APPENDIX 8: WETLAND ASSESSMENT REPORT

Report – A Wetland Delineation and Assessment on Erf 61 Lincoln Meade (55 Grimthorpe Avenue), Pietermaritzburg, South Africa

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wetland science

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Indemnity

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1. Summary

This report responds to the request for wetland specialist studies (present ecological state, functionality and delineation) for a proposed housing development to be built on Erf 61, Lincoln Meade, Pietermaritzburg, South Africa. It is proposed that development will consist of approximately 24 houses plus ancillary infrastructure. The area of the property was estimated, from available mapping, to be 2.1 hectares.

Approximately one hectare of wetland habitat was delineated on the property (see Figure 1). **The wetland is largely modified with an integrated present ecological state class of a D.** This implies that large change in ecosystem process and loss of biota has occurred. The hydrology component is largely modified (PES class of D), the geomorphology component of the wetland is moderately modified (PES class C) while the wetland vegetation is seriously modified with a PES of E. The impacts on the wetland hydrology and geomorphology relate to increased water delivery and storm flows due to the effects of urbanisation while the impacts on the wetland vegetation relate to physical disturbance at the site and alien invasive species encroachment within the wetland. Based on the observed threats and actives drivers of degradation it is predicted that the wetland PES will deteriorate significantly over the next five years (i.e. its trajectory of change).

Due to its location within an urban area and the disturbance to its vegetation, the wetland was found to be unimportant from a biodiversity support perspective. The wetland is not used directly in any way by humans. The wetland delivers water quality enhancement services at a moderate level however the wetland is very small in size making its contribution at a landscape scale relatively insignificant. **The wetland has an assessed Ecological Importance and Sensitivity (EIS) score of 0.5 or low (on a 0-4 scale) indicating the wetland is unimportant from a ecological, human use and hydrological perspective and is unlikely to be sensitive to changes to its hydrological regime and water quality**. **The Recommended Ecological State (REC) is a D**.

The risk assessment (see accompanying documentation) showed that the development would have a low impact on the wetland and as such the development would qualify for authorization under the section 21 (c) and (i) GA.

Mitigation measures

The following measures are recommended to reduce the impact of the development on the wetland.

1. The wetland is in very poor condition partly because of the abundance alien invasive plants within it. It is strongly recommended that the wetland is cleared of all alien vegetation and an appropriate herbaceous (grass and or sedge) indigenous plant community established in its place. This can be undertaken concurrently with the construction of the development or post construction of the development. **A plan to rehabilitate the wetland should a condition of authorisation.**
2. In general, a key measure that can be taken to protect wetlands within the context of urban development is the implementation of a buffer. **In the case of this development it is suggested that a buffer of at least grassed five meters is employed during the operational phase and a five meter grassed buffer plus a sediment fence be employed during the construction phase**. The use of a buffer is especially important if the rehabilitation of the wetland is done concurrently to the construction of the development. In addition to the above the wetland rehabilitation plan must consider sediment management as the wetland may be denuded of much vegetation during its rehabilitation. It should be noted that it is acceptable to have the grassed swales and attenuation ponds within the buffer.
3. The management of stormwater, particularly its attenuation, is an important part of managing wetlands in urbanised landscapes. T**he stormwater management plan for the development provides for suitable attenuation and water quality management and as such should be considered an important mitigation measure**

Figure 1 Delineated wetland habitat on Erf 61 Lincoln Meade showing the location of the development.

2. Limitation, assumptions and uncertainties

- The wetland boundary must be identified and classified along a transitional gradient from saturated through to terrestrial soils which makes it difficult to identify the exact boundary of the wetland. The presence of dense alien plants patches made access to all parts of the site difficult and the history of soil and vegetation disturbance at the site further complicated the process. The boundaries mapped in this specialist report therefore represent the approximate boundary of these wetlands as evaluated by an assessor familiar and well-practiced in the delineation technique.
- It should be noted that while WET-Health (Macfarlane, et al., 2009) is the most appropriate technique currently available to undertake assessments of wetland condition/integrity, it is nonetheless a rapid assessment tool that relies on qualitative information and expert judgment.

