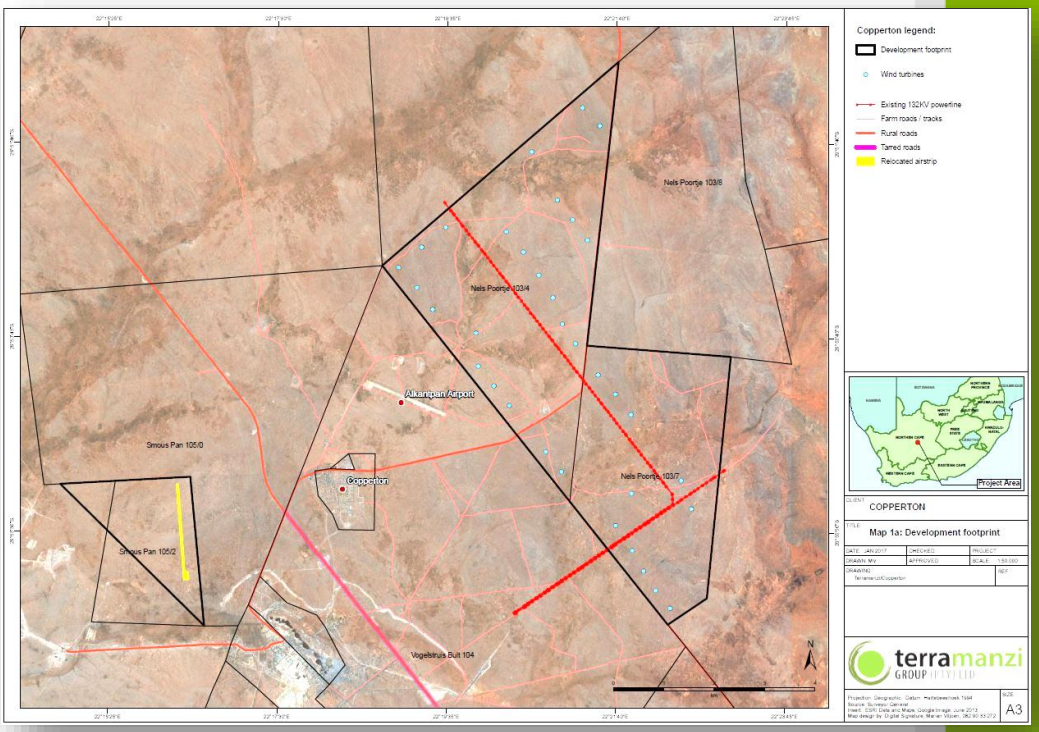

Final Environmental Management Programme (EMPr) for the Copperton Wind Farm, Copperton, Northern Cape Province, South Africa

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Contents

List of Annexures

Annexure A *contains the Glossary*

Annexure B *contains the generic Method Statement*

Annexure C *contains relevant permits applicable to the proposed development (Environmental Authorizations as applicable to this Project)*

Annexure D *contains design and planning documentation*

Annexure E *contains a detailed copy of the recommended Roles and Responsibilities of the Environmental Control Officer (ECO)*

Annexure F *contains the Traffic Management Plan for the site access roads in terms of Condition 17.10 of the Environmental Authorization dated 15 August 2012*

Annexure G *contains the Vegetation Plans in terms of Condition 17.3 (A Plant Rescue and Protection Plan); 17.4 (A Open Space Management Plan); 17.5 (A Re-vegetation and Habitat Rehabilitation Plan) and 17.6 (An Alien Invasive Management Plan) of the Environmental Authorizations dated 15 August 2012*

Annexure H *contains the Freshwater Plans in terms of Condition 17.7 (Storm water Management Plan); 17.9 (An Erosion Management Plan) and 17.11 (Measure to protect hydrological features) of the Environmental Authorizations dated 15 August 2012.*

Annexure I *contains the Faunal and Avifaunal Ground-truthing in terms of Condition 15 (Avifaunal and Fauna Specialist to Groundtruth every footprint) of the Environmental Authorizations dated 15 August 2012.*

Annexure J *contains that Conservation management plan for the Modderpan and two kraals in terms of Condition 97, 98 and 102 of the Environmental Authorization dated 15 August 2012.*

Annexure K *contains the Integrated Waste Management Approach, which includes the effective monitoring system to detect leakage or spillage of all hazardous substances in terms of Condition 17.8 and 91 respectively of the Environmental Authorization dated 15 August 2011.*

Annexure L *contains the EAP's Curriculum Vitae*

IMPORTANT NOTE: ALL READERS TO PLEASE FAMILIARIZE THEMSELVES WITH THE RELEVANT TERMINOLOGY CONTAINED IN THE GLOSSARY (ANNEXURE A) PRIOR TO READING THIS DOCUMENT.

Appendix 4 Regulation 1 of GN No. R. 982 of the NEMA EIA Regulations (2014) stipulates that an Environmental Management Programme (EMPr) must comply with Section 24N of the NEMA and must include the following:

Regulation		Content of Environmental Management Programme (EMPr)	Reference
A4 R1 (a)		**Details of:**	
	(i)	*The EAP who prepared the report; and*	Section 3.1
	(ii)	*The expertise of the EAP, including a curriculum vitae*	Section 3.1
A4 R1 (b)		***A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;***	Section 1 and 3
A4 R1 (c)		***A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers;***	Section 1 and Appendix 1
A4 R1 (d)		***A description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including-***	Section 4
	(i)	*Planning and design;*	Section 4
	(ii)	*Pre-construction activities;*	Section 4
	(iii)	*Construction activities;*	Section 4
	(iv)	*Rehabilitation of the environment after construction and where applicable post closure; and*	Section 4 and EMPr Annexures
	(v)	*Where relevant, operation activities;*	Section 4 and EMPr Annexures
A4 R1 (e)		***a description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);***	Section 4
A4 R1 (f)		***a description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable, include actions to -***	Section 4
	(i)	*Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;*	Section 4
	(ii)	*Comply with any prescribed environmental management standards or practices;*	Section 4
	(iii)	*Comply with any applicable provisions of the Act regarding closure, where applicable; and*	Section 4
	(iv)	*comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;*	Section 4
A4 R1 (g)		***The method of monitoring the implementation of the impact management actions contemplated in paragraph (f);***	Section 6
A4 R1 (h)		***The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);***	Section 6
A4 R1 (i)		***An indication of the persons who will be responsible for the implementation of the impact management actions;***	Section 6
A4 R1 (j)		***The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;***	Section 6
A4 R1 (k)		***The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);***	Section 6
A4 R1 (l)		***A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;***	Section 6
A4 R1 (m)		***An environmental awareness plan describing the manner in which-***	Section 6
	(i)	*The applicant intends to inform his or her employees of any environmental risk which may result from their work; and*	Section 6
	(ii)	*risks must be dealt with in order to avoid pollution or the degradation of the environment;*	Section 6
A4 R1 (n)		***Any specific information that may be required by the competent authority.***	Annexures of the EMPr and Section 1 for Maps

1 INTRODUCTION

The applicant, Copperton Wind Farm (Pty) Ltd, has been authorised to construct a 102MW Wind Energy Facility (WEF) on Farm Struisbult (Portions 4 (a portion of portion 2) and 7 (a portion of portion 5) of Farm No. 103 and Portion 5 of Farm No. 104) and to relocate an existing airstrip (An existing airstrip would also be relocated as part of the proposed project, to Portions 1 and 2 of Farm No. 105. Struisbult Farm is located approximately 5 km east of Copperton and the two main portions (excluding the transmission line portion) cover approximately 3 130 ha. The airstrip would be relocated to a 385 ha area within Portions 1 and 2 of Farm No. 105 which covers an area of 7 578 ha).to Portions 1 and 2 of Farm Smouspan (Farm No. 105), near Copperton in the Northern Cape.

Subsequent advances in technology obliged the Applicant to reconfigure the facility. The applicant appointed Aurecon to manage the requisite Amendment Application process (in terms of the 2014 NEMA EIA Regulations - Government Notice (GN) R 982). The amendments applied for included:

- turbine specifications,
- the hub height and
- rotor diameter,
- as well a reduced number of turbines which has led to a slight change in the layout.
- refinement of the internal layout and turbines locations, was also the location of underground cables and roads (mostly in the same corridors), which had been refined and changed due to fewer turbines.

<u>The current Environmental Authorisation (dated 23 November 2016), has the following general description of the activity:</u>

- The construction of the 102MW Wind Energy Facility which will consist of the following:
    - A total of 34 turbines of approximately 3MW each,
    - The turbines will be erected on a 100m high reinforced concrete tower (hub height) with a rotor diameter of 125m.
    - The project will be constructed on the Farm Nelspoortje (Farm No. 103 Portions 4 (a portion of portion 2) and 7 (a portion of portion 5)) near Copperton. The existing Eskom servitude in which the 132kV distribution network will be upgraded is on the Remaining Extent of the farm Vogelstruisbult Farm 104, Portion 1 and the relocation of an existing airstrip to Portions 1 and 2 of Smouspan Farm No. 105, approximately 7km east of the site into the Armscor (Altkanpan) test range. The properties are all within the Pixley ka Seme District Municipality (within Siyathemba Municipality) in the Northern Cape Province.
- Associated infrastructure which will consist of the following:
    - A powerline to connect into the existing 132 kV national transmission grid (including all associated power transmission infrastructure such as transformer substations) and roads, hard standing and cabling between the turbines.
    - Gravel surface access roads of approximately 6m wide would also be required between each turbine.
    - Cables connecting each turbine would be buried beneath the access roads
    - There is an existing distribution infrastructure, which is designed for 132 kV distribution adjacent to the site. This is the Eskom Cuprum Substation located at the disused copper mine approximately 6.5km to the south west. The project would connect to the grid via a transmission line from the proposed substation to Cuprum Substation.
    - An alternative grid connection would be via an onsite connection to the transmission lines traversing the site. The location of the proposed substation for this alternative would also be at the entrance to the site and the power would be stepped up from 33 or 22kV to 132kV either on the or at Cuprum Substation.

The Project, was initially authorised by the Competent Authority on 15 August 2012 (DEA Reference Number: 12/12/20/2099) and subsequently, the following amendments have applied for and approved for the Project:

- 12/12/20/2099 – 28 August 2012;
- 12/12/20/2099 – 28 March 2013;
- 12/12/20/2099/AM4 – 26 June 2015
- 12/12/20/2099/AM6 – 04 August 2016
- 12/12/20/2099/AM7 – 23 November 2016

Please note that several amendments have been undertaken for the Copperton project and each amendment which has been authorised above refers back to the original Environmental Authorisation dated (15 August 2012) and therefore the conditions extracted here are from the original EA, which are still valid, unless otherwise noted in an Amendment above.

Following on from the above, this document is in compliance with Condition 13 of the original Environmental Authorisation (dated 15 August 2012 with DEA Reference No: 12/12/20/2099), where Condition 13, specifically states the following: "*An amended Environmental Management Programme (EMPr) must be submitted to the Department for written approval prior to commencement of the activity along with a final development site layout. All available biodiversity information must be used in the finalisation of the layout plan".* Therefore, based on the above information the Applicant has appointed Terrmanzi Group (Pty) Ltd, hereinafter referred to as TMG to prepare the amended EMPr and issue this out to the Registered Interested &Affected Parties for the statutory 30-day PPP and thereafter submit this document to the DEA for a decision.

The DEA, within the Environmental Authorisation (dated 15 August 2012) have requested that the following information:

- *Condition 13: An amended Environmental Management Programme (EMPr) must be submitted to the Department for written approval prior to commencement of the activity along with a final development site layout. All available biodiversity information must be used in the final of the layout plan. The development layout must indicate the following:*
    - *Condition 13.1 Development footprint;*
    - *Condition 13.2 Wetlands, drainage lines, rivers, stream and water crossing of roads and cable indicating the type of bridging structure that will be used.*
    - *Condition 13.3: The location of heritage sites*
    - *Condition 13.4 Substations and /or transformers sites including their entire footprint.*
    - *Condition 13.5: Connection routes (including plygon positions) to the distribution/transmission network;*
    - *Condition 13.6 All existing infrastructure on the site, especially roads;*
    - *Condition 13.7 Buildings including infrastructure;*
    - *Condition 13.8 All "no-go" areas;*
    - *Condition 13.9 A map combining the final layout plan superimposed on the environmental sensitivity map. This map must reflect the location of the WEF as stated in the EIR dated April 2012 and this authorisation.*
- *Condition 14 The final development layout must also be superimposed over an environmental sensitivity map to be submitted to the department.*
- *Condition 15 The applicant must appoint a qualified botanical and fauna specialist to ground-truth every footprint and their recommendation must inform the final layout of the renewable energy facility and EMPr to be submitted to the department for approval.*
- *Condition 16 The draft EMPr submitted as part of the application for environmental authorisation must be amended and submitted with the above-mentioned layout plan to the Department for written approval prior to commencement of the activity.*

- *Condition 17 The EMPr amendments must include the following:*
    - *Condition 17.1 All recommendations and mitigation measures recorded in the EIR dated 2012*
    - *Condition 17.2 The requirements and condition of this authorisation*
    - *Condition 17.3 A plant rescue and protection plan which allows for the maximum transplant of conservation important species from areas to be transformed. The plan must be complied by a vegetation specialist familiar with the site in consultation with the ECO and be implemented prior to commencement of the construction phase.*
    - *Condition 17.4 An open space management plan to be implemented during the construction and operation pf the activity*
    - *Condition 17.5 A re-vegetation and habitat rehabilitation plan to be implemented during the construction and operation of the facility including timeframes for restoration which must indicate rehabilitation within the shortest possible time after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats*
    - *Condition 17.6 An alien invasive management plan to be implemented during the construction and operation of the facility. The plan must include mitigation measures to reduce the invasion of alien species and ensure that the continuous monitoring and removal of alien species is undertaken.*
    - *Condition 17.7 A storm water management plan to be implemented during the construction and operation of the facility. The plan must ensure compliance with applicable legislation and prevent off-site migration of contaminated stow water or increased soil erosion. The plan must include the construction of appropriate design measures that allow surface and subsurface flows. Drainage measures must promote the dissipation of storm water run-off.*
    - *Condition 17.8 An effective monitoring system to detect any leakage or spillage of all hazardous substances during their transportation handing uses and storage. This must include precautionary measures to limit the possibility of oil and other toxic liquids from entering the soil and storm water systems.*
    - *Condition 17.9 An erosion management plan for monitoring and rehabilitating erosion event associated with the facility. Appropriate erosion mitigation must form part of this plane to prevent and reduce the risk of any potential erosion.*
    - *Condition 17.10 A traffic management plan for the site access roads to ensure that no hazards would result from the increased truck traffic and that traffic flow would not be adversely impacted. This plan must include measures to minimize impacts on local commuters e.g. limiting construction vehicles travelling on public roadways during the morning and late afternoon commute times and avoid using roads through densely populated built-up areas so as not to disturb existing retail and commercial operations.*
    - *Condition 17.11 Measure to protect hydrological features such as streams, rivers, pans, wetlands, dams and their catchment and other environmental sensitive areas from construction impact including the direct or indirect spillage of pollutants.*
- *Condition 18 The approved EMPr must be implemented and strictly enforced during all phases of the project. It shall be seen as a dynamic document and shall be included in al contract documentation for all phases of the development when approved.*
- *Condition 19 Changed to the EMPr, which are environmentally defendable, shall be submitted to this Department for acceptance before such changes shall be implemented.*
- *Condition 20 The provision of the approved EMPr including the mitigation measures identified in the EIR dated 12 March 2012 and specialist studies shall be an extension of the conditions of this EA and therefore non-compliance with them would constitute non-compliance with the EA.*

- *Condition 21 The holder of this authorisation must appoint qualified vegetation, fauna, heritage and avifauna specialist to ground-truth every infrastructure footprint and their recommendation must inform the final layout of the facility and the EMPr to be submitted to the department for approval.*
- *Condition 91: An integrated waste management approach must be implemented that is based on waste minimisation and must incorporate reduction, recycling, re-use and disposal where appropriate. Any solid waste shall be disposed of at a landfill licensed in terms of Section 20 (b) of the National Environmental Management Waste Act (Act No. 59 of 2008).*
- *Condition 97: The holder of the authorisation must commission a Conservation Management Plan for Moddeerpan and the two kraals. The owner of the property must be provided with a copy of the Conservation Management Plan and this must be transferred to any new owner of the property.*

This EMPr has incorporated all the above mentioned requirements into this EMPr and further all the Environmental Authorisations that pertain to this project form Annexure C of this EMPr.

Conditions from EA dated 15 August 2012, which have been incorporated into this EMPr	Sections where Conditions are in this EMPr
• *Condition 13: An amended Environmental Management Programme (EMPr) must be submitted to the Department for written approval prior to commencement of the activity along with a final development site layout. All available biodiversity information must be used in the final of the layout plan. The development layout must indicate the following:*	This EMPr serves to satisfies Condition 13
• *Condition 13.1 Development footprint;*	Please refer to the figures in Section 1 of this EMPr
• *Condition 13.2 Wetlands, drainage lines, rivers, stream and water crossing of roads and cable indicating the type of bridging structure that will be used.*	Please refer to the figures in Section 1 of this EMPr
• *Condition 13.3: The location of heritage sites*	Please refer to the figures in Section 1 of this EMPr
• *Condition 13.4 Substations and /or transformers sites including their entire footprint.*	Please refer to the figures in Section 1 of this EMPr
• *Condition 13.5: Connection routes (including polygon positions) to the distribution/transmission network;*	Please refer to the figures in Section 1 of this EMPr
• *Condition 13.6 All existing infrastructure on the site, especially roads;*	Please refer to the figures in Section 1 of this EMPr
• *Condition 13.7 Buildings including infrastructure*	Please refer to the figures in Section 1 of this EMPr
• *Condition 13.8 All "no-go" areas;*	Please refer to the figures in Section 1 of this EMPr
• *Condition 13.9 A map combining the final layout plan superimposed on the environmental sensitivity map. This map must reflect the location of the WEF as stated in the EIR dated April 2012 and this authorisation.*	Please refer to the figures in Section 1 of this EMPr
• *Condition 14 The final development layout must also be superimposed over an environmental sensitivity map to be submitted to the department*	Please refer to the figures in Section 1 of this EMPr
• *Condition 15 The applicant must appoint a qualified botanical and fauna specialist to ground-truth every footprint and their recommendation must inform the final layout of the renewable energy facility and EMPr to be submitted to the department for approval.*	Please refer to Annexure G and I for the Faunal and Vegetation Ground-truthing Reports.
• *Condition 16 The draft EMPr submitted as part of the application for environmental authorisation must be amended and submitted with the above-mentioned layout plan to the Department for written approval prior to commencement of the activity.*	Please refer to Section 1 of this EMPr which satisfied this Condition
• *Condition 17 The EMPr amendments must include the following:*	
• *Condition 17.1 All recommendations and mitigation measures recorded in the EIR dated 2012*	Please refer to Section 4.2 for Construction Phase and Section 4.3 for Operational Phase mitigation measures. Where mitigation measures were proposed by the Professional Team in the EIA dated March 2012, this mitigation measures have been extracted accordingly in the relevant sections.

• *Condition 17.2 The requirements and condition of this authorisation*	Please refer to Section 4.2 for Construction Phase and Section 4.3 for Operational Phase mitigation measures. Further please refer to Annexure C which contains all the valid EA's for this Project and which detail the required Conditions.
• *Condition 17.3 A plant rescue and protection plan which allows for the maximum transplant of conservation important species from areas to be transformed. The plan must be complied by a vegetation specialist familiar with the site in consultation with the ECO and be implemented prior to commencement of the construction phase.*	Please refer to Annexure G, which contains this information
• *Condition 17.4 An open space management plan to be implemented during the construction and operation pf the activity*	Please refer to Annexure G, which contains this information
• *Condition 17.5 A re-vegetation and habitat rehabilitation plan to be implemented during the construction and operation of the facility including timeframes for restoration which must indicate rehabilitation within the shortest possible time after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats*	Please refer to Annexure G, which contains this information
• *Condition 17.6 An alien invasive management plan to be implemented during the construction and operation of the facility. The plan must include mitigation measures to reduce the invasion of alien species and ensure that the continuous monitoring and removal of alien species is undertaken.*	Please refer to Annexure G, which contains this information
• *Condition 17.7 A storm water management plan to be implemented during the construction and operation of the facility. The plan must ensure compliance with applicable legislation and prevent off-site migration of contaminated stow water or increased soil erosion. The plan must include the construction of appropriate design measures that allow surface and subsurface flows. Drainage measures must promote the dissipation of storm water run-off.*	Please refer to Annexure H, which contains this information
• *Condition 17.8 An effective monitoring system to detect any leakage or spillage of all hazardous substances during their transportation handing uses and storage. This must include precautionary measures to limit the possibility of oil and other toxic liquids from entering the soil and storm water systems.*	Please refer to Annexure K, which contains this information
• *Condition 17.9 An erosion management plan for monitoring and rehabilitating erosion event associated with the facility. Appropriate erosion mitigation must form part of this plane to prevent and reduce the risk of any potential erosion.*	Please refer to Annexure H, which contains this information
• *Condition 17.10 A traffic management plan for the site access roads to ensure that no hazards would result from the increased truck traffic and that traffic flow would not be adversely impacted. This plan must include measures to minimize impacts on local commuters e.g. limiting construction vehicles travelling on public roadways during the morning and late afternoon commute times and avoid using roads through densely populated built-up areas so as not to disturb existing retail and commercial operations.*	Please refer to Annexure F, which contains this information
• *Condition 17.11 Measure to protect hydrological features such as streams, rivers, pans, wetlands, dams and their catchment and other environmental sensitive areas from construction impact including the direct or indirect spillage of pollutants.*	Please refer to Annexure H, which contains this information
• *Condition 18 The approved EMPr must be implemented and strictly enforced during all phases of the project. It shall be seen as a dynamic document and shall be included in al contract documentation for all phases of the development when approved.*	This will be adhered to by all Contractors on site.
• *Condition 19 Changed to the EMPr, which are environmentally defendable, shall be submitted to this*	This Condition has been noted and will be adhered to should this be required during the lifecycle of the Project.

Department for acceptance before such changes shall be implemented	
• *Condition 20 The provision of the approved EMPr including the mitigation measures identified in the EIR dated 12 March 2012 and specialist studies shall be an extension of the conditions of this EA and therefore non-compliance with them would constitute non-compliance with the EA.*	This Condition will be adhered to by all Contractors on site.
• *Condition 21 The holder of this authorisation must appoint qualified vegetation, fauna, heritage and avifauna specialist to ground-truth every infrastructure footprint and their recommendation must inform the final layout of the facility and the EMPr to be submitted to the department for approval.*	This Condition has been adhered to as the vegetation, fauna, heritage and avifauna specialist went to site during September / October 2016 to ground-truth the site accordingly.
• *Condition 91: An integrated waste management approach must be implemented that is based on waste minimisation and must incorporate reduction, recycling, re-use and disposal where appropriate. Any solid waste shall be disposed of at a landfill licensed in terms of Section 20 (b) of the National Environmental Management Waste Act (Act No. 59 of 2008).*	Please refer to Annexure K, which contains this information
• *Condition 97: The holder of the authorisation must commission a Conservation Management Plan for Moddeerpan and the two kraals. The owner of the property must be provided with a copy of the Conservation Management Plan and this must be transferred to any new owner of the property.*	Please refer to Annexure J, which contains this information

Please note that the final layout depicted in the EMPr has been assessed and ground-truthed by the Professional Team and the Professional Team have confirmed that the location of the wind turbines are acceptable and implementable.

The maps below provide the reader a description of the associated infrastructure as well as show sensitive areas located on the site.

