



Photovoltaic Proposal

In order for humanity to overcome the real challenges faced in combating global warming we need to be innovative in our approach. Accepting that in order to help lower our carbon emissions, implementation needs to become more financially feasible to our clients. We recognize the magnitude of the challenge and understand that we can only be successful through collaboration, team work and advanced tools. It is our commitment to portray the financial viability of the solutions proposed through Jacara as accurately and transparently as possible

The factor influencing PV viability the most is design. By "design" we don't mean simply matching voltage, power and currents. Design factors need to include tariff, tariff regulations, seasonal consumption, generation changes, energy profiles, efficiency changes as well as array & mounting options. Jacara is the result of significant research and development dedicated to making PV viable to everyone through technology and innovation.



Customer Specific information

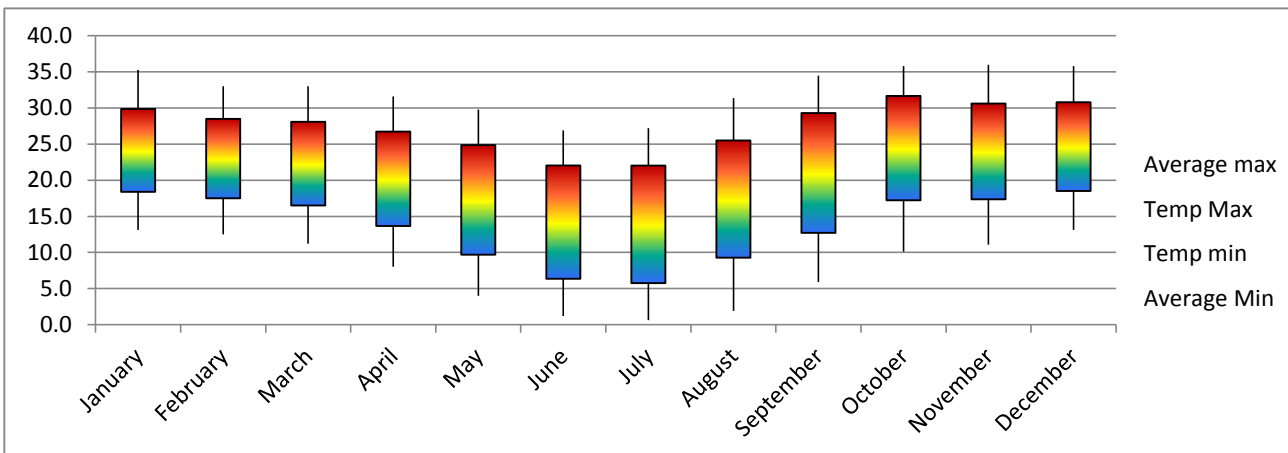
Client Name	Tuwilika Johannes
Client Company	5kW System
Address	0
Town, Postal Code	0
Telephone	0
System Designer	Joseph Shuumbwa

