WETLAND REHABILITATION AND MAINTENANCE MANAGEMENT PLAN

PROPOSED REHABILITATION OF A WETLAND PORTION ON ERF 8308, GRABOUW

August 2024

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REPORT INFORMATION

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VERSION	Revised_1

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Olivia Brunings holds a BSc degree in Conservation Ecology from the University of Stellenbosch. During the course of her studies, internships and professional career she has gained valuable and informed insight into the functioning of natural and socio-ecological systems, including aquatic ecology, together with many key research and monitoring skills. Olivia has substantial work experience in the aquatic ecology sector and has conducted aquatic specialist work in the agricultural, residential development, renewable energy, resort development and biodiversity conservation sectors.

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Kimberley van Zyl is an ecologist and environmental scientist with over 7 years' experience in the environmental management field. She holds a MSc. degree in Water Resource Management from the University of Pretoria and her professional affiliations include the South African Council for Natural Scientific Professions (SACNASP) and the Southern African Society of Aquatic Scientists (SASAqS). Kimberley's work experience has exposed her to a range of projects across various business sectors such as mining, agriculture, and construction, as well as the public sector.

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Please note: Changes made in response to comments received are underlined where possible. General text changes are not highlighted.

1. INTRODUCTION

1.1. Project Background

An Environmental Authorisation (EA) for the extension of the Elgin Poultry Abattoir in Grabouw Industria (Figure 1) was granted in 2015 by the Department of Environmental Affairs and Development Planning (DEA&DP). The approved extension entails the expansion of existing buildings and infrastructure in two phases. Phase 2 of the project will result in the infilling and loss of two wetland portions located in the north-eastern corner of erf 8611. Erf 8611 is owned by Elgin Free Range Chickens (Figure 2 & Figure 3). In order to compensate for the loss of onsite wetland functionality, the Freshwater Assessment Report compiled by BlueScience (Grobler & Belcher, 2014) recommended the rehabilitation of a portion of the wetland area on erf 8308 (previously portion 10 of erf 291), situated immediately north/northeast of the Elgin Poultry Abattoir (Figure 3). Erf 8308 is owned by the Theewaterskloof Municipality. The current report details the wetland rehabilitation and long-term maintenance management actions that need to be implemented on erf 8308 for the required mitigation to be realised.

This rehabilitation and Maintenance Management Plan (MMP) must be read in conjunction with the following documents:

- Berry, M. (2024). Plant Search & Rescue Plan Wetland Rehabilitation, Elgin Free Range Chicken site, Grabouw (**Appendix A**)
- Grobler, D. and Belcher, T. (2014), Freshwater Assessment for Elgin Chicken Industrial Site in Grabouw Industrial Area (**Appendix B**)
- Environmental Authorisation (EA) for the proposed extension of the Elgin Poultry Abattoir in Grabouw Industria dated 24 February 2015 (**Appendix C**)
- Letter of Commitment between Elgin Free Range Chickens and Theewaterskloof Municipality for the establishment of a wetland on Erf 291 Portion 10, Grabouw dated 12 February 2015 (**Appendix D**)
- Finalised Engineering Design of the Off-site Wetland System (**Appendix E**)
- Agreement between Elgin Free Range Chickens (Pty) Ltd and the Theewaterskloof Municipality for the Rehabilitation of a Wetland on the Remainder of Erf 8308, Grabouw (**Appendix F**)

