

## WASBANK RIVER WATER QUALITY MANAGEMENT STRATEGY – ACTION PLAN FOR IMPLEMENTATION

<u>Management Approach</u>	<u>Management Action</u>	<u>Function [Notes]</u>	<u>Responsibility</u>	<u>Time schedule</u>
<p><b><u>POLLUTION CONTROL AT SOURCE</u></b></p> <p>Assessment of pollution sources</p>	Identify and quantify possible sources of pollution in the lower subcatchments	<ul style="list-style-type: none"> <li>Expand monitoring programme in Tholeni area</li> <li>Identify new sources and report to DWAF representative</li> <li>Routine inspections to identify and investigate new sources</li> </ul>	<ul style="list-style-type: none"> <li>DWAF</li> <li>Community</li> <li>DWAF representative</li> </ul>	On-going
	Identify and quantify (as far as possible) diffuse sources of pollution associated with the salinity-problems experienced in the catchment	<ul style="list-style-type: none"> <li>Initiate water quality profile along river</li> <li>Identify all unknown impacts/sources</li> </ul>	DWAF	July 2000
	Installation of flow-measuring weirs at strategic points in the catchment to quantify the impact from various sources	<p><u>Upper catchment</u></p> <ul style="list-style-type: none"> <li>Install flow-measuring weirs at Burnside Colliery</li> <li>Calibrate flow-measuring weirs</li> <li>Continue monitoring on a weekly basis</li> </ul> <p><u>Lower catchment</u></p> <ul style="list-style-type: none"> <li>Investigate suitable site for a flow-measuring weir u/s of confluence with Sundays River</li> </ul>	DWAF	<ul style="list-style-type: none"> <li>Completed installation</li> <li>Calibration as soon as possible</li> <li>June 2000</li> </ul>
	Verify the background TDS-values for the lower Wasbank River catchment	Expand monitoring programme in unpolluted subcatchments on a monthly basis for one hydrological year	DWAF	January 2000 – December 2000

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<b><u>POLLUTION CONTROL AT SOURCE</u></b>  Development of land use and operational strategies	Implement land use strategies for afforestation and erosion control to minimise impact from these land use activities	<ul style="list-style-type: none"> <li>• Collect all available strategies/ guidelines and develop a simplified summary thereof</li> <li>• Distribute strategies/guidelines</li> <li>• Audit implementation</li> </ul>	Agriculture DWAF KZNCS	<ul style="list-style-type: none"> <li>• October 2000</li> <li>• November 2000</li> <li>• On-going</li> </ul>
	Develop and implement a strategy to conserve and rehabilitate the Paddavlei-area in the upper reaches of the Wasbank River catchment	<ul style="list-style-type: none"> <li>• Develop strategy</li> <li>• Audit implementation</li> </ul>	Agriculture DWAF KZNCS	<ul style="list-style-type: none"> <li>• December 2000</li> <li>• On-going</li> </ul>
	Develop and implement operational strategies for sewage pump stations and pipelines in formal settlements	<ul style="list-style-type: none"> <li>• Develop operational and maintenance strategies/guidelines</li> <li>• Audit implementation</li> </ul>	<ul style="list-style-type: none"> <li>• Local Authorities</li> <li>• DWAF</li> </ul>	<ul style="list-style-type: none"> <li>• December 2000</li> <li>• On-going</li> </ul>
<b><u>POLLUTION CONTROL AT SOURCE</u></b>  Management of informal and semi-formal settlements	Identify and provide for the water supply, sanitation facility and waste disposal needs in settlements	<ul style="list-style-type: none"> <li>• Identify needs</li> <li>• Initiate process through letter to responsible authorities</li> <li>• Develop plans and proposals to upgrade and install facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Forum</li> <li>• DWAF</li> <li>• Local Authorities CWSS</li> </ul>	<ul style="list-style-type: none"> <li>• Completed</li> <li>• October 2000</li> <li>• PRIORITY</li> </ul>
<b><u>RESIDUAL IMPACT CONTROL</u></b>  Refinement of objectives	Determine the actual potential (commercial and economical) for irrigation	Complete survey report	Agriculture	September 2000
	Determine the current and future class of the Wasbank River	<i>[Dependent on the Reserve determination – refer to page v: Ensure adequate surface water flow]</i>	DWAF	Dependent on national priority
	Determine the resource quality objectives for the Wasbank River	<i>[Dependent on the Reserve determination - refer to page v: Ensure adequate surface water flow]</i>	DWAF	Dependent on national priority

