FRESH WATER REPORT

for the construction of a proposed telecommunications mast on

FA 292/7, Jagersvlakte, Grabouw

A requirement in terms of section 21 (c) and (i) of the
National Water Act (36 of 1998)

January 2019

Index

Abbreviations

Breede-Gouritz Catchment Management Agency	BGCMA
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
National Environmental Management Act (107 of 1998)	NEMA
National Freshwater Environment Priority Area	NFEPA
National Water Act (36 of 1998)	NWA
Present Ecological State	PES
South Africa National Biodiversity Institute	SANBI
Water Use License Application	WULA

List of Figures

List of Tables

1 Introduction

Atlas Towers (www.atlastowers.com) is well known throughout South Africa and beyond for the construction and operation of cell phone towers. This is a prestigious company with a track record of excellence. Atlas Towers are perpetually adding to the existing network. Subsequently a new tower is planned on the Jagersvlakte property in Grabouw. Obviously, Atlas Towers negotiated the siting of the new tower with the owner of the property, the Maxwell Family Trust.

Atlas Towers appointed Enviro Africa for the Environmental Impact Assessment (EIA) that is required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998). The provincial government Department of Environmental Affairs and Development Planning (DEA&DP) as well as CapeNature reacted when the EIA was advertised according to standing procedures. The letters of concern are added in the Appendix of this report. Grabouw is blessed with a high annual rainfall and runoff from the mountain slopes. It is therefore to be expected that the many rivulets and wetlands and concomitant legislation will have to be addressed for the construction of the new tower.

To add to the concerns, Jagersvlakte is indicated as a National Freshwater Environment Priority Area (NFEPA) on the South African Biodiversity Institute's (SANBI) BGIS maps. The map is attached in the Appendix.

As a result, Dr D van Driel of WATSAN Africa was appointed to carry out a wetland delineation on the Jagersvlakte property. The wetland delineation is to be presented to the decision-making authorities. It was found that there is indeed a wetland on the property, albeit vastly altered and entirely transformed by an urbanised landscape.

Subsequently, the authorities, the DWS, by means of email correspondence, indicated that a Risk Matrix and Water Use License Application should be lodged, as the next step in the application process. As a result, the wetland delineation has been upgraded to a Fresh Water Report, now dubbed the Technical Report, to support the WULA. This then is the required upgraded document.

2 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 cell phone tower is located on the banks of a wetland. The wetland could possibly be altered, should the development go ahead.

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

The proposed cell phone tower may alter the characteristics of the wetland banks.

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, no development may take place within 500m of a wetland 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. The proposed cell phone tower is in or near a wetland. Consequently, this regulation is relevant to this application.

3 Quaternary Catchment

Grabouw is in the G40C quaternary catchment.

4 Grabouw Climate

http://www.saexplorer.co.za/south-africa/climate/grabouw_climate.asp

Grabouw normally receives about 990mm of rain per year and because it receives most of its rainfall during winter it has a Mediterranean climate. The chart below (lower left, Figure 1) shows the average rainfall values for Grabouw per month. It receives the lowest rainfall (22mm) in February and the highest (168mm) in June. The monthly distribution of average daily maximum temperatures (centre chart below) shows that the average midday temperatures for Grabouw range from 15°C in July to 24.8°C in February. The region is the coldest during July when the mercury drops to 6.4°C on average during the night.

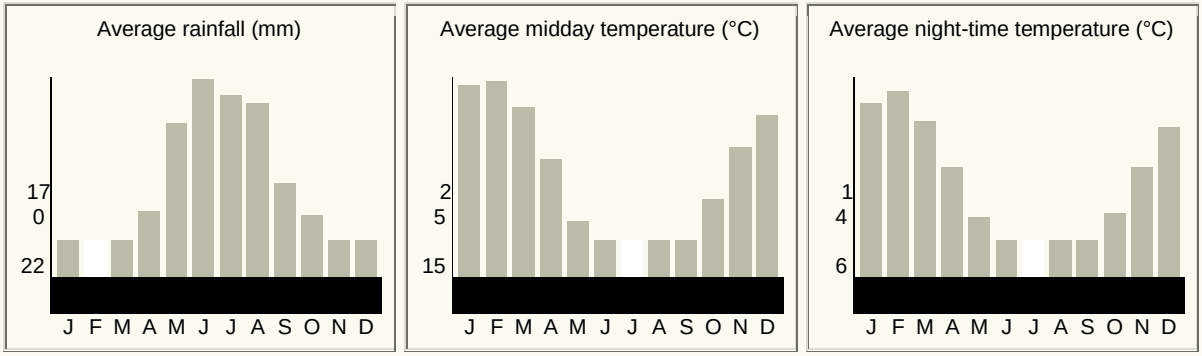


Figure 1 Grabouw Climate

5 Site Description

Grabouw is located to the east of Cape Town. The distance from the harbour to Grabouw is some 55 km, as the crow flies. Follow the N2 Highway through Somerset West, up the Sir Lowry's Pass and the first town over the Hottentotsholland Mountains is Grabouw, on an elevation of more than 300m above sea level. The town is flanked on the west and north by mountains of which the highest peaks are just over 2000m above sea level. Grabouw is located in the foothills in an undulating landscape with many small streams and wetlands. The Palmiet River passes the town on the west. The Palmiet River has a number of dams, of which the Eikenhof Dam is the largest. Grabouw is known for its fruit such as apples and pears for the export market and fruit juice industry. Grabouw makes up a significant part of the local economy.

