SITE SENSITIVITY VERITIFICATION (SSV) REPORT

<u>PROJECT DESCRIPTION</u>: BONATHABA DAM: THE PROPOSED DEVELOPMENT OF AN INSTREAM DAM ON PORTIONS 2 AND 3 OF FARM NO. 1100, BONATHABA, MALMESBURY, WESTERN CAPE

INTRODUCTION:

This Site Sensitivity Verification (SSV) Report was undertaken in terms of the *Protocols for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes* (referred to "the Protocols" hereafter) as per Government Notice No. 320 (published in Government Gazette No. 43110 on 20 March 2020)[1]. These Protocols, effected as on the 9th May 2020, must be complied with for every new application submitted after the effective date. According to the Protocols, the EAP must verify the current use of the proposed site for development as well as the site's environmental sensitivity, in accordance with the DEA Screening Tool (Appendix E – DEA Screening Tool), to determine the need for specialist inputs in relation to the themes (and proposed specialist assessments) included in the Protocols.

METHODOLOGY:

The Site Sensitivity Veritification (SSV) report was compiled based on desktop studies [including the Western Cape Biodiversity Spatial Plan, vegetation maps (Vegetation map of SA (Mucina & Rutherford, 2006), NFEPA, land-use map, google earth imagery, historical imagery, and QGIS), specialist input (Botanical, Freshwater, and Heritage inputs) in combination with a site visit (conducted during June 2020) to investigate, identify, and evaluate potential impacts, associated with the proposed development, on the receiving environment (namely the proposed site for development). The SSV report was compiled by the EAP (Mr Anthony Mader).

AIM OF THE SSV REPORT:

The aim of the SSV Report is to;

- Verify land use and theme sensitivities as identified by the DEA Screening Tool;
- Confirm or disconfirm the need for a particular specialist assessment(s) as indicated by the DEA Screening Tool; and
- Should the need for a specialist assessment be challenged, provide a motivatation as to why the proposed a particular theme(s) is not applicable to the proposed development.

[1] The Protocols are in line with Section 24(5)(a) and (h) and Section 44 of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998).

Please note: that this SSV report must be read in combination with the Draft Scoping Report as well as applicable specialist reports appended to the Draft Scoping Report, namely the Botanical Statement, Freshwater Assessment, and the Notice of Intent to Develop. This will aid in contexulizing the transformed / disturbed status of the proposed site for development. Please refer to the Draft Scoping Report for more information.

SITE DESCRIPTION:

This application is for the proposed development of an in-stream dam on Portions 2 and 3 of Farm No. 1100, Bonathaba, Malmesbury, Western Cape. The proposed instream dam will have a water surface area of approximately 19.2ha and will have a gross storage capacity of 1 000 000m³. The dam wall will be 18m in height along with a spillway channel which will be created. The site has an existing water use rights, and the proposed dam will provide insurance of water supply for irrigation of the existing irrigation areas. Access to the proposed dam will be gained by existing farm roads and the construction of a 4m wide gravel road around the basin and embankment of the dam footprint. A new pump station with a footprint of 150m² is proposed and will be located within 32m of the watercourse. A new outlet pipe will be constructed and a pipeline from the proposed dam will be connected to an existing pipe from the Berg River. A spillway channel will be constructed and located on the left flank of the proposed dam boundary. A dam safety and classification application will be submitted to the Dam Safety Office. In summary, the proposed development will be comprised of:

The proposed development and associated infrastructure will include the;

- Construction of the proposed Bonathaba Dam (1 000 000m^3 storage capacity, 18m high embankment) with a spillway (spillway discharge channel – 10m wide) on its left abutment.
- New 500mm dia HDPE outlet pipe will be constructed in reinforced concrete underneath the dam embankment and connected to a new pump station located at the downstream toe of the embankment.
- New 500mm dia PVC Class 8 pipeline (~600m long) from pump station to tie into existing 400mm asbestos-cement pipe which is connected to the pump station located on the banks of the Berg River.
- A 4 m wide gravel access road will be constructed around the entire dam basin and embankment.
- Pump station (~150m^2)

The Bonathaba Dam will be established on approximately 10.4ha of areas currently under permanent crops (namely table grapes) whereas approximately 8.8ha of already disturbed vegetation (due to previous agricultural activities) will be impacted. The location was selected based on environmental sensitivity and to ensure the project life cycle costs are minimised (gravity feed vs. pumping cost etc.).