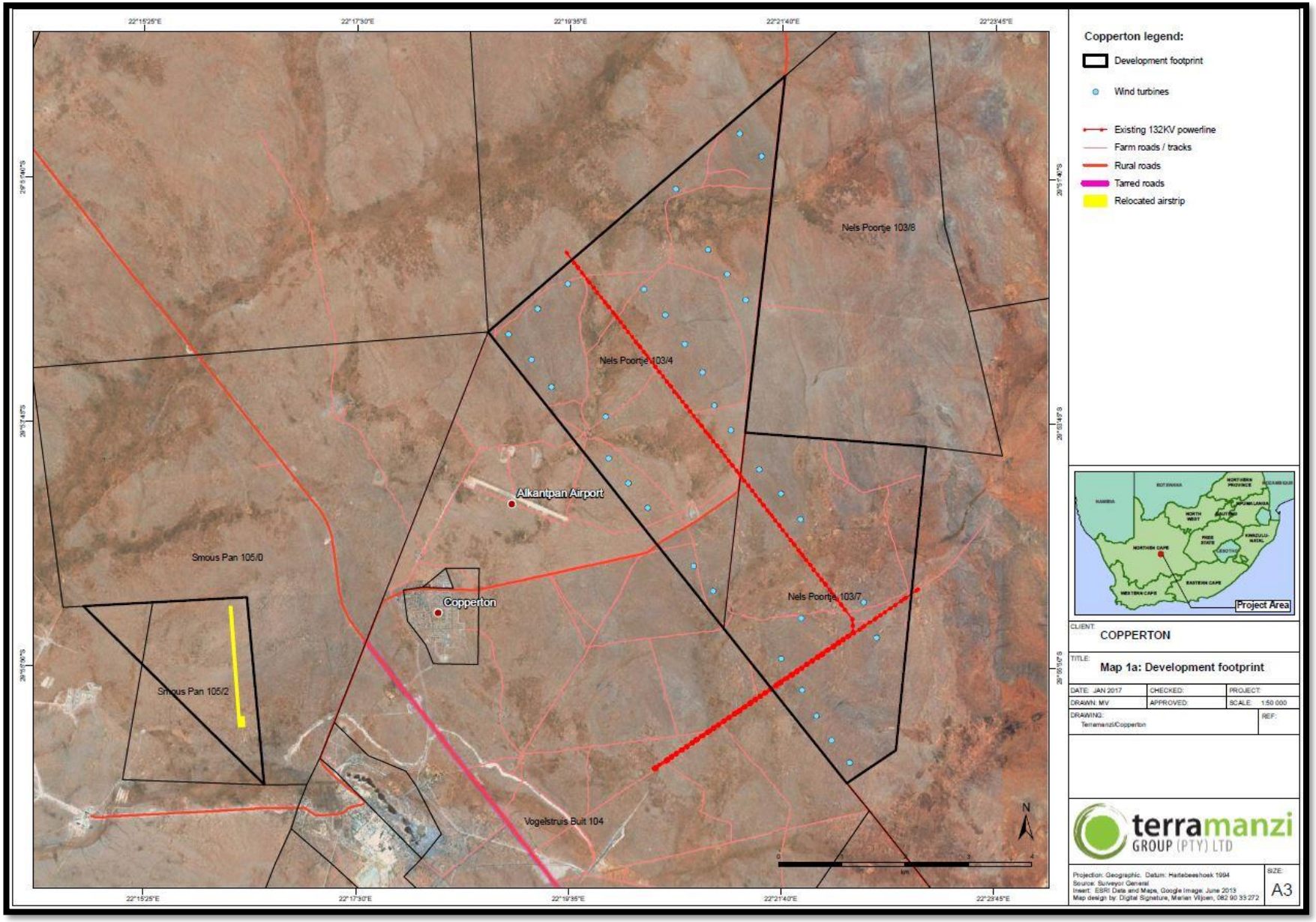


Figure 1: This Figure shows the Project Development Footprint

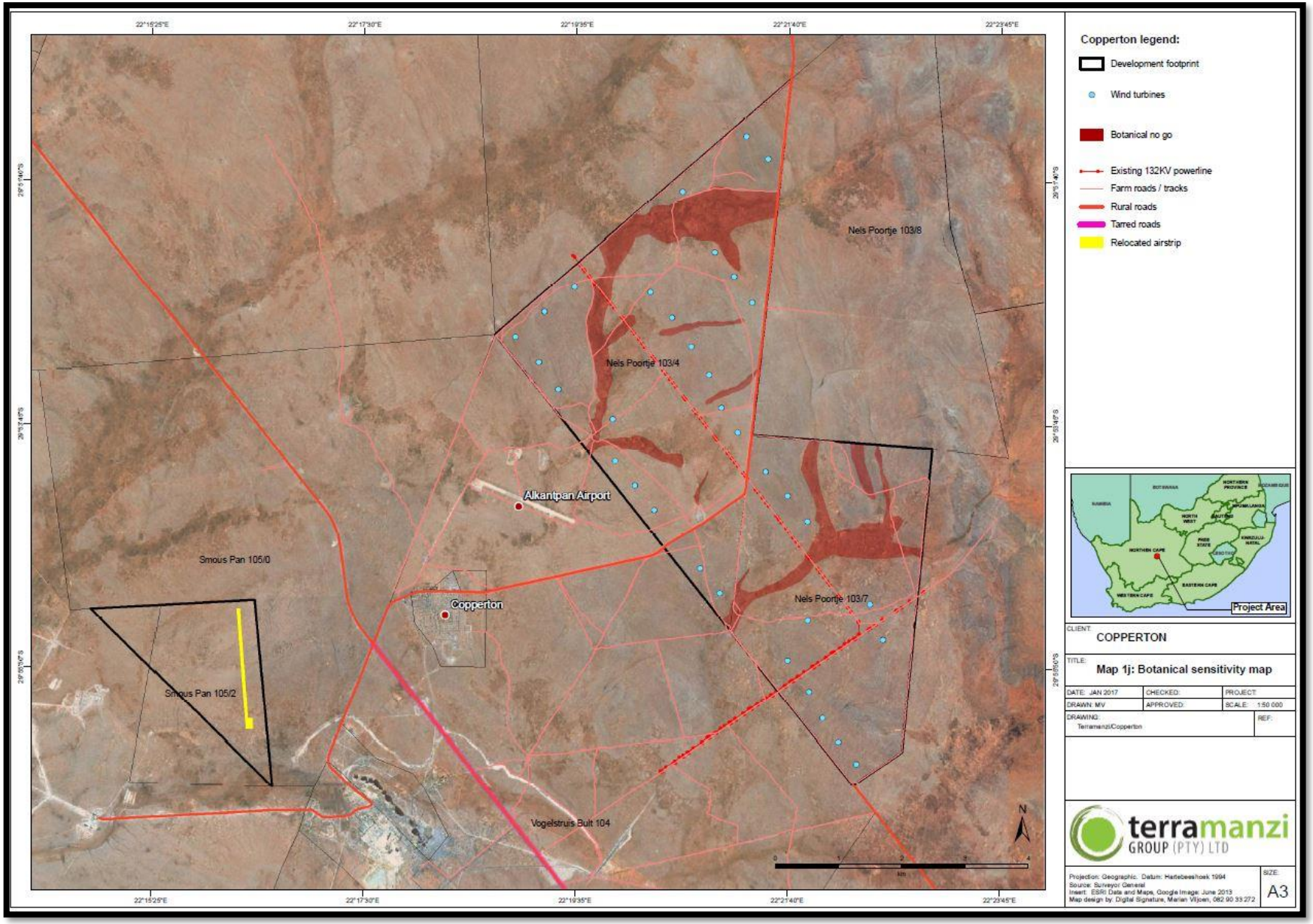


Figure 2: This Figure shows the location of the botanical sensitive areas on the Copperton WEF site.

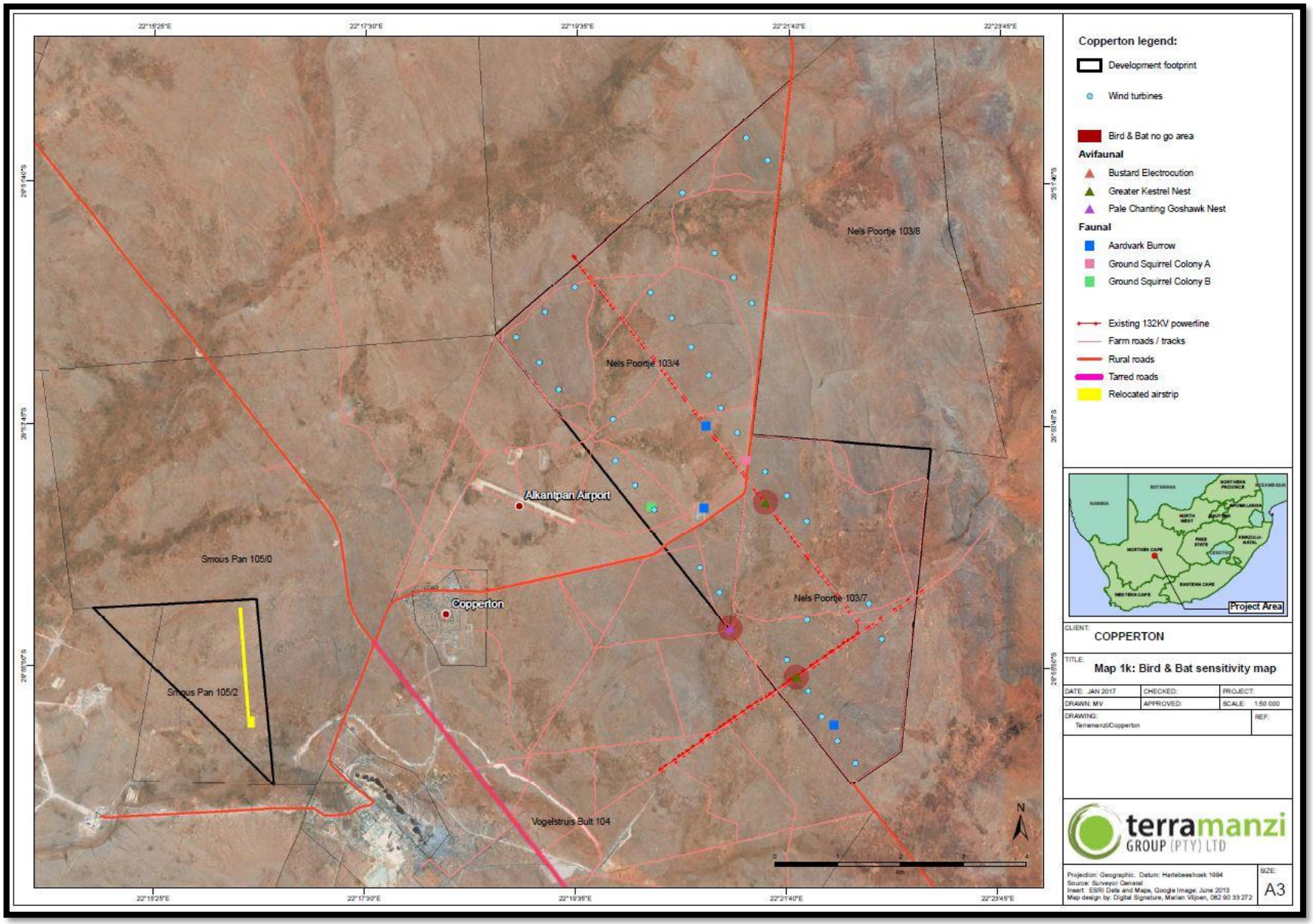


Figure 3: This figure shows the location of the bird, bat and fauna sensitive areas on the Copperton WEF site..

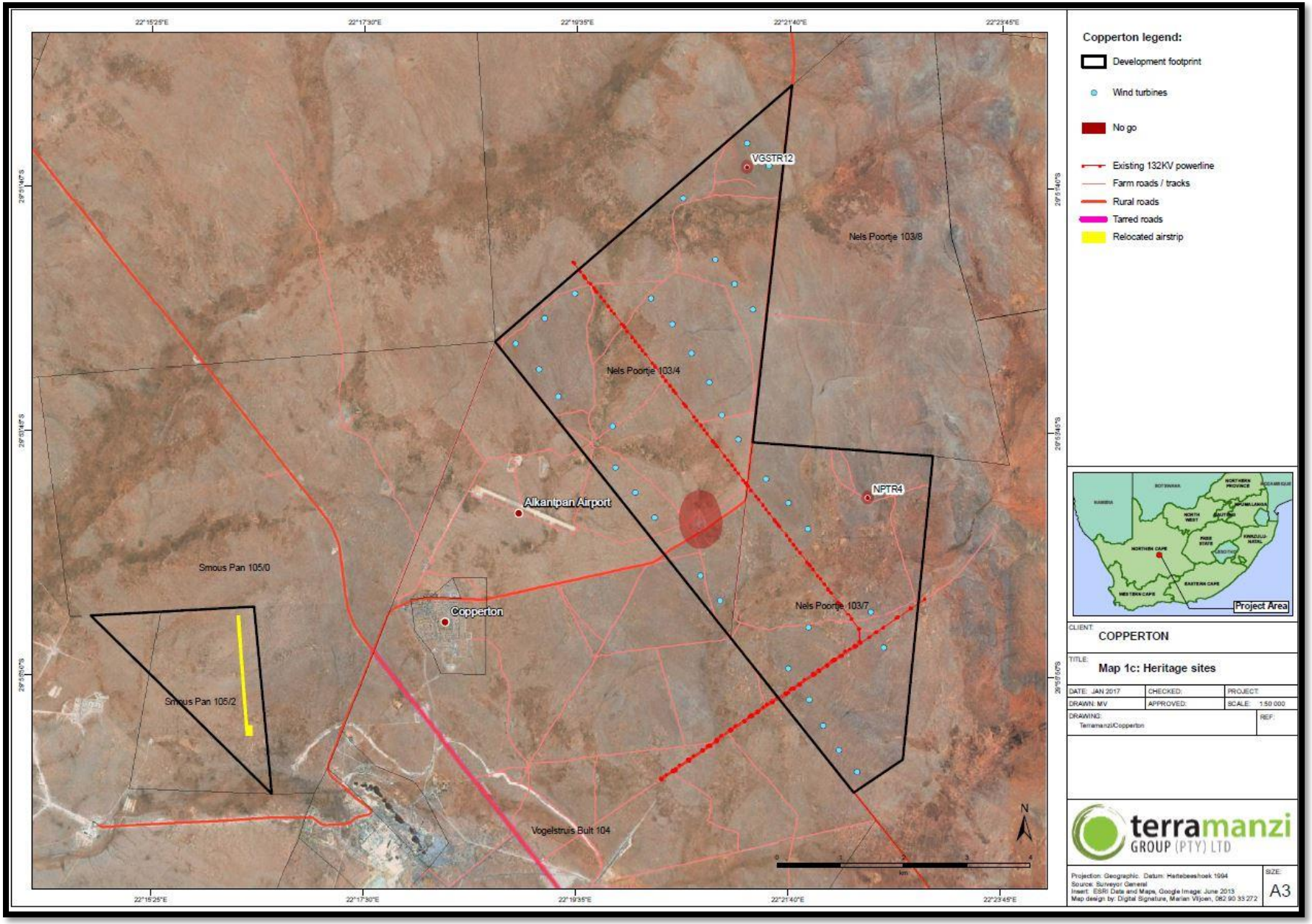


Figure 4: This figure shows the location of the sensitive heritage site on the Copperton WEF site.

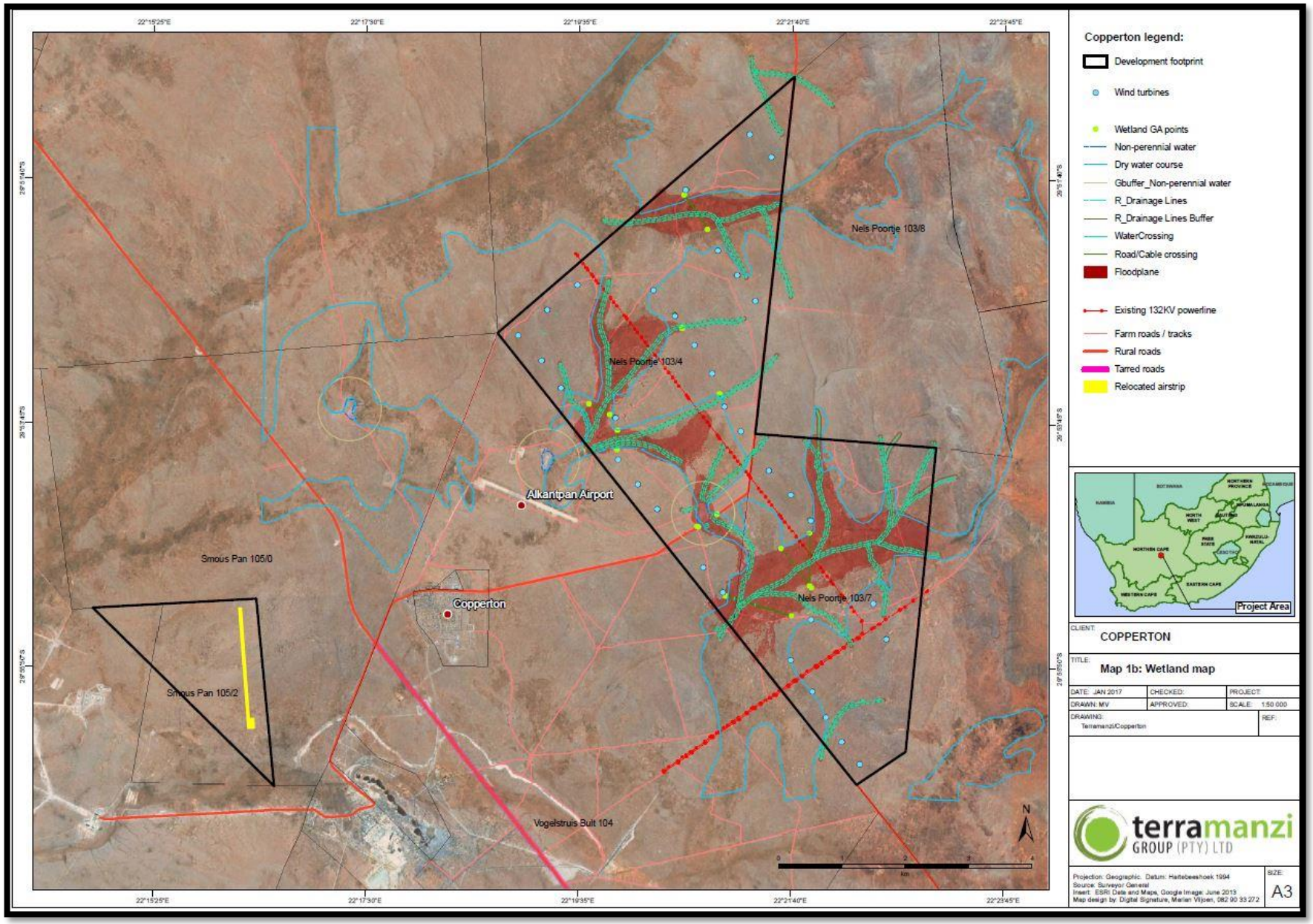


Figure 5: This figure shows the location of the sensitive wet areas located on the Copperton WEF site.

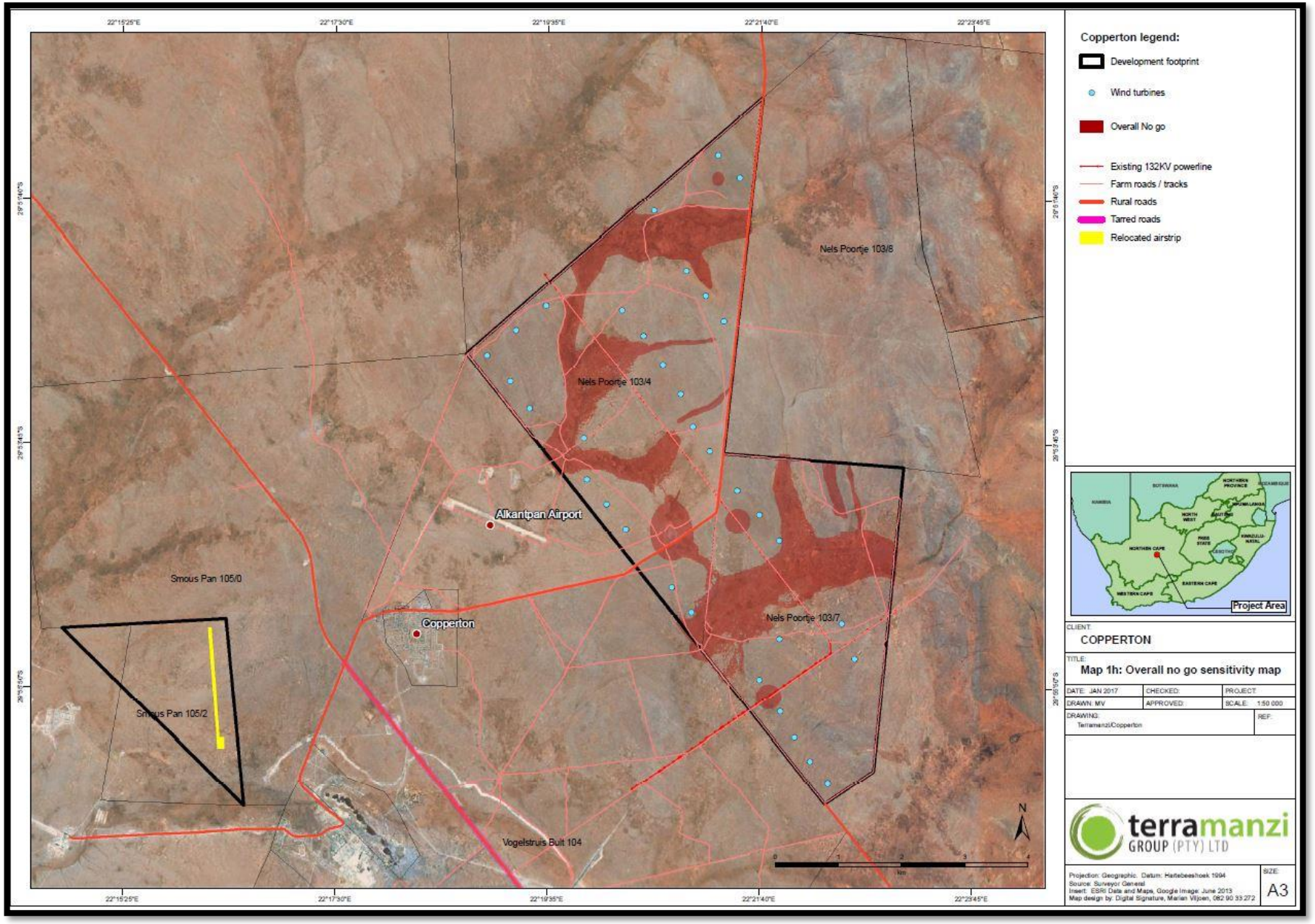


Figure 6: This figure shows the location of the all the sensitive areas on the Copperton WEF site.

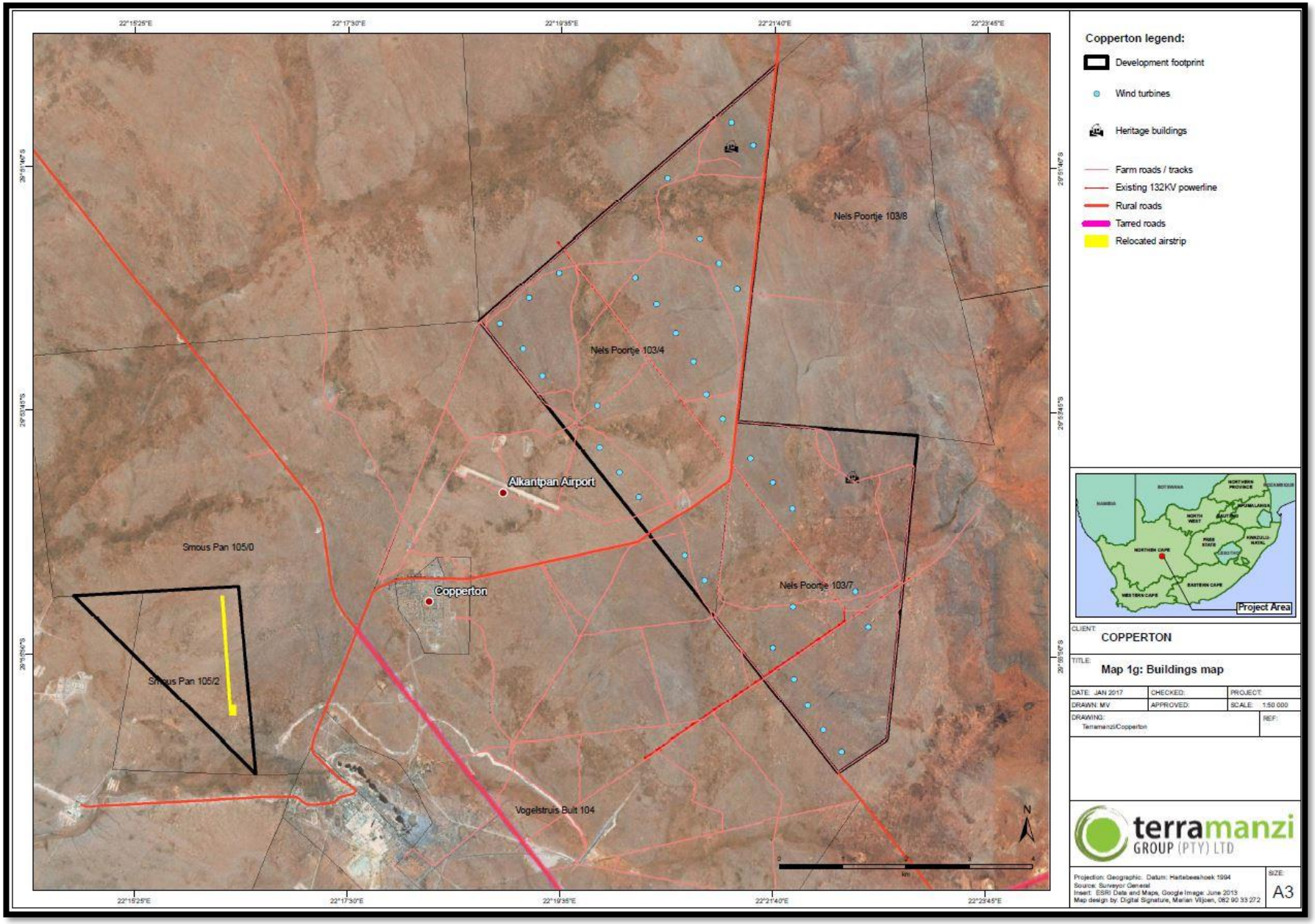


Figure 7: This figure shows the location of the building located on the Copperton WEF site

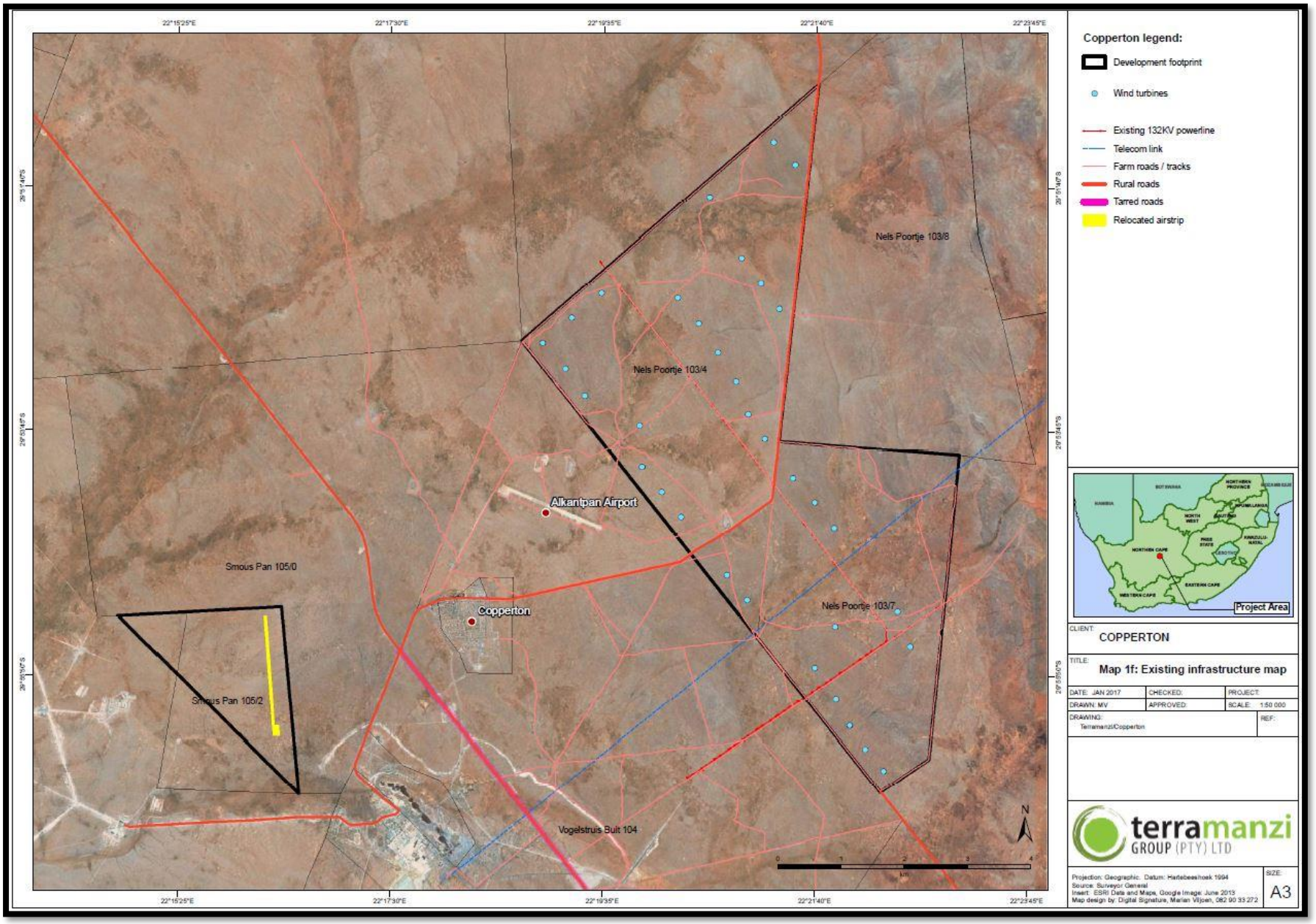


Figure 8: This figure shows the existing infrastructure located on the site and around the site.