As recently as 20 years ago, the mountain slopes and hills were covered with pine and blue gum forests. The forests have been replaced by vast expanses of informal housing that now dominates the landscape. The workers came from far afield to work the massive fruit industry. Some of the shanties have been replaced by formal housing and this process is ongoing.

The Jagersvlakte property on which the cell phone tower is to be constructed in the northern part of Grabouw is on this hilly landscape, flanked by formal and informal housing (Figure 2). It used to be plantation, forest, but is now denuded of these trees.

The property is open and serves as a pasture for horses and other livestock, a pleasant and manicured small holding with a neat dwelling, a garden and out buildings.

A ditch passes the property from the south west to the north east. This comes out of the urban section and carries storm water with lots of litter. From this ditch, perpendicular, a swale goes to the south east, between the two small farm dams and then onto Worcester Road. This prevents litter and other rubble from the adjacent urban area to end up in the farm dams.

Between the urban area, the informal housing, the high rainfall of more than 900mm per year and the many rivulets and wetlands, it is difficult to find a site in the specific area for a cell phone tower. This site will have to fit in with the existing connectivity and network of cell phone towers in the district. It is obvious why the site on Jagersvlakte was chosen, also because of security reasons and the protection of the new tower.

Figure 2 The Jagersvlakte Property

6 Wetland Delineation

The methodology to be followed for the delineation of wetlands is available on the DWS webpage. The methodology consists of 3 parts, landform, soil profile and vegetation.

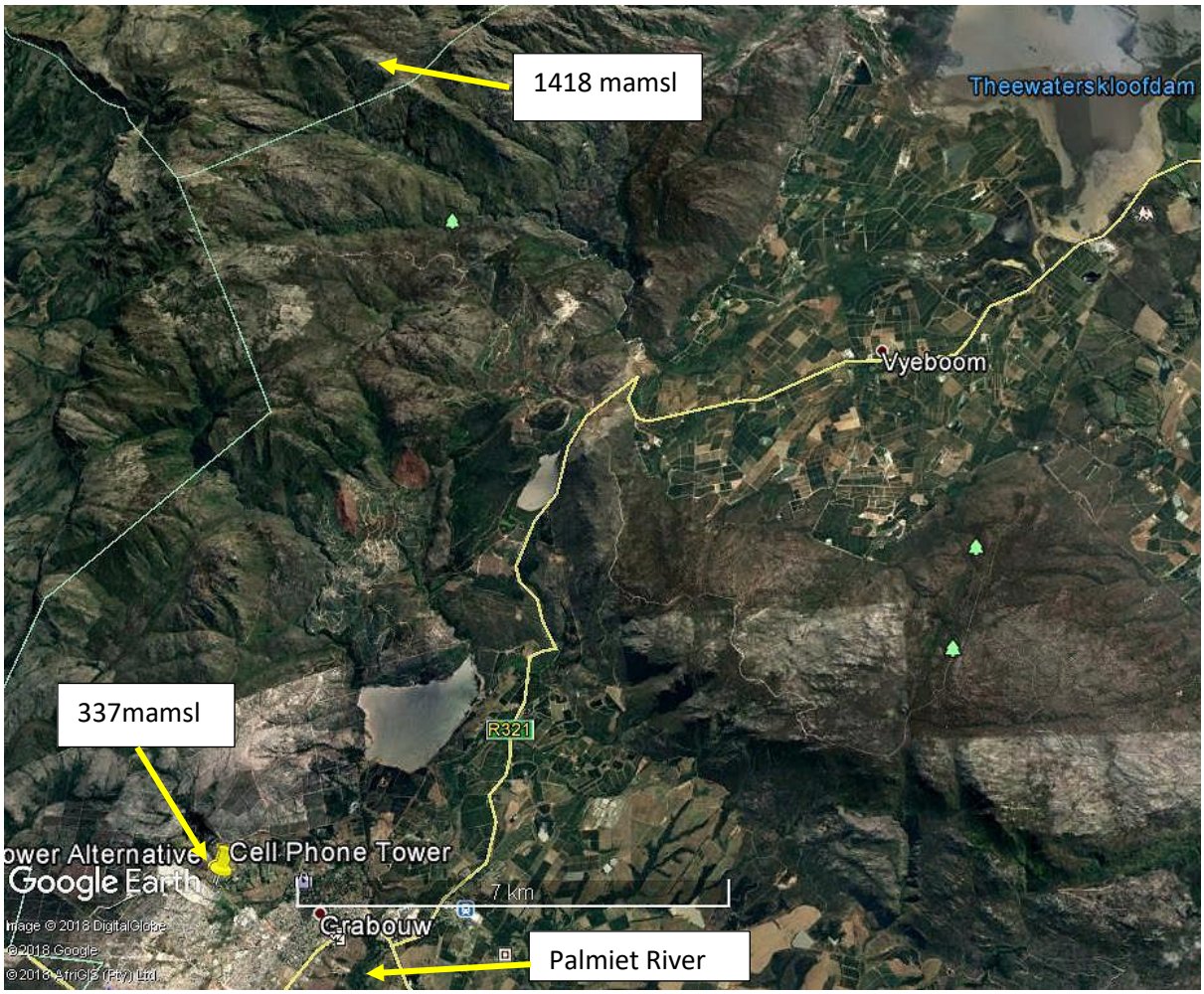


Figure 3 Land form

6.1 Land Form

The peaks and ridges above Grabouw can reach a height of 1418m above sea level (Figure 3). The sandstones and granites of the high ground above Grabouw, where the annual rainfall can exceed 1500mm, stores vast volumes of rain water, which then migrates down the slope to emerge as springs and seeps. There are numerous places on the slopes, depending on the geology, where ground water emerges. One such place is the portion of the Farm Jagersvlakte, at an elevation of 337m (Figure 3), even though 10 km away, now under discussion. The topography is conducive to the presence of springs and seeps. Some of this ground water may eventually decant into the Palmiet River, to perpetually replenish the flow in the river. Some of it ends up in

the upper Riviersonderend River, here known as the Vyeboom River that flows into the Theewaterskloof Dam.

