RIVER MAINTENANCE MANAGEMENT PLAN (MMP)

for the proposed

PROPOSED CONSTRUCTION OF THE JADE HILLS DAM

Portion 26 of Farm Stinkfontein No. 384, Ceres, Western Cape

DEADP reference number: 16/3/3/2/B5/2/1054/20

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Compiled by: ***EnviroAfrica cc***

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INDEPENDENCE & CONDITIONS

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

RELEVANT QUALITFICATIONS & EXPERIENCE OF THE EAP

This River Maintenance and Management Plan was prepared Clinton Geyser who has a MSc. Degree in Environmental Management. He has been working as an Environmental Assessment Practitioner since 2009 and is currently employed at EnviroAfrica cc.

Qualifications:

- BSc. Earth Sciences, Majors in Geology and Geography and Environmental Management (1998 – 2000) and;
- BSc. (hons): Geography and Environmental Management (2001) and;
- MSc. Geography and Environmental Management (2002), all from the University of Johannesburg.

Expertise:
Clinton Geyser has over twelve years' experience in the environmental management field as an Environmental Assessment Practitioner and as an Environmental Control Officer, having worked on a variety of projects in the Western, Eastern and Northern Cape.

The whole process and report was supervised by Bernard de Witt who has more than 20 years experience in environmental management and environmental impact assessments.

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1. EXECUTIVE SUMMARY

The proposed development entails the construction of a new dam for the storing of winter water for summer irrigation on Portion 26 of Farm Stinkfontein No. 383, Ceres. It is proposed that the construction of the dam occurs in two phases. This application is for the investigation of the proposed phase 1 development. For phase 1 it is proposed that the dam will have a capacity of ± 67000m³, a maximum wall height if ±11.1m and a total surface area of ±2ha. An existing water use of (8,6ha) for the taking of water exists and water will come from the Rietvalley scheme for phase 1. A pipeline of approximately 700m with a diameter of 150mm is proposed from the Jade Hills Delivery Point. Water to flow via gravity to the dam.

An expansion of about 10.5ha of fruit orchards is also proposed.

The site is located on Portion 26 of Farm Stinkfontein No. 383 otherwise known as Jade Hills Farm. The farm is located within the Ceres Valley about 6km east-south-east of Ceres. The proposed dam will fall on existing agricultural area (wheat production) and almost no remaining natural vegetation is expected. The drainage line of the property is also considered transformed with no natural vegetation.

The site coordinates for the dam wall are: S 33° 22'31.67", E19° 22'13.15".

The SG code for the property is: C01900000000038300026

According to the Freshwater Verification and Risk Assessment, the overall, the activities related to the proposed dam development are deemed to pose a 'Low' risk significance to the episodic drainage line. This is attributed to the already degraded ecological integrity of the drainage line, as well as the overall absence of indigenous vegetation and limited hydrological drivers which could potentially be impacted.

Nevertheless, possible edge effects that can arise from the construction activities include the disturbance of soils leading to increased sedimentation of the downgradient reach of the drainage line, erosion and possible further proliferation of alien and invasive vegetation. With the implementation of the recommended mitigation measures the risk that such effects would occur on the drainage line is considered to be low to very low.

During the operational phase of the dam, all operational activities are considered to pose a 'Low' risk significance to the drainage line and its downgradient reach, provided that the appropriate impact mitigation measures are implemented. The spillway and the dam wall should regularly be inspected for erosion, especially after heavy rainfall events when overflow from the dam is expected and the flow, velocity is increased. If erosion is noted, this should be rectified immediately, preferably by the reinstatement of the downgradient drainage line embankments though compaction of soil and revegetation thereof. If erosion is pronounced, erosion control devices such as reno mattresses should be considered, in consultation with a freshwater ecological specialist.

1.1 PURPOSE OF THE MMP

The main purpose of this river maintenance and management plan is to guide the applicant and landowner, Jade Hills Farming (Pty) Ltd, which actions to follow to prevent avoidable damage to the aquatic habitat associated with rehabilitation and maintenance activities of the proposed hut dam and weir, as well as to enhance the positive benefits of the project.

It should be noted that this MMP should be read in conjunction with the Environmental Management Programme (EMPr) (Appendix 11 of the EIR).

2. DEFINITIONS AND ABBREVIATIONS:

2.1 DEFINITIONS

Applicant: the person or responsible person from an organization who applied for the proposed activity described in the ROD.

Bund: enclosure under / around a storage facility to contain spillage.

Construction: means the construction period of the project during which the actual works are carried out, deemed to include site establishment, site preparation, the works, maintenance period and decommissioning and is defined as from commencement of site establishment until site handover (practical completion).

Construction site: means the area influenced and affected by the construction activities or under the control of the Contractor often referred to as "the Site".

Construction Supervisor: The person responsible (appointed by the Applicant) to ensure that the construction is carried out to completion on time, within budged and that the Contractor fulfils his obligations in terms of the EMP.

Contaminated water: means water contaminated by the Contractor's activities, *e.g.* concrete water and runoff from plant/ personnel wash areas.

Contractor: the principal persons / company and all other sub-contractors involved in the construction of the project.

Declaration of understanding: Form that is signed by all contractors involved in the construction works of their understanding and acceptance of the EMP and site-specific additions to the EMP.

Development site: boundary and extent of development works and infrastructure.

Environment: means the surroundings within which humans exist and that are made up of:

- the land, water and atmosphere of the earth;
- micro-organisms, plant and animal life;
- any part of the combination of the above two bullets and the interrelationships between them;
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being

Environmental Aspect: Any element of any construction activity, product or services that can interact with the environment.

Environmental Control Officer: The ECO must be independent and suitably qualified and must have a sound knowledge of the environment in which the activity will take place.

Environmental Impact: Any change to the environment, whether adverse or beneficial, wholly or partially resulting from any construction activity, product or services.

Method statement: A statement by the Contractor, describing the scope of intended construction works step-by-step, in order for the ECO and Construction Supervisor to understand the Contractors intentions and be able to comment on, so that they could assist with devising mitigating measures should it be necessary to avoid environmental impact.

No-Go Area(s): An area of such (environmental/aesthetical) importance that no person or activity are allowed within a designated boundary surrounding this area.

Site meetings: Periodic (weekly or monthly) meetings between the ECO, Construction Supervisor and Contractor to discuss construction activities that relate to the environment or any other environmental issues that might arise.

Works: The works to be executed in accordance with a contract.

