

## C3.2. SCOPE OF WORK

### 1. Introduction

Rand Water has 2 Purification plants treating 4900MI/day and 1200MI/day respectively pumped to 4 main booster stations distributed to the 10 satellite booster stations feeding the 37 Rand Water Reservoirs located throughout its supply area. Rand Water plants, booster stations and reservoirs utilize power from Eskom and Municipalities.

South Africa's power grid is under severe strain and energy security is becoming an important aspect for businesses to ensure that they can still provide services to their clients. This is especially important in the water supply sector as access to drinking water etc. is crucial for the wellbeing of people.

Rand Water wishes to procure electricity from independent power producers to improve reliability and security of electricity supply within Rand Water system. The IPPs will build, own, and operate the power plants and sell power to Rand Water. Rand Water to be the bulk energy consumer of the Power Production. The Power Production Plants shall form part of the Vaal triangle transition forum to wheel power to an independent power grid to serve the greater Vaal transition initiative for the decarbonation energy program as set out by the World Economic Forum.

Rand Water forms part of the Vaal triangle transition forum for the industrialising of the Vaal region. The Forums aim is to Power the region from an independent power grid to contribute to the decarbonation program aimed at "Net Zero "in 2050.

### 2. Background

Rand Water is dependent on the National Power Supplier Eskom and Local Municipalities for its power requirements. With the power grid stability posing a risk to Rand Water to supply its Bulk Water to consumers necessitate Rand Water to source alternative Independent Power Producers. Rand Water is a bulk Energy user of the National grid. Regular power failures at Local Municipalities destabilize water distribution to bulk consumers hence noncompliance to National regulations as per the constitution. Contributing to the unstable grid is the implementation of Load shedding putting the National grid under pressure posing high risk of power failures.

### 3. Rand Water objectives

The objective for Rand Water is to have the IPP to supply power to the following pumping and tertiary sites:

Sites	Power production
Zuikerbosch, Vereeniging, Lethabo, Panfontein, Amanzimtoti	Common Power plant (Mixed energy)
Zwartkopjes, Eikenhof, Palmiet, Rietvlei, Central Depot, Pipe manufacturing plant	Common Power plant (Mixed energy)

Trichart, Bloemendal, Mapelton, Roodepoort, Townlands, Cullinan, Mamelodi, Libanon, Ironside, Daleside	Small Power plant per site with suitable technologies
Reservoir sites	Solar plant and or Other suitable technologies

#### 4. General approach and Strategy

The general strategy will be based on an in-depth understanding of Rand Water's need as well as the macro-economic environment within which it operates. In developing the strategy, the IPP's objectives will be substantially guided by the following:

- a. Working collaboratively with Rand Water towards common objectives, delivering added value to Rand Water through strategic partnering meeting the objectives.
- b. A constant Willingness to be innovative and progressive.
- c. Maximizing the use of leading-edge technology to improve the way in which the IPP works together through knowledge transfer and training.
- d. Working with Rand Water to identify and reduce exposure to technical, business, and legal risks.
- e. Working with Rand Water to define a set of performance metrics focused on achieving the results Rand Water desires.
- f. The *fast tracking* of the project implementation by to improve Rand Water's security of electricity supply.
  - I. Minimizes the impact of exogenous factors.
  - II. Optimizes revenue potential.
- g. Consider proposed IPP solutions that will provide Rand Water demonstrated *tangible value for money* (electricity at fair price, an aggressive project implementation time frame, minimization/elimination of cost over-runs).
- h. Develop legal documentation for the projects in such a manner that the risks are identified.
- i. Sufficiently raise *capital on the best terms and conditions* possible for investors (tenor, interest rates, rates of return for investors).

##### a) Risk Management of the power production plant

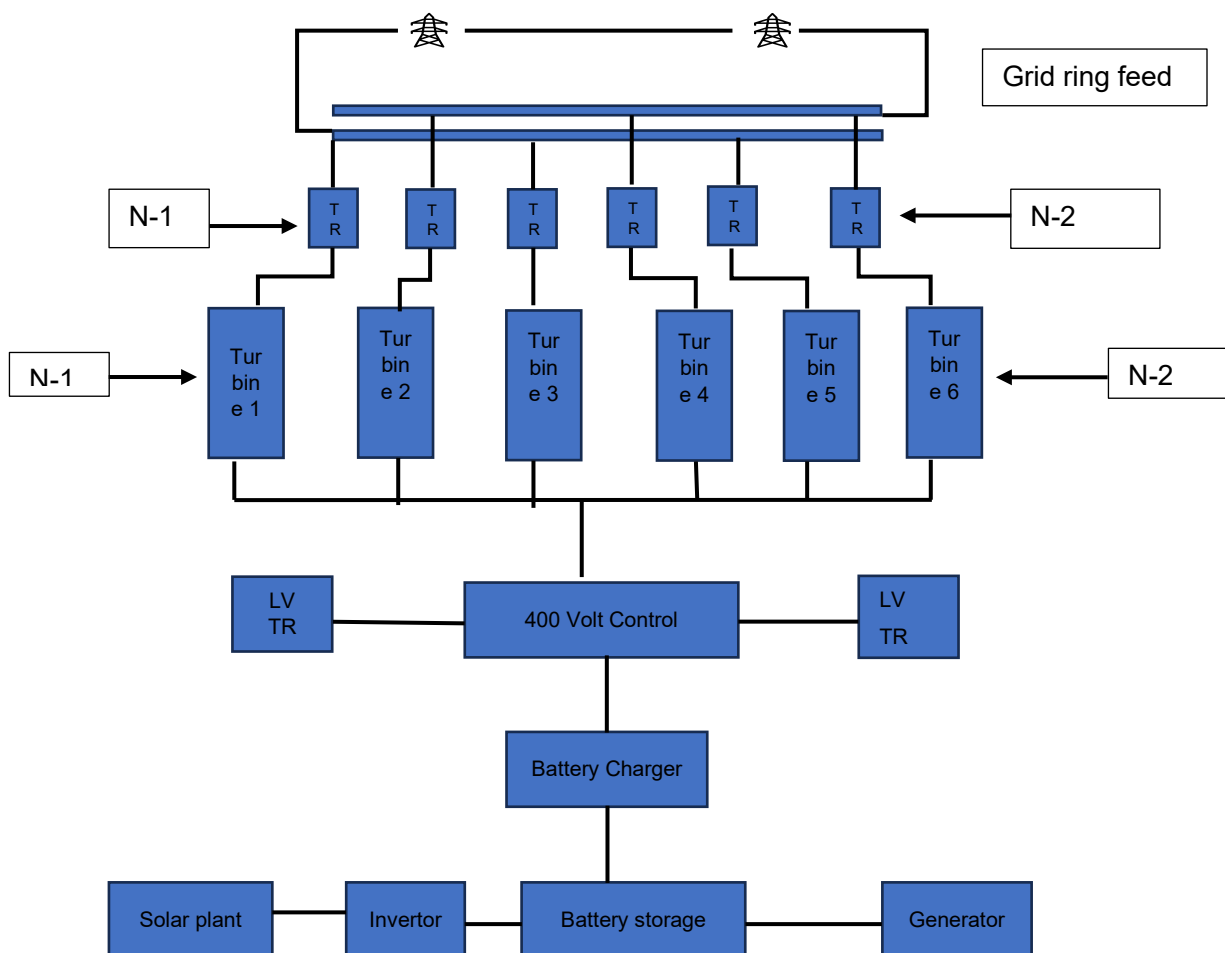
- I. Low voltage control systems
  - Low voltage control systems will consist of N-2 backup system to ensure alternative control to start up and control turbine systems.

- All auto control systems shall operate in the fail-safe mode to secure continues control and protection of the operating system.

## II. Medium and High voltage systems

- The turbine system shall consist of N-2 backup to ensure continues power production and instant recovery and stability of power in case of failure.
- All Pickup Sub Stations shall consist of N-2 backup for continues operation and flexibility across the switching systems.
- Ring feed to be created to cater for the invent of transmission line failure due to natural interference or unforeseen events to stabilize transmission feed.

### Typical Illustrative Power Plant Schematic



**Figure 1: Power plant Illustration.**

## b) Rand Water overview of the large sites

Rand Water's raw water is purchased from the Department of Water Affairs and is gravity fed to the largest water purification plant, Zuikerbosch station, which is located on the borders of the Three Rivers suburb in the east of Vereeniging. The Lethabo pumping station (on the bank of the Vaal River behind the Eskom Lethabo Power Station) supplies most of the raw water to the smaller, older Vereeniging pumping station, which is embedded in the south of Vereeniging. Both Zuikerbosch and Vereeniging pumping stations have water treatment and potable water pumping plant. Zuikerbosch, Vereeniging and Lethabo form the southern node of Rand Water's major operations.

The bulk of all treated potable water is pumped from the Zuikerbosch and Vereeniging pumping stations to four 'booster' pumping stations on the southern and eastern outskirts of Johannesburg, from where the water is pumped to multiple consumer destinations. These booster pumping stations have potable water pumping plant loads, with minor water disinfection plants attached, and they form the northern node of Rand Water's operations.