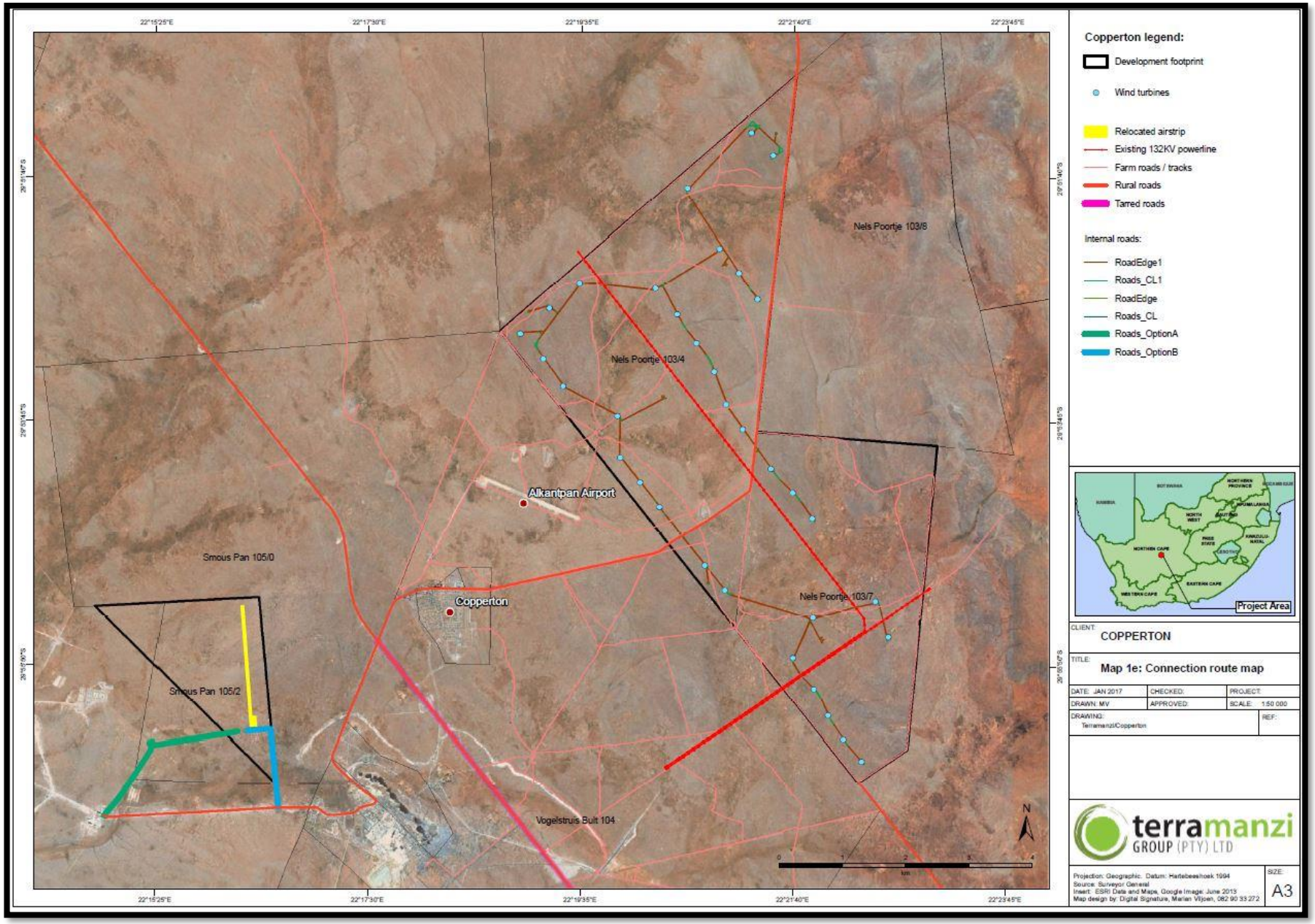


Figure 9: This figure shows the proposed infrastructure to be constructed on the Copperton WEF site.

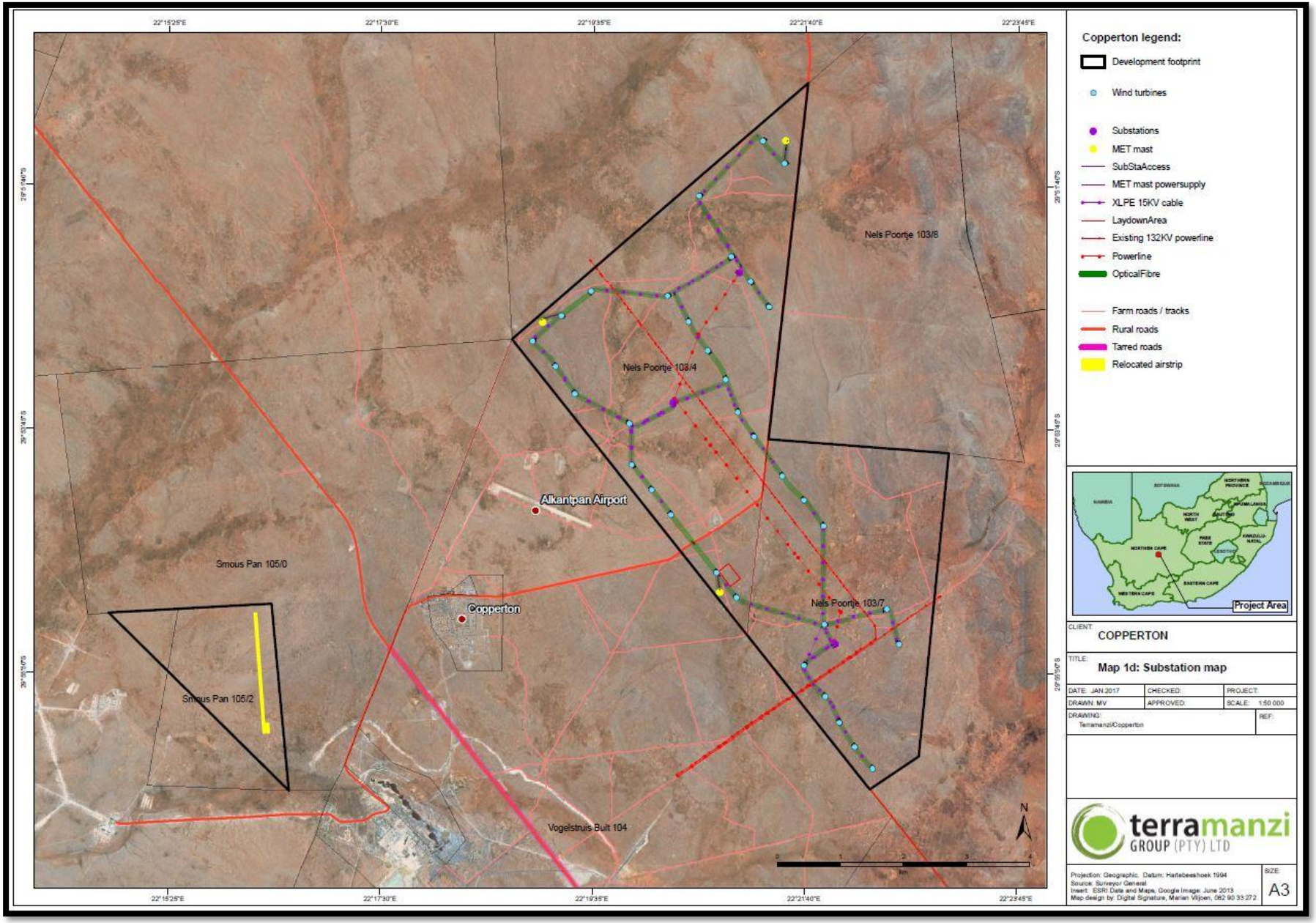


Figure 10: This figure shows the proposed infrastructure including the substation on the Copperton WEF site.

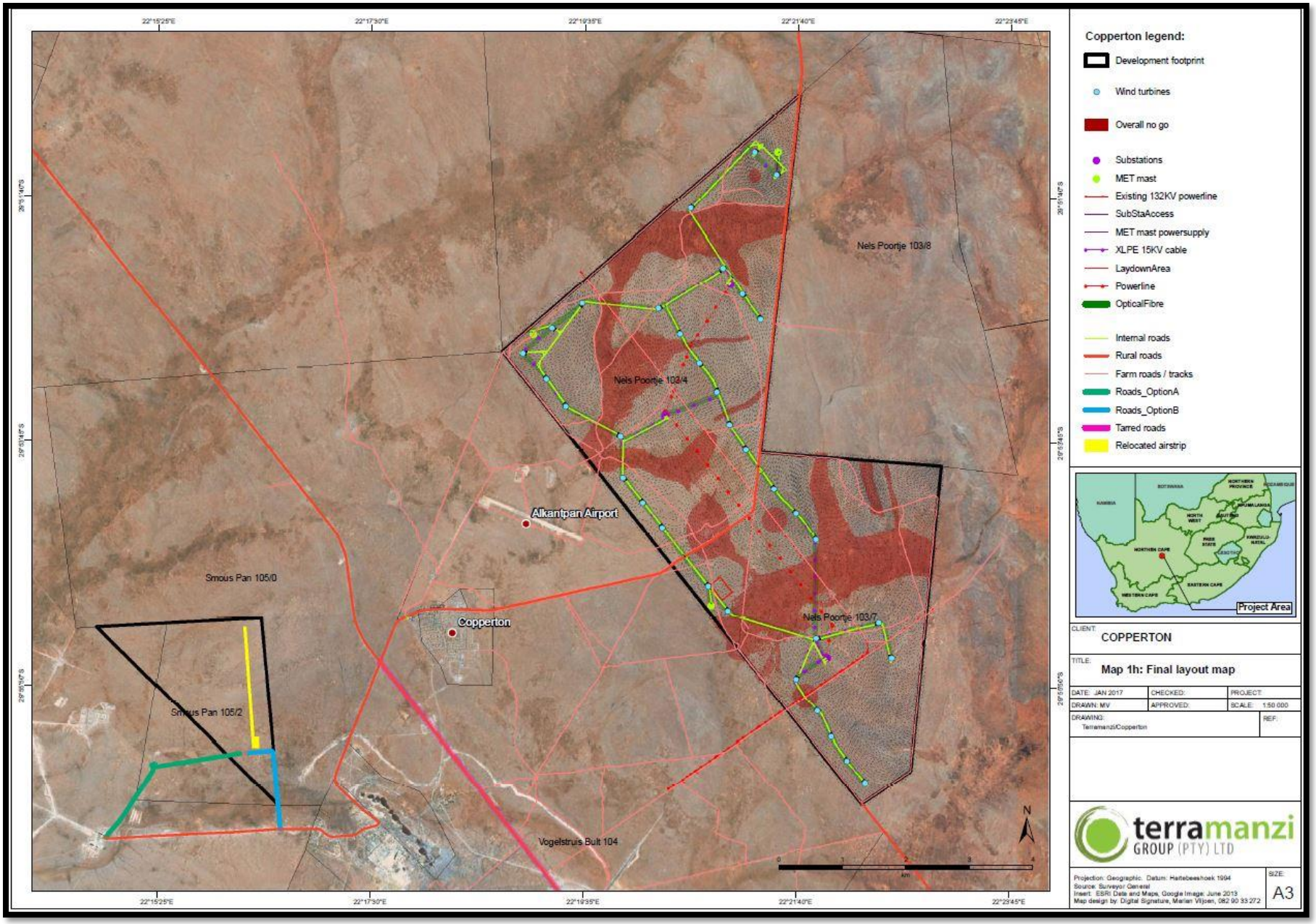


Figure 11: This figure shows the proposed infrastructure, existing infrastructure and sensitive areas superimposed on the Copperton WEF site

The development was subject to the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014 and as such was further subject to an Environmental Application process to the Competent Authority (Department of Environmental Affairs - DEA) ultimately made a decision on the application. One of the requirements of the application process was that an Environmental Management Programme (EMPr) that complies with Annexure 4 of Government Notice Number R.982 of the NEMA EIA Regulations (2014) is produced. This EMPr must address the potential lifecycle environmental impacts of the proposed activity.

The EMPr should also adhere to the local authority by law requirements as well as any other obligatory environmental and other legal requirements.

This EMPr is a practical and achievable plan to ensure that environmental risks and opportunities (i.e. opportunities to provide environmentally friendly alternatives) are identified and addressed during the various stages of the Project life cycle (namely pre-construction, construction, operation, pre-decommissioning and decommissioning).

This document is dynamic and can be amended during the Project life cycle in order to continue adapting the document to the requirements of the environmental management on site. Changes to this Environmental Management Programme can only occur with the written approval of all parties (including the local authority and the DEA) involved and an updated version should also be forwarded to all parties once agreed.

It is understood that the client or any future development entity (where transfer of ownership occurs) will be fully responsible for this EMPr and its requirements including any environmental rehabilitation that may be needed. This is required in terms of Section 28 (*Duty of Care and Remediation of Damage*) of the National Environmental Management Act, (Act No. 107 of 1998).

Please note that this Environmental Management Programme (EMPr) takes into account the Environmental Authorisation requirements and further the Environmental Authorisation and its Conditions of Authorisation form part of this document and are appended as Appendix 2.

2 STRUCTURE OF THIS EMPR

Section 1 provides an introduction to the Project

Section 2 details the structure of this EMPr

Section 3 deals with the terms of reference for this EMPr as well as identifies environmental risks and opportunities

Section 3 documents the environmental objectives, targets and measures for each environmental risk identified

Section 4 deals with the implementation of the EMPr including the assignment of roles and responsibilities, visits by the ECO, documented procedures and handling of complaints related to the Project.

Annexure A contains the Glossary

Annexure B contains the generic Method Statement

Annexure C contains relevant permits applicable to the proposed development (Environmental Authorizations as applicable to this Project)

Annexure D contains design and planning documentation

Annexure E contains a detailed copy of the recommended Roles and Responsibilities of the Environmental Control Officer (ECO)

Annexure F contains the Traffic Management Plan for the site access roads in terms of Condition 17.10 of the Environmental Authorization dated 15 August 2012

Annexure G contains the Vegetation Plans in terms of Condition 17.3 (A Plant Rescue and Protection Plan); 17.4 (A Open Space Management Plan); 17.5 (A Re-vegetation and Habitat Rehabilitation Plan) and 17.6 (An Alien Invasive Management Plan) of the Environmental Authorizations dated 15 August 2012

Annexure H contains the Freshwater Plans in terms of Condition 17.7 (Storm water Management Plan); 17.9 (An Erosion Management Plan) and 17.11 (Measure to protect hydrological features) of the Environmental Authorizations dated 15 August 2012.

Annexure I contains the Faunal and Avifaunal Ground-truthing in terms of Condition 15 (Avifaunal and Fauna Specialist to Groundtruth every footprint) of the Environmental Authorizations dated 15 August 2012.

Annexure J contains that Conservation management plan for the Modderpan and two kraals in terms of Condition 97, 98 and 102 of the Environmental Authorization dated 15 August 2012.

Annexure K contains the Integrated Waste Management Approach, which includes the effective monitoring system to detect leakage or spillage of all hazardous substances in terms of Condition 17.8 and 91 respectively of the Environmental Authorization dated 15 August 2011.

Annexure L contains the EAP's Curriculum Vitae

3 TERMS OF REFERENCE

This EMPr was designed and produced in accordance with the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations 2014, as amended. This EMPr also includes the best practice provisions recommended in Section 3 the New South Wales (Australia) Environmental Management System Guidelines (2009) which are recognized as International Best Practice and based on the ISO 14001 system, as well as any applicable statutory environmental requirements.

Within the conditions of the original Environmental Authorisation (dated 15 August 2012 with DEA Reference No: 12/12/20/2099), Condition 13, specifically states the following: "*An amended Environmental Management Programme (EMPr) must be submitted to the Department for written approval prior to commencement of the activity along with a final development site layout. All available biodiversity information must be used in the finalisation of the layout plan".* Therefore, based on the above information the Applicant has appointed Terrmanzi Group (Pty) Ltd, hereinafter referred to as TMG to prepare the amended EMPr and issue this out to the Registered Interested &Affected Parties for the statutory 30-day PPP and thereafter submit this document to the DEA for a decision.

The DEA, within the Environmental Authorisation (dated 15 August 2012) have requested that the following information:

- *Condition 13: An amended Environmental Management Programme (EMPr) must be submitted to the Department for written approval prior to commencement of the activity along with a final development site layout. All available biodiversity information must be used in the final of the layout plan. The development layout must indicate the following:*
    - *Condition 13.1 Development footprint;*
    - *Condition 13.2 Wetlands, drainage lines, rivers, stream and water crossing of roads and cable indicating the type of bridging structure that will be used.*
    - *Condition 13.3: The location of heritage sites*
    - *Condition 13.4 Substations and /or transformers sites including their entire footprint.*
    - *Condition 13.5: Connection routes (including plygon positions) to the distribution/transmission network;*
    - *Condition 13.6 All existing infrastructure on the site, especially roads;*
    - *Condition 13.7 Buildings including infrastructure;*
    - *Condition 13.8 All "no-go" areas;*
    - *Condition 13.9 A map combining the final layout plan superimposed on the environmental sensitivity map. This map must reflect the location of the WEF as stated in the EIR dated April 2012 and this authorisation.*
- *Condition 14 The final development layout must also be superimposed over an environmental sensitivity map to be submitted to the department.*
- *Condition 15 The applicant must appoint a qualified botanical and fauna specialist to ground-truth every footprint and their recommendation must inform the final layout of the renewable energy facility and EMPr to be submitted to the department for approval.*
- *Condition 16 The draft EMPr submitted as part of the application for environmental authorisation must be amended and submitted with the above-mentioned layout plan to the Department for written approval prior to commencement of the activity.*
- *Condition 17 The EMPr amendments must include the following:*
    - *Condition 17.1 All recommendations and mitigation measures recorded in the EIR dated 2012*
    - *Condition 17.2 The requirements and condition of this authorisation*
    - *Condition 17.3 A plant rescue and protection plan which allows for the maximum transplant of conservation important species from areas to be transformed. The plan must be complied by a*

vegetation specialist familiar with the site in consultation with the ECO and be implemented prior to commencement of the construction phase.

- *Condition 17.4 An open space management plan to be implemented during the construction and operation pf the activity*
- *Condition 17.5 A re-vegetation and habitat rehabilitation plan to be implemented during the construction and operation of the facility including timeframes for restoration which must indicate rehabilitation within the shortest possible time after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats*
- *Condition 17.6 An alien invasive management plan to be implemented during the construction and operation of the facility. The plan must include mitigation measures to reduce the invasion of alien species and ensure that the continuous monitoring and removal of alien species is undertaken.*
- *Condition 17.7 A storm water management plan to be implemented during the construction and operation of the facility. The plan must ensure compliance with applicable legislation and prevent off-site migration of contaminated stow water or increased soil erosion. The plan must include the construction of appropriate design measures that allow surface and subsurface flows. Drainage measures must promote the dissipation of storm water run-off.*
- *Condition 17.8 An effective monitoring system to detect any leakage or spillage of all hazardous substances during their transportation handing uses and storage. This must include precautionary measures to limit the possibility of oil and other toxic liquids from entering the soil and storm water systems.*
- *Condition 17.9 An erosion management plan for monitoring and rehabilitating erosion event associated with the facility. Appropriate erosion mitigation must form part of this plane to prevent and reduce the risk of any potential erosion.*
- *Condition 17.10 A traffic management plan for the site access roads to ensure that no hazards would result from the increased truck traffic and that traffic flow would not be adversely impacted. This plan must include measures to minimize impacts on local commuters e.g. limiting construction vehicles travelling on public roadways during the morning and late afternoon commute times and avoid using roads through densely populated built-up areas so as not to disturb existing retail and commercial operations.*
- *Condition 17.11 Measure to protect hydrological features such as streams, rivers, pans, wetlands, dams and their catchment and other environmental sensitive areas from construction impact including the direct or indirect spillage of pollutants.*

- *Condition 18 The approved EMPr must be implemented and strictly enforced during all phases of the project. It shall be seen as a dynamic document and shall be included in al contract documentation for all phases of the development when approved.*
- *Condition 19 Changed to the EMPr, which are environmentally defendable, shall be submitted to this Department for acceptance before such changes shall be implemented.*
- *Condition 20 The provision of the approved EMPr including the mitigation measures identified in the EIR dated 12 March 2012 and specialist studies shall be an extension of the conditions of this EA and therefore non-compliance with them would constitute non-compliance with the EA.*
- *Condition 21 The holder of this authorisation must appoint qualified vegetation, fauna, heritage and avifauna specialist to ground-truth every infrastructure footprint and their recommendation must inform the final layout of the facility and the EMPr to be submitted to the department for approval.*

Fabio Venturi, through Terramanzi Group (Pty) Ltd is responsible for this Report and has a wealth of strategic environmental assessment and environmental management expertise in both government and the private sectors, stretching over a decade within the industry.

Fabio Venturi is a **certified Environmental Scientist** registered with the Southern African Institute of Ecologists and Environmental Scientists (SAIEES), served on the Western Cape **Committee** Branch of the South African Affiliate of the International Association for Impact Assessment (IAIAsa) and the National Executive, is a **founding member** of the Environmental Assessment Practitioners Association of South Africa (EAPASA), is a member of the **Zoological Society** of South Africa (ZSSA), is a **Certified Carbon Footprint Analyst** and **Energy Efficiency Auditor** and is qualified as an **Accredited Professional** (AP) with the **Green Building Council of South Africa** (GBCSA).

Terramanzi Group (Pty) Ltd ("TMG") hereby declares that they have no conflicts of interest related to the work of this Report. Specifically, TMG declares that they have no personal financial interests in the property and/or activity being assessed in this report, and that they have no personal or financial connections to the relevant property owners, developers, planners, financiers or consultants of the property or activity, other than fair remuneration for professional services rendered for this Report to the Competent Authority. TMG declares that the opinions expressed in this Report are independent and a true reflection of their professional expertise.

3.1 ENVIRONMENTAL IMPACT ASSESSMENTS

The proposed development was subject to a Scoping and Environmental Impact Assessment Process in terms of the NEMA Environmental Impact Assessment Regulations (2010). This Lifecycle Environmental Management Programme ("EMPr") is an addendum to the Environmental Authorization and is in compliance with the requirements of the Competent Authority in terms of Annexure 4 of GN No. R. 982 of the NEMA EIA Regulations (2014).

3.2 DEVELOPMENT CONSENT CONDITIONS

Please refer to Annexure B.

3.3 POLLUTION CONTROL APPROVALS

Not applicable.

3.4 STATUTORY OBLIGATIONS

The applicant should incorporate the following statutory and best practice requirements as part of any contract documentation related to the construction, operation and decommissioning (if required) of the proposed development:

- The National Environmental Management Act, Act 107 of 1998 (NEMA)
- National Environmental Management: Biodiversity Act 10 of 2004 (as amended)
- National Water Act, 1998 (Act No. 36 of 1998) (as amended)
- National Heritage Resources Act, Act 25 of 1999 (as amended)
- The National Environmental Management: Waste Act (March 2008)
- Relevant SANS codes

3.5 CONTRACT OBLIGATIONS

It is understood the all contract documentation related to the construction, operation and decommissioning (if required) of the proposed development will include the conditions of this EMPr. It is important to note that the contract obligations must include the recording of any complaints on the Project in the environmental register (defined below). Further, it is incumbent on the ECO to keep an accurate audit trail showing compliance with the EMPr during construction phase.

3.6 ENVIRONMENTAL RISKS

The following environmental risks have been identified based on the available information:

Potential Impact	EMP reference
PRE CONSTRUCTION	
Bulk Services Identification	Refer to Section 4.1
Permits	Refer to Section 4.1
Site Boundaries	Refer to Section 4.1
"No-Go" Areas	Refer to Section 4.1
Training	Refer to Section 4.1
Site Layout	Refer to Section 4.1
Working Hours	Refer to Section 4.1
CONSTRUCTION PHASE	
Social Considerations Management	Refer to Section 4.2
Socio-Economic Management	Refer to Section 4.2
Appropriate Machinery Management	Refer to Section 4.2
Waste Management	Refer to Section 4.2
Safety and First Aid	Refer to Section 4.2
Air Quality Management	Refer to Section 4.2
Water Quality Management	Refer to Section 4.2
Hazardous Material (Bitumen, Oils and Lubricants) Management	Refer to Section 4.2
Hazardous Material (Fuels and Oils) Management	Refer to Section 4.2
Workshop, Equipment Maintenance and Storage Management	Refer to Section 4.2
Noise Pollution Management	Refer to Section 4.2
Blasting/Drilling/Demolitions	Refer to Section 4.2
Concrete Mixing (Batching) Management	Refer to Section 4.2
Establishment of Construction Laydown Area	Refer to Section 4.2
Fire Management	Refer to Section 4.2
Traffic Control	Refer to Section 4.2
Wet Environments Management	Refer to Section 4.2
Storm water and Erosion Management	Refer to Section 4,2
Natural Vegetation Management	Refer to Section 4.2
Heritage (including Archaeological) Resource Management	Refer to Section 4.2
Faunal and Avifaunal Management	Refer to Section 4.2
Visual Management	Refer to Section 4.2
Topsoil Management	Refer to Section 4.2
OPERATIONAL PHASE	
Waste Management	Refer to Section 4.3
Socio-Economic Management	Refer to Section 4.3
Wet Environment Management	Refer to Section 4.3
Storm water and Erosion Management	Refer to Section 4.2
Natural Vegetation Management	Refer to Section 4.3
Heritage (including Archaeological) Resource Management	Refer to Section 4.3
Faunal and Avifaunal Management	Refer to Section 4.3
Visual Management	Refer to Section 4.3
Emergency Management	Refer to Section 4.3
DECOMMISSIONING PHASE	
Please refer to the Construction Phase Impacts	

3.7 ENVIRONMENTAL OPPORTUNITIES

It would be responsible of the applicant to implement the principles below to minimise environmental risks and maximise environmental opportunities as defined above.

