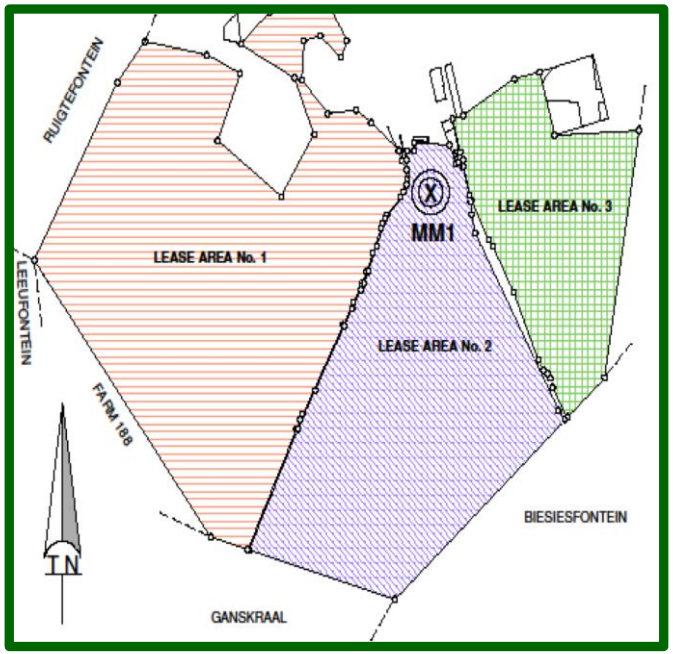
UBUNTU GREEN ENERGY

Scalable Green Power, Hydrogen and Ammonia

SITE LOCATION VICTORIA WEST

- 5726.2 Ha
- Land
- Good connectivity via roads and rail
- Water on site
- Quarry in area
- Good wind and solar data

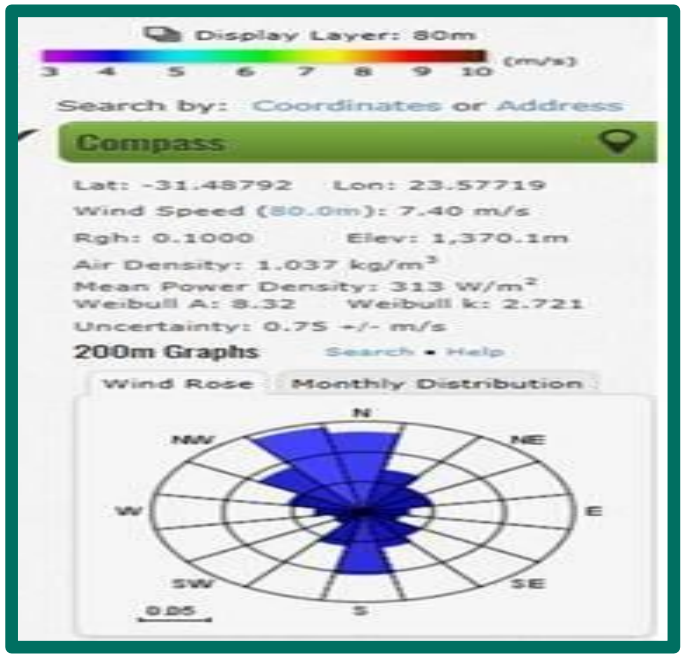


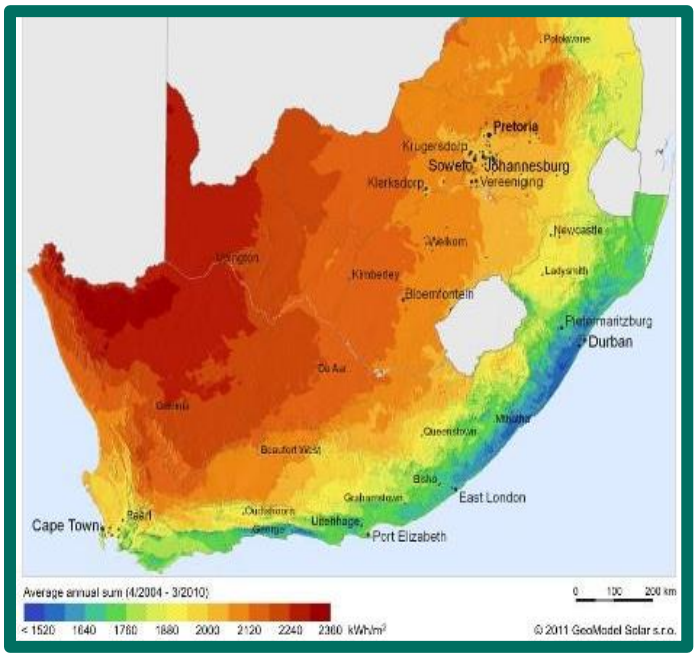
Site location well positioned on N1 and N12 national roads in high wind and solar zone

