius</i>) listed under Schedule I of Indian Wildlife Protection Act 1972 were also recorded.	Page 78
Installing bird diverters which are reflective and can flap with the wind as a bird collision deterrent. A carcass register as part of the O&M phase should be maintained to record any bird carcasses or suspected bird carcasses. The register should include a date, type of species (to the extent identifiable), geographic location and nearest Transmission Line infrastructure for each carcass entry. Back-up with photo-documentation. The feeder transmission poles should have suspended insulators in order to reduce the electrocution of avifaunal species. At each location where the conductor is crossing over a transmission pole, the conductor should be insulated at pole crossover 1.5 m on either side. Use of plastic insulator caps or tubing of conductor at the electricity poles crossover should be considered	Page 160
Avifauna are the most impacted by collision and electrocution risk and primarily larger wingspan birds that find it harder to manoeuvre if they spot the transmission line late when in flight. As the highest risk category species (vulnerable) is a bird – Asian Woollyneck and Schedule I species such as Black Eagle, Black-winged Kite, Eurasian Sparrowhawk, Indian Peafowl, Shikra.	Page 159
Tribal (Schedule Tribe) Land: It was reported by TS Wind and confirmed by Radiance that no tribal land has been identified/ procured for the project.	Page 29
Land use Change: The project with all its components shall be set up on private land and entire land parcel is reported to be an agricultural land. Under such circumstances, the setting up of the solar power project will result into the permanent land use change to industrial use. The application for the conversion of land shall be applied once the land procurement process is completed.	Page 29
Landlessness: As per the limited consultation with the landowners, it is understood that the land procurement for the project has not resulted into landlessness of any landowners.	Page 29
Land Based Livelihoods: There will be no impact on land-based livelihood by the Project. Based on the consultation with the site representative, the total land requirement for the proposed project is 600 acres private land, out of which 250 acres is already procured in Manjarwadi village on willing-seller willing-buyer basis and remaining 350 acres shall be procured in subsequent months in Mol village.	Page 58

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<p>The key stakeholders to get impacted are landowner who have their agricultural land and were dependent on these farms for primary income generation.</p> <p>As per the consultation with landowners, it is noted that they are willing to sell their land because of the low productivity of the agricultural land, dependency on monsoons and cultivation is difficult in the area due to the rough terrain. Further, the consultation with locals suggests that the amount received after selling the land parcels, was either reinvested in the purchase of fertile agricultural land in Chilewadi village or invested for personal purposes. Therefore, the employment opportunity in the Project, will give the sustain income source to the local people and will reduce uncertain income from agricultural activities</p>	
<p>Encroachment and Squatting: No encroachment was observed on the purchased land parcels during the site visit and it was reported that land belongs to the individual farmers with the land title.</p>	Page 29
<p>Common Property Resource: The project is located on private land and it is not influencing any common property resource (CPR) land, hence no CPR will be use for the project</p>	Page 29
<p>Community health and safety hazards can include noise pollution, increased traffic, dust pollution and any effects due to structural damage. In the case of spills/leaks, there is a potential for fire hazards and soil/water contamination. Health and safety of nearby community, may be affected since there are villages at a distance of 2 kms from the proposed project site.</p>	Page 59
<p>Cultural Heritage: Based on the observations made during the site visit, no cultural heritage is located near or within the project site. Although, a religious structure (Aljai Devi mandir) at a distance of 0.27 m north was observed from the boundary of the proposed site, which is in Mol village. But, based on discussions with the site representative, it is understood that the proposed project will not obstruct access to the route utilized by commuters.</p>	Page 29
<p>The temple is of religious significance during specific seasons/ time during a year. Based on the site visit and stakeholder consultations it is assessed that this religious structure is not a critical cultural heritage.</p>	Page 49
<p>CSR Currently, no solar power projects exist in the study area.</p> <ul style="list-style-type: none"> • The Project can prove to be the potential employer of the local community in the area; • The need-driven CSR activities can play the critical role in the development of the community through economic opportunities and CSR projects; and 	Page 100
<p>The total land identified for the proposed project is ~600 acre and it is located on the private land. Out of which 250 acres is already procured in Manjarwadi village on willing-seller willing-buyer basis and remaining 350 acres shall be procured in subsequent months in Mol village. This land identified for the project development is private in nature. Furthermore, the project has not led to resettlement, physical displacement, and economic displacement</p>	Page 101-102
<p>Community Consultation: The Key feedback received through the community consultation regarding the Project:</p> <p>It was informed during the community consultation that there is a transition from an agriculture-based economy to a non-agriculture-based economy, because crop yield has declined due to lack of irrigation facilities in the area and scarcity of rainfall. The community is positive about the proposed solar power plant project installation. Although no renewable energy projects have been developed in the study area, the proposed Project is the foremost for the local community.</p> <p>☑ According to the stakeholder consultation, the community covets more similar projects in the area, with the anticipation of receiving benefits from the Project in the form of employment opportunities and infrastructural development that would aid in communal betterment. The key feedback received from the local community are delineated below:</p> <p>Employment Opportunity: They anticipate that the Project will benefit them in terms of employment, infrastructural development, and overall community development. Furthermore, they demand that the local community be given precedence in employment opportunities from the Project.</p>	Page 111



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Community Development Activities: During the stakeholder consultation, some key areas of community development activities have been identified such as improvement in medical infrastructure, development of basic infrastructure for students and improvement in drinking water.


