



WATER USE LICENCE ASSOCIATES

Reg No. 2016/241418/07
VAT Reg No. 4270277074
PO Box 751779
Gardenvue
2047
Tel: 011 616 7893
Fax: 086 724 3132
Email: admin@sasenvgroup.co.za
www.sasenvironmental.co.za

Mandeni Local Municipality

Draft Water Use Licence Application Report

For a Water Use Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998) for the proposed Hlomendlini Sports Field in near Padianagar, KwaZulu-Natal Province.

October 2021

Prepared by: Water Use Licence Associates (Pty) Ltd
Application authors: N.Makaya
Application reviewer: N Cloete (Pr. Sci.Nat)
S. van Staden (Pr. Sci.Nat)
Report Reference: WUL 201016
Public Review Period: 25 October 2021 – 12 January 2022



SAS Environmental Group of Companies

TABLE OF CONTENTS

| | |
|---|-----------|
| LIST OF TABLES | iv |
| LIST OF FIGURES | iv |
| 1 PROJECT BACKGROUND..... | 1 |
| 1.1 Applicant Information | 1 |
| 1.2 Consultant | 1 |
| 1.3 Location of the Project | 1 |
| 1.4 Project Description | 2 |
| 2 DESCRIPTION OF THE RECEIVING ENVIRONMENT | 8 |
| 2.1 Local Climate | 8 |
| 2.2 Catchment Description..... | 8 |
| 2.3 Freshwater Ecosystem Assessment..... | 9 |
| 2.3.1 Freshwater Ecosystem Characterisation | 10 |
| 2.3.2 Freshwater Ecological Assessment..... | 10 |
| 2.4 Hydropedological Assessment | 18 |
| 2.4.1 Site Conditions | 19 |
| 2.4.2 Hydropedological Considerations | 19 |
| 3 DESCRIPTION OF WATER USE ACTIVITIES | 22 |
| 3.1 Existing Infrastructure | 22 |
| 3.2 Proposed Infrastructure | 22 |
| 3.2.1 Section 21(c) & (i): Impeding Or Diverting The Flow Of Water In A Watercourse Or Altering The Bed, Banks, Course Or Characteristics Of A Watercourse | 22 |
| 3.2.2 Soccer Field Bulk Earthworks, Layer works, and Grassing | 23 |
| 3.2.3 Open Stands | 23 |
| 3.2.4 Stormwater Diversion Measures..... | 23 |
| 3.2.5 Water Supply and Irrigation System | 24 |
| 3.2.6 Fencing, Access Gravel Road and Guard House..... | 24 |
| 3.2.7 Ablution Facility and Sewage System..... | 24 |
| 3.2.8 Section 21(g): Disposing Of Waste In A Manner Which May Have Detrimental Impact On A Water Resource..... | 27 |
| 4 WATER USES APPLIED FOR | 29 |
| 4.1 Alternatives Considered..... | 32 |
| 4.1.1 Property / Site Location Alternatives..... | 32 |
| 4.1.2 Design or Layout Alternatives | 32 |
| 4.2 Activity Life Description | 33 |
| 5 IMPACTS OF ACTIVITIES ON WATER RESOURCES AND MITIGATION MEASURES | 33 |
| 5.1 Risk Assessment Considerations | 33 |
| 5.2 Risk Assessment Outcome and Recommendations | 35 |
| 5.3 Hydropedology Outcome and Recommendations | 47 |
| 6 WETLAND OFFSET | 47 |
| 6.1 Mitigation Hierarchy | 47 |
| 6.2 Wetland Offset Guidelines | 48 |
| 6.3 Implementation of the Mitigation Hierarchy | 50 |
| 6.4 Opinion and Recommendation | 51 |
| 6.5 Recommended Rehabilitation Measures for Target Wetlands | 51 |
| 7 ENVIRONMENTAL AUTHORISATION AND PUBLIC PARTICIPATION PROCESS | 51 |
| 7.1 Public Participation Process | 52 |
| 7.1.1 Identification Of Interested and Affected Parties | 52 |
| 7.1.2 Project Announcement..... | 52 |
| 7.1.3 Public Review Period | 53 |
| 7.1.4 Issues and Response Register | 54 |
| 8 CORRESPONDENCE WITH THE DWS..... | 54 |
| 9 SECTION 27 MOTIVATION OF THE NATIONAL WATER ACT, 1998 | 54 |
| 10 CONCLUSIONS AND RECOMMENDATIONS..... | 58 |
| 11 WAY FORWARD | 59 |
| 12 REFERENCES | 60 |
| 13 APPENDICES..... | 60 |



| | |
|---|-----------|
| APPENDIX A: CHECKLIST OF THE DOCUMENTATION UPLOADED AS PART OF THIS APPLICATION..... | 61 |
|---|-----------|

FOR PUBLIC REVIEW



LIST OF TABLES

| | | |
|----------|---|----|
| Table 1: | The property details associated with the proposed sports field development..... | 2 |
| Table 2: | Summary of water use activities associated with the proposed sports field development. | 3 |
| Table 3: | Characterisation of the freshwater ecosystems associated with the study area..... | 10 |
| Table 4: | Summary of the results of the CVB wetland associated with the proposed sports field development. | 13 |
| Table 5: | Summary of the results of the VSP wetland to be traversed by the proposed sports field development..... | 15 |
| Table 6: | Summary of water use activities applied for the Section 21 (c) &(i) and (g) water use activities associated with the proposed sports field development..... | 29 |
| Table 7: | Summary of the results of the DWS risk assessment applied to the wetlands associated with the proposed sports field development..... | 36 |
| Table 8: | Correspondence with the Department of Water and Sanitation..... | 54 |
| Table 9: | Motivation in terms of Section 27 of the NWA..... | 55 |

LIST OF FIGURES

| | | |
|------------|--|----|
| Figure 1: | Digital satellite image depicting the locality of the study area and the surrounding landscape. | 5 |
| Figure 2: | Digital satellite image depicting the 1:50 000 topographic locality of the study area and the surrounding landscape. | 6 |
| Figure 3: | General arrangement layout of the proposed sports field development (as provided by SRK Consulting, 2021). | 7 |
| Figure 4: | Average temperature and precipitation for Mandeni, KwaZulu-Natal (www.meteoblue.com) (SRK, 2021)..... | 8 |
| Figure 5: | A digital satellite imagery of the delineation of the freshwater ecosystems associated with the study and investigation areas..... | 11 |
| Figure 6: | A digital satellite image of the delineated watercourses, the 1:100 year floodline, the 500 m ZoR (GN 509 of 2016) in relation to the proposed sports field development..... | 12 |
| Figure 7: | Dominant soil forms associated with the study area (SAS, 2021b)..... | 20 |
| Figure 8: | Hydropedological soil response (SAS, 2021b)..... | 21 |
| Figure 9: | A digital satellite image depicting the master layout plan of the proposed sports field development..... | 25 |
| Figure 10: | A digital satellite image depicting the master layout plan of the proposed sports field development with flow direction..... | 26 |
| Figure 11: | A typical example of an underground modular conservancy tank (https://calcamite.co.za/solutions/). | 27 |
| Figure 12: | Proposed conservancy tank to service the proposed Hlomendlini Sports Field development (SRK, 2021). | 28 |
| Figure 13: | Digital satellite image of the proposed water use activities associated with the proposed development. | 31 |



1 PROJECT BACKGROUND

Water Use Licence Associated (Pty) Ltd has been appointed by SRK Consulting (Pty) Ltd to facilitate a Water Use Licence (WUL) application process on behalf of the applicant, Mandeni Local Municipality (Mandeni Municipality), in terms of Section 21(c) & (i) and (g) water uses¹ of the National Water Act, 1998 (Act No. 36 of 1998) (NWA). The WUL application is in regard to water use activities associated with the proposed Hlomendlini sports field and associated infrastructure on ERF 1118 near the town Padianagar, hereafter referred to as the “proposed sports field development”.

The main objectives of the proposed sports field development are to provide the surrounding communities with access to quality sporting facilities and promote community participation in sporting activities. In addition, the construction of the proposed sports field development will address social challenges that the community is currently faced with, such as unemployment. Municipal Infrastructure Grant (MIG) funds have been allocated to the development and construction of the proposed Hlomendlini Sports Field Project.

The purpose of this document is to provide the Department of Water and Sanitation (DWS) and all relevant stakeholders and Interested and Affected Parties with the relevant project background information associated with the proposed sports field development during Phase 1 of the WUL application on the Electronic Water Use Licence Application and Authorisation System (EWULAAS).

1.1 Applicant Information

The following information pertains to the applicant:

| | |
|----------------------|---|
| Company / Applicant: | Mandeni Local Municipality |
| Responsible person: | Mr Kethukuthula Perslval Gumede |
| Designation: | Director: Technical Services Department |

1.2 Consultant

The following information pertains to the consultant who compiled the report.

| | |
|-----------------|--|
| Company: | Water Use Licence Associates (Pty) Ltd |
| Contact Person: | Nosipho Makaya |

1.3 Location of the Project

A portion of the proposed site is currently used as a soccer field by the local community; as such, the applicant intends to undertake the development of a sports field and associated infrastructure on ERF

¹ Section 21 water uses as defined by the NWA:

Section 21(c): Impeding or diverting the flow of water in a watercourse.

Section 21(i): Altering the bed, banks, course, or characteristics of a watercourse.

Section 21(g): Disposing of waste in a manner which may detrimentally impact on a water resource.



1118 within the Mandeni Local Municipality, KwaZulu-Natal Province. The proposed development site will hereafter also be referred to as “the study area”. The land use for which the proposed sports field development has been zoned as active open space² and covers an area of approximately 3.5 hectares (ha).

The study area is located within a peri-urban rural community approximately 2 km southwest of the town of Padianagar and Tugela and is characterised by residential development and associated network of linear infrastructure. The site is bounded by the secondary road, Platinum Road, to the east, west and south. The uThukela River is located approximately 2.4 km north of the study area and flows in an easterly direction. The study area falls within the Pongola-uMzimkhulu Water Management Area (WMA).

To identify all watercourses³ that may potentially be impacted by the proposed sports field development, a 500 m “zone of investigation” was implemented around the study area, in accordance with GN 509 of 2016 as it relates to the NWA, to assess possible sensitivities of the receiving freshwater environment. A digital satellite image and topographical image of the locality of the study area are depicted in Figure 1 and Figure 2.

Details on the property description, size, owner, title deed, registration date and the surveyor general code of the associated proposed sports field development are provided in Table 1 below.

Table 1: The property details associated with the proposed sports field development.

| Property Description | Property Size | Property Owner | Property Title Deed | Property Registration Date | Surveyor General Code |
|---|---------------|----------------------------------|---------------------|----------------------------|-----------------------|
| Portion 0 Erf 1118 Padianagar Township FU | 34341.0000SQM | Mandeni Local Municipality | T3717/2013 | 2013/02/14 | N0FU02460000111800000 |

1.4 Project Description

The proposed sports field development is envisaged to include the demolition of existing, partially constructed buildings and an existing concrete block as well as the construction of the Hlomendlini sports field. The sporting facility is set to include the following infrastructure (refer to Figure 3 for the proposed development layout plan):

- A soccer field and associated terrace that will be developed to create a level playing surface;
- Open stands;
- Ablution facilities and change rooms;
- Conservancy tank with a 110mm diameter sewer pipeline from the ablution facilities to the conservancy tank;

² Mandeni Local Municipality – Department of Economic Development Planning & Human Settlements. Zoning Certificate dated 31/05/2021.

³ In accordance with NWA, a watercourse is defined as:

- (a) a river or spring;
- (b) a natural channel in which water flows regularly or intermittently;
- (c) a wetland, lake or dam into which, or from which, water flows; and
- (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks;



- Water pipeline linking to an existing water meter located off-site. Water will be supplied by the iLembe district municipality;
- An irrigation system for watering the soccer field;
- A combi court; and
- The entire site will be enclosed with a clear view/beta fence with a single pedestrian gate and associated guardhouse and one service gate entrance/exit.

None of the proposed infrastructure will be constructed below the 1:100-year floodline; however, the proposed sports field development falls within the 500 m Zone of Regulation (ZoR)⁴ of a watercourse in accordance with Government Notice (GN) 509 of 2016 and encroaches into a valley head seep feature, thereby triggering the need for a WUL application in terms of Section 21(c) and (i) of the NWA. Additionally, as there is no existing municipal sewer services on site, the applicant proposes to utilise a conservancy tank system for the management of sewage that will be developed by the facility. This activity will trigger a Section 21(g) water use as defined by the NWA.

It is noted that following the wetland assessment and delineation all effort was made to optimise the development from an environmental impact point of view. This included the following methods:

- Changing the orientation of the sports field to avoid encroachment on the wetlands to avoid and minimise impacts; and
- Re-arrangement of the project elements to further reduce impacts.

It is notable that residual impacts will still occur and thus it was recommended that a rehabilitation plan be prepared which includes rehabilitation of an additional extent of the affected watercourses to improve the overall functioning and service of these systems thereby ensuring a no net loss of functional value of wetlands in the landscape. Further details on this are provided in Sections 5 and 6 of this document.

A summary of the water uses associated with the proposed sports field development is provided in Table 2 below and detailed in Section 3 and 4 of this report.

Table 2: Summary of water use activities associated with the proposed sports field development.

| Property description | Water use | Water use description | Description of activity |
|---|--|---|--|
| Portion 0 Erf 1118 Padianagar Township FU | 21 (c) of the National Water Act, 1998 (36 of 1998). | Impeding or diverting the flow of water in a watercourse. | New water use 1. Construction and operation of Hlomendlini Sports Field Development and all associated |

⁴ In accordance with GN 509 of 2016, for section 21(c) or (i) water uses, the Zone of Regulation means:

- (a) The outer edge of the 1 in 100 year flood line and /or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam;
- (b) In the absence of a determined 1 in 100 year flood line or riparian area the area within 100m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench (subject to compliance to section 144 of the Act); or
- (c) A 500 m radius from the delineated boundary (extent) of any wetland or pan.



| Property description | Water use | Water use description | Description of activity |
|---|--|--|---|
| | 21 (i) of the National Water Act, 1998 (36 of 1998). | Altering the bed, banks, course, or characteristics of a watercourse. | <p>infrastructure within the 500 m ZoR (GN 509 of 2016) of the identified watercourses.</p> <ol style="list-style-type: none"> The construction of the earth platform and associated sports field within a valley head seep wetland. The construction of the proposed fence line traversing the identified watercourse. |
| Portion 0 Erf 1118 Padianagar Township FU | 21 (g) of the National Water Act, 1998 (36 of 1998). | Disposing of waste in a manner which may detrimentally impact on a water resource. | <p>New water use</p> <ol style="list-style-type: none"> Conservancy tank for the on-site management of effluent waste for operational use. |



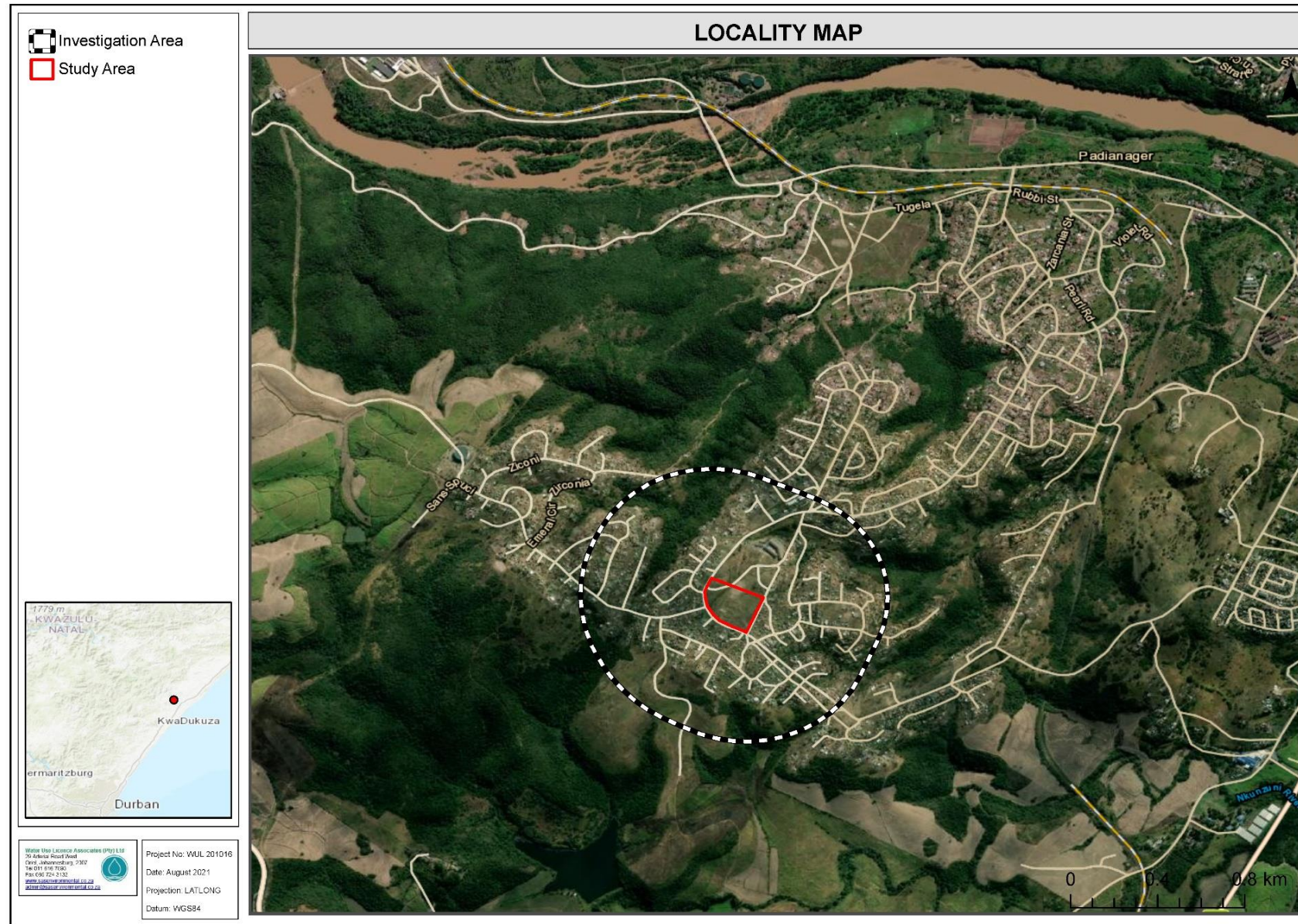


Figure 1: Digital satellite image depicting the locality of the study area and the surrounding landscape.



