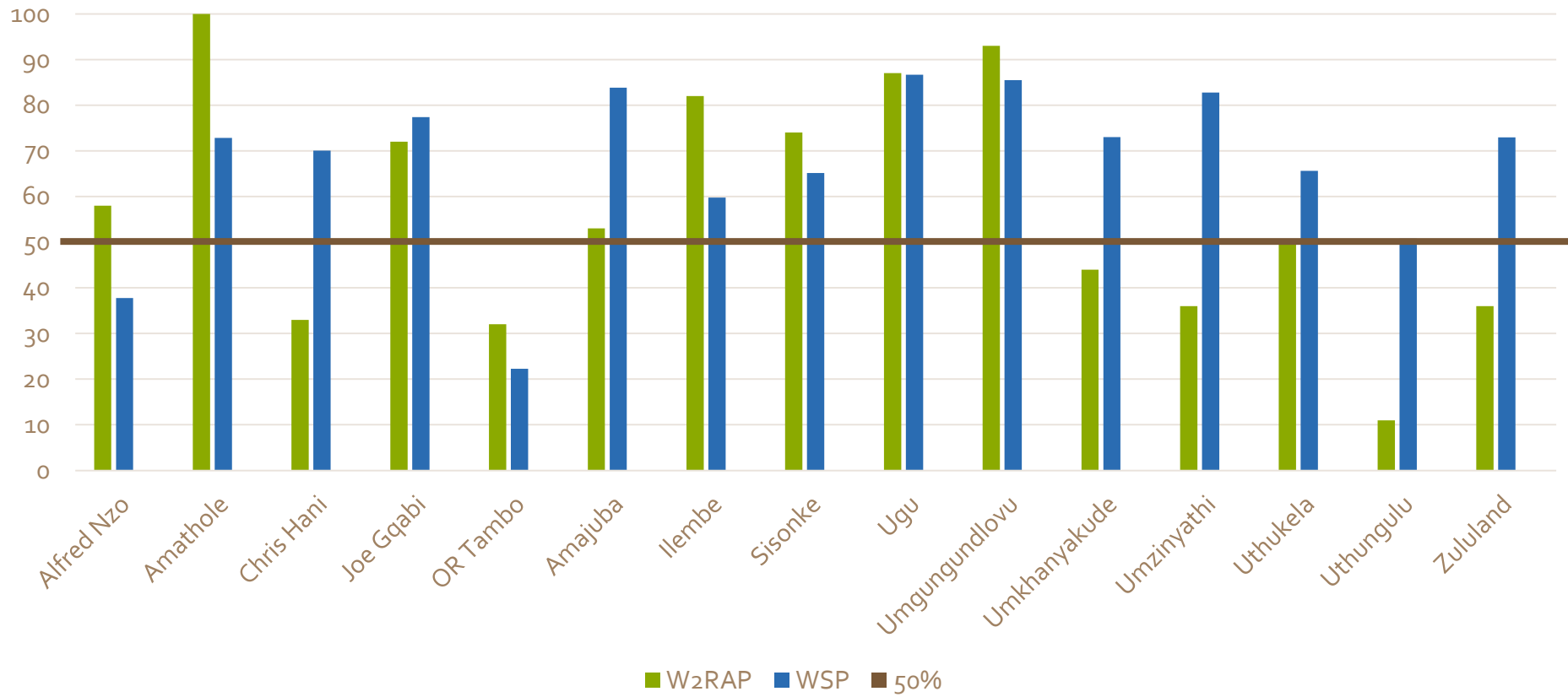


Building Capacity for the Implementation of WSP and W2RAPs in District Municipalities in EC and KZN.