Start-up meeting: a start-up meeting held on site, before any construction has begun to discuss EMP and determine site specific additions that will be included as the basis for the EMP.

Potentially hazardous substance: is a substance, which, in the reasonable opinion of the Engineer, can have a deleterious (detrimental) effect on the environment.

Precautionary principle: means the basic principle, that when in doubt or having insufficient or unreliable information on which to base a decision, to then undertake actions that will have minimum risk.

Reasonable: means unless the context indicates otherwise, reasonable in the opinion of the Engineer/Project Leader after he has consulted with a person, not an employee of the Applicant, suitably experienced in "environmental implementation plans" and "environmental management plans", both as defined in the Environmental Management Act (Act No 107, 1998).

Solid waste: means all solid waste, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).

2.2 ABBREVIATIONS

CARA	Conservation of Agricultural Resources Act no. 43 of 1983
CBA	Critical Biodiversity Area
DEA	Department Environmental Affairs
DEA&DP	Department of Environmental Affairs and Development Planning (Western Cape)
DWA	Department of Water Affairs
EA	Environmental Authorization (Record Of Decision) issued by relevant authority for the authorisation to commence construction under certain environmental compliances
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer - Must be a suitably qualified independent environmental consultant appointed to ensure compliance to the EMP
EIA	Environmental Impact Assessment
EIS	Ecological Importance and Sensitivity
ESA	Ecological Support Area
EMP	Environmental Management Plan or Programme
FEPA	Freshwater Ecological Support Area
GPS	Global Positioning System
IHI	Index of Habitat Integrity
HWC	Heritage Western Cape
NWA	National Water Act
NEMA	National Environmental Management Act no. 107 of 1998.
NEM: AQA	National Environmental Management: Air Quality Act 39 of 2004.
NEM:BA	National Environmental Management: Biodiversity Act 10 of 2004.
NEM: PAA	National Environmental Management: Protected Areas Act 57 of 2003

NEM: WA	National Environmental Management: Waste Act 59 of 2008.
NFA	National Forest Act 84 of 1998.
NHRA	National Heritage Resources Act 25 of 1999.
NVFFA	National Veld and Forest Fire Act 101 of 1998.
NWA	National Water Act 36 of 1998
PES	Present Ecological State
Sub-WMA	Sub – Water Management Area
WMA	Water Management Area

3. LEGISLATIVE FRAMEWORK

The following specific environmental legislative is applicable to this **Maintenance Management Plan:**

- This Maintenance Management plan is to be approved in terms of the **NEMA EIA** Regulations 2014 (as amended) and only relates to **Activity 19, Listing Notice 1 (GN R.327);**
- The requirements of the **National Water Act 36 of 1998** (as amended);
- The requirements of the **National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA**) in terms of:
    - National list of ecosystems that are threatened and in need of protection (GN 1002 of 9 December 2011).
    - Alien and invasive species list 2016 (GN R. 864 of 29 July 2016).
- **Conservation of Agricultural Resources Act 43 of 1983**, as amended (CARA) in terms of:
    - Combating/preventing erosion; and
    - Combating weeds and invader plants

Overview of other applicable legislation:

- **Constitution of the Republic of South Africa (1996)**: of special relevance in terms of environment is section 24
- **Conservation of Agricultural Resources Act 43 of 1983 (CARA)**: supports conservation of natural agricultural resources (soil, water, plant biodiversity) by maintaining the production potential of the land and combating/preventing erosion; for example, by controlling or eradicating declared weeds and invader plants.
- **Fertilizer, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act No. 36 of 1947),** to control the sell, purchase, use and disposal of agricultural or stock remedies.
- **Hazardous Substances Act 15 of 1973**: to control substances that may cause injury, ill-health, or death through their toxic, corrosive, irritant, strongly sensitizing or flammable nature, or by the generation of pressure
- **National Environmental Management Act 107 of 1998 (as amended):** replaces the Environmental Conservation Act (ECA) and establishes principles for decision-making on matters affecting the environment, and for matters connected therewith.
    - **Environmental Impact Assessment Regulations**: identifying activities (listed activities) for which environmental authorisation must be obtained.
- **National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA):** supports conservation of plant and animal biodiversity, including the soil and water upon which it depends.
    - **National list of ecosystems that are threatened and in need of protection** (GN 1002 of 9 December 2011).
    - **Alien and invasive species list 2016** (GN R. 864 of 29 July 2016).
- **National Environmental Management: Protected Areas Act 57 of 2003 (as amended Act 31 of 2004) (NEMPAA):** To provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes.
- **National Environmental Management: Waste Act 59 of 2008 (NEMWA):** To reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development.
    - **List of Waste Management Activities that have, or are likely to have a detrimental effect on the environment**: Identifies activities in respect of which a waste management license is required.
- **National Forests Act 84 of 1998 (as amended)**: supports sustainable forest management and the restructuring of the forestry sector.
    - **List of protected tree species** (GN 716 of 7 September 2012)

- **National Heritage Resources Act 25 of 1999**: supports an integrated and interactive system for the management of national heritage resources, including supports soil, water and animal and plant biodiversity.
- **National Veld and Forest Fire Act 101 of 1998 (NVFFA):** protects soil, water and plant life through the prevention and combating of veld, forest, and mountain fires
- **National Water Act 36 of 1998 (NWA):** promotes the protection, use, development, conservation, management, and control of water resources in a sustainable and equitable manner.

4. INTRODUCTION AND PROJECT BACKGOUND

Consideration is therefore being given for the construction the proposed Jade Hills dam for potting up of this particular winter water use for summer irrigation. The concerned water use was never potted up before due to the lack of storage capacity and was used on the neighbouring property, also belonging to the previous owner. The new owner of the property would like to ensure the productive use of this winter water use with the aim to establish an irrigated development on the previously dry-land farming property. Should the construction of the dam be approved, an expansion of about 10.5ha of fruit orchards is proposed. The establishment of 10.5ha fruit orchards would provide economic stability and job creation for a labour market that needs it urgently.

The proposed development entails the construction of a new dam for the storing of winter water for summer irrigation. It is proposed that the construction of the dam occurs in two phases. This application is for the investigation of the proposed phase 1 development. For phase 1 it is proposed that the dam will have a capacity of ± 67000m³, a maximum wall height if ±11.1m and a total surface area of ±2ha. An existing water use of (8,6ha) for the taking of water exists and water will come from the Rietvalley scheme for phase 1. A pipeline of approximately 700m with a diameter of 150mm is proposed from the Jade Hills Delivery Point. Water to flow via gravity to the dam.