Sustainable development is best summarised by an extract from the United Nations World Commission on Environment and Development and reads as follows:

"*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs… As such it requires the promotion of values that encourage consumption standards that are within the bounds of the ecologically possible and to which all could reasonably aspire.*" (Our Common Future, WCED, 1987)[1].

The NEMA Principles state that sustainable development requires the consideration of all relevant factors including the following:

- *That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;*
- *that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;*
- *that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;*
- *that waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;*
- *that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;*
- *that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;*
- *that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and*
- *that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.*

In this regard, **sustainable technology alternatives** that are technologically and environmentally superior to "standard" technologies should be promoted at all times which will assist in meeting compliance with the above Principles. All recommendations relating to the above and as contained in this EMP should therefore be implemented.

4 ENVIRONMENTAL OBJECTIVES, TARGETS AND MEASURES

4.1 PRE-CONSTRUCTION PHASE IMPACTS

4.1.1 Bulk Services Identification

Objectives: To minimise any possible damage to bulk services as a result of pre-construction and construction related activities.

Targets: To comply with any local authority by laws regarding bulk services and to avoid additional costs and potential project delays due to damage to these services.

Measures:

- If any bulk services are required to be relocated and/or rerouted then the appropriate permits/approvals must be sought.
- The location of existing bulk services must be determined to prevent accidental damage to these facilities.

4.1.2 Permits

Objectives: To ensure that the necessary permits regarding any activities related to construction activities are in place prior to construction starting.

Targets: To ensure that the construction works can proceed without possible delays and/or legal repercussions during building works as a result of outstanding permits and/or non-compliance with permits.

Measures:

- The client shall issue a list of applicable permitting conditions together with the respective permits/authorisations to the ECO prior to the start of construction works.
- Permits are to be acquired from the relevant authorities should protected or RDL floral species be removed or relocated.

4.1.3 Site Boundaries

Objectives: To ensure that site boundaries are agreed to by the ECO, Principal Agent and Contractor prior to the start of the site operations.

Targets: To contain construction activities to the development site/s and prevent unauthorised access (pedestrian or vehicular) and to demarcate potentially sensitive areas and or vegetation.

Measures:

- The Contractor must fence or clearly demarcate the area where construction activities are taking place.
- Access to the site must be restricted, to ensure that members of the public are not able to gain access other than via the designated, controlled access points.

4.1.4 "No-Go" Areas

Objectives: To minimise any potential impacts to identified sensitive areas.

Targets: To prevent possible impacts to any identified sensitive areas on site.

Measures:

- Before any work commences on site, sensitive areas must be demarcated in conjunction with the ECO;

- A construction site layout plan must be compiled and approved by the ECO, clearly stipulating where the ablutions, equipment, machinery, etc. are required to be placed, thereby not allowing any encroachments on the sensitive areas on site;
- Should additional working space be required at a later date, this must be agreed between the Principal Agent, Contractor, and ECO;
- Authorisation from the Principal Agent must only be given once the potential impacts have been assessed by the ECO;
- Any construction activities taking place prior to the above will constitute a serious violation of this EMP and are liable to a fine as detailed within this EMP;
- No vehicles should be allowed to drive through designated sensitive areas.

4.1.5 Training

Objectives: To ensure that all staff working on site are adequately trained on the requirements of this EMPr and are legally compliant with relevant legislation.

Targets: To ensure that the requirements of this EMPr are understood and implemented by all staff (as and when required) on site.

Measures:

- The ECO will provide for on-going training sessions (as required), to ensure that all staff working on site are familiar with the workings and requirements of this EMPr.
- An interpreter should be provided as required.

4.1.6 Construction phase site layout

Objectives: To designate areas on site for various types of construction related activities.

Targets: To ensure an efficient and orderly layout that promotes safe access.

Measures:

- The location of the Contractor's camp, toilet facilities and storage areas must be agreed to by the ECO, Principal Agent and Contractor prior to the commencement of work at the site.
- A sketch diagram of the above is required by the ECO.
- These areas must all be kept tidy, sanitary and in good condition throughout the project.
- Any construction activities taking place prior to the above will constitute a serious violation of this EMP and are liable to a fine as detailed within this EMPr.
- All development footprint areas should remain as small as possible and should not encroach onto no-go areas. It must be ensured that these areas are off-limits to construction vehicles and personnel unless these personnel are involved in rehabilitation activities. Very strict control of edge effects must be practiced.

4.1.7 Working Hours

Objectives: To designate working hours for construction related activities.

Targets: To ensure that the hours of operation shall be restricted to those stipulated by the local authority.

Measures:

- The Contractor shall at all times ensure that working hours are restricted to those stipulated by the local authority.

- Modifications to the above may only take place through the local authority and the ECO must be notified in writing.
- Please refer to section 4.2.22, which stipulates the requirements of lightning as well as working hours' requirements.

4.2 CONSTRUCTION PHASE IMPACTS

Please note that upon completion of construction phase activities, all related structures, materials and waste must be removed from site.

4.2.1 Social Considerations Management

Objective: To minimise social impacts (e.g. nuisance factors) related to the construction of the site through effective communications with abutting neighbours.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to site construction and demolition impacts.

Measures:

- All abutting neighbours (or as required) must be notified of the proposed construction phase activities at least two weeks before they commence.
- The Contractor must record and repair any damage that the construction works may cause to neighbouring properties, to the satisfaction of the ECO.
- The ECO must be notified in writing of any incidents relating to the above.

4.2.2 Socio-economic Management:

Objective: To maximise impacts on employment in the area during the construction phase.

Targets: To ensure that employment for local people is ensured during the construction phase.

Measures:

- Give preference to local communities for employment opportunities; and
- Base recruitment on sound labour practices and with gender equality in mind.

4.2.3 Appropriate Machinery Management

Objectives: To minimise possible nuisance effects and environmental damage through the use, storage and/or handling of machinery during the construction works.

Targets: To ensure that impacts and damage to the environment are minimised via the responsible use of appropriate machinery on site.

Measures:

- The Contractor shall ensure that any delivery drivers are informed of all procedures and restrictions (no-go areas) required to comply with the specifications. The Contractor shall ensure that these delivery drivers are supervised during off loading and made well aware of the specification of the site.
- The Contractor shall at all times carefully consider what machinery is appropriate to the task in the context of this EMP while minimising the extent of environmental impact.
- Materials shall be appropriately secured and/or covered to ensure safe transportation between destinations.
- Loads containing but not limited to, sand, stone, fine vegetation, chips, paper cement sand and waste, will be appropriately covered to ensure that such materials do not spill during the transportation of such materials. The Contractor in charge will be responsible for any required “clean-ups” resulting from failure to by his employees or suppliers to properly cover the required materials.
- Construction machinery must be located away from sensitive areas when parked for extended periods of time.

- A dedicated parking area must be defined with drip trays beneath any leaking equipment and fuel/lubricant absorbing media (peat/moss type products) within these drip trays must be used to contain any spilled liquids.
- These materials must be replaced regularly to prevent over-saturation and potential spillage of free phase product. This material must be disposed of as hazardous waste and be collected by an approved Contractor/delivered to a suitable waste site.
- Chain of custody documentation must be provided as proof of final end recipient.
- All spills are to be recorded in the Environmental Register, including any clean-up actions taken to remediate the spillage. Such actions are to be agreed with the ECO prior to taking place.
- In the event of spillage on site, the ECO should contact the municipality to determine whether the spillage constitutes a NEMA Section 30 incident

4.2.4 Waste Management

Objectives: To minimise possible environmental damage through inappropriate waste management on site or related to the site.

Targets: To ensure that the handling of waste is in accordance with the statutory requirements of the local authority by laws and the NEM: Waste Act (2008).

Measures:

1) Liquid Waste:
   - Storage areas that contain hazardous substances must be covered and bunded (in accordance with SANS 1089:1999: Part 1) with an approved impermeable liner or have some form of secondary containment.
   - The Contractor shall keep Material Safety Data Sheet (MSDS) on-site for all potentially hazardous materials used.
   - Suitably trained personnel shall be available on the site during working hours so that in the event of human exposure to any hazardous materials that the correct first aid actions are taken. This training should also include environmental spill containment procedures.
   - Spills in bunded areas must be cleaned up, removed and disposed of safely from the bunded area as soon after detection as possible to minimize pollution risk and reduced bunding capacity.
   - Chain of Custody documentation must be provided for any hazardous substances disposed of as proof of end recipient.
   - No discharge of pollutants such as cement, concrete, chemicals, fuels or oils will be allowed into any water resource;
   - The areas around fuel tanks will be bunded in accordance with SANS 10089-2008 Part 1 Storage and distribution from above ground bulk installations
   - Only above ground temporary storage tanks will be allowed on site;
   - Contaminated or potentially contaminated water will be kept separated from unpolluted storm water.

2) Solid Waste:
   - Waste must be categorised by the Contractor and disposed of in a suitable manner into separate waste streams (this includes general and hazardous waste).
   - The Contractor must provide an adequate number of waste receptacles for general waste at points around the construction site, and a single collection point for hazardous waste.
   - The frequency of collections/emptying of waste receptacles will be at least once per week or at such a frequency that waste receptacles do not overflow.

- Particular care shall be taken with the disposal of materials that could be wind-borne or waterborne to ensure that the release of these materials is minimised (the latter is a requirement for hazardous waste). Alternatively, bins with weighted lids must be used.
- The use of netting covers or similar sealed containers must be implemented as and when required by the ESO.
- Areas demarcated for specific activities including food consumption must have suitable waste receptacles provided.
- Wherever possible recycling must be carried out.
- No dumping within the surrounding area is to be permitted.
- No burning of solid waste is allowed.
- All material used by the Contractor during the construction phase shall be managed in such a way that it does not cause pollution, or that minimises pollution. In the event of a spillage, the Contractor should have suitably trained personnel who can correctly clean up any spillage in an efficient and environmentally sound manner.

3) Hazardous Waste:
   - All hazardous waste must be stored in a demarcated area and disposed of using professional waste disposal contractors. All documents relating to volumes and type of waste must be kept on site for inspection;
   - Storage areas that contain hazardous substances must be covered and bunded (in accordance with SANS 1089:1999: Part 1) with an approved impermeable liner or have some form of secondary containment.
   - The Contractor shall keep MSDS on-site for all potentially hazardous materials used.
   - Suitably trained personnel shall be available on the site during working hours so that in the event of human exposure to any hazardous materials, the correct first aid actions are taken. This training should also include environmental spill containment procedures
   - Any spills occurring on site must be cleaned up, removed and disposed of safely as soon after detection as possible to minimize pollution risk.
   - Chain of Custody documentation must be provided for any hazardous substances disposed of as proof of end recipient.
   - All significant spills of harmful product/waste into the soil or water resources that might lead to environmental degradation must be reported to all relevant authorities, including D:PCM immediately. This requirement is in terms of Section 30 (10) of the National Environmental Management Act, No. 107 of 1998 (NEMA).

4) Ablution Facilities
   - Chemical toilet facilities are to be supplied and managed by the Contractor. These are to be located in a specific area agreed to by the ECO prior to placement and to be used by all personnel.
   - The number of chemical toilets required on site (i.e. the ratio of persons working on site to number of toilets) must be determined in conjunction with the Competent Local Authority prior to works starting on site.
   - These toilets are to be secured (e.g. held down with four separate cables or guy ropes) to ensure that they are not knocked over or blown over by the wind.
   - Ablution facilities provided will include shelter, toilets and hand washing facilities;
   - Toilets will be provided as required;
   - Sanitation facilities shall be located within 100m of any point of work, but not closer than 50m from any water body, storm water channels and no-go areas; or according to the customer EMP;
   - All temporary/portable toilets will be secured to the ground to prevent them toppling due to wind or any other cause;

- Entrances to toilets will be adequately screened from public view;
- Ablution facilities provided will be maintained in a hygienic state and serviced regularly to ensure proper operation;
- Toilet paper will be supplied at ablutions;
- No spillage will be allowed when the toilets are cleaned or serviced;
- The contents of chemical toilets will be removed by an approved contractor to an approved disposal site;
- The toilets will be serviced on a scheduled programme and cleaned accordingly.

Please refer to Annexure K which contains an Integrated Waste Management Approach, which includes an effective monitoring system to detect leakage or spillage of all hazardous substances in terms of Condition 17.8 and 91 respectively of the Environmental Authorization dated 15 August 2011.

4.2.5 Safety and First Aid Management

Objectives: To minimise any potential safety or health related incidents on site.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to health and safety on a construction site.

Measures:

- All people working on site are responsible for their own safety on site. Contractors and Principal Agent/s shall at all times comply with the relevant statutory requirements including the Occupational Health and Safety Act (Act 85 of 1993).
- A comprehensive site specific first aid kit must be available on site at all times.
- At least one person trained in safety and first aid and familiar with the first aid equipment on site must be present on the site at all times.
- Emergency procedures must also be established prior to the start of construction operations on site and appended to this EMPr.

4.2.6 Air Quality (Dust Impacts) Management

Objectives: To minimise potential air quality impacts during construction related activities.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to air quality.

Measures:

- Wind-blown dust and sand may generate considerable negative impacts (e.g. reduced visibility for vehicles travelling along adjacent roads and nuisance to neighbours/adjacent erven). Therefore, the following is required to be taken into account:
    - The use of water bowsers and wetting down of loose soil areas, as well as the erection of shade netting screens to prevent off-site movement of dust.
    - The use of straw stabilisation or mulching of exposed sandy areas must also be considered in consultation with the ECO.
    - Speed limits for vehicles on unpaved roads and minimisation of haul distances should be implemented on site.
    - All material loads need to be properly covered during the transportation process.
    - Location and treatment of material stockpile must take into consideration the prevailing winds direction and location of sensitive receptors.
    - Adherence to ear duct loads and protective gear which is stipulated in the Occupational Health and Safety Act (Act No. 85 of 1993).
- In particular, no potable water may be used for dust suppression purposes.
- During the dry season and during the wind season, a water bowser must be present on site at all times to ensure that all dust is wetted and managed appropriately.
- Dust abatement techniques must be used before and during surface clearing, excavation, or blasting activities.
- Appropriate dust suppression techniques must be implemented on all exposed surfaces during
- periods of high wind. Such measures may include wet suppression, chemical stabilisation, the use of a wind fence, covering surfaces with straw chippings and re-vegetation of open areas.

4.2.7 Water Quality Management

Objectives: To minimise any potential impacts on the water quality of the site and off site through indirect impacts.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to water quality.

Measures:

- Site staff shall not be permitted to use any stream, river, open water body or natural water source adjacent to or within the designated site for the purposes of bathing, washing of clothing, or for any construction or related activities.
- Bowser water (or another source approved by the Principal Agent and ECO) should instead be used for all activities such as washing of equipment, dust suppression, concrete mixing, compaction, etc. with the latter taking place well outside any identified sensitive areas and within a demarcated area approved by the ECO.
- In particular, no potable water may be used for dust suppression purposes.
- Before an operation occurs near a waterbody, vehicles should be checked for leaks, to reduce soil and water contamination from vehicle fluids.
- Re-fuelling areas for vehicles should be bunded and located away from water resources and sensitive environments to prevent any accidental spillage contaminating soil or seeping into groundwater aquifers. All servicing area run-off should be directed towards a fully contained collection sump for recovery and appropriate disposal.
- Old engine oil must NOT be thrown on the ground or down a storm water drain but rather collected in containers and recycled.
- If soil contamination occurs (such as due to a spill), the soil should be removed from the site and legally disposed of appropriately.
- Any spills that occur during all phases of the development must be recorded in the Environmental Register. All clean-up actions must also be recorded that was used to remediate the spillage. All actions need to be agreed in conjunction with the ECO prior to commencing any work.

4.2.8 Hazardous Material (Bitumen Oils and Lubricants) Management

Objective: To minimise any potential hazardous material from causing environmental damage through the use, storage and/or handling of such hazardous material during the construction works.

Targets: To ensure compliance with all legal requirements, including local authority by laws and other statutory requirements relating to hazardous materials.

Measures:

- The Contractor shall ensure that all hazardous materials are stored within a bunded (in accordance with SANS 1089:1999: Part 1) area.
- All hazardous material containers are required to be inspected regularly to ensure that no leaks occur.
- When hazardous materials are required to dispensed, proper dispensing equipment should be used and made available on the site for such activities.
- The dispensing equipment is required to be stored in a waterproof container when not in use.
- Hazardous use should be used in moderation and dispensed at designated areas, which are controlled appropriately.
- The Contractor shall take all reasonable and necessary precautions to prevent accidental and incidental spillage during the use of such materials.

- In the event of a hazardous material spill, the Contractor must isolate and contain the hazardous material spillage.
- The Contractor shall clean up the spill, either by removing the contaminated soil and/or by the application of absorbent material in the event of a larger spill.
- Treatment and remediation of the spill will be undertaken to the reasonable satisfaction of the Engineer.
- The Contractor must advise that Engineers and the ECO of where any Bitumen is being stored.
- The storage area of hazardous waste should comprise of a smooth impermeable floor (concrete and/or 250um plastic cover).
- A spill kit is required to be present on the site at all times.

4.2.9 Hazardous Material (Fuels and Oils) Management

Objective: To minimise any hazardous fuel and oil material from causing environmental damage through the use, storage and/or handling of such hazardous material during the construction works.

Targets: To ensure compliance with all legal requirements, including local authority by laws and other statutory requirements relating to hazardous materials.

Measures:

- Fuel may be stored on site in an area which was been approved by an Engineer and the ECO.
- The Contractor shall ensure that all liquid fuels (petrol and diesel) are stored in tanks with lids, which are firmly shut and/or in bowsers.
- The tanks or bowsers are required to be located on smooth impermeable surfaces (concrete or plastic) with an earth bund.
- The impermeable lining shall extend to the crest of the bund and the volume of the bund will be 130% of the total of the storage tanks and/or bowsers located on the site.
- The bunded (in accordance with SANS 1089:1999: Part 1) area is required to be sheltered from the rain.
- Provisions shall be made for refuelling at the fuel storage area, by protecting the open soil with bunding (in accordance with SANS 1089:1999: Part 1).
- If fuel will be dispensed from 200 litre drums, only empty clean drums will be able to be stored on the bare ground.
- All empty dirty drums will be stored on a bunded area.
- Should the use of a 200l drum be required, proper dispensing mechanisms are required to be used and the drum will not be tipped in order to dispense the fuel.
- The dispensing mechanism for the fuel drums will be stored in a waterproof container when it is not in use.
- The Contractor will be required to prevent unauthorised access to the fuel storage area.
- No smoking will be allowed within the vicinity of the fuel storage areas.
- The Contractor must ensure that adequate fire-fighting equipment is readily available at the fuel storage area.
- Where reasonable practical the plant shall be refuelled at the fuel storage area or at the workshop as applicable. If it is not possible then the surface under the refuelling area must be bunded with plastic and/or wooden pallets.
- The Contractor is required to ensure that absorbent materials are readily available in the vicinity of the refuelling areas to absorb and/or breakdown and where possible be designed to encapsulate minor hydrocarbon spills.
- This absorbent material must be able to absorb a minimum spill of 200l of hydrocarbons.

- The Contractor must obtain the Engineer's and ECO's approval for any refuelling or maintenance activities.
- All hazardous material containers are required to be inspected regularly to ensure that no leaks occur.

4.2.10 Workshop, Equipment Maintenance and Storage Management

Objective: To minimise any potential dangerous material from causing environmental damage through the use, storage and/or establishment of such areas during the construction works.

Targets: To ensure compliance with all legal requirements, including local authority by laws and other statutory requirements relating to such storage and/or workshop and/or equipment maintenance areas.

Measures:

- Should any leaking equipment be present on this site, this equipment is required to be removed from the site immediately.
- All maintenance of equipment and vehicles on site should ideally be repaired off site or at a designated workshop area, which is appropriately bunded (bunded (in accordance with SANS 1089:1999: Part 1).
- Should emergency maintenance work be undertaken outside of the workshop area then this emergency work is required to be bunded appropriately and further such works must be approved by the Engineer and ECO prior to commencement.
- The Contractor must ensure that the workshop and/or any other maintenance areas (such as emergency maintenance areas) do not result in the contamination of the soil and/or vegetation.
- The workshop must have a smooth impermeable floor (concrete and/or plastic).
- The floor of the workshop is required to be angled towards an oil trap and/or sump to ensure that any dangerous spills are contained in the workshop area.
- Should servicing of equipment be required to be undertaken on the site then drip trays are required to be used to contain any waste oil and other lubricants.
- Drip trays are required to be used for all stationery equipment such as generator sets and compressors and all parked equipment such loaders, scrapers and vehicles on the construction site.
- All drip trays must be monitored and emptied on a daily basis.
- During rainy days and/or the rainy season the drip trays are required to be monitored continuously to ensure that they do not overflow. Where possible the Contractor is encouraged to place the drip trays and equipment during the rainy periods in sheltered areas, which will ensure that the drip trays do not overflow.
- The washing of any equipment on the site should be limited to urgent and/or preventative maintenance requirement only.
- Ass washing of any equipment should be undertaken off site and/or in the workshop area if necessary.
- The use of detergents for washing equipment should be restricted to detergents that have a low phosphate and nitrate content.
- The store man will be responsible for stacking and storage of material in the storage area at the site camp:
- Bricks, sandstone blocks, building sand, plaster sand and stone will be stored "open" on site but with special care that materials are not contaminated i.e. that different types of sand are not mixed;
- Cement will be stored in a lockable and water proof container and will be stacked;
- Not more than 13 pockets high. Cement will be used, as far as possible, on a first-in first-out basis;
- Reinforcing bars will be stored in the open but will be placed on timber poles to avoid "contamination" by mud or soil;
- Steel door and window frames will be stored in the open but within a fenced-off secure area;
- Paint will be stored in a ventilated lockable store.

Natural Materials: Sourcing

- Materials must be sourced in a legal and sustainable way to prevent off-site environmental degradation;
- Where possible, a signed document from the supplier of natural materials should be obtained confirming that they have been obtained in a sustainable manner and in compliance with relevant legislation (legitimate source);
- Where materials are borrowed (mined), permit must be provided of authorization to mine these materials.

Stockpile Areas

- Sites for stockpile areas are to be agreed with the Principal Agent / Engineer and ECO;
- Materials are not permitted to be stockpiled underneath or against the trunks of trees, on streams, river banks or within floodplains;
- No material will be permitted to be stockpiled in drainage lines or where there is a potential for the stockpiled material to be washed away;
- Stockpiles must not obstruct natural water pathways;
- Stockpiles must not exceed 2m in height;
- Stockpiles to be kept clear of alien invasive weeds.

4.2.11 Noise Pollution Management

Objectives: To minimise any potential noise impacts related to the construction operations on site.

Targets: To ensure compliance with all legal requirements, including the local authority by laws and any other statutory requirements relating to noise impacts.

Measures:

- The Contractor must use modern, appropriate equipment, which produces the least noise.
- Any unavoidably noisy equipment must be identified and located in an area where it has least impact.
- The use of noise shielding screens must be considered and the operation of such machinery restricted to when it is actually required.
- Noise generating work can only take place within the hours stipulated by the local authority.
- Noise from the turbines at the identified noise sensitive areas must be less than the 45dB (A) -limit- for rural areas presented in SANS 10103.
- The applicant must ensure that the National Noise Control Regulations and SANS 10103:2008 are adhered to and reasonable measures to limit noise from the work site are implemented.
- The applicant must ensure that the construction staff working in areas where the 8-hour ambient noise levels exceed 75dBA must wear ear protection equipment.
- The applicant must ensure that all equipment and machinery are well maintained and equipped with silencers.
- The applicant must provide a prior warning to the community when a noisy activity e.g. blasting is to take place.
- All wind turbines must be located at a setback distance of 500m from any homestead and a day/night noise criteria level at the nearest residents of 45dB(A) must be used to locate the turbines. The 500m setback distance can be relaxed if local factors: such as high ground between the noise source and the receiver, indicates that a noise disturbance will not occur.

- Positions of turbines jeopardizing compliance with accepted noise levels must be revised during the micro-siting- of the units in question and predicted noise levels re-modelled by the noise specialist, in order to ensure that the predicted noise levels are less than 45dB(A).
- In order to prevent noise impacts resulting from construction activities, working hours are to be limited as per the customer's requirements;
- If certain construction requires work outside of these hours, all adjacent landowners have to be informed prior to any construction outside of the specified hours;
- Preventative measures will be taken, where required, to minimize noise and vibration nuisance from sources such as power tools.

4.2.12 Blasting/Drilling/Demolitions Management

Objectives: To minimise impacts associated with blasting/drilling/demolition on site during construction.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to blasting and/or drilling and/or demolitions and to minimise nuisance impacts.

Measures:

- The following recommendations will be implemented in addition to normal health and safety requirements as stipulated in the Occupational Health and Safety Act (Act No. 85 of 1993).
- These activities will only take place via a competent and appropriately qualified and legally compliant Contractor.
- The Contractor shall take all necessary precautions to prevent damage to special features and the general environment, which includes the prevention of any fly rock.
- Environmental damage caused by the above activities shall be repaired and/or rehabilitated at the Contractor's expense to the satisfaction of the ECO and Principal Agent.
- None of the above activities may be carried out on Sundays or Public Holidays without the approval of all relevant authorities.
- Careful sealing off of the site and surrounding area will be carried out to ensure that all personnel are removed from the site and its immediate surrounds.
- Adequate notification and warning of blasting activities must be provided to all adjacent and or affected parties.
- Borrow materials must be obtained only from authorized and permitted sites.
- Appropriate Anti-erosion measures such as silt fences must be installed in disturbed areas.

