

ENERTRAG SOUTH AFRICA (PTY) LTD

HENDRINA GREEN HYDROGEN AND AMMONIA FACILITY

FINAL ENVIRONMENTAL MANAGEMENT PROGRAMME

22 JUNE 2023

FINAL





HENDRINA GREEN HYDROGEN AND AMMONIA FACILITY FINAL ENVIRONMENTAL MANAGEMENT PROGRAMME

ENERTRAG SOUTH AFRICA (PTY) LTD

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This Environmental Management Programme Report has been prepared by WSP Group Africa (Pty) Ltd (WSP) on behalf and at the request of Enertrag South Africa (PTY) LTD, to provide the Client an understanding of the potential impacts associated with the proposed green hydrogen facility.

Unless otherwise agreed by us in writing, we do not accept responsibility or legal liability to any person other than the Client for the contents of, or any omissions from, this Report.

To prepare this Report, we have reviewed only the documents and information provided to us by the Client or any third parties directed to provide information and documents to us by the Client. We have not reviewed any other documents in relation to this Report and except where otherwise indicated in the Report.

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B	SENSITIVITY MAP
C	GENERIC EMPR FOR OVERHEAD POWERLINES
D	GENERIC EMPR FOR SUBSTATIONS

1 INTRODUCTION

1.1 BACKGROUND

All changes made in this document from the draft, has been underlined for convenience.

The proponent is proposing the development of the Hendrina Renewable Energy Complex within the vicinity of the Hendrina Power Station in Mpumalanga.

The proposed Hendrina GH&A Facility will be developed in an area of approximately 25 hectares (ha), 17km west of Hendrina, in Mpumalanga. The proposed Hendrina GH&A Facility falls within the Steve Tshwete Local Municipality of the Nkangala District Municipality.

The Complex consists of five distinct projects referred to as:

- Hendrina North Wind Energy Facility (up to 200MW) over 3350ha;
- Hendrina South Wind Energy Facility (up to 200MW) over 2900ha;
- Hendrina North Grid Infrastructure (up to 275kV) – 15km;
- Hendrina South Grid Infrastructure (up to 275kV) – 16km;
- **Green Hydrogen and Ammonia Facility (up to 25ha).**

The Complex (except for the Green Hydrogen and Ammonia project) is being developed in the context of the Department of Mineral Resources and Energy’s (DMRE Integrated Resource Plan, and the Renewable Energy Independent Power Producer Procurement Programme (REIPPP).

The focus of this Final EMPr is the proposed Hendrina Green Hydrogen and Ammonia Facility, including grid connection infrastructure project.

This Environmental Management Programme (EMPr) was compiled as part of the EIA process and must be read in conjunction with the Final EIA Report in support of the EA application.

The proposed facility will connect directly to the nearby Collector substation through an up to 132kV powerline, which will supply the GH&A facility with green energy for the production of hydrogen (and ultimately Ammonia) via the Haber–Bosch process.

In order for the proposed project to proceed, it will require an Environmental Authorisation (EA) from the Competent Authority (CA) (i.e. the Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (MDARDLEA)).

1.2 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

WSP Group Africa (Pty) Ltd (WSP) has been appointed in the role of independent Environmental Assessment Practitioner (EAP) to undertake the EIA process for the proposed GH&A facility, as well as to develop this EMPr.

Table 1-1 outlines the details of the EAP and their expertise. The EAP Curriculum Vitae is attached in **Appendix A**.

Table 1-1: Details and Expertise of the EAP

NAME OF CONSULTANT WSP GROUP AFRICA (PTY) LTD

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Telephone	011 361 1392
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E-mail	Ashlea.Strong@wsp.com
EAP Expertise	<p>Ashlea is a Principal Associate with 20 years' experience in the environmental field. Work experience has principally consisted of Environmental and Social Impact Assessments (ESIAs) and compliance auditing. Sectorial experience includes conventional and renewable power generation, power transmission and distribution as well as mining. Ashlea has extensive experience with the power sector ESIAs having been involved in over 20 power sector related ESIAs for both government (including Eskom) and private sector clients. Her projects include amongst others two coal-fired power stations, a pebble bed modular reactor, nine solar power facilities, three wind energy facilities, three gas turbine plants (both open and closed cycle) and numerous transmission (400kV and 765kV) and distribution (132kV) powerlines.</p> <p>Qualifications:</p> <ul style="list-style-type: none"> — Masters in Environmental Management, University of the Free State, South Africa, 2006 — B Tech, Nature Conservation, Technikon SA, South Africa 2001 — National Diploma in Nature Conservation, Technikon SA, South Africa, 1999 — Registered Environmental Assessment Practitioner (Registration Number: 2019/1005)

1.3 ENVIRONMENTAL MANAGEMENT PROGRAMME STRUCTURE

For the purposes of demonstrating legal compliance, **Table 1-2** cross-references the sections within the EMPr with the requirements as per Appendix 4 of GNR 326 of 2017.

Table 1-2: Legislation Requirements as detailed in Appendix 4 of GNR 326

APPENDIX 4	LEGISLATED REQUIREMENTS AS PER THE NEMA GNR 326	RELEVANT REPORT SECTION
(a)	details of-	
	(i) the EAP who prepared the EMPr; and	Section 1.2
	(ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Section 1.2 Appendix A
(b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 1.4
(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 1.4 Section 1.5 Appendix B

(d)	<p>A description of the impact management outcomes, 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-</p> <p>(i) planning and design;</p> <p>(ii) pre-construction activities;</p> <p>(iii) construction activities;</p> <p>(iv) rehabilitation of the environment after construction and where applicable post closure; and</p> <p>(v) where relevant, operation activities;</p>	<p>Section 3 Section 5 Section 6</p>
(f)	<p>a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraphs (d) will be achieved, and must, where applicable, include actions to -</p> <p>(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;</p> <p>(ii) comply with any prescribed environmental management standards or practices;</p> <p>(iii) comply with any applicable provisions of the Act regarding closure, where applicable; and</p> <p>(iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable</p>	<p>Section 5 Section 6</p>
(g)	<p>the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);</p>	<p>Section 4.4</p>
(h)	<p>the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);</p>	<p>Section 4.1 Section 4.4</p>
(i)	<p>an indication of the persons who will be responsible for the implementation of the impact management actions;</p>	<p>Section 4 Section 5 Section 6</p>
(j)	<p>the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;</p>	<p>Section 5 Section 6</p>
(k)	<p>the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);</p>	<p>Section 4</p>
(l)	<p>a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations</p>	<p>Section 4 Section 5 Section 6</p>
(m)	<p>an environmental awareness plan describing the manner in which-</p>	<p>Section 4.2</p>

	(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and	
	(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	
(n)	any specific information that may be required by the competent authority	N/A

1.4 PROJECT DESCRIPTION

This section provides a description of the location of the project site location and a summary of the project details. The descriptions encompass the activities to be done during the construction, operational and decommissioning (should it be decided that the facility will be decommissioned) phases, as well as the consideration for the needs and desirability of the project in accordance with Appendix 3 of GNR 326.

1.4.1 PROJECT LOCATION

The proposed Hendrina GH&A Facility will be developed in an area of approximately 25 hectares (ha), 17km west of Hendrina, in Mpumalanga. The proposed Hendrina GH&A Facility falls within the Steve Tshwete Local Municipality of the Nkangala District Municipality.

The five projects of the Hendrina Renewable Energy Complex are located within the same geographical area and are inevitably linked and integrated. The locality of the Hendrina GH&A facility is included in **Figure 1-1**. The Hendrina GH&A Facility project site, including associated alternatives, is indicated in **Figure 1-2**

It must be noted that that the linear features (pipeline most importantly) are assessed in corridors, so as to allow for micro siting and minor modification withing the corridor to fit sensitives and on-site conditions.

The details of the properties associated with the proposed Hendrina GH&A Facility, including the 21-digit Surveyor General (SG) codes for the cadastral land parcels are outlined in **Table 1-3** below.

Table 1-3: Hendrina GH&A Facility Affected Farm Portions – Preferred Alterative

FARM NAME	21 DIGIT SURVEYOR GENERAL CODE OF EACH CADASTRAL LAND PARCEL
Site Alternative 2 (Preferred)	
Portion 18 of Weltevreden Farm No. 193IS	TOIS00000000019300018
Portion 3 of Dunbar Farm No. 189IS	TOIS00000000018900003

Table 1-4: Powerline – Preferred Alternative

FARM NAME	21 DIGIT SURVEYOR GENERAL CODE OF EACH CADASTRAL LAND PARCEL
POWERLINE ALTERNATIVE 1 FOR SITE 2 (PREFERRED)- 3KM	
Portion 1 of Dunbar Farm No. 189IS	TOIS00000000018900001
Portion 3 of Dunbar Farm No. 189IS	TOIS00000000018900003

Table 1-5: Water Supply Pipeline – Preferred Alternative

FARM NAME	21 DIGIT SURVEYOR GENERAL CODE OF EACH CADASTRAL LAND PARCEL
Water Pipeline Alternative for site 2 (Preferred)	
Portion 1 of Bultfontein Farm No. 187IS	TOIS00000000018700001
Portion 2 of Bultfontein Farm No.87IS	TOIS00000000018700002
Portion 3 of Bultfontein Farm No.187IS	TOIS00000000018700003
Portion 4 of Bultfontein Farm No.187IS	TOIS00000000018700004
Portion 6 of Bultfontein Farm No. 187IS	TOIS00000000018700006
Portion 10 Bultfontein Farm No.187IS	TOIS00000000018700010
Portion 14 Bultfontein Farm No.187IS	TOIS00000000018700014
Portion 0 Dunbar Farm No.189IS	TOIS00000000018900000
Portion 1 Dunbar Farm No.189IS	TOIS00000000018900001
Portion 2 Dunbar Farm No.189IS	TOIS00000000018900002
Portion 4 Dunbar Farm No.189IS	TOIS00000000018900004
Portion 5 Dunbar Farm No.189IS	TOIS00000000018900005
Portion 6 Dunbar Farm No.189IS	TOIS00000000018900006
Portion 7 Dunbar Farm No.189IS	TOIS00000000018900007
Portion 6 Geluk Farm No.26IS	TOIS0000000002600006
Portion 7 Geluk Farm No.26IS	TOIS0000000002600007
Portion 3 Hartebeestkuil Farm No.185IS	TOIS00000000018500003
Portion 0 Komati Power Station Farm No.56IS	TOIS0000000005600000
Portion 1 Wilmansrust Farm No.47IS	TOIS0000000004700001
Portion 3 Wilmansrust Farm No.7IS	TOIS0000000004700003
Portion 9 Wilmansrust Farm No.47IS	TOIS0000000004700009



Figure 1-2: Proposed Hendrina GH&A Alternatives and associated infrastructure

1.4.2 ACTIVITY DESCRIPTION

'Green Ammonia' is ammonia (NH₃) made using renewable energy, air and water (**Figure 1-3**). The process uses electrolysis (direct electric current to drive an otherwise non-spontaneous chemical reaction) and air separation to split water and air into its primary components i.e. hydrogen (H) and oxygen (O₂) from water, and nitrogen (N) and oxygen from air. NH₃ is then synthesised from the separated components using the Haber- Bosch method (the standard industrial process used to make ammonia). The Haber-Bosch process combines stoichiometric amounts of hydrogen and nitrogen in a moderate temperature (~ 400 – 500 °C), high pressure (100 barg) reactor. The process requires a catalyst (usually iron-based) promoting NH₃ mixture equilibrium. The NH₃ gas generated is rapidly cooled to form anhydrous (liquid) NH₃ for easy and safe storage and transport. Any unreacted nitrogen and hydrogen is recycled back into the reactor.

The proposed facility comprises the following components as summarised in **Table 1-6**, where the footprint and capacities are presented. An indicative block layout of the GH&A Facility is illustrated in **Figure 1-7**.

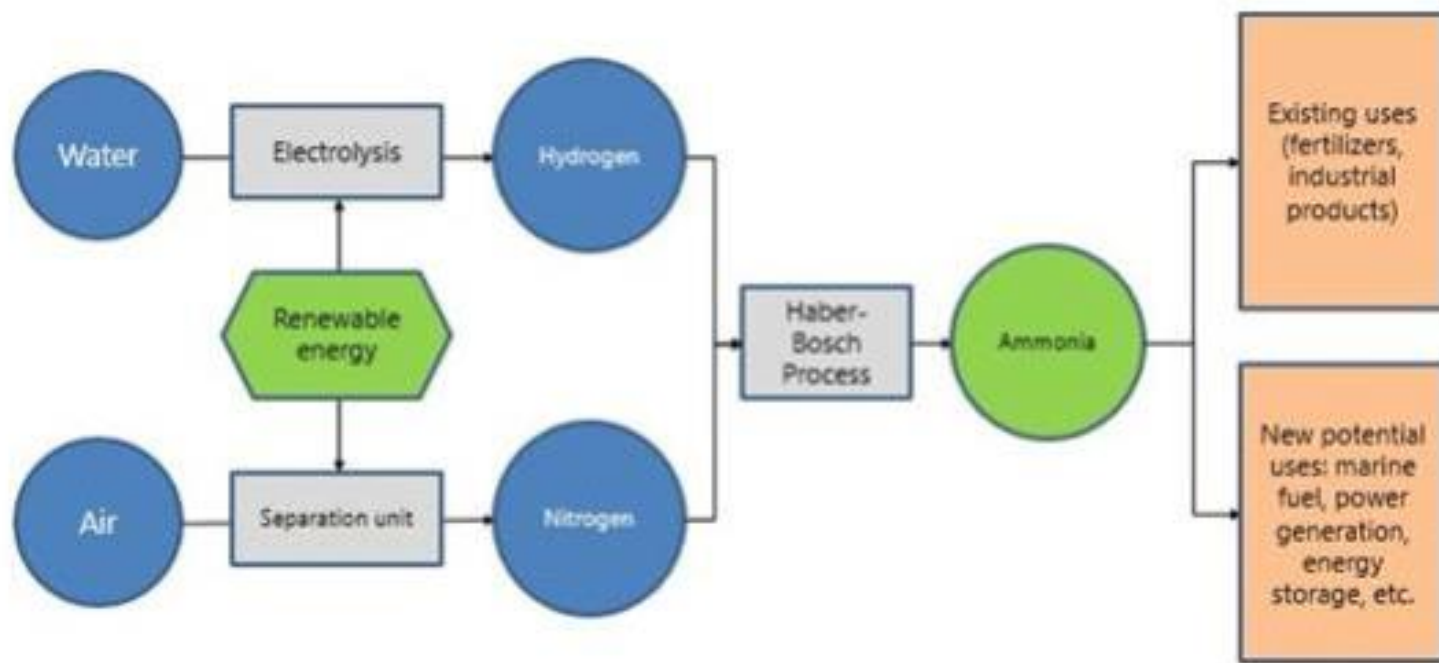


Figure 1-3: Green ammonia production and end uses

These parameters are based on the assumption that an up to 150MW electrolyser is installed (maximum). These comprise the following general components:

- Water treatment.
- Electrolyser.
- Air separator.
- Ammonia processing unit.
- Liquid air energy system (LAES) for nitrogen storage.
- Feedstock and product storage.
- Utilities.
- Gantry and loading bay.
- Up to 132kV overhead powerline from the substation to the facility

Associated infrastructure further includes:

- Temporary and permanent laydown areas required for temporary storage and assembly of components and materials.
- Access road/s to the site and internal roads between project components, with a width of up to up to 8m wide respectively.
- A temporary concrete batching plant (if necessary).
- Temporary staff accommodation.
- Fencing and lighting.
- Lightning protection.
- Telecommunication infrastructure.
- Stormwater channels.
- Water pipelines.
- Offices.
- Operational control centre.
- Operation and Maintenance Area / Warehouse / workshop.
- Ablution facilities.
- A gate house.
- Control centre, offices, warehouses.
- Security building.

Table 1-6 provides a summary of the project components and respective specifications.

Table 1-6: Project components and respective specifications

NO.	COMPONENT	APPROXIMATE FOOTPRINT (HA)	STORAGE CAPACITY (M3 / TONS)	MAXIMUM THROUGHPUT (M3 / TONS PER ANNUM)	NOTE
1	Water Reservoir	2	6 800 / 6 800	800 / 800	Process and utilities water
2	Water Treatment Unit	1.5	N/A	192 000 / 192 000	Process and utilities water
3	Electrolyser Unit	1	N/A	(1 239 157 – 301 932 367) / 20 000	Hydrogen Output Oxygen Output

NO.	COMPONENT	APPROXIMATE FOOTPRINT (HA)	STORAGE CAPACITY (M3 / TONS)	MAXIMUM THROUGHPUT (M3 / TONS PER ANNUM)	NOTE
4	Air Separation Unit	0.5	N/A	92 905 405 / 110 000	Nitrogen Input
5	Ammonia Processing Unit	2	N/A	149 253 / 100 000	Ammonia Output
6	Liquid Air Storage System	1	3 983/ 3 505	460 227 / 405 000	Nitrogen Storage
7	Air Separation Unit	2	2273/1523	261 194 / 175 000	
8	Hydrogen and Oxygen Storage Tank Farm	12	59 566/ 800	5 576 208 / 90 000	Hydrogen and Oxygen storage (combined tank farm), i.e. feedstock storage
9	Ancillary infrastructure	3	N/A	N/A	Includes temporary and permanent laydown areas, parking, offices and other related infrastructure.
	Total footprint	25			

1.4.3 PREFERRED ALTERNATIVES

The layout is likely to be updated and refined as the project engineering progresses and depending on the sensitivity and technical inputs from the specialists during the EIA phase. The developed site layouts of the Hendrina GH&A Facility is not yet final.

Outlined below are the proposed preferred layouts/sites alternative for the facility and its associated infrastructure:

Site Alternative 2 (Preferred):

— A2-A - 26°12'3.74"S	29°33'33.37"E
— A2-B - 26°12'17.06"S	29°33'26.78"E
— A2-C - 26°12'27.16"S	29°33'47.13"E
— A2-D - 26°12'19.30"S	29°33'51.76"E
— A2-E - 26°12'16.45"S	29°33'46.51"E
— A2-F - 26°12'13.49"S	29°33'48.09"E



Figure 1-4: Green Hydrogen and Ammonia plant site – Preferred Alternative

Water pipeline Alternative 2 (Preferred):

— WP1 - 26° 5'56.52"S	29°28'49.09"E
— WP2 - 26° 6'4.43"S	29°28'53.68"E
— WP3 - 26° 6'7.11"S	29°29'9.59"E
— WP4 - 26° 6'47.00"S	29°29'4.29"E
— WP5 - 26° 7'41.63"S	29°29'11.03"E
— WP6 - 26° 8'16.65"S	29°29'44.31"E
— WP12 - 26° 8'23.47"S	29°29'49.43"E
— WP13 - 26° 8'21.50"S	29°30'9.72"E
— WP14 - 26° 9'30.08"S	29°30'42.55"E
— WP15 - 26° 9'39.44"S	29°30'44.32"E

- WP16 - 26°10'1.52"S 29°31'10.46"E
- WP17 - 26°11'35.01"S 29°33'21.75"E
- WP18 - 26°11'51.57"S 29°33'12.35"E
- WP19 - 26°12'3.26"S 29°33'31.43"E
- WP20 - 26°12'19.33"S 29°33'41.05"E



Figure 1-5: Water pipeline route - Preferred Alternative

Powerline option (up to 132kV):

- PL1-A - 26°12'19.20"S 29°33'41.35"E
- PL1-B - 26°12'3.63"S 29°33'49.99"E
- PL1-C - 26°11'35.49"S 29°33'21.66"E
- PL1-D - 26°11'25.87"S 29°33'29.33"E
- PL1-E - 26°11'20.24"S 29°33'21.94"E
- PL1-F - 26°11'17.23"S 29°33'25.04"E



Figure 1-6: Powerline option (up to 132kV) - Preferred Alternative

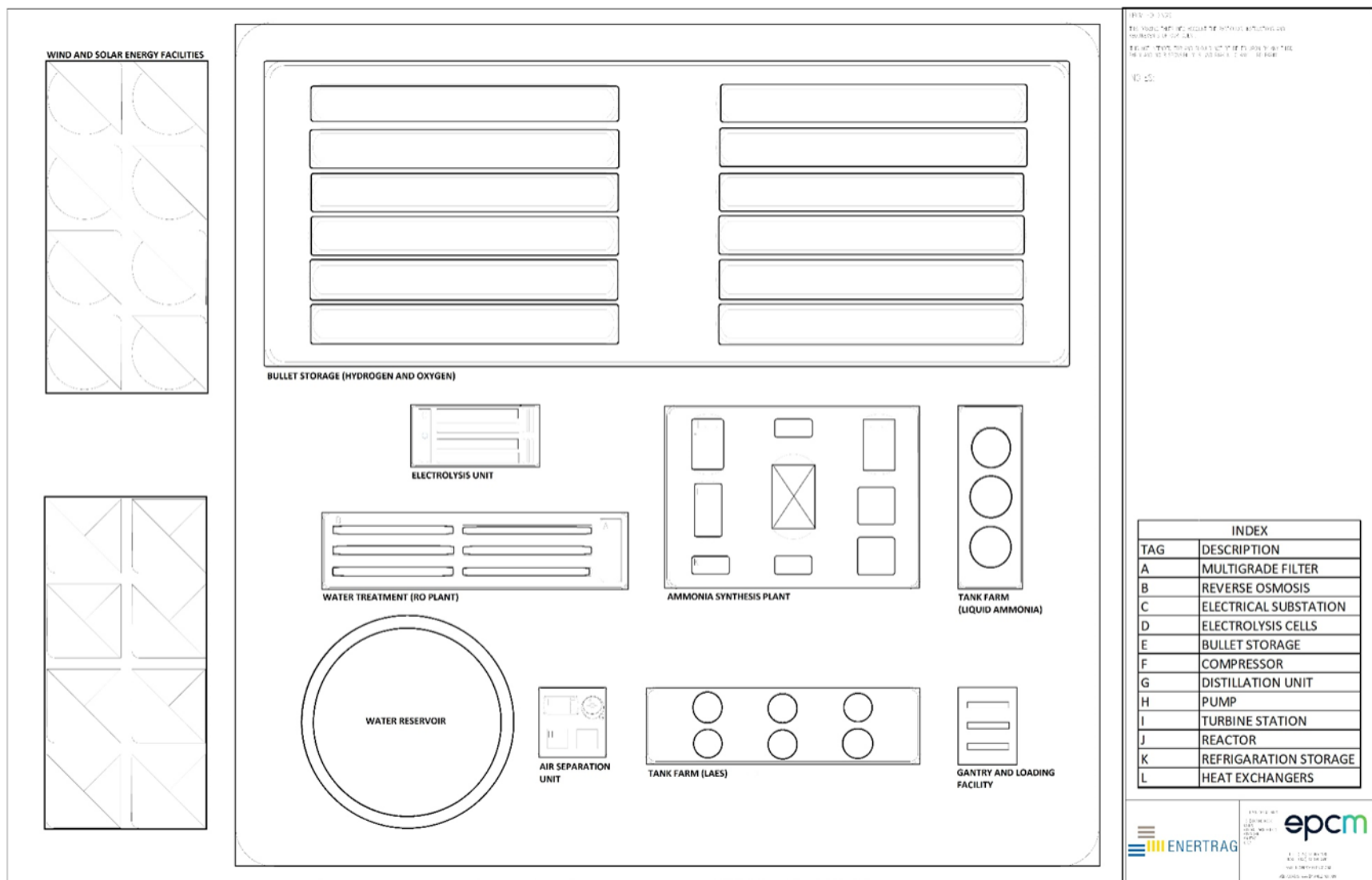


Figure 1-7: Indicative block layout of the proposed hydrogen and ammonia plant

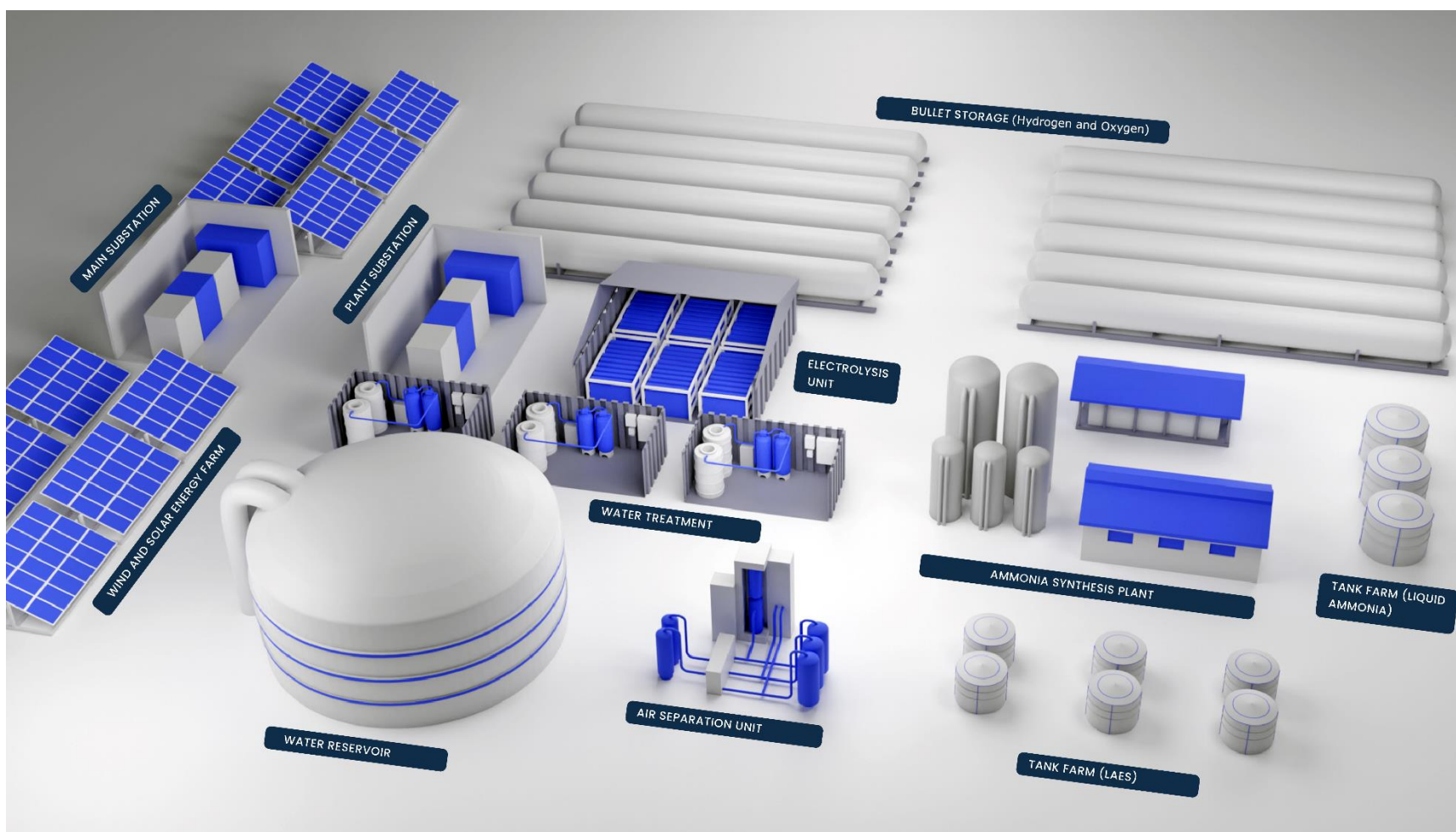


Figure 1-8: Possible Green Hydrogen and Ammonia plant layout

1.4.4 PROJECT DEVELOPMENT PHASES

PRE-CONSTRUCTION PHASE

The pre-construction phase is associated with the necessary pre-feasibility and feasibility studies as well as applying for the necessary permits and authorisations. The following required activities are required prior to the EPC/Sub-Contractors gaining access to site:

- Conduct pre-construction specialist walkdowns and amendment of the EMPR;
- Finalising project design requirements taking consideration of the specialist requirements;
- Development of project scope and schedule;
- Securing/applying for necessary permits and authorisations for required activities;
- Establishment of ESMS;
- Submission and approval of required Method statements; and
- Appointing of contractors/sub-contractors/ECO

CONSTRUCTION PHASE

The construction phase includes the preparatory works typically associated with GH&A developments, and will consist of the following key activities:

- Site establishment will include clearing of vegetation and topsoil at the authorised site, including laydown area and access routes.
- The temporary laydown area will be constructed, including establishment of the construction camp (temporary offices, storage containers, concrete batching plant etc).
- Site establishment will also entail the installation and/or connection of services (sanitation, electricity etc).
- Bulk materials (aggregate, steel etc.), infrastructure components, lifting and construction equipment (excavators, trucks, compaction equipment etc.) will be sourced and transported to site via suitable National and provincial routes and designated access roads.
- The infrastructure components may be defined as abnormal loads in terms of the Road Traffic Act (Act 29 of 1989) due to their large size and abnormal lengths and loads for transportation. A permit may be required for the transportation of these loads on public roads.
- Excavation necessary for concrete foundations
- Levelling of the plant area, construction camp area, substation area, and O&M building area, and excavation of foundations prior to construction.
- Excavation of trenches for the installation of underground cables and material pipelines as needed.
- A large lifting crane will be required to lift the various components into place. The lifting crane/s will be brought on site.
- Ancillary infrastructure will include construction site office, temporary laydown area and workshop area for contractor's equipment.
- The proposed facility will connect directly to the nearby Hendrina Collector substation through an up to 132kV powerline, which will supply the GH&A facility with green energy for the production of hydrogen (and ultimately Ammonia) via the Haber-Bosch process.
- Once all construction is completed on site and all equipment and machinery has been removed from the site, the site will be rehabilitated.

