ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

THE PROPOSED CONSTRUCTION OF A NEW DAM AND EXPANSION OF AN EXISTING DAM AND CULTIVATION AREAS, ON PORTION 3 OF FARM 781 (ERIN DE VIGNE), BOT RIVER, WESTERN CAPE.

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EXPERTISE: PAUL SLABBERT (Managing Member) graduated from the Potchefstroom University in 1995 with an honours degree B Art Et Scien. His passion for environmental, heritage & land-use planning with knowledge of associated management strategies enables him to facilitate with all role players and to implement workable policies. His experience in rural and urban conservation with the emphasis on environmental impact and management, focusing on sustainable development, enabled him to have various publications. He has hands-on expertise in heritage, conservation and recreation discipline with the emphasis on creating economic and employment opportunities. With sufficient practical experience in terms of the criteria of the Interim Certificate Board for Environmental Assessment Practitioners of South Africa (EAPASA) for registration, Paul was registered as an Environmental Assessment Practitioner. He is also a member of the International Association for Impact Assessment (IAIA), Corporate Member of the South African Planning Institute (SAPI) and accredited with the Association of Professional Heritage Practitioners – Western Cape (APHP).

Please refer Paul Slabbert's CV included **Annexure 1**.

PAUL SLABBERT

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SECTION 1: INTRODUCTION & OVERVIEW

1.1 BACKGROUND:

An Environmental Management Plan (EMPr) describes mitigation measures in detail, and is prescriptive, identifying specific individuals or organizations responsible for undertaking specific tasks to ensure that impacts on the environment are minimized during construction, operational and related activities. As an open – ended document, information gained during on-going monitoring of procedures on site could lead to changes in the recommendations and specifications of this document. This document forms an agreement between the Department of Environmental Affairs and Development Planning (DEA&DP) and the Applicant that the environmentally sensitive features on the site will be suitably protected during the lifespan of the activity through the implementation of the applicable mitigation measures.

This document is intended to guide and manage the construction, operation and maintenance phase of the agricultural related activities proposed on Portion 3 of Farm 781, Botriver, Western Cape (Theewaterskloof Local Municipality). Erin de Vigne is located approximately 3km south of Botriver in and occupies some 68.87 ha in area. It is bounded to the east by the Bot River and to the west by Karwyderskraal Road and the R43. The property is further bounded to the north and south by a mixture of agricultural and residential properties. The property is zoned Agriculture. Please refer to **Annexure 2: Locality Maps**.

1.2 ENVIRONMENTAL ATTRIBUTES:

VEGETATION:

According to the SA Vegetation Map the original natural vegetation in the study area is a mix of Western Ruens Shale Renosterveld (Critically Endangered), Ruens Silcrete Renosterveld (Endangered) and Elim Ferricrete Fynbos (Endangered) (prior to human disturbance). Based on the Botanists groundtruthing most of the site would probably be better mapped as Elim Ferricrete Fynbos.

Low Sensitivity Areas

About 65% of the study area is deemed to be so disturbed as to be of Low botanical sensitivity. These areas are either currently or previously cultivated, previously quarried or used for residential purposes, and support negligible natural vegetation and no plant Species of Conservation Concern.

Typical indigenous plant species in these areas are weedy, widespread species that are common in secondary habitat, such as *Athanasia trifurcata, Berkheya rigida, Senecio burchellii, Tribolium uniolae, Seriphium plumosum, Passerina corymbosa, Helichrysum patulum, H. indicum, Ehrharta calycina, Cliffortia ruscifolia* and *Dicerothamnus rhinocerotis*. Areas that are not developed tend to be heavily invaded by various alien invasive species, including *Acacia saligna, A. mearnsii, A. longifolia, Pinus* species and *Hakea gibbosa*.

Medium Sensitivity Areas

About 5% of the study area is deemed to be of Medium botanical sensitivity, and these areas have good rehabilitation potential. Both patches are presumably previously disturbed, but more than twenty years ago, as there has been quite substantial natural rehabilitation since then, such that there is now a low to moderate diversity of mostly indigenous plants in the area. There is a 5-10% cover of woody alien invasives, including *Acacia saligna, A. mearnsii* and *Hakea sericea*. Indigenous species noted include *Passerina corymbosa, Elytropappus rhinocerotis, Athanasia juncea, Aspalathus hispida, Oxalis pescaprae, Helichrysum petiolare, H. indicum, H. cymosum, Ficinia albicaulis, Ornithogalum thyrsoides, Micranthus*

junceus, Fuirena coerulescens, Cyanella hyacinthoides, Tenaxia stricta, Isolepis ludwigii, Struthiola laxa, Metalasia acutifolia, Wimmerella arabidea, Erica quadrangularis, Asparagus rubicundus and *Athanasia trifurcata*.

A single plant Species of Conservation Concern was recorded in this area, in the form of the highly cryptic *Restio anomalus*, which was found only on the seasonally damp clays below the current dam (eastern edge of site). This species is Redlisted as Endangered and is found only in the southern Cape coastal area from here towards Agulhas.

High Sensitivity Areas

About 14.5ha of the study area is of Very High botanical sensitivity (see Figure 1). Although some of this area has been lightly to moderately invaded by woody alien vegetation, notably *Hakea gibbosa, Acacia saligna* (Port Jackson), *Acacia mearnsii* (black wattle) and *Pinus* (pine), the rehabilitation potential is very good, and the underlying natural vegetation has generally not yet been compromised by aliens. Another important management related issue in these areas is lack of fire, as the vegetation should be fire-driven, but the vegetation would appear not to have burnt for at least 20 years and is thus thoroughly senescent. Soils in the area range from fairly deep clays in the north, to loamy sands with underlying ferricrete (koffieklip) layers in the south and southeast.

Indigenous plant diversity is high, and the following indigenous species were noted: *Phaenocoma prolifera, Lanaria lanata, Geochloa rufa, Wachendorfia paniculata, Ehrharta calycina, Indigofera heterophylla, Aspalathus acuminata, A. ciliaris, Dicerothamnus rhinocerotis, Nemesia barbata, Oxalis purpurea, Ornithogalum thyrsoides, Pelargonium myrrhifolium, Athanasia trifurcata, Senecio pubigerus, S. pterophorus, Osteospermum moniliferum, Protea repens, Erica quadrangularis, E. pilosiflora, Helichrysum petiolare, Anthospermum spathulatum, Searsia rosmarinifolia, Manulea cheiranthus, Euclea tomentosa, Asparagus rubicundus, Montinia caryophyllacea, Tenaxia stricta, Leucadendron salignum, Ficinia indica, F. secunda, Ehrharta rigida, Passerina corymbosa, Dimorphotheca pluvialis, Microloma tenuifolium, Cyanella hyacinthoides, Pelargonium triste, Restio capensis, R. macer, Ursinia anthemoides, Albuca cooperi, Diospyros glabra, Berkheya armata, Lobostemon fruticosus, Aristea spiralis, Arctotis acaulis, A. angustifolius, Staberoha distachyos, Senecio pinifolius, Stoebe capitata, Heliophila scoparia, Bulbinella triquetra, Diosma hirsuta, Gnidia juniperifolia, Athanasia juncea, Metalasia acutifolia, Salvia chameleagna, Tritoniopsis antholyza, Cliffortia juniperina, C. ruscifolia, Cliffortia ferricola, Erica imbricata, Willdenowia sp., Corymbium africanum, Serruria flagellifolia, Tetraria ustulata, Elegia vaginulata, E. squamosa, Otholobium rotundifolium, Leucospermum truncatulum, Aulax umbellata, Restio vimineus, Brunia laevis, Merciera leptoloba, Restio rigoratus, Micranthus junceus* and *Cyanella hyacinthoides.*

At least nine plant Species of Conservation Concern (SoCC) were recorded on site, all within the High sensitivity area, with a good chance that there are one or two other SoCC (not found during this survey; such as *Erica rhodopis* or *Erica ustulescens*, both known from within 500m of the site). This is a relatively high figure for a fairly small area and is indicative of the high conservation value of the better-quality habitat on site. A tenth SoCC (*Restio anomalus*; Endangered) was recorded only in the Medium sensitivity area.

FAUNAL:

The study area is comprised of seven broadly identified habitat types. The most intact habitats on the site are characterised by either dense, medium-high or low shrubland habitats, and encompass the southern margin and central to northern parts of the study area. The more degraded parts of the site

have been either cleared (through soil preparation or the planting of vineyards) in the western and central parts or consist of degraded areas where incidences of heavy alien tree infestations have been felled with little remaining natural vegetation (in the southern section). The eastern, north-eastern and north-western sections of the site harbour dense and impenetrable stands of alien invasive trees with little remaining natural vegetation within these thick stands. Finally, three artificial dams are located on the site (in the western, northern and eastern parts respectively), with only Dam 1 showing evidence of landscaped vegetation.

From the available distributional data and observational records (i.e., the desktop species list), the study area potentially harbours 193 avifaunal and 18 butterfly species. Among these, 11 avifaunal species constitute SCC which include the following:

1. Forest Buzzard (*Buteo trizonatus*) classified as "Near-Threatened",
2. Black Harrier (*Circus maurus*) classified as "Endangered",
3. African Marsh Harrier (*Circus ranivorus*) classified as "Least Concern",
4. Martial Eagle (*Polemaetus bellicosus*) classified as "Endangered",
5. Secretarybird (*Sagittarius serpentarius*) classified as "Endangered",
6. Maccoa Duck (*Oxyura maccoa*) classified as "Endangered",
7. Blue Crane (*Anthropoides paradiseus*) classified as "Vulnerable",
8. Southern Black Korhaan (*Afrotis afra*) classified as "Vulnerable", and
9. Denham's Bustard (*Neotis denhami*) classified as "Near-Threatened"
10. Ground Woodpecker (*Geocolaptes olivaceus*) classified as "Near-Threatened"
11. Cape Cormorant (*Phalacrocorax capensis*) classified as "Endangered" by the IUCN.

During the field survey, 11 mammal, five reptile, five amphibian, 55 avifaunal, six butterfly and four grasshopper species were recorded within the study area. While the majority of species are currently classified as "Least Concern" by the IUCN, the study area harbours confirmed subpopulations of the following five SCC:

1. The Montane Marsh Frog (*Poyntonia paludicola*) classified as "Near-Threatened",
2. Cape Flats Frog (*Microbatrachella capensis*) classified as "Critically Endangered",
3. Black Harrier (*Circus maurus*) classified as "Endangered",
4. Blue Crane (*Anthropoides paradiseus*) classified as "Vulnerable", and
5. Yellow-winged Agile Grasshopper (*Aneuryphymus montanus*) classified as "Endangered".

Along with the eight (five avifaunal and three invertebrate) SCC listed in the DFFE Screening Tool, the potential occurrence of nine other (two amphibian and seven avifaunal) SCC within the study area was therefore assessed, given their confirmed presence on the site, or through their presence in the desktop species lists. The presence of five SCC (two amphibians, two birds and one invertebrate) was confirmed one the site, with three avifaunal SCC further likely also utilizing the site as foraging habitat. All remaining SCC which have a "Low" or "Medium" probability of occurrence are not further considered, given their low likelihood of being present on the site.

Suitable habitats for the avifaunal and invertebrate SCC encompasses all shrubland habitats (Dense, Medium-high and Low shrubland) on the site, with Dam 1 currently harbouring subpopulations of the two amphibian SCC. Furthermore, Dam 2 and surrounds are a confirmed breeding and foraging habitat for the resident pair of Blue Cranes.

AQUATICS:

No freshwater ecosystems were found in the immediate vicinity of the proposed developments and thus they do not pose any fatal flaws from a construction perspective. From an operational perspective, the overflow of Dam 2 would dissipate into a recently cleared terrestrial area and is also deemed acceptable. The overflow of Dam 1 (or the new Dam) could however elicit an impact on the Bot River which is approximately 220 m away and 35 m downgradient respectively.

A comparison of diatom species between Dam 1 and the Bot River to infer the risk of dam spillage into the Bot River indicated no organic pollution in either, and that even though the dam was slightly more enriched compared to the Bot River (only due to stagnation and significantly less assimilation of nutrients by herbaceous vegetation), potential dam spillage is not envisaged to impact negatively on the Bot River, especially considering the good water quality of the dam.

Agricultural landuse has produced relatively bare cultivated areas that cause an increase in sediment laden runoff into freshwater ecosystems, as was evidenced in the study reach of the Bot River by the dense proliferation of *Phragmites australis* reeds. In and off channel impoundments decreased base flows and the timing, magnitude, frequency and duration of floods have largely altered the hydrological regime of the Bot River. There is also a significant establishment of alien vegetation within the catchment associated with riparian disturbances from agricultural pressure.

