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Environmental Authorisation for the proposed Musina-Makahdo Special Economic Zone Development Project, Limpopo Province

Freshwater Assessment Response to Public Comments Received

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TABLE OF CONTENTS

1. Introduction	1
2. Objectives of Addendum Report	1
3. Conclusion	7

LIST OF TABLES

Table 2-1: Response to Stakeholder Comments Related to the Soils and Land Capability Impact Assessment Report	2
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1. Introduction

The Limpopo Economic Development Agency (LEDA) are proposing to establish a Special Economic Zone (SEZ) across parts of the Musina and the Makhado Local Municipalities within the Limpopo Province (the Project). This is referred to as the Musina-Makhado SEZ and is abbreviated to MMSEZ or EMSEZ in the various documents related to this Project.

The Project requires Environmental Authorisation (EA) through an Environmental Impact Assessment (EIA) process, to comply with the National Environmental Management Act, 1999 (Act No. 107 of 1998) (NEMA). To this end, LEDA appointed Delta Built Environment Consultants (Pty) Ltd (hereinafter Delta BEC) to undertake the required EIA process. LEDA subsequently advertised tenders for other consultancies to undertake specialist studies in support of the EIA process. LEDA appointed Digby Wells Environmental (hereinafter Digby Wells) to undertake several of these specialist reports, including a Freshwater Assessment comprising of aquatic biodiversity and wetland delineation and functionality.

2. Objectives of Addendum Report

This report serves to address the stakeholder comments of the interested and affected parties pertaining to the Freshwater Assessment Report that was undertaken as part of the SEZ project for environmental authorization.

The future industrial waste site (outside the original study boundary provided) was requested for inclusion but could not form part of the Scope of Works due to time constraints. Therefore, this area was not included in the original Scope of Works and as such, no comments/extrapolation related to this can be included as part of this response. However, it is anticipated that further investigations will be undertaken prior to the publication of the final Environmental Impact Assessment report (EIAR) in February/March 2021.

The response addresses all comments associated with freshwater assessments from stakeholders. The comments are summarised in Table 2-1 and responses for each comment are given where these pertain to the Freshwater Assessment.


Table 2-1: Response to Stakeholder Comments Related to the Soils and Land Capability Impact Assessment Report

Contributor/ Organization	Comment Raised	Date	Response
Centre of Environmental Rights	<p>EMSEZ is not in the public interest as it will have severe and irreversible impacts on water resources, climate change, food security, agriculture, air quality and soil quality. There is also no discussion of – or proposal to assess in the EIA – the risk that the entire EMSEZ and all its associated infrastructure will become a stranded asset.</p> <p>FSR lacks basic facts about the proposed projects that will be part of EMSEZ, including: what each component will entail; the amount and type of fuel to be used; annual water requirements during construction and operation; wastewater volumes; solid waste volumes; and annual air pollution emissions, including mercury and other heavy metals, and it fails to include an adequate baseline assessment of air, soil and water quality in the region.</p> <p>The proposed 'wetland and aquatic assessment' should be conducted as a separate study as it addresses the fundamental issue of water supply.</p>	22 Oct 2020	<p>Any future potential water resource impacts of the proposed project can be assessed by comparing data collected from freshwater monitoring (including both aquatic and wetland biomonitoring indicators) to the established baseline conditions for the associated water resources, as recommended within the Section 8 of the September 2019 report. This will enable the early detection of contamination or any unforeseen changes that can occur and the baseline freshwater quality data will be provided.</p> <p>Although it can be acknowledged that the selected assessment indicators for aquatic ecology/biodiversity could not be applied with any degree of confidence due to the dry conditions of the majority of the watercourses, these conditions were representative of natural conditions. Therefore, these assessment indicators may not be useful within the study area until the rainfall is sufficient to re-inundate the associated watercourses and to allow colonisation of aquatic biota.</p> <p>The wetland and aquatic assessment were consolidated into one report, as per Client request (refer to the tender application). Although the reports were consolidated, it should be noted that each component was assessed as a separate component of the study and as such, the representation of the defined ecological conditions of the associated watercourses were deemed to be appropriate and supported by a moderate degree of confidence.</p>
Comments on the EMSEZ EIA from residents	<p>The hydrological report is superficial in the extreme. Rivers and riverine communities cannot be offset. No regard at all has been given to the dynamics of the riparian environments that will be impacted by the proposed development, which is extremely superficially described.</p>	22 Oct 2020	<p>A detailed desktop assessment was undertaken in order to gain background information and historical information on all freshwater features that will potentially be affected by the proposed SEZ development project, including wetland vegetation types, water management areas, quaternary catchment and sub-quaternary catchments.</p> <p>In addition, an Index of Habitat Integrity was undertaken for the Sand River reach to assess the perceived ecological condition of the instream (if available) and riparian components. The fact that this assessment described this system as largely natural/moderately modified (Ecological Category B/C) support the fact that the surrounding system are still functional in terms of maintaining connectivity within the catchment, even if it may be sub-surface flows. It was recommended that a Vegetation Response Assessment Index be undertaken as part of the monitoring activities within the study area during construction and operation, as the identified drainage lines were still likely to provide a refuge for aquatic biodiversity and support some riparian vegetation.</p> <p>In terms of offsetting riverine communities, it is understood that these aspects may be addressed within the Biodiversity Offset Strategy/Plan, but no suggestion to offset the potential impacts were suggested within the Freshwater Impact Report,</p>