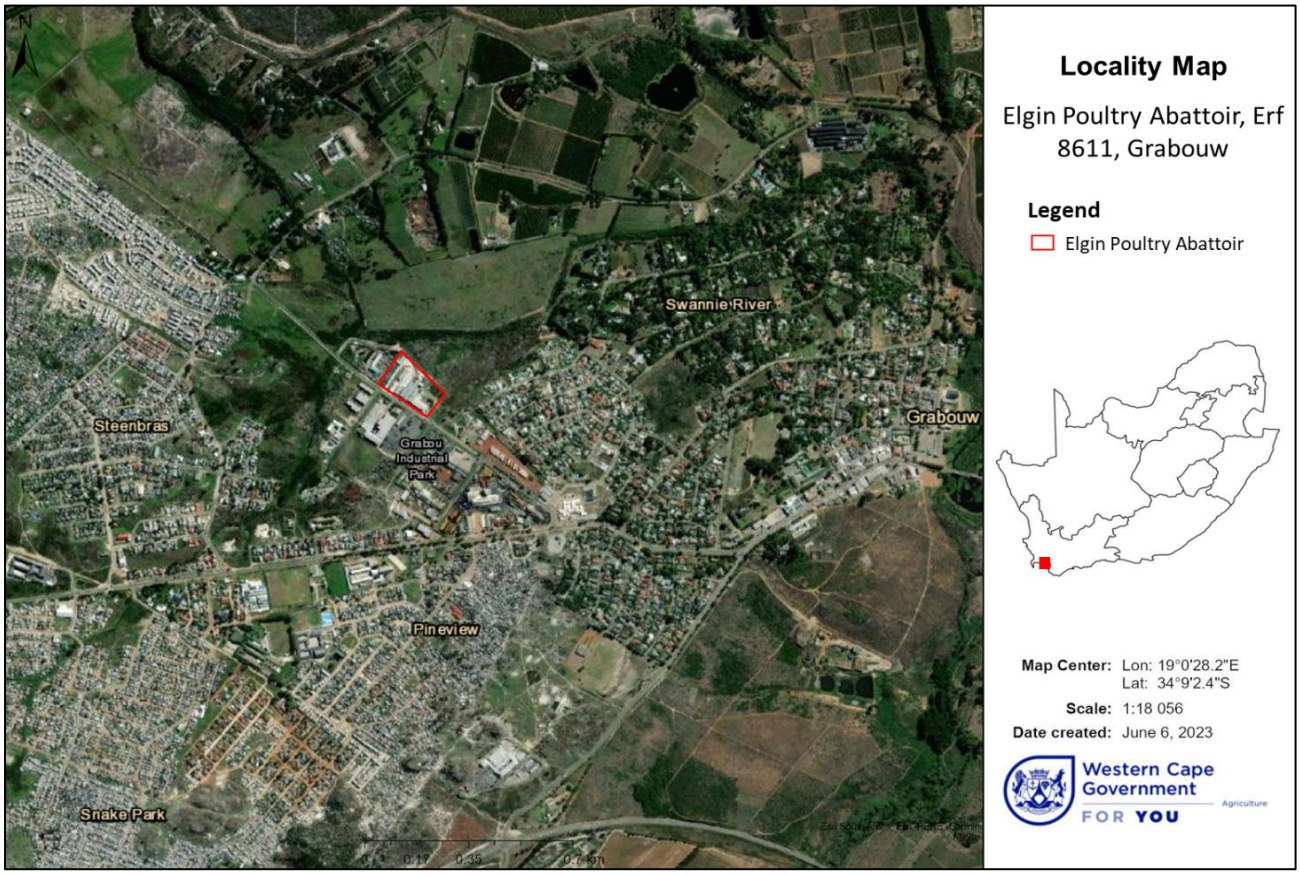


Figure 1: Location of the Elgin Poultry Abattoir in Grabouw Industria, Western Cape.

Figure 2: Wetland delineations presented in the 2014 BlueScience Freshwater Assessment (Grobler & Belcher, 2014). Please note, the two wetland portions located within the EFRC property boundaries (red outline) will be lost during Phase 2 of the approved expansion.

