

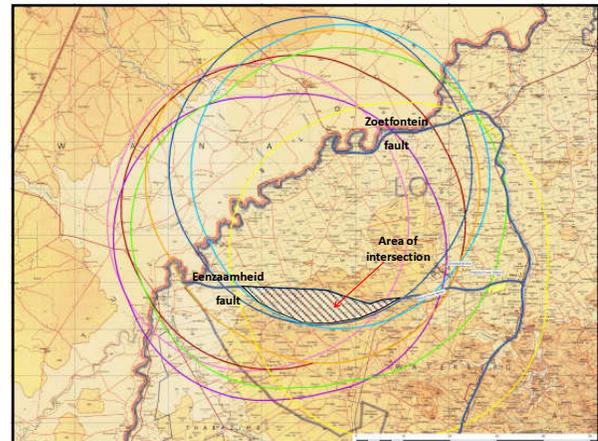
Site Selection: Rationale for Waterberg

- ❖ Expression of interest for coal supply
 - Various coal sources offered
 - Coal source not finalized
- ❖ Waterberg identified as location for further coal-related development
 - Size of coal field
 - Depth to coal
 - Allocation of resources



Site Selection: Rationale for Region Delineation

- ❖ Within South Africa
- ❖ Must be off-coal
- ❖ Distance from the coal
 - Max. feasible distance can transport by conveyor belt = 30 km
- ❖ Must access the shallow Waterberg coal
 - Waterberg coal reserves boundaries:
 - South Africa-Botswana border, Zoetfontein fault (north), Enzaamheid fault (south), Daarby fault (east)

Site Selection: Rationale for Site Delineation

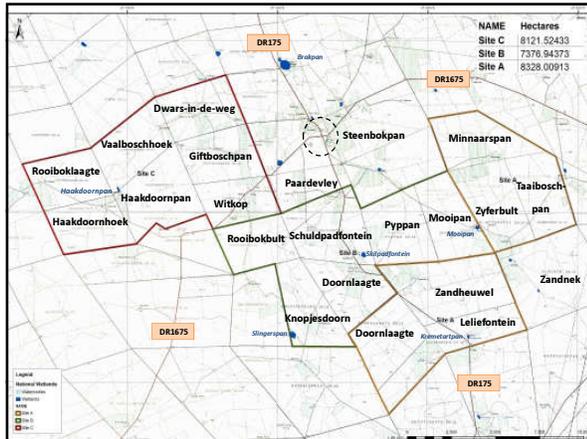
- ❖ Minimum 5 000 ha footprint
 - PS, ash dump, associated infrastructure
- ❖ Boundaries
 - Roads, railways, major powerlines & farm boundaries
- ❖ Buffer zones around residential areas
 - Air quality & noise
- ❖ Other infrastructure
 - Substation
- ❖ Other considerations
 - Topography, vegetation type, sensitive fauna, wetlands and land-use



Site Selection: Three Candidate Sites

| Site A | Site B | Site C |
|---------------------------------|---------------------------------|-------------------------------|
| Minnaarspan Farm No. 322 | Pyppan Farm No. 326 | Dwars-in-die-Weg Farm No. 289 |
| Zyferbult Farm No. 324 | Mooipan Farm No. 325 | Gifboschpan Farm No. 288 |
| Taalboschpan Farm No. 320 | Knopjesdoorn Farm No. 351 | Witkop Farm No. 287 |
| Zandheuwel Farm No. 356 | Ptn of Doornlaagte Farm No. 353 | Rooiboklaagte Farm No. 283 |
| Leliefontein Farm No. 672 | Schuldpadfontein Farm No. 328 | Haakdoornpan Farm No. 673 |
| Ptn of Doornlaagte Farm No. 353 | Rooibokbult Farm No. 330 | Haakdoornhoek Farm No. 333 |
| | Ptn of Paardevley Farm No. 329 | Vaalboschhoek Farm No. 285 |





Terrestrial fauna & flora: Key tasks

- ❖ Provide a broad description of the terrestrial ecological characteristics of the candidate sites & surrounds;
- ❖ ID & describe biodiversity patterns at community & ecosystem level, at species level (Red Data Book species) & in terms of significant landscape features;
- ❖ Recommend mitigation measures;
- ❖ Comment on cumulative impacts of two power stations, as well as Sasol's proposed CTL facility.



Animal toxicology: Key tasks

- ❖ Review ambient air concentrations of particulates (PM₁₀), sulphur dioxide & nitrogen dioxide at the receptor location;
- ❖ Interpret modelled air concentrations of particulates (PM₁₀), sulphur dioxide & nitrogen dioxide in terms of potential health effects on game species.



Aquatic flora & fauna: Key tasks

- ❖ Provide a broad description of aquatic ecology of sites, surrounding wetlands & streams;
- ❖ ID biodiversity patterns at community & ecosystem level, species level (Red Data Book species) & in terms of significant landscape features (e.g. wetlands);
- ❖ Recommend mitigation measures;
- ❖ Comment on cumulative impacts of two power stations & Sasol's proposed CTL facility.



Air quality: Key tasks

- ❖ Establish baseline conditions, by describing atmospheric dispersion potential of the area, existing sources of atmospheric emissions and existing air quality in the area.
- ❖ Predict potential impacts of three scenarios:
 - 6 x 900 MW, pulverised fuel, with FGD on any one site alternative,
 - 6 x 900 MW, pulverised fuel, with FGD on any two site alternatives (i.e. two power stations),
 - A worst case of two 6 x 900 MW (nominal), pulverised fuel, with FGD power stations & Sasol proposed CTL facility.