Site Information

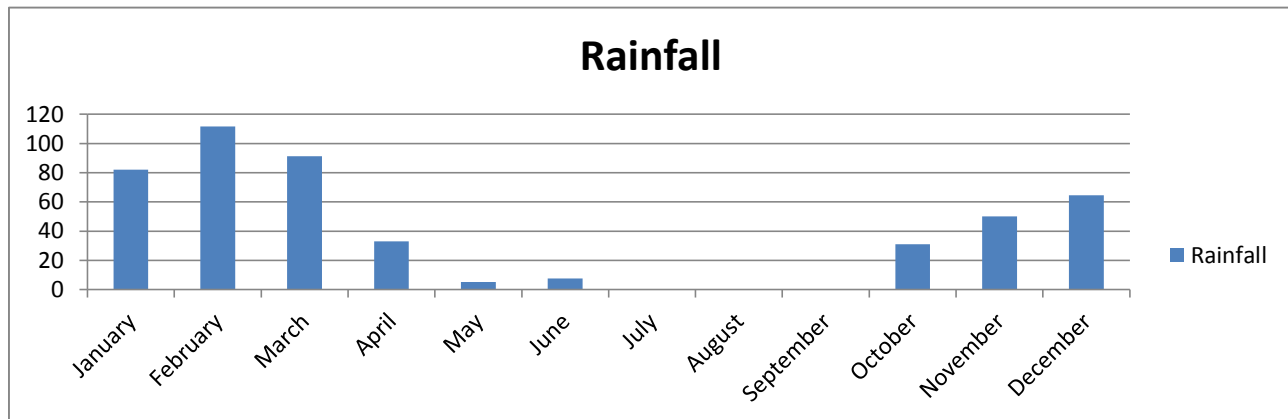
Metering	Generator as Main Supply
Current AC Distribution	Single Phase
Annual Irradiation kW.h/kWp	2361
Current Tariff	Generator as Main Supply
Proposed Tariff	Generator as Main Supply
Island Monitoring	Wi-Fi
Cellphone Reception	Y
Grid Tie Monitoring	Online

