# HARMONY TRUST: THE PROPOSED CONSTRUCTION OF THE NEW HARMONY DAM

ON THE REMAINDER OF FARM HOUDENBEK NO. 415 (MORESTER LANDGOED), CERES

## REVISED PRE-APPLICATION SCOPING REPORT AND PLAN OF STUDY FOR COMMENT



DEADP reference number: 16/3/3/6/7/1/B5/2/1367/17

JULY 2019

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## **INDEPENDENCE & CONDITIONS**

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

## **RELEVANT QUALITFICATIONS & EXPERIENCE OF THE EAP**

This Scoping Report was prepared by Inge Erasmus who has a BA Honours in Geography and Environmental Studies from Stellenbosch University. Before completing her honours degree Inge gained practical experience as a junior environmental consultant at Hatch Goba in Johannesburg from 2014 until 2015. Inge acted as an environmental control officer on a variety of projects in the Northern Cape, conducting environmental compliance audits, as well as being part of a project team working on a major resettlement project for Kumba Iron ore. Inge joined Enviro Africa in February 2017, generally performing duties as an environmental assessment practitioner with regards to NEMA EIA applications. The entire process and report was supervised by Bernard De Witt who has more than 10 years experience in environmental management and environmental impact assessments.

Please refer to **Appendix 11** for the CV's of the EAPs.

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#### ACRONYMS

BGIS	Biodiversity Geographic Information System
СВА	Critical Biodiversity Area
DEA	Department of Environmental Affairs
DEA&DP	Department of Environmental Affairs and Development Planning
DWA	Department of Water Affairs
EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act (Act No. 73 of 1989)
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMP	Environmental Management Programme
HIA	Heritage Impact Assessment
HWC	Heritage Western Cape
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act (Act No. 10 of 2004)
NHRA	National Heritage Resources Act (Act No. 25 of 1999)
NID	Notice of Intent to Develop
NWA	National Water Act
OESA	Other Ecological Support Area
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
WULA	Water Use Licence Application

## **1. INTRODUCTION**

## **1.1 BACKGROUND**

Agriculture forms the backbone of the Cape Winelands District economy. The agricultural sector contributes to 24% of the formal employment opportunities, which makes the sector essential to the likelihoods of the livelihoods of the local residents.

In 2006 the farm Winklehaak RE224 in the Koue Bokkeveld district, also known as Harmony was bought and initiated as a BBBEE farming project, operating independent but alongside their founder partner and mentor Morester Landgoed (MHB Boerdery Pty Ltd).

The Applicant and owner of Winklehaak RE224, also known as Harmony Trust, is a 100% black owned BBEEE farming entity, reference T2213/2003. Harmony Trust have been in the agricultural sector and trading successfully for the past 12 years with their neighbouring partner and mentor, Morester Landgoed (MHB Boerdery Pty Ltd). Harmony Trust, together with Morester Landgoed plan on expanding an existing BBEEE agricultural project by cultivating and irrigating an additional 75ha fruit orchards as well as the design and construction of two proposed instream dams namely Toeka dams (this application) and Harmony (separate application) and for irrigation of the proposed 75ha agricultural expansion. It was decided to do the two dams as two separate applications so the objection against one dam does not impact the other application.

One if the first issues to consider in such a large project expansion would be the dam site possibilities. The concerned BBBEE property, namely Winklehaak RE224, has a rather flat topography and no real natural dam basin of this calibre. However, Morester Landgoed (MHB Boerdery Pty Ltd), the owner of the neighbouring property, Houdenbek RE415 and also mentor of Harmony Trust, has two very suitable dam sites available, from where irrigation can also be done with gravitational advantages in the proposed land allocated for the fruit expansion.

Since the available and suitable land for both the dam sites as well as the proposed fruit orchards are on the neighbouring farm, the idea would be at first that Harmony Trust would rent the land from Moreser Landgoed (MHB Boerdery Pty Ltd), with a long-term vision of subdividing the land, giving Harmony Trust the opportunity to buy the land. Please refer to Figure 1 below. The two owners are in an agreement the necessary legal documents pertaining to land owner consent is included as **Appendix 10**.

![](_page_6_Picture_0.jpeg)

Figure 1: Map indicating the proposed Harmony and Toeka dam locations on Houdenbek RE415 belonging to Morester Landgoed in relation to Winkelhaak RE224 belonging to Harmony Trust. The pink polygon indicates the proposed subdivision.

The two dams will have a combined provisional storage capacity of 2 250 000m<sup>3</sup> and are proposed to be constructed on the Farm Houdenbek 415 belonging to Morester Lndgoed (MHB Boerdery Pty Ltd ) The proposed 75ha agricultural expansion is also proposed in Farm Houdenbek 415 on previously disturbed land.

The proposed Harmony dam is an instream dam and would will have a storage capacity of 250 000m<sup>3</sup> and will store and supply water for approximately 9ha out if the total 75ha. The proposed dam will be filled primarily with runoff from its own catchment area, an unnamed tributary to the Houdenbek River, upstream of the confluence with the larger Riet River. Winter surplus water will be the primary source for the dam. Although fully based on "new takings" according to the Water Use License Application (WULA), none of the existing downstream users will be affected negatively since regulatory mechanisms would ensure that only surplus winter water would be abstracted from the larger Houdenbek catchment. It is proposed during dry years that water be pumped from Toeka dam to Harmony.

Sarel Bester Engineers has been appointed as the project engineer coordinating and overseeing the various actions and components regarding the design of the dam and handling the WULA. Please refer to **Appendix 7.2** for the WULA Report 1733WULA-W2 form Sarel Bester Ingenieurs.

The applicant is Harmony Trust who will undertake the activity should it be approved. EnviroAfrica CC has been appointed as the independent environmental assessment practitioner (EAP) responsible for undertaking the relevant EIA and the Public Participation Process required in terms of the National Environmental Management Act 107 of 1998, as amended (NEMA).

This Scoping Report, which will be submitted to the Department of Environmental Affairs and Development Planning (DEA&DP) for consideration, forms part of the EIA process.

The purpose of this Pre-Application Environmental Scoping Report (for comment) is to describe the proposed project, the process followed to date, to present alternatives and to list issues identified for further study and comment by specialists.

Should the EIA process be authorised by DEA&DP, the Specialist Studies (noted in Section 6) will be undertaken and the significant issues (noted in Section 6) will be investigated and assessed during the next phase of this application.

## **1.2 DESCRIPTION OF THE PROPOSED ACTIVITY**

The proposed site location is within the Koue Bokkeveld district about 15km east from the town, Opdie-berg as the crow flies. This application is for the construction of the proposed Harmony Dam on the Remaining Extent of Farm Houdenbek 415. Water will be used for irrigation of a proposed 75ha BBEEE agricultural expansion. The proposed 75ha agricultural expansion will be on Remaining Extent of Farm Houdenbek 415 in previously ploughed land. No virgin soil will be disturbed. Please refer to **Appendix 1** for Locality Maps. The two owners are in an agreement the necessary legal documents pertaining to land owner consent is available in **Appendix 10**.

The proposed Harmony dam on RE Farm Houdenbek 415, will have the storage capacity of 250 000m<sup>3</sup> and will store and supply water for  $\pm$ 9ha out of the total 75ha (or 9ha / 75ha @ 9500m<sup>3</sup>/ha/a). Irrigation pipelines thresholds will not trigger Listed Activities in terms of NEMA and will be located on ploughed land and road reserves and the impact will be temporary. Please refer to **Appendix 1** Figure 7 for a map showing the proposed layout for irrigation pipelines.

Water requirements will be met from runoff from its own catchment area, an unnamed tributary to the Houdenbek River, upstream of the confluence with the larger Riet River. It is proposed during dry years that water be pumped from Toeka dam to Harmony. Winter surplus water will be the primary source for the dam. Sarel Bester Engineers applied for the 'new taking' of 85 500m<sup>3</sup> water and 'storing' of 250 000m<sup>3</sup> of water for this application in the WULA. Although fully based on "new takings" according to the WULA Report 1733WULA-W2, none of the existing downstream uses will be affected negatively since regulatory mechanisms would ensure that only surplus winter water would be abstracted from the larger Houdenbek catchment. Please refer to **Appendix 7.1** for *Preliminary Design Report 161DOV-S2 from Sarel Bester Engineers* for the investigation of the water availability & **Appendix 7.2** for the WULA Report 1733WULA-W2.

The proposed maximum wall high for the dam would be 12.8m with a crest length of  $\pm 280$ m. The total earthworks would constitute to  $\pm 52\ 800$ m<sup>3</sup> with a nett storage capacity of  $\pm 250\ 000$ m<sup>3</sup>. the total footprint/ flooded area would constitute  $\pm 5.4$ ha. Please see **Appendix 2** for Design Plans.

Max wall height	±12.8 m
Cres length	±280 m
Total earthworks	±52 800 m³
Nett storage capacity	±250 000 m <sup>3</sup>
Flooded area	±5.4 ha
Storage: Earthworks	±4.9 ha
Estimated Cost	±R3.6mil

Sarel Bester Engineers submitted a dam safety and classification application to the Dam Safety Office. Harmony was classified on 18 October 2017 as a medium size Category II dam with a Low Hazard potential rating (*Appendix D Preliminary Design Report 1618DOV-S2 from Sarel Bester Engineers* **Appendix 7.1**).

![](_page_8_Picture_1.jpeg)

Figure 2: Locality map of proposed Harmony dam in the landscape

# 2. NEED AND DESIRABILITY

In terms of the National Environmental Management Act, and EIA 2014 regulations, as amended, the Scoping/EIA report must provide a description of the need and desirability of the proposed activity. The consideration of "need and desirability" in EIA decision-making requires the consideration of the strategic context of the development proposal along with the broader societal needs and the public interest.

While the concept of need and desirability relates to the *type* of development being proposed, essentially, the concept of need and desirability can be explained in terms of the general meaning of its two components in which *need* refers to *time* and *desirability* to *place* – i.e. is this the right time and is it the right place for locating the type of land-use/activity being proposed? Need and desirability can be equated to *wise use of land* – i.e. the question of what is the most sustainable use of land.

#### 2.1 NEED

The applicant, Harmony Trust is planning to further develop an existing 100% black-owned BBEEE farming entity, referce T2213/2003. Harmony Trust have been in the agricultural sector and trading successfully for the past 12 years with their neighbouring partner and mentor, Morester Landgoed.

The plan is to grow and irrigate an additional 75ha if fruit orchards and there for the development of a dam for irrigation purposes is required to ensure the long term economic viability and sustainability of this project. The success of this project is expected to create a number if permanent jobs within the agricultural industry.

#### 2.2 DESIRABILITY

The following factors determine the desirability of the area for the proposed Harmony dam.