- ❖ Determine incremental & cumulative pollutant concentrations in the air as a result of construction and operational phases of the proposed power stations;
- ❖ Recommend mitigation measures;
- ❖ Compile an air quality management plan for the proposed power stations, which specifies, *inter alia*, monitoring, mitigation & management measures & stack height.



Groundwater: Key tasks

- ❖ Establish groundwater quality, quantity & flow direction at the sites & pattern of groundwater in the area.
- ❖ Comment on cumulative impacts of the 2nd power station & Sasol's proposed CTL facility.
- ❖ Assess groundwater impacts of above-ground ash disposal, & comment on implications of back ashing & in-pit ashing.
- ❖ Recommend mitigation measures & compile a groundwater monitoring plan for the operational phase of the project.



Visual : Key tasks

- ❖ Describe the receiving environment, establish the view catchment, view corridors, view points, receptors & ID potential lighting impacts at night;
- ❖ Provide simulations for 2 scenarios: 1 power station on each of the alternative sites & 2 power stations on combinations of two of the three candidate sites;
- ❖ Recommend mitigation measures.



Noise : Key tasks

- ❖ Determine the ambient noise context & major noise sources in the area of the sites;
- ❖ Assess the potential noise impacts of two operating scenarios: 1 power station on each of the alternative sites & 2 power stations on combinations of two of the three sites;
- ❖ Recommend mitigation measures.



Societal risk: Key tasks

- ❖ Describe the process & possible major incidents & consequences of such incidents;
- ❖ Estimate consequences of "worst case" scenario for on-site workers health & for an offsite incident for 1 power station on each of the sites & 2 power stations on combinations of 2 of the 3 sites
- ❖ Describe potential effects of a major incident on any other installation, the public and on residential areas;
- ❖ Recommend mitigation measures.



Heritage: Key tasks

- ❖ ID archaeological, cultural & historic sites within the sites;
- ❖ Comment on impacts of 2 power stations & Sasol's proposed CTL facility;
- ❖ Recommend mitigation measures & prepare a heritage resources management plan incl management measures & guidelines on procedures to be implemented if cultural resources are uncovered.



Local economy: Key tasks

- ❖ Establish the region's baseline socio-economic/economic conditions, including identifying up- & down-stream activities that may be influenced by the project;
- ❖ Quantify:
 - Direct & indirect impacts;
 - Induced impacts;
 - Cumulative impacts (additive, synergistic, time crowding & space crowding);
 - Construction (CAPEX Phase) and Operational (OPEX Phase) impacts, separately ;



- ❖ Develop socio-economic & economic management plans, including:
 - Mitigation measures;
 - Practical, realistic implementation guidelines; &
 - Possible targets and action plans to support the implementation guidelines.



Land use and planning: Key tasks

- ❖ Assess policies & proposals in the Municipal IDPs & SDFs & their impact on the proposed project.
- ❖ Assess development proposals (e.g. Sasol’s proposed CTL facility & township), policies & township/rezoning applications approved/being processing, within the area.
- ❖ Comment on exploration & mineral rights for the sites.



Livelihood security: Key tasks

- ❖ ID & assess potential impacts on:
 - Settlement, Land Use & Traversing Patterns;
 - Land ownership & use;
 - Existing social infrastructure & social institutional frameworks & patterns;
 - Community & social dynamics;
 - Comment on individuals & families potentially impacted;
- ❖ Recommend mitigation measures.
- ❖ Comment on the impacts of 2 power stations & Sasol’s proposed CTL facility.



Traffic: Key tasks

- ❖ Determine the current Levels of Service of affected roads. Assess how these would be impacted by 1 & 2 power stations.
- ❖ Analyse the temporary & long term effects of access roads, loading & storage & commuting.
- ❖ Comment on freight & public transport facilities & road infrastructure improvements.
- ❖ Recommend mitigation measures.



Agricultural potential: Key tasks

- ❖ Establish the *status quo* of agricultural resources within the area & at the sites.
- ❖ Determine the soil potential & characteristics (physical & chemical) of the sites.
- ❖ Determine the land capability & land use of the candidate sites.
- ❖ Comment on cumulative impacts of 2 power stations & Sasol’s proposed CTL facility) on the agricultural potential.
- ❖ Recommend mitigation measures.



Specialists

| Specialty | Specialist | Company |
|------------------------|-------------------------|---|
| Air quality | Lucian Burger | AirShed Planning Professionals |
| Noise | Derek Cosijn | Jongens Keet Associates |
| Visual | Eamonn O'Rourke | SEF |
| Terrestrial ecology | Johann du Preez | Makecha Development Association |
| Toxicology | Jan Myburgh | InfoTox |
| Aquatic ecology | Daniel Otto | Golder Associates |
| Groundwater | Andrew Johnstone | GCS |
| Risk | Mike Oberholzer | Riscom |
| Archaeological | Johnny van Schalkwyk | Private consultant |
| Socio-economic | Ben van der Merwe | Urban-Econ |
| Social impact | Ilse Aucamp | Ptersa Environmental Management Consultants |
| Land use & planning | Wim Jacobz | Winterbach, Potgieter and Associates |
| Traffic | Louis de Villiers Roodt | Nodana Consulting Engineers |
| Agricultural potential | Alta van Dyke | Ivuzi Environmental Consulting |