RESOURCE OVERVIEW – SOLAR + WIND

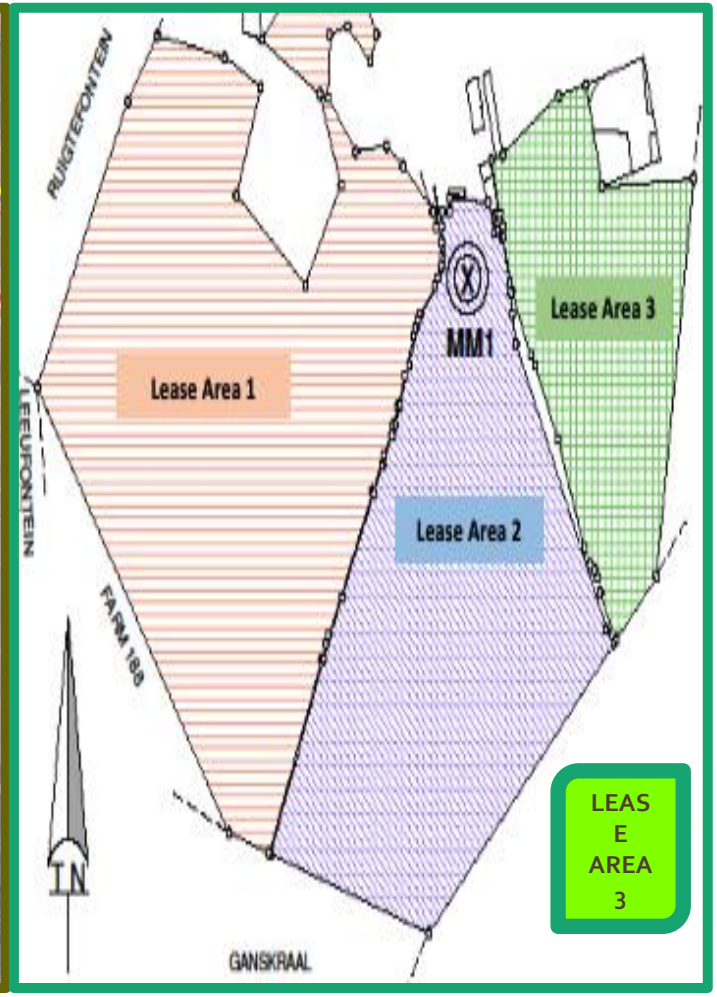
Both the solar and wind resources in this area of the Northern Cape are excellent and suitable for the efficient generation of renewable energy:

- **Wind Speed 7.4 m/s.**
- **Solar Insolation 4.4 – 6.5 Kwh / m² per day;.**
- **Wind speed is strongest late afternoon and night to complement solar output.**