Figure 1: Google Earth image showing an overview of the development. The blue polygon is the proposed dam footprint, and the green polygon the proposed agricultural development. The blue line is the proposed pipeline. Portion 26 of Farm Stinkfontein No. 383 is indicated by the red polygon.

5. SITE LOCATION AND DESCRIPTION

The site is located on Portion 26 of Farm Stinkfontein No. 383 otherwise known as Jade Hills Farm. The farm is located within the Ceres Valley about 6km east-south-east of Ceres. The proposed dam will fall on existing agricultural area (wheat production) and almost no remaining natural vegetation is expected. The drainage line of the property is also considered transformed with no natural vegetation.

The site coordinates for the dam wall are: S 33° 22’31.67”, E19° 22’13.15”.

The SG code for the property is: C01900000000038300026

Access to the farm is via existing access roads on the property.

Figure 2: Google Earth image showing the locality of the proposed Jade Hills Dam and agricultural development site (red circle).

5.1 BIODIVERSITY FEATURES

According to the Witzenberg spatial dataset of the WCBSP, the proposed dam does not fall within any CBA, but will overlap a proposed Ecological Support Areas (ESA)(Class 2)[1] associated with the channelled valley bottom seasonal streams.

According to the Botanical Assessment (**Appendix 7.1 of the EIR**), in this case the ecological support areas (Class 2) are delineations along the channelled valley bottom wetlands (seasonal streams). Ideally these areas should be restored to its natural state, but in this case restoration will require intervention as there is no more natural vegetation left. The valley bottom wetlands would have to be replanted with riparian vegetation brought in from similar locations (because there is no natural riparian vegetation left on the property).

A Botanical Assessment was conducted by PB Consult and a Freshwater Verification and Risk Assessment was conducted by SAS Environmental (FEN Consulting). For the specialists terms of reference see the full specialist report attached as Appendix 7 and section 8 of the EIR

5.1.1 Botanical:

A Botanical Assessment was conducted by PB Consult (**Appendix 7.1 of the EIR**) and key findings include:

The proposed dam will be located in an area that was utilized for wheat cultivation over a long period of time. Areal imagery indicated that the site is most likely transformed as a result of past and present agricultural practices.

According to the Vegetation Map from Cape Farm Mapper the vegetation that would have been present on site would and would be affected by the proposed dam development is Ceres Shale Renosterveld. This type of vegetation is considered "Vulnerable" according to the *National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA), National List of Ecosystems that are threatened and in need of protection*. It is expected that the proposed dam will fall mostly on agricultural land and that no natural vegetation will be lost.

According to the Botanical Assessment desktop studies indicated that the site and its immediate surroundings were most likely transformed as a result of cultivation. This was confirmed by the site visit. The proposed dam site was clearly degraded to such an extent that it is considered highly unlikely that any natural vegetation of any significance will remain.

However, just east of the proposed new dam site, and along the eastern boundary of the property two areas of degraded natural veld remains, protected within two rocky areas or ridges. Even though it was burned, many indigenous species could be identified. Some were re-sprouting, some were just re-emerging and some can be identified from remains. Both these areas will not be impacted by the proposed development footprint and should be considered for protection as part of the proposed new ecological corridor and wetland area that is proposed as part of the development plan.

No natural vegetation was encountered on the site or its immediate surroundings, apart from a few hardy species (e.g. *Asparagus* species and *Montinia caryophyllacea*) that persisted in a small rocky outcrop within the proposed dam footprint. Because of the resent fire, it was not easy to identify many of these plants past genus level.

The vegetation of the rocky ridge seems to have been (and still are) dominated by *Montinia caryophyllacea* (the common pepper bush). Other species observed includes a number of bulb species, *Searsia glauca*, *Asparagus* species, *Galenia africana* and *Stoebe* cf. *plumose*. All of these plants are either hardy shrubs or pioneer species.

5.1.2 Freshwater:

A Freshwater Verification and Risk Assessment was conducted by SAS Environmental (FEN Consulting) (**Appendix 7.2 of the EIR**), key findings include:

According to the Freshwater Verification Report (**Appendix 7.2.1**), desktop analysis found that, on review of the location of the proposed dam, the surrounding area has primarily been transformed by agricultural activities, including the construction of other dams within the drainage features of the region as a whole. This can be seen in the historical imagery dating back to 1942 when compared to the most recent digital satellite imagery (2017). The transformation of the surrounding areas to cultivated fields has also significantly modified the movement of surface water through the landscape.

Furthermore, on comparison of the digital satellite imagery available between 2013 and 2017; imagery from 2013 (just after the wet season) indicates a pronounced wetness digital signature of the drainage line within the footprint area of the proposed dam (hereafter referred to as 'drainage line 1') and a drainage line located south west of the footprint area (hereafter referred to as 'drainage line 2'), correlating to a surface flow paths identified in the historical imagery. After a period of drought in the Western Cape, and imagery of the dry season (December 2017), an area distinctly different to that of the surrounding area, is visible.

Following a site visit, the following key observation were made by the Freshwater Verification Report:

- The footprint area of the proposed dam is located within the footslope position in the landscape, changing into the valley bottom position just north of the proposed dam area. The proposed dam area has been burnt and cultivated.
- An episodic drainage line was identified to be located in the footprint area of the proposed dam. This drainage line is referred to as drainage line 1. This feature is considered to be degraded as it has no natural riparian vegetation remaining and very few vegetation species were present (vegetation had not recovered after the area was burnt). An erosion gully was present within the drainage line, of which the depth thereof

was more incised in the downstream reaches. The natural compaction and rocky nature of the soil (strong soil structure) prevents exacerbation of erosion, but due to the removal of the vegetation in the surrounding area and the degradation thereof in the drainage line, the depth of the erosion gully is deeper in the downstream reaches of the drainage line in the investigation area. This drainage line enters a dam located approximately 930m north of the proposed dam area. No other wetlands were found to be located within the footprint area of the dam nor the investigation area. The wetland flat identified by the NFEPA Database (see Appendix 4 and Figure 7 of the EIR) to be located within the investigation area was identified as a dam located south-east of the proposed dam area.

