Fresh Water Report

Proposed Agricultural Development on

Portion of Farm Kakamas

A requirement in terms of the National Water Act (36 of 1998).

August 2018

WATSAN *Africa*

Index

Abbreviations

Average Score Per Taxon	ASPT
Critical Biodiversity Area	CBA
Department of Environmental Affairs and Development Planning	DEA&DP
Department of Water and Sanitation	DWA
Ecological Importance	EI
Ecological Sensitivity	ES
Ecological Support Area	ESA
Environmental Impact Assessment	EIA
Electronic Water Use License Application (on-line)	eWULAA
Government Notice	GN
Metres Above Sea Level	masl
National Environmental Management Act (107 of 1998)	NEMA
National Freshwater Environment Priority Area	NFEPA
National Water Act (36 of 1998)	NWA
Northern Cape Department of Environment and Nature Conservation	DENC
Present Ecological State	PES
South Africa National Biodiversity Institute	SANBI
South African Scoring System Version 5	SASS5
Wastewater Treatment Works	WWTW
Water Use License Application	WULA

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1 Introduction

Triple D Farms (www.ddd-farms.com) is a well-established grape farming operation near Kakamas on the Northern Cape. This is an extremely well-run and modern business that is managed according to sound management principles by a team of qualified and experienced professional people.

Triple D Farms is planning to expand its current operation with another 100 hectares.

The new development is intersected by a drainage line that triggers the need for a Water Use Licence Application (WULA) in terms of section 21 of the National Water Act (NWA, 36 of 1998). This is a legal requirement, apart from the Environmental Impact Assessment (EIA) in terms of the National Environmental Management Act (107 of 1998). The WULA should be regarded as an integral part and parallel process to the EIA.

A Fresh Water Report (recently re-named Technical Report), apart from a completed set of official application forms, is a WULA requirement.

Triple D Farms appointed Enviro Africa to launch the EIA on its behalf. Enviro-Africa, in turn, appointed Dr Dirk van Driel of WATSAN Africa to deal with the WULA.

Two water courses are impacted by the proposed development, the drainage line as well as the Orange River. For the purpose of the WULA, these two will have to be assessed according to the prescribed methodologies.

2 Triple D Farm Fact Sheet

Farm Name:	Perseel 2435 Kakamas Suid Nedersetting Kenhardt RD
Deeds Office:	Kimberley
Municipality:	Kai !Garib
Size:	309.1548 ha
Title Deed:	T4689/2018
Date of Title Deed:	2018/12/05
Cadastral Code:	None given on SANBI BGIS
Company Registration:	1999/00125/07
Registration Date:	1999/01/20
Quaternary Catchment:	D53J
Postal Address:	PO Box 537, Kakamas 8870
Street Address:	Perseel 2435, N14, Kakamas
Contact Person:	Mr PT Dykman
Telephone:	054 431 1568
Contact email:	piet@dddfarms.net
VAT No.:	12345

The reach of the drainage line that will be developed stretches over a distance of 2.3km along the following coordinates:

28°45’43.01” S; 20°35’09.43E and
28°46’55.45” S; 20°35’11.67E

3 The New Agricultural Development

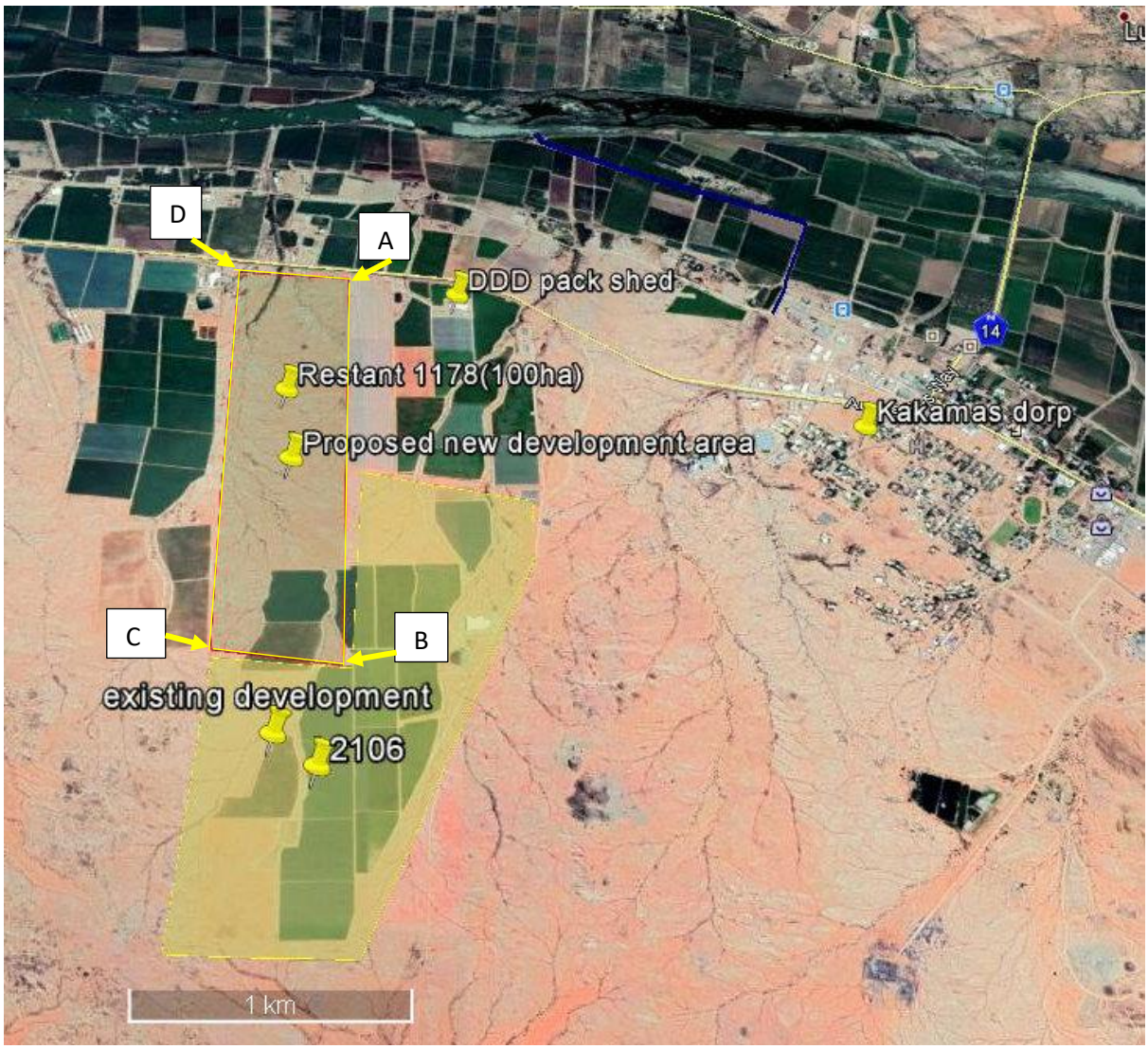


Figure 1 New Development

Table 1 Coordinates

Point	Coordinates
A	28°45’44.37”S; 20°35’21.06”E
B	28°46’56.39”S; 20°35’21.43”E
C	28°46’53.33”S; 20°35’01.21”E
D	28°45’42.89”S; 20°35’02.42”E

The new development is depicted in Figure 1. It is 1.1km long and 0.5km wide. It covers an area of 100 hectares. A small part along the southern boundary has previously been developed.

The highest point on the southern boundary is 692masl and the lowest on the N14 trunk road is 662masl. This represents slope of 2.7 (a drop of 2.7m in every 100 vertical metres).

For the most part this is virgin land that has not been tilled before. There are signs of heavy earth moving machinery that has moved over the land before, so it van hardly be described as pristine.

The drainage lines in the upper sub-catchment are faint. Closer to the N14 it is deeper, incised.

4 Legal Framework

The proposed development "triggers" sections of the National Water Act. These are the following:

S21 (c) *Impeding or diverting the flow of a water course*

The proposed development is spanning the banks of a drainage line. The drainage line would be altered, should the development go ahead.

S21 (i) *Altering the bed, bank, course of characteristics of a water course.*

Some part of the proposed development will alter the characteristics of the banks of the drainage line.

Government Notice 267 of 24 March 2017

Government Notice 1180 of 2002. *Risk Matrix.*

The Risk Matrix as published on the DWS official webpage must be completed and submitted along with the Water Use Licence Application (WULA). The outcome of this risk assessment determines if a letter of consent, a General Authorization or a License is required.

Government Notice 509 of 26 August 2016

An extensive set of regulations that apply to any development in a water course is listed in this government notice in terms of Section 24 of the NWA. No development take place within the 1:100 year-flood line without the consent of the DWS. If the 1:100-year flood line flood line is not known, no development may take place within a 100m from a water course without the consent of the DWS.

Likewise, the development triggers a part of the National Environmental Management Act, NEMA, 107 of 1998).

The EIA Regulations of 2014 No.1 Activity 12 states that no development may take place within 32 m of a water course without the consent of the Department of Environmental Affairs and its provincial representatives. A part of the development is in the river and the river bed. Consequently, this regulation is relevant to this application.

5 Climate Kakamas

Kakamas normally receives about 62mm of rain per year, with most rainfall occurring mainly during autumn. The chart below (lower left) shows the average rainfall values for Kakamas per month. It receives the lowest rainfall (0mm) in June and the highest (19mm) in March. The monthly distribution of average daily maximum temperatures (centre chart below) shows that the average midday temperatures for Kakamas range from 20°C in July to 33°C in January. The region is the coldest during July when the mercury drops to 3.1°C on average during the night.