Billing Information

Average Current Monthly Cost	R	18 559.52
Averaged R/KW.h	R	6.36



Windhoek

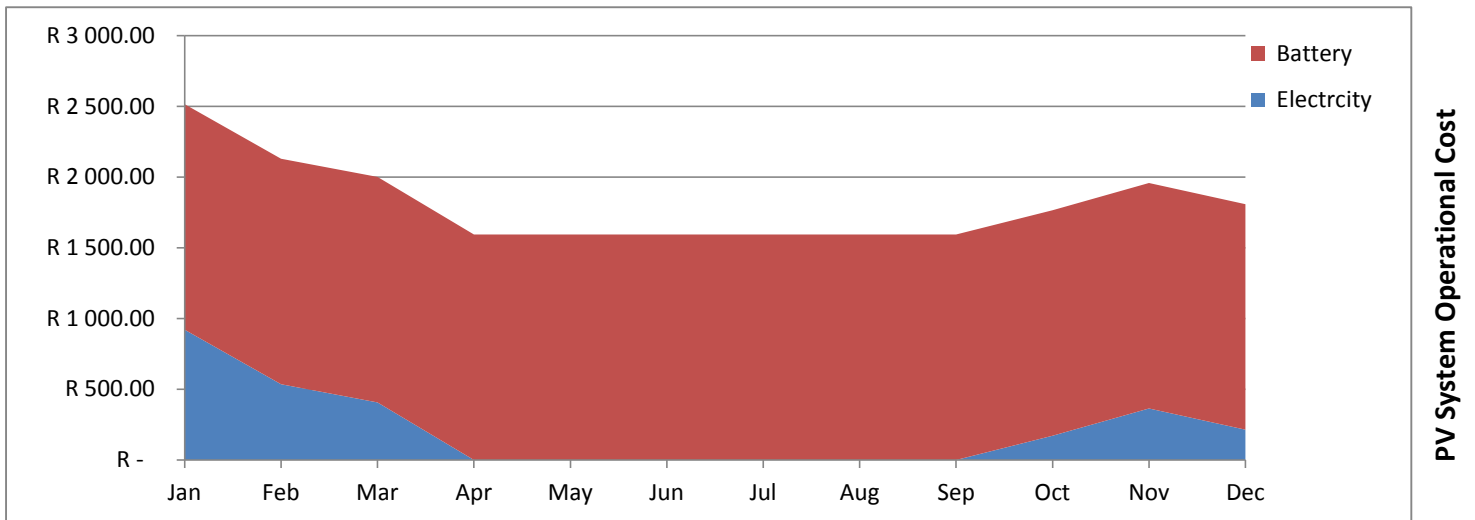
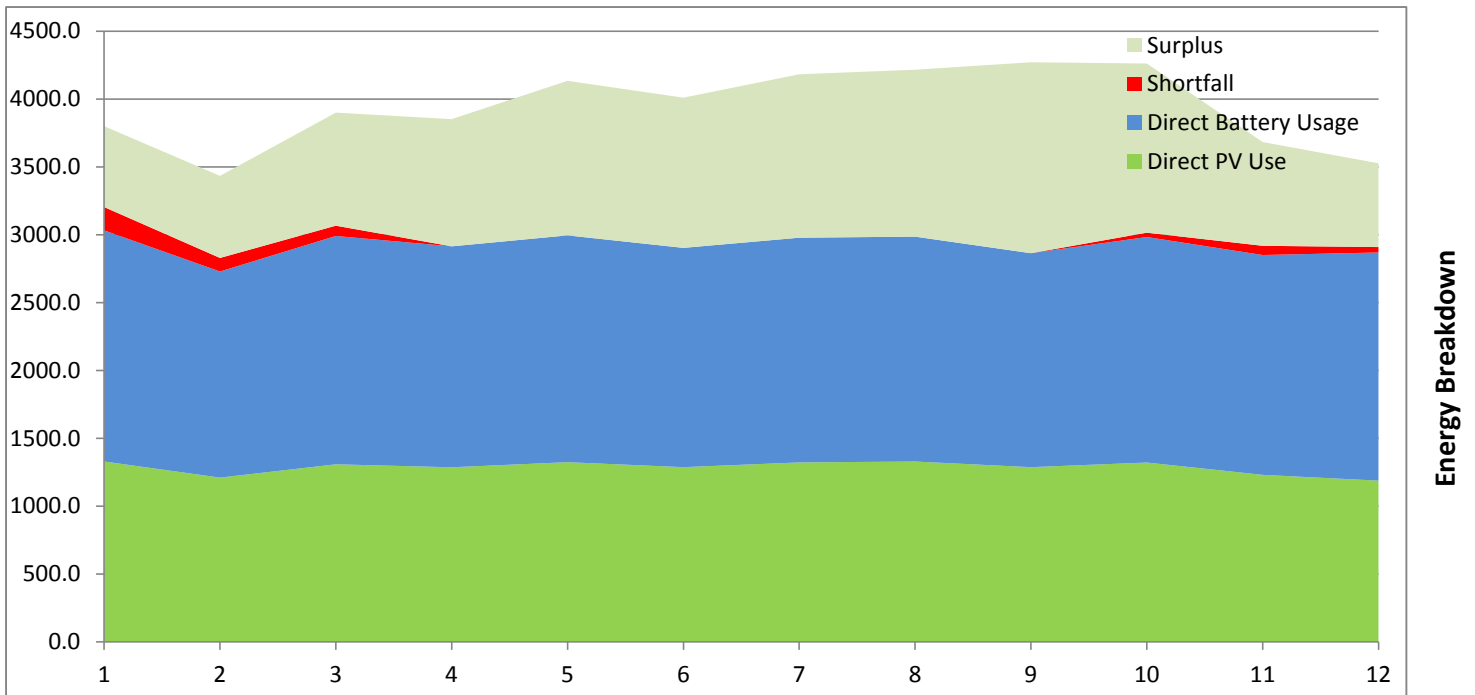


