

## KENDAL 30 YEAR ADF PROJECT

### MEETING NO. 2016/06 (DWS SPECIALIST FEEDBACK) - MINUTES

**CLIENT** : Eskom SOC Limited  
**CONSULTANT** : Zitholele Consulting (Pty) Ltd  
**PROJECT** : Kendal 30 year ADF EIA and IWULA  
**CONTRACT NO.** : 4660024961  
**PROJECT NO.** : 12935  
**DATE** : 31/05/2016  
**TIME** : 11:00 - 12:00  
**VENUE** : DWS Offices (Sedibeng Building)  
**REFERENCE** : 12935

#### PRESENT

Pieter Ackerman (PA)	DWS
Lumka Kuse (LK)	DWS
Ronald Malaudzi (LM)	DWS
Paul Meulebeld (PM)	DWS
Tania Oosthuizen (TO)	Zitholele Consulting
Nevin Rajasakran (NR)	Zitholele Consulting
Emmy Molepo (EM)	Eskom
Prof Kai Witthueser (KW)	Delta H
Dr Martin Holland (MH)	Delta H
Dieter Kassier (DK)	WETCS
Warren Funston (WF)	Eskom

#### ABSENT

Emmy Molepo (EM)	Eskom
Mokgadi Maloba (MM)	DWS



ITEM	DISCUSSION POINTS	ACTION, DATE
1.	<b>Introduction</b>	
1.1	<p><b>Slide 1-3:</b> TO provided an introduction to the meeting and of the project. It was discussed that the Kendal Continuous Water Use License (WUL) was received in January 2016.</p> <p>TO mentioned that the objective of the meeting was to provide feedback on the two additional water-related specialist studies undertaken on request by the DWS, i.e.:</p> <ul style="list-style-type: none"> <li>- Surface and Groundwater Interaction Study</li> <li>- Wetland Offset Study</li> </ul>	
1.2	<b>Slide 4 - 6:</b> TO explained what activities the Kendal 30 yr Site H Ash Disposal Facility (ADF) will entail and its dimensions.	
1.3	<b>Slide 7:</b> TO explained that some of the reasons why Site H was favorable was because it was not affected by current and future mining activities and that it is largely owned by Eskom. It is also the site closest to the power station.	
	PA enquired whether a site with historical mining could be pursued. TO explained that the other sites were eliminated more on the basis of current and future planned	

	mining than historical mining. NR added that it would sterilize minable land.	
	PA enquired whether there are flamingos on Site H. TO stated that there had been a siting which the specialists refer to in their reports.	
<b>2.</b>	<b>Wetland offset Study</b>	
2.1	<b>Slide 9 - 11:</b> DK provided an introduction to the wetland study. He confirmed that the wetland offset study was requested by the DWS following an initial feedback presentation to them on Site H and the pan that will be destroyed. DK pointed out that the wetland offset study that has been undertaken by WETCS is conceptual and doesn't include any costing or designs.	
2.1	<p><b>Slide 12:</b> DK pointed out on the map where the different types of wetlands are located. He pointed out that the site is located on a watershed and he showed how the different systems drain in different directions. He stated that most of the wetlands are quite impacted by cultivation. He stated that the pan is being artificially kept full by a farmer leasing from Eskom. He stated that there is very little zonation of vegetation.</p> <p>Some time was spent by TO, DK and NR to explain to the DWS how the water is being pumped from the farm dam+South of the Kendal Power Station to the pan.</p> <p>DK stated that the fact that the pan in its current state (permanently full) is less favourable flamingo habitat than it would have been if it was in its natural state.</p>	
2.2	<b>Slide 13:</b> DK explained the PES scores for the different wetland types on Site H. The PES of the pan is a 10+.	
2.3	<p><b>Slide 14:</b> DK pointed out which wetlands will be directly and indirectly lost. Shown as red and yellow on the map.</p> <p>PA enquired whether the pan could not be avoided. NR explained what the constraints are locking the site in. He stated that on the Western and Eastern flanks there are mining activities. On the Southern side it is the Kendal Continuous Ash. North is the railway line and Afgri Silos. NR further explained that Zitholele investigated the implications of avoiding three key wetlands as determined by the wetland specialist. The result was that the airspace requirement will be 8.1 years short. Also, moving the dams out of the lowest areas would render their design very impractical and unsafe.</p> <p>TO and NR pointed out that the irregular shape of the ADF shown is due to the placement of the Pollution Control Dams, the ash body itself cannot be cut out like a jigsaw.</p>	
2.4	<b>Slide 15:</b> TO pointed out that the shaded area shows the progression of the ash body over time (27 years). She explained that all of the wetlands will not be destroyed immediately although many wetlands including the pan will unfortunately be destroyed in the first 5 years.	
2.5	<b>Slide 16 - 17:</b> DK explained what the offset calculator results are. The functional offset target is 63.5 ha eq and the Ecosystem conservation target is 78.6 ha eq. He explained that 50 % of offset target derived from wetland losses in first 5 years.	
2.6	<b>Slide 18 -20:</b> DK explained the methodology followed to identify the target sites. The sites highlighted in yellow on Slide 12 were the target sites investigated.	
2.7	<b>Slide 21 . 22:</b> DK discussed Target Site 1. He explained that it is privately owned and the mining right status is unknown. He pointed out that there is a community to the north and they might be using the pan for communal grazing.	
2.8	<b>Slide 23 . 24:</b> DK discussed Target Site 2. It is located just North of Kriel Power Station. There are less opportunities for rehabilitation intervention on this pan. It	

