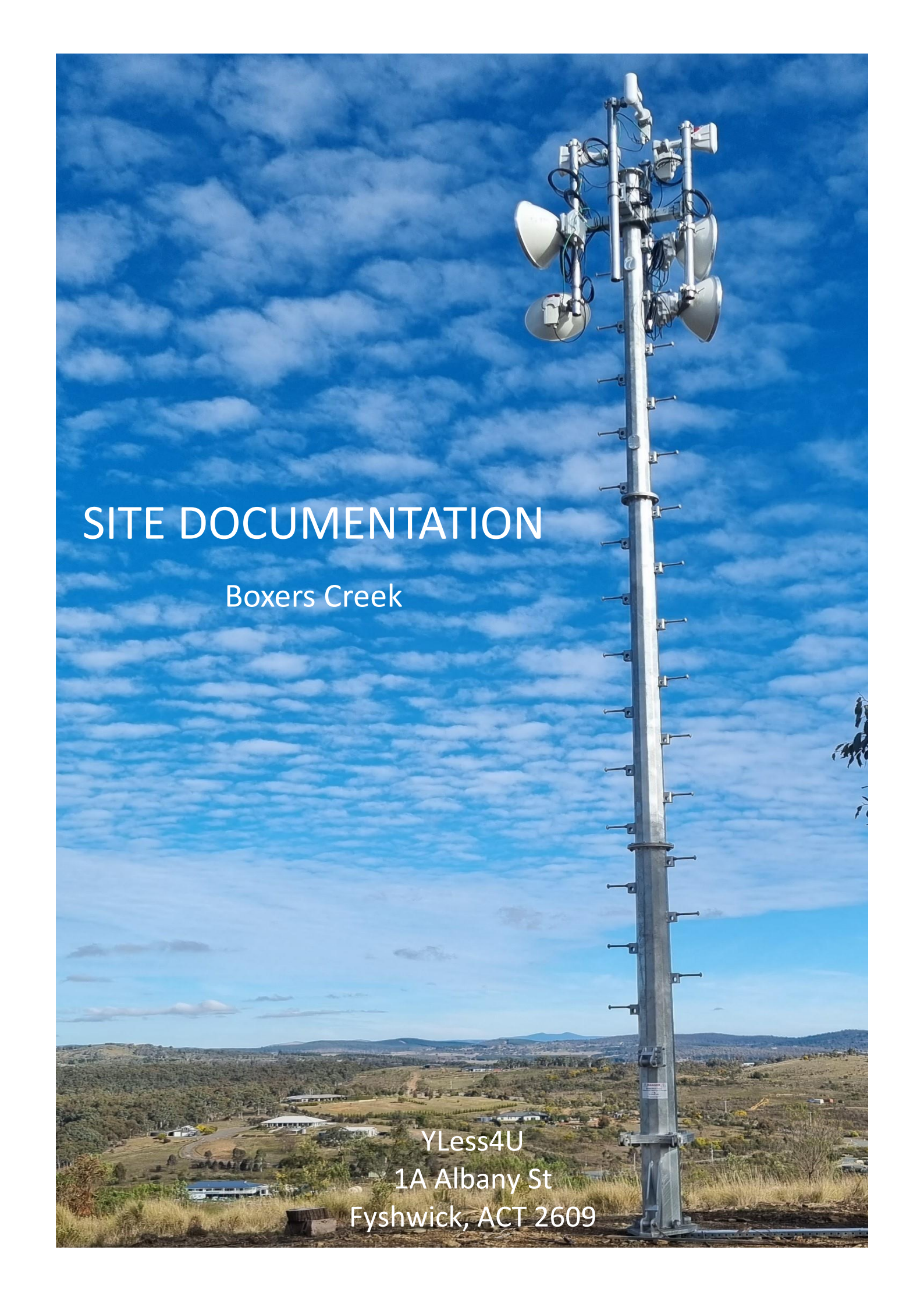




SITE DOCUMENTATION

Boxers Creek

YLess4U
1A Albany St
Fyshwick, ACT 2609

Table Of Contents

1. Legends	3
2. General Notes:	4
Site Access	6
3. Boxers Creek Site Overview	7
4. Boxers Creek Site Schematic Representation	8
5. Electrical Single Line Diagram.	9
6. DC Battery Backup.	10
7. DC Power Distribution Schedule	12
8. Cable Schedule	13
9. Earthing Resistance Calculation	13
10. Earthing Design (Internal & External)	13
11. Lightning Risk Assessment	14
12. Equipment's list used at site.	15

