SAREL BESTER INGENIEURS BK
Raadgewende Siviele Ingenieurs / Consulting Civil Engineers
Argitektuursdienste / Architectural Services
CK1999/09837/23
Bus/Box 21, CERES, 6835
T: 023-312 2017
F: 023-312 3802
E: sbri@telkomsa.net

Verw: 1921DDR-S2(Rev2)

Datum: 14 Mrt 2023

Messrs Howbill Farming
PO Box 146
Ceres
6840

Attention: Messrs Ernst Van Dyk & Theo van Rooyen

PRELIMINARY DESIGN REPORT FOR THE PROPOSED KLEINVLEI DAM ON KLEINVLEI 209, PORTION 1, DISTRICT CERES, HOWBILL FARMING

Your instruction about going ahead with the process with regard to the water use licence application, the activation of the environmental impact assessment as well as the preliminary design of the proposed Kleinvlei dam during the meeting held on 26 July 2019, refers.

1. BACKGROUND

The preliminary design of a dam normally follows after the scoping or feasibility stage during which the position, basic layout as well as the intended storage capacity range along with the initial costing have been determined. This will then serve as the basis for the final dam design and contract specifications in line with dam safety regulations in terms of chapter 12 of the National Water Act, 1998 (Act 36 of 1998).

In addition to the aforementioned, before a “Licence to Construct” can be issued, an *"Environmental Authorisation (EA)"* as well as a *“Water Use License”* have to be obtained from the respective authorities. In order to address these two aspects, a preliminary dam design is required containing specific technical information on the dam, which then serve as supportive documentation to the respective applications.

The proposed Kleinvlei dam will have a total storage capacity of approximately 176 840m³ and it would exclusively be filled with an existing water use, namely winter water from the Houdenbeks River as been included and motivated by the validation & verification process. The existing water use however, has been utilised before by abstracting directly from the Houdenbek River during summer months to sustain an annual 50% vegetable rotation of about 58ha in total. With the proposed Kleinvlei dam, they will create the opportunity to store winter water for summer irrigation during times when the Houdenbeks river nearly runs dry.

The concerned water taking has been managed by the *Koue Bokkeveld Water User Association* and they are aware and in favour of this application.

Construction of Kleinvlei dam will thus not only benefit and protect the summer flow in the Houdenbeks river but it would also give the opportunity for the BEE entity to become a stable self-sufficient economical entity. It will therefore maintain and ensure the beneficial effect on the broader economy by providing permanent jobs, something that is very important in the socio-economic status of previously disadvantaged groups in the surrounding local communities.

The licence application (WULA) therefore basically entails the switching of an existing summer water use to a winter water use and the ‘storing’ thereof for summer irrigation.

The proposed site is located between the Skurwe- and Sandberg mountains, about 5km south south-east of the town Op-Die-Berg as the crow flies and as shown on ***Appendix A.***

2. ASSIGNMENT

Sarel Bester Engineers has been appointed as the project engineer and coordinator overseeing the various actions and components regarding legal requirements as well as the design of the dam while also handling the Water Use Licence Application (WULA).

Instruction and appointment was received to continue with the preliminary design stage for licensing purposes. The Environmental Impact Assessment (EIA) in accordance with the NEMA guidelines, is currently in progress under the care of ***EnviroAfrica.*** The WULA is also in progress under care of our office, ***Sarel Bester Engineers***.

The preliminary design normally follows after and is partially based on the outcome of the scoping & feasibility study. In addition to this, the preliminary design calculations would normally be based on actual contours generated from an official survey compared to those typically obtained from GIS data used in the desk-top study. This assignment therefore takes it further by focussing on certain design as well as certain legal implications included in the first round of concept design drawings.

Surveyed data was converted to the WGS84 universal world map grid in order to relate and overlay it onto the world map for referencing purposes.

Part of the preliminary design process includes checking, verifying and updating information obtained from previous documentation as and where required and applicable with regard to storage capacity, expected earthworks quantities as well as the costing of the project for this purpose.

The intention and purpose of the Preliminary Dam Design Report is and will be used to:

- inform you as client of the concerned investigation regarding storage options along with provisional cost estimations,
- serve as supporting technical appendix to DWS for the water use license application,
- serve as technical appendix to DEADP for the environmental impact assessment, and
- serve as a basis to DWS Dam Safety Office for classification and APP matters.

3. APPLICATION & MOTIVATION

The first phase of activation of the WULA is running parallel to this preliminary design phase and will soon be submitted to DWS (Bellville). The application principles and motivation will be dealt with in full as a separate technical report, hopefully to be finalised & submitted early 2020 as allowed for by the eWULAAS system and which will be available on request when completed and submitted.

This application is based on an existing summer water use (ELU) in the form of surface water directly abstracted from the Houdenbek river as set out in the *Validation and Verification* documentation. The Houdenbeks river as such falls under the jurisdiction of the Koue Bokkeveld Water User Association. This particular summer abstraction will be switched or exchanged for winter abstraction with the key motivation to store winter water for summer irrigation, also benefiting and ensuring the protection of the Houdenbek river during the dry summer months when the water levels fall drastically.

This property was purchased in 2016 by the applicant, ***TSR Boerdery (Pty) Ltd***, a 51% BEE owned entity who would like to ensure the existing water use for permanent cultivars by creating winter storage capacity.

The dam site is located within the Houdenbek River catchment being part of the larger Olifants-Doorn system. The use of the water as well as the construction of the proposed Kleinvlei dam should have no negative effect on the downstream users since it is based exclusively on an existing taking which was executed on the property.

Other motivational information as required in terms of Section 27 of the National Water Act, forms part of and is included in the WULA being submitted separately.

4. ALTERNATIVES

Farm 209 portion 1, also known as Kleinvlei, is a relatively small property situated within the Koue Bokkeveld area with a rather mountainous topography towards the eastern side with limited potential dam site options, also due to the existing orchards, other development and infrastructure. However, the only potential dam site was surveyed and three wall options were investigated. We refer to Dam Options 1, 2 & 3 covered in the Feasibility Report, ***1921DDR-S1***, dated 5 June 2019 where Options 1 and 3 were declined because of poor storage ratios and bad overall economy.

5. WATER AVAILABILITY

The deeds information regarding the relevant property as well as the water use information which was submitted to DWS (Bellville) soon to be finalised by their *Validation & Verification* process, had been evaluated for purposes of this report. We refer to ***Appendices B1 & B2.***

A) Existing Water Uses:

Taking:

- Surface Water - summer use: ±180 000m³ (Houdenbek River)

Storing:

- None

B) This Licence Application (Storing):

- Proposed Kleinvlei Dam: ±176 840m³ (switched from summer use)

6. DAM SAFETY & CLASSIFICATION

The project entails the proposed Kleinvlei Dam and one of the first steps in the process is to have the proposed dam classified in terms of dam safety regulations. The application was submitted on 20 November 2019 to the Dam Safety Office, and the dam was classified on 23 Sep 2020 as a Small Category II dam with a Significant hazard potential rating under reference 12/2/E201/FJ. Refer ***Appendix B3***.

7. ENVIRONMENTAL IMPACT

Government Notices R385, R386 & R387 of 21 April 2006, issued under Chapter 5 of the National Environmental Management Act, 1998 (Act 107 of 1998), also known as the "NEMA" procedures determine that Kleinvlei Dam does trigger certain environmental aspects and therefore qualifies for a full Environmental Impact Assessment (EIA). The study and application is currently under way under the auspices of ***EnviroAfrica.***

8. EMPOWERMENT

The applicant, ***TSR Boerdery (Pty) Ltd***, a 51% black owned BEE company that was established in 2015, bought the concerned property in 2016. Project ***Kleinvlei*** is a land reform project established in terms of the Witzenberg PALS (Partners in Agri Land Solutions) framework. Witzenberg PALS is a private land reform initiative based on the principals of Chapter 6 of the National Development Plan. The initiative is supported by al spheres of Government in terms of which land is transferred and commercial farmers partners with black farmers. The aim is to empower the workforce by donating land and establishing an entity that will own and farm the land. The objective is to improve the broader work force's socio economic circumstances and establishing successful black commercial farmers.

Mr RJ Gibson, in his capacity as one of three directors of ***TSR Boerdery*** agreed on a Mentorship Programme with the other two BEE directors, namely *Mr & Mrs van Rooyen* with the aim to mentor the black shareholders and farmers to become successful black commercial farmers and businessmen, thereby supporting the goal to promote successful agricultural land reform. *Mr Gibson* will further help manage the Kleinvlei farming entity through his team in terms of a Management Agreement to ensure that the BEE project is managed according to best practices and the necessary skills is transferred to the black shareholders.

The aim of the project is to establish ±30ha of fruit orchards on the recently bought portion that only consisted of grazing fields before, and therefore not only economic growth will be promoted, but about 17 additional permanent employment opportunities will be generated in the process for a community that urgently needs it.

9. STATUTORY REQUIREMENTS

Various other statutory requirements might be applicable or of importance depending on site specific conditions apart from the regulations already dealt with above.

In this case the only limitations to be dealt with would be the farm borders and farm roads being accommodated elsewhere.

10. HYDROLOGY

The dam site lies within the E21D quaternary catchment under the auspices and care of DWS Olifants-Doorn catchment. This is an in-stream dam situated in the southern part of the quaternary catchment, near the origin of the Houdenbeks river as shown on ***Appendix C***. Although the proposed dam has its own local catchment, it would primarily be filled with water to be pumped from the Houdenbeks River itself because of little availability from its own catchment due to other existing lawful uses (ELU's) in the sub-catchment. For this reason a full hydrological study regarding the availability of water is considered unnecessary and neither required for purposes of this report.

Nevertheless, for the sake of completeness, the catchment characteristics according to the ***Water Resources of South Africa, WR2012***, by the Water Research Commission (WRC) in conjunction with Department Agriculture in cooperation with Elsenburg, are shown in the table below.

Table 2 shows the local catchment information in relation to the quaternary drainage area:

Catchment (ELSENBURG Catchment Delineation Tool)	Quaternary:	Local Catchment (Pro-rata)	Local Catchment (Elsenburg)
Name / Description	E21D	Kleinvlei Dam	Kleinvlei Dam
Area [km²]	242	4.5	4.3
Mean Annual Rainfall (MAP) [mm]	627	627	640
Mean Annual Run-off (MAR) [mm]	193	193	123
Gross Average Run-off (MAR) [x 10^6 m³]	46.71	0.87	0.53

11. SPILLWAY DESIGN CRITERIA

Kleinvlei Dam is in the process of being classified. Given the wall height of ±8m and the R303 main road directly downstream of the dam, we assume the classification to be ***Small Category II*** dam with a ***Significant*** Hazard Potential for purposes of this report.

Guidelines for the determination of appropriate flood sizes appears in SANCOLD "*Guidelines on Safety in Relation to Floods", (Report 4, SANCOLD, December 1991)* as follows:

Refer to Table 5.4 for Suggested Recommended Design Flood return periods (years) ~ UNROUTED

Dam Size Class	Hazard Rating		
	Low	Significant	High
Small	20 - 50	100	100
Medium	100	100	200
Large	200	200	200

Note, Based on the assumed classification for purposes of this report and the table above the spillway system of Kleinvlei Dam should be designed for the RDF equal to the ***1:100 year*** flood peak.