#### 2.2.1 LOCATION AND ACCESSIBILITY

The proposed location of the dam site is considered ideally suited for the construction of the dam. From an engineering point of view, the location was chosen to ensure the project life cycle costs are minimised. The decisive factors are normally the basin characteristics with reference to available capacity versus demand, optimal costing of works, risk, etc. The location is preferred based on the available runoff, cost effectiveness and storage capacity.

Access to the proposed dam site will be via existing farm roads,

Locality maps are included in in **Appendix 1**, Design Layout Plans **Appendix 2**, with site photographs in **Appendix 3**.

## 2.2.2 COMPATIBILITY WITH THE SURROUNDING AREA

The site is largely surrounded by agricultural activities (**Appendix 4.4** for Crop Census Map and site photographs in **Appendix 3**).

The proposed activity will therefore not be "out of character" with the surrounding land use and is expected to have a negligible impact on the visual character of the area.

# **3. SITE DESCRIPTION**

### 3.1 LOCATION

The proposed Harmony dam will be located on RE Farm Houdenbek 415, Ceres. The preferred site is located within the Koue Bokkeveld district about 15km east from the town, Opdie-Berg as the crow flies.

The site coordinates for proposed Harmony dam is: S 32° 59' 45.58", E19° 27'51.75". The SG code for the proposed site is: C019 0000 00000415 00000

Access to the farm is from the R303, the site can be accessed via existing farm roads on the property.

Pease refer to Appendix 1 for Locality maps.

![](_page_10_Picture_6.jpeg)

Figure 3: Locality map of proposed Harmony Dam on RE Farm Houdenbek 415, Ceres.

#### **3.2 VEGETATION**

According to the vegetation map from Cape Farm Mapper (**Appendix 4.1** & the figure below) the vegetation that can be expected at the proposed Harmony dam site is Wintershoek Sandstone Fynbos and smaller portion of Kouebokkeveld Alluvium Fynbos.

Kouebokkeveld Alluvium Fynbos is classified as Endangered in the Western Cape in terms *of NEMBA National list of Ecosystems that are threatened and in need of protection* and Wintershoek Sandstone Fynbos is not in need of protection.

![](_page_11_Picture_0.jpeg)

Figure 4: Vegetation Map, Cape Farm Mapper

# 3.3 CRITICAL BIODIVERSITY AREAS AND ECOLOGICAL SUPPORT AREAS

According to the Biodiversity Overlay Map from Cape Farm Mapper (**Appendix 4.2** & the figure below), the proposed Harmony dam Alternative A does not fall within a Critical Biodiversity Area (CBA) but does intersect an Ecological Support Area (ESA). Category 1, Aquatic. Ecological Support Areas are not essential for meeting biodiversity targets, but plat a role in supporting the functioning of CBAs and are often vital for the delivering ecosystem services. The Objective is to maintain a functional, near natural state. Some habitat loss is acceptable, provided that the underlying biodiversity objectives and ecological functioning are not compromised.

The proposed Harmony dam is located within the proclaimed Kouebokkeveld Mountain Catchment Area.

The Botanical impact assessment finding will be discussed in detail in the impact report summarised in Section 6.

![](_page_12_Figure_0.jpeg)

Figure 5: Biodiversity Overlay Map, Cape Farm Mapper

#### 3.4 FRESHWATER

According to the Freshwater resources map from Cape Farm Mapper (**Appendix 4.3** & the figure below), the proposed Harmony Dam will intercept non-perennial streams.

The following information was taken from the *Preliminary Design Report 1618DOV-S2 from Sarel Bester Engineers* **Appendix 7.1.** The proposed Harmony dam will be located along a small tributary within the larger Houdenbek River Catchment area upstream of the confluence of the Winkelhaak River into the Riet River which forms part of the larger Doring River, a tributary to Olifants River system. Water to the dam will purely be based on surplus winter water from the Houdenbek catchment. Regulatory mechanism will be implemented to ensure that only winter surplus water be abstracted to not negatively impact existing downstream users.

Sarel Bester Engineers BK is doing the WULA Application for the taking and storing of water.

A Freshwater impact assessment findings will be discussed in detail in the impact report but is summarised in Section 6.

![](_page_13_Figure_0.jpeg)

Figure 6: Water Resources Map, Cape Farm Mapper

#### 3.5 CLIMATE

In Op die Berg, the climate is warm and temperate. The winter months are much rainier than the summer months in Op die Berg. In Op die Berg, the average annual temperature is 13.5 °C. In a year, the average rainfall is 432 mm. The driest month is January. There is 6 mm of precipitation in January. Most of the precipitation here falls in May, averaging 79 mm. With an average of 19.8 °C, January is the warmest month. July is the coldest month, with temperatures averaging 7.6 °C. The precipitation varies 73 mm between the driest month and the wettest month. Throughout the year, temperatures vary by 12.2 °C. (https://en.climate-data.org/location/27253/)

## 3.6 SOCIO-ECONOMIC CONTEXT

According to the Witzenberg Local Municipality(WLM) IDP 2018 the Agric-economic environmental has indicated a positive growth over the next five years and it is necessary that the municipality provides sufficient bulk and network infrastructure to support investment and job creation opportunities.

The most prominent places in the WLM area are Tulbagh, Wolseley and Ceres, with Prince Alfred's Hamlet and Op-die-Berg two northern outposts. Activities around these settlements are essentially agriculture based, with the towns being "agricultural service centres", with some agri-processing related to wine, fruit, vegetables and other niche products. The region is also well-known for its fruit and wine products, as well as producing other agriculturally linked products such as olive and grain producing areas, beef and pork products. Horse and cattle stud farms are also found within the municipality.

The municipality has made tremendous progress in mobilising and harnessing the energies and expertise of the business sector in developing effective economic development strategies and programmes. This is articulated in its new economic vision as adopted in 2011, namely:

"To strategically partner with the private sector, other spheres of government and its agencies, development institutions and donor agencies and in concert develop sizable commercial projects which encompasses the imperatives of employment creation and broad-based black economic empowerment and contributing to the general expansion of the economic base of Witzenberg."

The sectors that employed the most residents included the agriculture, forestry and fishing sector at 22,2%. Agriculture employs the largest proportion of the population. The districts main produce is grapes, deciduous fruits and vegetables.

This proposed application is part of a larger projects for the further development of an existing 100% black-owned BBEEE farming entity, namely Harmony Trust, reference T2213/2003. They have been in the agricultural sector and trading successfully for the past 12 years with their neighbouring partner and mentor, Morester Landgoed. The plan is to grow and irrigate 75ha of fruit orchards in addition to the existing 40ha of vegetable pastures. This would benefit the existing BBBEE entity and more importantly also the broader economy by creating work opportunities for the previously disadvantaged groups.

#### **3.7 HERITAGE FEATURES**

The National Heritage Resources Act requires relevant authorities to be notified regarding this proposed development, as the following activities are relevant:

- any development or other activity which will change the character of a <u>site</u> exceeding 5 000 m<sup>2</sup> in extent;

A heritage screener was conducted by CTS Heritage and a Notice of Intend to Develop (NID) was submitted to Heritage Western Cape (**Appendix 8.3**).

## 4. LEGAL REQUIREMENTS

The current assessment is being undertaken in terms of the National Environmental Management Act (Act 107 of 1998, NEMA), to be read with section 24 (5): NEMA EIA Regulations 2017, as amended. However, the provisions of various other Acts must also be considered within this EIA.

The legislation that is relevant to this study is briefly outlined below.

#### 4.1 THE CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA

The Constitution of the Republic of South Africa (Act 108 of 1996) states that everyone has a right to a non-threatening environment and that reasonable measures are applied to protect the environment. This includes preventing pollution and promoting conservation and environmentally sustainable development, while promoting justifiable social and economic development.

#### 4.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT 107 OF 1998)

The National Environmental Management Act (Act 107 of 1998) (NEMA), as amended, makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the relevant authorities based on the findings of an environmental assessment. NEMA is a national act, which is enforced by the Department of Environmental Affairs (DEA). These powers are delegated in the Western Cape to the Department of Environmental Affairs and Development Planning (DEA&DP).

On the 4 December 2014 the Minister of Environmental Affairs promulgated regulations in terms of environmental impact assessments, under sections 24(5) and 44 of NEMA, namely the EIA Regulations 2014 (GN No. R 326) these regulations were amended in April 2017, and include:

- GN No. R. 327 (Listing Notice 1);
- GN No. R. 325 (Listing Notice 2); and
- GN No. R. 324 (Listing Notice 3).

Listing Notice 1 and 3 are for a Basic Assessment and Listing Notice 2 for a full Environmental Impact Assessment.

According to the 2014 EIA regulations, as amended in 2017, the following potentially listed activities may be triggered (refer to Table 1)

GN R327	Short description of relevant Activity(ies) in terms of Listing Notice 1	Description of specific portion of the development that might trigger the listed activity.
12	The development of (iv) dams, where the dam, including infrastructure and water surface area, exceeds 100 m <sup>2</sup> in size (a) within a watercourse	The proposed instream dam will have a total footprint of ±5.4ha and is proposed within a watercourse.
19	The infilling or depositing of any material of more than 10m <sup>3</sup> into, or the dredging, excavation, removal or moving of soil, sand shells grit, pebbles or rock of more than 10m <sup>3</sup> from (i) a watercourse	The proposed instream dam will have a total footprint of ±5.4ha within a watercourse
27	The clearance of an area of 1 ha or more, but less than 20 ha of indigenous vegetation	Vegetation clearing of $\pm 5.4$ ha is expected for the proposed construction of the dam.
GN R325	Short description of relevant Activity(ies) in terms of Listing Notice 2	Description of specific portion of the development that might trigger the listed activity.
16	Development of a dam, where the highest part of the dam wall, measured from the outside toe of the wall to the highest part pf the wall, is 5m or higher or where the highwater mark of the dam covers an area of 10ha or more	The proposed dam wall is 12.8 m.
GN R324	Short description of relevant Activity(ies) in terms of Listing Notice 3	Description of specific portion of the development that might trigger the listed activity.
14	The development of (iv) dams, where the dam, including infrastructure and water surface area exceeds 10m <sup>2</sup> in size where such a development occurs (a) within a watercourse: <u>Western Cape</u> (i) Outside urban areas: (aa) A protected area in terms of the NEMPPA	The proposed instream dam will have a total footprint of ±5.4ha and is proposed within a watercourse within the proclaimed Koue Bokkelveld Mountain Catchment Area.

#### Table 1: Summary of 2014 EIA regulations triggered

An Application Form will be submitted to DEA&DP. This Post-Application Scoping Process is undertaken to identify potential issues.