Emergency Contact Numbers

In the event of any Emergency Call Triple Zero First

000 or 112 from a mobile —Emergency Services

(02) 6230 3699—YLess4U Office

0417 295 660—Jason Green—Director

Landowners contact details:

Name: Phillip Anastopoulos

Contact Number: 0419239395

Address: 45 Perry Lane, Boxers Creek NSW, 2580

Site GPS Coordinate: -34.75473, 149.85340

Landowners' contact details are also provided on the back of maps in Vehicle Compendium.

First Aid Kits

In work vehicles you should find the following first aid kits and other PPE

1 x Red First Aid Kit

1 x Snake Bit First Aid Kit

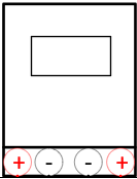
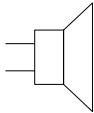
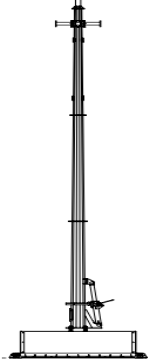
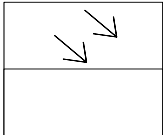
1 x Sunscreen

First Aid Kits should be re-stocked after each use

Emergency Entry & Exits on Tower Sites

The entry & exit points for tower sites are the same as the entry and exit points as marked on the maps.

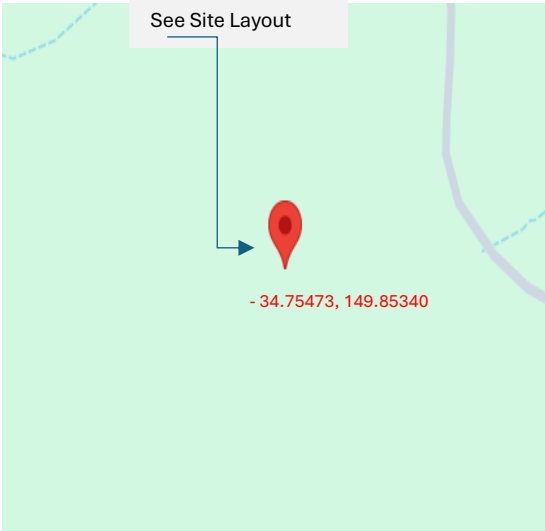
1. Legends

Sl.No	Legends	Description
1		Solar Charge Controller
2		Circuit Breaker
3		Battery
4		Load
5		Backhaul Link Radio
6		Sector Radio
7		Monopole Tower
8		Solar Array

2. General Notes:

- This diagram is for the purpose of reference only, so it is not in proportion to the real object.
- The total height of the tower is 12m above ground.
- One Field Cabinet is installed on the top of the concrete slab and all the equipment's are mounted and enclosed inside the cabinet.
- Each cabinet is provided with 2 pairs of fans and filters.
- Each fan is controlled by a thermostat.
- AC input is given as the power source.
- Two battery banks, each with a 200Ah capacity, are installed at the site.
- Red and Black color connector represents the positive and negative polarity of the supply.
- All the radio's mounted on the tower are powered through Power over Ethernet (POE).
- Datasheets of the equipment used at site are available on the link provided under the document section at the end of the page.
- All other site connection equipment is as per ACMA license and link reports supplied.