Various methods are normally used based on the SANCOLD guidelines and in this case the proposed ***RDF (Unrouted)*** is the equivalent of the 1:100 flood to the value of ***±43,3m³/s.*** However, the final design does take this to a next level by routing the flood through the dam basin which normally reduces the flood peak to the so-called ***RDD (Routed)***. In this case we expect the reduction to be substantial.

12. GEOLOGY

According to the Geological Survey of South Africa, the proposed site is situated within the Ceres & Nardouw Sub-groups which form part of the Bokkeveld & Table Mountain Groups, both being part of the lager Cape Supergroup as shown on ***Appendix D***. These geological formations on and surrounding the site is described as follows:

- ***Dh*** ~ *Light-grey feldspathic sandstone, subordinate siltstone; gritstone and conglomerate*
- ***Dt*** ~ *Micaceous, sandy shale and mudstone; alternating siltstone and minor sandstone*
- ***Db*** ~ *Light-grey feldspahtic and micaceous sandstone; subordinate shale; siltstone*
- ***Dv*** ~ *Dark-grey fossiliferous shale, mudstone and siltstone, thin sandstone beds*
- ***Dg*** ~ *Black to dark-grey fossiliferous shale, mudstone and siltstone*
- ***Dga*** ~ Dark-grey, rather lithic and feldspathic sandstone and siltstone; subordinate shale and conglomerate

The overall geology around the site is that of a complex strip configuration with many parallel running contact planes between the formations.

The footprint of the proposed dam walls would primarily fall on or across the contact planes between the Dh, Dt & Db formations described above mostly variations between sandstone, siltstone and shale. This in itself can lead to seepage problems which can be difficult to treat. Typically shale and sandstone formations in general can be regarded as suitable for dams of this nature and magnitude. However, depending on the fractured nature thereof, the general permeability of the dam basin can be jeopardised when it comes to sealing the core trench foundations. This requires further investigation during the design process.

In addition to the variation in formations there are a few geological features like fault-lines as well as strikes & dips of strata some distance south from the proposed sites indicated on the map which only requires mentioning for now. At this stage we don't foresee any particular risk or interdependency between these features and the water tightness of the site. Depending on the exact position and alignment, these fault zones or features might also impact on the seismic requirements in the design.

No soil tests have been done as yet and this is just an overview of the global geology at the sites and it may be that the local geology or soil conditions are such that it might even have cost implications on both the final design as well as construction thereof. However, dams in the vicinity is constructed of similar material and their behaviour over time is considered consistent and stable giving confidence in the proposed works.

Overall it would be considered better and less risky if the wall alignments can be arranged parallel to rather than crossing the contact planes between various formations.

13. SITE PROFILE

The Water Research Commission have recently launched their updated study of the Water Resources of South Africa replacing the previous versions thereof dated 1990 & 2005. The updated web-based information system, <*waterresourceswr2012.co.za*> launched in 2016, is well recommended by the Department of Water & Sanitation and also widely used throughout South Africa as basis when it comes to water management and development issues.

The table below shows a summary of such characteristics or profile regarding the proposed dam site.

Figure	Property Description	Zone / Index / Value	Unit / Scale
Figure 0	Water Management Area	17 ~ Olifants/Doorn	
Figure 1	Rainfall: MAR	400-500	[mm]
Figure 2a	Evaporation (WR90 S-pan)	1600-1700	[mm]
Figure 2b	Evaporation (A-pan)	2000-2200	[mm]
Figure 3	Runoff: MAR	100-200	[mm]
Figure 4a	Landcover	Irrigated areas	
Figure 6	Simplified Geology (WR90)	Intercalated arenaceous and argillaceous strata	
Figure 7	Soils (WR90) [Depth / Texture / Relief]	Moderate to deep / Sandy loam / Steep	
Figure 8	Sediment (WR90) [Erodibility Index]	15~ Medium	**H**igh 1-8 **M**edium 9-15 **L**ow 16-20
Figure 9	Vegetation (Acocks Veld Types)	Sclerophyllous bush types	
Figure 10	EWR Management Class	Class E-F Not an acceptable class	[A-F]
Figure 11	Surface Water Quality - TDS	>2000	[mg/l]
Figure 12	Population Density	0-100	[People / km²]
DWAF GRA2	Utilisable Groundwater Exploitation Potential	25 001-50 000	[m³/km²/a]

All of the above properties and/or characteristics are within an acceptable range for when it comes to building a dam and the overall observation and interpretation thereof does not raise any alarms which could potentially impact the design and construction of a dam of this nature.

14. CONCEPTUAL DESIGN

The project entails the design and construction of the proposed Kleinvlei dam as a zoned earthfill embankment across the valley including an open channel spillway provisionally against the northern bank plus a pipe outlet under the central embankment. Die preliminary design drawings are included in ***Appendix F***.

A) Design Characteristics:
The proposed dam is considered an in-stream dam with a straight alignment across the valley with the following characteristics:

Location:	33° 04' 02.00" 19° 19' 57.59"E
KLEINVLEI DAM	
Wall crest level (masl)	970.1
Full supply level (masl)	968,6
Lowest ground level (masl)	962.3
Max wall height (m)	7,8
Crest length (m)	130
Crest width (m)	4.0
Upstream slope	1 : 3
Downstream slope	1 : 2
Free board (m)	1.5
Embankment volume (m^3)	9 600
Total earthworks (m^3)	12 000
Nett storage capacity (m^3)	176 840
Flooded area (ha)	10,5
Total footprint (ha)	10,8

B) Foundation: Preliminary visual inspections shows a topsoil layer varying between ±0,3m and ±0,5m thick on a sandy to gravely layer between ±1,0 to ±3,0m thick on shale or sandstone formation. The formations are considered adequate and suitable for this type of structure.

C) Material investigation: No formal in-depth soil analyses has been done as yet. Other dams in the vicinity is of similar material and their behaviour over time is considered adequate and stable. The more gravelly and sandy material will be used as unselected mass fill within the up- and downstream embankment zones or shells while the more clayey material will be incorporated into the central core and cut-off zones. Visual inspection of the proposed dam site provisionally suggests that the availability of material from the dam basin seems to be adequate. Light dispersiveness is expected on these types of material originating from the shale, based on general erosion marks elsewhere in the valley. However, this characteristic will be addressed formally in the final design by way of either chemical stabilisation, increased compaction with built-in sand filters or a combination thereof.

D) Embankment design: The overall layout is a straight aligned in-stream dam across the valley with the wall crest length of ±155m. The proposed internal embankment profile will be zoned with a selected clayey core and cut-off zones plus unselected up- and downstream mass earthfill zones. Awaiting the outcome of the formal soil testing to be carried out for final design purposes, consideration will be given to the necessity and introduction of built-in sand drains. Due to the possibility of dispersiveness, the core and cut-off zones will be compacted to a higher density in the order of 98% Proctor. The planned maximum wall height is in the order of ±8.5m with the upstream slope provisionally set at 1v : 3h, the downstream slope at 1v : 2h and the crest width at 4m.

E) Drainage: Due to the height and the possibility of dispersiveness, as mentioned above, and pending the outcome of the soil tests, the internal embankment profile might require an optional built-in drainage system in the form of a curtain drain on the downstream side of the

core plus a blanket drain or evenly spaced strip drains over the downstream solumn area. Apart from this, drainage will also rely on the normal phreatic movement of moisture through the earthfill structure itself.

F) Stability: This aspect is considered part of the final design exercise when a complete slope and internal stability analysis will be conducted based on the results forthcoming from the specialized soil testing. Pending the outcome of these results, including the stability calculations, the proposed profile has been evaluated against and based upon applicable statistics obtained from a database of dams without any obvious risks being identified at this stage. However, the final design will also include a formal slope stability design based on finite element stability calculation models.

G) Outlet works: The outlet is currently planned as a single ø250mm class 9 pipe in reinforced concrete with a flanged sluice-gate control valve and manifold on the downstream side. It will also be fitted with a sieve pipe on pedestals or alternatively a custom built float unit at the upstream inlet end. This will be sufficient for irrigation purposes as well as for emptying the dam or lowering the water level in case of an emergency condition, say within 15 days.

H) Spillway & Flood management: Kleinvlei Dam will be equipped with an open side channel spillway with concrete sill at the right flank leading the flood water safely past and away from the embankment toe and back to the natural drainage path. The erodibility index is 15 on a scale of 1 to 20 with 1 being high and 20 being low, in other words the index is classified as low. The dry freeboard is provisionally set at ±1,5m based on the flood requirements.

I) Special Requirements: Releasing water for instream flow requirements (IFR) will probably be a requirement of the water use license (WUL) as it is considered an in-stream dam although to be filled by pumping from the Houdenbeks River. However, if required, the outlet of the dam will be equipped with a scour system including a calibrated measuring device if required. This aspect is considered a specialised item and the design thereof will form part of the detail design.

J) Maintenance and Operation: The dam is situated in a winter rainfall area and will be filled during the winter season primarily with water being pumped from the Houdenbeks River under the auspices of the Kouebokkeveld Water User Association. The operation and supervision of the dam will take place under the direct control of the owners or their delegated authority on a seasonal basis.

K) Specifications: Relevant and applicable specifications are envisaged for this purpose. It is recommended that the following standardised specifications be considered as basis and part of the construction contract:

- General Conditions of Contract for Construction Works Simplified (2018)
- SANS/SABS 1200AD: General (Small Dams)
- SANS/SABS 1200DE: Small Earth Dams
- SANS/SABS 1200GA: Concrete (Small Works)
- SANS/SABS 1200L: Medium Pressure Pipeline

15. QUALITY CONTROL

The site surveying, planning, design and construction supervision will be handled by personnel of *Sarel Bester Engineers*. Regular inspections and in-situ compaction tests will be conducted during the construction phase in order to ensure quality of workmanship in accordance with SABS/SANS standards.

16. DOWNSTREAM DEVELOPMENT

The proposed dam is considered an in-stream dam located within the Houdenbek River Catchment, about 0.6km before it confluence with the Houdenbek River itself. About 5km downstream it passes east from the town Op-die-Berg. Except for crossing the main road R303 twice at about 0.2km and 2km respectively, the potential flood area mainly consists of cultivated land with a few farm buildings and minor farm roads. The application for classification is due and was submitted to the Dam Safety Office who will then determine the hazard rating and subsequent clasification.

17. COSTING

The estimated costing of the project is based on recent tender prices of similar type projects within the Western Cape region. Costing of the project was done by using related data from other projects and dividing the sum total of all the earthmoving costs by the sum total of all the bulk earthmoving volumes as an all inclusive bulk unit price for earthmoving. Additional allowance was then made for other costs such as overhead costs, concrete & outlet related costs as well as diverse & unforeseen cost items. The sum total of these give the estimated project cost as set out on the attached preliminary design evaluation sheet summarised below and included as ***Appendix E.***

Description	Kleinvlei Dam
Max Wall Height (m)	7,8
Total Earthmoving (m^3)	12 000
Nett Storage Capacity (m^3)	±176 840
Storage : Earthworks	±14.8
Total Estimated Project Cost (R)	±R1,400,000

Kleinvlei Dam entails the construction of a new dam. The storage ratio was calculated as the ratio between the total volume of material to be moved and the storage capacity gained in the proposed dam. In general dam sites are considered more viable or economical when the storage ratio is about 5 and higher. The figures above show the storage versus earthworks ratio in the order of ±18 which is considered highly economical.