Approach and process followed



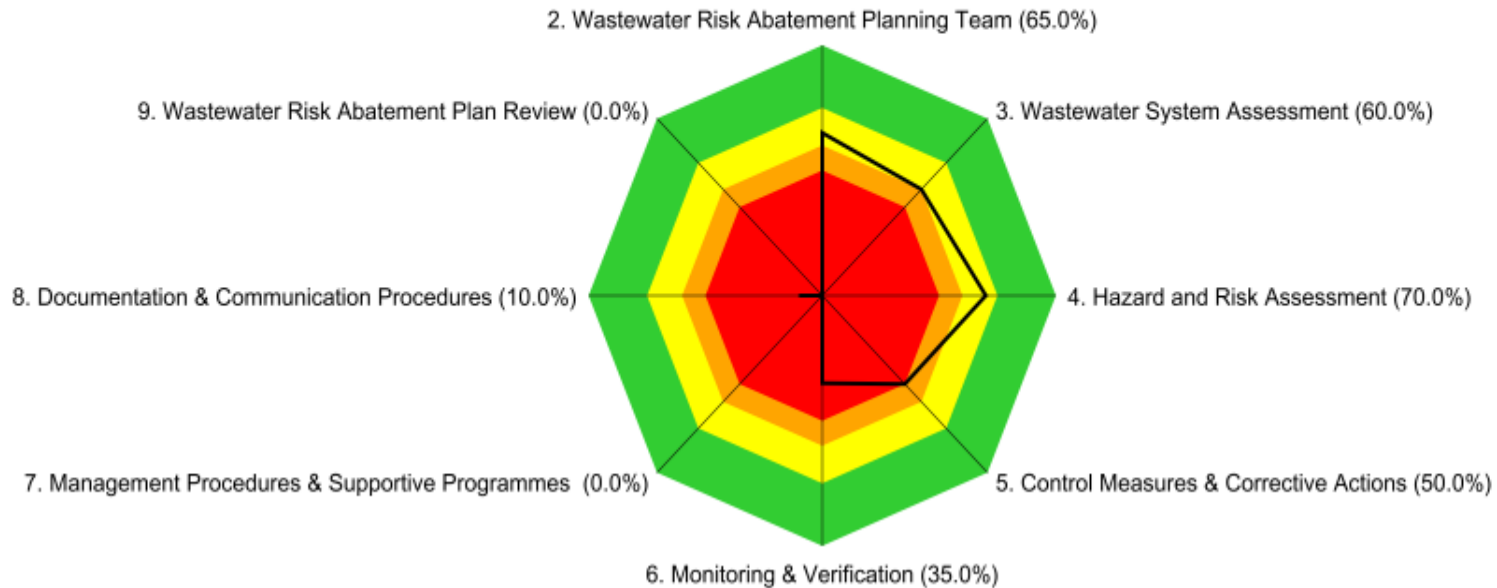
Methodology followed



Methodology followed

WRC W2RAP (Wastewater Risk Abatement Plan) Status Checklist Tool

■ 0 - 50% (Extreme Vulnerability) ■ 50 - 60% (High Vulnerability) ■ 60 - 75% (Moderate Vulnerability) ■ 75 - 100% (Low Vulnerability)