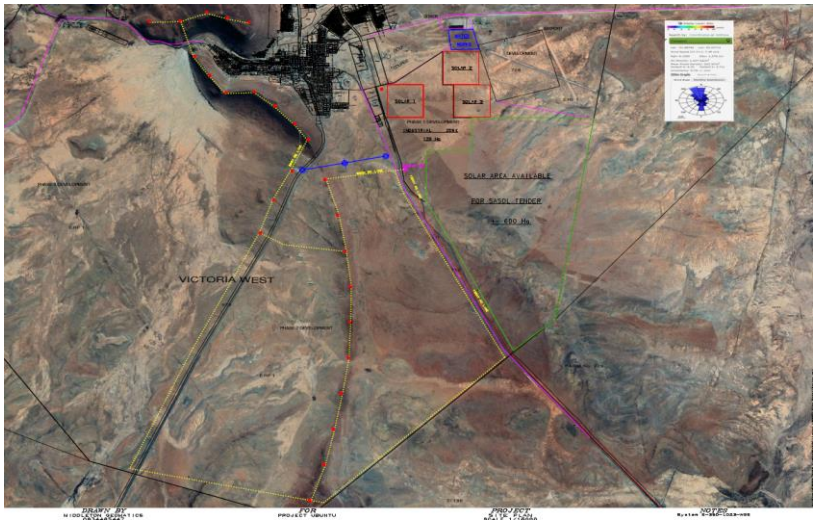


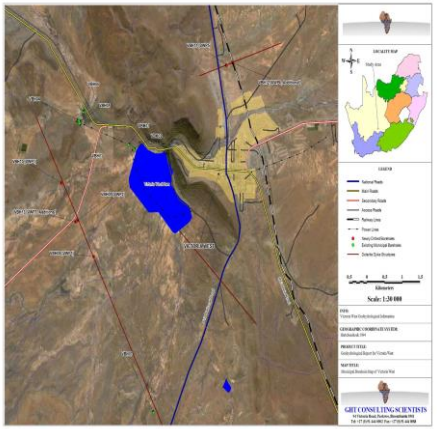
HYDROGEN PLANT AREA



PROGRESS TO DATE

- Land – secured
- Local municipality project approval
- Wind data
- Solar data
- Wind & Solar technology
- Water - secured
- Power Plant up to 3000 MW
- Hydrogen / Ammonia Plant from Green Power
- 22 / 132 /400 KV Grid transmission lines
- Airport & train station
- Quarry in area
- Masterplan of plant
- Green Industrial Park





INFRASTRUCTURE

Hutchinson station

Based on our initial investigations we believe that Hutchinson is a viable option for a logistics hub. In addition to the convenience of Hutchinson station the rail cost savings will be substantial when compared to current and future road tariffs. This makes for a compelling business case as logistic costs account for a large portion of project costs.

Quarry : in area

The aggregate rock sample from the Hard Rock Quarry is capable of producing satisfactory quality Base Course materials, Seal Stone and Concrete Aggregates. The aggregates meets the standards of COLTO and SABS