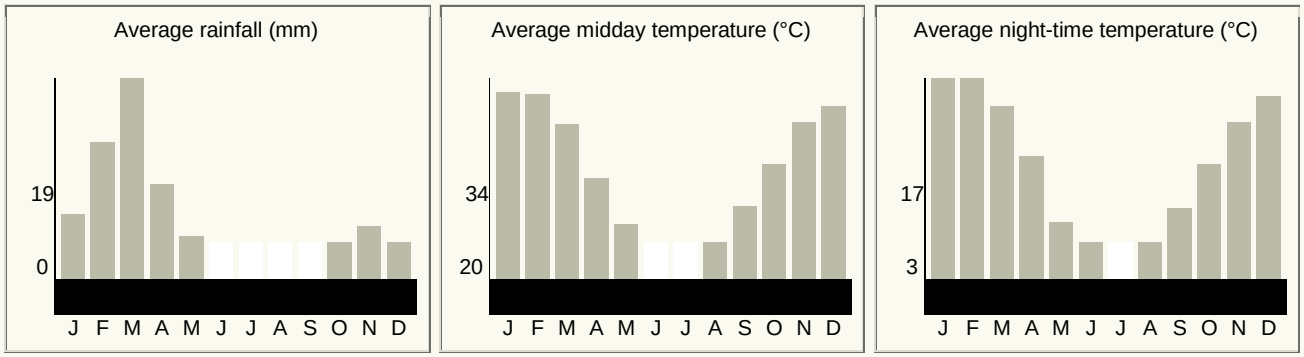


Figure 2 Kakamas Climate

Kakamas is arid. During 4 months of the year it does not rain at all.

The economy entirely dependent on water abstraction from the Orange River.

It is evident from Figure 2 that this is an arid region. The drainage lines exist because of sudden and intense downpours that occur only once in several years. These must have been formed over millennia since historical times.

The contribution to the flow in the Orange River is negligible.

6 The Sub-Catchment

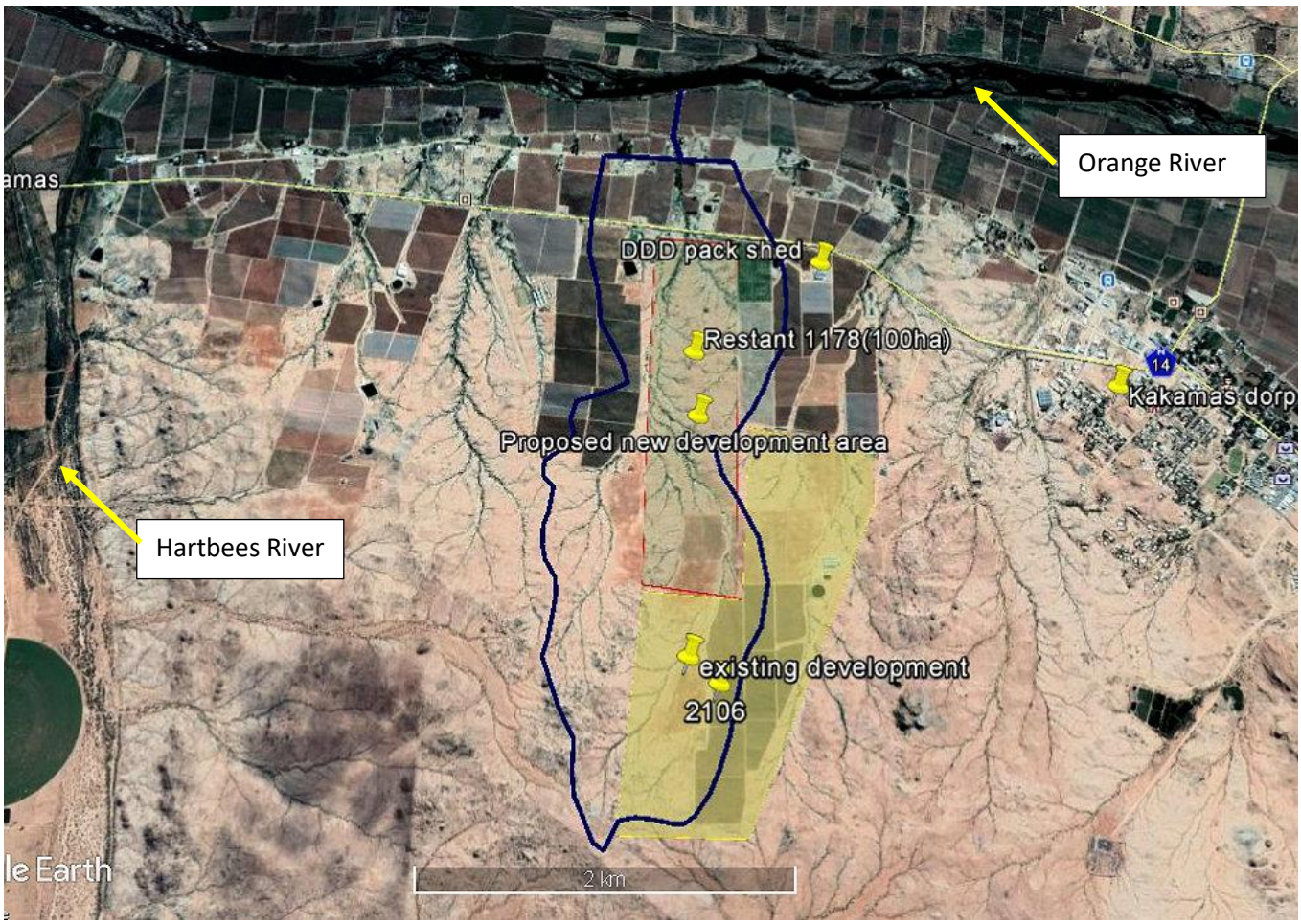


Figure 3 Sub-Catchment

The Lower Orange River is flanked by numerous drainage lines, which are mostly dry and only contain water during the occasional thunder storm. These drainage lines are a part of the arid landscape. These are nevertheless drainage lines with water flows strong enough to maintain its morphological integrity. These sudden and intense storms occur only occasionally, perhaps once in several years.

The drainage lines are poorly demarcated by vegetation. The scrub and small trees are the same as those further afield away from the drainage lines. Only the stand of higher vegetation is denser around drainage lines.

One such drainage line runs through the Triple D property that is now earmarked for development into vineyards (Figure 3). It is this drainage line that triggered the legal requirement for a Water Use License Application.

Benches and terraces, as described in DWAF wetlands and riparian zone field guide, are generally ill defined or absent, with only a wide floodplain in which transported material has been deposited as is the Triple D drainage line higher up the sub-catchments. It is pronounced and incised lower down closer to the trunk road.

There are two smaller drainage lines towards the west between the Triple D property and the Hartbees River.

The Hartbees River rises as the Sak River on the highlands to the south of Sutherland more than 300km to the south. A series of pans separate the Sak River from the Hartbees River. The Hartbees River only flows when these pans overflow. This happened in 1999 and in 2010. It is expected that these overflows will occur less often in future as water abstraction from the Sak River for agriculture increases.

It is however important to note that the Sak River as well as all of the drainage lines along the Orange River does not contribute towards the Mean Annual Runoff (MAR) of the Orange River. This is an arid region and its contribution is negligible.

The sub-catchment (Figure 3) covers 415 hectares. It is 10.4 km in circumference, 4.7km long and 114 m at its widest. The N14 trunk road cuts the sub-catchment off from its natural confluence with the Orange River.

From the N14 trunk road the drainage line has been partially formalised and where it flows through the vineyards along the Orange River, it has been channelled into a straight furrow (Figure 4).

Figure 4 Furrow downstream of the N14 Road Bridge

The drainage line passes underneath the N14 road through a bridge (Figure 5).

Figure 5 N14 Road Bridge

A dense stand of *Phragmitis* reeds covers the bottom of the drainage line upstream and adjacent to the road bridge (Figure 6). These reeds are maintained by the scant agricultural return flow and not natural flow down the drainage line.

Figure 6 *Phragmitis* reeds adjacent to the N14 Road Bridge

Further up the drainage line conditions are more natural. There are not any signs of riparian vegetation or hydromorphic soils. The drainage line was bone dry (Figure 7).

Figure 7 Drainage line further upstream of the N14 Road Bridge

Part of the sub-catchment has been transformed into manicured vineyards. Here it is hard to establish the natural boundaries, as the pattern of the drainage lines are no longer visible on Google Earth. This leaves room for guesswork, as far as an accurate estimation of the surface area is concerned.

The South African National Biodiversity Institute (SANBI) indicated the vegetation type at the proposed agriculture development as Bushmanland Arid Grassland. This is not listed as endangered in any way. The Orange River is indicated as a National Freshwater Ecosystem Priority Area (NFEPA). The islands and riparian area are indicated as Nama Karoo Bushmanland Floodplain Wetland, despite it being developed into manicured agriculture.

In the drainage lines, on the riparian zones, the dominant tree is swarthaak *Senegalia mellifera*. The vegetation here can be higher than that of the surrounding land, which provides habitat to a variety of organisms that would not have been present, were it not for these drainage lines. The drainage line on the proposed new development does not bear testimony of this taller vegetation and therefore does not contribute to this form of varied habitat.

7 Impact

A realistic and most probable impact of the proposed vineyard development is illustrated by the existing vineyards of the Triple D property. The drainage lines have been formalised, as is evident on Figure 8.

Figure 8 Formalised drainage line

Again, in these formalised furrows there was no sign of any aquatic habitat or riparian zone during the site visits. The only wetness was of a little agricultural return flow that emanated from the filling of a tanker from a valve in a water line.