- This episodic drainage line does not receive and retain sufficient water to support a wetland response or sustain riparian characteristics,
- This drainage line is expected to have surface water present only during and immediately after rainfall events, in which water would be present for a few days (if not shorter) and conveyed to the downstream dam. During the site visit, it was evident that the most upstream point of this drainage line is directly below an existing dam (upstream and south-east of the proposed dam area). No evidence of an outlet from the dam or visible seepage into the drainage line was evident, but it is possible that if the dam reaches full capacity, spill over water would be conveyed within the drainage line.
- It can be derived from the description of the drainage line as presented above, that it does lack the characteristics that define true watercourses, wetlands and riparian resources.
- Although the drainage line cannot be classified as a riparian resource (to which the drainage line mostly relates to, as per the definitions above) in the traditional sense thereof due to the lack of saturated soils and wetland/riparian vegetation, it does function as a waterway, through episodic conveying of water, and therefore potentially enjoys protection in terms of the National Water Act, 1998 (Act 36 of 1998), if a 1:100 floodline is present.
- Based on the description of drainage line 1 associated with the proposed Jade Hills dam development above and its digital satellite signatures, the drainage lines in the investigation area (west of the proposed dam) could be considered to have similar on-site characteristics as the drainage line associated with the proposed Jade Hills dam footprint. These drainage lines were not assessed on site but since the drainage line south west of the proposed dam (drainage line 2) may potentially be crossed by the proposed abstraction pipeline, it must be considered as part of this watercourse verification report.
    - Based on the most recent digital satellite imagery of drainage line 2, it presents with similar digital characteristics as that of the drainage line within the dam footprint, except that drainage line 2 is narrower and its catchment seemingly smaller.
    - From digital satellite imagery it can be seen that the local catchment of drainage line 2 has been transformed by cultivation and there are also no distinct changes in structure from the vegetation in drainage line 2 to that of the surrounding area. Based on this, the functioning and ecological condition of drainage line 2 is expected to be similar to that of the drainage line 1. As such, drainage line 2 may function as a waterway, through episodic conveying of water, and therefore potentially enjoys protection in terms of the National Water Act, 1998 (Act No. 36 of 1998), if a 1:100 floodline is present.

6. OBJECTIVES OF MAINTENANCE ACTIVITIES/ TERMS OF REFERENCE

The main objectives of this river maintenance and management plan (MMP) is to guide the landowner and other responsible parties to correctly implement mitigation measures to protect the integrity of the aquatic habitat and to minimise the impact of the proposed dam on the receiving environment. Dams require regular maintenance and monitoring to remain in a good working condition and to ensure these structures work in harmony with the environment.

This MMP aims to set guidelines for the correct management procedures and methods, in such a manner that they may be flexible.

6.1 TERMS OF REFERENCE

- Undertake a site visit in order to assess the site areas;
- Desktop review of DEADP's Maintenance Management Plan Guidelines;
- Identify the environmental risks associated with the maintenance management activities;
- Recommend appropriate, practicable mitigation measures that will reduce all major impact or enhance potential benefits, if any;
- Compile an MMP that takes into account all the aspects outlines in the DEADP Maintenance Management Plan Guidelines.

7. BRIEF DISCRIPTION OF MAINTENANCE ACTIVITIES:

The following section briefly describe the maintenance activities. Site specific Method Statements were developed for river maintenance from recommendations made by the specialists. The MMP should be approved by the deciding authority and subsequently complied with by the landowner and responsible parties during maintenance activities.

The engineer responsible for the design and building of the dam must submit Operating, Maintenance and Emergency plan to DWS/BGCMA as a requirement of the dam safety regulation after construction which must be implemented.

The following general management activities and mitigation measures have been identified and must be implemented, should maintenance management activities be conducted:

- Repairs and maintenance should be undertaken within the dry season, except for emergency maintenance works.
- The contractor must demarcate the boundaries of the site or area scheduled for maintenance during the maintenance management activities as required.
- Where at all possible, existing access routes should be used. In cases where none exist.
- Responsible management of pollutants through ensuring handling and storage of any pollutants is away from the watercourse. When machinery is involved, ensure effective operation with no leaking parts and refuel outside of the riparian area, at a safe distance from the watercourse to manage any accidental spillages and pose no threat of pollution.
- At no time should the flow of the watercourse be blocked (temporary diversions may be allowed) nor should the movement of aquatic and riparian biota (noting breeding periods) be prevented during maintenance actions.
- No new berms can be created.
- In circumstances which require the removal of any top soil, this must be sufficiently restored through sustainable measures and practices.
- Concerted effort must be made to actively rehabilitate repaired or reshaped banks with indigenous local vegetation.
- No deepening of the watercourse beyond the original, pre-damage determined thalweg, unless such deepening is directly related to the natural improved functioning and condition of such a watercourse.
- The build-up of debris/sediment removed from a maintenance site may:
    - be utilised for the purpose of in-filling or other related maintenance actions related to managing erosion, which form part of an adopted MMP;
    - not be used to enlarge the height, width or any extent of existing berms;
    - not be deposited anywhere within the watercourse or anywhere along the banks of a river where such action is not part of the proposed maintenance activity (ies). Material that cannot be used for maintenance purposes must be removed out of the riparian area to a suitable stockpile location or disposal site. Further action and consideration may be required where the possibility of contaminated material may occur, such as in urban watercourses.
- The use of foreign material, such as concrete, rubble, woody debris and/or dry land based soil, is strictly prohibited from being used in maintenance actions, unless for the specific purpose of repairs to existing infrastructure, coupled with appropriate mitigation measures.

- Maintenance material should be certified free of invasive alien plant seed to prevent infestation in the watercourse.

7.1 SITE SPECIFIC MAINTENANCE ACTIVITIES AND MIITGATION MEASURES

Site specific maintenance activities aim to protect the integrity of the aquatic habitat by mitigating, where possible, the loss aquatic habitat during maintenance activities.