As per the Botanical Assessment (Appendix 8.1), the largest portion of this footprint will overlap areas currently under permanent crops (namely table grapes) whereas the northern portion of the proposed dam footprint will impact on an area of virgin soil. According to the foreman of the farm, this area used to be under wheat cultivation, which was confirmed by historic Google images (please refer to Figure 7 of Appendix 8.1). The site was cultivated at least until 2006, while the next available Google image

(from 2009) shows the site lying fallow. No protected or red-listed plant species were observed during the site investigation. The most significant botanical feature identified by the Botanical Specialist was the presence of a few indigenous Olea europaea trees, located within the development footprint. However, Olea trees can be transplanted, and it is recommended that these trees are carefully removed and transplanted, next to the new dam.

The specialist concluded that the proposed dam development will have a low impact on any remaining natural veld, as the site and its surroundings are already disturbed and/ or transformed. As per the specialist, it is considered highly unlikely that the development had or will contribute significantly to:

- Significant loss of vegetation type and associated habitat.
- Loss of ecological processes (e.g. migration patterns, pollinators, river function etc.) due to construction and operational activities.
- Loss of local biodiversity and threatened plant species.
- Loss of ecosystem connectivity.

Figure 1. Overview of area within the proposed construction footprint. Note, agricultural land and disturbed vegetation previously impacted by agricultural activities (please refer to Botanical Statement).

Figure 2. Overview of area located within the proposed development footprint. Note, disturbed and transformed areas associated with the proposed site for development.

Figure 3. Non-perennial watercourse (drainage line), classified as ESA2, located within the proposed development footprint.

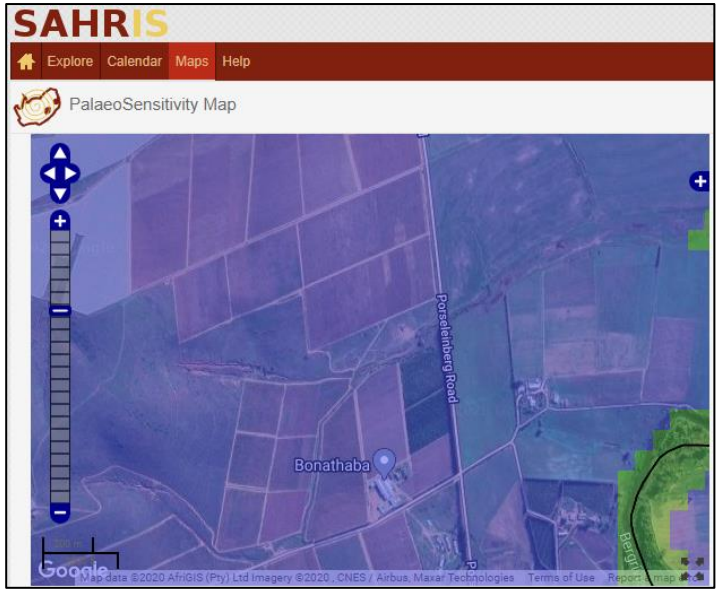
Table 1. Themes and associated sensitivity as per the DEA Screening Tool.