It is fully expected that the drainage line on the proposed development would very much resemble the ones on the already developed property.

8 Biomonitoring Orange River

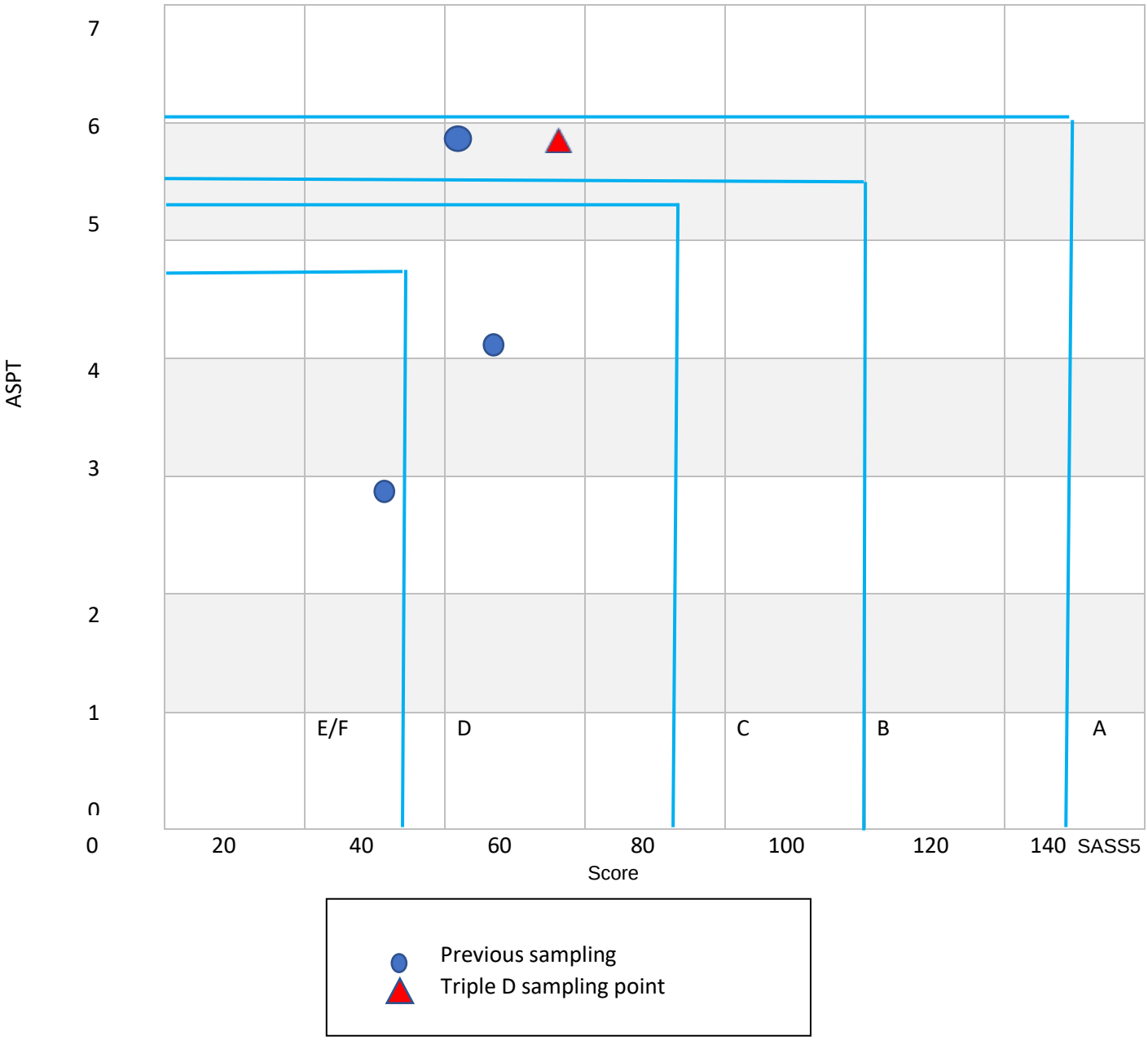
The sampling point was chosen directly below the Triple D farm on the southern bank of the Orange River. The site was marked by the water pump installation (Figure 9). This site was 520m to the north of the N14 road bridge on the boundary of the Triple D property.

The biomonitoring was carried out according to the description of Dickens & Graham (2002).

Figure 9 Sampling Point

The river here was broad and pool-like, perhaps 250m wide, with little current along the bank. In the middle of the river the current was stronger. The bank was very steep, because of the berms that were constructed for flood management.

Phragmites reeds made up most of the emerging vegetation and recently submerged grasses in the shallows along the bank provided more habitat. Solid substrate was provided by the steel floats of the pumping installation. There were clumps of pondweed *Potamogeton* drifting down the current, which was sampled as well. The bottom was sandy and muddy, with no other substrate types.



Integrity Class	Description
A	Pristine; not impacted
B	Very Good; slightly impacted
C	Good; measurably impacted with most ecological functioning intact
D	Fair; impacted with some loss of ecological functioning
E	Poor; loss of most ecological function
F	Very Poor; loss of all ecological function

Figure 10 Lower Orange River Biomonitoring Results

The SASS5 score was at 50 high for this type of mature river habitat, with an average score per taxon (ASPT) of 5.6. This score left the Triple D result in the good, slightly impacted, category (Figure 10) and clearly in a better category than some of the other, previously monitored sampling rounds that were done by WATSAN Africa during similar projects in the Lower Orange River from Groblershoop to Augrabies.

This positive result is not all that easy to explain. Perhaps it was because of the slightly better availability of habitat, with the pond weed, sandy bottom, submerged and emerging vegetation. Perhaps it was because of the river that was recently in flood, with an improvement in water quality. Perhaps it was because the drainage line was dry, with no agricultural return flow. This was in contrast with other drainage lines with large volumes of poor-quality return flow.

9 Water Quality Orange River

A water sample was taken at the sampling point in the Orange River from a sampling point at the pumping installation. The sample was frozen soon after and subsequently delivered at Quantum Laboratories in Malmesbury.

Table 2 Water Quality Orange River at Triple D

Constituent		Value
Temperature	°C	12.6
pH		8.6
Electrical Conductivity	mSm^{-1}	37.7
Turbudity	NTU	6.4
Dissolved Oxygen	mgl^{-1}	10.3
Ammonia	mgl^{-1}	0.12
Total Nitrogen	mgl^{-1}	7
Total Phosphorus	mgl^{-1}	0.06

There was enough oxygen in the water to sustain healthy aquatic life (Table 2). The water was rather fresh, not salty. The water was not as turbid as it usually is, despite the strong flow. The water is rather alkaline, as is often measured in the lower Orange River.

The ammonia concentration is low, which indicates that the river here is not subject to faecal pollution, be it from farm animals or human settlement. Phosphorus binds to the ground and is not easily washed out, despite a hefty application on agricultural lands, hence the low concentration in the Orange River as well. However, the nitrogen concentration is high, indicating a release from agriculture, but not as high is as elsewhere in the region. It is surmised that upstream of the sampling point, from a drainage line now transformed into a canal, a volume of irrigation return flow is flowing into the Orange River.

10 **Present Ecological State** (PES)

The PES and EIS are protocols that have been produced by Dr Neels Kleynhans (Table 3, 4 and 5) in 1999 of the then DWAF to assess river reaches. The scores given are solely that of the practitioner and are based on expert opinion.

10.1 Present Ecological State Orange River

Table 3 Present Ecological State Orange River at Triple D

Instream	Score	Weight	Product	Maximum score
Water abstraction	12	14	168	350
Flow modification	12	13	156	325
Bed modification	20	13	260	325
Channel modification	22	13	286	325
Water quality	15	14	210	350
Inundation	15	10	150	250
Exotic macrophytes	10	9	90	225
Exotic fauna	15	8	120	200
Solid waste disposal	18	6	108	150
Total		100	1428	2500
% of total			57.1	
Class			C	
Riparian				
Water abstraction	12	13	156	325
Inundation	12	11	132	275
Flow modification	20	12	240	300
Water quality	22	13	286	325
Indigenous vegetation removal	15	13	195	325
Exotic vegetation encroachment	5	12	60	300
Bank erosion	18	14	252	350
Channel modification	8	12	96	300
Total			1417	2500
% of total			56.7	
Class			D	

Much has been published on the ecological state of South African rivers and the Orange River is no exception. In fact, it seems somewhat arrogant to assess the Lower Orange River, even at the sampling point, with a team of one and with the financial backing of a single WULA. This is a large undertaking that is to be contemplated by a team of experts. Nevertheless, this is what the WULA requires.

The river at Kakamas, as elsewhere, has been impacted by major dams, large-scale water abstractions, an influx of agricultural chemicals, encroachment of reeds and exotic macrophytes, translocated and exotic fish, levees, bridges and many other infarctions. Hence the river was scored a C, which signifies that it has been impacted, but despite these impacts still exhibits appreciable ecological functioning. The riparian zone scores a D, which signifies that ecological functioning has been lost.

There is a good chance that other practitioners would score the river very much the same.

10.2 Present Ecological State of the Drainage Line

The question now arises if a dry drainage line without a discernible riparian zone carries adequate weight or is worthy of such an assessment. The answer is yes, indeed, as this is the way nature intended it to be, a dry drainage line.