3. Background

This report responds to the request for wetland specialist studies (present ecological state, functionality and delineation) for a proposed housing development to be built on Erf 61, Lincoln Meade, Pietermaritzburg, South Africa. The area of the property was estimated to be 2.1 hectares. It is proposed that development will consist of 24 houses plus ancillary infrastructure such as access roads and a stormwater system that has built into it, appropriate attenuation functionality as required by the Msunduzi Local Municipality.

4. Scope of Work

The wetland assessment aims to assess the impacts of the activities on a watercourse located on or near the development. The scope of work included the following:

- All wetland and/or riparian habitat on the property were delineated using the DWAF (2005) field procedure.
- Identify all wetlands within 500m of the development that could reasonably be expected to be impacted by the development.
- The mapped wetland habitat were typed and placed into a biodiversity conservation value context using appropriate biodiversity conservation databases.
- The WET-EcoServices assessment framework (Kotze, et al., 2009) was used to assess the ecosystem goods and services of the wetlands identified through the delineation process.

- The WET-Health assessment technique (Macfarlane, et al., 2009) was used to assess the present ecological state of the wetland. A level 2 with detailed field verification and desktop mapping using Geographical Information System (GIS) was employed.

5. Site location

The proposed housing development is to be built on Erf 61, Lincoln Meade, Pietermaritzburg, South Africa. It is planned that development will consist of approximately 24 houses plus ancillary infrastructure. The area of the property was estimated to be 2.1 hectares. The location of the property is shown in Figure 2.

Figure 2 The Grimthorpe Avenue site.

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6. Biophysical context

Table 1 Summary of the biophysical and geographical attributes of the assessed wetland

General Description		
General description	**Wetland name**	**Grimthorpe Avenue Wetland**
	Wetland complex size	~1.0 hectares
	Wetland catchment size	~30 hectares although the urban storm water systems in the catchment may have reduced or increased the effective size of the catchment.
	Location	55 Grimthrope Avenue, Lincoln Meade, Pietermaritzburg, South Africa
	GPS coordinates	29° 37.134'S 30° 26.047'E
	Land-cover within wetland	Secondary natural invaded by alien plants (historically disturbed)
	Surrounding land use	Urban - medium density
	Climate	The mean annual precipitation is ~713mm; potential evapotranspiration is ~1674mm with a simulated mean annual run-off of 94.6mm. Rainfall is mostly in summer which is warm to hot. Winters are cold and dry with frost (Gush *et al*, 2002 and Mucina and Rutherford, 2011).
	MAP/PET (aridity index (Middleton & Thomas, 1992) **)**	0.51 (Dry humid)
	Simulated annual run-off	77.9mm
	Geology (South Africa Council of Geosciences, 2011)	Siltstones and mudstones of the Pietermaritzburg Formation, Ecca Group of the Karoo Super Group.
	Quaternary catchment	U20J
	River system	Unnamed stream → uMsunduzi River → uMgeni River
National Classification and status	**HGM classification** (Kotze, et al., 2009)	Seepage wetland linked to a stream.
	Hydrological regime (Ollis, et al., 2013)	Seasonally inundated → seasonally saturated
	Vegetation type (Ollis, et al., 2013)	Herbaceous emergent → Grasses
	Terrestrial vegetation type (Mucina & Rutherford, 2010)	KwaZulu Natal Hinterland Thornveld (Svs 3)
	Conservation Status (Mucina & Rutherford, 2010)	Least threatened
	Wetland Vegetation Group (Nel, et al.,	Sub-Escarpment Savanna Group