4.2.13 Concrete Mixing (Batching) Management

Objectives: To ensure that appropriate and efficient measures are undertaken on site to manage concrete mixing areas during the construction phase.

Targets: To ensure compliance with the local authority by laws, independent specialist recommendations and any other statutory requirements relating to concrete mixing.

Measures

- Batching plants are to be located in areas of low environmental sensitivity;
- The batching plant area shall be operated in a way that prevents contaminated water run-off from the batching site and polluting nearby water bodies;
- Suitable measures, such as diversion berms, to be installed to direct the wastewater to a suitable catchment area;

- Suitable screening and containment must be in place to prevent wind-blown contamination from cement storage, mixing, loading and batching operations;
- Topsoil must be cleared from the area demarcated for the batching plant prior to establishment and stockpiled for later rehabilitation purposes;
- No batching / mixing activities may occur on the ground or on any permeable surface;
- Protect the batching plant on the up-slope side (where applicable) with an earth berm or sandbags to deflect clean surface run-off water away from the plant;
- Cleaning of equipment and flushing of mixers must occur in designated wash bays (with contaminated water collected, stored / contained) to ensure that contaminated wash water does not enter the environment;
- Aggregates (Stone, Crusher Sand and River Sand) will be stored in dedicated "bins". The bins will have three walls each to contain the aggregates;
- All visible remains of excess concrete and aggregate must be removed from site and disposed of in an appropriate manner;
- Cement bags must not become litter after use. They must be disposed of in bins/skips (see waste management).
- Concrete Truck Drivers to adhere to the following:
    - Appropriate License Code;
    - Competence certificate;
    - Medical Examination;
    - Training given on daily checklists etc.

4.2.14 Establishment of Construction Lay Down Area

Objectives: To minimise impacts associated with the establishment and operation of construction site lay down area.

Targets: To ensure proper management of the construction site from a centralised point

Measures:

Establishment of Construction Sites

- The contractor shall not locate the site camps in any areas in which vegetation is pristine (as defined by each contract's specifications), nor within 100m of any watercourse, nor in any area that could cause nuisance or safety hazards to surrounding landowners, inhabitants or the general public unless otherwise instructed by the Engineer and ECO;
- The site camp/office is to be clearly signposted and no unauthorized access is permitted. Relevant contact details are to be made easily visible and available to the public for the purposes of complaints/concerns or emergencies;
- A plan showing the construction site layout, including the positions of all buildings, fuel storage and hazardous materials storage areas, stockpiles, storm water management infrastructure, access points for deliveries and services, the position of site offices and ablutions and other infrastructure shall been prepared and submitted to the Engineer and ECO for approval and a copy kept on site;
- The plan will detail all pollution control measures. The sites are demarcated by means of a security fence;
- Access to the sites will be limited to authorized persons and will be security controlled;
- The placement of buildings and equipment will be done to minimize the footprint and visual impact of the sites;
- Locate Materials and soil stockpile areas, fuels and chemical storage areas and batching areas away from environmentally sensitive areas;

- Down lighting will be used and it will be ensured that lighting on site does not interfere with road traffic or cause a reasonably avoidable disturbance to the surrounding community or other users of the area;
- Workers will be instructed to dispose of cigarette butts in designated areas.

Demarcation and Access Control

- Sound environmental principles must be followed whilst establishing access to the site;
- The construction sites will be properly identified and demarcated;
- The selected accesses must consider minimizing nuisance impacts on neighbors;
- Any new access tracks must be approved by the Customer/Engineer and ECO prior to construction. No roads or access tracks should be created on an ad-hoc basis;
- The utility and safety of any exiting access shall not be compromised by use for the construction work or construction-related activities, nor shall spillage, littering, accelerated erosion, or other environmental impact, occur.

Clearing and Grubbing

- Prior to clearing the ECO must be notified in order to identify and demarcate any indigenous trees or plants, nesting sites or heritage sites that require protection or translocation;
- Areas of the construction site requiring clearance shall only be cleared immediately prior to construction activities commencing e.g. at the last practical stage;
- No indigenous trees or shrubs may be felled, lopped, pruned or removed without the prior permission of the ECO;
- Pruning of branches of indigenous trees will be done under direct competent supervision and sealant will be applied to cut surfaces in excess of 50mm in diameter.

4.2.15 Fire Management

Objectives: To ensure that fire as a result of the construction related activities are controlled and managed appropriately.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to fire management.

Measures

- Preferentially no fire will be lit on the site, however if required, fires must be limited to use for cooking and heating use only within a designated area. This area will be suitable distance from any fuel source;
- No burning of waste will be permitted on site;
- Suitable precautions will be taken when working with welding or grinding equipment near potential sources of combustion;
- All staff on site will be made aware of general fire prevention and control methods, and the name of the responsible person to be alerted to the presence of a fire.

4.2.16 Traffic Control Management

Objectives: To ensure that traffic impacts as a result of the construction related activities are minimized.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to construction traffic. To ensure that the impacts on current traffic flows in the vicinity of the site are minimised and that complaints relating to traffic associated with the site's activities are minimised.

Measures:

Traffic Management and Transportation Plan

- During the construction phase, the increase in truck traffic along the roads in the site vicinity will be significant, compared to the current truck traffic along these roads. However, the expected total traffic volumes along these roads will still be well within the function of the roads and no operational or safety issues are expected. The impact of the construction and operational traffic will be insignificant and no specific measures are required in terms of traffic management.
- Most of the equipment and construction material will be delivered to the site with heavy vehicles. The nacelle and turbine blades will be transported by abnormal load vehicles. It is expected that the delivery of the equipment will occur over a 10-month period and the impact of the delivery vehicles on the existing traffic along the road network in the site vicinity will be insignificant. All deliveries with abnormal loads will operate under an approved transportation plan with the necessary traffic routes and traffic accommodation plans in place.

Transport Routes

- A detailed abnormal load route study was conducted for the Copperton Wind Energy Facility by Abnormal Solutions during November 2015. Based on the November 2015 route analysis the Saldanha Bay via Beaufort West route was identified as the preferred route. The Saldanha Bay N1 route is classified as a major cleared route and the Coega N10 as a cleared route for abnormal load vehicles. Wind turbine components have already been transported via both these routes and based on the information currently available, the turbine components can be imported via either the Coega or Saldanha Bay harbours.
- Permits will need to be obtained from the relevant Provincial Road Authorities for all abnormal load and the specific route will be specified based on the characteristics of each load type.

Internal Access Roads

- The access roads need to be constructed to the standard of the equipment supplier. Access and site circulation roads must be maintained, graded, watered, etc. throughout the duration of the construction and installation period to restrict dust pollution and prevent surface deterioration or obstruction and to ensure safe passage.
- It is recommended that the access road layout is adjusted to accommodate the minimum requirements. Hard surfaced turning facilities should also be provided at the road ends to allow the abnormal load vehicles to turn around. It is also recommended that the access road bell mouth at the R357 intersection be upgraded to Provincial standards. Any construction or maintenance work required along the R357 should be submitted to the Provincial Roads Authority for approval

Please refer to Annexure F which contains the Traffic Management Plan in terms of Regulation 17.10 of the Environmental Authorisation dated 15 August 2012

4.2.17 Wet Environments Management

Objectives: To ensure that the best practice is followed with regards to wet environments rehabilitation, management and operations.

Targets: To ensure that the wet area on site is not impacted during the establishment of the proposed development.

Measures:

- Areas which are to be cleared of vegetation, including contractor lay-down areas which should be located outside of any freshwater features and their buffer zones,must remain as small as possible in order to the reduce the risk of proliferation of alien vegetation.
- All storage of construction materials should remain out of the floodplain of all watercourses;
- Construction vehicles must use existing roads only and not be allowed to indiscriminately drive through freshwater features;
- Planning of temporary roads and access routes should take the site sensitivity plan into consideration, and wherever possible, existing roads should be utilized. Construction roads should be constructed at least 29m from the Modderpan and not directly adjacent thereto. If crossings are required they should cross the system at right angles, as far as possible to minimize impacts on the receiving environment, and any areas where bank failure is observed due to the effects of such crossings should be immediately repaired by reducing the gradient of the banks to a 1:3 slope and where necessary, installing support structures. This should only be necessary if existing access roads are not utilized;
- Crossing structures must ensure that no concentration of flow occurs and that downstream scouring does not take place;
- All alien and invasive vegetation should be removed. Any vegetation removed should be taken to a registered landfill site so as to prevent proliferation of alien and invasive species;
- Avoid unnecessary site clearing/vegetation clearing as far as possible;
- All exposed soils should be revegetated as soon as possible in order to prevent erosion and loss of topsoil;
- Any cement mixing should be done within the designated batching area only and must not be mixed within the Modderpan or its associated buffer zones; and
- Concurrent rehabilitation of the freshwater areas impacted by the proposed Project is to take place and footprint areas should be minimised as far as possible.
- The project infrastructure footprint and associated area of disturbance should be minimised as far as practically possible, particularly where slopes are steep and soils are erodible.
- In all phases, infrastructure should be constructed, operated and maintained so as to comply with the provisions presented in Regulation GN 704 as it pertains to the National Water Act as well as other sediment/erosion control guidance. It must be noted that Regulation GN704 is strictly applicable to mining however the principles are very useful in impact mitigation for all infrastructure. These include:
- Clean water systems are separated from dirty water systems.
- Clean water will be diverted around dirty areas and allowed to return to its normal flow path as outlined in the stormwater management plan.
- Dirty water producing areas should be minimised with dirty water contained and managed as outlined in the stormwater management plan.
- Ensure adequate design and construction measures for both flood protection and stormwater management controls.

- The location of all activities and infrastructure should be outside of the specified buffers and/or floodlines of watercourses. If this is unavoidable the necessary exemptions/approvals should be obtained, as well engineering designs to manage the risk (construct flood protection berms etc)
- Watercourse crossings should be constructed in a manner so as not to negatively impact the natural hydrological flow regime.
- Site rehabilitation should be done and aimed to restore surface drainage patterns as far as practically and economically feasible. To this end, all disturbed areas must be rehabilitated (as soon as possible) to represent the previous undisturbed environment (soil, landuse, slope) as closely as possible so as to limit the impact on receiving water resources through improved infiltration and limiting soil erosion.
- Comply with relevant license conditions (if applicable)

Rehabilitation of Freshwater Features upon completion of Construction Activities

- Any concrete and other foreign material used during construction must be demolished and removed from site. All rubble and waste will be disposed of at a suitably registered landfill site;
- Any soil excavated should be reinstated and re-profiled as much as possible. Any remaining soil is to be removed from the site to a registered landfill site;
- Any disturbed areas must be inspected biannually for two years post construction for erosion.
- Implementation of an alien vegetation control program is recommended for the freshwater features impacted by construction activities.

Please refer to Annexure H which contains the Wet Environments Plan in terms of Condition 17.11 (Measure to protect hydrological features) of the Environmental Authorizations dated 15 August 2012.

4.2.18 Storm water and Erosion Management

Objectives: To ensure that erosion as a result of construction of the facility is controlled and managed.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to management of storm water and erosion.

Measures:

- All excavation/construction vehicles such as excavators and cranes should be in good condition and inspected regularly to ensure there are no diesel/oil spills which will detrimentally affect the receiving environment.
- Construction activities should not take place within the 1:100-year flood-line or within a horizontal distance of 100 meters from any watercourse, with the exception of linear infrastructure which is required to traverse watercourses, such as roads and flood compatible infrastructure such as electrical pylons.
- Ensure clearing of vegetation and associated excavation areas are kept to a minimum, particularly in areas where soils are unstable and erodible;
- Construction should be scheduled to take place during the dry seasons when rainfall and associated erosion potential is limited.
- Excavated soils should be stockpiled and separated into separate material types.
- A berm/channel combination should be constructed around each of the construction sites using the excavated material with side slopes for all berms and channels kept constant at 1 vertical: 3 horizontals. The channel depth (a) should be 0.5m and base width (b) 1.0m. This is standardized over all the construction areas. The berm should be on the outside of the construction area, with the channel component on the inside- thereby acting as a settling facility. The berm and channel combination is aimed to achieve the following.
    - Diverting upstream clean water which would otherwise flow into the dirty areas.
    - Contain dirty water in the dirty areas and allow suspended sediment to settle out.
    - Providing added flood protection which mitigates residual flood risk.
- The berm/channel should route runoff to a sediment control area where any entrained sediment can settle. This sediment control area can be in the form of a silt fence through which runoff from the berm/channel since runoff peaks and volumes are expected to be low, while rainfall events producing runoff are expected to be few. See Figure 4-3 in Annexure H of the Hydrological Report for an illustration of a typical silt fence.
- A water tanker should be available to be used for dust suppression should the need arise;
- Once the concrete slab is set with the turbine fixed, soil/topsoil should be placed onto the slab with natural vegetation re-established to represent the previous undisturbed environment as closely as possible.
- All disturbed areas must be rehabilitated (as soon as possible) to represent the previous undisturbed environment (soil, landuse, slope) as closely as possible so as to limit the impact on receiving water resources through improve infiltration and limited soil erosion;
- Regular inspection of the berms/channels and sediment control areas to assess erosion which may result from a loss in vegetation or cavitation from soil slumping.
- A practical erosion control handbook should be developed, based on the principles developed in this report and given to the construction contractors to ensure the impact on receiving water resources is limited.
- River crossing designs did not form part of this scope of work and may need to be considered prior to construction. Culverts, bridges or low-level crossings will be required in order to enable the unimpeded use of roads on site. The construction of all roads and crossings on site will need to take cognisance of

the modelled floodlines and/or 100m river buffer. This is in order for the roads/crossings to be adequately engineered to protect against potential flood risk.

- Applicable design standards for river crossings (inclusive of the required conveyance capacity of culverts and bridges) will need to be agreed with the DWS and should also consider standards as outlined in the South African National Roads Agency Limited (SANRAL) drainage manual (SANRAL, 2006).

Please refer to Annexure H which contains the Wet Environments Plan in terms of Condition 17.7 (Storm water Management Plan); 17.9 (An Erosion Management Plan) of the Environmental Authorizations dated 15 August 2012.

4.2.19 Natural Vegetation Management

Objectives: To aid in the conservation of floral habitat, floral biodiversity and protected floral species within the subject property as well as to maximise the use of indigenous landscaping and promote the enhancement and good management of natural environmental features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to natural environment management.

Measures:

Removal of Vegetation

- Removal of vegetation (uprooting) must be kept to a minimum. Only those areas where it is imperative to remove vegetation i.e. construction areas, identified storage areas, roads and minor tracks should be cleared. All other areas should remain vegetated. If brush-cutting is required as a minimum intervention, this should be applied with discretion; however, it would always be preferred to uprooting.
- If vehicle movement is required off designated roads and tracks, it would be advisable to drive over the shrubs (crush) rather than to uproot them. This would prevent loss of these shrubs since they would be able to regrow if not uprooted.
- In places where shrubs are uprooted and where brush-cutting takes place, the plant material must be stockpiled and retained for rehabilitation purposes. This plant material would contain seeds that would assist with restoration with local species.

Road Building

- Building of roads should be restricted as far as possible to existing tracks. Where it is necessary to build roads, care must be taken to ensure that drainage is not impeded from one side of the road to the other e.g. on slopes and across drainage lines. The roads themselves should also be correctly drained to ensure that runoff does not cause erosion. Vegetation should be allowed to persist along roads to assist with management of water runoff.
- It is envisaged that the farm roads and tracks would have to be widened to cater for wide vehicles. This would require clearing of vegetation along the edges of existing roads or upgraded tracks. Any vegetation that is cleared should, as noted above, be retained for rehabilitation purposes.

Movement of Turbine 2:

- *Boscia albitrunca* (Shepherd's Tree, Witgatboom) is the only protected tree species found in the Nelspoortjie 103 area. This species is sparsely scattered on the site and should not be difficult to avoid.
- One specimen was found in the original survey at S 29°52'22.17" E 22°20'32.94" (McDonald, 2011 – erroneously named Boscia foetida) and a second specimen was found during the site walkthrough in September 2016 near the proposed site for Turbine 2 (WTG2) at S 29° 51' 28.7" E 22° 21' 27.6". [The site for Turbine 2 should be relocated away from this very old plant – Photo 41, below).
- By avoidance there should be no impact on B. albitrunca species by the wind farm construction and no permit according to the National Forests Act, 1998 (Act No. 84 of 1998) would then be required to disturb or remove such trees.

Photo 1: A very old specimen of Boscia albitrunca growing prostrate on the ground.

Natural Vegetation Mitigation Measures from EIA (dated March 2012):

- Compile and implement a vegetation rehabilitation plan with the aid of a rehabilitation specialist, for inclusion in the Construction EMP. The specialist is to recommend species to be used in rehabilitation as well as any special measures for rehabilitation such as shade-netting and alien vegetation removal.

Please refer to Annexure G which contains the Botanical Plans in terms of Condition 17.3 (A Plant Rescue and Protection Plan); 17.4 (A Open Space Management Plan); 17.5 (A Re-vegetation and Habitat Rehabilitation Plan) and 17.6 (An Alien Invasive Management Plan) of the Environmental Authorizations dated 15 August 2012.

4.2.20 Heritage (including Archaeological) Resources Management

Objectives: To aid in the conservation of heritage (including archaeological) resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of such resources.

Measures:

- A buffer zone of 250m from the centre of the pan must be avoided as a **no-go** zone for this proposal but existing use of the site may continue as a source of water for grazing animals.
- Two historical stone kraals (NPRT4 & VGSTR12) must be avoided as **no-go** zones with a buffer of 100m from the centre of the kraals. Archival research for the stone kraals is recommended to understand the history of the sites. This need not be done for this application as these sites will be set aside from development.
- The development of a power line to Cuprum substation will have a low impact on a less significant pan called Saaipan (VGSTR8) and no mitigation is recommended for this aspect of the development.
- The development of a landing strip at Smous Pan 105 will affect archaeological scatters but these have been sufficiently recorded in this survey to establish that comparative material will remain on the unaffected areas of the site.
- The excavation of the foundations for the turbines will open up pits 20x20m and up to 3m deep. The Palaeontological Impact Assessment (Almond 2011) found that the fossil sensitivity in this area is low and therefore fulltime Palaeontological monitoring has not been deemed necessary for this proposal. The recording of the varying depth of the Kalahari sands, the calcrete layers and the quartzitic bedrock will provide excellent information to complement the work done by Kiberd (2002, 2006) and the open site surveys. The contracted engineer during the construction phase must produce an excavation report. This report must be submitted to the consultant archaeologist for dissemination to SAHRA, Mr Kiberd and the McGregor Museum. The engineer must be briefed on the recording requirements by the archaeologist before excavations are done.
- The rest of the sites have been sufficiently recorded to allow the development of the wind farm and the landing strip. The survey captured a representative record of the archaeological resources that will be affected by the development.
- A Conservation Management Plan for Modderpan and the stone kraals are highly recommended. This documented should be commissioned by the owners of Struisbult.

Heritage Mitigation Measures from EIA (dated March 2012):

- Safeguard any substantial fossil remains exposed during construction, preferably in situ, and SAHRA should be notified by the ECO so that appropriate mitigation can be undertaken;
- Cordon off the no-go areas including their buffer zones cordoned off during the construction phase; and
- Record the varying depth of the Kalahari sands, the calcrete layers and the quartzitic bedrock when excavating the foundations for the. Section drawings, measurements and photographs must be taken of the pit for each turbine and for each pit wall (i.e. 4 sections per pit with a metre scale) by the contracted engineer assigned to the construction phase. The format for this report must be drawn up in consultation with the archaeologist. The engineer must be briefed on the recording requirements by the archaeologist before excavations are done. This report must be submitted to the consultant archaeologist for dissemination to SAHRA, Mr Kiberd and the McGregor Museum to aid others in the development of a broader understanding of the Pleistocene landscape of this area.

Please refer to Annexure J contains that Conservation management plan for the Modderpan and two kraals in terms of Condition 97, 98 and 102 of the Environmental Authorization dated 15 August 2012.

4.2.21 Faunal and Avifaunal Management

Objectives: To aid in the conservation of faunal and avifaunal resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of fauna and avifauna respectively.

Measures:

Avifaunal Impact Assessment (Avisense dated October 2011)

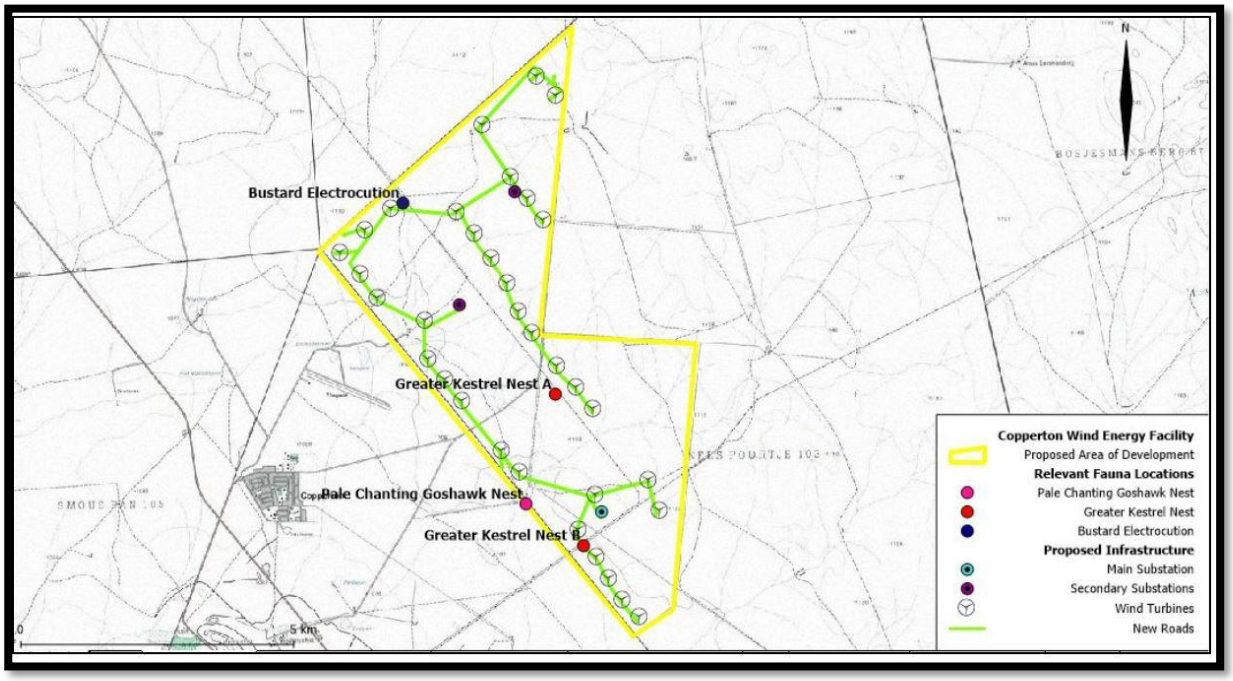
- On-site demarcation of 'no-go' areas identified during pre-construction monitoring to minimise disturbance impacts associated with the construction of the facility.
- Minimizing the disturbance impacts associated with the operation of the facility by scheduling maintenance activities to avoid disturbances in sensitive areas (identified through operational monitoring).
- Ensuring that any lighting on the turbines is kept to a minimum, and is coloured (red or green) and intermittent, rather than permanent and white, to reduce confusion effects for nocturnal migrants.
- Painting one blade of each turbine black to maximize conspicuousness to oncoming birds. The evidence for this as an effective mitigation measure is not conclusive, but it is suggestive. It might be best to adopt an experimental approach to blade marking, identifying a sample of pairs of potentially high risk turbines in pre-construction monitoring, and marking the blades on one of each pair. Post-construction monitoring should allow empirical testing of efficacy, which would inform subsequent decisions about the need to mark blades more widely in this and other wind farms.
- Minimizing the length of any new power lines installed, and ensuring that all new lines are marked with bird flight diverters
- Carefully monitoring the local avifauna pre- and post-construction (see below), and implementing appropriate additional mitigation as and when significant changes are recorded in the number, distribution or breeding behaviour of any of the priority species listed in this report, or when collision or electrocution mortalities are recorded for any of the priority species listed in this report. An essential weakness of the EIA process here is the dearth of knowledge about the actual movements of key species (bustards, eagles, other raptors) through the impact area. Such knowledge must be generated as quickly and as accurately as possible in order for this and other wind energy proposals in the area to proceed in an environmentally sustainable way.
- Ensuring that the results of pre-construction monitoring are applied to project specific impact mitigation in a way that allows for the potential cumulative effects on the local/regional avifauna of any other wind energy projects proposed for this area, including the Mainstream facility proposed for an area nearby. Viewed in isolation, the present project may pose only a limited threat to the avifauna of the area. However, in combination with a larger, neighbouring facility, it may contribute to the formation of a significant barrier to energy efficient travel between resource areas for regionally important bird populations, and/or significant levels of mortality in these populations in collisions with what may become a substantial array of many 100s of turbines (Masden et al. 2010).
- Additional mitigation might include re-scheduling construction or maintenance activities on site, shutting down problem turbines either permanently or at certain times of year or in certain conditions. The requirement for these measures would need to be determined after pre- and post- construction monitoring.

Avifaunal Mitigation Measures from EIA (dated March 2012)

- Compile and implement a comprehensive bird monitoring programme
- Demarcate no-go areas identified during pre-construction monitoring; and
- Re-schedule construction activities on site, where required by the results of the bird monitoring programme

Avifaunal Mitigation Measure BioInsight dated October 2016

- Minimize areas of construction to the maximum extent possible;
- No layover or temporary construction areas to be installed on natural vegetated areas;
- Adequate training should be provided to all the construction personnel. Everybody working in the area should be aware of the sensitive areas and be alert to the potential impacts of the construction phase on the avifauna community;
- The removal of trees and vegetation should be minimised and undertaken with extreme care due to is importance as roosting, refuge and even nesting for avifauna species.
- The construction phase should be accompanied by an Avifauna Specialist (if needed) to identify any conflictive situations.
- Strict measures should be put in place to limit potential poaching of avifauna species during the construction phase.
- All power lines linking wind turbines to the internal substation should be buried if possible.
- No chemical spills or any other material dumps should be conducted within the WEF implementation area, with special focus in areas nearby riparian vegetation or drainage lines. All the maintenance of vehicles must be carried out in specially designated areas to prevent any type of pollution on the area.
- Construction involving heavy machinery should be avoided 200m from Greater Kestrel nest A and the Pale Chanting Goshawk nest identified in the WEF during breeding season. Peak breeding season for the Greater Kestrels are in September and October, whereas Pale Chanting Goshawk's



Avifauna nest and relevant points located in the proposed Project.