Feedback from Landowners who were consulted during the ERM site visit –

Based on the consultation with the landowners, it is understood that land have been sold based on the willing seller willing buyer approach. The landowners were willing to sell their land because of the low productivity of the agricultural land, dependency on monsoons and cultivation is difficult in the area due to the rough terrain. They have reinvested the amount received after selling their land was either reinvested in the purchase of fertile agricultural land in Chilewadi village or invested for personal purposes (invested in setting up a business). The major concern of the stakeholder group till date is related to availability of employment opportunities that the project will generate.

Impact Assessment

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Page 129

Activity	Impact			Residual Impact	
	Nature	Magnitude	Significance	Magnitude	Significance
Land use change	Negative	Small	Moderate	Small	Moderate
Impact on topography and drainage	Negative	Small	Moderate	Small	Minor
Impact on Soil Compaction and Erosion	Negative	Small-Medium	Minor	Negligible	Negligible
Impacts due to Waste Generation and Soil Contamination	Negative	Small	Minor	Small	Minor
Water availability during construction phase	Negative	Medium	Major	Small	Moderate
Water quality during construction phase	Negative	Medium	Moderate	Small	Minor
Air Quality during construction phase	Negative	Small	Minor	Small	Negligible
Noise generation during construction phase	Negative	Medium	Minor	Small	Minor
Occupational Health & Safety	Negative	Small	Minor	Small	Minor
Impact on Landholding and Agricultural Income	Negative	Small	Moderate	Negligible	Minor
Community health and safety	Negative	Small	Minor	Negligible	Negligible
Impact on local employment opportunities during the Project life cycle	Positive				
Labour migration issues	Negative	Medium	Moderate	Small	Minor
Habitat Modification and loss	Negative	Small	Minor	Medium	Minor
Construction activities	Negative	Small	Minor	Small	Minor
Waste generation and soil contamination during operations	Negative	Small	Minor	Negligible	Negligible
Impact of water availability during operational phase	Negative	Large	Major	Medium	Moderate
Impact on water quality during operational phase	Negative	Small	Negligible	Negligible	Negligible
Impact on Community Health and Safety	Negative	Small	Minor	Small	Negligible
Impact on local employment opportunities during operations phase	Positive				
Collision and Electrocutation hazards	Negative	Medium	Minor	Small	Minor
Wildlife access to Project facility	Negative	Small	Minor	Small	Negligible




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Impact on water environment during decommissioning phase	Negative	Medium	Moderate	Small	Minor	
Impact on air quality during decommissioning phase	Negative	Small	Minor	Negligible	Negligible	
Impact on ambient noise levels during decommissioning phase	Negative	Small	Minor	Negligible	Negligible	
Impact on Economy and Employment during Decommissioning	Negative	Small	Minor	Negligible	Negligible	





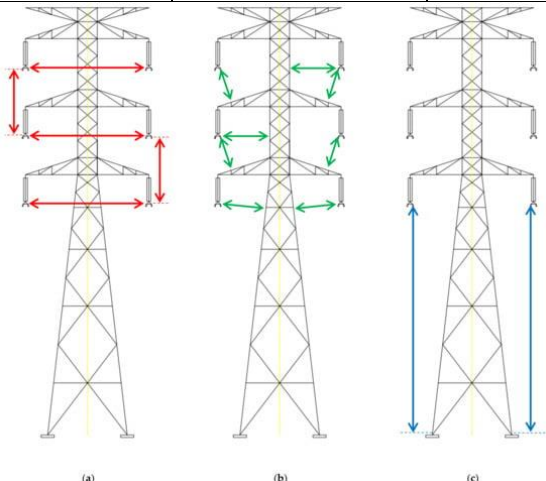
Impact on birds and Mitigating Measures

Name of Site	Site Address	Geographical Co-ordinate	Remarks
TS Wind	TS Wind, Mol and Manjarwadi village, Khatav Taluka, Satara District, Maharashtra, India	17.87748728453954, 74.26339894195321	
Presence of Waterbodies nearby	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	2-3 water bodies in vicinity- Tanks, small reservoirs
Capacity of Transmission line	33kV	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	66kV	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	110 kV	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	132 kV	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	220 kV	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
	230 kV	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