YLess4U Site – Boxers Creek



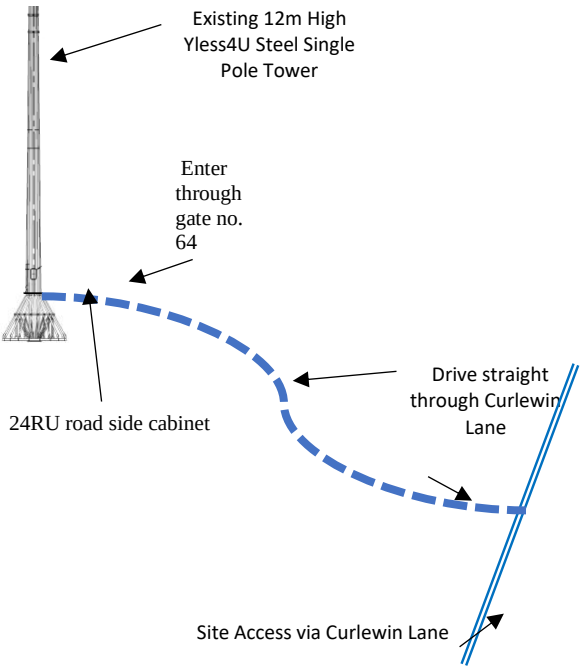
Copyright - Google
Maps

SITE LOCALITY PLAN

NOT TO SCALE

ACMA SITE ID:		
CARRIER	SITE NAME	SITE ID
YLess4U	Boxers Creek	

**SITE
ACCESS**



Site Layout Legend	
Existing Fence Line and Gate	
12m Monopole Tower	
24RU Roadside Cabinet	
Data Cables Buried in Conduit	

SITE LAYOUT



NOT TO SCALE

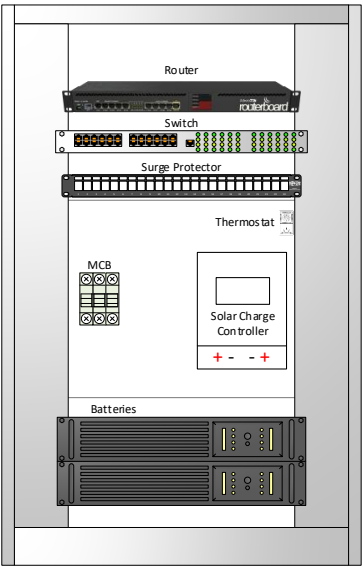
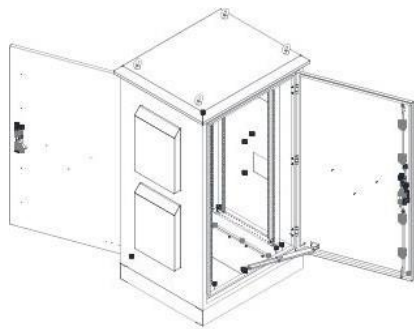
Site Access