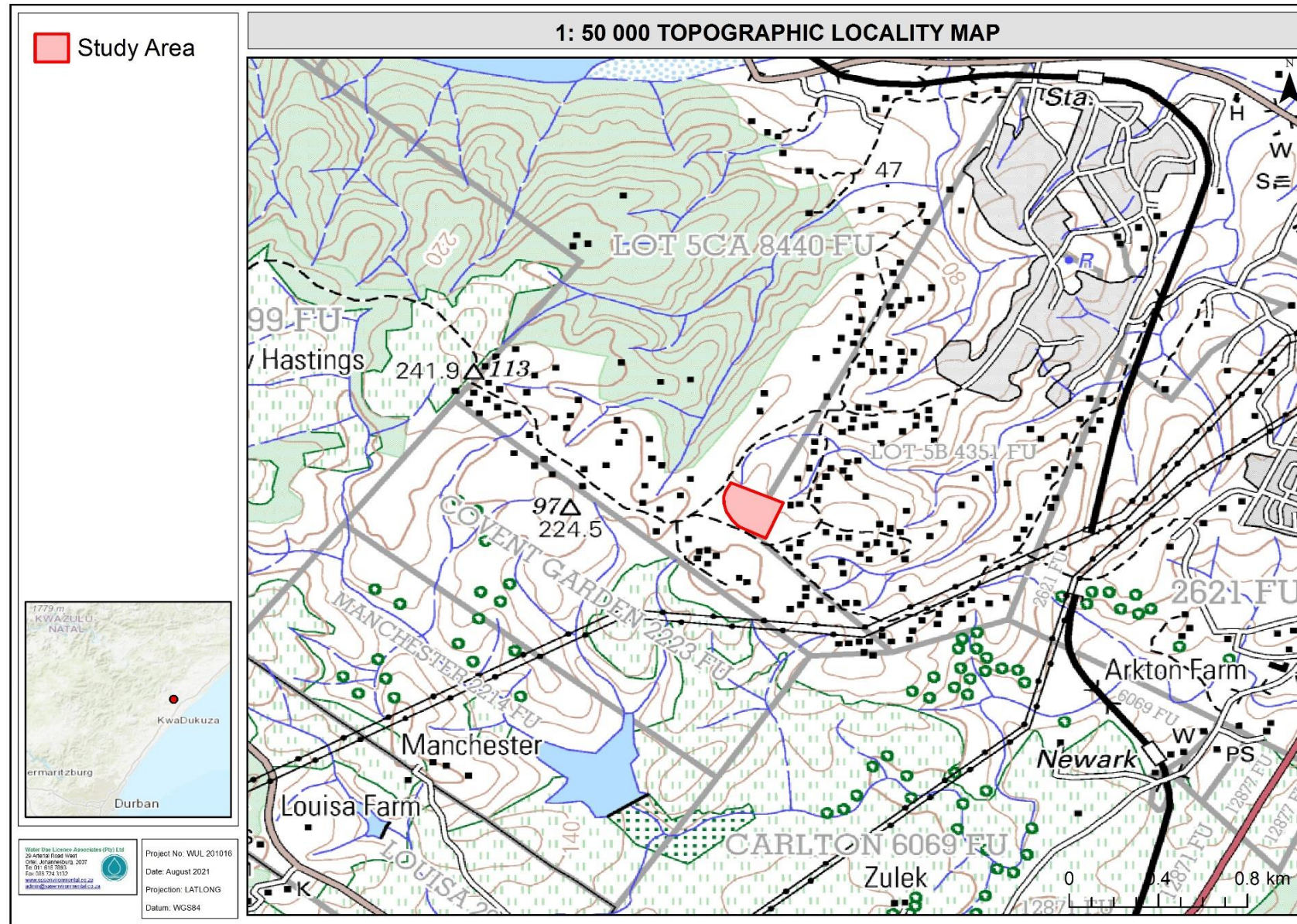


Figure 2: Digital satellite image depicting the 1:50 000 topographic locality of the study area and the surrounding landscape.





2 DESCRIPTION OF THE RECEIVING ENVIRONMENT

2.1 Local Climate

The study area is characterised by a warm and temperate climate and receives an average rainfall of 60mm, with the majority of the rain falling within the summer months. The mean monthly minimum and maximum temperatures and the mean monthly average precipitation are shown in Figure 4. However, it should be noted that the values shown are based on 30 years of hourly weather model simulations and the simulated weather data have a spatial resolution of approximately 30km⁵.

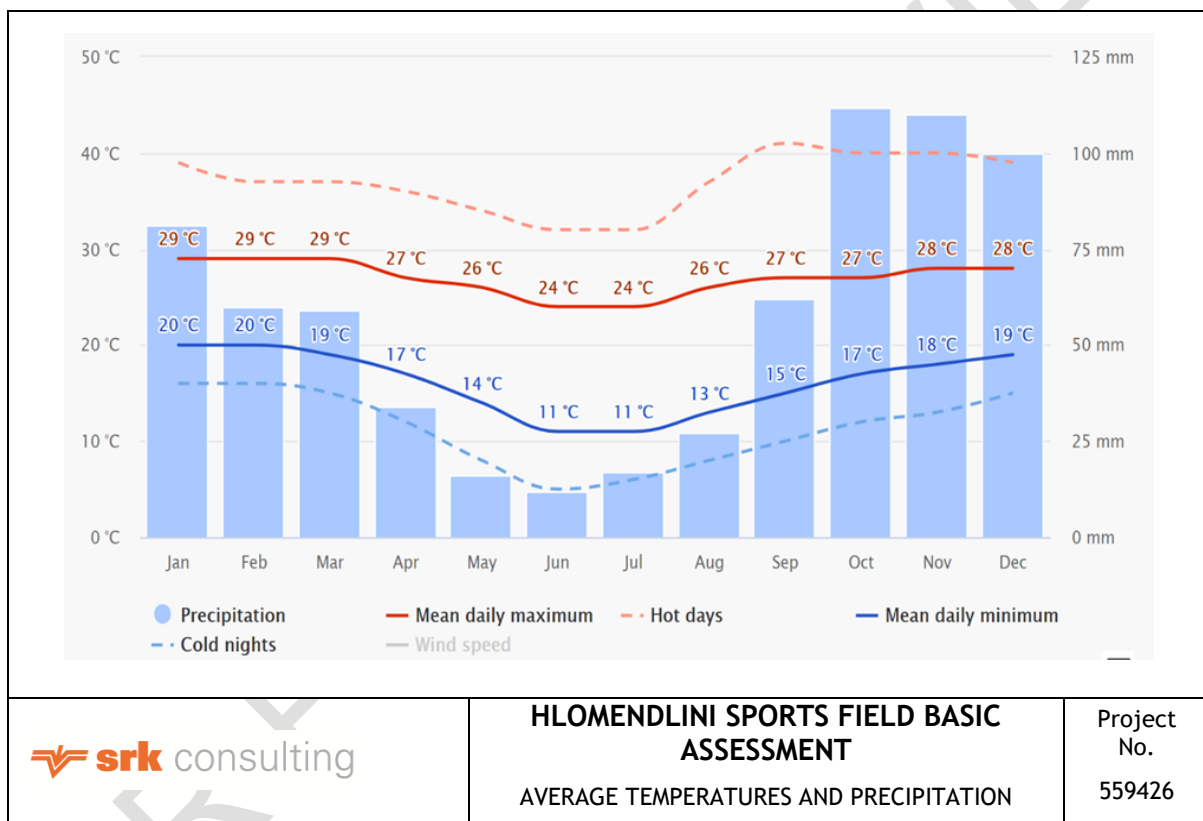


Figure 4: Average temperature and precipitation for Mandeni, KwaZulu-Natal (www.meteoblue.com) (SRK, 2021)

2.2 Catchment Description

The study area is located within the V50D quaternary catchment within the Pongola-Umzimkhulu WMA in the North Eastern Coastal Belt Ecoregion. The study area is in a sub-quaternary catchment currently not considered important in terms of fish or freshwater ecological conservation (National Freshwater Ecosystem Priority Area (NFEPA), 2011).

⁵ SRK Consulting (Pty) Ltd. 2021. Draft Basic Assessment Report the proposed development of the Hlomendlini Sports Field in Mandeni, KwaZulu Natal Report Prepared for Mandeni Local Municipality. Report number: 559426.



A perennial stream flows across the study area in a northerly direction, which in turn drains into the uThukela River⁵.

2.3 Freshwater Ecosystem Assessment

Scientific Aquatic Services (SAS) (2021a)⁶ undertook a Freshwater⁷ Ecological Assessment, including a Risk Assessment, to assess freshwater ecosystems that may be impacted by the proposed sports field development. To identify all freshwater ecosystems that may potentially be impacted by the proposed sports field development, a 500 m “zone of investigation” was implemented around the study area, in accordance with GN 509 of 2016 as it relates to the NWA, to assess possible sensitivities of the receiving freshwater environment.

The following assumptions and limitations are applicable to SAS (2021a):

- The ground-truthing and delineation of the freshwater ecosystem boundaries and the assessment thereof, are confined to a single site visit undertaken on the 9th of February 2021. All freshwater ecosystems identified within the investigation area were delineated in fulfilment of GN 509 of the NWA using various desktop methods, including the use of topographic maps, historical and current digital satellite imagery, and aerial photographs. The general surroundings and existing land uses were also considered as part of the assessment;
- The volume and dimensions of the proposed berm associated with the proposed sports field development were not available at the time of this assessment;
- Global Positioning System (GPS) technology is inherently somewhat inaccurate and some inaccuracies due to the use of handheld GPS instrumentation may occur, however, the delineations as provided in this report are deemed accurate enough to fulfil the authorisation requirements as well as implementation of the mitigation measures provided;
- Freshwater ecosystem and terrestrial zones create transitional areas where an ecotone is formed as vegetation species change from terrestrial to obligate/facultative species. Within this transition zone, some variation of opinion on the freshwater resource boundaries may occur, however, if the Department of Water Affairs and Forestry (DWAF) (2008) method is followed, all assessors should get largely similar results; and
- With ecology being dynamic and complex, certain aspects (some of which may be important) may have been overlooked. However, it is expected that the proposed sports field development has been accurately assessed and considered, based on the field observations and the consideration of existing studies and monitoring data in terms of freshwater ecology.

⁶ Scientific Aquatic Services. 2021a. *Freshwater Ecological Assessment as part of the Environmental Authorisation and Water Use Licence Authorisation Processes for the proposed Hlomendlini Sports Field in Mandeni, Kwazulu-Natal Province*. Report Reference: SAS 202122.

⁷ For the purposes of this investigation, the definition of a freshwater ecosystem is considered to be synonymous with the definition of a watercourse as per the National Water Act, 1998 (Act No. 36 of 1998).



2.3.1 Freshwater Ecosystem Characterisation

A site assessment was undertaken on the 9th of February 2021 (KZN summer period), during which the presence of any areas presenting with freshwater ecosystem characteristics were identified. Two (2) freshwater ecosystems were identified within the study and investigation areas, as follows:

- A modified Channelled Valley Bottom (CVB) wetland was identified within the western portion of the study area, occurring < 10 m from proposed sports field development;
- A Valley Head Seep (VHS) wetland was identified within the eastern portion of the study area of which the western portion of this wetland will be traversed by the proposed sports field development; and

Both systems are connected to drainage features which were identified in the larger investigation area.

The wetland systems identified in the study and investigation areas were classified according to the Classification System (Ollis et al., 2013) as Inland Systems, located within the North Eastern Coastal Belt Ecoregion. At Levels 3 (Landscape Unit) and 4 (HGM Type) of the Classification System, the systems were classified as per the summary in Table 3 below.

Table 3: Characterisation of the freshwater ecosystems associated with the study area

| Wetland | Level 3: Landscape unit | Level 4: Hydrogeomorphic (HGM) Type |
|---|--|--|
| Channelled Valley Bottom Wetland | Valley Floor: the base of a valley, situated between two distinct valley side-slopes, where alluvial or fluvial processes typically dominate. | Channelled Valley-Bottom wetland: A valley bottom wetland with a river channel running through it. |
| Valley Head Seep | Slope: an included stretch of ground that is not part of a valley floor, which is typically located on the side of a mountain, hill or valley | Seep: a wetland area located on (gently to steeply) sloping land, which is dominated by the colluvial (i.e. gravity-driven), unidirectional movement of material down-slope. Seeps are often located on the side-slopes of a valley but they do not, typically, extend into a valley floor. |

The delineated CVB wetland and VHS wetland are illustrated in Figure 5 below. Figure 6 illustrates the proposed sports field development in relation to the 1:100 year floodline and 500 m ZoRs (GN 509 of 2016) associated with the study and investigation areas.

2.3.2 Freshwater Ecological Assessment

A summary of the freshwater ecological assessment findings of the field verification in terms of relevant aspects (hydrology, geomorphology and vegetation components) of the freshwater ecology of the CVB wetland and VHS wetland. is presented in a dashboard style format in Table 4 and Table 5 below.



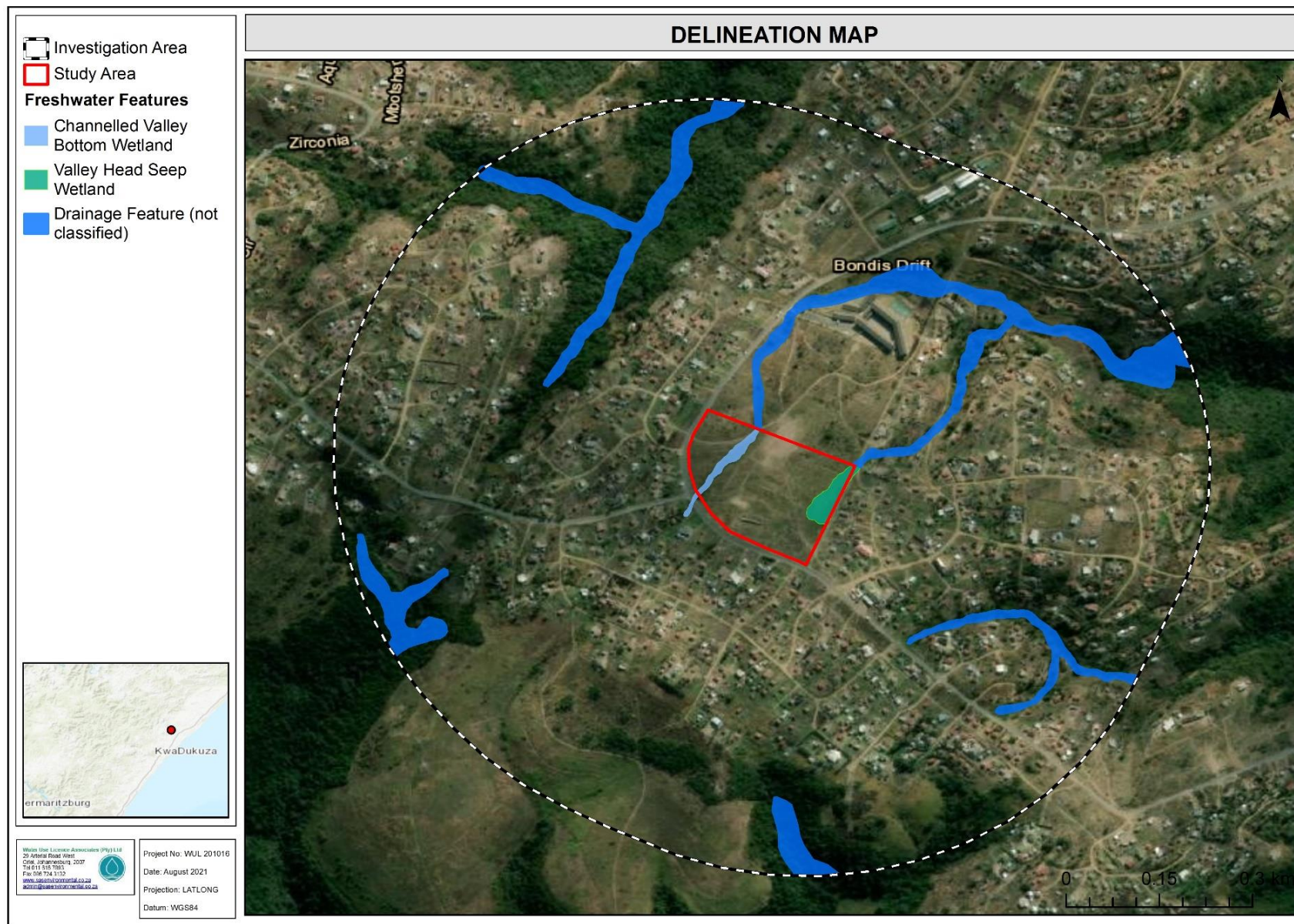


Figure 5: A digital satellite imagery of the delineation of the freshwater ecosystems associated with the study and investigation areas.



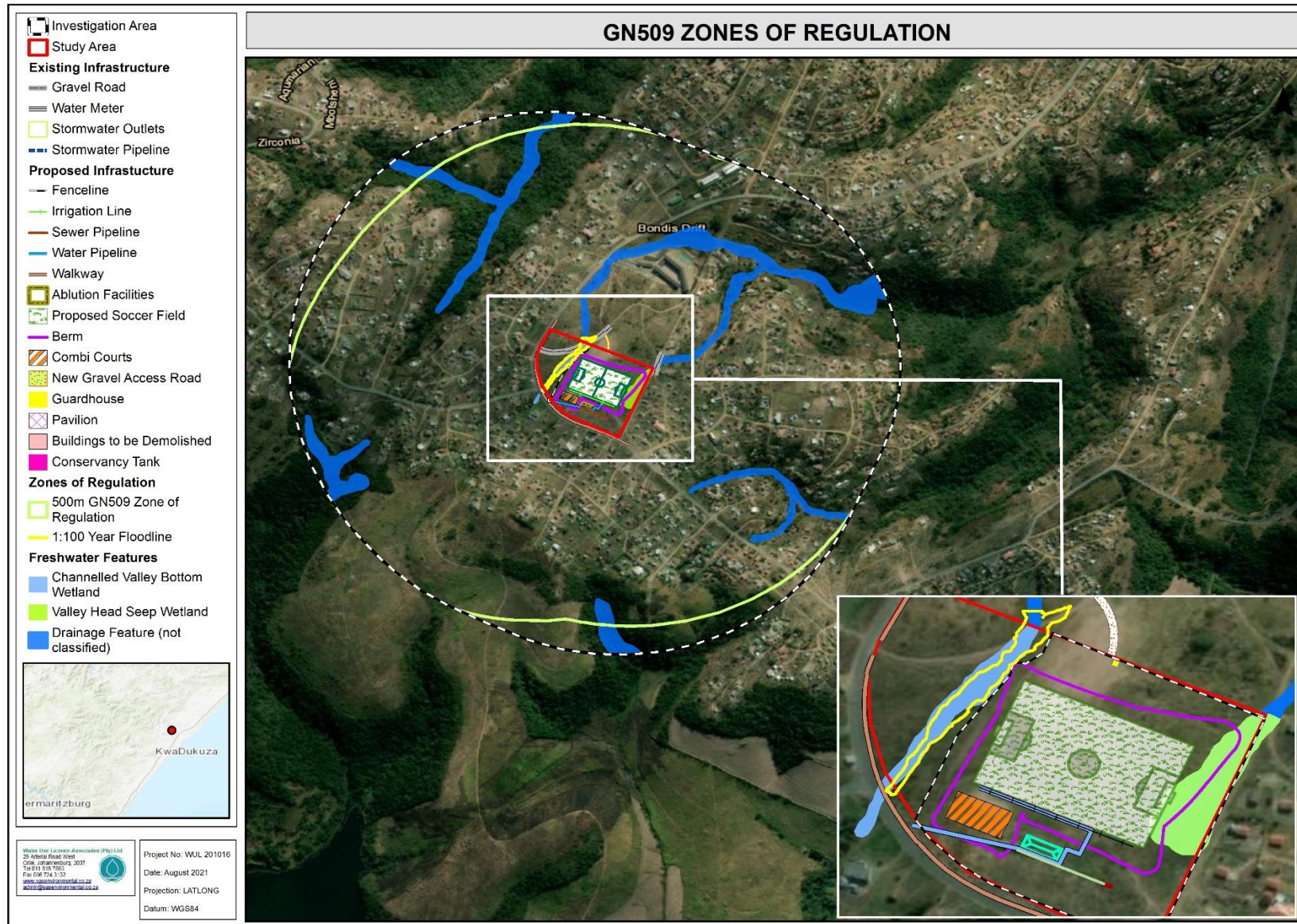



Figure 6: A digital satellite image of the delineated watercourses, the 1:100 year floodline, the 500 m ZoR (GN 509 of 2016) in relation to the proposed sports field development.