Table 4 Present Ecological State Triple D Drainage Line

Table 4 **Triple D Drainage Line Habitat Integrity**

Instream	**score**	**weight**	**Product**	**Maximum Score**
Water Abstraction	24	14	336	350
Flow modification	19	13	247	325
Bed modification	17	13	221	325
Channel modification	16	13	208	325
Water quality	24	14	336	350
Inundation	20	10	200	250
Exotic macrophytes	24	9	216	225
Exotic fauna	25	8	200	200
Solid waste disposal	15	6	90	150
max score		100	2054	2500
% of total			82.2	
Class			**B**	
Riperian Zone				
Water abstraction	24	13	312	325
Inundation	19	11	209	275
Flow modification	17	12	204	300
Water quality	24	13	312	325
Indigenous vegetation removal	12	13	156	325
Exotic vegetation encroachment	20	12	240	300
Bank erosion	16	14	224	350
Channel modification	14	12	168	300
		100	1825	2500
% of total			73.0	
Class			**C**	

Table 5 Habitat Integrity according to Kleynhans, 1999

Category	Description	% of maximum score
A	Unmodified, natural	90 – 100
B	Largely natural with few modifications. A small change in natural habitats and biota, but the ecosystem function is unchanged	80 – 89
C	Moderately modified. A loss and change of the natural habitat and biota, but the ecosystem function is predominantly unchanged	60 – 79
D	Largely modified. A significant loss of natural habitat, biota and ecosystem function.	40 – 59
E	Extensive modified with loss of habitat, biota and ecosystem function	20 – 39
F	Critically modified with almost complete loss of habitat, biota and ecosystem function. In worse cases ecosystem function has been destroyed and changes are irreversible	0 - 19

The Triple D drainage line was assigned a class B (Table 4) for the instream assessment. Only a part of the sub-catchment has been lost to agriculture, while a large part still remains intact. This would obviously change when the site is developed, probably to class D or E, with the original morphology significantly altered.

The riparian zone was placed into a category C, not only because of the loss of habitat due to agriculture, but because of clear signs that earth moving machinery has been active in some parts of the area. There was not much of a riparian zone to begin with, with no typical riverine riparian vegetation or hydromorphic soils.

11 Ecological Importance

The Ecological Importance (EI) is based on the presence of especially fish species that are endangered on a local, regional or national level (Table 5).

There are no fish in the drainage line, as there is no permanent water. According to this assessment, which is prescribed for WULA's, the drainage line is not important.

No other endangered species, either plant or animal, were detected in or near the drainage line.

Table 6. Ecological Importance according to endangered organisms (Kleynhans,1999).

Category	Description
1	One species or taxon are endangered on a local scale
2	More than one species or taxon are rare or endangered on a local scale
3	More than one species or taxon are rare or endangered on a provincial or regional scale
4	One or more species or taxa are rare or endangered on a national scale (Red Data)

The Orange River is most important, according to this assessment.

According to Skelton (1993) 11 species of fish occur in the Lower Orange River. Since 2011 another one was added, as well as 3 exotic species. These are the following:

Barbus trimaculatus
B paludinosus
B. hospus
Labeobarbus kimberleyensis (Near threatened)
L aenus
Labeo umbratus
L capensis
Austroglanis sclateri (Widespread elsewhere)
Clarias gariepinus
Pseudocrenilabrus philander (Threatened locally but abundant elsewhere)

Pseudobarbus quathlabae
Mesobola brevianalis (critically endangered)
Cyprinus carpio
Tilapia sparrmanii
Oreochromus mossambicus

Those in blue are endangered to some extent. Those indicated in red are exotic or translocated fish.

The only one that causes real concern in the largemouth yellow fish *Labeobarbus kimberleyensis*. It is endemic to the Orange River system and hence is threatened not only on a local scale, but on a national scale as well. This puts the Lower Orange in category 4. This renders the Orange River as important.

According to the owners of the Kalahari River and Safari Co. along the northern bank of the Orange River on the Riemvasmaak Road, mature blue kurper *Oreochromus mossambicus* are regularly captured in increasing numbers. It now takes at least 4 man-days to capture a single yellow fish. Yellow fish are generally infected with cestode bladder worms, while darters (*Anhinga rufa*) that predate on these fish are heavily infected with tape worms. It seems as if the translocated Tilapia are not affected by these parasites.

12 Ecological Sensitivity

Ecological Sensitivity (ES) is often described as the ability of aquatic habitat to assimilate impacts. It is not sensitive if it remains the same despite of the onslaught of impacts. Put differently, sensitive habitat changes substantially, even under the pressure of slight impacts.

The Ecological Sensitivity also refers to the potential of aquatic habitat to bounce back to an ecological condition closer to the situation prior to human impact. If it recovers, it is not regarded as sensitive.

12.1 Ecological Sensitivity Orange River

The Orange River at Kakamas has absorbed numerous and deep-cutting human impacts. Yet is still functions as an aquatic ecosystem. In the highly improbable event of ceased human impact, the river here would probably bounce back to its previous glory. In this respect the river cannot be categorised as sensitive. It is dreaded among conservation minded people that the Lower Orange River might have some more capacity to absorb further impact.

12.2 Ecological Sensitivity Drainage Line

If left to its own devices, the drainage line would remain as it is now, without the need for protection measures. However, if the agricultural development is allowed to proceed, the drainage line would probably never recover to any resemblance of its current state. In this regard it can be considered to be ecologically sensitive.

13 Impact Assessment

Some of the decision-making authorities prescribe an impact assessment according to a premeditated methodology, as described in the Appendix.

The main benefit of this exercise is that it allows for the evaluation of mitigation measures. Later follows a Risk Assessment. This is different from the Impact Assessment as it does not attempt to weigh the success of mitigation measures.

It is fully accepted that the current drainage line will be fundamentally changed if the development should go ahead and that no mitigation measure can be employed to stop this. However, the final outcome could be a landscaped channel without signs of erosion.

The following pertains to Table 6:

- Local means the drainage line below and adjacent to the drainage line.
- Regional means downstream of the drainage line into the Orange River.
- Short term means the time during the construction phase.
- Long term means the operational period, that is the time during which grapes are produced on the envisaged vineyards. Once changed into agricultural land, it is not foreseen that this status would ever change.
- Probability is expressed with a 5-point scale: Improbable, Low, Medium, High, Probable.
- The Confidence Level can either be low, medium or high. The same applies to Intensity and Significance.
- Significance is the combined effects of Extent, Duration and Intensity.

Table 7 Summary of possible impacts

Possible Impact		Extent	Duration	Intensity	Significance	Probability	Confidence
Clearing of vegetation, levelling of land	Without mitigation	Regional	Medium term	High	Medium	Probable	High
	With mitigation	Local	Short term	Low	Low	Low	High
Drainage Line reconstruction	Without mitigation	Regional	Medium term	Medium	Medium	Probable	High
	With mitigation	Local	Short term	Low	Low	Low	High
Installation of infrastructure, irrigation	Without mitigation	Regional	Medium term	Medium	Medium	Probable	High
	With mitigation	Local	Short term	Low	Low	Low	High
Operation of vineyards	Without mitigation	Regional	Long term	Medium	High	Probable	High
	With mitigation	Local	Long term	Low	Low	Low	High

13.1 Mitigation Measures pertaining to the Drainage Line

No activities should be allowed outside of the demarcated agricultural development area. Machinery, waste and rubble should not be allowed to accumulate anywhere in the natural vegetation.

The main threat because of the establishment of the agricultural development is the movement of sediments down the drainage line and into the Orange River. The land would be entirely transformed by heavy earth moving machinery, as is required for the establishment of vineyards in virgin land. This transformation should be affected during the dry season, when the likelihood of sudden thunder storms is at its least.

Any signs of erosion in the altered drainage line should be addressed immediately after downpours. Eroded areas should be filled in and the compacted. It should be planted with

suitable vegetation. Irrigation may be required to establish this vegetation. If necessary, berm and contours should be constructed to direct storm water away to less susceptible areas.

The flow path of the drainage line should remain the same as far as possible, despite of the agricultural development.

Agricultural waste and other waste and litter should not be allowed to pass down the channel.

Vehicles and other disturbances should be kept out of the altered drainage lines as to prevent any disturbance that could result in erosion.

13.2 Mitigation Measures pertaining to the Orange River

The single most threat to the Orange River during the subsequent end use is the agricultural return flow because of over-irrigation. This is overly evident in so many of these originally dry natural drainage lines turned into agricultural drainage channels. The impact on river's water quality is negative and deleterious. It is therefore expected that the ground moisture levels will be scientifically monitored and that irrigation will be adjusted accordingly, with return flow limited, if not eliminated altogether.

According to what has been witnessed during site visits in the Lower Orange River catchment it was evident that farming practices and in particular the level of management differ widely. The volume of agricultural return flow is perhaps the most telling criterium.

It is also evident that best practice and in particular control can be most effective to limit the impact of the downstream aquatic environment. From current practice on the property it is evident that best practice is entirely within Triple D's ability and that this company can be trusted to continue to implement such practices. The probability of mitigating measures to be successful is evident.

14 Risk Matrix

The assessment was carried out according to the interactive Excel table that is available on the DWS webpage. The methodology is explained in the Appendix. Table 7 is a replica of the Excel spreadsheet that has been adapted to fit the format of this report. The numbers in Table 7 (continued) represent the same activities as in Table 6, with sub-activities added.

This assessment has been designed to assist in the decision if a General Authorisation or a License is required, should the development be allowed.

The risk rating according to this assessment is generally low. This suggests that a General Authorisation should be in order.

This only applies if all of the mitigation measures are in place.

However, then environmental risk because of the re-alignment of the drainage line can never be low. It is rated as medium. This represents the decision the authorities will have to make; the trade-off between the alteration of the drainage line against the economic benefit and job opportunities.

If the drainage line offered viable aquatic habitat, apart from perhaps sub-surface water, the risk rating would have been much higher. The importance and extent of aquatic habitat was taken into consideration.