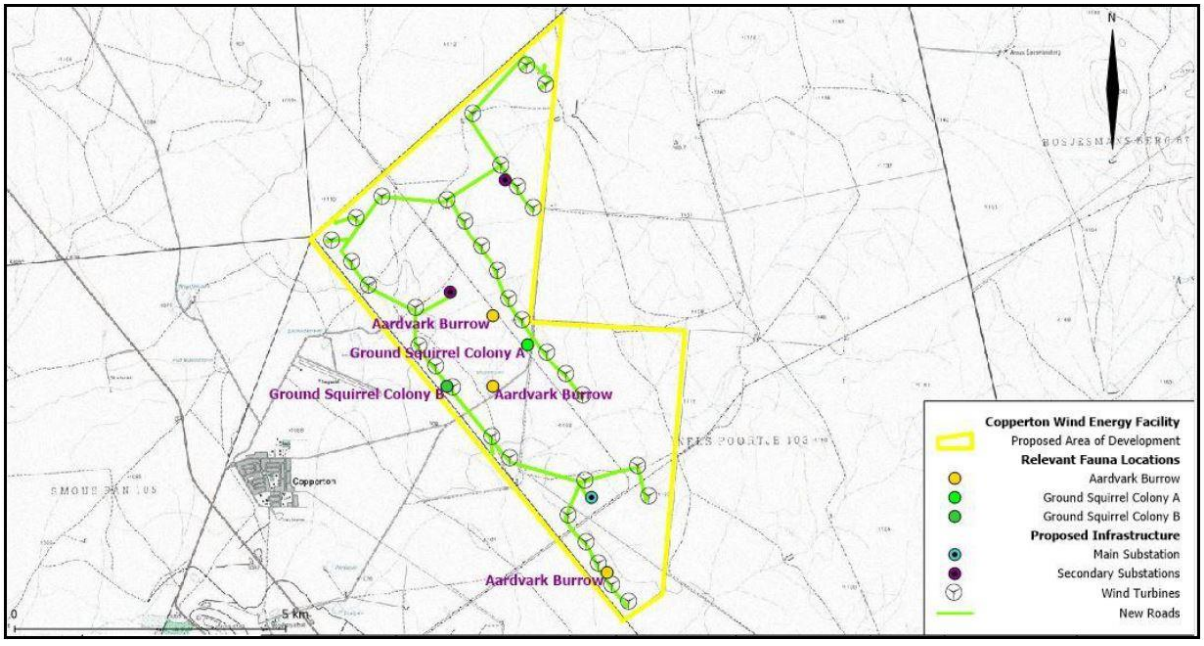
Faunal (Bat) Impact Assessment (Animalia Zoological and Ecological Consultation (dated October 2011)

- The correct placement of wind farms and of individual turbines can significantly lessen the impacts on bat fauna in the planned area.
- The migration paths of South African bats in the Northern Cape Province are not well studied and are virtually unknown. It will be beneficial to collaborate with academic institutions to promote research on the subject, doing affordable long term monitoring and quantifying the risks more accurately to effectively fine tune mitigation.

- Some foraging habitat will be destroyed by the construction of the turbines and associated infrastructure. This impact will be effective throughout the lifespan of the wind farm. Construction of any turbines in the areas designated as having a High Bat Sensitivity should be avoided.
- During the construction phase of the project, bat roosts can be negatively impacted by earthworks and large machinery, although highly unlikely. Diggings related to the placement of underground cables can also damage bat roosts. However, the study area does not have any major rocky outcrops or known underground roosts.

Faunal Mitigation Measures BioInsight (dated October 2016)

- Ground squirrel colonies A and B should be cordoned off with danger tape or anything similar to prevent entrapment of animals – to be done be Specialist and/or ECO;
- Minimize areas of construction to the maximum extent possible;
- No layover or temporary construction areas to be installed on natural vegetated or sensitive areas;
- Adequate training should be provided to all the construction personnel. Everybody working in the area should be aware of the sensitive areas and be alert to the potential impacts of the construction phase on the fauna community;
- The removal of trees and vegetation should be minimized and undertaken with extreme care due to is importance as roosting, refuge and even nesting for fauna species.
- The construction phase should be accompanied by a Fauna Specialist (if needed) to identify any conflictive situations.
- Poaching of fauna species should be strictly forbidden during the construction phase.
- No chemical spills or any other material dumps should be conducted within the WEF implementation area, with special focus in areas nearby riparian vegetation or drainage lines. All the maintenance of vehicles must be carried out in specially designated areas to prevent any type of pollution on the area.
- Limit the use of heavy electrified fencing around the WEF. Where burrowing animals such as porcupine dig underneath fences, these holes should be left undisturbed as it allows movement of other fauna species. Thus, no electrified fencing should be placed close to the bottom of the fence, to prevent the electrocution of burrowing animals. If possible, structures should be placed in strategically areas (near drainage lines) underneath fences which allows for a permanent hole under the fence. This can also constantly be monitored (with camera traps and physical) and cleaned of vegetation after heavy rains.



Relevant fauna observations recorded at the proposed Project.

The location of Ground Squirrel Colony B in relation to the closest turbine, turbine 26 (source: Google Earth Imagery).

Please refer to Annexure I contains the Faunal and Avifaunal Ground-truthing in terms of Condition 15 (Avifaunal and Faunal Specialist to Groundtruth every footprint) of the Environmental Authorizations dated 15 August 2012.

4.2.22 Visual Management

Objectives: To ensure that appropriate and efficient measures are put in place on site in order to mitigate visual impacts to an acceptable level.

Targets: To ensure compliance with the local authority by laws, independent specialist recommendations and any other statutory requirements relating to Visual Management.

Measures:

- A lighting engineer must be consulted to assist in the planning and placement of light fixtures in order to reduce visual impacts associated with glare and light trespass.
- Signage on or near wind turbines should be avoided unless they serve to inform the public about wind turbines and their function.
- Commercial messages and graffiti on turbines must be avoided.
- Turbines must be finished in matte white or of-white and be without contrast colour stripes.
- Any lighting on the turbines must kept to a minimum, and is coloured (red or green) and intermittent. rather than permanent and white, to reduce confusion effects for nocturnal migrants.

Lighting:

- Working hours will generally be restricted to daylight hours;
- If working hours are required outside of daylight hours, notification will be provided to relevant neighbors;
- If working hours are required outside of daylight hour's sufficient lightning plants will be provided.
- Security lights are directed from the perimeter wall towards the centre of the camp with a down angle.

Visual Mitigation Measures from EIA (dated March 2012):

- Minimise the construction period, where possible;
- Retain 100-150 mm of topsoil, where there is sufficiently deep topsoil, from any disturbed areas to rehabilitate disturbed areas after construction – allocated berm sites before construction starts;
- Use cut material where possible in construction or on site (e.g. in grading gravel roads) or remove cut material from site;
- Where site offices are required, limit these to single storey and use temporary screen fencing to screen offices from the wider landscape; and
- Ensure prompt revegetation of disturbed areas.

4.2.23 Topsoil Management

Objectives: To ensure that appropriate and efficient measures are put in place on site in order to manage topsoil storage.

Targets: To ensure compliance with the local authority by laws, independent specialist recommendations and any other statutory requirements relating to Topsoil Management.

Measures

- Topsoil can only be stripped from areas as indicated below:
  - Any area which is to be used for temporary storage of materials;
  - Areas which could be polluted by any aspect of the construction activity;
  - Areas designated for the dumping / stockpiling of soil;
  - Or as instructed by the Customer's Representative or ECO.
- Where topsoil stripping forms part of the contract requirement the Contractor will store the excavated topsoil in a windrow or stockpile which shall be discernibly separate from wind rows or stockpiles of any other excavated materials;
- Stripping of topsoil will be undertaken in such a manner as to minimize erosion by wind or runoff;
- Topsoil shall not be disturbed more than is absolutely necessary;
- Topsoil stripping will only take place as the area becomes necessary for works to commence;
- Topsoil will not be contaminated with anything that might impair its plant-support capacity (e.g. aggregate, cement, concrete, fuels, litter, oils, domestic and industrial waste);
- Topsoil stockpiles will not be situated such that they obstruct natural water pathways;
- Stockpiles will not exceed 2m in height;
- Stockpiles will be kept clear of weeds and alien vegetation growth by regular weeding;
- After the completion of the backfilling, re-contouring and erosion control works, the Contractor shall spread the topsoil evenly at uniform depth over the areas from which it was removed, where this is a requirement of the contract specifications.
- Retain 100-150 mm of topsoil, where there is sufficiently deep topsoil, from any disturbed areas to rehabilitate disturbed areas after construction;

4.3 OPERATIONAL PHASE IMPACTS

4.3.1 Socio-economic Management:

Objective: To maximise impacts on employment in the area during the operational phase.

Targets: To ensure that employment for local people is ensured during the operational phase.

Measures:

- Give preference to local communities for employment opportunities; and
- Base recruitment on sound labour practices and with gender equality in mind.

4.3.2 Wet Environments Management

Objectives: To ensure that the best practice is followed with regards to wet environments rehabilitation, management and operations.

Targets: To ensure that the wet areas on site are not impacted during the operational phase of the facility.

Measures:

- Any area where active erosion was observed within the impacted on freshwater feature must be immediately rehabilitated in such a way as to ensure that the hydrology of the area is re-instated to conditions which are as natural as possible;
- Implementation of an alien vegetation control program should be done for the Modderpan which may possibly be intersected by the infrastructure associated with the proposed Project; and
- All impacted features within the study area should be continuously monitored for any erosion and incision from construction activities.

Please refer to Annexure H which contains the Wet Environments Plan in terms of Condition 17.11 (Measure to protect hydrological features) of the Environmental Authorizations dated 15 August 2012.

4.3.3 Storm water and Erosion Management

Objectives: To ensure that erosion is managed during the operation of the facility.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to management of stormwater and erosion.

Measures:

- Regular inspection of the wind turbine areas to assess erosion which may result from a loss in vegetation or cavitation from soil slumping;
- Continued watering to ensure wind erosion is limited at the construction sites until such time that the natural vegetation is effectively established; and
- Maintain and clean all drainage structures along roads within the project area

Please refer to Annexure H which contains the Wet Environments Plan in terms of Condition 17.7 (Storm water Management Plan); 17.9 (An Erosion Management Plan) of the Environmental Authorizations dated 15 August 2012.

4.3.4 Natural Vegetation Management

Objectives: To aid in the conservation of floral habitat, floral biodiversity and protected floral species within the subject property as well as to maximise the use of indigenous landscaping and promote the enhancement and good management of natural environmental features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to natural environment management.

Measures:

General Measures from EIA (March 2012):

- An Environmental Control Officer should identify areas for rehabilitation post construction, including hard-standings and any temporary access roads, etc. These areas should be rehabilitated according to a rehabilitation plan for the site compiled with the aid of a rehabilitation specialist;
- Avoid drainage lines as far as possible when routing roads, cabling and other infrastructure; and
- Minimize the construction footprint.

Please refer to Annexure G which contains the Botanical Plans in terms of Condition 17.3 (A Plant Rescue and Protection Plan); 17.4 (A Open Space Management Plan); 17.5 (A Re-vegetation and Habitat Rehabilitation Plan) and 17.6 (An Alien Invasive Management Plan) of the Environmental Authorizations dated 15 August 2012.

4.3.5 Heritage (including Archaeological) Resource Management

Objectives: To aid in the conservation of heritage (including archaeological) resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of such resources.

Measures:

Heritage Mitigation Measures from EIA (dated March 2012):

- Avoid development within 250 m of the centre of Modderpan as well as within 100 m from the centre of the stone kraals. Confirm the co-ordinates of the smaller stone kraal via GPS;
- Do not exceed 1 m on the northern side of the road nor 2m on the southern side of the road when upgrading the existing access road which is within 250 m of Modderpan. Do not move the fence on the northern side in order to minimise disturbance, however the fence on the southern side could be moved if required; and
- Archival research for the stone kraals and a conservation management plan for Modderpan and the kraals are highly recommended and should be commissioned by the owner of Struisbult at some point in the future.

Please refer to Annexure J contains that Conservation management plan for the Modderpan and two kraals in terms of Condition 97, 98 and 102 of the Environmental Authorization dated 15 August 2012.

4.3.6 Faunal and Avifaunal Management

Objectives: To aid in the conservation of faunal and avifaunal resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of fauna and avifauna respectively.

Measures:

Avifaunal Impact Assessment (Avisense dated October 2011)

- On-site demarcation of 'no-go' areas identified during pre-construction monitoring to minimise disturbance impacts associated with the construction of the facility.
- Minimizing the disturbance impacts associated with the operation of the facility by scheduling maintenance activities to avoid disturbances in sensitive areas (identified through operational monitoring).
- Ensuring that any lighting on the turbines is kept to a minimum, and is coloured (red or green) and intermittent, rather than permanent and white, to reduce confusion effects for nocturnal migrants.
- Carefully monitoring the local avifauna pre- and post-construction (see below), and implementing appropriate additional mitigation as and when significant changes are recorded in the number, distribution or breeding behaviour of any of the priority species listed in this report, or when collision or electrocution mortalities are recorded for any of the priority species listed in this report. An essential weakness of the EIA process here is the dearth of knowledge about the actual movements of key species (bustards, eagles, other raptors) through the impact area. Such knowledge must be generated as quickly and as accurately as possible in order for this and other wind energy proposals in the area to proceed in an environmentally sustainable way.
- Ensuring that the results of pre-construction monitoring are applied to project specific impact mitigation in a way that allows for the potential cumulative effects on the local/regional avifauna of any other wind energy projects proposed for this area, including the Mainstream facility proposed for an area nearby. Viewed in isolation, the present project may pose only a limited threat to the avifauna of the area. However, in combination with a larger, neighbouring facility, it may contribute to the formation of a significant barrier to energy efficient travel between resource areas for regionally important bird populations, and/or significant levels of mortality in these populations in collisions with what may become a substantial array of many 100s of turbines (Masden et al. 2010).
- Additional mitigation might include re-scheduling construction or maintenance activities on site, shutting down problem turbines either permanently or at certain times of year or in certain conditions. The requirement for these measures would need to be determined after pre- and post- construction monitoring.

Avifauna Mitigation Measures from EIA (dated March 2012):

- Implement a comprehensive bird monitoring programme. This programme should inform the final layout and mitigation strategy of the project, and fully monitor the actual impacts of the wind farm on the broader avifauna of the area, from pre-construction and into the operational phase. The monitoring programme would recommend mitigation measures for inclusion in the final layout and operation of the project. These mitigation measures would need to be complied with. These mitigation measures could include, but are not limited to:
    - Locate turbines such that key habitats are avoided;
    - Minimise the footprint of the project;
    - Differentiate blades by markings, painting a single blade per turbine black, or some other means, should it be identified that raptors are likely to be frequent collision casualties. The

evidence for this as an effective mitigation measure is not conclusive, and as such it may be best to adopt an experimental approach to blade marking, identifying a sample of pairs of potentially high risk turbines in pre-construction monitoring, and marking the blades on one of each pair. Post construction monitoring should test the efficiency, which would inform subsequent decisions about the need to mark blades more widely in this facility;
    - Site turbines away from any areas of high avifaunal density or aggregation, regular commute routes or hazardous flight behaviour areas;
    - Use low risk turbine designs and configurations, which discourage birds from perching on turbine towers or blades, and allow sufficient space for commuting birds to fly safely through the turbine rows;
    - Carefully monitor collision incidence and be prepared to shut-down problem turbines at particular times or under particular conditions 19;
    - Minimise disturbances associated with maintenance activities by scheduling activities to avoid disturbances in sensitive areas or seasons; and
    - Keep disturbances to key bird species to a minimum.
- Use bird-safe structures (ideally with critical air gaps greater than 2 m), should aboveground power lines be used. Exclude birds physically from high risk areas of live infrastructure and comprehensively insulate such areas to avoid bird electrocution;
- Minimise the length of any above-ground power lines and mark all new lines with bird flight diverters. Mark above-ground lines for their entire length as there is currently insufficient data to indicate high risk areas. Recommendations from bird monitoring could indicate high risk areas to remain marked in the future. Where new lines run in parallel with existing, unmarked power lines, this approach has the added benefit of reducing the collision risk posed by the older line;
- Restrict any lighting of turbines to coloured (red or green) intermittent, lighting, as required by CAA; and
- Ensure that the results of monitoring are applied to project-specific impact mitigation in a way that allows for the potential cumulative effects on the local/regional avifauna of any other energy projects within 10 km of the site to be mitigated.

<u>Avifaunal Mitigation Measures from BioInsight (dated October 2016)</u>

It is considered that a rigorous and well-planned post-construction monitoring (operation phase) plan should be implemented. Will be very beneficial to the development, not only by contributing to determine the real impacts of the development but also to determine and adjust effectiveness of the proposed mitigation measures, but also by contributing to increase the understanding of the real impacts of wind energy developments may have on avifauna communities. This plan should follow the applicable guidelines and have a minimum duration of at least two years. The continuity of the monitoring programme should be revised accordingly to the results obtained.

Special emphasis should be directed to assess any displacement and disturbance effects of the development in the avifauna community and, simultaneously, contribute to increase the knowledge about the local avifauna community and its interactions with wind energy facilities.

The results of the operational phase monitoring programme must be taken into account for the implementation of further mitigation measures, if considered necessary. Subsequent mitigation measures, adjusted to the risk situation identified, should be implemented and may include, but not restricted to, camera trapping.

Additional mitigation measures include:

- Maintenance staff should be encouraged to keep noise and other disturbances to a minimum.
- Hunting of avifauna should be prohibited on site.

- In order to increase general avifauna protection, as well as water quality, the use of any pesticide in the wind energy facility area should be prohibited.
- The environmental management programme should be reviewed annually for the first five years of the operational phase of the facility.

Faunal (Bat) Impact Assessment (Animalia Zoological and Ecological Consultation (dated October 2011)

- The correct placement of wind farms and of individual turbines can significantly lessen the impacts on bat fauna in the planned area.
- The migration paths of South African bats in the Northern Cape Province are not well studied and are virtually unknown. It will be beneficial to collaborate with academic institutions to promote research on the subject, doing affordable long term monitoring and quantifying the risks more accurately to effectively fine tune mitigation.
- During the operational phase curtailment can be implemented as a mitigation measure to lessen bat mortalities. Curtailment is when a turbine is kept stationary at a very low wind speed and then allowed to rotate once the wind exceeds a specific speed. The theory behind curtailment is that there is a negative correlation between bat activity and wind speed, causing bat activity to decrease as the wind speed increases.
- It is strongly recommended that the curtailment mitigation measure be implemented at all turbines on the site, prioritizing the turbines proposed to be within the moderate sensitivity areas. Light bat mortality monitoring during the operational phase to quantify the effects of this mitigation will help to refine the method. Although the optimum cut-in speed to reduce bat fatalities and keep power loss at a minimum need to be researched and determined in the local context by means of long term studies in the general area, a cut-in wind speed of 5.0 m/s to 5.5 m/s (meters per second) is preliminarily recommended.
- An ultrasonic deterrent device is a device emitting ultrasonic sound in a broad range that is not audible to humans. The concept behind such devices is to repel bats from wind turbines by creating a disorientating or irritating airspace around the turbine. Research in the field of ultrasonic deterrent devices is progressing and yielding some promising results, although controversy about the effectiveness and a lack of large scale experimental evidence exists.
- It may be feasible to install such devices on selected functional turbines, and the results being monitored by an appropriately qualified researcher.

Faunal Mitigation Measures from EIA (dated March 2012):

- Apply a 100 m buffer area to all moderately sensitive areas as well as the building indicated to be of high sensitivity. Apply a buffer area of 500 m to Modderpan (a high sensitive area). No turbines should be placed within the high sensitivity areas. Avoid areas of moderate sensitivity as far as possible for the location of turbines but where unavoidable apply additional mitigation measures to any turbines placed in moderate sensitivity areas;
- Curtail turbines as a mitigation measure to lessen bat mortalities. This is where the turbine cut-in speed is raised to a higher wind speed premised on the principle that bats will be less active in strong winds due to the fact that their insect food can't fly in strong wind speeds, and the small insectivorous bat species need to use more energy to fly in strong winds. This measure should only be implemented after long term monitoring has indicated under which weather conditions, times of day, season, etc it should be implemented and a recommended cut-in speed has been suitably refined by a bat specialist;
- Consider implementing an ultrasonic deterrent device so as to repel bats from wind turbines if any turbines are placed in moderate sensitivity areas. This measure may negate the need for curtailment but this would need to be informed by long term monitoring; and
- Undertake affordable long term monitoring of bats and the potential impacts of turbines on them to effectively fine tune mitigation. This should include 12-month long term monitoring (preferably prior

to construction) where bat detectors are deployed on the site and passively recording bat activity every night. Additionally, the site should be visited by a bat specialist quarterly to assess and compare the bat activity on a seasonal basis. The wind speed data gathered by meteorological masts can then be correlated with bat activity to determine whether curtailment is required, and if so limiting factors for curtailment, and fine tune other mitigation measures.

Faunal Mitigation Measures from BioInisght Report (dated October 2016)

It is considered that a rigorous and well-planned post-construction bat monitoring (operation phase) plan should be implemented. It will be very beneficial to the development, not only by contributing to determine the real impacts of the development but also to determine and adjust effectiveness of the proposed mitigation measures, but also by contributing to increase the understanding of the real impacts of wind energy developments may have on the bat communities. This plan should follow the applicable guidelines and have a minimum duration of at least two years. The continuity of the monitoring programme should be revised accordingly to the results obtained.

The results of the operational phase monitoring programme must be taken into account for the implementation of additional mitigation measures, if considered necessary. Subsequent mitigation measures, adjusted to the risk situation identified, should be implemented and may include, but not restricted to, camera trapping.

- Maintenance staff should be encouraged to keep noise and other disturbances to a minimum.
- Hunting of fauna should be prohibited on site.
- In order to increase general fauna protection, as well as water quality, the use of any pesticide in the wind energy facility area should be prohibited.
- Lighting of the wind energy farm (for example security lights) should be kept to a minimum.
- The environmental management programme should be reviewed annually for the first five years of the operational phase of the facility.

Please refer to Annexure I contains the Faunal and Avifaunal Ground-truthing in terms of Condition 15 (Botanical and Fauna Specialist to Groundtruth every footprint) of the Environmental Authorizations dated 15 August 2012.

4.3.7 Visual Management:

Objectives: To ensure that appropriate and efficient measures are put in place on site in order to mitigate visual impacts to an acceptable level.

Targets: To ensure compliance with the local authority by laws, independent specialist recommendations and any other statutory requirements relating to Visual Management.

Measures:

Visual Mitigation Measures from EIA (dated March 2012):

- Consider temporary hard standings for cranes in place of permanent hard standings;
- As much as possible, place any new structures where they are least visible to the greatest number of people;
- Paint nacelles and towers in matte white or off-white. Where it does not conflict with other specialist recommendations (e.g. avifauna) rotors should be painted in the same colour as the remainder of the turbine structure;
- Do not display brand names on turbines;
- Fit aircraft warning lights with shields so that they are only visible to aircraft, not to receptors on the ground;
- Provide information on the proposed project to local people through a small education centre or office; and
- Maintain turbines in operational condition.

4.3.8 Emergency Management

Objectives: To ensure that an appropriate and efficient response is triggered in the event of an emergency situation arising. This should include incidents such as medical, fire, security and environmental disaster scenarios on the site.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to emergency response.

Measures:

- An Emergency Response Plan must be designed and implemented in conjunction with the local authority and the local emergency services.

5 DECOMMISSIONING IMPACTS

P Please note, that the Decommissioning Impacts are similar to those of the construction impacts because decommissioning will entail the same type of activities. Therefore, these have not been reproduced in this Section. Please kindly refer Section 4.2 for the Decommissioning Impacts.

Further decommissioning activities would be required to applied for in a separate Environmental Permitting Process as per the requirements of the Competent Authority.

6 IMPLEMENTATION OF THE EMPR

6.1 ROLES AND RESPONSIBILITIES

(a) Environmental register - an environmental register must be provided by the Principal Agent and kept on-site at all times as well as being freely accessible to all project team members. The register will provide a record of all actual environmental incidents that occur as a result of the onsite activity. This may include information related to such aspects as spillages, dust generation and complaints from adjacent neighbours and any other environmental incidents. It must also contain information relating to action taken/mitigation measures employed. Any party on-site may complete the register; however, it is envisaged that the Principal Agent, Contractor and ECO will be the main contributors. The Principal Agent must ensure that the Contractor implements recommendations made by the ECO within an agreed and reasonable time frame.

(b) Environmental Control Officer ("ECO") – the ECO must be appointed prior to commencement of operations. The ECO will advise the Principal Agent and Contractor of any environmental related issues during the construction and bulk landscaping phases of the development.

a) The responsibilities of the ECO will include *monitoring* of compliance with the EMPr by the Contractor.
b) The ECO has the authority to recommend the cessation of works or any portion of construction related activity to the Principal Agent. This will be triggered if in his/her opinion the activity has caused or will imminently cause significant damage and/or harm to the environment or is in contravention of the relevant environmental legislation/permits/authorisations applicable to the site and/or activity/ies.
c) If the Contractor fails to show adequate consideration to the EMPr or the recommendations of the ECO, then the ECO may recommend to the Principal Agent, that the Contractor's representative or any employee/s responsible for not showing adequate consideration to the EMPr are removed from the site. Alternatively, the ECO may recommend that all work on site be suspended until the matter is remedied. All costs will be carried by the Contractor.
d) Should modifications to this document be required, these must be agreed to by all parties concerned.

(c) The Client – the client is responsible for employing the Principal Agent, Contractor and Engineer for the duration of the construction contract. They in turn will employ the ECO. The client will also ensure, as a signatory to the EMPr, that the Principal Agent and Contractor fulfil their obligations in terms of this EMPr.

