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CK/2008/027022/23  
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February 2017

To whom it may concern

**REVIEW OF THE FRESHWATER HABITAT IDENTIFICATION REPORT FOR THREE PROPOSED BIOTHERM ENERGY (PTY)  
LTD WIND FARM PROJECTS: ESIZAYO, MARALLA EAST AND MARALA WEST**

**Experience of the peer reviewer**

Michiel Jonker is the lead freshwater ecology specialist and a founding member of Ecotone Freshwater Consultants. He holds Masters Degrees in Aquatic Health and Environmental Management from the University of Johannesburg, and is a registered Professional Natural Scientist practitioner in the field of freshwater ecology for the past 9 years. Michiel is also an accredited South African Scoring System version 5 (SASS5) practitioner and wetland delineator (Department of Water Affairs). He has extensive experience in aquatic ecology assessments, biomonitoring, impact and wetland assessments nationally and internationally.

**Acceptability of the terms of reference**

The terms of reference are not explicitly provided but are implied through the objectives listed as:

- Describe the background of the project and contextualise it in the natural environment. This will include identification of freshwater habitat systems located within the project footprint;
- List and assess the potential environmental impacts associated with the proposed project to the environs identified; and
- Conclude the finding of the report, highlighting any significant impacts and their corresponding mitigation and management measures, which should be considered as conditions in the authorisation.

In general, the terms of reference is acceptable in the context of the Project. It includes both a desktop assessment and field delineation of the water resources and an impact assessment is included. The method applied for the delineation of the drainage lines are ambiguous and the Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS) of the watercourses were not determined. However, a clear distinction is made in this regard and a more detailed assessment of watercourses is recommended during the Water Use Licensing Process within the specialist report.

## **Suitability of the Methodology**

### *Desktop Delineation*

No mention is made of consulting the 1:50 000 topographical maps of the site for potential wetlands and watercourses. This is also a fairly accurate database, although most of the watercourses are also included in NFEPA. One of the largest limitations of several of the wetland databases, including the NFEPA database, is that only wetlands with a permanent wetness zone is included in the dataset. This limitation must be indicated in the methods.

### *Field delineation*

The DWAF wetland and riparian delineation guidelines used is the appropriate method of delineation for wetland and riparian areas and this method is therefore strongly supported. However the guideline is limited in its application when working with ephemeral systems particularly where riparian and alluvial features are not defined. It is not clear how these limitation were addressed in during the application of the guideline. Any limitation in this regard should be stated.

### *Buffer zones*

The method or rationale for buffer zone allocation is not provided. It is suggested that a short description of the approach be added to the report.

### *Impact assessment*

This is a variation of the most common impact assessment methodology and is considered to be very appropriate to the project.

## **Validity of the findings**

### *Ephemeral Lotic Systems*

A biophysical description of the ephemeral system are absent. The description of the drainage lines should be clear and can be generalised for the area. There are no standardised methods available to assess the PES of ephemeral systems without riparian features. Excluding these assessments may therefore be appropriate. However a general

description of the ecological integrity of these systems should be included in the text. It is suggested that a sort section be included at the end of Section 4, indicating that these systems are mostly in a natural to largely natural condition, except where field observation indicate otherwise.

#### *Depression wetlands*

A clear and concise description is provided for the depression wetlands. It is suggested that the respective hectare sizes of the depressions be included in the description. As with episodic systems without riparian features, no applicable methods exist to assess the PES of depression wetland. It is however recommended that a sentence be included to state that the systems are in a natural to largely natural state if it is the case and to provide a short description of any prevailing impacts if it is not the case.