The following site specific mitigation measures were provided by the Freshwater Risk Assessment:

The following mitigation/control measures were recommended:

- It is recommended that the construction activities be undertaken during the dry summer period when the flow is limited in the drainage line;
- Due to the erosion that was noted within the drainage line, use should be made of existing roads to gain access to the proposed dam footprint area. Due to the relative accessibility of the site, no unnecessary crossing of the drainage line may be permitted. This will limit any further erosion of the drainage line and its downstream reach;
- Contractor laydown areas, vehicle re-fuelling areas and material storage facilities to remain outside of the proposed dam footprint area;
- All development footprint areas to remain as small as possible and vegetation clearing to be limited to what is essential, and preferably only alien floral species to be removed. Based on the site conditions at the time of the field assessment (January 2019), very few vegetation species were present within the drainage line. Nevertheless, any indigenous species present outside of the dam footprint area must be preserved to maintain the current ecological condition of the immediate area and prevent any erosion and keep the soil profile intact. Once alien species are removed, they may not be stockpiled on site, but must immediately be removed from the site and disposed of at a registered waste disposal facility;
- Exposed soils to be protected using a suitable geotextile covering such as hessian sheeting.
- Ensure sediment control devices are in place before the start of the construction activities;
- Maintain sediment/erosion control devices to minimise the risk of sedimentation of the downgradient drainage line reach using silt traps;
- The spillway outlet of the dam should be constructed from energy dissipating structures (such as Armorflex or reno mattresses) to slow down the velocity of water inflow into the downgradient drainage line reach and preventing erosion thereof;
- Excavated materials and topsoil may not be contaminated, and it must be ensured that the minimum surface area is taken up by the stockpiles, and the stockpiles may not exceed 2m in height. Mixture of the lower and upper layers of the excavated soil should be kept to a minimum, for later usage as backfill material or as part of rehabilitation of the dam wall;
- All exposed soils must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geojute or hessian sheeting) to prevent erosion and sedimentation of the downgradient drainage line reach; and
- Construction of the dam wall should be done in a layered phased manner, where layers of imported material are placed on the dam wall and compacted. This process should be repeated until the desired height has been reached.
- Mitigation measures applicable to the spillway:
    - Energy dissipating structures should be installed at the spillway outlet to prevent erosion and scouring of the drainage line where the overflow will be discharged;

- At the outlet, rocks must be placed and vegetation established (if applicable considering the highly episodic nature of the system) to bind the soil of the bed, and to prevent erosion. This will also diffuse flow and lower the velocity of water into the lower reach of the drainage line;
- Upon completion of the construction activities, all footprint areas should be revegetated with indigenous vegetation.

- Previously removed soils (removed as part of the site preparation activities) should be used as topsoil for covering of the dam wall;
- It should be ensured that the topsoil used are weed free to limit the establishment of alien and invasive vegetation species;
- Re-seed the dam wall with indigenous species as soon as construction activities are completed.
- During the site visit undertaken, no obligate freshwater vegetation species were noted in the drainage line. To increase the habitat of the immediate environment, indigenous obligate freshwater vegetation species should be established in the areas where extended periods of saturation would occur, such as within the drawdown area of the constructed dam; and
- Implement an alien and invasive species control plan to prevent the establishment of such species.
- The spillway should regularly be inspected for erosion, especially after heavy rainfall events when overflow from the dam is expected and the flow, velocity is increased. If erosion is noted, this should be rectified, preferably by the reinstatement of the embankments through compaction of soil and revegetation thereof. If erosion is pronounced, erosion control devices such as reno mattresses should be considered, in consultation with a freshwater ecological specialist.
- The spillway should be maintained free of any debris and silt/sediment.
- During desilting, silt associated with the dam should immediately be removed to prevent sedimentation of the downgradient drainage line reach. Additionally, during desilting, a temporary silt trap should be installed at the spillway. This must be emptied regularly and not permitted to reduce the capacity of the dam.

It must be noted that the site specific mitigation measures listed above are for both the construction, operational and maintenance phases. However, the mitigation measures for the construction phase must also be noted, and should also be applied to the maintenance activities.

Objective: Mitigate and monitor alien plant invasion on the property The landowner/ applicant is responsible for the removal of alien invasive plant species on their properties, especially within the riparian zone, downstream and upstream of the dam.
Mitigation Action: • Removal of the invasive and alien plants should be according to the appropriate invasive plant clearing guidelines/ methods provided by the Working for Water Programme • Alien and invasive plant species should be removed manually as far as possible, form the site as well as any areas on the property. All work will be done by hand (manually), either by pulling, using shears, hand saws or chainsaws (depending on the size of the tree). The use of vehicles or mechanical means for alien removal will be prohibited within the riparian zone. • The use of herbicides should be avoided. However, only herbicides which have been certified and proved for wetland/ aquatic environments by an independent testing authority may be considered. • No obligate freshwater vegetation species were noted in the drainage line. As per the freshwater specialist recommendations, to increase the habitat of the immediate environment, indigenous obligate freshwater vegetation species should be established in the areas where extended periods of saturation would occur, such as within the drawdown area of the constructed dam. • An alien and invasive species control plan must be implemented to prevent the establishment of such species.

- Once alien species are removed, they may not be stockpiled on site, but must immediately be removed from the site and disposed of at a registered waste disposal facility;
- Any topsoil used are weed free to limit the establishment of alien and invasive vegetation species.

Objective: Mitigate the disturbance of habitat and compaction of soils up and down stream of the proposed sites due to maintenance activities.

Maintenance activities such as the indiscriminate movement of vehicles and personnel and the dumping of excavated materials may result in the disturbance of wetland vegetation and the compaction/ disturbance of soil located up and down stream of the proposed dam. Disturbance may also result in the proliferation of alien and invasive plant species.

Mitigation Action:

- Demarcate working area and put up signage to ensure maintenance activities only remain within the dedicated area
- Immediately rip compacted soil to a depth of 300mm and reprofile the area according to natural terrain units where any accidental disturbance to portions of the unchanneled valley bottom wetland falling outside of the demarcated maintenance footprint area has taken place.
- If the disturbed area will be prone to erosion (sheet runoff or formation of gullies), it is recommended that straw bales (not Lucerne or hay) are used to intercept the bulk of the runoff. The bales should be placed strategically along contour lines and pegged. Disturbance and removal of vegetation within the immediate vicinity of the area where the bales are placed should be kept to a minimum.
- Sediment should be cleared manually as needed.
- If stockpiling of materials is required, stockpiles must be placed 32m from the border of the drainage line
- Prohibit dumping of excess excavated material within the drainage line
- Once maintenance is completed, all waste i.e. rubble and equipment must be removed and disposed of in an appropriate manner as per the EMP.

Objective: Mitigate the increased stormwater runoff, erosion and sedimentation during maintenance activities

An increase in stormwater runoff from cleared, disturbed and compacted areas may result in an increase in stormwater flows and flow velocities into the aquatic habitat which can cause erosion. Earth moving activities can also result in an increase in the runoff of sediment onto the downstream aquatic habitat.

Mitigation Action:

- It is suggested that the maintenance of the dam should be undertaken during the dry summer months.

