



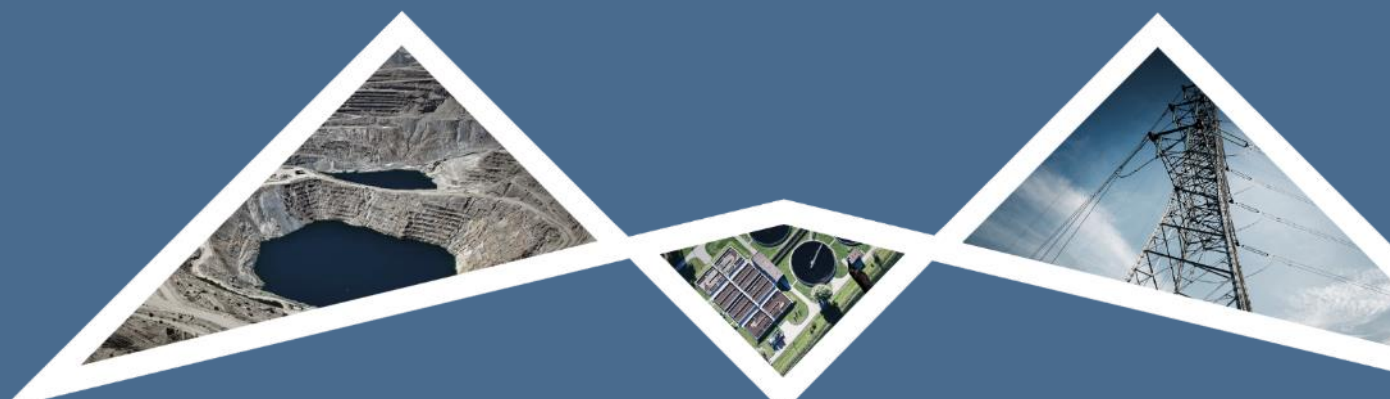
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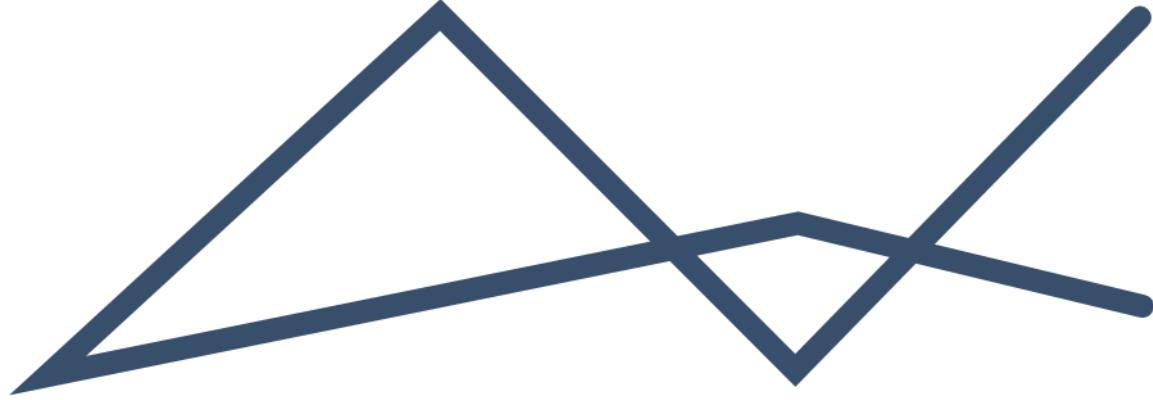
WETLAND AND WATERCOURSE
REHABILITATION AND MAINTENANCE
PROJECT

KAALSPRUIT CATCHMENT BASIC ASSESSMENT REPORT



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PROJECT BACKGROUND AND INTRODUCTION

1. PROJECT DESCRIPTION

ZAS Architects (Pty) Ltd. was appointed by the City of Ekurhuleni (CoE) to design a wetland rehabilitation and maintenance plan to be implemented within the Kaalspruit catchment. Environmental Impact Management Services (Pty) Ltd. (EIMS) was in turn contracted by ZAS Architects to undertake the necessary environmental studies and applications. This catchment was selected by CoE as a priority catchment to be focused on as part of this rehabilitation planning project.

In order to give effect to the wetland rehabilitation and maintenance plan, the Applicant (the CoE) has submitted an application for Environmental Authorisation (EA) in terms of Chapter 6 of GNR 982 (as amended by GN 326 dated 7 April 2017) promulgated under the National Environmental Management Act (Act No. 107 of 1998) (NEMA – as amended) for the wetland rehabilitation interventions and management plan to the Gauteng Department of Agriculture and Rural Development (GDARD). Additionally, the CoE have also submitted a General Authorisation (GA) application to the Department of Water and Sanitation (DWS) for implementation of the above mentioned interventions in terms of the National Water Act (Act 36 of 1998 – NWA). The above rehabilitation activities also extend, where required, to the applicable and associated watercourses (as defined in the NWA).

The Kaalspruit catchment is located within heavily developed areas consisting of township and urban development with associated infrastructure, as well as subsistence agricultural areas (Figure 1 below). All these land uses can lead to typical water quality and water quantity impacts ranging from the failing of sewer infrastructure and the direct discharge of sewerage into watercourses, increased storm water flows off hardened surfaces resulting in erosion and deterioration of the natural watercourses and agricultural return flows containing a variety of pesticides and fertilisers which negatively affect water quality in the receiving watercourses. Wetland rehabilitation and maintenance within this catchment provides a potential opportunity to address some of these, and other impacts.

In support of this project, detailed assessments of the wetlands in within the Kaalspruit Catchment were undertaken and compiled in a Wetland Assessment and Maintenance Management Plan. As part of the planning regime for the wetland rehabilitation, a high-level master plan, along with high-level conceptual designs and layout of the various “hard and soft” engineering measures were developed (please refer to Appendix G for copies of these reports).

It is important to bear in mind that some of the interventions referred to in this report will be implemented, as and when required within the catchment. As such, this application includes the implementation of the wetland maintenance management plan (as referred to in the EIA Listing Notices (LN). It is anticipated that should the project be authorised (including the maintenance management plan (MMP)), future interventions required within the catchment by the CoE would not require separate authorisation in terms of the EIA Regulations, 2014, should these be executed within the prescripts of the MMP. This would have a critical time and cost saving in terms of implementation of remedial measures.

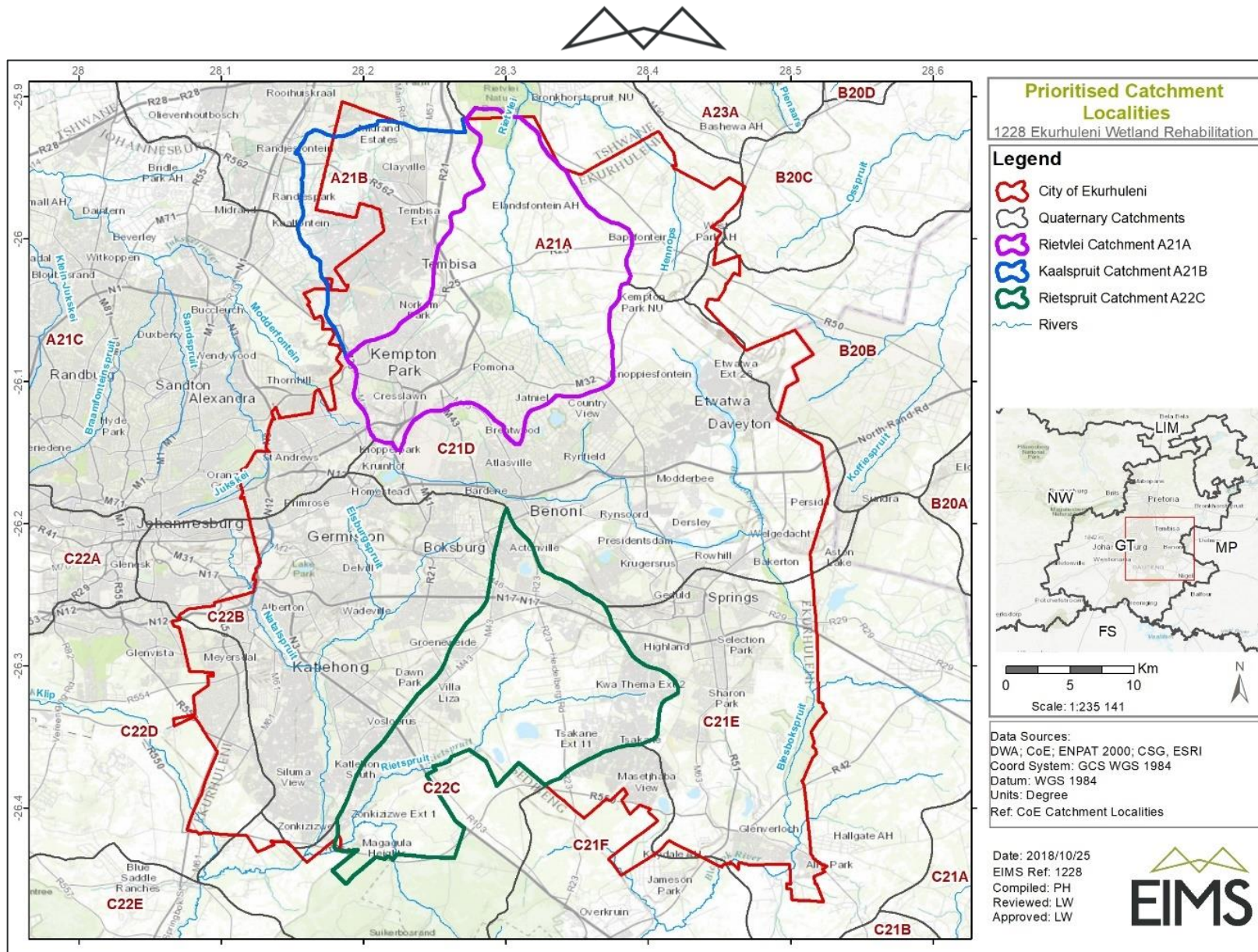
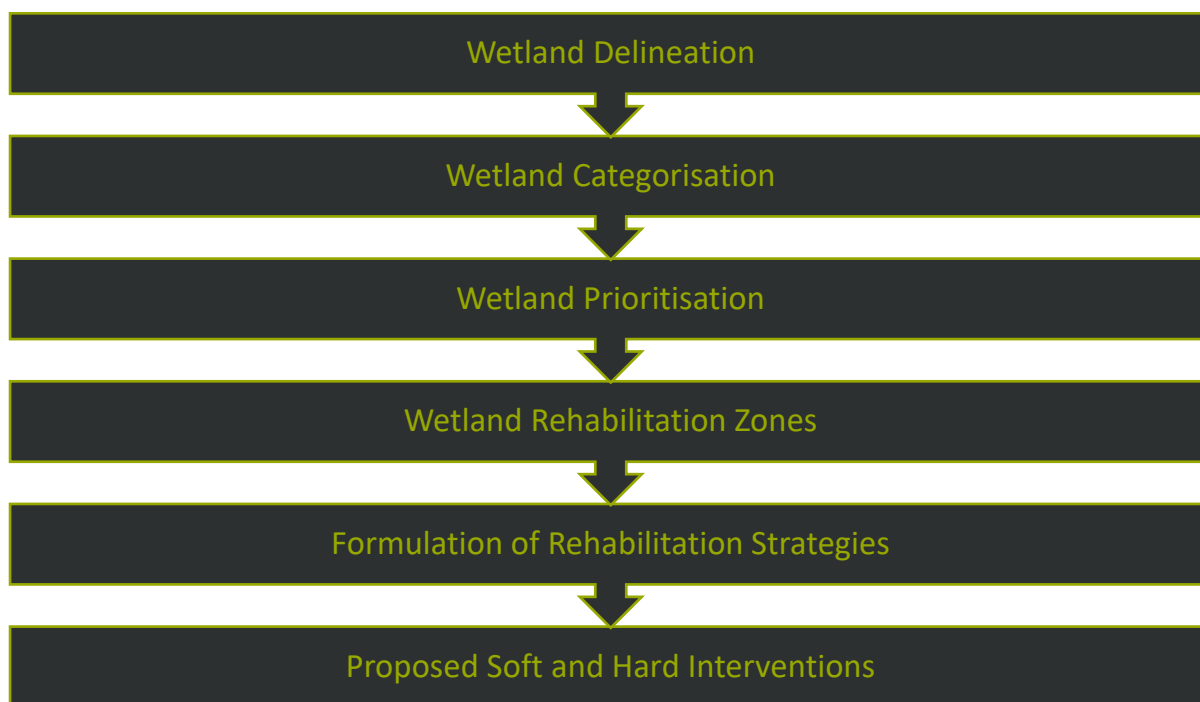


Figure 1: Kaalspruit Catchment locality



In support of this project, detailed assessments of the wetlands in within the Kaalspruit Catchment were undertaken by WCS and compiled in a detailed Situation Assessment, as well as a MMP. The most appropriate wetland rehabilitation measures were determined through the following steps:



The feasibility of some of the proposed activities were also further assessed with an environmental engineer in terms of implementation and costing as described in this section. Please refer to the Engineering Conceptual Designs and Basic Assessment Report by GreenGAB (Pty) Ltd in association with WCS attached in Appendix G.

1.1. WETLAND DELINEATION

Various wetland datasets of wetland coverages (including National Wetland Inventory, National Freshwater Priority Areas, Regional Conservation Plans, Environmental Management Frameworks and CoE wetland inventory datasets) were used to identify any gaps that will require additional data collection. An integration of all datasets to formulate a single wetland coverage dataset was undertaken. Additional delineations on high resolution aerial imagery was undertaken where gaps were identified using the methodology as proposed by Thompson *et al.* (2002), followed by limited ground-truthing for verification, collection of ecological integrity data, verification of existence of wetland and landuse within and around wetlands. The complete wetland layer was classified in terms of HydroGeoMorphic (HGM) settings in accordance with the South African Wetland Classification as proposed in SANBI (2009) and Ollis *et al.* (2013)¹. The results of the wetland delineation undertaken by WCS is presented in Figure 2 below.

¹ Refer to the reference list in the attached specialist reports.

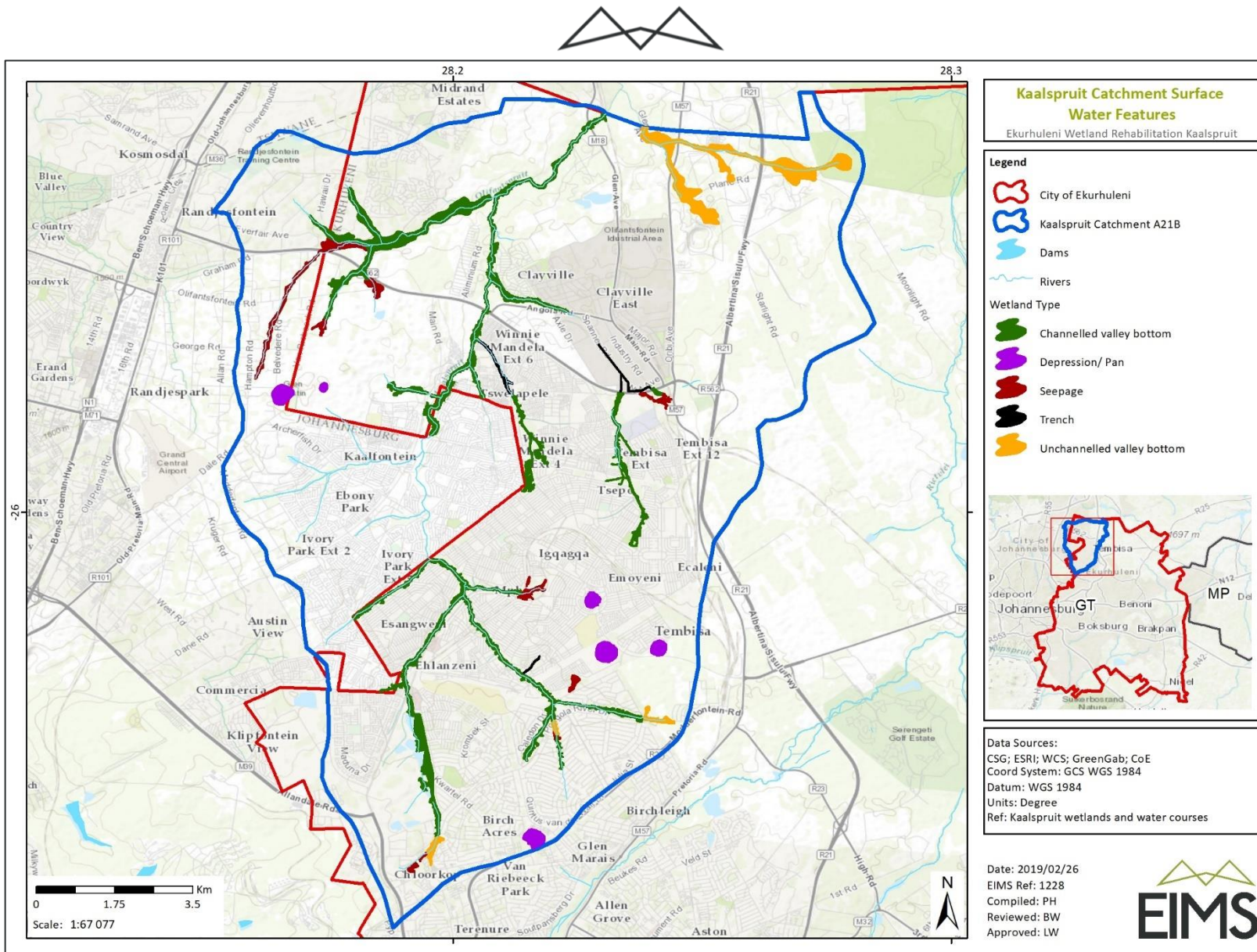


Figure 2: Wetlands and watercourses areas within the Kaalspruit Catchment



1.2. WETLAND CATEGORISATION

A method to assess wetland ecological condition based on land-cover type, as detailed in the Water Research Commission Project K5/2350 (Kotze, 2016a and 2016b), was used to provide an overall ecological state of wetlands and watercourses onsite. This method utilizes calculations within wetland and surrounding wetland land-uses as a proxy to determine wetland impacts, and consequently wetland ecological state. The Present Ecological State (PES) of the wetlands within the Kaalspruit Catchment as determined by WCS is presented in Figure 3 below.

A wetland importance and sensitivity (IS) assessment was conducted for each wetland system (HGM) at a desktop level only, and this was done in order to provide an indication of the conservation value and sensitivity of the wetlands. For the purposes of this study, the Rountree *et al.* (2013) assessment tool was used as a basis for the IS assessments. The IS assessment is undertaken to rank water resources in terms of:

- Ecological Importance - biodiversity support and ecological value;
- Hydrological Functions - Provision of goods and service or valuable ecosystem functions which benefit people; and
- Direct Human Benefits - Reliance of subsistence users (especially basic human needs uses).

The results of the IS assessment are presented in Figure 4 below.

1.3. WETLAND PRIORITISATION

The review of existing information contributed towards identifying which level of prioritisation the proposed rehabilitation will fall into. Three levels of prioritisation were considered for this work. These can be summarised as follows:

- Wetlands where rehabilitation initiatives have been implemented (below). The purpose of this is to assess existing rehabilitation interventions, undertake a maintenance inventory and identify opportunities for improving their efficacy;
- Catchment of key waterbodies, as were determined by Re-Solve Consulting in 2015. The purpose of this is to integrate already identified key waterbodies into the current rehabilitation initiatives; and
- Consider wetlands that are of high risk or are threatened ecosystems; which provide habitat for endangered biota; and wetland systems that are likely to contribute in achieving enhanced biodiversity support, water quality improvement, sediment stabilisation or reinstating natural flooding regime. This assessment included rating and assessment of wetland that falls within freshwater priority ecosystem, regional conservation plans, ecosystem threat status of wetlands, condition of wetland which reflects its level of functioning and ownership of land which will necessitate implementation of management of proposed interventions within the wetland systems.

Figure 6 below indicates the integration of all priority lists based on the above orders of prioritisation. These wetlands include all the wetlands to be considered for wetland rehabilitation planning going forward for this project. Only 316.13 ha of wetlands are targeted for rehabilitation for this current project within the 595.4ha of wetlands assessed for the entire Kaalspruit Catchment and this further indicates that 279.3 ha of wetlands are still available for further assessment in terms of suitability for rehabilitation for any future work the CoE may want to peruse as part of this project.

