



LAKE TURKANA WIND POWER PROJECT
INTERNAL ROADS UPGRADE PROJECT UPDATE- SEPTEMBER 2018



Area: The Lake Turkana Wind Power project is located in Loiyangalani District, Marsabit County, Kenya. It comprises of 365 wind turbines, each with a capacity of 850kW, and a high voltage substation that will be connected to the Kenyan national grid through an associated Transmission Line.

The wind farm is ready to provide 310MW of reliable, low cost and green energy that will power one million Kenyan home.

Background: Wind Turbine Energy is developing at a rapid rate in the clean and renewable energy field in a World plagued by energy crises where increasing carbon footprints and fossil fuel costs make it a desirable alternative. One of the most critical challenges faced in a wind turbine project is the degradation of the performance due to accumulated dust on the turbine rotors which causes changes in the aerodynamic properties of the air foils resulting in energy losses.

Dust is normally prevalent where there is wind and this will expose wind turbine air foils to the above-mentioned degradation leading to a loss of performance, increased maintenance costs and decreased longevity.

Although not all airborne dust can be controlled; a substantial amount of the dust is produced from untreated gravel roads throughout the project. The maintenance of the road network is critical to a wind project initially for the transport of the sensitive turbines but also throughout the life of the project for required maintenance and monitoring.

Project Name: LTWP Road Upgrade

Location: Kenya

Date: May 2018 to present

Client: Lake Turkana Wind Power

Application: EBS Surface Seal and Road Recycling



Project Description: Having already invested a significant amount in the initial road construction required to transport the 365 wind turbines throughout the 250 km wind farm, the roads now require an upgrade. In total 1095 blades spanning 55m and 365 towers measuring 36m travelled the gravel roads.

LTWP contacted Soil Solutions for a solution. Soil Solutions conducted a site assessment and then developed a long term cost effective sustainable solution that will protect the initial capital infrastructure investment and allow for a much improved road network, while reducing required future maintenance. This includes the integration of Engineered Base Stabilizer (EBS) to stabilize and surface seal the initial 50 km section of the road network. This will allow for a hard surface fully protected from any erosion or material lost. This will also eliminate any wind or vehicle generated dust and increase the efficiency of the turbines. To ensure that the project is concluded in a cost effective and efficient manner a RSL Recycler Machine was also recommended for the project.



Application: The existing surface is ripped, scarified or recycled, then shaped to provide proper drainage, compacted to a smooth finish then sealed with the EBS Soil Stabilizer in multiple coats until the point of refusal is reached. The EBS is allowed to penetrate then the road is opened for traffic.

Result: a re-constructed surface layer with a newly created wearing course with complete dust elimination, improved skid resistance, total preservation of fines and material, is non-slippery, water and UV resistant, free from the formation of potholes, rutting and corrugation, improved load bearing capacity, increased tensile strength and a reduced environmental impact.

THE EBS SURFACE SEALED ROAD SURFACE IS NEVER TO BE GRADED OR WATERED ...
The objective of the EBS Surface Seal is to eliminate the requirement for any future watering or grading of the surface.

After 18 months (or when required) the surface may need a maintenance application of EBS at a reduced application rate.





Soil Solutions provides Value Engineered Solutions, which incorporate the latest technologies and when utilized during the construction and operation of Wind Turbine Farms will address the problems associated with dust generation and accumulation ensuring proper and efficient turbine operation.

Effective soil stabilization and surface sealing of roads, for dust mitigation results in improved operational efficiency of the turbines. This allows for improved visibility for the operators of all vehicles, heavy equipment and a reduced environmental impact on the surrounding community during construction and operation of the farm.

Incorporating the use of Soil Solutions products and services into the construction and operation of your wind turbine farm will ensure:

- Reduced amount of aggregate required for layer works combined with erosion mitigation for the terraces and pads around the foundation.
- Reduced budgets for construction and maintenance.
- Reduced environmental impact to the surrounding area and community
- Substantially reduced costs for access and internal roads network, with a surface that guarantees minimal vibration for turbine transportation.
- Significantly reduced water usage.
- Reduced remediation and maintenance costs to the road surfaces.
- Maximum efficiency, reduced maintenance and expanded lifespan for the turbines.

SOIL SOLUTIONS PROVIDES IMPORTANT SOLUTIONS TO ACHIEVE MAXIMUM POWER OUTPUT AND REDUCED MAINTENANCE COSTS FOR WIND POWER PLANTS. PLEASE CONTACT SOIL SOLUTIONS FOR VALUE ENGINEERED SOLUTIONS ® FOR YOUR WIND TURBINE FARM TODAY