The application of the DWS GN509 Risk Assessment Matrix, as it relates to the National Water Act (Act 36 of 1998) (NWA), determined that all activities pertaining to the Alternative and Preferred development for the proposed Dam 1 expansion (or new dam) and downgradient cultivation area poses a low-risk significance of impact to the Bot River. This is on condition that pertinent mitigation measures such as construction in the dry season, staff and vehicles remaining outside of the delineated extent of the Bot River, sediment traps and an Alien and Invasive Plant (AIP) management plan being in place, else the risk significances for activities may be increased to moderate.

1.3 ACTIVITY DESCRIPTION:

The preferred project brief includes the following developments.

- Cultivation of a new irrigation area of approximately 10ha.
- The construction of a new dam located directly downstream of existing Dam 1 with a storage capacity of 2000 m^3. The dam will have a 4.9 m wall height and a total footprint area of 0.15 ha. This will include the excavation of a new open channel spillway on the embankment left flank.
- The expansion of Dam 2 to a 67 000 m^3 storage capacity with a new core and cut-off trench. The dam will have a 4.2 m wall height and a total footprint area of 2.5 ha. This will include a 250 mm dia HDPE outlet pipe Class PE100 PN10 ana a 315 mm dia HDPE overflow spillway pipe.

In terms of the preferred alternative a conservation area is proposed of ±14 hectares (20% of the property area) of high sensitivity vegetation. It is proposed that this area be set aside for conservation in perpetuity through a stewardship agreement or similar that can be facilitated by Cape Nature. The applicant is prepared to enter into such an agreement with Cape Nature for the proposed conservation area. Furthermore, the remaining natural vegetation areas, outside the conservation area, are considered sensitive largely from a faunal perspective and would need to undergo alien clearing and fire management. Please refer to Figure 1 below.

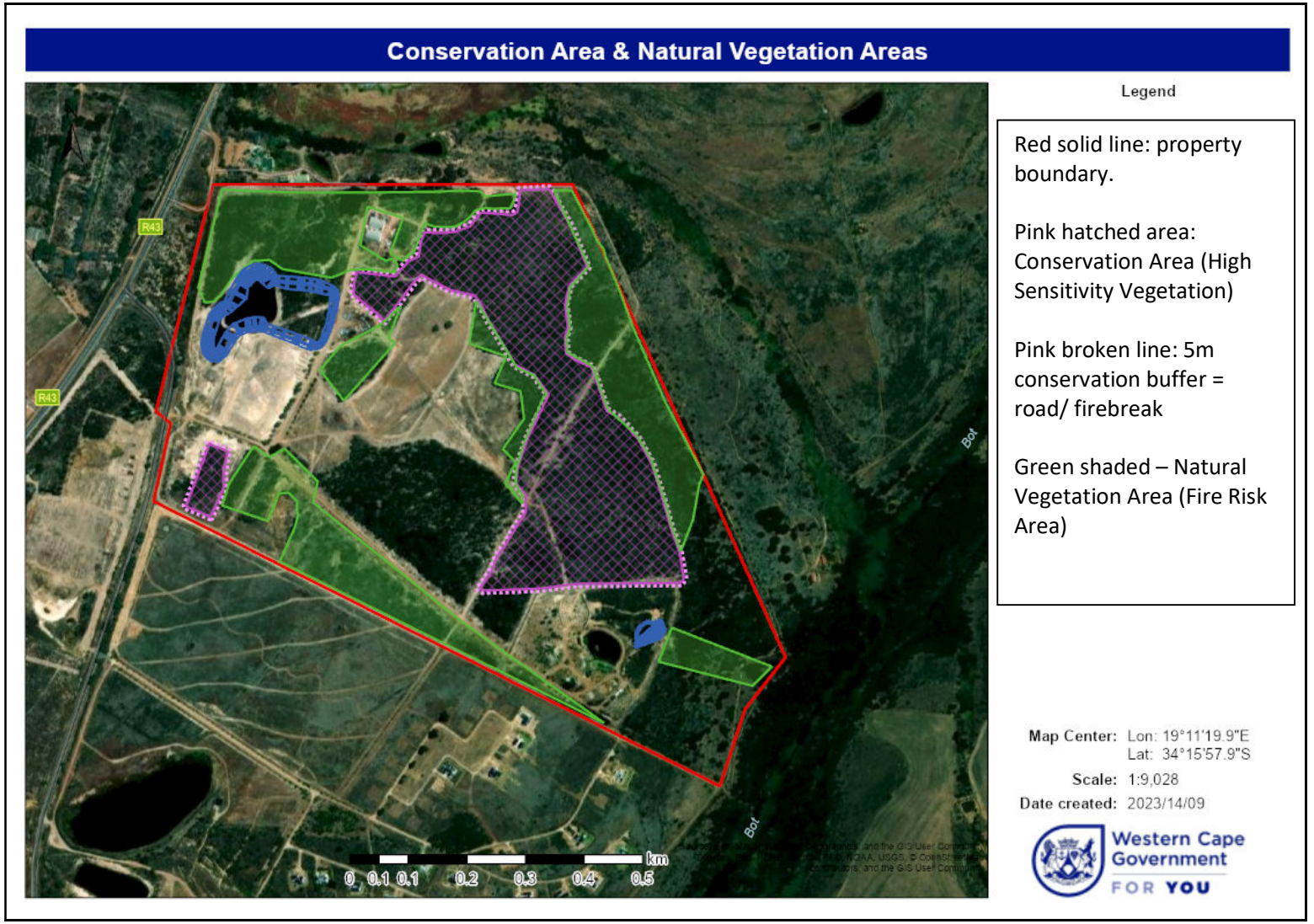

Figure 1: *The proposed conservation area (pink hatched area) versus the natural vegetation areas (green) which needs to be managed in terms of Fire Management and Alien Clearing. The remaining areas are either under cultivation, to be cultivated or consists of dams, dwellings and infrastructure. Take note of the proposed farm dam to be expanded (north) and the new dam (south-east) marked in blue.*

Please refer to **Annexure 3**, which includes a map showing the proposed activity components and associated infrastructure on the environmental sensitivities of the site including buffer areas.

1.4 ENVIRONMENTAL LEGISLATION:

1.4.1 National Environmental Management Act, 1998 (Act 107 of 1998), as amended ("NEMA")

NEMA makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the competent authority based on the findings of an Environmental Impact Assessment (EIA). NEMA is a national act, which is enforced by the Department of Environmental Affairs (DEA). In the Western Cape, these powers are delegated to the Department of Environmental Affairs & Development Planning (DEA&DP). According to the list of activities identified under the EIA Regulations, by Listing Notice 1 (GN. R. 327), Listing Notice 2 (GN. R. 325), and Listing Notice 3 (GN. R. 324), published in Gazette No. 40772 on the 07 April 2017, the following activities are triggered and require environmental authorisation:

Listing Notice 1 (BASIC ASSESSMENT):

27 - The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—

(i) the undertaking of a linear activity; or

(ii) maintenance purposes undertaken in accordance with a maintenance management plan.

Listing Notice 3 (BASIC ASSESSMENT):

12 - The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.

i. Western Cape

i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;

ii. Within critical biodiversity areas identified in bioregional plans;

iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas;

iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or

v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister.

1.4.2 National Heritage Resources Act, 1999 (Act No. 25 of 1999) ("NHRA")

The NHRA, provides for the management of national heritage resources, to set norms and maintain national standards for the management of heritage resources in South Africa, and to protect heritage resources of national significance, so that heritage resources may be bequeathed to future generations.

The proposed activity will not impact on any heritage resources and therefore no further action is required under Section 38 of the NHRA. However, should any heritage resources, including evidence of graves and human burials, archaeological material and paleontological material be discovered during

the execution of the activities above, all works must be stopped immediately, and Heritage Western Cape must be notified without delay.

1.4.3 National Water Act, 1998 (Act No. 36 of 1998) ("NWA")

The NWA is the primary statute providing the legal basis for water management in South Africa and has to ensure ecological integrity, economic growth and social equity when managing and using water. The fundamental objective of the National Water Act (Act 36 of 1998) is to ensure the protection of the aquatic ecosystems of South Africa's water resources. The NWA includes provisions requiring that a water use license be issued by the Department of Water & Sanitation (DWS) before a landowner engages in any activity defined as a water use in terms of the NWA (e.g. taking of water from a resource (Section 21 a); Impact on freshwater resources (Section 21c & i); Storing of water (Section 21b)).

1.4.4 Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) ("CARA")

The objective of this Act is to provide for the conservation of the natural agricultural resources by the maintenance of the production potential of land, by the combating and prevention of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the combating of weeds and invader plants.

The National Agriculture Department is responsible for implementing CARA, which stipulates, among other things, that:

- You can't cultivate virgin soil without written permission.
- You can't cultivate any land with a slope of more than 12% without written permission.
- You must protect cultivated land effectively against water and wind erosion.
- The veld on the farm must be effectively protected against deterioration and destruction.

1.5 THE EMPr DOCUMENT

An Environmental Management Plan (EMPr) can be defined as "*an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented; and that the positive benefits of the projects are enhanced*". EMPr's are therefore important tools for ensuring that the management actions arising from EIA processes are clearly defined and implemented through all phases of the project life cycle.

The EMPr forms part of the contract identifying and specifying the procedures to be followed by the Applicant in order to eliminate or reduce adverse impacts during the construction and operational phase. Should the owner or employee persistently fail to observe provisions of the EMPr, the Environmental Control Officer (ECO) should notify the relevant authority for a compliance audit, and possibly the prosecution of an individual or the removal of the individual from site.

The Environmental Contract ascribes legal status to the EMPr and any subsequent amendments thereto. The EMPr includes all relevant documentation within this report and/or referred to within it. The National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), and the respective Regulations are pertinent to this development. All activities on site must adhere and comply with the provisions of these Acts.

In general, the EMPr can consist of the following phases: ***planning & design***; ***pre-construction activities***; ***construction activities***; ***rehabilitation &/or decommissioning***; and lastly ***operational activities***. However, the need to include all the above phases is dependent on the scale and scope of each

individual project. For the purposes of this application the following three categories are largely defined:

- **Planning, Design & Pre-construction Phase**: This section relates to the demarcating of the proposed activity footprint areas versus conservation and no-go areas and the formalisation of the Stewardship Agreement or similar with Cape Nature.
- **Construction Phase**: This section relates to the construction of a dam, the expansion of an existing dam and the clearing of the areas proposed for cultivation.
- **Operational Phase**: This section is intended to guide the operation and maintenance aspects associated with the infrastructure relating to the proposed cultivation areas and dams in line with relevant legislative requirements and the recommendations made by the specialist consultant (s).

Please note: The first two phases can overlap and are generally also referred to collectively as the CEMP (Construction Environmental Management Plan). The final phase can also be referred to as the OEMP (Operation Environmental Management Plan).

The EMPr will be reviewed by the ECO on an ongoing basis. Based on observations during site inspections and issues raised at site meetings, the ECO will determine whether any procedures require modification to improve the efficiency and applicability of the EMPr on site. Any such changes or updates will be registered in the ECO's monthly record, as well as being included as an annexure to this document. Annexures of this nature must be distributed to all relevant parties on site.

The following content is required in the EMPr in accordance with Appendix 4 of the EIA Regulations:

a) details of–
  (i) the EAP who prepared the ; and
  (ii) the expertise of that EAP to prepare an , including a curriculum vitae;
b) a detailed description of the aspects of the activity that are covered by and as identified by the project description;
c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;
d) a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including–
  (i) planning and design;
  (ii) pre-construction activities;
  (iii) construction activities;
  (iv) rehabilitation of the environment after construction and where applicable post closure;&
  (v) where relevant, operation activities;
e) a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to —
  (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
  (i) comply with any prescribed environmental management standards or practices;
  (ii) comply with any applicable provisions of the Act regarding closure, where applicable; &

(iii) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;

f) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);

g) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);

h) an indication of the persons who will be responsible for the implementation of the impact management actions;

i) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;

j) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);

k) a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;

l) an environmental awareness plan describing the manner in which—

(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and

(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and

m) any specific information that may be required by the competent authority.

1.6 KEY TERMS AND ABBREVIATIONS

a) **Applicant**– The person or legal entity that has made application to the competent authority for environmental authorizations and who will have the overall responsibility to adhere to the relevant legislation and comply with the environmental authorization.

b) **Contractor/ Farm Manager –**

(i) the main or specialised contractors as engaged by the Applicant from time to time for the execution of the works, including all sub-contractors appointed by the main contractor of his own volition for the execution of parts of the works.