Location Information

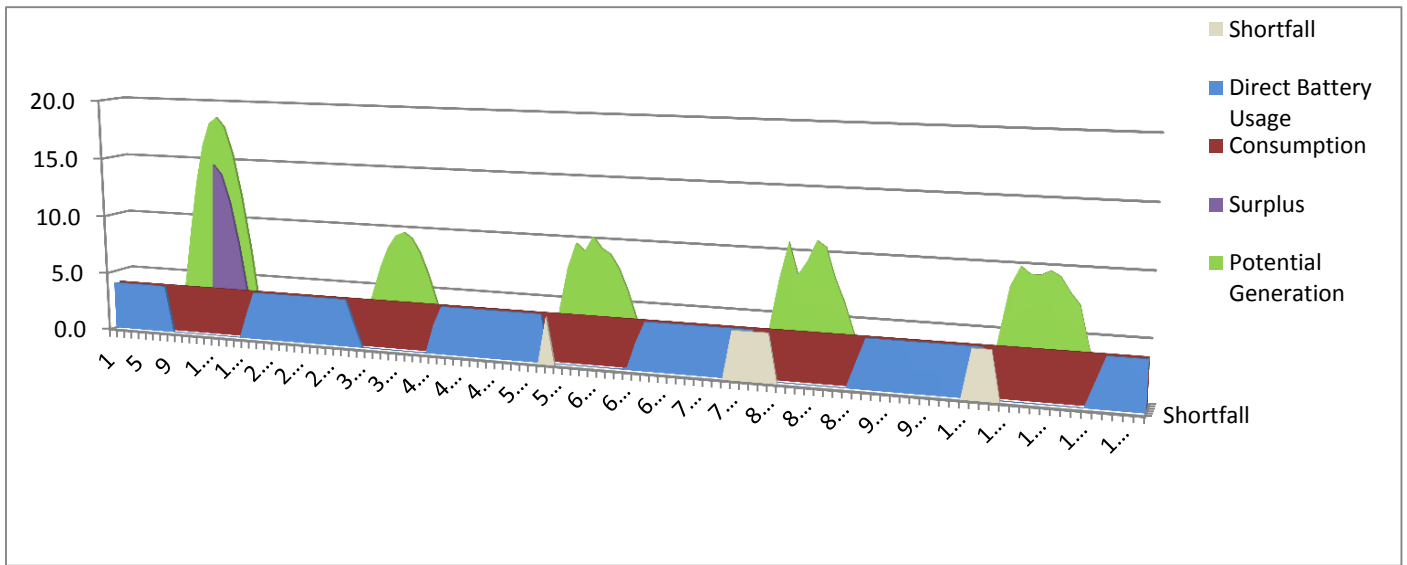
Consumption Breakdown

Load	Current KW.h	Amount	Efficient Technology	Cost	Post kW.h	Priority	% Total
0	96.00	1	R	-	96.00	√	100.0%
0	0.00	1	R	-	0.00	√	0.0%
0	0.00	1	R	-	0.00	√	0.0%
0	0.00	1	R	-	0.00	√	0.0%
0	0.00	1	R	-	0.00	x	0.0%
0	0.00	1	R	-	0.00	√	0.0%
0	0.00	1	R	-	0.00	x	0.0%
0	0.00	1	R	-	0.00	x	0.0%
0	0.00	1	R	-	0.00	x	0.0%
0	0.00	1	R	-	0.00	x	0.0%
0	0.00	1	R	-	0.00	x	0.0%
0	0.00	1	R	-	0.00	√	0.0%
0	0.00	1	R	-	0.00	√	0.0%
0	0.00	1	R	-	0.00	x	0.0%
0	0.00	1	R	-	0.00	√	0.0%
0	0.00	1	R	-	0.00	√	0.0%
0	0.00	1	R	-	0.00	x	0.0%
0	0.00	1	R	-	0.00	x	0.0%
0	0.00	1	R	-	0.00	√	0.0%
0	0.00	1	R	-	0.00	√	0.0%
0	0.00	1	R	-	0.00	x	0.0%
0	0.00	1	R	-	0.00	x	0.0%
0	0.00	1	R	-	0.00	x	0.0%
0	0.00	1	R	-	0.00	x	0.0%
0	0.00	1	R	-	0.00	x	0.0%
0	0.00	1	R	-	0.00	x	0.0%
0	0.00	1	R	-	0.00	√	0.0%
Totals	96.00		R	-	96.00		