(d) The Principal Agent – the Principal Agent is appointed by the client and is responsible to the client for ensuring that the construction contract is carried out to completion on time, in budget and that the Contractor fulfils their obligations in terms of the EMPr. The Principal Agent and ECO are expected to develop a close working relationship and to communicate frequently. The Principal Agent must be recognised as the senior authority on site and all communications and instructions between the ECO and the Contractor must occur via the Principal Agent. The Principal Agent is also responsible for deducting environmental penalties from the Contractor. The Principal Agent must ensure that the Contractor has a copy of this EMPr and all approved Method Statements and that the Contractor is familiar with the relevant documentation.

(e) The Contractor – the Contractor will adhere to the conditions of this EMPr and ensure that all of its sub-Contractors, employees, suppliers, agents and so forth, for whom the Contractor is fully responsible for their actions on site, are fully aware of this EMPr, its requirements and the consequences of any breach of the requirements of this EMPr. The Contractor is fully responsible for *implementing* the EMPr. The

Contractor will ensure that works on site are conducted in an environmentally responsible manner and in accordance with the requirements of this EMPr.

(f) Council Representative – will be an appropriately qualified environmental officer of the City of Cape Town Municipality. This representative will monitor compliance of this EMPr by the client through the ECO.

(g) Problematic Issues – should problematic issues arise, as identified by the ECO, the ECO has the authority to call a special meeting with the Principal Agent to address and rectify the matter.

6.2 FREQUENCY OF VISITS BY THE ECO

a) The ECO is ideally required to be on site daily for the duration of the Project, unless the determined otherwise by the ECO, taking into consideration the performance and compliance of the Contractor on site and with the EMPR respectively.
b) The ECO should conduct on going Basic Environmental Awareness Training sessions with the Contractor, his staff and sub-contractors prior to any work taking place. The Contractors are required to provide a facility and interpreter (if required).
c) An initial meeting with the ECO, local authority representative, Principal Agent and Contractor must be held to familiarise each of the parties with each other, the site, the EMPr and to confirm communication methods.
d) The frequency of subsequent meetings and ECO visits must be agreed, depending on the performance of the Contractor. If required, the Principal Agent may introduce some form of penalty system if compliance with the EMPr proves problematic.
e) A brief summary of the findings and any recommendations made by the ECO per visit should be emailed to all parties including the Principal Agent and Contractor. This report should also include photographs for additional information.

6.3 DOCUMENTED PROCEDURES

Method Statements (a template for these purposes is appended to this EMPr) will be required for activities that may result in significant impacts according to the ECO.

These must address the following aspects:

- What – a brief description of the work to be undertaken
- How – a detailed description of the process of work, methods and materials
- Where – a description of the location of the work (if applicable)
- When – the sequencing of actions with commencement and completion date estimates

All Method Statements (MS) must be in place at least 5 working days prior to the relevant construction activities taking place and must be approved by the ECO and Principal Agent prior to being implemented.

The following MS must as a minimum be made available to address the following construction related impacts:

- Erosion Management;
- Waste Management;
- Traffic Management; and
- Freshwater Management

6.4 HANDLING OF COMPLAINTS RELATED TO THE PROJECT

All forms of complaint must be forwarded to the site Principal Agent and ECO in writing. These must be entered into the environmental register and all responses and actions taken to address these must also be recorded. All

issues raised must be addressed. It is important that the complainant feels that their concerns have been listened to and that appropriate action (within reason) has been taken to address these.

6.5 CONDUCT OF EMPLOYEES ON SITE

The following restrictions will be placed on all staff operating on the site in general:

- Adherence to relevant health and safety standards and municipal by laws
- Use of appropriate Personal Protective Equipment (PPE) at all times
- No alcohol or illegal substance use may occur on site
- No illegal disposal of rubble;
- No littering of the site or surrounding areas;
- No collection of firewood;
- No interference with any fauna or flora;
- No use of toilet facilities other than the chemical toilets provided on site;
- No lighting of open fires; and
- No burning of any waste on site.

6.6 MATTERS PERTAINING TO NON-CONFORMANCE ON SITE

"Non-conformances" would occur when there are deviations from any of the construction requirements of this EMPr. This may also include non-compliance with the relevant environmental regulations.

The Contractor is responsible for reporting non-conformance with the EMPr, to the ECO. The applicant and Contractor, in consultation with the ECO must, thereafter, undertake the following activities:

- Investigate and identify the cause of non-conformance;
- Report matters of non-conformance to the local municipality (within a suitable timeframe, dependant on the severity of the incident);
- Implement suitable corrective action as well as prevent recurrence of the problem.
- Assign responsibility for corrective and preventative action.
- Any corrective action taken to eliminate the cause/s of non-conformance shall be appropriate to the magnitude of the problems and commensurate with the environmental impact encountered.

Records

The Contractor must maintain and update the environmental register at all times regarding non-conformance issues. The record shall specifically contain and list the instances of non-conformances found in the EMPr, the date of their occurrence, date of corrective action, and date of completion of preventive action. In addition, matters of non-conformance and corrective action must be included within the audit reports. Records must be are legible, identifiable, protected and easily retrieved for review.

Fine and Penalties relating to non-conformance/contraventions

The Contractor must comply with the environmental requirements of the construction phase requirements of this EMPr on an on-going basis and any failure on his part to do so will entitle the ECO and Principal Agent to impose a fine subject to the details set out below. Money from fines/penalties will be managed and allocated at the discretion of the Principal Agent.

1) Spot fines

Spot fines will be issued per incident in addition to any remedial costs incurred as a result of non-conformance with the EMPr, at the discretion of the Principal Agent and ECO. The ECO may *recommend* the imposition of

fines and penalties but the Principal Agent will be responsible for imposing such fines or penalties against the account of the Contractor. Fines may be imposed on the Contractor for contraventions of the EMPr by individuals or operators employed by the Contractor and/or any sub-Contractors. The Principal Agent will inform the Contractor of the EMPr contravention and the amount of the fine. These monies will be recovered by the Principal Agent from the Contractor.

Failure by the Contractor to pay fines imposed by the Principal Agent within 14 days of the fine being imposed may result in a "Stop Works" order being issued by the Principal Agent until the matter is resolved. Any costs incurred as a result of the "Stop Works" order will be for the account of the Contractor.

The following spot fines are recommended for contraventions (plus any rehabilitation costs if applicable):

a) Any individual/s littering on site: R50 on first offence and R250 on further offences.
b) Any individual/s burning waste on site: R250 on first offence and R1 000 on further offences.
c) Any individual/s dumping waste on site: R250 on first offence and R1 000 on further offences.
d) Any violation of a Method Statement: R250 for first offence and R1 500 on further offences.
e) Any individual causing avoidable disturbance to fauna and flora on site: R250 on first offence and R1 000 on further offences.

2) Penalty fines

Penalty fines will be implemented where the Contractor repeatedly fails to comply with the specifications of this EMPr the Contractor will be liable to pay a penalty fine over and above any other contractual consequence.

The following penalty fines (per repeat offence) are recommended for transgressions:

a) Ongoing littering on site: R2 500 plus any rehabilitation costs, if applicable.
b) Ongoing dumping of any waste on site: R10 000 plus any rehabilitation costs, if applicable.
c) Ongoing burning of any waste on site: R10 000 plus any rehabilitation costs, if applicable.
d) Ongoing transgression of a Method Statement: R10 000 plus any rehabilitation costs, if applicable.
e) Ongoing disturbance to Fauna and Flora on site: R5 000 plus any rehabilitation costs, if applicable.

3) Other fines

a) Any individual/s causing damage to identified sensitive natural areas: R5 000 plus any rehabilitation costs.
b) Any individual/s causing damage to identified sensitive heritage areas: R5 000 plus any rehabilitation costs.
c) Any individual/s causing irreparable damage to the environment: R10 000.
d) Injuring or killing of any wildlife: R5 000 plus any rehabilitation costs, if applicable.

The above recommended fines are applicable and relevant to the construction phase of this EMPr and as such do not exempt the client from other legal obligations such as *Section 24(h)* National Environmental Management Second Amendment Act, Act No. 107 of 1998, which states that it is "*an offence for any person to contravene conditions applicable to any environmental authorization granted for a listed activity. A person convicted of an offence is liable to a fine not exceeding R5 million or to imprisonment for a period not exceeding ten years, or to both such fine and such imprisonment".*

An Environmental Management Programme constitutes a *Condition* applicable to an *Environmental Authorisation* and any transgression would thus trigger *Section 24(h)* of the above-mentioned Act. The exact penalty and fines will be decided on, subsequent to consultation with Competent Authority and the local municipality.

All staff working on-site must be made aware of the penalties and fines associated with non-conformance. The Principal Agent will be responsible for ensuring that the penalty system is maintained and enforced. Should disputes arise between the Client, Engineer, Contractor or ECO with respect to the above then the matter will be referred to arbitration.

Should you require any further information, please do not hesitate to contact the undersigned.

Yours faithfully,

FABIO VENTURI

Certified Environmental Scientist (SAIEES)
Environmental Assessment Practitioners Association of South Africa (Founding Member)
Green Star SA Accredited Professional (GCBSA)
Certified Carbon Footprint Analyst (CPSA)

ANNEXURE A

GLOSSARY

TERMS USED IN THIS *EMP*

"Acceptable exposure" *means the exposure of the maximum permissible concentration of a substance to the environment that will have a minimal negative effect on health or the environment.*

"Agenda 21" *means the document by that name adopted at the United Nations Conference of Environment and Development held in Rio de Janeiro, Brazil in June 1992.*

"Agreement"*, for the purpose of NEMA EIA Regulations GNR 982 regulation 1(3) and (4) (of 2014) means the Agreement as contemplated in section 50A (2) of the Act;*

"Agri-industrial" *means an undertaking involving the beneficiation of agricultural produce.*

*"**Alternatives**", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to –*

(a) the property on which, or location where, the activity is proposed to be undertaken;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity; or
(e) the operational aspects of the activity;

And includes the option of not implementing the activity.

*"**Applicant**", means a person who has submitted or who intends to submit an application.*

"Application" *in terms of the NEMA EIA Regulations GNR 982 (2014) means an application for an –*

(a) Environmental authorisation in terms of Chapter 4 of these Regulations;
(b) Amendment to an environmental authorisation in terms of Chapter 5 of these Regulations;
(c) Amendment to an EMPr in terms of Chapter 5 of these Regulations; or
(d) Amendment of a closure plan in terms of Chapter 5 of these Regulations;

"Aquifer" *means a geological formation which has structures or textures that hold water or permit appreciable water movement through them*

"Aquatic critical biodiversity areas"*, means linkages between catchment, important rivers and sensitive estuaries whose safeguarding is critically required in order to meet biodiversity pattern and process thresholds and are spatially defined as part of a bioregional plan or systematic biodiversity plan, available on the South African National Biodiversity Institute's BGIS website (http://bgis.sanbi.org/WCBF14project.asp);*

"Associated structures, infrastructure and earthworks" *means any structures, infrastructure or earthworks, including borrow pits, that is necessary for the functioning of a facility activity;*

"Basic assessment report" *means a report contemplated in NEMA EIA Regulations GNR 982 regulation 19 (of 2014);*

"Best practicable environmental option" *means the Option that provides the most benefit or causes the least damage to the environment as a whole at a cost acceptable to society in the long term as well as in the short term*

"Biodiversity"*, this means the variety of life in an area, including the number of different species, the genetic wealth within each species, and the natural areas where they are found.*

"Bioregional plan" *means the bioregional plan contemplated in Chapter 3 of the National Environment Management Biodiversity Act, 2004 (Act No. 10 of 2004);*

"Borehole" *includes a well, excavation or my artificially constructed or improved underground cavity which can be used for the purpose of—*

(a) intercepting, collecting or storing water in or removing water from an aquifer;
(b) observing and collecting data and information on water in an aquifer; or
(c) recharging an aquifer;

"Buffer area" *means, unless specifically defined, an area extending 10 kilometres from the proclaimed boundary of a world heritage site or national park and 5 kilometres from the proclaimed boundary of a nature reserve, respectively, or that defined as such for a biosphere;*

"Building and demolition waste" *means waste, excluding hazardous waste, produced during the construction, alteration, repair or demolition of any structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition.*

"Business waste" *means waste that emanates from premises that are used wholly or mainly for commercial, retail, wholesale, entertainment or government administration purposes.*

"By-product" *means a substance that is produced as part of a process that is primarily intended to produce another substance or product and that has the characteristics of an equivalent virgin product or material.*

"Canal" *means an open structure that is lined or reinforced, for the conveying of a liquid or that serves as an artificial watercourse.*

"Catchment" *in relation to a watercourse or watercourses or part of a watercourse, means the area from which any rainfall will drain into the watercourse or watercourses or part of a watercourse, through surface flow to a common point or common points.*

"Channel" *means an excavated hollow bed for running water or an artificial underwater depression to make a water body navigable in a natural watercourse, river or the sea.*

"Clean production" *means the continuous application of integrated preventative environmental strategies to processes, products and services to increase overall efficiency and to reduce the impact of such processes, procedures and services on health and the environment.*

*The term '**client**' means the owner of the asset to be procured or project product, and representative of the end users of the asset.*

" Closure plan" *means a plan contemplated in NEMA EIA Regulations GNR 982 regulation 19 (of 2014);*

"Coastal activities", *means coastal activities listed or specified in terms of Chapter 5 of the National Environmental Management Act, which takes place I the coastal zone.*

"Coastal management" *includes-*

a) *The regulation, management, protection, conservation and rehabilitation of the coastal environment.*
b) *The regulations and management of the use and development of the coastal zone and coastal resources*
c) *Monitoring and enforcing compliance with laws and policies that regulate human activities within the coastal zone*

d) *Planning in connection with the activities referred to in paragraph (a), (b) and (c).*

"Coastal management objective", *means a clearly defined objective established by a coastal management programme for a specific area within the coastal zone which coastal management must be directed at achieving.*

"Coastal management programme", *means the national or a provincial or municipal coastal management programme established in terms of Chapter of the NEM: ICMA, 2008.*

"Coastal planning scheme", *means a scheme that-*

a) *Reserves defined areas within the coastal zone to be used exclusively or mainly for specified purposes, and*
b) *Prohibits or restricts any use of these areas in conflict with the terms of the scheme.*

"Coastal protected area" *means a protected area that is suited wholly or partially within the coastal zone and that is managed by, or on behalf of, an organ of state, but excludes any part of such a protected area that has been exercised from the coastal zone in terms of section 22 of the NEM: ICMA, 2008.*

"Coastal protected zone", *means the coastal protection zone contemplated in section 17 of the NEM: ICMA, 2008.*

"Coastal public property", *means public property referred to in section 7 of the NEM: ICNMA, 2008.*

"Coastal resources", *mans any part-*

a) *Of the cultural heritage of the Republic within the coastal zone, including shell middens and traditional fish traps, or*
b) *The coastal environment that is of actual or potential benefit to humans.*

"Coastal set-back line" *means a line determined by the MEC in accordance with section 25 of the NEM: ICMA, 2008 in order to demarcate an area within which development will be prohibited or controlled in order to achieve the objects of this Act or coastal management objectives.*

"Coastal waters" *means –*

a) *Means waters hat form part of the internal waters or territorial waters of the Republic referred to in sections 3 and 4 of the Maritime Zone Act, 1994 (Act No 15 of 1994) respectively and*
b) *Subject to section 26 of the NEM: ICMA, any estuary.*

"Coastal wetland" *means-*

a) *Any wetland in the coastal zone; and*
b) *Includes-*
    i. *Land adjacent to coastal waters that is regularly or potentially inundated by water, salt marshes, mangrove areas, inter-tidal sand and mud flats, marshes and minor coastal streams regardless of whether they are of saline, freshwater or brackish nature; and*
    ii. *The water, the subsoil and substrata beneath and bed and banks of any such wetland.*

"Coastal zone" *means the area comprising coastal public property, the coastal protection zone, coastal access land and coastal protected areas, the seashore, coastal waters and the exclusive economic zone and includes any aspects of the environment on, in under and above such area.*

"Commence" *means the start of any physical activity, including site preparation or any other activity on the site in furtherance of" a waste management activity, but does not include any activity required for investigation or feasibility study purposes as long as such investigation or feasibility study does not constitute a waste management activity.*

"Commercially confidential information" *means commercial information the disclosure of which would prejudice to an unreasonable degree the commercial interests of the holder provided that details of emission levels and waste products must not be considered to be commercially confidential notwithstanding any provision of this Act or any other law.*

"Community" *means any group of persons or a part of such a group who share common interests and who regard themselves as a community.*

"Competent authority*", means the authority who in terms of the provisions of the NEMA and the EIA Regulations GNR 982 (of 2014) is identified as the authority who must consider and decide on an application in respect of a Specific listed activity.*

> *Note: the "competent authority" in terms of an application for environmental authorisation for an Activity listed in listing notice 1, 2 or 3, is not necessarily the same authority as the "licensing Authority" in terms of the NEMA:WA or NEM: AQA.*

"Concentration of animals" *means the keeping of animals in a confined space or structure, including a feedlot, where they are fed in order to prepare them for slaughter or to produce products such as milk or eggs.*

"Conservation" *in relation to a water resource means the efficient use and saving of water, achieved through measures such as water saving devices, water-efficient processes, water demand management and water rationing.*

"Constitution" *means the Constitution of the Republic of South Africa 1996 (Act No. 108 of 1996).*

"Construction" *means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.*

*The term '****Contractor****' means an organisation that contracts with a Principal to carry out the work under the contract, including construction and related services, to deliver an asset or construction product.*

*The term '****consultant****' means a professional person or organisation that contracts with a customer to provide design, management or other services.*

"Container" *means a disposable or re-usable vessel in which waste is placed for the purposes of storing, accumulating, handling, transporting, treating or disposing of that waste, and includes bins, bin-liners and skips.*

"Contaminated" *means the presence in or under any land, site, buildings or structures of a substance or micro-organism above the concentration that is normally present in or under that land, which substance or micro-organism directly or indirectly affects or may affect the quality of soil or the environment adversely.*

"Cultural significance"*, this means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.*

*"**Cumulative impact**", in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities;*

***"Dam"** when used in the Listing Notice 1 GNR 983 and Listing Notice 2 GNR 984 Regulations means any barrier dam and any other form of impoundment used for the storage of water.*

***"Dangerous goods"** means goods containing any of the substances as contemplated in South African National Standard No. 10234, supplement 2008 1.00: designated "List of classification and labelling of chemicals in accordance with the Globally Harmonized System (GHS)" published by Standards South Africa, and where the presence of such goods, regardless of quantity, in a blend or mixture, causes such blend or mixture to have one or more of the characteristics listed in the Hazard Statements in section 4.2.3, namely physical hazards, health hazards or environmental hazards;*

*"**Days**" means calendar days. Note: when a period of days must in terms of these regulations be reckoned from or after a particular Day, that period must be reckoned as from the start of the day following that particular day to the end of the last day of the period, but if the last day of the period falls on a Saturday, Sunday or public holiday, that period must be extended to the end of the next day which is not a Saturday, Sunday or public holiday. The period of 15 December to 2 January must be excluded.*
In the reckoning of days, where a timeframe is affected by the 15 December to 2 January period, the timeframe must be extended by the number of days falling within the 15 December to 2 January period. Where a timeframe is affected by one or more public holidays, the timeframe must be extended by the number of public holiday days falling within that timeframe.

***"Decommissioning"** means to take out of active service permanently or dismantle partly or wholly, or closure of a facility to the extent that it cannot be readily re-commissioned.*

*"**Department**", means the Western Cape department of environmental affairs and development planning;*

***"Derelict land"** means abandoned land or property where the lawful/legal land use right has not been exercised during the preceding ten-year period.*

*The term **'design'** means the process (and product) of converting a brief into design details ready for documentation, including concept design and design development, and then documentation or detailing of the technical and other requirements for the project in a written form that details the project product sufficiently for it to be constructed or otherwise provided.*

***"Development"** means the building, erection, construction or establishment of a facility, structure of infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity, including any associated post development monitoring, but excludes any modification, alteration or expansion of such a facility, structure of infrastructure, including associated earthworks or borrow pits, and excluding the redevelopment of the same facility in the same location, with the same capacity and footprint;*

***"Development footprint",** means any evidence of its physical alteration as a result of the undertaking of any activity;*

***"Development setback"** means a setback line defined or adopted by the competent authority;*

***"Disposal"** means the burial, deposit, discharge, abandoning, dumping, placing or release of any waste into, or onto, any land.*

"Domestic waste" *means waste, excluding hazardous waste, that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes.*

"Dumping at sea" *means-*

a) *Any deliberate disposal into the sea of nay waste or material other than operational waste from a vessel, aircraft, platform or other man-made structure at sea.*
b) *Any deliberate disposal into the seas of a vessel, aircraft, platform or other man-made structure at sea.*
c) *Any storage of any waste or other material on or in the seabed, its subsoil or substrate*
d) *Any abandonment or topping at site of a platform or other structure at sea for the sole purpose of deliberate disposal but "dumping at sea" does not include-*
    i. *The lawful disposal at sea through sea out-fall pipelines of any waste or other material generated in land*
    ii. *The lawful depositing of any substance or placing or abandoning of anything in the sea for a purpose other than mere disposal of it, or*
    iii. *Disposing of or storing in the sea any tailings or other materials from the bed or subsoil of coastal waters generated by the lawful exploration, exploitation and associated off-shore processing of mineral resources from the bed, subsoil or substrata of the sea.*

"Dynamic coastal processes" *means all natural processes continually reshaping the shoreline and near shore seabed and includes-*

a) *Wind action*
b) *Wave action*
c) *Currents*
d) *Tidal action*
e) *River flows*

"DWA"*, the Department of Water Affairs. This Department is the custodian of South Africa's water resources. It is primarily responsible for the formulation and implementation of policy governing this sector. It also has override responsibility for water services provided by local government.*

"Ecosystem" *means a dynamic system of plant animal and micro-organism communities and their non-living environment interacting as a functional unit.*

"Effluent" *means-*

a) *Any liquid discharge into the coastal environment as waste and includes any substance dissolved or suspended in the liquid; or*
b) *Liquid which is a different temperature from the body of water into which it is being discharged.*

"Environment", *the surroundings (biophysical, social and economic) within which humans exist and that are made up of:*

i. the land, water and atmosphere of the earth;
ii. micro-organisms, plant and animal life;
iii. any part or combination of (i) and (ii) and the interrelationships among and between them; and
iv. the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing;

*"**Environmental assessment practitioner**" (EAP), means the individual responsible for planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management programmes or any other appropriate environmental instrument introduced through the NEMA EIA Regulations GNR 982 – as defined in section 1 of the Act.*

Note: if exemption from the appointment of an EAP has been applied for, the applicant must perform the tasks required of an EAP, as indicated in this guideline.

***"Environmental audit report"** means a report contemplated in NEMA EIA Regulations GNR 982 regulation 34 (of 2014);*

*"**Environmental authorisation**", means the authorisation by a competent authority of a listed activity or specified activity in terms of this act, and includes a similar authorisation contemplated in a specific environmental management act.*

***"Environmental Impact",** the direct effect of human activities and natural events on the components of the environment.*

***"Environmental Impact Assessment"** (EIA), means a systematic process of identifying, assessing and reporting environmental impacts associated with an activity and includes basic assessment and S&EIR;*

***"Environmental Impact Assessment Report"** (EIR) means a report contemplated in NEMA EIA Regulations GNR 982 regulation 23 (of 2014);*

***"Environmental Management Programme"** (EMPr), a document that contains recommendations for the control or management of the potential significant impacts of operations on the environment and recommendations to contain or mitigate actual impacts – as contemplated in NEMA EIA Regulations GNR 982 regulation 19 and regulation 23 (of 2014).*

*The term '**environmental opportunity**' means a potential for beneficial environmental impacts (such as an improvement in air or water quality through environmentally friendly technology alternatives).*

*The term '**environmental risk**' means a potential for adverse environmental impacts (such as pollution of a water source during construction activities).*

***"Environmentally sound management"** means the taking of all practicable steps to ensure that waste is managed in a manner that will protect health and the environment.*

***"Estuarine functional zone"** means the area in and around an estuary which includes the open water area, estuarine habitat (such as sand and mudflats, rock and plant communities) and the surrounding floodplain area, as defined by the area below the 5m topographical contour (referenced from the indicative mean sea level);*

***"Estuary"** means a body of surface water-*

- *a) That is part of a water course that is permanently or periodically open to the sea;*
- *b) In which a rise and fall of the water level as result if the tides are measurable at spring tides when the water course is open to the sea;*
- *c) In respect of which the salinity is measurably higher as a result if the influence of the sea.*

***"Expansion"** means the modification, extension, alteration or upgrading of a facility, structure or infrastructure at which an activity takes place in such a manner that the capacity of the facility or the footprint of the activity is increased.*

***"Export"** means to take or send waste from the Republic to another country or territory.*

***"Extended producer responsibility measures"** means measures that extend a person's financial or physical responsibility for a product to the post-consumer stage of the product, and includes—*

(a) waste minimisation programmes;
(b) financial arrangements for any fund that has been established to promote the reduction, re-use, recycling and recovery of waste;
(c) awareness programmes to inform the public of the impacts of waste emanating from the product on health and the environment; and
(d) any other measures to reduce the potential impact of the product on health and the environment

***"Fatal Flaw"**: generally, this is regarded as an impact associated with an activity on a site that is of such a negative or detrimental nature that even with mitigation measures, cannot be mitigated to acceptable levels and it is therefore not considered as implementable by the relevant independent specialist or EAP.*

***"Feasible",** Acceptable, capable of being used or implemented successfully, without unacceptably damaging the environment. Hydrogeological study: The study of ground water.*

***"Financial year"** means a period commencing on 1 April of any year and ending on 31 March of the following year.*

***"Forum"** refers to the National Environmental Advisory Forum.*

***"Gauteng Agricultural Potential Atlas"** means the Gauteng Agricultural Potential Atlas, which can be obtained from the Gauteng Provincial Department responsible for environmental affairs;*

***"Gauteng Conservation Plan"** means a systematic conservation planning tool delineating biodiversity priority areas representative of biodiversity patter, process and species of special concern, which areas have been identified in three broad categories; namely, Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs) and Protected Areas;*

***"Gauteng Protected Area Expansion Strategy"** means a framework for protected area expansion in Gauteng, setting out key strategies for protected area expansion and identifying spatial priorities and protected area targets and is aligned to the National Protected Area Expansion Strategy as it identifies finer scaled provincial priorities based on regional and local conservation imperatives;*

***"Gazette"**, when used in relation to—*

(a) the Minister, means the Government Gazette; and
(b) the MEC, means the Provincial Gazette of the province concerned.

