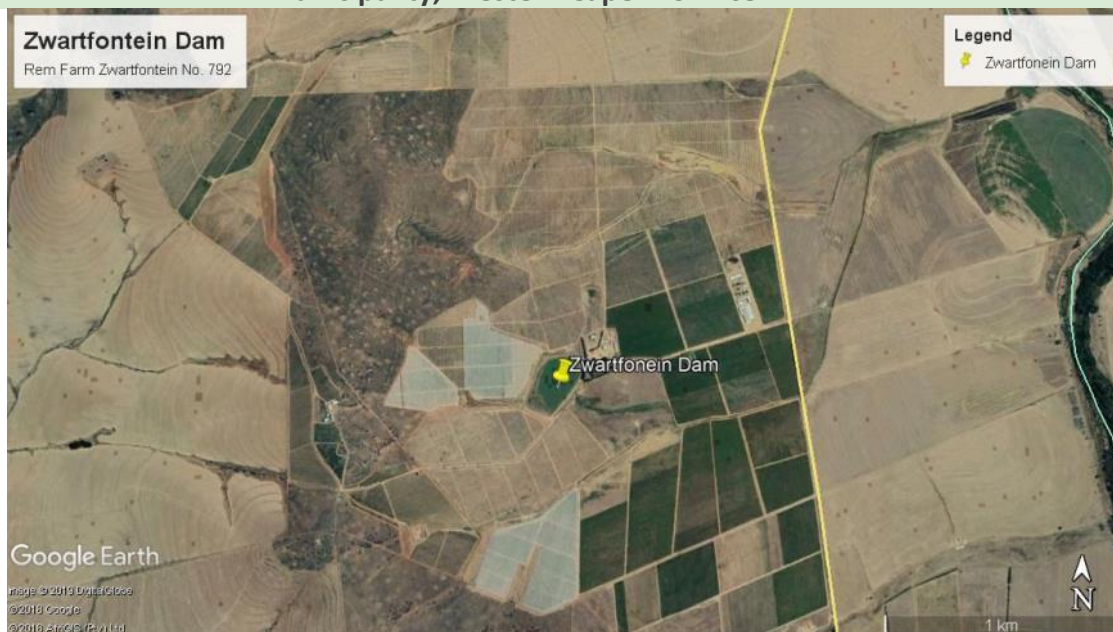


BOTANICAL STATEMENT

(Revision 2)

ZWARTFONTEIN DAM

Proposed enlargement of an existing dam on Portion 8 of the Farm No. 792 and
Remainder of the Farm Zwartfontein No. 792 (Malmesbury), Swartland Local
Municipality, Western Cape Province.



June 18, 2020

P.J.J. Botes (Pr.Sci.Nat: 400184/05)

Registered Professional Botanical, Environmental and Ecological Scientist

©

SUMMARY - MAIN CONCLUSIONS

The proposed development entails the enlargement of the existing Zwartfontein dam. The capacity of the dam will increase from 150 000 m³ to 915 000 m³, while the footprint will increase from approximately 3.6 ha to 14.5 ha (including dam wall, overflow, pumphouse, and access road). Desktop studies and Google imagery shows small areas surrounding the existing dam that appears as if it may still support natural vegetation.

According to the 2012 (beta 2) version of the Vegetation map of SA (Mucina & Rutherford, 2006) the site is located within an area that historically would have been covered by Swartland Shale Renosterveld (a critically endangered vegetation type).

According to the Witzenberg spatial dataset of the WCBSP, the proposed dam may impact on a small CBA area (Figure 5) and will further impact on ecological support areas (Class 2) associated with the intermittent seasonal streams (Figure 5). Please note that the small CBA area as it is mapped at the moment, is actually located within the dam.

According to the 2017/2018 winter crop census (Cape Farm Mapper), the dam is located within an area characterized by intensive agriculture. This is consistent with the observations made during the site visit.

From the site visit it is clear that all of the remaining vegetation around the dam can be described as transformed, with very few indigenous species remaining. In fact it is almost certain that most of these areas were within the construction footprint when the original dam was build, meaning that all the topsoil (with its potential indigenous seed store was most likely removed). Even the area to the bottom of the dam (Photo 4 & 5) is heavily degraded, and although it supported a few more indigenous species, even this area has been heavily degraded with the only plants remaining being hardy shrubs and weedy & alien pioneer species.

Botanically speaking the proposed dam is not expected to have any significant long term impacts on vegetation, since the site is already transformed. It is the opinion of the author that a full botanical assessment will not produce any significant additional information.

INDEPENDENCE & CONDITIONS

PB Consult is an independent consultant and has no interest in the activity other than fair remuneration for services rendered. Remunerations for services are not linked to approval by decision making authorities and PB Consult have no interest in secondary or downstream development as a result of the authorization of this proposed project. There are no circumstances that compromise the objectivity of this report. The findings, results, observations and recommendations given in this report are based on the author's best scientific and professional knowledge and available information. PB Consult reserve the right to modify aspects of this report, including the recommendations if new information become available which may have a significant impact on the findings of this report.