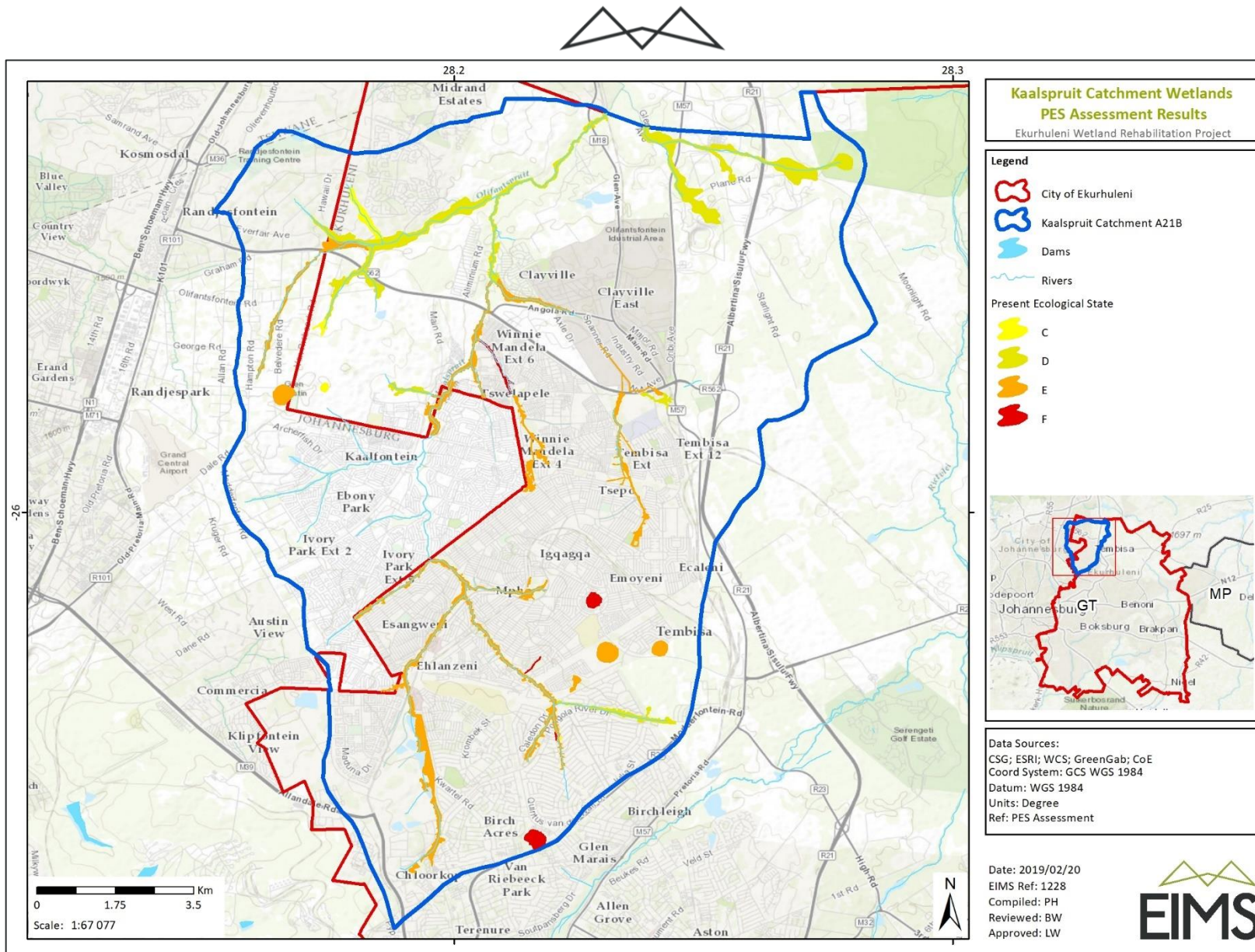


Figure 3: PES assessment results for wetlands within the Kaalspruit Catchment

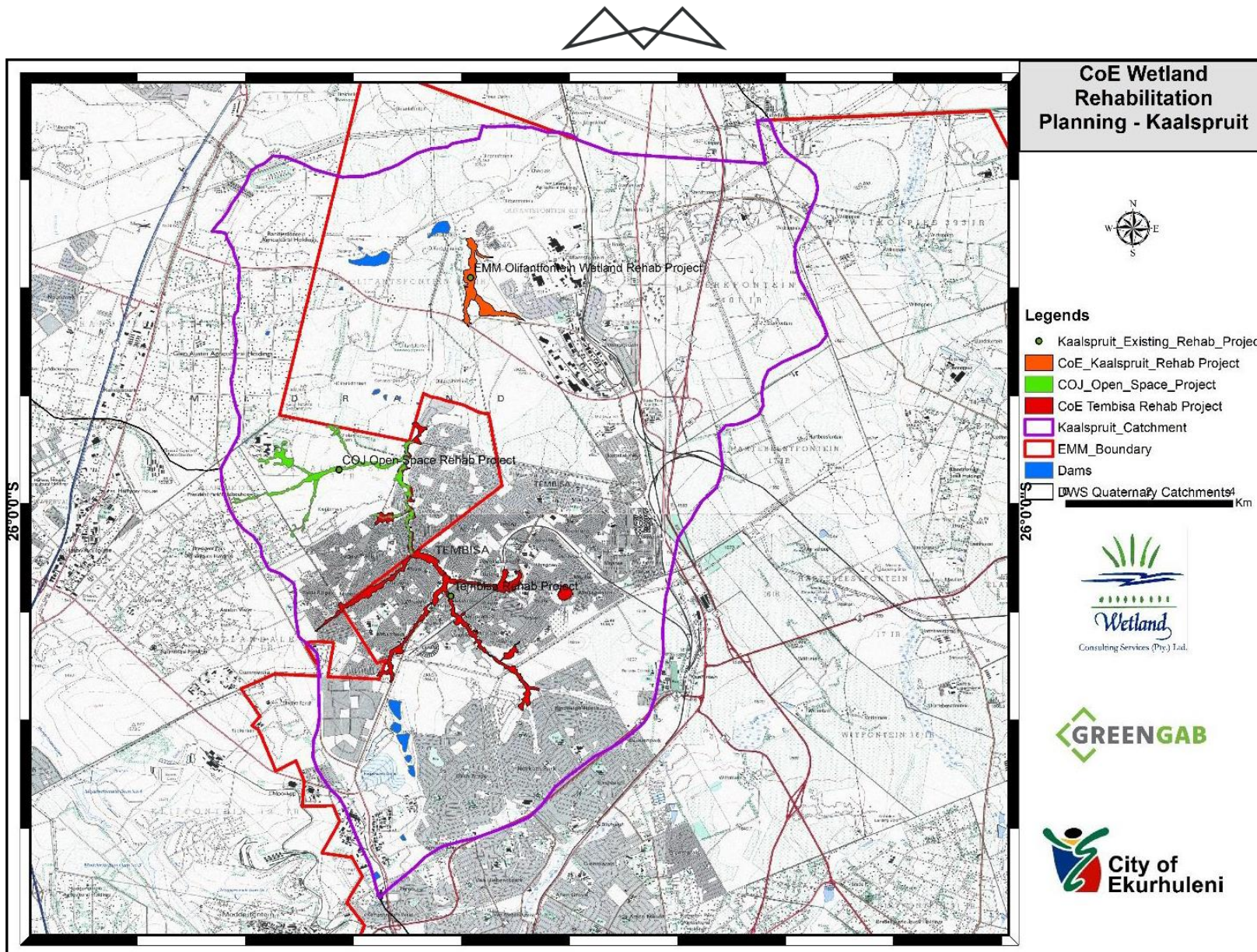


Figure 5: Existing rehabilitation initiatives within the Kaalspruit Catchment

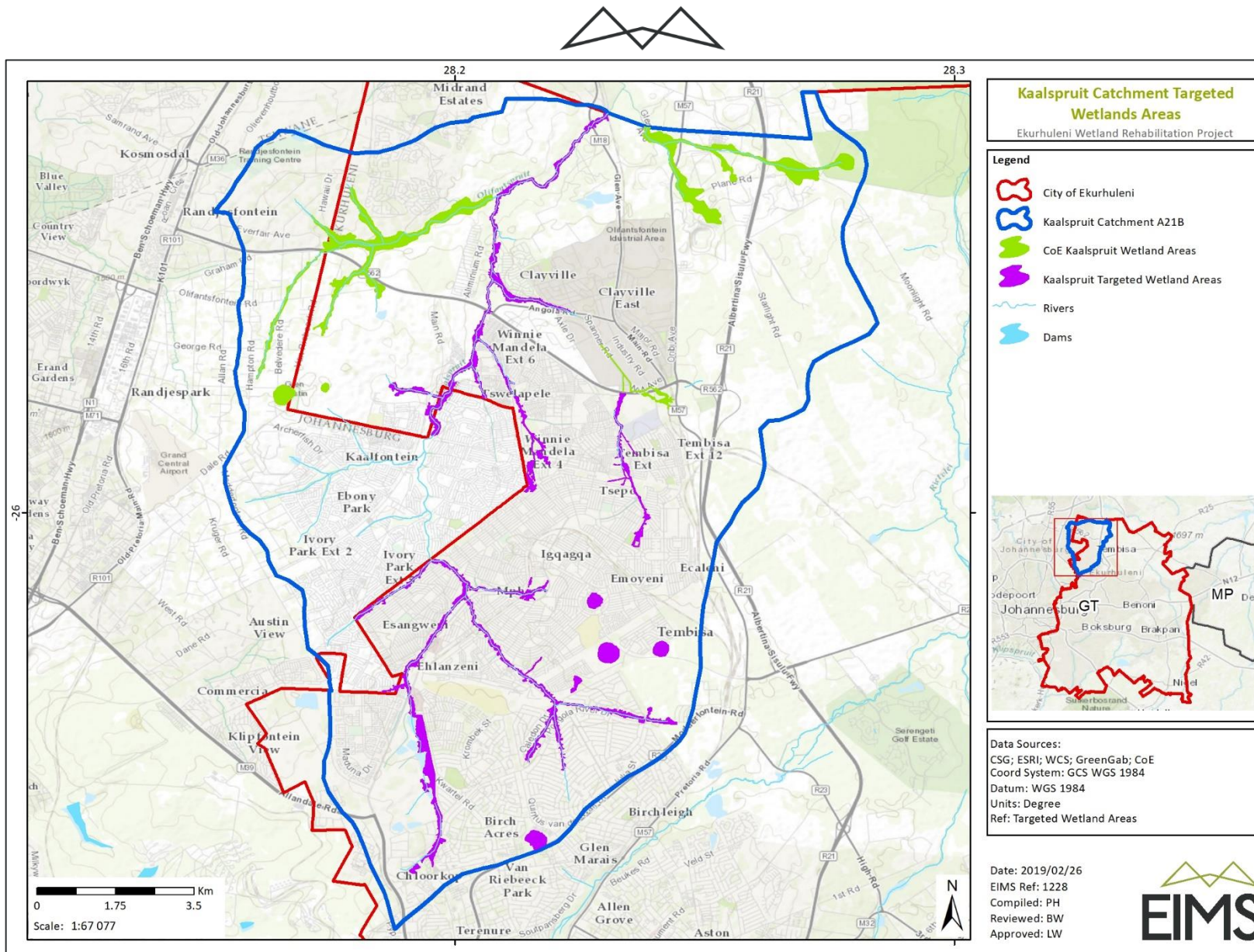


Figure 6: Integrated prioritisation list and all wetlands to be considered for current rehabilitation planning

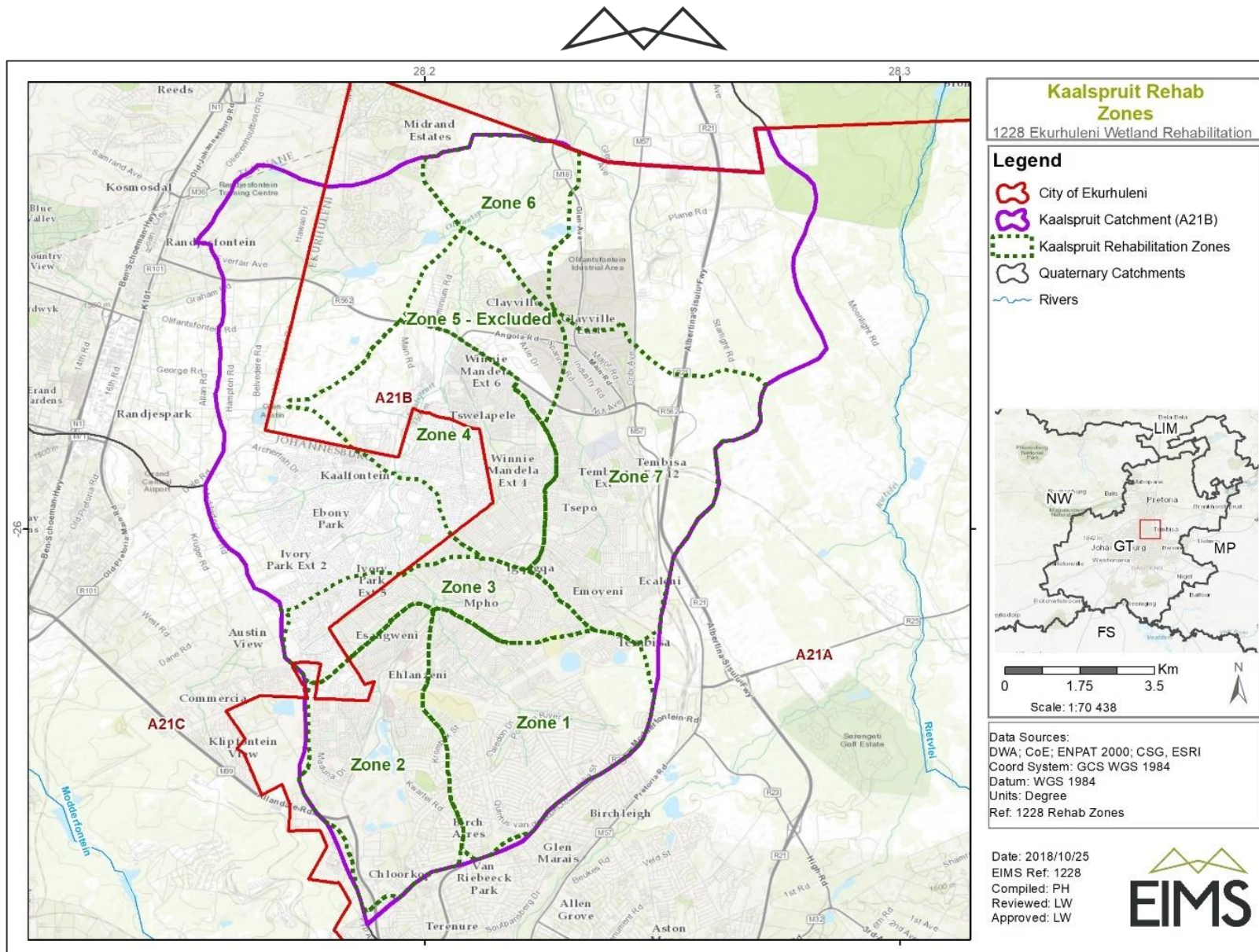


Figure 7: Rehabilitation zones for the wetlands to be considered for rehabilitation planning



1.4. WETLAND REHABILITATION ZONES

Due to the extensive nature and extent of the wetland areas to be assessed on site, a simplified approach was adopted to assess these areas within the project area on site. The study catchment area was subdivided into seven Kaalspruit rehabilitation zones. Subdivision of the study area into a number of rehabilitation zones had the following advantages:

- Sharpening the focus on the environmental problems encountered in each of the zones;
- Reducing the scale of the problems to be addressed, to those encountered within each zone;
- Ensuring community participation in the benefits of the rehabilitation process by addressing the rivers/wetlands problems within the geographic boundaries of each community;
- Ensuring as far as reasonably possible, that each community passes on water of acceptable quality to its downstream neighbours.

The subdivision is merely based on the point of confluence of tributaries in order to ensure manageable small catchments upstream. Figure 7 above indicates the proposed rehabilitation zones of the wetlands considered for further rehabilitation planning.

1.5. REHABILITATION AND MANAGEMENT STRATEGIES

Wetland rehabilitation and management strategy planning involved three-phases:

1. The identification of the problems compromising wetland ecological integrity;
2. Setting rehabilitation objectives based on an analysis of the problems and the feasible extent of addressing them in order to make ecological improvements; and
3. Formulating solutions and management actions aimed at achieving the set objectives.

A range of problems undermining wetland ecological integrity were identified during the site visits. Addressing these impacts forms the underlying goal of the proposed wetland rehabilitation and management strategy. Rehabilitation inherently implies that there is a concession that it will not be possible to reinstate all of the driving ecological processes within the wetlands because:

- The hydrology of the catchment has been fundamentally altered; or
- The physical impact within the wetland will be too costly to reverse.

Only those processes that were realistically achievable were considered and used to form the basis of the rehabilitation objectives. Under the current scenario, the goal of rehabilitating the wetlands to functional systems in some places was considered to be realistic.

This rehabilitation and management strategy provided an indication of rehabilitation interventions that could be considered during the design phase of the project. Please refer to the Situation Assessment undertaken by Wetland Consulting Services attached in Appendix G for further details.

1.6. PROPOSED INTERVENTIONS

The feasibility of some of the proposed activities were also further assessed with an environmental engineer in terms of implementation and costing as described in this section. Please refer to the Engineering Conceptual Designs and Basic Assessment Report by GreenGAB (Pty) Ltd in association with WCS attached in Appendix G.



The rehabilitation interventions are split into two categories, namely hard and soft interventions:

- Soft engineering wetland rehabilitation interventions: These relate to all ancillary measures used to improve the overall wetland condition, contributing to the success of the rehabilitation effort. Soft interventions are typically measured in terms of which are easier, quicker and less invasive to implement within the wetland system (e.g. the removal of alien vegetation). As part of the soft intervention, various parks and greenspaces were also highlighted; and
- Hard engineering wetland rehabilitation interventions: These relate to specific side slope or instream measures that have specific functions, given their respective locations. These interventions are used to improve the overall wetland condition. Hard wetland rehabilitation interventions are typically designed to solve a specific pre-identified issue such as head-cut, erosion gully and so forth. Hard interventions typically require Water Use Licences (WUL) and are more complex to construct (e.g. concrete weirs).

1.6.1. SOFT INTERVENTIONS

Some examples of soft wetland rehabilitation interventions include, but are not limited to, the following:

- Small earthworks: General earthwork which can be done using a small, unskilled labour force, to reshape uneven ground to allow for a more natural ground slope;
- Small breached dam removal: Undertaken to allow more flow in the wetland's small "damlike" structure;
- Re-vegetation of stabilised areas: Undertaken to re-instate the natural bio-diversity with appropriate wetland and riparian species;
- Fencing of sensitive areas: Done to protect the sensitive areas from unmanaged grazing;
- Pushing back of agriculture: Where possible, agriculture will be pushed out of the wetland boundary;
- Informal road removal: Undertaken to allow normal flow of water in the wetland. Informal roads crossing the wetland could be removed where possible, linking the up- and downstream wetlands together;
- Plug and fill channels/trenches in the wetland: Done to reduce the risk of danger, as well as to allow for free movement of water through the wetland. Plugging artificial drainage channels created by development or historical agricultural practices will be undertaken;
- Removal of alien vegetation: Done to reinstate natural bio-diversity and functional vegetation communities back into the wetland system; and
- Litter clean-up: Undertaken to reduce general pollution of the wetland as well as to prevent physical blockage in culverts.

The landscape design for the parks and green spaces was also considered and was mainly centred around creating usable public spaces that are fit for their intended purpose, while being aesthetically appealing. The primary landscape principles of movement facilitation and place-making were used to define the layout of the parks, within which specific elements are provided to facilitate use by different people groups. In this way, the following was done:



- Access points were positioned in logical locations and walkways aligned as indicated by existing movement patterns into and through the park. This was done to ensure that these features are actively used and that ad-hoc movement via other entry points and routes do not deteriorate the park over time;
- Spaces for different intended active and passive uses were defined along the various movement routes and throughout the park using a simple combination of form-giving vertical and horizontal elements, such as trees, paving and lawn areas. These were purposefully located in different parts of the park to ensure that they are intentionally and optimally used by different people groups;
- The various spaces created within the parks are simple and versatile to be as low maintenance as possible, and are provided with robust and durable landscape furniture, play and outdoor gym elements. In this manner, appealing places are created that each have defined uses and a distinct sense of place, while forming a contingent part of the overall park aesthetic;
- The robust layouts were also purposefully created such that further improvements and addition of other use areas can easily be accommodated in the future, without detracting from the overall character and appeal of the parks;
- Indigenous, water-wise and low-maintenance plant species are used throughout, to contribute to the ecological functionality, sustainability of appeal of the parks; and
- The various spaces and overall character of the landscape design is one of openness and accessibility, which will ensure that the parks will be safe and allow communal monitoring, while being inviting and retaining a sense of inclusion.