(ii) any other contractor from time to time engaged by the Applicant directly in connection with any part of the works which is not a nominated subcontractor or a subcontractor to the main contractor.

(iii) the main or specialised operator or farmer as engaged by the Applicant from time to time for the execution of the farm operation.

(iv) Considering the ploughing activity its highly likely that the Applicant will also be the contractor

c) **Conservation Easement** - Essentially a Conservation Easement equates to a Conservation Servitude, which is registered either over the whole property, or parts thereof, in favour of a particular NGO. This Easement "runs with the land," meaning it is applicable to both present and future owners of the land.

d) **Conservation Stewardship** - CapeNature works in partnership with private landowners, communities, agricultural businesses and other stakeholders to ensure biodiversity survives in a changing climate outside protected areas with tangible benefits to the local communities and

shareholders. As most of the province's biodiversity is in private ownership, CapeNature initiated the Biodiversity Stewardship programme in 2003. This programme facilitates conservation on privately owned land by setting up agreements between the landowners and CapeNature. Landowners undertake to protect and manage their properties or parts thereof according to sound conservation management principles. CapeNature undertakes to support this management by providing advice, management plans and assistance in planning invasive alien species clearing and fire management schedules. It also allows for the private landowner to benefit more from the biodiversity through ecologically sensitive income-generating avenues such as eco-tourism or green labelling of agricultural produce (e.g. Business and Biodiversity Initiatives).

e) **Council** – the local municipal authority that operates or is responsible in said area.

f) **Days** – the days of the week excluding Sundays and legal public holidays.

g) **Environmental Authorization** also referred to as the ROD is the Record of Decision as issued by the Provincial Government Department arising from the application for Environmental Authorization through either a basic assessment or full EIA process.

h) **Environmental Management Programme (EMPr)** – this document as amended or varied from time to time, to control the implementation of the works on the site in such a way as to ensure that they do not result in undue or reasonably adverse impacts on the environment.

i) **Environmental Control Officer (ECO)** – a suitably qualified individual or site manager to be appointed by the Applicant, and his successor/s should he cease to hold such appointment for any reason, to oversee the implementation of the EMPr and environmental agreement until the completion of works on the site.

j) **Land Surveyor - (LS)**

k) **Resident Engineer (RE) –** the representative Engineer or specialist from the department of Agriculture present on site for that part of the works dealing with the technical cultivation actions and extent.

l) **Site Manager –** the employee of the main contractor or Applicant responsible for the day-to-day control of all activities and operation on site.

m) **Works –** the construction operations, all related and incidental works such as, but not limited to, site works, fencing, earthworks, roads, and ploughing of the authorised area.

SECTION 2: ENVIRONMENTAL IMPACTS

2.1 IMPACTS:

BOTANICAL:

Construction Phase Impacts:
The primary botanical impact of the Preferred Alternative would be permanent loss of Low (about 10ha) sensitivity natural vegetation in the development footprints (prior to and after mitigation). Botanical significance of this loss is Low negative before and after mitigation. The Preferred Alternative is not likely to result in the loss of any plant Species of Conservation Concern on site. The Preferred Alternative will result in loss of about 10ha mapped as CBA2 in terms of the CapeNature Spatial Biodiversity Plan. These are deemed to be important, but degraded areas of habitat.

The primary botanical impact of Alternative 1 would be permanent loss of about 1.6ha of Very High sensitivity vegetation, loss of about 0.7ha of Medium sensitivity vegetation, and loss of about 4.7ha of Low sensitivity natural vegetation in the development footprints (prior to and after mitigation). Botanical significance of this loss is High negative before and after mitigation. Alternative 1 is likely to result in the loss of at least 6 different plant Species of Conservation Concern on site. Botanical significance of this loss is High negative before and after mitigation. Alternative 1 will result in loss of about 2.7ha mapped as CBA2, about 0.7ha mapped as CBA1, and about 0.3ha mapped as ESA2 in terms of the CapeNature Spatial Biodiversity Plan. The rest of the proposed development area is unmapped in this plan.

The proposed dam changes will have no impact on any significant natural vegetation as they will occur entirely in Low sensitivity areas.

Operational Phase Impacts:
Operational phase impacts will take effect as soon as the natural or partly natural vegetation on the site is lost, and will persist in perpetuity, or as long as the area is not rehabilitated. Operational phase impacts include loss of current levels ecological connectivity across the overall property, and associated habitat fragmentation. The new development is likely to result in further fire suppression of the adjacent natural areas, with associated negative ecological impacts, and may result in alien Argentine ant introduction, with associated negative ecological impacts on seed dispersal.

For both alternatives there will be some habitat fragmentation and associated loss of ecological connectivity in the study area as a result of the proposed cultivation, but ecological connectivity will remain across some of the adjacent area. Much of the vegetation on the greater property has been lost to other developments over a long period and the assessed development is merely another element of the ongoing loss of vegetation on this site. The habitat fragmentation impact is likely to be Low negative before and after mitigation, for both alternatives.

Alien invasive Argentine ants (*Linepithema humile*) impact negatively on the adjacent natural vegetation. It is very difficult to accurately assess the impact, as this would require detailed pre and post construction surveys of the vegetation and ant fauna over some years, but it is well known that these alien ants are strongly associated with human residences, stores, dumps, cultivation, etc, and forage up to 50m away from their nests (in the aforementioned areas). These ants are almost certainly already present on site given the existing disturbance, and the likely ecological impact of the proposed

development in terms of these ants in the surrounding vegetation is Low negative, and mitigation is virtually impossible, other than limiting disturbance and built footprints.

The disruption of natural fire regimes in the natural veld surrounding the developments is a very likely impact, as further deliberate fire-suppression is likely in the vicinity of the development, and is already occurring, with no fire for at least the last 15 years. On balance the increased likelihood of longer fire return intervals (versus what would occur naturally in the area), already way beyond what is ecologically optimal, is likely to have a Medium negative botanical impact at a local scale, before mitigation, and Neutral after mitigation (but likelihood of that is uncertain and possibly low).

The two development alternatives are likely to have overall similar operational phase negative botanical impacts (Medium negative before mitigation, Low negative after mitigation), but in theory both could have lower impacts than the No Go alternative which would be a result of the required mitigation for any authorised development (ecological management of remaining Very High sensitivity vegetation), which should thus be mandatory if either alternative is authorised.

No significant positive ecological impacts of the proposed development are likely during the operational phase, other than those arising from proper implementation of the required ecological management plan (EMP) for the natural Open Space areas (the approx. 14ha of High sensitivity vegetation). The positive impacts would arise from ongoing alien invasive vegetation management and appropriate fire management/simulation of these areas. These positive impacts could be of Medium positive significance and are unlikely to come about without the proposed development (aka No-Go scenario).

FAUNAL

Under Alternative 1 the majority of the agricultural node intersects an area of "Very low" SEI and is located outside of the SCC core habitats and -buffers, but part of the footprint intersects an area of "Very high" SEI and is located within the core habitat area for the avifaunal and invertebrate SCC. Placement of this part of the agricultural will lead to the destruction of SCC habitat, especially during the construction phase when vegetation clearing and soil preparation will be performed. Taken together, development under Alternative 1 will have a number of short to medium term negative impacts on the receiving environment during the construction phase but impacts during the operational phase will likely be limited.

Under Alternative 2 the larger part of the agricultural nodes intersects with areas of “Very low” SEI and are located outside of core SCC habitats and -buffers, with only a small and extralimital part of the south-central agricultural node intersecting with a habitat buffering as “Very high” SEI and located with the buffer zone for the invertebrate SCC. Given the small and extralimital nature of these intersected habitat areas, development here should not drastically affect ecosystem processes in adjacent habitats.

Furthermore, the new dam footprint at Dam 1 is spatially separated from the existing dam by the recommended buffer distance of 30m, and construction of the new dam embankment intersects with an area of “Very low” SEI. The placement of the new dam footprint is unlikely to impact on the resident amphibian SCC subpopulations and will further increase suitable habitat for these species.

The new Dam 2 footprint intersects an area of “Very low” SEI but overlaps with the core habitat for the resident pair of Blue Cranes. This pair does not appear to be disturbed by current levels of daily activity, noise and vibration by machinery and people in the adjacent vineyard. Should Dam 2 be enlarged (deepened and the dam walls to be raised), it is likely that the resident pair will temporarily vacate the

direct area surrounding the dam but should remain within the study area and return to this part of the site once disturbance has ceased. Even so, any enlargement of this dam should consider a monitoring program to track the activity and movement of these birds (this may be performed by an Environmental Control Officer without requiring specialist input) and should be performed out of the breeding season (August of the year which construction is started to April of the following year).

Taken together, development under Alternative 2 is likely to have fewer impacts on the receiving environment and will have an acceptable outcome from a faunal biodiversity perspective (especially through creating further habitat for amphibian SCC).

FRESHWATER ECOSYSTEMS

Construction Phase:

1. Vehicular movement (transportation of construction materials and access to site)
    - Transportation of construction materials can result in disturbances to soil, and increased risk of sedimentation to downstream Bot River; and
    - Soil and stormwater contamination from oils and hydrocarbons originating from construction vehicles that may be flushed into the Bot River.
2. Removal of vegetation and disturbance to soil associated with the proposed dam expansion areas and proposed vineyard
    - Sediment transported as runoff into the downgradient Bot River;
    - Exposure of soil, leading to increased runoff, and erosion, and thus increased sedimentation of the Bot River; and
    - Proliferation of alien vegetation as a result of disturbances.
3. Construction activities related to the expansion of the dams and proposed vineyard
    - Runoff from stockpiled material or sediment laden runoff from the dam construction footprint and cleared vineyard areas could enter the downstream Bot River and increase its sediment load.
4. Rehabilitation of the proposed dams and vineyard areas
    - Alien Invasive Plant (AIP) proliferation;
    - New erosion and incision due to the expanded dam walls; and
    - Litter and waste removal.

Operational Phase:

1. Overflow of dam 1 once full capacity has been reached:
    - Terrestrial vegetation encroachment downstream of the dam; and
    - Potential overtopping of the dam and the flushing of sediment laden runoff into the downgradient Bot River.
2. Future maintenance of the dams:
    - Soil compaction and disturbance around the dam;
    - Staff operation of the vineyards;
    - Potential sedimentation of downstream Bot River; and
    - Vegetation degradation and alien invasive proliferation.

SOCIO-ECONOMIC

Socio-economic impacts relate to job creation and the stimulation of the local economy, during the construction phase (short term) as well as the operational phase (long term). Furthermore, the upliftment of the local labour force through specialized training would provide them with a new skill set.

Through increased and diversified agricultural production the long-term sustainability of the farm and its existing (and future) employees can be ensured.

GENERAL IMPACTS

DUST

The contractor shall take appropriate measures, to the satisfaction of the ECO to minimise the generation of dust and mud on the site, by supplying suitable stabilisation (such as mulch or straw stabilisation) for all cleared ground. The watering of exposed working areas may be considered for the control of dust during windy conditions, although great care must be taken that this does not result in excessive run- off, and erosive action. Furthermore, no potable water may be used in this regard.

NOISE

Noise impacts should be limited due to the rural nature of the surrounding area and the nature of the existing activities being undertaken on site as well as the type of activities being proposed.

2.2 IMPACT MITIGATION:

BOTANICAL:

1. The approved new cultivation footprints on site must be surveyed, demarcated and fenced off prior to any site development or vegetation loss.
2. No dumping of material or any form of disturbance may take place within the Very High sensitivity areas.
3. The two areas of Very High botanical sensitivity (Figure 1, totalling about 14ha) must be buffered from any new development or soil disturbance or cultivation by at least 5m. It is recommended that the 5m buffer be either a dirt road (currently the case for about 40% of the area) or a brushcut firebreak, as this will facilitate fire and alien vegetation management in the conservation area.
4. Any firebreaks around the conservation area should be cut using hand-held brush cutters, and this should be done in November every year. No soil disturbance may be caused in these areas.
5. No vehicles should be allowed into the Very High sensitivity areas, except on existing tracks (evident on the satellite imagery from April 2021).
6. The Very High sensitivity areas must be formally managed by the landowner as a conservation area, according to requirements set out in an EMP.
7. A key element of the EMP will be alien invasive vegetation management within the 14ha Very High sensitivity area, which must be done according to the guidelines in **Appendix 6**. The efficacy of this work must be audited by the specialist botanist or CapeNature within two years of any project authorisation, with a target of zero invasive alien vegetation on site at that stage. The specialist must be able to make binding management recommendations for this area if this target is not met.
8. The natural vegetation in the conservation area (14ha) must be burnt once every 10 - 12 years, and thus a fire management plan must be incorporated into the EMP. As the vegetation is currently well overdue for a burn the first management burn must be undertaken within two years of any authorisation. The landowner should enlist the help of the local FPA and should get professional help to undertake the management burn, which should be done in late summer (February or March) for optimal ecological results, and only once the area is alien vegetation free.
9. No planting of any species should be undertaken in the Very High sensitivity areas.