OPERATIONAL PHASE

The operational phase includes the following activities:

- The generation of green hydrogen and ammonia from the facility.
- Brine handling and disposal from the facility.

— Periodic inspections and maintenance of the GH&A facility.

DECOMMISSIONING PHASE

The proposed facility is expected to be operational for approximately 25 years. Should it be decided not to extend beyond the 25 years lifespan, the facility will be decommissioned. The decommissioning phase includes the activities associated with the removal/dismantling of GH&A facility and associated infrastructure when no longer necessary. This would entail returning the land to its pre-construction state.

1.4.5 PROJECT JUSTIFICATION (NEED AND DESIRABILITY)

In October 2021, at the second Sustainable Infrastructure Development Symposium, President Cyril Ramaphosa said that green energy had the potential to drive industrialisation and establish a whole new industrial reality. Furthermore, the President stated that “We stand ready to be a major exporter in this market, to use hydrogen to rapidly decarbonise our existing industries, and attract industrial investment from across the globe seeking to meet new standards of green power in the production process”.

The proposed development of the Hendrina GH&A Facility directly addresses the President’s statements and the need to implement renewable energy technologies and green fuels and/or products in Mpumalanga. Renewable energy development is regarded as an important contribution to meeting international and national targets of reducing reliance on fossil fuels, such as coal, which contribute towards greenhouse gas emissions and resultant climate change. The need and desirability of proposed Hendrina GH&A facility has been considered from an international, national and regional perspective.

Sustainable energy conversion requires zero emissions of greenhouse gases and criteria pollutants using primary energy sources that the earth naturally replenishes quickly, like renewable resources. Solar and wind power conversion technologies have become cost effective recently, but challenges remain to manage electrical grid dynamics and to meet end-use requirements for energy dense fuels and chemicals.

Renewable hydrogen provides the best opportunity for a zero emissions fuel and is the best feedstock for production of zero emission liquid fuels and some chemical and heat end-uses. Renewable hydrogen can be made at very high efficiency using electrolysis systems that are dynamically operated to complement renewable wind and solar power dynamics.

Hydrogen can be stored within the existing natural gas system to provide low-cost massive storage capacity that (1) could be sufficient to enable a 100% zero emissions grid; (2) has sufficient energy density for end-uses including heavy duty transport; (3) is a building block for zero emissions fertilizer and chemicals; and (4) enables sustainable primary energy in all sectors of the economy.

1.5 ENVIRONMENTAL SENSITIVITY

Specialist assessments were conducted in accordance with the Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes, which were promulgated in Government Notice No. 320 of 20 March 2020 and in Government Notice No. 1150 of 30 October 2020 (i.e. “the Protocols”), or Appendix 6 of the EIA Regulations, depending on which legislation apply to the assessment under consideration. A summary of the DFFE screening tool, the applicable legislation as well as the specialist sensitivity verification are detailed in **Table 1-7**.

Table 1-7: Assessment Protocols and Site Sensitivity Verifications

SPECIALIST ASSESSMENT	ASSESSMENT PROTOCOL	DFFE SCREENING TOOL SENSITIVITY	SPECIALIST SENSITIVITY VERIFICATION
Agricultural Assessment	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Agricultural Resources</i>	High Sensitivity	High and Medium Sensitivity
Terrestrial Biodiversity Impact Assessment	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity</i>	Very high Sensitivity	High and Low Sensitivity
Aquatic Biodiversity Impact Assessment	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Aquatic Biodiversity</i>	Very High Sensitivity	High and Low Sensitivity
Plant Species	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species</i>	Medium Sensitivity	Medium Sensitivity
Animal Species	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species</i>	Medium Sensitivity	Low Sensitivity
Avifauna Impact Assessment	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species</i>	Medium Sensitivity	High and Low Sensitivity
Bat Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	No Sensitivity Identified	High and Medium Sensitivity
Archaeological and Cultural Heritage Impact Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Low Sensitivity	Low Sensitivity
Civil Aviation	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Medium Sensitivity	Low Sensitivity
Defence	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Low Sensitivity	Low Sensitivity

SPECIALIST ASSESSMENT	ASSESSMENT PROTOCOL	DFFE SCREENING TOOL SENSITIVITY	SPECIALIST SENSITIVITY VERIFICATION
Palaeontology Impact Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Very High Sensitivity	Low Sensitivity
Visual (Landscape) Impact Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	No Sensitivity Identified	Medium Sensitivity
Social Impact Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	No Sensitivity Identified	Low to Medium Sensitivity

1.6 SENSITIVITY MAPPING

A preliminary consolidated environmental sensitivity map (**Figure 1-9**) has been compiled based on the sensitivities and buffers outlined in the specialist studies.

The environmental sensitivity map indicates consolidated sensitivity significance ranking (i.e. Low, Medium-Low, Medium, Medium-High, High and Very High) as per the above input from the relevant specialist studies.

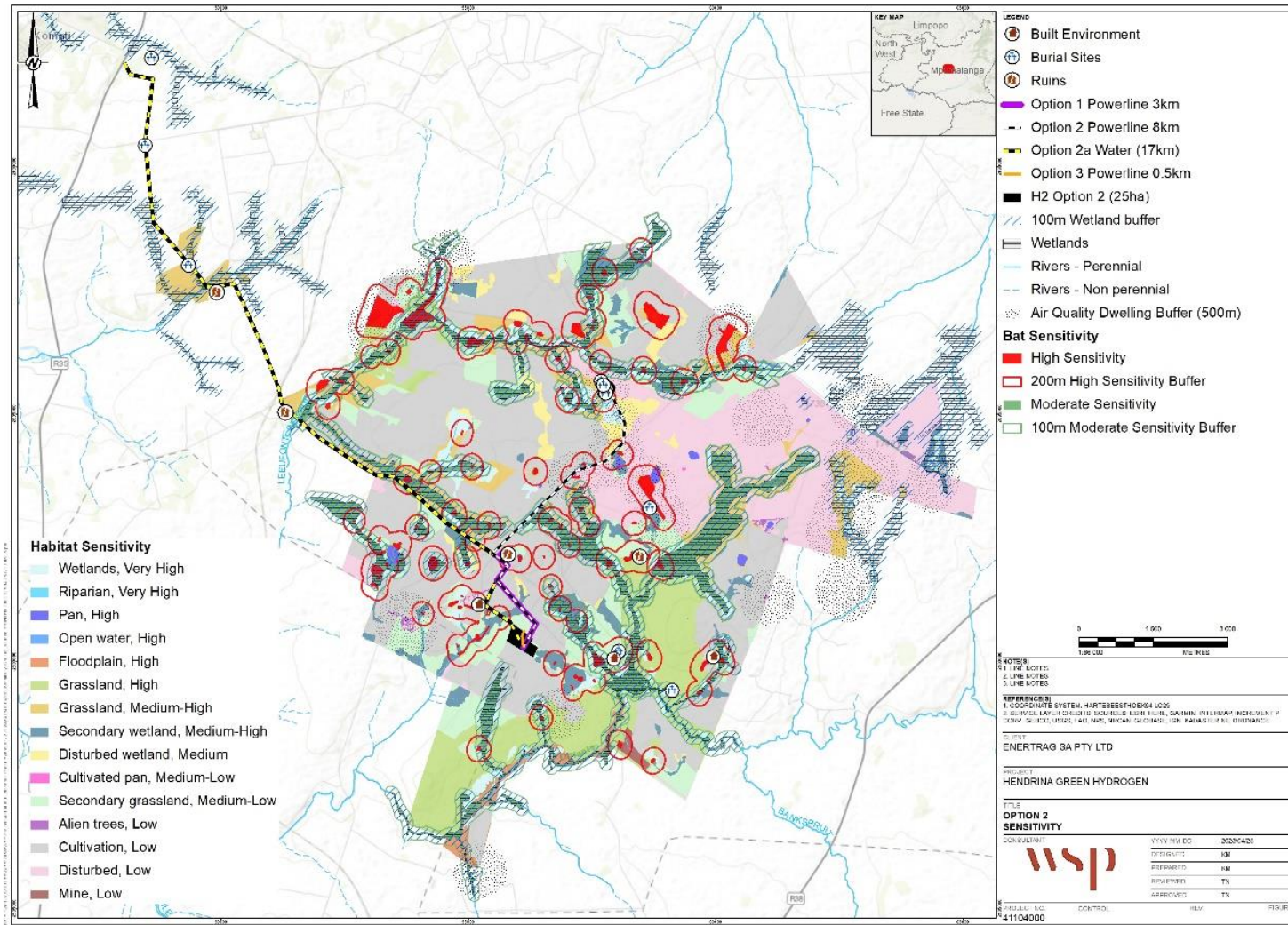


Figure 1-9: Preferred Site 2 Layout overlain onto a consolidated environmental sensitivity map

1.7 FINDINGS OF THE IMPACT ASSESSMENT

A summary of the identified impacts and corresponding (initial and residual) significance ratings to the proposed project are provided in **Table 1-8**.

Table 1-8: Impact Summary for the Proposed GH&A facility

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
Air Quality	Generation of Dust and PM	Construction	Low	(-)	Very Low	(-)
	Ambient air quality due to NH ₃ emissions	Operation	Low	(-)	N/A ¹	
Noise	Noise Emissions	Construction	Low	(-)	Very Low	(-)
	Noise Emissions from facility operation	Operation	Very Low	(-)	Very Low	(-)
Soil, land capability and Agricultural	Loss of agricultural potential	Construction	Moderate	(-)	N/A	(-)
Surface Water/Wetlands	Wetland destruction	Construction	Moderate	(-)	Low	(-)
	Hydrocarbon & Waste Spills	Construction	Moderate	(-)	Low	(-)
	Hydrocarbon & Waste Spills	Operation	Moderate	(-)	Low	(-)
	Increased run off leading to erosion and sedimentation	Operation	Moderate	(-)	Low	(-)
	Rehabilitation – rehabilitation mainly consists of profiling and landscaping of the land, and re-vegetation.	Decommission	Moderate	(-)	Low	(-)

¹ Note: A post-mitigation scenario is not applicable for the control of NH₃ emissions during the operational phase. All emission controls are considered standard operating procedure and thus the pre-mitigation scenario is representative of normal operations as the proposed facility is designed to function

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Post-closure monitoring and rehabilitation.	Decommission	Low	(-)	Low	(-)
Terrestrial Biodiversity	Loss of indigenous natural vegetation	Construction	Moderate	(-)	Moderate	(-)
	Establishment and spread of declared weeds and alien invader plants	Construction	Low	(-)	Very Low	(-)
	Continued disturbance to natural habitats due to general operational activities and maintenance	Operation	Low	(-)	Low	(-)
	Establishment and spread of declared weeds and alien invader plants	Operation	Moderate	(-)	Very low	(-)
	Continued runoff and erosion	Operation	Low	(-)	Low	(-)
	Loss and/or disturbance of indigenous natural vegetation during removal of infrastructure	Decommissioning	Low	(-)	Low	(-)
	Establishment and spread of declared weeds and alien invader plants	Decommissioning	Moderate	(-)	Low	(-)
Animal Species	Loss of faunal habitat	Construction	Moderate	(-)	Low	(-)
	Direct mortality of fauna	Construction	Low	(-)	Very low	(-)
	Direct mortality of fauna	Operation	Low	(-)	Very low	(-)
Plant Species	Loss of individuals of Species of Conservation Concern due to clearing for construction	Construction	Moderate	(-)	Very low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Disturbance due to general operational activities and maintenance leading to loss of individuals of SCC	Operation	Moderate	(-)	Very low	(-)
	Establishment and spread of declared weeds and alien invader plants leading to loss of SCC	Operation	Moderate	(-)	Very low	(-)
	Loss and/or disturbance of indigenous natural vegetation during removal of infrastructure that may lead to loss of individuals of SCC	Decommission	Moderate	(-)	Low	(-)
	Establishment and spread of declared weeds and alien invader plants leading to loss of SCC	Decommission	Moderate	(-)	Very Low	(-)
Avifauna	Displacement due to disturbance associated with the construction	Construction	Low	(-)	Very Low	(-)
	Displacement of SCC due to disturbance of breeding birds associated with the construction	Construction	Low	(-)	Very Low	(-)
	Displacement due to habitat transformation associated with the construction of the 132kV grid connection power line.	Construction	Low	(-)	Very Low	(-)
	Displacement due to disturbance associated with the construction of the 132Kv grid connection power line.	Construction	Low	(-)	Low	(-)
	Mortality of priority species due to collisions with the up to 132kV overhead power line	Operation	Moderate	(-)	Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Electrocution of priority species on the up to 132kV overhead powerline	Operation	Low	(-)	Very low	(-)
	Displacement of SCC due to disturbance of breeding birds associated with the decommissioning of the GH&A facility	Decommission	Low	(-)	Very low	(-)
	Displacement of priority species due to disturbance associated with decommissioning of the 132kV line	Decommissioning	Low	(-)	Low	(-)
Visual	Potential visual impact of construction activities on sensitive visual receptors in close proximity to the proposed grid connection infrastructure	Construction	Moderate	(-)	Low	(-)
	Potential visual impact on sensitive visual receptors located within a close proximity of the facility infrastructure during the operational phase	Operation	Moderate	(-)	Moderate	(-)
Waste	General Waste	Construction	Low	(-)	Low	(-)
	Hazardous Waste	Construction	Moderate	(-)	Low	(-)
	Sanitation Waste	Construction	Low	(-)	Low	(-)
	General Waste	Operation	Low	(-)	Low	(-)
	Hazardous Waste	Operation	Moderate	(-)	Low	(-)
Traffic	Noise due to vehicle trips on-site	Construction	Moderate	(-)	Low	(-)
	Dust & exhaust pollution due to additional trips on the national and district roads	Construction	Moderate	(-)	Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Transport of ISOtainers generating noise pollution on the national and district roads	Operation	Low	(-)	Very Low	(-)
	Transport of ISOtainers generating dust & exhaust pollution on the national and district roads	Operation	Low	(-)	Very Low	(-)
Heritage	Destruction or damage to Graves at 093, 094, HD001, HD002, HD 004, HD101, HD102 and GA004.	Construction	Moderate	(-)	Very Low	(-)
	Destruction or damage to recorded ruins	Construction	Moderate	(-)	Very Low	(-)
	Damage/ destruction of unknown heritage resources.	Construction	Low	(-)	Very low	(-)
Palaeontology	Encountering Fossils	Construction	Low	(-)	Very Low	(+)
Socio-economic	Temporary stimulation of the national and local economy	Construction	High	(+)	High	(+)
	Temporary increase employment in the national and local economies	Construction	Moderate	(+)	Moderate	(+)
	Contribution to skills development in the country and local economy	Construction	Moderate	(+)	Moderate	(+)
	Temporary increase in household earnings	Construction	Moderate	(+)	Moderate	(+)
	Temporary increase in government revenue	Construction	Moderate	(+)	Moderate	(+)
	Negative changes to the sense of place	Construction	Moderate	(-)	Moderate	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Negative impact on the local agriculture operations	Construction	Low	(-)	Low	(-)
	Temporary increase in social conflicts associated with the influx of people	Construction	Moderate	(-)	Low	(-)
	Impact on economic and social infrastructure	Construction	Moderate	(-)	Moderate	(-)
	Sustainable increase in production and GDP nationally and locally	Operation	Moderate	(+)	Moderate	(+)
	Creation of sustainable employment positions nationally and locally	Operation	Moderate	(+)	Moderate	(+)
	Skills development of permanently employed workers	Operation	Moderate	(+)	Moderate	(+)
	Improved standards of living for benefiting households	Operation	Moderate	(+)	Moderate	(+)
	Sustainable increase in national and local government revenue	Operation	Moderate	(+)	Moderate	(+)
	Local economic and social development benefits derived from the project's operations	Operation	Moderate	(+)	Moderate	(+)
	Sustainable rental revenue for farms where the facility is located	Operation	Moderate	(+)	Moderate	(+)
	Sustainable increase in hydrogen and ammonia production in South Africa	Operation	High	(+)	High	(+)
	Negative changes to the sense of place	Operation	High	(-)	Moderate	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Negative impact on agricultural operations	Operation	Moderate	(-)	Moderate	(-)
SHE Risk	Chronic exposure to toxic chemical or biological agents	Construction	Moderate	(-)	Low	(-)
	Human Health - exposure to noise	Construction	Moderate	(-)	Low	(-)
	Human Health -exposure to temperature extremes and/or humidity	Construction	Low	(-)	Very Low	(-)
	Human Health - exposure to psychological stress	Construction	Low	(-)	Low	(-)
	Human Health - exposure to ergonomic stress	Construction	Low	(-)	Low	(-)
	Human and Equipment Safety - exposure to fire radiation	Construction	Moderate	(-)	Low	(-)
	Human and Equipment Safety - exposure to acute toxic chemical and biological agents	Construction	Moderate	(-)	Low	(-)
	Human and Equipment Safety - exposure to violent release of kinetic or potential energy	Construction	High	(-)	Low	(-)
	Human and Equipment Safety - exposure to electromagnetic waves	Construction	Moderate	(-)	Low	(-)
	Environment - emissions to air	Construction	Low	(-)	Very Low	(-)
	Environment - emissions to water	Construction	Low	(-)	Low	(-)
	Environment – waste generation	Construction	Low	(-)	Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Environment - waste of resources e.g. water, power etc	Construction	Low	(-)	Very Low	(-)
	Public - Aesthetics	Construction	Low	(-)	Low	(-)
	Investors - Financial	Construction	Moderate	(-)	Low	(-)
	Employees and investors - Security	Construction	Moderate	(-)	Low	(-)
	Emergencies	Construction	Moderate	(-)	Low	(-)
	Legal matters	Construction	Moderate	(-)	Low	(-)
	Human Health - chronic exposure to toxic chemical or biological agents.	Operation	Moderate	(-)	Low	(-)
	Human Health - chronic exposure to toxic chemical or biological agents	Operation	Moderate	(-)	Low	(-)
	Human Health - exposure to noise	Operation	Moderate	(-)	Low	(-)
	Human Health - exposure to temperature extremes and/or humidity	Operation	Low	(-)	Very Low	(-)
	Human Health - exposure to psychological stress	Operation	Low	(-)	Very Low	(-)
	Human Health - exposure to ergonomic stress	Operation	Moderate	(-)	Low	(-)
	Human and Equipment Safety - exposure to fire radiation	Operation	Moderate	(-)	Low	(-)
	Human and Equipment Safety - exposure to explosion over pressures- Hydrogen Ammonia & oxygen leaks	Operation	Moderate	(-)	Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Human and Equipment Safety - exposure to explosion over pressures-Transformer faults	Operation	Moderate	(-)	Low	(-)
	Human and Equipment Safety - exposure to acute toxic chemical and biological agents	Operation	Low	(-)	Low	(-)
	Human and Equipment Safety - exposure to acute toxic/hazardous chemicals	Operation	High	(-)	Low	(-)
	Human and Equipment Safety - exposure to violent release of kinetic or potential energy	Operation	Moderate	(-)	Low	(-)
	Human and Equipment Safety - exposure to electromagnetic waves	Operation	Moderate	(-)	Low	(-)
	Environment - emissions to air	Operation	Low	(-)	Very Low	(-)
	Environment - emissions to water	Operation	Low	(-)	Low	(-)
	Environment – waste generation	Operation	Low	(-)	Very Low	(-)
	Environment - waste of resources e.g. water, power etc	Operation	Low	(-)	Very Low	(-)
	Public - Aesthetics	Operation	Moderate	(-)	Low	(-)
	Investors - Financial	Operation	Moderate	(-)	Low	(-)
	Employees and investors - Security	Operation	Moderate	(-)	Low	(-)
	Facility emergencies	Operation	Moderate	(-)	Low	(-)
	Legal matters	Operation	Moderate	(-)	Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Equipment reached end of life and may leak	Decommission	Moderate	(-)	Low	(-)
Bats	Loss of foraging habitat by clearing of vegetation.	Construction	Low	(-)	Low	(-)
	Roost destruction during earthworks.	Construction	Low	(-)	Very Low	(-)
	Increased bat mortalities due to light attraction and habitat creation.	Operation	Moderate	(-)	Low	(-)
Groundwater	Water use	Construction	Low	(-)	Very Low	(-)
	Soil clearing and construction of infrastructure	Construction	Low	(-)	Very Low	(-)
	Water feed from Usuthu water scheme	Operation	Very low	(-)	Very low	(-)
	Groundwater abstraction for production purposes	Operation	Moderate	(-)	Low	(-)
	Use of purified wastewater from nearby mining	Operation	High	(-)	Low	(-)

A summary of the identified cumulative impacts is outlined in **Table 1-9** below for both before and after mitigation measures have been considered for the current project as well as the combination of projects in the area.

Table 1-9: Cumulative impacts summary

ASPECT	IMPACT DESCRIPTION	CURRENT PROJECT		COMBINATION OF PROJECTS	
		SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
Noise	Cumulative acoustic impact	Very low	(-)	Very Low	(-)
Surface Water/ Aquatic	Cumulative surface water impact	Moderate	(-)	Low	(-)
Avifauna	Cumulative Avifaunal impacts from GH&A facility	Low	(-)	Low	(-)
	Cumulative Avifaunal impacts from 132kV powerline	Moderate	(-)	Low	(-)
Animal species	Loss of faunal habitat during construction	Very low	(-)	Very low	(-)
Plant species	Loss of individuals of Species of Conservation Concern	Moderate	(-)	High	(-)
Biodiversity	Clearing of natural habitat for construction	Moderate	(-)	High	(-)
	Disruption of ecological processes at landscape level	Low	(-)	Moderate	(-)
	Establishment and spread of declared weeds and alien invader plants	Very low	(-)	Moderate	(-)
Heritage and Palaeontology	Damage or loss of heritage or palaeontological finds	Moderate	(-)	Low	(-)
Visual and landscape	Cumulative visual impact	High	(-)	Moderate	(-)
Traffic	Increased traffic due to surrounding developments	Moderate	(-)	Low	(-)
Social	Cumulative change in the Sense of place and the landscape	Low	(-)	Low	(-)
	Cumulative impact on Local services and accommodation	Moderate	(-)	Low	(-)
	Cumulative impact on local economy	Low	(+)	Moderate	(+)

ASPECT	IMPACT DESCRIPTION	CURRENT PROJECT		COMBINATION OF PROJECTS	
		SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
Bats	Cumulative bat mortalities due to light attraction and habitat creation.	Moderate	(-)	Low	(-)

1.8 APPLICABLE DOCUMENTATION

The following documents are to be read in conjunction with the EMPr:

- Draft EIAR for the Proposed GH&A facility;
- Environmental Authorisation (EA) issued by the MDARDLEA in terms of the NEMA (once issued); and
- Generic EMPr for powerline construction (**Appendix C**)
- Generic EMPr for substation construction (**Appendix D**)

2 GOVERNANCE FRAMEWORK

The South African regulatory framework establishes well-defined requirements and standards for environmental and social management of industrial and civil infrastructure developments. The national environmental legislation applicable to the proposed project includes, but is not limited, to the following:

2.1 NATIONAL ENVIRONMENTAL LEGAL FRAMEWORK

The South African regulatory framework establishes well-defined requirements and standards for environmental and social management of industrial and civil infrastructure developments. Different authorities at both national and regional levels carry out environmental protection functions. The applicable legislation and policies are shown in **Table 2-1**.

Table 2-1: Applicable National Legislation²

LEGISLATION	DESCRIPTION OF LEGISLATION AND APPLICABILITY
The Constitution of South Africa (No. 108 of 1996)	The Constitution cannot manage environmental resources as a stand-alone piece of legislation hence additional legislation has been promulgated in order to manage the various spheres of both the social and natural environment. Each promulgated Act and associated Regulations are designed to focus on various industries or components of the environment to ensure that the objectives of the Constitution are effectively implemented and upheld in an on-going basis throughout the country. In terms of Section 7, a positive obligation is placed on the State to give effect to the environmental rights.
National Environmental Management Act (No. 107 of 1998)	<p>In terms of Section 24(2) of the NEMA, the Minister may identify activities, which may not commence without prior authorisation. The Minister thus published GNR 983 (as amended) (Listing Notice 1), GNR 984 (as amended) (Listing Notice 2) and GNR 985 (as amended) (Listing Notice 3) listing activities that may not commence prior to authorisation.</p> <p>The regulations outlining the procedures required for authorisation are published in the EIA Regulations of 2014 (GNR 982) (as amended). Listing Notice 1 identifies activities that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 2 identifies activities that require an S&EIR process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 3 identifies activities within specific areas that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity.</p> <p>WSP undertook a legal review of the listed activities according to the proposed project description to conclude that the activities listed in in this section are considered applicable to the development: A S&EIR process must be followed. An EA is required and will be applied for with the MDARDLEA.</p>
Listing Notice 1: GNR 983	<p>Activity 9(i)</p> <p><i>The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water—</i></p> <p><i>(i) with an internal diameter of 0,36 metres or more; or</i></p> <p><i>(ii) with a peak throughput of 120 litres per second or more;</i></p> <p><i>excluding where—</i></p> <p><i>(a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or</i></p>

² It should be noted that all dimensions outlined in relation to Listing Notice 1, 2 and 3 are provisional and are subject to final design.

