

Maqhashiya Solar Home System Project_ Technical Scope

Department: Network Engineering & Design

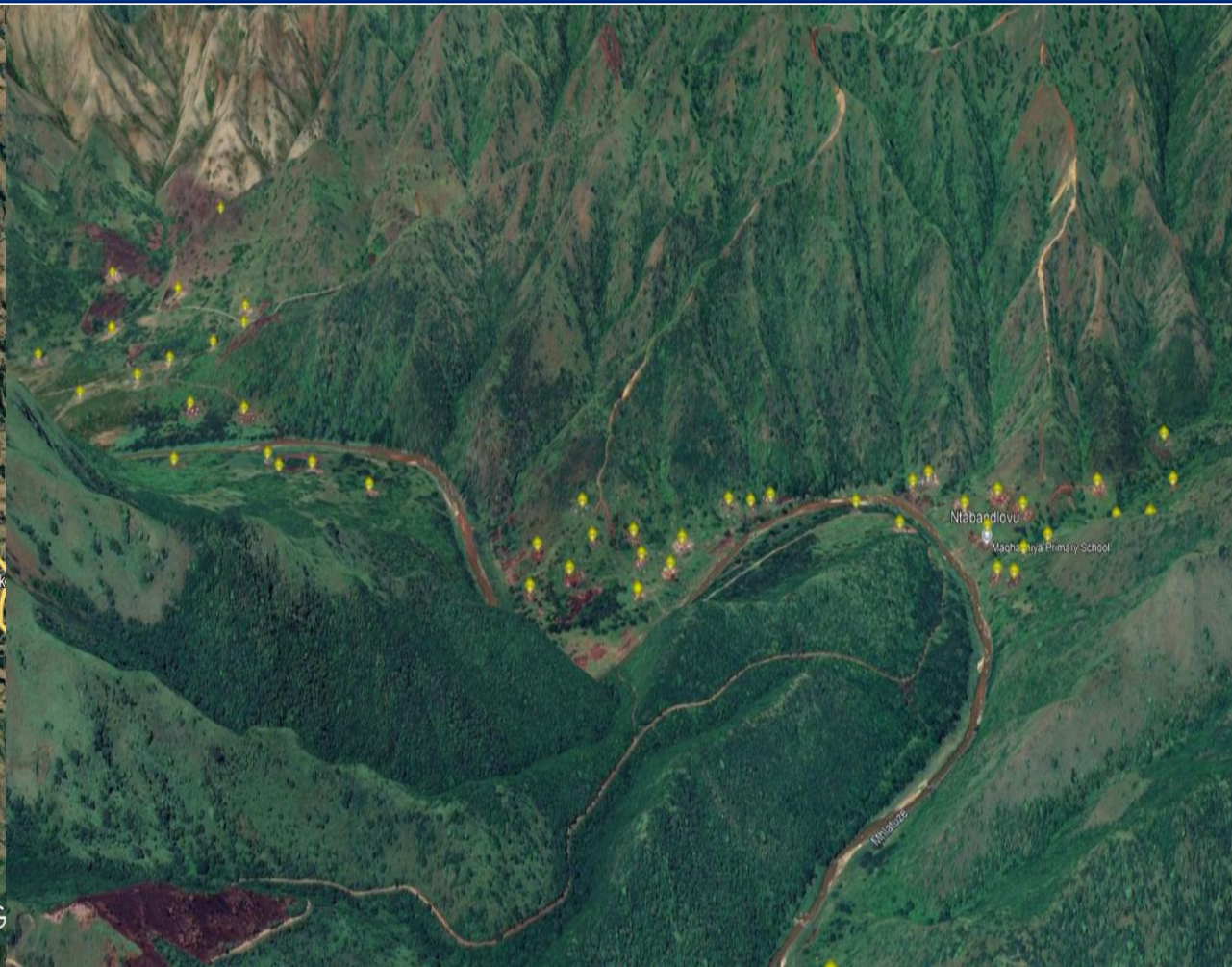
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- Maqhashiya Village is a remote rural community located approximately 20 km south of Melmoth in northern KwaZulu-Natal, comprising approximately 60 households including Maqhashiya Primary School.
- The purpose of the project is to provide a safe, reliable and sustainable electricity supply to the identified households and Maqhashiya Primary School.
- The households are widely dispersed across mountainous and environmentally sensitive terrain, making conventional grid extension difficult and costly.
- Access to some households is constrained by gravel roads, steep terrain and river crossings, affecting construction access, material transportation and future maintenance.
- The community has been identified for electrification using stand-alone Solar Home Systems, with an individual system provided at each approved customer site.
- Site visits and engineering assessments confirmed stand-alone Solar Home Systems as the preferred solution, avoiding extensive MV and LV network construction across the dispersed settlement.
- The project therefore requires an integrated solution comprising solar PV generation, battery storage, smart metering, remote monitoring, earthing, lightning protection and customer load management.