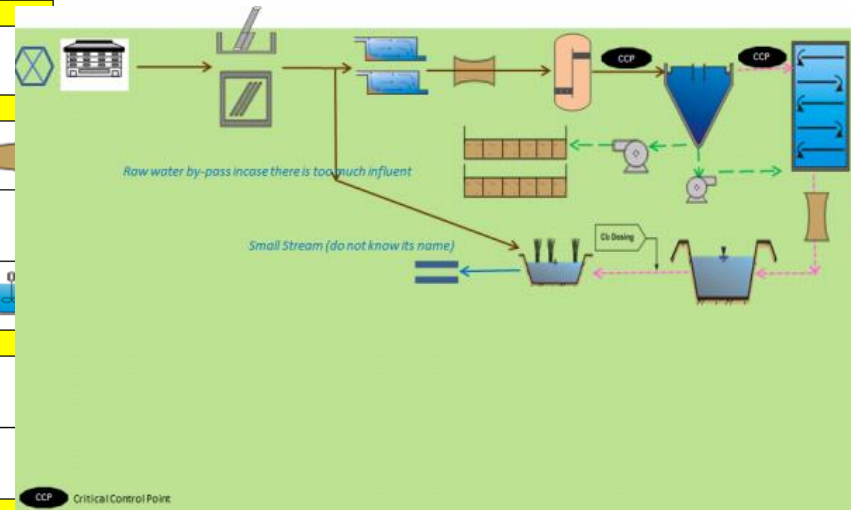


Methodology followed

1. Water Safety Plan Team		Status	WSA Comments and Current Interventions	Agreed Action	Responsible Person (Who)	Completion Date (When)	Proposed Budget
1.1	A multi-disciplinary team of experts has been assembled to carry out the WSP	Strongly agree	The WSP is available and the risk assessment has been conducted.	Need to initiate a formal process of WSP with the necessary stakeholders. DST/WRC project team will guide the district in the process. The team will review the WSP in the second quarter of 2015/16	Nokuphiwa Zondi	Dec 2015	Budget for compilation of the WSP is to be determined
1.2	The WSP team has been informed of their duties and are committed to the process	Strongly Agree	The WSP is available. The WRC team has assisted the team with the duties and the team is committed	A formal process of WSP with the necessary stakeholders. DST/WRC project team will continue to guide the district in the process.	Nokuphiwa Zondi	June 2016	Budget for compilation of the WSP is to be determined
1.3	A WSP methodology (e.g. steps 1 - 10) has been defined and agreed by the WSP team	Strongly agree	The WSP development was workshopped to the team during the development of the original Document	Need to balance the different stakeholders in the process of WSP with the additional stakeholders from the other aspects of the water business. Align B/GDS & RPMS teams	Nokuphiwa Zondi	June 2016	Budget for compilation of the WSP is to be determined
1.4	The WSP team regularly meets to discuss issues, review progress, etc.	Strongly agree	The WSP team meets quarterly to review the WSP.	Quarterly meetings to be scheduled for 2015/2016	Nokuphiwa Zondi	July 2015	Budget for compilation of the WSP is to be determined
1.5	WSP development and implementation is funded and supported by top management	agree	The WSP review is budgeted for	Quarterly reviews for WSP to be tabled to the Portfolio committee for information and recommendation to EXCO	Nokuphiwa Zondi	Ongoing till end 2016	Budget for compilation of the WSP available

Challenges: Flow Diagram

1	Wastewater Risk Abatement Planning Tool								
2	Step 3b of 17								
3	Develop a Basic Flow Diagram of the Wastewater System								
4	The WRC W ₂ RAP Guideline (TT489/11) pages 14-15 state the importance of developing a Process Flow Diagram as a first step to understanding the system. The plant layout needs to be conceptually accurate in order to identify all hazards and risks associated with each process unit.								
5	Symbol chart for drawing process flow diagrams of wastewater treatment systems								
6	1	Wastewater Collection							
7	Conveyance / Pipe network		Pumpstations						
8	2	Preliminary treatment							
9	Coarse screen		Screenings removal		Screenings Removal		Flow Measurement		
10	Mechanical screen		Grit Removal		Grit channels				
11	Vortex degritter		Screw lift pump		Screw pump		Mix tank		
12	3	Primary Treatment							
13	Flow Equalisation / Balancing		Primary settling / clarification						
14	Ponds (primary ponds)		Anaerobic tank		Blending tank				
15	4	Secondary treatment							
16	Biofilters (aka Tricking Filters)		Humus Settling / Clarification		Pre-anoxic reactor		Activated sludge reactor		
17	Activated sludge - extended aeration		Activated Sludge with Biological Nutrient removal		Anaerobic reactor				
18	Aerobic pond		Integrated Pond systems (Aka lagoons)		Secondary Settling / Clarification		Flocculation basin		
19	5	Tertiary treatment							



Challenges: Risk Rating

RISK RATING = LIKELIHOOD X CONSEQUENCE

Likelihood	Definition	Likelihood Rating	Consequence/ Impact	Definition	Consequence/ Impact Rating
Almost certain	Once per day or permanent feature	5	Catastrophic	Death expected from exposure	25
Likely	Once per week	4	Major	Population exposed to significant illness	20
Moderately likely	Once per month	3	Moderate	Moderate impact to large population	15
Unlikely	Once per year	2	Minor	Minor impact to large population	10
Rare	Once every 5 years	1	Insignificant	No impact or not detectable	5

Challenges: Allocating Responsibilities

- Focus on the plant only
- “soft issues” not included
- Future projections not considered

	A	B	C	D	E	F	G	H	I	J
1	Wastewater Risk Abatement Planning Tool									
2	Step 16 of 17									
3	Control Measures and Corrective Actions									
4	This step is:			Incomplete						
5	Evaluation of Existing Control Measures and Corrective Actions									
6	Component	Sub-Component	Potential Hazards or Hazardous Events	Valid Hazard / Hazardous Event	Root Cause / Risk Category	Risk Rating	Risk Profile	Control Measure in Place (if any)	Validation of Control Measure	Corrective Actions
7	Collection	Pump Stations	Mechanical pump failure (e.g. pump malfunction) may result in overflow/spillage resulting in contaminated environment/impact on human health.	No	Scientific	60	Moderate Risk			
8	Collection	Pump Stations	Electrical pump failure (e.g. power failure) may result in overflow/spillage resulting in contaminated environment/impact on human health.	Yes	Planning/Design	30	Low Risk			
9	Collection	Pump Stations	Natural disasters (e.g. storm, earthquake, flood) may damage or destroy pump station resulting in contaminated environment/impact on human health.	Yes	Operation	45	Moderate Risk			
10	Collection	Pump Stations	Man-made incidents (e.g. truck accident) may damage or destroy pump station resulting in resulting in contaminated environment/impact on human health.	Yes	Maintenance	60	Moderate Risk			
			Vandalism or sabotage may damage							

Do we need WWRAPs?