#### **Suitability of the mitigation measures and recommendations**

The mitigation measures and recommendations are suitable and applicable to the project. The following comments are suggestions to take into consideration:

- Include recommendations on what watercourse crossings should look like should authorisation be granted for tracks crossing the Right of Way (RoW). For example, do not clear the vegetation across the entire RoW. It is preferable that only the cleared portion will be the vehicle tracks. No structures will need to be in place to cross the watercourses, since the systems are ephemeral, no bog mats or gravel running tracks would therefore be required. None of the watercourses may be crossed during or directly after a rainfall event. No tracks may cross the ephemeral depression wetlands.
- Alien invasive and pioneer vegetation recruitment may be a potential impact that may be exacerbated in areas associated with channel bed and bank disturbances. This may be of particular concern at drainage line crossings during the construction phase. Suitable mitigation measures, along with monitoring requirements should be provided. If this impact has been appropriately addressed elsewhere ignore this comment.
- From the biophysical description it is not clear whether the pans play a role in the maintenance of biodiversity- in particular avifauna, which may be affected during the operational phase. Birds moving between pans may be affected by the turbines. It is suggested to address this possible impact or to refer to mitigation measures if this impact have been considered elsewhere. Ignore this comment if the avifauna specialist or terrestrial ecologist have considered this impact.

- It is suggested to describe any monitoring requirements for erosion and sedimentation as it is likely to be the main risk to the receiving aquatic resources.

### **Appropriateness of reference literature**

The reference list is generally appropriate for the project. The following references have been omitted from the reference list and should be added:

- Although Ollis *et al.* 2013.

The following references have not be cross referenced:


- Bailie *et al.* (2007).
- Fujihara (2001).
- The local government handbook (2016).
- Van der Molen *et al.* (2007).
- Wischmeier *et al.* (1971).
- WRC (2008).

The following references are not relevant:

- Chamber of mines (2007).
- Mining technology (2016).

### **Additional comments**

No site visit took place as part of the review process. The report is generally easy to read and understand.



Signed:

Date: 22 February 2017

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Project Name: LAND CAPABILITY  
ASSESSMENT FOR  
WIND ENERGY  
FACILITY- ESIZAYO, MARALLA EAST AND  
MARALLA WEST

Project number: 47579-R01

Non-compliant

Reviewer: Michiel Jonker

Partially compliant

Date: 17 February 2017

No.		Compliance	Comments
<b>13</b>	<b>General requirements for EAPs and specialists (NEMA- 2014 Regulation 13)</b>		
1a	Be independent.	Compliant	
1b	Have expertise in conducting environmental impact assessments or undertaking specialist work as required, including knowledge of the Act, these Regulations and any guidelines that have relevance to the proposed activity.		
1c	Ensure compliance with these Regulations.	Compliant	
1d	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 application.	Compliant	
1e	Take into account, to the extent possible, the matters referred to in regulation 18 when preparing the application and any report, plan or document relating to the application; and	Compliant	
f	Disclose to the proponent or applicant, registered interested and affected parties and the competent authority all material information in the possession of the EAP and, where applicable, the specialist, that reasonably has or may have the potential of influencing:		
i	Any decision to be taken with respect to the application by the competent authority in terms of these Regulations; or	Compliant	
ii	The objectivity of any report, plan or document to be prepared by the EAP or specialist, in terms of these Regulations for submission to the competent authority.	Compliant	
<b>Appendix 6- Specialist Reports</b>			
a	Details of:		
i	The person who prepared the report; and	Compliant	
ii	The expertise of that person to carry out the specialist study including curriculum vitae.	Compliant	
b	A declaration that the specialist is independent in a form as may be specified by the competent authority.	Compliant	