The principles of environmental management as set out in section 2 of NEMA have been taken into account. The principles pertinent to this activity include:

- People and their needs will be placed at the forefront while serving their physical, psychological, developmental, cultural and social interests. The activity seeks to provide additional employment and economic development opportunities, which are a local and national need the proposed activity is expected to have a beneficial impact on people, especially developmental and social benefits, as well providing additional employment and economic development opportunities.
- Development will be socially, environmentally and economically sustainable. Where disturbance of ecosystems, loss of biodiversity, pollution and degradation, and landscapes and sites that constitute the nation's cultural heritage cannot be avoided, are minimised and remedied. The impact that the activity will potentially have on these will be considered, and mitigation measures will be put in place *potential impacts have been identified and considered, and any further potential impacts will be identified during the public participation process. Mitigation measures will be included in the EMP.*

- Where waste cannot be avoided, it will be minimised and remedied through the implementation and adherence of the Environmental Management Programme (EMP) *this will be included in the EIR.*
- The use of non-renewable natural resources will be responsible and equitable.
- The negative impacts on the environment and on people's environmental rights will be anticipated, investigated and prevented, and where they cannot be prevented, will be minimised and remedied.
- The interests, needs and values of all interested and affected parties will be taken into account in any decisions through the Public Participation Process.
- The social, economic and environmental impacts of the activity will be considered, assessed and evaluated, including the disadvantages and benefits.
- The effects of decisions on all aspects of the environment and all people in the environment will be taken into account, by pursuing what is considered the best practicable environmental option.

#### 4.3 NATIONAL HERITAGE RESOURCES ACT

The protection and management of South Africa's heritage resources are controlled by the National Heritage Resources Act (Act No. 25 of 1999). South African National Heritage Resources Agency (SAHRA) is the enforcing authority and in the Western Cape, SAHRA have, in most cases, delegated this authority to Heritage Western Cape (HWC).

In terms of Section 38 of the National Heritage Resources Act, SAHRA and/or HWC will require a Heritage Impact Assessment (HIA) where certain categories of development are proposed. Section 38(8) also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that if such an assessment is found to be adequate, a separate HIA is not required.

The National Heritage Resources Act requires relevant authorities to be notified regarding this proposed development, as the following activities are relevant:

- any development or other activity which will change the character of a <u>site</u> exceeding 5 000 m<sup>2</sup> in extent;

Furthermore, in terms of Section 34(1), no person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the SAHRA, or the responsible resources authority. Nor may anyone destroy, damage, alter, exhume or remove from its original position, or otherwise disturb, any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority, without a permit issued by the SAHRA, or a provincial heritage authority, in terms of Section 36 (3). In terms of Section 35 (4), no person may destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object, without a permit issued by the SAHRA, or the responsible resources authority.

#### 4.4 EIA GUIDELINE AND INFORMATION DOCUMENT SERIES

The following are the latest guidelines that form part of the DEA&DP's *Environmental Impact* Assessment Guideline and Information Document Series (Dated: October 2011):

- ✓ Guideline on Transitional Arrangements
- ✓ Guideline on Alternatives
- ✓ Guideline on Public Participation
- ✓ Guideline on Exemption Applications
- ✓ Guideline on Appeals
- ✓ Guideline on Need and Desirability
- ✓ Information Document on the Interpretation of the Listed Activities

✓ Information Document on Generic Terms of Reference for EAPs and Project Schedules

### 4.5 NATIONAL WATER ACT

Besides the provisions of NEMA for this EIA process, the proposed dam also requires authorizations under the National Water Act (Act No. 36 of 1998). The Department of Water Affairs, who administer that Act, will be a leading role-player in the EIA.

Sarel Bester Ingeniers is conducting a Water Use License Application. Activities triggering Section 21 of the National Water Act include:

- S21 (a) Taking of water
- S21 (b) Storing of water
- S21 (c) Impeding or diverting the flow of the water course
- S21 (i) Altering the bed, bank, course or characteristics of a watercourse

#### Please refer to Appendix 7.2 for the Water Use License Application Report 1733WULA-W2

In terms of Chapter 12 of the National Water Act, the proposed dam is considered a dam with a safety risk. The dam therefore requires a permit to construct from the Dam Safety Office of the Department of Water Affairs. The design and construction must conform to the conditions of the Dam Safety Regulations as set out in Government Notice R139 in Government Gazette No. 35062 of 24 February 2012. Regulations 10 and 15 will be applicable to the proposed dam. A licence to construct application will only be submitted after an application for the safety classification of the proposed dam has been submitted, and only after the NEMA process has been concluded.

#### 4.6 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT

The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) is part of a suite of legislation falling under NEMA, which includes the Protected Areas Act, the Air Quality Act, the Integrated Coastal Management Act and the Waste Act. Chapter 4 of NEMBA deals with threatened and protected ecosystems and species and related threatened processes and restricted activities. The need to protect listed ecosystems is addressed (*Section 54*).

#### 4.7 MOUNTAIN CATCHMENT AREAS ACT NO. 63 OF 1970

The Mountain Catchment Areas Act, encourages conservation, use, management and control of mountain catchment areas. The management of mountain catchment areas will maintain sustained yields of quality streamflow, nature conservation, fire hazard reduction, afforestation, grazing, tourism and recreational opportunity. The owner of the designated land must manage that land through prevention of soil erosion, removal of exotic vegetation and fire protection.

# 5. ALTERNATIVES

Alternatives have been considered during the Scoping phase and these are described below.

### 5.1 LOCATION ALTERNATIVES FOR THE PROPOSED DAM

As previously described, the concern with such a large project expansion is site possibilities. Winkelhaak RE224 (owned by Harmony Trust) has no viable dam site options as it has a rather flat topography and no real natural basin. Therefore, the only available land for both dam sites as well as the proposed fruit orchards is on the neighbouring farm, RE Houdenbek Farm 415 (owned by Morester Landgoed). The idea would be at first that Harmony Trust would rent the land from Moreser Landgoed (MHB Boerdery Pty Ltd), with a long-term vision of subdividing the land, giving Harmony Trust the opportunity to buy the land. Please refer to Figure 1 above indicating the proposed future subdivision.

Sarel Bester Engineers together with Van Breda & Associates conducted an initial investigation of two alternative dam sites referred to in the Prelim Design Report 1618DOV-S2 (**Appendix 7.1**) and Figure 4 below as Harmony 266 on RE Houdenbek Farm 415, referred to in this report as Alternative A and Harmony 268 on RE Vaalbokskloof 211, referred to in this report as Alternative C. The evaluation was based upon runoff calculations and surveys done by Boland Opmetings (Appendix B of *Preliminary Design Report 1618DOV-S2 from Sarel Bester Engineers* **Appendix 7.1**). The distinctive factors when looking at alternatives are normally the basin characteristics with reference to available capacity versus demand, optimal costing of the works, risk etc.

After further investigation and the identification of possible heritage resources on site another possible alternatives was identified, Alternative B, Figure 7 below.

Locations for the proposed dam have been considered and investigated. Three locations were identified as possible locations, and referred to as:

- **Harmony Alternative A** (referred to as Harmony 266 in Prelim Design Report 1618DOV-S2, **Appendix 7.1** & Figure 7), was the original preferred location but it no longer preferred.
- **Harmony Alternative B** is the preferred location, Figure 8 &10.
- Harmony 268 Alternative C (referred to as Harmony 268 in Prelim Design Report 1618DOV-S2, Appendix 7.1), is not considered viable from an engineering perspective and therefore will not be investigated any further

Please refer to the Figures below.

![](_page_20_Picture_0.jpeg)

Figure 7: : Locations Alternatives - Harmony 266 on RE Houdenbek 415 (Alt A – Original location) and Harmony 268 on RE Vaalbokskloof 211 (Alt C - Not viable) (Prelim design report 1618DOV-S2 )

![](_page_20_Picture_2.jpeg)

Figure 8: High level locality map of alternatives investigated for the proposed Harmony Dam. Harmony Alternative A – Original location/ not preferred; Harmony Alternative B – Preferred; Harmony 268 Alternative C is not considered a viable option from an engineering point of view and will therefore not be evaluated further

#### Harmony 268 Alternative C (Not viable site alternative):

Harmony 268 Alternative C on RE Vaalbokskloof 211 is not considered feasible as is will not be cost effective. Due to the topography of the site the dam does not enough storage capacity, more earth moving, and a higher wall will be required. The associated stream does also not provide enough runoff and the locality does not have a gravitational advantage when getting water from the dam to the proposed orchards for irrigation. Harmony 268 Alt C also falls on the neighbouring farm which is not ideal as landowner consent would be required and compensation would have to be arranged. Harmony 268 Alternative C is therefore not considered viable from an engineering perspective and will therefore not be evaluated and investigated further.

#### Harmony Alternative A (Original/ Not preferred site alternative):

Harmony Alternative A on RE Houdenbek 415 was originally considered the preferred alternative based on the available runoff, cost effectiveness as well as storage capacity. The proposed dam would have a larger footprint when considering Harmony 269 Alternative C (not viable). However, Harmony Alternative A would have lower wall heights requiring less earthmoving and disturbance resulting in more efficient storage rations and overall better economics when compared to Harmony 269 Alternative C. This proposed site also has a gravitation advantage as water will be able to flow via gravitation from the outlet to the proposed orchards. Harmony Alternative A is therefore more preferred when compared to Harmony Alternative C (not viable).

The Heritage Screener conducted by CTS heritage (**Appendix 8.3**) as a baseline assessment identified possible Heritage Resources (i.e. rock art sites and artefacts) at the proposed Harmony Alternative A site. Based on the screener and comments from Heritage Western Cape, a Heritage Impact Assessment was conducted and heritage resources were identified on site (findings summarised in Section 6 below). Harmony Alternative A will impact on heritage resources identified as HMY1, HMY2 and HMY3 as shown in Figure 10 below. After in depth discussions with the Heritage specialist and engineers, additional alternatives/ design alternatives were proposed. These alternatives provided a new layout/ design, taking cognisance of the recommendations from the Heritage Specialist of a 40-50m no-go buffer areas for site HMY1 & HMY2.

The four design options considered are as follows:

- Option 1 Harmony Alternative A Location the original location and design (Not preferred)
- Option 2 Harmony Alternative B location wall of the dam to be moved further north but is not curved (Not preferred as the capacity of the dam is too small to be viable)
- Option 3 Harmony Alternative B Location wall to be moved north but also curved to increase capacity. (Preferred design option & Location)
- Option 4 Based on design Option 1 and Harmony Alternative A Location, but with an additional wall erected to the south in order to secure the heritage resources. In this option, the buffer zones remain un-impacted, but the additional cost of the wall & loss of biodiversity makes this option not viable.