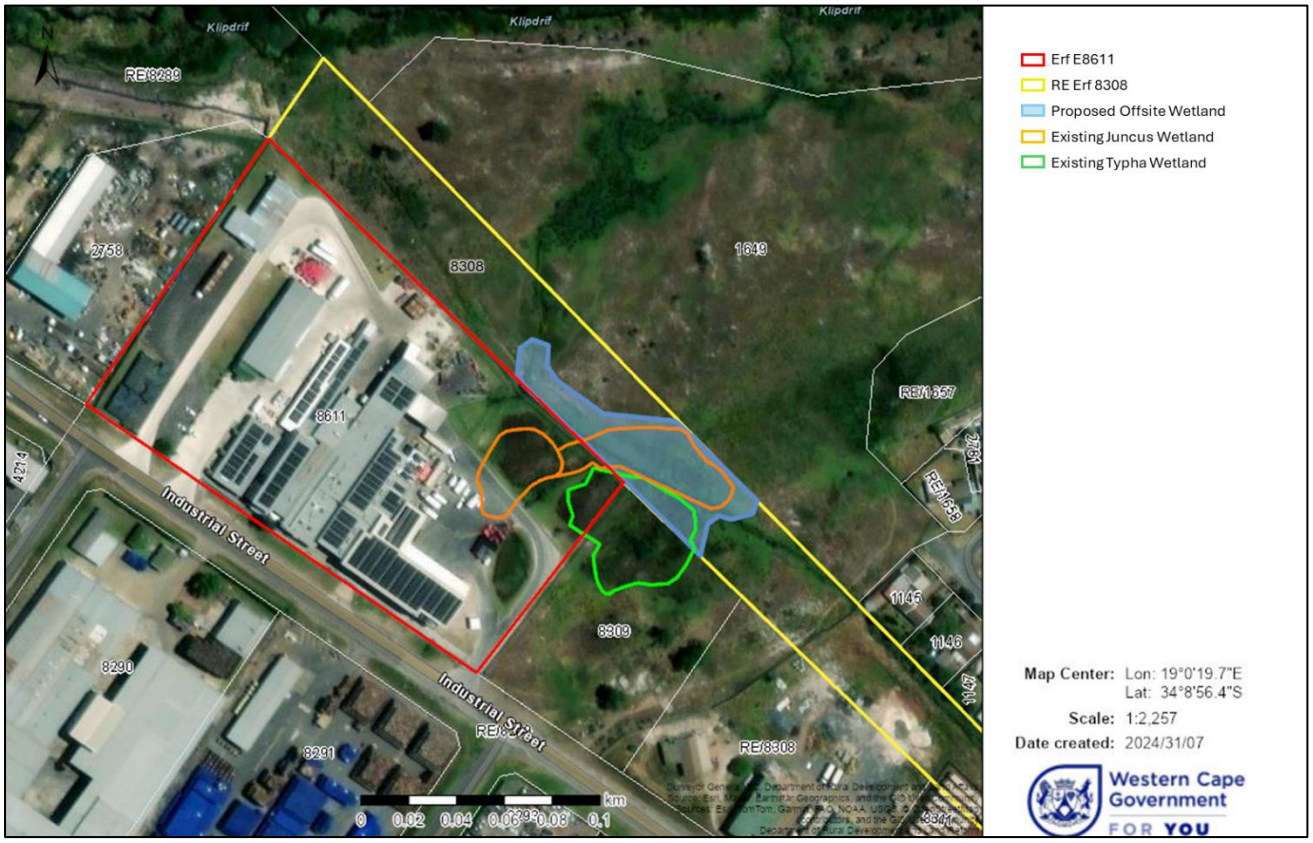


Figure 3: The proposed off-site wetland area to be improved and enhance wetland functionality and diversity is indicated in blue. Please note, the two wetland portions located within the EFRC property boundary (red outline) will be lost during Phase 2 of the approved expansion.

1.2. Legislative Framework

The following is a list of the legislation that may be pertinent to the project and its long-term operational management. All activities on site must ensure compliance with the provisions of the legislation as applicable:

- The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996);
- The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA);
- The National Environmental Management Act, 1998 (Act No. 107 of 1998) Environmental Impact Assessment (EIA) Regulations 2014 (as amended).
- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA);
- National Environmental Management: Biodiversity Act, 2014 (Alien and Invasive Species Regulations, 2014);
- The National Water Act, 1998 (Act No. 36 of 1998) (NWA); and
- Government Notice No 4167 of GG 49833, 2023 promulgated in terms of the National Water Act (Act 36 of 1998)

The proposed development activities will involve work within a wetland and will include some vegetation removal. Although the development footprint is highly transformed, it has not been cleared within the past 10 years and therefore qualifies as indigenous vegetation. This Rehabilitation and Maintenance Management Plan

will therefore be undertaken in accordance with the NEMA EIA Regulations 2014 (as amended) as it related to NEMA Listing Notice 1, Activity 19 (GN R 327) and NEMA Listing Notice 3, Activity 12 (GN R 324).

The proposed development activities will take place on land owned by the Theewaterskloof Municipality. The development activities proposed will fall within the ambit of GN no. 1198 of December 2009 – General Authorisation in terms of Section 39 of the National Water Act (Act no 36 of 1998) in terms of Section (c) and (i) for the purpose of rehabilitating a wetland for conservation purposes. The relevant requirements will be adhered to.

1.3. Baseline Wetland Environment

A site assessment was undertaken on the 9th of February 2024. The assessment revealed that the offsite wetland area had been significantly disturbed by canalisation, compaction, dumping of rubbish and foreign fill material, along with the proliferation of alien invasive vegetation. Large portions of the offsite wetland area were found to be covered by grass, most notably, *Pennisetum clandestinum* (kikuyu grass), *Cynodon dactylon* (fynkweek) and *Stenotaphrum secundatum* (buffalo grass). These species have become invasive and must be controlled.

Currently, the offsite wetland area to the north and east of the property is fed by Stormwater (SW) draining the industrial built-up area surrounding the site (Grobler & Belcher, 2014). The two wetland portions located in the north-eastern corner of the property are the result of the canalisation of storm water from Industria road onto the property. As such, with the loss of the two onsite wetland portions, SW from Industria road along with uncontaminated SW from the site will also now drain into this area. The general topography of the offsite wetland area slopes from the southeast to the northwest, with a channel draining SW into the Klipdrift River to the northwest of the site.

Canalization occurred subsequent to the initial Freshwater Assessment Report prepared by BlueScience (Grobler & Belcher, 2014), causing significant disturbance to the hydrology and original topography of the wetland area beyond the site boundaries. Consequently, more substantial earthworks than initially anticipated in the BlueScience report (Grobler & Belcher, 2014) will be necessary to restore the required wetland functionality.

Significant patches of indigenous vegetation including *Juncus* spp., *Typha* spp., *Paspalum distichum* and *Psoralea* spp. are present in the wetland area located north and east of the property. While several of these plants are in a poor state, numerous healthy individuals remain. Care must be taken not to harm any existing indigenous plant individuals during the implementation of rehabilitation action.

1.4. Goals and Objectives

The specific objectives for the design and functioning of the offsite wetland area are as follows:

- Enhance the functionality of the wetland portions located north/northeast of the property on erf 8308 (previously portion 10 of erf 291). Enhanced functionality will fully accommodate and improve stormwater originating from the development site as well as from the broader area which ultimately

drains into a larger Channelled Valley Bottom wetland (CVBW) system associated with the Klipdrift River to the north of the site.

- The design must facilitate water retention within the wetland portions located north/northeast of the property such that a diversity of water depths is provided. This will allow for the re-establishment of a diversity of plants along a soil moisture gradient.
- An overflow weir must be incorporated into the berm/embankment design to allow SW flow from the rehabilitated wetland area to be spilling at an appropriate level into the northern/northwestern CVBW area (Figure 3).

A Maintenance Management Plan (MMP) is a continuous strategy designed to ensure the rehabilitated wetland remains in optimal condition. To sustain the rehabilitated state, ongoing maintenance and monitoring, as detailed in Section 3 of this report will be carried out.