6.2 Ground Profiles

Two test holes were dug. The first one was near the location of the site where the cell phone tower is to go up, according to plan (Figure 4). The test hole was dug to a depth of only 400mm, when a bank of calcrete was struck. The sand was light in colour, somewhat yellow, all the way down to the calcrete and without any chroma mottles. The sand was very dry. Here was no sign of any temporary wetland or even a wetland support zone.

The second test hole was dug closer to the spring (Figure 5), up to a depth of 600mm. The upper soil was homogeneously grey, without any mottles. Deeper down the soil was lighter in colour, more towards the yellow of the first test hole, but still more grey, without mottles. The soil here was wet, more wet towards the surface than deeper down. This clearly is indicative of a permanent wetland with hydromorphic soils. Reportedly the water table is reached at a depth of 1.2m, where the sand is still soft, with no calcrete or bedrock.

The top soil and calcrete becomes thinner towards the Worcester Road (Figure 6), with the sandstone emerging on the road reserve (Figure 1). The sandstone is sloping towards the east, with soils becoming deeper.

Figure 4 Test Hole 1

Figure 5 Test Hole 2

Figure 6 Sandstone

6.3 The Spring

A spring emerges on the property, as indicated on Figure 7. A concrete structure has been erected around the spring. Reportedly the spring delivers water at a reliable rate of not less than 0.5 to 1.0 lm^{-1}. Such a delivery was witnessed during the site visit on 11 December 2018. This is good-quality water that has been used for domestic use for many decades.

The water of from the spring ends up in a small farm dam. There is yet another small farm dam adjacent to the one that is being fed by the spring.

Figure 7 Spring, dam and *Juncus effusis*

A dry drainage line can be seen across the road from the farm dam. The dam was built in a water course that now has running water when the dam overflows.

6.4 Vegetation

Around the farm dams a dense stand of the rush *Juncus effuses* occurs (Figure 7 and 8).

Up to 50m up the slope from the farm dams a sedge *Cyperus laevigatus* occurs (Figure 9). These are eaten by horses. The plants are small, up to 150mm high.

There are two other small sedges (Figure 10 and 11), up to 200 mm high, growing up to 100m up the slope. The identification is best left to the experts in this field.

If all of these are regarded as wetland indicator species, it can be deducted that the envisaged cell phone tower is well within the 500m buffer zone.

Figure 8 *Juncus effuses*

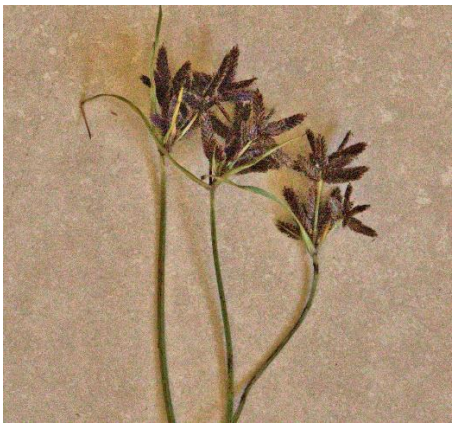


Figure 9 *Cyperus laevigatus*

Figure 10 Minor sedge 1

Figure 11 Minor sedge 2

The vegetation was interspersed with a pleasing stand of *Romulea tabularis* (Figure 12) and *R. rosea.* These grow in moist conditions and are further indicators of wetland conditions.

Figure 12 *Romulea tabularis*

7 Wetland Demarcation

Figure 13 Wetland Demarcation

If the dry land area were to be separated from the wetland area on the Jagersfontein property, based on the vegetation, a line could be drawn as in Figure 13.

8 **Present Ecological State** (PES)

The PES and EIS are protocols that have been produced by Dr Neels Kleynhans (Table 1 and 2) 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.

Table 1 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

It is difficult of not impossible to image what the vegetation and especially the riverine vegetation was like prior to human impact. The transformation started probably not long after the first European settlers arrived in the year 1652. Since then the vegetation has been transformed several times over from the original Kogelberg Sandstone Fynbos to pine and blue gum plantations and then again to the farm animal pasture that it is today.

Freshwater ecologists imagine a small stream in the foothills of the Hottentotsholland Mountains with a widening on gently sloping ground with a small wetland. The original stream could even have had a small stand of palmiet, sometimes perceived as the ultimate indicator of a healthy aquatic riverine ecosystem in the region. None of this is present today. It can be perceived that the aquatic habitat has been entirely lost, with the ecosystem function irretrievably gone. This is not entirely true, even though the wetland has been replaced by two small farm dams and a patch of hydromorphic soil. A new ecological regime has arisen, remote from the original one, but nevertheless with some ecological functioning.