FRESHWATER:

CONSTRUCTION PHASE:

10. The riparian area of the Bot River which is 35 m downgradient of the lower boundary of the proposed vineyard must be considered a no-go area for vehicles and staff and vehicle movement must be limited to existing dirt roads as far as operationally possible;
11. Contractor laydown areas and material storage facilities to remain 32 m away from the delineated extent of the Bot River and vehicle re-fuelling must take place off site;
12. Dedicated parking area for construction vehicles must be located away from sensitive areas, and drip trays must be located beneath any leaking equipment and lubricant/fuel absorbing media (moss/peat type products) within drip trays must be used to contain spilled material;
13. All cleared vegetation must be stockpiled in a designated area, outside of the delineated extent of the Bot River and after clearing, all material must be disposed of at a registered garden refuse site and may not be burned or mulched on site;
14. Topsoil must be stockpiled separately from all other materials, for use to cover the new dam wall for revegetation. Soil stockpiles may not be contaminated, and it must cover as minimal a surface area as possible, however the stockpiles may not exceed 2 m in height;
15. All exposed soils must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geotextile or hessian sheeting) to prevent dust generation that could potentially result in vegetation smothering and sedimentation of the Bot River riparian zone and the terrestrial fynbos vegetation surrounding the vineyard. Airborne dust must be reduced at construction sites through:
    - Damping dust generation areas with freshwater (not in sufficient quantities to generate runoff);
    - Use of geotextile or brush barrier fences; and
    - Covering stockpiles with plastic sheets.
16. Edge effects of activities including erosion and alien/ weed control need to be strictly managed in these areas.
17. It is imperative that all construction works be undertaken during the dry, summer months when sedimentation and pollutants are unlikely to be mobilised by surface runoff, avoiding impacts to the Bot River downgradient;
18. It is assumed that material required for the dam wall expansion will be excavated from the dam basin or the surrounding terrestrial habitat. Material quarries should be inert and unable to leach toxicants to the receiving environment prior to commencement of works;
19. It is assumed that the dam walls will be earth and no hard infrastructure (such as gabion baskets will be required);
20. The material excavated from the dam basin intended for use in the construction of the dam wall must be stockpiled in the area associated with the dam's proposed new inundated full supply level footprint (west of the dam wall). This will limit the sedimentation of the downgradient Bot River. These stockpiles may not exceed 2 m in height and must be covered with a suitable geotextile if the stockpiles will be on site for longer than 30 days;
21. All materials used to construct the dam wall should not generate toxic leachates or lead to significant changes in pH or dissolved salt concentrations; especially considering that outflow of the dam drains to the Bot River;
22. No plastic lining may be used as part of the dam construction as this has various ecological impacts, with special mention of impacts to faunal assemblages;
23. Rocks must be placed at any outlet pipes (downgradient of the dam wall) to be installed within the dam wall and indigenous vegetation established to bind the soil of the bed and to prevent erosion. This will also promote diffuse flow and decrease the velocity of water released downgradient

towards the Bot River, assuming that this dam will still occasionally release overflows to the Bot River after the vineyard has been developed;

24. It is recommended that any proposed spillways be lined at the base with energy dissipating structures (such as Armorflex) to reduce the velocity of water inflow into the downgradient areas and prevent erosion thereof during high flow events;
25. The slope between the (if one is proposed - detailed designs were not available at the time this report was compiled) spillway and the bottom of the dam wall must be gradual, to prevent a drop forming at the edge of the spillway which will result in incision and embankment erosion;
26. The release of water into the dam should be done in such a way that water does not drop from a significant height into the dam as this will cause erosion, gully formation and turbid water within the dam;
27. The dam walls must be revegetated after the construction activities, to stabilize the soils;
28. Sediment traps must be installed downgradient of the proposed vineyard for its full length to prevent any excess sediments arising from the construction works being transported into the Bot River and must be regularly cleared by hand.

29. Should concrete be required:

No mixed concrete may be deposited outside of the designated construction footprint. The following mitigation measures must be adhered to:

- Fresh concrete and cement mortar must preferably be mixed in the laydown area/construction camp associated with the proposed dam 1 expansion area, may not be mixed on bare soil, and must be contained within a lined, bound or bunded portable mixer. Consideration must be given to the use of ready mix concrete;
- A batter board or other suitable platform/mixing tray is to be provided onto which any mixed concrete can be deposited whilst it awaits placing;
- A washout area must be designated in area that will not be subjected to runoff downgradient and wash water must be treated on -site or discharged to a suitable sanitation system; wash water is not permitted to be discharge into freshwater ecosystems;
- Empty cement bags must be disposed of through the hazardous substance waste stream;
- Concrete spillage outside of the demarcated area must be promptly removed and taken to a suitably licensed waste disposal site.

30. An alien vegetation monitoring programme should be developed to monitor any further growth of potential alien vegetation surrounding the dam and cleared vineyard area (with specific mention of *Eucalyptus spp, Acacia mearnsii*, and *Pinus pinaster* to name a few). This will need to be monitored until all-natural vegetation has re-established surrounding the dam and vineyard area;
31. Any erosion or incision observed as a result of the newly expanded dam wall should be addressed using the following methods to prevent sedimentation of the dams to retain their maximum supply level:
    - Re-sloping – side walls of the dam should be re-sloped to a 3:1 ratio to prevent further gully formation during the operation of the dams.
    - Brush layering is when branches are placed perpendicular to the slope contour. This method is effective for earth reinforcement and mass stability. Brush layers break up the slope length, preventing surface erosion, and reinforce the soil with branch stems and roots, providing resistance to sliding or shear displacement. Brush layers also trap debris, aid infiltration on dry slopes, dry excessively wet sites, and mitigate slope seepage by acting as horizontal drains. Brush layers facilitate vegetation establishment by providing a stable slope and a favourable microclimate for growth of vegetation.

- Live gully repair is a technique that is similar to branch packing but is used to repair rills and gullies. Live gully repairs offer immediate reinforcement and reduce the velocity of concentrated flows. They also provide a filter barrier that reduces further rill and gully erosion and must be used where gully erosion is taking place on the project footprint.

32. All dam walls must be revegetated after the construction activities to stabilize soil and prevent erosion of the dam wall. A graminoid seed mixture can be used for this purpose, as it will allow for quick establishment.

OPERATIONAL PHASE:

33. The dams, spillways, and any outlet pipes should regularly be inspected for erosion, especially after heavy rainfall events when overflow from the dams is expected and the flow velocity is increased. If erosion is noted, this should be rectified, preferably through the reinstatement of vegetation in the eroded areas. If erosion is pronounced, erosion control devices such as reno mattresses should be considered, in consultation with a freshwater specialist;
34. AIPs must be managed, and annual removal/chemical treatment must be undertaken. An AIP control plan must be developed for the freshwater ecosystems within the proposed development area for at least 3 years post construction, thereafter refocusing on problem alien reestablishment areas;
35. A small drainage furrow should be constructed downgradient of the vineyard, but at least 32 m outside of the delineated extent of the Bot River to capture surface runoff during irrigation. This will prevent potentially sediment laden surface water from smothering the riparian zone of the Bot River.
36. Only existing roadways should be utilised during maintenance and monitoring activities to avoid indiscriminate movement of vehicles;
37. The dam will need to be desilted intermittently to ensure the storage capacity is maintained. During desilting, all silt within the dam basins should immediately be removed from site to prevent sedimentation of the Bot River downgradient during outflow events;
38. Additionally, during desilting a temporary silt trap should be installed at the spillway. This should be emptied on a regular basis during the desilting process to prevent any excess silt being washed down into the Bot River; and
39. Should repair be required to address seepage, mitigations as per construction activities above are applicable depending upon the location and severity of the seepage/structure failure.

FAUNAL:

CONSTRUCTION PHASE:

40. It is recommended that development footprints be kept at a minimum, inclusive of exclusion buffers, and avoid the degradation or disturbance of surrounding natural habitats on the site.
41. Every effort should be made to save and relocate any mammal, reptile, amphibian, bird, or invertebrate that cannot flee of its own accord, encountered during site preparation (i.e., to avoid and minimise the direct mortality of faunal species). These animals should be relocated to a suitable habitat area immediately outside the project footprint (in the adjoining natural habitats of the site), but under no circumstance to an area further away.

CONSTRUCTION AND OPERATIONAL PHASE:

42. It is recommended that pollution of the development footprints, as well as any areas adjacent to these footprints, be monitored and avoided during the construction phase. During the operational phase of the development, herbicides, fungicides or fertilizers should be applied in such a manner as to produce minimal risk of wind drift. If pest management is to proceed, this should be done under

an integrated pest management programme where the use of chemicals is considered as a last option, similarly taking cognisance of potential wind drift.

43. It is recommended that development footprints be kept at a minimum, inclusive of exclusion buffers, and avoid the degradation or disturbance of surrounding natural habitats on the site.
44. In addition, no livestock should be kept on the property as this may cause degradation of the remaining natural vegetation.
45. All burning of vegetation on the site should be done under a controlled and integrated fire management scheme. No open fires should be allowed near the natural vegetation on the site, and a fire management scheme should be put in place to contain any uncontrolled veldfires.
46. Alien vegetation has already been cleared to a large extent within the study area, thereby greatly improving habitat quality. A large amount of alien invasive trees still remain, which will similarly need to be cleared. In addition, any recruitment from alien vegetation seedbanks would need to be addressed, and these newly growing trees should be removed.
47. All waterflow to the existing three artificial dams is facilitated through an underground HDPE pipeline, and drainage impoundment is not considered as an impact for the current development. The most notable potential aquatic feature on the site pertains to Dam 1 where two amphibian SCC were recorded. It is therefore recommended that water usage from this dam be carefully managed to not cause excessive drying of this habitat.
48. No illegal hunting (either through illegal methods or of rare or threatened species) should be allowed on the site.

OPERATIONAL PHASE:

49. If pest management is to proceed, this should be done under an integrated pest management programme where the use of chemicals is considered as a last option, and where these chemicals are placed in such a way where it does not lead to the accidental poisoning of non-target species.

Refer to Annexure 3: Environmental Sensitivity Map.

SECTION 3: KEY STAKEHOLDERS

3.1 The Competent or Lead Authority

DEA&DP is the competent or lead authority in this instance. This Directorate has overall responsibility for ensuring that the Applicant complies with the conditions of its EA as well as this EMPr once approved. During the construction (and operational phases) of the EMPr the lead authority will have the following role to play:

- The authorities may perform random controls to check compliance.
- Review Monitoring and Audit reports, if required.
- Whenever necessary, the authorities are to aid in understanding and meeting the specified requirements.
- Recommend suitable corrective measures are undertaken by the Applicant where non-compliance has been reported.
- Enforcing compliance by the Applicant.

3.2 The Applicant

The Holder of the EA (e.g. the Applicant [also the landowner in this case]) is accountable for the potential impacts of the activities that are undertaken and is responsible for managing these impacts, both in the construction and operational phases. The Applicant therefore has overall and total environmental responsibility to ensure that the EMPr is implemented and that both the EMPr and the EA are complied with at all times. The Applicant is also responsible for ensuring that all other environmental related legislation is complied with (i.e. CARA, NWA). The Applicant is responsible for the development and implementation of the conditions of the EA in terms of the planning and design of the development and construction thereof.

Amongst the general responsibilities above the Applicant is also responsible for:

- Appointing an ECO, and where required an environmental auditor.
- Take the necessary action in terms of non-compliances.
- Ensuring that all of the Applicant's, staff, representatives, contractors, consultants and any other agent operating under the employ of the Applicant comply with the EA.
- Considering the ECO's observations and recommendations and acting where required.

3.3 Environmental Control Officer (ECO)

A suitably qualified individual will be designated to fulfil the role of Environmental Control Officer, to ensure and oversee the implementation of the EMPr in its entirety on site during construction and earthworks on the entire site.

The role of the ECO is essentially seen as an interactive one which involves site visits approximately once a month at the start of construction. Site visits may need to be less frequently during certain stages of the development, depending on the sensitivity of the area in which construction is taking place.

The responsibilities of the ECO or designated person during the construction phase of the project will include:

- To environmentally educate and raise the awareness of the Contractors and their staff as to the sensitivity of the site and to target responsible individuals as key players for environmental education, to facilitate the spread of the correct environmental attitude during the contract work.