1.5. Roles and Responsibilities

Wetland rehabilitation has significant labour and specialist requirements. The implementation of this wetland rehabilitation and MMP will require the collaboration of several role players. The practical and financial aspects pertaining to the design and implementation of offsite wetland rehabilitation/construction is the responsibility of Elgin Free Range Chickens (EFRC). As it pertains to the long-term management of the rehabilitated wetland, the contract between EFRC and the Theewaterskloof Municipality setting out the roles and responsibilities of each party is attached as Appendix F.

Furthermore, the Rehabilitation and MMP has been submitted to Breede Olifants Catchment Management Agency (BOCMA) and Cape Nature for comment before being signed off by the local municipality and will then being sent to DEADP for final decision. These organs of state may have the following role to play:

- Review and monitor implementation of the management plan,
- Review whether there is compliance by the operating agent,
- Perform random control checks,
- Review incident and audit reports,
- Enforce legal mechanisms for contraventions of the management plan,
- Authorise appropriate changes to the management plan.

2. WETLAND DESIGN

The offsite wetland system has been designed by AVDM Consulting Engineers in consultation with freshwater specialists (Figure 4 & Appendix E). As per the BlueScience report (Grobler & Belcher, 2014), a retention embankment will be created in the northwestern portion of the wetland area on erf 8308. This embankment will serve to facilitate water retention within the designated wetland area and will overflow to the north as per current hydrology of the system.

Given the canalization and earth works which have occurred within the offsite wetland area on erf 8308, a degree of reshaping will need to be undertaken to achieve the desired wetland functionality. In accordance with the existing topography, the area designated for rehabilitation will be contoured to feature several depressions ranging from 0-200 mm and 200-540 mm in depth. Where necessary, the sections between the depressions will be cut to the elevation of the overflow point and will serve as non-permanent water-carrying areas. The offsite wetland system will be gently sloped towards the deeper depressions, thereby providing for a variety of water depths to allow for the reestablishment of a diversity of plants along a soil moisture gradient. The engineering design of the offsite wetland is presented in Figure 4.