- Use should be made of existing roads to gain access to the proposed dam footprint area. Due to the relative accessibility of the site, no unnecessary crossing of the drainage line may be permitted. This will limit any further erosion of the drainage line and its downstream reach;
- Exposed soils to be protected using a suitable geotextile covering such as hessian sheeting.
- Ensure sediment control devices are in place before the start of the maintenance activities;
- Maintain sediment/erosion control devices to minimise the risk of sedimentation of the downgradient drainage line reach using silt traps;

Objective: Mitigate the increased stormwater runoff, erosion and sedimentation during maintenance activities applicable to the spillway

The spillway outlet of the dam should be constructed from energy dissipating structures (such as Armorflex or reno mattresses) to slow down the velocity of water inflow into the downgradient drainage line reach and preventing erosion thereof. This is to be maintained to prevent erosion and scouring of the drainage line where the overflow will be discharged;

Mitigation Action:

- At the outlet, rocks must be placed and vegetation established (if applicable considering the highly episodic nature of the system) to bind the soil of the bed, and to prevent erosion. This will also diffuse flow and lower the velocity of water into the lower reach of the drainage line. These are to be maintained, replaced or repaired
- Upon completion of any maintenance activities, all footprint areas should be revegetated with indigenous vegetation.
- The spillway should regularly be inspected for erosion, especially after heavy rainfall events when overflow from the dam is expected and the flow, velocity is increased. If erosion is noted, this should be rectified, preferably by the reinstatement of the embankments through compaction of soil and revegetation thereof. If erosion is pronounced, erosion control devices such as reno mattresses should be considered, in consultation with a freshwater ecological specialist.
- The spillway should be maintained free of any debris and silt/sediment.

Objective: Maintenance of the Dam Wall including inspections, desilting and leak detection.

Mitigate the run-off from which the potential to increase silt loads within the downstream drainage line due to desilting activities resulting in the Removal of vegetation (terrestrial and wetland) and Earthworks and silt stockpiling.

Mitigate the increase in water quantity which could cause extended periods of water saturation of the downstream drainage line reach due to leaks within the dam wall.

Mitigation Action:

- During desilting, silt associated with the dam should immediately be removed to prevent sedimentation of the downgradient drainage line reach. Additionally, during desilting, a temporary

silt trap should be installed at the spillway. This must be emptied regularly and not permitted to reduce the capacity of the dam.

- Repair leaks as soon as possible, taking the mitigation measures above, and as specified in the EMP for construction activities.

Objective: Mitigate water quality impairment of the wetland habitat during maintenance activities

The movement of vehicles through the unchanneled valley bottom wetland increases the possibility of the contamination of the wetland by hydrocarbons which may leak from vehicles duirig maintenance activities. Runoff cement could also cause contamination of the wetland.

Mitigation Action:

- Avoid the use of infill material or maintenance material with pollution / leaching potential.
- Clean up any spillages (e.g. concrete, oil, fuel), immediately. Remove contaminated soil and dispose of it appropriately.
- Store fuel, chemicals and other hazardous substances in suitable secure weather-proof containers with impermeable and bunded floors to limit pilferage, spillage into the environment, flooding or storm damage.
- Inspect all storage facilities and vehicles daily for the early detection of deterioration or leaks.
- Dispose of used oils, wash water from cement and other pollutants at an appropriate licensed landfill site. Disposal of any of these within the valley bottom wetland should be strictly prohibited.
- Dispose of concrete and cement-related mortars in an environmental sensitive manner (can be toxic to aquatic life). Washout should not be discharged into the valley bottom wetland.
- Provide portable toilets where work is being undertaken. These toilets must be located at least 32m from the boundary of the valley bottom wetland and must be serviced regularly in order to prevent leakage/spillage.

Objective: Ensure discharge points do not become blocked with sediment, debris, driftwood/nuisance vegetation

Mitigation Action:

- Removal of blockages must be conducted by hand wherever possible
- Use of machinery should only be as a last resort
- All debris, sediment and nuisance vegetation should be removed and properly disposed off
- If vegetation does not establish after maintenance, revegetate discharge areas with wetland species indigenous to the area. Vegetation will aid in dispersing concentrated flows and will decrease the

velocity and erosive potential of flows. Furthermore, the roots of vegetation will aid in binding the soils thereby reducing the possibility of erosion

8. METHOD STATEMENTS

Method Statements, as described in Section 7.6 of the EMPr, will be required for each of the objectives in Section 7 above.

A method statement forms the base line information on which sensitive area work takes place and is a "live document" in that modifications are negotiated between the Contractor and ECO/applicant, as circumstances unfold.

All method statements will form part of the MMP documentation and are subject to all terms and conditions contained within the MMP, and the EMP main document.

These documents must be available to the authorities for inspection or on request.

The Contractor must submit the method statement before any particular maintenance activity is due to start. Work may not commence until the ECO and applicant have approved the method statement.

Method statements need to be compiled by the contractor for approval by Applicant and the ECO.

9. RESPONSIBLE PARTIES

- **The Applicant/client** – the applicant (Jade Hills Farming (Pty) Ltd is responsible for employing the Contractors for the duration of the maintenance work. The applicant will employ the ECO. The applicant/ client will ensure, as a signatory to the MMP, that the Contractor fulfil their obligation in terms of this MMP

  The applicant will be held responsible for the correct implementation of the river maintenance management plan.

- **Principal agent** - the Principal Agent is appointed by the client and is responsible to the client for ensuring that the maintenance work is carried out to completion on time, in budget and that the Contractor fulfils their obligations in terms of the MMP. The Principal Agent and ECO are expected to develop a close working relationship and to communicate frequently. The Principal Agent must be recognized as the senior authority on site and all communications and instructions between the ECO and the Contractor must occur via the Principal Agent. The Principal Agent is also responsible for deducting environmental penalties from the Contractor. The Principal Agent must ensure that the Contractor has a copy of this MMP and all approved Method Statements and that the Contractor is familiar with the relevant documentation.

- **The ECO** – the ECO must be appointed prior to the commencement of any maintenance activities. The ECO will advise the Contractor of any environmentally related issues during the maintenance phase of the development.
  - The responsibilities of the ECO will include monitoring of compliance of the MMP by the contractor
  - The ECO has the authority to recommend the cessation of works or any portion of the maintenance activity to the Principal Agent. This will be triggered if in his/her opinion the activity has caused or

will imminently cause significant damage and/or harm to the environment or is in contravention of the relevant environmental legislation/permits/authorizations applicable to the site and/or activity/ies.