Contributor/ Organization	Comment Raised	Date	Response
			instead avoidance was still proposed as the primary mitigation measure (i.e. implement buffer zones).
DBASS (deVilliers Brownlie Associates)	Appendix J only looks at the direct footprint impacts of the SEZ on terrestrial ecosystems and species, and on wetlands. It does not consider impacts on the affected river systems (Sand, Limpopo) and their aquatic biota as a result of using the Limpopo as a proposed water source. Potential impacts on this system, including on downstream ecosystems, must form part of the biodiversity offset's scope (i.e. all potentially significant negative impacts, including direct, indirect and cumulative impacts, remaining after avoidance and minimisation must be remedied by the biodiversity offset).	09 Oct 2020	<p>A thorough literature review of available spatial databases was undertaken, including National Freshwater Ecosystem Priority Areas project, National Biodiversity Assessment, Present Ecological State/Environmental Importance and Sensitivity database, Limpopo Conservation Plan, etc. These databases suggested that the aquatic ecosystems within the study area supported some level of aquatic biodiversity and were regarded as important in terms of the national planning agenda. Consequently, the associated determination of the baseline conditions of these systems were defined at the time of the survey despite the vast majority of the watercourses being dry – the moderately modified conditions of the available riparian habitat were the only indication of the EcoStatus of the associated watercourses.</p> <p>In light of the defined ecological conditions and in demonstration of a applying a precautionary approach, a comprehensive impact assessment was provided with respect to the surrounding river systems (incl. the Sand River) and their supported aquatic biota. It is recommended that the water supply investigations be undertaken in more detail, as this activity was not directly assessed as part of the proposed activities (i.e. abstraction), as the proposed industries were still to be defined and as such, no estimated potential water abstraction volumes were assessed. These aspects of the SEZ were envisaged to be assessed more thoroughly once potential investors and/or industries showed an interest in the development.</p>
Dolphin Coast Conservancy	Threat to Wetlands: Our National and Provincial Departments have gone to great lengths to educate people about the almost incalculable value of Wetlands to our country. It would appear that Limpopo Province is prepared to sacrifice the wetlands for the sake of short-term economic gain.	17 Oct 2020	<p>As part of the Impact Assessment component, the loss of wetlands within the study area was defined as a major negative impact, as these systems do still support a notable aquatic biodiversity and various ecosystem services to the surrounding areas in terms of water supply. The proposed mitigation measures essentially suggest ensuring that the infrastructure of the proposed industries within the study area remain outside of the delineated wetland extents and their proposed buffer areas, which is still to be re-assessed in terms of feasibility once investors proposed plans and requirements for the development.</p> <p>If this cannot be done, it is recommended that further investigation be undertaken to assess the feasibility of a wetland offset strategy, plan and implementation within the region. However, it is understood that these aspects have been addressed and incorporated into the Biodiversity Offset Strategy published as part of the draft EIAr.</p>
Eco-Industrial Solutions	<p>The limitations and assumptions below were scrutinised:</p> <ul style="list-style-type: none"> ● Wetland ecology: Access to full extent of the identified systems was limited due to the areas occurring on private property and/or game reserves. However, these systems that could not be ground-truthed at the 		These limitations simply acknowledge the vast extent of the proposed project and that it is not always feasible to undertake survey over extended periods of time or access all area of privately-owned land portions. Nonetheless, the specialist opinion provided in terms of the report was still representative of a moderate to high confidence, as the study area is acknowledged as a water-scarce area and undertaking further investigations may require a few years.