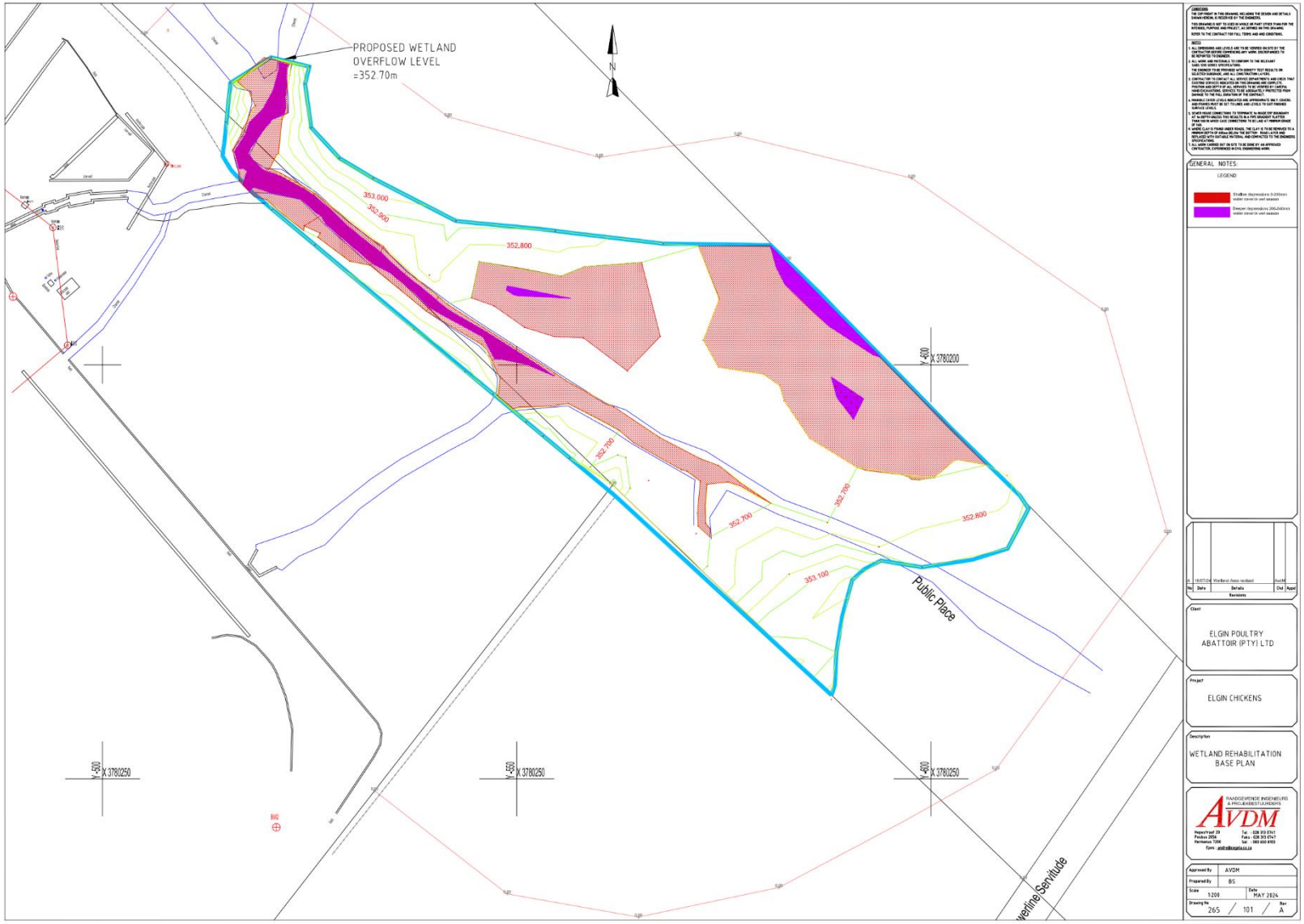


Figure 4: Engineering design of the offsite wetland. The blue outline indicates the offsite wetland area designated for rehabilitation. The solid purple areas indicate deeper depressions (200-540mm) while the dashed orange areas indicate shallower depressions (0-200mm). The remaining sections will be cut to the overflow point elevation (where necessary), and gently sloped towards the deeper depressions within the wetland area.

3. REHABILITATION AND MAINTENANCE MANAGEMENT PLAN

In this section, a detailed overview of the rehabilitation and long-term management actions essential for restoring and maintaining the health and functionality of the offsite wetland system is presented. Activities are outlined in tables, providing clarity on the affected area, objective, method, frequency, and project phase for each management action, with the aim of facilitating effective implementation and long-term monitoring. The rehabilitation and maintenance management action outlined will be undertaken in accordance with the NEMA EIA Regulations 2014 (as amended) as it relates to NEMA Listing Notice 1, Activity 19 (GN R 327) and NEMA Listing Notice 3, Activity 12 (GN R 324).

Activity 1 – Removal of dumped / discarded material and litter from the offsite wetland					
Affected Area	**Objective**	**Method**	**Frequency**	**Phasing**	**Notes & Mitigation**
Whole area designated for offsite wetland rehabilitation.	Removal of foreign fill material.	- All rubbish and building rubble dumped in the offsite wetland area must be removed such that the substrate within the offset wetland consists of only natural soils. - Removed material must be appropriately disposed of at a designated waste facility prior to implementation of additional wetland rehabilitation interventions.	Start-up Activity	Rehabilitation Phase	Undertake removal manually as far as feasibly possible. If vehicles or machinery are necessary, ensure they are in optimal working condition and free from leaks to prevent any spillage of hydrocarbons or other contaminants. Machinery should only be allowed within the wetland area while actively carrying out rehabilitation tasks.
Whole area designated for offsite wetland rehabilitation.	Maintain wetland free from litter and waste materials	- Solid waste inspections and manual clean-ups must be conducted monthly. - Collected waste materials must be appropriately disposed of at a suitable waste facility.	Monthly	Rehabilitation and Operational Phase	

Inlet and Outlet	Maintenance of flow through the system	- Litter must be collected from the inlets and outlet of the wetland system. - Periodic removal of excess plant material and accumulated sediment may be required at the overflow point to ensure uninhibited flow at the predetermined outflow level (refer to Activity 3).	Monthly As needed (No more than once a year)	Operational Phase Operational Phase	If needed, vegetation and sediment removal should take place manually in late summer, prior to winter rainfall.

Activity 2 – Alien vegetation clearing

Affected Area	Objective	Method	Frequency	Phasing	Notes & Mitigation
Whole area designated for offsite wetland rehabilitation.	Removal of invasive grass species and attempt to maintain the wetland free from invasive grasses as far as possible	- Where large, homogenous patches of invasive grasses are present, the vegetation should initially be removed through shallow, machine skimming of the surface vegetation and topsoil up to 300mm in depth, removing as much of the root system as possible (also refer to Appendix A). - The skimmed material must be disposed of at a designated waste facility. - Skimmed areas can be sprayed with herbicide suitable for use in watercourse (such as Roundup Bioactive) as directed by a professional experienced in application of the product. Herbicides may only be applied during the dry season, when no rain is predicted and under strict supervision.	Once-off Once-off Once-off	Rehabilitation Phase Rehabilitation Phase Rehabilitation Phase	Initial removal of invasive grasses must be undertaken in the dry season prior to implementation of reshaping measures. No indigenous vegetation may be damaged during skimming activities. Use of herbicides must be strictly controlled. All machinery must be kept in optimal working condition and free from any leaks to prevent any spillage