Table 2 Present Ecological Status Aquatic Habitat Jagersvlakte

Instream				
	Score	Weight	Product	Maximum score
Water abstraction	5	14	70	350
Flow modification	3	13	39	325
Bed modification	3	13	39	325
Channel modification	3	13	39	325
Water quality	24	14	336	350
Inundation	4	10	40	250
Exotic macrophytes	18	9	162	225
Exotic fauna	15	8	120	200
Solid waste disposal	24	6	144	150
Total		100	989	2500
% of total			39.6	
Class			D	
Riparian				
Water abstraction	5	13	65	325
Inundation	3	11	33	275
Flow modification	3	12	36	300
Water quality	24	13	312	325
Indigenous vegetation removal	6	13	78	325
Exotic vegetation encroachment	18	12	216	300
Bank erosion	23	14	322	350
Channel modification	3	12	36	300
Total			1098	2500
% of total			43.92	
Class			D	

It is hard to decide if the site should be classified as D or E, but according to the scores given in Table 1, the instream habitat just made class D with a very narrow margin.

Likewise, the riparian zone can be classified as D.

9 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 (Kleynhans, 1999, Table 3).

There are no indigenous fish in the drainage line downstream of the farm dams, as there is no permanent water. Likewise, no surface water was detected upstream of the site. It is unlikely that the dams still hold any indigenous fish. According to this assessment, which is prescribed for WULA's, the site and surrounds are not important.

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

Table 3. Ecological Importance according to endangered organisms.

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)

10 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.

This is forestry area and was under pine and blue gum trees. Recent experience has shown that when the trees are harvested and a block of trees is not replanted, the Fynbos soon grows back again, within a couple of years. This regrowth of Fynbos is promoted by the removal of any new exotic trees that may re-colonise the block following harvesting. It is often perceived that the Fynbos seedbank must be depleted after decades of forestry. Against expectation the Fynbos recovery is remarkable. Against this background, Fynbos of the area should be perceived as not sensitive. However, this is remote from reality. Forestry will not return, but the farmland will persist. It is unlikely that the Fynbos will ever return.

Likewise, with a stream that is being perpetually fed by a permanent fountain against the slopes of the Hottentotsholland foothills, it can be expected that stream will regain at least some or even most of its original ecological functioning, but it is unlikely that the farm dams, water abstraction, urban development and farming will ever cease. From this perspective a potentially unsensitive mountain stream becomes sensitive, induced by permanent human impact.

11 Mitigation Measures

Figure 14 Typical 32m Atlas Cell Phone Tower

The cell phone tower that is planned for the Jagersvlakte site in Grabouw resembles the one depicted in Figure 14.

The biggest single possible impact on the movement of shallow ground water, if there is any, which may eventually end up in the moist soils down the slope, is the concrete

foundation of the cell phone tower. This is typically 5 meters long, 5 meters and 0.4 to 0.5 meter deep. Ground water would simply move around it, or perhaps underneath.

It seems as if the foundation for both the indicated sites are not in the direct path of moving ground water, as the test hole was dry and away from the hydromorphic soils.

The foundation's impact can hardly add to the already existing impacts of the many buildings adjacent to the construction site.

The hole for the foundation will be excavated with a light mechanical digger / loader known as a TLB. This will be the heaviest piece of machinery that will be used on-site.

The next aspects that deserves attention is the security fence that is to be erected around the envisaged cell phone tower. The upright supports are usually 0.4 m deep into the ground. It cannot be seen how these can significantly affect moving ground water. The entire surface area that will be fenced in will be 100 m^2.

A worrying aspect of any construction near or on wetlands is access roads. Access to the site would be provided by the existing road servitude along the western border of the property. No new roads or access over the property and over the hydromorphic soils would be necessary. This arrangement would remain in place for the ongoing service and maintenance of the cell phone tower. In no point of its life cycle will the wetland area be compromised by additional access roads in any way. Vehicles should not be allowed to cross the demarcation line as indicated on Figure 13.

If any cranes are required to lift the tower and other equipment into position, these will take up position on the road servitude.

The cell phone tower and accessory components are being manufactured off-site and will be transported with trucks from elsewhere. Apart from the assembling of the tower, no parts will be made on-site. It is recommended that the concrete for the foundation is sourced from outside and transported to the site in specialised trucks, as aggregate manufacturing companies usually do. This will reduce the footprint during the construction phase.

It is essential that building material, rubble and vehicles should be kept out of the wetland area, as indicated by the demarcation line on Figure 13.

It would be advantageous if the construction of the cell phone tower could be completed prior to the start of the rainy season. This would prevent the washing down of sediments by storm water onto the hydromorphic soils.

12 Impact Assessment

The impact assessment is required for the EIA and will be included in the EIA documentation. The impact assessment follows a predetermined methodology (Table 4). The criteria and the description for scoring the impacts during the successive phases of the agricultural development are listed in the appendix.

Some of the criteria had to be re-defined to fit the aquatic environment, as explained in the appendix.

The impact of the foundation on the movement of ground water would be certain, but of insignificant consequence. This cannot be prevented. However, the ending up of building material and rubble on the wetland area can be prevented. So can the movement of vehicles on the wetland.

It is assumed that the cell phone tower can be removed, together with its foundation, once its lifetime has expired. In this event, ecological functioning that has been lost because of the cell phone tower, would be naturally restored.

Table 4 Impact Assessment

Description of impact Construction of the cell phone tower **Mitigation measures** Keep vehicles, machinery, building material and rubble out of wetland area Complete the development prior to the rainy season								
Type Nature	Spatial Extent	Severity	Duration	Significance	Probability	Confidence	Reversibility	Irreplaceability
Without mitigation								
Cumulative	Site specific	High	Permanent	Low	Probable	Certain	Reversable	Replaceable
With mitigation measures								
Cumulative	Site specific	Low	Permanent	Very Low	Unlikely	Certain	Reversible	Replaceable

Description of impact Operation of the cell phone tower **Mitigation measures** Stay out of the wetland								
Type Nature	Spatial Extent	Severity	Duration	Significance	Probability	Confidence	Reversibility	Irreplaceability
Without mitigation								
No further impact	Site specific	Zero	Permanent	Low	Probable	Certain	Reversable	Replaceable
With mitigation measures								
No further impact	Site specific	Zero	Permanent	Very Low	Unlikely	Certain	Reversible	Replaceable

13 Risk Matrix

The assessment was carried out according to the interactive Excel table that is available on the DWS webpage. Table 5 is a replica of the Excel spreadsheet that has been adapted to fit the format of this report. The numbers in Table 5 (continued) represent the same activities as in Table 4, with sub-activities added.

