

**A STRATEGY FOR MONITORING AND
ASSESSMENT TO SUPPORT WATER
RESOURCES MANAGEMENT**

Appendix 7

**Preliminary List of Detailed Data and Information Requirements for Water
Resources Management**

Compiled by J Moolman, IWQS 21 Feb 2000

PRELIMINARY LIST OF DETAILED DATA AND INFORMATION REQUIREMENTS FOR WATER RESOURCES MANAGEMENT

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|---|--|
| <p>1. Boundaries/Cadastral</p> <ul style="list-style-type: none"> - international - provincial - magisterial districts - local authorities - district council - TLC's - catchment/drainage areas - catchment management areas - farms + portions (including last 100 years) - building registration districts - registration districts - Government Water Control Areas - Water Board Control Areas - irrigation districts - surveyor general survey diagrams - DWAF project areas - 1:50 000 map sheet boundaries - 1:250 000 map sheet boundaries - 1:500 000 map sheet boundaries | <ul style="list-style-type: none"> - community income - levels of water and sanitation services |
| <p>2. Climate</p> <ul style="list-style-type: none"> - rainfall - rainfall stations - evaporation - temperature - wind - climate zones of South Africa | <p>4. Ecological</p> <ul style="list-style-type: none"> - species distribution - animal habitat - existing macro-invertebrate monitoring sites - macro-invertebrate data (SASS) - fish - exotic species - flora and fauna - riparian vegetation - ecoregions - bioregions - Aquatic weeds - Species diversity |
| <p>3. Demography</p> <ul style="list-style-type: none"> - census - population projections/growth - population distribution/density - poverty indexes - economic information - population by income levels - rural/urban/peri-urban | <p>5. Geology + Geohydrology</p> <ul style="list-style-type: none"> - lithology - structure - stratigraphy - geophysical - geochemical - palaeontology - aquifers <ul style="list-style-type: none"> - types - thickness - recharge - potential - vulnerability - mineral occurrences - construction material occurrences - mineral rights ownership |
| | <p>6. Geomorphology</p> <ul style="list-style-type: none"> - longitudinal geomorphological river zones - channel condition |

- channel morphology
7. Hydrology
- median annual simulated runoff
 - measurements of daily flow
 - coefficient of variation of annual simulated runoff
 - simulated MAR per quaternary drainage region
 - simulated monthly flow volumes per quaternary catchment
 - levels of assurance of defined flows
 - coefficients of variation - annual, seasonal monthly, daily
 - index of baseflow contribution
 - hydrologic zones
 - water status map
 - flood lines
 - flood peaks
 - flood history
 - irrigation potential
 - flow data
 - volumes
 - dam levels
 - transfer schemes
 - groundwater
 - static water level contour map
 - borehole yields
 - stream order
 - river source distance
8. Infrastructure
- roads
 - bridges
 - railways
 - towns + cities
 - settlements
 - powerlines
 - existing telemetry corridors
 - telephone lines
 - existing servitudes
- emergency services
 - UHF + HF radio network
 - refuse/waste disposal sites
 - location of clinics + creches
 - factories
 - aspect
9. Land Cover + Land Use
- satellite imagery
 - aerial photographs
 - orthophotos
 - land use
 - present
 - potential
 - dense bush
 - plain bush
 - alien vegetation
 - forest
 - indigenous
 - composition type
 - age class
 - commercial
 - age class
 - species type
 - secondary processing
 - prices
 - production volumes
 - non-timber forest types
 - communities around forests
 - community forestry projects
 - urban forestry (streets + parks)
 - provincial
 - national
 - woodlots
 - cultivated areas
 - conservation areas
 - agriculture
 - industrial

- mines
 - underground workings
 - mine dumps + slimes dams
 - rural settlements
 - vegetation
 - Low + Rebello
 - Acocks
 - Rutherford + Westfall
 - veld type distribution
 - bare surface
 - grasslands
 - grave sites
10. Legal/Administrative
- deeds
 - land ownership
 - mineral rights ownership
 - water rights
 - water allocation permits
11. Pedology
- soil maps
 - soil profiles
 - soil texture
12. Topography
- elevation
 - DTM
 - contour maps
 - trig beacons
 - slopes
 - physiographic regions
 - terrain morphology
 - altitude zones
 - channel slope
 - catchment relief
13. Water Infrastructure
- rivers
 - abstraction points
 - discharge points
 - monitoring points
- flow gauging stations
 - type of measuring structure
 - upstream catchment area
 - start date
 - boreholes
 - water care works
 - dams
 - locations
 - drawings
 - foundation
 - capacity
 - surface area volume relationship
 - date built
 - design parameters
 - recreation zoning
 - bathymetry
 - sediment surveys
 - canals
 - pipelines
 - pump locations
 - springs
 - pans
 - existing + proposed DWAF schemes
 - weirs
 - flood control
 - voice + telemetry schemes
 - municipal water schemes
 - service coverage
14. Water Quality
- pollution distribution
 - water chemistry regions
 - monitoring programme information
 - DWAF Water Quality Guidelines
 - chemical data
 - major inorganic constituents
 - minor inorganic constituents
 - organics
 - nutrients
 - microbiological data
 - physical data
 - temperature

- oxygen
- turbidity
- suspended solids
- radioactivity
- toxics
- erosion and sedimentation
- groundwater quality

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DWAF (various directorates)

- Dir: Institute for Water Quality Studies (IWQS)
- Dir: Geomatics
- Dir: Hydrology
- Dir: Project Planning
- Dir: Geohydrology
- Dir: Social and Ecological Services-Department of Water Affairs and Forestry

Institute for Water Research - Rhodes University

Water Research Commission

Council for Geoscience

Chief Directorate of Surveys and Land Information - Department of Land Affairs

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