

Addendum to

***Freshwater Assessment Report for the Haasendal Mixed Use Development
and Associated Infrastructure on Erven 23582 – 23584 and 23579 and 23580,
in Kuilsriver***

December 2019

1. INTRODUCTION AND BACKGROUND

The Haasendal Mixed Use Development comprises of a proposed mixed residential and commercial development on Erven 23582 – 23584 and 23579 and 23580, on the north-eastern outskirts of Kuilsrivier, a suburb in the City of Cape Town. The suburb of Brackenfell lies to the north of the site. The Bottelary Hills lie to the east and south east of the site.

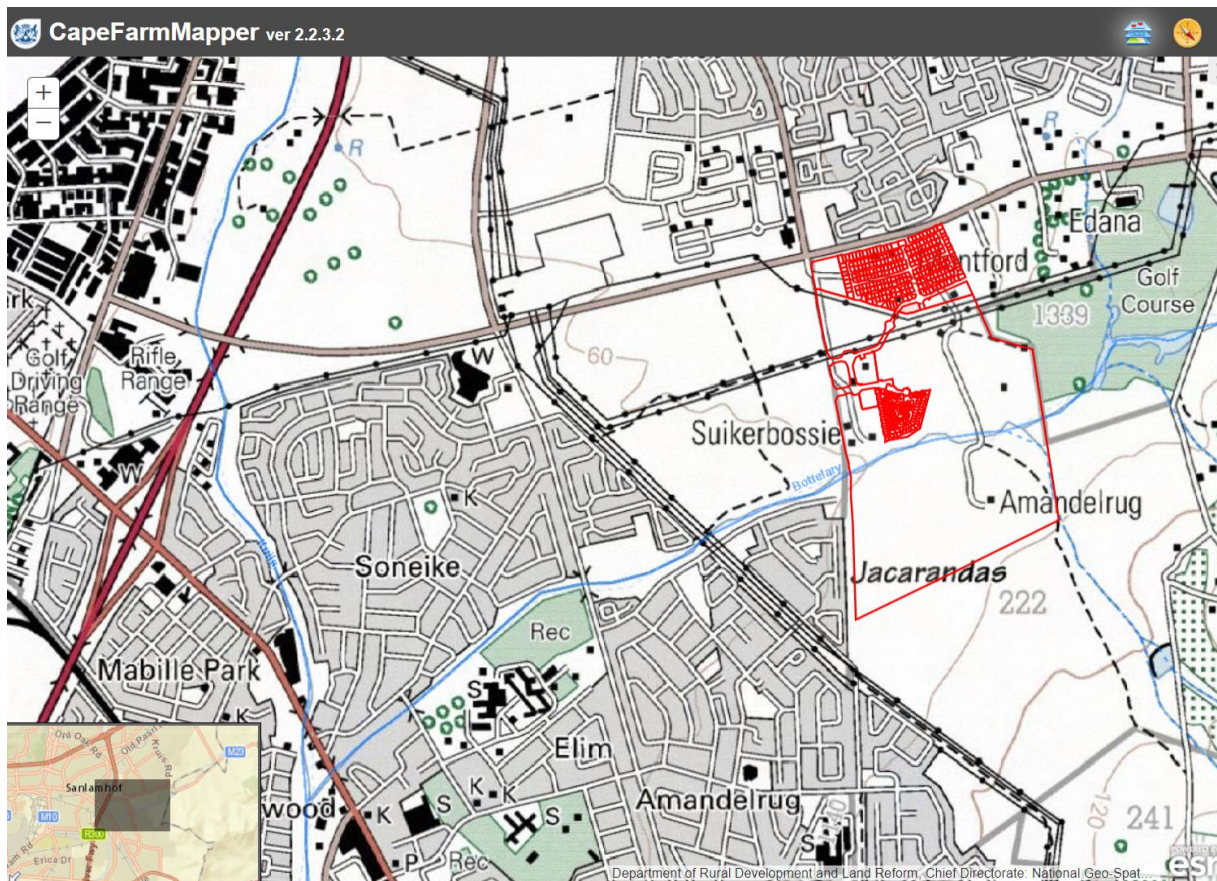


Figure 1. Topographical and Locality map of the study site and the surrounding area (CapeFarmMapper, 2019)