1.6.2. HARD INTERVENTIONS

Hard interventions were proposed in line with the following principles in order to meet the requirements for wetland rehabilitation:

- Legislative requirements as far as engineering requirements, especially the latest Norms and Standards;
- The practicality of design to ensure minimal wetland disturbances during construction; and
- Construction materials for the proposed interventions were selected based on a range of site specific criteria, including expected velocities, availability of materials and maintenance requirements;

Hard wetland rehabilitation interventions typically include, but are not limited to, the following:

- Earth berms with MacMat overlay: To slow water velocity and spread flow across a larger area;
- Concrete or masonry weirs: These structures will act as settling ponds, reducing the velocity of water to allow for sedimentation above the structure. These structures will also raise the water table of the localised area and disperse the overflow water in a controlled manner to reduce erosion;
- Concrete or concrete canvas structures: To stabilise head-cut or other erosion and to prevent gullies; and
- Litter traps: to capture litter in the rivers.

For the Kaalspruit catchment, two types of instream interventions are proposed:



- Existing Instream Interventions: These are interventions already designed and constructed previously; and
- Proposed Interventions: These are new interventions.

Figure 8, Figure 9, Figure 10, Figure 11 and Figure 12 below show all of the existing and proposed interventions for the targeted wetlands in Kaalspruit Catchment.

Throughout the targeted wetland area, various hard instream interventions were conceptualised. Some examples of hard instream interventions include, but are not limited to, the following:

- Armorflex and or MacMat Channels;
- Low level berms with MacMat;
- Concrete weirs;
- Concrete weir with incorporated walkways;
- Concrete weir with box inlet;
- Concrete weir with round inlet; and
- Litter traps.

A summary of the existing and proposed hard interventions is provided in Table 1 below. Please refer to the Engineering Conceptual Designs and Basic Assessment Report by GreenGAB (Pty) Ltd in association with WCS attached in Appendix G for more details on the proposed hard interventions. The structure number is denoted as follows:

- EX: Existing structure and number;
- PX: Proposed structure and number;
- LX: Proposed litter trap and number; and
- CX: Proposed channel and number.

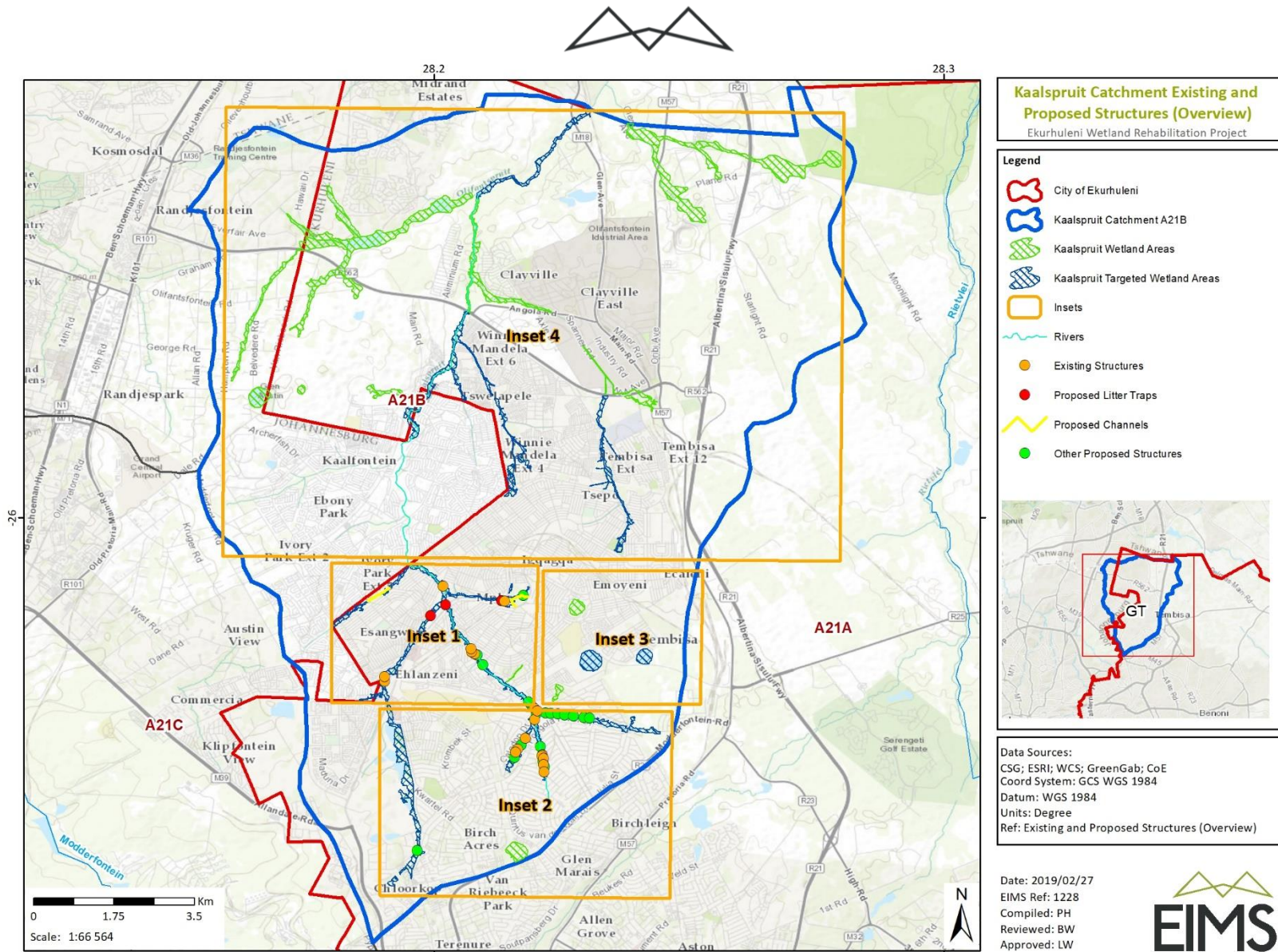


Figure 8: Existing and proposed structures in Kaalspruit catchment overview

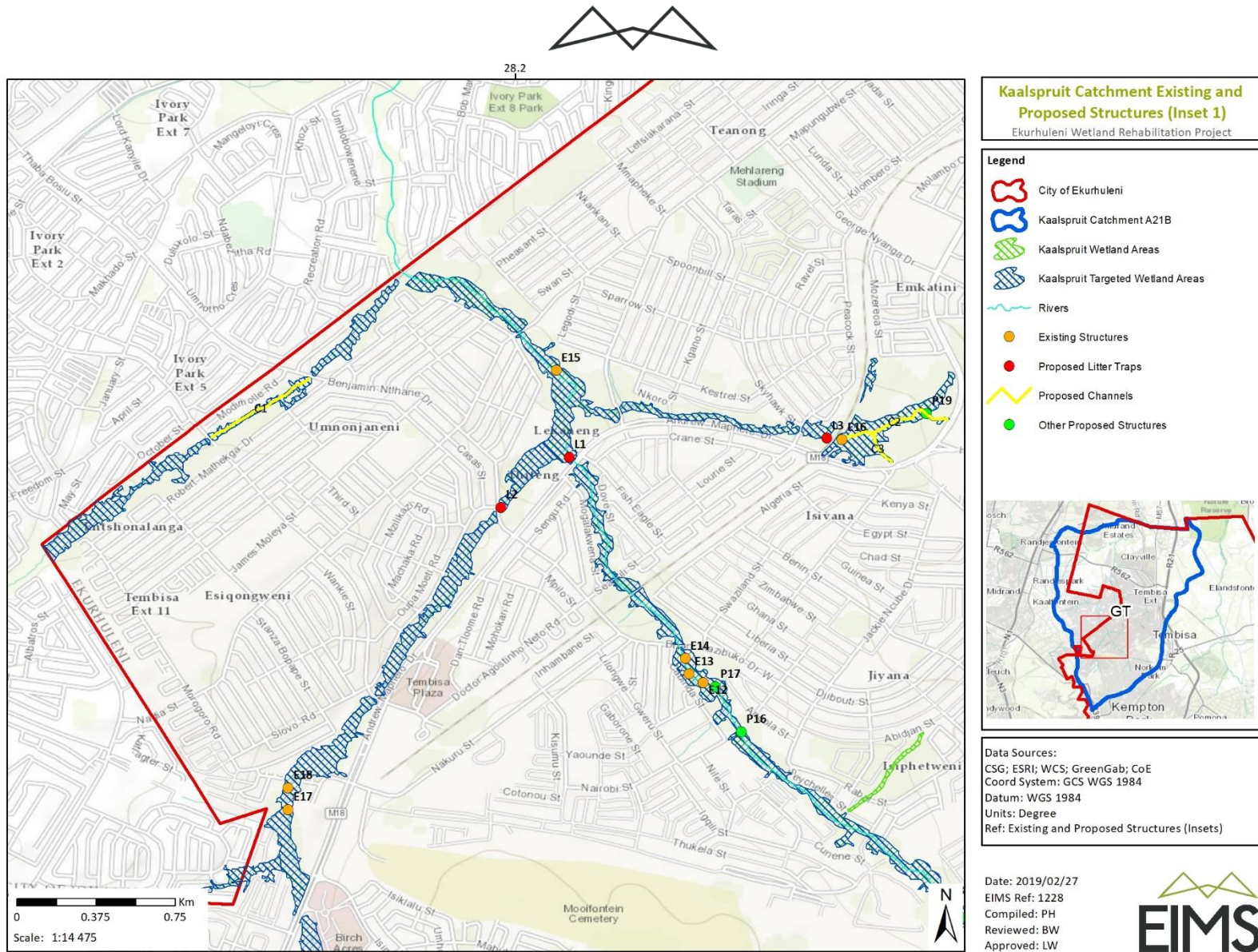


Figure 9: Existing and proposed structures in Kaalspruit catchment inset 1

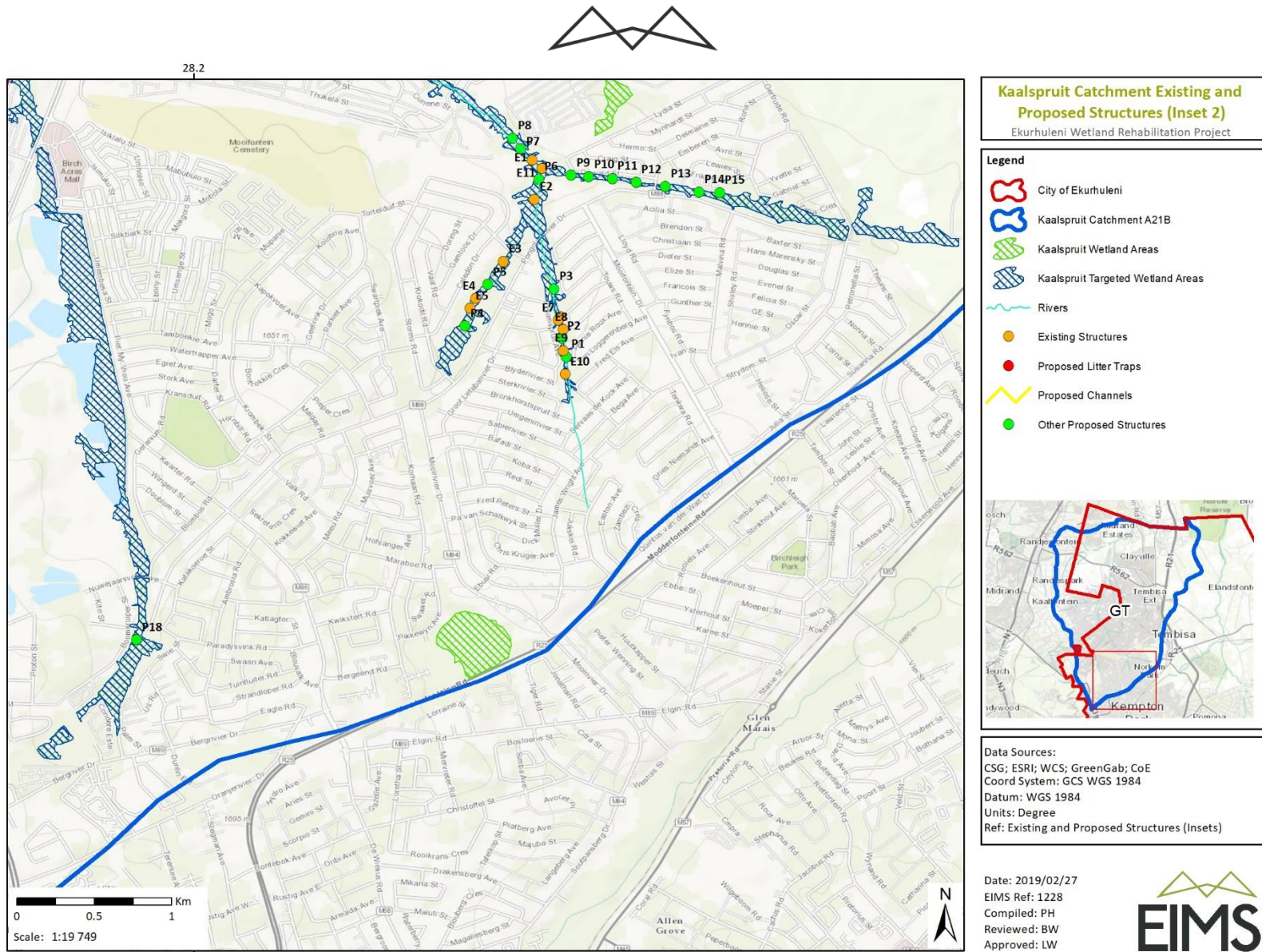


Figure 10: Existing and proposed structures in Kaalspruit catchment inset 2

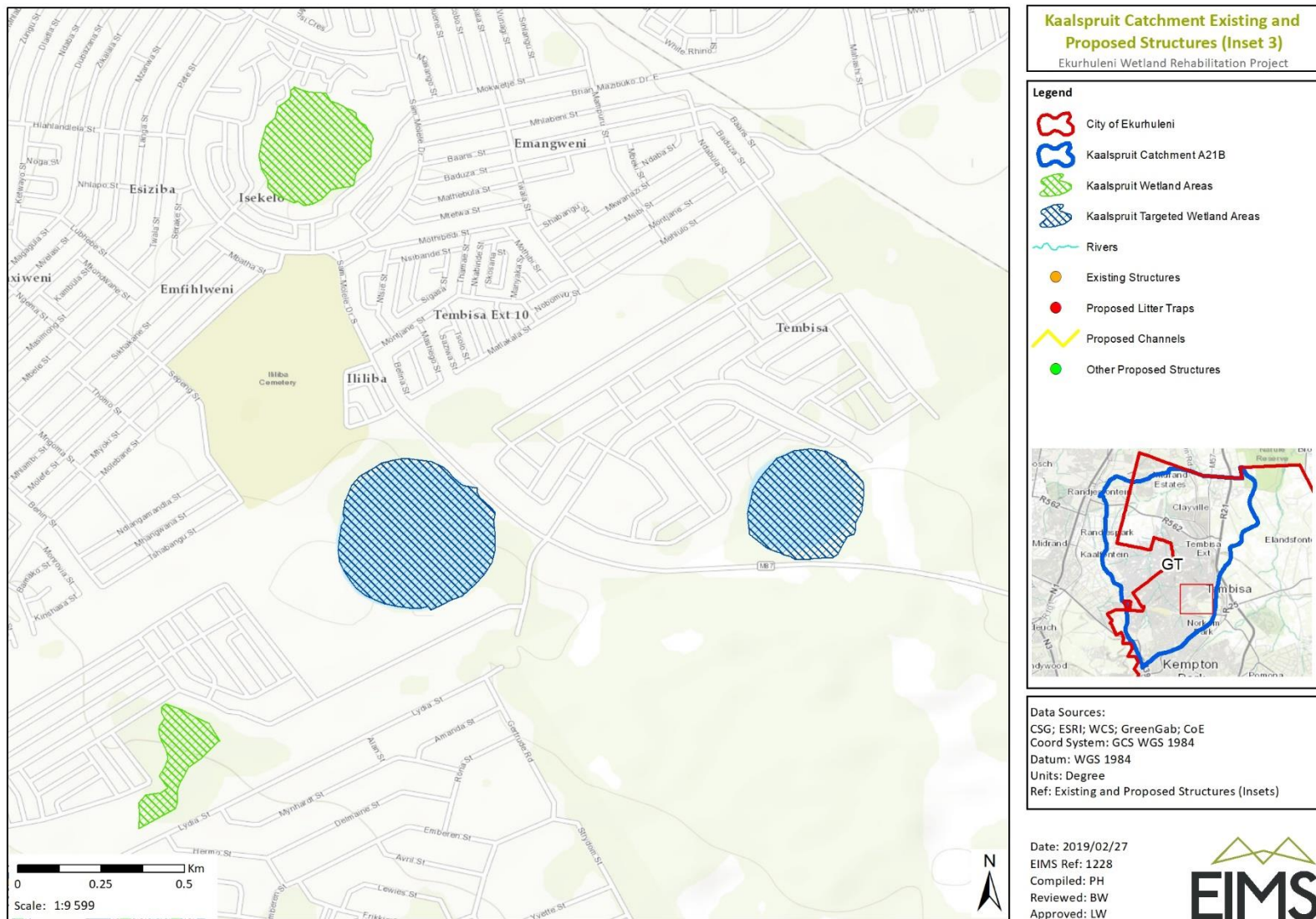


Figure 11: Existing and proposed structures in Kaalspruit catchment inset 3

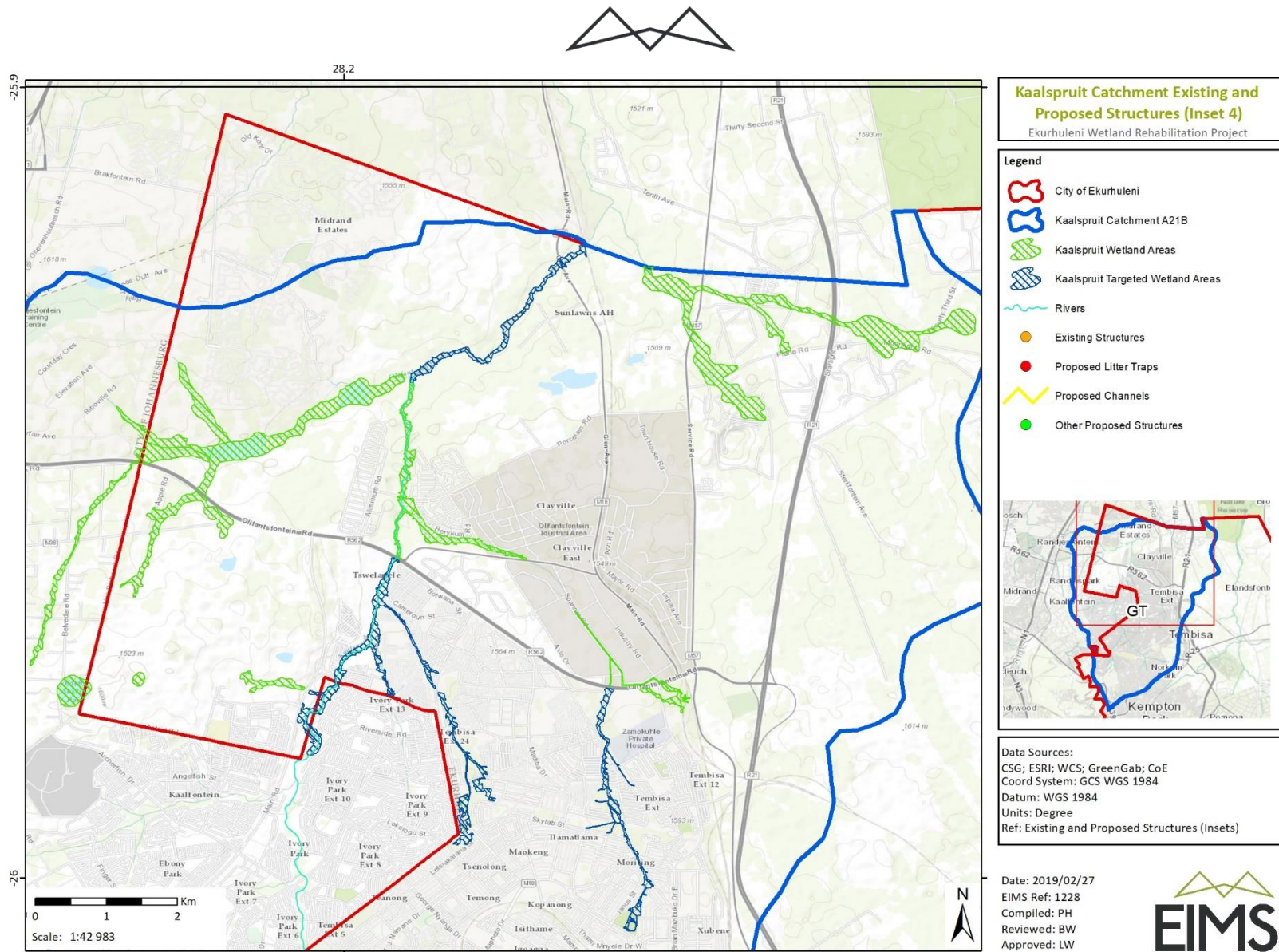


Figure 12: Existing and proposed structures in Kaalspruit catchment inset 4



Table 1: Existing and proposed interventions within the targeted wetlands area in Kaalspruit Catchment