Table 4: Summary of the results of the CVB wetland associated with the proposed sports field development.

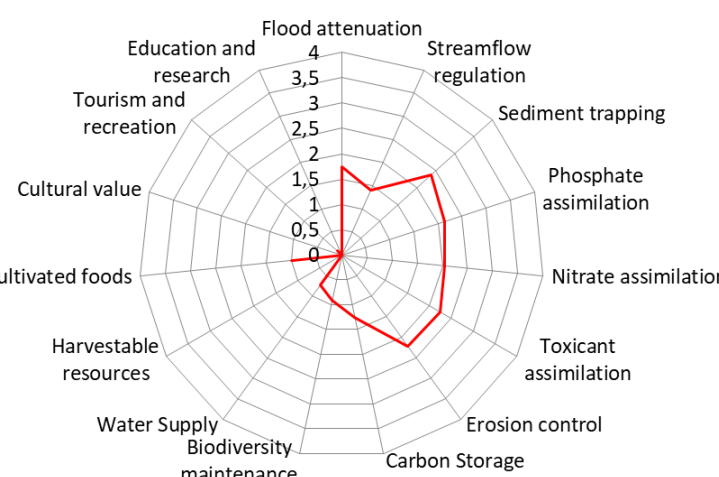

| | |
|---|--|
| <p>Ecological & socio-cultural service provision graph:</p> |  <p>(Left) The CVB wetland receives additional water input from the surrounding housing development; (Right) Existing culvert crossing within the CVB wetland confining flow.</p> |
| <p>PES discussion</p> <p>PES Category: E (Seriously Modified)</p> <p>The CVB wetland has been impacted by various anthropogenic activities in the surrounding catchment, including the surrounding housing development and associated road infrastructure which have altered the pattern, flow and timing of stormwater in the surrounding landscape. This has resulted in increased flood peaks in the CVB wetland, significantly impacting the hydrology. Consequently, runoff from the adjacent residential areas and roads have potentially augmented the surface water input into this system such that the system receives increased volumes of water, leading to development of prominent wetness indicators and hydrophilic plants. Infilling and modifications to the active channel particularly from the road and culvert crossing within the wetland further impact the hydrological and geomorphological integrity of the system. The CVB wetland is invaded by Alien and Invasive Plant (AIP) species, contributing to the overall disturbance to the system.</p> | <p>EIS discussion</p> <p>Moderate</p> <p>The CVB wetland is considered to be ecologically important and sensitive on a landscape scale, due to the protection status of wetland within a peri-urban setting. Furthermore, the vegetation type associated with the CVB wetland (according to NFEPA, 2011) is considered to be critically endangered and moderately protected, although no remnants were identified at the time of the site visit and it is considered unlikely that any species that are representative of this vegetation type will be found due to the large scale surrounding impacts. The hydro-functional importance of the system was considered to be moderate due to important services such as streamflow regulation and hydrological connectivity while the direct human benefits are considered to be low as a result of the low dependency of people in the area on the wetland for providing direct benefits such as water supply and harvestable resources.</p> |



| | | | |
|---|---|---|---|
| Ecoservice provision | <p>Intermediate: The CVB wetland is considered of moderately high importance for stream flow regulation, and of intermediate importance for flood attenuation, sediment trapping, phosphate, nitrate and toxicant assimilation and erosion control, largely as a result of the high surface roughness provided by the vegetation within the CVB wetland. The biodiversity maintenance is considered moderately low, mainly due to the significant anthropogenic impacts and the low buffer zone associated with the system. The assessed reach of the CVB wetland is not considered of value for tourism and recreation.</p> | <p>Wetland characteristics:</p> <p>a) Hydraulic regime The hydrological functioning of the CVB wetland is considered to be seriously modified as a result of surrounding housing development and road infrastructure which have resulted in increased impervious/hardened surfaces in the surrounds, contributing to increased stormwater input to the CVB wetland altering the pattern, timing, and flow of water within the CVB wetland. The presence of culverts along the reach of the CVB wetland further impact the hydrology of the wetland through confining flow and increased the risk of incision.</p> <p>b) Water quality Due to stormwater inputs and catchment land use changes, the surface water quality of the CVB wetland is expected to be impaired.</p> <p>c) Geomorphology and sediment balance The geomorphology of the CVB wetland can be considered moderately modified due to increased sediment loads as a result of run-off from the gravel roads and sediment deposition at culvert outlets. No significant erosion was noted within the CVB wetland due to the surface roughness provided by the vegetation present in the CVB wetland.</p> <p>d) Habitat and biota The CVB wetland is hydrologically connected to other freshwater ecosystems (to other drainage features feeding into the Thukela River) and may thus be considered as an important corridor for faunal movement, breeding and foraging. The vegetation of the CVB wetland is impacted by cattle grazing and extensive AIP proliferation.</p> | |
| REC Category and RMO | <p>REC: Category D BAS: Category: D; RMO: Improve</p> <p>The determined Recommended Management Objective (RMO) is to improve the PES of the CVB wetland since it is considered seriously modified and of moderate ecological importance and sensitivity. Thus, it is recommended that no further degradation to the wetland should be permitted as a result of the proposed sports field development. Thus, it is also recommended that the construction and operation of the proposed sports field development follows strict mitigation measures as outlined in this report (refer to Section 5). Careful planning of the stormwater management plan is imperative to ensure the hydraulic regime is retained and not further impaired by stormwater influxes. It is further recommended that portions of the wetland be improved as part of the overall landscaping for the sports field development. This will also assist in improving the ecological condition of the wetland which is considered ecologically unacceptable (Malan and Day 2011).</p> | | |
| Extent of modification anticipated | <p>None</p> <p>No modification is anticipated to the extent of CVB wetland as no infrastructure is proposed within the CVB wetland that may fragment or degrade the system. However, stormwater releases alongside the delineated CVB wetland will need to be monitored to ensure base flows, quantity or quality of water within the CVB wetland are not adversely affected.</p> | Impact Significance and Business Case: | <p>Moderate Risk</p> <p>While no direct impacts are anticipated to the CVB wetland, activities associated with the proposed sports field development including the removal of vegetation, ground-breaking, excavations, infilling and the construction of stormwater outlet structures will take place adjacent to the delineated edge of the CVB wetland, thus posing a moderate risk significance to the integrity of the CVB wetland. It is thus imperative that adherence to cogent, well-conceived and ecologically sensitive construction plans is implemented, and the mitigation measures provided in this report as well as general good construction practice are adhered to. With implementation of Sustainable Drainage systems (SuDs) to assist with polishing of water prior to release into the CVB wetland, the long-term impacts to the CVB wetland can be considered manageable. It is strongly recommended that small scale rehabilitation be included as part of the development, including AIP control to assist with obtaining the REC of Category D. The CVB wetland must be considered a 'no-go' area during construction.</p> |



Table 5: Summary of the results of the VSP wetland to be traversed by the proposed sports field development.

| | | | |
|------------------------------|--|--|---|
| | <p>Ecological & socio-cultural service provision graph:</p>  |  | <p>Photograph notes</p> <p>(Left) Overview of the valley head seep wetland within the surrounding landscape; (Right) Signs of sediment deposition noted within the valley head seep wetland.</p> |
| <p>PES discussion</p> | <p>PES Category: C (Moderately Modified)</p> <p>The valley head seep wetland has been impacted by land use changes in the surrounding catchment, including the surrounding housing development and associated road infrastructure which have resulted in the increase of impervious surfaces in the surrounding landscape, altering the pattern, flow and timing of flood peaks into the wetland, thus impacting the hydrology regime of the wetland. Signs of sediment deposition were also noted, albeit limited, but having a marked effect on the geomorphology and vegetation of the affected areas.</p> | <p>EIS discussion</p> | <p>Moderate</p> <p>The valley head seep wetland is considered to be ecologically important and sensitive on a landscape scale, due to the protection status of wetland within a peri-urban setting. Furthermore, the vegetation type associated with the valley head see wetland (according to NFEPA, 2011) is considered to be critically endangered and moderately protected, although no remnants were identified at the time of the site visit and it is considered unlikely that any species that are representative of this vegetation type will be found due to the large scale surrounding impacts. The hydro-functional importance of the system is considered to be moderate while the direct human benefits are considered to be low.</p> |



| | | | |
|-----------------------------|--|--|---|
| Ecoservice provision | <p>Intermediate</p> <p>The CVB wetland is considered of moderately high importance for sediment trapping, phosphate, nitrate and toxicant assimilation and erosion control, largely as a result of the high surface roughness provided by the vegetation within the valley head seep wetland. Sediment trapping capability evidenced by signs of sediment deposition within the wetland. The valley head seep wetland is of intermediate importance for flood attenuation, stream flow regulation and cultivated food. The biodiversity maintenance is considered moderately low, mainly due to the anthropogenic impacts and the low buffer zone associated with the system. The assessed reach of the valley head seep wetland is not considered of value for tourism and recreation.</p> | <p>Wetland characteristics:</p> <p>a) Hydraulic regime The hydrological functioning of the CVB wetland is considered moderately modified largely as a result of surrounding housing development and road infrastructure contributing to increased stormwater input to the valley head seep wetland altering the pattern, timing, and flow of water within the wetland.</p> <p>b) Water quality Due to stormwater inputs and catchment land use changes, the surface water quality of the valley head seep wetland is expected to be impaired.</p> <p>c) Geomorphology and sediment balance The geomorphology of the valley head seep wetland can be considered moderately modified due to increased sediment loads as a result of run-off from the gravel roads resulting in sediment deposition to the wetland. No significant erosion was noted within the wetland due to the surface roughness provided by the vegetation present in the valley head seep wetland.</p> <p>d) Habitat and biota The wetland habitat on site forms part of a network of open spaces and natural corridors which provide support for local fauna and flora within a transformed landscape. The high surface roughness offered by the vegetation with the valley head seep wetland assists in sediment trapping and erosion control.</p> | |
| REC Category and RMO | <p>REC: Category C BAS: Category: C; RMO: Maintain</p> <p>Although the determined RMO is to maintain the PES of the valley head seep wetland since it is considered moderately modified and of moderate ecological importance and sensitivity, it is recommended that no further degradation to the wetland should be permitted as a result of the proposed development. Development of the surrounding area will decrease surface roughness and increase surface stormwater run-off; thus rehabilitation (including revegetation with indigenous species and AIP control) of this system is necessary to maintain and/or improve its present ecological state. Careful planning of the stormwater management plan is imperative to ensure the hydraulic regime is retained and not further impaired by stormwater influxes.</p> | Impact Significance and Business Case: | <p>Moderate Risk</p> <p>As the infrastructure associated with the proposed sports field development including the proposed main soccer field and berm encroaches into the western extent of the valley head seep wetland, 0.089 ha of wetland habitat will be lost.</p> <p>As such, the development activities are considered to pose a moderate risk to the integrity of the valley head seep wetland. Some of the activities associated with the construction of the proposed sports field development, including the removal of vegetation, ground-breaking, excavations, infilling and associated concrete works will necessitate work within the valley head seep wetland, thus posing</p> |



| | | |
|--|---|---|
| <p>Extent of modification anticipated</p> | <p>High</p> <p>Significant modifications are anticipated to the extent of the valley head seep wetland associated with the proposed main soccer field, where 0.089 ha of wetland habitat will be lost as a result of the proposed sports field development. Similarly, habitat fragmentation is likely within the seasonal and temporary zones of the wetland. However, an offset investigation was undertaken, and focus was placed on the offset of functional Hectare equivalents to ascertain the functional habitat hectare equivalents that must be conserved by the proponent to account for the above-mentioned residual wetland loss and ensure improved functionality and ecological integrity of the remaining wetland extent. Stormwater released from the proposed sports field development into the adjacent valley head seep wetland must be appropriately attenuated and released in a dispersed manner before entering the wetland to prevent incision and erosion.</p> | <p>a moderate risk to the overall integrity of the valley head seep wetland and an anticipated loss of 0.089 ha of wetland habitat.</p> <p>An offset investigation was undertaken, and it was determined that a conservation offset is not appropriate and thus focus was placed on the offset of functional hectare equivalents to ascertain the functional habitat hectare equivalents that must be conserved by the proponent to account for the above-mentioned residual wetland loss, results provided in Section 6 of this report. It is recommended that rehabilitation of the valley head seep wetland be undertaken to improve the functionality and ecological integrity of the wetland. Furthermore, it is imperative that adherence to cogent, well-conceived and ecologically sensitive construction plans is implemented, and the mitigation measures provided in this report as well as general good construction practice are adhered to.</p> |
|--|---|---|



2.4 Hydropedological Assessment

Scientific Aquatic Services (SAS, 2021b⁸) was appointed to provide a hydropedological opinion for the proposed development. The proposed activities will likely entail earthworks preparation of foundations for development of associated infrastructure which may intercept the subsurface flows in the vadose zone feeding the watercourses as well as affect vadose zone recharge mechanisms. Thus, it was deemed necessary to investigate the recharge mechanism of the watercourse within and near the study area to ensure that development planning takes cognisance of the hydropedological important areas and hence enable informed decision making, construction design in support of the principles of sustainable development.

The objective of the assessment was to investigate the hydropedological properties of the soils in the vicinity of the watercourses within the study area, to infer the potential recharge mechanisms and destination of the transferred water of the surrounding soils that may be affected during the life of the proposed sports field development. It was also an objective to assess the impact of the proposed development activity on the watercourse in terms of the hydropedological drivers.

The following assumptions and limitations were identified by SAS (2021b):

- Hydropedological science and research is rapidly evolving and there are currently no standard methods to assess and/or model the recharge capacity of soils, as a result, the findings of this assessment are therefore a mix of qualitative and quantitative results and based on the specialist's training, opinion and experience with the hydrological properties of the identified soil types.
- Sampling by definition means that not all areas are assessed, and therefore some aspects of soil and hydropedological characteristics may have been overlooked in this assessment. However, it is the opinion of the professional study team that this assessment was carried out with sufficient sampling and in sufficient detail to enable an informed decision regarding the proposed activity.
- The effects climate change dynamics were not considered as part this assessment; however, it is acknowledged that this might exacerbate the anticipated reduction in water inputs and the resultant hydrological function of the watercourse beyond the extent of the proposed development.
- This assessment is confined to the study area as depicted in Figure 1, and does not include the neighbouring and adjacent properties, although land uses and possible catchment impacts occurring on surrounding properties were taken into consideration; and

⁸ Scientific Aquatic Services, 2021b. *Hydropedological Opinion as part of the Water Use Authorisation Process for The Proposed Hlomendlini Sports Field and Associated Infrastructure in Mandeni, Kwazulu-Natal Province*. Ref: SAS/SRK 230321.



- Although the delineations of the hydropedological soils is confined to the boundaries of the study area, adjacent areas were considered.

2.4.1 Site Conditions

Following the site visit conducted in February 2021, the following observations were made:

- The site occurs in an area where most of the surrounding area has been developed and are characterised by roads and impervious surfaces which have altered the hydrological processes (i.e. pattern, timing and flow) of the area, with specific mentions to runoff patterns;
- The topographic alteration associated with the construction of the road and residential areas within the catchment have significantly altered the hydrological drivers of the wetland and possibly its extent; and
- The soil in some portions within the footprint area have been impacted due to historic activities which have led to some alteration of the natural soil characteristics. This has ultimately impacted on the natural hydropedological recharge mechanism.

2.4.2 Hydropedological Considerations

Most of the soils associated with the footprint area are shallow, where the topsoil is underlined by either hard rock or plinthic material which largely inhibits infiltration. These soils based on the South African Soil Classification System (2018) can be classified as Mispah and Dresden soils forms. The best suited hydropedological recharge mechanism definition for these areas is responsive shallow. Shallow responsive soils are characterised by limited storage capacity which results in the generation of overland flow after rainfall events. These soils lead to a rapid runoff response time during intense rainfall events attributed to their shallow nature which inhibits infiltration.

The contribution of these soils to wetland recharge is significant during a rainfall event and minimal during drier periods. The soils within associated with the CVB wetland and VHS wetland can be best classified as Kroonstad and Wasbank soil forms. Figure 7 and Figure 8 present the dominant soil forms and the hydropedological soil responses, respectively.





Figure 7: Dominant soil forms associated with the study area (SAS, 2021b)





Figure 8: Hydropedological soil response (SAS, 2021b).



3 DESCRIPTION OF WATER USE ACTIVITIES

The water use activities associated with the proposed sports field development are discussed in the sections to follow. Information provided in this section has been obtained from the Hlomendlini Sports Field Preliminary Design Report⁹ as well as the Draft Basic Assessment Report (BAR) provided by the proponent.

Note that the proposed sports field development will be located within the 500m ZoR (GN 509 of 2016) of the CVB and VHS wetland, as illustrated in Figure 6. The majority of proposed infrastructure will be located outside of the 1:100 year floodline and the delineated wetland areas, with the exception of the soccer field as well as a section of the fence line being within a portion of the VHS wetland.

A master layout plan of the sports field development showing the delineated wetlands, applicable ZoRs and flow direction is illustrated in Figure 9 and Figure 10 below.

3.1 Existing Infrastructure

According to desktop studies and site visits undertaken by SRK (2021), there is an existing partially constructed building and an existing concrete block on the proposed development site. These buildings will be demolished to make way for the proposed infrastructure detailed in Section 3.2.