An initial freshwater assessment for the site was conducted in February 2008 (Belcher, 2008). Subsequently, a non-substantive amendment to the original authorised activities was applied for from the Department of Environmental Affairs and Development Planning and a follow-on freshwater report that provided an update of the original assessment, taking the current proposed development plan and the latest freshwater information into account, was completed in May 2017.

An additional addendum report was then compiled in September 2018 to provide the risk assessment for the associated water use activities for the project.

This addendum report is specifically intended to provide a freshwater impact assessment for the final proposed development of the site.

2. SUMMARY OF FINDINGS AND RECOMMENDATIONS FROM FRESHWATER ASSESSMENT REPORT

The findings and recommendations of the freshwater assessment for the project as summarised as follows:

“The Bottelary River flows across the site proposed for the Haasendal Development from east to west. There are five unnamed tributaries which confluence with the Bottelary River on the site. A few wetland areas are also wetland areas associated with the Bottelary River and its tributaries.

*The features on the site have been modified by upstream activities such as treated wastewater and stormwater discharges, canalization and piping. On the site, surrounding land use has resulted in much of the indigenous riparian vegetation being removed from the river and streams. The riparian zones have been invaded by *P. clandestinum* and *A. saligna*. The instream habitat of the Bottelary River is considered to be moderately modified while the riparian habitat is largely to seriously modified. The instream habitat of the tributaries is considered to be moderately to largely modified and the riparian habitat is considered to be seriously modified. The wetlands on the site are considered largely modified.*

In terms of the importance and sensitivity of the features, the numerous impacts have greatly reduced their species richness and diversity. The Bottelary River is of moderate ecological importance and sensitivity and its tributaries on the site are considered to be of moderate to low ecological sensitivity and importance. The wetlands offer certain ecosystem services to a moderate extent and are considered to be of moderate ecological importance and sensitivity.

In order to maintain what remains of the ecological functioning of the systems on the site it is recommended that a buffer be instated around the Bottelary River and its tributaries. It is recommended that a 30m buffer from river centre be instated around the Bottelary River. Where wetland areas fall outside of this buffer zone, it is recommended that the buffer be extended to ensure the wetlands are protected. A buffer zone of 10-15m from stream centre is also recommended for the larger unnamed tributaries.

The proposed stormwater management plan has taken into consideration the proposed freshwater constraints and is supported from an aquatic ecosystem point of view as the potential impacts of stormwater runoff from the developed areas will be adequately mitigated and are likely to have a very limited impact on the Bottelary River.”

The risk of the proposed activities resulting in degradation of the aquatic features within the area is considered to be low provided the recommended mitigation measures are implemented.

Recommended mitigation measures for the activities:

- A 30m buffer (measured from river centre) must be instated along the Bottelary River. Where wetland areas fall outside of this buffer zone, it is recommended that the buffer be extended to ensure the wetlands are protected. A buffer zone of 10-15m from stream centre is also recommended for the unnamed tributaries while the larger south-eastern tributary should remain within a 20 -30m wide ecological corridor. The 30 m buffer will be implemented prior to the commencement of any activity and where there are associated wetlands present, the buffer will be extended to ensure these wetlands are included within the buffer zone, which will be subjected to rehabilitation, maintenance and management activities. No infilling of hard structures should be placed within the buffer zones. These areas should be cleared of invasive alien plants and indigenous vegetation should be utilised to revegetation disturbed areas. A rehabilitation and planting plan should be compiled to inform the works required to establish the riparian zones and buffer areas.
- Good housekeeping measures should be implemented for the construction works on site as per an approved Environmental Management and monitored by an appointed Environmental Control Officer.
- Works within the watercourse should take place during the low flow period (Nov/Dec to Apr/May). Disturbance of the watercourse should be limited as far as possible (time and extent of works). Access to the works should be limited to the established access routes. The channel where the works has been undertaken should be rehabilitated immediately after the works is completed and revegetated to limit the erosion and sediment impacts. The structures should not impede or divert flow in the watercourses.
- Alien vegetation must be removed from within the aquatic features and their buffer zones, with a focus on *A. saligna* and *P. clandestinum*. Rehabilitation of the buffer zones with appropriate riparian indigenous vegetation is recommended. Recommended indigenous vegetation includes *Olea europaea* subsp. *africana*, *Salix macronata*, *Searsia augustifolia*, *Cliffortia odorata*, *Pennisetum macrourum*, *Isolepis prolifera*, *Cyperus textilis*, *Juncus effuses*, *Bolboschoenus maritimus*, *Carex clavata*, *Zantedeschia aethiopica*, *Chasmanthe aethiopica* and *Cynodon dactylon*. The development of infrastructure with hard foundations within these zones should be avoided and they should also not be used to dump rubble, soil or material of any kind. School fields can be inside the 1:100 year floodline but must remain outside of the buffer zones
- A Maintenance Management Plan must be drawn up for the entire estate to rehab, maintain and manage watercourses from the estate with input from the engineer and freshwater specialist and implemented by the home-owners association for the estate. The MMP must ensure that the watercourses must remain as an ecological corridor and much be managed as such. The instream dams must be landscaped to ensure habitat and biota diversity.
- The Recommended Ecological Category for the valley bottom wetland must be maintained and managed in a C category. Grey water systems must be incorporated into the proposed development. The stormwater management system should be monitored and managed to ensure that it continues to function effectively as it is designed to work. Monitoring of the alien vegetation, debris that can block the infrastructure and any signs of erosion within the watercourses should be undertaken at least 6 monthly and dealt with as per the MMP.

Regardless of whether the risk of the proposed activities, in terms of deteriorating the ecological integrity of the Bottelary River and its associated aquatic ecosystems at the site, is low, the proposed works would need to be authorised in terms of Section 21 (c) and (i) of the National Water Act, Act 3 of 1998 (Impeding or diverting flow in a watercourse; and Changing the bed, banks, course and characteristics of a watercourse). This is due to the fact that sewer lines will need to cross the Bottelary River.

4. Freshwater Impact Assessment

The development proposal is to construct a mix of 642 single residential units, four apartment blocks with 643 units, 527 town houses, 241 retirement units, 1345 business units and a school (1272 units) with a road network, utilities, 8.47 ha of public open space and 6.76 ha of private open space (Figure 2). The recommended aquatic ecological corridor containing the Bottelary River will be accommodated within the site, as well as smaller corridors for the watercourses joining the river from the north and south.

In terms of the proposed services, the proposed stormwater management will comprise of a number of stormwater ponds throughout the site that are placed outside of the 1 in 100 year floodline and downslope of the developed areas. These ponds will all include forebays for sediment trapping and bio filtration beds to allow for further water quality treatment. Some of the ponds will also comprise of an aquatic bench and permanent pond.

The internal sewage system will form part of the Bottelary Outfall Sewer that drains to the Bellville Wastewater Treatment Works. A bulk sewer (525mm diameter) has been constructed toward the north of Bottelary River up to Saxdowns Road from here 200mm diameter sewer lines will serve the development. These pipelines will most probably cross the river at the same two locations as the bridges crossing the Bottelary River.

The potential impacts to the aquatic ecosystems within the site that could be expected to be associated with the proposed development are: (1) modified storm water surface water runoff from the developed site; (2) localised impairment of water quality during construction and stormwater related water quality impacts during the operational phase; and (3) short and longer term disturbance and modification of aquatic habitat.