LEGISLATION**DESCRIPTION OF LEGISLATION AND APPLICABILITY**

	<p><i>(b) where such development will occur within an urban area.</i></p> <p>Description:</p> <p>The Facility is located outside an urban area and will require, depending on the water source and water quality obtained, an above or below ground water supply pipeline exceeding 1 000 metres in length, of internal diameter in excess of 0,36m towards feed water supply of the Facility.</p> <p>The exact pipeline specifications will be confirmed once final designs have been provided.</p>
	<p>Activity 10(i)</p> <p><i>The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes –</i></p> <p><i>(i) with an internal diameter of 0,36 metres or more; or</i></p> <p><i>(ii) with a peak throughput of 120 litres per second or more;</i></p> <p><i>excluding where—</i></p> <p><i>(a) such infrastructure is for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes inside a road reserve or railway line reserve; or</i></p> <p><i>(b) where such development will occur within an urban area.</i></p> <p>Description:</p> <p>The Facility is located outside an urban area and road/railway line reserve, and will require infrastructure exceeding 1000m in length for the bulk transportation of effluent/process water of internal diameter in excess of 0,36m for crystallisation, associated with the Reverse Osmosis plant.</p> <p>The exact pipeline specifications will be confirmed once final designs have been provided.</p>
	<p>Activity 11(i)</p> <p><i>The development of facilities or infrastructure for the transmission and distribution of electricity—</i></p> <p><i>(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or</i></p> <p><i>(ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more;</i></p> <p>Description:</p> <p>The Facility is located outside urban areas and will be supplied with electricity by a single up to 132kV overhead or underground power line from a common Collector Substation. In addition, electrical substation infrastructure associated with the Facility is rated at 33/132kV whilst being located outside urban areas or industrial complexes.</p>
	<p>Activity 12(ii)(a)(c)</p> <p><i>The development of—</i></p> <p><i>(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or</i></p> <p><i>(ii) infrastructure or structures with a physical footprint of 100 square metres or more;</i></p> <p><i>where such development occurs—</i></p> <p><i>(a) within a watercourse;</i></p> <p><i>(b) in front of a development setback; or</i></p>

LEGISLATION**DESCRIPTION OF LEGISLATION AND APPLICABILITY**

	<p><i>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;</i></p> <p>Description:</p> <p>The physical footprint of access roads, stormwater control infrastructure, electrical cabling and water supply pipelines related to the Facility will exceed 100m² within delineated watercourses on site, or within 32m of the outer extent of the delineated watercourses on site. The exact footprint will be confirmed once final designs have been provided.</p>
	<p>Activity 16</p> <p><i>The development and related operation of facilities for the desalination of water with a design capacity to produce more than 100 cubic metres of treated water per day.</i></p> <p>Description:</p> <p>The Facility's Reverse Osmosis (RO) infrastructure (with a design capacity to produce ~3182 m³ purified/treated water per day) will be required to supply the electrolysis process with sufficient quality feed water.</p>
	<p>Activity 19</p> <p><i>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;</i></p> <p>Description:</p> <p>Access roads, stormwater control infrastructure, electrical cabling and water supply pipelines related to the Facility will collectively require the excavation, infilling or removal of soil exceeding 10m³ from delineated watercourses on site. The exact values will be confirmed once final designs have been provided.</p>
	<p>Activity 24(ii)</p> <p><i>The development of a road—</i></p> <p><i>(i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or</i></p> <p><i>(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;</i></p> <p>Description:</p> <p>Internal and access roads required by the Facility will be between 5m and 6m wide, and exceed 1km in length in a rural area. Where required for turning circle/bypass areas, however, access or internal roads may be up to 20m to allow for larger component transport. The exact values will be confirmed once final designs have been provided.</p>
	<p>Activity 25</p> <p><i>The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2 000 cubic metres but less than 15 000 cubic metres.</i></p> <p>Description:</p> <p>Depending on the water source and water quality obtained, an evaporator / crystalliser for the treatment of more than 2 000m³ effluent at any one time will be constructed and operated as part of the Facility.</p>
	<p>Activity 27</p>

LEGISLATION**DESCRIPTION OF LEGISLATION AND APPLICABILITY**

	<p><i>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation</i></p> <p>Description:</p> <p>The power lines, water pipelines and access/internal roads related to the Facility are considered linear activities and therefore is excluded from this activity. However, the respective infrastructure components related to the Facility individually require in excess of 1 ha but not more than 20ha of indigenous vegetation clearance each. The exact values will be confirmed once final designs have been provided.</p>
	<p>Activity 28(ii)</p> <p><i>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:</i></p> <p><i>(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or</i></p> <p><i>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;</i></p> <p>Description:</p> <p>The Facility development footprint is collectively approximately 30ha (subject to finalisation based on technical and environmental requirements). As part of this buildable area, infrastructure such as the individual components will have footprints of between 1 ha and 12ha, all located outside an urban area and which is currently used for agriculture.</p>
	<p>Activity 30</p> <p><i>Any process or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).</i></p> <p>Description:</p> <p>The Facility and associated infrastructure is located within, and will require vegetation clearance or disturbance of Eastern Highveld Grassland this ecosystem is listed in the National List of Ecosystems That Are Threatened And In Need of Protection (GNR 1002 of 9 December 2011), and subsequently listed in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).</p>
	<p>Activity 48(i)(a)(c)</p> <p><i>The expansion of—</i></p> <p><i>(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; or</i></p> <p><i>(ii) dams or weirs, where the dam or weir, including infrastructure and water surface area, is expanded by 100 square metres or more;</i></p> <p><i>where such expansion occurs—</i></p> <p><i>(a) within a watercourse;</i></p> <p><i>(b) in front of a development setback; or</i></p> <p><i>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;</i></p> <p>Description:</p> <p>Transport of large infrastructure components related to the Facility will require the expansion of existing access and/or internal roads, culverts or similar drainage crossing infrastructure collectively exceeding 100m² or more beyond existing road or road reserves located within</p>

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	<p>delineated watercourses on site, or within 32m of the outer extent of the delineated watercourses on site. The exact values will be confirmed once final designs have been provided.</p> <p>Activity 56(i)(ii)</p> <p><i>The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre—</i></p> <p><i>(i) where the existing reserve is wider than 13,5 meters; or</i></p> <p><i>(ii) where no reserve exists, where the existing road is wider than 8 metres;</i></p> <p>Description:</p> <p>The Facility is located within a rural area. Transport of large infrastructure components related to the facility will require the widening of existing access and/or internal roads where no reserve exists and where such road is wider than 8 metres.</p>
<p>Listing Notice 2: GNR 984</p>	<p>Activity 4</p> <p><i>The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres.</i></p> <p>Description:</p> <p>Dangerous goods product stores related to the operation of the Facility include Nitrogen, Oxygen, Hydrogen and Ammonia storage tanks (of varying sizes, pressures and temperatures) in excess of 500m³.</p> <p>In addition, fuel, cement, transformer oil and other chemicals will be stored onsite.</p> <p>Collectively all storage and handling of dangerous goods on site will exceed 500m³.</p> <p>Activity 6</p> <p><i>The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding—</i></p> <p><i>(i) activities which are identified and included in Listing Notice 1 of 2014;</i></p> <p><i>(ii) activities which are included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies;</i></p> <p><i>(iii) the development of facilities or infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less; or</i></p> <p><i>(iv) where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic metres per day.</i></p> <p>Description:</p> <p>The Facility will produce up to 100,000 tons per annum of liquid ammonia and therefore potentially requires licensing in terms of the NEM: AQA (specifically Category 7, subcategory 7.1: “Production and or Use in Manufacturing of Ammonia, Fluorine, Fluorine Compounds, Chlorine, and Hydrogen Cyanide”, with a threshold trigger value of greater than 100 tons per annum).</p> <p>The activity identified in the NEM: AQA however relates to the production of Ammonia, regardless of the nature of the process undertaken in production.</p> <p>During operation of the Facility, gases purged are:</p> <p>— Not altered in the process;</p>

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	<ul style="list-style-type: none"> — Not considered ambient pollutants; and — Not regulated by the Minimum Emissions Standards (MES); <p>The applicant is therefore seeking exemption from Atmospheric Emissions Licensing (AEL) requirements. However, should the AELA consider an AEL required under the NEM:AQA regulations for this project, this activity will be triggered and is therefore applied for.</p> <p>Activity 7 (ii)</p> <p><i>The development and related operation of facilities or infrastructure for the bulk transportation of dangerous goods—</i></p> <p><i>(i) in gas form, outside an industrial complex, using pipelines, exceeding 1 000 metres in length, with a throughput capacity of more than 700 tons per day;</i></p> <p><i>(ii) in liquid form, outside an industrial complex, using pipelines, exceeding 1 000 metres in length, with a throughput capacity of more than 50 cubic metres per day; or</i></p> <p><i>(iii) in solid form, outside an industrial complex, using funiculars or conveyors with a throughput capacity of more than 50 tons per day.</i></p> <p>Description:</p> <p>Liquid ammonia of up to ~402 m³ per day will be produced by the Facility, which will be transported within the Facility as a liquid in pipelines exceeding 1000m in length.</p> <p>In addition, up to 800 m³ per day of liquid hydrogen will be produced by the Facility, which will be transported within the Facility as a liquid in pipelines exceeding 1000m in length.</p> <p>Both Hydrogen and Ammonia are substances listed in SANS10234.</p> <p>Activity 15</p> <p><i>The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for—</i></p> <p><i>(i) the undertaking of a linear activity; or</i></p> <p><i>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</i></p> <p>Description:</p> <p>The non-linear infrastructure components of the development footprint (buildable area) is approximately 25ha (subject to finalisation based on technical, final design and environmental requirements), within areas containing indigenous vegetation.</p>
<p>Listing Notice 3: GNR 985</p>	<p>Activity 4(f)(i)(cc)(ee)</p> <p><i>The development of a road wider than 4 metres with a reserve less than 13,5 metres.</i></p> <p><i>f. Mpumalanga</i></p> <p><i>i. Outside urban areas:</i></p> <p><i>(aa) A protected area identified in terms of NEMPAA, excluding disturbed areas;</i></p> <p><i>(bb) National Protected Area Expansion Strategy Focus areas;</i></p> <p><i>(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</i></p> <p><i>(dd) Sites or areas identified in terms of an international convention;</i></p> <p><i>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</i></p> <p><i>(ff) Core areas in biosphere reserves; or</i></p>

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	<p><i>(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas, where such areas comprise indigenous vegetation; or</i></p> <p><i>ii. Inside urban areas:</i></p> <p><i>(aa) Areas zoned for use as public open space; or</i></p> <p><i>(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose.</i></p> <p>Description:</p> <p>Internal and access roads required by the Facility will be between 5m and 6m wide, and exceed 1km in length in a rural area. Where required for turning circle/bypass areas, however, access or internal roads may be up to 20m to allow for larger component transport. The exact values will be confirmed once final designs have been provided.</p> <p>Furthermore, roads required for the Facility will be located within, and will require vegetation clearance or disturbance of, Eastern Highveld Grassland, this ecosystem is listed in the National List of Ecosystems That Are Threatened And In Need of Protection (GNR 1002 of 9 December 2011), and subsequently listed in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).</p> <p>Similarly, roads required for the Facility will be located within, and will require vegetation clearance or disturbance within Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA).</p>
	<p>Activity 10(f)(i)(bb)(cc)(ee)(hh)</p> <p><i>The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.</i></p> <p><i>f. Mpumalanga</i></p> <p><i>i. Outside urban areas:</i></p> <p><i>(aa) A protected area identified in terms of NEMPAA, excluding conservancies;</i></p> <p><i>(bb) National Protected Area Expansion Strategy Focus areas;</i></p> <p><i>(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</i></p> <p><i>(dd) Sites or areas identified in terms of an international convention;</i></p> <p><i>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</i></p> <p><i>(ff) Core areas in biosphere reserves;</i></p> <p><i>(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, where such areas comprise indigenous vegetation; or</i></p> <p><i>(hh) Areas within a watercourse or wetland, or within 100 metres of a watercourse or wetland;</i></p> <p>Description:</p> <p>Dangerous goods product stores related to the operation of the Facility include Nitrogen, Oxygen, Hydrogen and Ammonia storage tanks (of varying sizes, pressures and temperatures) in excess of 500m³.</p> <p>In addition, fuel, cement, transformer oil and other chemicals will be stored onsite. Collectively all storage and handling of dangerous goods on site will exceed 500m³, however individual component capacities may be between 30 - 80m³.</p> <p>Furthermore, storage contemplated above will be located within, and will require vegetation clearance or disturbance of, Eastern Highveld Grassland, this ecosystem is listed in the National List of Ecosystems That Are Threatened And In Need of Protection (GNR 1002 of 9 December</p>

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	<p>2011), and subsequently listed in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).</p> <p>Similarly, storage contemplated above will be located within, and will require vegetation clearance or disturbance within CBA and ESA as well as being located within delineated watercourses on site, or within 32m of the outer extent of the delineated watercourses on site.</p> <p>The exact footprint will be confirmed once final designs have been provided.</p>
	<p>Activity 12(f)(i)(ii)</p> <p><i>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</i></p> <p><i>f. Mpumalanga</i></p> <p><i>i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;</i></p> <p><i>ii. Within critical biodiversity areas identified in bioregional plans; or</i></p> <p>Description:</p> <p>The clearance required for the Facility will be up to approximately 30ha (subject to finalisation based on technical, final design and environmental requirements) of indigenous vegetation. Such clearance will therefore be in excess of 300m² and be partly located within Eastern Highveld Grassland, this ecosystem is listed in the National List of Ecosystems That Are Threatened And In Need of Protection (GNR 1002 of 9 December 2011), and subsequently listed in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004). Similarly, vegetation clearance required for the Facility and associated infrastructure will be located within CBA and ESA, in excess of 300m².</p> <p>The exact values will be confirmed once final designs have been provided.</p>
	<p>Activity 14(ii)(a)(c)(f)(i)(bb)(dd)(ff)</p> <p><i>The development of—</i></p> <p><i>(i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or</i></p> <p><i>(ii) infrastructure or structures with a Physical footprint of 10 Square metres or more;</i></p> <p><i>where such development occurs—</i></p> <p><i>(a) within a watercourse;</i></p> <p><i>(b) in front of a development setback; or</i></p> <p><i>(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;</i></p> <p><i>f. Mpumalanga</i></p> <p><i>i. Outside urban areas:</i></p> <p><i>(aa) A protected area identified in terms of NEMPAA, excluding conservancies;</i></p> <p><i>(bb) National Protected Area Expansion Strategy Focus areas;</i></p> <p><i>(cc) World Heritage Sites;</i></p> <p><i>(dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</i></p> <p><i>(ee) Sites or areas identified in terms of an international convention;</i></p>

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(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;

(gg) Core areas in biosphere reserves; or

(hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve, where such areas comprise indigenous vegetation;

Description:

The physical footprint of internal and access roads, stormwater control infrastructure, electrical cabling and water supply pipelines related to the Facility will exceed 10m² within delineated watercourses on site, or within 32m of the outer extent of the delineated watercourses on site.

Furthermore, the physical footprint of internal and access roads, stormwater control infrastructure, electrical cabling and water supply pipelines related to the Facility will exceed 10m² within delineated watercourses on site, or within 32m of the outer extent of the delineated watercourses on site, which infrastructure will be located within Eastern Highveld Grassland, this ecosystem is listed in the National List of Ecosystems That Are Threatened And In Need of Protection (GNR 1002 of 9 December 2011), and subsequently listed in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).

Finally, the physical footprint of internal and access roads, stormwater control infrastructure, electrical cabling and water supply pipelines related to the Facility will exceed 10m² within delineated watercourses on site, or within 32m of the outer extent of the delineated watercourses on site, located within CBA and ESA.

The exact footprint will be confirmed once final designs have been provided.

Activity 18(f)(i)(bb)(cc)(ee)

The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.

f. Mpumalanga

i. Outside urban areas:

(aa) A protected area identified in terms of NEMPAA, excluding conservancies;

(bb) National Protected Area Expansion Strategy Focus areas;

(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;

(dd) Sites or areas identified in terms of an international convention;

(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;

(ff) Core areas in biosphere reserves; or

(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve, where such areas comprise indigenous vegetation;

Description:

Transport of large infrastructure components related to the Facility will require the widening of existing access and/or internal roads by more than 4 metres or in excess of 1km within the Mpumalanga Province and outside urban areas.

Furthermore, such widening will occur within Eastern Highveld Grassland, this ecosystem is listed in the National List of Ecosystems That Are Threatened And In Need of Protection (GNR 1002 of 9 December 2011), and subsequently listed in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).

Finally, such widening will be located within CBA and ESA. The exact footprint will be confirmed once final designs have been provided.

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	<p><i>Activity 23(ii)(a)(c)(f)(i)(bb)(cc)(ee)</i></p> <p><i>The expansion of—</i></p> <p><i>(i) dams or weirs where the dam or weir is expanded by 10 square metres or more; or</i></p> <p><i>(ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more;</i></p> <p><i>where such expansion occurs —</i></p> <p><i>(a) within a watercourse;</i></p> <p><i>(b) in front of a development Setback adopted in the prescribed manner; or</i></p> <p><i>(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;</i></p> <p><i>f. Mpumalanga</i></p> <p><i>i. Outside urban areas:</i></p> <p><i>(aa) A protected area identified in terms of NEMPAA, excluding conservancies;</i></p> <p><i>(bb) National Protected Area Expansion Strategy Focus areas;</i></p> <p><i>(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</i></p> <p><i>(dd) Sites or areas identified in terms of an international convention;</i></p> <p><i>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</i></p> <p><i>(ff) Core areas in biosphere reserves;</i></p> <p><i>(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve, where such areas comprise indigenous vegetation;</i></p> <p>Description:</p> <p>The physical footprint of internal and access roads, stormwater control infrastructure, electrical cabling and water supply pipelines related to the Facility will exceed 10m² within delineated watercourses on site, or within 32m of the outer extent of the delineated watercourses on site.</p> <p>Furthermore, the physical footprint of internal and access roads, stormwater control infrastructure, electrical cabling and water supply pipelines related to the Facility will exceed 10m² within delineated watercourses on site, or within 32m of the outer extent of the delineated watercourses on site, which infrastructure will be located within Eastern Highveld Grassland, this ecosystem is listed in the National List of Ecosystems That Are Threatened And In Need of Protection (GNR 1002 of 9 December 2011), and subsequently listed in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).</p> <p>Finally, the physical footprint of internal and access roads, stormwater control infrastructure, electrical cabling and water supply pipelines related to the Facility will exceed 10m² within delineated watercourses on site, or within 32m of the outer extent of the delineated watercourses on site, located within Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA).</p> <p>The exact footprint will be confirmed once final designs have been provided.</p>
<p>National Environmental Management: Waste Act (59 of 2008) (NEM:WA)</p>	<p>This Act provides for regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation. The Act also provides for the licensing and control of waste management activities through GNR. 921 (2013): List of Waste Management Activities that have, or are likely to have, a detrimental effect on the environment.</p>

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	<p>The water treatment process is associated with the generation of concentrated wastes removed from the water, such as brine salt. Liquid brine can be made into a solid through several available technologies such as, settlement tanks, cooling water circuits, and forced crystallization.</p> <p>Given the proposed brine treatment and Zero Liquid Discharge system, as well as the use of a third-party contractor for the treatment and disposal of the produced salt cake, and the relatively small temporary storage facility envisaged and regular removal (< 80m³ at any one point in time), it is understood that no waste activities are triggered for either the treatment or storage of waste.</p> <p>It is however noted that the proponent will be required to comply with the general duties provided for at section 16 of NEM:WA relating to the management of waste as well as the legal requirements relating to the storage of waste as provided for at sections 21 and 22 respectively.</p> <p>The proposed project (Hendrina GH&A Facility) does not constitute a Listed Activity requiring a Waste Management Licence (WML) as defined in GNR 921.</p> <p>The contents of this Scoping Report will include reasonable measures for the prevention of pollution and good international industry practice (GIIP).</p>
<p>National Environmental Management: Air Quality Act (Act 39 of 2004) (NEM:AQA)</p>	<p>Until 2004, South Africa’s approach to air pollution control was driven by the Atmospheric Pollution Prevention Act 45 of 1965 (APPA) which was repealed with the promulgation of NEM:AQA . NEM:AQA represents a shift in South Africa’s approach to air quality management, from source-based control to integrated effects-based management.</p> <p>The objectives of NEM:AQA are to:</p> <ul style="list-style-type: none"> — Protect the environment by providing reasonable measures for: — The protection and enhancement of air quality; — The prevention of air pollution and ecological degradation; — Securing ecologically sustainable development while promoting justifiable economic and social development; and — Give effect to everyone’s right “to an environment that is not harmful to their health and well-being” <p>Significant functions detailed in NEM:AQA include:</p> <ul style="list-style-type: none"> — The National Framework for Air Quality Management ; — Institutional planning matters, including: — The establishment of a National Air Quality Advisory Committee; — The appointment of Air Quality Officers (AQOs) at each level of government; and — The development, implementation and reporting of Air Quality Management Plans (AQMP) at national, provincial and municipal levels; — Air quality management measures including: — The declaration of Priority Areas where ambient air quality standards are being, or may be, exceeded; — The listing of activities that result in atmospheric emissions and which have the potential to impact negatively on the environment and the licensing thereof through an Atmospheric Emissions License (AEL); — The declaration of Controlled Emitters; — The declaration of Controlled Fuels; — Procedures to enforce Pollution Prevention Plans or Atmospheric Impact Reporting for the control and inventory of atmospheric pollutants of concern; and — Requirements for addressing dust and offensive odours <p>Ammonia (NH₃) production in excess of 100 tons per annum triggers listed activity Subcategory 7.1: Production and or use in Manufacturing of Ammonia, Fluorine, Fluorine Compounds, Chlorine and Hydrogen Cyanide of Government Notice Regulation 893 of 20131, promulgated in line with Section 21 of the National Environmental Management: Air Quality Act (Act 39 of 2004) (NEM:AQA). As per Section 22 of NEM:AQA, all activities listed require an AEL.</p>

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	<p>An Atmospheric Impact Report (AIR) is required as a prerequisite for the application for an AEL. WSP was appointed to compile the AIR, assessing the ambient air quality impacts of the proposed facility. In line with the Regulations Regarding Air Dispersion Modelling (hereafter referred to as 'the Modelling Regulations') a Plan of Study was submitted to the licensing authority (in this case, the Environmental Management Unit for Nkangala District Municipality (NDM)) on 19 January 2022. The Plan of Study and the case specific limitations around quantitative assessment at this time (as detailed herein) were presented to the NDM atmospheric licensing officers on 11 March 2022. It was agreed that this AIR will thus comprise a qualitative impact assessment with further quantitative assessment conducted when operational information and site monitoring data is available to do so and will form part of the Provisional Atmospheric Emissions License (PAEL) review process. .</p>
<p>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)</p>	<p>The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) was promulgated in June 2004 within the framework of NEMA to provide for the management and conservation of national biodiversity. The NEMBA's primary aims are for the protection of species and ecosystems that warrant national protection, the sustainable use of indigenous biological resources, the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources. In addition, the NEMBA provides for the establishment and functions of a South African National Biodiversity Institute (SANBI). SANBI was established by the NEMBA with the primary purpose of reporting on the status of the country's biodiversity and conservation status of all listed threatened or protected species and ecosystems.</p> <p>The biodiversity assessment identifies CBAs which represent biodiversity priority areas which should be maintained in a natural to near natural state. The CBA maps indicate the most efficient selection and classification of land portions requiring safeguarding in order to meet national biodiversity objectives. The following areas were identified at a scoping level by the specialist study:</p> <ul style="list-style-type: none"> — CBA: Optimal: Various drainage lines and its associated grassland areas in the project area are within a "CBA: Optimal" area. — Other Natural Areas (ONA): There are patches throughout the site mapped as ONA. — Heavily or moderately modified: Remaining areas on site, associated primarily with cultivation. <p>According to the description for the MBSP Terrestrial Assessment categories, CBAs are areas that are required to meet biodiversity targets (for biodiversity pattern and ecological process features).</p> <p>The policy is that they should remain in a natural state. CBAs are areas of high biodiversity value which are usually at risk of being lost and usually identified as important in meeting biodiversity targets, except for Critically Endangered Ecosystems or Critical Linkages. CBAs in the Province can be divided into two sub-categories:</p> <ul style="list-style-type: none"> — Irreplaceable (parts of the site are within this sub-category), and — Optimal (northern parts of the site are within this sub-category). <p>Supplementary baseline terrestrial ecology studies will be undertaken during the EIA phase to inform the assessment of impacts and will include flora and faunal surveys of the project footprint to determine the presence of flora and fauna species of concern (SoC).</p> <p>The Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA) Regulations with regards to alien and invasive species have been superseded by the National Environmental Management: Biodiversity Act, 2004 (Act no. 10 of 2004) – Alien and Invasive Species (AIS) Regulations which became law on 1 October 2014. Specific management measures for the control of alien and invasive plants will be included in the Environmental Management Programme (EMPr).</p>
<p>The National Water Act (No. 36 Of 1998)</p>	<p>The National Water Act, 1998 (Act No. 36 of 1998) (NWA) provides the framework to protect water resources against over exploitation and to ensure that there is water for social and economic development, human needs and to meet the needs of the aquatic environment.</p> <p>The Act defines water source to include watercourses, surface water, estuary or aquifer. A watercourse is defined in the Act as a river or spring, a natural channel in which water flows</p>

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	<p>regularly or intermittently, a wetland, lake or dam into which or from which water flows, and any collection of water that the Minister may declare a watercourse.</p> <p>Section 21 of the Act outlines a number of categories that require a water user to apply for a Water Use License (WUL) and Section 22 requires water users to apply for a General Authorisation (GA) with the Department of Water and Sanitation (DWS) if they are under certain thresholds or meet certain criteria. The list of water uses applicable to the proposed Project include:</p> <ul style="list-style-type: none"> a) <i>Taking water from a water resource;</i> c) <i>Impeding or diverting the flow of water in a watercourse;</i> g) <i>Disposing of waste in a manner which may detrimentally impact on a water resource;</i> i) <i>Altering the bed, banks, course or characteristics of a watercourse;</i> <p>The DWS will make the final decision on water uses that are applicable to the project through a pre-application meeting after which a Water Use Authorisation Application (WUA) as determined by the risk assessment will be undertaken in compliance with procedural regulations published by the DWS within General Notice 267 (GN267). These regulations specify required information per water use and the reporting structure of required supporting technical information.</p>
<p>The National Heritage Resources Act (No. 25 Of 1999)</p>	<p>The National Heritage Resource Act (Act No. 25 of 1999) (NHRA) serves to protect national and provincial heritage resources across South Africa. The NHRA provides for the protection of all archaeological and palaeontological sites, the conservation and care of cemeteries and graves by the South African Heritage Resources Agency (SAHRA), and lists activities that require any person who intends to undertake to notify the responsible heritage resources agency and furnish details regarding the location, nature, and extent of the proposed development.</p> <p>Part 2 of the NHRA details specific activities that require a Heritage Impact Assessment (HIA) that will need to be approved by SAHRA. Parts of Section 35, 36 and 38 apply to the proposed project, principally:</p> <ul style="list-style-type: none"> — Section 35 (4) - No person may, without a permit issued by the responsible heritage resources authority- — destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite; — destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite. — Section 38 (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as- — any development or other activity which will change the character of a site— (i) exceeding 5 000 m² in extent, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development. <p>In terms of Section 38(8), approval from the heritage authority is not required if an evaluation of the impact of such development on heritage resources is required in terms of any other legislation (such as NEMA), provided that the consenting authority ensures that the evaluation of impacts fulfils the requirements of the relevant heritage resources authority in terms of Section 38(3) and any comments and recommendations of the relevant resources authority with regard to such development have been taken into account prior to the granting of the consent. However, should heritage resources of significance be affected by the proposed Hendrina GH&A Facility, a permit is required to be obtained prior to disturbing or destroying such resources as per the requirements of Section 48 of the NHRA, and the SAHRA Permit Regulations (GN R668).</p> <p>A Heritage Impact Assessment Report has been carried out by a suitably qualified specialist, revealing:</p> <ul style="list-style-type: none"> — The Project area is characterised by extensive cultivated fields and is considered to be of low archaeological potential. This was confirmed during the field survey and no archaeological sites of significance were noted and finds were limited to the ephemeral remains of demolished dwellings and burial sites.