Structure #	Coordinates	Structure	Maintenance/ Proposal
E1	26.037398°S, 28.21964°E	Concrete weir, good condition	Extend wingwall a further 10m with reinforced concrete wall
E2	26.039679°S, 28.219735°E	Large gabion structure, good condition	Cap gabions with concrete, add right wingwall further 10m
E3	26.043281°S, 28.217932°E	Gabion structure, fair condition	Concrete cap gabion baskets add wing walls 5m on both sides of structure
E4	26.045433°S, 28.216335°E	Gabion structure, fair condition	Concrete cap gabion baskets add wing walls 5m on both sides of structure
E5	26.045998°S, 28.216012°E	Gabion structure, fair condition	Concrete cap gabion baskets add wing walls 5m on both sides of structure
E6	26.046516°S, 28.221269°E	Concrete weir, good condition	Extend wingwall a further 5m with reinforced concrete wall on both side structure
E7	26.046697°S, 28.221142°E	Gabion stormwater channel, poor condition	Replace gabions with Armoflex channel
E8	26.047243°S, 28.221443°E	Gabion stormwater channel, poor condition	Replace gabions with Armoflex channel
E9	26.048462°S, 28.221418°E	Concrete weir, poor condition	Extend wingwall a further 5m with reinforced concrete wall on both side structure
E10	26.049828°S, 28.221544°E	Large gabion structure with walkway, fair condition	Concrete cap gabions as well as reinforce foundations
E11	26.037877°S, 28.22019°E	Concrete weir, poor condition	Extend wingwall a further 5m with reinforced concrete wall on both side structure
E12	26.026751°S, 28.207989°E	Large concrete weir, good condition	Extend wingwall a further 5m with reinforced concrete wall on both sides of structure
E13	26.026366°S, 28.207391°E	Large concrete weir, good condition	Extend wingwall a further 5m with reinforced concrete wall on both sides of structure



Structure #	Coordinates	Structure	Maintenance/ Proposal
E14	26.025717°S, 28.207225°E	Large concrete weir, good condition	Extend wingwall a further 5m with reinforced concrete wall on both sides of structure
E15	26.013464°S, 28.201733°E	Large low water crossing, fair condition	General concrete repairs
E16	26.016409°S, 28.213894°E	Large concrete weir, good condition	Extend wingwall a further 5m with reinforced concrete wall on one sides of structure
E17	26.032144°S, 28.190333°E	Large concrete weir, good condition	General concrete repairs and extend wingwalls a further 2m on both sides
E18	26.031217°S, 28.190328°E	Bridge, good condition	Currently under construction 2018
P1	26.04882°S, 28.221608°E	Armorflex and or Macmat Channel	All the stormwater channels entering the main wetland systems should be formalised to Armorflex channels. Sufficient energy dissipation measure should be constructed before stormwater enters the wetland system. Design connecting the current stormwater outlet and the Armorflex channel should be carefully considered.
P2	26.047747°S, 28.221371°E	Concrete Weir	These weirs are not designed for low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.
P3	26.044872°S, 28.220895°E	Concrete Weir with Walkway	All Concrete weir doubles up as a low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.



Structure #	Coordinates	Structure	Maintenance/ Proposal
P4	26.047032°S, 28.215723°E	Concrete Weir with Walkway	All Concrete weir doubles up as a low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.
P5	26.044625°S, 28.21705°E	Concrete Weir with Walkway	All Concrete weir doubles up as a low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.
P6	26.038496°S, 28.220022°E	Concrete Weir with Walkway and Drop Inlet	All concrete weir doubles up as a low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.
P7	26.036724°S, 28.21897°E	Concrete Weir with Walkway and Drop Inlet	All concrete weir doubles up as a low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.



Structure #	Coordinates	Structure	Maintenance/ Proposal
P8	26.036132°S, 28.218499°E	Concrete Weir with Walkway and Drop Inlet	All concrete weir doubles up as a low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.
P9	26.03827°S, 28.221891°E	Concrete Weir with Walkway and Drop Inlet	All concrete weir doubles up as a low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.
P10	26.038363°S, 28.222911°E	Concrete Weir with Walkway and Drop Inlet	All concrete weir doubles up as a low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.
P11	26.038467°S, 28.224276°E	Concrete Weir	These weirs are not designed for low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.
P12	26.038675°S, 28.225659°E	Concrete Weir	These weirs are not designed for low water pedestrian walkway. Please note that in high flows the water is designed to move over the



Structure #	Coordinates	Structure	Maintenance/ Proposal
			entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.
P13	26.038922°S, 28.227367°E	Concrete Weir	These weirs are not designed for low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.
P14	26.03926°S, 28.229319°E	Concrete Weir with Walkway	All Concrete weir doubles up as a low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.
P15	26.039281°S, 28.230501°E	Concrete Weir	These weirs are not designed for low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.
P16	26.02883°S, 28.209602°E	Concrete Weir with Walkway and Round Drop Inlet	All concrete weir doubles up as a low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this.



Structure #	Coordinates	Structure	Maintenance/ Proposal
			Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.
P17	26.026916°S, 28.208499°E	Concrete Weir with Walkway and Round Drop Inlet	All concrete weir doubles up as a low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.
P18	26.06525°S, 28.196652°E	Concrete Weir with Walkway	All Concrete weir doubles up as a low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.
P19	26.015302°S, 28.217478°E	Concrete Weir with Walkway and Round Drop Inlet	All concrete weir doubles up as a low water pedestrian walkway. Please note that in high flows the water is designed to move over the entire structure and at such time the walkways will not be safe to use. Clear signage should be installed to highlight this. Structure can be optimised during the detailed engineering design phase of the project. Concrete weirs will need to be scaled for each individual point. These sizes should be confirmed in the detailed design.
L1	26.017148°S, 28.202292°E	Litter Traps	The proposed litter traps are special nets, called "StormX nets," which are fitted to pipe or normal culverts. These nets will need to be cleaned periodically for them to function optimally. These nets have been chosen as they can be retro-fitted to existing infrastructure; this is important, as most of the areas proposed are extremally built-up



Structure #	Coordinates	Structure	Maintenance/ Proposal
			and more formal litter traps will not have enough space.
L2	26.019288°S, 28.199386°E	Litter Traps	The proposed litter traps are special nets, called “StormX nets,” which are fitted to pipe or normal culverts. These nets will need to be cleaned periodically for them to function optimally. These nets have been chosen as they can be retro-fitted to existing infrastructure; this is important, as most of the areas proposed are extremally built-up and more formal litter traps will not have enough space.
L3	26.016343°S, 28.213249°E	Litter Traps	The proposed litter traps are special nets, called “StormX nets,” which are fitted to pipe or normal culverts. These nets will need to be cleaned periodically for them to function optimally. These nets have been chosen as they can be retro-fitted to existing infrastructure; this is important, as most of the areas proposed are extremally built-up and more formal litter traps will not have enough space.
C1 start point	26.016284°S, 28.187074°E	Armorflex and or Macmat Channel Two Stepped Levels	All the stormwater channels entering the main wetland systems should be formalise to Armorflex channels. Sufficient energy dissipation measure should be construct
C1 end point	26.013745°S, 28.191269°E		
C2 start point	26.015526°S, 28.2184°E	Armorflex and or Macmat Channel Two Stepped Levels	All the stormwater channels entering the main wetland systems should be formalise to Armorflex channels. Sufficient energy dissipation measure should be constructed before stormwater enters the wetland system.
C2 end point	26.016538°S, 28.213775°E		
C3 start point	26.017358°S, 28.216008°E	Armorflex and or Macmat Channel Two Stepped Levels	All the stormwater channels entering the main wetland systems should be formalise to Armorflex channels. Sufficient energy dissipation measure should be constructed before stormwater enters the wetland system.
C3 end point	26.016113°S, 28.215095°E		

1.7. PUBLIC PARTICIPATION

This BAR has been compiled to meet the requirements for a BAR and Environmental Management Programme (EMPr) as stipulated in the Environmental Impact Assessment (EIA)



Regulations, 2014 promulgated under the NEMA. Sections A through F of this report contain the complete GDARD BAR template in line with the requirements for such.

The application for EA was submitted to GDARD on 29 March 2019. Public Participation was conducted as per Section C of this report. The BAR (this report and all supporting appendices) is made available to registered I&APs for comment. All comments received during this period will be included in the final version of the BAR submitted to the GDARD for adjudication and decision-making.



2. REPORT STRUCTURE

This report has been compiled in accordance with the EIA Regulations, 2014 (Government Notice (GN) R982). A summary of the report structure, and the specific sections that correspond to the applicable regulations, is provided in Table 2 below.

Table 2: Report Structure

Environmental Regulation	Description	Section in Report
NEMA EIA Regulations 2014 (as amended)		
Appendix 1(3)(a):	Details of – (i) The EAP who prepared the report; and (ii) The expertise of the EAP, including a curriculum vitae;	Project Background and Introduction: Section 4 Appendix I13
Appendix 1(3)(b):	The location of the activity, including: (i) The 21 digit Surveyor General code of each cadastral land parcel; (ii) Where available, the physical address and farm name; and (iii) Where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Section B1 & B2
Appendix 1(3)(c):	A plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is – (i) A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; (ii) On land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Section A6 Appendix A
Appendix 1(3)(d):	A description of the scope of the proposed activity, including –	Project Background and



Environmental Regulation	Description	Section in Report
	<ul style="list-style-type: none"> (i) All listed and specified activities triggered and being applied for; and (ii) A description of the activities to be undertaken including associated structures and infrastructure; 	Introduction: Section 3 Section A1 & A2
Appendix 1(3)(e):	A description of the policy and legislative context within which the development is proposed including – <ul style="list-style-type: none"> (i) An identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) How the proposed activity complies with and responds to the legislation and policy context plans, guidelines, tools frameworks, and instruments; 	Section A1 & A2
Appendix 1(3)(f):	A motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location;	Section E9
Appendix 1(3)(g):	A motivation for the preferred site, activity and technology alternative;	Section A3
Appendix 1(3)(h):	A full description of the process followed to reach the proposed alternative within the site, including: <ul style="list-style-type: none"> (i) Details of all the alternatives considered; (ii) Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage, and cultural aspects; (v) The impacts and risks identified for each alternative including the nature, significance, consequence, extent, duration, and probability of the impacts, including the degree to which these impacts – 	Section A3 Section C Section E1, E2, E5 & E6 Appendix I2



Environmental Regulation	Description	Section in Report
	<ul style="list-style-type: none"> (bb) Can be reversed; (cc) May cause irreplaceable loss of resources; and (dd) Can be avoided, managed or mitigated; (vi) The methodology used in determining and ranking the nature, significance, consequences, extent duration and probability of potential environmental impacts and risks associated with the alternatives; (vii) Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological social, economic, heritage and cultural aspects; (viii) The possible mitigation measures that could be applied and level of residual risk; (ix) The outcome of the site selection matrix; (x) If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and (xi) A concluding statement indicating the preferred alternatives, including preferred location of the activity; 	
Appendix 1(3)(i):	<p>A full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including –</p> <ul style="list-style-type: none"> (i) A description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures; 	Section E2 Appendix I2
Appendix 1(3)(j):	<p>An assessment of each identified potentially significant impact and risk, including –</p> <ul style="list-style-type: none"> (i) Cumulative impacts; 	Section E2 & E4 Appendix I2



Environmental Regulation	Description	Section in Report
	(ii) The nature, significance and consequence of the impact and risk; (iii) The extent and duration of the impact and risk; (iv) The probability of the impact and risk occurring; (v) The degree to which the impact and risk can be reversed; (vi) The degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) The degree to which the impact and risk can be mitigated;	
Appendix 1(3)(k):	Where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;	Section B7
Appendix 1(3)(l):	An environmental impact statement which contains – (i) A summary of the key findings of the environmental impact assessment; (ii) A map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Section E5 & E6 Appendix A
Appendix 1(3)(m):	Based on the assessment, and where applicable, impact management measures from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPR;	Section E11 Appendix H
Appendix 1(3)(n):	Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	Section E8
Appendix 1(3)(o):	A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Section E2



Environmental Regulation	Description	Section in Report
Appendix 1(3)(p):	A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Section E8
Appendix 1(3)(q):	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, and the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	N/A
Appendix 1(3)(r):	An undertaking under oath or affirmation by the EAP in relation to- <ul style="list-style-type: none"> (i) The correctness of the information provided in the reports; (ii) The inclusion of comments and inputs from stakeholders and I&Ps; (iii) The inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties; 	Appendix I1
Appendix 1(3)(s):	Where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	N/A
Appendix 1(3)(t):	Any specific information that may be required by the competent authority; and	N/A
Appendix 1(3)(u):	Any other matters required in terms of section 24(4)(a) and (b) of the Act.	N/A



3. APPLICABLE LISTED ACTIVITIES

The Basic Assessment Process applies to all activities identified in GN R. 983 (LN1) and GN R. 985 (LN3) proclaimed under the NEMA. These activities are typically developments, which are anticipated to have a manageable impact on the receiving environment. Table 3 below provides an extract of the anticipated listed activities which are considered applicable in the context of this project. Figure 13 below provides a simplified representation of the Basic Assessment Process.

Table 3: Potential NEMA Listed Activities

Activity No	Activity Description
<p>LN1 Activity 12</p>	<p>The development of—</p> <ul style="list-style-type: none"> (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; <p>where such development occurs—</p> <ul style="list-style-type: none"> (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; — <p>excluding—</p> <ul style="list-style-type: none"> (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.
<p>LN1 Activity 19</p>	<p>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;</p> <p>but excluding where such infilling, depositing, dredging, excavation, removal or moving—</p> <ul style="list-style-type: none"> (a) will occur behind a development setback;



Activity No	Activity Description
	<p>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;</p> <p>(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;</p> <p>(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or</p> <p>(e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.</p>
<p>LN1 Activity 27</p>	<p>The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for-</p> <p>(i) the undertaking of a linear activity; or</p> <p>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</p>
<p>LN1 Activity 31</p>	<p>The decommissioning of existing facilities, structures or infrastructure for—</p> <p>(i) any development and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;</p> <p>(ii) any expansion and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;</p> <p>(iv) any phased activity or activities for development and related operation activity or expansion or related operation activities listed in this Notice or Listing Notice 3 of 2014; or</p> <p>(v) any activity regardless the time the activity was commenced with, where such activity:</p> <p>(a) is similarly listed to an activity in (i) or (ii) above; and</p> <p>(b) is still in operation or development is still in progress;</p> <p>excluding where—</p> <p>(aa) activity 22 of this notice applies; or</p> <p>(bb) the decommissioning is covered by part 8 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies.</p>
<p>LN1 Activity 48</p>	<p>The expansion of—</p> <p>(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; or</p> <p>(ii) dams or weirs, where the dam or weir, including infrastructure and water surface area, is expanded by 100 square metres or more;</p> <p>where such expansion occurs—</p> <p>(a) within a watercourse;</p>



Activity No	Activity Description
	<p>(b) in front of a development setback; or</p> <p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;</p> <p>excluding—</p> <p>(aa) the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;</p> <p>(bb) where such expansion activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;</p> <p>(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;</p> <p>(dd) where such expansion occurs within an urban area; or</p> <p>(ee) where such expansion occurs within existing roads, road reserves or railway line reserves.</p>
<p>LN1 Activity 67</p>	<p>Phased activities for all activities—</p> <p>(i) listed in this Notice, which commenced on or after the effective date of this Notice or similarly listed in any of the previous NEMA notices, which commenced on or after the effective date of such previous NEMA Notices;</p> <p>excluding the following activities listed in this Notice-</p> <p>17(i)(a-d); 17(ii)(a-d); 17(iii)(a-d); 17(iv)(a-d); 17(v)(a-d); 20; 21; 22; 24(i); 29; 30;</p> <p>31; 32; 34; 54(i)(a-d); 54(ii)(a-d); 54(iii)(a-d); 54(iv)(a-d); 54(v)(a-d); 55; 61; 64; and 65; or</p> <p>(ii) listed as activities 5, 7, 8(ii), 11, 13, 16, 27(i) or 27(ii) in Listing Notice 2 of 2014 or similarly listed in any of the previous NEMA notices, which commenced on or after the effective date of such previous NEMA Notices;</p> <p>where any phase of the activity was below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold.</p>
<p>LN3 Activity 12</p>	<p>The clearance of an area of 300 square meters or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p>
<p>LN1 Activity 14</p>	<p>The development of—</p> <p>(i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or</p> <p>(ii) infrastructure or structures with a physical footprint of 10 square metres or more;</p>



Activity No	Activity Description
	<p>where such development occurs—</p> <ul style="list-style-type: none">(a) within a watercourse;(b) in front of a development setback; or(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; <p>excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.</p>
LN1 Activity 23	<p>The expansion of—</p> <ul style="list-style-type: none">(i) dams or weirs where the dam or weir is expanded by 10 square metres or more; or(ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; <p>where such expansion occurs—</p> <ul style="list-style-type: none">(a) within a watercourse;(b) in front of a development setback adopted in the prescribed manner; or(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; <p>excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.</p>

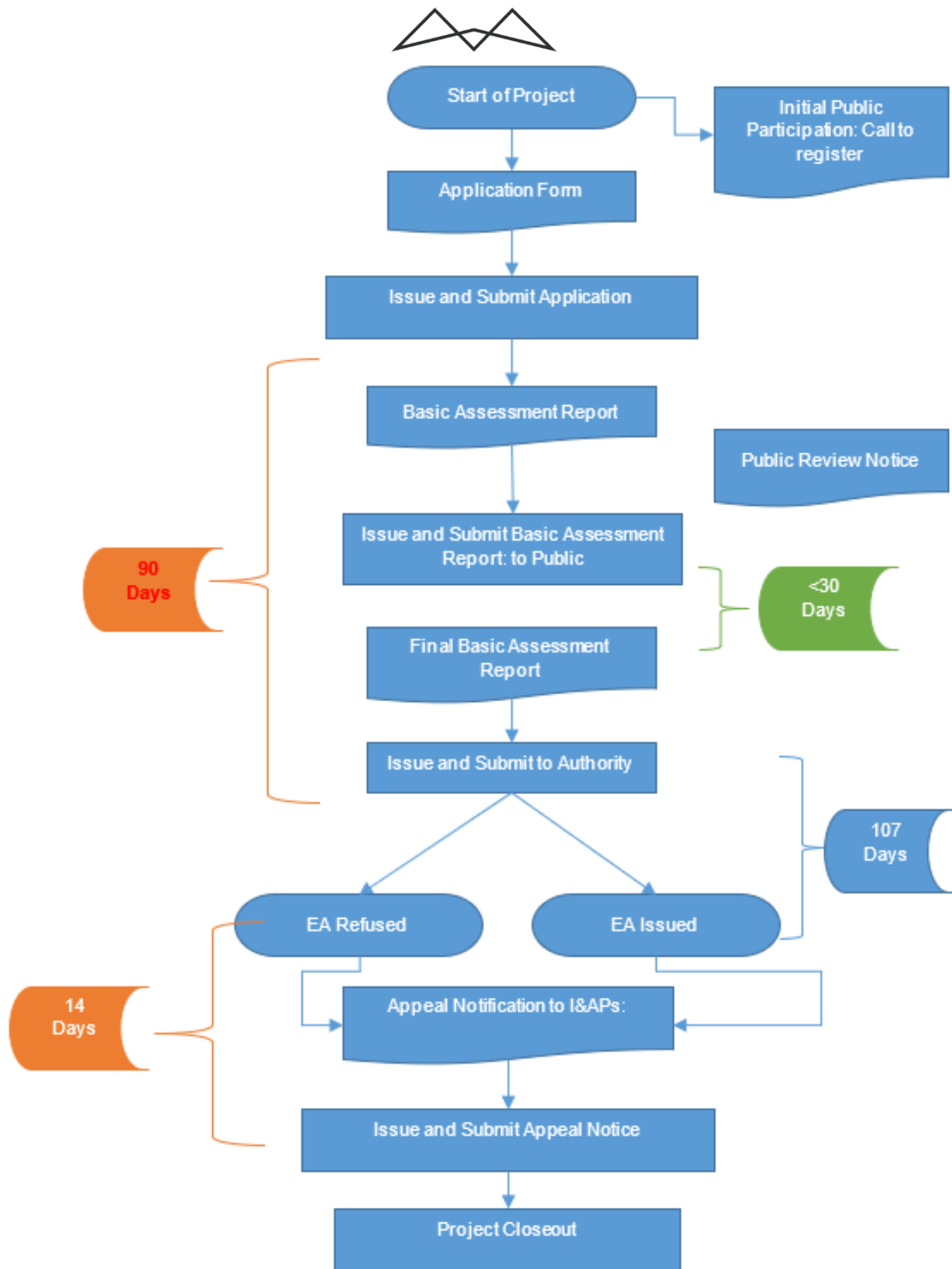


Figure 13: Simplified Representation of Basic Assessment Process



4. DETAILS OF THE EAP

The contact details of the EIMS Environmental Assessment Practitioner (EAP) are presented in Table 4 below:

Table 4: Details of EAP

EAP	Project Responsibility	Experience
<p>Mr Brian Whitfield</p>	<p>Project Manager and EAP</p>	<p>Brian is a senior project manager at EIMS and has been involved in numerous significant projects over the past 15 years he has been with the company. He holds a BSc (Botany and Zoology) and a BSc Honours degree in Botany from the University of the Witwatersrand. Brian is a Registered Professional Natural Scientist (400447/13) with the South African Council for Natural Scientific Professions. Brian's broad range of experience includes managing and/or undertaking projects in various sectors, including Energy, Mining, Oil and Gas, Water and Infrastructure. Brian's other experience includes Site Assessments, Water-use licensing, Environmental Monitoring and Auditing, Environmental Management Plans and Strategic Environmental Assessments.</p>
<p>Mr GP Kriel</p>	<p>Environmental Consultant</p>	<p>Mr GP Kriel holds an M.Env.Sci (Water Sciences) Cum Laude from the North-West University (Potchefstroom Campus) and is currently employed as a Senior Environmental Consultant. He has over 10 years of experience in environmental management and is the East London Office Manager. GP is a Registered Professional Natural Scientist (400202/09) with the South African Council for Natural and Scientific Professions (SACNASP) and Member of the Water Institute of Southern Africa. He has delivered presentations locally and internationally concerning the use of bio-indicators for the determination of water quality and has experience in a wide variety of Environmental Management Projects.</p>

In terms of Regulation 13 of the EIA Regulations, 2014, an independent Environmental Assessment Practitioner (EAP), must be appointed by the applicant to manage the application. EIMS has been appointed as the EAP and is compliant with the definition of an EAP as defined in Regulations 1 and 13 of the EIA Regulations and Section 1 of the NEMA. This includes, inter alia, the requirement that EIMS is:

- Objective and independent;
- Has expertise in conducting EIA's;
- Comply with the NEMA, the Regulations and all other applicable legislation;
- Takes into account all relevant factors relating to the application; and
- Provides full disclosure to the applicant and the relevant environmental authority.