Due to the fact that the recommendations from the freshwater constraints mapping have informed the layout plan for the development, the design of the stormwater management plan and aquatic ecological corridor, the potential aquatic ecosystem impacts are likely to be low. The recommended mitigation measures are as provided in the previous section (Section 3) for the risk assessment.

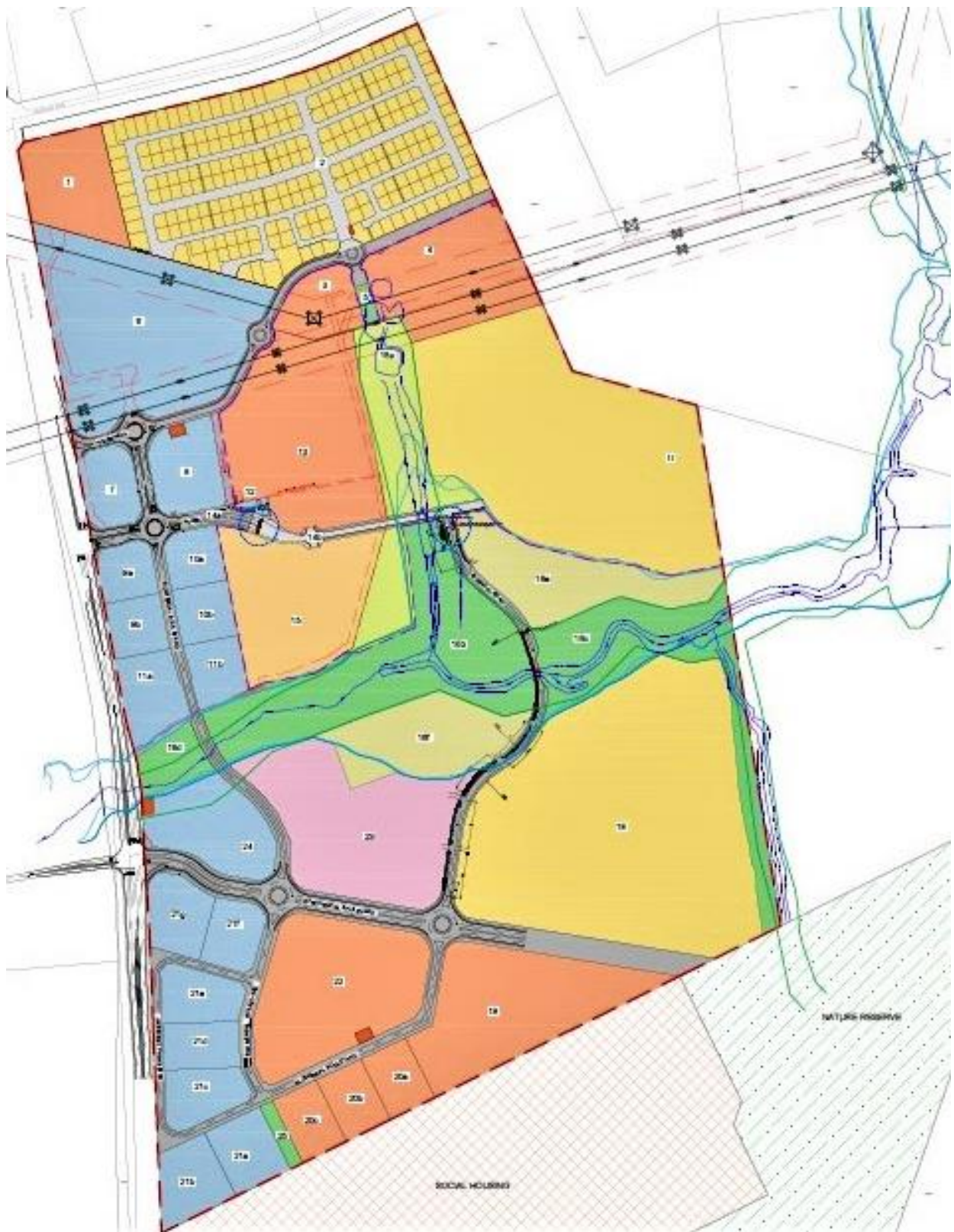


Figure 2. Proposed layout plan for the site (Elco Property Developments, 14 October 2019)