The original risk assessment as on the DWS webpage has been submitted on the eWULAA on-line system of the BGCMA.

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 assessment covers the same impacts as that of the Impact Assessment.

For the risk assessment it is assumed that all mitigation measures are in place.

Table 5 Risk Matrix

No.	Activity	Aspect	Impact	Significance	Risk Rating
1.1	Construction of cell Phone tower	Digging of hole for foundation	Sediments in aquatic habitat	24	Low
1.2		Casting of foundation	Pollutants in aquatic habitat	24	Low
1.3		Assembling tower	Pollutants in aquatic habitat	24	Low
1.4		Erection of security fence	Sediments in aquatic habitat	24	Low
2.1	Operation cell phone tower	Replacement of parts	Pollutants in wetland	24	Low
2.2		Service and other maintenance	Pollutants in wetland	24	Low

Table 5 Continued Risk Rating

No	Flow	Water Quality	Habitat	Biota	Severity	Spatial scale	Duration	Conse-quence
1.1	1	1	1	1	1	1	1	3
1.2	1	1	1	1	1	1	1	3
1.3	1	1	1	1	1	1	1	3
1.4	1	1	1	1	1	1	1	3
2.1	1	1	1	1	1	1	1	3
2.2	1	1	1	1	1	1	1	3

No	Frequency of activity	Frequency of impact	Legal issues	Detection	Likelihood	Significance	Risk Rating
1.1	1	1	5	1	8	24	Low
1.2	1	1	5	1	8	24	Low
1.3	2	2	5	1	8	24	Low
1.4	2	2	5	1	8	24	Low
2.1	2	2	5	1	8	24	Low
2.2	2	2	5	1	8	24	Low

The risk to the aquatic habitat next to the proposed cell phone tower is very low in all events. The Risk Matric works in such a way that a lower score is not possible.

A General Authorisation would be in order and Licence is not required.

14 Resource Economics

The goods and services delivered by the environment, in this case the Jagersvlakte Wetland, 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 15) is an accepted manner to visually illustrate the resource economic footprint the drainage line, from the data in Table 6.