	2011)	
	Wetland Vegetation Group Ecosystem threat and protection status	Endangered and Not protected
	NFEPA classification (Ollis, et al., 2013)	Sub-escarpment Savanna → Savanna Biome→ slope → Seep → seasonally inundated/seasonally saturated
	FEPA features	None
	FEPA Unit ID	4482
Provincial status	**Terrestrial and wetland vegetation** (Scott-Shaw & Escott, 2011)	KwaZulu Natal Hinterland Thornveld (least threatened) and Alluvial Wetland : Temperate alluvial vegetation
	Systematic Freshwater Conservation plan (EKZNW, 2007)	Earmarked

7. Assessment approach and methods

Delineation technique

All wetlands within 500 meters of the operational area were delineated using combination of desktop and the DWAF (2005) field delineation procedures. **Wetlands within 500m that could reasonably be expected not to be impacted by the operations at the site were excluded from further assessment and reasons given for their exclusion**. A Munsell Colour book (Munsell Soil Color 2009) was used when describing the soils. In addition to the above, historical topographical maps and aerial photography were sourced and inspected to ascertain the historic extent and configuration of wetlands at the site.

Health and functional assessments

The WET-Health (Macfarlane et al. 2009) framework and assessment method was used to assess the PES of wetland habitats that could reasonably be expected to be impacted by the proposed activities . The PES assessment was conducted at a level 1 resolution of evaluation with extensive field verification. The WET-EcoServices (Kotze et al. 2008) framework was used to assess the ecosystem services delivered by the same wetlands. Any wetlands that have formed as a consequence of human activities are regarded as “artifical” (Department of Water and Sanitation 2015). Should the conditions that have created the wetlands be permanent or semi permananet then the wetland is considered by DWS to be a ‘sustainable artifical wetland”.

Ecological importance and sensitivity assessment (EIS) and Recomened Ecological Class (REC)

The EIS of the wetland habitats were ascertained using the method of Rountree et al. (2012). The Recommended Ecological Condition (REC) was established using the procedure described by (Rountree et al. 2012).

Risk assessment

The risk assessment followed the approach prescribed by the General Notice 509 of 2016 (Republic of South Africa 2016) for water uses as defined in Section 21(c) and (i). The risk assessment was informed by the findings of the PES and EIS assessments. As mention above, wetlands that could not possibly be impacted despite being within 500m of the proposed activities were excluded from any assessment. The impacts were used to populate the DWS risk matrix were identified and described through examination of literature (local and global) and though first-hand experience of similar types of developments (urban, commercial retail and light industrial developments).

8. Findings of the field assessment

Wetland identification and delineation

This section describes the findings of the wetland identification and delineation process undertaken at the site. Inspection of the topography and landscape setting within the proposed development indicated that any water and entrained sediment and solutes produced by the development (during it's development and operational phases) would move down slope into the unnamed stream (see S1 in Figure 3) that flows along the northern boundary of the property. Upon entering the stream the water would move eastwards towards the uMsunduzi River and as such could not present a threat to any wetland within 500m of the site. The study site is bounded on all four sides by property boundaries which will ensure that the physical disturbance associated with the development or operational phases of the development is limited to the property itself.