Geographical Location



System Specification Per Household

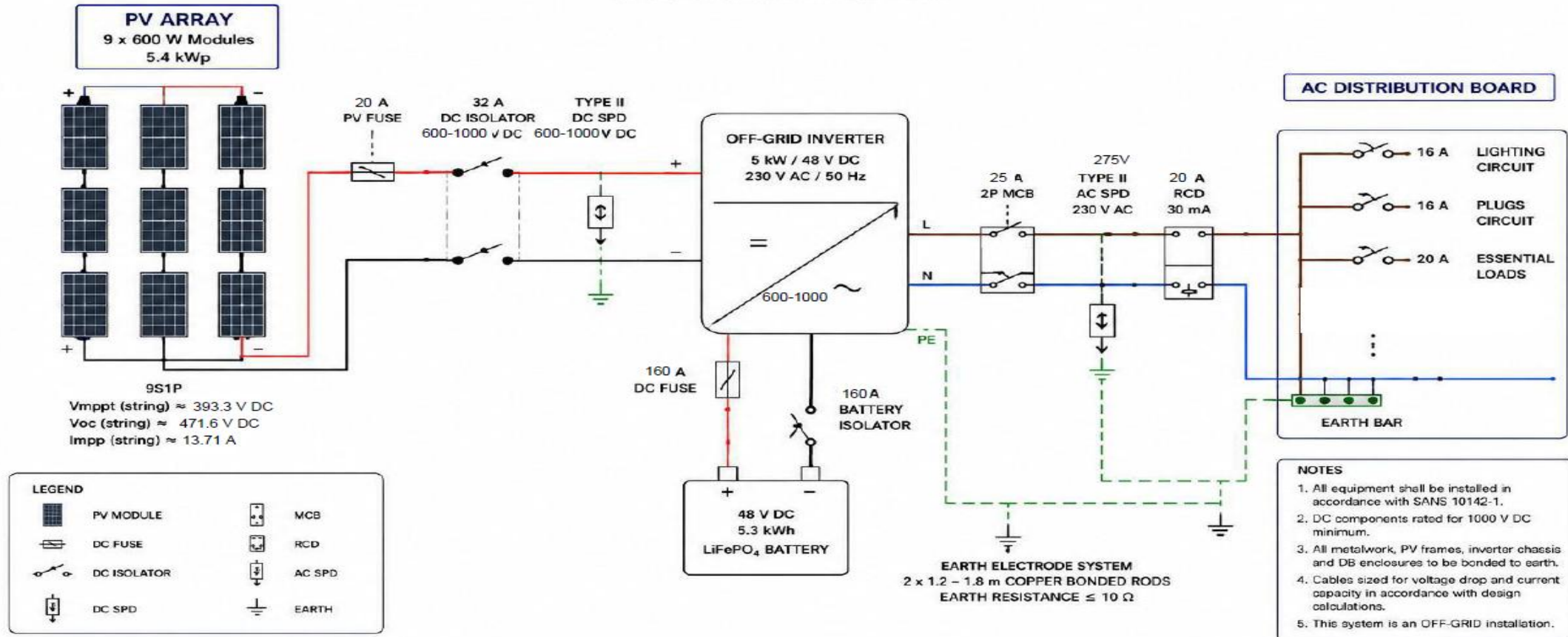
System Type: Off-Grid PV System
PV Array: 9 × 600 W Modules = 5.4kW
Inverter: 5 kW Hybrid Inverter (MPPT)
Battery: 5.3 kWh Lithium Battery (48 V)
String Configuration: 1 String of 9 Modules
System Monitoring: GPRS using Modem

The solution shall supply power to each of the 60 households including 1 Primary School at Maqhashiya Village along uMhlathuze River in Northern KwaZulu Natal.

The scope shall consist of but not limited to:

Installation of Airdac Service cable, LV 5m pole with pole-top box and smart metering including ready board per household as per Eskom standards.

5 kW OFF-GRID PV SYSTEM SINGLE-LINE DIAGRAM



PROJECT:
**5 kW OFF-GRID PV SYSTEM
MELMOTH, KZN**

DRAWING TITLE:
SINGLE-LINE DIAGRAM

SYSTEM SUMMARY:
PV ARRAY: 5.4 kWp (9 x 600 W)
INVERTER: 5 kW / 48 V DC / 230 V AC
BATTERY: 48 V / 5.3 kWh LiFePO₄

DRAWN BY:

DATE:

REV:

A

SCALE:

NTS

Type of dwellings in the village

- The village features a mix of brick and mud. Residential yards have and some houses shaded by trees and mountains.



Site Scenes



Thank You

