



EviBAN

Evidence Based Assessment of NWRM
for sustainable water management

Workshop Report

Organizing partner: SUWI
Workshop Place: Riversdale, South Africa
Date: 2020-02-11
Number of invitees: 35
Number of registrations: 23, including 3 extra on the day of the workshop
Number of guests attending: 22

Agenda for the workshop

FIRST STAKEHOLDER WORKSHOP

EXPLORING OPPORTUNITIES AND IMPACTS OF MANAGED AQUIFER RECHARGE IN THE GOUKOU CATCHMENT

(EviBAN project)

Presented by: Stellenbosch University Water Institute (SUWI) and SINTEF (Norway)

Date: 11 February 2020, 10:00 – 15:30

Venue: Kweekkraal, Riversdal

PROGRAMME

Welcome	Willem	5 min	10:00
Overview of programme and expectations	Marlene	10 min	10:05
Presentation from the municipality: current status and plans for water management	Jenovaan Booyesen	15 min	10:15



History of research team in area & introduction to new research project	Marlene, Willem, Herman	45 min	10:30
Tea break		15 min	11:15
Purpose of stakeholder group	Marlene	10 min	11:30
Group exercise: information gathering		45 min	11:40
Group feedback and short discussion		20 min	12:25
Lunch		45 min	12:45
Group exercise: Input to measure the sustainability of the proposed NWRM.	Herman	75 min	13:30
Group feedback and discussion		30 min	14:45
Wrap up and feedback (evaluation of meeting & next steps)	Willem & Marlene	15 min	15:15
Close meeting	Willem		15:30

Objectives

- ✓ Meeting local stakeholders and building relations to involve them throughout the project.
- ✓ Identifying gaps in the planned research.
- ✓ For the first group exercise: Understanding locals' perspective on observed changes in the river over the years, with regards to flow, quality, floods and groundwater.
- ✓ For the second group exercise: Input to measure the sustainability of the proposed NWRM, the objectives were:
 - to collect input from the stakeholders on which of the SDGs and local objectives/criteria that were relevant for assessing the sustainability of using managed aquifer recharge as a measure in the Goukou catchment, and;
 - to collect input from the stakeholders on whether MAR would have a positive or negative impact on progressing towards the SDGs and local objectives/criteria.



Characterization of the participants

Table 1 shows the number of registrations and actual participants, the respective sector of activity and the level of governance each stakeholder is active in.

Table 1 Overview of stakeholders

Institution / sector	No. of participants (registrations)		
	In total	Male	Female
Authorities	3 (3)	3 (3)	- (-)
Municipality, head of technical dept.	1 (1)	1 (1)	
Municipality, councillor	1 (1)	1 (1)	
Cape Nature	1 (1)	1 (1)	
Representatives of companies, other sectors	16 (16)	12 (12)	4 (4)
Stillbaai ratepayers' association/ interest group	7 (7)	7 (7)	
Riversdale ratepayers' association	1 (1)	1 (1)	
Goukou River Property Owners Association (GRIPOA)	2 (2)	1 (1)	1 (1)
Private landowners	2 (2)	1 (1)	1 (1)
Gouritz Cluster Biosphere Reserve	2 (2)	1 (1)	1 (1)
Korente-Vette irrigation board	2 (2)	1 (1)	1 (1)
Internal Stakeholders	3 (3)	2 (2)	1 (1)
SINTEF	1 (1)	1 (1)	
SUWI	2 (2)	1 (1)	1 (1)

Short summary of the workshop's activities

Session one of the workshop was a plenary session. The first presentation was by the municipality (Mr Jenovaan Booyesen, Head of the Technical Department at Hessequa Municipality), who gave an overview of the area's water management status and challenges. This was followed by a presentation on the history of the research team in the area (overview of the SUWAM project that concluded in 2017), and then an introduction and overview of EviBAN. Herman Helness (HH, SINTEF) and Willem de Clercq (WDC, SUWI) presented the SUWAM results, HH presented EviBAN from an international perspective and Marlene de Witt (MDW, SUWI) presented the South African case study.



Session two was a groupwork exercise. Participants were asked three questions related to the changes observed in the Goukou River and estuary over the years, and their opinion on how important floods and groundwater are to the system. Session 3 was also a groupwork exercise, aimed at obtaining input to measure the sustainability of the proposed intervention. The session was led by HH.

Group exercise 1: Understanding observed changes in the Goukou River and estuary

The first group exercise was aimed at obtaining information about observed and experienced challenges and changes within the river system over the years, and also to engage with the participants. Participants were divided into three groups and each had to answer the following three questions:

- What are some of the main changes you have observed around the flow and quality of the Goukou River over the years, and what do you think have the impacts of these changes been?
- How important do you think are floods for the estuary? Have you observed changes in the estuary particularly related to flood events?
- How important do you think are groundwater and springs to maintain the river's flow? Any observed changes and related impacts?

HH, WDC and MDW each guided a group. At the end of the exercise one person from each group provided feedback in a plenary session.

Group exercise 2: Input to measure the sustainability of the proposed NWRM

The group exercise to provide input to measure the sustainability of the proposed NWRM was introduced by HH with a short presentation of what an integrated sustainability assessment (ISA) is and what it may be used for. For the latter, some results from the previous SUWAM project were presented as an example.