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<b><u>RESIDUAL IMPACT CONTROL</u></b> Setting of compliance requirements	Set compliance requirements for sewage works (both formal and informal settlements), waste disposal sites, mining operations (both abandoned and operational)	<ul style="list-style-type: none"> <li>• Stipulate compliance requirements</li> <li>• Revise water use licences</li> <li>• Enforce requirements</li> </ul> <i>[Dependent on finalisation of water quality simulation model – refer to page viii: Implementation actions]</i>	DWAF	Commence April 2001
<b><u>RESIDUAL IMPACT CONTROL</u></b> Treating of residual impact	Develop and implement backup systems for sewage pump stations and pipelines in formal settlements in the case of failure or emergency spills	<ul style="list-style-type: none"> <li>• Develop contingency plans</li> <li>• Audit implementation</li> </ul>	<ul style="list-style-type: none"> <li>• Local Authorities</li> <li>• DWAF</li> </ul>	<ul style="list-style-type: none"> <li>• December 2000</li> <li>• On-going</li> </ul>
	Flood-releases during high-flow periods	Initiate investigation to evaluate the option of flood-releases from the attenuation dams at Burnside and Indumeni Collieries during high-flow periods <i>[Dependent on finalisation of water quality simulation model – refer to page viii: Implementation actions]</i>	DWAF	Commence April 2001
	Treatment options to reduce the residual impact from the coal mines situated in the upper reaches of the catchment	Initiate investigation to evaluate different treatment options to reduce the residual impact from the coal mines <i>[Dependent on finalisation of water quality simulation model – refer to page viii: Implementation actions]</i>	DWAF	Commence April 2001

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<p><b>REMEDIATION</b></p> <p>Remediation of historical mining operations</p>	<p>Implementation and upgrading of pollution control structures</p>	<ul style="list-style-type: none"> <li>• Implementation of pollution control structures if in absence</li> <li>• Upgrading of existing pollution control structures</li> <li>• Implementation of additional pollution prevention structures if inadequate</li> <li>• On-going maintenance programme to ensure the functionality of the pollution control structures</li> </ul>	<p>DWAF – abandoned mines</p> <p>Mining companies – operational and moth-balled operations</p>	<p>On-going</p>
	<p>Develop and implement management plans to address impacts</p>	<ul style="list-style-type: none"> <li>• Develop EMP's and closure plans to manage impacts if not State responsibility</li> <li>• Audit implementation</li> </ul>	<ul style="list-style-type: none"> <li>• Mining companies DME</li> <li>• DME</li> </ul>	<ul style="list-style-type: none"> <li>• June 2000</li> <li>• On-going</li> </ul>

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<p><b><u>ENSURE ADEQUATE SURFACE WATER FLOW</u></b></p> <p>Ensure adequate surface water flow, to increase base-flow conditions</p>	Re-evaluate the hydrology pattern of the Wasbank River catchment	Update flow records based on additional flow measurements obtained through the installation of flow-measuring weirs Minimum data required: one hydrological year [Refer to page i: Pollution control at source]	DWAF	Commence April 2001
	Determine the basic human needs Reserve and ecological Reserve for the Wasbank River catchment	<ul style="list-style-type: none"> <li>• Determine intermediate and/or full Reserve</li> <li>• Determine desk top estimate in the interim</li> </ul>	DWAF	<ul style="list-style-type: none"> <li>• Dependent on national priority</li> <li>• December 2000</li> </ul>
	Quantify and assess water use and land use	<ul style="list-style-type: none"> <li>• Evaluate water use in the catchment in accordance to the Reserve determination and based on the refined hydrology pattern of the catchment</li> <li>• Revise water use licences</li> </ul>	DWAF	Commence April 2001
	Implement land use strategies for afforestation, irrigation and impoundments to encourage unpolluted runoff	<ul style="list-style-type: none"> <li>• Collect all available strategies/ guidelines to encourage runoff and develop a simplified summary thereof</li> <li>• Distribute strategies/guidelines</li> <li>• Audit implementation</li> </ul>	Agriculture DWAF KZNCS	<ul style="list-style-type: none"> <li>• October 2000</li> <li>• November 2000</li> <li>• On-going</li> </ul>
	Identify and remove alien vegetation in the catchment to increase the base-flow	<ul style="list-style-type: none"> <li>• Initiate survey in catchment to determine problem</li> <li>• Initiate <i>Working for Water</i> programme if necessary</li> </ul>	DWAF Agriculture KZNCS	October 2000