	was dry at the time of sampling. The pan might potentially undermined. A positive aspect of this site is Eskom owned.	
2.9	<a href="#">Slide 25 . 26</a> : DK discussed Target Site 3. It is 2 pans located between Matla and Kriel Power Stations. Positive of this site is that it is a cluster of 2 pans and there is opportunity for rehabilitation.	
2.10	<a href="#">Slide 27</a> : DK explained that Target Site 4 is fatally flawed.	
2.11	<a href="#">Slide 28</a> : This slide shows a table of how the sites were weighed up against each other. PM enquired which target site is preferred. DK explained that from a purely wetland perspective, i.e. that which can be gained . Target site 1 is recommended.  PM explained that the DWS will probably licence the site that is the best from a wetland point of view.	
2.13	<a href="#">Slide 29 - 30</a> : DK explained that all three offsets together contribute only about 55% of the functional offset target.  For the ecosystem target which is possibly the more appropriate offset target for pans as the most important functions of pans are biodiversity support: * Alternative 1 exceeds target significantly * Alternative 2 achieves 78 % of target	
2.14	<a href="#">Slide 31 - 32</a> : DK concluded with the recommendation of target site 1 and gave reasons why.	
3.	<b>Eskom Question about Offsets</b>	
3.1	WF stated that for Eskom, following the mitigation hierarchy is key. Eskom don't want to get into a situation where they are forced into offsets. They would rather avoid the area. PM explained that Site H was the preferred site because the wetlands will be sacrificed.  WF elaborated that the significance of the loss needs to be understood. It should be established what that significance is for an offset to be required. Eskom has been trying to get this information from SANBI. WF stated that this discussion should be lost in this project.  WF also stated that offsets might be approved. However, in reality it may not be implementable.  PM responded that the pan will be lost and pans are endangered systems. He stated that this is the primary reason why an offset is required.	
4.	<b>Water Loss to the system</b>	
4.1	PA stated that the project should advise how much water will be lost from the system and state how these will be put back. TO to address this in the EIA and IWULA.	TO
4.2	NR explained how the water will run off from the ADF. There will be runoff from the rehabilitated areas, from the open ash area and from the newly grassed areas. Once the ADF is rehabilitated, all runoff will once again runoff to the natural system. During the operational phase only 80 ha will be open ash area and therefore will be lost-as this runoff will have to go into the pollution control dams from where dust suppression will happen.  PM asked whether the water that used to be pumped to the pan from the South (for irrigation) could not be kept so that it can help with the loss of water. It was explained that the water is being pumped from what is called the farm dam-and releases from this dam will be used to sustain the wetland downstream of it.	