3.2 Proposed Infrastructure

3.2.1 Section 21(c) & (i): Impeding Or Diverting The Flow Of Water In A Watercourse Or Altering The Bed, Banks, Course Or Characteristics Of A Watercourse

The proposed sports field development will include the construction of the following infrastructure:

- A soccer field.
- Open stands.
- Ablutions and changerooms.
- Conservancy tank with a 110mm diameter sewer line from the ablation facilities to the Conservancy tank.
- Water line linking into an existing water meter located offsite.
- A combi court.
- The entire site will be enclosed with a clear view/beta fence with one pedestrian gate and associated guardhouse, and one service gate entrance/exit.

The above items include the complete scope of works and due to local government financial planning practices, the development will take a phased approach over the two (2) financial years. The following items are proposed for implementation in the current financial year (2021/2022):

⁹ SRK Consulting (Pty) Ltd. 2020. Hlomendlini Sportsfield (Ward 4) Preliminary Design Report – 2020/2021. Report Number 559426/1



- Bulk earthworks, layer works and grassing for soccer field only;
- Stormwater diversion measures;
- Sewerage (limited);
- Water Supply and Irrigation;
- Ablutions facilities and guardhouse (limited);
- Open stands (limited);and
- Fencing with vehicle and pedestrian access gates.

The remaining items will need to be implemented during the following financial years i.e. 2022/2023 and 2023/2024 subject to available funds.

Details of the proposed infrastructure are provided in the sub-sections below.

3.2.2 Soccer Field Bulk Earthworks, Layer works, and Grassing

It is proposed to develop a soccer field within the 500 m ZoR (GN 509 of 2016) of the identified CVB wetland and VHS wetland, with an extent of 110 m x 75 m. A portion of the soccer field and associated earth platform, required to create a level playing field will be developed within the VHS wetland.

According to the preliminary designs the existing 2m contours have been used in estimating the bulk earthworks quantities and 15% hard rock excavation. The soccer field area will be cleared, and topsoil will be removed and stockpiled on site. Bulk earthworks will be done over the soccer field, in order to produce a generally flat surface with a 0.7% slope in a northerly direction across the property.

This will require cut to fill excavation works and additional fill material to be imported to site. Additional suitable fill material may be required to be sourced from other municipal sites in the area to supplement this. The additional fill material will be stockpiled on the property and used as fill. This proposed fill material will need to be tested before this operation will be approved. On completion of the bulk earthworks, a sand sub-base layer for drainage purposes and topsoil material will be imported and compacted prior to the planting of new *Cynodon dactylon* grass, an indigenous grass that is well suited for sports fields due to its hardy nature and ability to stabilise soils.

It is noted that construction activities within the VHS wetland will only occur in the winter months.

3.2.3 Open Stands

The open stands will be cut into the embankment overlooking the main soccer field and will consist of reinforced concrete slabs to accommodate approximately 150 people. The surrounding grassed embankment will also be sloped to cater for additional spectators.

3.2.4 Stormwater Diversion Measures

Of critical importance are the stormwater diversion measures that must be put in place to prevent major erosion damage taking place of the newly constructed bulk earthworks platform as well as drainage around the soccer field. The drainage would be diverted around the field to the eastern corner of the site. The proposed stormwater diversion measures can be summarised as follows:



- Earth cut-off drains to be provided along the southern side parallel to the soccer field. The purpose of these drains would be to capture and divert the overland stormwater flow from the high lying catchment area south of the site.
- Stoned pitched v-drains to be provided along the eastern boundary. These will serve, firstly to divert the flow from existing infrastructure and to collect all overland flow water from the earth cut-off drains along the southern side.

A detailed description of the stormwater management measures will be provided in Phase 3 of the application.

3.2.5 Water Supply and Irrigation System

Existing municipal water will be supplied to the site and for irrigation of the soccer field. The Mandeni municipality has obtained confirmation of the service level agreement with the iLembe District Municipality for the connection to the existing water meter located along Platinum Road.

The water supply network would consist of various diameter uPVC class 12 pipes, including all the necessary valves and fittings. Irrigation for the soccer field will make use of the travel canon irrigation system.

3.2.6 Fencing, Access Gravel Road and Guard House

The proposed sports field development will be enclosed with 2,4 m high clear view/be fencing to prevent vandalism from taking place and to maintain the security of the site. The proposed Hlomendlini Sports Facility will have two access points, which will be for spectators and motor vehicles located next to the guardhouse. Two swing gates for the main entrance will be provided with a width of 4.5 m that will allow passage of vehicles and buses. In addition to the main entrance gate, there will be a side gate which will be used by pedestrians to enter the sporting premises.

In addition to the fencing, it is proposed to develop a gravel access road that will tie in with the existing gravel access road located to the western side of the study area.

It is also proposed to develop a guardhouse for security purposes. The guardhouse will comprise a floor area of 40 m² and the design shall provide for suitable means for the control and disposal of accumulated stormwater. Stormwater drains shall comply with the requirements of the municipality.

3.2.7 Ablution Facility and Sewage System

The ablution facility will comprise of toilets, kitchen and storeroom, change rooms and showers. As there is no municipal sewerage system in the area, the site would need to make use of a conservancy tank system for the management of sewage . Further description of the conservancy tank is provided Section 3.2.8 below.



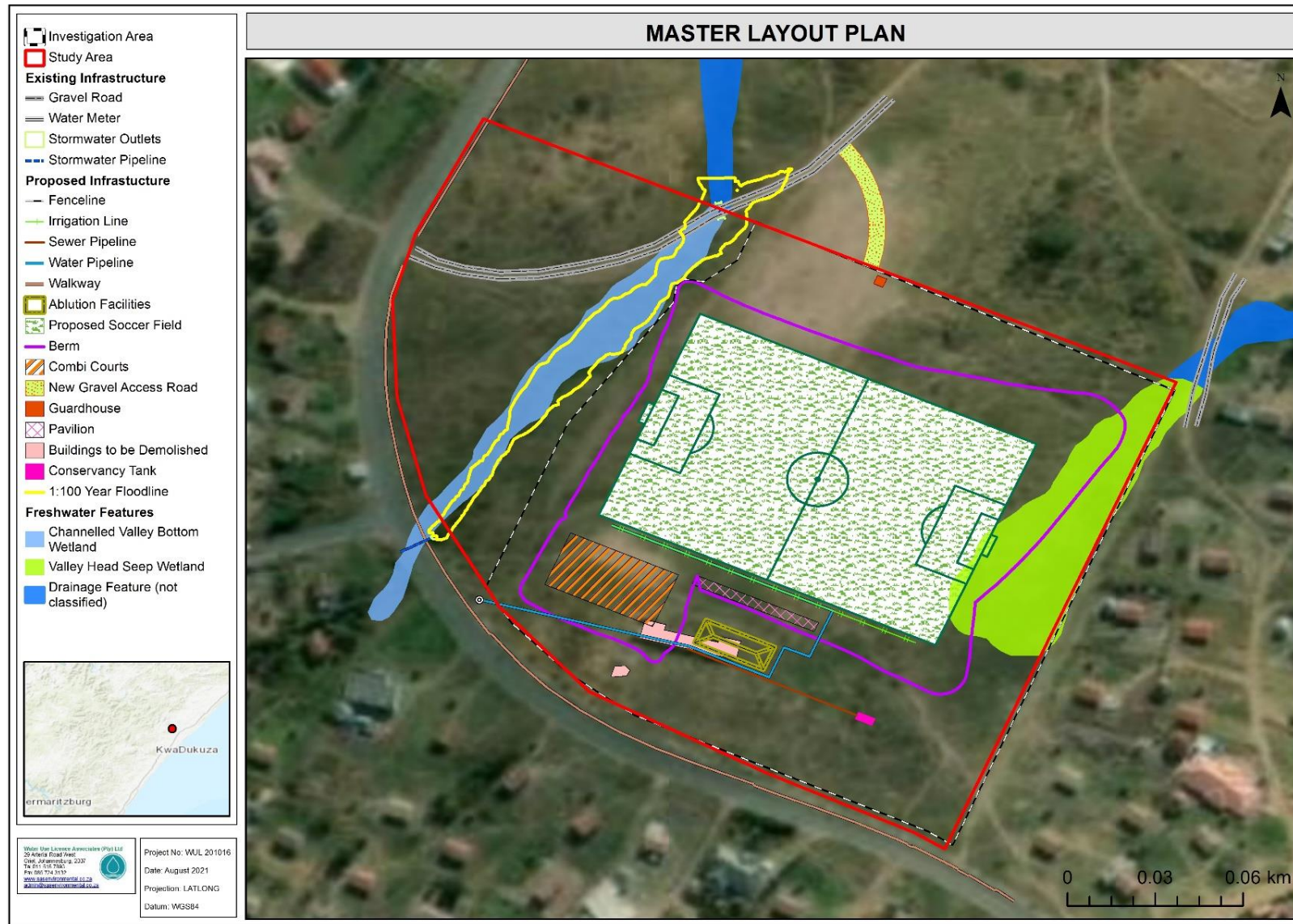


Figure 9: A digital satellite image depicting the master layout plan of the proposed sports field development



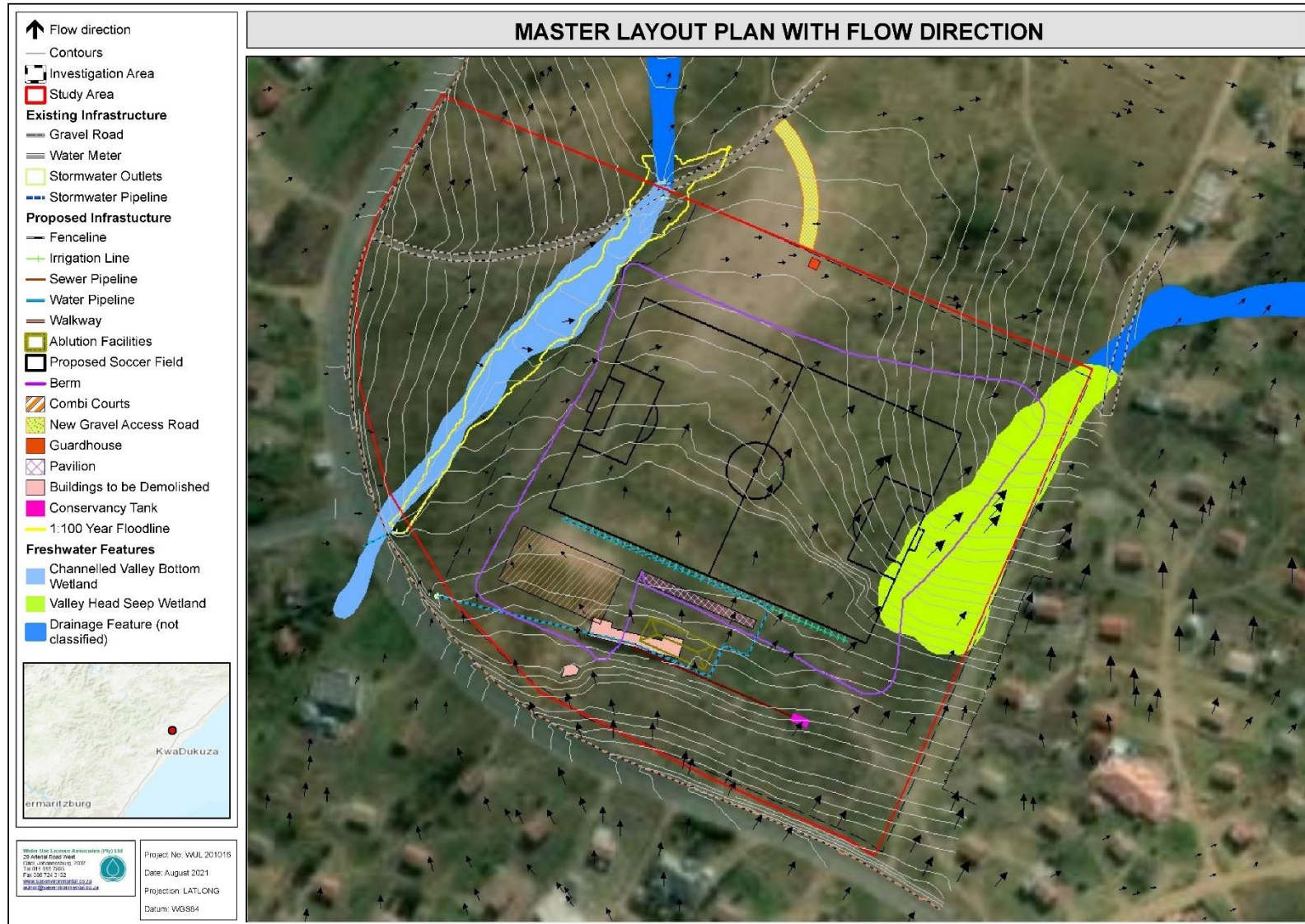


Figure 10: A digital satellite image depicting the master layout plan of the proposed sports field development with flow direction.



3.2.8 Section 21(g): Disposing of Waste in A Manner Which May Have Detrimental Impact on A Water Resource

As there is no municipal sewerage system in the area, the site would need to make use of a 9 500- litre underground modular conservancy tank system for the proposed sports field development. Please refer to Figure 11 for a typical example of an underground modular tank and Figure 12 of the proposed conservancy tank system layout.

The sewer sludge will be removed by means of a “honey sucker”; a tank that is transported on the back of a truck with a pump system that will pump the sewer sludge from the conservancy tank in the truck tank for disposal at the nearest sewer treatment plant.

It has been assumed that portable chemical toilets will be used during construction, while the expected flow during the operational period is estimated to be 9.5 (m³/year).

At this stage, it is proposed to dispose of the sewage sludge at a Waste Water Treatment Works (WWTW) facility within the iLembe District Municipality. This action will be done as and when required depending on the use. Maintenance details are to be provided as part of Phase 3.

The Mandeni Municipality is still in discussions regarding a service level agreement with the iLembe District Municipality.



Figure 11: A typical example of an underground modular conservancy tank (<https://calcamite.co.za/solutions/>).





4 WATER USES APPLIED FOR

This application is for water uses as listed in Table 6 well as visually depicted in Figure 13. All relevant Water Use application forms have been compiled electronically during Phase 1 of the E-WULAA system and all relevant administrative documents loaded.

Please refer to Annexure A for a summary of all administration documents uploaded as part of Phase 1.

Table 6: Summary of water use activities applied for the Section 21 (c) &(i) and (g) water use activities associated with the proposed sports field development

| Map Reference | Water use(s) activities | Purpose | Capacity/Volume (m³/a)/ Dimensions/Area (ha) | Property Description | Co-ordinates |
|---------------------------------|---|---|--|------------------------------------|--|
| Section 21 (c) & (i) | | | | | |
| 1 Figure 13 | Construction and operation of the soccer field within the 500m ZoR (GN 509) of the CVB wetland and VHS wetland | To promote community participation in sporting activities | Length: 110m Width: 75m | Erf 1118 Padianagar Township FU | 29°11'24.99"S 31°23'37.97"E |
| 1 Figure 13 | Construction and operation of combi courts within the 500m ZoR (GN 509) of the CVB wetland and VHS wetland | | Length: 28m Width: 15m | Erf 1118 Padianagar Township FU | 29°11'26.02"S 31°23'35.70"E |
| 1 Figure 13 | Construction and operation of the Pavilion (open stands) within the 500m ZoR (GN 509) of the CVB wetland and VHS wetland | | 0.01ha | Erf 1118 Padianagar Township FU | 29°11'26.29"S 31°23'37.31"E |
| 1 Figure 13 | Construction and operation of the water pipeline within the 500m ZoR (GN 509) of the CVB wetland and VHS wetland | Provision of water supply and irrigation of soccer field | Diameter: 90mm, 75mm, 63mm, 50mm, 32mmr | Erf 1118 Padianagar Township FU | Start 29°11'26.22"S 31°23'34.25"E End 29°11'26.34"S 31°23'38.17"E |
| 1 Figure 13 | Construction and operation of the sewer pipeline and associated conservancy tank within the 500m ZoR (GN 509) of the CVB wetland and VHS wetland | Hygiene and sewage management | 110mm diameter | Erf 1118 Padianagar Township FU | Start 29°11'26.77"S 31°23'36.57"E End 29°11'27.50"S 31°23'38.43"E |
| 1 Figure 13 | Construction and operation of the ablution facilities within the 500m ZoR (GN 509) of the CVB wetland and VHS wetland | | 0.02ha | Erf 1118 Padianagar Township FU | 29°11'26.71"S 31°23'37.06"E |
| 1 Figure 13 | Construction and operation of the fence line within the 500m ZoR (GN 509) of the CVB wetland and VHS wetland | Provision of access and security to the sporting facilities | Height: 2.4m | Erf 1118 Padianagar Township FU | Start 29°11'26.08"S 31°23'34.32"E End 29°11'23.90"S 31°23'41.95"E |



| Map Reference | Water use(s) activities | Purpose | Capacity/Volume (m³/a)/ Dimensions/Area (ha) | Property Description | Co-ordinates |
|---------------------------------|---|---|--|---------------------------------|---|
| Section 21 (c) & (i) | | | | | |
| 1 Figure 13 | Construction and operation of the Guardhouse within the 500m ZoR (GN 509) of the CVB wetland and VHS wetland | | 0.004ha | Erf 1118 Padianagar Township FU | 29°11'22.70"S 31°23'38.69"E |
| 1 Figure 13 | Construction and operation of the Gravel Access Road within the 500m ZoR (GN 509) of the CVB wetland and VHS wetland | | Length: 42m | Erf 1118 Padianagar Township FU | 29°11'21.83"S 31°23'38.62"E |
| 2 Figure 13 | Construction and operation of soccer field and associated earth berm within the VHS wetland. | To promote community participation in sporting activities | Size: 0.089 ha | Erf 1118 Padianagar Township FU | Start: 29°11'26.33"S 31°23'39.51"E End 29°11'24.21"S 31°23'41.38"E |
| 3 Figure 13 | Construction of the fence line within the VHS wetland. | Security to the sporting facilities | Length: 42.55 m | Erf 1118 Padianagar Township FU | 29°11'23.90"S 31°23'41.95"E |
| Section 21(g) | | | | | |
| 4 Figure 13 | No existing municipal sewer infrastructure exists in the vicinity of the proposed sports facilities. Due to the low volume of sewage discharge, the proposed development will use a conservancy tank in terms of sewage disposal during the operational phase. | Sewage management and disposal | 9.5 m³ | Erf 1118 Padianagar Township FU | 29°11'27.54"S 31°23'38.49"E |