Table 6. Goods and Services

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

0	Low
5	High

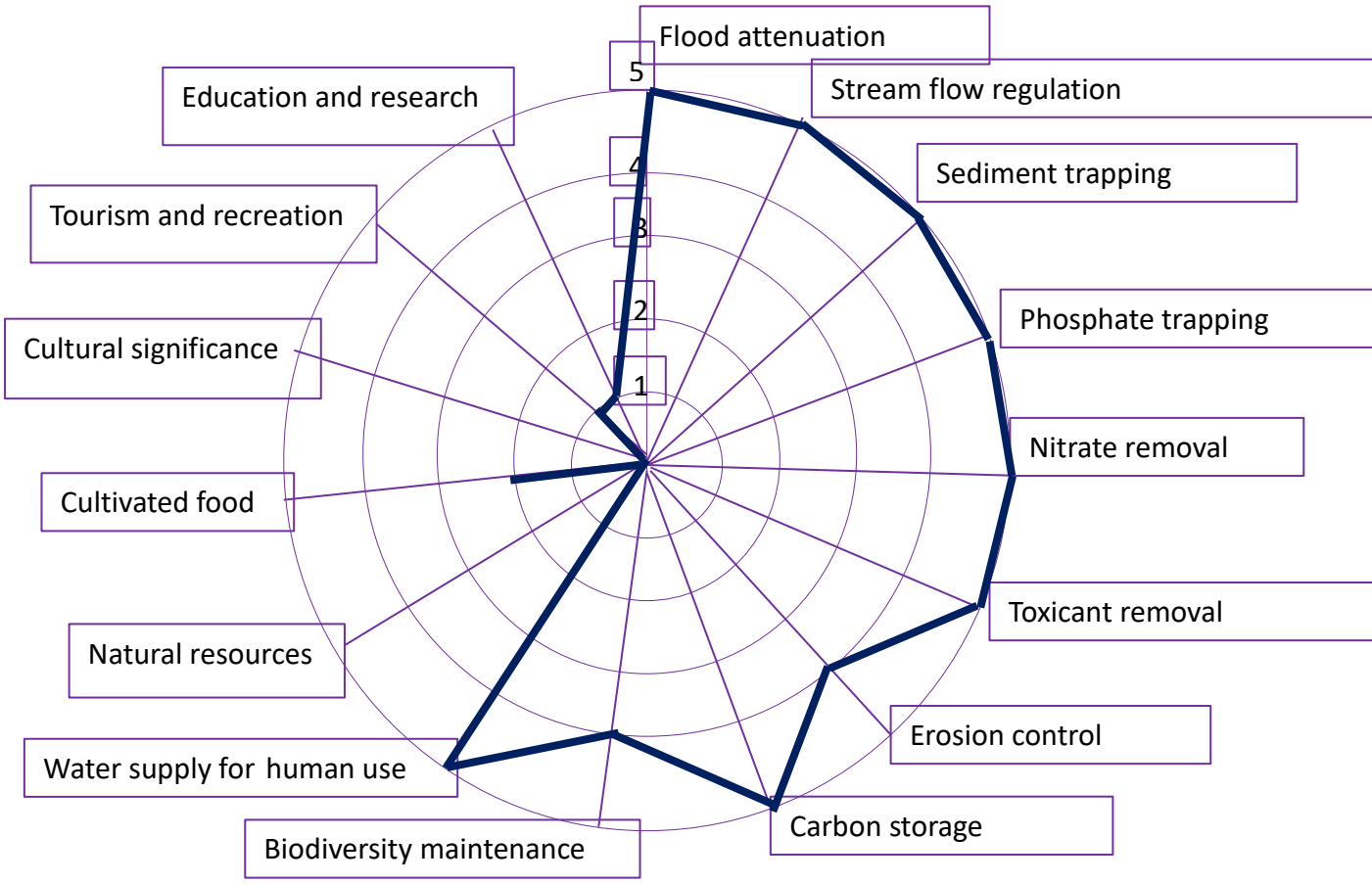


Figure 15. Resource Economics Footprint Jagersvlakte Wetland

The size of the star shape attracts the attention of the decision-makers. The large star shape for the Jagersvlakte Wetland would predictably draw attention. Hydrologically it is important because of its attenuation of floods. Ecologically it is important because of its attenuation of sediments and nutrients. It is most important because it still maintains biological diversity, even though it is different from being a rivulet prior to it being dammed and despite of its small size.

It is important because its of the domestic use of its water. Livestock is being watered and its water is used for irrigation of a small holding garden. The proposed cell phone tower is not about to detract from any of these aspects, even though it is on the verge of the wetland.

The wetland does not have much to offer for tourism and cultural significance. The neighbourhood has already been severely desecrated by the large-scale shanty towns of the Grabouw area. The envisaged cell phone tower would not detract any more from these aspects.

15 Conclusions

Figure 22 has been adapted from one of the most recent DWS policy documents.

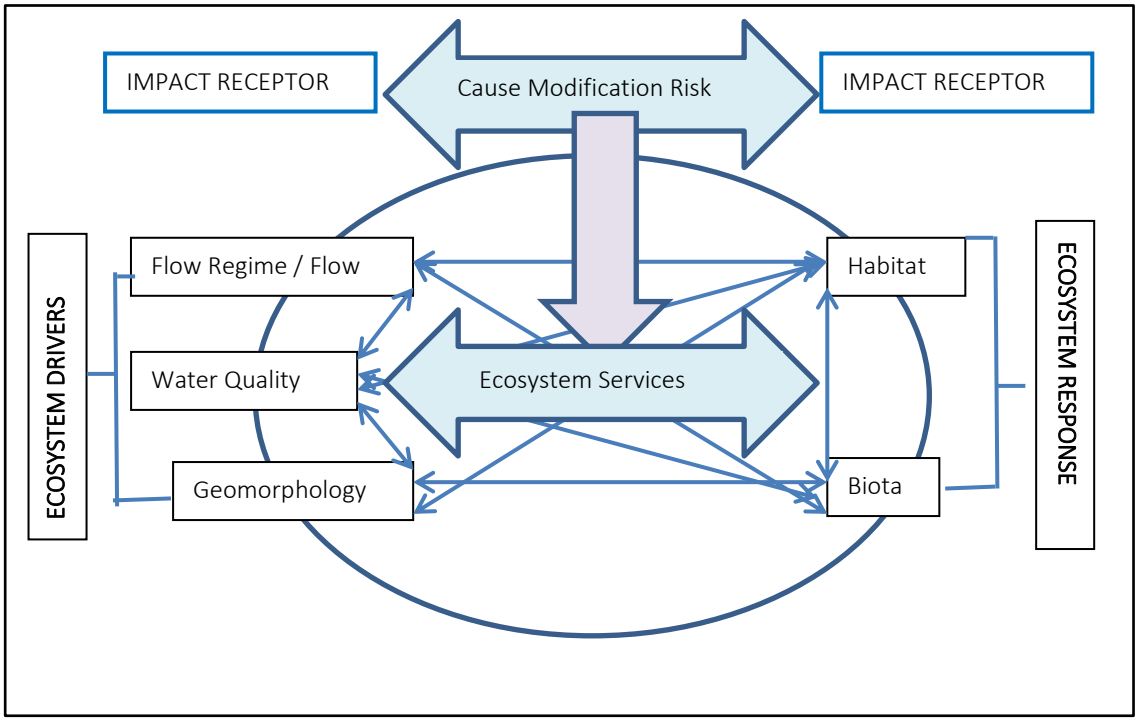


Figure 16 Minimum Requirements for a S21(c) and (i) Application

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. The WULA and the EAI must provide mitigation measured for these impacts.

The conclusions can be structured along the outline that is provided by Figure 22.

The winter rain was the main driver of the original mountain foothill stream and its associated wetland. The ground water of the saturated sandstones of the higher ground decant to the surface in many places, among other the fountain at Jagersvlakte. This fountain used to be a driver of a permanent stream. This was during historic times. Today the stream has been replaced by two small off-channel farm dams. A shallow swale is the only remains of the original stream. Much of its water is abstracted for urban and agricultural use. The stream is dry most of the time. The only aspect of the associated wetland that remains is the hydromorphic soils with some wetland vegetation.

The area has been entirely transformed, first by forestry, then by large-scale urban development, most of which is sub-economic and shanty town and eventually by agriculture. Yet, there is still ecological functioning, which deserves a measure of conservation.