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	<p>time of the field survey were scrutinised at a desktop level and been demarcated as such for transparency.</p> <ul style="list-style-type: none"> Aquatic ecology: in order to obtain a comprehensive understanding of the dynamics of the aquatic biota present within a watercourse (e.g. migratory pathways, seasonal prevalence, breeding cycles etc.), studies should include investigations conducted during different seasons, over a number of years and through extensive sampling efforts. Given the time constraints of the baseline assessment, such long-term studies were not feasible and could not be conducted. Therefore, the findings presented are based on professional experience, supported by a literature review, and extrapolated from the data collected at the time of the field survey. <p>These indicated impact assessments were not complete and does not represent the development footprint. Therefore, specialists' studies are inadequate for decision-making and should be recommissioned.</p>		<p>The specialist studies provided support a precautionary approach, as demonstrated by the fact that the pans systems determined to be in a natural and largely natural conditions (Ecological Category A/B) exhibited no signs of impact and some grazing influences, each of which were accounted for in the determination for the buffer zones distances. Further investigation can always be undertaken but should mitigations measures be properly implemented, and future monitoring activities be undertaken, then these system are still envisaged to remain intact.</p>
<p>EWT</p>	<p>International rivers and river basins are subjects of international Law, which regulates the status of those rivers and basins and is the reference in case disputes are sparked off.</p> <p>The proposed SEZ also falls within the Soutpansberg. The region comprises diverse and incessant vegetation mosaic. The Soutpansberg is one of South Africa's Strategic Water Source Areas and is therefore critical to the management of groundwater in this semi-arid area. The Soutpansberg falls within the Limpopo River Basin, which extends across South Africa, Botswana, Zimbabwe, and Mozambique. The Limpopo River Basin is already under considerable pressure to provide for the water demands of its population of 18 million people. Protected Areas are declared and formally protected under the National Environmental Management: Protected Areas Act, 2003 (Act No 57 of 2003), hereafter referred to as the Protected Areas Act.</p> <p>The proposed SEZ threatens unjustifiably high environmental impact:</p> <ol style="list-style-type: none"> A National Freshwater Ecosystems Priority Area; A World Heritage Site - Mapungubwe National Park UNESCO Biosphere Reserve; Two National Parks; and, Numerous provincial and private Nature Reserves. <p>This does not consider numerous private protected areas and areas in the process of being declared as such.</p> <p>FRESHWATER SYSTEMS: Globally, freshwater systems are under severe threat, with 84% of freshwater species in decline, only 37% of rivers are still free-flowing and over 90% of wetlands have disappeared. This is a stark warning of diminished water security for supporting human life. This is of relevance to South Africa, which is a water-scarce country. A Water Quality and Ecological Status Assessment of selected</p>	<p>22 Oct 2020</p>	<p>South African National Policy and legal frameworks [(Section 19 of the National Water Act (NWA, Act 36 of 1998); Section 21 (c), (g) and (i) of the NWA (Act 36 of 1998); Section 24 of the Constitution – Environment (Act 108 of 1996); National Environmental Management Biodiversity Act (NEMBA), 2004 (Act 10 of 2004); and Section 5 of the National Environmental Management Act (NEMA), 1998 (Act No. 7 of 1998)] were included in this study. Additional international policies will be included if deemed to be applicable and necessary.</p> <p>It can be confirmed that the Soutpansberg is a Strategic Water Source Area, which supplies the Luvuvhu, Little Letaba, Mutale, Mutamba and Nzhelele rivers. However, the impact of the proposed activities upon the source of these system is unlikely to be affected, as the development occurs to the north of the mountain range and is only likely to affect a very small portion of the catchment area of the Mutama River (approximately 1,300 ha od Quaternary Catchment A80F), which is already a system with relatively low surface water flows.</p> <p>A thorough literature review of available spatial databases was undertaken, including National Freshwater Ecosystem Priority Areas project, National Biodiversity Assessment, Present Ecological State/Environmental Importance and Sensitivity database, Limpopo Conservation Plan, etc. These databases suggested that the aquatic ecosystems within the study area supported some level of aquatic biodiversity and were regarded as important in terms of the national planning agenda. Unfortunately, the SARCHI-initiated study from 2014 within the Vhembe Biosphere Reserve was not reviewed as a part of this process, but an initial review suggested a focus on the tributaries of the Luvuvhu River, which occurs along the eastern portion of the Soutpansbrg, and not likely to provide too much value in terms of water quality or fish biodiversity, as these Sand and Luvuvhu River are exhibit notably variable flow regimes, which directly affects the supported biodiversity within these respective catchments.</p>