RELEVANT QUALIFICATIONS & EXPERIENCE OF THE AUTHOR

Mr. Peet Botes holds a BSc. (Hons.) degree in Plant Ecology from the University of Stellenbosch (Nature Conservation III & IV as extra subjects). Since qualifying with his degree, he had worked for more than 20 years in the environmental management field, first at the Overberg Test Range (a Division of Denel) managing the environmental department of OTR and being responsible for developing and implementing an ISO14001 environmental management system, ensuring environmental compliance, performing environmental risk assessments with regards to missile tests and planning the management of the 26 000 ha of natural veld, working closely with CapeNature (De Hoop Nature Reserve).

In 2005 he joined Enviroscientific, an independent environmental consultancy specializing in wastewater management, botanical and biodiversity assessments, developing environmental management plans and strategies, environmental control work as well as doing environmental compliance audits and was also responsible for helping develop the biodiversity part of the Farming for the Future audit system implemented by Woolworths. During his time with Enviroscientific he performed more than 400 biodiversity environmental legal compliance audits.

During 2010 he joined EnviroAfrica in order to move back to the biodiversity aspects of environmental management. Experience with EnviroAfrica includes NEMA EIA applications, environmental management plans for various industries, environmental compliance audits, environmental control work as well as more than 70 biodiversity & botanical specialist studies.

Towards the end of 2017, Mr. Botes started his own small environmental consulting business focusing on biodiversity & botanical assessments, biodiversity management plans and environmental compliance audits.

Mr. Botes is a registered Professional Botanical, Environmental and Ecological Scientists at SACNASP (South African Council for Natural Scientific Professions) as required in terms of Section 18(1)(a) of the Natural Scientific Professions Act, 2003, since 2005.

DECLARATION OF INDEPENDENCE

THE INDEPENDENT PERSON WHO COMPILED A SPECIALIST REPORT OR UNDERTOOK A SPECIALIST PROCESS

I Petrus, Jacobus, Johannes Botes, 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, 2014, as amended, and any specific environmental management Act;
- have and will not have no vested interest in the proposed activity proceeding;
- have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential 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, 2014 and any specific environmental management Act;
- am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2014 (specifically in terms of regulation 13 of GN No. R. 326) 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 in 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 was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- have ensured that the names of all 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, whether such information is favourable to the applicant or not; and
- am aware that a false declaration is an offence in terms of regulation 13 of GN No. R. 326.

Note: The terms of reference must be attached.



Signature of the specialist:

PB Consult (Sole Proprietor)

Name of company:

18 June 2020

Date:

TABLE OF CONTENT

Summary - main conclusions	i
Independence & Conditions	ii
Relevant qualifications & Experience of the author	ii
1. Introduction	1
1.1. Terms of reference.....	1
1.2. Location & Layout	1
1.3. Evaluation method.....	3
1.4. Activity description	3
2. The Vegetation	4
3. Witzenberg critical biodiversity map.....	5
4. National Land use Map	6
5. Vegetation encountered.....	6
6. Recommendations.....	10
7. References	10

TABLE OF FIGURES

Figure 1: The location of the Zwartfontein farm (Red) within between Malmesbury and Wellington.	2
Figure 2: The proposed location of the Zwartfontein Dam (Red) within the southern portion of the larger farm (Green)	2
Figure 3: The Zwartfontein Dam, showing the dam wall location (Red) and the area that may be affected (blue dotted line)	3
Figure 4: Vegetation map of South Africa (Mucina, Rutherford & Powrie, 2005) showing the property and dam location	4
Figure 5: Western Cape Biodiversity Spatial Plan (2017) indicting the proposed dam location and surroundings	5
Figure 6: National Land Use map, indicating the status of the proposed site as a water body (Dam) within cultivated land	6

1. INTRODUCTION

The Zwartfontein farm is located in the Swartland, about 22 km east-south-east of Malmesbury (Figure 1). The property (Portion 8 of the Farm Zwartfontein No. 792 and Remainder of the Farm Zwartfontein No. 792) is approximately 255.85 ha in size and can be divided into a southern and northern portion (Figure 2). The Zwartfontein Dam is located on the southern portion of the farm (which is basically fully developed). The northern portion still supports a large area with natural vegetation in good condition. The owners propose to enlarge the dam capacity, by lifting the dam wall from 11.7 m to 22.5 m. This will increase the physical footprint of the dam from approximately 3.6 ha to 10.9 ha. The enlargement will allow the landowner to store more of Berg River water allocation on site. The dam enlargement is proposed as a relative simple operation of lifting the dam wall, using material excavated from within the footprint of the enlarged dam area. The total footprint (including dam wall, overflow, pumphouse, and access road) will be approximately 14.5 ha.