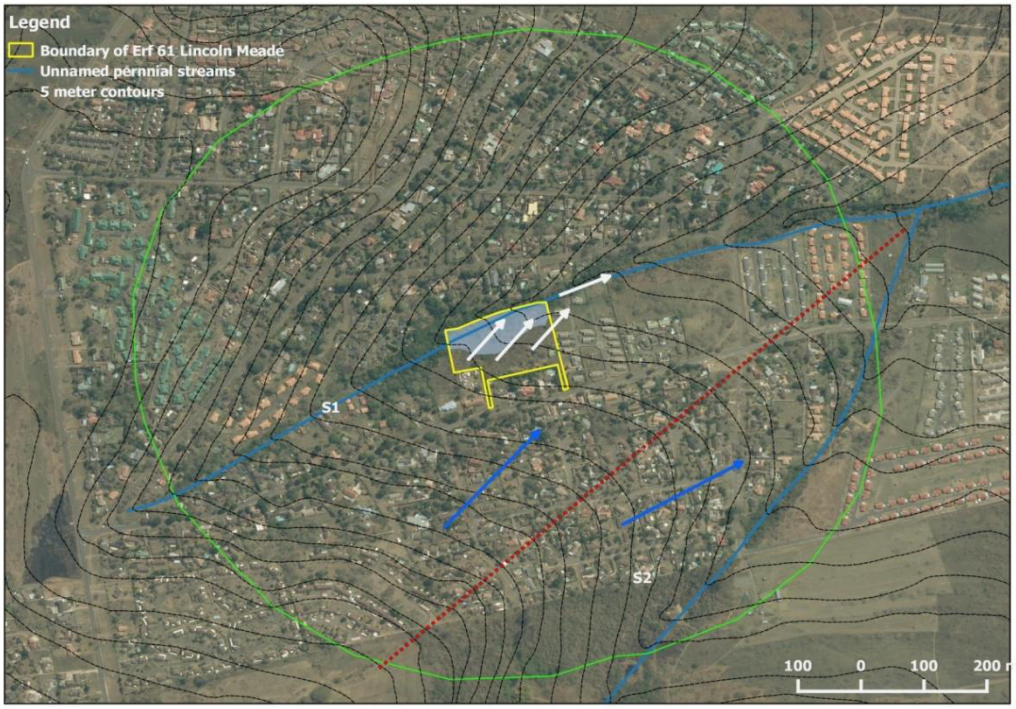


Figure 3 The 500m DWS regulated zone relative to watercourses (red dotted line indicates approximate catchment boundary.

Table 2 shows the soil and vegetation typical of the study site that was used for delineation. Figure 4 shows the boundary of the wetland habitat delineated at the study site. The delineation at the site was made difficult and complex by the patches of thick alien vegetation that limited access and a history of disturbance (soil and vegetation) at the site.

Many of the samples taken at the site had plinthite, either hard or soft as a diagnostic horizon within 500mm of the surface. Plinthite, unless relic, suggests a fluctuating water table and alternating soil oxidation and reduction process in the soil of long enough duration to create plinthite/redoximorphic features. (Fey, et al., 2010). The site is characterised by yellow brown soils over hard/soft (but well developed) plinithe higher up on the slope with the soils becoming

progressively greyer and more clayey in a down slope direction. There is a large band of soils (see marginal samples in Figure 2) that are difficult to classify as either wetland or terrestrial based upon their colour that falls between the value and chroma thresholds specified by DWA (2005) for wetlands. The vegetation, although disturbed, does follow a similar pattern of indicating increasing soil wetness in a down slope direction. In the drier area facultative and facultative dryland species dominate while in the wetter areas there is a dominance of obligate wetland species with some facultative wetland species (see Table 2). The wetland boundary and marginal zone (Table 2) are characterised by increasing facultative wetland species and decreasing facultative species with very few facultative species. Small patches of non wetland habitat were found within the matrix of wetland habitat, these were included into the delineated wetland habitat.

Table 2 A summary of the soil and vegetation characteristics used to delineate wetland at the study site.

Soils characteristics (Munsell colours)		**Vegetation characteristics**	**Terrain indicator**	**Interpretation**
0-150mm	**150-500mm**			
10Yr/3/3	5YR/4/4 grading into hard plinthite at about 450mm	*Panicum maximum, Sporobolus pryramidalis, Erogrostis curvula, Solanum mauritianum.*	No	No-wetland
 				
10YR/2/2	10YR3/3 grading into soft plinthite at about 450mm	Many *Cymbopogan validus, Digitaria eriantha, few Panicum maxima, Tagetes minuta, Lanatana sp., Melia azedarach*	No	Marginal/Temporary
  				
10YR/4/1/ few low contrast mottles	10YR/4/1 many mottles grading into sift plinthite at 500mm	Mostly *Imperata cylindrica with few Sorghum bicolour Cymbopogan validus, Digitaria eriantha, Lanatana sp and Asclepias sp. Schinus terebinthfolius*	Yes	Wetland
  				