No	Theme	DEA Sensitivity	Agree / Disagree	Proposed Sensitivity	Motivation
1	Agriculture Theme	Very High Sensitivity	Disagree	Medium Sensitivity	Although approximately 8.8ha of agricultural land will be impacted, the propose development is in line with the zoning of the site, namely Agriculture. This application is for the storage of an already existing water use (Appendix 9). This existing water use could never be potted before due to inadequate storage capacity on the property and thus, the water use was never utilised to its full potential. The proposed development is required to ensure the long-term economic viability and sustainability of the production of table grapes and citrus through a reliable water supply from the dam for irrigation. The West Coast District Municipality's IDP and SDF identify and support efforts made to promote sustainability and growth within/ of the agricultural sector. One of the main issues highlighted by the West Coast Districts Spatial Development Framework (SDF)[2] is the recent drought and the negative implications of drought on the agricultural sector. Various climatic drivers, namely higher temperatures and drier conditions further exacerbate the impact of drought events on the agricultural sector[3], which require careful planning and adequate responses to sustain and grow the sector. In this area, the agricultural industry depends on water abstracted from the Bergrivier for irrigation. Due to the absence of rainfall during mid-summer when water is required (which is generally too little to sustain agricultural activities), water is generally abstracted during winter and subsequently stored in dams for irrigation during the summer months.
2	Animal Species Theme	Medium Sensitivity	Disagree	Low Sensitivity	Faunal diversity changes through space and time and are directly influenced by anthropogenic activities. Such activities include the transformation of land (Chapin *et al*., 2000[4]). Direct impacts are typically associated with urban expansion, leading to land cover changes (and consequent loss of natural areas) and edge effects, whereas indirect impacts include impacts associated with the generation of waste and its management (McDonald *et al*., 2020)[5]. Edge effects have diverse impacts on biodiversity and ecological functioning (Razafindratsima *et al*.,

[2] http://westcoastdm.co.za/wp-content/uploads/2020/09/WCDM-SDF-2020-1.pdf
[3] Zscheischler, J., Martius, O., Westra, S., Bevacqua, E., Raymond, C., Horton, R.M., van den Hurk, B., AghaKouchak, A., Jézéquel, A., Mahecha, M.D. and Maraun, D. 2020. A typology of compound weather and climate events. *Nature reviews earth & environment*, pp.1-15.
[4] Chapin Iii, F.S., Zavaleta, E.S., Eviner, V.T., Naylor, R.L., Vitousek, P.M., Reynolds, H.L., Hooper, D.U., Lavorel, S., Sala, O.E., Hobbie, S.E. & Mack, M.C., 2000. Consequences of changing biodiversity. *Nature*, 405(6783), pp.234-242.
[5] McDonald, R.I., Mansur, A.V., Ascensão, F., Crossman, K., Elmqvist, T., Gonzalez, A., Güneralp, B., Haase, D., Hamann, M., Hillel, O. and Huang, K., 2020. Research gaps in knowledge of the impact of urban growth on biodiversity. *Nature Sustainability*, 3(1), pp.16-24.

					2018)[6]. Such effects contribute to a disturbance factor, which is likely to have driven most wild animals away from the proposed site for development. As the site is currently under intensive agriculture, activities associated with such as the transformation of land and disturbance of surrounding areas, it is envisaged that the proposed development is unlikely to impact any animal species.
3	Aquatic Biodiversity Theme	Low Sensitivity	Agree	Low Sensitivity	Although the DEA Screening Tool rated the non-perennial watercourses as low sensitivity, a Freshwater Assessment was undertaken due to the need for a (i) WUA, and (ii) nature of the proposed development (i.e. storage of water).
4	Civil Aviation Theme	High Sensitivity	Disagree	Low Sensitivity	Although the site is located within 8km of a civil aviation aerodome / dangerous and restricted airspace, the nature of the proposed development (i.e. dam) is highly unlikely to impact any civil aviation activities.
5	Defence Theme	Low Sensitivity	Agree	Low Sensitivity	There are no defence related structures or zones on the site or within close proximity to the site. Therefore, it is envisaged that the proposed development will not impact on any defence related theme.
	Paleontological Theme	Low Sensitivity	Agree	Low Sensitivity	As per the SAHRIS Paleontological Online Map Tool (https://sahris.sahra.org.za/map/palaeo), the proposed site is situated within an area of low paleontological significance (represented as blue in Figure 4). Therefore, it is envisaged that the proposed development is unlikely to impact any paleonotological features.