EnviroAfrica CC was appointed to conduct an environmental assessment for the proposed Zwartfontein Dam. Since the property is located in an area that used to be covered by Swartland Shale Renosterveld (a vegetation type classified as “Critically endangered” in terms of the “*List of ecosystems that are threatened and in need of protection*”, GN 1002, December 2011), PB Consult was appointed to perform a botanical scan of the site and its immediate surroundings in order to determine potential impacts on botanical features of significance.

Desktop studies and Google imagery shows small area surrounding the existing dam that appears if it may still support natural vegetation. Given the fact that area surrounding the dam has been subject to intensive cultivation over a long period of time it was considered highly unlikely that the area surrounding the dam will still support natural vegetation, but it may still support some species of significance. The Western Cape Biodiversity Spatial Plan (2017) shows ecological support areas (ESA2) associated with the small seasonal stream within which the dam was build. It even shows a small Terrestrial CBA area (located within the existing dam). As a result the pre-cautionary had to be followed.

A site visit was performed during March 2019, during which the site was walked and scanned for potential remaining botanical features of significance. The timing of the site visit was not great, in that Renosterveld is generally known for its rich bulb component that usually shows best during spring. Still it was quite clear that the dam site and its surroundings had been transformed as a result of intensive agricultural practices over a long period of time and that almost the only species remaining were a few hardy shrubs and weedy pioneer species. This report only gives a short description of the botanical elements and its status encountered at the site and its immediate surroundings and was not intended as a full botanical assessment. It is the opinion of the author that a full botanical assessment will not produce any significant additional information.

1.1. TERMS OF REFERENCE

The terms of reference for this appointment were to:

- Give a short statement on the vegetation and its conditions encountered at the site and its immediate surroundings.
- Determine and record the position of any plant species of special significance (e.g. protected tree species, or rare or endangered plant species) that should be avoided or that may require “search & rescue” intervention.
- Make recommendations on impact minimization should it be required

1.2. LOCATION & LAYOUT

Zwartfontein farm refers to Portion 8 of the Farm Zwartfontein No. 792 and Remainder of the Farm Zwartfontein No. 792, which is located about halfway between Malmesbury and Wellington and almost halfway between the

R45 (Malmesbury Road) and the R44 (Gouda Road) within the Swartland Municipality, Western Cape Province (Figure 1). The farm is approximately 255.85

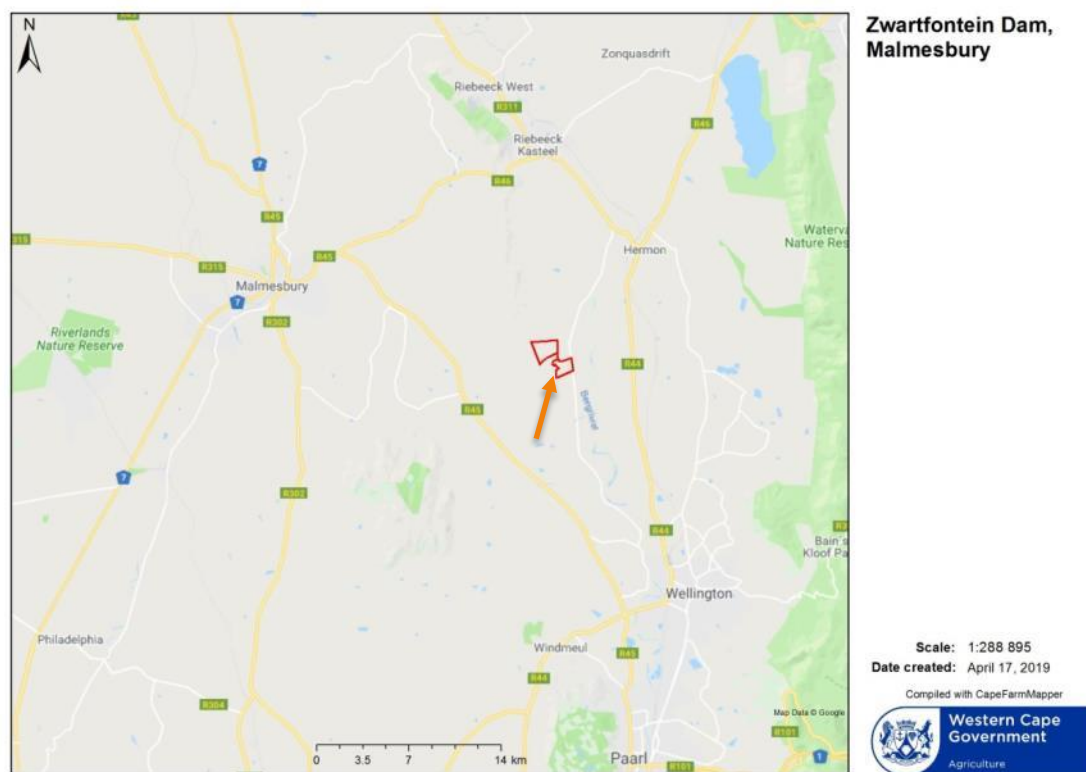


Figure 1: The location of the Zwartfontein farm (Red) within between Malmesbury and Wellington.