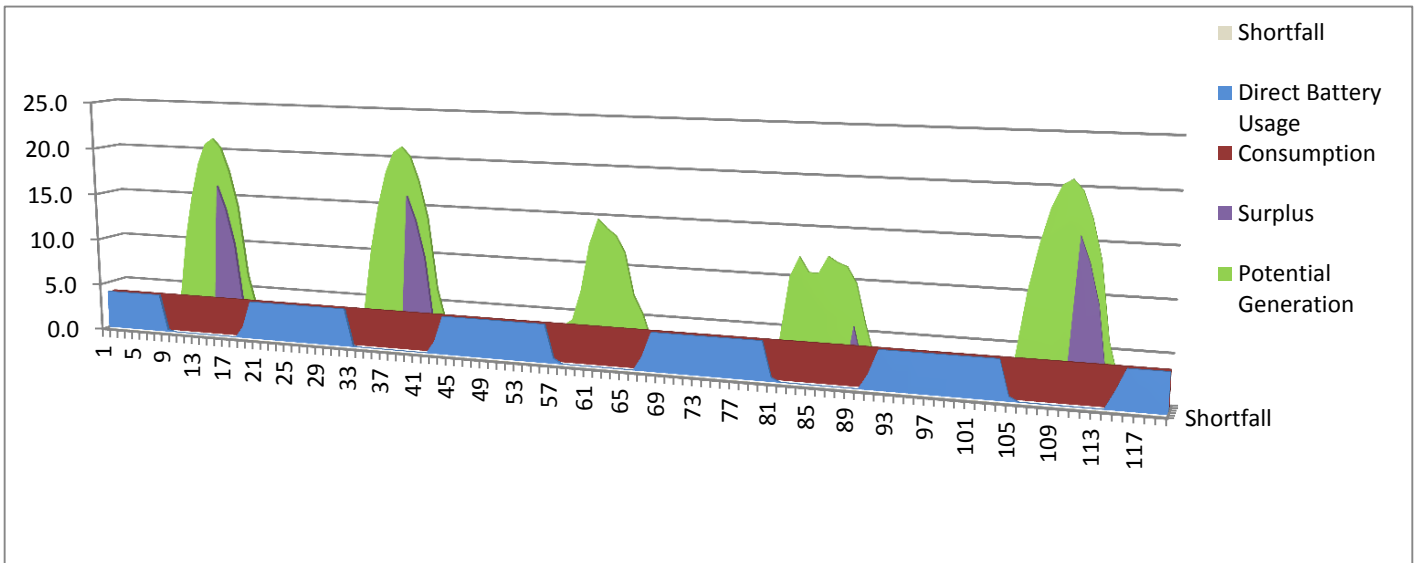
Island System - Graphical Representation



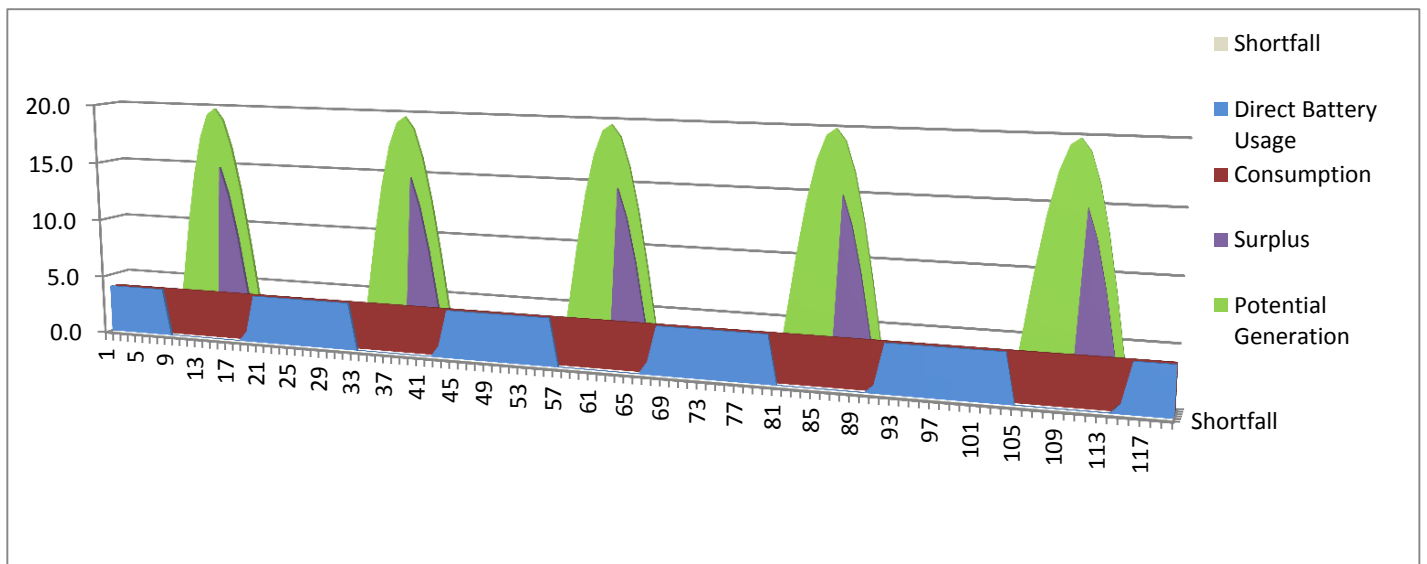
Island System - Graphical Representation