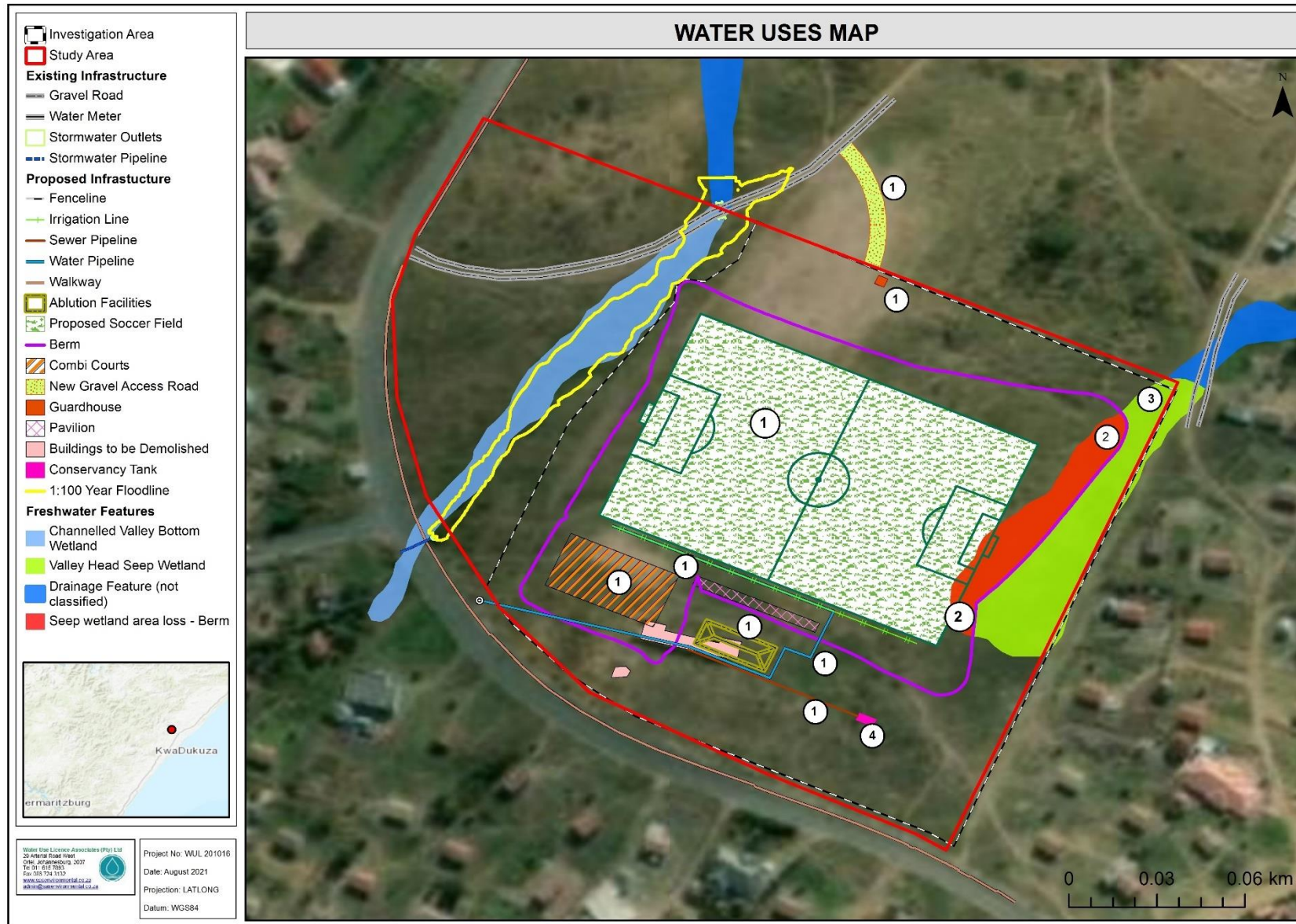


Figure 13: Digital satellite image of the proposed water use activities associated with the proposed development.



4.1 Alternatives Considered

4.1.1 Property / Site Location Alternatives

The Mandeni Municipality found it feasible to construct the new sports facilities at the site where an existing semi-formal soccer field currently exists. As mentioned previously, the main objectives of the Hlomendlini Sports Field development are to provide the surrounding communities access to quality sporting facilities and promote community participation in sporting activities. The site has thus been deemed the most appropriate for the proposed development, whereby no site alternatives have been considered. The proposed layout was optimised to avoid as much of the wetland as possible.

4.1.2 Design or Layout Alternatives

Due to the VHS wetland being identified to be at risk of the proposed development, various consultations with the freshwater ecologist were undertaken, following which the freshwater specialist recommendations on the layout were taken into consideration to develop the final layout of the development.

Following the wetland assessment and delineation all effort was made to optimise the development from an environmental impact point of view. This included the following methods:

- Changing the orientation of the sports field to avoid encroachment on the wetlands to avoid and minimise impacts; and
- Re-arrangement of the project elements to further reduce impacts.

It is notable that residual impacts will still occur and thus it was recommended that a rehabilitation plan be prepared which includes rehabilitation of an additional extent of the affected watercourses to improve the overall functioning and service of these systems thereby ensuring a no net loss of functional value of wetlands in the landscape.

The final layout was determined to be the preferred option that would keep traversing and infilling of the wetland to the absolute minimum.

As there is no municipal sewerage system in the area, the initial proposed method to manage sewerage was to make use of a septic tank and soakaway system. The size of the septic tank was determined by means of two percolation tests during the geotechnical investigation. The septic tank and soakaway system were to be constructed at the same time as the ablution facilities.

The freshwater assessment undertaken by SAS (2021a), however, identified risks to the VHS wetland with the installation and operation of a septic tank and soakaway system. As such, the use of a conservancy tank was proposed by the specialist. The preferred method of sewerage management is, therefore, the use of a conservancy tank. The use of the septic tank and soakaway is now an alternative design. The septic tank and soakaway have been replaced by the installation of a 9500L underground modular conservancy tank.

The conservancy tank will be emptied once a month by the iLembe District Municipality.



4.2 Activity Life Description

The construction and operation of the proposed development are viewed as a long-term or permanent activity. Therefore, it is recommended that the Water Use Licence be issued for the maximum allowed period of 20 years in terms of the National Water Act, 1998 (Act No. 36 of 1998).

5 IMPACTS OF ACTIVITIES ON WATER RESOURCES AND MITIGATION MEASURES

This section discusses the anticipated potential risks associated with the proposed sports field development from a freshwater ecosystem and hydrogeological perspective. Recommended mitigation measures for the anticipated potential risks are also provided in the sections to follow.

The DWS Risk Assessment Matrix, as promulgated in GN 509 of 2016, as it relates to the NWA, was applied to the proposed water use activities (as stipulated in Section 3 and 4 of this report) (SAS, 2021a). The risk matrix calculated the significance of perceived impacts (including cumulative and latent) on the flow regime, physical, chemical, geomorphological, habitat and biota of the watercourses.

5.1 Risk Assessment Considerations

The following considerations have been undertaken as part of the risk assessment:

- The risk assessment was applied assuming that a high level of mitigation is implemented, thus the results of the risk assessment provided in this report present the perceived impact significance post-mitigation;
- In applying the risk assessment, it was assumed that the mitigation hierarchy as advocated by the Department of Environmental Affairs (DEA) et al (2013) would be followed, i.e. the impacts would first be avoided, minimised if avoidance is not feasible, rehabilitated as necessary and offset if required;
- While the wetlands identified are not particularly sensitive as a result of historical and ongoing impacts (associated primarily with the surrounding urban development including linear infrastructure development and increased catchment hardening), adequate mitigation measures are still deemed imperative to prevent further significant impacts and to retain the current level of ecological habitat provision;
- The proposed activities were assessed based on their location in relation to the delineated extent of the wetlands and their applicable ZoRs.
- The following considerations were undertaken for the activities falling within the wetland areas:
 - The proposed main soccer field encroaches into the western extent of the VHS wetland;
 - To develop a flat playing field, it is necessary to infill and terrace the landscape to create a flat deck. The terracing encroaches into the western extent of the VHS wetland and will



result in a loss of 0.089 ha of wetland habitat. This equates to approximately 34% wetland habitat loss of the total area of the VHS wetland;

- The proposed fence line traverses the VHS wetland; and
- Activities outside the delineated extent of the wetlands but within the 500 m GN509 ZoR of the wetlands, include earth works associated with the construction of the proposed main soccer field, gravel access road, fence line, parking area and a guardhouse, combi courts, ablution facilities and stands, irrigation line, water pipeline (90 mm Ø), sewer pipeline (110 mm Ø), and installation of the conservancy tanks;
- The activities and the associated risks they pose are all highly site-specific, not of a significant extent relative to the wetlands assessed, and therefore have a limited spatial extent (i.e., within the study area). The exception are risks to water contamination due to sediment runoff during the construction phase, however, if the mitigation measures as presented in the report are fully implemented, the risks can be considered low. In addition, given that the proponent proposes to install conservancy tanks (which are closed off tanks that retain all waste water generated) that are regularly serviced, this will prevent the release of any effluent into the surrounding landscape and thus significantly reduce the likelihood of water contamination. If the system is well managed and the recommended mitigation measures implemented, this risk is considered low;
- It should be noted that although the severity scoring of any work within a wetland are usually considered 'High' and a maximum risk scoring allocation of 5 is usually assigned, it is the opinion of the ecologist that because the proposed sports field development will only affect the marginal extent of the VHS wetland thus not impacting on the overall functioning, with specific mention of the hydrological functioning, of this wetland, the activities associated with vegetation clearing, construction of the proposed main soccer field (which may not require intensive earthworks within the wetlands), fence line, and small-scale rehabilitation of the wetlands, does not necessitate a high severity scoring for flow regime and biota, and therefore a score value of either 2 or 3 was assigned (See Table 7 below);
- Activities outside the delineated extent of the wetlands but within the 500 m GN 509 ZoR of the wetlands, include earth works associated with the construction of the proposed main soccer field, gravel access road, fence line, parking area and a guardhouse, combi courts, ablution facilities and stands, irrigation line, water pipeline (90 mm Ø), sewer pipeline (110 mm Ø), and a conservancy tank system;
- Except for sewer infrastructure which has the potential to contaminate both ground and surface water, the activities relating to the proposed sports field development are all highly site specific, not of a significant extent relative to the area of the wetlands assessed, and therefore have a limited spatial extent;



- While the operation of the proposed sports field development will be a permanent activity, the installation thereof is envisioned to take no more than a few months. However, the frequency of the construction impacts may be daily during this time;
- Most impacts are considered to be easily detectable, with the exception of contamination of surface and groundwater which will require some effort;
- The considered mitigation measures are easily practicable; and
- It is highly recommended that the proponent makes provision for small-scale rehabilitation of the areas of the wetlands directly impacted upon by the construction activities, particularly the VHS wetland that will be traversed by the proposed sports field development. This is especially applicable to the removal of alien and invasive plants and the revegetation of the affected areas. This will ensure that the ecological service provision of the wetlands is maintained and where feasible, improved. Rehabilitation of these impacted areas can be included as part of the landscaping plans for the proposed sport field development, and this will potentially encourage sustainability of the rehabilitation initiatives.

5.2 Risk Assessment Outcome and Recommendations

There are four key ecological impacts on the wetlands lines that are anticipated to occur namely:

- Loss of freshwater habitat and ecological structure;
- Changes to the service provision; and
- Impacts on the hydrology of the watercourses.

The results of the risk assessment are summarised in Table 7 below, including key mitigation measures for each activity that must be implemented in order to reduce the impacts of the proposed sports field development on the wetlands. The activities associated with the construction and operational phases of the proposed sports field development, which include site preparation, vegetation clearing and excavation and levelling of the platforms for the construction of the proposed sports field development and associated stormwater management, pose a Moderate risk to the overall integrity of the wetlands. Many of the impacts are considered fully reversible, except those associated with loss of wetland habitat of the valley head seep wetland that will be traversed by the proposed main sports field and terrace resulting in 0.089 ha of wetland habitat loss. As such, an offset investigation was undertaken to ascertain the functional and conservation habitat hectare equivalents (ha) that must be conserved by the proponent to account for the residual wetland loss (see Section 6 below) and to achieve a no net loss of freshwater resources as a result of the proposed sports field development.

Indirect impacts may arise from potential water quality concerns and increased sediment loads entering the wetlands through the stormwater channels. It is thus strongly recommended that the proponent makes implements the stormwater management plan to service the proposed sports field development. Careful planning of the stormwater management plan that will ensure that stormwater is released in an attenuated manner outside of the wetlands, is imperative to ensure the hydraulic regime of the receiving wetlands is retained.




Table 7: Summary of the results of the DWS risk assessment applied to the wetlands associated with the proposed sports field development.

| No. | Phases | Activity | Aspect | Impact | Wetland impacted | Severity | Consequence | Likelihood | Significance | Risk Rating | Control Measures | Reversibility of Impact |
|-----|--------------------|--|---|--|--------------------------|----------|-------------|------------|--------------|-------------|---|-------------------------|
| 1 | CONSTRUCTION PHASE | Site preparation prior to construction activities. | Movement of construction equipment | <ul style="list-style-type: none"> Loss of wetland vegetation, associated habitat and ecosystem services, associated with the proposed water pipelines; Indiscriminate movement of construction equipment through the wetlands; Transportation of construction materials can result in disturbances to soil, and increased risk of sedimentation/erosion; and Soil and stormwater contamination from oils and hydrocarbons originating from construction vehicles. | CVB wetland | 2,5 | 4,5 | 12 | 54 | L | <ul style="list-style-type: none"> It is imperative that all construction works be undertaken during the dry, winter months when surface flow is very low within the wetlands, and no diversion of flow would be necessary; Due to the accessibility of the site and the existing roads, no unnecessary crossing of the wetlands may be permitted. this will limit edge effects, erosion and sedimentation of the wetlands during the construction phase; The assessed wetlands should be clearly demarcated with danger tape by an ECO and marked as a 'no-go' area where no construction activities are planned; Contractor laydown areas, vehicle re-fuelling areas and material storage facilities to remain outside of the wetland areas. All footprint areas must remain as small as possible and vegetation clearing to be limited to what is absolutely essential to ensure as much indigenous vegetation is retained; Vehicles to be serviced at the contractor laydown area and all re-fuelling is to take place outside of the delineated wetlands; Stockpiles should be placed outside demarcated features; Control of alien vegetation, specifically weeds which may find a niche to encroach disturbed areas; and All waste to be removed from the site and disposed of at a registered facility. | Fully Reversible |
| | | | | | Valley head seep wetland | 3 | 5 | 12 | 60 | M | | |
| 2 | | | <ul style="list-style-type: none"> Removal of vegetation and associated disturbances to soil. Potential clearing of vegetation within the development footprint | <ul style="list-style-type: none"> Loss of freshwater habitat and ecological structure, particularly along the western portion of the valley head seep wetland associated with the | CVB wetland | 1,5 | 3,5 | 12 | 42 | L | <ul style="list-style-type: none"> The clearing of vegetation must remain within the development footprint and may not extend beyond this area. No unnecessary disturbance within the wetlands must take place; Retain as much indigenous vegetation as possible outside of the authorised footprint areas; and | Fully Reversible |



| No. | Phases | Activity | Aspect | Impact | Wetland impacted | Severity | Consequence | Likelihood | Significance | Risk Rating | Control Measures | Reversibility of Impact |
|-----|--------------------|---|--|---|--------------------------|----------|-------------|------------|--------------|-------------|---|-------------------------|
| | CONSTRUCTION PHASE | | including within the wetland habitat of the valley head seep wetland for the construction of the proposed main soccer field. | <ul style="list-style-type: none"> proposed main soccer field; Exposure of soil, leading to increased runoff, and erosion, and thus increased sedimentation of the wetlands; Increased sedimentation of the wetlands, leading to smothering of vegetation in the downstream reaches; and Proliferation of alien and/or invasive vegetation as a result of disturbances. | Valley head seep wetland | 3 | 5 | 14 | 70 | M | <ul style="list-style-type: none"> The removed vegetation must be stockpiled outside of the delineated boundary of the wetlands. The footprint areas of these stockpiles should be kept to a minimum. Should the vegetation not be suitable for reinstatement after the construction phase or be alien/invasive vegetation species, all material must be disposed of at a registered garden refuse site and may not be burned or mulched on site. | Partially reversible |
| 3 | | Ground-breaking: excavation of foundations, earthworks and building associated with the construction of the proposed main soccer field, terrace, conservancy tank, gravel access road, fence line, parking area and a guardhouse, combi courts, ablution facilities and stands, and walkway within the 500 m GN509 ZoR. | <ul style="list-style-type: none"> Movement of construction machinery/vehicles within the vicinity of the wetlands; Possible spills/leaks from construction vehicles; Earthworks including excavation, infilling and levelling of soil to create a leveled platform, compaction of soil and stockpiling of excess soil; | <ul style="list-style-type: none"> Disturbances of soil leading to ponding of water as a result of over compaction of soil in some areas, increased alien vegetation proliferation, and in turn altered wetland habitat and runoff patterns; Total loss of 0.089 ha of seep wetland habitat as a result of the proposed main soccer field and terrace within the wetland; Altered runoff patterns, leading to increased erosion and sedimentation of the receiving wetlands; | CVB wetland | 1 | 4 | 13 | 52 | L | <ul style="list-style-type: none"> Major earthworks near the wetland (particularly the valley head seep wetland) can be avoided if the proposed main soccer field is slightly levelled as needed and major terracing is avoided; Vegetation clearing and movement within the wetlands to be limited to what is absolutely essential. Retain as much indigenous vegetation as possible; All vehicles are to remain within existing roads and no new roads should be developed without prior authorisation; All stockpiles should not exceed 2m in height and be located at least 10 m from the delineated wetlands. Stockpiling of removed materials may only be temporary (may only be stockpiled during the period of construction at a particular site) and should be disposed of at a registered waste disposal facility; All exposed soil, including stockpiles, must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geojute or hessian sheeting) in order to prevent excessive dust generation, erosion and sedimentation of the receiving freshwater environment; Given the topography of the site, it is recommended that that silt traps (for example – Figure A) be installed downgradient of the construction works to limit any sediment entering the downgradient wetland areas, especially considering the excavation activities associated with the valley head seep wetland. Sediment traps should allow for surface runoff should a rainfall event occur; | Fully Reversible |




| No. | Phases | Activity | Aspect | Impact | Wetland impacted | Severity | Consequence | Likelihood | Significance | Risk Rating | Control Measures | Reversibility of Impact |
|-----|--------------------|---|---|---|--------------------------|----------|-------------|------------|--------------|-------------|--|-------------------------|
| 4 | CONSTRUCTION PHASE | <ul style="list-style-type: none"> Earthworks within the western portion of the valley head seep wetland associated with the proposed main soccer field and terrace. | <ul style="list-style-type: none"> Removal of vegetation and infilling within the seep wetland and associated disturbance of soil; Possible discard of construction material within the wetlands; and Ongoing disturbances to soil leading to AIP proliferation. | <ul style="list-style-type: none"> Potential erosion and formation of preferential flow paths as a result of disturbed soil and inappropriate slopes resulting in sedimentation of the wetlands; Disruption to the embankment, potentially causing sedimentation; and Ground disturbances, potential concrete works and cement usage, and dust pollution during construction which may impact water quality. | Valley head seep wetland | 5 | 7 | 13 | 91 | M |  <p>Figure A: Example of the installation of geotextile sediment traps to be used during the construction phase, to limit additional sediment from entering the downstream portion of the wetlands.</p> <p>When installing the conservancy tank, double-check regularly to ensure that nothing falls into the tank and no effluent will leaks out of the tank.</p> <p><u>With regards to the construction of the proposed terrace within the valley head seep wetland</u></p> <ul style="list-style-type: none"> In order to create the proposed terrace all vegetation will need to be cleared. All indigenous vegetation can be stockpiled and mulched, to be used as organic matter during the rehabilitation phase. All exotic or alien vegetation must be removed from the watercourse and disposed of at a registered facility As far as feasibly possible, imported material used for infilling and terracing of the proposed sports field development must be free of weeds and alien and invasive vegetation species seeds; The first 10 cm of topsoil should be stripped and stockpiled for reuse once the proposed terrace has been shaped and the wetland has been re-sloped; | Partially reversible |