- To review method statements and to determine the most environmentally sensitive options of modus operandi for the development tasks.
- To oversee the implementation of environmental procedures set out in this document.
- To attend site contractor's and report on environmental issues.
- To maintain an open and direct channel of communication with the RE, who will be immediately aware of the actions of the ECO at all times, especially as they relate to implementation policy and corrective actions as detailed in this document.
- To take immediate action on site where clearly defined no-go areas are violated, or in danger of being violated.
- To keep an up-to-date record of works on site, as they relate environmental issues.
- To be contactable by the public regarding matters of environmental concern as they relate to the development.

3.4 Contractor / Farm Manager

The Contractor/ Farm Manager (as per definition this can be the Applicant as well) will be required, where specified, to provide Method Statements setting out in detail how the management actions contained in an EMPr will be implemented in order to ensure that the environmental management objectives are achieved.

The responsibilities will include:

- Demarcating the no-go areas within the vicinity of the proposed activities through the appropriate fencing as discussed and agreed upon with the ECO.
- Complete Site Inspection Forms on a regular basis (eg. weekly).
- Provide inputs to the regular (eg. monthly) environment report to be prepared by the ECO.
- Liaise with the 'construction team' on issues related to implementation of, and compliance with, the EMPr.
- To oversee the implementation of environmental procedures set out in this document.
- Compilation of a maintenance routine, with tasks and budget and timing factors.
- Compilation of a monitoring plan.

3.5 Conservation Easement or Conservation Stewardship (NGO)

Cape Nature (CN) is responsible for the Conservation Area once a Conservation Easement is formalised. CN will therefore be responsible for compiling the Conservation Management Plan (CMP). The CMP is, however, a collective effort between the Applicant and the CN. The CN responsibilities will include:

- Drawing up a draft CMP based on the ecological surveys with recommended management objectives.
- Liaise with the Applicant and make any changes to the CMP based on the Applicants recommendations and concerns.
- Develop an Annual Plan of Operations (APO) that will prioritise specific management interventions required and endeavor to secure funding from external donors to secure them.

In terms of a Conservation Stewardship, CapeNature initiated the Biodiversity Stewardship programme which facilitates conservation on privately owned land by setting up agreements between the landowners and CapeNature. Landowners undertake to protect and manage their properties or parts thereof according to sound conservation management principles. CapeNature undertakes to support this management by providing advice, management plans and assistance in planning invasive alien species clearing and fire management schedules. It also allows for the private landowner to benefit

more from the biodiversity through ecologically sensitive income-generating avenues such as eco-tourism or green labelling of agricultural produce (e.g. Business and Biodiversity Initiatives).

The type of conservation stewardship and the level of Cape Natures involvement will need to be discussed between Cape Nature and the Landowner/ Applicant. However, both parties have indicated their willingness to enter into discussions.

3.6 The Environmental Auditor

Where required by the EA an environmental auditor will be appointed by the Applicant. The auditor will be an independent environmental consultant. The auditor will carry out a compliance audit based on the EA and of all of the activities being undertaken.

SECTION 4: IMPACT MANAGEMENT OUTCOMES AND ACTIONS

This section includes a description of proposed impact management actions, identifying the manner in which the impact management outcomes will be achieved and, where applicable, include actions to avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation & comply with any prescribed environmental management standards or practices.

4.1 Pre-Construction Management Plan

The pre-construction or planning management plan is to be used as a guide during the planning, design and detailing of the development activity.

4.1.1 General Requirements:

A. Contractual Communication Procedures on Site

One book will be kept on site for the purposes of recording on-site instructions and as a general record of environmental issues. The book will consist of three sections:

Environmental Site Instruction Section
The Environmental Site Instruction Section will be used for the recording of general site instructions relating to the protection of environmentally sensitive or potentially impacted areas or features on the site, by the ECO.

Site Diary Section
The purpose of this section will be to record the comments of the ECO as they relate to activities on the site, any problems encountered, or comments or complaints received from the public about works from the site.

Monitoring Section
The purpose of this section will be to record the comments of the ECO during Construction and alien clearing measure used during the life cycle of project.

This book is to remain on site at all times and is to be made available for monitoring purposes by the local authority as required.

B. Communication/Contractual Network

There is to be continual communication between the Applicant; RE, Contractor, Site Manager and the ECO. The ECO will advise all on factors relating to the EMPr and all environmental matters on site.

The ECO is empowered to order the Contractor immediately to cease any activities or operations that are required to be stopped as a matter of urgency to prevent serious adverse environmental impacts or potential impacts on the site or any of the adjacent properties or areas outside the boundaries of the site. The ECO shall without delay report any such actions to the Competent Authority. The suspension will be enforced until corrective action has been taken, with no extension of time for such delays. In such a case, all costs are to be borne by the Contractor.

C. Method Statement Format

For any activity the Contractor is requested to submit a method statement for comment by the ECO, the format should clearly indicate the following:

- What: a brief description of the work to be undertaken;
- How: a detailed description of the process of work, methods and materials;
- Where: a description/sketch map of the locality of work; and
- When: the sequencing of actions with due commencement dates and completion date estimates.

The Contractor must submit the method statement to the ECO prior to the start of any construction activity. Work may not commence until the comments of the ECO have been received and taken into consideration.

D. Programming of Construction Events

The ECO must be supplied with a detailed program of all construction events to allow for proper monitoring and planning on site. Any amendments to the program of construction events for any reason must be forwarded to the ECO.

E. Bylaws and Regulations

All national and provincial laws and regulations, as well as all local authority bylaws and regulations which apply to the development of this site are to be adhered to.

F. Protection of sensitive features

Vegetation

All protected elements/areas located on the site, will be clearly marked, and care should be taken by the ECO to ensure that they are not unnecessarily disturbed during construction works on site. All alien vegetation must be removed according to standard legislated alien clearing methods.

Apart from the vegetation identified by the project team for removal from the site prior, no indigenous vegetation is to be removed without the written permission of the ECO during the construction phase. Damage to the indigenous vegetation anywhere on the site (outside of the approved area) will be subject to penalties.

The approved new cultivation footprints and the conservation area (±14ha) on site must be surveyed, demarcated and fenced off prior to any site development or vegetation loss.

Rivers, Riparian Habitat & Wetlands

It is imperative that all construction works be undertaken during the dry, summer months when sedimentation and pollutants are unlikely to be mobilised by surface runoff, avoiding impacts to the Bot River downgradient.

No pollutants must be allowed to enter any river system or any other ecologically sensitive areas during the construction phase. The riparian area of the Bot River which is 35 m downgradient of the lower boundary of the proposed vineyard must be considered a no-go area for vehicles and staff and vehicle movement must be limited to existing dirt roads as far as operationally possible.

Reptiles, birdlife and mammals

Due to the fact that there are vegetated areas on and next to the site reptiles, birdlife and mammals occur and move through the system. Any living organism needs to be respected during the construction

phase and should not be killed or ran over. Every effort should be made to save and relocate any mammal, reptile, amphibian, bird, or invertebrate that cannot flee of its own accord, encountered during site preparation (i.e., to avoid and minimise the direct mortality of faunal species). These animals should be relocated to a suitable habitat area immediately outside the project footprint (in the adjoining natural habitats of the site), but under no circumstance to an area further away.

In terms of Dam 2: A monitoring program must be established by the ECO to track the activity and movement of the pair of Blue Cranes in terms of existing location and location during construction works. Any work at Dam 2 must be performed outside of the breeding season (the period between August – April of the following year).

Two amphibian SCC were recorded at Dam 1 and therefore water usage from this dam is to be carefully managed to not cause excessive drying of this habitat.

No illegal hunting (either through illegal methods or of rare or threatened species) should be allowed on the site. No plastic lining may be used as part of the dam construction as this has various ecological impacts, with special mention of impacts to faunal assemblages.

Archaeological remains (**Annexure 4: Fossil Finds**)
If any heritage remains are found Heritage Western Cape (HWC) needs to be informed. If heritage remains are disturbed it should be left and demarcated for inspection by HWC. If any archaeological remains (including but not limited to fossil bones and shells, coins, ceramics, antique, marine shell heaps, stone artefacts and bone remains) are discovered HWC need to be notified. If any graves or human remains are discovered HWC need to be notified.

G. Visual Impacts

The visual impact of the development is limited due to the nature of the activity and the location. However, the site is to remain neat and well maintained.

H. Noise Impacts

The contractor must take appropriate measures to limit the impact of unreasonable noise from construction activities on the neighbouring land users. However, due to the nature of the activity and the location the proposed activity will not result in significant noise impacts.

I. Safety

The Contractor is to appoint a safety steward, who will be responsible for safety of the labour force, construction activities and handling emergency situations on site during construction hours.

J. Fire Control

The contractor must take appropriate measures to guard against accidental fire, and it will be presumed that any bush fire which starts on the site, or within 100m thereof during the construction period would be the responsibility of the applicant.

Fire beaters and “bakkie sakkie” are to be kept on site, and easily accessible at all times, and not locked away. No open fires may be lit anywhere on the construction site, except at locations approved by the

ECO and Site Manager. The burning of refuse or vegetation material on site as a means of disposal will not be allowed unless a permit for burning is issued by the competent authority.

Please refer to **Annexure 5: Fire Management Plan**.

K. Emergency

All accidents and emergency situations are to be reported to the ECO and Site Manager and full details included in the monthly environmental report.

Fire

In the case of a fire occurring on site, the Applicant and Site Manager (safety steward) are to be notified immediately. If fairly localised and effort should be made to extinguish the fire immediately and if required, the assistance of the local fire department should be sought by the safety steward.

First Aid

The Contractor must provide and maintain a suitable first aid kit on site, with a member of staff suitable qualified in first aid on site during working hours, in accordance with the Occupational Health and Safety Act.

L. Public Complaints

All public complaints received are to be registered by the ECO or Site Manager and addressed immediately. Public complaints and responses are to be recorded in the Site Diary and included in the monthly environmental report by the ECO.

4.1.2 Site Establishment Requirements

A. Environmental Awareness Training for Site Personnel

All contractors involved in work on the development are to be briefed on their obligations towards the environmental controls and methodologies. The briefing will usually take the form of an on-site talk and demonstration by the ECO. The education program should be aimed at all levels of management within the Contractor team.

The environmental awareness education program should commence with entry onto the site, prior to any construction activities taking place by each team and is likely to be an ongoing process. All personnel are to be made aware of the details of the EMPr which will be applicable to them, in the languages of the site staff. Contractor teams must also be aware of penalties issued by the ECO in terms of environmental conduct on site, as well as safety and emergency procedures to be followed.

A regularly updated record is to be kept of all personnel attending the Environmental Awareness training sessions.

B. Site Definition and Demarcation

Prior to any works commencing on site a site survey is to be undertaken and the placement of boundary pegs (i.e. white stakes) along the areas proposed for cultivation are to be erected. Peg coding is to be communicated to the Contractor and all other relevant parties as they may be identified. The approved new cultivation footprints and the conservation area on site must be surveyed, demarcated and fenced off prior to any site development or vegetation loss.

All fencing is to be erected prior to construction works commencing on site and are to remain in position and in good repair for the duration of the construction phase. Once this has been done, all works, including stockpiling of construction materials are to be strictly confined to the demarcated area.

C. Contractor's Camp

As the property is already operating as a working farm the contractors camp would be in line with the current area (existing facility located outside of the conservation area) being utilised for the purposes of equipment storage and maintenance etc.

D. Toilet Facilities

Suitable sanitary facilities must be provided by the contractor for all staff on site. The Contractor should ensure that ablutions are restricted to the sanitary facilities. Where chemical toilets are provided, the Contractor should ensure that they are kept in hygienic condition and emptied on a regular basis. Waste from the toilets should be disposed of to the satisfaction of the ECO.

Care must be taken that no spillage occurs when chemical toilets are cleaned, and their contents are properly stored and removed off site. A contingency plan for spills must be supplied by the contractor and approved by the ECO. Toilets should be located where their use would result in minimal impact on the surrounding environment and may not be in areas of running or standing water during winter and must be secured to prevent them from blowing over.

