Western Cape IWRM Action Plan

Status Quo Report
Contents

Order of Presentation

• Introduction to IWRM
• Brief review of the Status Quo Report
• Gap Synthesis and Recommendations
Integrated Water Resources Management

What is IWRM?

Integrated water resources management is a process for co-ordinated planning and management of water, land and environmental resources. It takes into account the amount of available water (Surface and groundwater), water use, water quality, environmental and social issues as an integrated (combined) whole to ensure sustainable, equitable and efficient use.
Water Management Areas of the Province

- Lower Orange
- Olifants Doorn WMA
- Berg WMA
- Breede WMA
- Gouritz WMA
- Fish to Tsitsikamma
- Upper Orange
Brief review of the Status Quo Report

Contents:

• Legislative Review
• Institutional Arrangements
• Existing Water Management strategies and plans
• Brief summary of the four WMAs in the province
• Water quality
• Land use impacts
• Climate change
Legislative Review

Legislation Reviewed included *inter alia*:

- National Water Act, Act 36 of 1998 (NWA)
- National Environmental Management Act, Act 107 of 1998 (NEMA) and Specific Environmental Management Acts
- Municipal Systems Act, Act 32 of 2000
- Municipal Structures Act, Act 117 of 1998 and Amendments
- Water Services Act, Act 108 of 1997
- National Forest Act
- Heritage Act
- Minerals Act
Legislative Review continued…

Findings:

- Areas of overlap or conflict between statutes:
  - Definitions
  - Plans
  - Administrative enforcement notices
- Liability of Organs of State
- Bylaw enforcement
Institutional Review

Reviewed according to government sphere’s responsibilities within the following themes:

- Water Resources Management
- Water Services and Sanitation
- Environmental Management
- Agricultural Resources
- Forestry
- Mining
- Planning and Development
- Disaster Management
- Cooperative Governance
- Financial Management
Findings:

- Resource management at National and Provincial level, but land use management at municipal level.
- Insufficient institutional capacity leading to timeous delays in issuing authorisations, limited monitoring, limited enforcement, limited cooperative governance.
- Institutions operating and making decisions in “silos”
- Appropriate training for staff not readily available, e.g. WWTW operators.
Existing Water Management Strategies

Strategies Reviewed *inter alia*:

- National Water Resource Strategy
- Breede Catchment Management Strategy
- Internal Strategic Perspectives
- Water Reconciliation Strategies
- Water Conservation / Water Demand Management (WC/WDM)
- All Towns Study
- Water Service Development Plans
- Provincial Growth & Development Strategy
Existing Water Management Strategies

Review:

- Comprehensive Strategies and Plans are generally in place in the province.
- Although strategies are being implemented incrementally, there are still challenges due to the scale of what is required e.g. aspects identified in ISPs are being addressed.
- Long term WR Management planning needs to take place in smaller towns.
- Provincial Strategies should emphasize environmental sustainability and stress that water is a major driver (and limiter) of development. I.e. economic planning and environmental resource sustainability must be more integrated.
Four Water Management Areas

Review included:

- General climate, topography etc.
- Water Quality
- Groundwater
- Water Resources Infrastructure
- Strategic Perspectives from the ISPs
- Water availability and utilisation
- Operation of WWTWs
- Water Conservation and Demand Management (WCDM)
- Recent Interventions
- BITT priorities
- Problem synthesis
Example of Information Used in each WMA
Example of Information Used in each WMA
Example of Information Used in each WMA
Berg WMA

Key Issues:

• Water quality issues pose a threat to the export fruit market.
• Water availability surplus (Berg Water Project) since 2007.
• By 2019 (or earlier if WCDM is not fully successful), a new scheme will be required.
• More expensive options (water reuse, desalination) will prevail as remaining conventional options are very limited.
• Groundwater over-abstraction in some areas requires a cautious approach to further allocation in those areas.
• Reconciliation Strategy planning by DWA is ongoing and must be fully supported.
Key Issues:

- Geology and intensive irrigation impact on salinity in middle and lower Breede River.
- Cumulative impact of irrigation with high COD concentrations (e.g. winery effluent) is a concern.
- There is an over utilisation of groundwater in some areas e.g. Ceres & Hex Valley areas.
- Uncertainty regarding the availability of water in the Breede River system. DWA plan to conduct an updated hydrology and land use study. Until then, the opportunity for further allocation of water from the Breede system remains uncertain.
Key Issues:

- Over-allocation in the Klein Karoo (irrigation sector) is resulting in low assurance of supply to farmers.
- WCDM opportunities such as canal refurbishment and lining has potential but ownership issues and cost are constraints.
- There is over-abstraction of groundwater, e.g. between Beaufort West and Laingsburg.
- Groundwater monitoring is not adequate.
- Saline intrusion is a risk along the coast.
- The potential for artificial aquifer recharge has been identified e.g. Sedgefield.
Key Issues:

- Water quality deteriorates in a downstream direction (natural geology and irrigation), especially in summer months.
- Groundwater over abstraction (Kouebokkeveld and Vredendal areas) requires a cautious approach.
- Canal refurbishment downstream of Clanwilliam Dam offers opportunity but will be expensive.
- Clanwilliam Dam is scheduled to be raised by up to 13m (Commencement of decision is pending).
- Low assurance of supply to downstream users from the canals.
- Study on potential water use from the raised dam is out for tender.
Findings:

• Deteriorating Water Quality is major threat to ability to meet developmental needs and environmental sustainability

• Geology (especially Shales) and Irrigation return flows contribute significantly towards salinity.