Typically, Rand Water sites are on portions of land large enough to allow for expansion. In the southern node, particularly Zuikerbosch Pumping Station with significant areas for sedimentation, sand filtration, associated raw water, wash water and wastewater pumps. The largest loads are those of the potable water pump motors in the main engine rooms. Some pumping stations utilize Variable Speed Drives (VSDs) on the pump motors.

On all sites, motor loads are started sequentially, i.e., one pump set at a time, and, within that pump set, one stage at a time, five seconds apart. To establish pipeline hydraulic equilibrium, there is a pause between starting pump sets of between one and three minutes.

Table 1: Present maximum demands for the large sites.

SITE	MAXIMUM DEMAND
Zuikerbosch 6.6kV	56.2MVA
Zuikerbosch 11kV	72.0MVA
Vereeniging 11kV	33.1MVA
Lethabo 6.6kV	12.1MVA
<b>Total for Southern node</b>	<b>173.4MVA</b>
Zwartkopjes 11kV	41.0MVA
Eikenhof 11kV	43.4MVA
Palmiet 11kV	50.0MVA
Ancillaries	14.0MVA
<b>Total for Central node</b>	<b>148.3MVA</b>

It is contemplated that Rand Water would have a generating plant for the central node, near the Zwartkopjes station, with radial feeds via overhead lines to all four stations: or wheeling over the Eskom transmission network and another generating plant for the southern node, in the proximity of Zuikerbosch station, again with radial feeds to Zuikerbosch, Vereeniging and Lethabo pumping Stations.

The IPP must conduct a feasibility studies and present proposals, for replacing present supply authorities, with Power Plants of the required generating capacities.

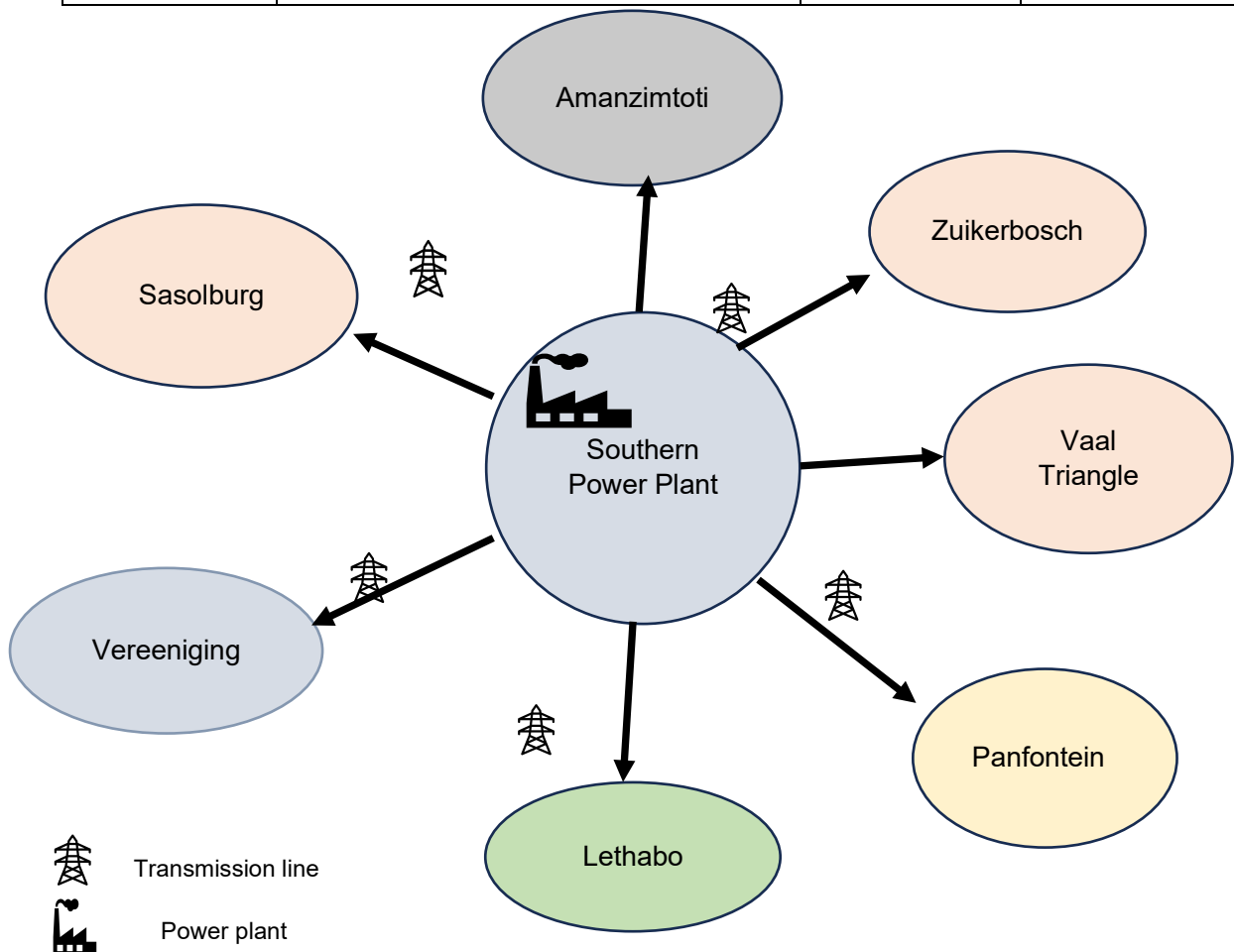
The feasibility studies and proposals must address the following aspects, as a minimum:

The proposed power plant (plants) must:

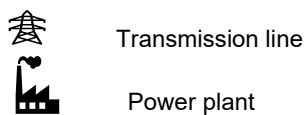
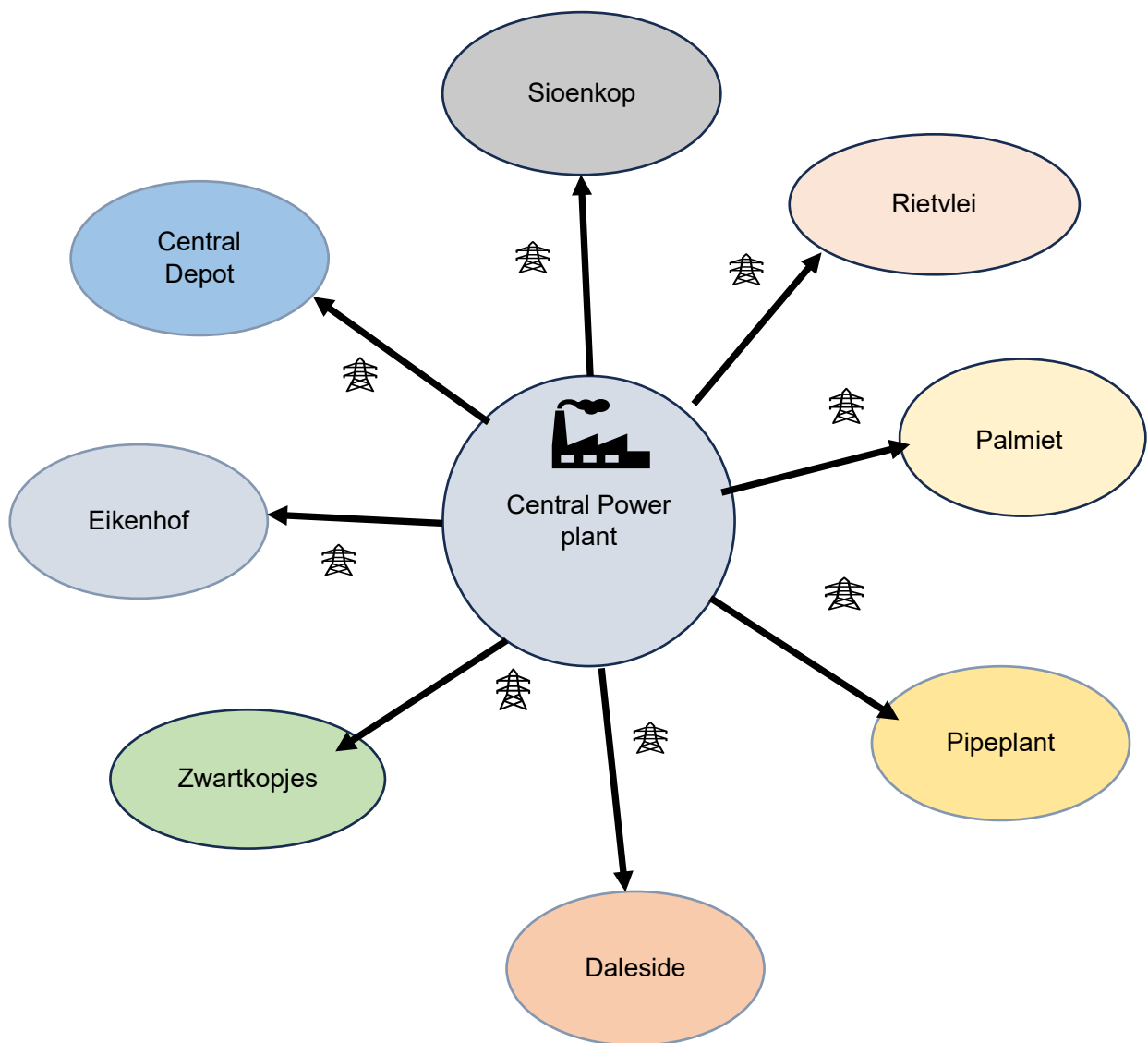
- Ensure secure, reliable, and sustainable supply of electricity.
- Provide long term sustainability of Rand Water operations.
- Have minimal impact on the environment.
- Offer an attractive tariff, the tariff is based on capital and operational and maintenance costs.
- Reduce electricity costs.
- Give Rand Water better control of its electricity supply and make it independent of other electrical utilities.
- Have the necessary redundancy to allow for maintenance without compromising power supply to Rand Water
- Have flexible switching capability on feeders to various sites.