The low risk rating attached to the ongoing operation of the vineyards was rated as low, as the control of the volume of irrigation return flow can be effective and as rainfall is few and far between in this arid area.

Table 8 Risk Matrix

No.	Activity	Aspect	Impact	Significance	Risk Rating
1	Clearing of vegetation, preparation of land	Mobilisation of sediments	Sediments in Orange River	26	Low
2.1	Drainage line reconstruction	Mobilisation of sediments	Sediments in Orange River	26	Low
2.2		Destruction of drainage line habitat	Habitat destruction in drainage line	129	Medium
3	Installation of infrastructure, irrigation	Mobilisation of sediments	Sediments in Orange River	39	Low
4	Operation of vineyards	Agricultural return flow	Water quality impairment in Orange River	38.5	Low

Table 8 Continued Risk Rating

No	Flow	Water Quality	Habitat	Biota	Severity	Spatial scale	Duration	Conse-quence
1	1	1	2	1	1.25	1	1	3.25
2.1	1	1	2	1	1.25	1	1	3.25
2.2	4	2	4	1	2.25	4	4	10.75
3	1	1	2	1	1.25	1	1	3.25
4	1	1	2	2	1.5	1	1	3.5

No	Frequency of activity	Frequency of impact	Legal issues	Detection	Likelihood	Significan-ce	Risk Rating
1	1	1	5	1	8	26	Low
2.1	1	1	5	1	8	26	Low
2.2	1	1	5	1	8	129	Medium
3	1	1	5	1	12	39	Low
4	1	1	5	1	11	38.5	Low

15 Resource Economics

The goods and services delivered by the environment, in this case the Triple D drainage line is a Resource Economics concept as adapted by Kotze *et al* (2009). The methodology was designed for the assessments of wetlands, but in the case of the drainage line the goods and services delivered are particularly applicable and important, hence it was decided to include it in the report.

The diagram (Figure 11) is an accepted manner to visually illustrate the resource economic footprint the drainage line, from the data in Table 8.

Table 9. Goods and Services

Goods & Services	Score
Flood attenuation	5
Stream flow regulation	5
Sediment trapping	5
Phosphate trapping	2
Nitrate removal	2
Toxicant removal	2
Erosion control	4
Carbon storage	2
Biodiversity maintenance	2
Water supply for human use	0
Natural resources	1
Cultivated food	1
Cultural significance	1
Tourism and recreation	0
Education and research	1

0	Low
5	High

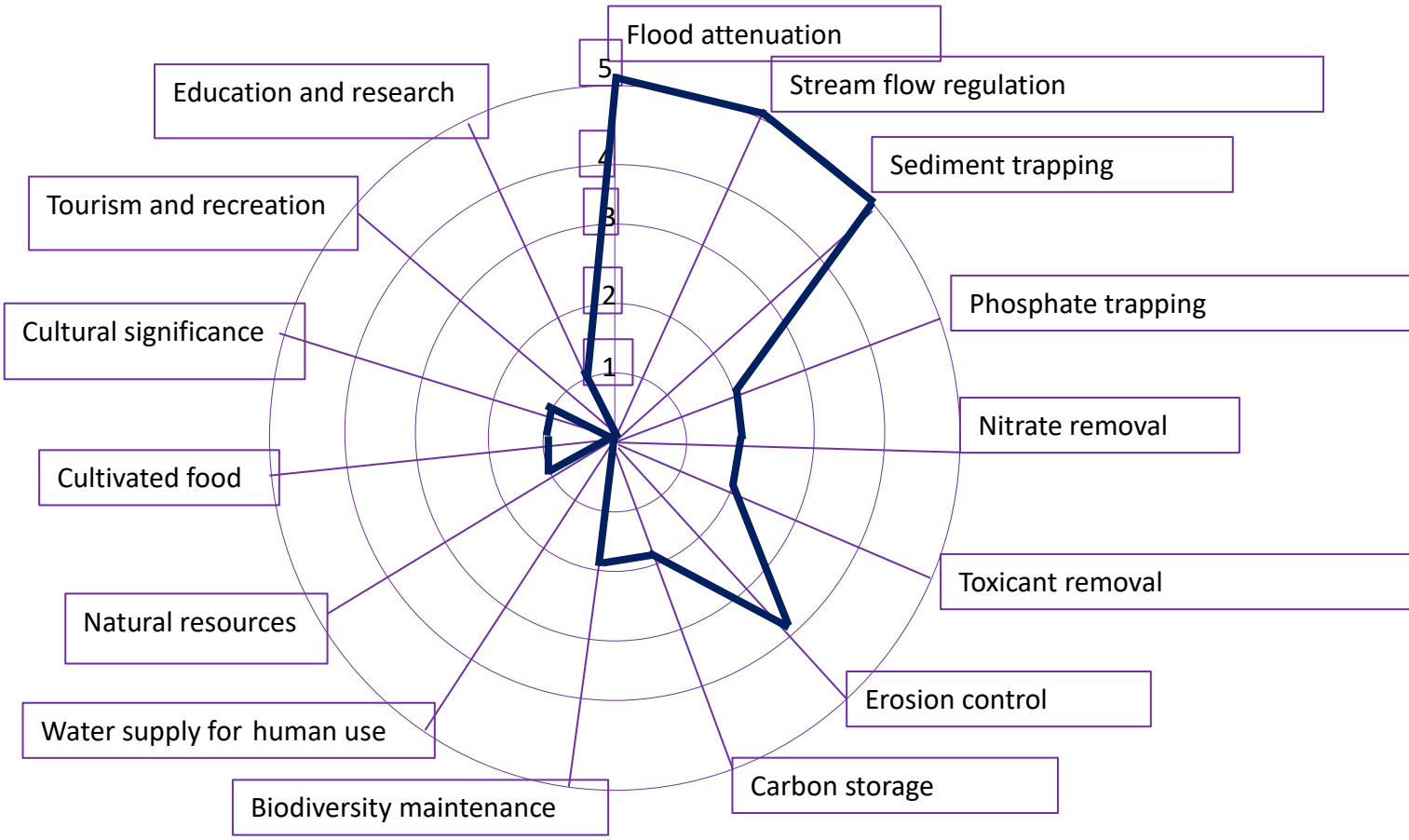


Figure 11. Resource Economics Footprint of the Triple D drainage line

The size of the star shape of Figure 11 attracts the eyes of the decision-makers. This shape is small, indicating that the water course has a small economic foot print. Apart from flood attenuation, stream flow regulation and sediment trapping, the drainage line is not important.

16 Conclusions

Figure 12 has been adapted from one of the most recent DWS policy documents.

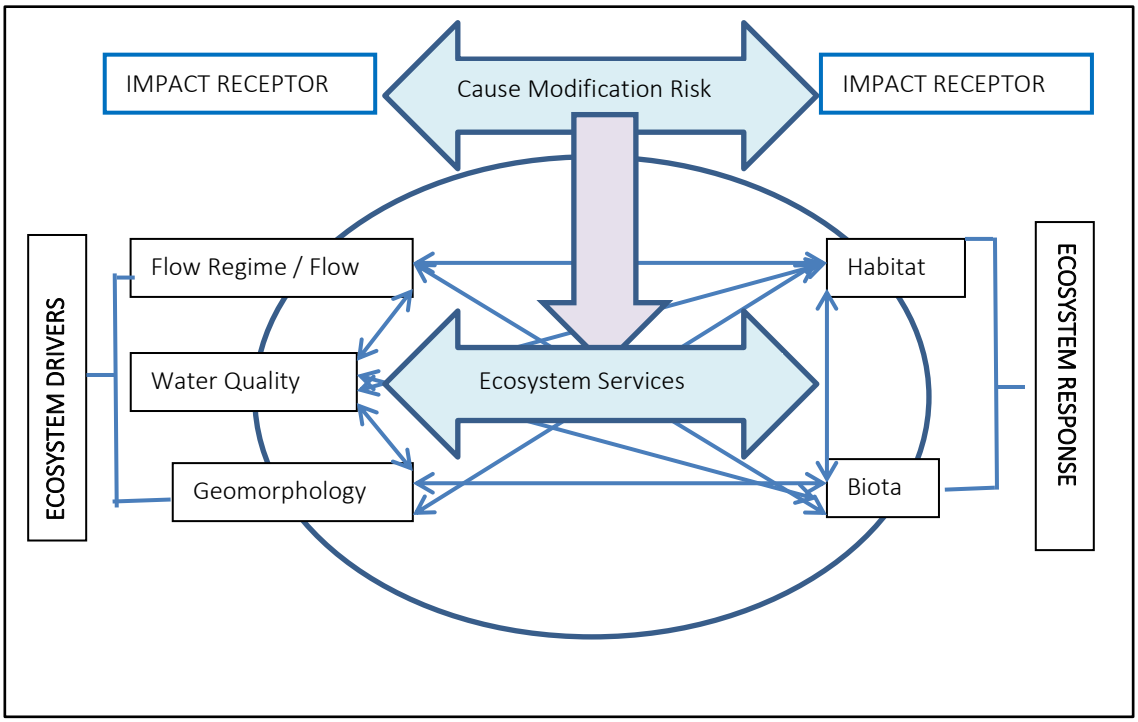


Figure 12 Minimum Requirements for a S21(c) and (i) Application

An anthropogenic activity can impact on any of the ecosystem drivers or responses and this can have a knock-on effect on all of the other drivers and responses. This, in turn, will predictably impact on the ecosystem services (Figure 12). The WULA and the EAI must provide mitigation measured for these impacts.