10Yr/5/1 few low chroma mottles	10YR/5/1 many high chroma mottles grading into soft plintite at about 450mm	*Many Paspalum urvillei, Imerata cylindrica and Sesbania punicea with few Digitaria eriantha.*	Yes	Wetland
  				
10YR/4/1/	10YR/5/1 many low chroma mottles	Many *Leersia hexandra, Typha capensis, Sesbania punicea* with few Paspalum *urvillei, Commelina sp* and *Schinus terebinthfolius*	Yes	Wetland
  				

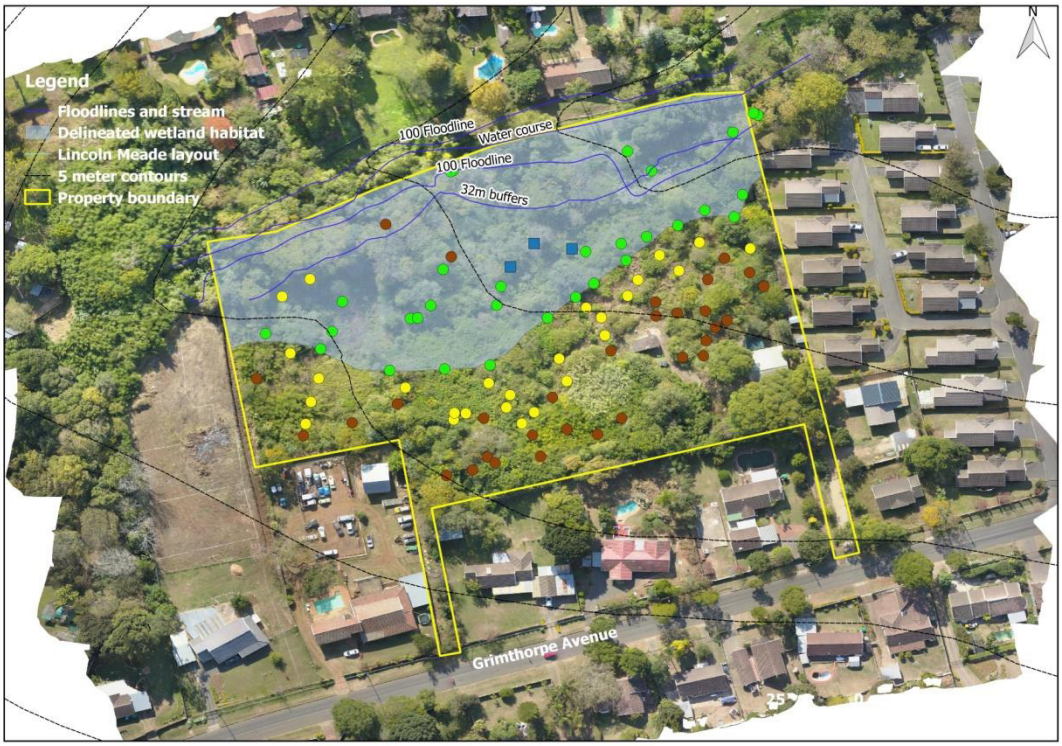


Figure 4 The boundary of the delineated wetland habitat and the sample points used to establish the boundary.

9. Health and functional assessment of wetland habitats

The present ecological state of the wetland

Table 3 presents the finding of the WET-Health present ecological state assessment and supporting data.

Seepage Wetland

Table 3 The results of the WET-Health assessment and supporting data

Wetland A (Figure 2)	
Location	29° 37.134'S 30° 26.047'E
HGM type	Seepage wetland leading into a stream
Size	1.1 hectares
Vegetation characteristics	Emergent herbaceous →Grass/sedge/rushes with many alien plants both woody and herbaceous.
Land-cover within wetland	Natural invaded by alien plants (historically disturbed)
Hydroperiod	Seasonally inundated/permanently saturated (seasonal)
Catchment size	~30 hectares although the urban storm water systems in the catchment may have reduced or increased the effective size of the catchment.
Catchment land use	Urban – medium density housing

A. Vegetation typical of the drier portions of the wetland. Note the variety of alien plants *Morus alba, Lantanna camara, Ligustrum sp*	B. A patch of largely natural wetland vegetation (*Imperata cylindrica*) with many alien invasive trees and shrubs (*Schinus terebinthifolius and Solanum mauritianum*).	C. The vegetation typical of the wettest part of the wetland not the abundance of alien species in particular *Canna indica*, *Sesbania punicea* and *Melia azedarach*.