**Table 2: Power generation plant requirements**

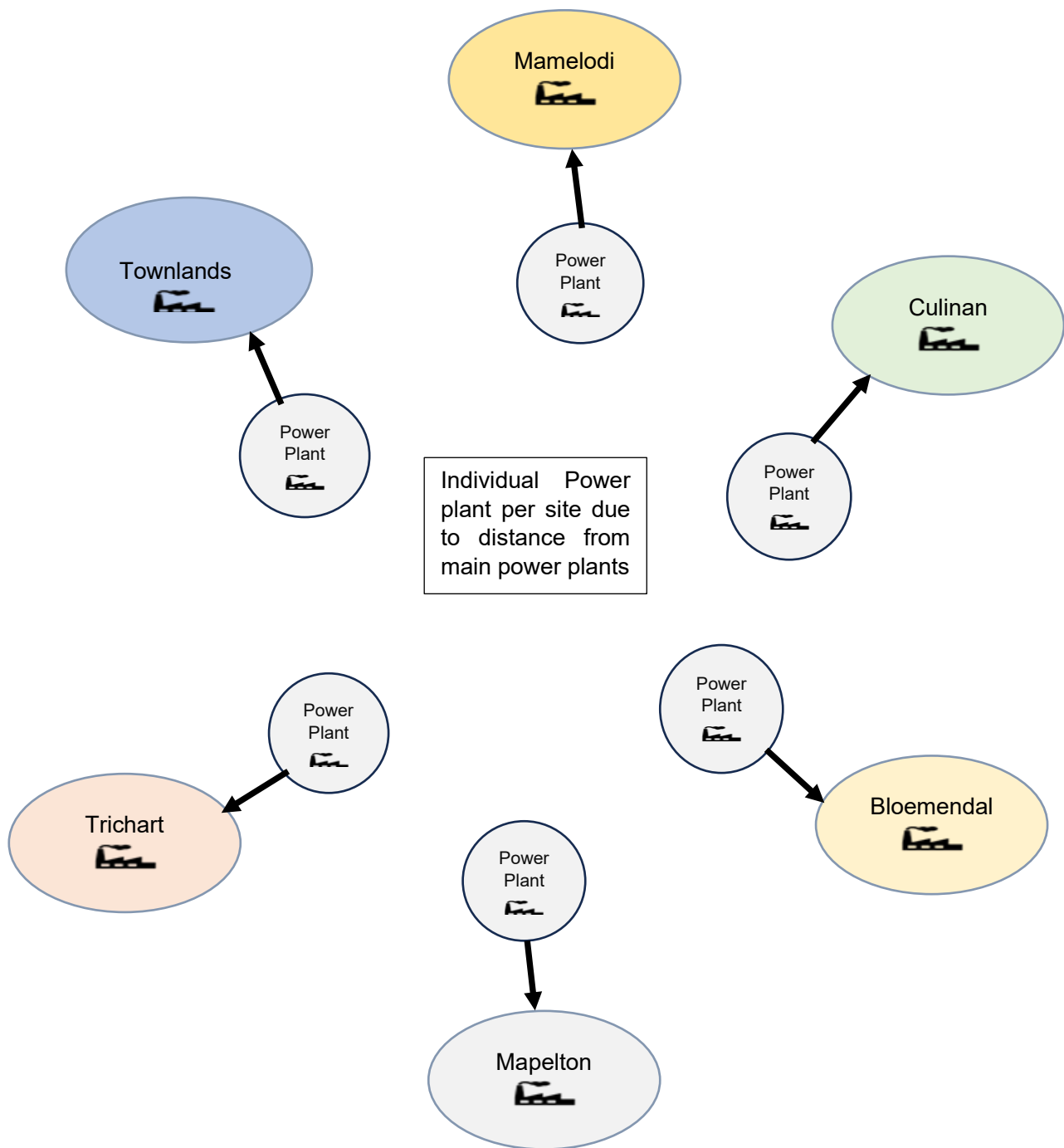
Technology	Rand Water Site	System Size	
		2023	2050
<b>Gas / Coal. Hydrogen New Technologies</b>	Zuikerbosch, Vereeniging, Lethabo, Panfontein, Amanzimtoti	173 MW	216 MW
	Eikenhof, Zwartkopies, Palmiet, Mapleton	143 MW	184 MW
<b>Solar/Hydro</b>	All smaller sites	22 MW	37 MW



**Figure 2: Proposed Southern Power Plant.**



**Figure 3: Proposed Central Power Plant.**



**Figure 3: Proposed Northern Power Plants.**





Figure 4: Zwartkopjes power plant Geographical layout



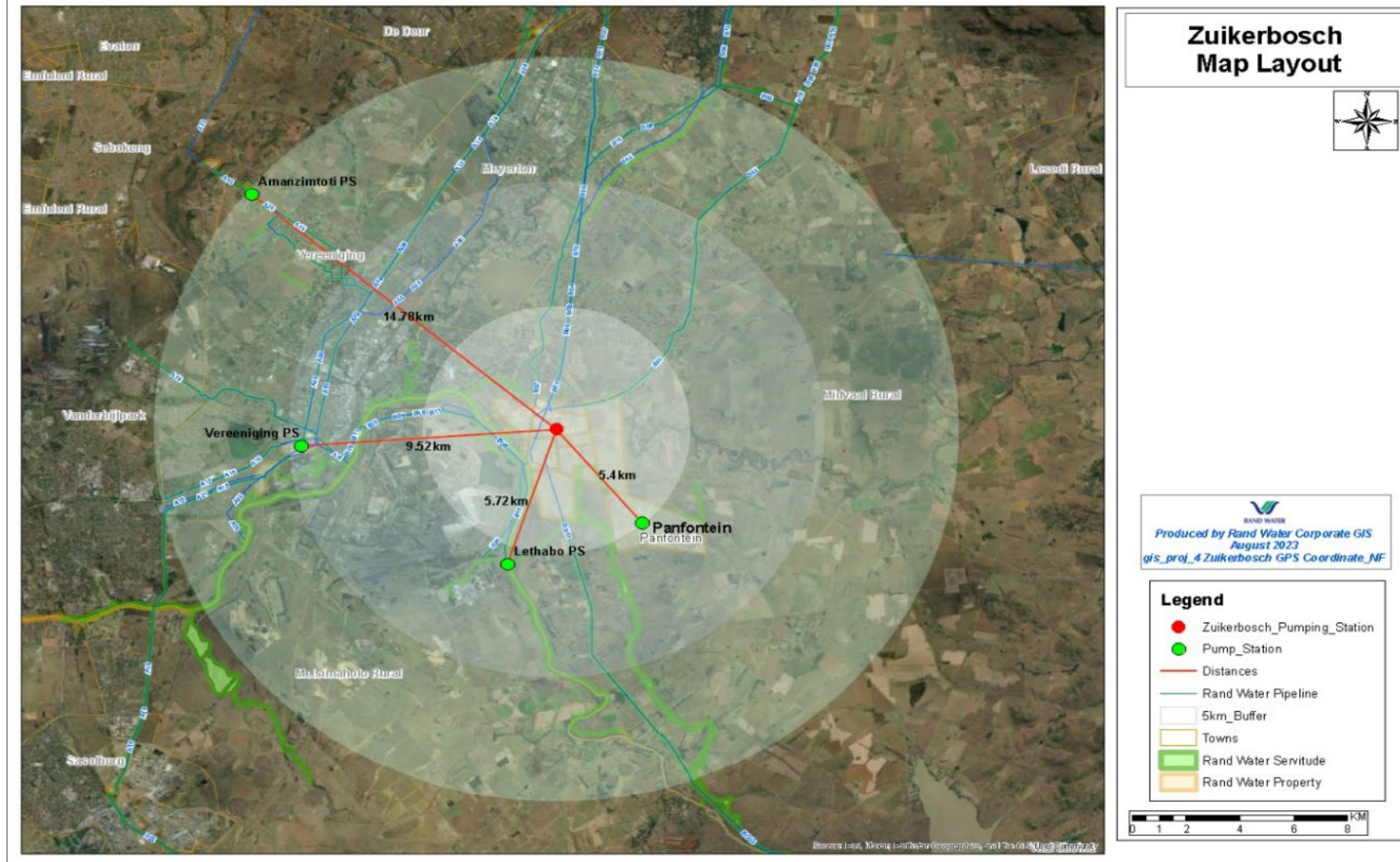


Figure 5: Zuikerbosch(Southern) proposed Power Plant Geographical layout.