The driver of the drainage line is the occasional flood that follows sudden and intense rainfall events. This is followed by prolonged droughts and intense summer heat that prevents the development of any viable aquatic habitat. This is apart from shallow ground water that explains the growth of a somewhat more prolific vegetation along the drainage lines. These plants are by no means an indication of aquatic or riparian habitat. The Triple D drainage line's riparian vegetation is not taller than that of the surrounding landscape and therefore does not add much to habitat variation.

The planned agricultural expansion would obviously and greatly alter the drainage line. However, the Triple D drainage line is not important in terms of aquatic habitat, aquatic biodiversity and economic footprint. The envisaged alteration would therefore not be a

significant loss. Apart from this, the banks of the Orange River are already heavily exploited, with little habitat that has not been impacted upon in a varying degree.

A note from the DWS dated 18 July 2018 (Appendix) stated that drainage lines are “extremely sensitive to development”. The DWS did not, by any means, ruled out development over drainage lines.

The DENC, on the other hand, in their note dated 9 March 2019 (Appendix), stated that disturbance of ephemeral rivers is “strongly prohibited”. This effectively rules out any further development in the Lower Orange River, as drainage lines are densely distributed over the landscape. Numerous developments are in various stages of completion, representing literally billions of Rands worth of investment.

The question arises if this ruling has been promulgated as a provincial ordinance or regulation in terms of an ordinance, or only stands as departmental policy.

The conservation of drainage lines along the Lower Orange River deserves and demands attention by decision-making authorities, environmental practitioners, the conservation and farming community alike. As more of these drainage lines are impacted upon, and because impacts are radical by nature, because sections of drainage lines are replaced by vineyards or other forms of agriculture, or transformed into return flow infrastructure, the necessity for a widely accepted conservation policy becomes urgent as development escalates.

A percentage of still unimpacted drainage lines should be identified, prioritised and set aside for conservation. Only specified practices with no or limited impacts should be allowed in these sub-catchments and their drainage lines.

It remains for the decision-making authorities to decide if the proposed agricultural developments in the Lower Orange River are acceptable and if they should go ahead. Since impacts are already evident and since a vast amount of money has already been invested in this venture, with many job opportunities at stake, the proposed development should go ahead, but the eminent approval would increase the urgency and pressure for a known and accepted Lower Orange River Drainage Lines conservation policy.

It is therefore recommended that the agricultural development should go ahead, subject to a General Authorisation, or even an official letter of consent. A Licence is should not be necessary.

17 References

Annonymous. Date unknown. *A practical field procedure for identification and delineation of wetlands and riparian areas.* Department of Water Affairs and Forestry, Pretoria.

Dickens, CWS & PM Graham. 2002. *The South African Scoring System (SASS) Version 5 Rapid Bioassessment Method for Rivers*. African Journal of Aquatic Science 27: 1–10

Kleynhans, C.J. 1999. *Assessment of Ecological Importance and Sensitivity*. Department of Water Affairs and Forestry. Pretoria.

Kotze, G., G. Marneweck, A. Batchelor, D. Lindley & Nacelle Collins. 2009. *A technique for rapidly assessing ecosystem services supplied by wetlands.* Water Research Commission, Pretoria.

Skelton, P. 1993. *A Complete Guide to the Fresh Water Fishes of Southern Africa*. Tutorial Press, Harare.

18 Declaration of Independence

I, Dirk van Driel, as the appointed independent specialist hereby declare that I:

- Act/ed as the independent specialist in this application
- Regard the information contained in this report as it relates to my specialist input/study to be true and correct and;
- Do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management act;
- Have and will not have vested interest in the proposed activity;
- Have disclosed to the applicant, EAP and competent authority any material information have or may have to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the environmental Impact Assessment Regulations, 2010 and any specific environmental management act.
- Am fully aware and meet the responsibilities in terms of the NEMA, the Environmental Impacts Assessment Regulations, 2010 (specifically in terms of regulation 17 of GN No. R543) and any specific environmental management act and that failure to comply with these requirements may constitute and result in disqualification;
- Have ensured that information containing all relevant facts on respect of the specialist input / study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties facilitated in such a manner that all interested and affected parties were provided with reasonable opportunity to participate and to provide comments on the specialist input / study;
- Have ensured that all the comments of all the interested and affected parties on the specialist input were considered, recorded and submitted to the competent authority in respect of the application;
- Have ensured that the names of all the interested and affected parties that participated in terms of the specialist input / study were recorded in the register of interested and affected parties who participated in the public participation process;
- Have provided the competent authority with access to all information at my disposal regarding the application, weather such information is favourable or not and;
- Am aware that a false declaration is an offence in terms of regulation 71 of GN No. R543.

Signature of the specialist: 

Name of the company: WATSAN Africa Date: 19 August 2018

19 Résumé

Dr Dirk van Driel
PhD, MBA, PrSciNat, MWISA
Water Scientist

PO Box 681
Melkbosstrand 7437
saligna2030@gmail.com
079 333 5800 / 022 492 2102

Experience

WATSAN Africa, Cape Town. Scientist **2011 - present**

USAID/RTI, ICMA & Chemonics. Iraq & Afghanistan **2007 -2011**
Program manager.

City of Cape Town **1999-2007**
Acting Head: Scientific Services, Manager: Hydrobiology.

Department of Water & Sanitation, South Africa **1989 – 1999**
Senior Scientist

Tshwane University of Technology, Pretoria **1979 – 1998**
Head of Department

University of Western Cape and Stellenbosch University 1994- 1998 part-time

- Lectured post-graduate courses in Water Management and Environmental Management to under-graduate civil engineering students
- Served as external dissertation and thesis examiner

Service Positions

- Project Leader, initiator, member and participator: Water Research Commission (WRC), Pretoria.
- Director: UNESCO West Coast Biosphere, South Africa
- Director (Deputy Chairperson): Grotto Bay Home Owner's Association
- Member Dassen Island Protected Area Association (PAAC)

Membership of Professional Societies

- South African Council for Scientific Professions. Registered Scientist No. 400041/96
- Water Institute of South Africa. Member

Recent Reports &
Water Use License Applications

- Process Review Kathu Wastewater Treatment Works
- Effluent Irrigation Report Tydstroom Abattoir Durbanville
- River Rehabilitation Report Slangkop Farm, Yzerfontein
- Fresh Water and Estuary Report Erf 77 Elands Bay
- Ground Water Revision, Moorreesburg Cemetery
- Fresh Water Report Delaire Graff Estate, Stellenbosch
- Fresh Water Report Quantum Foods (Pty) Ltd. Moredou Poultry Farm, Tulbagh
- Fresh Water Report Revision, De Hoop Development, Malmesbury
- Fresh Water Report, Idas Valley Development Erf 10866, Stellenbosch
- Wetland Delineation Idas Valley Development Erf 10866, Stellenbosch
- Fresh Water Report, Idas Valley Development Erf 11330, Stellenbosch
- Fresh Water Report, La Motte Development, Franschhoek
- Ground Water Peer Review, Elandsfontein Exploration & Mining
- Fresh Water Report Woodlands Sand Mine Malmesbury
- Fresh Water Report Brakke Kuyl Sand Mine, Cape Town
- Wetland Delineation, Ingwe Housing Development, Somerset West
- Fresh Water Report, Suurbraak Wastewater Treatment Works, Swellendam
- Wetland Delineation, Zandbergfontein Sand Mine, Robertson
- Storm Water Management Plan, Smalblaar Quarry, Rawsonville
- Storm Water Management Plan, Riverside Quarry
- Water Quality Irrigation Dams Report, Langebaan Country Estate
- Wetland Delineation Farm Eenzaamheid, Langebaan
- Wetland Delineation Erf 599, Betty's Bay
- Technical Report Bloodhound Land Speed Record, Hakskeenpan
- Technical Report Harkerville Sand Mine, Plettenberg Bay
- Technical Report Doring Rivier Sand Mine, Vanrhynsdorp
- Rehabilitation Plan Roodefontein Dam, Plettenberg Bay
- Technical Report Groenvlei Crusher, Worcester
- Technical Report Wiedouw Sand Mine, Vanrhynsdorp
- Technical Report Lair Trust Farm, Augrabies
- Technical Report Schouwtoneel Sand Mine, Vredenburg
- Technical Report Waboomsrivier Weir Wolseley
- Technical Report Doornkraal Sand Mine Malmesbury
- Technical Report Berg-en-Dal Sand Mine Malmesbury
- Wetland Demarcation, Osdrif Farm, Worcester
- Technical Report Driefontein Dam, Farm Agterfontein, Ceres
- Technical Report Oewerzicht Farm Dam, Greyton
- Technical Report Glen Lossie Sand Mine, Malmesbury
- Preliminary Report Stellenbosch Cemeteries
- Technical Report Toeka & Harmony Dams, Houdenbek Farm, Koue Bokkeveld
- Technical Report Kluitjieskraal Sand & Gravel Mine, Swellendam

