

# Sustainability Assessment Report




**Reporting Period:** January 1, 2024 - December 31, 2024


**Location:** Site Assessment Area

## Executive Summary

This report assesses the feasibility of implementing solar, wind, and water harvesting solutions at the Site Assessment Area. Analysis reveals excellent potential for solar energy generation with an estimated 5.51 kWh/m<sup>2</sup>. Wind energy is not feasible due to unsuitable land use. While water harvesting potential is moderate based on rainfall, limitations exist due to soil type, slope, and overall harvesting score. The area exhibits suitable green coverage for broader environmental benefits.

## Detailed Analysis

Energy Source	Feasibility	Value/Score	Details
Solar	 Excellent	5.51 kWh/m <sup>2</sup>	Excellent potential for solar energy generation. Installing solar panels is highly recommended.
Wind	 Not Feasible	N/A	The land use within the Site Assessment Area (grass, plant nursery, garages, forest, village green, orchard, construction, military, reservoir, railway, flowerbed, religious, traffic island, government, basin, education, landfill, cemetery, retail, greenfield, allotments, industrial, recreation ground, commercial, residential, farmland) is not suitable for wind farms.
	 Moderate	0.427 (Overall)	

Energy Source	Feasibility	Value/Score	Details
<b>Water Harvesting</b>			Rainfall is favorable (0.855), but soil (0.0) and slope (0.0) conditions significantly limit the overall water harvesting potential. Further investigation into specific site characteristics is recommended.
<b>Green Coverage</b>	 Suitable	33.61%	The site meets the feasibility criteria for green coverage (>20%) and barren coverage (>10%), with values of 33.61% and 40.69% respectively. This suggests a healthy balance and supports broader environmental goals.

#### Explanations:

- **Solar:** The high solar irradiance value indicates significant potential for solar energy generation, making it a highly attractive option for the site.

- **Wind:** The diverse land use encompassing residential, commercial, industrial, and recreational areas, along with sensitive areas like cemeteries and reservoirs, precludes the establishment of wind turbines.
- **Water Harvesting:** While the rainfall score is promising, the zero scores for soil and slope indicate significant limitations. This suggests the ground might be impermeable or steeply sloped, hindering effective water capture. A detailed topographical study and soil analysis are necessary to identify potential micro-catchment areas.
- **Green Coverage:** The sufficient green coverage combined with the barren land percentage suggests a relatively healthy ecosystem. Maintaining this balance is important for biodiversity and overall site sustainability.

## Recommendations

- **Prioritize Solar Energy Implementation:** Given the excellent solar potential, investing in a solar photovoltaic system should be the primary focus.
- **Explore Localized Water Harvesting Solutions:** Despite overall limitations, explore small-scale rainwater harvesting solutions for specific buildings or areas with more favorable micro-climates and soil conditions. Further investigation is required to identify suitable locations.
- **Maintain and Enhance Green Coverage:** Continue monitoring and implementing strategies to maintain or even increase green coverage within the Site Assessment Area. This will support biodiversity, improve air quality, and contribute to overall site resilience.
- **Reconsider Wind Energy Only After Significant Land Use Changes:** Wind energy is not currently viable. Only if significant changes occur in land use patterns should wind energy be reassessed.