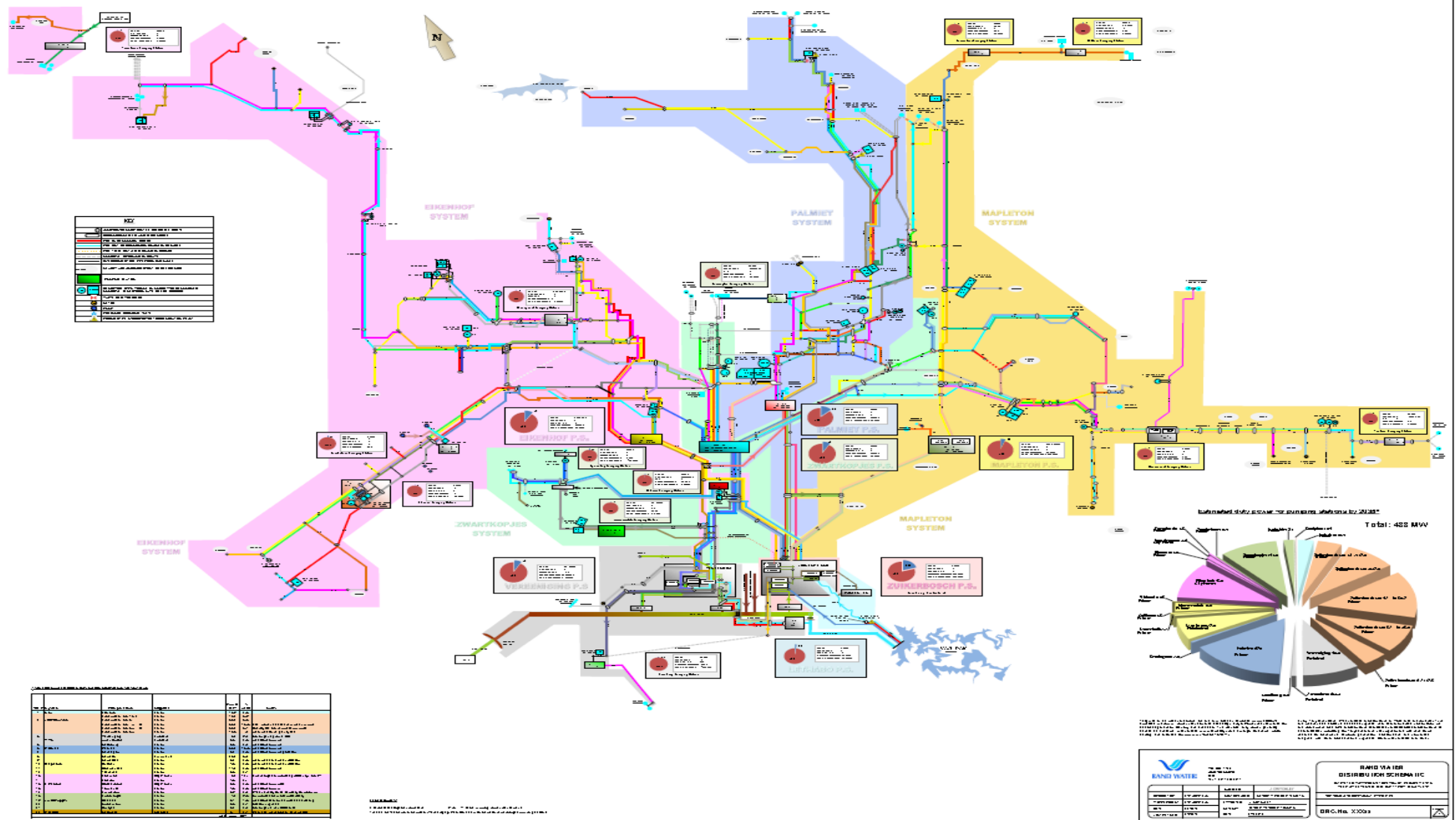
Site Power plant	Distribution Sites	Distance from plant (Km)
Zuikerbosch (Southern Power Plant)	Panfontein	5.41
	Lethabo	5.72
	Vereeniging	9.52
	Amanzimtoti	14.78
	Sasolburg	22. 0
Zwartkopjes (Central Power Plant)	Central Depot	0.89
	Palmiet	5.67
	Eikenhof	9.57
	Spieonkop	16.29
	Daleside	17.0
	Rietvlei	9.50

**Table 3: Site distance from proposed power plants.**

Zwartkopjes (Reference) (Proposed sites for individual Power plant per site)	Bloemendal	51.0
	Mapelton	19.5
	Cullinan	88.0
	Mamelodi	83.0
	Roodepoort	22.0
	Libanon	44.0
	Trichart	119.0
	Townlands	118.0

**Table 4: Site distance with reference from central proposed power plants.**

Figure 6: Rand Water Area of supply layout.



## Rand Water Electricity Network

Table 4: Below shows the existing respective electricity supplier per pumping station.

Electricity supplier	Pumping Stations	Booster-Pumping Stations
Eskom	Zuikerbosch, Zwartkopjes, Palmiet	Daleside, Libanon, Lethabo, Trichardt, Bloemendal, Mamelodi, Cullinan, Townlands, Ironside, Zuurbekom
mfuleni	Vereeniging	Amanzimtoti
City of Johannesburg	Eikenhof	Roodepoort
Ekurhuleni	Mapleton	
Metsimaholo	-	Sasolburg

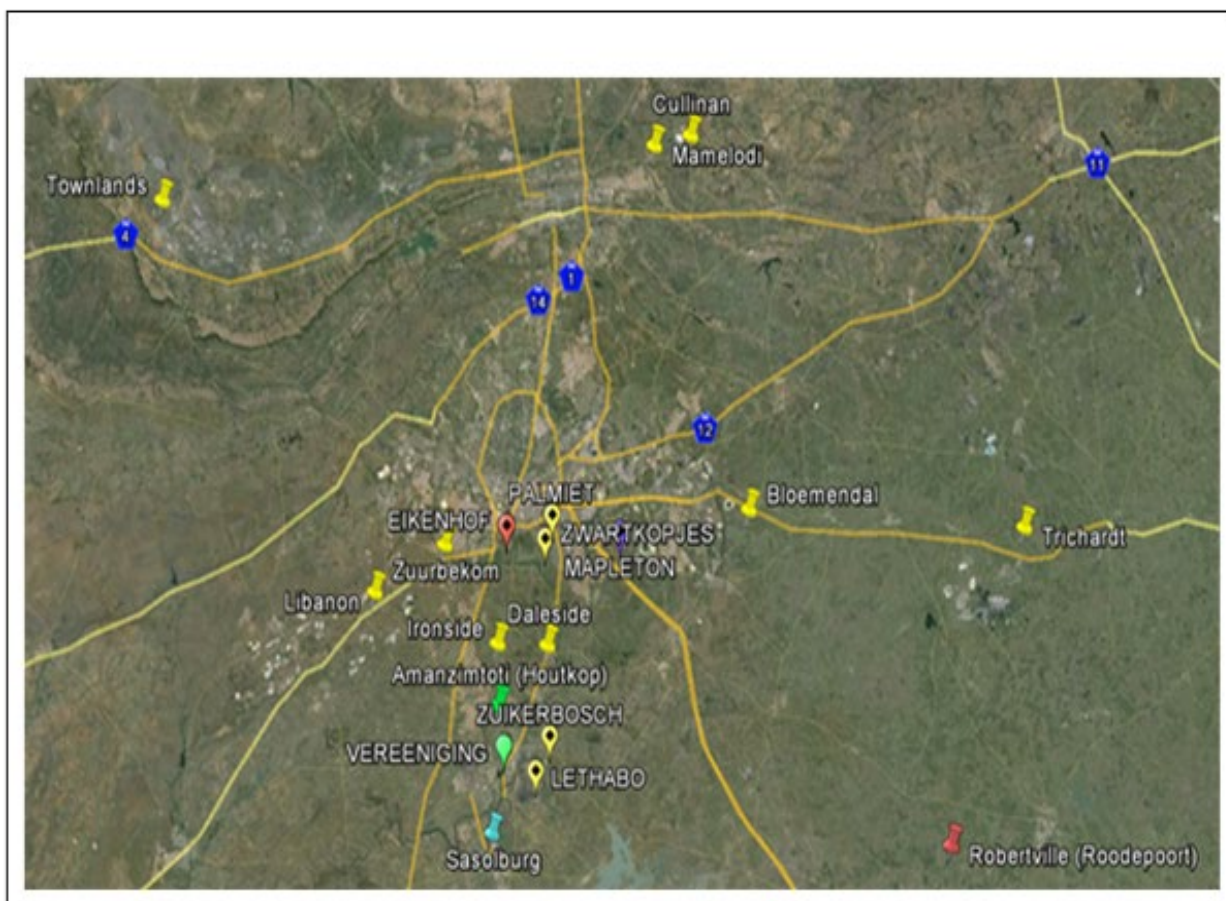


Figure 7: Geographical layout of the raw water, booster, and tertiary pumping stations.