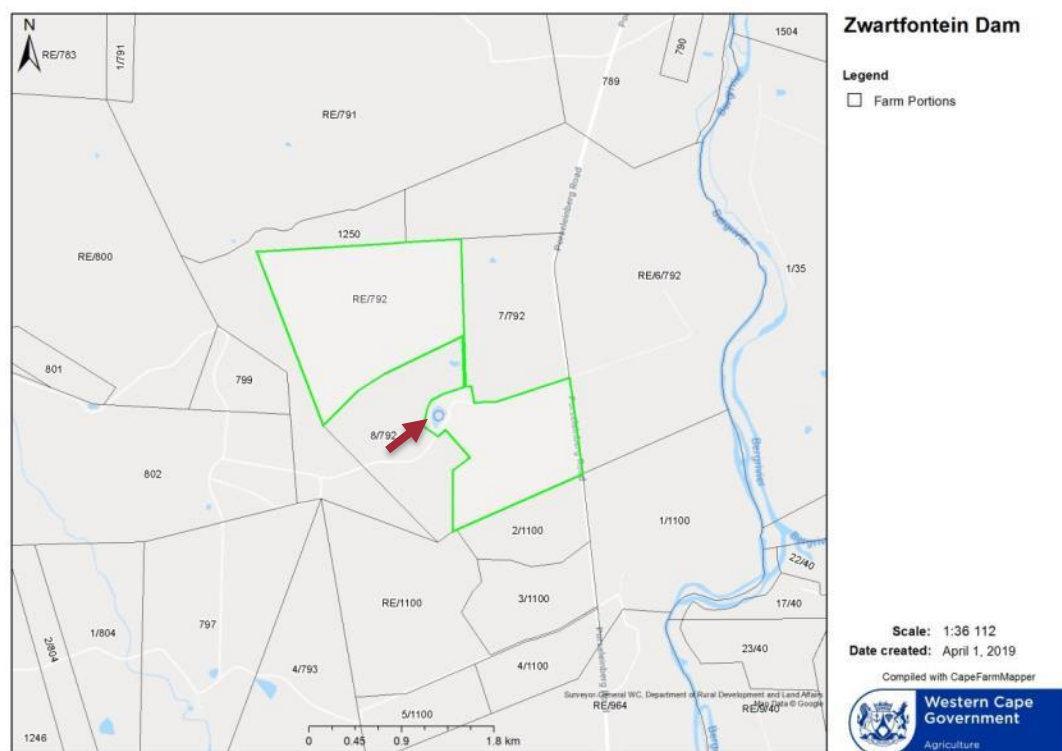


Figure 2: The proposed location of the Zwartfontein Dam (Red) within the southern portion of the larger farm (Green)

The existing Zwartfontein Dam is located on the southern portion of the farm (Refer to Figure 2).

1.3. EVALUATION METHOD

Desktop studies together with a site visit was performed to evaluate the proposed site in terms of potential impacts on botanical features of significance and to make recommendations on mitigation measures (should it be required). The site visit was conducted during March 2019 (after recent rains). The timing of the site visit was not ideal in that Renosterveld is generally known for its rich bulb component that usually shows best during spring. Non-the-less, the site is so degraded as a result of agricultural practices (over a long period of time) that it is considered highly unlikely that any significant species would have survived these practices.

1.4. ACTIVITY DESCRIPTION

The proposed development entails the enlargement of the existing Zwartfontein dam. The existing dam wall (11.7 m in height) will be raised to a height of approximately 22.5 m, using material that will be excavated from the proposed enlarged dam footprint. The increase in the dam wall height will result in an increase in the footprint and capacity of the new dam. The capacity of the dam will increase from 150 000 m³ to 915 000 m³, while the total footprint will increase from approximately 3.6 ha to 14.5 ha (including dam wall, overflow, pumphouse, and access road).

Figure 3 shows the existing dam and illustrates the approximate footprint enlargement. It also shows the areas that will be impacted by the proposed footprint.