The declaration of independence of the EAP and the Curriculum Vitae (indicating the experience with environmental impact assessment and relevant application processes) of the



consultants that were involved in the BAR process and the compilation of this report are attached as Appendix I1.

EIMS is a private and independent environmental management-consulting firm that was founded in 1993. EIMS has in excess of 25 years' experience in conducting EIAs.



GAUTENG PROVINCE
AGRICULTURE AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

Basic Assessment Report in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014 (Version 1)

Kindly note that:

1. This **Basic Assessment Report** is the standard report required by GDARD in terms of the EIA Regulations, 2014.
 2. This application form is current as of 8 December 2014. It is the responsibility of the EAP to ascertain whether subsequent versions of the form have been published or produced by the competent authority.
 3. **A draft Basic Assessment Report must be submitted, for purposes of comments within a period of thirty (30) days, to all State Departments administering a law relating to a matter likely to be affected by the activity to be undertaken.**
 4. **A draft Basic Assessment Report (1 hard copy and two CD's) must be submitted, for purposes of comments within a period of thirty (30) days, to a Competent Authority empowered in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended to consider and decide on the application.**
 5. Five (5) copies (3 hard copies and 2 CDs-PDF) of the final report and attachments must be handed in at offices of the relevant competent authority, as detailed below.
 6. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
 7. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.
 8. An incomplete report may lead to an application for environmental authorisation being refused.
 9. **Any report that does not contain a titled and dated full colour large scale layout plan of the proposed activities including a coherent legend, overlain with the sensitivities found on site may lead to an application for environmental authorisation being refused.**
 10. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the application for environmental authorisation being refused.
 11. No faxed or e-mailed reports will be accepted. Only hand delivered or posted applications will be accepted.
 12. Unless protected by law, and clearly indicated as such, all information filled in on this application will become public information on receipt by the competent authority. The applicant/EAP must provide any interested and affected party with the information contained in this application on request, during any stage of the application process.
 13. Although pre-application meeting with the Competent Authority is optional, applicants are advised to have these meetings prior to submission of application to seek guidance from the Competent Authority.
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DEPARTMENTAL DETAILS

Gauteng Department of Agriculture and Rural Development
Attention: Administrative Unit of the of the Environmental Affairs Branch
P.O. Box 8769
Johannesburg
2000

Administrative Unit of the of the Environmental Affairs Branch
Ground floor Diamond Building
11 Diagonal Street, Johannesburg

Administrative Unit telephone number: (011) 240 3377
Department central telephone number: (011) 240 2500



(For official use only)

NEAS Reference Number:						
File Reference Number:						
Application Number:						
Date Received:						

If this BAR has not been submitted within 90 days of receipt of the application by the competent authority and permission was not requested to submit within 140 days, please indicate the reasons for not submitting within time frame.

N/A

Is a closure plan applicable for this application and has it been included in this report?

No

if not, state reasons for not including the closure plan.

This development entails the rehabilitation of wetlands within the City of Ekurhuleni and will not include any activities in terms of the Minerals and Petroleum Resources Development Act (Act No. 28 of 2002 – MPRDA). As such no closure plan will be required.

Has a draft report for this application been submitted to a competent authority and all State Departments administering a law relating to a matter likely to be affected as a result of this activity?

Yes

Is a list of the State Departments referred to above attached to this report including their full contact details and contact person?

Yes

If no, state reasons for not attaching the list.

N/A

Have State Departments including the competent authority commented?

No

If no, why?

N/A – to be updated following review period of this report.



SECTION A: ACTIVITY INFORMATION

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

Project title (must be the same name as per application form):

City of Ekurhuleni: Wetland and Watercourse Rehabilitation and Maintenance within the Kaalspruit Catchment

Select the appropriate box

The application is for an upgrade of an existing development

The application is for a new development

Other, specify

This development includes the upgrade of existing structures within watercourses and wetlands as well as the development of new structures within watercourses and wetlands.

Does the activity also require any authorisation other than NEMA EIA authorisation?

<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
---	-----------------------------

If yes, describe the legislation and the Competent Authority administering such legislation

The National Water Act (Act 36 of 1998) (NWA) legislates the way in which water resources are protected, used, developed, conserved, managed and controlled. Section 21 of the NWA lists the activities which are defined as 'water uses' and which require permission to undertake such activities (Section 22). The following water uses may, depending on the site circumstances and the proposed designs, be applicable to the proposed activity, which would require a Water Use Licence (WUL) / General Authorisation (GA) from the Department of Water and Sanitation (DWS).

NWA Section 21 Water Uses	Applicability to This Project
21 c) Impeding or diverting the flow of water in a watercourse	The rehabilitation and/or maintenance interventions may impede or divert the flow of water in a watercourse (including any activities within 500m of any wetland).
21 i) Altering the bed, banks, course or characteristics of a watercourse	The rehabilitation and/or maintenance interventions may alter the bed, banks, course or characteristics of a watercourse.

If yes, have you applied for the authorisation(s)?

<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO

If yes, have you received approval(s)? (attach in appropriate appendix)



2. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations:

Title of Legislation, Policy or Guideline	Administering Authority	Promulgation Date
Legislation		
National Water Act (Act 36 of 1998)	National	November 1998
Water Use Licence Application and Appeals Regulations, 2017	National	March 2017
National Environmental Management Act (Act 107 of 1998)	National & Provincial	November 1998
Environmental Impact Assessment (EIA) Regulations, 2014 (GN R. 982)	National & Provincial	December 2014
National Environmental Management: Biodiversity Act (Act 10 of 2004)	National & Provincial	June 2004
National Environmental Management: Protected Areas Act (Act 57 of 2003)	National & Provincial	November 2004
National Environmental Management: Waste Act (Act 59 of 2008)	National & Provincial	July 2009
Conservation of Agricultural Resources Act (Act 43 of 1983)	National & Provincial	June 1984
Municipal Systems Act (Act 32 of 2000)	National & Provincial	March 2001
Municipal Structures Act (Act 117 of 1998)	National & Provincial	February 1999
Municipal Health Act (Act 61 of 2003)	National & Provincial	August 1998
Spatial Planning and Land use Management Act (Act 16 of 2013)	National & Provincial	July 2015
Disaster Management Amendment Act (16 of 2016)	National & Provincial	May 2016
Policies and Guidelines		
National Development Plan and Associated Medium Term Strategic Framework (MTSF)	National	
City of Ekurhuleni Integrated Development Plan (IDP) 2016-2021	Municipal	2019
Ekurhuleni Metropolitan Spatial Development Framework: 2015	Municipal	2015



Title of Legislation, Policy or Guideline	Administering Authority	Promulgation Date
Ekurhuleni Regional Spatial Development Framework: Region A: 2015	Municipal	2015
City of Ekurhuleni Open Space Framework: Region A	Municipal	2015
Gauteng Provincial Environmental Management Framework (EMF)	Provincial	2007
Bioregional Plan for Ekurhuleni Metro	Municipal	2014
Gauteng Spatial Development Framework 2030	Provincial	2016
DEA Guidelines on Public Participation	National	October 2012
Gauteng Conservation Plan Version 3.3 (C-Plan 3.3)	Provincial	October 2011

Description of compliance with the relevant legislation, policy or guideline:

Legislation, Policy or Guideline	Description of Compliance
Legislation	
National Water Act (Act 36 of 1998)	The principles of the NWA include protection, use, development, conservation, management and control of water resources. This includes regulating of activities within the vicinity of a water resource which includes wetlands. The NWA provides various regulatory requirements for any activities within regulated areas which include amongst others, wetlands and rivers.
Water Use Licence Application and Appeals Regulations, 2017	The proposed development constitutes Water Uses in terms of Section 21 of the National Water Act (Act No. 36 of 1998). A GA process is being followed to obtain approval from the DWS.
National Environmental Management Act (Act 107 of 1998)	Regulatory requirements and framework, including relevant applications for activities within and around watercourses. This includes requirements for EIA's for developmental activities within the vicinity of watercourses.
Environmental Impact Assessment (EIA) Regulations, 2014 (GN R. 982)	The proposed development constitutes activities listed under GN R. 983 and GN R. 985 (as amended); therefore, a Basic Assessment Report process is being followed to obtain authorisation from the GDARD. Please refer to Project Background and Introduction: Section 3 above.
National Environmental Management: Biodiversity Act (Act 10 of 2004)	Protection of biodiversity and the formulation of several tools to affect such protection, including bioregional plans and threatened ecosystem lists



Legislation, Policy or Guideline	Description of Compliance
	<p>that feed into land use planning and EIA procedures.</p> <p>Alien and Invasive Species Regulations - the regulations provide requirements for invasive species management (fauna and flora) which also have direct impacts on the functioning of watercourses, including wetlands.</p>
<p>National Environmental Management: Protected Areas Act (Act 57 of 2003)</p>	<p>The Act provide for the protection of National Parks, protected areas and conservation sites. This includes the protection of wetland sites within these areas as well as RAMSAR sites.</p>
<p>National Environmental Management: Waste Act (Act 59 of 2008)</p>	<p>The Act regulates, amongst other things, illegal dumping. This is a major problem, particularly for wetlands within and around development areas.</p>
<p>Conservation of Agricultural Resources Act (Act 43 of 1983)</p>	<p>The Act provides a regulatory framework for the protection and utilisation of the natural agricultural resources to promote the conservation of the soil, the water resources and vegetation and the combating of weeds and invasive plants. Erosion, cultivation and encroachment of invasive plants are some of the major impacts to wetlands and water resources in general.</p>
<p>Municipal Systems Act (Act 32 of 2000)</p>	<p>The Act provides for the role of local governments and the requirements of IDPs, SDFs and Disaster Management Plans. The wetlands and watercourses in general form an integral part of these plans.</p>
<p>Municipal Structures Act (Act 117 of 1998)</p>	<p>The Act provides for the requirements and promotion of regional planning and spatial planning categories. Again, wetlands and watercourses in general form an integral part of these plans and are required to clearly define the measures to be put in place to ensure continuity of functioning of these systems within the plans.</p>
<p>Municipal Health Act (Act 61 of 2003)</p>	<p>The Act sets the framework and requirements for monitoring and reporting of Waste Water Treatment Work discharge. These discharges are a major water quality impact in most of the municipalities and require constant monitoring.</p>
<p>Spatial Planning and Land Use Management Act (Act 16 of 2013)</p>	<p>The Act provides a framework for spatial planning and land use management in South Africa. It sets out in its definition that municipal planning is primarily the executive function of the local sphere of government and requires that biodiversity is adequately considered in the spatial planning.</p>



Legislation, Policy or Guideline	Description of Compliance
Disaster Management Amendment Act (16 of 2016)	The Act outlines how ecosystems should be considered in the updated disaster management Act.
Policies and Guidelines	
National Development Plan and Associated Medium Term Strategic Framework (MTSF)	The NDP set out measures to protect natural resources in South Africa. This is done through the creation of the MTSF and associated "Delivery Agreement", required outputs and targets set. Outcome 10 of MTSF specifically deals with the protection and enhancement of national environmental assets and natural resources.
City of Ekurhuleni Integrated Development Plan (IDP) 2016-2021	Overall strategy document for the municipality. It provides vision, leadership and direction for all those that have a role to play in the development of a municipal area. Municipality as part of this plan is required to play a role in ensuring integration and co-ordination between the various sectors and cross-sectoral dimensions of development, to achieve social, economic and ecological sustainability. Ecological sustainability components include biodiversity, water resources (wetlands and rivers) and environmental management. The plan sets goals and objectives to be achieved by municipality in realizing sustainability, including available funds to initiate projects associated with environmental improvement and ecological sustainability to be implemented by various departments within the municipality.
Ekurhuleni Metropolitan Spatial Development Framework: 2015 Ekurhuleni Regional Spatial Development Framework: Region A: 2015 Gauteng Spatial Development Framework 2030	Overarching spatial planning guidelines and strategic plans for the province, district and local municipality (including a map of land use within the district). These plans assist in managing municipal land at different levels of local government institution. The maps include, amongst others, waterbodies (including wetlands) and well as sensitivity of these features at a local government level.
City of Ekurhuleni Open Space Framework: Region A	This includes Demarcation of Open Space Areas and these areas are predominantly free of buildings and provide ecological, socio-economic and place-making functions at all scales of the municipality area. Green areas, including rivers and wetlands, are always incorporated into the design of these areas and are reflected in the specific municipality framework as part of green spaces which require improvement, rehabilitation, monitoring and management.



Legislation, Policy or Guideline	Description of Compliance
Gauteng Provincial Environmental Management Framework (EMF)	Map and land use guidelines for areas of environmental importance. Municipality is required to undertake the assessment of all their areas and identify environmentally important areas and these assessments include wetland and rivers and these features need to be indicated. The sensitivity of these systems is also included in the framework. Action plans in terms of management and monitoring requirements to sustain these areas are required and indicated as part of the EMF strategy for municipality.
Bioregional Plan for Ekurhuleni Metro	These plans assist in informing land-use planning and decision-making by municipality as its policies and decisions impact on biodiversity. This is done through providing a map of biodiversity priorities (CBAs and ESA) with accompanying land-use planning and decision-making guidelines. Bioregional plans are intended to feed into a range of multi-sectoral planning and assessment processes such as Environmental Management Frameworks (EMFs), Spatial Development Frameworks (SDFs), Strategic Environmental Assessments (SEAs) and Environmental Impact Assessments (EIAs). Water resources form part of these plans and the sensitivity of these systems is also highlighted within these plans to assist with careful planning of developments around them.
DEA Guidelines on Public Participation	This guideline was considered during the Public Participation Process conducted for the proposed project.
Gauteng Conservation Plan Version 3.3 (C-Plan 3.3)	The Gauteng Conservation Plan was considered in ensuring the protection of the surrounding ecology. The proposed interventions will aim to improve the ecological status of the watercourses in order to mitigate further deterioration.

3. ALTERNATIVES

Describe the proposal and alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. The determination of whether the site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment.

The no-go option must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. **Do not include the no go option into the alternative table below.**

Note: After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.



Please describe the process followed to reach (decide on) the list of alternatives below

As described in the Project Description above (Project Background and Introduction), this project entails the implementation of the measures as detailed in the wetland rehabilitation plan for the Kaalspruit catchment, located within the CoE. The most appropriate wetland rehabilitation measures were determined through the following steps:



The feasibility of some of the proposed activities were also further assessed with an environmental engineer in terms of implementation and costing as described in this section. Please refer to the Engineering Conceptual Designs and Basic Assessment Report by GreenGAB (Pty) Ltd in association with WCS attached in Appendix G.

As such, based on the outcome of this process, the most practical site and technological alternatives (i.e. soft and hard interventions) have already been selected and, as such, no further alternatives have been considered in this report.

Provide a description of the alternatives considered

No.	Alternative type, either alternative: site on property, properties, activity, design, technology, energy, operational or other (provide details of "other")	Description
1	Proposal (Site and Technology)	<p>Please refer to the Engineering Conceptual Designs and Basic Assessment Report by GreenGAB (Pty) Ltd in association with WCS attached in Appendix G. The rehabilitation interventions are split into two categories, namely hard and soft interventions:</p> <ul style="list-style-type: none"> • Soft engineering wetland rehabilitation interventions: These relate to all ancillary



No.	Alternative type, either alternative: site on property, properties, activity, design, technology, energy, operational or other (provide details of "other")	Description
		<p>measures used to improve the overall wetland condition, contributing to the success of the rehabilitation effort. Soft interventions are typically measured in terms of which are easier, quicker and less invasive to implement within the wetland system (e.g. the removal of alien vegetation). As part of the soft intervention, various parks and greenspaces were also highlighted; and</p> <ul style="list-style-type: none"> • Hard engineering wetland rehabilitation interventions: These relate to specific side slope or instream measures that have specific functions, given their respective locations. These interventions are used to improve the overall wetland condition. Hard wetland rehabilitation interventions are typically designed to solve a specific pre-identified issue such as head-cut, erosion gully and so forth. The proposed hard interventions included changes to existing interventions already implemented previously, and new proposed interventions including the following: <ul style="list-style-type: none"> ○ Armorflex and or MacMat Channels; ○ Low level berms with MacMat; ○ Concrete weirs; ○ Concrete weir with incorporated walkways; ○ Concrete weir with box inlet; ○ Concrete weir with round inlet; and ○ Litter traps. <p>Please refer to the detailed description of these interventions in the Project Description above (Project Background and Introduction).</p> <p>It is important to bear in mind that some of the interventions referred to in this report will be implemented, as and when required within the catchment. As such, this application includes the implementation of the wetland maintenance management plan (as referred to in the EIA Listing</p>



No.	Alternative type, either alternative: site on property, properties, activity, design, technology, energy, operational or other (provide details of "other")	Description
		Notices (LN). It is anticipated that should the project be authorised (including the maintenance management plans (MMP)), future interventions required within the catchment by the CoE would not require separate authorisation in terms of the EIA Regulations, 2014, should these be executed within the prescripts of the MMP.

In the event that no alternative(s) has/have been provided, a motivation must be included in the table below.

As described in the Project Description above (Project Background and Introduction), this project entails the implementation of the measures as detailed in the wetland rehabilitation plan for the Kaalspruit catchment, located within the CoE. The most appropriate wetland rehabilitation measures were determined through the following steps:



The feasibility of some of the proposed activities were also further assessed with an environmental engineer in terms of implementation and costing as described in this section. Please refer to the Engineering Conceptual Designs and Basic Assessment Report by GreenGAB (Pty) Ltd in association with WCS attached in Appendix G.

As such, based on the outcome of this process, the most practical site and technological alternatives (i.e. soft and hard interventions) have already been selected and, as such, no further alternatives have been considered for this project.



4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the total physical size (footprint) of the proposal as well as alternatives. Footprints are to include all new infrastructure (roads, services etc), impermeable surfaces and landscaped areas:

The development footprint sizes vary due to the nature of this application. Upgrades to existing instream structures as well as new instream structures are scattered throughout the catchment. Furthermore, the peripheral interventions (rehabilitation of adjacent open space) depends on the extent of waste removal, vegetation rehabilitation, etc. As such, the area for each intervention cannot be provided at this stage.