Pump Station	Supplier	Transformer size, Qty, MVA	2023 Substation Capacity MVA	Calc 2023 max MW	2024 Max Pumping MLD	Calc 2035 max MW	2035 Max Pumping MLD	Calc 2035 max MW	2050 Max Pumping MLD	2023 Annual cost Current Rands
Lethabo	Eskom	2 x 10	20	11.4	1400	11.8	1450	11.8	1450	0
Zuikerbosch Stn 1 & 2	Eskom		40	19.5	900	19.5	900	19.5	900	0
Zuikerbosch Stn 3	Eskom		50	36.7	1100	36.7	1100	36.7	1100	0
Zuikerbosch Stn 4 A + B	Eskom		80	58.5	1800	58.5	1800	58.5	1800	0
Zuikerbosch Stn 5 A + B	Eskom		-	13.3	400	40.0	1200	40.0	1200	0
Zuikerbosch Stn 6A								20.0	600	0
			170	128.0	4200	154.6	5000	154.6	5000	1 181 767 854
Vereeniging PS (Vg site)	Emfuleni	3 x 20	60	40.6	1200	47.4	1400	47.4	1400	456 472 185
WWTW (Sebokeng potentially)	Emfuleni		-	-	-	3.2	100	6.4	200	0
Amanzimtoti PS	Emfuleni	none		2.8	180	4.2	270	5.7	370	33 787 522
Sasolburg PS	Eskom	none		0.4	14	0.5	16	0.5	18	3 745 080
Palmiet PS	Eskom	4x10, 2x20	80	51.0	1800	68.0	2400	85.0	3000	560 599 340
Northern treatment works WWTW	Various		-	-	-	5.3	200	10.6	400	0
Olifantsfontein WWTW			-	-	-	2.7	100	4.0	150	0
Kensington PS	Eskom		-	-	-	1.7	150	1.7	150	0
Mapleton PS	Ekurhuleni	3 x 10	30	17.6	800	28.0	1200	35.0	1500	197 965 762
Mamelodi	Eskom	none		1.2	38	2.4	76	2.4	76	0
Cullinan	Eskom	none		0.7	25	1.5	50	1.5	50	27 236 215
Bloemendal	Eskom	2 x 10	20	12.1	280	12.1	280	16.3	380	37 679 201
Trichardt	Eskom	none		0.3	15	0.4	18	0.4	18	2 923 837
Eikenhof	City Power	2 x 45	90	37.7	1330	43.3	1530	49.0	1730	718 636 734
Libanon	Eskom	none		0.0	0	1.6	70	2.5	100	887 530
Roodepoort	City Power	none		2.5	150	3.7	225	4.8	290	38 391 023
Goudkoppies WTW			-	-	-	2.0	80	2.0	80	0
Townlands	Eskom	2 x 2	1	1.1	55	1.1	55	1.1	55	4 773 968
Zuurbekom	Eskom	3 x 1		0.0	0	0.1	5	0.2	10	1 082 684

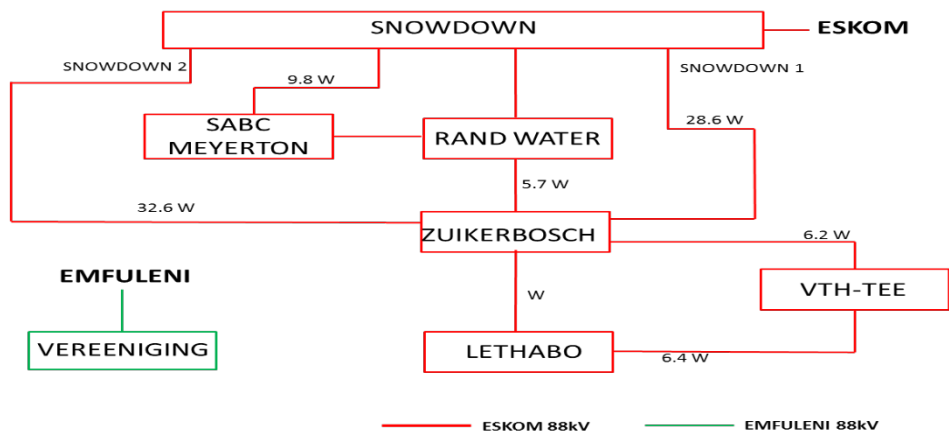
Zwartkopjes PS	Eskom	3 x 20		38.4	700	43.9	800	49.4	900	318 121 937
Daleside	Eskom	2 x 10	20	6.3	140	12.6	280	19.0	420	52 146 739
Spioenkop	Eskom	none		0.1	7	0.1	7	0.1	7	0
Ironside				0.0	0	0.0	0	0.0	0	31 621
Barrage				-	-	-	-	-	-	0
				<u>341</u>	<u>5,400</u>	<u>440</u>	<u>6,880</u>	<u>500</u>	<u>7,830</u>	<b>3 761 243 808</b>

**Table 5: Transformer size, bus voltages the maximum demand and Annual cost at each pumping station.**

The maximum demand for the entire Rand Water network is estimated at 341MW<sub>1</sub> at full pumping requirements; with a projected electricity usage of 440MW for 2024. This is based on a combined maximum pumping from 6880ML/day.

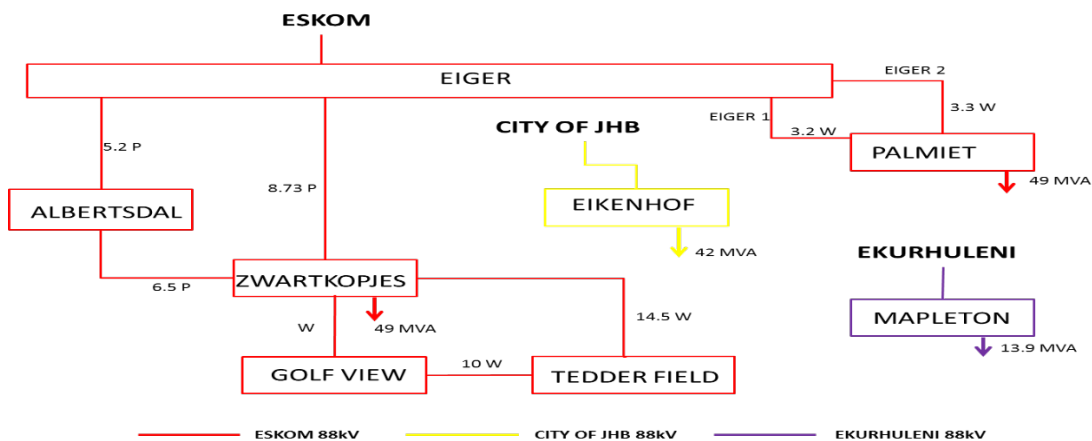
**Electricity network corridors within main Rand Water system.**

**Vereeniging-Zuikerbosch-Lethabo**



**Figure 8: Current Eskom 88kV and Emfuleni 88kV-network around Zuikerbosch, Lethabo and Vereeniging.**

**Eikenhof-Palmiet-Zwartkopjes-Mapleton**



**Figure 9: Eskom 88kV Zwartkopjes and Palmiet network layout.**

Figures 4 and 5 illustrates that the majority of Rand Water’s electricity supply is supplied by Eskom; followed by the City of JHB, Emfuleni and Ekurhuleni. Table 2 shows that Rand



Water’s operations are mainly supplied at a HV voltage of 88kV, except for Libanon and Bloemendal, which receive power at 44kV.

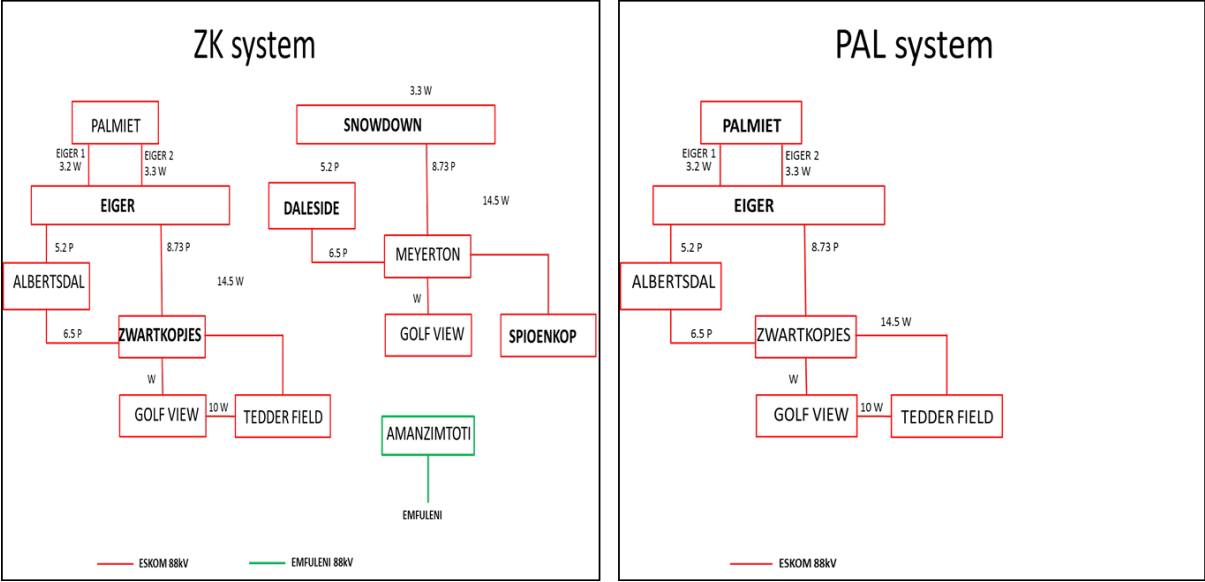


Figure 10: Zwartkopjes 88kV system and Palmiet 88kV system.