Thereafter the questionnaire and objectives were explained.

The questionnaire was distributed to each participant who answered individually. However, the participants were seated in 3 groups and discussed in the group during the exercise.

After the individual answering of the questionnaire the groups discussed and concluded on the (3) most relevant SDGs. This was shared with the other groups in a final plenary discussion.

Short summary of outcomes and results

Group exercise 1: Understanding observed changes in the Goukou River and estuary

Main points raised by each of the three groups for each of the questions:



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What are some of the main changes you have observed around the flow and quality of the Goukou River over the years, and what do you think have the impacts of these changes been?

- Group (1) noted that flow in the river is weaker. Group (2) concluded that they can't say for certain that flow is weaker, they can only infer from various activities that the flow should be weaker, but there is insufficient data and proof. Group (3) mentioned that the river is in a very good condition, but also noted that there is not enough measurements and information about the river.
- All three groups noted that sandbanks and siltation are pronounced. Group (1) mentioned Bentonite mining as a potential cause of the siltation problems.
- Group (2) listed the carrying capacity of the estuary for recreational boat use as a problem.
- Hyacinth was mentioned by all three groups as being a problem. Group (1) suggested the abattoir and golf course contribute to the problem.
- Other invasive plants (Black wattle and Rooikrans) was also a big concern for all three groups. The infestation along the Kruis River was highlighted as being particularly bad.
- Group (2) also mentioned invasive fish (e.g. carp) as a problem for the river's health.
- All three groups mentioned farming practices (and land-use changes) as being a contributor to problems in the river. Group (1) mentioned the loss of valleys of natural vegetation that one used to see in between farms, which leads to soil loss.
- Illegal land-use activities, illegal damming and environmental destruction by some farmers were mentioned by Groups (2) and (3).
- Group (3) was aware of pollution of the river in Riversdale, but not in the estuary. Sewerage spills from the wastewater treatment works below the golf course were noted as problems by groups (1) and (3).
- Groups (2) and (3) mentioned the impact that a large piggery has on the quality of the Goukou River's water.
- Group (3) mentioned rising salinity in the estuary as a problem, noting that rain and springs, as well as floods and tides have a noticeable effect on this.
- Group (2) noted an increase in iron and magnesium at the inflow of the wastewater treatment works in Riversdale since 2007, but that the cause of this is unknown.
- Despite the problems Group (3) noted that the system is resilient – the river and estuary are in a fairly good condition.

How important do you think are floods for the estuary? Have you observed changes in the estuary particularly related to flood events?

- Group (1) noted that floods and rainfall events certainly changed: "this is the first time in history that we've had less than 700mm for four years in a row".
- "10% of floods used to be for nature, now floods are a cleansing system" (Group 1). Group (2) also mentioned that floods cleanse the river, particularly the hyacinth.
- Group (2) emphasized that the river's base flow is much more important than floods.
- Group (1) noted that water is made available for the river through dam releases even when there isn't surplus water.



- Groups (2) and (3) mentioned that floods could play an important role in sediment build-up.

How important do you think are groundwater and springs to maintain the river's flow? Any observed changes and related impacts?

- The three groups all mentioned that groundwater is highly important, mainly because it cannot be seen. The importance of fountains maintaining the river flow was highlighted as important.
- The non-measurement and policing of boreholes was highlighted as a problem (Group 2).
- Group (2) said that the more surface water is abstracted, the more the groundwater is affected and it's problematic because this interaction cannot be seen.
- Group (1) noted that fountains upstream are getting salty. This could be contributed to the soil types (clay). Jongensfontein and Stilbaai's fountains are still fresh.
- Group (3) emphasized that groundwater and springs are "the livelihoods of the region and they are important for the resilience of the system and in bridging drought conditions."

Group exercise 2: Input to measure the sustainability of the proposed NWRM

The results from the exercise were compiled and the average scores for each SDG and criterion were calculated.

The individual results indicated that there were probably different views on/understanding of the scoring scale since some were not logical with respect to the expected impact of MAR.

This may have several causes:

- The scoring was given according to a foreseen effect of MAR, but with lacking knowledge about MAR.
- The scoring was given according to if the criterion was considered positive or negative by itself, e.g. costs are typically considered negative.
- The scoring was given according to if an increased value/impact of the criterion was expected to give a positive or negative impact on sustainability.
- The scoring was given according to a foreseen risk from MAR (which would come from poorly managed MAR), e.g. pollution of the aquifer due to infiltration of water with poorer quality.

The results are therefore not conclusive, and the method should be improved/clarified for further use.

The scoring with respect to positive or negative effects is therefore considered to be more uncertain than the range used, i.e. -3 and +3 both indicate a highly relevant SDG/criterion but the indicated negative or positive impact is highly dependent on the understanding of the respondent.

The results were therefore also assessed according to the averages of the absolute values of the scores.

Both the average scores and the average absolute values of the scores were highest for SDG6,



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SDG11 and SDG14. These three SDGs were therefore indicated to be most relevant for the case in Hessequa.

Interestingly, the same SDGs also received the highest scores in the French workshop in Agon Countainville, December 2019.

SDG8, 9, 12, 13, 15 and 17 were also indicated to be of high relevance with average scores higher than 1 according to both approaches for treating the results.

For further details the spreadsheet with the compiled results should be consulted.