Contributor/ Organization	Comment Raised	Date	Response
	<p>rivers in the proposed SEZ was conducted in 2014 for a period of six months to include both high and low flow scenarios. The project was initiated by the South African Research Chair Initiatives together with the University of Limpopo. Diatom-based indices, fish biodiversity and the health status of the fish were determined. The main goal of this project was to better understand anthropogenic impacts on water quality, nutrient status, and biodiversity.</p> <p>WETLANDS: Multiple wetlands are located across the eight farms within the SEZ, including seeps, flats, valley-bottom wetlands, and channeled valley-bottom wetlands. The current desktop study is limited in providing specific water-accessibility, quantities, and current land use of these eight properties (which will likely influence the current limited water table further). This suggests that there will be a major impact on the watertable. Within Appendix I, there was also little mention of mitigating these threats – only offsets, which do not fully address the magnitude, and are somewhat unclear. Limited desktop study. Major impact, no room for mitigation, only offsets.</p>		<p>It is acknowledged that the NFEPA status of the catchment was significant and reported as such within the report, and this was considered within the recommendation made within the report. Also, in terms of the sensitivity of the identified wetland within the study area, appropriate buffers were proposed and should be amended in relation to the monitoring data during construction and operational phase should authorisation be given to go ahead with the development.</p> <p>Lastly, the implication upon the water table should be addressed as part of a more intensive water supply investigations within the study area, as the semi-arid nature of the associated system was evident during the survey.</p>
Lantic (Residents comments)	<p>AQUATICS & WETLANDS: Although it is well to specify that “caution should be applied during interpretation of these results due to highly dynamic changes expected within these systems following sufficient rainfall within the area”, it should be noted that, lacking proper specification of “sufficient”, to supply the requirements of SEZ, this area has probably not had enough rainfall for a thousand years or more. The initial comments made above should make it obvious that another thousand years may pass before that much rain falls again. It cannot be assumed that climate change will result in higher rainfall; more likely the opposite.</p>	01 Sep 2020	<p>A precautionary approach was applied within the relevant studies and as such, the proposed mitigation measures aimed to maintain functionality and conserve biodiversity, even if overlooked during the dry conditions observed within the survey (e.g. notable egg bank deposits within the sediments).</p> <p>As an alternative, it is suggested that additional, more novel biomonitoring technique be considered during the implementation of the adaptive monitoring programme, as recent publications support the use of hatching diapause eggs within the sediment banks of pans to provide an indication of the biodiversity and a perceived ecological condition.</p>
LEAP Environmental	<p>Disruption of ecological functioning and pollution of water resources.</p> <p>The assessment on the Clean Coal-firing Plan lacks the impact assessment on the ancillary infrastructure that required, such as pollution of roadsides. Storage of coal and pollution of the rivers and streams, acid rain from coal dust etc. it is thus not an adequate proposal as an energy source.</p>	22 ct 2020	<p>As alluded to within the Freshwater Impact Report, the infrastructure of the proposed SEZ was not specifically assessed in terms of their potential impact upon the surrounding watercourses, as this was still to be confirmed at the time of writing. Therefore, it is recommended that a follow up survey be undertaken to ground-truth the perceived ecological conditions once the proposed infrastructure layout becomes available and individual impacts assessment are conducted for activities additional to the proposed land clearing addressed within this initial application process.</p>
Remax Northland	<p>WETLANDS: Multiple wetlands are located across the eight farms, including seeps, flats, valley-bottom wetlands and channeled valley-bottom wetlands. Limited desktop study. Major impact, no room for mitigation, only offsets; PROTECTED AREAS: UNESCO Vhembe Biosphere Reserve; National Parks (Kruger national Park, Mapungupwe national Park); Formal Protected Areas (Baobab Protected Reserve; Musina, Honnet, Nwanedi, Nzhelele, Happy Rest and Langjan Nature Reserve; Informal Protected Areas; National Protected Areas Expansion Strategy(NPAES) Focus Areas (Blouberg Langjan National Protected Areas); and Private Nature Reserves (Averal, Nzhelele); Critical Biodiversity area 2; Ecological Corridor Network; Important Bird Area nearby.</p>	09 Sep 2020	<p>A detailed desktop assessment was undertaken in order to gain background information and historical information on all freshwater features that will potentially be affected by the proposed SEZ development project, including wetland vegetation types, water management areas, quaternary catchment and sub-quaternary catchments will be included in this report. It should be noted that the perceived sensitivities of the associated aquatic ecosystems were noted as a part of the NFEPA database and the Limpopo Conservation Plan, which was considered as a part of the recommendation and mitigation measures proposed.</p>