Table 6: Eikenhof 88/44kV system.

EIKENHOF SYSTEM		
Power feed	Site	Service provider
Orlando 1	Eikenhof	City of JHB
Orlando 2		
	Roodepoort	Eskom 88kV
Nancefield	Zuurbekom	Eskom 88kV
Lenazia		
	Libanon	Eskom 44kV
	Townlands	Eskom 88kV

Table 7: Mapleton 88/44kV system.

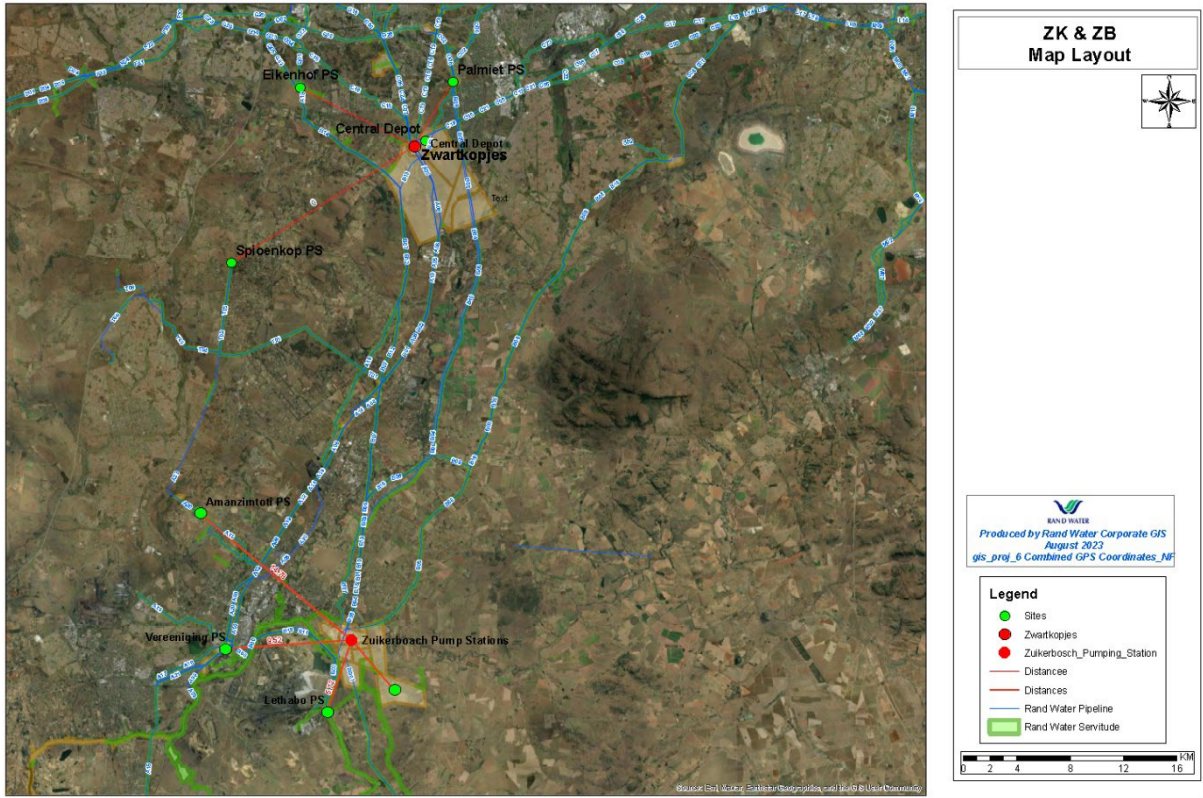
Site	Service provider
Mapleton	Ekurhuleni 88kV
Mamelodi	Eskom 88kV
Cullinan	Eskom 88kV
Bloemendal	Eskom 44kV
Trichart	Eskom 88kV

Table 8: Power generation plant requirements.

Technology	Rand Water Site	System Size	
		2023	2050
Gas / Coal. / Hydrogen New Technologies	Zuikerbosch, Vereeniging, Lethabo, Palmiet	153 MW	216 MW
	Eikenhof, Zwartkopjes, Palmiet, Mapleton	143 MW	184 MW
Solar/Hydro	All smaller sites	22 MW	37 MW

Table 9: Proposed Power Utilities

Power Utility	Rand Water Site	System Size	
		2023	2050
South	Zuikerbosch, Vereeniging, Lethabo, Panfontein, Vaal triangle (External consumers)	214 MW + X	221 MW + X
North	Eikenhof, Zwartkopjes, Palmiet	127.1 MW	155.2 MW



**Figure 11: Geographical layout for Zwartkopjes and Zuikerbosch**

## **5. Requirements**

It is required that the successful Independent Power Producer have the resources, capacity and skills to Design, construct, Build, commission, operate and maintain the power utilities over long-term supply agreement to purchase power. Are financially sound to procure materials, resources, and skills to successfully execute projects for the delivery of reliable and sustainable power to Rand Water needs as the bulk consumer.

a) Independent Power Producer to:

- Demonstrate necessary expertise to undertake the project and include details of previous projects undertaken.
- Provide indicative overall project cost estimate.
- Indicate anticipated timeframes to complete the project.
- Indicate any sole rights, intellectual property, and licences.
- Provide innovative solutions to meet the key deliverables.
- Provide alternatives and additions to the key deliverables.
- Incorporate 4IR technologies in designs analysis and management of plant and equipment.
- Interconnectivity to Rand Water networks for power monitoring and metering.
- Provide Fuel Supply Agreement (FSA) as part of deliverables.

The IPP shall form long-term partnership with Gas / coal or other fuel producing entities for the delivery of sustainable supplies. Long term contractual agreements to produce gas, coal or other fuel need to be agreed upon, highlighting sustainable supply and capability to honour contractual obligation. Typical local producers and distributors such as Sasol or Linde are to be considered.

## **6. Regulations and Environmental Compliance/Approvals**

All bidders are responsible for acquiring and maintaining government and local approvals, licenses, permits or variances, and the specific requirements or potential requirements necessary to construct and/or operate any facilities to generate and/or deliver energy to Rand Water sites.

Rand Water will only consider bidders who demonstrate that their facilities are sited in an environmentally responsible and compliant manner and in compliance with applicable local and governmental laws and regulations in which a secure fuel supply is documented by the IPP. The cost for obtaining the Environmental and Governmental Approvals will be borne by the bidder.

It is required that successful IPP bidder be following National and local governmental regulation and legislation as set out by Government with respect to the following:

- Application and registration of Independent Power Production Plants with NERSA.
- The South African Grid Code
- Grid Connection Code for Renewable Power Plants (RPPs) connected to the Electricity Transmission System (TS) or Distribution (DS) in South Africa
- Standard for the Interconnection of Embedded Generation (Eskom)
- Government Immovable Asset Management Act, 2007
- Schedules to be based on the REIPPP project documents (as issued by the South African Government for its renewable energy independent power producers programme) but customised to suit the project.
- Environmental impact assessment to determine the EIA requirements for the sites.
- Include initiatives for the disposal or reuse of by-products of each type of technology where applicable.

## **7. Power Purchase Agreement (PPA)**

Rand Water expects to enter into one or more PPA with the selected bidder(s) at a preferred agreement to supply power to Rand Water over long term . If a bidder wishes to enter into an agreement with different terms and conditions, an alternative proposal can be submitted for consideration and must be clearly labelled as an alternative proposal.

The PPA(s) shall include provisions that:

- Require the supplier to comply with all applicable laws, rules and regulations that are in, or may come into, effect during the term of the contract.
- Prohibit the supplier from assigning the agreement without the prior consent of Rand Water.

It underpins the project by providing the necessary liquidity related securities and guarantees required by the lenders (such as escrow accounts and debt service coverage ratios. It is aimed at mapping the way forward with the implementation of the project. The foregoing elements give both potential lenders, investors, and other stakeholders the required comfort and credibility, and improves their level of certainty that the project can be implemented.

## **8. Format and content of the proposal**

Bidders are requested to follow format and content instructions when completing and submitting their proposals. Each section of this tender must be comprehensively addressed and supporting documentation must be attached accordingly. Doing so will allow the corporation to expedite the evaluation and selection processes.

### **a) Executive summary**

This section must include an executive summary discussing the highlights of the proposal. If the proposal includes multiple sites or different energy sources at these sites, each should be described as a separate project.

**b) Introduction**

In this section, provide any information that your company wishes to submit about the nature of your business and primary business focus. Include information about what makes your company (Not the product) different from your competitors.

**c) Company profile**

Please include the following information about your company: the nature of your business and primary business focus, your company's major differentiator (i.e., what makes your company different from your competitors), the mailing address and contact information for your head office.

**d) In-house skill sets facilities and capabilities.**

Describe in-house skill sets and capabilities.

**e) Past-project experience**

In this section, include a brief description of completed IPP projects that are similar in nature and size as those expected to result from this project, a few pictures of the installations can be included in not more than 2-pages of the proposal.