[6] Razafindratsima, O.H., Brown, K.A., Carvalho, F., Johnson, S.E., Wright, P.C. and Dunham, A.E., 2018. Edge effects on components of diversity and above-ground biomass in a tropical rainforest. *Journal of Applied Ecology*, 55(2), pp.977-985.

					 **Figure 4.** Paleonotlogical sensitivity of the proposed site for development. Source: SAHRIS.
6	Plant Species Theme	Medium Sensitivity	Disagree	Low Sensitivity	As per the Botanical Statement, the majority of the proposed developmental footprint will overlap areas currently under permanent crops (mostly table grapes) whereas approximately 8.8ha of already disturbed vegetation will be impacted [as area was previously under wheat cultivation until 2006 and subsequently left lying fallow]. The Botanical Specialist noted that few indigenous plant species were present within the development footprint - most plants observed being weeds or pioneer species. The specialist also noted that the small watercourse associated with the study area has been previously impacted where the nature of the impact characteristic of intensive agricultural landscape practices. Therefore, it is envisaged that the proposed development is highly unlikely to impact any plant spcies of conservational value.

7	Terrestrial Biodiversity Theme	Very High Sensitivity	Disagree	Low Sensitivity	Faunal diversity changes through space and time and are directly influenced by anthropogenic activities. Such activities include the transformation of land (Chapin *et al*., 2000). Direct impacts are typically associated with urban expansion, leading to land cover changes (and consequent loss of natural areas) and edge effects, whereas indirect impacts include impacts associated with the generation of waste and its management (McDonald *et al*., 2020). Edge effects have diverse impacts on biodiversity and ecological functioning (Razafindratsima *et al*., 2018). Such effects contribute to a disturbance factor, which is likely to have driven most wild animals away from the proposed site for development. No animal species were observed during the site visit (June 2020). Due to the intensive agricultural activity on site, it is unlikely that the proposed development will impact any animal species.

Table 2. Specialist assessments identified as per the DEA Screening Tool.

No	Proposed Specialist Assessment	Verification of Site Sensitivity And Motivation On The Need For Specialist Investigation	Will the specialist study be conducted?
1	Landscape/ Visual Impact Assessment	The proposed project is for development of a new, instream dam. The site is zoned for agricultural purposes and the proposed site for development is surrounded by agricultural land uses. The nature of the proposed development is in line with the surrounding land use and therefore will not be a novel visual impact. Therefore, it is envisaged that a Visual Impact Assessment will not be required.	No. It is envisaged that a Landscape/ Visual Impact Assessment assessment will not required.
2	Archaeological and Cultural Heritage Impact Assessment (HIA)	As per section 38 of the National Heritage Resources Act, 1999 (Act 25 of 1999), and more specifically section 38. (1) (c) - any development or other activity which will change the character of a site- *(i) exceeding 5 000 m^2 in extent;* The proposed development footprint is comprised of transformed / disturbed land. A Notice of Intent to Develop (NID) was submitted to HWC by the Heritage Specialist (Agency for Cultural Resource Management). The area has a low SAHRIS palaeo-sensitivity. The specialist concluded that the anticipated impact of the proposed Bonathaba Dam development on heritage resources in anticipated to be very low and recommended that a heritage impact assessment is not required. Comment received from HWC states that, "*since there is no reason to believe that the proposed Bonathaba Dam on Ptn*	No as no further study is required by HWC (please see Appendix F).