20 Appendix

20.1 SASS5 score sheet

SASS5 Score Sheet										
Date	15 Aug 18	**Taxon**	**Weight**	**Score**	**Taxon**	**Weight**	**Score**	**Taxon**	**Weight**	**Score**
Locality	Orange River	Porifera	5		**Hemiptera**			**Diptera**		
		Coelenterata	1		Belostomatidae	3		Athericidae	10	
		Turbellaria	3		Corixidae	3	3	Blepharoceridae	15	
		Oligochaeta	1		Gerridae	5		Ceratopogonidae	5	
Coordinates	28°45' 08.37"	Huridinea	3		Hydrometridae	6		Chironomidae	2	
	20°35'06.16"	**Crustacea**			Naucoridae	7	7	Culicidae	1	
		Amphipodae	13		Nepidae	3		Dixidae	10	
DO mg/l	10.3	Potamonautidae	3		Notonectidae	3	3	Empididae	6	
Temperature °C	12.6	Atyidae	8	8	Pleidae	4		Ephydridae	3	
pH	8.64	Palaemonidae	10		Veliidae	5		Muscidae	1	
EC mS/m	37.7	Hydracarina	8		**Megaloptera**			Psychodidae	1	
		Plecoptera			Corydalidae	10		Simuliidae	5	
SASS5 Score	50	Notonemouridae	14		Sialidae	8		Syrphidae	1	
Number of Taxa	9	Perlidae	12		**Trichoptera**			Tabanidae	5	
ASPT	5,6	**Ephemeroptera**			Dipseudopsidae	10		Tipulidae	5	5
		Baetidae 1 sp	4		Ecnomidae	8		**Gastropoda**		
Other Biota		Baetidae 2 sp	6	6	Hydropsychidae 1 sp	4		Ancylidae	6	
		Baetidae >3 sp	12		Hydropsychidae 2 sp	6		Bulinidae	3	
		Caenidae	6		Hydropsychidae <2 sp	12		Hydrobiidae	3	
		Ephemeridae	15		Phylopotamidae	10		Lymnaeidae	3	
		Heptageniidae	13		Polycentropodidae	12		Physidae	3	
		Leptophlebiidae	9		Psychomyidae	8		Planorbidae	3	
		Oligoneuridae	15		**Cased Caddis**			Thiaridae	3	
Comments		Polymitarcyidae	10		Barbarochthonidae	13		Viviparidae	5	
		Prosopistomatida	15		Calamoceratidae	11		**Pelecipoda**		
		Teloganodidae	12		Glossostomatidae	11		Corbiculidae	5	
		Trichorythidae	9		Hydroptilidae	6		Sphariidae	3	
		Odonata			Hydrosalpingidae	15		Unionidae	6	
		Calopterygidae	10		Leptostomatidae	10				
		Clorocyphidae	10		Leptoceridae	6				
		Chorolestidae	8		Petrothrincidae	11				
		Coenagrionidae	4		Pisulidae	10				
		Lestidae	8		Sericostomatidae	13				
		Platycnemidae	10		**Coleoptera**					
		Protoneuridae	8		Dyticidae	5	5			
		Aesthnidae	8		Elmidae Dryopidae	8				
		Corduliidae	8	8	Gyrinidae	5				
		Gomphidae	6		Haliplidae	5				
		Libellulidae	4		Helodidae	12				
		Lepidoptera			Hydraenidae	8				
		Pyralidae	12		Hydrophilidae	5	5			
					Limnichidae	10				
					Psephenidae	10				
Score				22			23			5

20.2 Methodology used in determining significance of impacts

The methodology to be used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives is provided in the following tables:

Table 20.2.1 Nature and type of impact

Nature and type of impact	Description
Positive	An impact that is considered to represent an improvement to the baseline conditions or represents a positive change
Negative	An impact that is considered to represent an adverse change from the baseline or introduces a new negative factor
Direct	Impacts that result from the direct interaction between a planned project activity and the receiving environment / receptors
Indirect	Impacts that result from other activities that could take place as a consequence of the project (e.g. an influx of work seekers)
Cumulative	Impacts that act together with other impacts (including those from concurrent or planned future activities) to affect the same resources and / or receptors as the project

Table 20.2.2 Criteria for the assessment of impacts

Criteria	Rating	Description
Spatial extent of impact	National	Impacts that affect nationally important environmental resources or affect an area that is nationally important or have macro-economic consequences
	Regional	Impacts that affect regionally important environmental resources or are experienced on a regional scale as determined by administrative boundaries or habitat type / ecosystems
	Local	Within 2 km of the site
	Site specific	On site or within 100m of the site boundary
Consequence of impact/ Magnitude/ Severity	High	Natural and / or social functions and / or processes are severely altered
	Medium	Natural and / or social functions and / or processes are notably altered
	Low	Natural and / or social functions and / or processes are slightly altered
	Very Low	Natural and / or social functions and / or processes are negligibly altered
	Zero	Natural and / or social functions and / or processes remain unaltered
Duration of impact	Temporary	Impacts of short duration and /or occasional
	Short term	During the construction period
	Medium term	During part or all of the operational phase
	Long term	Beyond the operational phase, but not permanently
	Permanent	Mitigation will not occur in such a way or in such a time span that the impact can be considered transient (irreversible)

Table 20.2.3 Significance Rating

Significance Rating	Description
High	High consequence with a regional extent and long-term duration High consequence with either a regional extent and medium-term duration or a local extent and long-term duration Medium consequence with a regional extent and a long-term duration
Medium	High with a local extent and medium-term duration High consequence with a regional extent and short-term duration or a site-specific extent and long-term duration High consequence with either local extent and short-term duration or a site-specific extent with a medium-term duration Medium consequence with any combination of extent and duration except site-specific and short-term or regional and long term Low consequence with a regional extent and long-term duration
Low	High consequence with a site-specific extent and short-term duration Medium consequence with a site-specific extent and short-term duration Low consequence with any combination of extent and duration except site-specific and short-term Very low consequence with a regional extent and long-term duration
Very low	Low consequence with a site-specific extent and short-term duration Very low consequence with any combination of extent and duration except regional and long term
Neutral	Zero consequence with any combination of extent and duration

Table 20.2.4 Probability, confidence, reversibility and irreplaceability

Criteria	Rating	Description
Probability	Definite	>90% likelihood of the impact occurring
	Probable	70 – 90% likelihood of the impact occurring
	Possible	40 – 70% likelihood of the impact occurring
	Unlikely	<40% likelihood of the impact occurring
Confidence	Certain	Wealth of information on and sound understanding of the environmental factors potentially affecting the impact
	Sure	Reasonable amount of useful information on and relatively sound understanding of the environmental factors potentially influencing the impact
	Unsure	Limited useful information on and understanding of the environmental factors potentially influencing this impact
Reversibility	Reversible	The impact is reversible within 2 years after the cause or stress is removed
	Irreversible	The activity will lead to an impact that is in all practical terms permanent
Irreplaceability	Replaceable	The resources lost can be replaced to a certain degree
	Irreplaceable	The activity will lead to a permanent loss of resources.

20.3 Risk Matrix Methodology

RISK ASSESSMENT KEY (Referenced from DWA RISK-BASED WATER USE AUTHORISATION APPROACH AND DELEGATION GUIDELINES)

Negative Rating

TABLE 1- SEVERITY

How severe does the aspects impact on the environment and resource quality characterisitics (flow regime, water quality, geomorfology, biota, habitat)

Insignificant / non-harmful	1
Small / potentially harmful	2
Significant / slightly harmful	3
Great / harmful	4
Disastrous / extremely harmful and/or wetland(s) involved	5

Where "or wetland(s) are involved" it means

TABLE 2 – SPATIAL SCALE

How big is the area that the aspect is impacting on?

Area specific (at impact site)	1
Whole site (entire surface right)	2
Regional / neighbouring areas (downstream within quaternary catch	3
National (impacting beyond seconday catchment or provinces)	4
Global (impacting beyond SA boundary)	5

TABLE 3 – DURATION

How long does the aspect impact on the environment and resource quality?

One day to one month, PES, EIS and/or REC not impacted
One month to one year, PES, EIS and/or REC impacted but no change in status
One year to 10 years, PES, EIS and/or REC impacted to a lower status but can be improved over this period through mitigation
Life of the activity, PES, EIS and/or REC permanently lowered
More than life of the organisation/facility, PES and EIS scores, a E or F

TABLE 4 – FREQUENCY OF THE ACTIVITY

How often do you do the specific activity?

Annually or less	1
6 monthly	2
Monthly	3
Weekly	4
Daily	5

TABLE 5 – FREQUENCY OF THE INCIDENT/IMPACT

How often does the activity impact on the environment?

Almost never / almost impossible / >20%	1
Very seldom / highly unlikely / >40%	2
Infrequent / unlikely / seldom / >60%	3
Often / regularly / likely / possible / >80%	4
Daily / highly likely / definitely / >100%	5

TABLE 6 – LEGAL ISSUES

How is the activity governed by legislation?

No legislation	1
Fully covered by legislation (wetlands are legally governed)	5

Located within the regulated areas

TABLE 7 – DETECTION	
How quickly can the impacts/risks of the activity be observed on the environment (water resourc	
Immediately	
Without much effort	
Need some effort	
Remote and difficult to observe	
Covered	

TABLE 8: RATING CLASSES		
RATING	**CLASS**	**MANAGEMENT DESCRIPTION**
1 – 55	(L) Low Risk	Acceptable as is or consider requirement for mitigation. Impact to watercourses and resource quality small and easily mitigated. Wetlands may be excluded.
56 – 169	M) Moderate Risk	Risk and impact on watercourses are notably and require mitigation measures on a higher level, which costs more and
170 – 300	(H) High Risk	Always involves wetlands. Watercourse(s) impacts by the activity are such that they impose a long-term threat on a large scale
A low risk class must be obtained for all activities to be considered for a GA		

TABLE 9: CALCULATIONS

Consequence = Severity + Spatial Scale + Duration
Likelihood=Frequency of Activity + Frequency of Incident +Legal Issues + Detection
Significance \Risk= Consequence X Likelihood

20.4 Note DWS

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

Northern Cape Provincial Operations, Private Bag X 6101, Kimberley, 8301, 28 Central Road Beaconsfield
Kimberley, Tel: 053 836 7600, Fax: 053 842 3258,

F	053 830 8825		Vhonani Ramugondo
E	ramugondov@dws.gov.za	☎	053 836 7648

Triple D (Pty) Ltd
P. O. BOX 5367
Helderburg
7135

Email:admin@enviroafrica.co.za

By Email/Registered Mail

Attention: EnviroAfrica CC

RE: CONSULTATION IN TERMS OF SECTION 4 OF THE NATIONAL WATER ACT, (ACT NO. 36 OF 1998): FOR PROPOSED AGRICULTURAL DEVELOPMENT (60HA OF VINEYARDS FOR TABLE GRAPE AND RAISIN PRODUCTION) ON PLOT 1178, SITUATED IN KAKAMAS SOUTH SETTLEMENT, NORTHERN CAPE PROVINCE.