In this case, the earthworks costing was calculated at a basic rate of **±R65/m^3** accounting for ±65% of the total cost which translates to an estimated project cost in the order of **R1,23mill**, excluding fees etc.

18. SUMMARY

Kleinvlei dam is planned as an in-stream dam situated within a tributary of the Houdenbeks River catchment, about 0,6km upstream of the confluence with the Houdenbek River itself, forming part of the larger Olifants-Doorn River system. The water use licence application is for new storage of an existing summer water use to be transformed into winter abstraction from the Houdenbek River which is acknowledged by the management of the Koue Bokkeveld Irrigation Board. The dam will mainly be filled from the Houdenbek River via an existing pump and pipeline system while plantations will be irrigated directly from the dam during summer periods.

The embankment will be aligned north-south between two ridges with a relative short crest length compared to water storage. The spillway will be relocated higher up against the northern abutment as an uncontrolled open channel with concrete sill at the full supply level. The dam will also be equipped with an outlet pipe encased in concrete under the embankment.

The application is based on existing summer water use to be exchanged for surplus winter water use which could not be utilised in the past due to limited storage capacity. The additional storage of winter water will be used for summer irrigation which in turn will increase the irrigated area by ±30ha.

The license application for the 'storing' of water as well as the environmental impact assessment have both been initiated under the auspices of our offices and those of *Enviro Africa* respectively. The purpose of this document is therefore also to provide certain technical information as part of the above applications to the various authorities.

All taken into account based on proper engineering, the site is considered suitable for a dam of this nature.

19. APPENDICES

A) Locality Map
B) Documentation *(Property Information / V&V / Classification)*
C) Hydrological Map
D) Geological Map
E) Preliminary Design Evaluation: Quantities & Costing
F) Drawing 1921-S2-01; Contour Layout Plan & Construction Detail

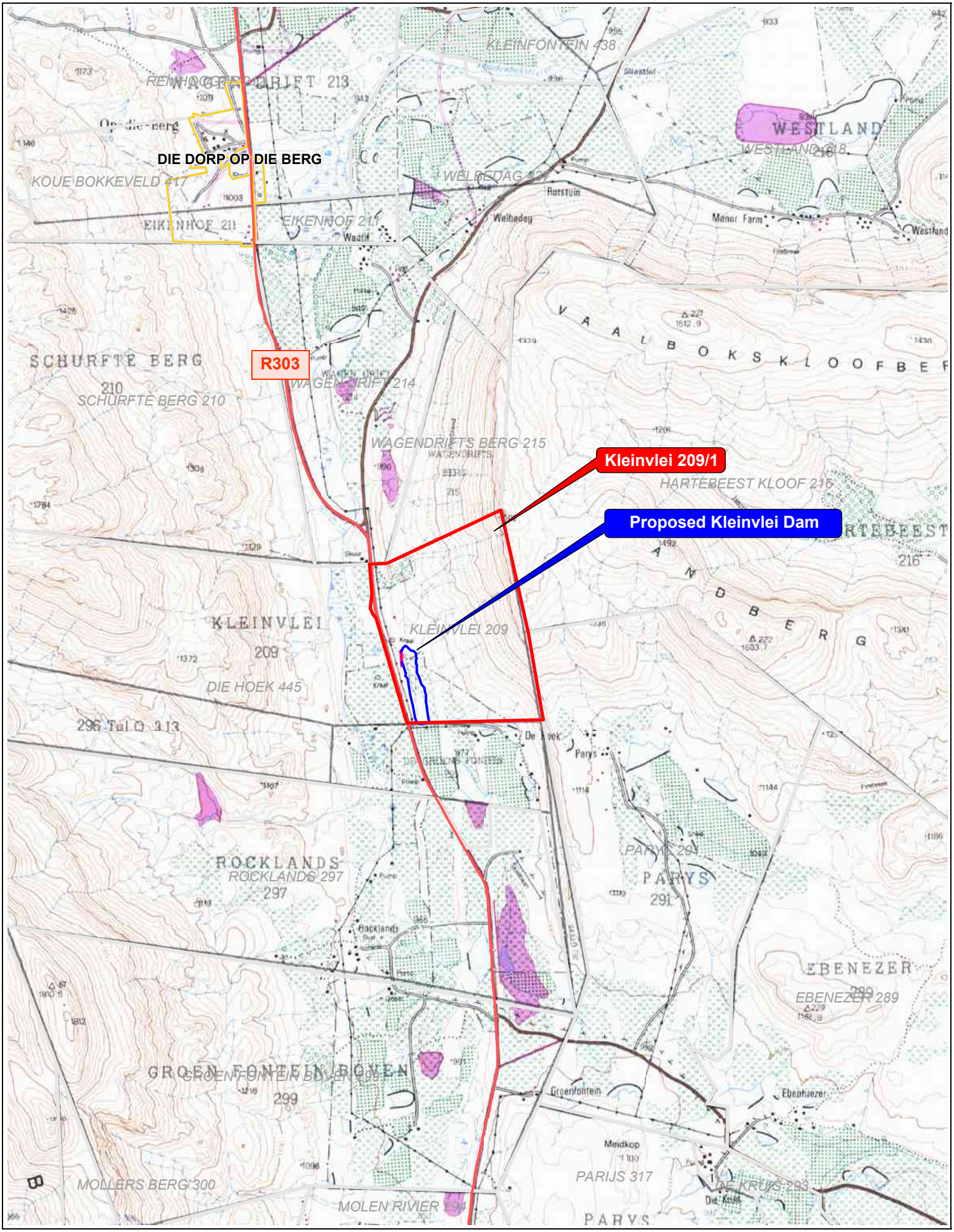
You are welcome to contact us in case of uncertainty about the contents or if more information is required about any aspect or component herein.

We trust that you will find the above in order.

Yours faithfully

M Charl Bester (Pr Ing)

Copies to:	Mr C Geyser, *Enviro Africa,* Somerset West



SAREL BESTER INGENIEURS BK
MC BESTER
Pr. Ing., LSAISI: 970598, LSACAP: T1218
Tel 023 312 2017 / Epos sbri@telkomsa.net

Client: Howbill Farming (Pty) Ltd
PO Box 146
CERES
6835

Project: Proposed Kleinvlei Dam
LOCALITY MAP

Project Ref: 1921

Map Ref: 3319AB

Scale: 1: 50 000

WinDeed Database Deeds Office Property

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KLEINVLEI, 209, 1 (CAPE TOWN)

GENERAL INFORMATION

Date Requested	2019/10/09 09:39
Deeds Office	CAPE TOWN
Information Source	WINDEED DATABASE
Reference	1921

PROPERTY INFORMATION

Property Type	FARM
Farm Name	KLEINVLEI
Farm Number	209
Portion Number	1
Local Authority	WITZENBERG DC
Registration Division	CERES RD
Province	WESTERN CAPE
Diagram Deed	T30024/1985
Extent	295.4589H
Previous Description	-
LPI Code	C01900000000020900001

OWNER INFORMATION

Owner 1 of 1

Type	COMPANY
Name	K2015028869 SOUTH AFRICA PTY LTD
ID / Reg. Number	201502886907
Title Deed	T52028/2016
Registration Date	2016/08/29
Purchase Price (R)	3,534,000
Purchase Date	2015/04/15
Share	0.00
Microfilm	-
Multiple Properties	NO
Multiple Owners	NO

ENDORSEMENTS (4)

#	Document	Institution	Amount (R)	Microfilm
1	K131/1986S	-	UNKNOWN	1986 0231 1288
2	FARM CE 209/1	-	UNKNOWN	1985 0022 0145
3	VA9262/2009	MUN WITZENBERG	UNKNOWN	-
4	VA2388/2016	MUN WITZENBERG	UNKNOWN	-

HISTORIC DOCUMENTS (5)

#	Document	Owner	Amount (R)	Microfilm
1	T19910A/1991	-	UNKNOWN	1991 0570 1261
2	T30024/1985	REGIONAL SERVICES COUNCIL-BREERIVIER	SECT 16	1991 0570 1220
3	T30024/1985	MUN WITZENBERG	SECT 16	1991 0570 1220
4	T30024/1985	DIV-AFD WITZENBERG	SECT 16	1991 0570 1220
5	T63930/2009	-	UNKNOWN	-

FORMAL APPLICATION FOR THE VALIDATION AND VERIFICATION OF THE EXISTING LAWFUL WATER USES IN TERMS OF THE NATIONAL WATER ACT, 1998

(Completed formal V& V documentation as received from the Aurecon V&V Team)

PROPERTY
PORTION 1 OF THE FARM KLEINVLEI 209
DISTRICT OF CERES

REGISTERED PROPERTY OWNER
TSR BOERDERY (PTY) LTD

WATER USER
TSR BOERDERY (PTY) LTD

Contact Person:
Mr Raymond Gibson
Mr Tian Erasmus
P O Box 146
CERES
6835

Tel no.: (023) 317 0823
Fax no.: (023) 317 0821
Cell nr: (082) 575 6005
Email: tian@howbill.co.za

MAY 2017

APPLICATION FOR THE VALIDATION AND VERIFICATION OF EXISTING LAWFUL WATER USE IN TERMS OF THE NATIONAL WATER ACT, 1998

Introduction

Included in this report kindly find the completed and signed Validation and Verification application form for the property, Portion 1 of the farm Kleinvlei 209, located within the District of Ceres.

This property which is registered in the name K2015028869 South Africa (Pty) Ltd. Kindly note that the company K2015028869 South Africa (Pty) Ltd has undergone a name change and is now known as TSR Boerdery (Pty) Ltd. The necessary documentation confirming this name change has been included in this report.

The water user/operating company in respect of this property is TSR Boerdery (Pty) Ltd (ID 2015/028869/07). The VAT no. of this water user is 450 027 0428.

We have included amongst others, as additional information, in respect to the Validation and Verification of the ELU of this property, the following information:

- Property Deed Search;
- Property Diagram;
- Our 2000 Land Use Colour Images- A4-size on which is indicated four additional land parcels which are/were irrigated at the time;
- Certificate confirming name change of the company;
- Copy of the Signatory ID document;
- Letter confirming the signatory's power of attorney to sign the Validation & Verification application on behalf of TSR Boerdery (Pty) Ltd.

Water Resources

The water resources identified and listed below from which all the irrigation water is taken for use on these twenty nine properties are the following:

- Surface Water - Run of River- Houdenbeks River (summer water).

Irrigation Demand

The irrigation water demand for the respective crop cultivated is listed below:

Summer Vegetables 9 500 m³/ha/a

Detail of Properties

Property Description	Registered Owner	Extent (ha)	Title Deed Nr	District
Portion 1 of Kleinvlei 209	#TSR Boerdery (Pty) Ltd	295.4589	T52028/2016	Ceres

 # previously known as K2015028869 South Africa (Pty) Ltd

Current Water Registration Certificates

No records of current water registration are available.