3. Boxers Creek Site Overview



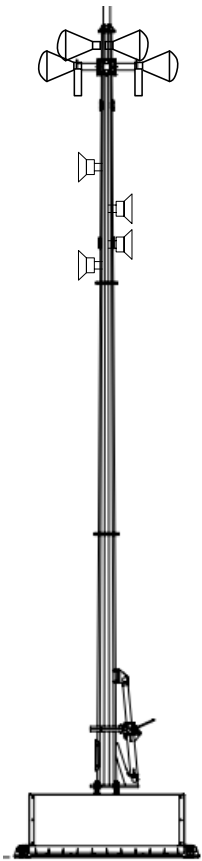
Outdoor Cabinet



Inside of Cabinet

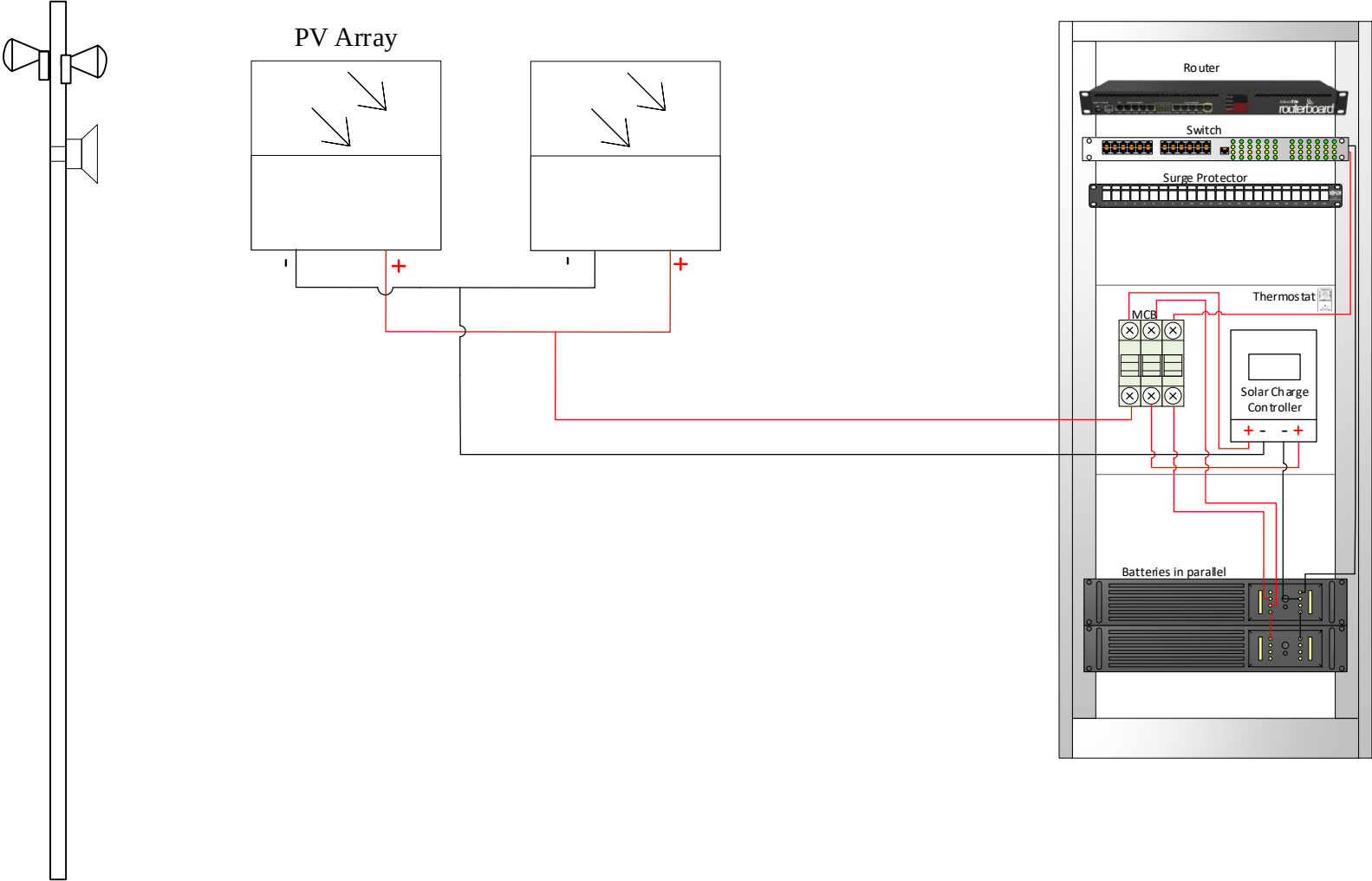


Solar Panels Fitted

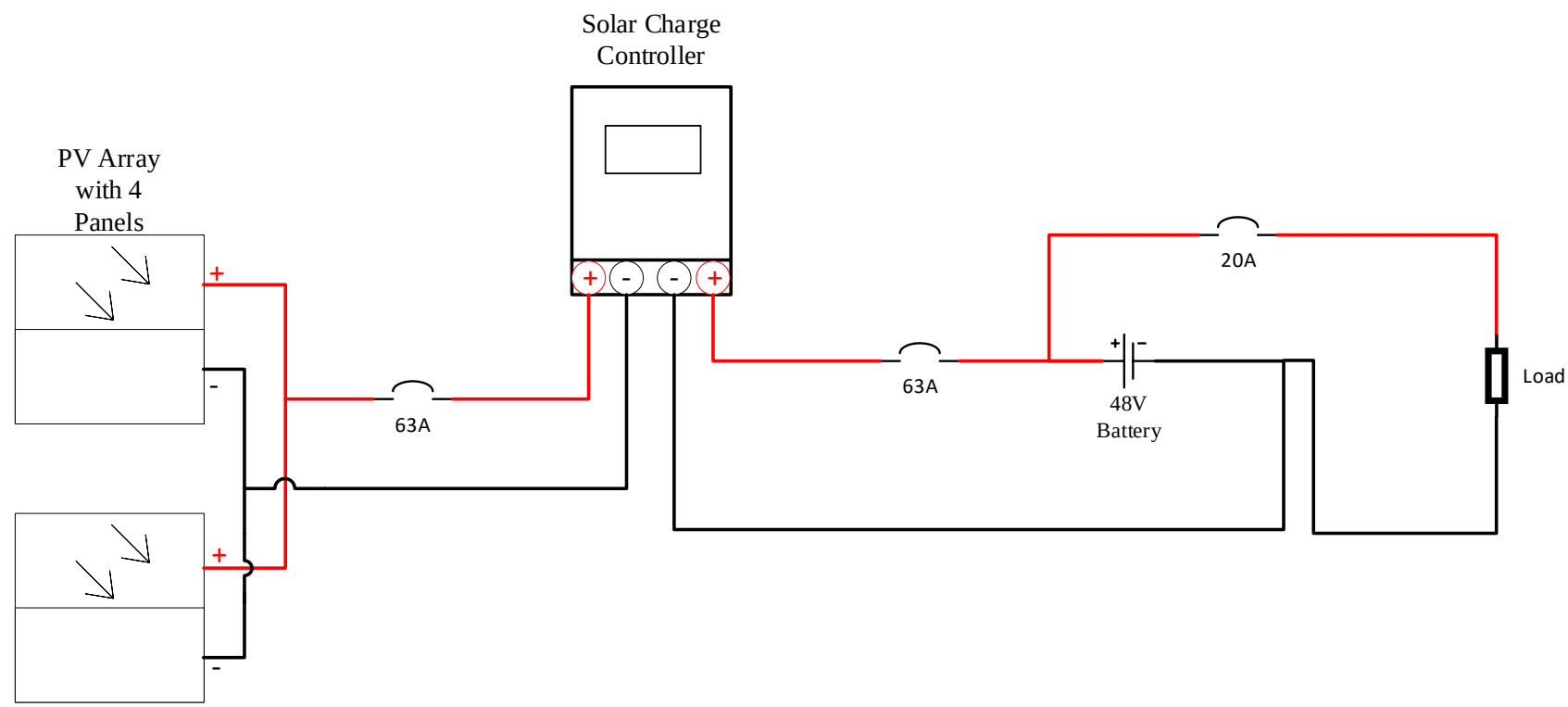


Tower with Radio's mounted

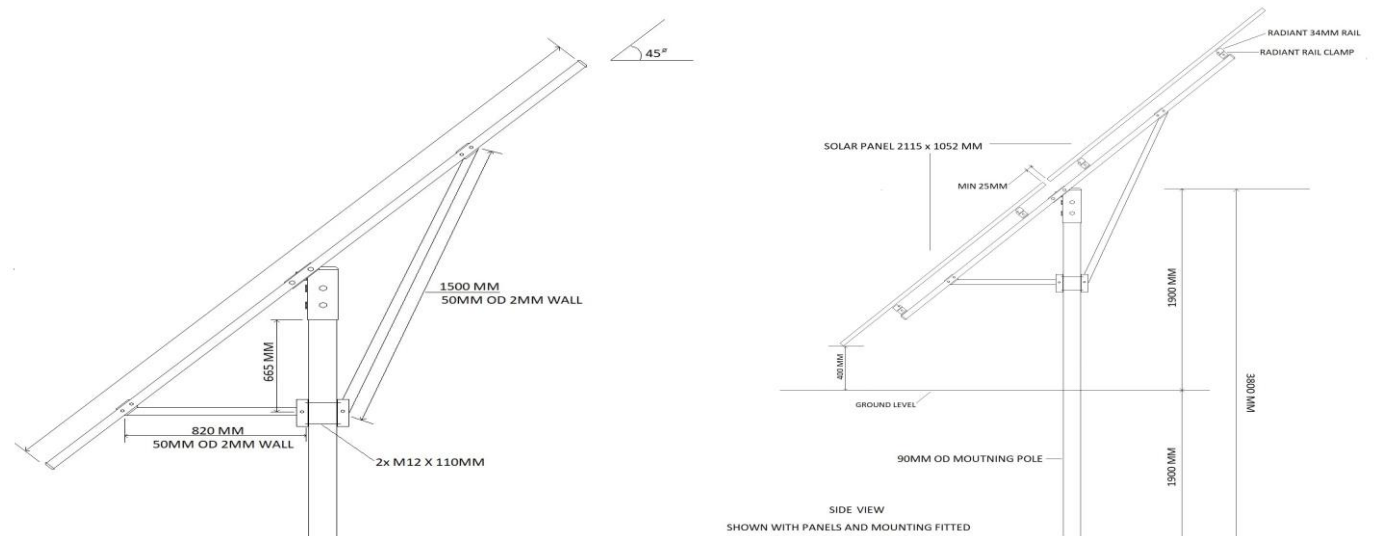
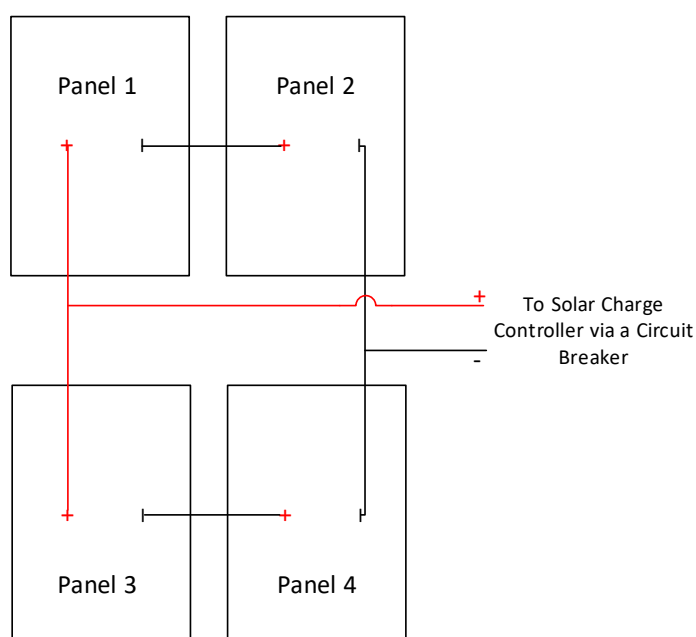
4. Boxers Creek Site Schematic Representation.



5. Electrical Single Line Diagram.

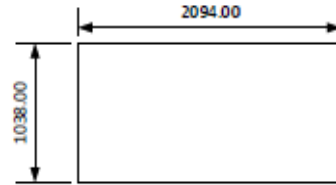


6. Solar Arrangement and Wiring Diagram.

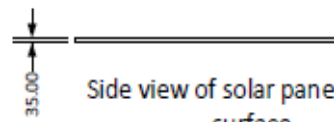


Notes:

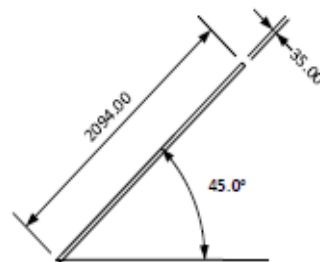