Reference is hereby made for to your Invitation to register and comment on NEMA Public Participation Report drafted by EnviroAfrica on behalf of Triple D farms (Pty) as presented to the Department of Water and Sanitation dated 04 June 2018.

. **RECOMMENDATIONS AND DECISION**

This Department has evaluated the nature of the activity and the following should be addressed by the applicant when proving the application to the Department:

a) It is apparent that the nature of activities the applicant is proposing to engage in has potential impacts on the environment and water resources, as the area to be irrigated has non-perennial

1

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Our Future - make it work

streams around. The Department rates all perennial and non- perennial streams together with all dry river beds and natural drainage, wetlands, pans and associated riparian areas extremely sensitive to development

b) The water uses must be clearly identified and elaborated according to the National Water Act (Act 36 of 1998);

c) Clear colour topographical map showing the property, facilities in the property, land use, water courses and location of water abstraction point;

d) The relevant water uses according to the National Water Act (Act 36 of 1998) must be identified and clearly identified and defined;

e) A rehabilitation and monitoring plan must be included in the report;

f) A pre consultation meeting has to be arranged when the final draft is finalised to discuss the final water use authorisation requirements ;

g) The regulations on the use of water for agriculture and related activities aimed at the protection of the Water Resources as published in the Government Notice No.704 on 4 June (Government Gazette No. 20119) must be complied with.

This reply does not grant any exemption from the requirements of any applicable Act, Ordinance, Regulation or By-law.

This office reserves the right to revise its initial comments and request additional information that may arise from correspondence and upon inspection.

Yours sincerely

DIRECTOR: INSTITUTIONAL ESTABLISHMENT
DATE: 18/11/2018

20.5 Note DENC

the denc

Department:
Environment & Nature Conservation
NORTHEN CAPE PROVINCE
REPUBLIC OF SOUTH AFRICA

Private Bag X6102, Kimberley, 8300, SASKO Building, Tel: 053-807 7430, Fax: 053-831 3530

Enquiries : Ordain Riba
Dipatlisiso :
Navrae :
Imibuzo :

Date : 06 March 2019
Letlha :
Datum :
Umhla :

Reference : NC/EIA/02/ZFM/DAW/KAK1/2019
Tshupelo :
Verwysing :
Isalathiso

Att: Clinton Geyser
EnviroAfrica
P.O. BOX 5367
Helderberg
7135
Email: admin@enviroafrica.co.za

Dear Clinton

RE: PROPOSED AGRICULTURAL DEVELOPMENT, PLOT 2435, KAKAMAS SOUTH SETTLEMENT, KAI GARIEB MUNICIPALITY, NORTHERN CAPE.

The final scoping report which was submitted by you in respect of the above mentioned application and received by the Department on 05 February 2019, has been reviewed and found acceptable by the Department. You may proceed with undertaking of the Environmental Impact Report in accordance with the tasks that are outlined in the Scoping plan of study. However please take into consideration the following approval conditions:

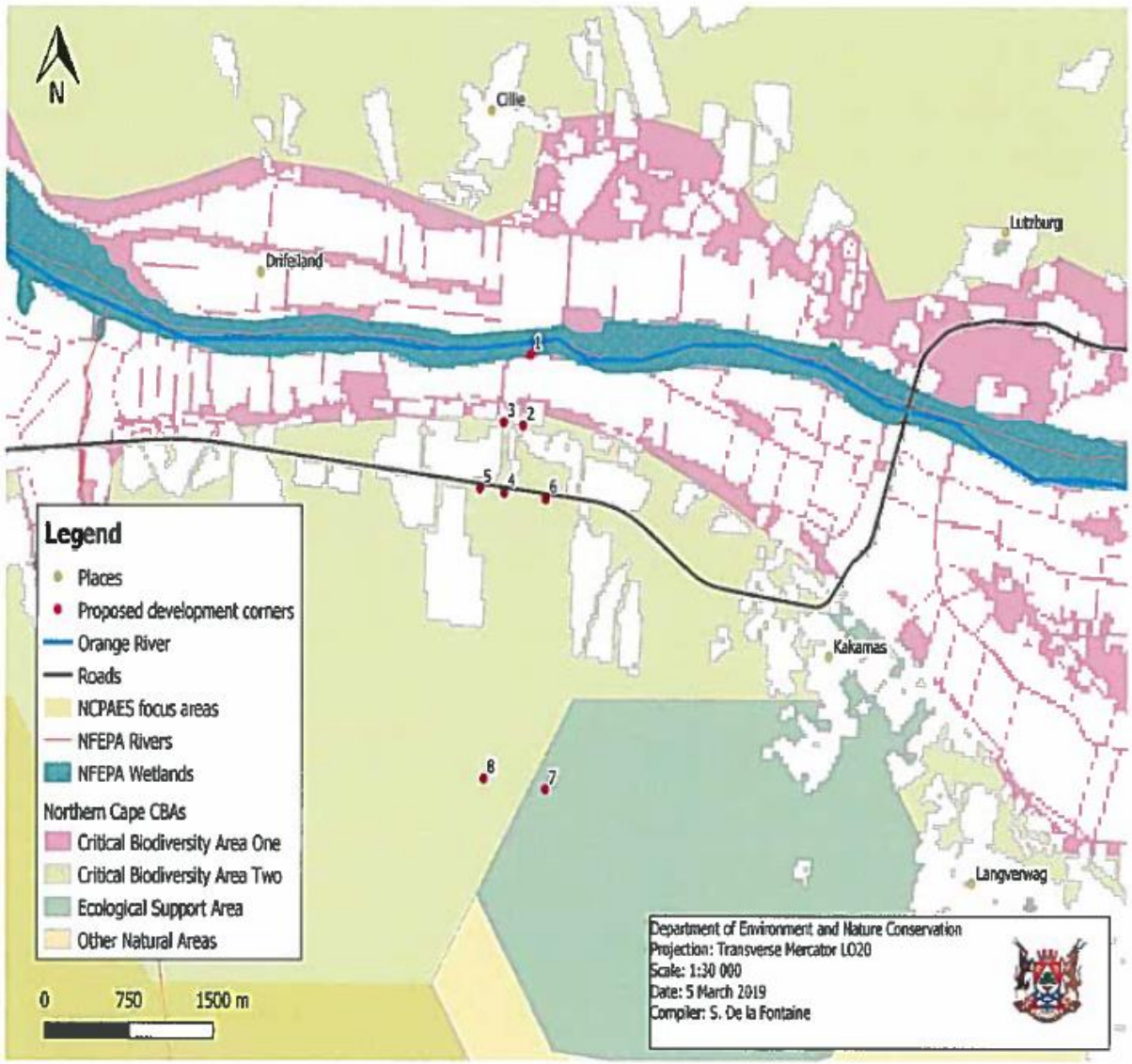
- The proposed development triggers activity 15 of LN 2 and thus cannot trigger activity 27 of LN 1, please amend the application form (Page only) and correct this in the final EIR report

With regards to planned botanical impact assessment please take into consideration the following;-

- The proponent should take the Northern Cape Nature Conservation Act 9 of 2009 as well as the National Forest Act 84 of 1998 in consideration as part of the legal frameworks when drafting the EIR. These acts list species that are protected in the province and nationally respectively. The specialist is advised to map listed species; their abundances should influence the sensitivity map.

1

- The sensitivity map should be up to standard. Sensitivity maps should include no-go areas, areas of high, medium and low sensitivity, ALL in relation to the layout of the proposed development. All of this information should be informed by the information drawn by the specialist's from the literature, background knowledge, virtual museums, site-visits, etc.
- Other man-made features should also be highlighted in relation to the sensitive features identified by the specialists.
- Reason for emphasis on the above-mentioned is because the proposed development area falls within CBA 1 (the pipeline), CBA 2 (majority of the proposed the development) and ESA areas (small south western corner of the proposed developmental area; see map attached), hence, a lot of detail should be given to sensitive features, protected species and their abundances, mitigation, conservation, etc. in order for the competent authority to make a sound and informed decision regarding the application for environmental authorization for the proposed development. Seeing that the proposed development falls within CBAs, the proponent should clearly illustrate if the proposed development triggers an off-set, or not, with supporting facts. The accumulation of impacts within the broader vicinity should also be given attention to.
- It is advised that a site-visit be taken prior to the drafting of the EIR. The site-visit should be undertaken in an appropriate season and for a considerate time.
- Any water features e.g. ephemeral rivers, seasonal pans, etc. Should be regarded in the dry Kalahari region as no-go areas. Disturbance of these features will have a direct negative impact on the local biodiversity of the area. Disturbance is thus strongly prohibited.
- It must be noted that at present there is a moratorium in place in the Northern Cape on the removal of *Aloidendron dichotomum* from the wild due to historic trade related pressures on populations (Proclamation No 968, 1 April 2005). All *A. dichotomum* individuals within close proximity to the planned development must be mapped in all documents going forward and regarded as no-go areas.



Please draw the applicant attention to the fact that the activity may not commence prior to an environmental authorization being granted by the Department.

Yours faithfully

Ordain Riba
ZFM Environmental Officer: IMPACT MANAGEMENT