- If the Contractor fails to show adequate consideration to the MMP or the recommendations of the ECO, then the ECO may recommend that the Contractor's representative or any employee/s responsible for not showing adequate consideration to the MMP are removed from the site. Alternatively, the ECO may recommend that all maintenance work on site be suspended until the matter is remedied. All costs will be carried by the Contractor.
- Should modifications to this document be required, these must be agreed to by all parties concerned.

- **The Contractor** – the Contractor will adhere to the conditions of this MMP and ensure that all of its sub-Contractors, employees, suppliers, agents and so forth, for whom the Contractor is fully responsible for their actions on site, are fully aware of this MMP, its requirements and the consequences of any breach of the requirements of this MMP. The Contractor is fully responsible for implementing the MMP. The Contractor will ensure that works on site are conducted in an environmentally responsible manner and in accordance with the requirements of this MMP.

- **Problematic Issues** – should problematic issues arise, as identified by the ECO, the ECO has the authority to call a special meeting with the Principal Agent to address and rectify the matter.

9.1 CONTACT DETAILS OF APPLICANT/ CLIENT

Relevant parties	Jade Hills Farming (Pty) Ltd
Maintenance Proponent	Mr Jean Faul
Landowner	Same as Applicant
Address:	P.O. Box 72 Ceres 6835
Email:	jeanfaul@lando.co.za

10. ENVIRONMENTAL AWARENESS TRAINING

The applicant (who is also the landowner) has been involved during the NEMA EIA application process and understands the implications off the recommendations made by the various specialists' reports, especially the freshwater specialist. By signing the declaration of understanding **(Appendix F)** the applicant declares that he understands his responsibility towards the implementation of the MMP and EMPr.

General awareness training will be given (as needed) in accordance with the EMPr.

- An ECO should be appointed prior to the commencement of any maintenance activities.
- The ECO should train the Contractor on site in order to ensure that all parties involved are familiar with the potential impacts and environmental risks of the maintenance and monitoring activities as week as the mitigation measures to reduce or avoid these impacts and potential pollution or degradation of the site and surrounding environment.

As a minimum, the following should be included in the awareness programme:

- Explanation of the importance of this MMP;
- Discussion of the potential environmental impacts of maintenance activities;
- Explanation of the management structure of individuals responsible for matters pertaining to this MMP;
- employees' roles and responsibilities, including emergency preparedness (also refer to **Section 7.11 of the EMPr**);
- Explanation of the mitigation measures that must be implemented when carrying out maintenance activities; and
- Explanation of the Environmental Do's and Don'ts (please refer to the **Appendix 3 of the EMPr**) for the Environmental Education section).

Attention should be focussed on the following areas of sensitivity:

- Removal/ disturbance of riparian vegetation;
- Aquatic habitat disturbance
- Soil erosion and sedimentation; and
- Water Quality degradation due to siltation and debris.

The awareness training for the maintenance activities should aim to prevent, and where prevention is not possible, mitigate detrimental health, safety and environmental impacts. In particular, it should promote awareness of environmental risk and management thereof.

11. GENERAL CONTROL

The following additional general management activities and mitigation measures have been identified and should be implemented where required during the maintenance management activities:

Description of the Activity & Associated Impacts	**Site Boundaries and No-Go Areas**
Measures to be implemented during maintenance activities	• The Contractor must demarcate the boundaries of the site or area scheduled for maintenance during maintenance management activities as required. • The minimum area scheduled for the maintenance activities should be demarcated. • Access to the site during maintenance activities must be restricted to ensure to only the required personnel in order to gain access via the designated, controlled access points. Sensitive areas must be demarcated in conjunction with the ECO prior to any maintenance work starting on site.

Description of the Activity & Associated Impacts	**Use of Materials** **Potential environmental impact as a result of the use/misuse of inappropriate materials**

Measures to be implemented during maintenance activities	• The principle of "re-use and recycle" (i.e. try to use recycled materials) should be implemented as far as possible on site for all maintenance related activities. • The Contractor must at all times carefully consider the requirements of the NEMA Principles and take appropriate measures to implement such as far as practicably possible.

Description of the Activity & Associated Impacts	**Occupational Health and Safety** **Potential health and Safety Impacts associated with the maintenance activities on site**
Measures to be implemented during maintenance activities	• All people working on site are responsible for their own safety on site. • Contractors must at all times comply with the relevant statutory requirements including the Occupational Health and Safety Act, Act 85 of 1993. • A comprehensive site specific first aid kit must be available on site at all times. • At least one person trained in safety and first aid and familiar with the first aid equipment on site must be present on the site at all times. Emergency procedures must also be established prior to the start of maintenance operations on site.

Description of the Activity & Associated Impacts	**Waste Management** **Possible pollution of or damage to the environment in the general areas of the site, as a result of incorrect or poor waste management.**
Measures to be implemented during maintenance activities	**Liquid waste:** (if machinery is used) • Use of machinery should only be as a last resort • Liquid dispensing receptacles (e.g. lubricants, diesel, shutter oil etc.) must have drip trays beneath them/beneath the nozzle fixtures. • Material safety data sheets (MSDS) must be available on site (if required) where products are stored, so that in the event of an incident, the correct action can be taken. • Depending on the types of materials stored on site during the maintenance activities, suitable product recovery materials (such as Spillsorb or Drizit products) must be readily available. Vehicles should ideally be washed at their storage yard as opposed to on site. • Storm water must be managed in such a way that no overland flow is possible onto any area of the site which could contain potential contaminants (such as concrete mixing areas, material and hazardous storage areas from any adjacent area). **Solid waste:** • Waste must be categorized by the Contractor and disposed of in a suitable manner into separate waste streams (this includes general,

	hazardous and recyclable waste) only at authorised waste disposal facilities. • The Contractor must provide an adequate number of waste receptacles for the duration of the maintenance management activities for general waste at points around the site as well as for hazardous and recyclable waste. • Waste is to be disposed via a licensed waste disposal Contractor. • The frequency of collections/emptying of waste receptacles will be of such a frequency that waste receptacles do not overflow. Particular care must be taken with the disposal of materials that could be wind-borne or waterborne to ensure that the release of these materials is minimised (the latter is a requirement for hazardous waste). The use of netting covers or similar sealed containers must be implemented as and when required by the ECO. • Areas demarcated for specific activities including food consumption must have suitable waste receptacles provided. • Wherever possible recycling must be carried out. • No dumping within the surrounding area is to be permitted. No burning of solid waste is allowed. • All material used by the Contractor during the maintenance management activities must be managed in such a way that it does not cause pollution, or that it minimises pollution. In the event of a spillage, the Contractor should have suitably trained personnel who can correctly clean up any spillage in an efficient and environmentally sound manner.