Figure 3: The Zwartfontein Dam, showing the dam wall location (Red) and the area that may be affected (blue dotted line)

2. THE VEGETATION

According to the 2012 (beta 2) version of the Vegetation map of SA (Mucina & Rutherford, 2006) the site is located within an area that historically would have been covered by a vegetation type known as Swartland Shale Renosterveld (Figure 4). Swartland Shale Renosterveld is classified as a critically endangered vegetation type in terms of “List of ecosystems that are threatened and in need of protection” (GN 1002, December 2011), promulgated in terms of the National Environmental Management Biodiversity Act, Act 10 of 2004. However, the proposed dam enlargement will overlap areas that were already disturbed as a result of cultivation and associated practices. BGIS land use results indicates that the site is most likely transformed as a result of past and present agricultural practices.

Mucina & Rutherford (2006) describe Swartland Shale Renosterveld as low to moderately tall leptophyllous shrubland of varying canopy cover as well as low, open shrubland dominated by renosterbos occurring on moderately undulating plains and valleys. Heuweltjies are a very prominent local feature of the environment, forming ‘hummockveld’ near Piketberg. Stunted trees and thicket are often associated with the heuweltjies. Disturbed areas are dominated by *Athanasia trifurcata* and *Otholobium hirtum*. Patches of *Cynodon dactylon* sometimes occur in abundance.

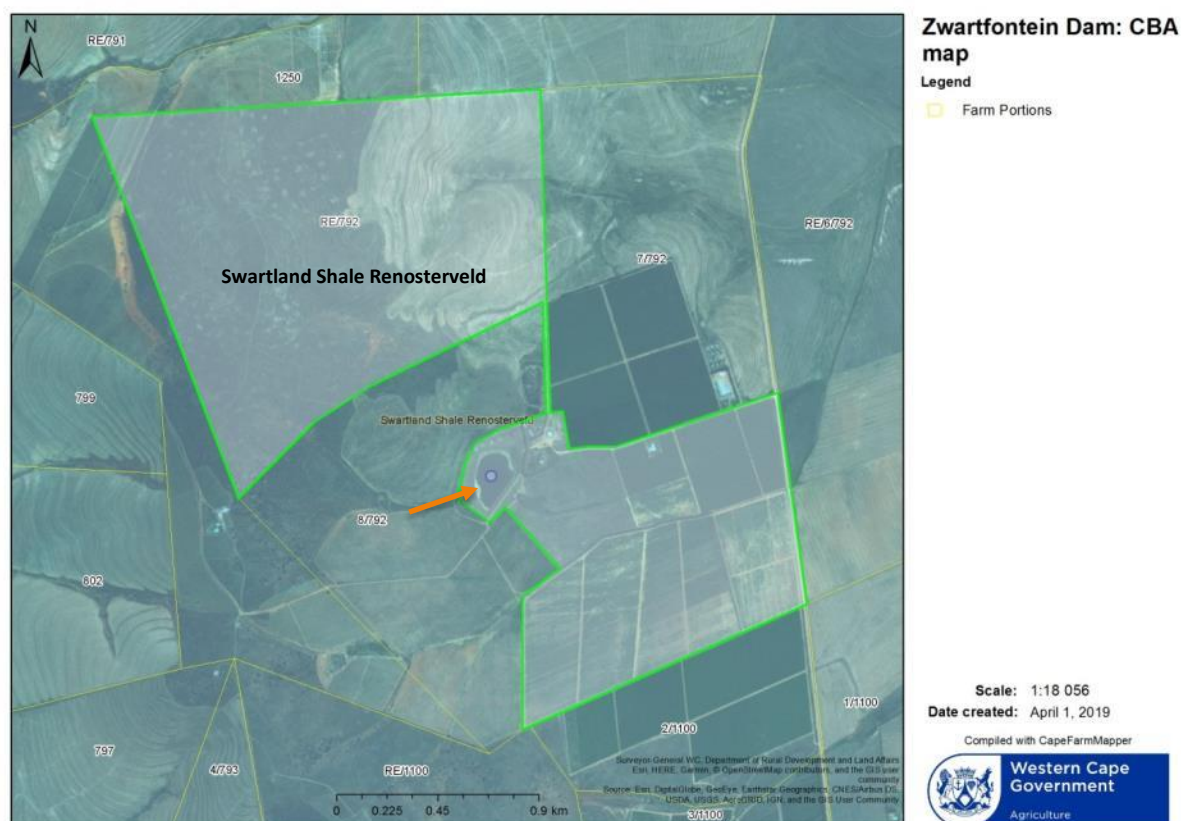


Figure 4: Vegetation map of South Africa (Mucina, Rutherford & Powrie, 2005) showing the property and dam location

3. WITZENBERG CRITICAL BIODIVERSITY MAP

The 2017 Western Cape Biodiversity Spatial Plan (WCBSP) includes a map of biodiversity importance for the entire province, covering both the terrestrial and freshwater realms, as well as major coastal and estuarine habitats (Pool-Stanvliet, 2017). The WCBSP is the product of a systematic biodiversity plan that delineates, on a map, Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), which require safeguarding to ensure the continued existence and functioning of species and ecosystems, including the delivery of ecosystem services.