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	<ul style="list-style-type: none"> — The recorded ruins’ potential to contribute to aesthetic, historic, scientific, and social aspects are non-existent, and it is therefore of low heritage significance unless associated with burial sites (e.g., still born graves) in which case the burial sites are of high social significance. The graves are of high significance and should be avoided. — Based on the current lay out the ruins at Waypoint 067 – 071 will be directly impact on by Option 1 and although of low significance the possible presence of graves is a risk, and the impact is high. Option 3 is from a heritage point of view not a preferred option due to the occurrence of ruins (based on aerial photographs and Topographical maps) of the Weltevreden Farmstead. This option is not preferred from a heritage point of view as the associated water pipeline will also have a high impact on the burial site at Waypoint 088 — According to the SAHRA Paleontological sensitivity map the study area is of very high paleontological significance and an independent study was conducted for this aspect. — Bamford (2022) concluded that it is extremely unlikely that any fossils would be preserved in the loose soils and sands of the Quaternary. There is a very small chance that fossils may occur in the shales and siltstones of the early Permian Vryheid Formation, but only more than 5m below the surface, therefore, a Fossil Chance Find Protocol should be added to the EMPr — The impact to heritage resources can be mitigated to an acceptable level provided that the recommendations in this report are adhered to, based on the South African Heritage Resource Authority (SAHRA) ’s approval <p>The proposed project has been loaded onto the SAHRIS portal for comment by SAHRA. Interim comments were received on 13 January 2023. <u>Further comments were received from SAHRA on the 9 June 2023 on the Draft EIAr. (Appendix D of the SER)</u></p>
Mineral and Petroleum Resources Development Act (No. 28 of 2002)	<p>The aim of the Mineral and Petroleum Resources Development Act (No. 28 of 2002) (MPRDA) is to make provision for equitable access to and sustainable development of the nation’s mineral and petroleum resources.</p> <p>Section 53(1) of the MPRDA provides that any person who intends to use the surface of any land in any way that may be contrary to any object of the MPRDA, or which is likely to impede any such object, must apply to the Minister of Mineral Resources (the Minister) for approval. Section 53 of the MPRDA provides a mechanism for ensuring that, inter alia, the mining of mineral resources is not detrimentally affected through the use of the surface of land and which may, for example, result in the sterilisation of a mineral resource.</p> <p>A Section 53 approval will be required due to the fact that the project is located on various mining right areas.</p>
Noise Control Regulations in terms of the Environmental Conservation, 1989 (Act 73 of 1989)	<p>In South Africa, environmental noise control has been in place for three decades, beginning in the 1980s with codes of practice issued by the South African National Standards (formerly the South African Bureau of Standards, SABS) to address noise pollution in various sectors of the country. Under the previous generation of environmental legislation, specifically the Environmental Conservation Act 73 of 1989 (ECA), provisions were made to control noise from a National level in the form of the Noise Control Regulations (GNR 154 of January 1992). In later years, the ECA was replaced by the National Environmental Management Act 107 of 1998 (NEMA) as amended. The National Environmental Management: Air Quality Act 39 of 2004 (NEMAQA) was published in line with NEMA and contains noise control provisions under Section 34:</p> <p><i>(1) The minister may prescribe essential national standards –</i></p> <p><i>(a) for the control of noise, either in general or by specific machinery or activities or in specified places or areas; or</i></p> <p><i>(b) for determining –</i></p> <p><i>(i) a definition of noise; and</i></p> <p><i>(ii) the maximum levels of noise.</i></p> <p><i>(2) When controlling noise, the provincial and local spheres of government are bound by any prescribed national standards.</i></p>

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	<p>Under NEMAQA, the Noise Control Regulations were updated and are to be applied to all provinces in South Africa. The Noise Control Regulations give all the responsibilities of enforcement to the Local Provincial Authority, where location specific by-laws can be created and applied to the locations with approval of Provincial Government. Where province-specific regulations have not been promulgated, acoustic impact assessments must follow the Noise Control Regulations.</p> <p>Furthermore, NEMAQA prescribes that the Minister must publish maximum allowable noise levels for different districts and national noise standards. These have not yet been accomplished and as a result all monitoring and assessments are done in accordance with the South African National Standards (SANS) 10103:2008 and 10328:2008.</p>
<p>Conservation of Agricultural Resources Act (No. 43 of 1983)</p>	<p>The Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA) provides for the implementation of control measures for soil conservation works as well as alien and invasive plant species in and outside of urban areas.</p> <p>In terms of the amendments to the regulations under the CARA, landowners are legally responsible for the control of alien species on their properties. Various Acts administered by the DFFE and the DWS, as well as other laws (including local by-laws), spell out the fines, terms of imprisonment and other penalties for contravening the law. Although no fines have yet been placed against landowners who do not remove invasive species, the authorities may clear their land of invasive alien plants and other alien species entirely at the landowners' cost and risk.</p> <p>The CARA Regulations with regards to alien and invasive species have been superseded by NEMBA Alien and Invasive Species (AIS) Regulations which became law on 1 October 2014.</p>
<p>Civil Aviation Act (No. 13 of 2009)</p>	<p>Civil aviation in South Africa is governed by the Civil Aviation Act (Act 13 of 2009). This Act provides for the establishment of a stand-alone authority mandated with controlling, promoting, regulating, supporting, developing, enforcing and continuously improving levels of safety and security throughout the civil aviation industry. This mandate is fulfilled by South African Civil Aviation Authority (SACAA) as an agency of the Department of Transport (DoT). SACAA achieves the objectives set out in the Act by complying with the Standards and Recommended Practices (SARPs) of the International Civil Aviation Organisation (ICAO), while considering the local context when issuing the South African Civil Aviation Regulations (SA CARs).</p> <p>The DEA Screening Tool Report identified Civil Aviation as having low sensitivity for the proposed Hendrina GH&A Facility, and as being located between 8 and 15km of other civil aviation aerodrome.</p> <p>SACAA and ATNS have been included on the project stakeholder database. They will be informed of the proposed Project, and comment will be sought from these authorities as applicable.</p>
<p>Occupational Health and Safety Act (No. 85 of 1993)</p>	<p>The National Occupational Health and Safety Act (No. 85 of 1993) (OHSA) and the relevant regulations under the Act are applicable to the proposed project. This includes the Construction Regulations promulgated in 2014 under Section 43 of the Act. Adherence to South Africa's OHSA and its relevant Regulations is essential.</p> <p>The ammonia and hydrogen facilities as well as oxygen facilities will likely be Major Hazard Installations (MHI) and will require a full quantitative risk assessment (QRA) and emergency response plan (ERP). Under the current MHI Regulations notification of various authorities and the public is required.</p> <p>Should the proposed new MHI Regulations be promulgated prior to commencement of construction of this facility it is possible that in addition to a QRA and ERP, the hydrogen, ammonia and oxygen facilities will necessitate an application for a Licence to Operate from the Department of Employment and Labour. There will likely be a requirement for implementation of a Process Safety Management Systems and submission of a Safety Report providing evidence of the effectiveness of this management system.</p>

2.2 IFC PERFORMANCE STANDARDS

The objectives and applicability of the eight International Finance Corporation (IFC) Performance Standards (PS) are detailed in **Table 2-2**.

Table 2-2: Objectives and Applicability of the IFC Performance Standards

REFERENCE	REQUIREMENTS	PROJECT SPECIFIC APPLICABILITY																		
Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts																				
Overview	Performance Standard 1 underscores the importance of managing environmental and social performance throughout the life of a project. An effective Environmental and Social Management System (ESMS) is a dynamic and continuous process initiated and supported by management, and involves engagement between the client, its workers, local communities directly affected by the project (the Affected Communities) and, where appropriate, other stakeholders.																			
Objectives	<p>To identify and evaluate environmental and social risks and impacts of the project.</p> <p>To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize, and, where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment.</p> <p>To promote improved environmental and social performance of clients through the effective use of management systems.</p> <p>To ensure that grievances from Affected Communities and external communications from other stakeholders are responded to and managed appropriately.</p> <p>To promote and provide means for adequate engagement with Affected Communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.</p>																			
Aspects	<table border="1"> <tr> <td>1.1</td> <td>Policy</td> </tr> <tr> <td>1.2</td> <td>Identification of Risks and Impacts</td> </tr> <tr> <td>1.3</td> <td>Management Programmes</td> </tr> <tr> <td>1.4</td> <td>Organisational Capacity and Competency</td> </tr> <tr> <td>1.5</td> <td>Emergency Preparedness and Response</td> </tr> <tr> <td>1.6</td> <td>Monitoring and Review</td> </tr> <tr> <td>1.7</td> <td>Stakeholder Engagement</td> </tr> <tr> <td>1.8</td> <td>External Communication and Grievance Mechanism</td> </tr> <tr> <td>1.9</td> <td>Ongoing Reporting to Affected Communities</td> </tr> </table>	1.1	Policy	1.2	Identification of Risks and Impacts	1.3	Management Programmes	1.4	Organisational Capacity and Competency	1.5	Emergency Preparedness and Response	1.6	Monitoring and Review	1.7	Stakeholder Engagement	1.8	External Communication and Grievance Mechanism	1.9	Ongoing Reporting to Affected Communities	<p>The IFC Standards state under PS 1 (Guidance Note 23) that “<i>the breadth, depth and type of analysis included in an ESIA must be proportionate to the nature and scale of the proposed project’s potential impacts as identified during the course of the assessment process.</i>” This document is the <u>Final</u> deliverable from the Scoping and EIA process undertaken for the proposed Project. The impact assessment comprehensively assesses the key environmental and social impacts and complies with the requirements of the South African EIA Regulations. In addition, this EMPr has been compiled during the EIA phase of the project.</p> <p>A formal project specific ESMS will be compiled in the event that the project is developed in the future. Management and monitoring plans outlined in this EMPr will serve as the basis for an ESMS for the proposed Project.</p>
1.1	Policy																			
1.2	Identification of Risks and Impacts																			
1.3	Management Programmes																			
1.4	Organisational Capacity and Competency																			
1.5	Emergency Preparedness and Response																			
1.6	Monitoring and Review																			
1.7	Stakeholder Engagement																			
1.8	External Communication and Grievance Mechanism																			
1.9	Ongoing Reporting to Affected Communities																			

REFERENCE REQUIREMENTS

PROJECT SPECIFIC APPLICABILITY

Performance Standard 2: Labour and Working Conditions;			
Overview	Performance Standard 2 recognises that the pursuit of economic growth through employment creation and income generation should be accompanied by protection of the fundamental rights of workers.		
Objectives	<p>To promote the fair treatment, non-discrimination, and equal opportunity of workers.</p> <p>To establish, maintain, and improve the worker-management relationship.</p> <p>To promote compliance with national employment and labour laws.</p> <p>To protect workers, including vulnerable categories of workers such as children, migrant workers, workers engaged by third parties, and workers in the client’s supply chain.</p> <p>To promote safe and healthy working conditions, and the health of workers.</p> <p>To avoid the use of forced labour.</p>		
Aspects	2.1	<p>Working Conditions and Management of Worker Relationship</p> <p>Human Resources Policy and Management</p> <p>Working Conditions and terms of Engagement</p> <p>Workers organisation</p> <p>Non- Discrimination and Equal Opportunity</p> <p>Retrenchment</p> <p>Grievance Mechanism</p>	<p>The construction activities will require contractors for completion. A safe working environment and fair contractual agreements must be in place. The operational phase will have permanent employees for day-to-day activities as well as contractors who will all need a safe working environment and fair contractual agreements.</p> <p>Whilst PS2 will be applicable to the Project, it is not intended to be addressed in detail at the ESIA stage. Recommendations are provided concerning development of a detailed Human Resources (HR) and Occupational Health and Safety (OHS) system by the developer and its partners as the Project moves towards implementation. In addition, measures to address the Interim Advice for IFC Clients on Supporting Workers in the Context of COVID-19 are referenced.</p> <p>This EMPr has incorporated the requirements for compliance with local and international Labour and Working legislation and good practice on the part of the contractors.</p>
	2.2	<p>Protecting the Workforce</p> <p>Child Labour</p> <p>Forced Labour</p>	
	2.3	Occupational health and Safety	
	2.4	Workers Engaged by Third Parties	
	2.5	Supply Chain	
Performance Standard 3: Resource Efficiency and Pollution Prevention			
Overview	Performance Standard 3 recognises that increased economic activity and urbanisation often generate increased levels of pollution to air, water, and land, and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels. There is also a growing global consensus that the current and projected atmospheric concentration of greenhouse gases (GHG) threatens the public health and welfare of current and future generations. At the same time, more efficient and effective resource use and pollution prevention and GHG emission avoidance and mitigation technologies and practices have become more accessible and achievable in virtually all parts of the world.		

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Objectives	<p>To avoid or minimise adverse impacts on human health and the environment by avoiding or minimising pollution from project activities.</p> <p>To promote more sustainable use of resources, including energy and water.</p> <p>To reduce project related GHG emissions.</p>	
Aspects	<p>3.1 Policy Resource Efficiency Greenhouse Gases Water Consumption</p>	<p>PS3-related impacts, such as the management of construction waste, hazardous substances, and stormwater are assessed in Section 8 of EIAr</p> <p>There are no material resource efficiency issues associated with the Project. This EMPr includes general resource efficiency measures in Section 6</p> <p>The project is not GHG emissions intensive and a climate resilience study or a GHG emissions-related assessment is not deemed necessary for a project of this nature. However, the Hendrina GH&A Facility seeks to facilitate resource efficiency and pollution prevention by contributing to the South African green economy.</p> <p>Dust air pollution in the construction phase has been addressed in the Section 6 of this EMPr.</p> <p>The Project will not result in the release of industrial effluents.</p> <p>Potential pollution associated with sanitary wastewater is low and mitigation measures have been included in Section 6 this EMPr</p> <p>Land contamination of the site from historical land use (i.e. low intensity agricultural / grazing) is not considered to be a cause for concern.</p> <p>The waste generation profile of the project is not complex. Waste mitigation and management measures have been included in Section 7.1 of this EMPr</p> <p>The ammonia and hydrogen facilities as well as oxygen facilities will likely be Major Hazard Installations and will require a full quantitative risk assessment (QRA) that complies with SANS 1461: MHI QRA as well as an emergency response plan (ERP) that complies with SANS 1514: MHI Emergency Response Planning.</p> <p>Under the current MHI Regulations notification of various authorities and the public is required.</p> <p>This EMPr has taken this into account and recommend relevant mitigation and management measures in Section 6 of this EMPr.</p>
<p>Performance Standard 4: Community Health, Safety, and Security</p>		
Overview	<p>Performance Standard 4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts.</p>	
Objectives	<p>To anticipate and avoid adverse impacts on the health and safety of the Affected Community during the project life from both routine and non-routine circumstances.</p> <p>To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the Affected Communities</p>	
Aspects	<p>4.1 Community Health and Safety</p>	

REFERENCE REQUIREMENTS

PROJECT SPECIFIC APPLICABILITY

	<p>Infrastructure and Equipment Design and Safety</p> <p>Hazardous Materials Management and Safety</p> <p>Ecosystem Services</p> <p>Community Exposure to Disease</p> <p>Emergency Preparedness and Response</p>	<p>The requirements included in PS 4 has been addressed in the S&EIA process and the development of this EMPr in Section 6.</p> <p>During the construction phase there will be an increase in vehicular traffic along public roads, largely due to the need for importation of construction material. Pedestrian and road safety risks will be qualitatively evaluated in the S&EIA process and the clients’ standard safety and security measures, as well as potential additional measures recommended by WSP, has been detailed in Section 6 of this EMPr.</p>
4.2	Security Personnel	

Performance Standard 5: Land Acquisition and Involuntary Resettlement

Overview	<p>Performance Standard 5 recognises that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land. Involuntary resettlement refers both to physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) as a result of project-related land acquisition and/or restrictions on land use.</p>
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Objectives	<p>To avoid, and when avoidance is not possible, minimise displacement by exploring alternative project designs.</p> <p>To avoid forced eviction.</p> <p>To anticipate and avoid, or where avoidance is not possible, minimise adverse social and economic impacts from land acquisition or restrictions on land use by (i) providing compensation for loss of assets at replacement cost and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected.</p> <p>To improve, or restore, the livelihoods and standards of living of displaced persons.</p> <p>To improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure at resettlement sites.</p>
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Aspects	<p>5.1 Displacement</p> <p>Physical Displacement</p> <p>Economic Displacement</p> <p>Private Sector Responsibilities under Government Managed Resettlement</p>	<p>PS5 is not applicable to the proposed Hendrina GH&A Facility as no physical or economic displacement or livelihood restoration will be required.</p> <p>The proposed Hendrina GH&A Facility is located on privately owned land that is utilised for agriculture by the landowners. The impact of the proposed development on the agricultural production capability of the site has been assessed by the Agriculture Specialist as being acceptable.</p>
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Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

Overview	<p>Performance Standard 6 recognizes that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development.</p>
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Objectives	<p>To protect and conserve biodiversity.</p> <p>To maintain the benefits from ecosystem services.</p> <p>To promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities.</p>
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REFERENCE REQUIREMENTS

PROJECT SPECIFIC APPLICABILITY

Aspects	6.1	Protection and Conservation of Biodiversity	<p>The Project Area falls within CBAs (Irreplaceable and Optimal) and a large wetland area adjacent and to the north of the Vaal River (near the southern part of the site) is mapped as an ESA. A Biodiversity Impact Assessment as well as an Avifaunal Impact Assessment and Freshwater Ecology Impact Assessment have been included in the proposed scope.</p> <p>The methodologies for the specialist assessments include a combination of literature review, in-field surveys and sensitivity mapping. This substantively complies with the PS 6 general requirements for scoping and baseline assessment for determination of biodiversity and ecosystem services issues. The determination of habitat sensitivity was undertaken within the legal and best practice reference framework for South Africa.</p> <p>The prevalence of invasive alien species will be determined, and mitigation and management measures have been included in Section 7.2 of this EMPr.</p>
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Performance Standard 7: Indigenous People

Overview	<p>Performance Standard 7 recognizes that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalized and vulnerable segments of the population. In many cases, their economic, social, and legal status limits their capacity to defend their rights to, and interests in, lands and natural and cultural resources, and may restrict their ability to participate in and benefit from development. Indigenous Peoples are particularly vulnerable if their lands and resources are transformed, encroached upon, or significantly degraded.</p>		
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Objectives	<p>To ensure that the development process fosters full respect for the human rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples.</p> <p>To anticipate and avoid adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is not possible, to minimize and/or compensate for such impacts.</p> <p>To promote sustainable development benefits and opportunities for Indigenous Peoples in a culturally appropriate manner.</p> <p>To establish and maintain an ongoing relationship based on Informed Consultation and Participation (ICP) with the Indigenous Peoples affected by a project throughout the project’s life-cycle.</p> <p>To ensure the Free, Prior, and Informed Consent (FPIC) of the Affected Communities of Indigenous Peoples when the circumstances described in this Performance Standard are present.</p> <p>To respect and preserve the culture, knowledge, and practices of Indigenous Peoples.</p>		
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Aspects	7.1	<p>General</p> <p>Avoidance of Adverse Impacts</p> <p>Participation and Consent</p>	<p>As per the international instruments under the United Nations (UN) Human Rights Conventions, no indigenous peoples are present within the study area. The Project does not involve displacement. PS7 will not be triggered.</p>
	7.2	<p>Circumstances Requiring Free, Prior, and Informed Consent</p> <p>Impacts on Lands and Natural Resources Subject to Traditional Ownership or Under Customary Use</p> <p>Critical Cultural Heritage</p> <p>Relocation of Indigenous Peoples from Lands and Natural</p>	

REFERENCE REQUIREMENTS

PROJECT SPECIFIC APPLICABILITY

		Resources Subject to Traditional Ownership or Under Customary Use	
	7.3	Mitigation and Development Benefits	
	7.4	Private Sector Responsibilities Where Government is Responsible for Managing Indigenous Peoples Issues	
Performance Standard 8: Cultural Heritage			
Overview	Performance Standard 8 recognizes the importance of cultural heritage for current and future generations.		
Objectives	To protect cultural heritage from the adverse impacts of project activities and support its preservation. To promote the equitable sharing of benefits from the use of cultural heritage.		
Aspects	8.1	Protection of Cultural Heritage in Project Design and Execution	<p>A Heritage impact assessment has been carried out by a suitably qualified specialist, revealing that archaeological sites (Stone Age and Historic Archaeological), cultural heritage sites, burial grounds or isolated artifacts are unlikely to be present on the affected landscape.</p> <p>All three powerlines and water supply pipeline will impact on burial sites at HD002 and GA004. The sites must be preserved in situ with a 30-meter buffer as mitigation measure (prescribed by SAHRA), which means that the powerlines and water supply pipeline will have to be micro sited in these areas.</p> <p>All three facility alternatives are acceptable from a heritage point of view with the implementation of the recommendations in this report, but the facility alternative 2 is preferred from a heritage point of view.</p> <p>The impact to heritage resources can be mitigated to an acceptable level provided that the recommendations in this report are adhered to, based on the SAHRA’s approval.</p> <p><u>Furthermore, a Palaeontological site assessment report has been proved by a suitably qualified palaeontologist, indicating that no fossils were identified on site and are unlikely to occur in the project area.</u></p> <p>A Chance Find Procedure has been included in Section 7.14.1 of this EMPr.</p>

2.3 OTHER GUIDELINES AND BEST PRACTICE RECOMMENDATIONS

2.3.1 WORLD BANK GROUP ENVIRONMENTAL, HEALTH, AND SAFETY GUIDELINES

EHS GENERAL GUIDELINES

The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of GIIP. They contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs.

The EHS General Guidelines contain information on cross-cutting environmental, health and safety issues potentially applicable to all industry sectors, used together with the relevant industry sector guideline(s), to guide the development of management and monitoring strategies for various project-related impacts.

In support of the Performance Standards, the World Bank Group (WBG) has published a number of Environmental Health and Safety (EHS) Guidelines. The EHS Guidelines are technical reference documents that address IFC's expectations regarding the industrial pollution management performance of its projects. They are designed to assist managers and decision makers with relevant industry background and technical information. This information supports actions aimed at avoiding, minimising, and controlling EHS impacts during the construction, operation, and decommissioning phase of a project or facility. The EHS Guidelines serve as a technical reference source to support the implementation of the IFC Performance Standards, particularly in those aspects related to PS3: Pollution Prevention and Abatement, as well as certain aspects of occupational and community health and safety.

Where host country regulations differ from the levels and measures presented in the EHS Guidelines, projects seeking international funding may be expected to achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, a full and detailed justification for any proposed alternatives is required.

The following IFC / WBG EHS Guidelines have been generally consulted during the preparation of the EIA in order to aid the identification of EHS aspects applicable to the project:

- *Electric Power Transmission and Distribution (2007)* - information relevant to power transmission between a generation facility and a substation located within an electricity grid, in addition to power distribution from a substation to consumers located in residential, commercial, and industrial areas;
- *General EHS Guidelines* – this includes a section on a range of environmental, occupational health and safety, community health and safety, and construction activities that would apply to the project. The guideline also contains recommended guidelines adopted from the World Health Organisation (WHO) for ambient air and water quality, which are referred to in the relevant impact assessment sections in the ESIA report.
- *Section 1.1 - Air Emissions and Ambient Air Quality* - This guideline applies to facilities or projects that generate emissions to air at any stage of the project life-cycle. This guideline provides an approach to the management of significant sources of emissions, including specific guidance for assessment and monitoring of impacts. It is also intended to provide additional information on approaches to emissions management in projects located in areas of poor air quality, where it may be necessary to establish project-specific emissions standards.
- *Section 1.5 - Hazardous Materials Management* - These guidelines apply to projects that use, store, or handle any quantity of hazardous materials (Hazmats), defined as materials that represent a risk to human health, property, or the environment due to their physical or chemical characteristics. Hazmats can be classified according to the hazard as explosives; compressed gases, including toxic or flammable gases; flammable liquids; flammable solids; oxidizing substances; toxic materials; radioactive material; and corrosive substances. Guidance on the transport of hazardous materials is covered in Section 8 of this document. The ammonia and hydrogen facilities as well as oxygen facilities will likely be Major Hazard

Installations and will require a full quantitative risk assessment (QRA) that complies with SANS 1461: MHI QRA as well as an emergency response plan (ERP) that complies with SANS 1514: MHI Emergency Response Planning. Under the current MHI Regulations notification of various authorities and the public is required. This EMPr will take these anticipated hazardous materials into account and recommend relevant mitigation and management measures.

- *Section 2 - Occupational Health and Safety* - Employers and supervisors are obliged to implement all reasonable precautions to protect the health and safety of workers. This section provides guidance and examples of reasonable precautions to implement in managing principal risks to occupational health and safety. Although the focus is placed on the operational phase of projects, much of the guidance also applies to construction and decommissioning activities.
- *Section 3.5 - Community Health and Safety – Transport of Hazardous Materials* - This section complements the guidance provided in the preceding environmental and occupational health and safety sections, specifically addressing some aspects of project activities taking place outside of the traditional project boundaries, but nonetheless related to the project operations, as may be applicable on a project basis.

2.3.2 EQUATOR PRINCIPLES

The Equator Principles (EPs) is a risk management framework, adopted by financial institutions, for determining, assessing, and managing environmental and social risk in projects and is primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making.

The EPs apply globally to all industry sectors and to five financial products 1) Project Finance Advisory Services, 2) Project Finance, 3) Project-Related Corporate Loans, 4) Bridge Loans and 5) Project-Related Refinance and Project-Related Acquisition Finance. The relevant thresholds and criteria for application is described in detail in the Scope section of the EP. Currently 125 Equator Principles Financial Institutions (EPFIs) in 37 countries have officially adopted the EPs, covering the majority of international project finance debt within developed and emerging markets. EPFIs commit to implementing the EPs in their internal environmental and social policies, procedures and standards for financing projects and will not provide Project Finance or Project-Related Corporate Loans to projects where the client will not, or is unable to, comply with the EPs.

While the EPs are not intended to be applied retroactively, EPFIs apply them to the expansion or upgrade of an existing project where changes in scale or scope may create significant environmental and social risks and impacts, or significantly change the nature or degree of an existing impact. The EPs have greatly increased the attention and focus on social/community standards and responsibility, including robust standards for indigenous peoples, labour standards, and consultation with locally affected communities within the Project Finance market.

The EPs have also helped spur the development of other responsible environmental and social management practices in the financial sector and banking industry and have supported member banks in developing their own Environmental and Social Risk Management Systems. The requirements and applicability of the EPs are outlined in **Table 2-3**.

It should be noted that Principles 8 and 10 relate to a borrower’s code of conduct and are therefore not considered relevant to the S&EIA process and have not been included in this discussion.

Table 2-3: Requirements and Applicability of the Equator Principles

REQUIREMENT	PROJECT SPECIFIC APPLICABILITY
Principle 1: Review and Categorisation	
When a project is proposed for financing, the EPFI will, as part of its internal social and environmental review and due diligence, categorise such project based on the magnitude of its potential impacts and risks in accordance with the environmental and social screening criteria of the IFC.	Based upon the significance and scale of the Project’s environmental and social impacts, the proposed project is regarded as a Category B project i.e. a project with potential limited adverse environmental or social risks and/or impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures.