Please refer to **Appendix 2** for Design Drawings and the figure below:

![](_page_22_Figure_0.jpeg)

Figure 9: Four development/ design options investigated. Option 3 is considered the preferred design option associated with Harmony Alternative B. 3

#### Harmony Alternative B (Preferred site alternative)

It is therefore proposed that the dam wall be moved north but is also curved to increase capacity from Harmony Alternative A to Harmony Alternative B. Harmony Alternative B RE Houdenbek 415 based on design drawing Option 3 above is now considered the Preferred Alternative to maintain a 40-50 m No-go buffer avoid heritage resources identified on site as HMY1, HMY 2, and HMY 3. Please refer to the figure below.

The maximum wall high for the dam would be  $\pm 12.8$ m with a crest length of  $\pm 280$ m, a nett storage capacity of  $\pm 250\ 000$ m<sup>3</sup> and the total footprint/ flooded area would constitute  $\pm 5.4$ ha. Please refer to **Appendix 2** for Design Drawings

![](_page_23_Figure_3.jpeg)

Figure 10: Locality map of dam site alternatives investigated. Harmony dam - Alt A was the original dam position investigated and is not preferred as the high-water supply will impact on heritage resources identified on site. Heritage resources are indicated as HMY1 – rock art site; HMY2 – rock art site and HMY3 – Artifacts. It was proposed that the dam wall be moved north to Harmony dam Alt B (based on desing drawing Option 3) to avoid heritage resources.

## **5.2 ACTIVITY ALTERNATIVES**

The purpose of the proposed dam is to provide the Harmony Trust with enough water for its irrigation requirements. No activity alternatives were considered.

#### **5.3 NO-GO ALTERNATIVE**

This is the option of not developing the proposed dam. Although this might result in no potential negative environmental impacts, the direct and indirect socio-economic benefits of not constructing the storage dam will not be realised. As described in *Section 2.1*, it is of critical importance to the success and feasibility of the business proposal for the proposed agricultural expansion on the farm, which is expected to create jobs in the area, that there be sufficient supply and storage of irrigation water.

## 6. ENVIRONMENTAL IMPACT ASSESSMENT, SIGNIFICANCE AND MITIGATION METHODOLIGY

The following impact rating approach used by EnviroAfrica CC is a basic exponential rating system to assess actual and potential negative environmental impacts of viable alternatives by the EAP.

Positive environmental impacts are not listed All positive impacts need to be enhanced or increased where possible but positive impacts are not rated or given a score since the rating is based on risks.

Environmental activities or aspects are identified, based on:

- the phases of the project,
- the nature (or description) of the actual and potential impacts of the activities.

For every project activity or aspect, various environmental impacts are listed. Every negative impact is allocated a value – as per each of the following criteria:

- Probability (Likelihood)
- Extent
- Duration (Frequency)
- Consequence (Receiving Environment)
- Magnitude (Intensity/severity)

Every negative impact is allocated a ( - )value as per each of the following criteria:

- Probability (Likelihood)
- Extent
- Duration (Frequency)
- Magnitude (Intensity/severity)

Once a value is allocated for each of the criterion, the scores are averaged to determine the final impact rating see Table 5 below.

EnviroAfrica then further assesses environmental significance, based on the nature of the impact, as per the score and colour key which forms part of the table below. This results in impacts having either a low (indicated in green), medium (indicated in yellow) or high (indicated in orange and red) negative significance.

**Note:** i. As a baseline, impact rating values/scores are allocated taking the **worst case** scenario into account i.e. with no mitigation. The baseline rating is compared with those after mitigation has been taken into account i.e. the post-mitigation rating. Post mitigation rating is used for the actual impact assessment.

SIGNIFICANCE CRITIERIA	Very High	High	Medium	Low	Negligible (very-low)	Score
Value	16	8	4	2	1	
Probability (likelihood) (P)	Definite. Impact will definitely occur.	Highly probable. Very likely for impact to occur.	Probable. Impact may likely occur.	Improbable. Impact may occur. Distinct Possibility	Improbable. Low likelihood/unlikely for impact to occur.	
Extent (E)	Impact potentially reaches beyond national boundaries	Impact has definite provincial/potential national consequences	Impact confined to regional area/ town	Impact confined to local region and impact on neighbouring properties	Impact confined to project property / site	
Duration (D)	Permanent	Long-Term	Medium-term	Short-term	Very short/ temporary	
Magnitude (Intensity/ Severity) (M)	It is expected that the activity will have a very severe to permanent impact on the surrounding environment. Functioning irreversibly impaired. Rehabilitation often impossible or unfeasible	It is expected that the activity will have a severe impact on the surrounding environment. Functioning may be severely impaired and may be temporarily cease. Rehabilitation will be needed to restore system integrity	It is expected that the activity will have an impact on the surrounding environment, but it will maintain its function, even if moderately modified (overall integrity not compromised). Rehabilitation easily achieved	It is expected that the activity will have a perceptible impact on the surrounding environment, but it will maintain its function, even if slightly modified (overall integrity not compromised). Rehabilitation easily achieved	It is expected that the impact will have little or no effect on the integrity of the surrounding environment	
Receiving environment (Consequence): (RE)	Very sensitive, pristine area – protected site or species permanently or seasonally present	Unused area containing only indigenous fauna / flora species	Unused area containing indigenous and alien fauna / flora species	Semi-disturbed area already rehabilitated / recovered from prior impact, or with moderate alien vegetation	Disturbed area/ transformed/ heavy alien vegetation	
FINAL RATING (average score)						

#### ENVIRONMENTAL RATING SIGNIFICANCE KEY: Negative Impacts

SIG	NIFICANCE	RATING	Final rating score / value range
	Very Significant	Very High	-12 to -16
	Significant	High	-9 to <-12
	Increasing Significance	Medium	-6 to <-9
Insignificant		Low	-3 to <-6
		Very Low	-1 to <-3

## 6.1 ENVIRONMENTAL SIGNIFIGANCE RISK RATING

Please refer to **Appendix 9** for the Environmental Impact Risk rating matrix. The matrix aims to identify potential impacts of the proposed development on the receiving environment, based on a desktop study. The following table is a summary of all the potential impacts assessed based on the four design/ layout alternative as discussed in Section 5 above. Please note that specialist findings were not considered in this risk assessment.

In addition to determining the individual impacts against the various criteria, the element of mitigation, where relevant, will also be brought into the assessment. In such instances the impact will be assessed with a statement on the mitigation measure that could/should be applied. Specialist recommendations and mitigation measures will be included. A more detailed assessment will be carried out in the EIR phase taking specialist findings into consideration.

Aspect	Impact	Significance	Significance
		No mitigation	With Mitigation
Botanical	Loss of Kouebokkeveld	High Significance	Low Significance
	Alluvium Fynbos/		
	Wintershoek Sandstone		
	Fynbos		
	Loss of ESAs	Low Significance	Very Low Significance
	Soil Contamination	Low Significance	Very Low Significance
Water	Loss of Riparian Habitat	Medium Significance	Very Low Significance
	Alternation of Hydrology of	Medium Significance	Very Low Significance
	the drainage line		
	Surface water & ground water	Very Low Significance	Very Low Significance
	contamination		
	Erosion & Sedimentation	Very Low Significance	Very Low Significance
Heritage	Loss of Heritage Resources	Very High Significance	Very Low Significance
Dust	Dust from site topsoil	Very Low Significance	Very Low Significance
	removal; construction,		

• Option 1 – Harmony Alternative A Location – the original location and design (Not preferred)

	rehabilitation		
Visual	Negative visual impact of the	Very Low Significance	Very Low Significance
	proposed development		

• Option 2 – Harmony Alternative B location - wall of the dam to be moved further north but is not curved (Not preferred as the capacity of the dam is too small to be viable)

Aspect	Impact	Significance No mitigation	Significance With Mitigation
Botanical	Loss of Kouebokkeveld Alluvium Fynbos/ Wintershoek Sandstone Fynbos	Medium Significance	Low Significance
	Loss of ESAs	Low Significance	Very Low Significance
	Soil Contamination	Low Significance	Very Low Significance
Water	Loss of Riparian Habitat	Medium Significance	Very Low Significance
	Alternation of Hydrology of the drainage line	Medium Significance	Very Low Significance
	Surface water & ground water contamination	Very Low Significance	Very Low Significance
	Erosion & Sedimentation	Very Low Significance	Very Low Significance
Heritage	Loss of Heritage Resources	Very Low Significance	Very Low Significance
Dust	Dust from site topsoil	Very Low Significance	Very Low Significance
	removal; construction, rehabilitation		
Visual	Negative visual impact of the proposed development	Medium Significance	Low Significance

• Option 3 – Harmony Alternative B Location - wall to be moved north but also curved to increase capacity. (Preferred design option & Location)

Aspect	Impact	Significance No mitigation	Significance With Mitigation
Botanical	Loss of Kouebokkeveld	Medium Significance	Low Significance
	Alluvium Fynbos/		
	Wintershoek Sandstone		
	Fynbos		
	Loss of ESAs	Low Significance	Very Low Significance
	Soil Contamination	Low Significance	Very Low Significance
Water	Loss of Riparian Habitat	Medium Significance	Very Low Significance
	Alternation of Hydrology of	Medium Significance	Very Low Significance
the drainage line			
	Surface water & ground water	Very Low Significance	Very Low Significance
contamination			
	Erosion & Sedimentation	Very Low Significance	Very Low Significance
Heritage	Loss of Heritage Resources	Very Low Significance	Very Low Significance
Dust	Dust from site topsoil	Very Low Significance	Very Low Significance
	removal; construction,		
	rehabilitation		

Visual	Negative visual impact of the	Very Low Significance	Very Low Significance
	proposed development		

• Option 4 – Based on design Option 1 and Harmony Alternative A location, but with an additional wall erected to the south in order to secure the heritage resources. In this option, the buffer zones remain un-impacted, but the additional cost of the wall & loss of biodiversity makes this option not viable.

Aspect	Impact	Significance	Significance
		No mitigation	With Mitigation
Botanical	Loss of Kouebokkeveld	High Significance	Medium Significance
	Alluvium Fynbos/		
	Wintershoek Sandstone		
	Fynbos		
	Loss of ESAs	Low Significance	Very Low Significance
	Soil Contamination	Low Significance	Very Low Significance
Water	Loss of Riparian Habitat	Medium Significance	Very Low Significance
	Alternation of Hydrology of	Medium Significance	Very Low Significance
	the drainage line		
	Surface water & ground water	Very Low Significance	Very Low Significance
	contamination		
	Erosion & Sedimentation	Very Low Significance	Very Low Significance
Heritage	Loss of Heritage Resources	Very High Significance	Very Low Significance
Dust	Dust from site topsoil	Very Low Significance	Very Low Significance
	removal; construction,		
	rehabilitation		
Visual	Negative visual impact of the	Medium Significance	Low Significance
	proposed development		

# 7. ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS

Environmental issues were raised through informal discussions with the project team, specialists and authorities. Based on a baseline assessment and these informal discussions, specialist were appointed to conduct assessments of the proposed dam development on the environment. Specialist findings and recommendations will be addressed in detail in the Environmental Impact Report.