Energy Profile - January



Energy Profile - April



Energy Profile - July



Off-Grid Systems

Off-grid systems operate independent from grid power, but could have grid or generator power as back-up if required. Design of off-grid systems are a lot more involved compared to most other types of systems as they have a lot more variables to consider. Design considerations should include life of batteries, PV utilization, inverter load factors, temperature, efficiencies of equipment, altitude and weather data. The feasibility of the system should include those factors to give a true reflection of viability.

Technical Specifications

Panel Output	24300 Watt
Solar Generation Range	130.16 kW.h/day
DC Charger Power	9971.52 Watt
Backup	3 AC Source
AC Charger Power	9600 Watt
Battery Autonomy	71 kW.h
Battery Cycle Life	1000000 Cycles @ 80% DOD
Battery Standby Life	46 Years
Inverter Power	15 kVA

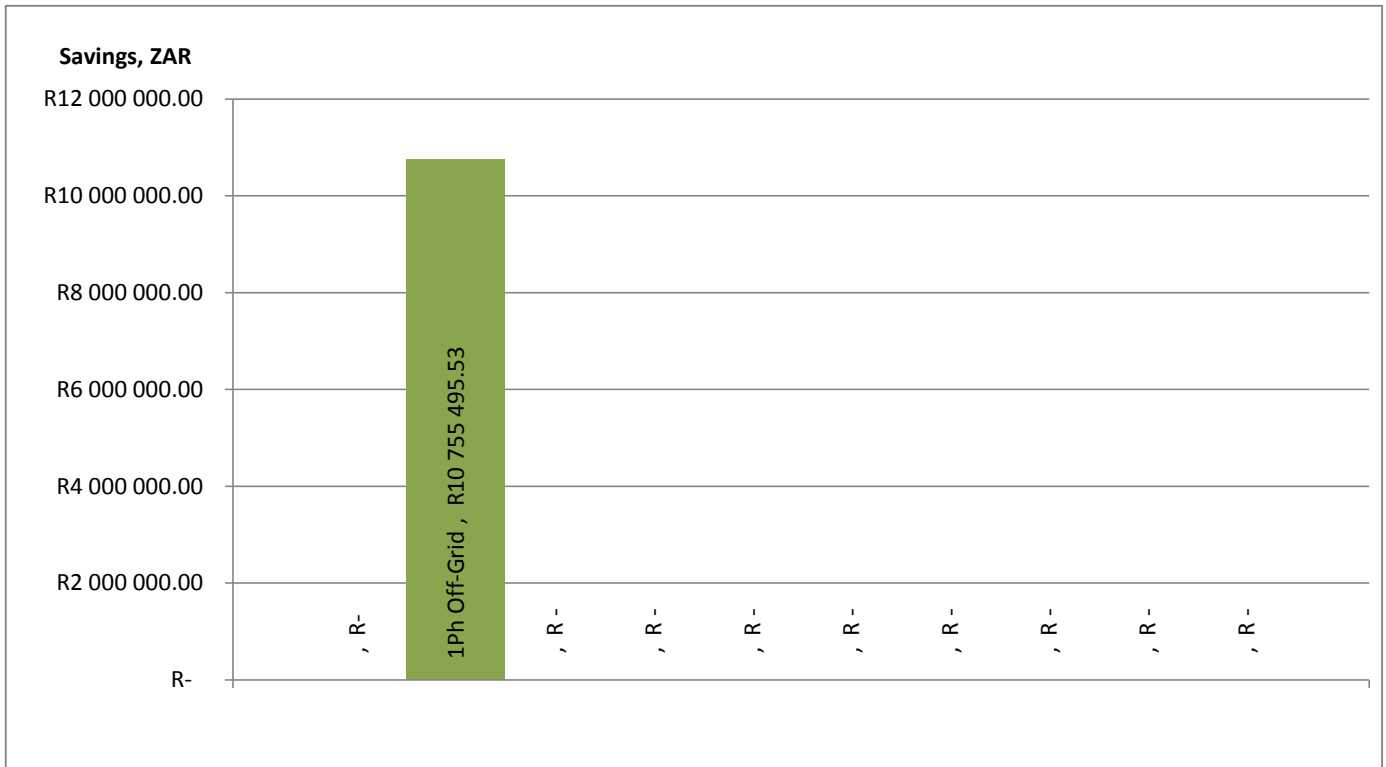
Calculated Site Specific Information

Payback		5.6 Years
Average Daily Battery Use		53.9 kW.h
Battery Capacity		71.0 kW.h
Daily Battery Use as %		75.9%
Average Daily Surplus Energy		32.0 kW.h
System Average Daily Gen		96.0 kW.h
Potential Generation		130.2 kW.h
PV Utilization as %		75.0%
PV Array		22.3 kWp
Battery Usage Cost	R	0.02 R/kW.h