		- Where invasive grasses are interspersed with indigenous vegetation, manual weeding must be undertaken, removing as much as the root system as possible. - Ongoing monthly manual weeding of invasive grasses must be practised throughout the rehabilitation and operational phase of the offsite wetland. Herbicide application may not be undertaken near indigenous vegetation. - Replant cleared areas with indigenous species to prevent reestablishment of invasive grasses as far as possible. - The introduction of topsoil may be required in preparation for replanting – refer to Appendix A. - Given the severe infestation of invasive grasses in the broader area, it is likely that ongoing control will be needed to avoid the encroachment of these grasses back into the rehabilitated area over time.	Monthly As per Activity 4	Rehabilitation and Operational Phase Rehabilitation and Operational Phase	<u>of hydrocarbons or other contaminants.</u> Machinery should only be allowed within the wetland area while actively carrying out rehabilitation tasks.
Whole area designated for offsite wetland rehabilitation.	Removal and continued control of alien and invasive plants	- The wetland area designated for rehabilitation must be maintained free from alien invasive plants. This includes but is not limited to the following species: *Acacia saligna* (Port Jackson willow), *Acacia cyclops* (Black wood), *Acacia mearnsii* (Black wattle), *Cortaderia selloana* (Pampas grass), *Casuarina cunning-hamiana* (Beef wood), Paraserianthes *lophantha subsp. Lophantha* (stinkbean, Australian albizia), *Rubus fruticosus* (black berry), *Solanum mauritianum* (bugweed) and *Sesbania punicea* (red Sesbania). - Rehabilitation and maintenance staff must be trained in the identification of basic weeds and alien invasive species. - These species must be removed from the wetland area by cutting and clearing existing mature trees, hand pulling or tree popping seedlings and manual weeding of herbaceous species.	At start-up and thereafter quarterly ongoing monitoring and clearing of alien and invasive plants should be undertaken. This can be reduced to yearly inspections and clearing once two consecutive quarterly	Rehabilitation and Operational Phase	Use of herbicides must be strictly controlled and may only take place during the dry season, when no rain is predicted and the water table in the wetland is low. Herbicide use during the operational phase must remain limited to stump treatment for resprouting species.

		- The removed material must be disposed of offsite. - Port Jackson willow is known to resprout from the stump or roots after felling. To prevent this, an herbicide treatment suitable for use in watercourse must be applied post-felling. Cutting of this species may therefore only take place during the dry season. - Ongoing monitoring and management as needed must be implemented throughout the rehabilitation and operational phase of the offsite wetland	inspections do not reveal a single invasive individual.		

Activity 3 – Wetland habitat rehabilitation and maintenance activities, designed to improve the quality of wetland habitat and habitat diversity

Affected Area	Objective	Method	Frequency	Phasing	Notes & Mitigation
Public open space north of EFRC designated for offsite wetland rehabilitation.	Engineer system to facilitate water retention within the designated wetland area	- Create a retention embankment in the northwestern portion of the public open space area with overflow to the north as per current hydrology. - Proposed overflow level = 35.270 m - During the operational phase the embankment structure and outlet level may not be altered. - The retention embankment and overflow point must be inspected monthly for the accumulation of debris, blockages, instabilities and erosion. Any damage identified must be promptly repaired. During repair works, all mitigation measures and precautions outlined in this MMP must be strictly followed.	Start-up Activity Monthly inspections and clean-up as required.	Rehabilitation Phase	The anticipated water level must be achieved by the structure and should be operated in such a way as to be compliant with the design and goals that are set out for the enhanced wetland. It is recommended that the retention embankment is constructed at the onset of rehabilitation to ensure that any lose sediment resulting from rehabilitation actions is trapped and settles out of suspension before water flows out of the system

		- The outlet must be maintained free from any debris to ensure uninhibited throughflow at the pre-determined outflow point (refer to Activity 1)			
Public open space north of EFRC designated for offsite wetland rehabilitation.	Reshape the offsite wetland system to provide for a variety of water depths.	- Grading and shaping of the offsite wetland area as per the engineering design provided by AVDM Consulting Engineers to create a gently graded area that leads gradually from the existing depressions towards land areas with an elevation comparable to that of the northwestern overflow point: o Several deeper depressions, ranging from 200-540 mm in depth, will persist due to the existing topography, likely resulting in permanent saturation. o These deeper depressions will lead into shallower shelving with depths ranging from 0-200 mm. These areas are likely to be seasonally saturated. o The edges of these depression should be pulled gently back to create a broad shelving wetland margin at a level likely to be temporarily saturated. - Existing canalisation should be addressed through reshaping the currently deep narrow channel to form a shallower, broader depressional area with a maximum depth of 200-540 mm. - Existing depressions should not be made deeper during reshaping activities. - Where reshaping of areas containing indigenous vegetation is required, these plants must be manually removed and used for revegetation as per Activity 4.	Start-up activity	Rehabilitation Phase	Reshaping activities must take place immediately after skimming for the removal of invasive grasses. Skimming and reshaping activities should take place in the dry season only and should commence no earlier in the year than late January. Works must be completed in time to allow for the establishment of new plants prior to the onset of the winter rainfall season. Surface stabilization may be necessary during the wet winter months using netting, logging, or similar methods to prevent washaway. All machinery must be kept in optimal working condition and free from any leaks to prevent any spillage of hydrocarbons or other contaminants. Machinery should only be allowed within the wetland area while actively carrying out rehabilitation tasks.