- 4 panels are mounted on each pole on the top of the frame. Frame and Pole are assembled as per the instruction provided by the manufacturer as shown in the diagram above. Standard 24V two panels in series and two sets of series in parallel.
- 60A MPPT Solar controller with isolating breakers installed.
- Only one array of solar panels is used at the site.
- 2X100 Ah battery installed on the site.



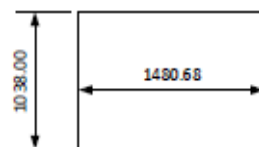
Top view of solar panel on flat surface



Side view of solar panel on flat surface



Side view of solar panel while mounted at 45 degree angle



Top view of solar panel while mounted at 45 degree angle

Top view of solar panel
while mounted on 45
degree angle
Scale:1:50 @A4

7. DC Battery Backup.

Total Power consumption: 193 Watts

Voltage: 48 V

For the backup of 2 days = 48 hrs.

Current on site: $193/48$ A

$$= 4.020 \text{ A}$$

Total current required for 3 days backup = $48 \text{ h} \times 4.020 \text{ A}$

$$= 193 \text{ Ah}$$

With the discharge capacity of 80% of each battery:

80% of Battery = 193 Ah

$$\text{Battery} = (193 \times 100)/80$$

$$= 241.25 \text{ Ah}$$

$$\sim 200 \text{ Ah}$$

Currently 2X100 Ah battery will be connected in parallel in the site for the required backup.