| No. | Phases | Activity | Aspect | Impact | Wetland impacted | Severity | Consequence | Likelihood | Significance | Risk Rating | Control Measures | Reversibility of Impact |
|-----|--------------------|----------|--------|--------|------------------|----------|-------------|------------|--------------|-------------|---|-------------------------|
| | CONSTRUCTION PHASE | | | | | | | | | | <ul style="list-style-type: none"> The proposed terrace should be designed in such a way that there are no steep slopes which may limit vegetation growth and result in erosion. A maximum slope with 1:4 is considered the most appropriate balance between reducing footprint and ensuring slopes are stable; It must be ensured that there is no impedance to stormwater that is released into the valley head seep wetland and that all stormwater is suitably managed; and The area must be suitably compacted to prevent any erosion or preferential flow paths from occurring. No hard infrastructure is allowed within the reshaped area and use of hard engineering structure (such as gabion retention structures or reno-mattresses) should be avoided as far as feasibly possible; It is recommended that a post and wire fence be utilised for the proposed fence line. Although ClearVu fencing is suitable for security as it cannot be easily removed or cut, it does limit the movement of fauna (with only insects and avifaunal species able to navigate it). If ClearVu is desired a suitable faunal specialist should assist in designing under tunnels for larger faunal species (such as porcupine) No formal paving should be used for the proposed walkway. <i>In situ</i> compaction of soil or bark mulch could be utilised (for example see Figure below); Revegetation of the areas surrounding the walkways with suitable indigenous species of the Indian Ocean Coastal is recommended. | |



| No. | Phases | Activity | Aspect | Impact | Wetland impacted | Severity | Consequence | Likelihood | Significance | Risk Rating | Control Measures | Reversibility of Impact |
|-----|--------------------|----------|--------|--------|------------------|----------|-------------|------------|--------------|-------------|---|-------------------------|
| | CONSTRUCTION PHASE | | | | | | | | | |  <p>Figure B: Example of compacted soil walkway.</p> <p><u>Cement usage</u></p> <ul style="list-style-type: none"> Concrete and cement-related mortars can be toxic to aquatic life. Proper handling and disposal should minimize or eliminate discharges into freshwater ecosystems. High alkalinity associated with cement, which can dramatically affect and contaminate both soil and ground water. The following recommendations must be adhered to: <ul style="list-style-type: none"> Fresh concrete and cement mortar should not be mixed within 10 m of the identified wetlands. Mixing of cement may be done within the construction camp, may not be mixed on bare soil, and must be within a lined, bound or banded portable mixer. Consideration must be taken to use ready mix concrete; No mixed concrete shall be deposited directly onto the ground whilst it awaits placing. A batter board or other suitable platform/mixing tray is to be provided onto which any mixed concrete can be deposited whilst it awaits placing; Cement bags must be disposed of in the demarcated hazardous waste receptacles and the used bags must be suitably disposed of; and Spilled or excess concrete must be disposed of at a suitable landfill site. Only indigenous vegetation species may be used as part of the landscaping of the development, and invasive plant species should be eradicated. | |



| No. | Phases | Activity | Aspect | Impact | Wetland impacted | Severity | Consequence | Likelihood | Significance | Risk Rating | Control Measures | Reversibility of Impact |
|-----|--------------------|--|--|---|--------------------------|----------|-------------|------------|--------------|-------------|--|-------------------------|
| 5 | CONSTRUCTION PHASE | Installation potentially via open trenching of: the proposed water pipeline within the 500 m NEMA ZoR of the CVB; the proposed irrigation line within the 500 m NEMA ZoR of the valley head seep wetland; and The proposed sewer line within 40 m of the wetlands. | Excavation and trenching leading to stockpiling of soil; Movement of construction equipment and personnel within the wetlands. | <ul style="list-style-type: none"> Disturbances of soil leading to disturbance to the wetland vegetation and resulting in increased sediment loads in the downgradient areas; Increased alien vegetation proliferation in the footprint areas, and in turn to altered wetland habitat; and Altered runoff patterns, leading to increased erosion and sedimentation of the wetlands during rainfall events. | CVB wetland | 1 | 3 | 12 | 36 | L | <p><u>With regards to open trenching for the installation of the water pipeline, sewer pipeline, and irrigation line</u></p> <ul style="list-style-type: none"> During trenching, soil may be stockpiled on the upgradient edges of the excavation in order to limit potential sedimentation of the downgradient wetlands (Figure C). Mixture of the lower and upper layers of the excavated soil should be kept to a minimum. The soil must be used to backfill the trenches, immediately after inserting the pipeline; and The stockpiles must remain as small as possible and may not exceed 2m in height. | Fully Reversible |
| | | | | | Valley head seep wetland | 1 | 3 | 12 | 36 | L | | Fully Reversible |

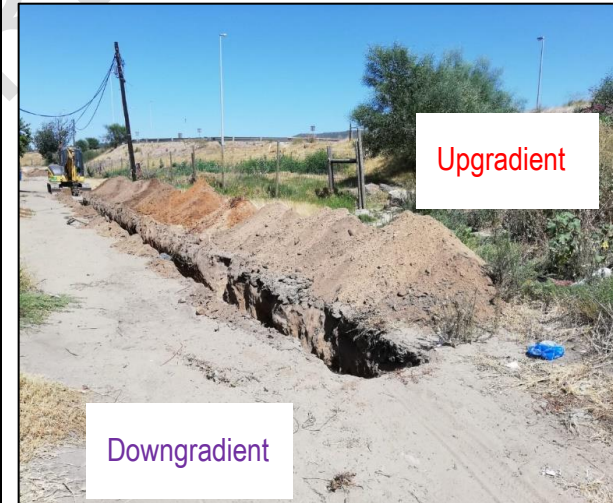



Figure C: An example of a trench being excavated, and the removed soil stockpiled along the trench.



| No. | Phases | Activity | Aspect | Impact | Wetland impacted | Severity | Consequence | Likelihood | Significance | Risk Rating | Control Measures | Reversibility of Impact |
|-----|--------|-----------------------|---|--|------------------|----------|-------------|------------|--------------|-------------|---|-------------------------|
| 6 | | Stormwater management | <ul style="list-style-type: none">Establishment of stormwater channels and outlet structures are recommended for the management of stormwater and sustainable discharge into the wetlands | <ul style="list-style-type: none">Alterations to the sediment loads within the wetlands;Potential deposition of waste material into the wetlands; andPotential changes to the water retention pattern of the wetlands. | CVB wetland | 1 | 4 | 12 | 48 | L | <ul style="list-style-type: none">An adequate stormwater management plan must be incorporated into the design of the proposed sports field development. Stormwater must be released in an attenuated manner outside of the wetlands in line with the suggestions as follows.A suitably qualified freshwater specialist should provide input into this plan;It is strongly recommended that the developer consider Sustainable Drainage Systems (SuDS) for stormwater management (as opposed to underground stormwater pipelines) and that these systems be vegetated with indigenous freshwater vegetation as this will assist with sediment trapping and “polishing” of stormwater before releasing into the wetlands (for example see Figure E below); <div></div> <p>Figure E: Examples of open swales, considered to be SuDs utilised for conveyance of stormwater.</p> | Fully Reversible |



| No. | Phases | Activity | Aspect | Impact | Wetland impacted | Severity | Consequence | Likelihood | Significance | Risk Rating | Control Measures | Reversibility of Impact |
|-----|--------------------|--|--|---|--------------------------|----------|-------------|------------|--------------|-------------|---|-------------------------|
| | CONSTRUCTION PHASE | | | | Valley head seep wetland | 1 | 4 | 12 | 48 | L | <ul style="list-style-type: none"> It is further recommended that the developer create a constructed wetland/retention pond for the stormwater to enter so that it is not released directly into the wetlands. This will be a proactive approach to limit contaminated water entering the wetlands; Energy dissipating structures should be installed at the stormwater outlets to prevent erosion and scouring of the wetlands where the stormwater will be discharged into; At the drop of stormwater outlets, rocks must be placed, and vegetation established to bind the soil of the bed, and to prevent erosion. This will also diffuse flow and lower the velocity of water entering the wetlands; and Litter traps should be installed at all the inspection chambers to prevent any litter from entering into the freshwater ecosystems. | Fully Reversible |
| 7 | OPERATIONAL PHASE | Small-scale rehabilitation of the area | <ul style="list-style-type: none"> Proactive monitoring to identify early signs of alien vegetation encroachment; Small-scale rehabilitation of the valley head seep wetland; Re-vegetation of surrounding wetland areas, remove any obstructions to flow; Alien and invasive plant removal. | <ul style="list-style-type: none"> Soil compaction within the wetlands; Potential sedimentation of the valley head seep wetland due to activities within the wetland; and Impacts to water quality of the wetlands as a result of the application of herbicides. | CVB wetland | 1 | 3 | 12 | 36 | L | <ul style="list-style-type: none"> Following construction, a suitable alien invasive management plan must be implemented to ensure that alien invasive plant species do not become established within the areas disturbed by construction activities; Rehabilitation of the wetlands must be undertaken, including clearing of all alien and invasive vegetation and reinstatement of indigenous wetland vegetation (particularly for the valley head seep wetland where portions of the proposed main soccer field and terrace are proposed. All disturbed soils must be ripped and loosened. Any existing erosion must be remediated; It is considered advantageous if the impacted areas adjacent to the wetlands be rehabilitated with indigenous terrestrial vegetation to create an open space corridor and reinstate the ecological buffer to the wetlands; Planting must start as soon as possible after soil profiling so as to reduce the duration of bare earth being exposed, which could lead to erosion and sedimentation of the area, and to establish ecological habitats; | |



| No. | Phases | Activity | Aspect | Impact | Wetland impacted | Severity | Consequence | Likelihood | Significance | Risk Rating | Control Measures | Reversibility of Impact |
|-----|-------------------|--|--|---|---|----------|-------------|------------|--------------|-------------|---|-------------------------|
| | OPERATIONAL PHASE | | | | Valley head seep wetland | 1.8 | 3.8 | 13 | 48.8 | L | <ul style="list-style-type: none"> The wetlands must be monitored for alien and invasive vegetation encroachment and all alien vegetation/weeds must be removed according to a suitable alien vegetation control plan. Annual follow up should be undertaken to the wetlands for at least 3 years post construction; Where applicable for the eradication of alien and invasive vegetation, care should be taken with the choice of herbicide to ensure that no additional impact and loss of indigenous plant species occurs due to the herbicide used and water contamination is avoided; and These rehabilitation recommendations should be read in conjunction with the rehabilitation measures following the offset considerations as presented in Section 8.6 below to improve the functionality and ecological integrity of the identified target wetlands. | Fully Reversible |
| 8 | | Operation of the proposed sports field development | <ul style="list-style-type: none"> Increased impermeable surfaces due to the presence of roofs, parking areas, access roads, etc.; Potential indiscriminate movement of vehicles within the freshwater ecosystems for perimeter inspections/maintenance. | <ul style="list-style-type: none"> Altered runoff patterns and increased water inputs to the receiving wetlands, resulting in altered flow regime; Altered flow regime may lead to changes to an impacts on vegetation as a result; Proliferation of alien and invasive plant species within the wetlands. | CVB wetland Valley head seep wetland | 2,5 | 4,5 | 12 | 54 | L | <ul style="list-style-type: none"> Adequate stormwater run-off measures must be put in place and no stormwater may be directly released into the wetland. Attenuation ponds and/or SuDs must be installed to assist with water "polishing" and reducing the velocity of water before entering the wetlands. This will ensure no erosion or scouring occurs as a result of stormwater inputs; Incorporate as much indigenous terrestrial and wetland vegetation into the open space areas, SuDS, and stormwater attenuation facilities (where applicable) associated with the proposed sports field development; Any spills to be immediately cleaned up and treated accordingly; No vehicles are permitted to enter into the freshwater ecosystems. Any maintenance works must be undertaken by foot or the relevant authorisations obtained beforehand. | Fully Reversible |



| No. | Phases | Activity | Aspect | Impact | Wetland impacted | Severity | Consequence | Likelihood | Significance | Risk Rating | Control Measures | Reversibility of Impact |
|-----|-------------------|--|--|---|--------------------------|----------|-------------|------------|--------------|-------------|--|-------------------------|
| 9 | OPERATIONAL PHASE | Operation of the proposed water pipeline | Potential leakage of water from the pipelines. | <ul style="list-style-type: none"> Possible incision and alteration of the hydroperiod of the downgradient wetlands; Potential impacts to the water quality of the wetland | CVB wetland | 1 | 3 | 12 | 36 | L | <ul style="list-style-type: none"> It is recommended that the integrity of the water pipelines be tested at least once every five years or more often should there be any sign of a leak; It should be ensured that the hydrological regime of the downgradient wetlands not be impacted as a result of leaks or bursting of the pipeline, and that an emergency plan should be compiled to ensure a quick response and attendance to the matter in case of a leakage or bursting of the pipeline; Should repair of the pipeline be required to address a leak, mitigations as per activity 1 to 5 above are applicable depending on the location of the leak | Fully Reversible |
| | | | | | Valley head seep wetland | 1 | 3 | 12 | 36 | L | | |
| 10 | | Operation and maintenance of conservancy tanks and associated infrastructure | Possible indiscriminate movement of waste removal vehicles leading to damage to the conservancy tanks. | <ul style="list-style-type: none"> Potential failure of infrastructure resulting in anaerobic conditions within the conservancy tanks and possible spillage and runoff of sewage from the conservancy tanks into the wetlands decreasing the quality of surface water; The anaerobic conditions in the conservancy tank system could lead to a decrease in effluent quality which may enter the wetlands. | CVB wetland | 1 | 3 | 12 | 36 | L | <ul style="list-style-type: none"> Regular monitoring of the conservancy tanks and associated infrastructure must be undertaken to allow for pro-active management, including regularly inspection of all conservancy tanks to ensure they do not leak; Care must be taken when servicing the conservancy tanks, making sure that no litter or runoff from the servicing of the conservancy tank enters the wetland; and In the event of that the following warning signs are noticed during regular inspection, contact a professional septic company/preferred installer immediately for assistance: <ul style="list-style-type: none"> • Surfacing sewerage or wet spots • Gurgling sounds in the plumbing system • Slow draining fixtures | Fully Reversible |
| | | | | | Valley head seep wetland | 1 | 3 | 12 | 36 | L | | |



| No. | Phases | Activity | Aspect | Impact | Wetland impacted | Severity | Consequence | Likelihood | Significance | Risk Rating | Control Measures | Reversibility of Impact |
|-----|-------------------|---|--|--|--------------------------|----------|-------------|------------|--------------|-------------|--|-------------------------|
| 11 | OPERATIONAL PHASE | Monitoring of the sewer and water pipelines, and operation of the stormwater management system. | Proactive monitoring to ensure structural integrity is maintained. | <ul style="list-style-type: none"> Compaction of soil and loss of habitat as a result of ongoing disturbance from vehicles and equipment; and Disturbance of soil which could lead to erosion. | CVB wetland | 1 | 3 | 12 | 36 | L | <ul style="list-style-type: none"> All wetlands are to be considered "off limits" to any vehicular activity; Disturbances to the wetlands should be limited to what is essential for long-term maintenance in line with the mitigation measures presented herein; Existing access roads must be used for monitoring purposes. No indiscriminate movement of vehicles is allowed as this would result in the compaction of soil and potential loss of wetland and instream habitat; The likelihood of erosion is reduced due to a higher surface roughness of SuDs (earth swales), allowing for water to enter the wetlands at a lower velocity; The SuDs should be inspected regularly to ensure proper functioning, monitoring of erosion and clearing of any debris or litter in the SuDs; Regular inspection of the stormwater outlet structures should be undertaken to monitor the occurrence of erosion. If erosion has occurred, it should immediately be rehabilitated by means of revegetation; Water will be diverted around the soccer field in earth cut off trenches and stone pitched swales will be used to discharge water into the wetland in an attenuated manner. Hot spots for the build-up of debris and excess sediment within the wetlands must be identified and when necessary, debris/excess sediment must be removed by hand to prevent future flooding and potential damage to infrastructure. In this regard, special mention is made of periods following high rainfall and subsequent high instream water volumes. Removal of debris must be undertaken in line with the above listed construction mitigation measures; and Any erosion or gully formation must be identified on an ongoing basis and re-profiled and revegetated accordingly. | Fully Reversible |
| | | | | | Valley head seep wetland | 1 | 3 | 12 | 36 | L | | Fully Reversible |



5.3 Hydropedology Outcome and Recommendations

The findings of the hydropedological assessment indicate that the construction of the sports field is not anticipated to cause a significant loss of hillslope processes driving the adjacent wetlands on both the local and catchment to the nature of development as well as the absence of hydropedologically important soils associated with the study area. This is with specific mention to the area where the proposed sports field development is to occur and the portion of the sport field encroaching on the VHS wetland. Although direct impact will likely occur, the post development scenario is unlikely to disrupt the functionality of the hillslope process if mitigation measures are implemented.

This proposed sports field development is regarded acceptable from a hydropedological point of view, provided that the following recommendations be considered going forward:

- Excavation and soil disturbances within the VHS wetland should remain as small as possible;
- Drainage systems associated with the sport field should be designed in a manner discharges clean water back into the adjacent systems in an attenuated manner;
- Water from the sealed surfaces associated with the development should also be collected, and discharged back into the wetland in an attenuated manner;
- The development must ensure that runoff from all surfaces surrounding the development is attenuated before discharging into the adjacent systems, thus recharging the wetlands in an ecologically appropriate manner;
- Following the completion of the construction phase, areas of disturbance should be monitored at least once after an intense rainfall event for erosion arising from the surface runoff management;
- Implementation of erosion control measures to limit loss of soil and sedimentation of the adjacent systems associated with the proposed project; and
- All surface development footprint areas should remain as small as possible and disturbance of soil profiles to be limited to what is essential.

6 WETLAND OFFSET

6.1 Mitigation Hierarchy

Offsets are applied within a mitigation hierarchy and are only aimed at mitigating or compensating for residual impacts of project development on the environment (often called “compensatory mitigation”) after all appropriate and feasible steps have first been taken to avoid/prevent, minimize/reduce and remediate/rehabilitate impacts (Macfarlane D. et al 2016).