***"General waste"** means waste that does not pose an immediate hazard or threat to health or to the environment, and includes—*

(a) domestic waste;
(b) building and demolition waste;
(c) business waste: and
(d) inert waste;

***"Government waterwork"** means a waterwork owned or controlled by the Minister and includes the land on which it is situated.*

***"Hazard"** means a source of or exposure to danger.*

"Hazardous waste" *means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment.*

"Holder of waste" *means any person who imports, generates, stores, accumulates, transports, processes, treats, or exports waste or disposes of waste.*

"High-risk activity" *means an undertaking, including processes involving substances that present a likelihood of harm to health or the environment.*

"High water mark" *means the highest line reached by coastal wasters but excluding the line reached as a result of-*

a) Exceptional or abnormal floods or storms that occur no more than one in ten years or
b) An estuary being closed to the sea

"Import" *means any entry into the Republic other than entry for transit.*

"Important Bird and Biodiversity Areas (IBA)" *means areas/sites that hold significant numbers of globally and/or regionally threatened species (Categories A1 and C1); sites that are known or thought to hold a significant component of a group of species whose breeding distributions define and Endemic Bird Area (EBA) (Category A2); sites that are known or thought to hold a significant component of a group of species whose distributions are largely or wholly confined to one biome (Category A3);*

"Incineration" *means any method, technique or process to convert waste to flue gases and residues by means of oxidation.*

"Independent"*, in relation to an EAP, a specialist or the person responsible for the preparation of an environmental audit report, means –*

(a) That such EAP, specialist or person has no business, financial, personal or other interest in the activity or application in respect of which that EAP, specialist or person is appointed in terms of the NEMA EIA Regulations GNR 982 (2014); or
(b) That there are no circumstances that may compromise the objectivity of that EAP, specialist or person in performing such work; excluding –
  i. Normal remuneration for a specialist permanently employed by the EAP; or
  ii. Fair remuneration for work performed in connection with that activity, application or environmental audit;

"Indigenous vegetation" *refers to vegetation consisting of indigenous plant species occurring naturally in an area, regardless the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.*

"Industrial complex" *means an area used or zoned for bulk storage, manufacturing, processing or packaging purposes.*

"Industry" *includes commercial activities, commercial agricultural activities, mining activities and the operation of power stations.*

"Inert waste" *means waste that—*

(a) does not undergo any significant physical, chemical or biological transformation after disposal;
(b) does not burn, react physically or chemically biodegrade or otherwise adversely affect any other matter or environment with which it may come into contact; and

(c) does not impact negatively on the environment, because of its pollutant content and because the toxicity of its leachate is insignificant;

"In stream habitat" *includes the physical structure of a watercourse and the associated vegetation in relation to the bed of the watercourse.*

*"**Interested and affected party**" (I&AP), for the purposes of chapter 5 of the NEMA and in relation to the assessment of the environmental impact of a listed activity or related activity, means an interested and affected party contemplated in section 24(4)(a)(v), and which includes-*

(a) any person, group of persons or organisation interested in or affected by such operation or activity; and
(b) any organ of stale that may have jurisdiction over any aspect of the operation or activity.

"International environmental instrument" *means any international agreement declaration, resolution, convention or protocol which relates to the management of the environment.*

"Large stock unit" *means domesticated units including but not limited to cattle and horses, as well as game, including but not limited to antelope and buck with an average adult male live weight of 100 kilograms or more.*

"Life cycle assessment" *means a process where the potential environmental effects or impacts of a product or service throughout the life of that product or service are being evaluated.*

"Linear activity" *means an activity that is arranged in or extending along one or more properties and which affects the environment or any aspect of the environment along the course of the activity, and includes railways, roads, canals, channels, funiculars, pipelines, conveyor belts, cableways, powerlines, fences, runways, aircraft landing strips, and telecommunication lines;*

"Littoral active zone" *means any land forming part of or adjacent to the seashore that is-*

a) *unstable and dynamic as a result of natural processes, and*
b) *characterised by dunes, beaches, sand bars and other landforms composed of unconsolidated sand, pebble or other such material which is either un-vegetated or only partially vegetated*

"Low water mark" *means the lowest line in which coastal waters recede during spring tides.*

"Maintenance" *means actions performed to keep a structure or system functioning or in service on the same location, capacity and footprint;*

"Maintenance management plan" *means a management plan for maintenance purposes defined or adopted by the competent authority;*

*The term '**management**' means the planning and interactive controlling of human and material resources to achieve time, cost, quality, performance, functional and scope requirements. It involves the anticipation of changes due to changing circumstances and the making of other changes to minimise adverse effects.*

"Marina" *means a constructed waterway that is normally associated with residential or commercial use and that could include mooring facilities.*

"Marine Living Resource Act" *means the Marine Living Resources Act, 1998 (Act No. 18 of 1998).*

"MEC" *means the Member of the Executive Council to whom the Premier has assigned the performance in the province of the functions entrusted to a MEC by or under such a provision.*

"Minimisation", *when used in relation to waste, means the avoidance of the amount and toxicity of waste that is generated and. in the event where waste is generated, the reduction of the amount and toxicity of waste that is disposed of.*

"Minimum information requirements" *means the minimum information requirements contemplated in section 24(5)(bA)(viiiA), if any are applicable at the time of the application;*

"Mitigation" *means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible;*

"Mixed use", *with regard to an activity, means the presence of two or more types of land use in an area.*

"National Appeal Regulations" *means the national appeal regulations published in terms of section 43(4) and 44 of the Act;*

"National department" *means a department of State within the national sphere of government.*

"National Environmental Management Act" *(NEMA), means the National Environmental Management Act, 1998 (Act No. 107 of 1998); To provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote cooperative governance and procedures for co-ordinating environmental functions exercised by organs of state; to provide for certain aspects of the administration and enforcement of other environmental management laws; and to provide for matters connected therewith.*

"National Protected Area Expansion Strategy (NPAES)" *means South Africa's national strategy for expansion of the protected area network, led by the Department of Environmental Affairs and developed in collaboration with national and provincial conservation authorities. The NPAES sets targets for protected area expansion, provides maps of the most important areas for protected area expansion, and makes recommendations on mechanisms for protected area expansion. Focus areas for protected area expansion are identified in the NPAES. They are large, intact, unfragmented areas of high importance for land-based protected area expansion, suitable for the creation or expansion of large protected areas.*

"NEM: AQA", *National Environmental Management: Air Quality Act (39 of 2004). The NEM: AQA's serves to protect the environment by providing reasonable measures for the protection and improvement of the quality of air; the prevention of air pollution and ecological degradation; and securing ecologically sustainable development while promoting economic and social development.*

"NEM: BA", *National Environmental Management: Biodiversity Act (10 of 2004). This Act serves to provide for the management and conservation of biological diversity within an area and of the components of such biological diversity. This Acts objective is to preserve species and ecosystems irrespective of whether or not they are situated in protected areas.*

"NEM: ICM"*, National Environmental Management: Integrated Coastal Management Act (24 of 2008). This act applies to the coastal zone of South Africa and is intended to preserve, protect, extend and improve the status of coastal public property as being held in trust by the State on behalf of all South Africans, including future generations.*

"NEM: PAA", *National Environmental Management: Protected Areas Act (57 of 2003). This Act is intended to protect and conserve ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. This includes the identification and classification of various types of protected areas to give effect to this intention and underpinning this intention is the stated objective of creating a national system*

of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity. These protected areas are to fall on state owned land, privately owned land and communally owned land.

"NEM: WA", *National Environmental Management: Waste Act (59 of 2008). The NEM:WA serves to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; to provide for institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management measures; to provide for the licensing and control of waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith.*

"NEMA EIA regulations*", mean the environmental impact assessment regulations promulgated in terms of the national environmental management act, 1998 (act no. 107 of 1998) ("NEMA") 12.*

*"**No-go option**" means the option of not implementing the activity.*

"Non-substantive"*, in relation to the amendment or substitution of a regulation, notice, strategy, licence, approval, or provision thereof, includes—*

(a) any clerical mistake, unintentional error or omission;
(b) the correction of any miscalculated figure; and 45
(c) the correction of any incorrect description of any person, thing, property or waste management activity;

"Ocean-based activity" *means an activity in the territorial waters of the Republic of South Africa;*

*"**Organ of state**", means -*

(a) any department of state or administration in the national, provincial or local sphere of government; or
(b) any other functionary or institution –
I. Exercising a power or performing a function in terms of the constitution or a provincial constitution; or
Ii. Exercising a public power or performing a public function in terms of any legislation but does not include a court or a judicial officer.

Note: examples of organs of state include: municipalities (both the district and local municipality), Heritage western cape, CapeNature, the department of water affairs, etc.

"Person" *includes a natural person, a juristic person, an unincorporated body, an association, an organ of state and the Minister.*

"Phased activities" *means an activity that is developed in phases over time on the same or adjacent properties to create a single or linked entity through interconnected internal vehicular or pedestrian circulation, sharing of infrastructure, or the continuum of design, style or concept by the same proponent or his or her successors.*

"Plan of study for environmental impact assessment" *means a study contemplated in NEMA EIA Regulations GNR 982 regulation 22 (of 2014) which forms part of a scoping report and sets out how an environmental impact assessment will be conducted;*

"Pollution", *manes any change in the environment caused by-*

i. Substances
ii. Radioactive or other wastes; or
iii. Noise, odours, dust or heat.

Emitted from any activity, including the storage to treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where the change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems or on material useful to people, or will have an effect in the future.

"Previous NEMA notices" *as contemplated in these transitional arrangements means the previous notices published in terms of section 24(2) and NEMA (Government Notices R. 386 and R. 387 in the Government Gazette of 21 April 2006, as amended, or Government Notice No. R 544, 545 and 546 in the Government Gazette of 18 June 2010, as amended);*

*"**Previous NEMA regulations**" means the environmental impact assessment regulations published in terms of: · sections 26 and 28 of the ECA, by government notice no. R. 1183 of 5 September 1997; or · NEMA, by government notice no. R. 385 in the government gazette of 21 April 2006.*

*The term '**procurement**' means the collection of activities performed by and for an agency to acquire services and products, including assets, beginning with the identification/detailing of service requirements and concluding with the acceptance (and where applicable, disposal) of the services and products.*

*The term '**project**' means an undertaking with a defined beginning and objective by which completion is identified. Project delivery may be completed using one contract or a number of contracts*

"Proponent" *means a person intending to submit an application for environmental authorisation and is referred to as an applicant once such application for environmental authorisation has been submitted;*

"Protection" *in relation to a water resource, means -*

(a) maintenance of the quality of the water resource to the extent that the water resource may be used in an ecologically sustainable way;
(b) prevention of the degradation of the water resource; and
(c) the rehabilitation of the water resource

"Protected area" *means those protected areas contemplated in section 9 of the NEMPAA and the core area of a biosphere reserve and shall include their buffers;*

*"**Public participation process**", means a process by which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, an application.*

"Receipt" *means receipt on the date indicated –*

(a) On a receipt form if the application of document was hand delivered or sent via registered mail;
(b) In an automated or computer generated acknowledgment of receipt;
(c) On an acknowledgment in writing from the competent authority as the date of receipt if the application or document was sent via ordinary mail; or
(d) On an automated or computer generated proof of transmission in the case of a facsimile message;

*"**Recovery**" means the controlled extraction of a material or the retrieval of energy from waste to produce a product.*

*"**Recycle**" means a process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material.*

*"**Red Flags**": generally, this is terminology used to bring to attention, at the early stages of assessment, a potentially serious issue that needs to be assessed in greater detail and that may have undesirable impacts, even with mitigation. This can however, only be determined on detailed assessment, but serves as a good guide to the professional team and EAP and applicant early on in the process to inform further design on site.*

*"**Registered environmental assessment practitioner or registered EAP**" means an environmental assessment practitioner registered with an appointed registration authority contemplated in section 24H of the Act;*

*"**Registered interested and affected parties**" in relation to an application, means an interested and affected party whose name is recorded in the register opened for that application in terms of NEMA EIA Regulations GNR 982 regulation 42 (of 2014);*
a) all persons who, as a consequence of the public participation process conducted in respect of an application have submitted written comments or attended meetings with the applicant or EAP;
b) all persons who, after completion of the public participation process, have requested the applicant or the EAP managing the application, in writing, for their names to be placed on the register; and
c) all organs of state which have jurisdiction in respect of the activity to which the application relates.

Note: to be registered as an interested and affected party the persons referred to in (a) and (b) above must provide their names, contact details and addresses to the EAP managing the application process.
Registered IA&Ps must ensure that they notify the EAP if their contact details and/or address changes during the application process.

A registered I&AP is entitled to comment, in writing, on all written submissions made to the department by the applicant or the EAP, provided that comments are submitted within the specified timeframes and the I&AP discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.

*"**Reserve**" means the quantity and quality of water required -*

(a) to satisfy basic human needs by securing basic water supply, as prescribed under the Water Services Act. I) 97 (Act No, 108 of 1997) for people who are now or who will, in the reasonably near future be—
(i) relying upon;
(ii) taking water from; or
(iii) being supplied from, the relevant water resource; and
(b) to protect aquatic ecosystems in order to secure ecologically sustainable development and use of the relevant watt resource.

*"**Resource quality**" means the quality of all the aspects of a water resource including-*

(a) the quality, pattern, timing, water level and assurance of instream flow;
(b) the water quality, including the physical, chemical and biological characteristics of the water;
(c) the character and condition of the instream and riparian habitat; and
(d) the characteristics, condition and distribution of the aquatic biota.

"Responsible authority" *in relation to a specific power or duty in respect of water uses means-*

> *(a) it that power or duty has been assigned by the Minister to a catchment management agency that catchment management agency; or*
> *(b) it that power or duty has not so been assigned the Minister.*

"Re-use" *means to utilise articles from the waste stream again for a similar or different purpose without changing the form or properties of the articles.*

"Riparian habitat" *includes the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of Species with a composition and physical structure distinct from those of adjacent land areas.*

"Route determination" *means the process of planning and designing a new route;*

"*SANS 1089:1999"* *The Petroleum Industry: Storage and distribution of petroleum products in above-ground bulk installations.*

"Scoping report" *means a report contemplated in NEMA EIA Regulations GNR 982 regulation 21 (of 2014);*

"S&EIR" *means the scoping and environmental impact reporting process contemplated in NEMA EIA Regulations GNR 982 regulation 21 to regulation 24 (of 2014);*

"Sea" *means all marine waters, including-*

a) *The high seas*
b) *All marine waters under the jurisdiction of any state, and*
c) *The bed, subsoil and substrata beneath those waters, but does not include estuaries.*

"Seashore" *subject to section 26 of the NEM: ICMA, 2008, means the area between the low water mark and the high water mark.*

*The term '**service provider**' means a Contractor, sub-Contractor, supplier, consultant (including an agency) and sub-consultant (contracting with a consultant), and their service providers, that contract with a customer to carry out assets construction, provide other products (including goods) and/or provide services.*

"Significant impact" *means an impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds or targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence;*

"Site or areas listed in terms of an International Convention" *means any area and its buffer, unless specifically defined, of 5 kilometres extending from is listed boundary, listed in terms of an international convention but does not include world heritage sites, and shall include but not be limited to the Ramsar Convention on Wetlands (Ramsar, Iran, 1971);*

"Small stock unit" *means domesticated units, including sheep, goats and pigs, as well as game, including but not limited to antelope and buck with an average adult male live weight of less than 100 kilograms.*

"Specialist" *means a person that is generally recognised within the scientific community as having the capability of undertaking, in conformance with generally recognised scientific principles, specialist studies or preparing specialist reports, including due diligence studies and socio-economic studies;*

*"**State department**", means any department or administration in the national or provincial sphere of Government exercising functions that involve the management of the environment or that administer a law relating to a matter affecting the environment.*

Note: examples of state departments include: the department of water affairs, department of agriculture, etc. Whilst all state departments are organs of state, not all organs of state are state departments (e.g. Municipalities are organs of state, but not state departments).

"State land" *means land which vests in the national or a provincial government, and includes land below the high water mark and the Admiralty Reserve but excludes land belonging to a local authority.*

"Storage" *means the accumulation of waste in a manner that does not constitute treatment or disposal of that waste.*

*The term '**sub-Contractor**' means an organisation that contracts with a Contractor as the customer to carry out construction and related services, and/or provide other products.*

*The term '**supplier**' means an organisation that contracts with a Contractor/Principal to supply a product and/or service**.***

"Sustainable development" *means the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations.*

"Systematic biodiversity plan" *is a plan that identifies important areas for biodiversity conservation, taking into account biodiversity patterns (i.e. the principle of representation) and the ecological and evolutionary processes that sustain them (i.e. the principle of persistence). A systematic biodiversity plan must set quantitative targets/thresholds for aquatic and terrestrial biodiversity features in order to conserve a representative sample of biodiversity pattern and ecological processes;*

"the Act" *means the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended;*

- *Any reference in the associated regulations to an environmental assessment practitioner will, from a date to be determined by the Minister by notice in the Gazette, be deemed to be a reference to a registered environmental assessment practitioner, as defined.*

"Throughput capacity" *means the design capacity or maximum capable capacity of a facility, structures or infrastructure, whichever is greater;*

"Transit" *means the continuous passage from one border of the Republic to another such border without storage other than temporary storage incidental to transport.*

"Treatment" *means any method, technique or process that is designed to—*

(a) change the physical, biological or chemical character or composition of a waste; or
(b) remove, separate, concentrate or recover a hazardous or toxic component of a waste; or
(c) destroy or reduce the toxicity of a waste, in order to minimise the impact of the waste on the environment prior to further use or disposal:

"Undeveloped" *means that no facilities, structures or infrastructure have been effected upon the land or property during the preceding 10 years.*

"Unit" *in relation to a quantity standard for determining throughput of facilities or infrastructure for the slaughter of animals, has the meaning assigned to it in Regulations promulgated in terms of the Meat Safety Act, 2000 (Act No. of 40 of 2000).*

"Urban areas" *means areas situated within the urban edge (as defined or adopted by the competent authority), or in instances where no urban edge or boundary has been defined or adopted, it refers to areas situated within the edge of built-up areas.*

"Vacant" *means not occupied for the purpose of its lawful land use during the preceding ten-year period.*

"Virgin soil" *means land not cultivated for the preceding 10 years.*

"Waste" *means any substance, whether or not that substance can be reduced, re-used, recycled and recovered—*

(a) that is surplus, unwanted, rejected, discarded, abandoned or disposed of;
(b) which the generator has no further use of for the purposes of production;
(c) that must be treated or disposed of; or
(d) that is identified as a waste by the Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector, but—
(i) a by-product is not considered waste; and
(ii) any portion of waste, once re-used, recycled and recovered, ceases to be waste;

"Waste disposal facility" *means any site or premise used for the accumulation of waste with the purpose of disposing of that waste at that site or on that premise.*

"Waste management activity" *means any activity listed in Schedule 1 or 40 published by notice in the Gazette under section 19, and includes—*

(a) the importation and exportation of waste;
(b) the generation of waste, including the undertaking of any activity or process that is likely to result in the generation of waste:
(c) the accumulation and storage of waste;
(d) the collection and handling of waste;
(e) the reduction, re-use, recycling and recovery of waste;
(f) the trading in waste;
(g) the transportation of waste;
(h) the transfer of waste; 50
(i) the treatment of waste; and
(j) the disposal of waste;

"Waste management services" *means waste collection, treatment, recycling and disposal services.*

"Waste minimisation programme" *means a programme that is intended to promote the reduced generation and disposal of waste.*

"Waste transfer facility" *means a facility that is used to accumulate and temporarily store waste before it is transported to a recycling, treatment or waste disposal facility.*

"Waste treatment facility" *means any site that is used to accumulate waste for the purpose of storage, recovery, treatment, reprocessing, recycling or sorting of that waste.*

"Watercourse" *means-*

(a) a river or spring;
(b) a natural channel in which water flows regularly or intermittently;
(c) a wetland lake or dam into which, or from which, water flows; and
(d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998); and

A reference to a watercourse includes, where relevant, its bed and banks;

"Water management area" *is an area established as a management unit in the national water resource strategy within which a catchment management agency will conduct the protection use development, conservation, management and control of water resources.*

"Water management institution" *means a catchment management agency, a water user association, a body responsible for international water management or any person who fulfils the functions of a water management institution in terms of this Act.*

"Water resource" *includes a watercourse, surface water, estuary, or aquifer.*

"Waterwork" *includes any borehole, structure, earthwork or equipment installed or used for or in connection with Water use.*

"Wetland" *means land which is transitional between terrestrial and aquatic systems, where the water table is usually at or near the surface, or the land is periodically covered with shallow water and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.*

ANNEXURE B

METHOD STATEMENT

TYPICAL BASELINE INFORMATION TABLE RELATING TO CONSTRUCTION WORKS

Describe in detail *what* work is to be undertaken?
Describe in detail *where* on the site the works are to be undertaken and the *extent*?
***When* the works will start and the anticipated finishing date of these works?**
***How* are the works to be undertaken?**
Typical Plant and Machinery to be used
Materials to be stored on Site

METHOD STATEMENT TABLE

PROJECT NAME	
IMPACT SOURCE(S)	
RECEPTOR(S)	
OBJECTIVE	
RISKS	
Impacts of Camp Site on Surrounding Site	
NOTES:	

ROLE	**NAME**	**COMPANY**	**DATE**	**SIGNATURE**
CLIENT				
PRINCIPAL AGENT				
CONTRACTOR				
ENGINEER				
ECO				

Signature of this Method Statement represents a **binding agreement** to the Method Statement and associated Construction EMP by all site Contractors and sub-Contractors involved in the work for which the Method Statement is submitted.

DECLARATIONS OF RESPONSIBILITY ROLES ON PROJECT

ROLE	**NAME**	**COMPANY**	**DATE**	**SIGNATURE**
CLIENT				
PRINCIPAL AGENT				
CONTRACTOR				

ENGINEER
ECO

DECLARATIONS OF UNDERSTANDING BY PARTIES

CLIENT

I understand the contents of the method statement document and associated construction EMP as well as the legal obligations in terms of ensuring that the Project Team comply with this Method Statement and associated Construction EMP.

_____ **(Print name)**

_____ **(Signed)** **Dated:** _____

CONTRACTOR

I understand the contents of the method statement document and the scope of the works required of me. I further understand that the method statement may be amended on application to the signatories of this declaration, and that the Environmental Control Officer will audit my compliance with the contents of this method statement.

_____ **(Print name)**

_____ **(signed)** **Dated:** _____

ENVIRONMENTAL CONTROL OFFICER (ECO)

The work described in this Method Statement document, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm.

_____ **(Print Name)**

_____ **(Signed)** **Dated:** _____

PRINCIPAL AGENT

The work described in this Method Statement document, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm.

_____ **(Print name)**

_____ **(Signed)** **Dated:** _____

ANNEXURE C - RELEVANT PERMITS INCLUDING ENVIRONMENTAL AUTHORISATIONS

ANNEXURE C

RELEVANT PERMITS

ANNEXURE D - DESIGN AND PLANNING

ANNEXURE D

DESIGN AND PLANNING

ANNEXURE E

ROLE OF THE ECO

DUTIES OF THE ECO

1. The identification of potential environmental impacts, prior to the onset of the project.
2. Ensuring that the EMP conditions are adhered to at all times and taking action (via the engineer) where the specifications are not being followed.
3. Ensuring that environmental impacts are kept to a minimum.
4. Reviewing and approving method statements in consultation with the Principal Agent.
5. Advising the engineer and Contractor on environmental issues and assisting in developing environmentally responsible solutions to problems.
6. Reporting to the client and Principal Agent on a regular basis and advising of any environmental impacts.
7. Attending site meetings (when necessary) and giving a report back on the environmental issues at these meetings and other meetings that may be called regarding environmental matters.
8. Inspecting the site and surrounding areas regularly.
9. Establishing and monitoring an ongoing environmental awareness program in conjunction with the Contractor.
10. Requesting the removal of person(s) and/or equipment not complying with the specifications.
11. Keeping both a written and photographic record of progress on site from an environmental perspective, and an ad hoc record of all incidents or events on site with environmental ramifications. These records should be dated and accurately catalogued.
12. Undertaking continual internal review of the EMP and submitting a report at the end of the project.
13. Submitting all written instructions and verbal requests to the Contractor via the engineer.

ANNEXURE F – TRAFFIC MANAGEMENT PLAN AND ROUTE ANALYSIS

ANNEXURE F

Traffic Management Plan for the site access roads in terms of Condition 17.10 of the Environmental Authorization dated 15 August 2012

ANNEXURE G

Botanical Plans in terms of Condition 17.3 (A Plant Rescue and Protection Plan); 17.4 (A Open Space Management Plan); 17.5 (A Re-vegetation and Habitat Rehabilitation Plan) and 17.6 (An Alien Invasive Management Plan) of the Environmental Authorizations dated 15 August 2012

ANNEXURE H - FRESHWATER PLANS (INCLUDING EROSION AND STORM WATER MANAGEMENT PLANS)

ANNEXURE H

Wetland Plans in terms of Condition 17.7 (Storm water Management Plan); 17.9 (An Erosion Management Plan) and 17.11 (Measure to protect hydrological features) of the Environmental Authorizations dated 15 August 2012

ANNEXURE I – FAUNAL AND AVIFAUNAL GROUND -TRUTHING

ANNEXURE I

Faunal and Avifaunal Ground-truthing in terms of Condition 15 (Botanical and Fauna Specialist to Groundtruth every footprint) of the Environmental Authorizations dated 15 August 2012

ANNEXURE J – MODDERPAN CONSERVATION MANAGEMENT PLAN

ANNEXURE J

Conservation management plan for the Modderpan and two kraals in terms of Condition 97, 98 and 102 of the Environmental Authorization dated 15 August 2012

ANNEXURE K – INTEGRATED WASTE MANAGEMENT APPROACH

ANNEXURE K

Integrated Waste Management Approach, which includes the effective monitoring system to detect leakage or spillage of all hazardous substances in terms of Condition 17.8 and 91 respectively of the Environmental Authorization dated 15 August 2012.

ANNEXURE L – EAP'S CURRICULUM VITAE

ANNEXURE L

EAP's Curriculum Vitae