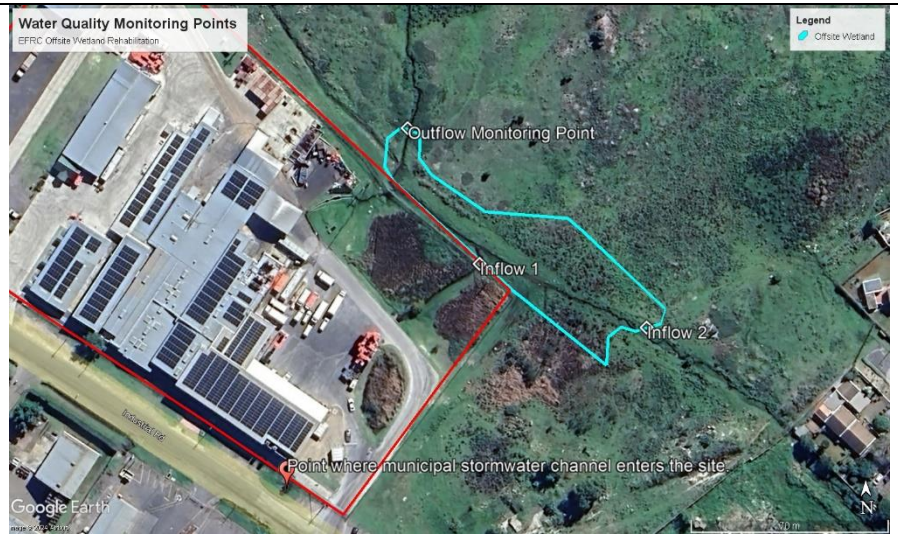
		- The engineering design of the offsite wetland is presented in Figure 4. - Please refer to Appendix A for additional guidelines relating to the preparation of the wetland area for revegetation			
Whole area designated for offsite wetland rehabilitation.	Maintain established shape and prevent canalisation and erosion	- The offsite wetland must be regularly inspected for any signs of canalisation or erosion. - If illegal canalization activities affecting the area's hydrology are observed, local authorities must be promptly informed. - If erosion concerns arise, guidance should be sought from a freshwater specialist, either during monitoring/audits (refer to Activity 5) or as needed in between.	Monthly – can be combined with solid waste inspection as per Activity 1	Rehabilitation and Operational Phase	Presently, the dense coverage of invasive grasses in the wetland area protects the system against erosion. With the aim of eradicating this species and establishing indigenous vegetation communities, vigilant monitoring for emerging erosion is essential, particularly during the rehabilitation phase. Should erosion be noted, the source must be identified and the most suitable mitigation measures recommended by the appointed freshwater specialist (refer to Activity 5)

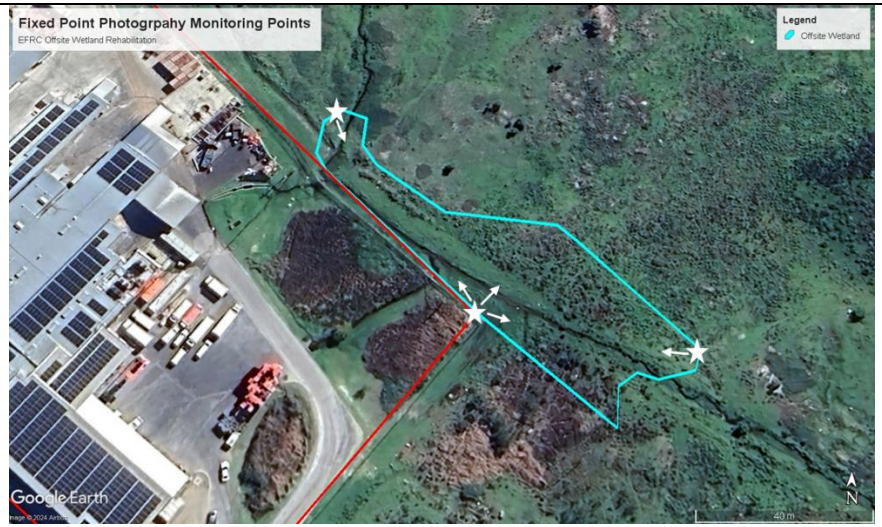
Activity 4 – Revegetation (active revegetation in the form of planting and seeding)					
Affected Area	**Objective**	**Method**	**Frequency**	**Phase**	**Notes & Mitigation**
Whole area designated for offsite wetland rehabilitation.	Establishment of locally indigenous, locally	- Since the existing onsite wetlands will be destroyed, the present indigenous plant material should be removed and utilized for revegetating the offsite wetland area.	As soon as possible after reshaping activities and	Rehabilitation and Operational Phase	Reseeding shall occur in autumn (March to May).

	sourced plant communities.	- Any indigenous plants removed during reshaping must be replanted during revegetation. - Plant and seed locally indigenous species as listed in the species list compiled by the appointed botanist (Please refer to Appendix A for detailed species lists as well as replanting methods and guidelines): Key Species Comprise: Permanently saturated zones: *Juncus capensis, Cyperus textilis, Typha capensis* Seasonally saturated zones: *Cenchrus caudatus, Juncus effusus, Juncus capensis, Zantedeschia aethiopica, Psoralea pinnata, Cliffortia strobilifera* Temporary saturated zones: *Capeochloa cincta, Cenchrus caudatus, Cyperus congestus, Zantedeschia aethiopica, Chasmanthe aethiopica, Salix mucronata* Drier or well-drained, elevated areas: *Chasmanthe aethiopica, Carpobrotus edulis, Athanasia trifurcate, Passerina corymbose, Helichrysum patulum, Seriphium plumosum, Osteospermum moniliferum, Metalasia densa, Leonotis ocymifolia, Salix mucronate*	ongoing as needed.		Where possible, replanting should be timed to fall between the end of May and the end of July. Plant material used for revegetation should ideally be sourced from the local catchment. The site is centrally located and nurseries from Somerset-Wes, Grabouw, Botrivier; Kleinmond and Hermanus should be used to hold the sourced plants prior to planting. During the initial establishment phase the rehabilitated wetland area should be marked off with temporary measures to prevent unintentional trampling of newly planted vegetation. Ensure that these demarcations are removed no later than 6 months after planting. Monitor the demarcations during rainfall events to prevent them from washing away.