According to the Witzenberg spatial dataset of the WCBSP, the proposed dam may impact on a small CBA area (refer to the yellow arrow) and will further impact on an ecological support areas (Class 2) associated with the intermittent seasonal streams (Refer to the yellow areas shown in Figure 5). Please note that the small CBA area as it is mapped at the moment, is actually located within the dam. However, special care was taken when this areas was studied in order to check for any special vegetation features.

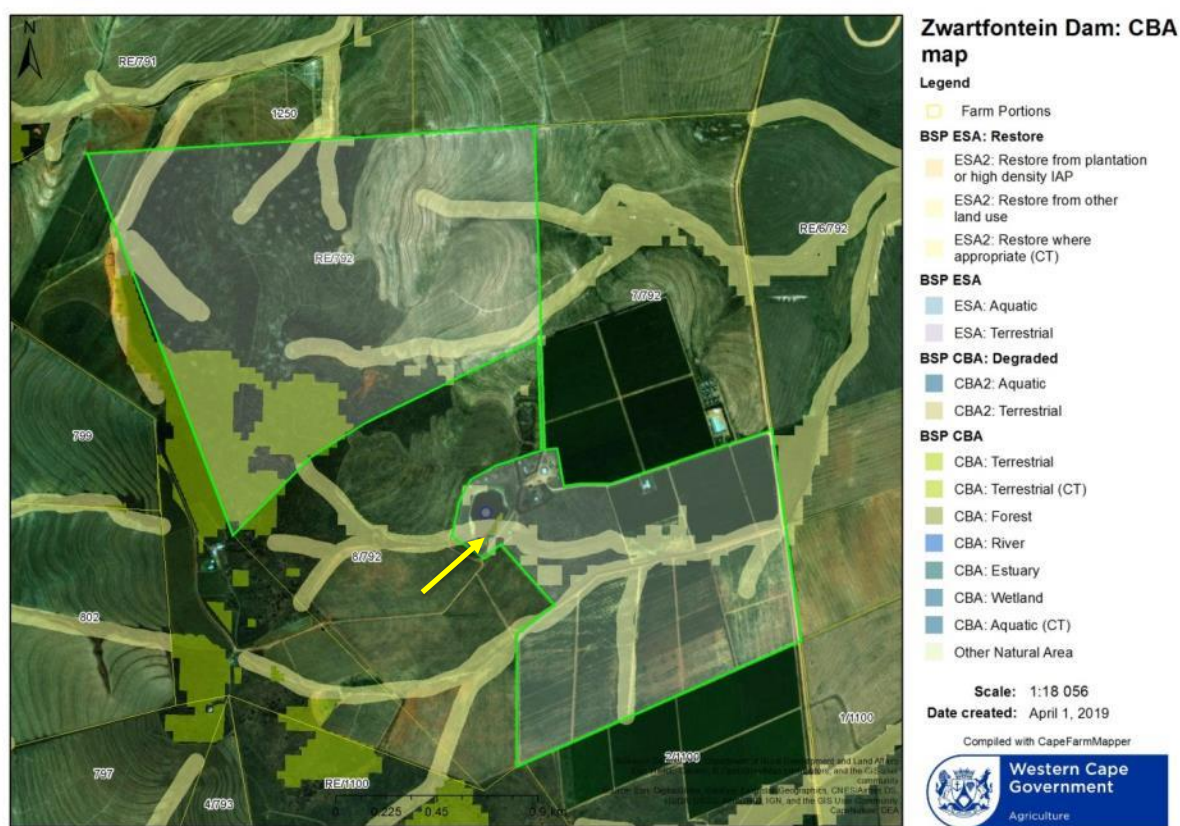


Figure 5: Western Cape Biodiversity Spatial Plan (2017) indicating the proposed dam location and surroundings

Please note that it is always an excellent idea to let the inflow water to the dam run through a constructed or artificial wetland area. This will help to prevent siltation of the dam and will also help to clean the water from various micro-elements that may be detrimental to water health. Such a wetland should be established in the water inlet area and can be a simple affair like a shallow v-shaped inlet that widens as it drains towards the dam (the longer and larger the better). This inlet should then be planted with reeds like *Phragmites australis* and / or *Typha capensis*, which will over time, establish itself in a dense mat, which will help filtering / cleaning the inlet water before it reaches the dam.

Properly designed and managed farm dams can attract a variety of birds, insects and animals to the area and so contribute to conservation of biodiversity.