Wetland Present Ecological State

	Score	Class	Drivers of degradation
Hydrology	4.0	**D (↓↓)**	The wetland catchment hydrology is largely altered due to changes in flood peaks and water input volumes associated with the impact of urbanisation – catchment hardening is estimated to be 50%. The wetland internal hydrology (water distribution and retention) is moderately modified due to some in-filling, a few small storm water canals and increased water use due to the presence of woody alien plant species.
Geomorphology	3.0	**C (→)**	A key driver of the wetland geomorphology, stormflows, has been altered in the manner described above in the hydrology section.
Vegetation	7.0	**E (↓)**	The wetland vegetation has been great modified. The wetland is inhabited (>55% cover) a wide variety of alien plants species e.g. *Paspalum urvillei*, *Canna indica*, *Sesbania punicea, Melia azedarach, Solanum mauritianum Morus alba, Lantanna camara Schinus terebinthifolius and Ligustrum sp.* The indigenous vegetation present in the wetland atypical of undisturbed wetlands of this vegetation type and is typically generalist and disturbance tolerant in nature. Inspection of GoogleEarth and historical air photo imagery suggest a history of repeated disturbance of the vegetation on the site.

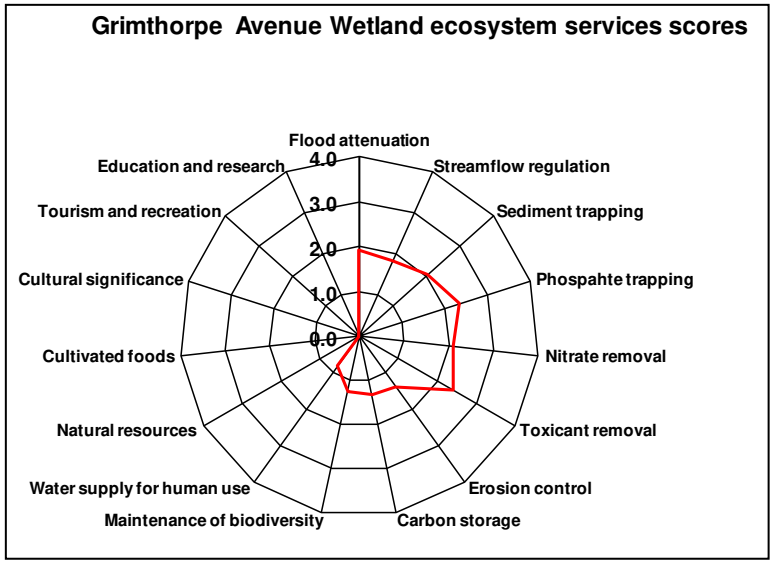
Integrated PES	**4.6 (D ↓↓) Largely modified. A large change in ecosystem in ecosystem process and loss of habitat has occurred.**
	Note: The integrated score is as follows – (Hydrology x 3 + Geomorphology x 2 + vegetation x 2) / 7

Table 4. Health categories used by WET-Health for describing wetland ecological integrity or PES

HEALTH CATEGORY	DESCRIPTION	RANGE
A	Unmodified, natural.	0 – 0.9
B	Largely natural with few modifications. A slight change in ecosystem processes is discernible and a small loss of natural habitats and biota may have taken place.	1 – 1.9
C	Moderately modified. A moderate change in ecosystem processes and loss of natural habitats has taken place but the natural habitat remains predominantly intact	2 – 3.9
D	Largely modified. A large change in ecosystem processes and loss of natural habitat and biota and has occurred.	4 – 5.9
E	The change in ecosystem processes and loss of natural habitat and biota is great but some remaining natural habitat features are still recognizable.	6 – 7.9
F	Modifications have reached a critical level and the ecosystem processes have been modified completely with an almost complete loss of natural habitat and biota.	8 – 10