Proposed Development Layout:			
PLANNING, DESIGN AND CONSTRUCTION PHASE			
Potential impact and risk:	Flow modification	Water quality impacts	Aquatic habitat modification/loss
Nature of impact:	Modification to flow to allow for construction	Potential contamination during construction	Loss and disturbance to aquatic habitat during construction
Extent and duration of impact:	Local, short term	Local, short term	Site, permanent
Consequence of impact or risk:	Existing aquatic features will be disturbed or modified – aquatic ecological corridor will be rehabilitated		
Probability of occurrence:	Possible	Probable	Probable
Degree impact may cause irreplaceable loss of resources:	Only loss of insignificant aquatic habitat will occur		
Degree impact can be reversed:	Reversible	Reversible	Partially reversible
Indirect impacts:	None		
Cumulative impact prior to mitigation:	Medium to low: Further loss of aquatic habitat associated with the Bottelary River		
Significance of impact pre-mitigation	Low	Low	Medium/Low
Degree impact can be avoided:	Partly avoided	Partly avoided	Unavoidable
Degree impact can be managed:	Fully managed	Fully managed	Fully managed
Degree the impact can be mitigated:	Fully mitigated	Fully mitigated	Fully mitigated
Proposed mitigation:	Works in aquatic features should be done in the dry season	Good housekeeping measures on site; construction adjacent to aquatic features should be done in dry season	Rehabilitation and maintenance of aquatic ecological corridor
Residual impacts:	Modified aquatic habitats		
Cumulative impact post mitigation:	Low: An aquatic ecological corridor associated with the Bottelary River and its associated aquatic habitats and the recommended buffers will be retained and rehabilitated within the site		
Significance of impact after mitigation	Very low	Very low	Low
OPERATIONAL PHASE			
Potential impact and risk:	Flow modification	Water quality impacts	Aquatic habitat modification/loss
Nature of impact:	Change to surface water runoff and flow characteristic due to land use and landcover change	Potential contamination of runoff from developed areas; Potential for spillage from sewer lines crossing watercourse	Increased disturbance as a result of developed adjacent areas
Extent and duration of impact:	Local, long term	Local, long term	Site, permanent
Consequence of impact or risk:	Modified aquatic habitat		
Probability of occurrence:	Probable	Probable	Probable
Degree impact may cause irreplaceable loss of resources:	No loss	No loss	No loss
Degree impact can be reversed:	Reversible	Reversible	Reversible
Indirect impacts:	Facilitation of alien vegetation growth and erosion / sedimentation impacts as a result of ongoing disturbance of aquatic corridor		
Cumulative impact prior to mitigation:	Low		
Significance of impact prior to mitigation	Low	Low	Low

Degree impact can be avoided:	Partly	Partly	Partly
Degree impact can be managed:	Fully	Fully	Partly to fully
Degree impact can be mitigated:	Fully	Fully	Fully
Proposed mitigation:	Monitoring, maintenance and management of aquatic ecological corridor and stormwater management system		
Residual impacts:	Modified aquatic habitat		
Cumulative impact post mitigation:	Low		
Significance of impact after mitigation	Very low to neutral	Very low to neutral	Very low

5. Consideration of Alternatives

The No-Go Option would imply that the status quo within the site remains. This would imply that the Bottelary River and its associated aquatic habitats would remain in their current degraded state.