Battery Autonomy Days		0.74 Days
Calculated Battery Life		46.0 Years
Max Load		4.2 kW
Inverter Load Factor		28%

Island System - Breakdown

Island system		
	Specification	Amount
PV Modules	Canadian Solar 270W	90
Panel frames	Mounting System	90
Charge controller	VE Smart Solar 250/85	2
Grid Inverter	Fronius Primo 8.2 Web & WLAN	2
Charge Controller Cable	50mm ² Multi Strand Cable	6
Inverter	Victron Quattro 48/15000	1
AC Cables	10mm 3 Core	10
Generator Cable		0
Batteries	Sirius 7.1kW.h 48V	10
Battery Extra's	0	0
Solar Connectors	MC4 Connection Set	0
Solar Cables	4mm Solar Cable R&B	100
Solar Cables	6mm Solar Cable R&B	25
Interlink		0
Interlink		0
Inverter Cables	75mm ² Multi Strand Cable	4
Fuse Holder	ANL Fuse Holder	1
DC System Fuse	500A - 80V ANL Fuse	1
DC Surge Arrestor	175V Class 2 DC Surge Arrestor	1
AC Surge Arrestor	275V Class 2 AC Surge Arrestor	1
DC Disconnect	4Way W/O EL-NB	1
AC Disconnect	10 Way DB + EL and NB(AC)	1
Circuit Breakers	100A 1P 5Ka CB	2
System Display	VE CCGx & Long Range Wi-Fi	1
Battery monitor	BMV700	1
Earth Rod & Copper	Earth Rod & Copper (m)	35
Consumables	Island system consumables	1
Installation	Island Installation	1
Total Excl VAT	R	1 468 026.43
Total Incl VAT	R	1 688 230.39

System Savings & Payback Calculations



Cashflow Projection