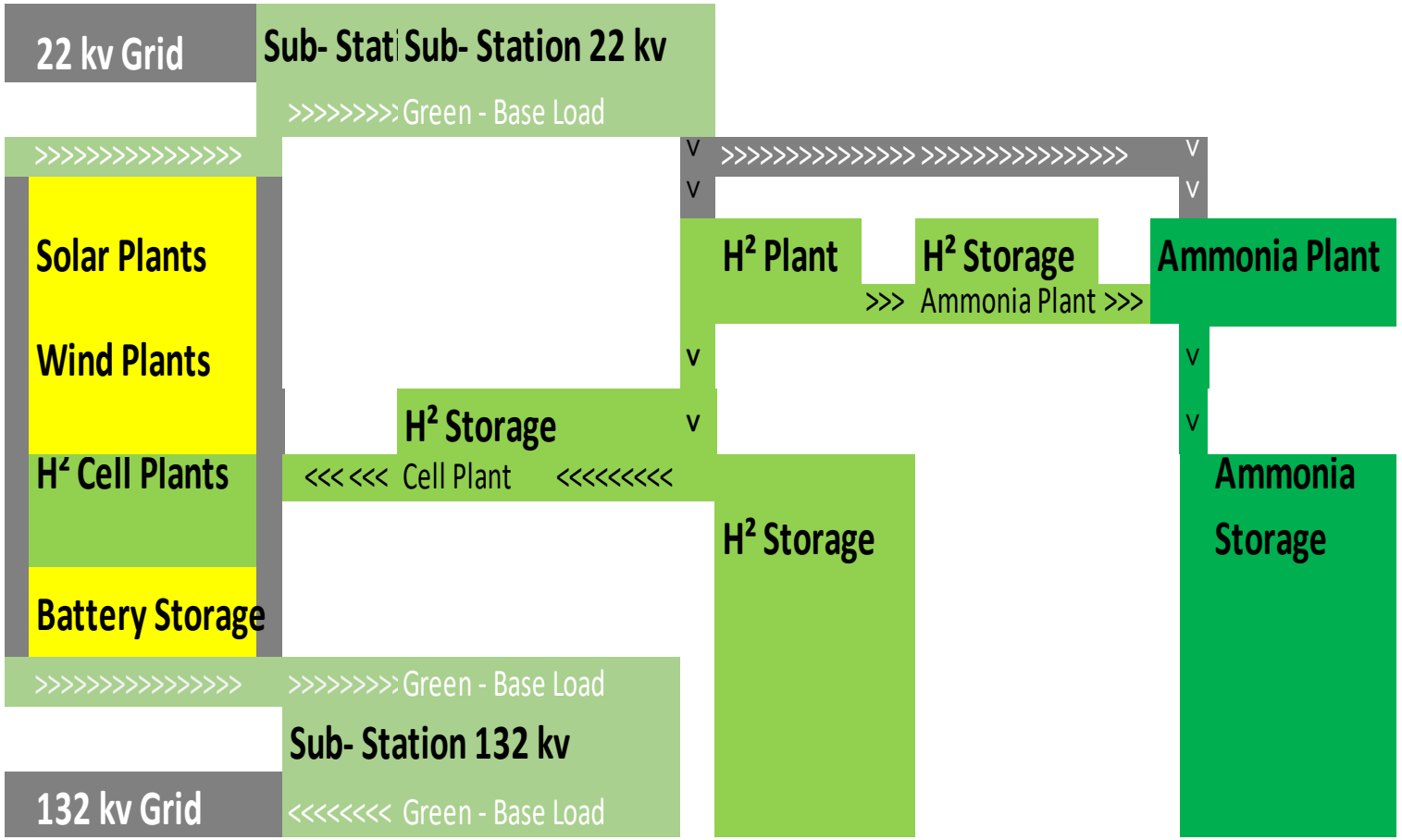
PROJECT FEASIBILITY STUDY

The feasibility study will assess the impact and viability of the project by performing the following investigations:

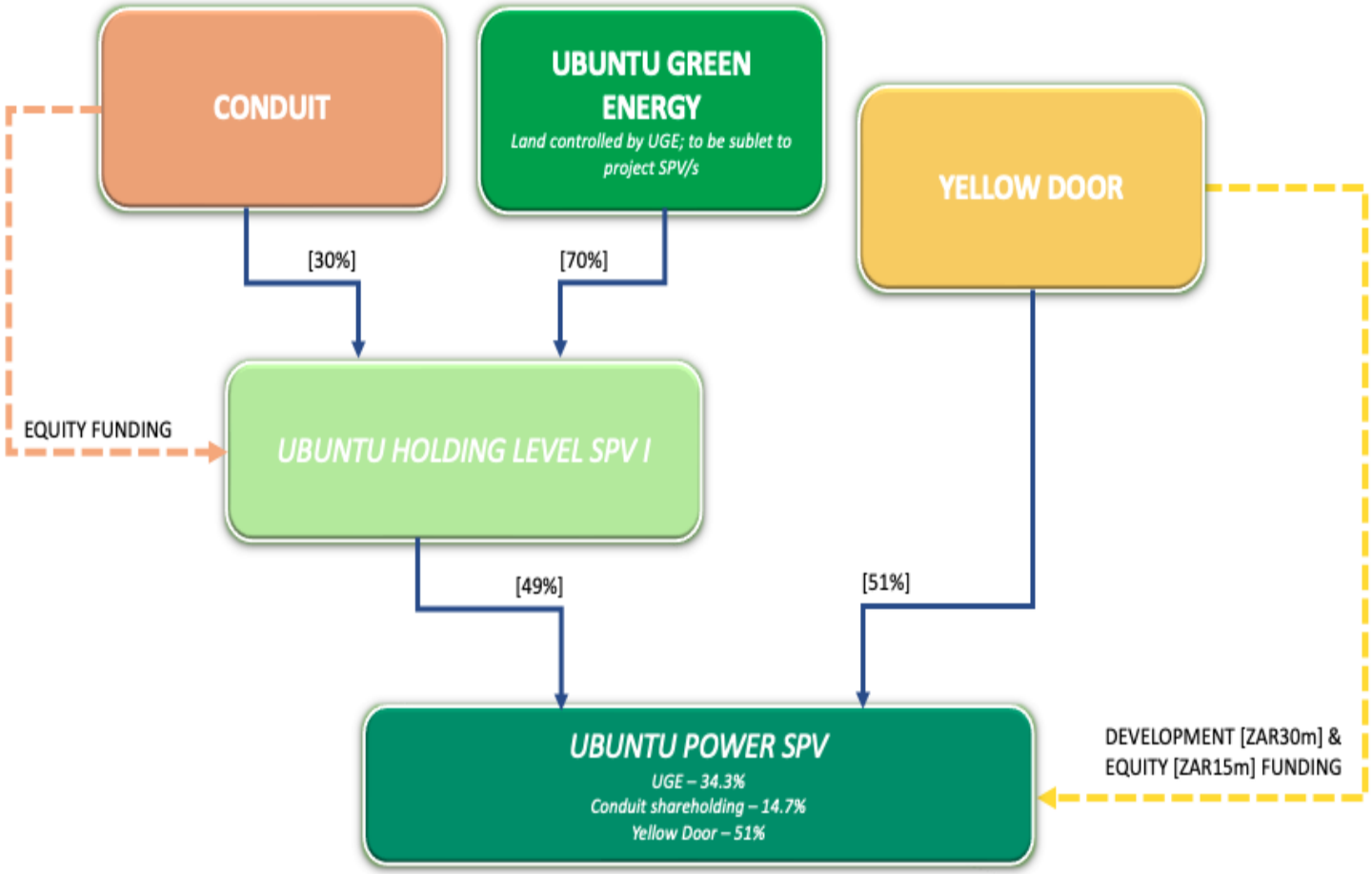
- Grid Report
- Wind Technical Assessment
- Energy Storage Assessment
- Infrastructure Survey
- Geo-Technical Survey
- Environmental Impact Assessment
- Business Case Modelling
- Main Uncertainties and proposed mitigation activities