4. NATIONAL LAND USE MAP

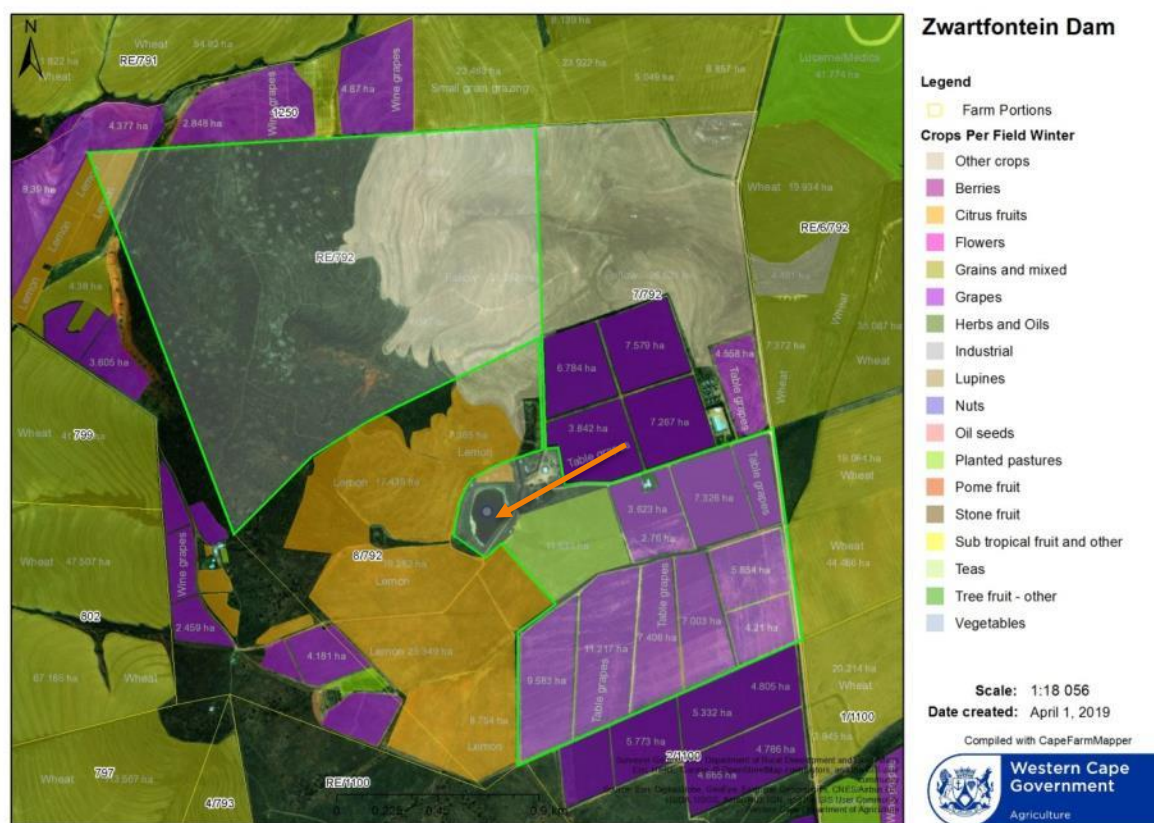


Figure 6: National Land Use map, indicating the status of the proposed site as a water body (Dam) within cultivated land

According to the 2017/2018 winter crop census (*Cape Farm Mapper*), the dam is located within an area characterized by intensive agriculture. This is consistent with the observations made during the site visit.

5. VEGETATION ENCOUNTERED

The site visit confirmed that the small edge of vegetation that can still be observed next to the dam is in fact degraded veld, which only now only supports hardy weeds and shrubs and perennial grasses finding some shelter and water within the excavated edge of the original dam. In fact, apart from a small section at the back of the dam (Photo 2), most of this area was most likely part of the originally excavated area that would have been left stripped of topsoil and any remaining indigenous vegetation (Refer to Photo 1).

This is true for basically all of the remaining natural vegetation surrounding the current dam site and the vegetation is dominated by weeds and a few hardy shrubs. Apart from the grasses like (*Briza minor*, *Bromus diandrus*, *Cynodon dactylon*, *Eragrostis* species and sedges like *Kallinga* species, *Phragmites australis*, *Typha capensis* most of this area was characterized by alien problem plants like: *Amaranthus deflexus* (pigweed), *Achyranthes cf. aspera* (Bur weed), *Chenopodium album*, *Conyza bonariensis* (Skraalhans), *Datura stramonium* (Olieboom), *Echium plantagineum*, *Nicotiana glauca* (Tabaco plant), *Ricinus communis* (Kasterolieplant), *Salsola kali* (tumbleweed) and *Urtica urens* (nettle). Indigenous plants include the weedy *Galenia africana* (Kraalbos), *Eriocephalus africanus* (kapokbossie), one of the hardy *Hermannia* species, *Stoebe* species and the common *Tribulus terrestris* (Dubbeltjie). A few young individuals of the following alien and invasive trees were also observed namely *Acacia saligna* (Port Jackson Willow) and *Casuarina cunninghamiana* (Beefwood)



Photo 1:

Looking over the existing dam wall from east to west. Note the degraded vegetation along the dam slopes.