The following specialist were appointed:

- Botanical specialist
- Freshwater specialist
- Heritage specialist

The following potential issues have been identified from a baseline assessment:

## 7.1 BIODIVERSITY

According to the vegetation map from Cape Farm Mapper (**Appendix 4.2**) the vegetation that can be expected at the proposed Harmony dam – Alt B (Preferred) is Wintershoek Sandstone Fynbos and smaller portion of Kouebokkeveld Alluvium Fynbos.

Kouebokkeveld Alluvium Fynbos is classified as Endangered in the Western Cape in terms of NEMBA National list of Ecosystems that are threatened and in need of protection and Wintershoek Sandstone Fynbos is not in need of protection. The proposed Harmony 266 dam does not fall within a CBA but does intersect an ESA Category 1 and is located within the proclaimed Kouebokkeveld Mountain Catchment Area. ESAs are not essential for meeting biodiversity targets, but play a role in supporting the functioning of CBAs. And are often vital for delivery ecosystems services. The objective is to restore and/or manage to minimize impact on ecological processes and ecological infrastructure functioning, especially soil and water-related services, and to allow for faunal movement. Properly design and managed farm dams can attract a variety of birds, insects and animals to the area which can contribute to the conservation of biodiversity.

Because of the proximity to intensive cultivated areas it is not expected that the proposed dam location will have a significant impact on fauna species. Avi-fauna (water species) may even benefit from the dam. The impact on reptiles and amphibian will be much localised and may result in species being displaced (snakes and lizards) but not significant permanent impact on species is expected. Properly design and managed farm dams can attract a variety of birds, insects and animals to the area which can contribute to the conservation of biodiversity.

It was anticipated that a more detailed full botanical assessment, in addition to the high level desktop study will need to be undertaken. Therefore, a site-based assessment by a specialist was conducted to ground-truth the initial desktop assessment and determine if there is any sensitive or endangered vegetation on the proposed site, findings will be discussed in detail in the EIR but are summarised below for ease of reference.

#### 7.1.1 TERMS OF REFENCE - BOTANICAL IMPACT ASSESSMENT:

- Take cognizance of, and comply with, the substantive content requirements outlined within Appendix 6 of GN R982, as amended, which outlines the legal minimum content requirements for specialist studies in terms of the 2014 NEMA EIA Regulations;
- The local and regional context of the vegetation communities and plant species within the affected areas, taking cognizance of the relevant biodiversity plans, bioregional planning documents, Environmental Management Frameworks etc.
- The ecosystem status and conservation value of the vegetation communities, including whether the potentially affected areas comprise critically endangered or endangered ecosystem(s) listed in terms of section 52 of the NEMBA;
- Any rare or endangered species encountered or likely to be or have been present;
- The presence of and proximity of the proposed site to protected area(s) identified in terms of NEMPAA and proximity to a Biosphere Reserve (where relevant).
- Confirm the approximate area (m<sup>2</sup>) of indigenous vegetation (as defined in the NEMA EIA Regulations) that would be cleared for the proposed project.
- A description of the direct, indirect, residual and cumulative botanical impacts (both before and after mitigation) and an assessment of the significance of the impacts (on a nominal scale of Neutral/ Negligible, Very Low, Low, Medium, High) by evaluating: (a) nature of the impacts (positive/ negative), (b) extent of the impacts (zero/ site specific/local/ regional/ national/ international), (c) magnitude of the impacts (zero/ Very Low/Low/ Medium/ High), (d) duration of the impacts (none/ short/ medium/ long term) and (e) probability of occurrence of the impacts (none/ unlikely/ possible/ definite). In addition, (f) the level of confidence in findings relating to potential impacts, (g)reversibility of potential impacts (i.e. the degree to which the impact can be reversed); and (h) the degree to which the impact may cause irreplaceable loss of resources.
- An indication of the degree (very low/ low/ medium/ high) to which the impacts can be avoided, managed and mitigated, a description of the measures to mitigate any impacts, and an indication of whether or not the measures (if implemented) would change the significance of the impact, for the construction and operational phases of the project;

- Delineate the vegetation communities and sensitive areas from a floristic perspective and overlay onto aerial photography and /or site map (i.e. create a vegetation sensitivity map of the project area);
- Take cognizance of the Department of Environmental Affairs (DEA) and Department of Environmental Affairs and Development Planning (DEA&DP) Guideline for Involving Biodiversity Specialists in the EIA Process and the requirements of the Botanical Society of South Africa (BotSoc) in developing an approach to the botanical investigation.

#### 7.1.2 SUMMARY - BOTANICAL SPECIALIST FINDINGS:

The Botanical Impact Assessment Report is available as in **Appendix 8.1** and findings and recommendations will be discussed in detail in the EIR. The specialist findings is summaries below. As described in Section 4 above, four design/ layout alternatives were investigated due to heritage resources found on site. The Botanical Specialist also considered the impact of the proposed four design/ layout alternatives on the receiving environment. The following section aims to summarise the direct impacts of the four design alternatives for the proposed Harmony dam. Direct impacts of the can be attributed to the loss of vegetation type, habitat, which include the loss of plant species and ecological process, due to the construction and operations of the proposed Harmony dam.

#### **Option 1 – Harmony Alternative A Location – the original location and design (Not preferred)**

Option 1 based on the original proposed location design or Harmony Alternative A (as described in Section 4 above) will, according to the botanical specialist, have the greatest negative impact on undisturbed natural vegetation named Wintershoek Sandstone Fynbos) since the largest area of inteact fynbos would be affected by the wall construction and inundation by the dam. The impact is rated as High Negative.

# Option 2 – Harmony Alternative B location - wall of the dam to be moved further north but is not curved (Not preferred as the capacity of the dam is too small to be viable)

According to the botanical specialist Option 2 would have a marginally lower negative impact when compared to Option 1 due to a smaller dam wall, but the impact is still rated High Negative.

# Option 3 – Harmony Alternative B Location - wall to be moved north but also curved to increase capacity. (Preferred design option & Location)

Option 3 is the preferred alternative or Harmony Alternative B as described in Section 4. Option 3 or Harmony Alternative B is the preferred layout/ design option in terms of the protection of the heritage resources found on site. It is proposed that the dam wall be moved further north and will be curved to increase the capacity. The botanical specialist states that Option 3 is the preferred option the wall would be constructed lower in the catchment in an area that is more disturbed than higher in the catchment. The specialist states that less proteoid fynbos (and intact undisturbed fynbos) would be inundated by the dam and hence the impact would be less negative. However, since the dam would sill fall within a protected area the negative impact cannot be rated as less than Medium Negative.

# Option 4 – Based on design Option 1 and Harmony Alternative A Location, but with an additional wall erected to the south in order to secure the heritage resources.

According to the specialist findings this option would result in the loss of the most undisturbed vegetation and habitat and is not desirable. The impact would be High Negative.

The table below indicates the impact and significant rating for the loss of natural vegetation and habitat during construction and operations of the proposed Harmony dam.

CRITERIA	'NO GO' ALTERNATIVE		Opti	on 1	Option 2		Option 3		Option 4	
Nature of direct impact (local scale)	Loss of Winte	Loss of Winterhoek Sandstone Fynbos								
	WITHOUT MITIGATION	WITH MITIGATION	WITHOUT MITIGATION	WITH MITIGATION	WITHOUT MITIGATION	WITH MITIGATION	WITHOUT MITIGATION	WITH MITIGATION	WITHOUT MITIGATION	WITH MITIGATION
Extent	Local	Local	Local	Local	Local	Local	Local	Local	Local	Local
Duration	Long-term	Long-term	Long-term	Long-term	Long-term	Long-term	Long-term	Long-term	Long-term	Long-term
Intensity	Low	Low	High	High	High	High	Medium	Medium	High	High
Probability of occurrence	Probable	Probable	Probable	Probable	Probable	Probable	Probable	Probable	Probable	Probable
Confidence	High	High	High	High	High	High	High	High	High	High
Significance	Negligible	Negligible	High negative	High negative	High negative	High negative	Medium negative	Medium negative	High negative	High negative
Nature of Cumulative impact	Loss of Winte	Loss of Winterhoek Sandstone Fynbos								
Cumulative impact prior to mitigation	Low negative									
Degree to which impact can be reversed	Not reversible	Not reversible								
Degree to which impact may cause irreplaceable loss of resources	Low	Low								
Degree to which impact can be mitigated	Low									
Proposed mitigation	Mitigation not	Mitigation not possible in the dam inundation area. The only mitigation would be to revegetate the dam wall.								
Cumulative impact post mitigation	Low negative	Low negative								
Significance of cumulative impact (broad scale) after mitigation	Low negative	Low negative								

The botanical specialist further states that indirect impacts occur away from the 'action source' i.e. away from the development site. The impact assessed here is specifically how the proposed dams would have an indirect impact on vegetation and flora away from the development site. No indirect impacts for terrestrial vegetation and flora were identified.

#### 7.2 FRESHWATER

A freshwater impact assessment is proposed. This is due to the fact that the dam is considered an instream dam which is likely contain remaining elements of riparian vegetation.

The following information was taken from the *Preliminary Design Report 1619DOV-S2 from Sarel Bester Engineers* **Appendix 7.1.** The proposed Harmony dam will be located along a small tributary within the larger Houdenbek River Catchment area upstream of the confluence of the Winkelhaak River into the Riet River which forms part of the larger Doring River, a tributary to Olifants River system. Water to the dam will purely be based on surplus winter water from the Houdenbek catchment.

Many downstream water users expressed their concerns with regards to the proposed dam restricting the flow of water downstream into the Rietriver. Sarel Bester Engineers explains in the Comments & Response Report (**Appendix F1.5.6**) that regulatory mechanism will be implemented to ensure that only winter surplus water be abstracted to not negatively impact existing downstream users. A monitoring plan & measurement mechanisms is proposed to be installed both up and down stream to ensure that only surplus water will be stored and that water is not cut off to downstream users. This should me made a condition of the Environmental Authorisation and well as the Water Use License, should the authorisations be granted.