Both the site and the alternative site are located outside of the wetland area, but within the 500m buffer zone. The buffer zone is very dry, with ground water moving deeper down underneath, or perhaps around the proposed sites. From this perspective, given the nature of a cell phone mast, the impact on the aquatic environment would be negligible.

Given that economic housing as well as the worst of shanty towns are located within the 500m buffer zone and even right on water courses in Grabouw, the addition of a cell phone transmission tower can hardly be viewed as incrementally deleterious.

The site is slightly more preferable than the alternative site, even though the alternative site is out of the official NFEPA. It is slightly further away from the verge of the demarcated wetland. It is157m away from the spring, as opposed to the 136m of the alternative site.

It remains for the decision-making authorities to allow or disallow the envisaged tower, as GN 509 stipulates that should developments take place within buffer zones, official permission is required. The relevant consultants can at most make recommendations as to its feasibility. In this case it is humbly recommended that the authorities should kindly consider the application, as the impact would be negligible and as the impact would be unnoticeable if compared to existing impacts.

The proposed cell phone tower, if constructed, would not change the conservation status of the aquatic habitat on Jagersvlakte. The ecological classification would remain a ‘D’ and would not change. The impact and the risk to the ecology would be low enough that a General Authorisation should be considered. A License would not be required.

16 References

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

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.

For the identification of plants:

Bean, Anne & Amida Johns. 2005. *South Africa Wild Flower Guide 5. Stellenbosch to Hermanus.* Botanical Society of South Africa, Pretoria.

Gerber, Annelise, Carina J. Cilliers, Carin van Ginkel & R. Glen. *Easy Identification of Aquatic Plants*. Department of Water Affairs, Pretoria.

Griffiths, C., Jenny Day & M. Picker. 2015. *Fresh Water Life*. Struik, Cape Town.

17 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:  15 January 2019

18 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
- Fresh Water Report Urban Development Witteklip Vredenburg
- Fresh Water Report Groblershoop Resort, Northern Cape
- Fresh Water Report CA Bruwer Quarry Kakamas, Northern Cape
- Fresh Water Report, CA Bruwer Sand Mine, Kakamas, Northern Cape
- Fresh Water Report, Triple D Farms, Agri Development, Kakamas
- Fresh Water Report, Keren Energy Photovoltaic Plant Kakamas
- Fresh Water Report, Keren Energy Photovoltaic Plant Hopetown
- Fresh Water Report Hopetown Sewer
- Fresh Water Report Hoogland Farm Agricultural Development, Touws River

19 Appendix

19.1 Breede-Gouritz CMA Correspondence

BREEDE-GOURITZ
CATCHMENT MANAGEMENT AGENCY

51 Baring Street Worcester 6850, Private Bag X3055 Worcester 6850

Enquiries: V Lgudu Tel: 023 346 8000 Fax: 023 347 2012 E-mail: vligudu@bgcma.co.za

REFERENCE NO: 4/10/1/G40C/Farm Jagersvlakte 292/7 Grabouw

Date: 07 November 2018

EnviroAfrica
PO Box 5367
Helderberg
7135

Attention: Inge Erasmus

RE: ATLAS TOWERS (PTY) LTD: PROPOSED DEVELOPMENT OF A 30M HIGH TELECOMMUNICATIONS LATTICE MAST ON PORTION 7 FARM JAGERSVLAKTE NO. 292 CALEDON RD, GRABOUW, WESTERN CAPE (MAXWELL FAMILY TRUST).

With reference to the above mentioned document received by this office on the 07 November 2018 requesting comments.

This office has reviewed the report and has the following comments:

1. All relevant sections and regulations of the National Water Act, 1998 (Act 36 of 1998) regarding water use must be adhered to.

2. Any activity within the 1:100 year floodline or within 100 metres of a watercourse (river, spring, natural channel, a lake or dam) or ***within a 500 m radius from the delineated boundary (extent) of any wetland*** or pan triggers a water use activity in terms of Section 21 c & i of the National Water Act, 1998 (Act 36 of 1998).

3. You are requested to submit the Risk Matrix for the wetland mentioned in the Report.

4. Erosion control measures must be implemented to prevent soil erosion during construction.

5. No pollution of surface water or ground water resources may occur due to any activity.

6. Please note that engaging in activity that triggers the National Water Act without authorisation is an offence and will result in the BGCMA taking legal action against the proponent in terms of the National Water Act, 1998 (Act 36 of 1998).

This office reserves the right to amend and revise its comments as well as to request any further information.

The onus remains on the registered property owner to confirm adherence to any relevant legislation concerning the activities that might trigger and/or need authorization.

Please contact the above-mentioned official if you have any queries.

Yours faithfully

pp Lgvdevc
MR JAN VAN STADEN
CHIEF EXECUTIVE OFFICER (Acting)

19.2 Cape Nature Correspondence

CapeNature

SCIENTIFIC SERVICES

postal Private Bag X5014 Stellenbosch 7599
physical Assegaaibosch Nature Reserve Jonkershoek
website www.capenature.co.za
enquiries Chanel Rampartab
telephone +27 21 866 8017 fax +27 21 866 1523
email crampartab@capenature.co.za
reference SSD14/2/5/1/7/4/292-7_mast_Grabouw2
date 7 November 2018

EnviroAfrica CC
P.O. Box 5367
Helderberg
7135

Attention: Inge Erasmus

Dear Ms. Erasmus

Pre-application Basic Assessment Report for proposed 30 m high telecommunications mast: FA 292/7, Jagersvlakte, Grabouw
(DEA&DP ref: 16/3/3/6/7/1/A5/88/2134/18)

CapeNature would like to thank you for the opportunity to comment on the application for the erection of a 30 m telecommunications mast on FA 292/7, Jagersvlakte, Grabouw. CapeNature commented previously (ref: SSD14/2/5/1/7/4/292-7_mast_Grabouw) on the biodiversity value of the site. Please note that our comments only pertain to the biodiversity-related impacts and not to the overall desirability of the application.