**f) Project technical description**

This section should include a detailed description of the project, including:

- **Location of the project and site**

Provide details about where the project will be located and list Rand Water sites which will receive electricity from that power generation plant.

- **Size of power generation plant in MW and description of its respective generation equipment**

Provide the size of the proposed power plants in MW and its energy source. Describe the type of equipment that will be used, how it will be operated and maintained and include any other relevant equipment information.

- **Energy analysis**

This section should be based on the maximum pumping requirements at each of the Rand Water sites and consider the motor start-up requirements for pumping. The energy production from each power plant, based on the availability of the energy source especially the renewable energy sources, must be shown as follows:

- A calculation of gross monthly and annual energy production in MWh.
- A calculation of energy losses, all sources of losses considered should be listed and individually quantified.
- A calculation of projected net energy output monthly.
- A guaranteed monthly net megawatt hour energy production.
- A calculation power capacity on site and the balance between externally and self-generated power.
- Determine the capital, operational, maintenance and eventual disposal costs per technology and the plant life cycle.
- Explore other alternatives that have not yet been considered: HEP, solar diesel/HFO hybrid technologies.
- Indicate investment opportunity and risks of IPPI rental options vs. owner operated power plant.
- Calculate the return on investment considering the savings on energy costs from Eskom/City Power/Other and the survival as a going concern due to the substantial costs which may be involved.

- **Siting issues**

Provide a brief description of any siting issues/concerns and any plans of assessing local community siting issues.

- **Transmission plans**

Provide a description of the means of delivering the energy to the transmission system, including any distribution system related issues, if applicable. This should include the location, route, and voltage level of the transmission and/or distribution facilities. The design shall be in accordance with NRS 034, NRS 069, Occupational Health & Safety Act and all power transmission regulations and standards.

The bidder must ensure that the current power distribution network within Rand Water and respective electricity suppliers (Eskom and Municipalities) are not compromised. The bidder will be responsible for all costs involved in interconnecting with the local utility or transmission system, and transmitting the energy to Rand Water or to such point where energy can be delivered to Rand Water via network transmission service with ESKOM or municipalities. The purpose of the project is to allow for independence to Eskom or municipalities electricity supplies, thus preference will be given to proposals with minimal transmission lines and no connection onto the current supplier's electricity network.

Should the tenderer wish to submit bids for power plants located at multiple sites, a separate project technical description is required per site. Furthermore, if the proposal covers multiple types of energy sources (i.e., Solar, Hydro, Gas) at a site, a project technical description is required for each type of power plant for this site.

Indicate the distribution routes to the sites to be supplied and possible wheeling arrangements with Eskom/Others.

#### **g) Regulatory and Environmental compliance**

Provide information on regulatory and environmental compliance for each proposal submitted.

The bidder is exclusively and entirely responsible for meeting and satisfying all regulatory and environmental approvals, permits, licenses, approvals and/or variances that are currently, or become in the future, required for the operation of the power generation plant and the delivery of energy in accordance with the Power Purchase Agreement (PPA). Please list all the abovementioned documents that may be required for the project and status regarding the progress to obtain the documentation.

#### **h) Financial Information**

Please provide the following information

- Describe how you will finance the project.
- Are there any past, current, threatened, or proposed lawsuits related to your IPP plants or your ability to deliver power under a PPA?



- Has your company/organization or any of the principals ever declared bankruptcy?
- Credit references including the Institution, Address, Contact Name, Phone number.
- Provide a matrix determining the costs of all options +/-20% NPV.
- Provide cost benefit matrix based on the proposed power solutions.

**i) Power supply contract duration, pricing and time**

This section should include the following information:

- **Energy generation**

This section should state the amount of energy generated by the power generation plant proposed as follows:

- Anticipated amount of energy capable of being delivered annually in MWh/year.
- Anticipated amount of energy to be delivered per month in MWh; and
- Anticipated guaranteed minimum energy production per month in MWh.

- **Energy delivery and pricing**

Rand Water receives electricity from Eskom at different tariff rates and from various municipalities at an escalated rate. In this section state the bid price in R/kWh. This is a competitive bidding process and preference will be given to bidders that will bid at a tariff lower than the projected target cost of electricity in R/kWh.

Using the format shown in table 3 below, indicate the monthly energy production and energy prices in year of occurrence. Minimum energy production values must be shown as the guaranteed energy production.

Monthly Energy Production		
Month	Projected (MWh)	Guaranteed (MWh)
January		
February		
March		
April		

May			
June			
July			
August			
September			
October			
November			
December			
<b>Annual</b>			
<b>Prices in year of occurrence</b>			
<b>Year</b>	<b>R/kWh</b>	<b>Year</b>	<b>R/kWh</b>
2025		2038	
2025		2039	
2026		2040	
2027		2041	
2028		2041	
2029		2042	
2030		2043	
2031		2044	
2032		2045	
2033		2046	
2034		2047	
2035		2048	
2036		2049	
2037		2050	
2038			

**Table 8: Energy generation and pricing**

- **Commercial date of operation**

The bidder must provide the anticipated duration for construction and date of commercial operation assuming that financial close is reached by November 2023.

**j) Other information**

Provide any other information that is relevant to the project.

**k) Risk analysis**

Provide the following information regarding risk taking in consideration all Legal, regulatory and partnerships.

- Identification and description of the risks
- Consequences of the risks
- Possible mitigations
- Residual risk after mitigation
- Project risk

## **I) Evaluation criteria**

In addition to other pre-qualifiers and other qualifiers listed in the document the proposal will be selected based on the following technical qualifiers:

- Low cost of energy in R/kWh - LCOE
- Compliance to all relevant standards and codes such as IEC, SANS, and ISO.
- Economical, feasible and viable options for meeting Rand Water's energy needs.
- Duration to commercial date of operation.
- Energy generation (kWh/year), power plants with high energy yield will be preferred.

## **9. Other Project Agreements**

Agreements the IPP's entered with third parties to implement the project:  
These include, but are not limited to:

- Construction Contract (EPC)
- Fuel Supply Agreement (FSA)
- Operation and Maintenance Contract (O&M Contract)
- Finance Documents of agreements

Should it be necessary and only if requested by Rand Water, the Technical Advisor (TA) may assist the Preferred Bidder to negotiating and conclude some of these agreements.

## **10. Project prioritization**

*Project prioritization shall be based on amongst others:*

- Rand Water's strategic objectives.
- The cost effectiveness of the proposed solutions.
- The availability of fuel sources.
- Project readiness of bids received.

## **11. Legal advice.**

IPP to appoint independent legal advisor to assist with:

- Electrical Regulatory issues
- Compliance with Governmental regulations and IPP regulations
- Heritages issues
- Geo-tech issues
- Land ownership
- Land use rights
- Regulatory framework
- Consents, authorities, and signatories
- Operational matters
- Environmental matters
- Competition matters

## **12. Assets currently owned by ESKOM and Municipalities on Rand Water sites**

Presently, Rand Water is being supplied from Eskom and local municipalities and has contractual obligations towards these entities, regarding investments made to upgrade or augment existing infrastructure on site.

The IPP should negotiate with these entities for the purchase of this infrastructure or make provision for the construction of new. All necessary steps must be taken to reach normal agreement or compensation agreements.

## **13. Project Objectives**

It is for the IPP to consider a phased approach on implementation of the project where phase one will be the two proposed Power Stations and phase two the Solar or best technology for Reservoirs and small stations. The second phase may be implemented partial parallel to phase one. The above-mentioned phased approach is to meet Rand Water objectives to mitigate loss of power at its sites. The critical part will be the phase one of the project to be implemented to reach commercial operation of plant.