Summary of Land Use and Lawful Water of Properties

Property Description	Irrigated Area & Crop Type/Year (ha)	Annual Water Use/ Resource Type (m^3/a) Scheduled Water (Sch) Surface Water (SW) or Groundwater (GW)	Total Storage/Property (m^3)	Number of Dams/Property (nr)
Portion 1 of Kleinvlei 209	58.74 ha of Summer Vegetables @ 50% rotation	279 011 m^3/a (SW)	Zero	Zero
Totals	58.74 ha/2 = 29.37 ha/year	279 011 m^3/a (SW)	Zero	Zero

Storage Dams

There are no storage dams on the property. All the water used and exercised for irrigation use is abstracted from the Houdenbeks River during the summer months.

Summary of Other Water Uses on the Properties

Property Description	Type of Use	Annual Volume Used (m^3/a)	Water Resource & Name
Portion 1 of Kleinvlei 2089	Domestic	1 500 m^3/a	(SW) Houdenbeks River
Portion 1 of Kleinvlei 2089	Stock-watering	2 500 m^3/a	(SW) Houdenbeks River
	Totals	4 000 m^3/a	

SW = Surface Water & GW = Groundwater

Conclusion

We trust that the information supplied is sufficient in order to finalise the Validation and Verification process and proceed with the issue of a certificates of confirmation in respect of the lawful water use of this property, Portion 1 of the farm Kleinvlei 209, District of Ceres.

Kindly contact us should you require any additional information in this regard.

Addendums

Addendums included for this property, are:

- Property Deed Search;
- Property Diagrams;
- Our 2000 Land Use Colour Images- A4-size on which is indicated four additional land parcels which are/were irrigated at the time;
- Certificate confirming name change of the company;
- Copy of the Signatory ID document;
- Letter confirming the signatory's power of attorney to sign the Validation & Verification application on behalf of TSR Boerdery (Pty) Ltd.

Mr Raymond J Gibson
Director: TSR Boerdery (Pty) Ltd

Date: 16 May 2017

COMPLETED & SIGNED
V&V APPLICATION FORM

Portion 1 of Kleinvlei 209
Cecil RD

water & sanitation

Department
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

WESKAAP

Privaatsak X16, Sanlamhof, 7532. Voortrekker Straat 52, Bellville

An English version is available on the next page.

Meneer / Mevrou

Die bepaling van die Bestaande Wettige Watergebruik op eiendomme binne die Berg-Olifantswaterbestuursgebied (WBG)

Die Departement van Water en Sanitasie (DWS) is regoor Suid-Afrika besig met die Validasie en Verifikasie (V&V) proses om die Bestaande Wettige Watergebruik (BWW) in terme van Artikel 35 van die Nasionale Waterwet, (Akte 36 van 1998) (NWW) te bepaal.

'n **Riglyndokument** vir watergebruikers is ook aan u gestuur. Dit bevat die volgende belangrike inligting:

- Agtergrondinligting oor die wettige proses wat van toepassing is op die bepaling van BWW.
- Besonderhede van opedagvergadering datums.
- Kontakbesonderhede vir die indiening van voltooide getekende vorms.
- Besonderhede oor die V&V webtuiste, **www.VandVms.co.za**, wat nuttige inligting tov die proses bevat.

Die BWW sal slegs vir die volgende watergebruike bepaal word:

- Artikel 21(a): Neem van water vanuit 'n waterhulpbron
- Artikel 21(b): Opgaring van water
- Artikel 21(d): Deelname aan 'n stroom vloei verminderings aktiwiteit (kommersiële bosbou).

Die volgende onder u beheer val binne die Berg-Olifantsrivier WBG, vaarvoor u vir elk 'n soortgelyke vorm moet ontvang

- C01900000000020900001 - 933006 -

Gedeelte nommer/ Plaas nommer

Hierby ingesluit is 'n gedeeltelik voltooide vorm met inligting wat verkry is vanaf bestaande watergebruik registrasies, ontledings en berekeninge gebaseer op lugfoto's wat kort na die implementering van die NWW geneem is. U word versoek om die inligting noukeurig te bestudeer aangesien dit 'n impak op die BWW het. U word hiermee uitgenooi om 'n opedagvergadering by te woon waar die V&V proses verduidelik sal word. U sal die geleentheid gegee word om direk met die DWS-verteenwoordigers in gesprek te tree. 'n Lys met al die datums en vergaderplekke is in die riglyndokument ingesluit.

Voltooi asseblief enige ontbrekende inligting op die vorm. Veranderinge, gemotiveer deur ondersteunende dokumente, kan deur die watergebruiker voorgestel word.

Gedeelte 6 van die vorm, "Aansoek vir Verifikasie", moet deur die watergebruiker onderteken en teen ingedien word, ten einde 2016-12-11 die aansoek te verwerk en die watergebruik formeel te erken. Aurecon Suid-Afrika (Edms.) Bpk. is deur die DWS aangestel om die Berg-Olifants Proto Opvanggebiedbestuursagentskap (OBA) met die V&V proses in die Berg-Olifants WBG by te staan.

Let asseblief op die volgende belangrike inligting wat spesifiek tot u relevant is:

- **Eiendom waarop die watergebruik in hierdie vorm van toepassing is:** C01900000000020900001 - 933006
- **Die watergebruiker se unieke wagwoord op die webtuiste toegang tot inligting rakende watergebruik op hierdie eiendom te verkry:** -

Indien u nie die geskeduleerde opedag vergaderings kan bywoon nie of indien u meer inligting benodig, kontak Annemie Mynhardt by 021 526 9400 of stuur 'n e-pos na wateruse@aurecongroup.com of 'n faks na 086 560 5068.

Die uwe

Ashia Petersen
Waarnemende Hoof Uitvoerende Beampte Berg-Olifants Proto-OBA
DEPARTEMENT VAN WATER EN SANITASIE
Datum: 2016-11-11

water & sanitation
Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

WESTERN CAPE

Private Bag X16, Sanlamhof, 7532. 52 Voortrekker Road, Bellville

Sir / Madam

Determining the Existing Lawful Water Use on properties within the Berg-Olifants Water Management Area

The Department of Water and Sanitation (DWS) is undertaking a validation and verification (V&V) process across South Africa to determine the Existing Lawful Water Use (ELU) in terms of Section 35 of the National Water Act, (Act 36 of 1998) (NWA).

A **Guideline Document** for water users has also been sent to you. It contains the following important information:

- Background information on the legal process applicable to determine ELU.
- Details of open day meeting dates and venues.
- Contact details for submission of completed signed forms.
- Details on the V&V website, **www.VandVms.co.za**, which contains useful information on the process.

The ELU will be determined for the following types of water use only:

- Section 21(a): Taking water from a water resource
- Section 21(b): Storage of water
- Section 21(d): Engaging in a stream flow reduction activity (commercial forestry)

The following properties under your control within the Berg-Olifants WMA, for each of which you should receive a similar form:

- C01900000000020900001 - 933006 -

Portion number/ Farm number

The forms enclosed with this letter are partially completed with data obtained from existing water use registered, analysis and calculations done based on aerial photography taken shortly after the implementation of the NWA. You are requested to review the data which will have an impact on the ELU.

You are hereby invited to attend an open day meeting where the V&V process will be explained. At the open day meeting, you will have the opportunity to interact directly with the DWS representatives. The open day schedule is included in the Guideline Document.

Please complete the forms attached, and confirm the information provided. Amendments may be proposed with motivations and supporting documents.

Section 6 of the form, "Application for Verification" is compulsory and must be signed by the water user and returned by 2016-12-11 in order for the application to be assessed and the water use formally verified. Aurecon South Africa (Pty) Ltd was appointed by the DWS to assist the Proto Catchment Management Agency (CMA) with the V&V process in the Berg-Olifants WMA.

Please note the following information relevant to you,

- **Property on which water use is being addressed in this form:** C01900000000020900001 - 933006
- **Water User website unique password to access information relating to water use on this property:**

If you are unable to attend the scheduled open day meetings or need more information you can contact Annemie Mynhardt at 021 526 9400 or send an e-mail to wateruse@aurecongroup.com or a fax to 086 560 5068.

Yours sincerely

Ashia Petersen
Acting CEO: Berg-Olifants Proto-CMA
DEPARTMENT OF WATER AND SANITATION
Date: 2016-11-11

1 Property Information *Besonderhede van Eiendom*

Registration division *Registrasie afdeling*		C019 ✓
Farm name *Naam van plaas*	KLEINVLEI Nr 209 ✓	
Portion number / farm number *Gedeeltenommer / plaasnommer*		1/209 ✓
Property extent (ha) *Groote van eiendom (ha)*	295.4589 HA ✓	
Name of owner *Naam van eienaar*	TSR BOERDERY (PTY) LTD ✓	
Company Reg / CC / ID number *Maatskappyreg / BK / ID nommer*	2015/028869/07 ✓	
Title deed number *Titelakte nommer*	T52028/2016 ✓	
Title deed date *Datum van titelakte*	29 AUGUST 2016 ✓	

2 Water User Information *Besonderhede van Watergebruiker*

2.1 Water User Details *Besonderhede van Watergebruiker*

Registered user type *Regsentiteit van geregistreerde watergebruiker*		Individual (Complete Section 2.2) / *Individu (Voltooi Gedeelte 2.2)* Company (Complete Section 2.3) / *Maatskappy (Voltooi Gedeelte 2.3)*
Postal address *Posadres*	P O BOX 146, CERES, 6835 ✓	
Physical address *Fisiese adres*	PLAAS KLEINVLEI, KOUE BOKKEVELD, CERES ✓	
Telephone number *Telefoon nommer*	023-3170823 ✓	
Fax number *Faks nommer*	023 - 317 0121	
Cell number *Selfoon nommer*	0825755006 ✓	
Email *E-posadres*	TIAN@HOWBILL.CO.ZA ✓	

2.2 Details of Individual

Besonderhede van Individu

Only complete this section if the registered water user is a natural person. A copy of the water user's ID document must accompany the returned submission.

Hierdie gedeelte moet slegs voltooi word indien die gregistreerde watergebruiker 'n individu is. 'n Kopie van die watergebruiker se ID dokument moet saam met die voltooide vorm ingedien word.

Title of water user *Titel van watergebruiker*	
Initials of water user *Voorletters van watergebruiker*	
Surname of water user *Watergebruiker se van*	
ID or passport number *ID nommer of paspoortnommer*	
Vat number (if applicable) *BTW nommer (in van toepassing)*	
Country where passport was issued *Land wat paspoort uitgereik het*	
Gender *Geslag*	Male / *Manlik* Female / *Vroulik*
Population group of water user *Etniese groepering van watergebruiker*	Black / *Swart* White / *Blank* Coloured / *Bruin* Indian / *Indiër*

2.3 Company Details

Besonderhede van Maatskappy

Only complete this section if the registered water user is a company. A copy of the water user's company registration document must accompany the returned submission.

Hierdie gedeelte moet slegs voltooi word indien die gregistreerde watergebruiker 'n maatskappy is. 'n Kopie van die watergebruiker se maatskappyregistrasiedokument moet saam met die vorm ingedien word.

Company name *Naam van maatskappy*	TSR BOERDERY (PTY) LTD ✓
Company Reg number / CC number *Maatskappy Reg number / BK nommer*	2015/028869/07 ✓
Date company was established *Stigtingsdatum van maatskappy*	11/02/2015 ✓
Country in which company was established *Land waar maatskappy gestig is*	RSA ✓
VAT number *BTW nommer*	4500270428 ✓
Contact person name *Naam van kontak persoon*	TIAN ERASMUS ✓

2.4 Contact Person Details — *Besonderhede van Kontak Persoon*

Only complete if the Contact Person's details are different from the Water User's details above.