E. Fencing of Sensitive Features

The high sensitivity conservation area on site must be surveyed, demarcated and fenced off prior to any site development or vegetation loss. Furthermore, the extent of the boundary is to be marked out by a temporary visible marker (i.e. white stakes driven into the soil). Areas beyond the white stakes and/or wire fencing are to be considered **no-go areas**. These include the following:

- The two areas of Very High botanical sensitivity (as per Figure 1), totalling about 14ha, must be buffered from any new development or soil disturbance or cultivation by at least 5m. It is recommended that this surrounding 5m buffer be either a dirt road (currently the case for about 40% of the area) or brushcut firebreak.
- The riparian area of the Bot River which is 35 m downgradient of the lower boundary of the proposed vineyard must be considered a no-go area. However, as this falls outside the site boundaries this is automatically considered a no-go area.
- Given the conservation importance of the faunal SCC confirmed or possibly occurring on the site, along with the "Very high" SEI retrieved for the habitats of these SCC, it is advocated that any development should exclude all shrubland habitats (Dense, Medium-high and Low shrubland) as these are highly sensitive from a faunal perspective. Furthermore, species-specific buffer distances are recommended around core SCC habitats / colonies where no development should take place, excluding the clearing of alien invasive vegetation. These remaining areas (outside the conservation area) have been included in Figure 1 as 'Natural Vegetation Areas' which are to undergo alien clearing and fire management.

All fencing is to be erected prior to construction works commencing on site and is to remain in position and in good repair for the duration of the works. No materials, rubble or equipment is to be stored or

stockpiled within these no-go areas. Any deviations from these specifications are subject to the approval of the ECO.

F. Vegetation Clearance

Vegetation to be removed from the site to facilitate development needs to be identified by the ECO, indicated on a site plan and clearly marked prior to any other works on site. Alien vegetation directly adjacent or in close proximity to the construction area should be removed in line with alien clearing methods.

Due to the potential fire risk in the area, no vegetation may be removed using fires, and no excess vegetation material may be burned on site. No natural vegetation outside of the site may be removed without approval of the ECO, apart from invasive plant species which are to be removed according to a controlled program.

4.1.3 Documentation

The Applicant is to formalise the stewardship agreement or similar with Cape Nature in terms of the conservation area.

Written permission is required in terms of CARA for the cultivation of virgin soil.

4.2 Construction Management Plan

4.2.1 Material handling and storage

Fuels and flammable materials are to be stored in suitably equipped storage areas. These areas shall comply with general fire safety requirements. Impervious materials are to be used in these storage areas to prevent contamination of the ground in the event of spillages or leaks. Quantities of fuels and hazardous materials stored on site should be appropriate to the requirement for these substances on site.

Bulk fuel depots are to be placed within hardened bunded areas. Bunds are to have a holding capacity equal to 110% of the largest fuel container. The Contractor is to ensure that he is aware of the effects of all substances on staff and the environment, with the correct action to take in the case of any incident involving these materials.

Contractor laydown areas and material storage facilities to remain 32 m away from the delineated extent of the Bot River and vehicle re-fuelling must take place off site. All cleared vegetation must be stockpiled in a designated area, outside of the delineated extent of the Bot River and after clearing, all material must be disposed of at a registered garden refuse site and may not be burned or mulched on site. Topsoil must be stockpiled separately from all other materials, for use to cover the new dam wall for revegetation. Soil stockpiles may not be contaminated, and it must cover as minimal a surface area as possible, however the stockpiles may not exceed 2 m in height.

The material excavated from the dam basin intended for use in the construction of the dam wall must be stockpiled in the area associated with the dam's proposed new inundated full supply level footprint (west of the dam wall). This will limit the sedimentation of the downgradient Bot River. These stockpiles may not exceed 2 m in height and must be covered with a suitable geotextile if the stockpiles will be on site for longer than 30 days. All materials used to construct the dam wall should not generate toxic

leachates or lead to significant changes in pH or dissolved salt concentrations, especially considering that outflow of the dam drains to the Bot River.

No mixed concrete may be deposited outside of the designated construction footprint. The following must be adhered to:

- Fresh concrete and cement mortar must preferably be mixed in the laydown area/construction camp associated with the new dam area, may not be mixed on bare soil, and must be contained within a lined, bound or bunded portable mixer. Consideration must be given to the use of ready-mix concrete.
- A batter board or other suitable platform/mixing tray is to be provided onto which any mixed concrete can be deposited whilst it awaits placing.
- A washout area must be designated in area that will not be subjected to runoff downgradient and wash water must be treated on -site or discharged to a suitable sanitation system. Wash water is not permitted to be discharge into freshwater ecosystems.
- Empty cement bags must be disposed of through the hazardous substance waste stream.
- Concrete spillage outside of the demarcated area must be promptly removed and taken to a suitably licensed waste disposal site.

It is assumed that material required for the dam wall expansion will be excavated from the dam basin or the surrounding terrestrial habitat. Material quarries should be inert and unable to leach toxicants to the receiving environment prior to commencement of works.

4.2.2 Effluent/ Waste Management

General Wastes

Waste management during the construction phase is the responsibility of the Contractor. The Contractor must establish a system acceptable to the ECO for control during execution of the works. Refuse generated during the execution phase should be managed according to the guidelines for waste management and recycling adopted for the life-cycle of the project.

- Waste must be identified and analysed for reduction, re-use and recycling opportunities;
- Arrange for storage and transportation/collection of various wastes to their final destination or use areas on-site;
- Staff must be trained in waste management.

Refuse should be stored in an appropriate area on site, protected against wind dispersion and removed on a regular basis for disposal of at a permitted disposal site. No burning or burying of refuse on site should be allowed. Refuse bins must be watertight and wind-proof.

Pollution:

Pollution of the development footprints, as well as any areas adjacent to these footprints, should be monitored and avoided. Sediment traps must be installed downgradient of the proposed vineyard for its full length to prevent any excess sediments arising from the construction works being transported into the Bot River and must be regularly cleared by hand.

Eating areas

Contractor shall remove waste from the site on a daily basis.

4.2.3 Maintenance of equipment

All mechanical equipment and work vehicles which may be kept on site are to be stored, serviced and refuelled only at designated areas within the Contractor's Camp. Within these areas drip trays and other impervious materials, for example plastic or metal sheeting are to be used to prevent contamination of the ground in any way.

The Applicant or ECO may order the removal of equipment that is causing continual environmental damage by leaking oil or diesel for example, until such equipment has been repaired.

4.2.4 Stormwater and Erosion Control/Management

The operator/farmer may need to maintain contour furrows or construct berms or similar control measures to prevent stormwater washing soil from ploughed areas.

Any erosion or incision observed as a result of the newly expanded dam wall should be addressed using the following methods to prevent sedimentation of the dams to retain their maximum supply level:

- Re-sloping – side walls of the dam should be re-sloped to a 3:1 ratio to prevent further gully formation during the operation of the dams.
- Brush layering is when branches are placed perpendicular to the slope contour. This method is effective for earth reinforcement and mass stability. Brush layers break up the slope length, preventing surface erosion, and reinforce the soil with branch stems and roots, providing resistance to sliding or shear displacement. Brush layers also trap debris, aid infiltration on dry slopes, dry excessively wet sites, and mitigate slope seepage by acting as horizontal drains. Brush layers facilitate vegetation establishment by providing a stable slope and a favourable microclimate for growth of vegetation.
- Live gully repair is a technique that is similar to branch packing but is used to repair rills and gullies. Live gully repairs offer immediate reinforcement and reduce the velocity of concentrated flows. They also provide a filter barrier that reduces further rill and gully erosion and must be used where gully erosion is taking place on the project footprint.

Furthermore, rocks must be placed at any outlet pipes (downgradient of the dam wall) to be installed within the dam wall and indigenous vegetation established to bind the soil of the bed and to prevent erosion. This will also promote diffuse flow and decrease the velocity of water released downgradient towards the Bot River, assuming that this dam will still occasionally release overflows to the Bot River after the vineyard has been developed.

It is recommended that any proposed spillways be lined at the base with energy dissipating structures (such as Armorflex) to reduce the velocity of water inflow into the downgradient areas and prevent erosion thereof during high flow events. The slope between the spillway and the bottom of the dam wall must be gradual, to prevent a drop forming at the edge of the spillway which will result in incision and embankment erosion.

The release of water into the dam should be done in such a way that water does not drop from a significant height into the dam as this will cause erosion, gully formation and turbid water within the dam.

All dam walls must be revegetated after the construction activities to stabilize soil and prevent erosion of the dam wall. A graminoid seed mixture can be used for this purpose, as it will allow for quick establishment.

Care must be taken at all times to prevent erosion of soils on the construction site. Should any erosion be detected on site, the ECO, RE or Site Manager must identify the cause of such erosion and ensure that the most appropriate method of mitigation or stabilisation is employed as soon as possible.

4.2.5 Dust Control

Dust will naturally occur due to the nature of the ploughing activities on site. Areas where dust will impact on neighbouring properties should be ploughed during low wind conditions to avoid dust impact.

All exposed soils must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geotextile or hessian sheeting) to prevent dust generation that could potentially result in vegetation smothering and sedimentation of the Bot River riparian zone and the terrestrial fynbos vegetation surrounding the vineyard. Airborne dust must be reduced at construction sites through:

- Damping dust generation areas with freshwater (not in sufficient quantities to generate runoff);
- Use of geotextile or brush barrier fences; and
- Covering stockpiles with plastic sheets.

4.2.6 Construction Traffic Management

Movement of all construction vehicles on site is to be strictly limited to existing haul and access routes at all times. Should deviation from these routes be necessary for any reason, this is to be with approval of the ECO who is to ensure that no significant environmental damage results.

Dedicated parking area for construction vehicles must be located away from sensitive areas, and drip trays must be located beneath any leaking equipment and lubricant/fuel absorbing media (moss/peat type products) within drip trays must be used to contain spilled material.

4.2.7 Site Clean Up

The Contractor must ensure that all structures, equipment materials and facilities used on site are removed once the project has been completed. The construction site shall be cleared and cleaned to the satisfaction of the ECO.

All dam walls must be revegetated after the construction activities to stabilize soil and prevent erosion of the dam wall. A graminoid seed mixture can be used for this purpose, as it will allow for quick establishment.

4.2.8 Alien Clearing

Invasive alien plants/ trees are to be removed and treated according to standard alien control methods.

According to Regulation 15E of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) Regulations: Where category 1, 2 or 3 plants occur contrary to the provisions of these regulations, a land

user shall control such plants by means of one or more of the following methods of control as is appropriate for the species concerned and the ecosystem in which it occurs:

a. *Uprooting, felling, cutting ~~or burning~~;*
b. *Treatment with a weed killer that is registered for use in connection with such plants in accordance with the directions for the use of such a weed killer;*
c. *Biological control carried out in accordance with the stipulations of the Agricultural Pests Act, 1983 (Act No. 36 of 1983), the Environment Conservation Act, 1989 (Act No. 73 of 1989) and any other applicable legislation;*
d. *Any other method of treatment recognised by the executive officer that has as its object the control of the plants concerned, subject to the provisions of sub-regulation (4);*
e. *A combination of one or more of the methods prescribed in paragraphs (a), (b), (c), and (d), save that biological control reserves and areas where biological control agents are effective shall not be disturbed by other control methods to the extent that the agents are destroyed or become ineffective.*

Alien vegetation should be monitored to ensure clearance and avoid any further growth of alien vegetation surrounding the dam and cleared vineyard area (with specific mention of *Eucalyptus spp, Acacia mearnsii*, and *Pinus pinaster* to name a few). This will need to be monitored until all-natural vegetation has re-established surrounding the dam and vineyard areas.

Please refer to **Annexure 6: A Practical Guide to Managing Invasive Alien Plants, WWF**.

4.2.9 Fire Prevention/ Management

The Contractor/Farm Manger shall ensure that basic fire-fighting equipment is available at all 'construction' areas and facilities. The workforce should be appropriately trained in the use of all equipment. Fire beaters and "bakkie sakkie" are to be kept on site, and easily accessible at all times, and not locked away.

Smoking shall not be permitted in areas where it is a fire hazard. Such areas shall include any workshop and fuel storage areas and areas where the vegetation or other material may promote the rapid spread of an initial flame. A fire extinguisher of the appropriate type must be present when welding or other "hot" activities are undertaken.

Any work that requires the use of fire or open flame may only take place at a designated area approved by the Farm Manager and must be supervised at all times. Serviced fire-fighting equipment shall be available.

Please refer to **Annexure 5: Fire Management Plan**.