The assessments are then used to draw primary conclusions on each of the assessments and a optimal way forward for the project is then recommended

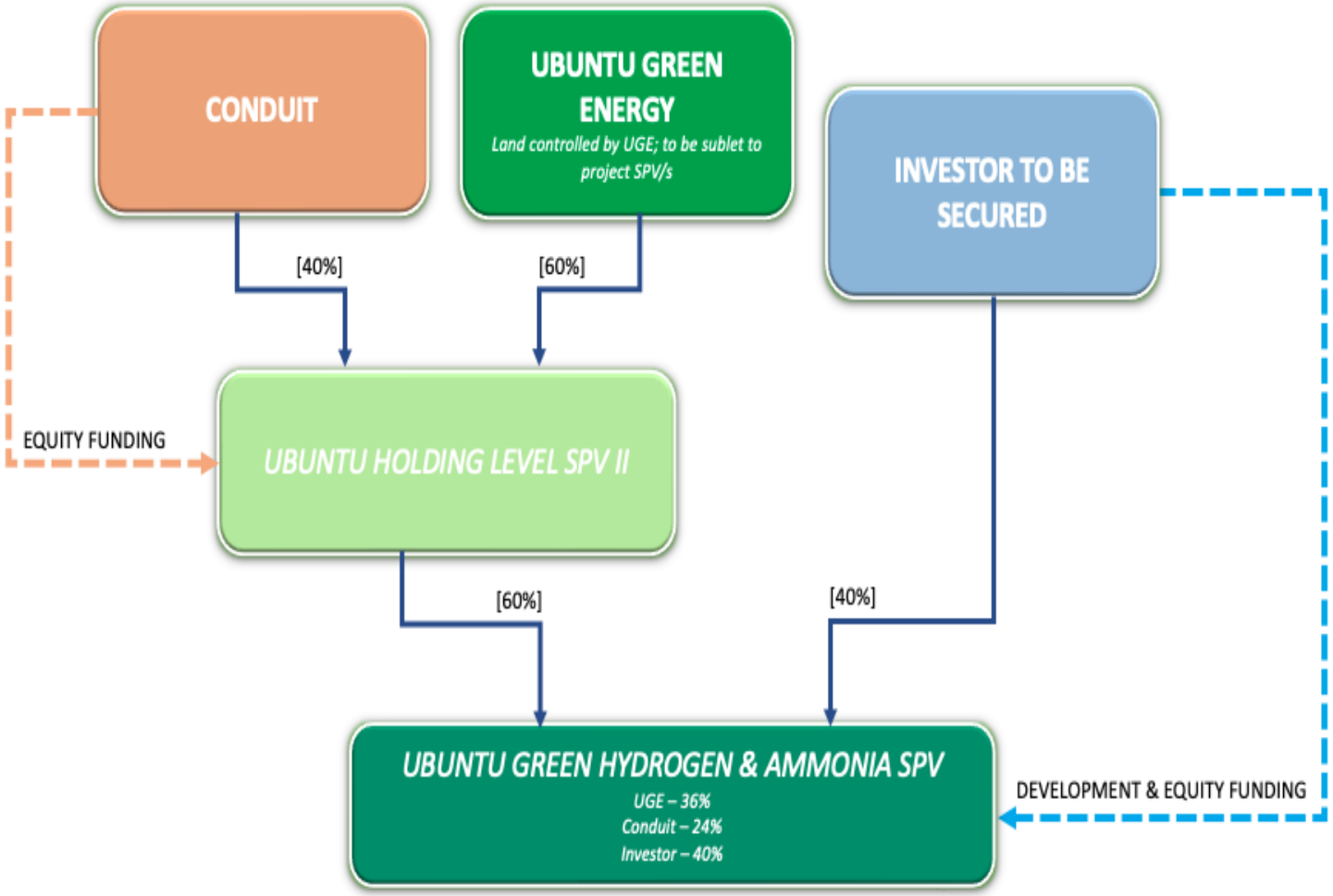
GREEN HYDROGEN WORKING DIAGRAM



GREEN POWER INVESTMENT SRUCTURE DIAGRAIM



GREEN HYDROGEN INVESTMENT SRUCTURE DIAGRAIM



PLAN TO DEVELOPMENT OF SOLAR,WIND PLUS GREEN HYDROGEN /AMMONIA PLANTS

Phase 1

11.3 MW to the GRID +
100 MW WIND & SOLAR
to power the
HYDROGEN & AMMONIA PLANTS

- Development of 18 hour/day 11.3 MW wind & solar plants (1.3MW for sale to Victoria West and 10 MW Private customers + 100 MW power to the Hydrogen / Ammonia plant.
- **Power to be supplied from wind & solar plants to simultaneously prototype green hydrogen & ammonia plants with technical feasibility and equipment supply support from Cummins.**
- **Objective to achieve a Green base load power supply.**
- Hydrogen plant will manufacture H_2 for the Fuel Cell Plant for the 11,3 MW power to the grid, and power to the Ammonia Plant when there no solar or wind available.
- H_2 to the Ammonia Plant to supply 100 tons of Ammonia to Omnia Group.

PLAN TO DEVELOPMENT OF SOLAR,WIND PLUS GREEN HYDROGEN /AMMONIA PLANTS

Phase 2

100 MW to the GRID from WIND & SOLAR PLANT +
100 MW from the HYDROGEN FUEL CELL PLANT for 6 hours / day

- **Additional solar & wind generation developed for Green Hydrogen & Ammonia power production.**
- This phase will scale up the power generation to the Hydrogen plant
- and Ammonia plant with capacity of 72 000 000 Kg per annum.

PLAN TO DEVELOPMENT OF SOLAR,WIND PLUS GREEN HYDROGEN /AMMONIA PLANTS

Phase 3

550 MW to GRID from WIND & SOLAR PLAN +
550 MW HYDROGEN FUEL CELL PLANT for 6 hours / day

- Hydrogen plant to manufacture H_2 for the Fuel Cell Plant for the 550 MW and to power to the Ammonia Plant when there no solar or wind available.
- Hydrogen to ammonia plant to supply [TBD] tons / day to Omnia Group and rest of South African market.

Note:

- Ammonia Plant to run 24/7 - 365 days throughout Phases 1 – 3.
- Hydrogen Fuel Cell hours: 6 hours throughout Phases 1 – 3.
- Hydrogen Storage Days: 5 daysH2 Storage 5 Days throughout Phases 1 – 3.