- First, the proposed sports field development should try to avoid or prevent negative impacts on biodiversity and ecosystem services by seeking alternative types of development, or alternative



locations, different scales of development, different layouts and siting of development components, etc.;

- Secondly if the above-mentioned alternatives have been exhausted, every effort should be made to minimize negative impacts and to rehabilitate or remediate affected areas;
- 'Residual impacts' are what will remain after minimising impacts and rehabilitation. These residual impacts would then need to be compensated for, and this may involve the specific application of an offset.

6.2 Wetland Offset Guidelines

The offset ratios as defined by DEA&DP (2011) were refined in the draft wetland offset calculator specifically pertaining to wetland offsets (Macfarlane D. et al 2016). The wetland offset calculator was designed to guide the criteria and importance of wetland habitat in terms of water resource and ecosystem value, ecosystem conservation and presence of species of conservation concern, at the end providing hectare equivalents representative of the wetland that requires an offset. The wetland offset calculator was used during the determination of the Hlomedlini Sports Field offset.

Hectare Equivalents: To enable the quantification of an appropriate offset, it is important to establish a unit or measurement that will allow for losses (due to the proposed impacts) and gains (due to the proposed offset) in wetland / biodiversity values to be assessed. This is central to the concept of offsets, and the goal of achieving no net loss. In the past, the area of wetland affected (as measured in hectares, for example) was a commonly used 'currency' and is still used in many instances. However, the approach taken in these guidelines which is based on international best practice, shows that a more refined "currency" that better incorporates a measure of ecological function, quality, and/or integrity.

The basic "hectare equivalents" used in these guidelines are a combination of area impacted and the change in condition or functionality. These basic values are modified based on the significance of the feature being impacted (in the case of the calculation of the required offset) or the quality of the offset achieved (in the case of the offset receiving calculation). This currency ('hectare equivalents') is used as a surrogate for residual loss and has been adopted as the primary currency for evaluating impacts to wetlands as a result of the proposed development.

Where a wetland offset is deemed appropriate, various actions may be used to deliver the required outcomes. These actions can be broadly grouped into the different categories listed below as provided by Macfarlane D. et al (2016).

- **Protection:** This refers to the implementation of legal mechanisms (e.g., declaration of a Protected Environment or Nature Reserve under the National Environmental Management: Protected Areas Act, 2014 (Act No. 21 of 2014), a legally binding conservation servitude, or a long-term Biodiversity Agreement under National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) and putting in place appropriate management structures and actions. This may include setting appropriate water reserve determinations and specifying protection measures within the DWS planning instruments. Furthermore, inclusion of offset sites into appropriate land use zones and land use plans, including provincial and local conservation plans, ensure that conservation outcomes are secured and maintained in the long-term. In light of the high regional rate of loss of wetlands and associated biodiversity, protection is necessary for any wetland offset, irrespective of the means used to deliver the "no net loss" outcome (i.e.,



rehabilitation, or other activities that compensate for wetland degradation or loss). It is important to recognise that increased protection (especially at a catchment level) greatly improves the chance of long-term persistence of wetland function and biodiversity, and therefore contributes to “no net loss” objectives. As protection increases the current “value” of a wetland system, it is important that the offset mechanism fully recognises the benefits associated with increased protection in reducing potential for long term loss and adding to the overall conservation estate, in line with national conservation goals and targets;

- **Averted loss:** This refers to physical activities which prevent the loss or degradation of an existing wetland system, its ecosystem services and its biodiversity, where there is a clearly demonstrated threat of decline in the system’s condition, ability to provide ecosystem services or support overall Water Resource Objectives (both quality and quantity). This would apply in situations where a wetland head-cut¹⁰ is stabilised to prevent an erosion gully from propagating further into the wetland, where excessive sediment inputs are prevented from entering a wetland through the stabilisation of erosion dongas alongside the wetland or by creating structures to trap such sediment before reaching the wetland, or where there is significantly improved management of a wetland (e.g. reduced grazing pressure or control of invasive aliens impacting on wetland ecosystem functioning). These actions can therefore count as ‘gains’ which contribute to achieving a “no net loss” outcome for key wetland services. Although, it can be argued that protection mechanisms measured against the regional background rate of wetland / biodiversity loss are part of ‘averted loss’;
- **Rehabilitation:** Rehabilitation results in an improvement in wetland condition, function, and associated biodiversity. Rehabilitation involves the manipulation of the physical, chemical, or biological characteristics of a degraded wetland system in order to repair or improve wetland integrity and associated ecosystem services. This could involve actions such as removing obstructions to flow or assisting the regeneration of the natural vegetation. By increasing the condition of a wetland system and its biodiversity, a positive contribution is made towards the goal of “no net loss”;
- **Establishment:** This involves the development (i.e. creation) of a new wetland system where none existed before by manipulating the hydrological drivers, physical, chemical, or biological characteristics of a specific site. Successful establishment would result in ‘gains’ in wetland area, functions and biodiversity values. It is important to note however, that while selected ecosystem services may quite readily be created through establishment, many ecological values – let alone whole intact systems - are very difficult if not impossible to create. In general, establishment as a mechanism for delivering an offset should therefore be avoided, or only used in exceptional circumstances, where it is known (based on research and demonstrated experience) that a particular system or service that has been lost can be reliably created

¹⁰ Erosion occurring upstream of a specific point.



elsewhere. Sites would also need to be located such that they do not impact on important terrestrial resources (e.g., intact natural grasslands); and

- **Direct compensation:** Direct compensation involves directly compensating affected parties for the ecosystem services lost as a result of development activities. This is ideally done by providing an equivalent substitute form of offset or in some cases may take the form of monetary compensation. This form of offset action is generally most relevant to direct services (e.g. loss of grazing land) but may occasionally be applied to compensate for losses of regulating and supporting services (e.g. through the direct treatment of polluted water).

6.3 Implementation of the Mitigation Hierarchy

The mitigation hierarchy has been defined by Macfarlane D. *et al* 2016 and necessitates specific steps that first need to be taken to avoid/prevent, minimise/reduce and remediate/rehabilitate impact prior to investigation into any offset initiative. The different pathways investigated for the proposed sport field complex are summarised in the points below:

Step 1: Avoid or prevent negative impacts on biodiversity and ecosystem services:

A consultation process was undertaken between the proponent, engineers and the freshwater specialist prior to this offset plan to optimise the layout in order to avoid the identified wetlands as far as feasibly possible, in line with the minimum project footprint.

Step 2: Make effort to minimise negative impacts and to rehabilitate or remediate affected areas:

As part of the proposed layout, and in line with the final layout plan, all unavoidable impacts on the watercourses must be mitigated to minimise the impacts. Although avoidance of the wetland habitat (as indicated in Step 1) was undertaken as far as possible, an anticipated unavoidable loss of 0.089 ha of wetland is still anticipated. Strict mitigation measures have therefore stipulated in the freshwater ecological assessment in order to minimize the impacts as far as possible.

Due to complete avoidance and recreation of wetland HGM units not being a feasible mitigation option, the residual impacts as a result of the proposed sports field complex development must to be compensated for and the best alternatives (including onsite rehabilitation of the remaining portions of the wetlands) has therefore been identified as part of this project.

From the results of the analyses it is evident that the proposed sports field development will lead to a loss of 0.0305 functional hectare equivalents and 0.0454 conservation target hectare equivalents.

The required ecosystem conservation hectare equivalents equate to .429 Hae. This is attributed to the threat status and protection level of the applicable WetVeg group (according to Mbona et al., 2015). As the WetVeg group is considered “critically endangered”, a factor of 1:15 is utilised by the wetland offset calculator tool (Macfarlane et al. 2016). The functional hectare equivalent target is 0.031 functional Hae.



6.4 Opinion and Recommendation

The need and desirability of a wetland offset was considered. Taking into consideration the loss of habitat associated with wetlands within the proposed sports field an offset to compensate for loss of habitat will assist in limiting any residual loss of wetland.

Due to the limited extent of the wetland loss and the location of the development a formal offset initiative is not deemed possible and it is therefore proposed to compensate for the loss by improving the functionality of a portion of the remaining wetland extent. The combined functional hectare equivalents and conservation hectare equivalents equates to .4594 ha. This was rounded to 0.5 ha which will be rehabilitated to offset the effects of the wetland to compensate for the wetland impact.

6.5 Recommended Rehabilitation Measures for Target Wetlands

Based on the outcomes of the offset analyses, the following preliminary rehabilitation measures have been recommended in order to improve the functionality and ecological integrity of the identified target wetlands:

- Implementation of an alien invasive vegetation plan, to eradicate as far as possible all alien floral species which are identified within wetland areas.
- Re-introduction of indigenous vegetation, in particular, graminoid species and sedges where vegetation is sparse. Manure sourced from local farmers is likely to contain seeds of naturally occurring floral species, and this could be utilised in the rehabilitated areas to further encourage growth of indigenous flora;
- Erosion control within the wetlands and their buffer zones in order to prevent sedimentation, enable natural vegetation to become re-established, and improve water quality. Examples of possible management methods include monitoring of access by domestic livestock, protection of small areas of exposed soils with suitable geotextiles or organic material (e.g. branches) until such time as vegetation is re-established, appropriate stormwater management practices and installation of erosion berms; and
- Indiscriminate grazing practices and crop cultivation bordering the wetlands are widespread in the surrounding community and are largely responsible for the poor condition of the vegetation communities of the wetlands. Thus, whilst it may not be feasible to prevent grazing of livestock altogether, the local community should be educated about sustainable grazing practices.

7 ENVIRONMENTAL AUTHORISATION AND PUBLIC PARTICIPATION PROCESS

An application for Environmental Authorisation (EA) has been submitted with the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA). The EA application has been submitted by the appointed EAP SRK Consulting (Pty) Ltd for listed activities



which trigger a Basic Assessment (BA) Process in accordance with the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) Environmental Impact Assessment (EIA) regulations as published in GN 327 of 2014, as amended.

7.1 Public Participation Process

This aim of the section is to provide the DWS with the necessary information associated with the public participation process undertaken for the water use activities associated with the proposed development as required by GNR 267 Regulations Regarding the *Procedural Requirements for Water Use Licence Applications and Appeals* of 24 March 2017.

The objective of the public participation process is to engage with interested and affected parties (I&APs) and to provide them with an opportunity to raise comments. Furthermore, the public participation process is necessary to satisfy the requirements of DWS, ensuring the interests of the I&APs are being taken into account and are adequately addressed.

7.1.1 Identification Of Interested and Affected Parties

A combined Public Participation Process (PPP) has been undertaken for the BA and WUL application process. The following I&APs were identified :

- EDTEA
- Department of Water and Sanitation (DWS).
- Mandeni Local Municipality.
- Ilembe District Municipality.
- KwaZulu Natal Department of Agriculture and Rural Development.
- Ezemvelo KZN Wildlife.
- KZN Department of Transport.
- Local ward councillor (Ward 4)

The identification of I&APs commenced and was undertaken by means of the following:

- Newspaper advertisement;
- Site Notices; and
- Direct Notifications (e-mails).

7.1.2 Project Announcement

A notification of the project was circulated to I&APs on 16 August 2021. Copies of the project announcement documentation is provided in Appendix 25.

7.1.2.1 Advertisements

The community to be impacted by the proposed Sports field is majority isiZulu speaking and as such, an isiZulu advertisement was placed in the Ilanga Newspaper on the Monday, 16 August 2021. The aim of the advertisement was to inform the public in the area of the proposed development in order to canvass the issues and concerns of the broader public. This was done to ensure that all potential I&AP's



were invited to register for the project and afforded the opportunity to comment on the proposed development.

7.1.2.2 Background Information Document (BID)

isiZulu fliers (i.e., the isiZulu advertisement) were distributed via hand delivery on 12 August 2021 to adjacent residents and landowners.

An English Background Information Document (BID) was compiled and distributed electronically to the I&APs on the database on Monday, 16 August 2021. The BID provided a brief overview of the proposed development and an explanation of the BA and WULA processes being followed. The purpose of the BID was to inform I&APs of the project and afford them an opportunity to register as an I&AP and provide comment.

7.1.2.3 Site Notices

Three (3) A2-size, laminated posters, in both English and isiZulu, were placed on Thursday, 12 August 2021 in the following locations:

- One English and isiZulu site notice placed at local Tuckshop on Platinum Road, South West of the site (29°11'25.42"S 31°23'33.53"E).
- One English and isiZulu site notices placed on fence of a property along Eastern boundary of proposed sports field (29°11'24.10"S 31°23'42.15"E)
- One English and isiZulu site notice placed along Platinum Road, on Western Boundary of the site (29°11'22.38"S 31°23'33.43"E).

The purpose of the site notices was to inform passers-by of the proposed development and how to register and comment.

7.1.3 Public Review Period

The BA report and draft WUL application report will be placed on public review from 25 October to 12 January 2021. The following will be undertaken:

- The Draft BA Report and WUL application Report will be uploaded onto the SRK website.
- I&APs on the database will be notified via email of the availability of the Draft BA Report and WUL application Report for review and comment. The link to the SRK website will be provided and the closing date for comments (i.e. 30 days for the draft BA report and 60 days for the draft WUL application report) stipulated, together with the forms of communication available to submit comments.
- The following commenting authorities will be contacted to determine how they would like to receive copies of the draft reports:
 - EDTEA.
 - DWS.



- Mandeni Local Municipality.
- To ensure all health and safety regulations and protocols will be adhered to, it is noted that a hard copy of the Draft reports will be not made available in any public locations (e.g. local library, Ward Councillor's office or Mandeni Local Municipality Reception). Where hard copies of documents will be submitted to I&APs, the following will be undertaken:
 - Only one person from SRK compiled the hard copies of the report.
 - Prior to handling the reports, the responsible person hand sanitized and wore a mask for the duration of the compilation thereof.
 - All hard copy documents will be delivered via courier. A reputable courier that follows all required protocols will be used.

All I&APs registered as part of the PPP will be included into the stakeholder database, which will be developed as part of the Water Use Licence Application.

7.1.4 Issues and Response Register

An Issues and Responses Register (I&RR) will be compiled to include the comments received during the PPP of the draft WULA report and submitted to the authorities as part of the WUL application.

The aim of the Issues and Responses Register is thus to provide a formal record of the issues, comments and concerns raised by I&APs.

8 CORRESPONDENCE WITH THE DWS

The following correspondence with the DWS has been undertaken thus far (Table 8).

Table 8: Correspondence with the Department of Water and Sanitation

| No. | Date | Type of Communication | Comments Raised |
|-----|----------------|--------------------------------------|---|
| 1 | 10 August 2021 | Pre-application consultation meeting | <p>A pre-application consultation meeting was held with Ms Nosisa Ngwenya and Ms Antonia Steenkamp.</p> <p>It was confirmed that a full Water Use Licence application process is to be followed due to the water use triggers associated with the proposed development.</p> <p>A copy of the meeting minutes is available on request.</p> |

9 SECTION 27 MOTIVATION OF THE NATIONAL WATER ACT, 1998

In accordance with the principles of the White Paper on a National Water Policy for South Africa,¹¹ a Water Use Authorisation (WUA) may only be issued if the use is an "optimum beneficial use in the public interest". Furthermore, section 27 of the National Water Act, 1998 (Act No. 36 of 1998) provides

¹¹DWAF White Paper on a National Water Policy for South Africa (1997).



that “in issuing a Water Use Licence, a responsible authority must take into account relevant economic, social, environmental as well as strategic and political factors in determining if the water use will be an optimum beneficial use”.

In terms of Section 27 of the National Water Act, 1998 (Act No. 36 of 1998), criteria that must be taken into consideration by the DWS during the making of a decision whether to authorise or not authorise the WUA. Table 9 is applicable to the proposed development.

Table 9: Motivation in terms of Section 27 of the NWA.

| Section | Description | Motivation |
|----------|--|--|
| 27(1)(a) | Existing lawful water use. | The area within 500 m of the CVB wetland and VHS wetland has been developed with residential and associated linear infrastructure, however, no water uses are registered for ERF 1118 property in Padianagar Township and immediate surrounds, KwaZulu-Natal Province. Other existing lawful uses associated with neighbouring properties are unlikely to be negatively affected by the proposed additional activities. |
| | Unlawful water use | The proposed sports field development has not yet commenced since water use authorisation for Section 21(c) & (i) and (g) water uses is yet to be granted. Therefore, there are no water uses currently taking place on the property requiring a Water Use Licence. |
| | New use | Water uses applied for on ERF 1118 Padianagar Township, KwaZulu-Natal for the proposed sports field development. |
| 27(1)(b) | Redress of the results of past racial and gender discrimination. | <ul style="list-style-type: none"> ➤ During the construction phase, the proposed development will create equal and fair employment opportunities for all members of society, including Historically Disadvantaged Individuals (HDI's); ➤ Both male and female disadvantaged unemployed individuals will benefit from the proposed development. <ul style="list-style-type: none"> • The estimated number of people who will benefit from this development during the construction and operational phase include: <ul style="list-style-type: none"> • Black: 25 males and 5 females • Coloured: 4 males and 2 Female • Indian: 3 males and 5 females • White: 3 males and 1 female • Youth: 10 males and 10 females ➤ During the operational phase the Padianagar community and surrounds will benefit by the provision of opportunities to partake in sport and recreational activities, including employment opportunities. |
| 27(1)(c) | Efficient and beneficial use of water in the public interest. | <ul style="list-style-type: none"> ➤ The beneficial use of the water in the context of this application is derived from the social and economic benefits resulting from the proposed development. The applicant contributes to the effectiveness and beneficial use of water by adhering to the regulatory provisions as contained in the WUL application and the provisions of the NWA. Section 21 water uses will be undertaken, managed and controlled in such a way to ensure that pollution of the nearby water resources is minimised and avoided. ➤ Social and economic development in the Padianagar area will be facilitated, which will ensure that the use of the water resources will be of benefit to the local communities. ➤ Goods and services will be sourced from local businesses as far as possible to enhance the economic benefits of the proposed development. |