4.2.10 Environmental Control Sheets

A. Communications

TASK	MITIGATION AND ENVIRONMENTAL CONTROLS	ACTION
Site Diary and Site Instruction Book	• To be updated on a regular basis	ECO, Farm Manager
Public complaints	• To be recorded, along with records of responses to them in the Site Diary	ECO/Farm Manager
Environmental Awareness/ Education	• Each contractor team to attend a training session prior to commencing work on site Record of members attending training sessions to be kept and updated regularly	ECO
Method Statements	• Method statements to indicate: What, How, Where and When activities are to take place. • Method statements for each relevant activity to be submitted to ECO prior to the start of that activity on site. • Work is not to commence until method statement approved by ECO and Site Manager if necessary.	Contractor/ Farm Manager

COMMENTS/ UPDATE

RECORD OF PERFORMANCE

Acceptable		Details of Transgression	Responsible Party	Action Taken	Date
Yes	No				

B. Site Preparation

TASK	MITIGATION AND ENVIRONMENTAL CONTROLS	ACTION
Site definition	All protected elements/areas located on the site, will be clearly marked, and care should be taken by the ECO to ensure that they are not unnecessarily disturbed during construction works on site.	ECO
	The approved new cultivation footprints and the conservation area on site must be surveyed, demarcated and fenced off prior to any site development or vegetation loss.	Surveyor/Contractor
Fencing of sensitive features	No-go areas include the demarcated 'conservation area' as well as the follow buffers: • The two areas of Very High botanical sensitivity, totalling about 14ha, must be buffered from any new development or soil disturbance or cultivation by at least 5m. It is recommended that this surrounding 5m buffer be either a dirt road (currently the case for about 40% of the area) or brushcut firebreak, as this will facilitate fire and alien vegetation management in the conservation area. • The riparian area of the Bot River which is 35 m downgradient of the lower boundary of the proposed vineyard must be considered a no-go area. However, as this falls outside the site boundaries this is automatically considered a no-go area. • Given the conservation importance of the faunal SCC confirmed or possibly occurring on the site, along with the "Very high" SEI retrieved for the habitats of these SCC, it is advocated that any development should exclude all shrubland habitats (Dense, Medium-high and Low shrubland) as these are highly sensitive from a faunal perspective. Furthermore, species-specific buffer distances are recommended around core SCC habitats / colonies where no development should take place, excluding the clearing of alien invasive vegetation. These remaining areas (outside the conservation area) have been included in Figure 1 as 'Natural Vegetation Areas' which are to undergo alien clearing and fire management.	ECO/ Contractor
	• All fencing is to be erected prior to construction works commencing on site and is to remain in position and in good repair for the duration of the works. • No materials, rubble or equipment is to be stored or stockpiled within these no-go areas and no-one should enter these areas. • Any deviations from these specifications are subject to the approval of the ECO.	
Vegetation clearance	• All vegetation to be removed from site to be indicated on a site plan, and clearly marked on site.	Contractor/ ECO

	• Fires may not be used as a method of vegetation clearance. • No excess vegetation material may be burned on site unless permitted. • No vegetation outside of the building/construction envelope may be removed without approval of the ECO.	
Faunal Monitoring	• Every effort should be made to save and relocate any mammal, reptile, amphibian, bird, or invertebrate that cannot flee of its own accord, encountered during site preparation (i.e., to avoid and minimise the direct mortality of faunal species). • These animals should be relocated to a suitable habitat area immediately outside the project footprint (in the adjoining natural habitats of the site), but under no circumstance to an area further away. • In terms of Dam 2: A monitoring program must be established by the ECO to track the activity and movement of the pair of Blue Cranes in terms of existing location and location during construction works. Any work at Dam 2 must be performed outside of the breeding season (the period between August – April of the following year).	ECO Contractor
Fossil Finds	• If any heritage remains are found Heritage Western Cape (HWC) need to be informed. If heritage remains are disturbed it should be left and demarcated for inspection by HWC. • If any archaeological remains (including but not limited to fossil bones and shells, coins, ceramics, antique, marine shell heaps, stone artefacts and bone remains) are discovered HWC need to be notified. • If any graves or human remains are discovered HWC need to be notified.	ECO Contractor

COMMENTS/ UPDATE

RECORD OF PERFORMANCE

Acceptable		**Details of Transgression**	**Responsible Party**	**Action Taken**	**Date**
Yes	**No**				

C. Site Procedures

TASK	MITIGATION AND ENVIRONMENTAL CONTROLS	ACTION
Toilet facilities	• Suitable toilet facilities are provided for all staff. • Ablutions are to be restricted to the facilities provided. • Toilets are to be kept in a hygienic condition and emptied regularly.	Contractor/ Farm Manager
Fire control	• Required fire fighting equipment is available on site, and in working order. • No open fires are lit on site without approval of the ECO and Site Manager • Refer to the Fire Management Plan (**Annexure 5**) .	Contractor/ Farm Manager
Material handling and storage	• Fuels and hazardous materials to be stored in suitably equipped storage areas in the Contractor's camp. • These areas shall comply with fire safety requirements. • Impervious materials are to be used to prevent contamination of the ground in the event of spillages or leaks. • Contractor laydown areas and material storage facilities to remain 32 m away from the delineated extent of the Bot River and vehicle re-fuelling must take place off site. • All cleared vegetation must be stockpiled in a designated area, outside of the delineated extent of the Bot River and after clearing, all material must be disposed of at a registered garden refuse site and may not be burned or mulched on site. • Topsoil must be stockpiled separately from all other materials, for use to cover the new dam wall for revegetation. Soil stockpiles may not be contaminated, and it must cover as minimal a surface area as possible, however the stockpiles may not exceed 2 m in height. • The material excavated from the dam basin intended for use in the construction of the dam wall must be stockpiled in the area associated with the dam's proposed new inundated full supply level footprint (west of the dam wall). This will limit the sedimentation of the downgradient Bot River. These stockpiles may not exceed 2 m in height and must be covered with a suitable geotextile if the stockpiles will be on site for longer than 30 days. All materials used to construct the dam wall should not generate toxic leachates or lead to significant changes in pH or dissolved salt concentrations, especially considering that outflow of the dam drains to the Bot River. • No mixed concrete may be deposited outside of the designated construction footprint. • All waste to be stored in an appropriate area on site and	Contractor

	protected against wind dispersal.	
Waste management	• Waste to be removed on a regular basis for disposal in line with accepted recycling plan at a permitted disposal site. • No burning or burying of refuge on site is allowed. • Pollution of the development footprints, as well as any areas adjacent to these footprints, should be monitored and avoided. • Sediment traps must be installed downgradient of the proposed vineyard for its full length to prevent any excess sediments arising from the construction works being transported into the Bot River and must be regularly cleared by hand.	Contractor
Maintenance of equipment	• All mechanical equipment and work vehicles to be stored serviced and refuelled at designated areas in the contractor's camp. • Drip trays or impervious materials to be used to prevent contamination of ground.	Contractor
Stormwater and Erosion Control/ management	• The operator/farmer may need to maintain contour furrows or construct berms or similar control measures to prevent stormwater washing soil from ploughed areas. • Any erosion or incision observed as a result of the newly expanded dam wall should be addressed using the following methods to prevent sedimentation of the dams to retain their maximum supply level: Re-sloping, Brush layering, and /or Live gully repair. • Furthermore, rocks must be placed at any outlet pipes (downgradient of the dam wall) to be installed within the dam wall and indigenous vegetation established to bind the soil of the bed and to prevent erosion. This will also promote diffuse flow and decrease the velocity of water released downgradient towards the Bot River, assuming that this dam will still occasionally release overflows to the Bot River after the vineyard has been developed. • It is recommended that any proposed spillways be lined at the base with energy dissipating structures (such as Armorflex) to reduce the velocity of water inflow into the downgradient areas and prevent erosion thereof during high flow events. • The slope between the spillway and the bottom of the dam wall must be gradual, to prevent a drop forming at the edge of the spillway which will result in incision and embankment erosion. • The release of water into the dam should be done in such a way that water does not drop from a significant height into the dam as this will cause erosion, gully formation and turbid water within the dam. • All dam walls must be revegetated after the construction activities to stabilize soil and prevent erosion of the dam wall. A graminoid seed mixture can be used for this purpose, as it will	Contractor/ ECO/ Farm Manager

	allow for quick establishment.	
Dust control	• Areas where dust will impact on neighbouring properties should be ploughed during low wind conditions to avoid dust impact. • All exposed soils must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geotextile or hessian sheeting) to prevent dust generation that could potentially result in vegetation smothering and sedimentation of the Bot River riparian zone and the terrestrial fynbos vegetation surrounding the vineyard.	Contractor/ ECO
Construction traffic management	• Movement of construction vehicles must be limited to approved haul and access routes. • Dedicated parking area for construction vehicles must be located away from sensitive areas, and drip trays must be located beneath any leaking equipment and lubricant/fuel absorbing media (moss/peat type products) within drip trays must be used to contain spilled material.	Contractor/ ECO
Site Clean up	• All structures, equipment materials and facilities are to be removed from site on completion of the project. • Construction site shall be cleared and cleaned to the ECO's satisfaction. • All dam walls must be revegetated after the construction activities to stabilize soil and prevent erosion of the dam wall. A graminoid seed mixture can be used for this purpose, as it will allow for quick establishment.	Contractor/ ECO
Alien Clearing	• Invasive alien plants/ trees are to be removed and treated according to standard alien control methods (**Annexure 6**: A Practical Guide to Managing Invasive Alien Plants, WWF.)	Farm Manager
TASK	**MITIGATION AND ENVIRONMENTAL CONTROLS**	**ACTION**

COMMENTS/ UPDATE

RECORD OF PERFORMANCE

Acceptable		**Details of Transgression**	**Responsible Party**	**Action Taken**	**Date**
Yes	**No**				

4.3 Operational Management Plan

4.3.1 Components of Operational Management

- Goals: The key environmental goals are set for the operation of the development
- Objectives: These are set to meet the goals.
- Risk: If the goal is not achieved.
- Actions: Measures put in place to achieve objectives.
- Monitoring: To check if the objectives are achieved.
- Targets: Indicators of the effectiveness of the programme.
- Remedial Action: If targets are not met.

4.3.2 Goals (Management Outcomes and Actions):

Goal 1: Protection of sensitive environments and the conservation area to ensure long-term maintenance of ecological process and functioning and contribute to regional conservation targets.					
Objective	**Risk**	**Actions**	**Monitoring**	**Targets**	**Remedial Action**
Management and Protection of the Conservation Area.	Disturbance of the Botanical High Sensitivity Area.	• No dumping of material or any form of disturbance may take place within the Very High sensitivity areas. • The two areas of Very High botanical sensitivity must be buffered from any new development or soil disturbance or cultivation by at least 5m. It is recommended that this surrounding 5m buffer be either a dirt road (currently the case for about 40% of the area) or brushcut firebreak, as this will facilitate fire and alien vegetation management in the conservation area. • Any firebreaks around the conservation area should be cut using hand-held brushcutters, and this should be done in November every year. No soil disturbance may be caused in these areas.	Monitor the edges of the Conservation area. The efficacy of Alien Clearing must be audited by a specialist botanist or CapeNature within two years of any project authorisation, with a target of zero invasive alien vegetation on site at that	No ploughing/ agricultural activities to extend beyond the boundary of the conservation areas. Maintain a 5m buffer (road or firebreak). Ongoing Alien Clearing Fire Management	Non-compliance to be reported to the Applicant and the Competent Authority. Penalise individuals who deviate from the targets. The specialist must make binding management recommendations if the zero alien invasive target is not met.