Description of the Activity & Associated Impacts	**Erosion Control** **Erosion of soil and material resulting along the impacted areas.**
Measures to be implemented during maintenance activities	• Soil erosion on site must be prevented at all times. • Maintenance activities should preferably be undertaken in the low rainfall months when the potential for erosion impacts from the maintenance activities can be contained.

Description of the Activity & Associated Impacts	**Fire Safety** **Potential fire risk associated with the maintenance activities on site.**
Measures to be implemented during maintenance activities	• Fires and burning of waste on site should not be allowed. • Open fires will not be permitted anywhere on the site during the maintenance activities.

12. REHABILITATION SPECIFICATIONS AND SITE CLEAN-UP

The following measures have been identified to ensure that restoration and rehabilitation of the environment affected by the maintenance activity following the completion of these activity:

- The contractor shall be responsible for rehabilitating (vegetation planting etc. where applicable) all disturbed areas during the maintenance activities to the satisfaction of the ECO.
- Vegetation to be replanted shall be indigenous species that are endemic to that region only. Any invasive alien plants within the disturbed area should be removed according to objective in Section 7.1, and according to the guidelines provided in the Working for Water Programme.
- Any soil and vegetation cover removed during the maintenance activities should be replaced at the same level as the existing level.
- All areas where temporary services were installed are to be rehabilitated to the satisfaction of the ECO.
- The implementing agent shall clear and clean the site and ensure that everything not forming part of the permanent works is removed from site before issuing the completion certificate or as otherwise agreed.
- Any rubble or waste associated with the maintenance activities should be removed to an approved disposal site after the maintenance activity is complete.
- Burying or burning rubble or waste on the site is prohibited.
- The site is to be cleared of all litter following the completion of maintenance activities.
- All surfaces are to be checked for waste products from maintenance activities and cleared in a manner approved by the ECO.

13. ENVIRONMENTAL MONITORING & REPORTING

Monitoring aims to detecting changes that will inform intervention or remedial actions that might be needed to inform environmental performance. Monitoring will be done by physically walking the property, inspecting the dam itself as well as the aquatic habitat up and down stream of the dam.

Part of the watercourse that is monitored	Frequency of Monitoring	Monitoring procedure	How results are analysed and presented	Comments
The wetland habitat up and down stream of the dam must be monitored.	Prior to the commencement of activities and after activities are complete. If necessary also during the maintenance activities.	➢ The ECO will visit the site during the maintenance management activities and ensure that conformance with the MMP. ➢ Guidance will be given to the implementing agent as required with regards to implementing the MMP. ➢ Photographs of the maintenance management activity will be taken as a record of the correct undertaking of the specific maintenance management activity.	The record of the site visit undertaken during the maintenance management activities will include the following: ➢ Report which will illustrate what activity was undertaken at the site; ➢ Correct implementation as well as non-conformance of the MMP will be outlined; ➢ Recommendations to ensure conformance with the MMP in future maintenance management activities if required. ➢ Photographs of all maintenance management activities undertaken at the site.	The following in particular should be monitored: • Post-construction monitoring of plants relocated during search and rescue to evaluate where the intervention was successful or not. This should be undertaken on a three-monthly basis for two years after transplanting in order to evaluate the success thereof, or as suggested by the appointed botanist who will be conducting the entire search and rescue operation. • Monitoring and clearing of alien invasive plants on the property will need to be undertaken on an ongoing basis according to the applicable recognised methods for clearing of alien invasive plant growth. • Monitor discharge points for erosion and incision on a quarterly basis and after heavy rainfall events. Should erosion and incision be noted, corrective measures must be undertaken.

13.1 MONITORING REPORT

Monitoring report will focus mainly on physical site inspections aiming at early detection of erosion and the need for intervention and the measures to be taken. As such the monitoring report needs to address the following minimum criteria, namely the date of inspection, the portion of the river that was inspected, the result of the inspection and any actions that was or needs to be taken as well as photographs showing the site before and after the maintenance activity was completed.

The landowner is responsible to ensure a record of all maintenance activities is recorded as per the forms below. Form A and B below must also be sent to the Provincial Department of Agriculture, Directorate: Sustainable Resource Management.

The Department may, within a reasonable notice period, request to evaluate the maintenance activities and assess the maintenance sites as per the adopted MMP.

Form A should be completed at least 7 working days before the commencement of any maintenance activity and Form B at least 3 working days following the completion of the maintenance activity(ies). At least two photographs are required from two different points of perspective (A and B) looking at the site (coordinates of these points are required). When listing the type and reference code, this must be done by specifically listing the relevant detail within the adopted MMP.

REPORTING FOR INTENT TO UNDERTAKE MAINTENANCE ACTIVITIES – FORM A				
Section A: Landowner Details				
Name	**Surname**	**Farm No.**	**Erf No.**	**Today's Date**
Section B: Details of proposed maintenance activity				
WUA/GA reference number and DEA&DP reference number for MMP.	**Activity Type:**	**Reference code (*make reference to MMP*)**	**Footprint area (m^2)**	**Volume of material (m^3)**
Equipment to be used:	**Description of method for planned activity:**			**Date when work will commence:**
Date of last flood event for site:	**Note any further damage and comments regarding the state of the site**			
Section C: Photographs of activity location before maintenance				
Before A **Coordinates:** **S** **E**				
Before B **Coordinates:** **S** **E**				

Date of photos taken:				
REPORTING COMPLETION OF MAINTENANCE ACTIVITIES – FORM B				
Section A: Landowner Details				
Name	**Surname**	**Farm No.**	**Erf No.**	**Today's Date**
Section B: Details of proposed maintenance activity				
WUA/GA reference number and DEA&DP reference number for MMP.	**Activity Type:**	**Reference code (*make reference to MMP*)**	**Footprint area (m^2)**	**Volume of material (m^3)**
Equipment that was used:	**Description of method for completed activity and if the commence date changed**			**Date when work will commence:**
Date of last flood event for site:	**Note any challenges or difficulties experienced in following the MMP method statement**			
Section C: Photographs of activity location after maintenance				
Before A **Coordinates:** **S** **E**				
Before B **Coordinates:** **S**				

E **Date of photos taken:**	