Voltooi slegs indien die Kontak Persoon se besonderhede verskil van die Watergebruiker hierbo s'n.

Name of contact person *Naam van kontak persoon*	Mr Tian Erasmus
Telephone number *Telefoon nommer*	074 167 3502
Cell number *Selfoon nommer*	072 575 5006
Email address *E-posadres*	tian@herbill.co.za

3 Reference Information — *Verwysing Inligting*

This section lists reference information available to DWS. Review and edit where necessary and provide supporting documents for motivation.

Hierdie afdelingbevat inligting wat DWS beskikbaar het. Hersien en wysig indien nodig met ondersteunde dokumente ter motivering.

3.1 Irrigation Board Allocation — *Besproeiingsraad Toekenning*

Reference is made to Irrigation Board allocation only.

Verwys slegs na Besproeiingsraad toekennings.

Irrigation board name *Naam van besproeingsraad*	**Scheduled area (ha)** *Ingelyste oppervlakte (ha)*	**Quota / Water use rate (m³/ha/year)** *Kwota / Watergebruik per eenheid (m3/ha/jaar)*	**Authorised volume (m³)** *Inlysting volume (m³)*
	Not Applicable		

3.2 WARMS Registrations — *WARMS registrasies*

3.2.1 Taking of Water — *Neem van water*

Registration number *Registrasie nommer*	**Water resource type** *Tipe waterbron*	**Resource name** *Naam van bron*	**Water use sector** *Watergebruik sektor*	**Registered volume (m³)** *Gregistreerde volume (m³)*
		No Information	Available	

3.2.2 Storage — *Opgaar van Water*

Registration number *Registrasie nommer*	**Dam name** *Naam van dam*	**River name** *River naam*	**Registered volume (m³)** *Gregistreerde volume (m³)*
	No Information	Available	

3.2.3 Stream Flow Reduction Activity

Stroomvloeivermindering Aktiwiteit

Stream flow reduction activities refer to commercial forestry plantations.

Stroomvloeiverminderingsaktiwiteite verwys na kommersiele bosbouplantasies

Registration number *Registrasie nommer*	Type of trees in plantation *Tipe bome in plantasie*	Name of nearest river *Naam van naaste rivier*	Area (ha) *Oppervlakte (ha)*	Water use rate (m^3/ha/year) *Watergebruik per eenheid (m3/ha/jaar)*	Registered volume (m^3) *Gregistreerde volume (m^3)*

NO INFORMATION AVAILABLE

3.3 Dam Safety Registrations

Dam Veiligheids Registrasies

DSO Number *DVK nommer*	Dam Name *Naam van Dam*	Capacity (m^3) *Kapasiteit (m^3)*

NOT APPLICABLE

3.4 Other authorisations-9B permits, etc

Ander magtings-9B permitte, ens

Please enter details of any other water use authorisation you have. Please attach a full copy of the water use authorisation document.

Voltooi besonderhede van enige ander watergebruik magtiging waaroor u beskik. Dien asseblief 'n afskrif van die watergebruiksmagtiging saam met die voltooide dokument in.

Authorisation type *Tipe magtiging*	Nature of water use (e.g. taking of water from a water source, storage, etc.) *Doel van watergebruik (Neem van water van n bron, opgaring, ens.)*	Permit number *Permit nommer*	Permitted volume (m^3) *Toegelate volume (m^3)*

NOT APPLICABLE

4 Actual Water Use

Actual Water Use

This section lists the actual average annual water use during the qualifying period.

Hierdie gedeelte dui die werklike gemiddelde jaarlikse watergebruik gedurende die kwalifiserende periode aan.

4.1 Taking of water

Neem van water

4.1.1 Taking of water for irrigation

Neem van water vir bespoeing

Field number on map *Veldnommer op kaart*	Irrigated *Besproei*	Crop type * *Gewas tipe**	Area (ha) *Oppervlakte (ha)*	Rotation factor (%) *Rotasiefaktor (%)*	Water use rate (m³/ha/year) *Watergebruik per eenheid (m3/ha/jaar)*	Volume (m³/year) *Volume (m³/jaar)*
C1	✓	VEGETABLES	1.47	50 %	9500	6982
C2	✓	VEGETABLES	12.76	50 %	9500	60 610
C3	✓	VEGETABLES	3.85	50 %	9500	18 287
C4	✓	VEGETABLES	3.87	50 %	9500	18 382
C5	✓	VEGETABLES	5.10	50 %	9500	24 225
C6	✓	VEGETABLES	6.15	50 %	9500	29 212
C7	✓	VEGETABLES	2.39	50 %	9500	11 352
C8	✓	VEGETABLES	5.37	50 %	9500	25 507

Total irrigated (m³/year)
Totale besproeing (m³/year)

Crop types are: Gewastipes is:

Citrus *Sitrus*, Deciduous Fruit *Sagte Vrugte*, Grazing *Weiding*, Lucerne *Lusern*, Potatoes *Aartappel*, Table Grapes *Tafeldruiwe*, Vegetables *Groente*, Wheat *Graan*, Wine Grapes *Wyndruiwe*

C9	✓	VEGETABLES	2.05	50 %	9500	11 637
C10	✓	VEGETABLES	8.07	50 %	9500	38 352
C11	✓	VEGETABLES	2.38	50 %	9500	11 305
C12	✓	VEGETABLES	4.88	50 %	9500	23 180

TOTALS 58.74 ha 279 011 m³/a

∴ 50 % Rotation = 29.37 ha of VEGETABLES planted and irrigated per year

4.1.2 Taking of water for other purposes *Neem van water vir ander doeleindes*

4.1.2.1 Feedlots

Animal type *Tipe diere*	Number of animals *Aantal diere*	Water use rate (m³/year) *Watergebruik per eenheid (m³/year)*	Volume (m³/year) *Volume (m³/year)*
Cows & Sheep	-	Stock-watering	2 500 m³/a
Total *Totaal*			2500 m³/a

4.1.2.2 Domestic water use

Number of households *Aantal huishouding*	Water use rate (m³/year) *Watergebruik per eenheid (m³/year)*	Volume (m³/year) *Volume (m³/year)*
Domestic Use		1 500 m³/a
Total *Totaal*		1500 m³/a

4.1.2.3 Industrial water use

Type of industry *Tipe nywerheid*	Details of water use *Detail van watergebruik*	Volume (m³/year) *Volume (m³/year)*
Total *Totaal*	NOT APPLICABLE	

4.1.3 Water Sources

Waterbronne

The table below reconciles water taken from sources with water used. For water obtained via an Irrigation Board, only state the actual volume used. The full allocation will be used when calculating the ELU.

Die tabel hieronder moet voltooi word om water uit die onderskeie waterbronne met watergebruik te rekonsilieer. Vir water vanaf 'n besproeiingsraad, dui net die werklike volume wat van u Besproeiingsraadtoekenning inlysting gebruik was. N.S. Die volle toekenning van die Besproeiingsraad skedule sal gebruik word om die BWW te bereken.

Sector *Sektor*	**Annual volume actually used (m³/year)** *Jaarlikse volume eintlik gebruik (m³/jaar)*			**Total** *Totaal*	**Notes** *Notas*
	Surface water *Oppervlak water*	**Groundwater *** *Grondwater **	**Irrigation Board** *Besproeiingsraad*		
Agricultural irrigation Landboubesproeiing	279 011 m³/a	Zero	Zero	279 011 m³/a	Total 4.1.1 *Totaal 4.1.1*
Feedlots Voerkraal	2500 m³/a	ZERO	Zero	2500 m³/a	Total 4.1.2.1 *Totaal 4.1.2.1*
Domestic water use Huishoudelike watergebruik	1500 m³/a	Zero	Zero	1500 m³/a	Total 4.1.2.2 *Totaal 4.1.2.2*
Industrial water use Gebruik vir nywerhede	ZERO	Zero	Zero	ZERO	Total 4.1.2.3 *Totaal 4.1.2.3*

* Mark the position of any boreholes on map

** Dui aan die posisie van enige boorgate op kaart*

Summary *Opsomming*

Total Scheduled Irrigation Board (from LBO list) *Totaal Besproeiingsraadtoekenning (van LBO lys af)*	ZERO m³
Total Irrigation Board volume used *Totaal Besproeiingsraadtoekenning eintlik gebruik*	Zero m³
Total other sources volume used *Totaal ander waterbronne gebruik*	283 011 m³/a ~~m³~~
Total volume used *Totaal volume gebruik*	283 011 m³/a ~~m³~~

4.2 Storage

Opgaring

Map reference number *Veld nommer op kaart*	**Area (ha)** *Oppervlakte (ha)*	**Method for determining volume** *Metode vir volume bepaling*	**Maximum wall height (m)** *Maksimum wallhoogte (m)*	**Average water depth at full supply level (m)** *Gemiddelde water diepte volvoorraadvlak (m³)*	**Crest length of wall (m)** *Kruin lengte van muur (m)*	**Volume (m³)** *Volume (m³)*
Total *Totaal*	There are no STORAGE DAMS on the property					

4.3 Stream Flow Reduction Activity / *Stroomvloeivermindering Aktiwiteit*

Stream flow reduction activities refer to commercial forestry plantations.

Stroomvloeivermindering aktiwiteite verwys na kommersiële bosbouplantasies.

Field number on map *Veld nommer op kaart*	Type of trees in plantation *Tipe bome in plantasie*	Plantation area (ha) *Plantasie oppervlakte (ha)*	Water use rate (m³/ha/year) *Watergebruik per eenheid (m³/ha/jaar)*	Volume (m³) *Volume (m³)*
F9	PINE	12.54	2500	31350 m³/a
F10	PINE	2.37	2500	5925 m³/a
Total *Totaal*		14.91		37 275 m³/a

5 ELU Summary / *BWW Opsomming*

This is a preliminary summary of the water user's ELU

Dit is 'n voorlopige opsomming van die watergebruiker se BWW.

Type of water use *Watergebruik tipe*	Volume (m³/annum) *Volume (m³/annum)*	Source *Bron*	Irrigation Board or Water User Association *Besproeiingsraad of Watergebruikersvereniging*
Irrigation + Domestic + Stock-watering	283 011 m³/a	Surface Water - Houdenbeks River	N/A

+ Stream Flow Reduction Use = 37 275 m³/a.

6 Application for verification / *Aansoek van Verifikasie*

I,

(Initials and surname)

hereby apply for the verification of my Existing Lawful Water use in terms of Section 35 of the National Water Act (Act 36 of 1998). Furthermore, I approve that the information in the preceding tables, including the amendments thereto, as accepted by DWS, be applied to my Water Use registration. If an authorised representative signs the application for verification, Power of Attorney from the water user must be attached. Refer to Power of Attorney template in the Guideline document.