Activity 5 – Monitoring as a guide to maintenance activities					
Affected Area	**Objective**	**Method**	**Frequency**	**Phasing**	**Notes & Mitigation**
Whole area designated for offsite wetland rehabilitation	Ensure that the rehabilitation aims and objectives are met and assist in identifying and addressing any potential unexpected complications that may arise during the implementation of rehabilitation activities.	Site visits from a freshwater specialist will be required at the following time intervals to ensure rehabilitation success: - A site visit after the removal of fill material, alien clearing and reshaping has been implemented to ensure that the results are in line with the requirements of this management plan. - Biannual (6-monthly) site visits until such time as the offsite wetland has been successfully revegetated with indigenous species (80% indigenous vegetation cover). The site visits must include an estimate of total indigenous vegetation cover, species assemblage and annual fixed-point photography. Based on these findings, the freshwater specialist should provide recommendations on any potential interventions needed to achieve the required functionality.	Once-off 6-monthly until a diverse indigenous plant community has been established with a minimum cover of 80%	Rehabilitation Phase Rehabilitation Phase	
Whole area designated for offsite wetland rehabilitation	Monitor implementation and success of long-term management interventions and recommend	Once rehabilitation has been completed and signed off by the appointed freshwater specialist, a 3-year follow-up audit must be undertaken whereafter audit frequency can be reduced to once every 15 years from the date of rehabilitation completion. An independent auditor with specialist knowledge of wetland ecology must be appointed to conduct these audits. The auditor must evaluate management effectiveness by assessing: - Indicators of erosion and/or reinvasion by cleared alien invasive species.	Once-off: 3-year follow-up audit Ongoing: Once every 15 years from the date of rehabilitation completion.	Operational Phase	

	adaptations as necessary.	- Changes in habitat diversity i.e. diversity of water depths, vegetation cover and species assemblage based on fixed-point photography and aerial/satellite photography, informed by a site inspection. - The presence of dumped material within the wetland system. - In addition, the auditor should note any significant emerging ecological problems or successes observed during the site inspection that may affect ecological functionality over the next 15 years. This may include the emergence of new alien species, or significant indigenous species senescence. Recommendations must be provided for addressing these issues.			
Water quality monitoring points as per Figure A	Illustrate level of functioning of the wetland system.	- Water quality monitoring must be conducted at the following specified inflow and outflow points (Figure A): o Inflow 1: The municipal stormwater channel inflow point. o Inflow 2: The incoming channel east of the rehabilitation area. o Outflow: The northwestern overflow point in the constructed berm. - An initial water quality measurement must be undertaken immediately prior to the onset of rehabilitation activities to establish baseline water quality. A follow-up water quality measurement should be taken once the wetland is deemed rehabilitated. Further water quality measurements should align with the long-term monitoring audits. - The following parameters should be analysed: pH, temperature, DO, EC, TSS, total phosphorous, orthophosphate, ammonia, nitrates/nitrites and Escherichia coli. Please note: The stormwater entering the wetland from the surrounding industrial area is notably polluted. The recommended water quality sampling should assist in identifying potential polluters, and these operations must then be reported to the Municipalities Environmental Department who must then take the required action.	Initially prior to rehabilitation and upon completion of rehabilitation, thereafter: Once-off: 3-year follow-up audit Ongoing: Once every 15 years from the date of rehabilitation completion	Operational Phase	Water quality at the outlet is downstream of secondary stormwater release points originating from the Elgin Free Range Chicken Abattoir. Water quality at these points must adhere to parameters as per the existing water quality monitoring plan in place for the site.

		 **Figure A: Water Quality Monitoring Points.**			
Fixed point photography monitoring points as per Figure B	Monitor overall rehabilitation progress and track ecological changes	- The first fixed-point photographs must be taken immediately prior to implementation of rehabilitation interventions. - Thereafter, fixed-point photography must be conducted annually during the rehabilitation process in the same month as the first fixed-point photographs were taken. This can be reduced to coincide with long-term monitoring audits once rehabilitation has been completed. - Photographs must be taken at a height of 1.5 m while standing at each position indicated in Figure B in the direction indicated. - Photographs are to be kept by EFRC and should be stored in an organized database for presentation to auditors at each subsequent audit.	Once-off Annually during rehabilitation, thereafter: Once-off: 3-year follow-up audit Ongoing: Once every 15 years from the date of	Rehabilitation Phase Rehabilitation Phase Operational Phase	

		 **Figure B: Position of the fixed-point photography monitoring points indicated by white stars and the direction in which each photograph is to be taken indicated by white arrows.**	rehabilitation completion.		

4. CONCLUSION

This Wetland Rehabilitation and Maintenance Management Plan outlines comprehensive rehabilitation and long-term management actions needed to successfully rehabilitate and maintain the functionality of the offsite wetland system north and east of the Elgin Poultry Abattoir in Grabouw Industria. The primary objective of this management plan is to effectively mitigate the loss of onsite wetlands anticipated during phase 2 of the approved development. This management plan is practically implementable and will ensure that required aims and objectives for offsite wetland rehabilitation are met.

5. REFERENCES

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