REQUIREMENT	PROJECT SPECIFIC APPLICABILITY
<p>Using categorisation, the EPFI’s environmental and social due diligence is commensurate with the nature, scale, and stage of the Project, and with the level of environmental and social risks and impacts.</p> <p>The categories are:</p> <ul style="list-style-type: none"> — Category A: Projects with potential significant adverse environmental and social risks and/or impacts that are diverse, irreversible or unprecedented; — Category B: Projects with potential limited adverse environmental and social risks and/or impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures; and — Category C: Projects with minimal or no adverse environmental and social risks and/or impacts. 	
Principle 2: Environmental and Social Assessment	
<p>For all Category A and Category B Projects, the EPFI will require the client to conduct an appropriate Assessment process to address, to the EPFI’s satisfaction, the relevant environmental and social risks and scale of impacts of the proposed Project (which may include the illustrative list of issues found in Exhibit II). The Assessment Documentation should propose measures to minimise, mitigate, and where residual impacts remain, to compensate/ offset/ remedy for risks and impacts to Workers, Affected Communities, and the environment, in a manner relevant and appropriate to the nature and scale of the proposed Project. The Assessment Documentation will be an adequate, accurate and objective evaluation and presentation of the environmental and social risks and impacts, whether prepared by the client, consultants or external experts. For Category A, and as appropriate, Category B Projects, the Assessment Documentation includes an Environmental and Social Impact Assessment (ESIA). One or more specialised studies may also need to be undertaken. For other Category B and potentially C Projects, a limited or focused environmental or social assessment may be appropriate, applying applicable risk management standards relevant to the risks or impacts identified during the categorisation process.</p> <p>The client is expected to include assessments of potential adverse Human Rights impacts and climate change risks as part of the ESIA or other Assessment, with these included in the Assessment Documentation.</p>	<p>This document is the <u>Final</u> deliverable (i.e. EMPr) from the S&EIA process undertaken for the proposed Project. The assessment appropriately and comprehensively assessed the key environmental and social impacts and complies with the requirements of the South African EIA Regulations and this principle. A formal project specific ESMS will be compiled in the event that the project is developed in the future. Management and monitoring plans outlined in this EMPr will serve as the basis for an ESMS for the proposed Project.</p>
Principle 3: Applicable Environmental and Social Standards	
<p>The Assessment process should, in the first instance, address compliance with relevant host country laws, regulations and permits that pertain to environmental and social issues.</p> <p>The EPFI’s due diligence will include, for all Category A and Category B Projects globally, review and confirmation by the EPFI of how the Project and transaction meet each of the Principles.</p> <p>For Projects located in Non-Designated Countries, the Assessment process evaluates compliance with the then applicable IFC PS and WBG EHS Guidelines. For Projects located in Designated Countries, compliance with relevant host country laws, regulations and permits that pertain to environmental and social issues.</p>	<p>As South Africa has been identified as a non-designated country, the reference framework for environmental and social assessment is based on the IFC PS. In addition, this S&EIA process has been undertaken in accordance with NEMA (the host country’s relevant legislation).</p>
Principle 4: Environmental and Social Management System and Equator Principles Action Plan	
<p>For all Category A and Category B Projects, the EPFI will require the client to develop or maintain an Environmental and Social Management System (ESMS).</p>	<p>A formal project specific ESMS will be compiled in the event that the project is developed in the future. Management and monitoring plans outlined in this</p>

REQUIREMENT	PROJECT SPECIFIC APPLICABILITY
<p>Further, an Environmental and Social Management Plan (ESMP) will be prepared by the client to address issues raised in the Assessment process and incorporate actions required to comply with the applicable standards. Where the applicable standards are not met to the EPFI's satisfaction, the client and the EPFI will agree on an Equator Principles Action Plan (EPAP). The EPAP is intended to outline gaps and commitments to meet EPFI requirements in line with the applicable standards.</p>	<p>EMPr will serve as the basis for an ESMS for the proposed Project.</p>
<p>Principle 5: Stakeholder Engagement</p>	
<p>EPFI will require the client to demonstrate effective Stakeholder Engagement as an ongoing process in a structured and culturally appropriate manner with Affected Communities Workers and, where relevant, Other Stakeholders. For Projects with potentially significant adverse impacts on Affected Communities, the client will conduct an Informed Consultation and Participation process.</p> <p>To accomplish this, the appropriate assessment documentation, or non-technical summaries thereof, will be made available to the public by the borrower for a reasonable minimum period in the relevant local language and in a culturally appropriate manner. The borrower will take account of and document the process and results of the consultation, including any actions agreed resulting from the consultation.</p> <p>Disclosure of environmental or social risks and adverse impacts should occur early in the Assessment process, in any event before the Project construction commences, and on an ongoing basis.</p> <p>All Projects affecting Indigenous Peoples will be subject to a process of Informed Consultation and Participation, and will need to comply with the rights and protections for Indigenous Peoples contained in relevant national law, including those laws implementing host country obligations under international law.</p>	<p>The S&EIA process includes an extensive stakeholder engagement process which complies with the South African EIA Regulations. The process includes consultations with local communities, nearby businesses, and a range of government sector stakeholders (state owned enterprises, national, provincial and local departments).</p> <p>The stakeholder engagement process solicits interest from potentially interested parties through the placement of site notices and newspaper advertisements as well as written and telephonic communication.</p>
<p>Principle 6: Grievance Mechanism</p>	
<p>For all Category A and, as appropriate, Category B Projects, the EPFI will require the client, as part of the ESMS, to establish effective grievance mechanisms which are designed for use by Affected Communities and Workers, as appropriate, to receive and facilitate resolution of concerns and grievances about the Project's environmental and social performance.</p> <p>The borrower will inform the Affected Communities and Workers about the grievance mechanism in the course of the stakeholder engagement process and ensure that the mechanism addresses concerns promptly and transparently, in a culturally appropriate manner, and is readily accessible, at no cost, and without retribution to the party that originates the issue or concern.</p>	<p>This EMPr includes a <i>Grievance Mechanism Process for Public Complaints and Issues (Section 7.16)</i>. This procedure effectively allows for external communications with members of the public to be undertaken in a transparent and structured manner.</p>
<p>Principle 7: Independent Review</p>	
<p>For all Category A and, as appropriate, Category B Projects, an Independent Environmental and Social Consultant, not directly associated with the client, will carry out an Independent Review of the Assessment Documentation including the ESMPs, the ESMS, and the Stakeholder Engagement process documentation in order to assist the EPFI's due diligence, and assess Equator Principles compliance.</p>	<p>This principle will only become applicable in the event that that the project is developed in the future necessitating Independent Review.</p>
<p>Principle 9: Independent Monitoring and Reporting</p>	
<p>To assess Project compliance with the Equator Principles after Financial Close and over the life of the loan, the EPFI will require independent</p>	<p>This principle will only become applicable in the event that the project is developed in the future</p>

REQUIREMENT	PROJECT SPECIFIC APPLICABILITY
monitoring and reporting for all Category A, and as appropriate, Category B projects. Monitoring and reporting should be provided by an Independent Environmental and Social Consultant; alternatively, the EPFI will require that the client retain qualified and experienced external experts to verify its monitoring information, which will be shared with the EPFI in accordance with the frequency required.	necessitating independent monitoring and reporting.

2.3.3 GENERIC EMPr RELEVANT TO AN APPLICATION FOR SUBSTATION AND OVERHEAD ELECTRICITY TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE

NEMA requires that an EMPr be submitted where an EIA has been identified as the environmental instrument to be utilised as the basis for a decision on an application for environmental authorisation. The content of an EMPr must either contain the information set out in Appendix 4 of the EIA Regulations, 2014, as amended, or must be a generic EMPr relevant to an application as identified and gazetted by the Minister in a government notice. Once the Minister has identified, through a government notice, that a generic EMPr is relevant to an application for EA, that generic EMPr must be applied by all parties involved in the EA process, including, but not limited to, the applicant and the CA.

GN 435 of 22 March 2019 identified a generic EMPr relevant to applications for substations and overhead electricity transmission and distribution infrastructure which require authorisation in terms of Section 42(2) of NEMA. Applications for overhead electricity transmission and distribution infrastructure and applications for the development or expansion of substation infrastructure for the transmission and distribution of electricity that trigger Activity 11 or 47 of Listing Notice 1 or Activity 9 of Listing Notice 2 and any other listed or specified activities must use the generic EMPrs.

The objective of the generic EMPr is to prescribe and pre-approve generally accepted impact management outcomes and impact management actions, which can commonly and repeatedly be used for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of overhead electricity transmission and distribution infrastructure and the development or expansion of substation infrastructure for the transmission and distribution of electricity. The use of a generic EMPr is intended to reduce the need to prepare and review individual EMPrs for applications of a similar nature.³

Both the generic EMPr for transmission lines as well as the generic EMPr for substations have been used as a basis for this EMPr. The *Generic Environmental Management Programme (EMPr) for the Development and Expansion for Overhead Electricity Transmission and Distribution Infrastructure* is attached as **Appendix C** and the *Generic Environmental Management Programme (EMPr) for the Development and Expansion of Substation Infrastructure for the Transmission and Distribution of Electricity* is attached as **Appendix D**.

³ DEA (2019) *Appendix 1: Generic Environmental Management Programme (EMPr) for the Development and Expansion for Overhead Electricity Transmission and Distribution Infrastructure*; DEA (2019) *Generic Environmental Management Programme (EMPr) for the Development and Expansion of Substation Infrastructure for the Transmission and Distribution of Electricity*

3 ENVIRONMENTAL MANAGEMENT OBJECTIVES

An EMPr is defined as “an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented or mitigated, and that the positive benefits of the projects are enhanced.”

This EMPr has been compiled in accordance with Appendix 4 of GNR 982, in compliance with section 24N of NEMA, with the purpose of ensuring that negative impacts are reduced, and positive effects are enhanced through a process of continual improvement, during both the construction and operational phases of Hendrina GH&A Facility project.

To facilitate compliance to the EMPr by appointed contractors and sub-contractors, it is required that all onsite personnel are aware of the requirements of the EMPr as well as the prescribed penalties should a non-conformance be identified during the construction, operation and decommissioning activities.

Further to the above, appointed contractors and sub-contractors will also be required to comply with all relevant legislation and standards.

3.1 EMPR OBJECTIVES

The EMPr has the following objectives:

- Identify mitigation measures and environmental specifications which are required to be implemented for the planning, construction and rehabilitation, operation, and decommissioning phases of the project in order to manage and minimise the extent of potential environmental impacts associated with the facility;
- Ensure that all the phases of the proposed project do not result in undue or reasonably avoidable adverse environmental impacts, and ensure that any potential environmental benefits are enhanced;
- Identify entities responsible for the implementation of the measures and outline functions and responsibilities;
- Create management structures that address the concerns and complaints of interested and affected parties (I&APs) with regards to the proposed project;
- Propose mechanisms and frequency for monitoring compliance, and preventing long-term or permanent environmental degradation; Comply with all applicable laws, regulations, standards and guidelines for the protection of the environment;
- Train onsite personnel with regard to their environmental obligations; and
- Facilitate appropriate and proactive responses to unforeseen events or changes in project implementation that was not considered in the EIA process.

3.2 ENVIRONMENTAL OBJECTIVES AND TARGETS

To facilitate compliance to the EMPr, Hendrina Green Energy must comply with all relevant legislation and standards and make all personnel aware of the requirements of the EMPr, as well as the prescribed penalties should a non-conformance be identified during the different phases of the proposed Project.

It is recommended that environmental objectives (as outlined in this document) be emphasised as minimum requirements. Objectives include:

- Encourage good management practices through planning and commitment to environmental issues; and
- Provide rational and practical environmental guidelines to:
 - Minimise disturbance of the natural environment;
 - Minimise fugitive emissions;
 - Minimise impact of added traffic into the area;

- Ensure surface and groundwater resource protection;
- Prevent or minimise all forms of pollution;
- Protect indigenous flora and fauna;
- Prevent soil erosion;
- Promote sustainable use of resources;
- Adopt the best practical means available to prevent or minimise adverse environmental impacts;
- Comply with all applicable laws, regulations, standards and guidelines for the protection of the environment;
- Promote the reduction, reuse, recycling and recovery of waste;
- Develop waste management practices based on prevention, minimisation, recycling, treatment or disposal of waste;
- Describe all monitoring procedures required to identify impacts on the environment;
- Define how the management of the environment is reported and performance evaluated; and
- Train onsite personnel with regard to their environmental obligations.

4 MANAGEMENT PROCEDURES AND ADMINISTRATIVE REQUIREMENTS

4.1 ORGANISATIONAL STRUCTURE AND RESPONSIBILITIES

Formal responsibilities are necessary to ensure that key management measures/procedures are executed. The Proponent via the appointed EPC contractor/principal contractor will be responsible for the overall control of the project site during the pre-construction, construction, operation, decommissioning and rehabilitation phases of the project. The Proponent's responsibilities (via the appointed EPC contractor/principal contractor) will include the following:

- Appointing an independent environmental control officer (ECO) for the duration of the Contract during construction and as specified by the MDARDLEA during operation;
- Being fully familiar with the EIR, EA conditions and the EMPr;
- Applying for an amendment of the EA from the MDARDLEA as and when required in line with the prevailing legislation
- Ensure the overall implementation of the EMPr by the EPC contractor/principal contractor/ and or subcontractors ;
- Ensuring compliance, by all parties, and the imposition of penalties for noncompliance;
- Implementing corrective and preventive actions, where required;
- Ensuring that any other necessary permits or licences are obtained and complied with;
- Preventing pollution and actions that will harm or may cause harm to the environment;
- Notifying the MDARDLEA within 30 days that construction activity will commence;
- Notifying the MDARDLEA in writing within 24 hours if any condition in the EA cannot be or is not adhered to; and
- Notifying the MDARDLEA 14 days prior to commencement of the operational phase

4.1.1 CONTRACTOR RESPONSIBILITIES

The following contractor responsibilities are applicable:

- The EPC Contractor is appointed by the Applicant for the Construction Phase, while the O&M Contractor is appointed for the Operational Phase of the Project. The Contractor shall take all required steps to ensure that the project meets all Environmental legislative requirements as required by the project EA, ESMS EMPr and Equator Principles Action Plan (EPAP), together with all applicable IFC Environmental, Health and Safety Guidelines and Procedures. Guidelines and Procedures as developed and implemented by the Developer /Applicant, and any other relevant standards identified by the lenders or the project sponsor must be implemented as required. These contractors have overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with above mentioned authorisations, procedures and guidelines and that Method Statements are implemented as described.
- All contractors must ensure compliance with the ESMS and EMPr while performing the onsite activities as per their contract with the Applicant (Holder). The contractors are required, where specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the construction and operation of the Project.
- The following labour, health and safety standards will be relevant:
 - The Contractor shall take all required steps to ensure that the project meets all legislative requirements as per the Occupational Health and Safety Act No. 85 of 1993 and the requirements of the IFC Performance Standards (Section 2.1) and the IFC Environmental, Health and Safety Guidelines.

- The Contractor shall develop a site-specific Health and Safety Plan in line with the Health and Safety Specification as a pre-construction requirement.
- The Contractor shall ensure compliance with all relevant Standards and Procedures as developed and implemented by the Developer and Applicant and any other relevant standards identified by the lenders or the project sponsor. Compliance will extend to any direct or indirect employees (including sub-contractors) and any persons required to be on the site.
- The Contractor shall appoint a full-time Environmental Officer.
- The Contractor shall appoint a full-time certified Construction Health and Safety Officer (CHSO) or Construction Health and Safety Manager (CHSM).
- The above appointments cannot be dual roles as appointed by the Contractor. Above appointments must be approved by Applicant

Table 4-1 provides a high-level outline of the various roles and responsibilities of the project.

Table 4-1: Roles and Responsibilities

DESIGNATION	ROLES AND RESPONSIBILITY
Proponent / Holder of the EA	<ul style="list-style-type: none"> — The Proponent (holder of the EA) shall take overall responsibility for the adherence to the EMPr and EA conditions, via the appointed EPC contractor/principal contractor/sub-contractor
Project Manager	<ul style="list-style-type: none"> — Ensure the Proponent and the relevant contractor/s are aware of all specifications, legal constraints pertaining to the project during construction, specifically with regards to the environment. — Ensure that all stipulations within the EMPr and conditions of the environmental authorisation are communicated and adhered to by the Proponent and its contractor(s). — Monitor the implementation of the EMPr and conditions of the environmental authorisation throughout the project by means of site inspections and meetings. This will be documented as part of the site meeting minutes. — Be fully conversant with the EIR for the project, the conditions of environmental authorisation and all relevant environmental legislation.
Site Manager (EPC Contractor)	<ul style="list-style-type: none"> — Be fully conversant with the EIAR, the conditions of environmental authorisation and the EMPr. — Approve method statements. — Provide support to the ECO. — Be fully conversant with all relevant environmental legislation and ensure compliance thereof. — Have overall responsibility for the implementation of the EMPr and conditions of the environmental authorisation — Ensure that audits are conducted to ensure compliance to the EMPr and conditions of the environmental authorisation. — Liaise with the Project Manager or his delegate, the ECO and others on matters concerning the environment — Prevent actions that will harm or may cause harm to the environment, and take steps to prevent pollution and unnecessary degradation onsite. — Confine construction activities to demarcated areas.
Environmental Officer (EO) (EPC Contractor)	<p>The EO must be appointed by the Contractor and is responsible for managing the day-to-day onsite implementation of the EMPr, and for the compilation of weekly environmental monitoring reports during construction. During the operational phase environmental monitoring reports may be as specified by the MDARDLEA (such as annually) by the external EO or ECO. In addition, the EO must act as liaison and advisor on all environmental and related issues, seek advice from the ECO when necessary, and ensure that any complaints received from I&APs are duly processed and addressed and that conflicts are resolved in an acceptable manner and timely manner.</p>

DESIGNATION

ROLES AND RESPONSIBILITY

	<p>The EO shall be a full time dedicated member of the Contractor’s team and must be approved by HendrinaGreen Energy (Project Company).</p> <p>The following qualifications, qualities and experience are recommended for the individual appointed as the EO:</p> <ul style="list-style-type: none"> — A relevant environmental diploma or degree in natural sciences, as well as a minimum of three years’ experience in construction site monitoring, excluding health and safety; — A level-headed and firm person with above-average communication and negotiating skills. The ability to handle and address conflict management situations will be an advantage; and — Relevant experience in environmental site management and EMPr compliance monitoring. <p>The EO’s responsibilities include, but not limited to:</p> <ul style="list-style-type: none"> — Monitoring, on a daily basis, environmental specifications on site and compliance with the conditions of the EA, environmental legislation and EMPr; — Keeping a register of compliance / non-compliance with the environmental specifications; — Identifying and assessing previously unforeseen, actual or potential impacts on the environment; — Ensuring that a brief weekly environmental monitoring report is submitted to the ECO; — Conducting site inspections during the defects liability period, and bringing any environmental concerns to the attention of the ECO and Contractor; — Advising the Contractor on the rectification of any pollution, contamination or damage to the construction site, rights of way and adjacent land; — Attending site meetings (scheduled and ad hoc); — Presenting the environmental awareness training course to all staff, Contractors and Sub contractors, and monitoring the environmental awareness training for all new personnel on-site, as undertaken by the Contractor; — Ensuring that a copy of the EA and the latest version of the EMPr are available on site at all times and maintaining a records-keeping system of all compliance and environmental documentation; — Ensuring that the Contractor is made aware of all applicable changes to the EMPr that are approved by the MDARDLEA; — Assisting the Contractor in drafting environmental method statements and/or the Environmental Policy where such knowledge/expertise is lacking; — Undertaking daily environmental monitoring to ensure the Contractor’s activities do not impact upon the receiving environment. Such monitoring shall include dust, noise and water monitoring; and — Maintaining the following on site: <ul style="list-style-type: none"> — A weekly site diary. — A non-conformance register (NCR). — An I&AP communications register, and — A register of audits. — Records of all communication received in relation to compliance actions. <p>The EO will remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is handed over to the Operator.</p>
<p>Construction Health and Safety Officer (CHSO) or Construction</p>	<p>The Contractor shall appoint a full-time certified Construction Health and Safety Officer (CHSO) or Construction Health and Safety Manager (CHSM) with a minimum of 5 years of experience in onsite health and safety management. The CHSO/CHSM must be based onsite to ensure that the project complies with all legislative</p>

DESIGNATION**ROLES AND RESPONSIBILITY**

Health and Safety Manager (CHSM)	<p>requirements and the requirements of the Labour, Health and Safety Standards. The CHSO/CHSM Occupational Health and Safety Officer will also be responsible for reporting to the Project on the health and safety performance of the project within the Construction monthly report.</p> <p>The above CHSO/CHSM and EO appointments cannot be dual roles as appointed by the Contractor. Above appointments must be approved by Applicant</p>
Independent Environmental Control Officer (ECO)	<p>A suitably qualified ECO must be appointed by the Holder of the EA to monitor the project compliance with the EMPr and conditions of the environmental authorisation on a monthly basis during construction. During the operational phase environmental monitoring may be undertaken as specified by the MDARDLEA (such as annually) by the external ECO. Proof of external ECO appointment must be maintained onsite.</p> <p>Responsibilities of the ECO include:</p> <ul style="list-style-type: none"> — Be fully conversant with the EIR, the conditions of environmental authorisation and the EMPr; — Be fully conversant with all relevant environmental legislation and ensure compliance thereof; — Approve method statements; — Remain employed until the completion of the construction activities; and — Report to the Project Manager, including all findings identified onsite. <p>In addition, the ECO will:</p> <ul style="list-style-type: none"> — Undertake independent monthly inspections of the site and surrounding areas in order to audit compliance with the EMPr and conditions of the environmental authorisation; — Take appropriate action if the specifications contained in the EMPr and conditions of the environmental authorisation are not followed; — Monitor and verify that environmental impacts are kept to a minimum, as far as possible; and — Ensure that activities onsite comply with all relevant environmental legislation.
Contractors, Staff and Service Providers	<ul style="list-style-type: none"> — Prepare Method Statements as per the EMPr, and ensure all activities are conducted as per the approved Method Statements. — Complying with the Holder of the EA’s environmental management specifications. — Be conversant with all EMPr and conditions of the EA, and ensure compliance thereto. — Adhering to any environmental instructions issued by the Site Manager/Project Manager on the advice of the ECO. Completion of the appropriate training requirements as specified in the training program.

Refer to: Table 1 (Part A, Section 3) of the Generic EMPr for the development of overhead transmission and distribution infrastructure, attached as Appendix C and Table 1 (Part A, Section 3) of the Generic EMPr for the development and expansion of substation infrastructure for the transmission and distribution of electricity, attached as Appendix D.

4.2 ENVIRONMENTAL AWARENESS PLAN

Legislation requires that Enertrag SA, via the appointed EPC contractor/principle contractor, must develop an environmental awareness plan that describes the manner in which Enertrag SA intends to inform employees of any environmental risks which may result from their work and the manner in which the risks must be dealt with in order to avoid pollution or the degradation of the environment. In recognition of the need to protect our

environment, environmental management should not only be seen as a legal obligation but also as a moral obligation.

It is important to ensure that all relevant personnel have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and ongoing minimisation of environmental degradation and harm.

To achieve effective environmental management, it is important that employees, contractors (including subcontractors) are aware of the responsibilities in terms of the relevant environmental legislation and the contents of the EMPr, conditions of the environmental authorisation.

Enertrag SA, via the appointed EPC contractor/principle contractor, will provide appropriate resources to facilitate social and environmental awareness training during the construction, operational and decommissioning phases of the project. Enertrag SA will require that all managers associated with the project adhere to the mitigation/management measures detailed in the EMPr and identify, evaluate, and minimise risks to the social, physical and biophysical environments. This will be implemented by educating employees in social and environmental matters and responsibilities relating to performance of their assigned tasks. Furthermore, employees will be entrusted to maintain the necessary level of environmental performance for their activities. Contractors, and their associated sub-contractors, will also need to demonstrate compliance to mitigation/management measures included in the EMPr.

The following methodology described must be used to implement and ensure environmental and social awareness and competence:

4.2.1 INTERNAL COMMUNICATION

Internal Communication of environmental issues to ensure environmental awareness will be achieved by using any combination of the following means:

- Meetings;
- Memos;
- Notice boards;
- Briefs;
- Reports;
- Monthly themes;
- Daily operational bulletins;
- Newsletter;
- E-mail;
- Telephone; and
- Induction training.

4.2.2 STANDARD MEETINGS

The following standard meetings will be held at specific times to ensure that environmental and social awareness; potential problems; complaints etc. are heard and addressed proactively:

- Safety, Health and Environmental Meetings will be held monthly by the Senior Management;
- Safety, Health and Environmental Meetings will be held weekly (during construction) and monthly (during operation) by the relevant personnel, environmental and social issues will form part of the agenda;
- Communication between all personnel and Senior Management will be facilitated through the appropriate reporting lines, or by using complaint and incident forms.

4.2.3 ENVIRONMENTAL AND SOCIAL TALK TOPICS

Monthly environmental and social talk topics must be compiled and distributed/shared to relevant personnel and must be displayed on appropriate notice boards or shared by whatever means established on site. As a minimum, the following topics must be considered during the course of the construction phase:

- Water Quality;
- Water Use and Consumption;
- Air Quality i.e. dust;
- Power Consumption and Energy Efficiency;
- Waste Management;
- Fauna and Flora;
- Emergency Procedures;
- Incidents Reporting;
- Systems;
- Noise;
- Heritage Impacts;
- Landowner Etiquette; Speed Limits;
- Health Risks (such as HIV/ Aids); and
- General Awareness (e.g. World Environment Day, National Arbour Day).

4.2.4 GENERAL COMMUNICATIONS

Communication to the community, government, landowners, neighbouring farmers, environmental groups, non-government organisations and other stakeholders will be communicated to ensure environmental and social awareness by means of the following:

- Fax or E-mail;
- Telephone; or
- Formal meetings.

4.2.5 TRAINING

It is important to ensure that all personnel, contractors and their sub-contractors have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and on-going minimisation of environmental harm. As a minimum environmental training must include the following:

- Employees must have a basic understanding of the key environmental features of the site and the surrounding environment.
- Employees will be thoroughly familiar with the requirements of the EMPr and the environmental specifications as they apply to the project.
- Employees must undergo training for the operation and maintenance activities associated with project and have a basic knowledge of the potential environmental impacts that could occur and how they can be minimised and mitigated.
- Awareness of any other environmental matters, which are deemed to be necessary by the Environmental Officer.
- Training must include the environment, health and safety as well as basic HIV/AIDS education.

The following facets to training form part of this Environmental and Social Awareness Plan:

- **Induction:** Environmental and social awareness training will be given at induction when personnel join the company and/or return from leave. Induction training will also be given to visitors entering the site. Induction training will include, inter alia:
 - A discussion on the environment concept, what does it comprise of and how do we interact with it;

- A description on the components and phases of the specific renewable power generation facility;
 - A general account of how the facility and its associated activities can affect the environment, giving rise to what are called environmental impacts;
 - A discussion on what staff can do in order to help prevent the negative environmental impacts from degrading the environment i.e. environmental impact management.
- **Job Specific Training:** Job specific training programmes will be developed as and when required. The programs will be based on the significant environmental and social aspects/ impacts that are identified during regular audits and site inspections. Supervisory staff will be equipped with the necessary knowledge and information to guide their employees on environmental and social aspects applicable to performing a specific task.
- **Competency Training:** The Environmental Officer will be responsible for the environmental and social competency and awareness training of Middle Management and supervisors. This training will be performed both on a one-on-one basis and through workshops and presentations. Competence and the effectiveness of training and development initiatives will be determined through the following methods:
- Trend analysis of incidents reported; and
 - Analysis of work areas during visits and audits.
- The process to declare competency of personnel is documented in the ISO9001 procedure. This plan will be amended periodically in light of operational changes, learning experienced during its implementation and other activities that can affect the risk profiles.
- **Training Records:** Training can be done either in a written or verbal format but will be in an appropriate format for the receiving audience. Persons having received training must indicate in writing that they have indeed attended a training session and have been notified in detail of the contents and requirements of the EMPr. The attendance registers must be kept on file.

4.3 ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

To ensure accountable and demonstrated implementation of the EMPr, a number of reporting systems, documentation controls and compliance mechanisms must be in place. **Table 4-2** indicates the minimum requirements as set out in the generic EMPrs for the development of overhead transmission and distribution infrastructure and for the development and expansion of substation infrastructure for the transmission and distribution of electricity.

Table 4-2: Documentation Reporting and Compliance Requirements as per the generic EMPrs

ASPECT	REFER TO GENERIC EMPR (PART A)
Document control/Filing system	Section 4.1
Documentation to be available	Section 4.2
Weekly Environmental Checklist	Section 4.3
Environmental site meetings	Section 4.4
Required Method Statements	Section 4.5
Environmental Incident Log (Diary)	Section 4.6
Non-compliance	Section 4.7
Corrective action records	Section 4.8
Photographic record	Section 4.9

ASPECT**REFER TO GENERIC EMPR (PART A)**

Complaints register	Section 4.10
Claims for damages	Section 4.11
Interactions with affected parties	Section 4.12
Environmental audits	Section 4.13
Final environmental audits	Section 4.14

Refer to: Part A, Section 4 of the Generic EMPr for the development of overhead transmission and distribution infrastructure, attached as Appendix C and Part A, Section 4 of the Generic EMPr for the development and expansion of substation infrastructure for the transmission and distribution of electricity, attached as Appendix D.

4.4 MONITORING

The EPC contractor EO will monitor the day-to-day site activities on an ongoing basis and will produce weekly monitoring reports during construction. The independent external ECO will undertake monthly audits to ensure compliance with the EMPr and conditions of the environmental authorisation during the construction activities and will report to the Site Manager should any non-compliance be identified or corrective action deemed necessary.

During the operational phase, The Proponent via the appointed O&M contractor/principle contractor will establish, implement and maintain a procedure to monitor and measure, on a regular basis, the key characteristics of the operations that may have a significant environmental impact. The procedure shall include the documenting of information to monitor performance, applicable operational controls and conformity with the operation's environmental objectives and targets.

The Proponent via the appointed O&M contractor/principle contractor will ensure that all instruments and devices used for the measurement or monitoring are calibrated and appropriately operated and maintained. Calibration records must be kept on site or in close proximity to the equipment for ease of availability.

All the conditions outlined in the EMPr will be subject to required internal day-to-day monitoring and external compliance monitoring. Where required, any specific additional monitoring has been outlined in the EMPr and Project ESMS.

4.5 NON-CONFORMANCE AND CORRECTIVE ACTION

The auditing of the construction and operational activities may identify non-conformances to the EMPr and conditions of the EA. Non-conformances may also be identified through incidents, emergencies or complaints recorded. In order to correct non-conformances, the source must be determined, and corrective actions must be identified and implemented.

4.5.1 COMPLIANCE WITH THE EMPR AND CONDITIONS OF THE ENVIRONMENTAL AUTHORISATION

- A copy of the EMPr and conditions of the environmental authorisation will be available onsite at all times for the duration of the construction and operational activities;
- All persons employed by a contractor or their sub-contractors will abide by the requirements of the EMPr and conditions of the environmental authorisation;

- Any members of the workforce found to be in breach of any of the specifications contained within the EMPr and conditions of the environmental authorisation may be ordered by the Site Manager to leave the site. A contractor will not direct a person to undertake any activity which would place them in contravention of the specifications contained within the EMPr and conditions of the environmental authorisation;
- Should a contractor be in breach of any of the specifications contained in the EMPr and conditions of the environmental authorisation, the Site Manager will, in writing, instruct the contractor responsible for the incident of non-compliance regarding corrective and/or remedial action required, specify a timeframe for implementation of these actions, implement a penalty and/or indicate that work will be suspended should non-compliance continue;
- Should non-compliance continue, further written notification will be forwarded to the contractor responsible for the incident of non-compliance outlining the required corrective and/or remedial action, the timeframe for implementation, penalties and/or work will be suspended as specified previously; and
- Departmental officials will be given access to the property referred to in the EIAR and EMPr for the purpose of assessing and/or monitoring compliance with the EMPr and conditions of the environmental authorisation, at all reasonable times.