Hiermee verklaar ek, RAYMOND JOHN GIBSON

(Voorletters en van)

dat ek aansoek doen vir die verifikasie van my Bestaande Wettige Watergebruik in terme van Artikel 35 van die Nasionale Waterwet (Wet 36 van 1998). Ek keur dit goed dat die inligting in die voorafgaande tabelle, en wysigings daarvan, soos deur DWS goedgekeur word, aangewend word om my Watergebruik registrasie(s) op te dateer. Indien 'n gemagtige verteenwoordiger die aansoek vir verifikasie teken moet Volmag van die watergebruiker af aangeheg word. Verwys na Volmag sjabloon in die Riglyndokument.

Position / Hoedanigheid: DIREKTEUR

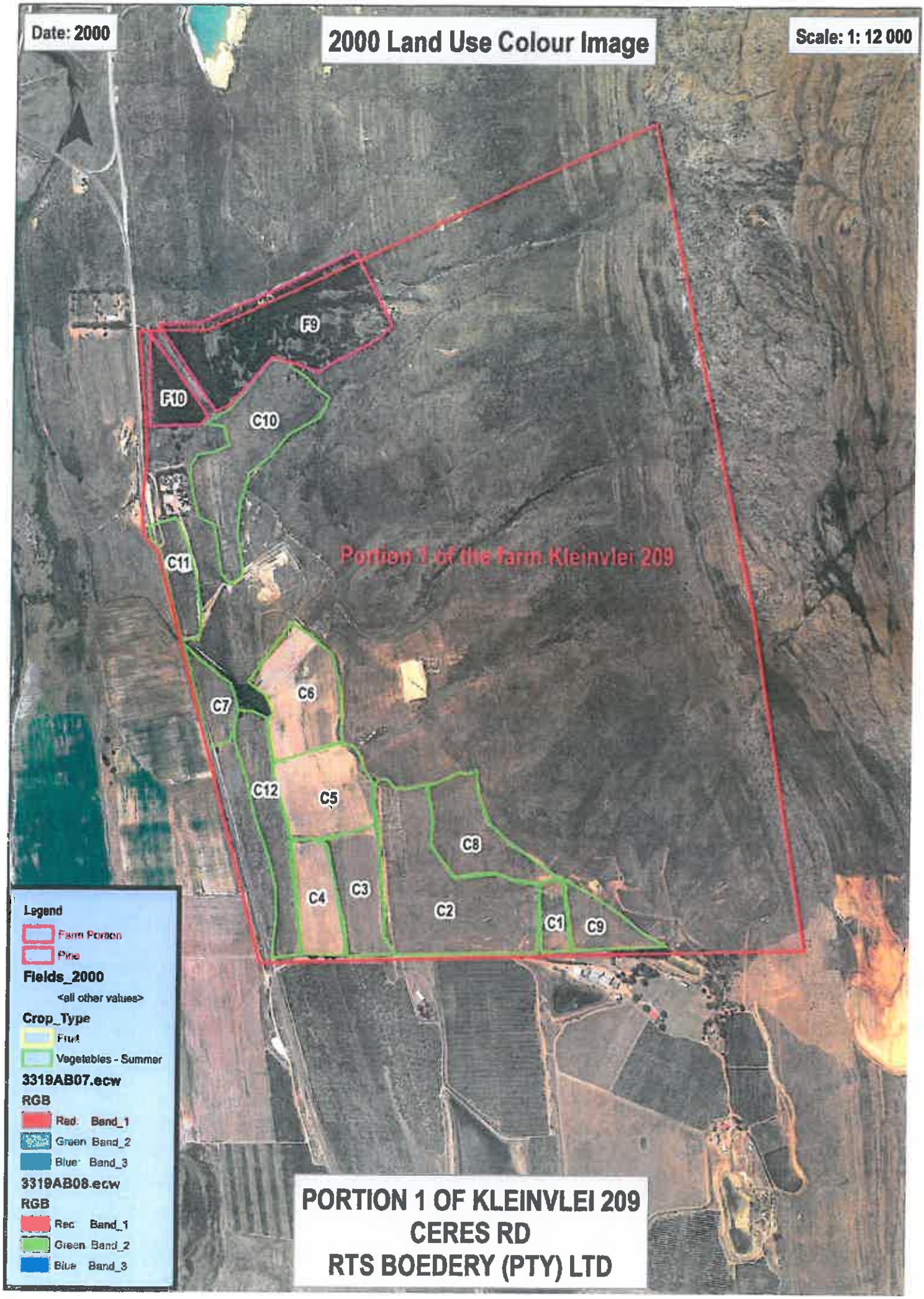
Signature / Handtekening:

Date / Datum: 16 May 2017

AURECON 2000 LAND USE COLOUR IMAGE

SEE ONE INCLUDED 2011 Colour Image (Land Use)
IRRIGATED VEGETABLE LANDS C1 to C12 on
50% ROTATION

OUR 2000 LAND USE COLOUR IMAGE


Date: 2000
2000 Land Use Colour Image
Scale: 1: 12 000
F9
F10
C10
C11
Portion 1 of the farm Kleinvlei 209
C7
C6
C12
C5
C8
C4
C3
C2
C1
C9
Legend
Farm Portion
Pine
Fields_2000
<all other values>
Crop_Type
Fruit
Vegetables - Summer
3319AB07.ecw
RGB
Red Band_1
Green Band_2
Blue Band_3
3319AB08.ecw
RGB
Red Band_1
Green Band_2
Blue Band_3
PORTION 1 OF KLEINVLEI 209
CERES RD
RTS BOEDERY (PTY) LTD

water & sanitation
Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA
Private Bag X313, Pretoria 0001 / Sedibeng Building, 185 Francis Baard Street, Pretoria
Tel: 012 336-6629 Fax: 012 336-8674

Ms SI Stoffels
stoffelss@dws.gov.za
(012) 336-6629
12/2/E201/FJ

Howbill Farming (Pty) Ltd
PO Box 146
CERES
6835

ATTENTION: tian@howbill.co.za

Sir

CLASSIFICATION OF A DAM WITH A SAFETY RISK IN TERMS OF CHAPTER 12 OF THE NATIONAL WATER ACT, 1998 (ACT 36 OF 1998) READ WITH REGULATIONS 2 AND 3 OF THE REGULATIONS PUBLISHED IN GOVERNMENT NOTICE R.139 OF 24 FEBRUARY 2012: PROPOSED KLEINVLEI DAM ON PORTION 4 OF THE FARM 182, DIVISION OF RIVIERSONDEREND

A. APPLICATION

Your application dated 20 November 2019, from Mr MC Bester, on your behalf refers.

B. CLASSIFICATION

1. The classification of the **Proposed Kleinvlei Dam**

Vertical wall height Storage capacity	7 metres 235 000 cubic metres
Size classification Hazard potential rating Category	Small Significant II

2. The classification is based on available information. If you have any information on the basis of which you feel the classification is incorrect, you should submit a substantiated application in writing for its revision.

C. REQUIREMENTS BEFORE CONSTRUCTION WORK OF A DAM WITH A SAFETY RISK

1. No construction work as stipulated in Regulation 4, 10 to 22 of the said regulations may commence before the appropriate steps have been followed:

1.1 In terms of Regulation 10, any person who intends to construct a Category II dam so that the completed dam can be classified as a Category II dam, must –

1.2. acquire the services of an approved professional person to design the proposed project and to draw up plans and specifications for it. An application has been received from Mr Udal and is receiving attention.

1.3. apply on an official application form (DW695E) available on the Dam Safety Regulation (Office) website at http://www.dws.gov.za/DSO, for a licence to construct by submitting to the Director-General (Dam Safety Regulation (Office)) a proposed design complying with acceptable dam engineering practices and criteria as set out in Regulation 10 to 14.

1.4 In terms of Regulation 25 an application for a licence to impound water, after the completion of the proposed dam on form (DW696E) available on the Dam Safety Regulation (Office) website at http://www.dws.gov.za/DSO/), must be completed and submitted to the Dam Safety Regulation (Office). Impoundment of water in the dam may not commence until you are in possession of a licence to impound issued by this Department.

2. In terms of section 120 of the National Water Act, 1998, the dam must be registered at the Dam Safety Regulation (Office) of this Department within 120 days of the date on which the dam becomes capable of containing, storing or impounding water. Form (DW693E) available on the Dam Safety Regulation (Office) website at http://www.dws.gov.za/DSO must be completed and submitted to the Dam Safety Regulation (Office) for this purpose.

D. THIS LETTER SHALL NOT BE CONSTRUED AS CONFERRING EXEMPTION FROM COMPLIANCE WITH THE FOLLOWING:

1. The provisions of Chapter 4 of the National Water Act, 1998 pertaining to the lawful water use. Address enquiries and applications in this regard to the following address:

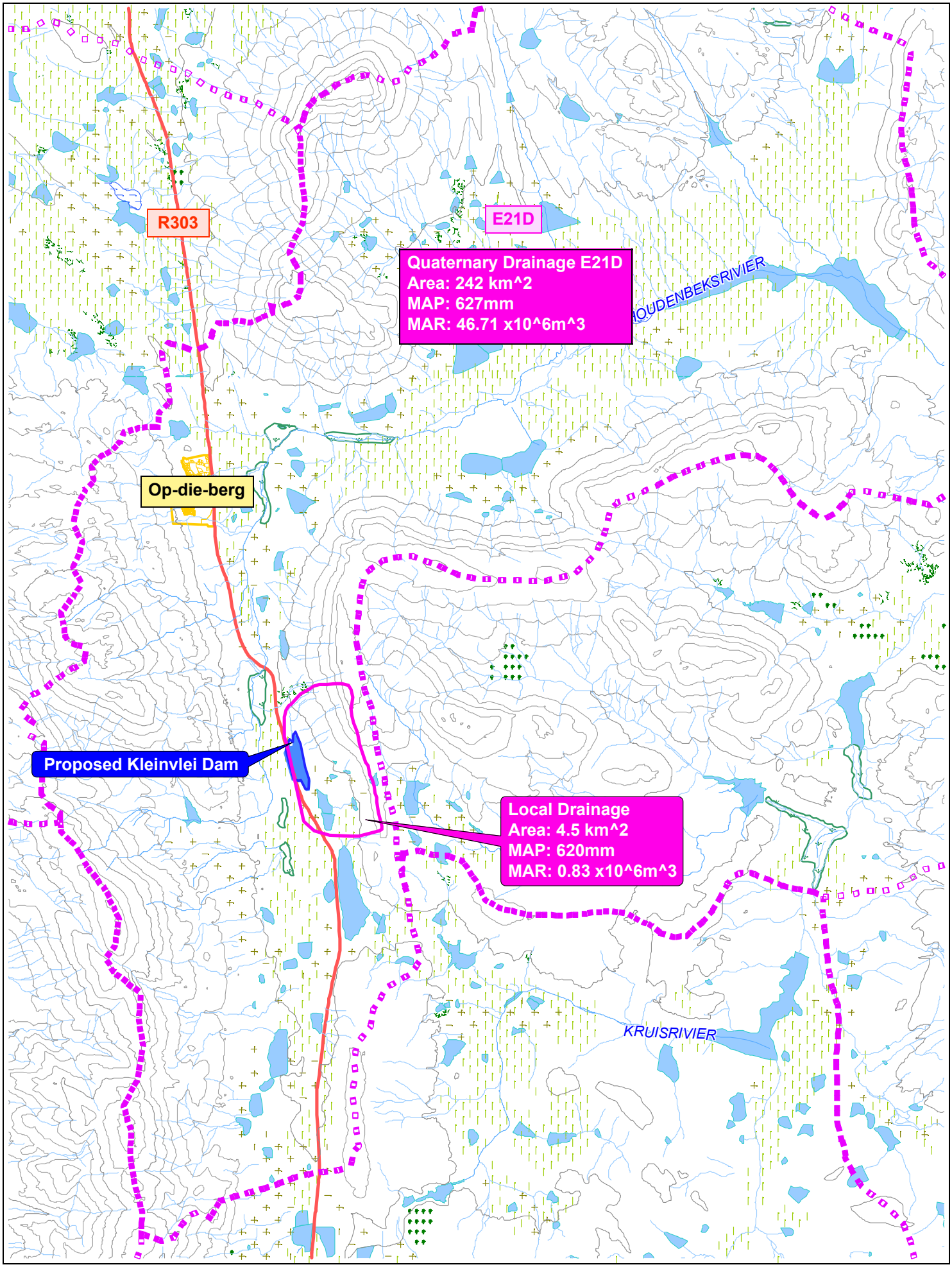
Chief Director: Western Cape
Department of Water and Sanitation
Private Bag X16
SANLAMHOF ☎ : (021) 941-6000
7532 Fax : (021) 941-6100

2. The provisions and regulations of the National Environmental Management Act, 1998 (Act No. 107 of 1998) regarding control over activities which may have a detrimental effect on the environment.