c	An indication of the scope of, and the purpose for which, the report was prepared.	Compliant	
d	The date and season of the site investigation and the relevance of the season to the outcome of the assessment.	Compliant	
e	A description of the methodology adopted in preparing the report or carrying out the specialised process.	Compliant	
f	The specifics regarding the sensitivity of the site related to the activity and its associated structures and infrastructure.	Partially Compliant	<p>It is stated that the report is a high level assessment of watercourses associated with the footprint and a 500m radius thereof and identifies the requirement for a detailed assessment once the proponent was successful in the bid. In this regard the assessment excludes the following:</p> <ul style="list-style-type: none"> <li>• A detailed delineation of the watercourses.</li> <li>• A description of the ecological integrity, importance and sensitivity of the watercourses.</li> <li>• A description of ecological functions and services for the watercourses.</li> </ul> <p>However, the location and <b>longitude extent</b> of drainage lines have been mapped and a 32m buffer has been applied presumably to a centreline associated with each drainage feature. These areas along with the four depression wetlands are generically marked as sensitive and avoided by the proposed infrastructure. It is possible that the <b>lateral extent</b> of the drainage lines and <b>buffer zone</b> requirements may change with a more detailed delineation and assessment.</p>
g	An identification of any areas to be avoided, including buffers.	Compliant	With consideration to the limitation stated in (f).
h	A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers.	Compliant	
i	A description of any assumptions made and any uncertainties or gaps in knowledge.	Compliant	
j	A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment.	Partially Compliant	<p>Impacts that may have to be added if they have been omitted from other specialist reports include:</p> <ul style="list-style-type: none"> <li>• avifauna using depressions wetlands affected by the placement of the turbines.</li> <li>• recruitment of alien, invasive and pioneer species in disturbed channel bed and bank areas.</li> </ul>
k	Any mitigation measures for inclusion in the EMPr.	Partially Compliant	<ul style="list-style-type: none"> <li>• additional mitigation measures may be required for impacts listed under (j).</li> <li>• any monitoring requirements should be stipulated within the management plan.</li> </ul>
l	Any conditions for inclusion in the environmental authorisation.	Compliant	
m	Any monitoring requirements for inclusion in the EMPr or environmental authorisation.	Partially Compliant	See (k) if applicable.
n	A reasoned opinion-		

i	As to whether the proposed activity or portions thereof should be authorised;	Compliant	
ii	If the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMP, and where applicable, the closure plan.	Compliant	
o	A description of any consultation process that was undertaken during the course of preparing the specialist report.	Compliant	
p	A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Compliant	
q	Any other information requested by the competent authority.	Not Applicable	

**C General Comments of Technical Content**

C1	<b>Section 4: Findings :</b>		
C1.1	From the land use and physical area description it seems as if the drainage lines and pans are in a good ecological conditions and retain all of their functions and services. It will be useful to add some narrative in this regard and to shortly elaborate on these functions and services. The impacts should be viewed in relation to the potential loss of ecological function and service.		
C1.2	This section mainly focus on the pans and no biophysical description is provided for the ephemeral drainage lines and the Roggeveld River. It is also not clear if the drainage lines have been delineated based on their riparian features as stated in the methods. It will be helpful to add a description of the marginal and non-marginal riparian features used within the delineation.		
C1.3	The buffer zone allocation requires some further discussion in the narrative.		
C1.4	The 500m radius regulatory area is relevant for wetlands. So the pans will be subject to this regulatory area. The 500m radius will not be required for riparian system, rivers and streams.		
C2	<b>Section 5: Assessment of Impacts:</b>		
C2.1	Alien invasive and pioneer vegetation recruitment may be a potential impact that is exacerbates in areas associated with channel bed and banks disturbance. This may be of particular consideration at drainage line crossings during the construction phase.		

C2.2	From the biophysical description it is not clear whether the pans play a role in the maintenance of biodiversity- in particular avifauna, which may be affected during the operational phase. Ignore this comment if the avifauna specialist or terrestrial ecologist have considered this impact.		
C3	<b>Section 5: Mitigation Measures</b>		
C3.1	The mitigation section will have to be revised to consider additional impacts listed under C2.		
C3.2	It is not clear if any monitoring is required as part of the management of potential impacts? Of particular importance will be an erosion and sedimentation monitoring plan and an alien invasive plants monitoring plan.		
<b>D Gaps Identified</b>			
D2	Partial compliance for Appendix 6 (f), (k) and (m).		
<b>Terms of Reference to Update Study in Order to Satisfy Gaps</b>			
<b>E</b>			
E1	Add a description on the likely ecological integrity and functions for the drainage lines under Section 4.		
E2	Explain the buffer zone allocated and potential for buffer zone change subject to a more detailed aquatic assessment.		
E3	Address impacts related to avifauna use of the depression wetlands and potential establishment of alien and invasive plant species in disturbed watercourses if these impacts have not been considered elsewhere, in Section 5.		
E4	Add monitoring requirement for erosion and sediment control under Section 6.		