

ANNEXURE B

REQUIREMENTS FOR WATER USE LICENCE APPLICATION: GROUNDWATER ABSTRACTION [S 21 (a)]

The *Initial Regional* assessment is needed to determine the amount of information necessary for each new Water Use licence application for abstraction from groundwater, based on the amount of recharge that is used by the applicant in relation to the specified property.

Categories A, B and C list the information requirements for the licence application, as should be provided by the applicant to the Department of Water Affairs & Forestry.

Regional - Initial

- Size of property ($AREA_{PROP}$)
- Recharge - HP (RE)
- Existing use volume (ABS_{EX})
- New use volume (ABS_{NEW})
- Scale of abstractions (ABS_{SCALE})

CALCULATION

$$AREA_{PROP} * RE = RE_{AREA} (m^3/a)$$

$$ABS_{EX} + ABS_{NEW} = ABS_{TOTAL} (m^3/a)$$

$$ABS_{SCALE} = (ABS_{TOTAL} / RE_{AREA}) * 100$$

Small scale abstractions (<60% recharge on property)

Category A

Medium scale abstractions (60-100% recharge on property)

Category B

Large scale abstractions (>100% of recharge on property)

Category C

The Regional RDM support is info that should be submitted with the request for a Reserve determination. This will not only speed up the process, but also render more confidence to the Reserve determination.

Regional - RDM support

- Delineate resource units (default quaternary, unless geologically different)
- Delineate response units (same as resource unless existing information shows otherwise)
- Drainage (rivers and gauging stations in the resource unit area)
- Climate (average rainfall, reference source)
- Vegter regions (hydrological regions and recharge)
- Geo-hydrology - wq, wl, aquifer tests, main fracture zones – storage, sustainable yield, assurance of supply?
- Aquifer status: Local expert consideration (reference source), natural / impacted (mapping these areas in the resource unit), importance (both socio-economic and strategic), vulnerability, dependent ecosystems, total current use, classification (Parsons and current resource classification system).
- Licensing conditions - wl, wq, level of acceptable degradation?
- Monitoring requirements - according to the Category.
- Site visit necessary to validate all info - regional and applicant

Category A

- Volume and purpose of the water required.
- Detail borehole census on the property in question. Information to be collected should include pump depth / borehole depth, depth to water level, yield of the borehole, volume abstracted (daily, weekly, monthly).
- Proximity to surface water discharges (springs, seeps, wetlands streams, rivers, lakes) and groundwater dependant ecosystems.
- Geo-referenced map of the property in question, with boreholes, physical structures (houses, stores, irrigation equipment) and current pollution sources (septic tanks, pit latrines, petrol/diesel tanks, irrigation areas) depicted.
- Monitoring programme - monthly water levels, monthly rainfall.

Category B

- Geology of the area / borehole?
- Volume and purpose of the water required.
- Detail borehole census within a 1km width zone around the property in question as well as on the property itself. Information to be collected should at least include pump installation/ borehole depth, depth to water level, yield of the borehole, volume abstracted (daily, weekly, monthly), water quality (one macro analysis per property).
- Proximity to surface water discharges (springs, seeps, wetlands streams, rivers, lakes) and groundwater dependant ecosystems.
- Geo-referenced map of the property in question, with boreholes, surface water features, physical structures (houses, stores, irrigation equipment) and current pollution sources (septic tanks, pit latrines, petrol/ diesel tanks irrigation areas) depicted.
- Contact details of relevant parties in the hydro census area.
- Potential impacts of potential use on groundwater and surface water quality.
- Monitoring programme - weekly water levels, weekly rainfall, 6 monthly macro analysis and surface water discharges in the 1km width zone.

Category C

- A geo-hydrological report compiled by an acceptable and qualified geo-hydrological consultant. Report should include appropriate maps, tables and figures to support the conclusions and recommendations.
- Detail geology of the area, including structures, maps etc.
- Detail borehole census within at least 1km width zone around the area of recharge as well as on the area itself. Information to be collected for each borehole should at least include pump installation depth, borehole depth, depth of water level, yield of the borehole, depth of water strike(s), volume abstracted (daily, weekly, monthly) and water quality (one macro analysis per property in the zone).
- Aquifer description and characteristics including extent of the aquifer and hydraulic properties (storativity and transmissivity). This would require testing. Drilling might or might not be required. Groundwater piezometric contour map showing flow direction and a depth to water level contour map.

- Effective annual recharge on this property and the safe yield of the aquifer.
- Volume and purpose of the water required and the volume available for abstraction. A water balance that at least cover the aquifer unit in which the property is located should, in other words, be done that includes all gains and losses.
- Contact details of relevant parties in the hydro census area.
- Impact the abstraction will have on existing users and surrounding properties. This should be short- and long-term impact. This might have to be supported by a numerical model.
- Proximity to and potential impact of the abstraction on surface water discharges and groundwater dependant terrestrial ecosystems.
- Potential impact of potential use on groundwater and surface water quality.
- Geo-referenced map of the property in question, with boreholes, surface water features, geological features, physical structures (houses, stores, irrigation equipment) and current pollution sources (septic tanks, pit latrines, petrol/ diesel tanks, irrigation areas) depicted.
- Monitoring programme - weekly water levels, weekly rainfall, 3 monthly macro analysis and surface water discharges and 6 monthly qualities in the 1km width zone.

The Department of Water Affairs and Forestry recommends that the following measures be taken when testing bore holes for sustainable yields and to provide the following information:

- Refer to test procedures in the South African National Standards Code No.: SANS 10299.
- Perform a three (3) hour stepped draw down test to determine the discharge rate of the intended constant rate test OR;
- The constant discharge test should be done at approximately $\frac{2}{3}$ of the blow yield of the bore hole.
- For **HOUSEHOLD** use it as recommended that a 8 hour constant rate test be performed with the draw down and the recovery measured.
- For **IRRIGATION** it as recommended that a 24 constant rate test should be performed while the draw down and the recovery is measured. This test could also be performed for intended **BULK WATER SUPPLY** for a volume of up to 150 000 m³ per annum.
- For **BULK WATER SUPPLY** in excess of 150 000 m³ per annum it as recommended that a 72 hour constant rate test should be performed while the draw down and the recovery of the bore hole is measured.
- All data as obtained above should be attached to the relevant Water Use License Application forms, together with an analysis of the data (including draw down curves) and recommendation for the sustainable yield of the borehole(s), by a qualified Geo-hydrologist .

NOTE: The above-recommended requirements may change without prior notice as required by DWAF to effectively manage the respective water resource.