Sarel Bester Engineers is conducting a Water Use License Application. Activities triggering Section 21 of the National Water Act include:

- S21 (a) Taking of water
- S21 (b) Storing of water
- S21 (c) Impeding or diverting the flow of the water course
- S21 (i) Altering the bed, bank, course or characteristics of a watercourse

The Water Use Licence Application report *1733WULA-W2* (**Appendix 7.2**) explains the Houdenbek catchment is one of five upstream catchment areas that contribute to the total run-off of the Riet River catchment. Houdenbek River Catchment, one of the tributaries to the Riet river, contribute about 30% of the total of the annual Riet River run-off. This particular Water Use Application is for the taking of about 3% of the Houdenbeks River run-off, AFTER the ELU's (Existing water users) and IFR (in flow requirements) have been protected, which is 30% of the total Riet River run-off. Therefore we are applying for only 0,9% of the total of Riet river run-off (after ELU's & IFR's).

#### 7.2.1 TERMS OF REFERENCE - FRESHWATER IMPACT ASSESSMENT:

- A description of the area, its climate, rainfall, catchment and aquatic habitat.
- A description of the project
- The legal framework, as it pertains to the project.

- Assessment of the Water Quality, if there is any water in the water courses at the time of field visits. This entails analytical water quality testing in a SANAS accredited laboratory and SASS5 biomonitoring.
- The Present Ecological State of the affected aquatic habitat, as outlined by Kleinhans (1999) and as has been described in various DWS publications. This applies to both the instream and riparian habitat.
- The Ecological Importance of the affected aquatic habitat must be established.
- The Ecological Sensitivity must be determined.
- The possible impacts of the farm dams on the aquatic habitat must be described.
- Mitigation Measures must be added.
- This is followed by an Impact Assessment. This is a measurement of the envisaged success of the mitigation measures. The Mitigation Measures and Impact Assessment are specifically to satisfy the WULA requirements..
- A Risk Matrix is required, as published on the DWS webpage. This is specifically to assess the environmental risks of the envisaged project. This methodology is specifically a tool to decide if a General Authorisation or a License is required for these two dams.
- The Resource Economics, or the environmental goods and services of the aquatic habitat must be assessed, according to the methodology of 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.
- The drivers of the aquatic systems must be described and how these pertain to the envisaged project, according to the methodology outlined in various DWS documents.
- The Fresh Water Report should contain adequate information to aid DWS decision-makers if a letter of consent, a General Authorisation or a License is required

DEADP also requested in their comments (**Appendix 5.6.31**) that a River Maintenance Management Plan (MMP) be conducted for the proposed Harmony dam development. The specialist still need to be appointed to conduct the MMP.

# 7.2.2 THE TERMS OF REFERENCE – RIVER MAINTENANCE MANAGEMENT:

- Provide a map (at an appropriate scale) of the watercourse or stretch of watercourse being applied for within the stretch where maintenance activities will take place being clearly defined – consideration must be made to mapped features relating to Critical Biodiversity Areas (CBAs) and National Freshwater Ecosystem Priority Areas (NFEPAs).
- GPS coordinates must be provided for all site(s) at which maintenance activities will take
  place and included on the map which defines the stretch of watercourse. Coordinates must be
  provided in degrees, minutes and seconds using the Hartebeesthoek94 WGS84 co-ordinate
  system. Where numerous properties/sites are involved (e.g. linear activities), you may attach
  a list of property descriptions and co-ordinates to this form.
- Specialist assessment to be undertaken to determine (NOTE: information relating to the specifications and Terms of Reference used for the appointment of all specialist inputs must be provided).
- Hydrological (incl. flood hydrological data etc.) and geomorphological assessment of watercourse functioning.
- The relevant Present Ecological Status (PES) of the stretch of watercourse in question, if not available an assessment is to be done to determine PES in accordance with the Department of Water and Sanitation (DWS) guidelines.
- What is the reason/cause for the maintenance activities based on an ecological and hydrological assessment of the watercourse within the context of the larger catchment.
- What are the drivers of system functioning within the watercourse and what is the ecological objective based on historical condition and PES.
- What is the management objective given the ecological status of the watercourse based on historical and PES data; as set out in agreement with the person(s) responsible for undertaking the maintenance activities.

- What is the impact on the watercourse/river system (resource quality characteristics: flow regime, geomorphology, water quality, habitat and biota) for a minimum of 500m both up and downstream of the proposed maintenance activities, with the mitigation measures included;
- An appropriate assessment for risk for each of the proposed types of maintenance activities and linked management actions in terms of the risk matrix for General Authorisations (GA) of Section 21 (c) and (i) by the DWS (GN 509 of 2016) or where applicable.
- Mapped biodiversity features such as Critical Biodiversity Area, Ecological Support Area, National Freshwater Ecosystem Priority Area (NFEPA), and the National list of Ecosystems that are threatened and in need of protection (2011) gazetted in terms of Section 52 of the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEMBA), the Western Cape Biodiversity Spatial Plan 2017, as well as relevant provincial specific plans and classifications etc. Please consult the website www.bgis.sanbi.org.za to determine mapped features.
- Include a description of existing or previous protection measures or reinforcements (eg. gabions or groynes etc.) and infrastructure. Describe any evidence of erosion and/or siltation at the various sites and outlining possible causal factors and maintenance practices.
- Provide historical maps and data (images/flow/water quality/land use) of the river channel (if available) in order to assess the natural to changing flow patterns of the watercourse to determine cause of maintenance and possible impact of the maintenance activities, to inform mitigation measures.
- Provide a photographic record for the condition of the riparian habitat around maintenance sites, with the presence of important and/or sensitive habitat/species noted.
- For sites prone to flood damage, a description regarding the history and effect of past floods and include dates of most recent events must be provided. This must inform the process to understand what actions are required along the stretch of the watercourse to reduce such impacts to the resource quality characteristics.
- Explain the risks associated with the no-go option for the MMP i.e. the risk of not undertaking the maintenance activities as stated in the MMP.

#### 7.2.3 SUMMARY- FRESHWATER IMPACT REPORT:

The Freshwater Impact Assessment Report is available in **Appendix 8.2** and findings and recommendations will be discussed in detail in the EIR. The attached Freshwater Impact reports still reflects the original locality of the proposed Harmony dam (Alternative A or Option 1 as described Section 4 above). The updated report included in the next round. Specialist findings based on the original proposed location for Harmony is summaries below.

Impact of the proposed Harmony dam on receiving environment:

The proposed Harmony dam will be situated in another small drainage line just to the east of the proposed Toeka dam. According to the specialist, the drainage line was dry during the site visit but was much better developed and visible than the drainage lines associated with Toeka dam. the drainage line can be followed from the Houdembek River up into the mountain for approximately 3.7km and shares a boundary with the Toeka catchment. There seems to be another faint drainage line between the Harmony and Toeka catchments, with a small catchment area of its own.

According the specialist the drainage line at the proposed dam wall site (Harmony Dam - Alternative A – based on the original location) is still natural and near pristine. The riparian zone is narrow and with steep sides and with a healthy stand of the restio Elgia capensis. This is a wetland indicator species and a sure sign of a mountain stream. the specialist further states that the drainage line downstream of the dam site is straightened, lined with high berms and deeply incised and impacted by farming.

According to the specialist report, the drainage line and its riparian zone associated with the original Harmony dam wall location (Alternative A/Option 1 - not preferred) is considered pristine. However, due to no endangered fish species present, the site is not considered ecologically important.

The drainage line downstream of the proposed dam site (based on the original dam wall location/ Alternative A/ Option 1 – not preferred) is considered most disturbed and the instream habitat is considered less ecologically sensitive. Therefore the conclusion can be drawn that the preferred dam location (Alternative B/ Option 3 as described above) will have a less significant impact on the aquatic environment when compered to the original location. Updated findings will be discussed.

The table below indicates the impact and significant rating during construction and operations of the proposed Harmony dam.

Possible Impact		Extent	Duration	Intensity	Significance	Probability	Confidence
Clearing of the dam sites	Without mitigation	Regional	Long term	Medium	Medium	Probable	High
	With mitigation	Local	Short term	Low	Low	Low	High
Collecting construction	Without mitigation	Regional	Medium term	Medium	Medium	Probable	High
material from dam sites	With mitigation	Local	Short term	Low	Low	Low	High
Construction of the dams	Without mitigation	Regional	Short term	Medium	High	Probable	High
	With mitigation	Local	Short term	Low	Low	Low	High
Clearing of dam sites	Without mitigation	Regional	Long term	Medium	Medium	Probable	High
	With mitigation	Regional	Long term	Low	Low	Low	Medium
Stabilisation of the new	Without mitigation	Regional	Long term	Medium	Medium	Probable	High
dam waits	With mitigation	Local	Short term	Low	Low	Low	High
Operation of Harmony	Without mitigation	Regional	Long term	High	High	Probable	Medium
Dam	With mitigation	Regional	Long term	Medium	Medium	Probable	Medium

The impact assessment is the same is that of the Toeka dam, with the addition of the 25% Instream Flow Requirements, discussed below. Without the IFR the impact on the downstream drainage line would have remained high and not be reduced to medium.

#### Water demand:

The report explains how the Harmony and Toeka catchments flow into the Houbenbek river, which together with the Winkelhaak river flows into the Riet River. The Rietriver flows into the Groot River

not far away from its confluence with the Doring River. The Doring river is the main river system on the Western Cape's Atlantic sea board.

Harmony will have a capacity of 250 000m3. The proposed dam will be filled with runoff from its own catchment, however, in dry years, when runoff is inadequate to fill the dam, it will have to be filled from the much larger Toeka dam for which pipeline as already in place

The IFR (Instream Flow Requirements) or Ecological Release for Harmony dam is set at 25%, according the Sarel Bester Engineers Water Use Licence Application report *1733WULA-W2* (**Appendix 7.2.**) and demands to 82 500m3 per year. The water demand for the proposed 75ha agricultural development amounts to 712 500m3 per year. Therefore the shortfall of water on an annual basis will have to be sources form the Houdenbek River. Please refer to the explanation and motivation for the taking and storing of water in the Sarel Bester Engineers Water Use Licence Application report *1733WULA-W2* (**Appendix 7.2.**).

The freshwater specialist stated that the direct long terms impact of the water storage and the flow reduction down the drainage lines and eventually down the Houdenbek river have not been assessed. The impact on the entire river system is the domain of a qualified and experienced hydrologist. How much more abstraction can be allowed to approach or exceeds the Ecological Reserve rests with the Department of Water and Sanitation. These issued are very much beyond the scope of a WULA and its budget.

However, the freshwater specialist did assess the possible impact on the proposed new abstraction in the Houdenbek River. A WULA is required for the 712 500m3 from the Houdenbek River and the Toeka and Harmony Catchments. The impact from this new water was assessed on the Houdenbek river close to and downstream from the confluence of the Harmony drainage line with the Houbenbek river.