8. DC Power Distribution Schedule

48V cnMatrix switch via breaker.

48V from Battery charger to battery via breaker.

9. Cable Schedule

Cable Cross section	Used for
6mm ² Red	Positive Connection
6mm ² Black	Negative Connection
6mm ² Earth	Main Earthing
2.5mm ² Earth	Equipment Earthing

10. Earthing Resistance Calculation

As sites vary wildly in our area, we rely less on the earthing resistance calculation and rely more upon tried and tested results. YLess4U tests the earthing installations to be at or below 5 Ohms were reasonably possible.

Earthing rods are placed under concrete bases on installations as the gathering point of external rods in most cases. Some areas do not allow for this and then a separate cable from the buried rod is brought to the central Busbar.

11. Earthing Design (Internal & External)

All equipment with an earthing point to be joined to the internal busbar. 3 Earth Stakes, 1 buried under the box and two in between the site box and poles. All common grounded to the busbar in the Site box. All cables to be greater than 2.5mm as per standard regulations. Cables to earth nodes to be 6mm and to equipment where possible.

12.Lightning Risk Assessment

Tower Site	
Tower Site Address:	
Tower Coordinates:	
Lightning Density	Ng = 1-2
Structure	Site Shed
	Length L(m) L = 0.8
	Width W(m) W = .75
	Height H(m) Hi = 1.375
	Tower Height T = 12
Danger for people	No Particular Danger
Occupation of the Structure	Structure Normally Unoccupied
Electrical Line	Underground
Relative location of the Structure	Structure surrounded by higher objects – Powerlines & pole
Fire Risk	Low
Surge Arrestor	
Results of the Risk Assessment	
Risk of Human Loss	High ☐ Medium ☐ Low ☒
Risk of Loss of Services	Acceptable ☒ Not Acceptable ☐

13.Equipment's list used at site.

Sl.No	Item Name	Description	Photos	Datasheet
1	Battery	2 x Lithium 48v 100AH banks x2 Centrally controlled with OEM software		https://www.meritsunpower.com/lithium-ion-battery-200ah-48v-battery-pack-ess-high-performance-energy-storage-system-lifepo4-battery
2	Li Ion battery Charger	48V 20A Rectifier		AC-DC 48V 20A Lithium LiFePO4 Battery Charger - Amtron
3	Circuit Breaker	Noark 63A 360V DC CircuitBreaker 2 Pole		https://www.tro-pacific.com/products/noark-360v-dc-mcb-63a
4	Circuit Breaker	Noark 20A 360V DC CircuitBreaker 2 Pole		https://www.tro-pacific.com/products/noark-360v-dc-mcb-20a
5	Thermostat	IP Enclosure NO Fan Thermostat		https://www.ipenclosures.com.au/wp-content/uploads/IP-TH-Datasheet.pdf
6	Patch Panel	1RU 24 Ports Universal Patch Panel		https://tst.blackbox.com.au/en-ca/store/product/detail/cat6-surge-protected-patch-panel/jsm11?item=JSM112A
7	Switch	cnMatrix Tx1012		cnMatrix-TX1000-Series-Switches-Data-Sheet.pdf (cambiumnetworks.com)
8	Router	Mikrotik RB4011		MikroTik Routers and Wireless - Products: RB4011iGS+RM

9	Sector Radio	4x Tarana		https://www.taranawireless.com/product/
10	Back- haul Radio	Cambium 820 S p2p 11GHz		https://www.cambiumnetworks.com/wp-content/uploads/2017/09/SS_PTP820S_05312017.pdf
11	Filter	2 X Ventilation Filter		https://www.ipenclosures.com.au/electrical-enclosure-ventilation/
12	Fan	2 X Ventilation Fan		https://www.ipenclosures.com.au/electrical-enclosure-ventilation/
13	Field Cabinet	1 x 24RU IP66 Field Cabinet 1375H x 750W x 620D (Ventilated)		https://www.ipenclosures.com.au/wp-content/uploads/IP-1377562-T33-Datasheet.pdf