However, where available, the proposed changes to existing interventions and the proposed new interventions were utilised to calculate an estimated maximum area for these types of interventions (specific individual interventions) and this is the area utilised below under the "Size of the activity".

Size of the activity

Proposed activity (Total environmental (landscaping, parking, etc.) and the building footprint)

3.6 ha

Alternatives

Alternative 1 (if any)

Alternative 2 (if any)

Ha/m²

Indicate the size of the site(s) or servitudes (within which the above footprints will occur):

A total of 316.13 ha of wetlands are targeted for rehabilitation for this current project within the 595.4 ha of wetlands assessed for the entire Kaalspruit Catchment. Maintenance activities may occur within the entire extent of the wetlands as and when required.

Size of the site/ servitude

Proposed activity (Total environmental (landscaping, parking, etc.) and the building footprint)

316.13 ha

Alternatives

Alternative 1 (if any)

Alternative 2 (if any)



5. SITE ACCESS

Proposal

Does ready access to the site exist, or is access directly from an existing road?

YES	NO
[Redacted]	

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

No new roads are planned for the project. Existing roads will be utilised to access the sites.

Include the position of the access road on the site plan (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

PLEASE NOTE: Points 6 to 8 of Section A must be duplicated where relevant for alternatives

Section A 6-8 has been duplicated (only complete when applicable)

0

Number of times

6. LAYOUT OR ROUTE PLAN

A detailed site or route (for linear activities) plan(s) must be prepared for each alternative site or alternative activity. It must be attached to this document. The site or route plans must indicate the following:

- the layout plan is printed in colour and is overlaid with a sensitivity map (if applicable);
- layout plan is of acceptable paper size and scale, e.g.
 - A4 size for activities with development footprint of 10sqm to 5 hectares;
 - A3 size for activities with development footprint of > 5 hectares to 20 hectares;
 - A2 size for activities with development footprint of >20 hectares to 50 hectares);
 - A1 size for activities with development footprint of >50 hectares);
- The following should serve as a guide for scale issues on the layout plan:
 - A0 = 1: 500
 - A1 = 1: 1000
 - A2 = 1: 2000
 - A3 = 1: 4000
 - A4 = 1: 8000 (±10 000)
- shapefiles of the activity must be included in the electronic submission on the CD's;
- the property boundaries and Surveyor General numbers of all the properties within 50m of the site;
- the exact position of each element of the activity as well as any other structures on the site;



- the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, sewage pipelines, septic tanks, storm water infrastructure;
- servitudes indicating the purpose of the servitude;
- sensitive environmental elements on and within 100m of the site or sites (including the relevant buffers as prescribed by the competent authority) including (but not limited thereto):
 - Rivers and wetlands;
 - the 1:100 and 1:50 year flood line;
 - ridges;
 - cultural and historical features;
 - areas with indigenous vegetation (even if it is degraded or infested with alien species);
- Where a watercourse is located on the site at least one cross section of the water course must be included (to allow the position of the relevant buffer from the bank to be clearly indicated)

FOR LOCALITY MAP (NOTE THIS IS ALSO INCLUDED IN THE APPLICATION FORM REQUIREMENTS)

- the scale of locality map must be at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map;
- the locality map and all other maps must be in colour;
- locality map must show property boundaries and numbers within 100m of the site, and for poultry and/or piggery, locality map must show properties within 500m and prevailing or predominant wind direction;
- for gentle slopes the 1m contour intervals must be indicated on the map and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the map;
- areas with indigenous vegetation (even if it is degraded or infested with alien species);
- locality map must show exact position of development site or sites;
- locality map showing and identifying (if possible) public and access roads; and
- the current land use as well as the land use zoning of each of the properties adjoining the site or sites.

7. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under the appropriate Appendix. It should be supplemented with additional photographs of relevant features on the site, where applicable.

Please refer to Appendix B for representative site photographs. Due to the nature of this application and extent of the wetland and watercourses assessed, representative photographs are included.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned



activity. The illustration must give a representative view of the activity to be attached in the appropriate Appendix.

Please refer to Appendix C and the Engineering Conceptual Designs and Basic Assessment Report by GreenGAB (Pty) Ltd in association with WCS attached in Appendix G. The rehabilitation interventions are split into two categories, namely hard and soft interventions:

- Soft engineering wetland rehabilitation interventions: These relate to all ancillary measures used to improve the overall wetland condition, contributing to the success of the rehabilitation effort. Soft interventions are typically measured in terms of which are easier, quicker and less invasive to implement within the wetland system (e.g. the removal of alien vegetation). As part of the soft intervention, various parks and greenspaces were also highlighted; and
- Hard engineering wetland rehabilitation interventions: These relate to specific side slope or instream measures that have specific functions, given their respective locations. These interventions are used to improve the overall wetland condition. Hard wetland rehabilitation interventions are typically designed to solve a specific pre-identified issue such as head-cut, erosion gully and so forth. The proposed hard interventions included changes to existing interventions already implemented previously, and new proposed interventions including the following:
 - Armorflex and or MacMat Channels;
 - Low level berms with MacMat;
 - Concrete weirs;
 - Concrete weir with incorporated walkways;
 - Concrete weir with box inlet;
 - Concrete weir with round inlet; and
 - Litter traps.



SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

Note: Complete Section B for the proposal and alternative(s) (if necessary)

Instructions for completion of Section B for linear activities

- 1) For linear activities (pipelines etc) it may be necessary to complete Section B for each section of the site that has a significantly different environment.
- 2) Indicate on a plan(s) the different environments identified
- 3) Complete Section B for each of the above areas identified
- 4) Attach to this form in a chronological order
- 5) Each copy of Section B must clearly indicate the corresponding sections of the route at the top of the next page.

Section B has been duplicated for sections of the route

times

Instructions for completion of Section B for location/route alternatives

- 1) For each location/route alternative identified the entire Section B needs to be completed
- 2) Each alternative location/route needs to be clearly indicated at the top of the next page
- 3) Attach the above documents in a chronological order

Section B has been duplicated for location/ route alternatives

times

Instructions for completion of Section B when both location/route alternatives and linear activities are applicable for the application

Section B is to be completed and attachments order in the following way:

- All significantly different environments identified for Alternative 1 is to be completed and attached in a chronological order; then
- All significantly different environments identified for Alternative 2 is to be completed and attached chronological order, etc.

Section B - Section of Route

(complete only when appropriate for above)

Section B – Location/route Alternative No.

(complete only when appropriate for above)



1. PROPERTY DESCRIPTION

Property description:
(Including Physical
Address and Farm name,
portion etc.)

The development footprint sizes vary due to the nature of this application. Upgrades to existing instream structures as well as new instream structures are scattered throughout the catchment. Furthermore, the peripheral interventions (rehabilitation of adjacent open space) depends on the extent of waste removal, vegetation rehabilitation, etc. As such, the area for each intervention cannot be provided at this stage.

Please refer to Appendix I3 for a table containing a list of properties affected by the various wetland rehabilitation activities.

2. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in decimal degrees. The degrees should have at least six decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

Alternative:

Latitude (S):

Longitude (E):



This application includes the implementation of catchment wide soft and hard interventions. Soft interventions will vary widely throughout the Kaalspruit catchment due to the nature of this type of interventions and therefore, definite coordinates cannot be provided at this stage. The hard interventions include upgrades to existing instream structures, as well as new instream structures that are scattered throughout the catchment and these have been indicated in Figure 8 and Table 1 above.

The soft and hard interventions will be implemented in line with the requirements of the EMPr and the MMP throughout the catchment.

The 21 digit Surveyor General code of each cadastral land parcel

Proposal	Please refer to Appendix I3 for a table containing a list of properties affected by the various wetland rehabilitation activities.
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3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Due to the fact that this application includes the implementation of catchment wide interventions, the gradient within the catchment has been illustrated on a map included in Appendix A. The colours in the table below illustrate the gradient on the map included in Appendix A.



Flat	1:50-1:20	1:20-1:15	1:15-1:10	1:10-1:7,5	1:7,5-1:5	Steeper than 1:5
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4. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site.

	Valley		River front
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5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

a) Is the site located on any of the following?

Shallow water table (less than 1.5m deep)

Dolomite, sinkhole or doline areas

Seasonally wet soils (often close to water bodies)

Unstable rocky slopes or steep slopes with loose soil

Dispersive soils (soils that dissolve in water)

Soils with high clay content (clay fraction more than 40%)

Any other unstable soil or geological feature

An area sensitive to erosion

YES	
YES	
YES	
	NO
YES	
YES	
	NO
YES	

(Information in respect of the above will often be available at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

b) are any caves located on the site(s)

c) are any caves located within a 300m radius of the site(s)

d) are any sinkholes located within a 300m radius of the site(s)

	NO
	NO
	NO

If any of the answers to the above are "YES" or "unsure", specialist input may be requested by the Department

6. AGRICULTURE

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?

YES	
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Please note: The Department may request specialist input/studies in respect of the above.



7. GROUNDCOVER

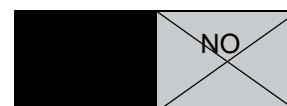
To be noted that the location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Indicate the types of groundcover present on the site and include the estimated percentage found on site

Natural veld - good condition % =	Natural veld with scattered aliens % = 50	Natural veld with heavy alien infestation % = 50	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	Building or other structure % =	Bare soil % =

Please note: The Department may request specialist input/studies depending on the nature of the groundcover and potential impact(s) of the proposed activity/ies.

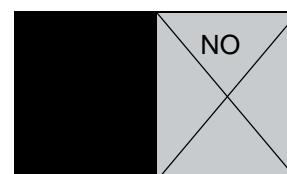
Are there any rare or endangered flora or fauna species (including red list species) present on the site?



If YES, specify and explain:

The results of the Situation Analysis by WCS did not indicate the presence of rare or endangered flora or fauna species. However, should these be encountered during the construction phase, it is anticipated that these will be dealt with in terms of the prescripts of the EMPr and the MMP.

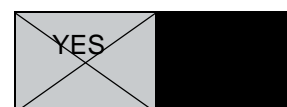
Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site?



If YES, specify and explain:

The results of the Situation Analysis by WCS did not indicate the presence of rare or endangered flora or fauna species. However, should these be encountered during the construction phase, it is anticipated that these will be dealt with in terms of the prescripts of the EMPr and the MMP.

Are there any special or sensitive habitats or other natural features present on the site?



If YES, specify and explain:



One of the non-targeted wetland areas towards the north-east of the Kaalspruit Catchment is located within the Rietvlei Dam Protected Area.

WCS (2018) reports that the extent and distribution of wetland areas within the Kaalspruit Catchment area is indicated in Project Background and Description: Section 1.1 above and Figure 2 above. Three types of natural wetland system, in terms of the HGM classification system in accordance with the South African Wetland Classification as proposed in SANBI (2009) and Ollis et al. (2013), were recorded on site and distribution of these types, namely:

- Depressions (Pans);
- Hillslope seepage wetlands; and
- Valley bottom wetlands (Channelled and Unchannelled).

Wetland areas have been subjected to numerous impacts associated with the modification of the system's hydrology, vegetation integrity and morphology. Increase in flow peaks caused by storm water discharges and urbanization have resulted in channel incision, bank collapsing, erosion and sediment loss, as well as water quality deterioration. These changes have resulted in the desiccation of the adjacent wetland habitat, loss of riparian vegetation, loss of aquatic habitats and subsequently loss of biodiversity. Dumping, infilling, sand mining (excavation), the surcharging of outfall sewers and manholes, not to mention an influx of pollutants originating from the upslope residential areas, have also impacted on the quality of water, morphological structure and aesthetic appeal of the wetland areas within the catchment.

Developmental activities on site as well as several road crossings, tracks and bridges have all compromised hydrology, geomorphology and the overall integrity of the wetland systems due to the extensive incision and subsequent erosion created by these features. The incision of the channels has resulted in further impacts on the systems. The vegetation within the wetland areas have been significantly altered with the desiccation of the systems and the consequent encroachment of alien invasive plant species such as Kikuyu grasses and other terrestrial plant species. Without the implementation of rehabilitation interventions, it is likely that the integrity of the systems will deteriorate even further.

The main impacts within the catchment are:

- Sediment loss due to erosion associated with channel switching and incision caused by un-attenuated stormwater flows, resulting in loss of aquatic habitat, biodiversity and both riparian and wetland vegetation;
- Sand mining that has changed the morphology of the banks of the Kaalspruit River, creating further instability of the banks, erosion and incision;
- Dumping of litter, building rubble and debris that has affected the morphological structure and aesthetic appeal of the wetland areas on site;
- Water quality deterioration associated with sewerage return flows (surcharging sewer systems and manholes and failing sewerage infrastructure) from Tembisa Township surrounding wetland areas on site; and
- The level of transformation within the wetland areas has created a niche for invasive alien vegetation and weeds in the wetland.

The pan area (Isisekelo Pan in particular) has been subjected to a number of impacts associated with the modification of the system's hydrology, vegetation integrity and



morphology. Informal housing adjacent to the pan area is one of the main problems affecting the pan. The secondary problem associated with this is the discharging of grey water into the pan. Furthermore, infilling (soccer field), tracks and human paths have created a niche for alien vegetation and invasive weeds on site. Informal settlements often have inadequate sanitation and infrastructure (pit latrines, septic tanks, surcharging sewers), resulting in water quality problems where organics, nutrients, pathogens and coliforms are of concern. Solid waste, containing plastics, PVC and vehicle tyres, is also of concern.

Despite having fewer pollutant types, pollutant loads are generally far higher in informal areas than in formal areas as a result of high population densities and inadequate sewage infrastructure, which is the case surrounding this pan. The issue of housing in South Africa has become a contentious issue around poor South African communities. Ideally the council should negotiate a relocation plan especially within the pan catchment area which is believed to have the most coverage of informal housing.

Based on the recorded impacts in and around wetlands within the catchment, a catchment wide PES assessment was undertaken for all wetlands. The intensity scores, as discussed in the approach section, were used to area weight the impacts to wetlands and their catchments for the PES assessment. Figure 3 above indicates the results of the catchment PES assessment.

“Importance” of a water resource is an expression of its importance to the maintenance of ecological diversity and functioning on local and wider scales. “Sensitivity” refers to the system’s ability to resist disturbances and its capability to recover from disturbance once it has occurred.

The wetlands within the study area form part of the Crocodile West Marico Water Management Area, which is a heavily utilised and economically important catchment. Wetlands and rivers within the Kaalspruit and Hennops River have been greatly impacted upon by various activities, which include urbanisation and informal settlements and associated infrastructural activities, water abstraction and supply and agriculture, etc. As a result of these impacts, serious water quality and quantity concerns have been raised within the sub-catchment.

Given this situation, and the fact that wetlands can support functions such as water purification and stream flow regulation, a high importance and conservation value is placed on all wetlands and rivers within the catchment that have as yet not been seriously modified. Within this context, a wetland IS assessment was conducted for every hydro-geomorphic wetland unit identified within the study area. Further considerations that informed the IS assessment include the following:

- The location of the majority of the study area within a vegetation type (Mesic Highveld Grassland) considered extensively transformed and threatened, having been classed as **Endangered** and Carletonville Dolomite Grasslands downstream of Tembisa towards the confluence of the Kaalspruit and Hennops Rivers which has been classed as **Vulnerable**;
- The wetland vegetation types extending across the catchment include Dry Highveld Grassland Group 5 and Mesic Highveld Grassland Group 3, which are both considered Least Threatened, but which are poorly protected or not protected at all;
- According to the Gauteng Conservation Plan (C-Plan), the majority of the wetlands within the catchment form part of a network of Ecological Support Areas and areas that are Important for biodiversity conservation;



- The wetlands connect to the larger system/water resource that drains the entire area; and
- No Freshwater Ecosystem Protected Area (FEPA) wetlands are present within the catchment.

It is these considerations that have, in part, informed the scoring of the systems in terms of their importance and sensitivity. Figure 4 above indicates the results of the wetland IS assessments.

Was a specialist consulted to assist with completing this section

YES	
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If yes complete specialist details:

Name of the specialist:	Bhuti Dlamini		
Qualification(s) of the specialist:	BSc (Hons) Water Resources Registered Professional Natural Scientist (400083/16) with the South African Council for Natural and Scientific Professions (SACNASP) (Water Resources Sciences) Associate Member of Water Institute of Southern Africa (WISA),		
Postal address:	P.O. Box 72295, Lynnwood Ridge		
Postal code:	0040		
Telephone:	012 349 2699	Cell:	072 410 8931
E-mail:	bhutid@wetcs.co.za	Fax:	012 349 2993

Are any further specialist studies recommended by the specialist?

	NO
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If YES, specify:

--

If YES, is such a report(s) attached?

--

If YES list the specialist reports attached below

--

Signature of specialist: Refer to attached specialist report.

Date:

--

Please note; If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated



8. LAND USE CHARACTER OF SURROUNDING AREA

Using the associated number of the relevant current land use or prominent feature from the table below, fill in the position of these land-uses in the vacant blocks below which represent a 500m radius around the site

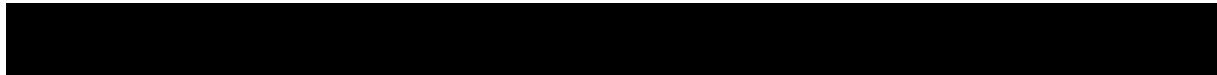
Due to the fact that this application includes the implementation of catchment wide interventions within a metropolitan municipality, the land use character of the surrounding sites includes a large amount of land uses. In order to provide an accurate illustration of the applicable land uses, of the sites have been illustrated on a land use map included in Appendix A.

Please note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies. Specialist reports that look at health & air quality and noise impacts may be required for any feature above and in particular those features marked with an “A” and with an “N” respectively.

Have specialist reports been attached?



~~If yes indicate the type of reports below~~



9. SOCIO-ECONOMIC CONTEXT

Describe the existing social and economic characteristics of the area and the community condition as baseline information to assess the potential social, economic and community impacts.

The Kaalspruit catchment stretches over three main administrative areas in the CoE, namely: Tembisa, Kempton Park and Edenvale.

According to Statistics South Africa, Tembisa is a township that was established in 1957 by the apartheid government. Its name comes from the Zulu word “thembisa” which means 'to promise' or 'give hope'. It is said that when black residents were evicted from other areas in Johannesburg to live in what was to be called Tembisa, they saw the area as a place that would give hope, as they were no longer homeless. In 2011, Tembisa had an estimated total population of 463 109 with 75.4% of the population of working age (15-64). The majority of the population was male and approximately 39.9% had achieved Matric. Of the 166 340 households, 72,5% lived in formal housing.

Kempton Park was first conceived on the 25 October 1859 when the Zuid-Afrikaansche Republiek (Z.A.R.) issued a title deed for part of the farm Zuurfontein. The actual settlement was established in 1903 on the farm itself and it is said to have been named after Kempten in Germany, home of the owner of the farm, Karl F Wolff. Another possible origin of the name is from the Kempton Park horse racing centre in England. In 2011, Kempton Park had an estimated total population of 171 575 with 72.6% of the population of working age (15-64). The majority of the population was female and approximately 41.6% had achieved Matric. Of the 53 777 households, 97,3% lived in formal housing.

According to Statistics South Africa, Edenvale was established in 1903 on the farm Rietfontein. Originally populated by Cornish mineworkers, the settlement was possibly named after one of the owners of the original farm, John Eden. In 2011, Edenvale had an estimated total population of 49 292 with 72% of the population of working age (15-64).



The majority of the population was female and approximately 40.4% had achieved Matric. Of the 17 119 households, 98.9% lived in formal housing.

10. CULTURAL/HISTORICAL FEATURES

Please be advised that if section 38 of the National Heritage Resources Act 25 of 1999 is applicable to your proposal or alternatives, then you are requested to furnish this Department with written comment from the South African Heritage Resource Agency (SAHRA) – Attach comment in appropriate annexure

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- (b) the construction of a bridge or similar structure exceeding 50m in length;*
- (c) any development or other activity which will change the character of a site-*
 - (i) exceeding 5 000 m² in extent; or*
 - (ii) involving three or more existing erven or subdivisions thereof; or*
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;*
- (d) the re-zoning of a site exceeding 10 000 m² in extent; or*
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.*

Are there any signs of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site?

	NO
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If YES, explain:

If uncertain, the Department may request that specialist input be provided to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist if one was already appointed:

No heritage features were noted observed on site. The South African Heritage Resources Development Agency (SAHRA) and the Gauteng Provincial Heritage Resources Authority (GPHRA) have been informed of the project and registered as key Interested and Affected Parties (I&APs).

Will any building or structure older than 60 years be affected in any way?

	NO
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Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

	NO
	X

~~If yes, please attached the comments from SAHRA in the appropriate Appendix.~~



SECTION C: PUBLIC PARTICIPATION (SECTION 41)

The Environmental Assessment Practitioner must conduct public participation process in accordance with the requirement of the EIA Regulations, 2014.