According to the Freshwater report the n main impact of the proposed abstraction of water from the Houdenbek sampling point downstream of the Harmony confluence, but rather downstream in the Riet River & eventually in the Doring River. The Doring River is already stressed because of water abstraction in the upper catchment. This is causing a shortened hydroperiod and lowering the water level. More water abstraction from the pumping of water from the Houdenbek River as well the proposed damming of the Toeka and Harmony catchments, will contribute to existing impacts. The specialist then goes on to explain that the impact could be minimised if the additional water abstraction is affected only when the river is in flood and at its peak flow. The impact will be limited when the abstraction is not allowed during base and drought flow. Shortening of the hydroperiod would be least noticeable, if at all, if water would be taken only during peak flow.

Concluding remarks from the specialist is that the destruction of aquatic habitat because of the construction of the proposed dam is not deemed significant. The impact receptor would be downstream in the Doring Riverm which is already water stressed. However the impact on the Doring River can be significantly reduced if water abstraction is only allowed during peak flows.

Furthermore, the Freshwater specialist was asked to address concerns raised by Cape Nature in their comments Appendix 5.6.4 and Appendix 5.6.32. The comment was based on the fact that the proposed Harmony dam would be situated in a Mountain Catchment Area as well as the impact of the proposed dams on significant loss of habitat or alternation of water flow or quality as well as the impact on water quality of the Houdenbeks River and groundwater recharge. The Freshwater responded in an email attached as Appendix 5.6.32.1.

The freshwater specialist stated that water quality will be minimally, insignificantly impacted. The theory has it that runoff from pristine mountain catchment dilutes polluted runoff from agricultural areas. However, the volume from the Harmony stream is so small in relation to that of the Houdenbeks River that it would not make a noticeable difference. The cumulative effect of many such small dams may have an impact, but since we do not have any numbers from analytical laboratory analyses, this is all speculation. According to the specialist another dam would add to ground water. Instead of running away, water would sink into the ground under the dam. This is a small dam and the gain would be small as well.

The dam would alter aquatic habitat, as all new dams do. If moved downstream, the loss of valuable riparian vegetation would be minimised. Therefore is can be concluded that the proposed new dam location, Harmony dam – Alternative B/ Option 3 will have a less significant impact on aquatic habitat.

The specialist agrees that the proposed dam and water use in the upper catchment may have a significant impact of the Doring River downstream. The hydroperiod has been shortened and this river is dry for much longer than it was prior to human impact. However, the specialist suggests that the dam can be constructed with a release valve to make provision for ecological releases, as described above and in Sarel Bester Engineers Water Use Licence Application report *1733WULA-W2* (**Appendix 7.2.**). Water can be taken during peak flow and left during base flow and low flow, to reduce the impact on hydroperiod.

#### 7.3 HERITAGE

The possible impact on heritage resources has been identified as a possible environmental impact because of the construction of the dam.

A Heritage Screener was conducted by CTS Heritage as a baseline assessment (**Appendix 8.3**) A heritage NID was submitted to Heritage Western Cape (HWC). HWC provided comments requesting that the further studies, specifically Archaeological and Paleontological Impact Assessment, have to be conducted (**Appendix 5.6.33**). The Heritage Screener suggested that the proposed dams might impact on rock art sites. CTS Heritage suggested that an Archaeological assessment first be conducted. Findings were captured in a Heritage Impact Report (**Appendix 8.3.2**) which was submitted to HWC for comment. HWC proceeded to request a Paleontological assessment be conducted. The Paleontological assessment still needs to be conducted. The updated Heritage Impact report will include the assessments on archaeological as well as palaeontological resources and will submitted with the Post-App Scoping report.

#### 7.3.1 TERMS OF REFERENCE - HERITAGE IMPACT ASSESSMENT:

- An archaeological and palaeontological field assessment of the area proposed for development to ensure that any archaeological or palaeontological resources that may be impacted are identified and impacts mitigated. The results of these field assessments are integrated into a Heritage Impact Assessment with an integrated set of recommendations pertaining to impacts to heritage resources.
- To identify and map heritage sites/remains that might be impacted by the proposed development;
- To assess the sensitivity and conservation significance of archaeological sites/remains in the inundation area;
- To assess the status and significance of any impacts resulting from the proposed development;
- To identify measures to protect any valuable heritage sites/remains that may exist within the estimated inundation area.

#### 7.3.2 SUMMARY HERITAGE IMPACT REPORT (NOT UPDATED):

The Heritage Impact Assessment Report is available in **Appendix 8.3.1** and the Archaeological Impact Report is available in **Appendix 8.3.2**. The specialist findings can be summarised for the proposed Harmony dam:

Well preserved rock art was located in a large long standstone overhang/ shelter located on the eastern bank of the small. Unnamed perennial stream. Large numbers (several thousand) of Later Stone Age (LSA) lithics, including chips, chunks, modified and unmodified flakes were counted, on the weathered gritty floodplain sands immediately in front of the shelter. Both bladelet and cylindrical cores were found, including modified retouched points and at least two adzes. Several miscellaneous grindstone pieces and a hammerstone were also counted. No scrapers, backed pieces, ostrich eggshell, beads, or pottery was found. The majority of the lithics are in very

fine grained lydianite/indurated shale, but tools in silcrete, quartz and CCS were also seen. One reused Middle Stone Age (MSA) quartzite flake was found.

Point ID	Site No	Site Name	Description	Co-ordinates	Grading	Mitigation
	HMY1	Harmony 1	Rock art site	S32° 59.966' E19° 27.697'	Grade IIIA	Dam must be moved, 40-50m buffer
	HMY2	Harmony 2	Rock art site	S32° 59.928' E19° 27.727'	Grade IIIA	Dam must be moved, 40-50m buffer
	HMY3	Harmony 3	Artefacts	S32° 59.733' E19° 27.795'	Grade IIIC	None

Rock art site (HMY1 & HMY2) including associated archaeological resources (i.e. high density stone artefacts) and i n-situ archaeological deposit have, collectively been rated as having high archaeological significance. Facing west, in shadow, and protected by vegetation the rock art/imagery is well preserved and comprises both representational art (HMY 2) and highly symbolic art (HMY 1). There is no graffiti, and only minimal percolation of natural salts from behind the painted surfaces. Construction of the proposed Harmony Dam and full supply level will have a severe, negative impact on the archaeological resource. Full supply level flags have been place immediately in front of the sandstone shelter, a mere 2-3 meters from the wall of the shelter.

A 40-50m no-go buffer around each site (HMY1 and HMY2) is proposed as this will also allow for the protection of the archaeological deposit within the rocky overhang as well as the rock art.

As discussed in Section 5 above, due to the finding of archaeological assessment, additional alternatives were proposed:

**Option 1 –** based on Harmony Alternative A – the original location and design

**Option 2 –** wall of the dam moved further north. This option is not preferred as the capacity of the dam is too small to be viable

**Option 3 –** wall be moved north but also curved to increase capacity. This is considered the preferred design option – Harmony Alternative B. This option is also preferred according to the Botanical and Freshwater specialists.

**Option 4 –** Based on Option 1 but with an additional wall erected to the south in order to secure the heritage resources.

Therefore it can be concluded that according to the Heritage Impact assessment that there no objection to the proposed development of the Harmony Dam on condition that the recommendations outlined below are implemented:

- The recommended no-go buffer area of 40-50m for sites HMY1 and HMY2 be implemented and that Option 3 be approved;
- The Rock Art Guide document (Appendix 8.3.3) be included in the EMPr for the construction phase of this project and that all construction and farm staff be informed of its contents

• A Heritage Agreement in terms of section 42 of the NHRA be signed between the landowner and HWC to ensure that this significant archaeological site is protected and conserved.

The updated Heritage impacts report containing Archaeological as well as Palaeontological findings will be included in the Post-App Scoping or EIR.

#### 7.4 VISUAL IMPACT

The potential impact on the sense of place of the proposed dam has also been considered. The surrounding area is characterised by agricultural activities, as well as a number of farm dams in the local area, and the proposed dam will therefore not be uncharacteristic for the area.

The sense of place is not expected to be altered by the proposed dam, and no further studies are suggested.

#### 7.5 SAFETY

Sarel Bester Engineers submitted a dam safety and classification application to the Dam Safety Office. Harmony was classified on 18 October 2017 as a medium size Category II dam with a Low Hazard potential rating (*Preliminary Design Report 1618DOV-S2 from Sarel Bester Engineers* **Appendix 7.1**).

#### 7.6 LOSS OF AGRICULTURAL LAND

The success of the proposed Harmony dam is of critical importance to the to the successful expansion of the planned 75ha agricultural development, a BBBEE farming initiative. The success of this project is expected to create a number of permanent jobs within the agricultural industry.

## 7.7 SOCIO-ECONOMIC IMPACT

Although the construction of the proposed dam will create jobs during the construction phase of the activity, the dam will indirectly secure additional jobs during the operational phase. As indicated in *Section 2.1*, the proposed dam is of critical importance to the success to establish fruit orchards, which is expected to create permanent job opportunities in the agricultural sector.

This proposed application is part of a larger projects for the further development of an existing 100% black-owned BBEEE farming entity, namely Harmony Trust, reference T2213/2003. They have been in the agricultural sector and trading successfully for the past 12 years with their neighbouring partner and mentor, Morester Langoed The plan is to grow and irrigate 75ha of fruit. This would benefit the existing BBBEE entity and more importantly also the broader economy by creating work opportunities for the previously disadvantaged groups.

## 7.8 OTHER ISSUES IDENTIFIED

Any further issues raised during the public participation process or by the Competent Authority not mentioned in this section, will be dealt with during the EIA phase.

# 8. PLAN OF STUDY FOR THE EIA

To adequately address the environmental issues raised and highlighted above the following plan of study will employed:

## 8.1 PRE-APPLICATION PHASE

In terms of the 2014 EIA requirements, this application is now in what is termed the "Pre-Application Phase", which included the following steps:

- Project preparation, site visits and meetings with client;
- Preparation of draft background information document;
- The Preparation of the "Notification of Intend" (**Appendix 6.1** for Proof of submission)
- Pre-application meeting was scheduled with the DEADP & DWS (Appendix 6.2 for the Pre-App Meeting register)
- Initial public participation was done (Refer to Appendix 5);
- Register of interested and affected parties was compiled (Refer to Appendix 5.5):
- A comments and response report was established (**Appendix 5.6**):
- Specialist were appointed;
- Preparation of Pre-App Scoping Report for comment, October 2018.

The Pre-App Scoping Report was made available for 30-day comment period. Comments were captured and addressed in the Comments & Response Repot (**Appendix 5.6**) original comments were also included. Comments received during the Public Participation Process will be incorporated into the Draft Environmental Impact Report.