The ecosystem services provided by the wetland

The Grimthorpe Avenue Wetland provides (within the limits of its size) a moderate level of water quality enhancement services (sediment and phosphate trapping, nitrate and toxicant removal). The wetland provides very little direct benefits to people largely because it is on unoccupied private property. As the wetland vegetation is in such poor condition and the system is essentially isolated from other ecosystems that are in good condition it is unlikely the wetland is plays any meaningful role in biodiversity maintenance and support.



Note: 0 = Low; 1= moderately low; 2 = moderate, 3 = moderately high and 4 = high

The Ecological Importance and Sensitivity and Recommended Ecological Class of the wetland

Table 5 The Ecological and Social Importance and Sensitivity of the Wetland on the property.

Ecological and Social Importance and Sensitive			
Component	**Score (1-4)**	**Confidence (1-4)**	**Rationale for the score**
Ecological Importance & Sensitivity	0.3	3	The wetland is relatively small, historically disturbed and is dominated alien invasive vegetation. It is unlikely to be important from a biodiversity maintenance perspective.
Hydrological/Functional Importance	0.5	3	Being a receiver of stormwater , the wetland could be somewhat important for water quality enhancement; however its small size relative to the discharge throughput makes it unlikely that is important
Importance of Direct Human Benefits	0.0	3	The wetland is not used in anyway by humans.
Overall EIS score	0.5		The wetland is not ecological important or sensitive at any scale and plays an insignificant role in moderating the quantity or quality of water in any major river.
IS Class	Low/marginal importance		
REC	**D**		

The potential impacts of the development on the wetland (risk assessment)

General impacts of urban developments on wetlands

Urbanisation has several well recognised direct and indirect impacts on wetlands that relate to their hydrology, geomorphology and ecology (Ehrenfeld, 2000). Urbanisation can increase both flood peaks and the total amount of water that reaches the wetlands and streams in a catchment (Warburton, et al., 2012 and Davie, 2008). Increased stormflows can cause geomorphic readjust and incision (erosion) in fluvial systems such as streams and wetlands (Charlton, 2010 and Booth, 1990). Urbanisation tends to lead to a decrease in water quality in receiving ecosystems (Malan & Day, 2012, Nyenje, et al., 2010 and Wimberely & Coleman, 1993). Changes in water quality and a wetlands hydrological regime all can lead to changes in wetland functioning and structure (Mitsch & Gosselink, 2015 and Faulkner, 2004). Other drivers of degradation relate to the direct loss of habitat (Owen, 1999) and the loss of indigenous species and an increase in alien plant and animals species (McKinney, 2008).

The specific potential impacts of the development on the wetland at the site.

The location of the wetland relative to the proposed development is illustrated in Figure 5. The development is located in close proximity to the boundary of the wetland (~7m). The stormwater management plan deploys a combination of rainwater harvesting form roofs and the use of a routing system that dispersed overland flows into a system of grassed swales and attenuation ponds (Figure 5) to attenuate stormwater (Unsunguli Project management, 2018). The attenuation ponds have sediment trap functionality. A portion of the each of the two stormwater attenuation ponds impinges on the boundary of the wetland covering a very small area of approximately 40m^2 (Figure 5). The attenuation pond functionality includes the ability to trap sediment and gross litter and as such play a role in water quality enhancement.

Figure 5 The location wetland at the site in relation to the positioning of the proposed development.

Risk assessment outcome

The risk assessment (see accompanying documentation) showed that, in general, the development would have a low impact on the wetland and as such the development would qualify for authorization under the section 21 (c) and (i) GA.