Photo 2

Looking over the middle of the dam from east to west. Again the degraded weedy vegetation should be noted along the dam wall. It is expected that in these areas all the topsoil was removed when the original dam was build.



Photo 3

Looking at the bottom part of the dam (from southeast to northwest over the dam. Note the slightly better vegetated area to the back of the dam (Refer Photo 4).



Photo 4

Looking from east to west over the bottom part of the dam, again showing the slightly better vegetated area. This area was basically dominated by *Galenia africana* and *Salsola kali*, other shrubs like *Stoebe* and *Eriocephalus* scattered in between.



Photo 5

Looking from west to east over the bottom part of the dam. Again showing the *Galenia* dominated disturbed veld.



Photo 6

Showing the *Salsola kali* dominated remaining veld to the west of the dam. Again it is clear that this area were subject to heavy disturbance in the past. It is almost certain that all topsoil were removed in this area during the construction of the original dam.

**Photo 7**

The south western corner of the dam where the CBA and ESA has been identified. Again the vegetation can only be described as transformed, with only hardy weedy and alien invasive species remaining.

**Photo 8**

A view over the dam wall looking from west to east.

From the site visit it is clear that all of the remaining vegetation around the dam can be described as transformed, with very few indigenous species remaining. In fact it is almost certain that most of these areas were within the construction footprint when the original dam was build, meaning that all the topsoil (with its potential indigenous seed store was most likely removed. Even the area to the bottom of the dam (Photo 4 & 5) is heavily degraded, and although it supported a few more indigenous species, even this area has been heavily degraded with the only plants remaining being hardy shrubs and weedy & alien pioneer species.

6. RECOMMENDATIONS

Having evaluated the proposed site and its immediate surroundings, it is unlikely that the proposed development will lead to any significant impact on any remaining vegetation or plant species of significant conservation value. In fact most of the terrain and its immediate surroundings are considered heavily degraded to transform. Only a few hardy indigenous species remains.

Recommendations on impact minimization are thus mostly limited to good environmental control (apart from potential positive off-sets):

- A suitably qualified Environmental Control Officer must be appointed to monitor the construction phase.
- Before any work is done the site and access routes must be clearly demarcated (with the aim at minimal width/smallest footprint).
- Lay-down areas or construction sites must be located within already disturbed areas or areas of low ecological value and must be pre-approved by the ECO.
- Indiscriminate clearing of areas must be avoided.
- All areas impacted as a result of construction must be rehabilitated on completion of the project.
- An integrated waste management approach must be implemented during construction.

7. REFERENCES

- De Villiers C.C., Driver, A., Brownlie, S., Clark, B., Day, E.G., Euston-Brown, D.I.W., Helme, N.A., Holmes, P.M., Job, N. & Rebelo, A.B. 2005. Fynbos Forum Ecosystem Guidelines for Environmental Assessment in the Western Cape. Fynbos Forum, c/o Botanical Society of South Africa: Conservation Unit, Kirstenbosch, Cape Town.
- Driver A., Sink, K.J., Nel, J.N., Holness, S., Van Niekerk, L., Daniels, F., Jonas, Z., Majiedt, P.A., Harris, L. & Maze, K. 2012. National Biodiversity Assessment 2011: An assessment of South Africa's biodiversity and ecosystems. Synthesis Report. South African National Biodiversity Institute and Department of Environmental Affairs, Pretoria
- Driver, A., Maze, K., Rouget, M., Lombard, A.T., Nel, J.L., Turpie, J.K., Cowling, R.M., Desmet, P., Goodman, P., Harris, J., Jonas, Z., Reyers, B., Sink, K. & Strauss, T. 2005. National spatial biodiversity assessment 2004: priorities for biodiversity conservation in South Africa. Strelitzia, 17. South African National Biodiversity Institute, Pretoria.
- Mucina, L. & Rutherford, M.C. (eds.) 2006. The vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria.
- Pool-Stanvliet, R. 2017. Western Cape Biodiversity Spatial Plan Handbook. CapeNature Scientific Services Land Use Team, Jonkershoek, Stellenbosch.
- Rouget, M., Reyers, B., Jonas, Z., Desmet, P., Driver, A., Maze, K., Egoh, B. & Cowling, R.M. 2004. South Africa National Spatial Biodiversity Assessment 2004: Technical report. Volume 1: Terrestrial Component. Pretoria: South African National Biodiversity Institute.
- SANBI. 2006. South African National Botanical Institute: Biodiversity GIS Home (as updated).
- SANBI. 2015. Statistics: Red List of South African Plants version (as updated). Downloaded from Redlist.sanbi.org on 2017/06/15.