According to the report, the site is 'completely disturbed with no natural areas remaining'. Historical satellite imagery shows that the site had been transformed; however, no active disturbance of soil (e.g. ploughing) appears to have taken place within the last decade. Note that the ESA2 status of the site accounts for this level of transformation (Western Cape Biodiversity Spatial Plan, CapeNature 2017). Although the development footprint is small (100 m^2), it is important to note the following principle: transformed wetlands are still functional in terms of ecological processes; ecological infrastructure; and risk mitigation. Any further hardening compromises the ecosystem and compounds negative downstream effects, e.g. decreased capacity to mitigate floods and transport run-off; increased soil erosion; and increased introduction of non-point source pollution.

No alternative locations were presented; however, the southern section of the property just 60 m southeast of the proposed location will likely have a lower impact on the receiving environment because it falls outside both the mapped wetland and the ESA2.

CapeNature requests that an alternative location is considered; however, if the application is authorised as it stands, the development must take place in the dry summer months.

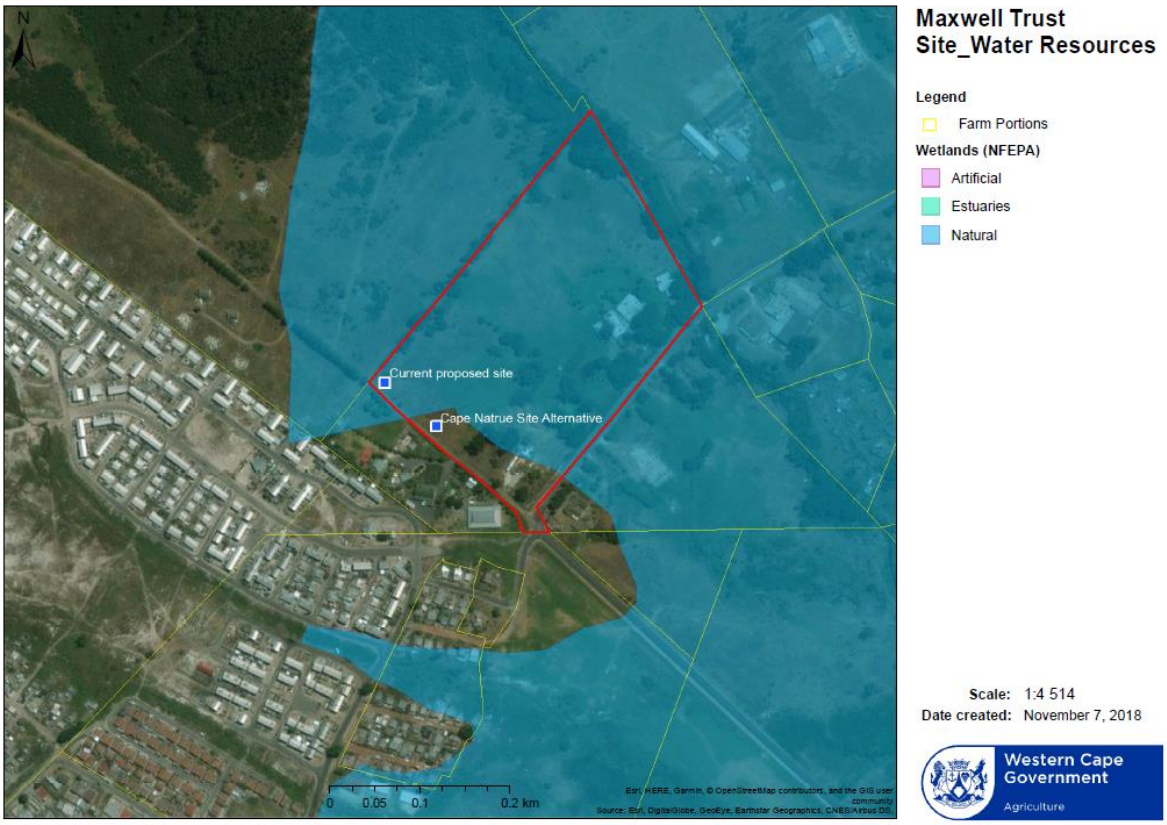
CapeNature reserves the right to revise initial comments and request further information based on any additional information that may be received.

Yours sincerely

Rampartab

Chanel Rampartab
For: Manager (Scientific Services)

cc. Rhett Smart, CapeNature


Maxwell Trust
Site_Water Resources
Legend
Farm Portions
Wetlands (NFEPA)
Artificial
Estuaries
Natural
Current proposed site
Cape Natrue Site Alternative
N
0 0.05 0.1 0.2 km
Scale: 1:4 514
Date created: November 7, 2018
Western Cape Government
Agriculture

19.3 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 7 Impact Assessment Methodology

Table 7.1 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 7.2 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 7.3 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 7.4 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.

In the event of water courses, direct can mean that the impact is affected right on the water course, such as a structure or agriculture on the banks or in-stream.

Indirect can mean that the impact is away from the water course and its riparian zone, but that runoff from a development can reach the water course.

Local can mean in a water course or its riparian zone where the impact is taking place.

Site specific can mean 100m downstream of that impact.

Regional can mean further downstream and down the catchment past confluences into larger tributaries.