

Verw: 16109T-02  
 Datum: 26/03/2018

Chief Engineer  
 Private Bag X16  
 Sanlamhof

Attention Mr du Buisson,

**SANGASDRIFT TRUST: PROPOSED HUT DAM ON FARM VAN DER WATSKRAAL 394, DISTRIK SWELLENDAM**  
**REFER CIVIL ENGINEERING COMMENTS**

I refer to your letter dated 7 November 2017 as well as **Sangasdrift WULA**, 16109WULA-W2, dated 12 June 2017, *Par 6 Hydrology, page 8,9* and hereby comment as follows:

**- EKSTEENSKLOOF CATCHMENT -**

Please refer to 16109WULA-W2, page 8 **Table 4** for Eksteenskloof catchment runoff:

Total MAR = 1 070 000m<sup>3</sup>  
 Minus 50% Reserve and existing uses = 830 000m<sup>3</sup>  
 Balance = 240 000m<sup>3</sup>  
 Available to be shared = **120 000m<sup>3</sup>** (DEMAND EKSTEENSKLOOF)

**Refer Table 4:**

WATER AVAILABILITY (Hydrology Study; G Howard; Mrt 2017)				
	SUB-CATCHMENTS			
	Cumulative Catchment A	Cumulative Catchment B	Cumulative Catchment C	
Primary Catchment	0.930	1.010	1.070	x10 <sup>6</sup> m <sup>3</sup>
<b>VIRGIN MAR</b>	<b>0.930</b>	<b>1.010</b>	<b>1.070</b>	<b>x10<sup>6</sup>m<sup>3</sup></b>
- MAR (50%) IFR	0.465	0.505	0.535	x10 <sup>6</sup> m <sup>3</sup>
- Existing Use (Sangasdrift Trust)	0.055	0.055	0.055	x10 <sup>6</sup> m <sup>3</sup>
- Existing Use: Servitude (Viljoen Trust)	0.240	0.240	0.240	x10 <sup>6</sup> m <sup>3</sup>
<b>NETT MAR / AVAILABLE</b>	<b>0.170</b>	<b>0.210</b>	<b>0.240</b>	<b>x10<sup>6</sup>m<sup>3</sup></b>
<b>Share 50/50 (Intended Taking)</b>			0.120	x10 <sup>6</sup> m <sup>3</sup>

**- HUT DAM CATCHMENT -**

Please refer to 16109WULA-W2, page 9 **Table 5** for Hut dam catchment runoff;

Total MAR	= 270 000m <sup>3</sup>
Minus Reserve	= 115 000m <sup>3</sup>
Balance	= <b>155 000m<sup>3</sup></b> (DEMAND Hut Dam)

**Refer Table 5**

WATER AVAILABILITY (WR2005)			
	QUATERNARY CATCHMENT	SUB-CATCHMENTS	
	H60K	Local Hut Dam	
Area	262	2.93	km <sup>2</sup>
MAP	371	385	mm
MAR	40	98	mm
Virgin Runoff	11%	25%	
MAR(Virgin)	10.5	0.270	x10 <sup>6</sup> m <sup>3</sup>
Intended Taking (Adjacent)		0.155	m <sup>3</sup>
<b>BALANCE</b>		0.115	x10 <sup>6</sup> m <sup>3</sup>

(Refer to the Hut Dam Catchment Hydrology Map (corrected))

Thus, TOTAL DEMAND -	120 000m <sup>3</sup> (Eksteenskloof Catchment)
	<u>155 000m<sup>3</sup></u> (Hut Dam Catchment)
	<b><u>275 000m<sup>3</sup></u></b>

**- PROPOSED HUT DAM -**

Please refer to 16109WULA-W2, page 9 **Table 6** for Hut dam capacity;

**Refer Table 6**

TOTAL AVAILABLE WATER FOR STORAGE	Volume (m <sup>3</sup> )
From Eksteenskloof (50% portion)	120,000
Local Catchment	155,000
Existing Water Use (ELU)	55,000
<b>TOTAL</b>	<b>330,000</b>

This implies that:

- 1)  $(120\,000\text{m}^3 + 55\,538\text{m}^3) / 1\,010\,000 = 17\%$  is taken in total from Eksteenskloof at point B (weir)
- 2)  $155\,000\text{m}^3 / 270\,000 = 55\%$  is taken from Hut Dam Catchment (not part of weir division)  
In both cases the Reserve and existing uses have been protected.
- 3) Hut Dam would release Reserve via valve or bypass (to be finalised in Final Design)
- 4) Refer Combined Hydrology & Site Map
- 5) The 17% from the Eksteenskloof would be deviated by the existing weir-to-be-restored and then via pipe line to Hut dam as described in WULA.

6) The Conceptual/Preliminary Design only addresses the concepts to be confirmed and once the WUL is approved we will adhere to the conditions therein.

In the meantime, for the division we suggest a permanent self-regulating dividing structure, based on pro-rata share mentioned above. This could involve either V-notches or orifices or a combination thereof.

Whereas the main part of water would just be released back into Eksteenskloof (falling over the weir), the authorised portion would fall into a concrete chamber from where the pipe would take it to Hut Dam, the pipe in itself being a regulating system having a maximum flow tempo (volume per hour).

7) The weir's scour valve is a maintenance component to flush the weir, releasing water back into the natural stream, thus this scour valve is not part of the dividing structure.

8) We agree with a flow-meter at both the inlet from Eksteenskloof as well as the dam outlet, recording all water taken (from both streams) for irrigational purposes.

9) A depth pole-measuring system would be included in the final dam design, and will assist in calculating the 'balance-volume from Hut Dam catchment itself.

We trust for the above to be in order. Please contact us should there be any queries.

Yours Sincerely



M Charl Bester (Pr Ing)

Copies to:	Mrs O Jonker, Sangasdrift Trust / Mooiuitsig Boerdery, Bonnievale
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