ECONOMIC DEVELOPMENT

- **As with any development in a rural farming area, the growth of a business brings the opportunity for both local and regional economic development.**
- **<u>Short term Economic Development:</u>**
- **Construction of a power plant and manufacturing facility.**
- **<u>Long term opportunities:</u>**
- **Production plant, service centre, maintenance of facilities over 20 year period.**
- **A 'Local' social development fund that will enhance the Economic and social abilities of this area – Fund to be professionally administered.**
- **Job Creation:**

Manufacturing facility's	± 500 Job opportunities
Service Centre	± 250 Permanent jobs
Power Plant Construction	± 200 Temp job opportunities
Construction	± 3000 Temp job opportunities

COMMITMENT TO LOCAL CONTENT

We will dedicate the Project to locally sourced and produced content, including

- Cement
- Reinforced steel
- Steel ropes
- Support frames for solar panels
- Transformers
- Electrical cable
- Electrical switch gear
- Paint for Turbines
- Building materials for substations and gatehouse
- Fencing
- Road / Rail transport from PE to site
- Transport of segments from factory to site
- Transport of aggregate using conveyers from Quarry to factory
- Security on site and factory

SKILLS TRANSFER

- All Consultants to the project are committed to setting up local offices in Ubuntu Municipality and establishing new career opportunities

- Local employment and training and education provided to develop local expertise in the following careers:

- Civil Engineering
- Electrical Engineering
- Mechanical Engineering
- Process Engineering
- Construction
- Marketing
- Office Administration
- New Consulting offices will assist Ubuntu Municipality in developing improved services to the region

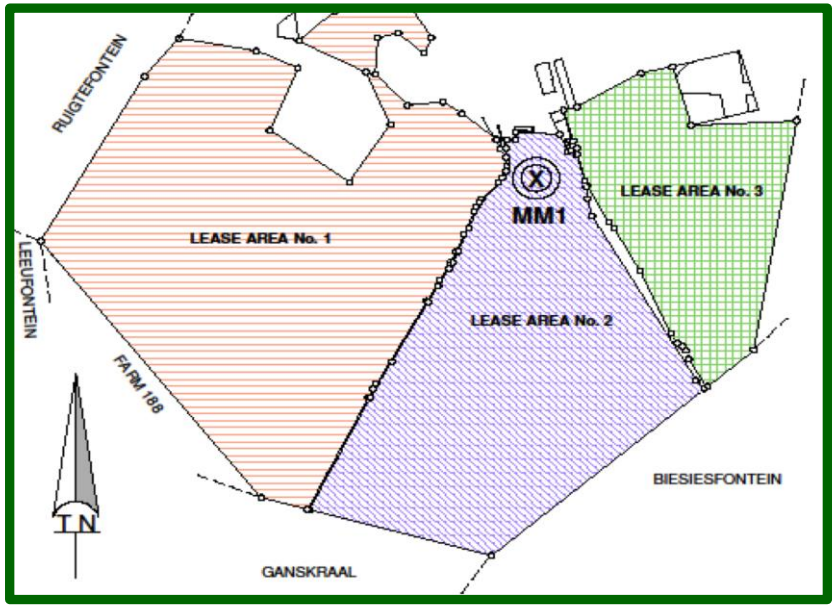
VICTORIA WEST COMMUNITY

- 10 % -Profited Shareholding in Ubuntu Power Project
- Off Grid Green Electricity for the Municipality
- Significant community job creation
- Opportunity to grow income/rates base of the Municipality
- Development of local infrastructure (refurbishment and
- RSA renewable hub development

THE WAY FORWARD

- The Ubuntu Green Energy team is consists of specialists in their specific field but their ability to learn and rapidly adapt their approach has been instrumental in reaching this stage of the project while remaining independent.

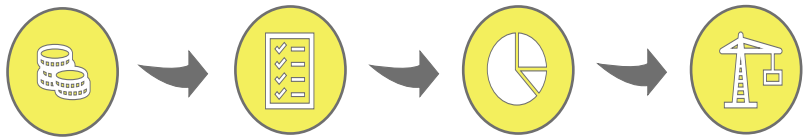
- Due to this project being vastly different from the standard REIPPPP based projects, we do not think that anyone has the formula to success but that success will only be achieved if we put together a dynamic team which is willing to learn and is flexible their approach.



Ubuntu Green Energy :

Seeking investment to conclude

the feasibility study to financial close



Feasibility Funding → Feasibility Study → Financial Close → Construction

UGE DIRECTORS

Each Director brings his own specialised abilities to add value to the Project and each Director is also a shareholder in Ubuntu Green Energy.

Rob Huff - Chairman

MARK HASELAU

PHILIP HOPLEY

RALPH MIDDLETON

Trusted partners who have proven technology and experience in the Africa markets


THANK YOU