Alternative	No-Go
Potential impact and risk:	Ongoing flow, water quality and habitat impacts
Nature of impact:	Ongoing water utilization and habitat disturbance activities
Extent and duration of impact:	Local, long term
Consequence of impact or risk:	Degrading aquatic habitat
Probability of occurrence:	Probable
Degree impact may cause irreplaceable loss of resources:	Low loss
Degree impact can be reversed:	Reversible
Indirect impacts:	None
Cumulative impact prior to mitigation:	Low
Significance of impact prior to mitigation	Low to very low
Degree impact can be avoided:	Partly
Degree impact can be managed:	Partly
Degree impact can be mitigated:	Partly
Proposed mitigation:	Alien vegetation clearing
Residual impacts:	Degrading aquatic habitat
Cumulative impact post mitigation:	Very low
Significance of impact after mitigation	Very low

6. Concluding Remarks

Both the risk and potential impacts of the proposed development are deemed to be low with implementation of the provided mitigation measures. Thus, from a freshwater perspective, there is no reason why the proposed Haasendal Mixed Use Development should not be approved. This should however be undertaken together with mitigation and maintenance of the watercourses on the property.

Prepared By:

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Appendix A: BACKGROUND AND QUALIFICATIONS OF SPECIALIST CONSULTANT

ABBREVIATED CURRICULUM VITAE:

- Organisation:** BlueScience (Pty) Ltd
- Contact details:** PO Box 455, Somerset Mall, 7137
- Names:** Ms. Toni Belcher
- Profession:** Senior Aquatic Ecologist for BlueScience, SACNASP No 400040/10
- Expertise:** BlueScience (Pty) Ltd provides water resource management services and includes the following:
- Rivers and wetlands scoping and impact assessments;
 - River rehabilitation plans and implementation;
 - Wetland rehabilitation plans and implementation;
 - Water use authorisation applications (WULA);
 - Biomonitoring of rivers (including macro-invertebrates, fish & water quality);
 - Water use compliance auditing (internal auditing);
 - Water use compliance monitoring and reporting for license holders (including water quality sampling and measurements);
 - Ecological Reserve determination of rivers and wetlands;
 - River Maintenance and Management Plans (MMP);
 - NEMBA – alien vegetation assessment and management plans; and
 - Water resources capacity building and training.

Summary of projects undertaken by BlueScience since July 2012:

Type of project	Number of projects undertaken
Dam developments	76
Other freshwater and freshwater impact assessments	364
River reach MMP	6
ESKOM	34
Renewable energy (WEF and Solar)	29
Roads (Provincial and National roads)	47
River monitoring and rehabilitation projects	58
Water resource study	12
Water use authorisation applications (not linked to a freshwater assessment study)	26
Water use authorisation audits and licensing monitoring)	7

Appendix B: DECLARATION OF INDEPENDENCE

I, Antonia Belcher, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I :

- in terms of the general requirement to be independent:
 - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or
 - ~~○ am not independent, but another specialist (the “Review Specialist”) that meets the general requirements set out in Regulation 13 has been appointed to review my work (Note: a declaration by the review specialist must be submitted);~~
- in terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;
- have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared or to be prepared as part of the application; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of the Specialist:



Name of Company:

BlueScience (Pty) Ltd

Date:

2 December 2019

Appendix B: Impact Assessment Criteria

CRITERIA FOR ASSESSMENT

The impact assessment criteria were provided as part of the terms of reference for the freshwater assessment and are drawn from the EIA Regulations published by the Department of Environmental Affairs and Tourism (April 1998) in terms of the Environmental Conservation Act, 1989 (Act No. 73 of 1989) and the latest basic assessment report template provided by the Department of Environmental Affairs and Development Planning (DEA&DP) and the DEA&DP Guidelines for involving Biodiversity Specialists in EIA Processes, 2005. These criteria include:

Nature of the impact: This is an appraisal of the type of effect (positive or negative) the construction, operation and maintenance of a development would have on the affected environment. This description should include what is to be affected.