1. LOCAL AUTHORITY PARTICIPATION

Local authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least thirty (30) calendar days before the submission of the application to the competent authority.

Was the draft report submitted to the local authority for comment?

YES	
YES	NO

If yes, has any comments been received from the local authority?

If "YES", briefly describe the comment below (also attach any correspondence to and from the local authority to this application):

(To be updated on completion of the BAR review period)

If "NO" briefly explain why no comments have been received or why the report was not submitted if that is the case.

(To be updated on completion of the BAR review period)

2. CONSULTATION WITH OTHER STAKEHOLDERS

Any stakeholder that has a direct interest in the activity, site or property, such as servitude holders and service providers, should be informed of the application at least thirty (30) calendar days before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?

YES	
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If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

(To be updated on completion of the BAR review period)

If "NO" briefly explain why no comments have been received

(To be updated on completion of the BAR review period)

3. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

The Environmental Assessment Practitioner must ensure that the public participation process is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees and ratepayers associations. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was flawed.



The EAP must record all comments and respond to each comment of the public / interested and affected party before the application report is submitted. The comments and responses must be captured in a Comments and Responses Report as prescribed in the regulations and be attached to this application.

4. APPENDICES FOR PUBLIC PARTICIPATION

All public participation information is to be attached in the appropriate Appendix. The information in this Appendix is to be ordered as detailed below

Appendix 1 – Proof of site notice

Appendix 2 – Written notices issued as required in terms of the regulations

Appendix 3 – Proof of newspaper advertisements

Appendix 4 – Communications to and from interested and affected parties

Appendix 5 – Minutes of any public and/or stakeholder meetings

Appendix 6 - Comments and Responses Report

Appendix 7 –Comments from I&APs on Basic Assessment (BA) Report

Appendix 8 –Comments from I&APs on amendments to the BA Report

Appendix 9 – Copy of the register of I&APs



SECTION D: RESOURCE USE AND PROCESS DETAILS

Note: Section D is to be completed for the proposal and alternative(s) (if necessary)

Instructions for completion of Section D for alternatives

- 1) For each alternative under investigation, where such alternatives will have different resource and process details (e.g. technology alternative), the entire Section D needs to be completed
- 4) Each alternative needs to be clearly indicated in the box below
- 5) Attach the above documents in a chronological order

Section D has been duplicated for alternatives

times

Section B Alternative No.

(complete only when appropriate for above)

1. WASTE, EFFLUENT AND EMISSION MANAGEMENT

Solid Waste Management

Will the activity produce solid construction waste during the construction/initiation phase?

YES	
±350 m ³ of waste throughout the construction phase.	

If yes, what estimated quantity will be produced per month?

How will the construction solid waste be disposed of (describe)?

The solid waste generated during the construction phase of this proposed development will be stored on site in suitable waste receptacles and will then be transported by a waste removal company to a suitably registered landfill site.

Where will the construction solid waste be disposed of (describe)?

The solid waste will be disposed of at a suitably registered landfill site.

Will the activity produce solid waste during its operational phase?

	NO
--	----

If yes, what estimated quantity will be produced per month?

How will the construction solid waste be disposed of (describe)?

Has the municipality or relevant service provider confirmed that sufficient air space exists for treating/disposing of the solid waste to be generated by this activity?

YES	
-----	--



Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

The solid waste will be disposed of at a suitably registered landfill site.

Note: If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?



~~If yes, inform the competent authority and request a change to an application for scoping and EIA.~~

Is the activity that is being applied for a solid waste handling or treatment facility?



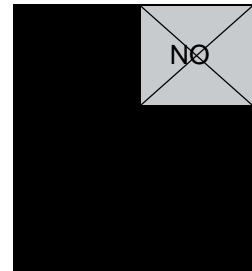
~~If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.~~

Describe the measures, if any, that will be taken to ensure the optimal reuse or recycling of materials:

Suitable separation and sorting of construction solid waste will be required in order to facilitate recycling of construction waste where feasible.

Liquid effluent (other than domestic sewage)

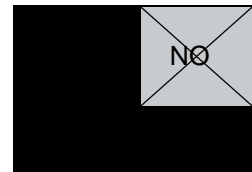
Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?



~~If yes, what estimated quantity will be produced per month?~~

~~If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the liquid effluent to be generated by this activity(ies)?~~

Will the activity produce any effluent that will be treated and/or disposed of on-site?



~~If yes, what estimated quantity will be produced per month?~~

~~If yes describe the nature of the effluent and how it will be disposed.~~



Note that if effluent is to be treated or disposed on site the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?



~~If yes, provide the particulars of the facility:~~



Facility name:

Contact person:

Postal address:

Postal code:

Telephone:

Cell:

E-mail:

Fax:

[Redacted contact information]

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

Where possible and suitable, efforts will be made to utilise grey water for construction activities such as cement mixing and dust control.

Liquid Effluent (Domestic Sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system?

[Redacted] NO

~~If yes, what estimated quantity will be produced per month?~~

~~If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the domestic effluent to be generated by this activity(ies)?~~

Will the activity produce any effluent that will be treated and/or disposed of on-site?

[Redacted] NO

~~If yes describe the nature of the effluent and how it will be disposed.~~

[Redacted]

Emissions Into the Atmosphere

Will the activity release emissions into the atmosphere?

YES NO

If yes, is it controlled by any legislation of any sphere of government?

~~If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.~~

[Redacted]

If no, describe the emissions in terms of type and concentration:



The emissions that are expected to be released into the atmosphere during the construction phase are that of the usual emissions (exhaust fumes) from construction plant and machinery and dust associated with construction activities.

2. WATER USE

Indicate the source(s) of water that will be used for the activity

Municipal

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

--

If Yes, please attach proof of assurance of water supply, e.g. yield of borehole, in the appropriate Appendix.

Does the activity require a water use permit from the Department of Water Affairs?

YES

If yes, list the permits required:

The National Water Act (Act 36 of 1998) (NWA) legislates the way in which water resources are protected, used, developed, conserved, managed and controlled. Section 21 of the NWA lists the activities which are defined as 'water uses' and which require permission to undertake such activities (Section 22). The following water uses may, depending on the site circumstances and the proposed designs, be applicable to the proposed activity, which would require a Water Use Licence (WUL) from the Department of Water and Sanitation.

NWA Section 21 Water Uses	Applicability to This Project
21 c) Impeding or diverting the flow of water in a watercourse	The proposed wetland/watercourse interventions will likely impede or divert the flow of water in a watercourse (including any activities within 500m of any wetland).
21 i) Altering the bed, banks, course or characteristics of a watercourse	The proposed wetland/watercourse interventions will likely alter the bed, banks, course or characteristics of a watercourse.

If yes, have you applied for the water use permit(s)?

YES

If yes, have you received approval(s)? (attached in appropriate appendix)

NO

The General Authorisation application process (as agreed to with the DWS) is taking place concurrently with the Environmental Authorisation Application Process.



3. POWER SUPPLY

Please indicate the source of power supply eg. Municipality / Eskom / Renewable energy source:

The activity will not utilise power for the operation of the proposed interventions.

~~If power supply is not available, where will power be sourced from?~~



4. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

Not applicable. The activity will not utilise power for the proposed interventions.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

Not applicable. The activity will not utilise power for the proposed interventions.



SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts as well as the impacts of not implementing the activity (Section 24(4)(b)(i)).

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summarise the issues raised by interested and affected parties.

Please refer to Appendix E6 for a detailed record of the issues raised by I&APs. A summary of the issues raised is provided below:

- Requests to be registered as I&APs

This section will be updated on completion of the BAR review period.

Summary of response from the practitioner to the issues raised by the interested and affected parties (including the manner in which the public comments are incorporated or why they were not included) (A full response must be provided in the Comments and Response Report that must be attached to this report):

Please refer to Appendix E6 for a detailed record of the responses by the EAP. A summary of the responses is provided below:

- Requests to be registered were confirmed

This section will be updated on completion of the BAR review period.

2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION AND OPERATIONAL PHASE

Briefly describe the methodology utilised in the rating of significance of impacts:

Please refer to Appendix I2 for a detailed description of the Impact Assessment Methodology. The potential impacts have been assessed based on the generic concept of wetland rehabilitation and maintenance activities and not for each and every specific intervention structure or activity. This was undertaken since the impacts within the wetlands/watercourses would be of a similar nature for various interventions.

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the construction phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.



Proposal (Construction)

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Activities Outside the Wetland Within Regulated Area				
Disturbance to vegetation	-7.50	<ul style="list-style-type: none"> Undertake initial clearing of vegetation during dry season. Vegetation clearing should be limited to the actual construction footprint. Prior to the commencement of any construction, the required disturbance footprint should be demarcated, and all activities should be located within the demarcated area. No vegetation disturbance, clearing or excavation to take place outside the demarcated area. All alien vegetation clearing should be undertaken according to WfWetlands alien vegetation management protocols. Only manual removal of alien vegetation should be permitted and should be limited to use of hand tool. To ensure areas cleared of alien vegetation and areas that have been disturbed or revegetated remain free of alien and weed vegetation, ongoing management of alien vegetation should be implemented. Wherever possible, as part of either revegetation activities or for use as grass cover on the sports fields, indigenous grass species with low watering requirements, should be used. 	-3.50	Low



Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Creation of preferential flow paths and flow concentration	-7.50	<ul style="list-style-type: none"> No heavy vehicles should be permitted in wetland habitat, unless absolutely necessary and existing access routes and disturbed areas should be utilised as far as possible to access intervention locations. Where no existing tracks are available, a single access track to each intervention location should be used. Access tracks through wetland areas should ideally run parallel to the contour to limit the formation of preferential flow paths that could lead to erosion. Accessing intervention locations along tracks perpendicular to the contour should be avoided. All disturbance footprints should be rehabilitated, including ploughing/ripping (in instances where the soils have become compacted), landscaping to the natural landscape profile, application of topsoil if necessary, and revegetation with appropriate, indigenous plant species. 	-3.50	Low
Altered flow characteristics due to soil compaction and placement of sand/PVC/concrete pavers	-6.75	<ul style="list-style-type: none"> No heavy vehicles should be permitted in wetland habitat, unless absolutely necessary and existing access routes and disturbed areas should be utilised as far as possible to access intervention locations. Where no existing tracks are available, a single access track to each intervention location should be used. All disturbance footprints should be rehabilitated, including ploughing/ripping (in instances where the soils have become compacted), landscaping to the natural 	-4.50	Low



Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
		<p>landscape profile, application of topsoil if necessary, and revegetation with appropriate, indigenous plant species.</p> <ul style="list-style-type: none"> • Wherever possible, as part of either revegetation activities or for use as grass cover on the sports fields, indigenous grass species with low watering requirements, should be used. 		
<p>Exposure of bare soils to increased risk of erosion and mobilisation of sediments</p>	<p>-9.75</p>	<ul style="list-style-type: none"> • Access tracks through wetland areas should ideally run parallel to the contour to limit the formation of preferential flow paths that could lead to erosion. Accessing intervention locations along tracks perpendicular to the contour should be avoided. • Surface runoff along the access tracks should not lead to erosion. Where ruts have formed and remain following completion of construction activities, these should be plugged with regular shallow soil berms to prevent a preferential flow paths forming along the vehicle ruts. All vehicle ruts must be rehabilitated following completion of activity. • On completion of construction the site should be left clean and free from all debris, hydrocarbons and waste, and all excavations filled appropriately and as soon as possible. • Minimise construction period to limit opportunity for erosion and mobilisation of sediment 	<p>-4.50</p>	<p>Low</p>



Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
		<ul style="list-style-type: none"> Implementation of soil management measures within communal subsidence agricultural plots, i.e.: contour berms to prevent sediment mobilisation into adjacent wetland habitat. All disturbance footprints should be rehabilitated, including ploughing/ripping (in instances where the soils have become compacted), landscaping to the natural landscape profile, application of topsoil if necessary, and revegetation with appropriate, indigenous plant species. 		
Altered surface runoff characteristics	-11.00	<ul style="list-style-type: none"> Undertake initial clearing of vegetation during dry season. Access tracks through wetland areas should ideally run parallel to the contour to limit the formation of preferential flow paths that could lead to erosion. Accessing intervention locations along tracks perpendicular to the contour should be avoided. Surface runoff along the access tracks should not lead to erosion. Where ruts have formed and remain following completion of construction activities, these should be plugged with regular shallow soil berms to prevent a preferential flow paths forming along the vehicle ruts. All vehicle ruts must be rehabilitated following completion of activity. Agricultural plots to be limited to designated areas outside of wetland habitat only. 	-7.50	Low



Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
		<ul style="list-style-type: none"> Implementation of soil management measures within communal subsidence agricultural plots, i.e.: contour berms to prevent sediment mobilisation into adjacent wetland habitat. Wherever possible, as part of either revegetation activities or for use as grass cover on the sports fields, indigenous grass species with low watering requirements, should be used. 		
Water quality deterioration (Fertiliser/Herbicides/Insecticides)	-11.00	<ul style="list-style-type: none"> Only approved, low impact herbicides to be used for initial clearing of vegetation, along bricked walkways and during ongoing alien vegetation management. The use of broad spectrum herbicides should be avoided, application should be limited to target individuals rather than being applied to a general area, and application should be avoided during periods of high rainfall when herbicides may be washed into downstream water resources. Working for Wetlands should be consulted for further information on the most appropriate products. 	-6.00	Low
Activities Within the Wetland Habitat				
Water quality deterioration (spillages and leaks from machinery and equipment)	-11.00	<ul style="list-style-type: none"> Apply best practice management to storage of materials and preparation and pouring of concrete, i.e.: remain outside of wetland habitat, do not store or mix cement and concrete (or other materials) directly on the ground, store and prepare on liner on a bunded area, dispose of all visible remains of excess cement and concrete after 	-7.50	Low



Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
		<p>the completion of tasks, dispose of in the approved manner (solid waste concrete may be treated as inert construction rubble, but wet cement and liquid slurry, as well as cement powder must be treated as hazardous waste).</p> <ul style="list-style-type: none"> No servicing or cleaning of vehicles/machinery to take on site. No storage of fuel and diesel on site. On completion of construction the site should be left clean and free from all debris, hydrocarbons and waste, and all excavations filled appropriately and as soon as possible. Only approved, low impact herbicides to be used for initial clearing of vegetation, along bricked walkways and during ongoing alien vegetation management. The use of broad spectrum herbicides should be avoided, application should be limited to target individuals rather than being applied to a general area, and application should be avoided during periods of high rainfall when herbicides may be washed into downstream water resources. Working for Wetlands should be consulted for further information on the most appropriate products. 		
Disturbance to vegetation	-10.00	<ul style="list-style-type: none"> Undertake initial clearing of vegetation during dry season. 	-5.25	Low



Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
		<ul style="list-style-type: none"> • Vegetation clearing should be limited to the actual construction footprint. Prior to the commencement of any construction, the required disturbance footprint should be demarcated, and all activities should be located within the demarcated area. No vegetation disturbance, clearing or excavation to take place outside the demarcated area. • All alien vegetation clearing should be undertaken according to WfWetlands alien vegetation management protocols. • Only manual removal of alien vegetation should be permitted and should be limited to use of hand tool. • To ensure areas cleared of alien vegetation and areas that have been disturbed or revegetated remain free of alien and weed vegetation, ongoing management of alien vegetation should be implemented. • Wherever possible, as part of either revegetation activities or for use as grass cover on the sports fields, indigenous grass species with low watering requirements, should be used. 		
Creation of preferential flow paths and flow concentration	-10.00	<ul style="list-style-type: none"> • No heavy vehicles should be permitted in wetland habitat, unless absolutely necessary and existing access routes and disturbed areas should be utilised as far as possible to access intervention locations. Where no existing tracks are available, a single access track to each intervention location should be used. 	-5.25	Low



Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
		<ul style="list-style-type: none"> • Access tracks through wetland areas should ideally run parallel to the contour to limit the formation of preferential flow paths that could lead to erosion. Accessing intervention locations along tracks perpendicular to the contour should be avoided. • All disturbance footprints should be rehabilitated, including ploughing/ripping (in instances where the soils have become compacted), landscaping to the natural landscape profile, application of topsoil if necessary, and revegetation with appropriate, indigenous plant species. 		
Temporary diversion or impoundment of flow	-10.00	<ul style="list-style-type: none"> • Apply best practice to the diversion/impoundment of flows and the rehabilitation of disturbed wetland areas. • Minimise construction period to limit opportunity for erosion and mobilisation of sediment 	-5.25	Low
Altered flow characteristics due to soil compaction and placement of sand/PVC/concrete pavers	-11.00	<ul style="list-style-type: none"> • No heavy vehicles should be permitted in wetland habitat, unless absolutely necessary and existing access routes and disturbed areas should be utilised as far as possible to access intervention locations. Where no existing tracks are available, a single access track to each intervention location should be used. • All disturbance footprints should be rehabilitated, including ploughing/ripping (in instances where the soils have become compacted), landscaping to the natural landscape profile, application of topsoil if necessary, 	-5.25	Low



Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
		<p>and revegetation with appropriate, indigenous plant species.</p> <ul style="list-style-type: none"> • Wherever possible, as part of either revegetation activities or for use as grass cover on the sports fields, indigenous grass species with low watering requirements, should be used. 		
<p>Exposure of bare soils to increased risk of erosion and mobilisation of sediments</p>	<p>-14.00</p>	<ul style="list-style-type: none"> • Access tracks through wetland areas should ideally run parallel to the contour to limit the formation of preferential flow paths that could lead to erosion. Accessing intervention locations along tracks perpendicular to the contour should be avoided. • Surface runoff along the access tracks should not lead to erosion. Where ruts have formed and remain following completion of construction activities, these should be plugged with regular shallow soil berms to prevent a preferential flow paths forming along the vehicle ruts. All vehicle ruts must be rehabilitated following completion of activity. • On completion of construction the site should be left clean and free from all debris, hydrocarbons and waste, and all excavations filled appropriately and as soon as possible. • Minimise construction period to limit opportunity for erosion and mobilisation of sediment • Implementation of soil management measures within communal subsidence agricultural plots, i.e.: contour 	<p>-7.50</p>	<p>Low</p>



Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
		<p>berms to prevent sediment mobilisation into adjacent wetland habitat.</p> <ul style="list-style-type: none"> All disturbance footprints should be rehabilitated, including ploughing/ripping (in instances where the soils have become compacted), landscaping to the natural landscape profile, application of topsoil if necessary, and revegetation with appropriate, indigenous plant species. 		
General				
Job Creation	10.00	<ul style="list-style-type: none"> The use of local labour should be encouraged. Appropriate training to be provided to the labourers regarding the environmental constraints on site. 	12.50	Low
Noise	-8.25	<ul style="list-style-type: none"> Noise-generating activities associated with construction activities should be kept to a minimum. Compliance with the appropriate legislation any local by-laws and regulations regarding the generation of noise. 	-6.75	Low
Dust	-8.25	<ul style="list-style-type: none"> Loose building materials and excavated material stockpiles adequately protected against the wind by covering with material such as canvas. Appropriate dust abatement measures implemented to minimise dust generation on site (e.g. wetting of active 	-6.75	Low



Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
		construction areas and unpaved roads and the vegetation of the semi-permanent stockpiles).		
Visual Impact	-7.50	<ul style="list-style-type: none"> • Construction camps must be established in appropriate locations prior to the commencement of construction activities. • Camps, offices etc. maintained in an orderly and tidy condition. • No littering of the site. 	-6.75	Low

Proposal (Operation)

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Activities Outside the Wetland Within Regulated Area				
Water quality deterioration (Herbicides)	-7.50	<ul style="list-style-type: none"> • All alien vegetation clearing should be undertaken according to WfWetlands alien vegetation management protocols. • Only manual removal of alien vegetation should be permitted and should be limited to use of hand tool. 	-3.50	Low



Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
		<ul style="list-style-type: none"> Only approved, low impact herbicides to be used for initial clearing of vegetation, along bricked walkways and during ongoing alien vegetation management. The use of broad spectrum herbicides should be avoided, application should be limited to target individuals rather than being applied to a general area, and application should be avoided during periods of high rainfall when herbicides may be washed into downstream water resources. Working for Wetlands should be consulted for further information on the most appropriate products. 		
Improved flow into wetlands	7.50	<ul style="list-style-type: none"> Informal agricultural plots to be limited to designated areas outside of wetland habitat only. Implementation of soil management measures within communal subsidence agricultural plots, i.e.: contour berms to prevent sediment mobilisation into adjacent wetland habitat. All alien vegetation clearing should be undertaken according to WfWetlands alien vegetation management protocols. Only manual removal of alien vegetation should be permitted and should be limited to use of hand tool. To ensure areas cleared of alien vegetation and areas that have been disturbed or revegetated remain free of alien and weed vegetation, ongoing management of alien vegetation should be implemented. 	13.13	Low
Improvement in habitat quality	7.50		13.13	Low
Water quality improvement after removal of litter/waste	5.50		12.25	Low
Improved surface runoff characteristics	5.50		12.25	Low
Improved vegetation composition and cover	5.50		12.25	Low
Improved waste disposal, resulting in reduction of fugitive litter	3.00		6.00	Low
Establishment of alien vegetation	-11.00		-9.00	Low



Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
		<ul style="list-style-type: none"> • Wherever possible, as part of either revegetation activities or for use as grass cover on the sports fields, indigenous grass species with low watering requirements, should be used. • Limit irrigation volumes required on sports fields by timing irrigation during cooler hours/overnight. • All refuse bins installed should be regularly emptied and waste removed to appropriate refuse disposal sites. 		
Activities Within the Wetland Habitat				
Water quality deterioration (Herbicides)	-11.00	<ul style="list-style-type: none"> • All alien vegetation clearing should be undertaken according to WfWetlands alien vegetation management protocols. • Only manual removal of alien vegetation should be permitted and should be limited to use of hand tool. • Only approved, low impact herbicides to be used for initial clearing of vegetation, along bricked walkways and during ongoing alien vegetation management. The use of broad spectrum herbicides should be avoided, application should be limited to target individuals rather than being applied to a general area, and application should be avoided during periods of high rainfall when herbicides may be washed into downstream water resources. Working for Wetlands should be consulted for further information on the most appropriate products. 	-6.00	Low



Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Improved flow into wetlands	11.00	<ul style="list-style-type: none"> Informal agricultural plots to be limited to designated areas outside of wetland habitat only. Implementation of soil management measures within communal subsidence agricultural plots, i.e.: contour berms to prevent sediment mobilisation into adjacent wetland habitat. All alien vegetation clearing should be undertaken according to WfWetlands alien vegetation management protocols. Only manual removal of alien vegetation should be permitted and should be limited to use of hand tool. To ensure areas cleared of alien vegetation and areas that have been disturbed or revegetated remain free of alien and weed vegetation, ongoing management of alien vegetation should be implemented. Wherever possible, as part of either revegetation activities or for use as grass cover on the sports fields, indigenous grass species with low watering requirements, should be used. Limit irrigation volumes required on sports fields by timing irrigation during cooler hours/overnight. All refuse bins installed should be regularly emptied and waste removed to appropriate refuse disposal sites. 	18.67	Low
Improvement in habitat quality	11.00		18.67	Low
Water quality improvement after removal of litter/waste	8.25		16.33	Low
Improved surface runoff characteristics	8.25		16.33	Low
Improved vegetation composition and cover	8.25		16.33	Low
Improved operation of structure resulting in improved flow within wetland	11.00		18.67	Low
Decreased risk of erosion around structure	8.25		16.33	Low
General				



Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Job Creation	9.00	<ul style="list-style-type: none">• The use of local labour should be encouraged.• Appropriate training to be provided to the labourers regarding the environmental constraints on site.	9.00	Low
Visual Impact	8.25	<ul style="list-style-type: none">• Ensure the maintenance of the wetland rehabilitation interventions.• Ensure adequate alien invasive vegetation control.	9.75	Low



No Go

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Sediment loss due to erosion associated with channel switching and incision caused by un-attenuated stormwater flows, resulting in loss of aquatic habitat, biodiversity and both riparian and wetland vegetation.	-17.50	No mitigation.	-17.50	Low
Sand mining that has changed the morphology of the banks of the Kaalspruit River, creating further instability of the banks, erosion and incision.	-16.25	No mitigation.	-16.25	Low
Dumping of litter, building rubble and debris that has affected the morphological structure and aesthetic appeal of the wetland areas on site.	-15.00	No mitigation.	-15.00	Low
Water quality deterioration associated with sewerage return flows (surcharging sewer systems and manholes and failing sewerage infrastructure) from Tembisa Township to surrounding wetland areas on site.	-17.50	No mitigation.	-17.50	Low
The level of transformation within the wetland areas has created a niche for invasive alien vegetation and weeds in the wetland.	-18.75	No mitigation.	-18.75	Low



List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

The following specialist reports are attached in Appendix G:

- Wetland Consulting Services. 2018. City of Ekurhuleni Wetland Rehabilitation Planning within the Kaalspruit Catchment – Situation Assessment Report
- GreenGAB. 2018. City of Ekurhuleni Wetland Rehabilitation Planning within the Kaalspruit Catchment – Engineering Conceptual Designs and Basic Assessment Report.

Describe any gaps in knowledge or assumptions made in the assessment of the environment and the impacts associated with the proposed development.

- The information presented in this report is based on the information available at the time of compilation of the report.
- It is assumed that all data and information supplied by the Specialist, Applicant or any of their staff or consultants is complete, valid and true.
- Due to the scale of the study area, only representative samples of riparian areas were visited. The riparian and wetlands systems were mapped from the most recent aerial imagery available at a scale of 1:5000 wherever possible and where the imagery was of sufficient resolution for this purpose.
- Due to the extent of the area and the mapping scale used, the actual extent of the boundaries of these systems may be underestimated or overestimated in places. This may range from metres to tens of metres, but generally is regarded as being of sufficient accuracy for the purposes of this study. Some areas that were not visited during the field survey were mapped at a desktop level of accuracy.

3. IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING AND CLOSURE PHASE

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the decommissioning and closure phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

The application for this project involves the implementation of existing and new interventions. The applicant does not expect to decommission these interventions in the near future. Should the interventions require decommissioning in future, these will be applied for separately to the competent authority.

4. CUMULATIVE IMPACTS

Describe potential impacts that, on their own may not be significant, but is significant when added to the impact of other activities or existing impacts in the environment. Substantiate response:



Given that the purpose of the proposed project is the implementation of certain interventions aiming to rehabilitate the wetlands within the Kaalspruit Catchment, the positive impacts identified for this project are anticipated to have a cumulative positive impact that is likely to extend beyond the current boundary of the site, through the overall improvement of flow into wetlands, creation of a significantly improved wetland habitat, water quality improvements, reduced alien vegetation infestation, improvement in vegetative cover and decreased erosion. These effects are further highlighted in the overall improvement of the ecosystem services that these rehabilitated wetlands will be able to provide to the receiving environment and communities within metro.

5. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that sums up the impact that the proposal and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Proposal

EIMS in association with WCS were appointed to design a wetland rehabilitation and maintenance plan to be implemented within the Kaalspruit catchment. This catchment was selected by CoE as a priority catchment to be focused on as part of this rehabilitation and maintenance planning project. In order to give effect to the wetland rehabilitation plan, the Applicant, the CoE has submitted an application for EA in terms of Chapter 6 of GNR 982 promulgated under the NEMA for the wetland rehabilitation interventions.

The Kaalspruit catchment is located within heavily developed areas consisting of township and urban development and associated infrastructure, as well as subsistence agricultural areas. All these land uses can lead to typical water quality and water quantity impacts ranging from the failing of sewer infrastructure and the direct discharge of sewerage into watercourses, increased storm waterflows off hardened surfaces resulting in erosion and deterioration of the natural watercourses and agricultural return flows containing a variety of pesticides and fertilisers which negatively affect water quality in the receiving watercourses. Wetland rehabilitation within this catchment provides a potential opportunity to address some of these, and other impacts.

Based on the outcome of the rehabilitation and maintenance planning process, the most practical site and technological alternatives (i.e. soft and hard interventions) have already been selected and, as such, no further alternatives have been considered for this project.

It is clear from the regional wetland ecological overview, as well as the baseline data collected to date that the project area has been altered (historically and currently) significantly.

All impacts that were assigned a medium negative significance pre-mitigation were reduced to low-medium to low significance post mitigation. It is important to note the extensive positive and cumulative impacts the project proposal will have on the wetland systems and the surrounding communities. Notwithstanding the current negative environmental impacts, and with the understanding of the interdependence between the people and the environment, it is envisaged that if implemented as prescribed in this report, specialist



reports, EMPr and MMP, the proposed development can set a good precedent and example of sustainable development in action over many years to come.

No-go (compulsory)

With reference to the situational assessment and impact assessment of the no-go alternative, it is clear that maintaining the status quo would result in further degradation of the wetlands and watercourses within and surrounding the catchment. Implementation of the no-go alternative would mean that the potential negative environmental impacts of construction and operational phases would be avoided, however, the numerous positive impacts as discussed in the impact assessment section above would be forgone.

Table 5: Comparative Assessment of Impacts for the Proposal and the No-Go Option

Alternative	Pre-Mitigation Significance	Post Mitigation Significance
Alternative 1		
Construction	-133.50	-73.25
Operation	88.25	216.92
Alternative 1 Total	-45.25	143.67
No-Go		
Operation	-85.00	-85.00
No-Go Total	-85.00	-85.00

6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

Proposal

The following Construction Phase Impacts are anticipated:

- Job Creation
- Water quality deterioration (spillages and leaks from machinery and equipment)
- Disturbance to vegetation
- Creation of preferential flow paths and flow concentration
- Temporary diversion or impoundment of flow
- Altered flow characteristics due to soil compaction and placement of sand/PVC/concrete pavers
- Exposure of bare soils to increased risk of erosion and mobilisation of sediments
- Altered surface runoff characteristics



- Water quality deterioration (Fertiliser/Herbicides/Insecticides)
- Noise
- Dust
- Visual Impact

The following Operational Phase Impacts are anticipated:

- Job Creation
- Water quality deterioration (Herbicides)
- Improved flow into wetlands
- Improvement in habitat quality
- Water quality improvement after removal of litter/waste
- Improved surface runoff characteristics
- Improved vegetation composition and cover
- Improved operation of structure resulting in improved flow within wetland
- Decreased risk of erosion around structure
- Improved waste disposal, resulting in reduction of fugitive litter
- Establishment of alien vegetation
- Visual Impact

No-go

Should the no-go alternative be identified as the preferred alternative, then the following would occur:

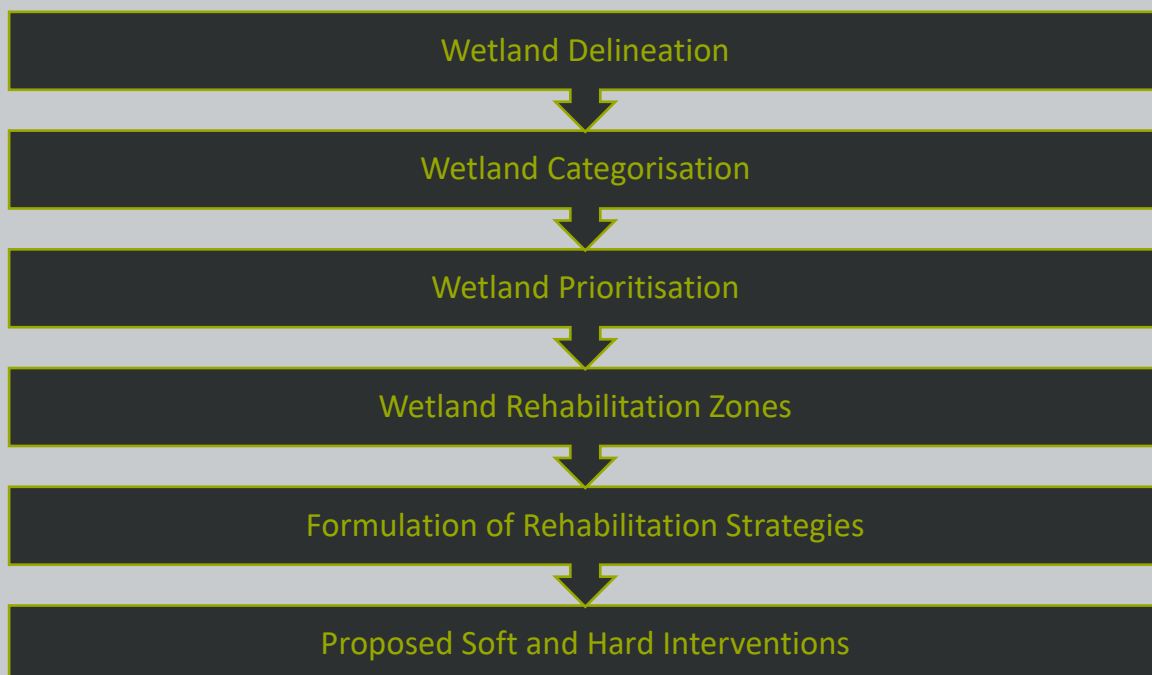
- Sediment loss due to erosion associated with channel switching and incision caused by un-attenuated stormwater flows, resulting in loss of aquatic habitat, biodiversity and both riparian and wetland vegetation.
- Sand mining that has changed the morphology of the banks of the Kaalspruit River, creating further instability of the banks, erosion and incision.
- Dumping of litter, building rubble and debris that has affected the morphological structure and aesthetic appeal of the wetland areas on site.
- Water quality deterioration associated with sewerage return flows (surcharging sewer systems and manholes and failing sewerage infrastructure) from Tembisa Township to surrounding wetland areas on site.
- The level of transformation within the wetland areas has created a niche for invasive alien vegetation and weeds in the wetland.

Based on these reasons the no-go alternative is not recommended. The environmental impacts associated with the proposed rehabilitation interventions are considered to be of an overall beneficial level and can be effectively managed with the implementation of effective mitigation methods as discussed in the EMP and MMP.



Having assessed the significance of impacts of the proposal and alternative(s), please provide an overall summary and reasons for selecting the proposal or preferred alternative.

As described in the Project Description above (Project Background and Introduction), this project entails the implementation of the measures as detailed in the wetland rehabilitation and maintenance plan for the Kaalspruit catchment, located within the CoE. The most appropriate wetland rehabilitation measures were determined through the following steps:



The feasibility of some of the proposed activities were also further assessed with an environmental engineer in terms of implementation and costing as described in this section. Please refer to the Engineering Conceptual Designs and Basic Assessment Report by GreenGAB (Pty) Ltd in association with WCS attached in Appendix G.

As such, based on the outcome of this process, the most practical site and technological alternatives (i.e. soft and hard interventions) have already been selected and, as such, no further alternatives have been considered for this project. With reference to the above impact assessment, the option of rehabilitation of the wetlands by implementation of the recommended rehabilitation and maintenance plan interventions have an overall positive impact on the wetlands and the surrounding environment.

7. SPATIAL DEVELOPMENT TOOLS

Indicate the application of any spatial development tool protocols on the proposed development and the outcome thereof.

It is anticipated that the proposed development will not change the character of the wetland areas but will serve to rehabilitate and improve the current conditions of these wetlands. As such, this development is deemed to be compatible with the following:

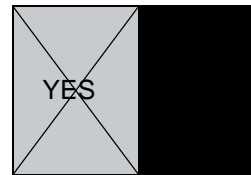
- Ekurhuleni Metropolitan Spatial Development Framework: 2015;



- Ekurhuleni Regional Spatial Development Framework: Region A: 2015;
- Gauteng Spatial Development Framework 2030;
- City of Ekurhuleni Open Space Framework: Region A;
- Gauteng Provincial Environmental Management Framework (EMF);
- Bioregional Plan for Ekurhuleni Metro; and
- Gauteng Conservation Plan Version 3.3 (C-Plan 3.3).

8. RECOMMENDATION OF THE PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the Environmental Assessment Practitioner as bound by professional ethical standards and the code of conduct of EAPASA).



If "NO", indicate the aspects that require further assessment before a decision can be made (list the aspects that require further assessment):



If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

It is the recommendation of the EAP that the project be authorised in light of the positive impacts associated with its development, and considering the low negative impacts anticipated during the construction phase of the project. The overall environmental impacts identified as part of this Basic Assessment Process can be adequately mitigated, through the implementation of the EMPr and MMP.

As per the findings of the Wetland Assessments, the following conditions of authorisation are proposed:

- Undertake initial clearing of vegetation during dry season.
- Vegetation clearing should be limited to the actual construction footprint. Prior to the commencement of any construction, the required disturbance footprint should be demarcated, and all activities should be located within the demarcated area. No vegetation disturbance, clearing or excavation to take place outside the demarcated area.
- No heavy vehicles should be permitted in wetland or watercourse habitat, unless absolutely necessary and existing access routes and disturbed areas should be utilised as far as possible to access intervention locations. Where no existing tracks are available, a single access track to each intervention location should be used.
- Access tracks through wetland areas should ideally run parallel to the contour to limit the formation of preferential flow paths that could lead to erosion. Accessing intervention locations along tracks perpendicular to the contour should be avoided.
- Surface runoff along the access tracks should not lead to erosion. Where ruts have formed and remain following completion of construction activities, these should be



plugged with regular shallow soil berms to prevent a preferential flow paths forming along the vehicle ruts. All vehicle ruts must be rehabilitated following completion of activity.

- Apply best practice management to storage of materials and preparation and pouring of concrete, i.e.: remain outside of wetland habitat, do not store or mix cement and concrete (or other materials) directly on the ground, store and prepare on liner on a bunded area, dispose of all visible remains of excess cement and concrete after the completion of tasks, dispose of in the approved manner (solid waste concrete may be treated as inert construction rubble, but wet cement and liquid slurry, as well as cement powder must be treated as hazardous waste).
- No servicing or cleaning of vehicles/machinery to take on site.
- No storage of fuel and diesel on site.
- On completion of construction the site should be left clean and free from all debris, hydrocarbons and waste, and all excavations filled appropriately and as soon as possible.
- Undertake construction or repair associated with instream rehabilitation structures towards the end of the dry season when flows are low – it may then not be necessary to divert flows, and temporary impoundment may be sufficient.
- Apply best practice to the diversion/impoundment of flows and the rehabilitation of disturbed wetland areas.
- Minimise construction period to limit opportunity for erosion and mobilisation of sediment
- Informal agricultural plots to be limited to designated areas outside of wetland habitat only.
- Implementation of soil management measures within communal subsidence agricultural plots, i.e.: contour berms to prevent sediment mobilisation into adjacent wetland habitat.
- All alien vegetation clearing should be undertaken according to WfWetlands alien vegetation management protocols.
- Only manual removal of alien vegetation should be permitted and should be limited to use of hand tool.
- To ensure areas cleared of alien vegetation and areas that have been disturbed or revegetated remain free of alien and weed vegetation, ongoing management of alien vegetation should be implemented.
- Only approved, low impact herbicides to be used for initial clearing of vegetation, along bricked walkways and during ongoing alien vegetation management. the use of broad spectrum herbicides should be avoided, application should be limited to target individuals rather than being applied to a general area, and application should be avoided during periods of high rainfall when herbicides may be washed into downstream water resources. Working for Wetlands should be consulted for further information on the most appropriate products.
- All disturbance footprints should be rehabilitated, including ploughing/ripping (in instances where the soils have become compacted), landscaping to the natural



landscape profile, application of topsoil if necessary, and revegetation with appropriate, indigenous plant species.

- Wherever possible, as part of either revegetation activities or for use as grass cover on the sports fields, indigenous grass species with low watering requirements, should be used.
- Limit irrigation volumes required on sports fields by timing irrigation during cooler hours/overnight.
- All refuse bins installed should be regularly emptied and waste removed to appropriate refuse disposal sites.

9. THE NEEDS AND DESIRABILITY OF THE PROPOSED DEVELOPMENT (AS PER NOTICE 792 OF 2012, OR THE UPDATED VERSION OF THIS GUIDELINE)

The Kaalspruit catchment is located within heavily developed areas consisting of township and urban development and associated infrastructure, as well as subsistence agricultural areas. All these land uses can lead to typical water quality and water quantity impacts ranging from the failing of sewer infrastructure and the direct discharge of sewerage into watercourses, increased storm waterflows off hardened surfaces resulting in erosion and deterioration of the natural watercourses and agricultural return flows containing a variety of pesticides and fertilisers which negatively affect water quality in the receiving watercourses. Wetland rehabilitation within this catchment provides a potential opportunity to address some of these, and other impacts.

10. THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

(consider when the activity is expected to be concluded)

The proposed interventions are permanent in nature and, therefore, the authorisation is required indefinitely.

11. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

(must include post construction monitoring requirements and when these will be concluded.)

If the EAP answers "Yes" to Point 7 above then an EMP is to be attached to this report as an Appendix.

EMPr attached?

Yes. Attached as Appendix H



SECTION F: APPENDICES

The following appendices must be attached as appropriate (this list is inclusive, but not exhaustive):
It is required that if more than one item is enclosed that a table of contents is included in the appendix

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information

Appendix F: Water use license(s) authorisation, SAHRA information, service letters from municipalities, water supply information

Appendix G: Specialist reports

Appendix H: EMPr

Appendix I:

Appendix I1: EAP CV and Declaration

Appendix I2: Impact Assessment Methodology

Appendix I3: Property List and Coordinates

CHECKLIST

To ensure that all information that the Department needs to be able to process this application, please check that:

Where requested, supporting documentation has been attached.	
All relevant sections of the form have been completed.	