10. Conclusion

Approximately one hectare of wetland habitat was delineated on the property (see the Figure below). The wetland is largely modified with an integrated present ecological state class of a D. This implies the wetland is largely modified and a large change in ecosystem process and loss of biota has occurred. The hydrology component is largely modified (PES class of D), the geomorphology component of the wetland is moderately modified (PES class C) while the wetland vegetation is seriously modified with a PES of E. The impacts on the wetland hydrology and geomorphology relate to increased water delivery and storm flows due to the effects of urbanisation while the impacts on the wetland vegetation relate to physical disturbance at the site and alien invasive species encroachment within the wetland. Based on the observed threats and actives drivers of degradation it is predicted that the wetland PES will deteriorate significantly over the next five years (i.e. its trajectory of change).

Due to its location within an urban area and the disturbance to its vegetation, the wetland was found to be unimportant from a biodiversity support perspective. The wetland is not used directly in any way by humans. The wetland delivers water quality enhancement services at a moderate level however the wetland is very small in size making its contribution at a landscape scale relatively insignificant. The wetland has an assessed Ecological Importance and Sensitivity (EIS) score of 0.5 (on a 0-4 scale) indicating the wetland is unimportant from a ecological, human use and hydrological perspective and is unlikely to be sensitive to changes to its hydrological regime and water quality. The Recommended Ecological State (REC) is a D. The risk assessment (see accompanying documentation) showed that, in general, the development would have a low impact on the wetland and as such the development would qualify for authorization under the section 21 (c) and (i) GA.

Mitigation measures

The following measures are recommended to reduce the impact of the development on the wetland.

1. The wetland is in very poor condition partly because of the abundance alien invasive plants within it. It is strongly recommended that the wetland is cleared of all alien vegetation and an appropriate herbaceous (grass and or sedge) indigenous plant community established in its place. This can be implemented concurrently with the construction of the development or post construction of the development. A plan to rehabilitate the wetland should a condition of authorisation.
2. In general, a key measure that can be taken to protect wetlands within the context of urban development is the implementation of a buffer. In the case of this development it is suggested that a buffer of at least grassed five meters is employed during the operational phase and a five meter grassed buffer plus a sediment fence be employed during the construction phase. The use of a buffer is especially important if the rehabilitation of the wetland is done concurrently to the construction of the development. In addition to the above the wetland rehabilitation plan must consider sediment management as the wetland may be denuded of much vegetation during its rehabilitation.
3. The management of stormwater, particularly its attenuation, is an important part of managing wetlands in urbanised landscapes. The stormwater management plan for the development provides for suitable attenuation and water quality management and as such should be considered an important and mitigation measure

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PROVINCE OF KWAZULU-NATAL

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DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

Submitted in terms of section 24(2) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) or for a waste management licence in terms of section 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008).

KINDLY NOTE:

1. This form is current as of **October 2019**. It is the responsibility of the Applicant / Environmental Assessment Practitioner ("EAP") to ascertain whether subsequent versions of the form have been released by the Department.

PROJECT TITLE

Erf 61 Lincoln Meade

DISTRICT MUNICIPALITY

Umgungundlovu District Municipality

1. SPECIALIST INFORMATION

Specialist name:	Dr. Damian Walters		
Contact person:			
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Professional affiliation(s) (if any)	SACNASP and SAWS		

Project Consultant / EAP:	Terratest (Pty) Ltd		
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E-mail:	patakr@terratest.co.za		

2. DECLARATION BY THE SPECIALIST

I, **Damian Walters** are that --

General declaration:

- I act as the independent specialist in this application;
- do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I am aware that a person is guilty of an offence in terms of Regulation 48 (1) of the EIA Regulations, 2014, if that person provides incorrect or misleading information. A person who is convicted of an offence in terms of sub-regulation 48(1) (a)-(e) is liable to the penalties as contemplated in section 49B(1) of the National Environmental Management Act, 1998 (Act 107 of 1998).

Damian Walters

Signature of the specialist:

Name of company:

Ikhwane Wetlands Science

Date: 2019-11-19