Contributor/ Organization	Comment Raised	Date	Response
			The identified wetland systems were assessed during a field survey and appropriate avoidance mitigation measures were initially proposed in the form establishing and maintaining buffer zones.
Save our Limpopo Valley Environment	FRESHWATER IMPACT: The writer notes that no reference to the layout plan appears in the Aquatic Report, and it appears that the specialist did not take the layout in to account when proposing buffer zones and other mitigations. In Table 6.3 (Mitigation) he writes, "Design the footprint of the infrastructure so as not to fall within the pans and drainage lines or their buffers". According to the proposed layout this cannot be done. While noting the references to wetland classification and frogs in paragraph 3.3.1 and Table 3-7, the writer finds it extraordinary that no frogs, nor signs of frog activity, were noted either by this specialist or by those who conducted the Flora and Fauna study. General aquatics and wetland studies were not done.	Sep 2020	<p>The layout plan was not included in the report but a proposed SEZ mining right boundary was provided on all the maps and was deemed enough to assess the impact of potential land clearing within the Project Area. However, the Storm Water Management Plan did focus more on the available infrastructure layout provided at the time of the submission. It is recommended that further investigation be undertaken once the internal infrastructure layout is finalised and additional impacts can be properly assessed in terms of potential water quality impairment or alteration to flow regimes, which is understood to form a part of the next phase of the SEZ sensitivity analysis and amending the layouts within the SEZ.</p> <p>If the proposed avoidance mitigation is not possible, then the feasibility of the SEZ may need to be re-assessed in terms of what industries and activities the SEZ will be able to support.</p>
WWF	The absence of a SEA site-specific EIAs to consider not only the direct impact of the site, but also the impacts on additional areas essential for the functioning of the operation, including upstream and downstream impacts.	22 Oct 2020	As per the requirements of the Tender, an aquatic and wetland impact assessment was to be undertaken of the parcels of land earmarked for the potential development of a proposed SEZ. This was conducted with a primary focus on the determination of baseline ecological conditions and the potential sensitivities that should be avoided going forward as a part of the feasibility studies.

3. Conclusion

Digby Wells included the following additional recommendations in the Freshwater Impact Assessment report, referring to both aquatic and wetland ecosystems:

- A Vegetation Response Assessment Index is proposed to be undertaken as part of the monitoring activities within the study area during construction and operation, as the identified drainage lines were still likely to provide a refuge for aquatic biodiversity and support some riparian vegetation.
- Further investigation should be undertaken to assess the feasibility of a wetland offset strategy, plan and implementation within the region. However, it is understood that these aspects have been addressed and incorporated into the Biodiversity Offset Strategy published as part of the draft EIAr.
- As an alternative, it is suggested that additional, more novel biomonitoring technique be considered during the implementation of the adaptive monitoring programme, as recent publications support the use of hatching diapause eggs within the sediment banks of pans to provide an indication of the biodiversity and a perceived ecological condition.