4.3	Some time was spent discussing the option of continuous pumping and the feasibility thereof in the long term.	
4.4	TO enquired whether the Wetland Offset Plan can be submitted at the level is is now . with the three target sites still open, and not proposing a single site. She added that the wetland offset plan could then be managed as a separate project by Eskom. This is so that the submission of the EIA and IWULA is not delayed by the finalization of this study.	
5.	<b>Surface and Groundwater Interaction Study</b>	
5.1	<a href="#">Slide 31 - 32</a> : KW gave an introduction of his study, stating that he will discuss the outcomes of the drilling programme, which focused specifically on the pan. It will indicate to what extent the pan and downstream wetlands are being fed by groundwater.	
5.2	PM asked how the Ogies Dyke is perceived from a hydrogeological point of view. KW responded that it is not an issue. He stated that it is a dry ash facility which will be lined. He stated that it is more a geotechnical issue than a hydrogeological or a contaminant point of view.	
5.3	<a href="#">Slide 35</a> : KW provided information on the project location, catchment and altitude.	
5.4	<a href="#">Slide 36</a> : KW showed where the 5 shallow boreholes were drilled.	
5.5	<p><a href="#">Slide 37</a>: KW spoke about the hydraulic testing. He indicated that pump tests could not be undertaken because of the low yields. Therefore slug tests had to be done to get some hydraulic conductivities for the boreholes which was found to be very low.</p> <p>KW stated that the vertical infiltration of water is quite inhibited by the in-situ wheathered material and soils.</p> <p>KW stated that the groundwater quality is quite good and that the conductivity is low. He stated that exceedances of drinking water standards of aluminium, iron and manganese are attributable to active weathering reactions in a shallow to perched aquifer system</p>	
5.6	<a href="#">Slide 38- 39</a> : KW spoke about the geology and the 4 different aquifer zones of the Karoo groundwater systems.	
5.7	<a href="#">Slide 40</a> : KW pointed out the regional groundwater model showing that the groundwater level in the general area is fairly shallow.	
5.8	<a href="#">Slide 41</a> : KW pointed out that the conceptualization of the pan shows that the groundwater levels are below the pan elevation. So, the gradient for most sections of the pan is from the pan towards the aquifer and not the other way around. This already provides a first indication that this pan is primarily fed by surface flow and rainwater and not by groundwater.	
5.9	Some time was spent discussing whether pans originate from the Karoo or pre-Karoo period. Also some discussion about Honingkrantz Pan.	
5.10	<p>KW stated that to sustain this pan (slide 41) it would require a large surface area to collect runoff. Based on this statement, TO asked KW whether it would then make a difference if the pan alone is avoided (cut out like a jigsaw) from the ADF footprint, as it will not be able to be sustained without a large catchment around it.</p> <p>DK stated that if the pumping will stop it will dry out during winter time.</p>	
5.11	<a href="#">Slide 42 - 43</a> : KW noted the elements of the groundwater model and the calibration statistics.	
5.12	<a href="#">Slide 44</a> : This slide shows the regional wetlands in the area with their ID numbers.	

	<p>He stated that the pan gains about 0.03 l/s of groundwater which is negligible. Usually these figures would not even be shown because they would be deemed within the model accuracy. He also noted that most of the wetlands in the area are not fed by the groundwater which is too deep, but instead by interflow.</p> <p>KW showed that the calibrated groundwater model with the proposed ADF. The pan will be completely destroyed, therefore it is shown as 100%. Some wetlands immediately downstream of the proposed ADF will also be impacted by it. There is a reduction of groundwater inflows because of a sealing of the surface by a liner. Essentially the impact is the footprint of the ADF multiplied by the regional recharge rate of 18mm. This is the water you take out of the system. You give it back once the ADF is rehabilitated. You will probably get more runoff because of the steeper slopes.</p>	
5.13	<p><b>Slide 45 . 50:</b> These are the model outputs that show the impact of the ADF on groundwater flow over time. It shows that there will be no impact to groundwater flow due to the sealing of the surface with a liner. In terms of the contaminant transport, these are essentially confined to the footprint area.</p>	
5.14	<p><b>Slide 51:</b> KW stated that the only element exceeding its leachable concentration limits is boron. He reiterated that we have a low recharge and we are not that concerned about the leachable concentrations as they are just above the drinking water standard which gets further diluted in the aquifer.</p>	
5.15	<p><b>Slide 52:</b> KW concluded that essentially the reduction in regional groundwater recharge is the only groundwater impact worth noting.</p>	
<b>6.</b>	<b>Due dates</b>	
6.1	TO stated that these are the latest studies that were outstanding before the EIA and IWULA can be compiled.	
6.2	TO stated that the Engineering Design was presented to Kelvin Legge in April 2015.	
<b>7.</b>	<b>Conclusion</b>	
7.1	PA stated that it is important to show what the % of losses will be and how these will be dealt with. DK stated that there is only one system where one can discharge into to the east of Site H.	TO
7.2	It was agreed that we will set up a meeting with PA post submission.	TO
7.3	PA stated that one could also look at creating an artificial wetland.	