#### 8.2 APPLICATION PHASE

The process will now enter the formal application process. The NEMA EIA (2014) as amended, process prescribes the following tasks:

#### Table 3: Summary of the NEMA EIA (2014) process that will be followed

TASKS		PROJECTED DATES
1. PRE-APPLICATION PHASE	90	
Notice of Intent (NoI): Prepare & Submit		9 June 2017
Appoint Specialists – Botanical, Freshwater, Heritage		9 June 2017
• <b>PPP</b> (1 <sup>st</sup> round): Advertisement, Posters, mail drops, Register I&AP's	30	9 June 2017
• Submit <b>Pre-Application Scoping</b> report to competent authority & I&APs for comment	30	1 October 2018 & <b>July 2019</b>
NB: Post-App SR: Prepare for comment + update EMP and C&R report		

2. APPLICATION PHASE	43	
2.1. Application document: Prepare & Submit to competent authority (CA have 10 days to respond)		September 2019
2.2. Submit <i>Post-App SR</i> to CA + IAP's for comments	30	September 2019
2.3. Submit <i>Post-App SR</i> to CA for approval	43	November 2019
3. IMPACT REPORT (Timeframe start on decision from CA on SR)	106	
3.1. Submit <i>IR</i> to CA & IAP's for comment (PPP on IR)	30	Dec 2019
3.2. Submit <i>Final IR</i> to CA for approval	20	January 2020
CA to provide decision within 107 days		
Total for NON-SUBSTANTIVE EIA Application (90 + 43 +44 + 106 + 107 days)		

![](_page_43_Figure_0.jpeg)

Figure 11: Summary of the Scoping and EIA 2014 Process

#### 8.3 PUBLIC PARTICIPATION AND INTERESTED AND AFFECTED PARTIES

Please refer to Figure 7 to see where the public participation process is present in the environmental impact assessment. The Interested and Affected Parties will have a chance to view and comment on all the reports that are submitted. The figures also indicated what timeframes are applicable to what stage in the process. If required, meetings with key stakeholders will be held.

At the end of the comment period, the Scoping report (for comment) will be revised in response to feedback received from I&APs. All comments received and responses to the comments will be incorporated into Scoping report for decision (this report). This report will be sent to DEA&DP for decision. The Department will then have 44 days to either accept or reject the Scoping Report. Once the Scoping report has been accepted by the Department, the Environmental Impact Report will be compiled. This report will include all the outstanding specialist report as well as further comments from DEA&DP. The Environmental Impact Report (for comment) will then be sent out to I&APs for comment. After the 30 days commenting period, comments from I&APs and state organisations will be included, with responses, in the Environmental Impact Report. This report can then be viewed as the final impact report and will be submitted to DEA&DP for final decision.

Correspondence with I&APs will be via post, telephone, email and newspaper advertisements.

Should it be required, this process may be adapted depending on input received during the on-going process and as a result of public input. DEA&DP will be informed of any changes in the process.

#### 8.3.1 DETAILS OF THE PUBLIC PARTICIPATION PROCESS UNDERTAKEN

Interested and Affected Parties (I&APs) were identified throughout the process. Landowners adjacent to the proposed site, relevant organs of state, organizations, ward councillors and the Local and District Municipality were added to this database. A complete list of organisations and individual groups identified to date is shown in **Appendix 5**.

Public Participation was conducted for this proposed dam in accordance with the requirements outlined in Regulation 41, 42, 43 and 44 of the NEMA EIA Regulations 2014 as amended, as well as the Department of Environmental Affairs and Development Planning's guideline on Public Participation 2011. The issues and concerns raised during the scoping phase will be dealt with in the EIA phase of this application.

As such each subsection of Regulation 54 contained in Chapter 6 of the NEMA EIA Regulations will be addressed separately to thereby demonstrate that all potential Interested and Affected Parties (I&AP's) were notified of the proposed development.

Table 2: Summary of the public participation process

<u>R41</u>	Posters, Advertisement & Notification letters
<u>(2) (a) (i)</u>	Posters were displayed on Farm Houdenbek 514 and Winkelhaak 224
	Posters were also placed on the notice boards at Op die Berg Spar, Witzenberg
	Local Municipality and Op die Berg Agrimark.
	Please see Appendix 5.1
<u>(ii)</u>	N/A No feasible alternative site
<u>(2) (b) (iii)</u>	Notification letters were sent to the municipal ward councilor at the Witzenberg
	Municipality.
	Please see Appendix 5.2
<u>(iv)</u>	Notification letters were sent to Cape Winelands District Municipality and
	Witzenberg Local Municipality.
	Please see Appendix 5.2
<u>    (v)</u>	Notification letters were sent to the following organs of state:
	<ul> <li>Department of Environment and Development Planning</li> </ul>
	<ul> <li>BGCMA – future of the reports (including this one) will be sent to DWS as</li> </ul>
	they are the commenting authority
	<u>Cape Nature</u>
	Heritage Western Cape
	<ul> <li>WC Department of Agriculture and Land Use Management</li> </ul>
	Please see Appendix 5.2
(vi)	Notification letters were sent to neighbours
	Please see Appendix 5.3
<u>(2) (c) (i)</u>	An advert was placed in the Witzenberg Herland on July 2017
	Please see Appendix 5.4

<u>R42 &amp; 34</u>	Register of I&AP
<u>(a), (b),</u> (c), (d)	A register of interested and affected parties was opened and maintained and is available to any person requesting access to the register in writing Please see Appendix 55
<u>R43</u>	Registered I&AP entitled to comments
<u>3</u>	<u>I&amp;AP were given 30 days for comments during the initial public participation phase</u>
<u>R44</u>	I&AP to be recorded
	A summary of issues raised by I&AP are addressed in the Comments and Response
	Re <u>port</u> (C&RR).
	Please see Appendix 5.6 for the C&RR as well as comments received.

## 9. CONLUSION AND RECOMMENDATIONS

A scoping exercise is being undertaken to present the proposed activities to the I&APs and to identify environmental issues discussed in this report and concerns raised as a result of the proposed development alternatives to date. The issues and concerns were raised by I&APs, authorities, the project team as well as specialist input, based on baseline studies undertaken.

This Draft Scoping Report, being undertaken in terms of NEMA, summarises the process undertaken, the alternatives presented and the issues and concerns raised. Positive and negative impacts of the proposed dam development can be summarised:

#### Positive:

- The investigation of the proposed Harmony dam led to the discovery and now the protection of Heritage resources (i.e. rock art painting & artifacts on site)
- The Freshwater specialist is of the opinion that the construction of Harmony dam within the MCA will add to ground water. Instead of the water running away, water would sink into the ground under the dam.
- The move of the dam wall to Alternative B, Option 3 would minimize the loss of valuable riparian and terrestrial vegetation.
- Morester Landgoed (MHB Trust), Harmony Trust's founder partner and mentor, has both land available as well as suitable dam sites for the proposed expansion of the existing neighbouring BBBEE farming entity. Since the enlargement consists of 75ha of permanent fruit crops, this application, should it be granted, would ensure that Harmony Trust (100% Black Owned) would become an independent and economically viable entity.
- This application forms part of the larger Witzenberg PALS project whose primary goal is to support, mentor and enable black farmers to become succesful commercial farmers. See Witzenberg PALS, Partnerships in Agri Land Solutions, Project Leader: Gerrit van Vuuren, CEO: Lennox Plaatjies, Copy available on request.
- This is not only another mere envisioned BBBEE project, but this expansion is based on an already stable and succusful BBBEE farming entity, namely Harmony Trust which has the infrastructure in place for the proposed expansion.
- About 90 permanent and sustainable jobs will be created in the long term farming of 75ha of fruit orchards, refer Ceres Kernvrugte Studie, Frudata SA, 2017, available on request.
- The expansion of Harmony Trust together with Witzenberg PALS project, will be implemented on the Houdenbek RE415 property that stand to-be-subdivided and transferred to Harmony Trust in future. The project currently entails a ±75ha fruit development that will be under irrigation.
- The Koue Bokkeveld Water User Association under whose auspices the concerned area & WUL Application falls, approves of the application for taking & storing. **Please refer to Appendix 7.2** for the Water Use License Application 1733WULA-W2 from Sarel Bester Engineers, Appendix 9, available on request.

#### Negative:

- Potential further loss of Kouebokkeveld Alluvium Fynbos/ Wintershoek Sandstone Fynbos
- Further degradation of an ESA2
- Potential alteration of the hydrology of the drainage line/ non-perennial stream ,
- Loss of Agricultural land for the establishment of the dam

As a result of the above, the need for the following specialist studies, have been identified:

- Botanical Assessment
- Freshwater Assessment
- Heritage Assessment

Any further issues raised as a result of the Public Participation Process will be dealt with during the EIA phase.

The significance of the impacts associated with the alternatives proposed will be assessed in these specialist studies, as part of the EIA. Details of specialist studies will be summarised in the Environmental Impact Report (EIR), which integrates the findings of the assessment phase of the EIA.

Based on the significance of the issues raised during the ongoing Public Participation Process and Scoping Phase, it is evident that an Environmental Impact Assessment (EIA) is required. It is therefore recommended that authorisation for the commencement of an EIA for the proposed development is granted. Should the EIA process be authorised, the significant issues raised in the process to date will be addressed and the specialist studies noted in this report, will be undertaken.

# 10. OATH OF AFFIRMATION BY THE EAP

#### THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

I ....., as the appointed EAP hereby declare/affirm:

- the correctness of the information provided as part of this Report;
- that all the comments and inputs from stakeholders and I&APs have been included in this Report;
- that all the inputs and recommendations from the specialist reports, if specialist reports were produced, have been included in this Report;
- any information provided by me to I&APs and any responses by me to the comments or inputs made by I&APs;
- that I have maintained my independence throughout this EIA process, or if not independent, that the review EAP has reviewed my work (Note: a declaration by the review EAP must be submitted);
- that I have throughout this EIA process met all of the general requirements of EAPs as set out in Regulation 13;
- I have throughout this EIA process disclosed to the applicant, the specialist (if any), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared as part of the application;
- have ensured that information containing all relevant facts in respect of the application
  was distributed or was made available to I&APs and that participation by I&APs was
  facilitated in such a manner that all I&APs were provided with a reasonable opportunity
  to participate and to provide comments;
- have ensured that the comments of all I&APs were considered, recorded and submitted to the Department in respect of the application;
- have ensured the inclusion of inputs and recommendations from the specialist reports in respect of the application, if specialist inputs and recommendations were produced;
- have kept a register of all I&APs that participated during the PPP; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of the EAP:	
Name of Company:	
Date:	
(	END
(	EINDEIND