Yours faithfully

Ms SI Stoffels
Senior Administration Clerk: Dam Safety Regulation
Date: 23 September 2020

Copy to: Mr MC Bester- charl@sbri.co.za



SAREL BESTER INGENIEURS BK
MC BESTER
Pr. Ing., LSAISI: 970598, LSACAP: T1218
Tel 023 312 2017 / Epos sbri@telkomsa.net

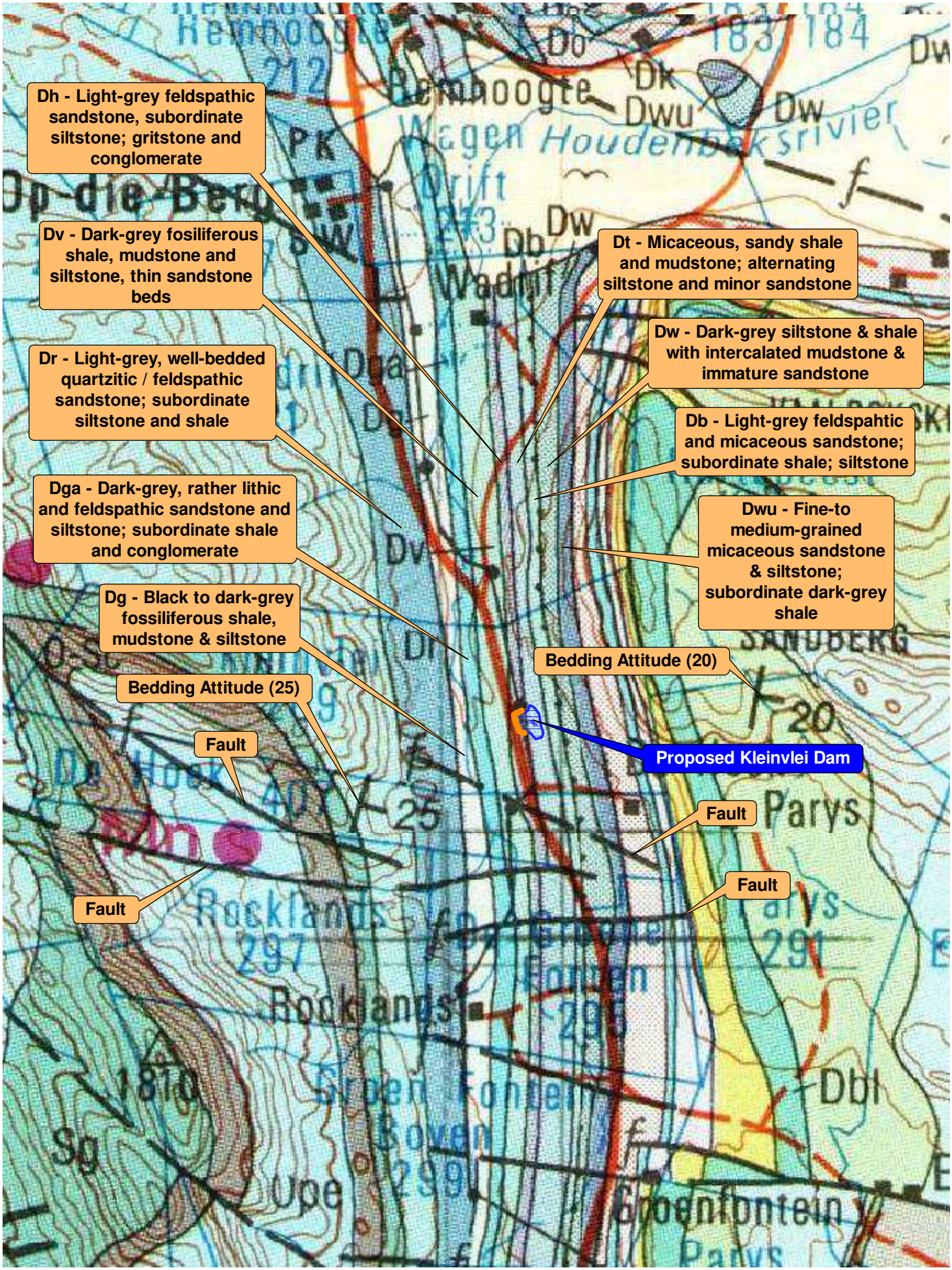
Owner: Howbill Farming (Pty) Ltd
P.O. Box 146
CERES
6835

Project: Proposed Kleinvlei Dam
HYDROLOGY MAP

Project Ref: 1921

Map Ref: 3319AB

Scale: 1: 100 000



SAREL BESTER INGENIEURS BK
Raadgewende Siviele Ingenieurs/ Consulting Civil Engineers
Argitekturadienste / Architectural Services
Bus/Box 31, CERES, 6835
T: 023 312 2017
F: 086-514 3350
E: sbri@telkomsa.net
MC BESTER
Pr. Ing., LSAISI: 970598, LSACAP: T1218
Tel 023 312 2017 / Epos sbri@telkomsa.net

Owner: Howbill Farming (Pty) Ltd
P.O. Box 146
CERES
6835

Project: Proposed Kleinvlei Dam
GEOLOGY MAP

Project Ref: 1921

Map Ref: 3319 - Worcester

Scale: 1: 50 000

PRELIMINARY EVALUATION OF THE PROPOSED EARTH DAM: QUANTITIES AND COSTING

Client: **Howbill Farming**
Address: P.O. Box 146
Ceres 6835
Dam: **KLEINVLEI DAM**
Notes: 1. VAT EXCL.
2. Report 1 -Opt. 2 (Single wall)
3. Capacity ±235 000m³

Project Nr.: **1921**
Annexure: **A**
Date: 12-Dec-19
Prepared: Stanley

Version: *May 2019*

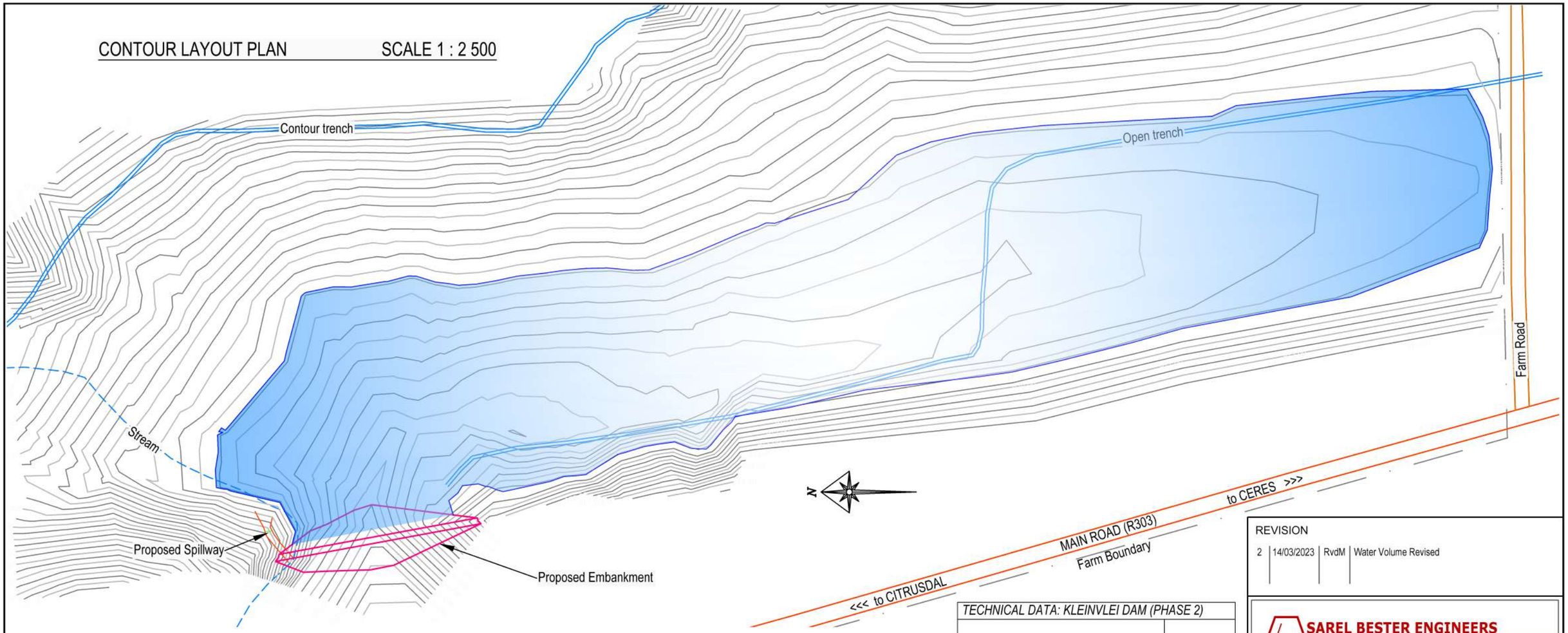
Report by: Charl Bester
SAREL BESTER ENGINEERS
P.O. Box 21, Ceres 6835
Ph: 023-312 2017
Fax: 086-514 3350

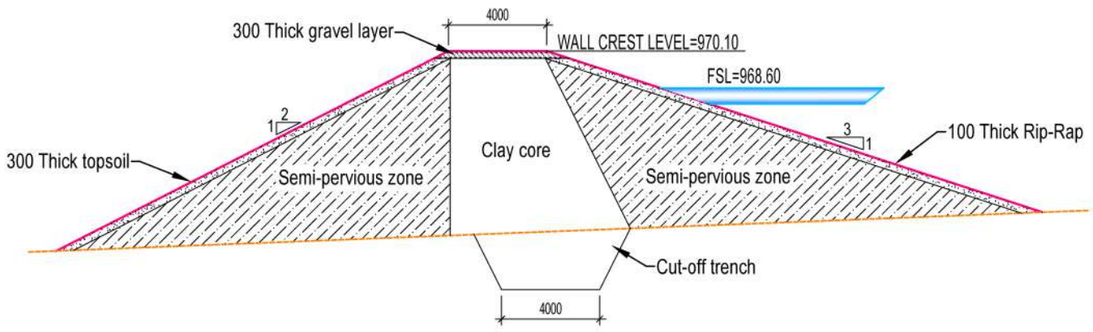
Design Parameters & Assumptions:

Crest width (m):	4,0	*Cut-off depth (m):*	3,00	*Earthmoving Cost (R/m³):*	65,00
Upstream slope 1:	3,0	*Cut-off base (m):*	4,00	*Basic Fees Scale (%):*	12,0%
Downstream Slope 1:	2,0	*Cut-off slope 1:*	0,75	*Fees Base Value (R):*	R 11 500 000
Percentage of fill from dam basin:	50%	*Application (m³/ha):*	7 000	*Enlargement (Y/N):*	N

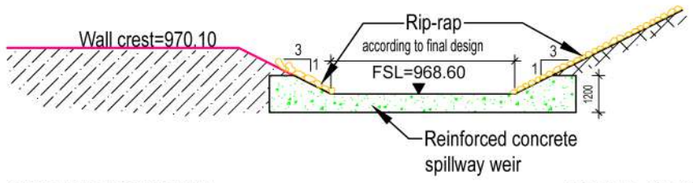
Item	Description		Unit	Stadium / Wall position / Terrain				
				Stadium 1	Stadium 2	Stadium 3	Stadium 4	Stadium 5
	1 EMBANKMENT			*Existing*	*Rep 1 – Opt2*	*Opt3*		
1.1	Wall crest level		masl		970,70	970,10		
1.2	Lowest ground level below wall		masl		962,30	962,30		
1.3	Maximum wall height		m	#N/A	8,40	7,80	#N/A	#N/A
1.4	Wall crest length		m		154,3	128,8		
1.5	Wall volume - excluding cut-off		m³		10 400	9 570		
1.6	Cut-off trench excavation		m³	*#N/A*	2 893	2 414	#N/A	#N/A
1.7	**Total earthmoving**		**m³**	**#N/A**	**13 293**	**11 984**	**#N/A**	**#N/A**
	2 STORAGE CAPACITY							
2.1	Full supply level		masl		969,20	968,60		
2.2	Draw-off level		masl		964,00	964,00		
2.3	Total free-board		m	0,00	1,50	1,50	0,00	0,00
2.4	Maximum depth above draw-off level		m	0,00	5,20	4,60	0,00	0,00
2.5	Nett capacity from contours		m³		230 000	172 055		
2.6	Capacity gain from excavations		m³	0	5 200	4 785	0	0
2.7	**Potential gross capacity**		**m³**	**0**	**235 200**	**176 840**	**0**	**0**
2.8	Water surface		ha		12,00	10,47		
2.9	Potential irrigation		ha	0,00	33,60	25,26	0,00	0,00
2.10	Average water depth		m	#DIV/0!	1,96	1,69	#DIV/0!	#DIV/0!
2.11	Ratio Storage : Earthworks			*#N/A*	17,69	14,76	#N/A	#N/A
2,12	Recommended pipe diameter		mm	150	250	200	150	150
	3 COSTING (Excl VAT)							
3.1	Overhead & Preparation	10%	Rand	#N/A	132 931	119 844	#N/A	#N/A
3.2	Earthworks (excavate & construct)	65%	Rand	#N/A	864 053	778 988	#N/A	#N/A
3.3	Concrete & Outlet works	15%	Rand	#N/A	257 420	207 577	#N/A	#N/A
3.4	Diverse & Unforeseen	10%	Rand	#N/A	132 931	119 844	#N/A	#N/A
3.5			Rand					
3.6	**Estimated Construction Cost**		**Rand**	**#N/A**	**1 387 336**	**1 226 254**	**#N/A**	**#N/A**
3.7	Engineering Fees Percentage		%	*#N/A*	14,8%	14,8%	#N/A	#N/A
3.8	Engineers costs (ECSA Fees)		Rand	#N/A	204 744	180 972	#N/A	#N/A
3.9	Engineers costs (Disbursements)		Rand		150 000			
3.10	**Estimated Engineers Costs**		**Rand**	**#N/A**	**354 744**	**180 972**	**#N/A**	**#N/A**
3.11			Rand					
3.12			Rand					
3.13	**Total estimated capital cost**		**Rand**	**#N/A**	**1 742 080**	**1 407 225**	**#N/A**	**#N/A**
3.14	Capital costs per m³ gross capacity		Rand	#N/A	7,41	7,96	#N/A	#N/A
3.15	Capital costs per irrigated hectare		Rand	#N/A	51 848	55 703	#N/A	#N/A

CONTOUR LAYOUT PLAN SCALE 1 : 2 500





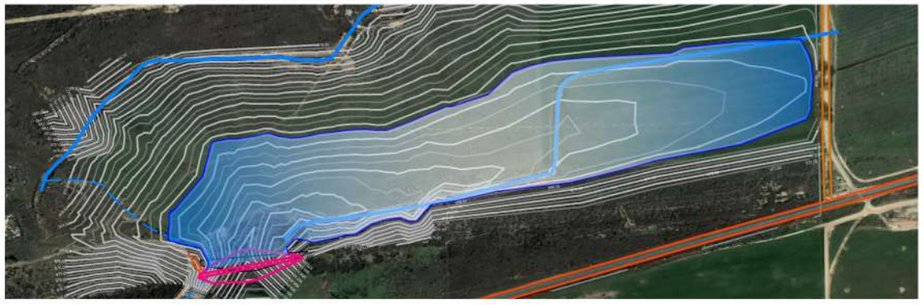
TYPICAL EMBANKMENT CROSS SECTION SCALE 1:250



SPILLWAY SECTION SCALE 1:200

TECHNICAL DATA: KLEINVLEI DAM (PHASE 2)		
Wall crest width (m)		4.00
Wall crest level (msl)		970.10
Lowest groundlevel D/S (msl)		962.30
Maximum wall height (m)		7.80
Wall crest lenght (m)		130.00
Upstream slope	1:	3.00
Downstream slope	1:	2.00
Earthfill -cut-off trench excluded (m³)		9 570
Total earthfill (m³)		11 984
Full supply level (msl)		968.60
Total freeboard (m)		1.50
Netto storage capacity (m³)		±176 840
Flooded area (ha)		±10.47
Dam footprint area (ha)		±10.80
Spillway crest lenght (m)		--

CONTOUR LAYOUT PLAN (AERIAL PHOTO) SCALE 1 : 7 500



REVISION			
2	14/03/2023	RvdM	Water Volume Revised

SAREL BESTER ENGINEERS
Consulting Civil Engineers
Architectural Service

Date: 14/3/2023
MC BESTER
Pr. Eng., B.Eng., MSAICE:970598, SACAP:T1218
P.O. Box 21
62 Lyell Street
CERES, 6835
Ph: 023-312 2017
e-mail: admin@sbri.co.za

Howbill Farming (Pty) Ltd
P.O. Box 146
CERES
6835

PROPOSED KLEINVLEI DAM ON THE FARM DE HOEK, KOUEBOKKEVELD, CERES

Proposed Contour Layout Plan, Aerial Photo, Embankment & Spillway Cross Sections

DRAWN	DATE	SCALE	SHEET
R van der Merwe SC Hartzenberg	MAR. 2023	as shown	1 of 1
SURVEYED	DESIGNED	DWG. NUMBER	REV.
R van der Merwe SC Hartzenberg	Sarel Bester Engineers	1921-S2-01	2

 A3

SAREL BESTER INGENIEURS BK
Raadgewende Siviele Ingenieurs / Consulting Civil Engineers
Argitektuursdienste / Architectural Services
CK1999/69837/23
Bus/Box 21, CERES, 6835
T: 023-312 2017
F: 086-514 3350
E: admin@sbri.co.za

Ref: 1921DDR-S2(Rev1)
Date: 30/07/2021

Messrs Howbill Farming
PO Box 146
Ceres
6840

Attention: Messrs Tian Erasmus & Theo van Rooyen

PRELIMINARY DESIGN FOR THE PROPOSED KLEINVLEI DAM ON FARM KLEINVLEI 209, PORTION 1, DISTRICT CERES, HOWBILL FARMING ~ WULA ADDITIONAL TECHNICAL INFORMATION

We refer to the DWS Letter received from Ms M Tshikalange, *Ref: WU15685 & dated 17 June 2021*, with regard to the WULA additional technical information. We also refer to our Preliminary Design Report dated 13 December 2019; Paragraph "*Geology"* and elaborate as follows:

1 - *Suitable geotechnical and foundation conditions:*
Paragraph 12 of the preliminary design report deals with the general and overall geology. Soil-testing for purposes of the geotechnical design is a costly exercise and therefore part of the final design stage of a dam normally undertaken once the environmental authorisation and water use licence is in hand. For this reason geotechnical assumptions were made as contained in the preliminary design report based on readily available information such as geological maps as well as an oversight of existing dams near to the proposed dams, see attached map. Apart from many years of experience with the design and construction of earthfill dams built on the well-known shale and sandstone formations of the Western Cape, visual inspection of the sites including cut-faces of nearby borrow areas, confidence in the geological conditions was further strengthened by looking at existing dams within close proximity of the proposed dam as shown on the attached map. The valley between the mountain ridges is situated on the well-known Ceres & Nardouw sub-groups which forms part of the Bokkeveld & Table Mountain groups, being part of the larger Cape Supergroup formation.

Category	Number of Dams in 15km radius	Wall Height
I	8	5-10m
II	4	6-12m
III	1	33m

The table above shows a summary of existing dams within a ±5km radius from the proposed site as registered with the dam safety office. All of these are built on the same or similar geological formations as is the case for the proposed dam. These formations are well-known for containing suitable clay for use in the core as well as semi-weathered gravely material suitable for use as unselected fill.

2 - *Source of materials:*
Preliminary calculations have shown that the dam would require less than ±5 000m³ clayey plus ±12 000m³ bulk earthfill respectively. The suitable borrow areas within the basins have been estimated at 60-70% of the flooded area which then works out on an average excavation depth of less than one meter which is easily achievable. The bulk of the core as well as the unselected mass fill material is therefore sufficiently available in volume and will come from within the basin of the dam even if the footprint of the borrow area is reduced during construction. However, until a local suitable sand source can be identified, sand for the intended filter zones will have to be imported from registered commercial sources.

3 - *Remedial measures in case of poor foundation conditions:*
When it comes to the preparation of the core trench base, experience with other dams constructed on the same and similar shale and sandstone formations have seldom required special treatment beyond hand-cleaning and filling the surface cracks with cement mortar before backfilling the cut-off trench with clay. Nevertheless, the risk of striking a localised fractured zone or fishers beneath the cut-off trench base is always there and in such a case grouting will be considered as the best possible and most practical solution when there is a substantial risk of foundation failure or when the expected seepage rate is unacceptably high.

You are welcome to contact us for further information. We trust that you would find this in order.

Yours Sincerely

M Charl Bester (Pr Eng)

Copies to:	Enviro Africa, Mr C Geser

MAP A

Dams registered with Dam Safety Office within ±5km radius

(8 x Cat 1 / 4 x Cat 2 / 1 x Cat 3)