Extent of the impact: Extent defines the physical extent or spatial scale of the impact. The impact could:

- **Site specific:** limited to the site.
- **Local:** limited to the site and the immediate surrounding area (1-10km)
- **Regional:** covers an area that includes an entire geographic region or extends beyond one region to another.
- **National:** across national boundaries and may have national implications.

Duration of the impact: Whether the lifespan of the impact would be:

- **Short term:** 0-5 years.
- **Medium term:** 5-15 years.
- **Long term:** beyond the operational phase, but not permanently.
- **Permanent:** where mitigation either by natural processes or by human intervention will not occur in such a way or in such time span that the impact can be considered transient or temporary.
- **Discontinuous or intermittent:** where the impact may only occur during specific climatic conditions or during a particular season of the year.

Consequence of Impact: What will happen if the impact occurs.

Probability of occurrence: Probability describes the likelihood of the impact occurring. The likelihood can be described as:

- **Improbable/unlikely:** low likelihood of the impact occurring.
- **Probable:** distinct possibility the impact will occur.
- **Highly probable:** most likely that the impact will occur.
- **Definite:** impact will occur regardless of any prevention measures.

Irreplaceable loss of resources: Whether or not the impacts may be irreversible or may result in an irreplaceable loss of resources. It can be **no loss**, **marginal loss**, **significant loss** or **complete loss** of resources.

Reversibility: This refers to the degree to which an impact can be reversed.

- **Fully reversible:** where the impact can be completely reversed.
- **Partly reversible:** where the impact can be partially reversed.

- **Irreversible:** where the impact is permanent.

Indirect impacts: Indirect impacts are secondary impacts and usually occur at a different place or time. Elaborate on any indirect or secondary impacts of proposed activities. If there are no indirect impacts, briefly explain.

Cumulative impact: An effect which in itself may not be significant but may become significant if added to other existing or potential impacts that may result from activities associated with the proposed development or similar developments in the surrounding area. Cumulative impacts must be assessed prior to and post mitigation. Such impacts will be either positive or negative, and will be graded as being of negligible, low, medium or high impact.

Degree to which impact can be avoided: This indicates the degree to which an impact can be avoided. Impacts can either be **fully** avoided (impact is completely avoidable), **partly** avoided (impact is avoidable with moderate mitigation and/or management) or the impact is **unavoidable** (the impact is cannot be avoided even with significant mitigation measures and/or management).

Degree to which impact can be managed: This indicates the degree to which an impact can be managed. Impacts can either be **fully** managed (impact is completely manageable), **partly** managed (impact is manageable with moderate mitigation and/or management) or the impact is **unmanageable** (the impact cannot be managed even with significant mitigation measures).

Degree to which an impact can be mitigated: This indicates the degree to which an impact can be reduced. The degree of mitigation can either be **high** (the impact can be **fully** mitigated), **moderate** (the impact can be **partly** mitigated) or **not mitigated at all**.

Significance: Based on a synthesis of the information contained in the above-described procedure, the significance of the potential impacts can be assessed (prior and post mitigation) in terms of the following significance criteria:

- **No impact/Negligible.**
- **Low negative:** where it would have negligible effects and would require little or no mitigation.
- **Low positive:** the impact will have minor positive effects.
- **Medium negative:** the impact will have moderate negative effects and will require moderate mitigation.
- **Medium positive:** the impact will have moderate positive effects.
- **High negative:** the impact will have significant effects and will require significant mitigation measures to achieve an accepted level of impact.
- **High positive:** the impact will have significant positive effects.
- **Very high negative:** the impact will have highly significant effects and are unlikely to be able to be mitigated adequately.
- **Very high positive:** the impact will have highly significant positive effects.

Residual impacts: Residual impacts are those impacts that remain following the implementation of mitigation measures. Residual impacts must be identified and discussed. If there are no residual impacts, briefly explain that the activity will have no residual impacts.