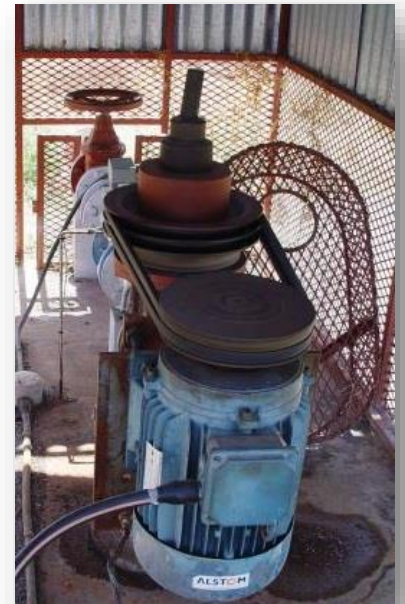
“Its not new, we do this stuff, its just packaged better”

“I finally understand my system”

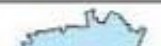
“I know where my risks are”

“It helps me get money to fix issues”

“I sleep better at night”



The map illustrates the five districts of Zululand, each color-coded and labeled. The districts are: eDumbe (pink), uPhongolo (orange), Nongoma (purple), Ulundi (yellow-green), and AbaQulusi (blue). The map also shows surrounding areas like Pietermaritzburg, Durban, and KwaZulu-Natal.

	eDumbe Local Municipality		uPhongolo Local Municipality
	AbaQulusi Local Municipality		Nongoma Local Municipality
 Ulundi Local Municipality			



Zululand Key Challenges

- Only technical personnel – team
- Focused on plant issues – what to include in the network?
- Challenge to rate the risks – (high, medium, low)
- How to identify control measures?
- How to implement a WWRAP?

Methodology followed

- Status presented and updated at the workshop

WRC W2RAP (Wastewater Risk Abatement Plan) Status Checklist Tool

■ 0 - 50% (Extreme Vulnerability) ■ 50 - 60% (High Vulnerability) ■ 60 - 75% (Moderate Vulnerability) ■ 75 - 100% (Low Vulnerability)

2. Wastewater Risk Abatement Planning Team (50.0%)

9. Wastewater Risk Abatement Plan Review (25.0%)

3. Wastewater System Assessment (25.0%)

8. Documentation & Communication Procedures (25.0%)

4. Hazard and Risk Assessment (65.0%)

7. Management Procedures & Supportive Programmes (25.0%)

5. Control Measures & Corrective Actions (35.0%)

6. Monitoring & Verification (40.0%)

WRC W2RAP (Wastewater Risk Abatement Plan) Status Checklist Tool

■ 0 - 50% (Extreme Vulnerability) ■ 50 - 60% (High Vulnerability) ■ 60 - 75% (Moderate Vulnerability) ■ 75 - 100% (Low Vulnerability)

■ Actual

■ Target

2. Wastewater Risk Abatement Planning Team (75.0%)

9. Wastewater Risk Abatement Plan Review (50.0%)

3. Wastewater System Assessment (85.0%)

8. Documentation & Communication Procedures (55.0%)

4. Hazard and Risk Assessment (95.0%)

7. Management Procedures & Supportive Programmes (60.0%)

5. Control Measures & Corrective Actions (70.0%)

6. Monitoring & Verification (60.0%)

Methodology followed

- Selected systems - Conducted site visits



Methodology followed

- Risk rating workshop

Component	Hazard	Risk Category	Risk Rating	Risk Profile	Control Measure	Validation	Corrective Action	Who	When	Budget
Wastewater Treatment Plant										
Absence of backup manual screens	Incase there is a load <u>scheduling</u> , the inlet gets blocked.			High Risk	None		Install manual screens. Extend the inlet channel wall to avoid overflowing.	Investigate how best to handle the situation. Implement the plant or appoint appropriate person to do the work.	B Mnguni S Ngubane T Mabika	TBI
Bypass valves not working	No- functioning bypass valve makes it difficult to clean the inlet channel.			Moderate			Fix the bypass valve	Mr <u>Mfusi</u>	31 July 2015	N/A
Power failure	Electrical failure result in malfunctioning of the system and interrupted services.	Effluent Quality and Environmental health		Very High Risk	There are oxidation ponds					
Sludge handling	Lack of sludge handling facilities (e.g. drying beds or sludge lagoons) result in the system not functioning efficiently and failing effluent quality.	Operation		Moderate Risk	At the moment very little sludge is produced, however as the effluent increased, sludge will be accumulated.					





Benefits Summary

- Identification of relevant departments and stakeholders
- What can be considered for community awareness programmes
- Understand WWRAP process
- Risk rating calculation
- Allocation of responsibilities