		• No vehicles should be allowed into the Very High sensitivity areas, except on existing tracks (evident on the satellite imagery from April 2021). • The Very High sensitivity areas must be formally managed by the landowner as a conservation area, according to requirements set out in an EMP. • Alien invasive vegetation management within the 14ha Very High sensitivity area must be done according to the guidelines in **Appendix 6**. • The natural vegetation in the conservation area (14ha) must be burnt once every 10 - 12 years, and thus a fire management plan must be incorporated into the EMP. As the vegetation is currently well overdue for a burn the first management burn must be undertaken within two years of any authorisation. The landowner should enlist the help of the local FPA and should get professional help to undertake the management burn, which should be done in late summer (February or March) for optimal ecological results, and only once the area is alien vegetation free. • No planting of any species should be undertaken in the Very High sensitivity areas.	stage.		
Alien vegetation management	• Loss of biodiversity • Alien overgrowth • Fire	• Clear all alien vegetation and new growth by means of pulling, cutting and approved herbicide. • No stockpiling of aliens after removal, it will increase fire risk.	Monitor natural vegetation for Alien Invasives Ensure that no	• Zero alien vegetation • Preservation of indigenous vegetation	• Non-compliance to be reported to Applicant and the Competent

		• Alien invasive vegetation management within the site must be done according to the guidelines in **Appendix 6**.	fire hazards are created by stockpiling alien vegetation which has been removed.		Authority
Faunal Management	Mobile species moving off the site if the site cannot support these species Wildlife suffers disturbance during operation	• No feeding of wild animals. • No rubbish to be left out to attract scavengers. • Plant indigenous & endemic flora to increase on-site biodiversity (outside of the conservation area). • If pest management is to proceed, this should be done under an integrated pest management programme where the use of chemicals is considered as a last option, and where these chemicals are placed in such a way where it does not lead to the accidental poisoning of non-target species. • No illegal hunting (either through illegal methods or of rare or threatened species) should be allowed on the site. • No livestock should be kept on the property as this may cause degradation of the remaining natural vegetation. • Two amphibian SCC were recorded at Dam 1. It is therefore recommended that water usage from this dam be carefully managed to not cause excessive drying of this habitat.	• Monitor faunal and avi-faunal species on site • Monitor littering • Monitor encroachment of development into sensitive areas • Monitor encroachment of alien vegetation	To increase bio-diversity Ensure that no species become pets Litter free site No disturbance of fauna and flora Ensure zero alien encroachment	• Institute a litter collection programme • Increase awareness of fauna and flora
Fire Management	Impact on natural Fire Cycles	• Ensure that basic serviced fire-fighting equipment is available at all times in areas in which work is being undertaken. The workforce must be appropriately trained in	• Be part of the Fire Protection Association programme	Effective implementation of the Fire Management	• Contractor/ Farm Manger to ensure Fire Fighting

	Liability	the use of all equipment. Fire beaters are to be kept on site, and easily accessible at all times, and not locked away. • Smoking shall not be permitted in areas where it is a fire hazard. Such areas shall include any workshop and fuel storage areas and areas where the vegetation or other material may promote the rapid spread of an initial flame. • A fire extinguisher of the appropriate type must be present when welding or other "hot" activities are undertaken. • Any work that requires the use of fire or open flame may only take place at a designated area approved by the Farm Manager and must be supervised at all times. • All burning of vegetation on the site should be done under a controlled and integrated fire management scheme. No open fires should be allowed near the natural vegetation on the site, and a fire management scheme should be put in place to contain any uncontrolled veldfires. Refer to **Annexure 5: Fire Management Plan.**		Plan. Zero liability	Equipment are in place and serviced regularly. • Fire Management Plan to be implemented.
Use, storage and disposal of any chemicals or fertilizers etc.	Environmental Damage	The Applicant would adhere to standard "best practice" measures regarding the use, storage and disposal of any chemicals or fertilizers etc. required to undertaken standard agricultural activities on site. Pollution of the development footprints, as well	Monitor the effectiveness of methods used.	Efficient management and use of chemicals or fertilizers.	Refer non-compliance to the Farm Manager/ Contractor

		as any areas adjacent to these footprints, should be monitored and avoided.			
PERFORMANCE					
Acceptable Yes	**Acceptable Yes**	**Details of Transgression**	**Responsible Party**	**Action Taken**	**Date**

Goal 2: Management & Control of Soil Erosion resulting from the action of water and/or wind.					
Objective	**Risk**	**Actions**	**Monitoring**	**Targets**	**Remedial Action**
Management & Control of Soil Erosion (water).	Soil erosion	According to Regulation 4 of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) Regulations: Every land user shall by means of as many of the following measures as are necessary in his situation, protect the cultivated land on his farm unit effectively against excessive soil loss: • *A suitable soil conservation work shall be constructed and thereafter be maintained in order to divert run-off water from other land or to restrict the run-off speed of run-off water;* • *The land concerned shall be cultivated in accordance with such method or be laid out in such a manner that the run-off speed of run-off water is restricted;* • *The land concerned shall be utilised in accordance with a crop rotation system;* • *Alternate strips on which a cover crop occurs shall be left undisturbed annually;* • *Crop residues and other plant material shall be left on the land concerned, or shall be utilised as grazing or otherwise be removed only to such an extent that the remaining portion thereof will be sufficient to form a mulch; and/or* • *A suitable grazing crop shall be established on the land concerned, whereafter it shall be permanently withdrawn from cultivation.* *According to Regulation 7 (2) of the Conservation of Agricultural Resources Act,*	Monitor the effectiveness of soil erosion methods used.	Efficient management and control of soil erosion	Refer non-compliance to the Farm Manager/ Contractor

		1983 (Act 43 of 1983) Regulations: Every land user shall remove the vegetation in a water course on his farm unit to such an extent that will not constitute an obstruction during a flood that could cause excessive soil loss as a result of erosion through the action of water.			
Management & Control of Soil Erosion (wind).	Soil erosion	According to Regulation 5 of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) Regulations: Every land user shall by means of as many of the following measures as are necessary in his situation, protect the cultivated land on his farm unit effectively against excessive soil loss: • *The land concerned shall be cultivated in accordance with such method or be laid out in such manner that the surface movement of soil particles through the action of wind is restricted.* • *Strips of natural vegetation shall be left at right angles to the prevailing wind direction, a suitable wind break shall be constructed or suitable vegetation shall be established to serve as a wind break.* • *The land concerned shall be utilised in accordance with a crop rotation system.* • *Alternate strips on which a cover crop occurs shall be left undisturbed annually.* • *The land concerned shall not be left fallow.* • *The cultivation and grazing of the land concerned during periods of high winds shall be avoided.* • *The establishing of crops of which the*	Monitor the effectiveness of soil erosion methods used.	Efficient management and control of soil erosion	Refer non-compliance to the Farm Manager/ Contractor

		harvesting causes the disturbance of the topsoil shall be avoided. • *Crop residues and other plant material shall be left on the land concerned, or shall be utilised as grazing or otherwise be removed only to such extent that the remaining portions thereof will be sufficient to form mulch.* • *A suitable grazing crop shall be established on the land concerned, where after it shall be permanently withdrawn from cultivation.* • *A suitable soil conservation work shall be constructed and thereafter be maintained in order to restrict the surface movement of soil particles through the action of wind.* Any rehabilitation and remedial action concerning soil erosion, in the event it does occur, needs to be per Regulation 13 & 14 of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983).			
Management & Control of Soil Erosion (wind).	Waterlog-ging & Salination	According to Regulation 6 of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) Regulations: Every land user should implement measures as required to protect the irrigated land on his farm unit effectively against waterlogging and salination. Measures that may be applicable include implementing a run-off control plan or draining plan (suitable soil preparation) before the establishment of the vineyards and maintaining such works to draw off excess surface and subterranean water and to dispose of it safely to prevent waterlogging and salination of lower lying land.	Monitor the effectiveness of methods used.	Efficient management and control of waterlogging.	Refer non-compliance to the Farm Manager/ Contractor

Prevention of erosion to safeguard Dams	Erosion and wall failure	Indigenous vegetation coverage across the entire downstream face of the embankment be planted to provide protection against erosion. The dams, spillways, and any outlet pipes should regularly be inspected for erosion, especially after heavy rainfall events when overflow from the dams is expected and the flow velocity is increased. If erosion is noted, this should be rectified, preferably through the reinstatement of vegetation in the eroded areas. If erosion is pronounced, erosion control devices such as reno mattresses should be considered, in consultation with a freshwater specialist.	Monitor the effectiveness of vegetation cover against erosion.	Efficient management and replanting where required.	Refer non-compliance to the Farm Manager/ Contractor Erosion Control devices if required.
PERFORMANCE					
Acceptable Yes	**Acceptable Yes**	**Details of Transgression**	**Responsible Party**	**Action Taken**	**Date**

Goal 3: Safeguarding the Bot River and amphibian SCC.					
Objective	**Risk**	**Actions**	**Monitoring**	**Targets**	**Remedial Action**

Optimal functioning, management, and maintenance of all Dams.	Environmental degradation	• Dams will need to be desilted intermittently to ensure the storage capacity is maintained. During desilting, all silt within the dam basins should immediately be removed from site to prevent sedimentation of the Bot River downgradient during outflow events. • Additionally, during desilting a temporary silt trap should be installed at the spillway. This should be emptied on a regular basis during the desilting process to prevent any excess silt being washed down into the Bot River. • Should repair be required to address seepage, mitigations as per construction activities above are applicable depending upon the location and severity of the seepage/structure failure. • A small drainage furrow should be constructed downgradient of the vineyard, but at least 32 m outside of the delineated extent of the Bot River to capture surface runoff during irrigation. This will prevent potentially sediment laden surface water from smothering the riparian zone of the Bot River. • Two amphibian SCC were recorded at Dam 1 and therefore water usage from this dam should be carefully managed to not cause excessive drying of this habitat. Only existing roadways should be utilised during maintenance and monitoring activities to avoid indiscriminate movement of vehicles.	Monitor the effectiveness of maintenance activities in terms of erosion, silting and water levels.	Efficient management and maintenance of all Dams.	Refer non-compliance to the Farm Manager/ Contractor

SECTION 5: COMPLIANCE AND MONITORING

5.1 Monitoring

The monitoring of works on site is necessary to demonstrate compliance with the specifications of the EMPr and to allow for problems or issues of non- conformance to be identified and appropriate corrective measures to minimise environmental damage to be implemented.

Monitoring should include visual checks by the Farm Manager on a daily basis, checks on particular requirements for site activities by the ECO, as well as a review of site documentation. The ECO or suitable person shall complete the performance record at the end of each table, as a record of transgressions or problems experienced on site and how they were dealt with.

Monitoring of activities on site by the ECO should be done as follows: An initial site visit prior to any activities will be carried out to brief the Contractor/Farmer who will undertake the construction activities and a second site visit will be undertaken once the no-go areas have been demarcated and prior to the commencement construction activities. Site visits will be undertaken on a monthly basis during the construction phase.

5.2 Penalties and Incentives

Transgressions relate to actions by the Contractor and team members whereby damage or harm is inflicted upon the environment or any feature thereof and where any of the conditions or specifications of the EMPr are infringed upon.

In the instance of environmental damage, the damage is where possible to be repaired and rehabilitated using appropriate measures, as specified and undertaken by appropriate specialists for the account of the Applicant or other guilty party.

Where infringement of the specifications or conditions of the EMPr is registered, appropriate remedial action or measures are to be implemented for the account of the Applicant. Where non-repairable damage is inflicted upon the environment or non-compliance with any of the EMPr obligations is registered then the Contractor may face a monetary penalty to an amount specified by the ECO. The ECO reserves the right to implement a first offence warning.

Transgressions are most likely to occur with respect to litter on site, damage to trees on site, disturbance of sensitive areas. The following penalties are suggested for the above-mentioned transgressions:

- Waste: In the case of excessive waste the ECO is to allow the Contractor 24 hours in which to remove the litter or face a monetary penalty at the ECO's discretion.
- Damage of River System or conservation area: A monetary penalty to the maximum of R5000 is to be paid for each waste act within a River System or the Conservation Area.
- Erosion: Erosion resulting from any work on site is to be rectified at the cost of the operator/farmer.

If excessive infringement with regard to any of the specifications is registered, the Applicant reserves the right to terminate the Contractor's contract.

The above-mentioned controls are to be identified and enforced by the ECO. Issues of non-compliance noted by the ECO are to be communicated to the site manager, who holds the responsibility of ensuring that the relevant parties are made aware of the lack of compliance with EMPr specifications and that appropriate action is taken to rectify the situation. The ECO will advise on appropriate corrective actions when necessary.

5.3 Site record

Minutes of the Contractor's meetings on site must reflect:

- environmental queries and complaints;
- actions agreed upon;
- dates of eventual compliance;
- must form part of the official environmental site record; and
- along with the Environmental Site Book and Site Diary.

In additions to the summary report, the ECO shall keep a monthly photographic record of progress on site at the start of the construction phase and an ad hoc record of incidents or events on site, especially in the case of transgressions from EMPr specifications.

5.4 Review of EMPr

The EMPr will be reviewed by the ECO on an ongoing basis. Based on observations during site inspections and issues raised at site meetings, the ECO will determine whether any procedures require modification to improve the efficiency and applicability of the EMPr on site.

Any such changes or updates will be registered in the ECO's monthly record, as well as being included as an annexure to this document. Annexures of this nature must be distributed to all relevant parties on site.

5.5 Environmental Audits

A suitably qualified Environmental Auditor is to be appointed, to undertake audits of compliance with the EMPr. An audit should be undertaken 6 months after construction activities have been commenced with and 6 months after completion of construction activities/ the operation phase has commenced. Objectives should be to audit compliances with the key components of the EMPr, to identify main areas requiring attention and recommend priority actions. The audit should cover a cross section of issues, including implementation of environmental controls, environmental management, and environmental monitoring.

In addition, the efficacy of alien vegetation clearance must be audited by a specialist botanist or CapeNature within two years of any project authorisation, with a target of zero invasive alien vegetation on site at that stage. The specialist must be able to make binding management recommendations for this area if this target is not met.

Results of the audits should inform changes required to the specifications of the EMPr, or additional specifications to deal with any environmental issues which arise on site and have not been dealt with in the current document.

- END -