| Section | Description | Motivation |
|------------|--|--|
| | | <ul style="list-style-type: none"> ➤ Local communities will be provided opportunities to participate in sport. The watching of a sport event will provide recreational opportunities and a form of relaxation to local community members during sport events. |
| 27(1)(d)i | The socio-economic impact of the water use or uses if authorised. | <ul style="list-style-type: none"> ➤ The main objectives of the Hlomendlini Sports Field development are to give the surrounding communities access to: <ul style="list-style-type: none"> • Quality sporting facilities. • Promote community participation in sporting activities. ➤ In addition, the construction of the Hlomendlini Sports Field will address social challenges that the community is currently faced with, such as unemployment. ➤ Having been issued financial backing by means of the Municipal Infrastructure Grant (MIG) from the Department of Co-operative Governance and Traditional Affairs (COGTA) and endorsed by the Department of Public Works' Expanded Public Works Programme (EPWP), this proposed development will provide an important avenue for labour absorption and income transfers to poor households, in the short to medium-term. The EPWP is one of government's key programmes aimed at providing poverty and income relief through temporary work for the unemployed. The EPWP is a nationwide programme covering all spheres of government and State-Owned Enterprises (SOEs). The upgrade of the sports field is a desired project for the municipality due to the field being the only facility that can accordingly cater for sporting facility or large gatherings of people of the community within Hlomendlini. There is a school immediately adjacent to the site that is without sporting facilities. Therefore, the proposed development can potentially benefit the youth in the school and the broader community thus affording. |
| 27(1)(d)ii | The socio-economic impact of the failure to authorise the water use or uses. | <ul style="list-style-type: none"> ➤ The Mandeni Municipality is lacking formalised sporting facilities for the communities to utilise. As such, sites such as this project site are being used on an ad hoc basis for recreational purposes. An area of the site has already been denuded of vegetation for the informal soccer field site and numerous footpaths across the site. Should this project not proceed the site will continue to be used informally as a soccer field. Uncontrolled movement within the wetlands on site will continue and the further degradation of these systems and the grassland on site will ensue. ➤ Should the Department of Water and Sanitation fail to authorise the water use, Mandeni Municipality will not be able to provide sport and recreational facilities to the local community members including pupils. The above-mentioned opportunities will not be realised. ➤ Although it was determined that the construction and operation of the proposed sports field development will pose a medium risk significance to the VHS wetland, the anticipated impacts are reversible. In addition, the applicant will rehabilitate the wetlands thereby improving the overall functionality and ecological integrity of the wetlands which have been modified by historic land uses and catchment hardening resulting in a positive contribution made towards the goal of "no net loss" |
| 27(1)(e) | In line with the Catchment Management Strategy. | <ul style="list-style-type: none"> ➤ Catchment Management Agencies (CMA's) are recognised in the NWA as operational institutions to actively support and implement the integrated catchment management policies and strategies at a local level. The agencies are tasked with ensuring that the nation's water resources are protected, used, developed, conserved, managed and controlled in an equitable manner. The CMA is |



| Section | Description | Motivation |
|----------|--|---|
| | | <p>responsible inter alia for: (a) developing and implementing a Catchment Management Strategy that reflects the needs and concerns of all role-players and coordinating the activities of water users and water.</p> <ul style="list-style-type: none"> ➤ The proposed sports field development is located within the Pongola- uMzimkhulu Proto Catchment Management Agency (CMA). Although the Pongola-Umzimkhulu WMA is still a (proto) CMA, the establishment of a Catchment Management Strategy has commenced, the process is undergoing stakeholder consultation. ➤ The Pongola-Umzimkhulu proto-CMS will be aligned with other national and provincial strategies, particularly the National Water Resource Strategy (NWRS). As such, the focus from the National Water Resource Strategy-2 (NWRS-2) is equitable and sustainable access and use of water by all South Africans while sustaining the water resources. The water related issues in the Provincial Growth and Development Strategy are to ensure availability and sustainable management of water and sanitation for all, enhance resilience of ecosystem services and adopt and respond to climate change. |
| 27(1)(f) | The likely effect of the water use to be authorised on the water resource and on other water users (Quantity and Quality). | <ul style="list-style-type: none"> ➤ From the risk assessment, it can be concluded that providing the proposed development will pose Moderate risk to the integrity of the wetlands within the study area, predominantly due to the infilling of the valley head seep wetland associated with the proposed main soccer field and terrace to create a flat platform for the sports field development. ➤ The above conclusions are based on the assumption that the applicant will strictly adhere to mitigation measures and wetland offset provided in all specialist reports. ➤ It should be noted that the watercourses have already been modified due to catchment hardening from the surrounding land uses, although the proposed sports field will traverse a portion of the VHS wetland, the associated benefit is that the applicant will rehabilitate the watercourses resulting in a positive contribution made towards the goal of “no net loss”. ➤ A wetland offset strategy will be implemented as part of the rehabilitation of the watercourses. The study area can be effectively rehabilitated if this plan is implemented in combination with a rigorous design, management and monitoring process. From a wetland and hydrological perspective, although the wetland will be reduced, the proposed project will result in improved PES with increased wetland seepage, species diversity and improved runoff quality and quantity, albeit reduced wetland extent. |
| 27(1)(g) | The likely effect of the water use on the class and resource quality objectives. | <ul style="list-style-type: none"> ➤ The site forms part of Quaternary Catchment V50D and is located in the Pongola – Umzimkhulu WMA. In order to meet the objectives of the resource quality, guidelines have been set, including water management and protection of wetlands. These surface water resources must be monitored during the operational phase to determine whether the proposed development has an impact on the resources. ➤ It is unlikely that the class of the watercourse and the feasibility to meet resource quality objectives will be negatively affected by the proposed additional water uses on a regional scale although some local impacts will occur but will be compensated for through the offset and rehabilitation plan. ➤ A wetland offset strategy will be implemented as part of the rehabilitation of the watercourses. The study area can be effectively rehabilitated if this plan is implemented in combination with a rigorous design, management and monitoring process and |



| Section | Description | Motivation |
|----------|---|--|
| | | will ensure a no net loss of wetland functionality. From a wetland and hydrological perspective, although the wetland will be reduced in extent, the proposed project will result in improved PES with increased wetland seepage, species diversity and improved runoff quality and quantity, in such a way as to ensure no net loss of wetland functionality. |
| 27(1)(h) | The investments already made and to be made by the water user in respect of the proposed water use. | Substantial investment has already been made by the applicant in terms of consultant fees for the Environmental Authorisation (EA), WUL application and Engineering designs. The EA and WUL processes have prompted various specialist studies to be undertaken at a significant financial cost. |
| 27(1)(i) | The strategic importance of the water use to be authorised. | The authorisation of the Water Use License will facilitate further economic development in the Padianagar area and provides the local community with employment opportunities. |
| 27(1)(j) | The quality and quantity of the water in the water resource which may be required for the reserve. | <ul style="list-style-type: none"> ➤ The site forms part of Quaternary Catchment V50D and is located in the Pongola – Umzimkhulu WMA. The ILembe District Municipality will provide bulk potable water to the proposed development via the municipality's water connection point on site. No water will be abstracted from a watercourse as part of the proposed development. ➤ The negative impact of the proposed activities on the water quality or water quantity of the watercourse will be reduced to acceptable and manageable levels should mitigation measures provided in specialist reports be strictly adhered to during all phases of the proposed development. It is anticipated that there will be a low risk to the quality and quantity of water in the water resources within 500m of the proposed development |
| 27(1)(k) | Probable duration of any undertaking for which a water use is to be authorised. | The development will be permanent. It is recommended that the licence is issued for the maximum allowed period of 20 years in terms of the National Water Act, 1998 (Act No. 36 of 1998). |

10 CONCLUSIONS AND RECOMMENDATIONS

A valley head seep (VHS) wetland was identified along the eastern portion of the study area and will be intercepted by the proposed sports field development and infilled to create a level playing surface. A channelled valley bottom (CVB) wetland was identified along the western portion of the study area and is at risk of being indirectly impacted by the proposed sports field development given its close proximity to the CVB wetland. From a watercourse conservation perspective, the potential impacts pertaining to the VHS and CVB wetlands were assessed in the risk assessment (Table 9).

Based on the findings of the wetland assessment and the results of the risk assessment, it is the opinion of the freshwater ecologist that the proposed sports field development poses a **Moderate risk to the integrity of the wetlands within the study area**, predominantly due to the infilling of the valley head seep wetland associated with the proposed main soccer field and terrace to create a level platform for the sports field development. This activity will result in habitat fragmentation and the loss of 0.089 ha of wetland habitat in the valley head seep wetland. **It is considered imperative that all mitigation measures as provided in Section 5 and wetland offset considerations provided in Section 6 of this report are strictly adhered to, to minimise the impacts associated with the proposed sports field development.**



11 WAY FORWARD

From a freshwater resource conservation perspective, all impacts possibly pertaining to the freshwater features were assessed with an appropriate level of detail in the risk assessment. Commitments to mitigatory measures recommended by the specialist in line with the mitigation hierarchy must be implemented to ensure informed decision making, and with the objective of achieving sustainable development that balances the need for economic and socio-cultural advancement while taking cognisance of environmental risks and degradation. Water Use Licence Associates (Pty) Ltd, is therefore of the opinion that this Water Use Licence should be recommended for approval by the DWS, provided that the recommended mitigation measures are implemented and made conditions of the licence.

Technical documentation was submitted as part of the Phase 1 submission of the application as per the DWS KZN requirements outlined in Appendix A. Further documentation will be submitted as part of Phase 3 following the review of the Phase 1 application by the department.



12 REFERENCES

Constitution of the Republic of South Africa, 1996 (Act 108 of 1996).

Department of Water Affairs and Forestry (DWAF) 1997. White Paper on a National Water Policy for South Africa

National Water Act, 1998 (Act No. 36 of 1998).

NFEPA: Driver, A., Nel, J.L., Snaddon, K., Murrui, K., Roux, D.J., Hill, L., Swartz, E.R., Manuel, J. and Funke, N. (2011). Implementation Manual for Freshwater Ecosystem Priority Areas. Water Research Commission. Report No. 1801/1/11. Online available: <http://bgis.sanbi.org/nfepa/project.asp>

Scientific Aquatic Services. 2021a. Freshwater Ecological Assessment as part of the Environmental Authorisation and Water Use Licence Authorisation Processes for the proposed Hlomendlini Sports Field in Mandeni, Kwazulu-Natal Province. Report Ref: SAS 202122.

Scientific Aquatic Services, 2021b. Hydropedological Opinion as part of the Water Use Authorisation Process for The Proposed Hlomendlini Sports Field And Associated Infrastructure In Mandeni, Kwazulu-Natal Province. Ref: SAS/SRK 230321

SRK Consulting, July 2020. Hlomendlini Sportsfield (Ward 4) Preliminary Design Report – 2020/2021. Report Number 559426/1

SRK Consulting, August 2021. Draft Basic Assessment Report for the proposed development of the Hlomendlini Sports Field in Mandeni, KwaZulu Natal prepared for Mandeni Local Municipality. Report Number 559426

The South African National Biodiversity Institute - Biodiversity GIS (BGIS) [online]. Retrieved 2011/12/21 URL: <http://bgis.sanbi.org>

Ollis, DJ; Snaddon, CD; Job, NM & Mbona, N. 2013. Classification System for Wetlands and other Aquatic Ecosystems in South Africa. User Manual: Inland Systems. SANBI Biodiversity Series 22. South African Biodiversity Institute, Pretoria, RSA.

13 APPENDICES

Appendix A: Checklist of the Documentation Uploaded as Part of this Application



APPENDIX A: CHECKLIST OF THE DOCUMENTATION UPLOADED AS PART OF THIS APPLICATION

| Appendix A. | Description | Uploaded as part of Phase 1 Submission (Yes/No) |
|-------------|---|--|
| Appendix 1 | Certified copy of ID of applicant and company registration certificate | Yes |
| Appendix 2 | Copy of property's title deed where water use occurs | Yes |
| Appendix 3 | Lease Agreements, if any. Also certified copy of ID of landowner (if different from applicable) | N/A – property owned by applicant |
| Appendix 4 | Copy of Property Zoning Documents where water use occurs | Yes |
| Appendix 5 | Clearance letter from the Department of Rural Development and Land Reform indicating that the property where the water uses are taking place are not under land claims | Yes |
| Appendix 6 | Proof of BBEEE Status | N/A - as not required for Government |
| Appendix 7 | Licence application forms: Fully and correctly completed: <ul style="list-style-type: none"> - Registration as a user (DW 756/DW757/DW758/DW759) - Property on which water use occurs (DW901) - Property owner form (DW902) - Water use forms - Water use supplementary forms | Water use forms submitted – the rest of the application to be submitted as part of Phase 3 |
| Appendix 8 | A copy of the 1:50 000 topographic map / 1:100 000 indicating map name number of farm boundaries including subdivision | Yes – please refer to Figure 2 |
| Appendix 9 | Master Layout Plan: must clearly indicate the delineated sensitive areas, including 1:100 year floodline, riparian areas, buffer areas, and flow direction in relation to the proposed development, contours, property demarcation for properties on which water uses occur and the proposed water uses. The water uses as labelled in the map must be consistent with the WULA report and Specialist Report. | Yes – please refer to Figure 10 |
| Appendix 10 | Alternatives: Report and map showing alternative to include avoidance of the wetland/sensitive areas/1:100 year floodline | Yes – please refer to Section 4.1 |
| Appendix 11 | EIA (or letter from Environmental Affairs indicating that no EIA required). Draft to be submitted in WULA, final EIA when complete | No - to be submitted as part of Phase 3 of the application |
| Appendix 12 | RoD | N/A |
| Appendix 13 | EMP | No - to be submitted as part of Phase 3 of the application |
| Appendix 14 | Wetland Studies: Wetland Delineation, Functional Assessment (must tabulate PES & EIS), Wetland Management and Rehabilitation Plan, Offset as per SANBI Guidelines (if any). Must include detailed impacts and mitigation measures. Wetland studies to include wet and dry seasons, and nocturnal surveys. Studies must include all wetlands within a 500m radius of the proposed activity including discharge points. Wetland studies to be conducted by qualified wetland specialist only. Risk matrix to be compiled by SACNASP accredited specialist together with SACNASP no. | Yes |
| Appendix 15 | Geotechnical Studies | No - to be submitted as part of Phase 3 of the application |
| Appendix 16 | Aquatic Assessment – must tabulate PES & EIS. Assessment to include wet and dry seasons and nocturnal surveys | N/A |
| Appendix 17 | Geohydrological Studies, including hydrocensus of a 5km radius and including AMD study. | N/A |



| Appendix A. | Description | Uploaded as part of Phase 1 Submission (Yes/No) |
|-------------|---|--|
| Appendix 18 | Hydrological Studies (by a qualified Hydrologist). Non-exhaustive requirements. Understanding of the FULL hydrological cycle of the catchment, upstream and downstream users, impact of the proposed activity on the cycle. Cycle will include surface water, groundwater, wetland etc. | N/A |
| Appendix 19 | Water Balance | N/A |
| Appendix 20 | Method Statement | Yes – please refer to Section 3 |
| Appendix 21 | Stormwater Management Plan | No – to be submitted as part of Phase 3 of the application |
| Appendix 22 | Civil Design | No – to be submitted as part of Phase 3 of the application |
| Appendix 23 | Monitoring Programme for surface and groundwater, and Biomonitoring | No – to be uploaded as part of Phase 3 |
| Appendix 24 | Contingency Plans | N/A |
| Appendix 25 | Public Participation | No - to be submitted as part of Phase 3 of the application |
| Appendix 26 | Financial Provision | N/A |
| Appendix 27 | Mining Permit, Prospecting Right, Signed Social and Labour Plan | N/A |
| Appendix 28 | Exception from GN 704 | N/A |
| Appendix 29 | Hydropedological Studies | Yes |



Administrative Documents


 Additional Information required : Registration Fee Receipt Number

| Legend: ■ Outstanding ■ Optional ■ Uploaded | | | | | | |
|---|--|--|--|---|-------------------------------|---------------------------------------|
| # | Upload | Document | Description | Loaded By On | View | Remove |
| 1 | <input type="button" value="Upload More"/> | Certified ID copy of the applicant | ID of Applicant Representative | Stephen van Staden 8/13/2021 4:47:01 PM | View Document | <input type="button" value="Remove"/> |
| 2 | <input type="button" value="Upload More"/> | Proof of Payment Application Fee | WU20661 Proof of Payment | Stephen van Staden 9/3/2021 10:23:33 AM | View Document | <input type="button" value="Remove"/> |
| 16 | <input type="button" value="Upload Now"/> | OPTIONAL - Copy of Registration Form (Property, Part 1, Part 2, Supplementary Forms) | | | | |
| 3 | <input type="button" value="Upload Now"/> | OPTIONAL - Certified Passport copy of the applicant | | | | |
| 4 | <input type="button" value="Upload Now"/> | OPTIONAL - Company Registration certificate | | | | |
| 15 | <input type="button" value="Upload More"/> | T3717/2013 - Copy of the Title deed/Servitude Agreements/PTO/Lease Agreement/Community resolution/Letter of consent of the affected properties | Portion 0 Erf 1118 Padianagar Township FU Windeed Report | Stephen van Staden 9/2/2021 4:27:52 PM | View Document | <input type="button" value="Remove"/> |
| 5 | <input type="button" value="Upload More"/> | Motivational Report to address sec 27 and proof that proposed water use will redress the result of past racial and gender discrimination /BBBEE status | Section 27 Motivation Report | Stephen van Staden 10/25/2021 4:33:00 PM | View Document | <input type="button" value="Remove"/> |
| 6 | <input type="button" value="Upload More"/> | Other Document | Hydropedology Opinion | Stephen van Staden 9/2/2021 4:34:28 PM | View Document | <input type="button" value="Remove"/> |
| 7 | <input type="button" value="Upload More"/> | Other Document | Freshwater Assessment Report | Stephen van Staden 9/2/2021 4:31:52 PM | View Document | <input type="button" value="Remove"/> |
| 8 | <input type="button" value="Upload More"/> | Other Document | Water Use Table (word version) | Stephen van Staden 10/25/2021 4:36:31 PM | View Document | <input type="button" value="Remove"/> |
| 9 | <input type="button" value="Upload More"/> | Other Document | DWS Risk Matrix | Stephen van Staden 9/3/2021 9:18:32 AM | View Document | <input type="button" value="Remove"/> |
| 10 | <input type="button" value="Upload More"/> | Other Document | Zoning Certificate | Stephen van Staden 9/2/2021 4:30:25 PM | View Document | <input type="button" value="Remove"/> |
| 11 | <input type="button" value="Upload More"/> | Other Document | Land Claim Clearance Certificate | Stephen van Staden 9/2/2021 4:31:01 PM | View Document | <input type="button" value="Remove"/> |
| 12 | <input type="button" value="Upload More"/> | Other Document | Project Brief and Section 27 Motivation Report | Stephen van Staden 10/25/2021 4:33:42 PM | View Document | <input type="button" value="Remove"/> |
| 13 | <input type="button" value="Upload More"/> | Consultant Appointment Letter | Consultant Appointment Letter | Stephen van Staden 8/13/2021 4:47:37 PM | View Document | <input type="button" value="Remove"/> |
| 1 2 | | | | | | |

Administrative Documents


 Additional Information required : Registration Fee Receipt Number

| Legend: ■ Outstanding ■ Optional ■ Uploaded | | | | | | |
|---|--|------------|-------------|--|-------------------------------|---------------------------------------|
| # | Upload | Document | Description | Loaded By On | View | Remove |
| 14 | <input type="button" value="Upload More"/> | Title Deed | Title Deed | Stephen van Staden 8/13/2021 4:48:18 PM | View Document | <input type="button" value="Remove"/> |
| 1 2 | | | | | | |