4.5.2 DUTY OF CARE

Under Section 28 of the NEMA, all personnel involved with the construction and operational activities onsite will be responsible for implementing measures to prevent pollution or degradation of the environment from occurring, continuing or recurring. Failure to comply with the above conditions is a breach of the duty of care. If such harm is unavoidable, steps must be taken to minimise and rectify such pollution or degradation of the environment.

4.6 DOCUMENTATION AND REPORTING

The following documentation must be kept onsite in order to record compliance with the EMPr and conditions of the environmental authorisation:

- Record of complaints; and
- Record of emergencies and incidents.

The contractor will be required to report on the following:

- Environmental incidents involving contractor/ employees and/or the public;
- Environmental complaints and correspondence received from the public; and
- Incidents that cause harm or may cause harm to the environment.

The above records will form an integral part of the ECO's reports and records thereof maintained for the duration of the project. These records will be kept with the EMPr and conditions of the EA, and will be made available for scrutiny if so requested by the Site Manager or his delegate and the ECO.

The contractor will ensure that the following information is recorded for all environmental complaints/incidents/emergencies:

- Date of complaint/incident/emergency;
- Location of complaint/incident/emergency;
- Nature of complaint/incident/emergency;
- Causes of complaint/incident/emergency;
- Party/parties responsible for causing complaint/incident/emergency;
- Immediate actions undertaken to stop/reduce/contain the causes of the complaint/incident/emergency;
- Additional corrective or remedial action taken and/or to be taken to address and to prevent reoccurrence of the complaint/incident/emergency;
- Timeframes and the parties responsible for the implementation of the corrective or remedial actions;

- Procedures to be undertaken and/or penalties to be applied if corrective or remedial actions are not implemented; and
- Copies of all correspondence received regarding complaints/incidents/emergency.

4.6.1 ESTABLISHMENT OF AN ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM (ESMS)

IFC Performance Standard 1 underscores the importance of managing environmental and social performance throughout the life of a Project. An effective Environmental and Social Management System (ESMS) is a dynamic and continuous process initiated and supported by management, and involves engagement between the Applicant, EPC, O&M, their workers, and local communities directly affected by the project (the Affected Communities) and, where appropriate, other stakeholders. The ESMS is a set of management processes and procedures that allows a Project to analyse, control and reduce the environmental and social impact of its activities, products and services, and operate with a greater efficiency and control.

The ESMS must be developed by the EPC Contractor prior to the commencement of Construction. The structure of the ESMS must comprise of the following (but not limited to):

- Policy;
- Sustainability Policy;
- HSE Policy;
- Identification of Risk & Permits;
- Risk Assessments;
- Full copy of the EIA Report and all appendices;
- EA;
- Construction Permit;
- Environmental Permits;
- Management Programmes;
- EMPs (including copy of the Generic EMP);
- Method Statements;
- Management Plans;
- Organisational Capacity Competency;
- Organogram;
- Appointments;
- Training;
- Medicals;
- Monitoring and review;
- Completed (dated and signed) weekly environmental checklists (inspection log / diary) completed by the Contractor's EO for the duration of the construction phase (Section 8.2.1);
- ECO Monthly Reports (Section 8.2.2);
- Audit reports (internal and external);
- Waste Disposal Certificates/manifests/register (See Appendix H 9);
- Resource Consumption data and analysis (water and electricity);
- Material Safety Data Sheets;
- Non-compliance record, with associated records of corrective actions taken and the current status of each non-compliance recorded (Section 8.2.2);
- Stakeholder Engagement;
- Meeting Minutes;
- Procedures;
- Grievance Mechanism;

- Complaints register (record of all complaints received, and notation on how each complaint has been addressed, the person responsible, and the current status of the complaint). See Appendix H 8;
- ESMS Review shall take the form of a formal, documented meeting and chaired by the Project Manager in case of the EPC Contractor;
- Management reviews should be conducted at regular intervals or at least annually to evaluate overall ESMS performance in order to ensure its effectiveness and continual improvement;

An on-site environmental file must be maintained throughout all phases of the Project. Digital copies of relevant documentation may be kept in addition to hard-copy documents. This file is to be made available at the request of the auditor, ECO, Applicant or similar monitoring body. A digital photographic record will be kept by the EO, to show before, during and post rehabilitation evidence of the project. The photographic record can also be used in cases of damages claims if they arise. Each image must be dated and a brief description note attached. The photographic record and weekly inspection log may be combined.

4.7 PUBLIC COMPLAINTS

A signboard must be erected at the entrance to the project site, informing the public of the construction activities taking place. The signboard must include the following information:

- The name of the contractor; and
- The name and contact details of the site representative to be contacted in the event of emergencies or the location of the complaint registration.

5 GENERIC ENVIRONMENTAL CONTROLS

This section refers to construction related activities that are common to most power line projects as defined within the pre-approved generic EMPs. For each activity, a set of prescribed environmental controls and associated management actions have been identified. Contractors shall implement these controls as a minimum requirement for mitigating the impact of particular construction related activities.

These control measures are defined within Part B: Section 1 of the pre-approved generic EMPs (attached as **Appendix C** and **Appendix D**). The format of a general environmental control is shown below, see **Table 5-1**. The boxes shaded in green are predefined and represent minimum standards for the management of that particular aspect. The Contractor will be required to adhere to all impact management actions (where applicable to the construction related activity) for the Project. The boxes shaded in red assign responsibility for the implementation and monitoring of the impact management actions. This implementation and monitoring information is project specific and shall be completed by the Contractor prior to commencement of construction.

Table 5-1: Format of a general environmental control illustrating aspects which are predefined versus those which still need to be completed by the contractor

Management Objective:	Predefined as part of Generic EMP					
Management Outcome:	Predefined as part of Generic EMP					
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Predefined as part of Generic EMP	To be completed by Contractor	To be completed by Contractor	To be completed by Contractor	To be completed by Contractor	To be completed by Contractor	To be completed by Contractor

The completed template must be signed and dated on each page by both the contractor and the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template. The generic EMP has predefined signing requirements which must be met prior to commencement of construction by the contractor and the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

The construction related activities addressed within Part B: Section 1 of the pre-approved generic EMPs are as follows:

Table 5-2: Activities and management measures as per generic EMP (Part B: Section 1)

ACTIVITY	REFER TO GENERIC EMP FOR THE DEVELOPMENT OF OVERHEAD TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE, ATTACHED AS APPENDIX C (PART B: SECTION 1)	REFER TO GENERIC EMP FOR THE DEVELOPMENT AND EXPANSION OF SUBSTATION INFRASTRUCTURE, ATTACHED AS APPENDIX D (PART B: SECTION 1)
Environmental awareness training	5.1	5.1
Site Establishment development	5.2	5.2
Access restricted areas	5.3	5.3
Access roads	5.4	5.4

REFER TO GENERIC EMPR FOR THE DEVELOPMENT OF OVERHEAD TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE, ATTACHED AS APPENDIX C (PART B: SECTION 1)

REFER TO GENERIC EMPR FOR THE DEVELOPMENT AND EXPANSION OF SUBSTATION INFRASTRUCTURE, ATTACHED AS APPENDIX D (PART B: SECTION 1)

ACTIVITY

Fencing and Gate installation	5.5	5.5
Water Supply Management	5.6	5.6
Storm and wastewater management	5.7	5.7
Solid and hazardous waste management	5.8	5.8
Protection of watercourses and estuaries	5.9	5.9
Vegetation clearing	5.10	5.10
Protection of fauna	5.11	5.11
Protection of heritage resources	5.12	5.12
Safety of the public	5.13	5.13
Sanitation	5.14	5.14
Prevention of disease	5.15	5.15
Emergency procedures	5.16	5.16
Hazardous substances	5.17	5.17
Workshop, equipment maintenance and storage	5.18	5.18
Batching plants	5.19	5.19
Dust emissions	5.20	5.20
Blasting	5.21	5.21
Noise	5.22	5.22
Fire prevention	5.23	5.23
Stockpiling and stockpile areas	5.24	5.24
Finalising tower positions	5.25	
Civil works		5.25
Excavation (and Installation) of foundations	5.26	5.26
Installation of foundations, cable trenching and drainage systems		5.27
Assembly and erecting towers	5.27	

ACTIVITY	REFER TO GENERIC EMPr FOR THE DEVELOPMENT OF OVERHEAD TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE, ATTACHED AS APPENDIX C (PART B: SECTION 1)	REFER TO GENERIC EMPr FOR THE DEVELOPMENT AND EXPANSION OF SUBSTATION INFRASTRUCTURE, ATTACHED AS APPENDIX D (PART B: SECTION 1)
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Installation of equipment (circuit breakers, current Transformers, Isolators, Insulators, surge arresters, voltage transformers, earth switches)		5.28
Stringing (and cabling)	5.28	5.30
Testing and Commissioning (all equipment testing, earthing system, system integration)		5.31
Socio-economic	5.29	5.32
Temporary closure of site	5.30	5.33
Dismantling of old equipment		5.34
Landscaping and rehabilitation	5.31	5.35

Refer to: Part B – Section 1 of the Generic EMPr for the development of overhead transmission and distribution infrastructure, attached as Appendix C and Part B – Section 1 of the Generic EMPr for the development and expansion of substation infrastructure for the transmission and distribution of electricity, attached as Appendix D.

6 SITE SPECIFIC ENVIRONMENTAL CONTROLS

The EMPr contains guidelines, operating procedures, rehabilitation and pollution control requirements which will be binding to the onsite personnel working for, or on behalf of Enertrag SA. It is essential that the EMPr be carefully studied, understood, implemented and adhered to at all times.

In instances where the method statements provided by the contractor conflict with the EMPr, such conflicts will be discussed between the Site Manager, ECO and contractor and if unresolved the EMPr will take precedent.

The EMPr identifies various actions which are undertaken throughout the construction and operational phases of the GH&A facility. Not every action will be required during the entire course of activities. Therefore, the actions identified in the EMPr have been given priority timeframes for proposed implementation. The columns in the structure of the EMPr have been described **Table 6-1** below.

Table 6-1: Structure of EMPr

COLUMN	DESCRIPTION
Activity/Aspect	Highlights the various activities/aspects associated with the project i.e. the contractors' activities that will interact with the environment.
Impact Management Outcome	The desired outcomes from effectively minimising negative impacts and/or enhancing positive impacts.
Impact Management Actions/Measures	Indicates the actions required to prevent and /or minimise the potential impacts on the environment that are associated with the project.
Indicator and Compliance Management	Items that will assist with determining compliance against management actions.
Responsibility	Indicates the party responsible for implementing the environmental measures and action plans laid out in the EMPr. Please note that the Site Manager will have authority to stop works if/as necessary.
Priority Timeframe	Indicates when the actions for the specific aspect must be implemented and/or monitored.

The following assumptions have been made in the development of the environmental specification/ESMS in this site specific EMPr:

- An environmental file containing the information/documentation required by this site specific EMPr is to remain onsite and to be made available at the request of the auditor or similar monitoring body; and
- For ease of reference, any person(s) employed to assist in the Project (i.e. contractors, sub-contractor and permanent and temporary staff) will be collectively referred to as 'onsite personnel'.

It should be noted that at this point of the Project planning process, the necessity for and timing of the decommissioning phase is unknown. Before decommissioning, the holder of the EA will need to follow the related legal permitting process in terms of NEMA and other legislation applicable at the time. The future associated permitting process will further supplement any commitments made within this document.

Table 6-2 outlines the site specific EMPr for the proposed Project.

Table 6-2: Environmental Management Programme Mitigation and Management Measures

ACTIVITY/ASPECT	<u>IMPACT MANAGEMENT ACTIONS/MEASURES</u>	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
PRE-CONSTRUCTION REQUIREMENTS			
<p><u>Impact Management Outcome:</u></p> <ul style="list-style-type: none"> — To implement measures to minimise impacts on the environment through planning and implementation of pre-construction mitigation measures 			
<p><u>Indicator and Compliance Mechanism:</u></p> <ul style="list-style-type: none"> — Design requirements — Establishment of ESMS — Method statements 			
General	Prior to commencement of onsite activities, appoint an ECO to manage and verify compliance with the EA and EMPr.	Project Manager Contractor (Site Manager/EO) Relevant specialists (as required)	Pre-Construction
	The development footprint must be demarcated to ensure that only the demarcated areas are impacted upon. Any no-go areas identified must be demarcated before the construction or decommissioning commences.		
	Working protocols and site specific method statements as per section 7 must be complied and approved prior to construction. Approved method statements by the contractor must be clearly set out for the project and strictly enforced.		
	Plan the placement of laydown areas and temporary construction equipment camps in order to minimise vegetation clearing (i.e. in already disturbed areas) wherever possible.		
	Retain and maintain natural vegetation immediately adjacent to the development footprint.		
	Make use of existing roads wherever possible and plan the layout and construction of roads and infrastructure with due cognisance of the topography to limit cut and fill requirements.		

ACTIVITY/ASPECT	<u>IMPACT MANAGEMENT ACTIONS/MEASURES</u>	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Plan all roads, ancillary buildings and ancillary infrastructure in such a way that clearing of vegetation is minimised. Consolidate infrastructure and make use of already disturbed sites rather than undisturbed areas.		
	A pre-construction walkdown must be undertaken by the biodiversity (terrestrial and aquatic), heritage and avifauna specialists in order to provide input with regards to micro-siting of structures and infrastructure in preparation of the final Layout		
Stormwater	Develop and implement a system of storm water management, which will prevent erosion, as part of the road engineering on site. As part of this system, the integrity of the existing contour bank systems of erosion control on croplands, where they occur on steeper slopes, must be kept intact.	Project Manager Contractor (Site Manager/EO) Relevant specialists (as required)	Pre-Construction
	The system must effectively collect and safely disseminate any run-off water from all accumulation points and it must prevent any potential down slope erosion.		
	The stormwater management plan must detail the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems. Effective stormwater management will include effective stabilisation (gabions and Reno mattresses) of exposed soil and the re-vegetation of any disturbed riverbanks.		
Traffic	Abnormal vehicle routes and management plans may be required dependant on the type and route of the abnormal vehicle loads. Abnormal vehicles may require special permits and route plans from the relevant road authority such Gauteng Department of Roads and Transport. These permits are the responsibility of the developer and its logistics/freight companies.	Project Manager Contractor (Site Manager/EO) Relevant specialists (as required)	Pre-Construction
Bats	During the planning phase for the Hendrina GHA facility it must become mandatory to only use lights with low sensitivity motion sensors that switch off automatically when no persons are nearby, to prevent the creation of regular insect gathering pools, where practically possible without compromising security requirements.	Project Manager Contractor (Site Manager/EO)	Pre-Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	<p>This applies to all GHA infrastructure/buildings. Floodlights should be down-hooded and where possible, lights with a colour (lighting temperature) that attract less insects should be used. This mitigation step is a simple and cost-effective strategy to effectively decrease the chances of bat mortalities.</p> <p>The likelihood of bats being killed by moving turbine blades increases significantly when they are attracted to their proximity when it has become an improved foraging airspace due to the presence of artificial light or artificial water sources. This can result in the Hendrina GHA facility increasing the likelihood of bats being killed by the proposed Hendrina North & South WEF's.</p>	Relevant specialists (as required)	
Avifauna	Conduct a pre-construction inspection to identify SCC that may be breeding within the project footprint to ensure that the impacts on breeding species (if any) are adequately managed.	Project Manager Contractor (Site Manager/EO) Relevant specialists (as required)	Pre-Construction
Terrestrial Biodiversity	Prior to commencement of construction, compile and implement an alien management plan, which highlights control priorities and areas and provides a programme for long-term control, including monitoring specifications.	Project Manager Contractor (Site Manager/EO)	Pre-Construction
	Prior to commencement of construction, compile a Rehabilitation Plan including monitoring specifications, to be included into the EMPr during final approval.	Relevant specialists (as required)	
	A detailed pre-construction walk-through survey will be required during a favourable season where possible, to locate any individuals of protected plants, as well as for any populations of threatened plant species. This survey must cover the footprint of all approved infrastructure, including internal service roads and footprints of tower structures (final infrastructure layout). The best season is early to late Summer if possible, taking administrative processes into account, but will be influenced by recent rainfall and vegetation growth.	Project Manager Contractor (Site Manager/EO) Relevant specialists (as required)	Pre-Construction
	It is a legal requirement to obtain a permit from the provincial authorities for the destruction of any of these species. A comprehensive walk-through survey of the final footprint is required to compile a complete list of these protected species with pictures.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Where significant populations of SCC are found, collect the data for any flora permits or micro-siting of infrastructure that may be required, and compile a Rescue Plan		
Heritage	Sites with heritage significance identified must be preserved in-situ with a 30-meter buffer as mitigation measure as prescribed by SAHRA, which means that the powerline will have to be micro sited in the areas where HD002 and GA004 were recorded.	Project Manager Contractor (Site Manager/EO)	Pre-Construction
	The final layout should be subjected to a heritage walkthrough.	Relevant specialists (as required)	
Social	The developer should encourage the contractor to increase the local procurement practices and promote the employment of people from local communities, as far as feasible, to maximise the benefits to the local economies.	Project Manager Contractor (Site Manager/EO)	Pre-Construction
	The developer should engage with local authorities and business organisations to investigate the possibility of procuring construction materials, goods and products from local suppliers where feasible.	Relevant specialists (as required)	
	Co-ordinate with the local municipality and relevant labour unions to inform the local labour force about the project that is planned to be established and the jobs that can potentially be applied for.		
	Recruit local labour as far as feasible. Employ labour-intensive methods in construction where feasible.		
	Sub-contract to local construction companies particularly SMMEs and BBBEE compliant enterprises where possible.		
	Use local suppliers where feasible and arrange with the local SMMEs to provide transport, catering and other services to the construction crews.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Facilitate knowledge and skills transfer between foreign technical experts and South African professionals during the pre-establishment and construction phases.		
	Undertake a public relations (PR) campaign prior to commencement of construction to communicate to community members the construction programme, inclusive of regular updates to generate excitement in the community		
Health and Safety	Facilities to be declared a Major Hazard Installation and to comply with all the regulatory requirements.	Project Manager Contractor (Site Manager/EO) Relevant specialists (as required)	Pre-Construction
	Full Process Safety Management system with all elements to be implemented to highest international best practice levels.		
	Extremely flammable hydrogen systems to be designed to latest applicable international codes.		
	Detailed FMEA/Hazop/Bowtie to done during design at the component level and system levels.		
	Safety integrity level rating of equipment (failure probably) with suitable redundancy if required.		
	Hazardous Area Classification (SANS 10108) studies to be done and equipment suitably specified and maintained.		
	Suitable ingress protection level provided for electrical equipment, e.g. IP55 - 66.		
	Emergency Response plan in compliance with SANS 1514 to be compiled, e.g. plan from transport and construction phase to be extended to operational phase to include the hazards of the systems containing large quantities of highly hazardous chemicals.		

ACTIVITY/ASPECT

IMPACT MANAGEMENT ACTIONS/MEASURES

RESPONSIBLE PERSON

PRIORITY TIMEFRAME

CONTRACTOR LAYDOWN AREA AND SITE ACCESS

Impact Management Outcome:

- To implement measures to minimise impacts on the environment from the initiation of construction activities through planning, careful site access route selection and implementation of mitigation measures.

Indicator and Compliance Mechanism:

- Health, safety, environmental and community incident and complaints management system register.
- Close-out on incidents.
- Monitoring and audit reports.
- Inductions training and register.
- Environmental awareness programme/toolbox talks.

Project Initiation of Construction Activities	All personnel and contractors to undergo Environmental Awareness Training, including awareness of the surrounding area and wetlands to inform importance of these areas and their conservation. A signed register of attendance must be kept for proof.	Project Manager Contractor (Site Manager/EO) Construction Health & Safety Officer (CHSO)/ Construction Health & Safety Manager (CHSM)	Construction Operation
	Site clearing must be limited to the footprint of the infrastructure requirements.		
	Locate firefighting measures at laydown areas and vehicles, such as fire extinguishers, and make personnel aware of fire prevention and firefighting measures.		
	Firefighting equipment must be securely placed and inspected monthly.		

VEHICLE, EQUIPMENT AND MACHINERY MANAGEMENT

Impact Management Outcome:

- To implement measures to minimise impacts on the environment from poorly maintained equipment, machinery and vehicles onsite.

ACTIVITY/ASPECT	<u>IMPACT MANAGEMENT ACTIONS/MEASURES</u>	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
<p>Indicator and Compliance Mechanism:</p> <ul style="list-style-type: none"> — Health, safety, environmental and community incident and complaints management system register. — Close-out on incidents. — Monitoring and audit reports. — Transport route delineation. — Daily equipment, machinery and vehicle checklists. — Incident classification and reporting procedure. 			
<p>Operation of Equipment, Machinery and Vehicles</p>	<p>Ensure that the equipment, machinery and vehicles are adequately maintained so as to:</p> <ul style="list-style-type: none"> — Reduce the potential for spillages of oil, diesel, fuel or hydraulic fluid. — Ensure road-worthiness. — Reduce emissions. <p>Evidence of such maintenance must be recorded and maintained onsite for verification.</p> <p>The movement of vehicles into and out of the site must be managed to ensure the impact on public areas is minimised, such as ensuring that abnormal loads are moved outside of peak traffic hours, and reasonable measures are taken to ensure that public and staff safety is managed adequately</p>	<p>EO Contractor</p>	<p>Construction Operation Decommissioning</p>
<p>FUEL AND CHEMICAL MANAGEMENT</p>			
<p><u>Impact Management Outcome:</u></p> <ul style="list-style-type: none"> — To ensure the correct storage, handling and disposal of fuels and chemicals in order to prevent impacts to the surrounding environment. 			
<p>Indicator and Compliance Mechanism:</p> <ul style="list-style-type: none"> — Maintenance records. — Safe disposal certificates (if applicable) — Material safety data sheets (MSDS). 			

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
<ul style="list-style-type: none"> — Health, safety, environmental and community incident and complaints management system register. — Chemicals management procedure (to be developed). — Monitoring and audit reports. — Training records. 			
Fuel and Chemical Management	Provide secure storage for fuel, oil, chemicals and other hazardous materials. Securely fence and lock the storage areas to accommodate all hazardous substances such as fuel, oils and chemicals. The storage area must be roofed and the floor must be an impermeable surface and suitably bunded as per the requirements outlined in SANS 10089-1 (2008). If storage capacity triggers licencing, those must be acquired.	EO/CHSM-CHSO Contractor	Construction Operation
	Indicate the location of the fuel and chemical storage area on the layout plans.		
	Label all liquids (chemicals and hydrocarbons) stored onsite for easy identification. MSDS for onsite chemicals, hydrocarbon materials and hazardous substances must be readily available. MSDS must include mitigation measures to ameliorate potential environmental impacts which may result from a spill, incorporating health and safety mitigation measures.		
	A spill management plan must be in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.		
	No servicing of equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers for safe disposal.		
	In cases where a surface leak occurs during loading and off-loading activities, the spill material will be cleaned using a spill kit.		
	Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
Health and Safety	Display “no smoking” and “no naked flame” signs in and around the project area, as well as near the hazardous material store.	EO/CHSM-CHSO	Construction
	Strategically place the correct types of fire extinguishers onsite and near the hazardous material store. Train key personnel on basic firefighting skills	Contractor	Operation
	Frequently inspect and maintain containment facilities and retain records onsite.		
WASTE MANAGEMENT			
<u>Impact Management Outcome:</u>			
— To ensure the correct handling, storage, transportation and disposal of general waste and hazardous waste.			
Indicator and Compliance Mechanism:			
<ul style="list-style-type: none"> — Induction training and records. — Waste Management Plan (WMP). — Relevant SANS Codes of Practice. — Waste register, manifests and safety disposal certificates (all waste streams). — Emergency preparedness and response procedure. — Incident classification and reporting management procedure (to be developed). — Health, safety, environmental and community incident and complaints management system register. — Monitoring and audit reports. 			
General Waste Management	General waste generated as a result of construction and operational activities must be managed in accordance with a WMP (to be developed).	EO	Construction
	Train and inform all onsite personnel regarding general waste minimisation, management and disposal as per the WMP.	Contractor	Operation Decommissioning

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Prohibit littering and burning of waste onsite.		
	Place an adequate number of labelled or colour coded general waste bins around the laydown area and at the construction sites during construction activities in order to minimise littering. The bins must be removed from the site on a regular basis for disposal at a registered or licensed disposal facility.		
	Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site. — Refuse bins will be emptied and secured. — Temporary storage of domestic waste shall be in covered waste skips. — Maximum domestic waste storage period will be 10 days.		
	Retain records such as waybills and waste manifests associated with waste removal, transportation and disposal (safe disposal certificates). These must be collated in a waste register and audited by the ECO monthly		
	Prohibit the mixing of general waste with hazardous waste. Should general waste be mixed with hazardous waste, it will be considered hazardous waste. There will need to be waste segregation (e.g. electronic equipment, chemicals, oil contaminated rags, paper, plastic) and management on the site.		
	Recover, recycle and reuse waste of general waste as far as possible.		
	Sanitation waste management		
Ablution facilities must be located in a specific area agreed to by the ECO prior to placement and must be located away from sensitive environments.		EO Contractor	Decommissioning
Spillages must be prevented during cleaning or servicing.		CHSO/CHSM	

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Ablution facilities must be effectively secured to prevent toppling or being wind-blown		
	Ablution facilities must be maintained in a hygienic state and serviced regularly and must make provisions for wash basins		
Hazardous Waste Management	Hazardous waste generated as a result of construction, operational and decommissioning activities must be managed in accordance with a WMP.	EO Contractor	Construction Operation Decommissioning
	The WMP must include a procedure for handling spillages.		
	Train and inform all onsite personnel regarding hazardous waste minimisation, management and disposal as per the WMP.		
	A designated and appropriately demarcated and covered hazardous waste storage area must be established on a hard standing area.		
	Ensure that all hazardous wastes temporarily stored on site are stored in a covered skip and are placed on a hard standing		
	Clean areas where hazardous waste spills have occurred and dispose of the hazardous material appropriately. Key personnel must be trained on handling spillages.		
	Retain records of appropriate safety disposal certificates associated with hazardous waste removal, transportation and disposal.		
	An emergency preparedness and response plan is to be developed by the contractor/operator for any hazardous waste being removed, transported and disposed of offsite.		
	Ensure that waste manifest documentation (as per the Waste Classification and Management Regulations – GNR 634) is prepared and maintained for the generation, transportation and disposal of waste.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Report any major spill incidents to the Department within 24 hours of occurrence.		
SOIL, LAND AND AGRICULTURAL MANAGEMENT			
<p><u>Impact Management Outcome:</u> To prevent any disturbance, erosion or contamination of soil resources.</p>			
<p><u>Indicator and Compliance Mechanism:</u></p> <ul style="list-style-type: none"> — Induction training and records. — WMP. — Incident classification and reporting management procedure (to be developed). — Health, safety, environmental and community incident and complaints management system register. — Monitoring and audit reports. — Stormwater Management Plan (SWMP) (to be developed). 			
Soil and Land Management	Land clearance must only be undertaken in accordance with the construction programme and only within the development footprint. Unnecessary land clearance must be avoided.	EO Contractor Site Manager	Construction Operation
	Access roads must have gradients or surface treatment to limit erosion, and road drainage systems must be accounted for.		
	Implement an effective system of storm water run-off control, in line with the SWMP (to be developed).		
	Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further erosion from occurring there.		
	Any excavations done during the construction phase, in areas that will be re-vegetated at the end of the construction phase, must separate the upper 30 cm of topsoil from the rest of the	EO	Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	excavation spoils and store it in a separate stockpile. When the excavation is back-filled, the topsoil must be back-filled last, so that it is at the surface.	Contractor	
	Topsoil should only be stripped in areas that are excavated. On areas that are only cleared, like construction lay down areas, it is much better to leave the topsoil in place.		
	Ensure soil stockpiles (from road construction) and concrete / building sand are sufficiently safeguarded against rain wash.		
	Landscape and re-vegetate all unnecessarily denuded areas as soon as possible.	Contractor Site Manager	
	Water erosion action is considered limited, however backfilling with soil and use of gabions or Reno Mattresses must be used where evidence of erosion is present.	Contractor Site Manager	Construction Operation
	Due to the potential for soil compaction due to vehicles, traffic must be limited to existing or proposed roadways as far as possible.	Contractor Site Manager	
	The construction of roads must be limited in width and length as far as is practical to limit impacts.	EO Contractor	Construction
	Where an impact to the vegetation outside of the development footprint occurs, rehabilitation measures must be undertaken to maintain the baseline vegetation population and health.		
	Machinery must be regularly checked to ensure hydrocarbon leaks (including fuel and hydraulic fluids) are not occurring. Drip trays must be used where necessary. Fuels and oils must be stored within bunded areas.	Contractor/Operator	Construction Operation
	Sufficient on-site ablutions must be made available during site construction and decommissioning. If portable toilets can be installed for the construction phases, ensure that they in accordance with Occupational Health and Safety Act, (No 85 of 1993).	CHSO/CHSM Contractor	Construction Decommissioning