• Many WWTWs fail to meet one or more of the required discharge standards.

• Runoff from dense urban settlements/areas with poor sanitation

• Surface water quality monitoring is undertaken by different authorities and held in different databases.
Findings:

• Informed by the Provincial Spatial Development Framework (PSDF), as this strategy must link horizontally to PSDF

  • Informal settlements - Non-point source discharge
  • Mining – Illegal sand mining
  • Forestry – Change in land use: biodiversity vs. urban development
  • Agriculture – Water quality and efficiency; crop suitability
  • Conservation & Biodiversity – Impact of water quality on protected quaternary catchments (NFEPAs)
  • Invasive & Alien Vegetation- continued removal and management of IAPs
Western Cape IWRM Action Plan

WWTW, Discharge Points and NFEPA Priority Catchments - Berg WMA

NFEPA: Berg WMA
## Priority NFEPA sites

### Priority WWTW impacting on NFEPA Sites

<table>
<thead>
<tr>
<th>WMA</th>
<th>BERG</th>
<th>OLIFANTS-DOORN</th>
<th>BREEDE-OVERBERG</th>
<th>GOURITZ</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WWTWs or Discharge point</strong></td>
<td>Riebeeck Kasteel</td>
<td>Clan William Citrusdal</td>
<td>Swellendam Bredasdorp Kleinmond Worcester De Doorns</td>
<td>Prince Albert Oudtshoorn Mossel Bay Riversdale Touwsrivier Laingsburg</td>
</tr>
</tbody>
</table>
Documents Reviewed:

- A climate change strategy and action plan for the Western Cape (2008).
- A climate change strategy and action plan for the Western Cape: Responding to the challenge of climate change and sustainable development in the Western Cape (2007).
- The economic impact of future water restrictions on irrigation agriculture in the Upper-Berg irrigation area. Research report.
### Expected changes in climate:

<table>
<thead>
<tr>
<th>Change to Climate variable</th>
<th>Primary impacts</th>
<th>Secondary impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Higher mean temperature</td>
<td>Increased severity of drought</td>
</tr>
<tr>
<td></td>
<td>Higher maximum temperatures, more hot days and heat waves</td>
<td>Decrease in relative humidity</td>
</tr>
<tr>
<td></td>
<td>Higher minimum temperatures, fewer cold days and frost days</td>
<td>Increased intensity of extreme events (flooding, storms</td>
</tr>
<tr>
<td></td>
<td>Decrease in precipitation</td>
<td>and fires)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increased mean sea level</td>
</tr>
</tbody>
</table>
Climate Change continued...

Anticipated impacts:

• Wine estates may need to change cultivars.
• Cold climate fruits may be impacted, e.g. pears and apples.
• Increased electricity consumption for cooling.
• Increased water demand.
Gap Synthesis & Initial Recommendations

List of Gap Themes

1. Institutional Capacity and Functions
2. Cooperative Governance: Integrated Authorisations
3. Enforcement and Legislation
4. Implementation of WCDM
5. Ecological Sustainability of Water Resources
6. Water Scarcity
7. Water Quality
8. Groundwater
9. Allocation of Budget
10. Planning
11. Infrastructure Ownership
12. Access to Information
1. Institutional Capacity and Functions

Gaps:
- Continuity of Leadership
- Institutional Functions
- Occupational Service Dispensation (OSD)
- Skills Development and Career Advancements

Recommendations:
- Phased implementation of OSD.
- Appropriate WWTW training, e.g. operators.
- Budget for institutional management.
2. Co-operative Governance: Integrated Authorisations

Gaps:

• Attendance at forums by appropriate staff (lack of capacity)
• Overlap in requirements of statutes, plans, regulations etc.
• Need Streamlined approval processes.
• Shortage of Staff causes Delays in Approval Processes.

Recommendations:

• Develop a protocol for issuing integrated authorisations for specific activities.
• Streamline approval process. E.g. one plan that meets all requirements.
• Establish a centralised Water Working Group to co-ordinate all existing National, Provincial and Local Government forums that address integrated water resource management.
3. Enforcement and Legislation

Gaps:

- Monitoring Compliance and Enforcement: Authorisations
- Non compliance of the State
- Conflicts with National Legislation
- Penalties are too lenient

Recommendations:

- General legislative review to address gaps/overlaps in definitions between legislation and update penalties.
- Enforcement of senior officials of Organ’s of State.
- Continue roll-out of EMI training, tailored for relevant tasks.
- Decision support tree to identify points for cooperative governance in enforcement and regulation.
4. Implementation of WCDM