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<p><b><u>CREATE AN ENABLING ENVIRONMENT</u></b></p> <p>Creation of an enabling environment to ensure successful implementation of the management strategy</p>	Ensure suitable level of knowledge	<ul style="list-style-type: none"> <li>• Develop and publish a simplified version of the WQMS</li> <li>• Translate and publish a simplified version of the WQMS into Zulu</li> <li>• Develop simplified summaries of all land use strategies and guidelines</li> <li>• Initiate regular information sessions during the Forum meetings</li> </ul>	<ul style="list-style-type: none"> <li>• DWAF</li> <li>• DWAF</li> <li>• Forum</li> </ul>	<ul style="list-style-type: none"> <li>• September 2000</li> <li>• November 2000</li> <li>• On-going</li> </ul>
	Ensure suitable level of skill	<ul style="list-style-type: none"> <li>• Involve the community during routine inspections in the catchment, thereby capacitating them to actively participate</li> <li>• Identify and develop necessary management instruments and tools to assist stakeholders in implementing the WQMS</li> <li>• Identify other stakeholders as the need arise, and empower them to participate in the implementation of the WQMS</li> </ul>	<ul style="list-style-type: none"> <li>• DWAF</li> <li>• Forum</li> </ul>	On-going
	Ensure suitable level of will	<ul style="list-style-type: none"> <li>• Continue with the capacity building program in the settlement areas initiated by The Bridge Foundation</li> <li>• Maintain commitment to the WQMS</li> </ul>	Forum	On-going

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<b><u>IMPLEMENTATION ACTIONS</u></b>  Strategic actions	Integrate future development in the Wasbank River catchment with the WQMS	<ul style="list-style-type: none"> <li>Participate in future land use development projects as part of the EIA process or any other related process</li> <li>Provide input to ensure integration with the WQMS and management objective</li> </ul>	Forum	On-going
	Cost-benefit analysis to determine the actual socio-economic impacts associated with each of the management actions	<p><i>[Dependent on finalisation of water quality simulation model – refer to page viii: Implementation actions]</i></p> <p><i>[Dependent on investigations with regard to treatment options – refer to page iii: Residual impact control]</i></p>	DWAF	Commence April 2001 <i>On-going where major impacts already identified</i>
	Evaluation of the management actions by means of an appropriate water quality simulation model before implementation	<p><i>[Dependent on finalisation of water quality simulation model – refer to page viii: Implementation actions]</i></p> <p><i>[Dependent on investigations with regard to treatment options – refer to page iii: Residual impact control]</i></p>	DWAF	Commence April 2001 <i>On-going where major impacts already identified</i>
	On-going maintenance and revision of the WQMS	Update WQMS and action plan on an annual basis	Forum	On-going

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<b><u>IMPLEMENTATION ACTIONS</u></b>  Operational actions	Development and calibration of an appropriate water quality simulation model	<ul style="list-style-type: none"> <li>• Update Ngagane River water quality model for the Wasbank catchment</li> <li>• Calibrate the model using the updated hydrological information</li> </ul> <i>[refer to page v: Ensure adequate surface water flow]</i>	DWAF	Commence April 2001
	Management and dissemination of information		Forum	On-going
	Continued chemical, bacteriological and biological monitoring		DWAF	On-going
	Maintenance of awareness and communication	<ul style="list-style-type: none"> <li>• Maintain awareness with respect to progress on the implementation of the WQMS</li> <li>• Develop a Communication Strategy to maintain communication of the above to all stakeholders</li> </ul>	Forum	On-going
<b><u>IMPLEMENTATION ACTIONS</u></b>  Control actions	Evaluation and monitoring of implementation of the WQMS	Bi-annual review at Forum meeting	Forum	On-going
	Audit achievement of in-stream water quality objectives	Bi-annual review at Forum meeting	Forum	On-going
	Audit achievement of compliance requirements and licence conditions	Bi-annual review at Forum meeting	DWAF	On-going