ACTION	FUNCTION	NAME	DATE	SIGNATURE
Prepared	Environmental Assessment Practitioner	Tania Oosthuizen	14 July 2016	
Reviewed	Lead Engineer	Nevin Rajasakran	14 July 2016	

## KENDAL 30 YEAR ADF PROJECT

### MINUTES OF MEETING WITH DWS REGARDING WETLAND OFFSET

**CLIENT** : Eskom Holdings SOC Limited  
**CONSULTANT** : Zitholele Consulting (Pty) Ltd  
**PROJECT** : Kendal 30 year ADF EIA and IWULA  
**CONTRACT NO.** : 4660024961  
**PROJECT NO.** : 12935  
**DATE** : 23/01/2017  
**TIME** : 10:00 - 11:00  
**VENUE** : DWS Offices (Sedibeng Buildig)  
**REFERENCE** : 12935-11-Min-2017-02 Pieter Ackerman-Rev0

#### PRESENT

Dieter Kassier (DK)	Wetland Consulting Services
Tania Oosthuizen (TO)	Zitholele Consulting
Emmy Molepo (EM)	Eskom
Warren Funston (WF)	Eskom
Calisile Simelane (CS)	DWS
Patheka Yawa (PY)	DWS
Lethobuhle Makele (LM)	DWS
Pieter Ackerman (PA)	DWS
Wietchke Roets (WR)	DWS
Luma Kuse (LK)	DWS
Arinao Ramudzii (AR)	DWS

#### APPOLOGY

Mokgadi Maloba DWS

ITEM	DISCUSSION POINTS	ACTION
1.	<b>Recap of process</b>	
1.1	TO and PA discussed the background to the project. TO explained that Site H came out as the only feasible site, although it will impact on several wetlands. Zitholele have engaged with DWS National Office on the following occasions: <ul style="list-style-type: none"> <li>14 August 2014: PA requests wetland offset study and interaction study</li> <li>3 June 2015: Motivation for Site H</li> <li>31 May 2016: Presentation of wetland offset and interaction study results</li> </ul>	
1.2	TO indicated that the DWS have been asked to comment on the Final Environmental Impact Report (FEIR) which was submitted to the DEA on the 28 <sup>th</sup> of October 2016.	
1.3	TO indicated that the Integrated Water Use License Application (IWULA) has not yet been submitted.	
2.	<b>The wetland offset proposed</b>	

2.1	PA indicated that he has read the report and feels that the offsets proposed are un-implementable and do not meet the targets.	
2.2	DK pointed out that the target sites don't meet the functional target, but that some of them meet the ecological target. He elaborated that biodiversity is the most important function of a pan.	
2.3	DK went through his previous presentation again and the three top sites were discussed.	
<b>3</b>	<b>Need for a wetland offset</b>	
3.1	WF enquired about the need to do an offset. He stated that legislation calls for an offset when a significant wetland is impacted. However, these wetlands are not significant.	
3.2	WR responded by quoting a position paper in which it states that there should be no net loss of wetlands. He pointed out that this project will cause several hectares of wetlands to be permanently destroyed.	
3.3	WF stated that Eskom have several other projects which they are doing to benefit the environment. However, because the offset guidelines are so specific, these actions cannot be considered.	
<b>4.</b>	<b>Timelines</b>	
4.1	TO spoke about the project timelines. She enquired whether the DWS can include a license condition about the finalization of the offsets. WR responded that they would prefer to see the final offset plan before they issue a licence.	
4.2	TO stated that the FEIR had already been submitted to the DEA, and it would cause major problems to withdraw that FEIR. She requested that DWS give comments to DEA that the offset should be finalized as part of the IWULA before construction can commence. In this way, the EIA process is not delayed. The DWS agreed to this.	PA
<b>5.</b>	<b>Way forward</b>	
5.1	Some options were discussed to make up the additional wetland losses. These options include discussions with Shanduka who is working on an artificial wetland, tapping in to another Eskom study, or finding an additional offset.	
5.2	It was agreed that the offset proposal will be amended and again presented to the DWS.	TO / DK
<b>6.</b>	<b>Meeting closed</b>	

ACTION	FUNCTION	NAME	DATE	SIGNATURE
Prepared	Environmental Assessment Practitioner	Tania Oosthuizen	3/2/2017	