Large Wingspan Species in the area

Common Name	Black-winged Kite	Lesser Fish-Eagle	Black-necked Stork	Woolly-Necked Stork
Scientific Name	Elanus caeruleus	Haliaeetus humilis/ Icthyophaga humilis	Ephippiorhynchus asiaticus	Ciconia episcopus
Photo				
Wingspan	75 cm (0.75m) to 90cm (0.9m)	120cm (1.2m) to 160cm (1.6m).	200cm (2m)	175cm (1.75m)
Height	35cm (0.35m)	50 (0.5) to 70 cm (0.7m).	130cm (1.3m)	85cm (0.85m)
Habitat	Open savanna grasslands with scattered bushes and	Various forms of rivers, lakes, and wetlands. These eagle species are often seen	Found in or near lowland marshes, rivers, and ponds, as well as in	Forest, Grassland, Wetlands (inland), Marine Neritic, Marine Intertidal,

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	small trees and semi-deserts areas	along hill streams and fast-moving rivulets with fringe trees.	agricultural fields (rice, wheat and inundated fallow fields.	Artificial/Terrestrial, Artificial/Aquatic & Marine (rice, wheat and inundated fallow fields.
Presence of Waterbodies nearby	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	2-3 water bodies in vicinity- Tanks, small reservoirs	
IUCN Red List Category				
Migration	Not a Migrant	Not a Migrant	Not a Migrant	Not a Migrant
Prominent threats	Agricultural & forestry effluents - Herbicides and pesticides, Hunting & trapping terrestrial animals. Impact from Human intrusions & disturbance- None reported¹	Loss of forest habitat along rivers, siltation, over-fishing and increasing human disturbance of waterways are causing widespread declines. Population declining in Uttar Pradesh, India, partly because of pesticide use. It is relevant throughout much of its range. Impact from Human intrusions & disturbance- None reported²	Loss of suitable habitats, to the degradation and draining of shallow waterbodies, dumping of waste, overfishing, hunting, and power-line collision ³ . Impact from Human intrusions & disturbance- Medium⁴	Loss of suitable habitats, to the degradation and draining of shallow waterbodies, dumping of waste, overfishing, hunting, and power-line collision. Impact from Human intrusions & disturbance- None reported⁵
220 kV Line Clearance				


¹ <http://datazone.birdlife.org/species/factsheet/black-winged-kite-elanus-caeruleus/details>

² <http://datazone.birdlife.org/species/factsheet/lesser-fish-eagle-ictyophaga-humilis/details>

³ <https://roundglassustain.com/species/secondary-species-black-necked-stork>

⁴ <http://datazone.birdlife.org/species/factsheet/black-necked-stork-ephippiorhynchus-asiaticus/details>

⁵ <http://datazone.birdlife.org/species/factsheet/asian-woollyneck-ciconia-episcopus/details>

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	(a) phase-to-phase - Vertical-4.9m; Horizontal-8.4m ⁶ ((Section 4.4.3) (b) phase-to-earth (IS: 5613) - 2.13 m (2130 mm) ⁷ (Section 4.4.2) (c) phase-to-ground - 7.915m (7015mm) ⁸ (4.4.1)				
Electrocution Risk	Low ⁹	Low	Low	Low	
Collision Risk	Low	Low	Low-Medium	Low-Medium	

⁶ [https://cea.nic.in/wp-content/uploads/notification/2021/04/Draft%20 Standard Technical Specification for Steel Pole strcutrues.pdf](https://cea.nic.in/wp-content/uploads/notification/2021/04/Draft%20Standard%20Technical%20Specification%20for%20Steel%20Pole%20structures.pdf)

⁷ [https://cea.nic.in/wp-content/uploads/notification/2021/04/Draft%20 Standard Technical Specification for Steel Pole strcutrues.pdf](https://cea.nic.in/wp-content/uploads/notification/2021/04/Draft%20Standard%20Technical%20Specification%20for%20Steel%20Pole%20structures.pdf)

⁸ [https://cea.nic.in/wp-content/uploads/notification/2021/04/Draft%20 Standard Technical Specification for Steel Pole strcutrues.pdf](https://cea.nic.in/wp-content/uploads/notification/2021/04/Draft%20Standard%20Technical%20Specification%20for%20Steel%20Pole%20structures.pdf)

⁹ "Large birds such as large raptors and storks are most affected by electrocutions on distribution line networks, with voltages of 132 kV and below posing the most apparent risk (Table 3-1; Dixon, 2016)".

<http://www.indiaenvironmentportal.org.in/files/file/wildlife%20and%20power%20lines.pdf>