## **PART C4: SITE INFORMATION**

Site	Long	Lat
Airfield Break Pressure Tank Site	28° 13' 18.466''' E	26° 8' 33.152''' S
Amanzimtoti Pumping Station	27° 53' 50.410''' E	26° 35' 48.840''' S
Barnardsvlei Reservoir Site	27° 30' 44.255''' E	25° 46' 27.346''' S
Barrage Site	27° 40' 51.824''' E	26° 45' 52.812''' S
Benoni Reservoir Site no.1	28° 18' 38.215''' E	26° 9' 39.051''' S
Benoni Reservoir Site no.2	28° 18' 29.461''' E	26° 9' 47.707''' S
Bloemendal Pumping Station	28° 34' 0.775''' E	26° 20' 34.413''' S
Blyvooruitzicht Reservoir Site	27° 24' 32.570''' E	26° 22' 40.715''' S
Borehole ZM30	27° 47' 24.983''' E	26° 19' 16.705''' S
Brakfontein Reservoir Site	28° 9' 40.655''' E	25° 55' 27.833''' S
Bronberg Reservoir Site	28° 20' 30.620''' E	25° 47' 34.161''' S
Buffelshoek Break Pressure Tank Site	27° 33' 54.348''' E	25° 48' 32.119''' S
Cullinan Pumping Station	28° 31' 44.252''' E	25° 40' 48.885''' S
Daleside Reservoir Site	28° 1' 58.728''' E	26° 30' 31.080''' S
Driefontein Reservoir Site	27° 26' 33.635''' E	26° 24' 43.764''' S
Eikenhof Pumping Station	27° 58' 28.167''' E	26° 18' 32.971''' S
Esselen Park Break Pressure Tank & Res.	28° 15' 21.743''' E	26° 1' 8.457''' S
Forest Hill No1 & No3 Res. Sites	28° 2' 28.850''' E	26° 15' 43.795''' S
Forest Hill Res. Site No 2	28° 2' 34.063''' E	26° 15' 28.625''' S
Germiston Reservoir Site	28° 8' 59.990''' E	26° 11' 12.603''' S
Hartebeesthoek Reservoir	28° 4' 50.176''' E	25° 40' 29.202''' S
Ironsyde Pumping Station	27° 54' 46.831''' E	26° 29' 22.363''' S
Isando Reservoir Site	28° 12' 8.685''' E	26° 7' 57.800''' S
Klipfontein Reservoir Site	28° 11' 11.863''' E	26° 4' 41.943''' S
Klipriviersberg Reservoir Site	28° 4' 13.784''' E	26° 16' 13.592''' S
Krugersdorp Reservoir Site	27° 48' 30.098''' E	26° 6' 43.510''' S
Langerand Reservoir Site	27° 52' 56.631''' E	26° 35' 9.015''' S
Lethabo Pumping Station & Barrier	27° 59' 34.900''' E	26° 43' 52.302''' S
Libanon Reservoir Site	27° 37' 32.927''' E	26° 21' 35.780''' S
Mamelodi Booster Pumping Station	28° 26' 14.410''' E	25° 41' 10.908''' S
Mapleton Pumping Station	28° 15' 21.959''' E	26° 21' 36.957''' S
Meredale Reservoir Site	27° 58' 27.475''' E	26° 16' 59.742''' S
Meyer's Hill Reservoir Site	28° 4' 53.221''' E	26° 15' 30.189''' S
Modderfontein East Reservoir Site	28° 25' 26.481''' E	26° 10' 36.729''' S
Northridge Reservoir Site	28° 11' 1.499''' E	26° 10' 10.975''' S
Olifantsfontein- Pretoria -Anode Site	28° 14' 28.763''' E	25° 49' 11.040''' S
Palmiet Pumping Station	28° 5' 21.492''' E	26° 18' 22.227''' S
Panfontein Sludge Disposal Site	28° 2' 45.261''' E	26° 43' 6.724''' S
Roodepoort Booster Pumping Station	27° 55' 41.802''' E	26° 11' 45.955''' S
Sasolburg Reservoir Site	27° 50' 33.719''' E	26° 48' 45.975''' S
Spioenkop Reservoir Site	27° 55' 18.998''' E	26° 25' 39.231''' S
Townlands	27° 13' 21.322''' E	25° 36' 44.905''' S
Trichardt Pumping Station	29° 14' 10.322''' E	26° 27' 35.325''' S
Vereeniging Pump Station	27° 54' 33.278''' E	26° 41' 14.423''' S
Vereeniging Pumping Station	27° 54' 54.156''' E	26° 41' 18.387''' S
Vlakfontein Reservoir Site	28° 22' 15.656''' E	26° 8' 35.895''' S
Waterkloof Break Pressure Tank Site	27° 39' 56.253''' E	25° 57' 57.970''' S
Waterval Reservoir Site	27° 57' 14.076''' E	26° 9' 38.541''' S
Wilbeestfontein Reservoir Site	29° 9' 4.196''' E	26° 26' 55.109''' S
Witpoortjie Reservoir Site	27° 47' 30.813''' E	26° 9' 20.696''' S
Zuikerbosch Control Works	28° 4' 38.124''' E	26° 49' 37.555''' S
Zuikerbosch Pumping Station	28° 1' 0.904''' E	26° 41' 13.519''' S
Zuurbekom No. 2 PS-Borehole Pumping Station	27° 47' 29.662''' E	26° 18' 48.490''' S
Zwartkopjes Pumping Station	28° 4' 36.465''' E	26° 22' 39.023''' S

Sites with capacities smaller than 10 MW

Site	Power plant (Solar / Hydro potential)
Airfield Break Pressure Tank Site	Solar / Hydro
Barnardsvlei Reservoir Site	Solar / Hydro
Barrage Site	Solar / Hydro
Benoni Reservoir Site no.1	Solar
Benoni Reservoir Site no.2	Solar
Blyvooruitzicht Reservoir Site	Solar
Borehole ZM30	Solar
Brakfontein Reservoir Site	Solar / Hydro
Bronberg Reservoir Site	Solar
Buffelshoek Break Pressure Tank Site	Solar / Hydro
Cullinan Pumping Station	Solar
Daleside Reservoir Site	Solar (12MW) <b>Note*</b>
Driefontein Reservoir Site	Solar
Esselen Park Break Pressure Tank & Reservoir depot Site	Solar / Hydro
Forest Hill No1 & No3 Res. Sites	Solar
Forest Hill Res. Site No 2	Solar
Germiston Reservoir Site	Solar
Hartebeesthoek Reservoir	Solar / Hydro
Ironsyde Pumping Station	Solar
Isando Reservoir Site	Solar
Klipfontein Reservoir Site	Solar / Hydro
Klipriviersberg Reservoir Site	Solar
Krugersdorp Reservoir Site	Solar
Langerand Reservoir Site	Solar
Libanon Reservoir Site	Solar
Mamelodi Booster Pumping Station	Solar
Meredale Reservoir Site	Solar
Meyer's Hill Reservoir Site	Solar
Modderfontein East Reservoir Site	Solar
Northridge Reservoir Site	Solar
Olifantsfontein- Pretoria -Anode Site	Solar
Sasolburg Reservoir Site	Solar
Spioenkop Reservoir Site	Solar
Townlands	Solar
Trichardt Pumping Station	Solar
Vlakfontein Reservoir Site	Solar
Waterkloof Break Pressure Tank Site	Solar / Hydro
Waterval Reservoir Site	Solar
Wildebeestfontein Reservoir Site	Solar
Witpoortjie Reservoir Site	Solar
Zuikerbosch Control Works	Solar / Hydro
Zuurbekom No. 2 PS-Borehole Pumphouse	Solar

Rand Water thus invites IPPs and/or interested parties to put forward proposals to supply electrical power to the afore-mentioned stations.

Queries will be discussed at a compulsory clarification meeting to be held at Rand Water's Rietvlei Head Office as advised by the Procurement function.

The Bidder must refer to **ANNEXURE A - Scope of Work (including drawings, where applicable and related available information)** provided with this bid document.

The Bidder must refer to **C4: Site Information** provided with this bid document.

**1. PROCUREMENT** *(in relation to in the Standard for Developing Skills through Infrastructure Contracts (published in GN 43495 of 20 March 2020):*

- a) *The successful contractor may employ part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates directly or through a Skills Development Agency (SDA), (A1 - List of cidb accredited SDAs).*
- b) *The successful contractor shall ensure that no single method shall contribute more than 75% of the CSDG for the contract.*
- c) *The successful contractor may only place 33% employed employees or that of his subcontractors contributing to the CSDG.*
- d) *The successful contractor must employ at least 60% of the learners from an FET / TVET college should the contractor select to have part/full occupational qualification learners and trade qualification learners contributing to the CSDG.*
- e) *The successful contractor shall employ at least **(0.25%)** from eligible part/full occupational qualification learners, work integrated learners or candidates in the employment of the employer.*

**2. MANAGEMENT** *(in relation to in the Standard for Developing Skills through Infrastructure Contracts (published in GN 43495 of 20 March 2020):*

- a) *The successful contractor must keep site records regarding the part/full occupational qualification learners', work integrated learners' or candidates' progress, site attendance, hours worked and other relevant information as required by the Standard.*
- b) *The successful contractor shall provide the required number of appropriately qualified mentors to the maximum number of part/full occupational qualification learners, trade qualification learners, work integrated learners in the proportion as specified in the Standard.*



- c) *The successful contractor shall provide a supervisor to manage the training of the part/full occupational qualification learners, work integrated learners, candidates.*
- d) *The successful contractor shall submit to the employer's representative a baseline training plan in the specified format (Pro-forma A2) for the part/full occupational qualification learners, work integrated learners, within 30 days of start of the contract.*
- e) *The successful contractor shall submit to the employer's representative project interim report in the specified format (Pro-forma A3) on the progress of each of part/full occupational qualification learner, work integrated learner, candidate every three months.*
- f) *The successful contractor shall submit to the employer's representative the names and particulars in the specified format (Pro-forma A4) of the supervisor, mentors for the part/full occupational qualification learners, work integrated learners or candidates within 30 days of start of the contract.*
- g) *The successful contractor shall keep a daily record of all the part/full occupational qualification learners, trade qualification learners, work integrated learners, candidates on site and their daily activities and shall be made available to the employer's representative on request.*
- h) *The successful contractor shall submit to the employer's representative the reports on the progress and status of the part/full occupational qualification learners, work integrated learners or candidates with the monthly invoice for the payment certificate.*
- i) *The successful contractor shall have health and safety inductions for all part/full occupational qualification learners, work integrated learners or candidates.*
- j) *The successful contractor shall conduct entry and exit medical tests of all part/full occupational qualification learners, work integrated learners or candidates.*
- k) *The successful contractor shall provide personal protective equipment (PPE) to all part/full occupational qualification learners, work integrated learners or candidates at the start of their employment on site.*

Annexure A attached contains all standards and specification including Land and rights documentation.

