

TABLE of CONTENT

SECTION 1:

1. BACKGROUND	1
2. LINK WITH THE WATER SAFETY PLANT	2
3. PREPARATION AND USE OF A W ₂ RAP	3
4. W ₂ RAP IN THE MUNICIPAL WASTEWATER BUSINESS	6
5. W ₂ RAP IN RISK-BASED REGULATION	9
6. METHODOLOGY TO ESTABLISH A W ₂ RAP	12

SECTION 2:

1. ASSEMBLE A TEAM TO DEVELOP THE W ₂ RAP	13
2. DOCUMENT AND DESCRIBE THE SYSTEM	13
3. ASSESS THE EXISTING OR PROPOSED SYSTEM	14
4. HAZARD ASSESSMENT AND RISK CHARACTERISATION	17
5. IDENTIFY HAZARDS, CONTROL MEASURES & PREVENTATIVE ACTIONS /validation	27
5.1. Hazards and control measures in the collection and reticulation of wastewater services	29
5.2. Hazards and control measures in wastewater treatment	34
5.3. Sludge management and disposal	47
5.4. Effluent returned to catchment	53
5.5. Wastewater reclamation and reuse	55
5.6. Facility safety guidelines and worker protection	57
5.7. Non-reticulated wastewater systems	64
5.8. Validation	67
5.9. Upgrade and improvement	69
6. OPERATIONAL MONITORING AND MAINTAINING CONTROL	70
6.1. Determining system control measures	71
6.2. Selecting operational monitoring parameters	72
6.3. Establishing operational and critical limits	77
7. VERIFICATION THAT THE W ₂ RAP IS EFFECTIVE AND MEET HEALTH-BASED AND ENVIRONMENTAL TARGETS	82
7.1. Verification of microbial quality	84
7.2. Verification of chemical quality	84
7.3. Verification of physical quality	87
7.4. Water sources	88
7.5. Verification for non-reticulated systems	88
7.6. Quality assurance and quality control	89
8. MANAGEMENT PROCEDURES FOR WASTEWATER TREATMENT SYSTEMS	90
8.1. Predictable incidents (“deviations”)	93
8.2. Unforeseen events	93
8.3. Emergencies	94
8.4. Preparing a monitoring plan	95
8.5. Supporting programmes	96
8.6. Management of non-piped, community and household wastewater systems	97
9. DOCUMENTATION AND COMMUNICATION	98
10. REVIEW OF W ₂ RAP	99
11. CONCLUDING REMARKS	99
SECTION 3:	
11. W ₂ RAP CHECKLIST	101
12. REFERENCES	103