Gaps:
- Lack of adequate budgets
- Limited Capacity and Technical Competency
- WCDM is urgently needed to reduce water requirements
- Stepped tariffs

Recommendations:
- WCDM a pre-requisite before undertaking further development of new water supply schemes e.g. waste water reuse
- All water uses to be appropriately metered.
- Building regulations to specify water efficient fittings in new and refurbished buildings.
- Make budget available for “Soft” WCDM measures.
- Municipalities to develop WCDM implementation plans.
5. Ecological Sustainability of Water Resources

Gaps:
• Planning and Development Decisions
• Over allocations
• Implementation of the Ecological Reserve

Recommendations:
• Compulsory licensing to address over-allocation and implementation of the Ecological Reserve.
• Ecological integrity should also be emphasis as part of sustainable development in all provincial plans.
6. Water Scarcity

Gaps:
- Increasing Water Requirements
- Limited Implementation of WCDM
- Climate Change uncertainties
- Implementation of the Ecological Reserve
- Reaching the limit of affordable Conventional Water Resources, therefore need to develop non-conventional sources, e.g. desalination, water reuse, deep groundwater.

Recommendations:
- Scale of water restrictions (low = day to day use – high = drought time).
- Active participation and representation to the Western Cape Reconciliation Strategy Steering Committee.
- Appropriate public awareness campaign, e.g. similar to electricity warning.
- Explore concept of virtual water trading.
7. Water Quality

Gaps:

- Deteriorating Water Quality is major threat to ability to meet developmental needs and environmental sustainability.
- DWA are busy updating their water quality guidelines.
- Geology (especially Shales) and Irrigation return flows impact on salinity.
- Non-compliance of effluent from many WWTWs.
- Runoff from dense urban settlements/areas with inadequate sanitation services.
- More monitoring required particularly for groundwater.
- Where water quality issues occur at known locations of high risk, continuous monitoring is recommended.
- Specific monitoring sites are needed to monitor discharges from wineries, fruit processing industries and other industrial dischargers.
Recommendations:

• Improve water quality monitoring initiatives and implement standard sampling and analysis protocols

• Establish a central database of monitoring information.

• The DWA Waste Discharge Charge system must continue to be implemented.

• The implementation of the DWAs water resource quality objectives must continue to be implemented.

• The setting of management classes Specific monitoring sites are needed for discharges from wineries and fruit processing industries.
8. Groundwater

Gaps:

- Groundwater use is increasing, resulting in over-abstraction in some areas
- Over allocation exists in certain areas (such as Stompdrift-Kamannassie scheme in the Klein Karoo).

Recommendations:

- Need for more active groundwater management.
- Monitoring required to support aquifer-level assessment and not just individual boreholes.
- Conjunctive use of surface and groundwater is encouraged.
- An artificial aquifer recharge pilot project should be implemented where studies have found this to be viable (eg Sedgefield).
9. Allocation of Budget

Gaps:
- Allocation of Municipal Budgets
- Allocation for implementing NWRS

Recommendations:
- Planning and budgets for water resource development must take a long-term view (10-25 year horizon).
- Appropriate preparedness planning for slow onset disasters such as drought and climate change which must be communicated to the public on a regular basis.
- There should be proactive maintenance of infrastructure.
- Adequate budgets for maintenance and development of essential water and sanitation related infrastructure must be identified, ring-fenced and implemented.
Gaps:
- Water resource domains do not correspond with municipal boundaries
- New developments do not always consider water availability and waste water treatment capacity
- Disaster Management planning in some areas may not be adequate

Recommendations:
- Economic and growth planning, and environmental resources sustainability must become more integrated.
- Municipalities to complete a water balance prior to approving new development and ensuring sufficient capacity.
- Develop a priority strategy to protect the identified priority NFEPA sites in the Province.
- Include Disaster Risk assessment as part of EIA supporting documentation.
11. Infrastructure Ownership

Gaps:
- Potential for significant savings in water losses in conveyance canals but upgrades are not likely to be affordable by the irrigation sector (WCDM and Budget limitations)

Recommendations:
- Reconsider funding models to encourage private investment and identify opportunities for a shared financial model between the relevant stakeholders.
- Reconsider if canal refurbishments and linings are realistic options, and identify other potential beneficiaries, such as emerging farmers.
12. Access to Information

Gaps:

- Access to Information and sharing of information is not optimal
- Data Quality varies between institutions
- The centralisation of information (for example water quality monitoring) is not optimal

Recommendations:

- Consider establishing a central library at appropriate sphere of government. Explore the possibility of establishing a call centre / web-based information access that links to the central library.
- Develop a standard list of abbreviations and set minimum requirements for annotation of spatial data (such as GIS coverages).
- A centralised monitoring and evaluation system needs to be in place to track progress made against plans developed.
Way Forward

What now?

• Finalise Status Quo Report and produce hard copy versions.
• Presentation - 29 July 2011.
• Phase I of the study will be complete.

Phase II

• Commence Phase II of the study: workshops with stakeholders to develop the Action Plan
• Table Draft Action Plan for comment.