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion.	EO	Construction
	If an activity will mechanically disturb the soil below surface in any way, then any available topsoil should first be stripped from the entire surface to be disturbed and stockpiled for re-spreading during rehabilitation. During rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface.		
	Facilitate re-vegetation of denuded areas throughout the site	Site Manager	Operation
	Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion.	EO	Decommissioning
WATER MANAGEMENT			
<u>Impact Management Outcome:</u>			
<ul style="list-style-type: none"> — To implement measures to prevent the contamination and deterioration on surface and groundwater resources. — To prevent erosion. 			
<u>Indicator and Compliance Mechanism:</u>			
<ul style="list-style-type: none"> — Induction training and records. — WMP (to be developed). — Water Use Licence (or General Authorisation as applicable). — Incident classification and reporting management procedure (to be developed). — Environmental awareness programme/toolbox talks. — SWMP (to be developed). 			
Surface Water Management	Where the destruction of wetlands is unavoidable (i.e. at road crossings), disturbance must be minimised and suitably rehabilitated	Site Manager	Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	At areas where new road crossings have been designed, these roads should cross wetland or river features at the narrowest point and a 90-degree angle with suitable drainage designed into the relevant bridge/culvert crossing	EO	
	Environmental Compliance Officer (ECO) to be present during vegetation clearing to prevent unnecessary clearing of extensive areas not part of the direct footprint area	Site Manager EO ECO	
	Bare land surfaces must be vegetated to limit erosion from surface runoff associated with infrastructure areas. Revegetate disturbed areas immediately after construction	Site Manager EO	
	Stockpiles should be monitored to ensure no runoff, erosion and sedimentation into the adjacent areas, especially the wetlands and freshwater systems		
	A Storm Water Management Plan (SWMP) should be designed and implemented during the construction phase. This should consider wetlands associated with the new developments/infrastructure which should divert stormwater and runoff away from the surface infrastructure and back into natural watercourses to maintain catchment yield as far as possible.		
	All vehicle maintenance must occur within designated areas		
	All vehicles must be regularly inspected for leaks		
	All spills must be cleaned up immediately to prevent contaminants to enter the wetlands		
	Chemicals, such as paints and hydrocarbons, should be used in an environmentally safe manner with correct storage as per each chemical's specific storage descriptions and health and safety requirements		
	Re-fuelling and maintenance must take place on a sealed surface area away from wetlands to prevent the ingress of hydrocarbons into topsoil		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	The edge of the wetland and a 100m buffer or 1:100 flood line buffer should be demarcated in the field with wooden stakes painted white as no-go zones that will last for the duration of the construction phase.		
	Quarterly (four times a year) inspections by the site environmental officer to ensure no unnecessary impact to the freshwater resources present, and if so that a remedy is put in place as soon as possible	Site manager EO	Operation
	All stormwater infrastructure must be maintained		
	Decommissioning should occur in the dry season where possible to avoid high rainfall events that could lead to increased runoff, erosion, contamination and sedimentation of the wetlands	Site Manager EO	Decommissioning
	Stormwater must be diverted from decommissioning activities	ECO	
	All areas of increased ecological sensitivity outside of the project footprint should be designated as “No-Go” areas and be off-limits to all unauthorised vehicles and personnel		
	Actively landscape and re-vegetate disturbed areas as soon as possible to avoid loss of soil, organic material, and sedimentation into wetland areas; and		
	Implement and maintain a Wetland and Alien invasive management Plan for the duration of the decommissioning phase		
	No vehicles or heavy machinery should be allowed to drive indiscriminately within any wetland areas or their buffer areas. All vehicles must remain on demarcated roads; and		
	Wetland monitoring by suitably qualified specialist (See Wetland Monitoring Plan Section 7.16) must be carried out after the decommissioning phase to ensure the success of wetland rehabilitation.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
Groundwater Management	Areas with the potential to contaminate the groundwater must be underlain by hardstanding of suitable integrity.	Site Manager Contractor	Construction
	Acquire spill kits to clean up any hydrocarbon or chemical spills during construction, operation and closure to prevent seepage. All spillage incidents must be reported to the responsible site officer as soon as they occur.	EO	Construction Operation
	Oils, greases, diesel and other chemicals will be stored in the prescribed manner and within bunded areas to prevent groundwater contamination.		Construction
	Any cement mixing shall be completed on impervious hardstanding surfaces or batching boards to prevent spillage to the environment		
	Contain spillage, excavate and dispose of soil if required. Utilisation of spill kits and/or excavation of affected soil with subsequent disposal at an accredited disposal site is crucial.		
	Uncontrolled discharges from the construction camp/s should not be permitted.		
	All vehicles must be properly maintained and serviced so that no oil leaks occur on site.		
	Diesel fuel storage tanks should be above ground on an impermeable concreted surface in a bunded area in accordance to SANS 10131: Above-ground storage tanks for petroleum products.		
	The maintenance of all infrastructure must ensure that the quality of the groundwater that feeds sensitive receptors (groundwater abstractions and groundwater dependant terrestrial ecosystems) downstream from any infrastructure does not significantly change and the development does not act as a preferential pathway to groundwater flow.	Operator EO Specialists	Operation
	Identified boreholes should be subjected to pump tests overseen by a professional geohydrologist.		

ACTIVITY/ASPECT	<u>IMPACT MANAGEMENT ACTIONS/MEASURES</u>	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Boreholes should not be pumped more than its sustainable use allows as recommended by the geohydrologist.		
	Prevent groundwater pollution from brine seepages or spillages.		
	Contain brine in fit for use holding facilities and remove from site as frequently as possible.		
	Contain brine in fit-for-purpose facilities and prevent seepage, spills and groundwater contamination.		
	Pipes and tanks should be regularly inspected for leaks, leaks should be repaired upon detection.		
	All facilities constructed to contain brine should be constructed according to water balance so as not to allow overflow of the facilities.		
Potable Water Management	Onsite staff are to be provided with an appropriate potable water supply, safe and healthy sanitary facilities and protection against exposure to environmentally dangerous or unhealthy situations or conditions.	Contractor/Operator EO	Construction Operation
	Appropriate ablution facilities should be provided for construction workers during construction and on-site staff during the operation of the facility. These must be situated outside of any delineated watercourses and pans/depressions or the buffers shown.		
	Onsite staff must be made aware and encouraged to use water sparingly such that there is no water wastage.		
BIODIVERSITY MANAGEMENT			
<u>Impact Management Outcome:</u>			

ACTIVITY/ASPECT	<u>IMPACT MANAGEMENT ACTIONS/MEASURES</u>	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
<ul style="list-style-type: none"> — Prevent the unnecessary destruction of, and fragmentation, of the vegetation community. — Prevent the loss of the faunal community associated with these vegetation communities. 			
<p>Indicator and Compliance Mechanism:</p> <ul style="list-style-type: none"> — Induction training and records. — Incident classification and reporting management procedure (to be developed). — Environmental awareness programme/toolbox talks. — Adhere to bat sensitivity map criteria — Monitoring and audit reports. 			
Vegetation and Habitats Management	For any plants that are transplanted, annual monitoring should take place to assess survival. This should be undertaken as per the frequency specified in the management plan and be undertaken by a qualified botanist. The monitoring programme must be designed prior to translocation of plants and should include control sites (areas not disturbed by the project) to evaluate mortality relative to wild populations.	EO	Construction Operation Decommissioning
	Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, must under no circumstances be fragmented or disturbed further.	EO Contractor	Construction Operation Decommissioning
	Vegetation clearing should occur in a phased manner in accordance with the construction programme to minimise erosion and/or run-off. Large tracts of bare soil will either cause dust pollution or quickly erode and then cause sedimentation in the lower portions of the catchment. Suitable dust and erosion control mitigation measures should be put in place to mitigate these impacts.		
	Monitor surfaces for erosion, repair and/or upgrade, where necessary.		
	The final layout must be approved prior to construction commencing, and construction activities must adhere to all specialist measures and sensitivities prescribed in the Biodiversity Assessment of the EIAR.	Project Manager Contractor EO	Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species	Project Manager Contractor EO	Construction Operation
	Areas that are denuded during construction need to be re-vegetated to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species	Contractor EO ECO	Post-Construction
	All disturbed areas outside the direct footprint to be rehabilitated and landscaped after the development is complete. Rehabilitation of the disturbed areas existing in the project area must be made a priority. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are endemic to this vegetation type. Progressive rehabilitation of construction areas or cleared areas will enable topsoil to be returned more rapidly, thus ensuring more recruitment from the existing seedbank		
	All construction/operational access must make use of the existing roads where possible	Contractor/Operator EO	Construction Operation
	No materials may be stored for extended periods of time and must be removed from the project area once the construction/closure phase has been concluded. No storage of vehicles or equipment will be allowed outside of the designated project areas.	Contractor EO	Construction
	It must be made an offence for any staff to take bring any plant species into/out of any portion of the project area. No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.	EO Contractor	Construction Operation
	A fire management plan needs to be compiled and implemented to restrict the impact fire might have on the rehabilitated areas.	ECO EO Contractor	Construction Operation

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	All alien plant re-growth must be monitored and should these alien plants reoccur, these plants should be re-eradicated.	EO Project Manager Contractor/Operator	Construction Operation Decommissioning
	A pest control plan must be put in place and implemented	EO	
Fauna Management	A qualified environmental control officer must be on site when construction begins. The area must be walked through prior to construction to ensure no faunal species remain in the habitat and get killed. Should animals not move out of the area on their own relevant specialists must be contacted to advise on how the species can be relocated.	ECO EO Contractor	Construction
	A trained expert should be available for consultation should snakes be encountered. Snakes need to be relocated by a trained snake handler.		Construction
	The areas to be developed must be specifically demarcated to prevent movement of staff or any individual into highly sensitive areas and the surrounding environments, i.e the wetlands. Signs must be put up to enforce this		Construction Operation
	No trapping, killing, or poisoning of any wildlife is to be allowed. Signs must be put up to enforce this.	EO Contractor	Construction Operation
	No driving of vehicles off-road outside of construction areas.	ECO EO Contractor	Construction Operation Decommissioning
	Personnel on site should undergo environmental induction training, including the need to abide by speed limits, the increased risk of collisions with wild animals on roads in rural areas.	ECO EO	Construction Operation

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
		Contractor	Decommissioning
	Personnel to be educated about protection status of species, including distinguishing features, to be able to identify protected species.	EO Contractor	Construction Operation Decommissioning
	The duration of the construction <u>must</u> be minimized to as short term as possible, to reduce the period of disturbance on fauna	Project Manager EO Contractor	Construction
	Adhere to the consolidated Sensitivity map (Avifauna, Bats, Biodiversity) boundaries shown in Figure 1-9 .	Project Manager EO Contractor/Operator	Construction Operation
	Rehabilitate cleared vegetation where possible at areas such as laydown yards	Project Manager EO Contractor/Operator	Construction Operation
	All lights on substation and/or Operations and Management (O&M) buildings, should be down-hooded and connected to motion sensors (where safe to do so), to minimise light pollution.	Project Manager EO Contractor/Operator	Construction Operation
	Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species	EO Contractor	Construction Operation Decommissioning

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Any holes/excavations need to be sealed to ensure that no fauna species can fall in.	EO Contractor	Construction
	Proper waste management must be implemented, ensuring no toxic or dangerous substances are accessible to wildlife. This should also apply to stockpiles of new and used materials to ensure that they do not become a hazard.	EO Contractor	Construction Operation Decommissioning
AVIFAUNA MANAGEMENT			
<u>Impact Management Outcome:</u>			
— To minimise impacts to avifauna and their habitat.			
Indicator and Compliance Mechanism:			
— Induction training and records.			
— Incident classification and reporting management procedure (to be developed).			
— Environmental awareness programme/toolbox talks.			
— Monitoring and audit reports.			
Avifauna and Habitat Management	Areas of already fragmented indigenous vegetation, even secondary communities outside of the direct project footprint, must under no circumstances be fragmented or disturbed further. Clearing of vegetation must be minimized and avoided where possible.	EO Contractor	Construction Operation Decommissioning
	Where possible, existing access routes and walking paths must be made use of.		
	Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood and wind events. This will also reduce the likelihood of encroachment by alien invasive plant species.	EO Contractor	Post Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Any woody material removed can be shredded and used in conjunction with the topsoil to augment soil moisture and prevent further erosion.		
	Rehabilitation of the disturbed areas existing in the project area must be made a priority. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are endemic to this vegetation type.	EO Contractor ECO	Post Construction Operation
	Erosion control and alien invasive management plan must be compiled.	EO Contractor	Construction Operation Decommissioning
	No off-road driving should be permitted in undisturbed areas	Site Manager	Construction
	Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species	EO	Operation Decommissioning
	Strict application of all recommendations in the terrestrial biodiversity specialist report pertaining to the limitation of the footprint.		
	The areas to be developed must be specifically demarcated to prevent movement of staff or any individual into the surrounding environments. Signs must be put up to enforce this.	EO Contractor	Construction Operation
	All personnel must undergo environmental induction with regards to avifauna and in particular awareness about not harming, collecting, or hunting terrestrial species (e.g., guineafowl and francolin), and owls, which are often persecuted out of superstition. Signs must be put up to enforce this.		
	The duration of the construction must be minimized to as short term as possible, to reduce the period of disturbance on avifauna.	Project Manager EO	Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
		Contractor	
	Schedule or limit (where feasible) activities and operations during least sensitive periods, to avoid migration, nesting and breeding seasons (June – August).	Project Manager EO ECO Contractor	Construction Operation
	All areas to be developed must be walked through prior to any activity to ensure no nests or avifauna species are found in the area. Should any Species of Conservation Concern (SCC) be found and not move out of the area or their nest be found in the area a suitably qualified specialist must be consulted to advise on the correct actions to be taken.	Project Manager EO ECO	Construction Operation Decommissioning
	Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species. Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum Measures to control noise and dust should be applied according to current best practice in the industry.	Project Manager EO Contractor	Construction
	Infrastructure must be consolidated where possible in order to minimise the amount of ground and air space used.		
	Limit construction of infrastructure in high sensitivity grassland as much as possible.		
	As far as possible power cables within the project area must be thoroughly insulated and preferably buried.		
Collision Management - Powerlines	Bird Flight Diverters must be fitted to the entire OHL according to the applicable Eskom Engineering Instruction (Eskom Unique Identifier 240 – 93563150: The utilisation of Bird Flight Diverters on Eskom Overhead Lines). These devices must be installed as soon as the conductors and earth wires are strung.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	<p>If a steel monopole pole design is used, the approved vulture friendly pole/tower design D-DT-7649 in accordance with the Eskom Distribution Technical Bulletin titled Refurbishment of 66/88kV line kite type frames with D-DT-7649 type top configuration – Reference Number 240-170000467 relating to bird friendly structures, must be used.</p>		
	<p>If lattice type structures are used, it is imperative that a minimum vertical clearance of 1.8m is maintained between the jumper cables and/or insulator live ends, and the horizontal earthed components. Additional mitigation in the form of insulating sleeves on jumper cables present on strain poles and terminal poles is also recommended (if suitable insulation material is readily available), alternatively all jumper cables must be suspended below the crossarms.</p>		
AIR QUALITY MANAGEMENT			
<p><u>Impact Management Outcome:</u></p> <ul style="list-style-type: none"> — To ensure that impacts to air quality of the surrounding environment are minimised. 			
<p><u>Indicator and Compliance Mechanism:</u></p> <ul style="list-style-type: none"> — Complaints register. — Incident reporting system. — Health, safety, environmental and community incident and complaints management system register. — Incident classification and reporting management procedure (to be developed). — Equipment, machinery and vehicle maintenance. 			
Dust Management	<p>Before the commencement of any site works and during the operation, as much vegetation as possible must be retained, including patches and strips to minimise dust.</p>	EO Contractor	Construction Operation
	<p>Activities with high dust-causing potential, such as grading and moving of soil, must not be carried out in sensitive areas during adverse wind conditions.</p>		Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	All stockpiles (if any) must be restricted to designated areas and may not exceed a height of two (2) metres;		
	<p>Earth-moving works have the potential to generate large amounts of dust. Pre-planning of earth-moving works can reduce dust emissions by limiting the time the site is exposed. Options for dust control can include the following, where possible:</p> <ul style="list-style-type: none"> — Plan earth-moving works so that they are completed just prior to the time they are needed — Observe weather conditions and do not commence or continue earth moving works if conditions are unsuitable e.g., under conditions of strong winds — Reduce off-site hauling via balanced cut and fill operations — Pre-water areas to be disturbed 		
	Cover and/or maintain appropriate freeboard on trucks hauling any loose material that could produce dust when travelling. Minimise transfer points.		
	Re-vegetate disturbed areas as soon as possible to prevent excessive dust from occurring.		
	Once construction is complete, initiate rehabilitation (e.g. re-vegetation) procedures to reduce wind speed across exposed surfaces.		
	Dampen exposed soil to suppress dust if required. Use watering sprays on materials to be loaded and during loading.		
	Where possible, minimise speed limits, vehicle weights and the number of vehicles using unpaved roads.		
Volatile Organic Compounds and Other Emissions Management	All equipment, machinery and vehicles must be fitted with appropriate emission control equipment, are maintained frequently and serviced to the manufacturers' specifications.	EO Contractor / Operator	Construction Operation Decommissioning
	Ensure incident and complaint registers are established and maintained		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Prohibit burning of waste or vegetation onsite.		
	Maintain appropriate operational controls (e.g. appropriate temperature and pressure settings for storage vessels and loading gantries).	EO ECO Contractor / Operator	Construction Operation
	Conduct regular equipment inspections for visible/audible/odorous leaks.	EO Contractor / Operator	Construction Operation
	Conduct regular checks and periodic replacement of components including pump seals, compressor seals, pipeline valves, open-ended valves, flanges, and other connections (as applicable) in line with manufacturer specifications.		
	Conduct training of the workforce at all levels (i.e. workers, foremen, managers) in awareness of air emissions. This can be included in site induction courses and should focus on promoting understanding as to why operational controls are in place and should be adhered to.		
	Undertake passive monitoring of NH ₃ along the facility's fence line and at proximate receptors. A monthly monitoring frequency for a period of 12-months is recommended to provide sufficient data for follow up quantitative assessment of impacts.	EO Operator	Operation
NOISE MANAGEMENT			
<p><u>Impact Management Outcome:</u></p> <p>To ensure that noise impacts to the surrounding environment are minimal or mitigated.</p>			
<p><u>Indicator and Compliance Mechanism:</u></p> <ul style="list-style-type: none"> — Complaints register. — Incident reporting system. — Health, safety, environmental and community incident and complaints management system register. 			

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
<ul style="list-style-type: none"> — Incident classification and reporting management procedure (to be developed). — Equipment, machinery and vehicle maintenance. 			
Noise	Fit equipment, machinery and vehicles generating excessive noise with appropriate noise abatement measures and undergo regular maintenance to ensure optimum efficiency during operation	EO Contractor/Operator	Construction Operation
	Provide a complaints register to report any excessive noise incidents. Manage all complaints as per the Incident Classification and Reporting Management Procedure		
	Regular maintenance of equipment to reduce the generation of additional unwanted noise		
	Avoid noisy activities at night-time and outside of normal weekend working hours where possible.		
	Due to rural nature of site, construction is unlikely to continue at after sunset, however if required to work afterhours, notices should be put up informing the public accordingly.		
	Employees / contractors are to be provided with appropriate hearing protection when undertaking noisy activities.	EO Contractor/Operator	Construction Operation
	Health risk assessment to determine if equipment continuous noise exceeds 85dB at workstation and 61dB at boundary of the site		
	Employees to be provided with hearing protection if working near equipment that exceeds the noise limits.		
	Information regarding construction activities should be provided to identified and nearby receptors likely to be affected. Such information includes: <ul style="list-style-type: none"> — Proposed working times. 	Site manager EO Contractor	Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	<ul style="list-style-type: none"> — Anticipated duration of activities. — Explanations on activities to take place and reasons for activities. — Contact details of a responsible person on site should complaints arise. 		
	Improving the acoustic performance of constructed buildings through the application of sound insulation.	Site manager EO	Operation
	Installing acoustic screens alongside noisy equipment if required	Operator	
	Installing acoustic barriers without gaps and with a continuous minimum surface density of 10 kg/m ² in order to minimize the transmission of sound through the barrier. Barriers should be located as close to the source or to the receptor location to be effective. (if required)		
	Improving the acoustic performance of constructed buildings through the application of sound insulation.		
SITES OF CULTURAL OR HERITAGE SIGNIFICANCE			
<u>Impact Management Outcome:</u> <ul style="list-style-type: none"> — To ensure that sites/artefacts of heritage value are identified and protected. 			
<u>Indicator and Compliance Mechanism:</u> <ul style="list-style-type: none"> — Health, safety, environmental and community incident and complaints management system register. — Incident classification and reporting management procedure (to be developed). — Monitoring and audit reports. 			
Cultural and/or Heritage Site and Palaeontological Material	Operating controls and monitoring should be aimed at the possible unearthing of such features. Care should therefore be taken when development commences that if any of these are discovered, a qualified archaeologist be called in to investigate the occurrence.	Site Manager EO	Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.	Contractor	
	The senior on-site Manager will inform the ECO of the chance find and its immediate impact on construction activities. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA.		
	A palaeontologist should be involved during the digging and excavation (ground breaking) phase of the development. A site visit is recommended after drilling and excavations and the keeping of a photographic record. A regular monitoring presence over the period during which excavations are made, by a palaeontologist, is generally not practical, but can be done during ground breaking.	Project Manager EO ECO Contractor	Construction
	<p>Protocol for Chance Finds:</p> <p>Upon finding any archaeological or historical material all work at the affected area must cease. The area must be demarcated in order to prevent any further work there until an investigation has been completed. An archaeologist must be contacted immediately to provide advice on the matter. Should it be a minor issue, the archaeologist will decide on future action, which could include adapting the HIA or not. Depending on the nature of the find, it may include a site visit. SAHRA's Archaeology Palaeontology and Meteoritis Unit must also be notified. If needed, the necessary permit will be applied for with SAHRA. This will be done in conjunction with the appointed archaeologist. The removal of such archaeological material will be done by the archaeologist in lieu of the approval given by SAHRA, including any conditions stipulated by the latter. Work on site will only continue after removal of the archaeological/ historical material was done.</p>	Project Manager EO/ECO Contractor	Construction
	If any evidence of archaeological sites or remains (e.g., remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments and charcoal/ash concentrations) or palaeontological remains are found during the proposed activities, SAHRA must be alerted immediately, and a professional archaeologist or palaeontologist, based on the nature of the finds, must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of significance a Phase 2 rescue operation might be necessary.	Project Manager EO/ECO Contractor	Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	If any unmarked human burials are uncovered and the archaeologist called in to inspect the finds and/or the police find them to be heritage graves, mitigation may be necessary and the SAHRA Burial Grounds and Graves (BGG) Unit must be contacted for processes to follow.	Project Manager EO Contractor	Construction Operation
	If any palaeontological material is exposed during digging, excavating, drilling or blasting, SAHRA must be notified. All development activities must be stopped, a 30 m no-go barrier constructed and the construction workers must be informed that this is a no-go area. A palaeontologist should be called in to determine proper mitigation measures, especially for shallow caves.	Project Manager EO ECO Contractor	Construction
	If fossils are found, they must be placed in a safe area for further investigation	Project Manager EO Contractor	Construction
VISUAL IMPACT MANAGEMENT			
<u>Impact Management Outcome:</u>			
— To ensure that the changes to the landscape character of the area are mitigated to minimise the negative impact.			
<u>Indicator and Compliance Mechanism:</u>			
<ul style="list-style-type: none"> — Health, safety, environmental and community incident and complaints management system register. — Incident classification and reporting management procedure (to be developed). — Monitoring and audit reports. 			
Visual	Maintain a neat construction site by removing litter, rubble and waste materials regularly.	EO Project Manager	Construction Operation
	Restrict vegetation clearance on the site to that which is required for the correct operation of the facility.	Contractor	

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	As far as possible, limit the number of vehicles which are allowed to access the site.		
	Ensure that dust suppression techniques are implemented on all gravel access roads.	EO Contractor	Construction Decommissioning
	As far as possible, limit the amount of security and operational lighting present on site.	EO ECO	Operational
	Light fittings for security at night should reflect the light toward the ground and prevent light spill.	EO Contractor	Construction Operation
	Lighting fixtures should make use of minimum lumen or wattage whilst adhering to safety and security requirements.	Operator	Decommissioning
	Mounting heights of lighting fixtures should be limited, or alternatively foot-light or bollard level lights should be used		
	If economically and technically feasible, make use of motion detectors on security lighting.		
	The buildings should not be illuminated at night and should be painted in natural tones that fit with the surrounding environment.		
	Non-reflective surfaces should be used where possible.		
	Construct temporary screens south of the construction site to shield construction activities from observers at the four houses south of the facility.	EO Project Manager Contractor	Construction

ACTIVITY/ASPECT	<u>IMPACT MANAGEMENT ACTIONS/MEASURES</u>	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Reduce the construction phase through careful logistical planning and productive implementation of resources.	EO Project Manager Contractor	
	Restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting.	EO Contractor	
	If feasible, plant and maintain dense perennial vegetation along the boundary of the facility in order to shield the operational plant from observers at the nearby farmhouse houses.	Project Manager EO	Operation
	Maintain the general appearance of the facility as a whole, including the servitudes and the ancillary structures.	Operator	
	Monitor rehabilitated areas and implement remedial action as and when required.		
	Investigate and implement (should it be required) the potential to screen visual impacts at affected receptor sites.		
	Remove infrastructure not required for the post-decommissioning use of the site.	EO Contractor	Decommissioning
	Monitor rehabilitated areas quarterly for at least a year following decommissioning and implement remedial action as and when required.	Project Manager EO	Post-decommissioning

ACTIVITY/ASPECT IMPACT MANAGEMENT ACTIONS/MEASURES RESPONSIBLE PERSON PRIORITY TIMEFRAME

HEALTH AND SAFETY			
<u>Impact Management Outcome:</u>			
<ul style="list-style-type: none"> — To ensure communication with members of the public to promote safety awareness. — To prevent public access to construction sites and storage areas. — To ensure safety for all onsite personnel. 			
<u>Indicator and Compliance Mechanisms:</u>			
<ul style="list-style-type: none"> — Induction training and records. — Health, safety, environmental and community incident and complaints management system register. — Monitoring and audit reports. — Incident classification and reporting management procedure (to be developed). — PPE Register. — Occupational health and safety plan (to be developed). — Health and safety protocol (to be developed). — MHI (to be developed) 			
Health and Safety	The construction phase will be managed according to all the requirements of the Occupational Health and Safety Act 85 of 1993 specifically the Construction Regulations.	Site Manager Contractor	Construction Operation
	All onsite personnel are required to undergo induction training and regular toolbox talks in order to raise awareness of the conditions contained herein.	CHSO/CHSM	
	Development and implementation of an occupational health and safety plan and SHERQ policy	Contractor/Operator Site Manager	Construction Operation
	The appointed contractor will be responsible for the development of a comprehensive health and safety protocol which must be adhered to.	Contractor	Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Emergency response plan to be in place prior to beginning construction and to include aspects such as appointment of emergency controller, provision of first aid, first responder contact numbers.		
	Provide and wear appropriate PPE onsite.	Contractor/Operator Site Manager	Construction Operation
	All normal procedures for working at heights, hot work permits, confined space entry, cordon off excavations etc to be in place before construction begins	Contractor/Operator Site Manager	Construction Operation
	All necessary good hygiene practices to be in place, e.g. provision of toilets, eating areas, infectious disease controls. Policies and practice for dealing with known vectors of disease such as Aids, TB, COVID 19 and others. Prior to construction determine the dangerous species in the area and what responses are needed to bites/exposure/attacks.	Site Manager Contractor EO	Construction Operation
	Train all onsite personnel handling chemical or hazardous substances in the use of such substances and the environmental, health and safety consequences of incidents.		
	Outside work must be stopped during severe thunderstorms. Lighting conductors may be required for the final installation, to be confirmed during design phase.		
Facility emergencies	Emergency response plan for full operation and maintenance phase to be in place prior to beginning commissioning and to include aspects such as: <ul style="list-style-type: none"> — appointment of emergency controller, — emergency isolation systems for electricity, — emergency isolation and containment systems for electrolyte, — provision of PPE for hazardous materials response, 	Operator	Operation

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	<ul style="list-style-type: none"> — provision of emergency facilities for staff at the main office building, — provision of first aid facilities, — first responder contact numbers etc 		
	A detailed risk assessment of all normal operating and maintenance activities on site to be compiled, and form the basis of operating instructions, prior to commencing commissioning.	Operator	Operation
	Material Safety Data Sheets (MSDSs) must be made available for all chemicals and substances on site	Site Manager Contractor Operator EO	Construction Operation
Fire risk	Grass cutting and fire breaks around the battery installations to prevent veld fires.	Site Manager	Construction
	No combustible materials to be stored in or near the main chemical infrastructure especially hydrogen system.	Contractor Operator EO	Operation
	Separation of site diesel tank, transformers from hydrogen / ammonia and vice versa.		
	Ensure regular testing of emergency alarm systems are undertaken.		
Public Safety	Restrict public access by employing full time security for the site.	Project Manager	Construction
		EO	Operation
Decommissioning of facility	End of Life shutdown procedure including a risk assessment of the specific activities involved.	Operator EO	Decommissioning
	Re-purpose the equipment with associated Environmental impact considered.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Disposal according to local regulations and other international directives.		
	Operator should seek the opinion from a waste consultant on how to correctly dispose of hazardous waste.		
SOCIO-ECONOMIC ENVIRONMENT			
<u>Impact Management Outcome:</u>			
<ul style="list-style-type: none"> — To ensure that the negative socio-economic impacts are mitigated and managed. — To ensure that the positive socio-economic impacts are enhanced. 			
<u>Indicator and Compliance Mechanisms:</u>			
<ul style="list-style-type: none"> — Induction training and records. — Health, safety, environmental and community incident and complaints management system register. — Monitoring and audit reports. — Incident classification and reporting management procedure (to be developed). — PPE Register. — Occupational health and safety plan (to be developed). — Health and safety protocol (to be developed). — Employment records and community engagement local enterprise development records. 			
Socio-economic	Facilitate a broader skills development programme as part of socio-economic development commitments.	Project Manager	Construction
	Recruit local labour as far as feasible to increase the benefits to the local households.	Contractor	Decommissioning
	Employ labour intensive methods in construction where feasible.		
	Sub-contract to local construction companies where possible.		