		2 & 3 of Farm 1100 Bonathaba, Malmesbury will impact on heritage resources, no further action under Section 38 of the National Heritage Resources Act (Act 25 of 1999) is required". Please see Appendix F for comment.	
3	Palaeontological Impact Assessment	As per the PalaeoSensitivity Map , the site is located within an area of low paleonotological sensitivity (see Figure 3 below/ accessed at: https://sahris.sahra.org.za/map/palaeo), and therefore, no impacts to significant palaeontological resources are anticipated.	
4	Terrestrial Biodiversity Assessment	The proposed site is located within the Swartland Shale Renosterveld, a vegetation type classified as Critically Endangered (GN 1002, December 2011). No animals were noted on site during the site visit. A Botanical Study was conducted whereby the Specialist concluded that the majority of the proposed developmental footprint will overlap areas currently under permanent crops (mostly table grapes) whereas approximately 8.8ha of already disturbed vegetation will be impacted [as area was previously under wheat cultivation until 2006 and subsequently left lying fallow]. The Botanical Specialist noted that few indigenous plant species were present within the development footprint - most plants observed being weeds or pioneer species. The specialist also noted that the small watercourse associated with the study area has been previously impacted where the nature of the impact characteristic of intensive agricultural landscape practices. Therefore, it is envisaged that the proposed development is highly unlikely to impact any plant spcies of conservational value.	A Botanical Assessment was conducted.
5	Aquatic Biodiversity Impact Assessment	As per the DEA Screening Tool, the Aquatic Biodiversity Theme is classified as Low however, due to the nature of the proposed development, a Freshwater Assessment was conducted. *Please refer to the Freshwater Report.*	Yes, a Freshwater Assessment was conducted.
6	Hydrological Assessment	Please see comment above.	
7	Socio-economic Assessment	All comments received from I&APs will be addressed and responded to by the relevant personnel, namely the EAP, Applicant, and/ or Specialists. Conditions and measures will be implemented to mitigate any impacts on socioeconomic development within the area and surrounds. Therefore, it is envisaged that a Socio-economic Assessment will not be required. *Please refer to the Draft Scoping Report for more information.*	No, it is envisaged that a socio-economic assessment will not required.

8	Plant Species Assessment	Although the Plant Species Theme was classified as Medium (see DEA Screening Tool), a Botanical Assessment was conducted. The proposed site is located within the Swartland Shale Renosterveld, a vegetation type classified as Critically Endangered (GN 1002, December 2011). A Botanical Study was conducted whereby the Specialist concluded that the majority of the proposed developmental footprint will overlap areas currently under permanent crops (mostly table grapes) whereas approximately 8.8ha of already disturbed vegetation will be impacted [as area was previously under wheat cultivation until 2006 and subsequently left lying fallow]. The Botanical Specialist noted that few indigenous plant species were present within the development footprint - most plants observed being weeds or pioneer species. The specialist also noted that the small watercourse associated with the study area has been previously impacted where the nature of the impact characteristic of intensive agricultural landscape practices. Therefore, it is envisaged that the proposed development is highly unlikely to impact any plant spcies of conservational value.	Yes, a Botanical Assessment was conducted.
9	Animal Species Assessment	No animals were noted on site during the site visit however, conditions and measures will be addressed and stipulated in the Draft EIR and EMPr to mitigate potential impact(s) of the proposed development on animal species. This will include conducting earth moving activities in phases (to enable any animal species which may be present to move away from the area and to reduce soil erosion). Therefore, it is envisaged that no Animal Species Assessment will be required.	No, it is envisaged that an Animal Species Assessment will not required.
10	Civil Aviation	The proposed development is for the construction of the new Bonathaba Da, and thus, due to the nature of the proposed development – i.e. storage of water – is unlikely to pose any threat to civil aviation within the area. Due to the nature of the proposed project, it is therefore envisaged that the proposed expansion will not impact any civil aviation activities.	No, it is envisaged that a Civil Aviation assessment will not required.
11	Defence	There are no defence related structures or zones on the site / within close proximity to the site. Due to the nature of the proposed project, i.e. construction of the Bonathaba dam, it is envisaged that the proposed expansion will impact any defence-related activities.	No, it is envisaged that a Defence assessment will not required.

Please do not hesitate to contact me should you require any further information or clarity on the above.

Best Regards,

Anthony Mader

Environmental Assessment Practitioner

EnviroAfrica cc

p: +27 21 851 1616 m: +27 83 309 9211

f: +27 86 512 0154

a: Unit 7, Pastorie Park, Reitz St, Somerset West, 7130

P.O. Box 5367, Helderberg, 7135

w: www.enviroafrica.co.za e: anthony@enviroafrica.co.za