ACTIVITY/ASPECT	<u>IMPACT MANAGEMENT ACTIONS/MEASURES</u>	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Natural areas that are not affected by the footprint should remain as such.		
	Efforts should also be made to avoid disturbing such sites during construction.	Project Manager	
	Ensure that the farm owners are aware of construction activities that will take place on their premisses.	Contractor ECO EO	
	Employ locals as far as feasible through the creation of a local skills database.		
	Assign a dedicated person to deal with complaints and concerns of affected parties.		
	Provide adequate signage along the access roads to warn motorists of the construction activities taking place on the site.	Project Manager Contractor	
	Ensure that any damages or losses to nearby affected farms that can be linked to the conduct of construction workers are adequately reimbursed.		
	Where feasible, assist the municipality in ensuring that the quality of the local social and economic infrastructure does not deteriorate through the use of social responsibility allocations.		
	The operator of the green hydrogen facility should be encouraged to, as far as possible, procure materials, goods and products required for the operation and maintenance of the facility from local suppliers to increase the positive impact in the local economy.	Project Manager Operator	Operation
	Where possible, local labour should be considered for employment so as to increase the positive impact on the local economy.		
	The operator should consider establishing vocational training programmes for the local labour force to promote the development of skills required by the green hydrogen facility and thus		

ACTIVITY/ASPECT	<u>IMPACT MANAGEMENT ACTIONS/MEASURES</u>	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	provide for the opportunities for these people to be employed in other similar facilities elsewhere in the future.		
	Where possible, the local labour supply should be considered for employment opportunities to increase the positive impact on the area's economy.		
	When identifying enterprise development initiatives, the focus should be on creating sustainable and self-sufficient enterprises.		
	In devising the programmes to be implemented, the developer should take into account the local Integrated Development Plans.		
	Natural areas that are not affected by the footprint should remain as such.		
	Efforts should also be made to avoid disturbing such sites during operations.		
	Ensure that the farm owners get the revenue from rent paid		
TRAFFIC MANAGEMENT			
<p><u>Impact Management Outcome:</u></p> <ul style="list-style-type: none"> — To ensure that the traffic impacts of the project are mitigated and managed. 			
<p><u>Indicator and Compliance Mechanisms:</u></p> <ul style="list-style-type: none"> — Induction training and records. — Health, safety, environmental and community incident and complaints management system register. — Monitoring and audit reports. — Incident classification and reporting management procedure (to be developed). — Occupational health and safety plan (to be developed). 			

ACTIVITY/ASPECT	<u>IMPACT MANAGEMENT ACTIONS/MEASURES</u>	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
<ul style="list-style-type: none"> — Health and safety protocol (to be developed). — Traffic and transportation management plan 			
Traffic Management	Where permission from the relevant roads authority are obtained, ensure signage is implemented	Project Manager Contractor	Construction Operation
	All drivers must adhere to all speed limits applicable to the roads used.	Operator	Construction Decommissioning
	All unsurfaced roads must be regularly sprayed with water to prevent dust generation	Project Manager	Construction
	All vehicles that travel on-site must not be overloaded, and abnormal vehicles must comply to relevant legislation for overweight loads, to ensure lowest possible road surface damage.	Contractor	Decommissioning
	All vehicles that travel on-site must be roadworthy to ensure noise and emissions levels comply to national vehicle standards, thereby minimising noise/exhaust pollution		
BAT MANAGEMENT			
<p><u>Impact Management Outcome:</u></p> <p>To ensure that the impacts from the construction and operation of the facility on Bats are mitigated and managed.</p>			
<p><u>Indicator and Compliance Mechanisms:</u></p> <ul style="list-style-type: none"> — Induction training and records. — Incident classification and reporting management procedure (to be developed). — Environmental awareness programme/toolbox talks. — Monitoring and audit reports. 			

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
Bat management	Adhere to the sensitivity map criteria. Rehabilitate cleared vegetation where possible at areas such as laydown yards and choose location alternatives that don't intrude into high bat sensitivities.	Project Manager Contractor Operator EO	Construction
	Bi-annual visits to the facility at night must be conducted for the operational lifetime of the facility by operational staff of the facility, to assess the lighting setup and whether the passive motion sensors are functioning correctly.	Project Manager Contractor Operator	Operation
	The bat specialist conducting the operational bat mortality monitoring of the proposed Hendrina North & South WEF's must conduct at least one visit to site during night-time to assess the placement and setup of outside lights on the facility. When lights are replaced and maintenance on lights is conducted, this Mitigation Action Plan must be consulted.		
	The storm water drainage plan must avoid creating artificial wetlands and open water sources near turbines of the proposed Hendrina North & South WEF's (closer than 300m from any turbine base), as this will increase insect and bat activity around turbines of these WEF's.		

7 MANAGEMENT PLANS

A number of generic management plans have been included in the EMPr as a guideline to Constructors to develop site specific management plans and method statements. The plans included below provide an indication of the requirements that must be followed on the proposed construction and operation of the GH&A facility.

The following specific plans have been compiled:

- Waste Management Plan;
- Alien Invasive Plant Management Plan;
- Plant Rescue and Protection Plan;
- Re-vegetation and Habitat Rehabilitation Plan;
- Fire Management Plan;
- Emergency Response Plan (ERP);
- Stormwater Management Plan;
- Erosion Management Plan; and
- Traffic and Transport Management Plan.
- Fauna Management Plan
- Avifaunal Management Plan
- Soil Management Plan
- Closure and Decommissioning management plan
- Hazardous Substance Management Plan
- Heritage and Palaeontological Management Plan/Chance find Procedure
- HIV/AIDS Management Plan
- Wetland Management Plan
- Grievance Mechanism
- Covid-19 Management

7.1 WASTE MANAGEMENT PLAN

7.1.1 WASTE HIERARCHY

A waste is any solid, liquid or contained gaseous material that is being discarded by, disposal, recycling, burning or incineration. Waste management options for a particular waste need to be considered according to the Waste Management Hierarchy (**Figure 7-1**) which reflects the relative sustainability of each of the options. One of the key principles underlying the waste management hierarchy is to ensure that waste is dealt with as high up the waste hierarchy as possible. Since all waste disposal options have some impact on the environment, the only way to avoid impact is not to produce waste in the first place, and waste reduction is therefore at the top of the hierarchy. Re-use, followed by recovery techniques (recycling, composting and generating energy from waste) follow, while disposal to landfill or by incineration (the worst options) are at the bottom of the hierarchy.

In deciding on the most appropriate disposal route, both environmental and economic costs and benefits need to be considered. This decision must be reached taking into account all the costs and impacts associated with waste disposal, including those associated with the movement of waste.

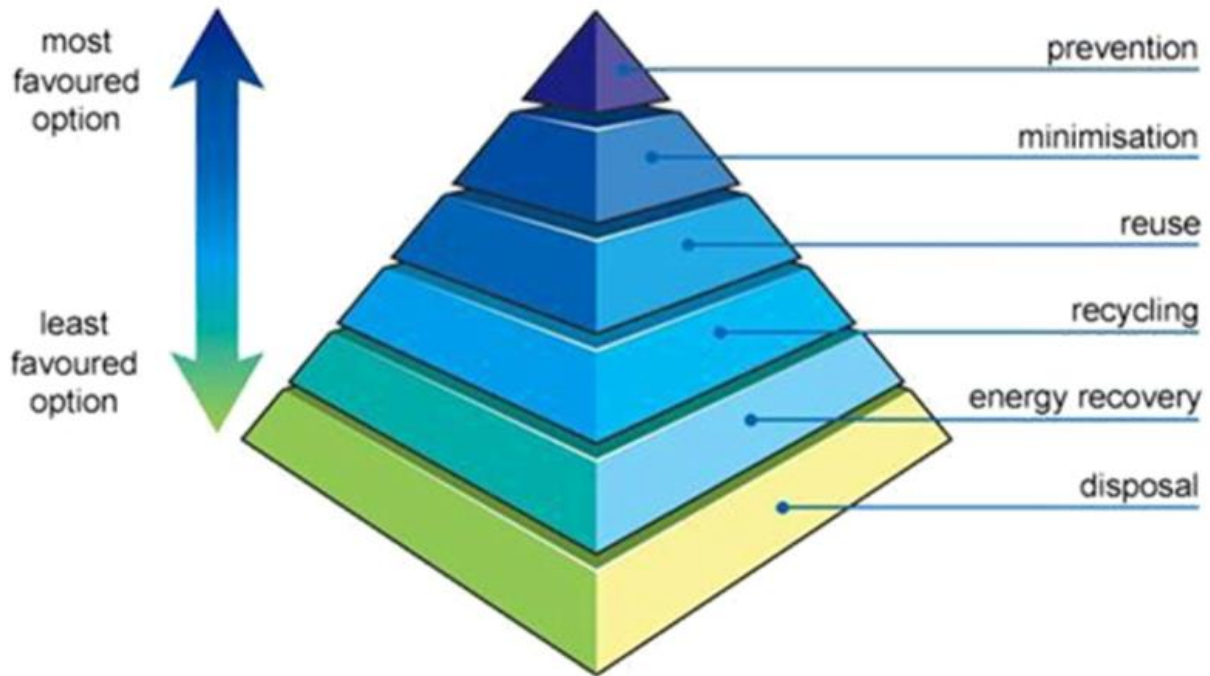


Figure 7-1: Waste Hierarchy

7.1.2 PROJECT STAGES

The purpose of this section is to assess the construction, operational processes of the proposed GH&A Facility in order to identify short comings, like raw materials procurement, infrastructure, employee training, health and safety, transportation, storage, compliance with legislative requirements, emergency preparedness and waste streams arising from an operation and its related activities, as well as the current waste management practices per waste stream. The assessment serves as the baseline against which any problem areas or gaps in waste management practises, process technology and environmental authorisations are identified and against which future performance objectives, activities and targets can be set.

The project stages are described below with the waste generation and management methods described in the corresponding tables below them including:

- Details on how waste will be managed during the construction and operational phases taking into consideration the waste management hierarchy;
- Details of the procedure for the separation of non-recyclable and recyclable waste;
- Details of the management of non-recyclable waste i.e. how waste will be stored on site during construction and operational phases, including the frequency for the removal of waste from the site and an indication of the landfill site where it will be disposed;
- Details for the management of recyclable waste e.g. the type of waste materials that will be recycled on site and the details pertaining to the offloading, sorting, handling, storage and collection procedures for the waste types (e.g. compaction and bailing, breaking of glass etc.); and
- The frequency for the removal of waste from the proposed development to where it will be finally managed must be included.

Waste Management at the project site will be undertaken in line with the EMPr to consider the correct disposal of general and hazardous waste generated on the project. **Table 7-1** describes the different waste products that the proposed project will produce, as well as the various options to dispose of them. Waste will mainly be generated during the construction phase. During operation, contractors are only on the site for limited amount of time as and when maintenance is required.

Table 7-1: Waste Management Options

WASTE	TYPE OF WASTE	MANAGEMENT OPTIONS
Hydrocarbons (Contaminated soil)	Hazardous	Fuel and oil spillages can be a source of contamination of water sources and the soil. Management options include: <ul style="list-style-type: none"> — Using spill kits to clean any spillages; — Ensure storage facilities are maintained and meet industry regulations; — Transportation and storage of fuel must be regulated and correctly managed according to the EMP;Pr; — All hazardous waste is to be disposed of at a registered hazardous landfill (safe disposal certificates must be obtained).
Contaminated Personal Protective Equipment (PPE)	Hazardous	PPE can be contaminated during handling of hydrocarbons. Management options include: <ul style="list-style-type: none"> — Store contaminated PPE in hazardous waste skips along the servitude; — Ensure contaminated PPE is disposed of at a registered hazardous landfill (safe disposal certificates must be obtained).
General waste	General	General waste (inorganic matter) can be disposed of as per normal and form part of the municipal waste management system. Management options include: <ul style="list-style-type: none"> — Ensure waste is stored securely in refuse bins; —
Food waste	General	Food waste is generated as site personnel take their meals on the construction site. Management options include: <ul style="list-style-type: none"> — Store any waste and packaging into a labelled food waste bin; — Co-ordinate waste removal with the general removal of waste.

7.2 ALIEN INVASIVE PLANT MANAGEMENT PLAN

The purpose of this Plan is to provide a framework for the management of alien and invasive plant species during the construction and operation of the project, which in turn serves to manage open spaces, as required. The broad objectives of the plan include the following:

- Ensure alien plants do not become dominant in the areas that are affected by the construction and operation activities through the control and management of alien and invasive species presence, dispersal and encroachment.
- Managing and maintaining the ecosystem in a near-natural state and restoring and/or rehabilitating the ecosystems to such a state.
- Develop and implement a monitoring and eradication programme for alien and invasive species.
- Promote the natural re-establishment and planting of indigenous species in order to retard erosion and alien plant invasion.

Mitigation and management measures include, but are not limited to the following:

- Monitor for early detection, to find species when they first appear on site. This should be as per the frequency specified in the management plan, and should be conducted by an experienced botanist. Early detection should provide a list of species and locations where they have been detected. Summer (vegetation maximum growth period) is usually the most appropriate time, but monitoring can be adaptable, depending on local conditions – this must be specified in the management plan.
- Monitor for the effect of management actions on target species, which provides information on the effectiveness of management actions. Such monitoring depends on the management actions taking place. It should take place after each management action.

- Monitor for the effect of management actions on non-target species and habitats.
- Stockpiles must be kept clear of weeds and alien vegetation growth by regular weeding.
- Alien vegetation and the spread of exotic species on the site will need to be controlled.
- The contractor must be responsible for implementing a programme of weed control (particularly in areas where soil has been disturbed); and grassing of any remaining stockpiles to prevent weed invasion.
- Herbicide use shall only be allowed according to contract specifications. The application shall be according to set specifications and under supervision of a qualified technician. The possibility of leaching into the surrounding environment shall be properly investigated and only environmentally friendly herbicides shall be used.
- Six monthly checks of the areas disturbed by construction activities must take place for the emergence of invader species.
- Correct rehabilitation with locally indigenous species.
- Monitoring programme to ensure that rehabilitation efforts are successful to ensure that risks such as erosion, spread of exotic species and the edge effect are avoided.
- Constant maintenance of the area to ensure re-colonisation of floral species.
- Ensure regular removal of alien species which may otherwise jeopardise the proliferation of indigenous species.

7.3 PLANT RESCUE AND PROTECTION PLAN

The purpose of the plant rescue and protection plan is to implement avoidance and mitigation measures, in addition to the mitigation measures included in the EMP to reduce the impact of the development of the project on listed and protected plant species and their habitats, and to provide guidance on search and rescue of species of conservation concern.

Mitigation and management measures include, but are not limited to the following:

- The location of all transplanted rescued plants must be recorded, along with the identity of the plant.
- The health / vigour of each transplanted individual should be monitored as per the frequency and duration specified in the management plan.
- As a scientific control, an equal number of non-transplanted individuals of the same species, within similar habitats, should be monitored in the same way as the transplanted specimens. This will provide comparative data on the survival of wild populations relative to transplanted plants.
- If populations of threatened plant species are found to occur on site, annual monitoring of population health should take place. This should be appropriate to the species concerned.
- Vegetation clearing must only commence after a walk down has been conducted by a suitably qualified person and the necessary permits obtained.
- Vegetation clearing to be kept to a minimum. No unnecessary vegetation to be cleared.
- Vegetation removal must be limited to the construction site and must be removed only as it becomes necessary rather than removing all the vegetation throughout the site at once.
- Materials must not be delivered to the site prematurely which could result in additional areas being cleared or affected.
- No vegetation to be used for firewood.
- Gathering of firewood, fruit, medicinal plants, or any other natural material onsite or in areas adjacent to the site is prohibited unless with prior approval of the ECO.
- Construction site office and laydown areas must be clearly demarcated and no encroachment must occur beyond demarcated areas.
- All natural areas impacted during construction must be rehabilitated with locally indigenous plant species or grassed accordingly.
- Herbicide use shall only be allowed according to contract specifications. The application shall be according to set specifications and under supervision of a qualified technician. The possibility of leaching into the surrounding environment shall be properly investigated and only environmentally friendly herbicides shall be used.

- Soil stockpiles must not become contaminated with oil, diesel, petrol, garbage or any other material, which may inhibit the later growth of vegetation in the soil. Spillage can result in a loss of soil functionality thus limiting the re-establishment of flora.
- It is a legal requirement to obtain permits for specimens or protected species that will be lost due to construction of the project.
- A detailed pre-construction walk-through survey will be required during a favourable season where possible, to locate any individuals of protected plants, as well as for any populations of threatened plant species. This survey must cover the footprint of all approved infrastructure (final infrastructure layout). The best season is early to late Summer if possible, taking administrative processes into account, but will be influenced by recent rainfall and vegetation growth.
- It is possible that some plants lost to the development can be rescued and planted in appropriate places in rehabilitation areas, but the description and appropriateness of such measures must be included in a Plant Rescue Plan. Any such measures will reduce the irreplaceable loss of resources as well as the cumulative effect. Note that Search and Rescue is only appropriate for some species and that a high mortality rate can be expected from individuals of species that are not appropriate to transplant.
- Prior to construction commencing, a Plant Rescue Plan must be compiled to be approved by the appropriate authorities as part of the EMPr approval.
- For any plants that are transplanted, annual monitoring should take place to assess survival. This should be undertaken as per the frequency specified in the management plan and be undertaken by a qualified botanist. The monitoring programme must be designed prior to translocation of plants and should include control sites (areas not disturbed by the project) to evaluate mortality relative to wild populations.
- No collecting or poaching of any plant species.

RESCUED PLANTS

- The location of all transplanted rescued plants must be recorded, along with the identity of the plant.
- The health / vigour of each transplanted individual should be monitored as per the frequency and duration specified in the management plan.
- As a scientific control, an equal number of non-transplanted individuals of the same species, within similar habitats, should be monitored in the same way as the transplanted specimens. This will provide comparative data on the survival of wild populations relative to transplanted plants.

THREATENED SPECIES

- If populations of threatened plant species are found to occur on site, annual monitoring of population health should take place. This should be appropriate to the species concerned

FOR PERMITTING PURPOSES, THE FOLLOWING FLORA SURVEY IS REQUIRED PRIOR TO CONSTRUCTION ACTIVITIES TAKING PLACE:

- Detailed floristic walk-through survey of all footprint areas in order to document composition, especially of protected species. It is suggested this be undertaken after an appropriate time-period after rainfall, where possible, to allow emergence of any species of potential concern. The survey must also cover all footprint areas, including final road alignments. Renewable energy projects similar to the one assessed here tend to have high fluidity in terms of layout and technology, due to the current rapid evolution of the technology, which allows more efficient deployment of infrastructure. However, this means that “final” layouts regularly change. The walk-through survey:
 - Must assess the footprint that will be constructed – if this changes then the new footprint areas must be subject to a walk-through survey in full.
 - Must be undertaken in the correct season, if possible, taking administrative processes into account.
 - Must be adequately resourced to ensure it is done properly.
 - Must be undertaken by a competent botanist.

7.4 RE-VEGETATION AND HABITAT REHABILITATION PLAN

The purpose of the rehabilitation plan is to ensure that areas cleared or impacted during construction activities are rehabilitated with a plant cover that reduces the risk of erosion from these areas as well as restores some ecosystem function. The purpose of the rehabilitation plan for the site can be summarised as follows:

- Achieve long-term stabilisation of all disturbed areas to minimise erosion potential.
- Re-vegetate all disturbed areas with suitable local/indigenous plant species or grass/crop.
- Minimise visual impact of disturbed areas.
- Ensure that disturbed areas are safe for future uses.

Mitigation and management measures include, but are not limited to the following:

- Rehabilitation Plan must be compiled by an approved ecologist prior to achieving COD and prior to the start of decommissioning.
- All management actions associated with rehabilitation must be recorded after each management action has taken place.
- All rehabilitated areas should be monitored to assess vegetation recovery. This should be for a minimum of three years after post-construction rehabilitation but depends on the assessed trajectory of rehabilitation (whether it is following a favourable progression of vegetation establishment or not – this depends on the total vegetation cover present, and the proportion that consists of perennial growth of desired species). For each monitoring site, an equivalent comparative site in adjacent undisturbed vegetation should be similarly monitored. Monitoring data collection should include the following:
 - total vegetation cover and height, as well as for each major growth form;
 - species composition, including relative dominance;
 - soil stability and/or development of erosion features;
 - representative photographs should be taken at each monitoring period.
- Monitoring of rehabilitated areas should take place at the frequency and for the duration determined in the rehabilitation plan, or until vegetation stability has been achieved.
- Re-vegetation must aim to accelerate the natural succession processes so that the plant community develops in the desired way, i.e. promote rapid vegetation establishment.
- Re-vegetation of disturbed surfaces must occur immediately after construction activities are completed. This must be done through seeding with suitable crop or locally indigenous species typical of the representative botanical unit.
- Re-vegetation of the disturbed site is aimed at approximating as near as possible the existing vegetative conditions prevailing prior to construction.
- Seeds from surrounding seed banks can be used for re-seeding.
- Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas.
- Planting of indigenous tree species in areas not to be cultivated or built on must be encouraged.
- Habitat destruction must be limited to what is absolutely necessary for the construction of the infrastructure, including the construction of new roads. In this respect, the recommendations from the Biodiversity Assessment must be applied strictly. Personnel must be adequately briefed on the need to restrict habitat destruction, and must be restricted to the actual construction area.
- Monitoring programme to ensure that rehabilitation efforts are successful to ensure that risks such as erosion, spread of exotic species and the edge effect are avoided.

7.5 FIRE MANAGEMENT PLAN

The purpose of this plan is to address firefighting requirements throughout the construction of the project and to preserve and protect human life as well as tangible goods and equipment in the event of a fire.

Mitigation and management measures include, but are not limited to the following:

- All construction camps shall be provided with portable fire extinguishing equipment, in accordance with all relevant legislation and must be readily accessible.
- The Contractor shall take specific measures to prevent the spread of veld fires, caused by activities at the campsites. These measures must include appropriate instruction of employees about fire risks and designated smoking areas.

- Fire prevention facilities must be present at all storage facilities. No open fires shall be allowed on site under any circumstance. No cooking on open fires shall be done onsite to prevent runaway fires.
 - The Contractor shall have operational fire-fighting equipment available on site at all times. The level of firefighting equipment must be assessed and evaluated through a typical risk assessment process.
 - Emergency numbers for local police and fire department etc. must be placed in a prominent area.
 - Firefighting equipment must be placed in prominent positions across the site where it is easily accessible. This includes fire extinguishers, a fire blanket as well as a water tank.
 - All construction staff must be trained in fire hazard control and firefighting techniques. Translators are to be used where necessary.
 - All flammable substances must be stored in dry areas which do not pose an ignition risk to the said substances.
 - Smoking must only be conducted in demarcated areas.
 - Firefighting equipment must be regularly maintained by a suitable service provider
-

7.6 EMERGENCY RESPONSE PLAN

Appropriate resources must be provided to respond to accidental and emergency situations for operations and activities during construction and operation phases. The procedures will include plans for addressing training, resources, responsibilities, communication and all other aspects required to effectively respond to emergencies associated with their respective hazards.

This Emergency Response Plan (ERP) is intended as a practical working document for the proposed GH&A facility. The purpose of this document is to provide the basic guidelines on how to respond to potential emergency situations that may arise during project activities. These potential emergency situations include medical emergencies and fires.

All activities associated with the project will require site-specific emergency response plans to mitigate impacts, which meet or exceed all applicable regulations.

The objectives of this plan are as follows:

- Protect the communities and the environment through the development of emergency response strategies and capabilities.
- Set out the framework for hazard identification in order to define procedures for response to the situations including the development of contingency measures.
- Structure a process for rapid and efficient response to and manage emergency situations during the construction and operational phases of the project.
- Assign responsibilities for responding to emergency situations.

The ERP must take the incident procedures referred to in Section 30 of the NEMA into account.

7.6.1 ROLES AND RESPONSIBILITIES

With respect to this plan, the Proponent, via the appointed EPC contractor/principle contractor, has the responsibility to:

- Provide emergency response services (such as first aid and firefighting representative) and to structure and coordinate emergency response procedures for the project.
 - Ensure that specific emergency responsibilities allocated to them are organised and undertaken.
 - Ensure that employees and contractor third parties are trained and aware of all required emergency procedures.
-

7.6.2 EMERGENCY COMMUNICATIONS AND COORDINATION PLAN

In an emergency situation where there is an immediate threat to communities, personnel or the environment, the Project Manager will be notified immediately. The Project Manager will dispatch the Emergency Response

Coordinator (or suitably tasked person) who will determine the appropriate plan of action depending on the severity of the emergency, the people affected, and the need to evacuate.

If there is a developing emergency or unusual situation, where an emergency is not imminent, but could occur if no action is taken, the Project Manager (or if the Project Manager is absent the Environmental Officer) is to be informed immediately. Once the emergency or unusual situation has been managed, the correct incident/near miss must be reported to the General Manager.

If an emergency situation poses a direct threat to communities in the area, the Environmental Officer and/or Social Officer will advise persons in the vicinity of the emergency to evacuate due to the potential risk. The appropriate government authorities will immediately be notified of such an emergency evacuation. The Emergency Response Coordinator (or suitably tasked person) will be tasked with responding to the potential risk. Should the emergency situation be such that it can be managed by the Proponent, equipment and personnel will be deployed to the maximum extent necessary, so as to prevent/minimise potential risks.

7.6.3 RESPONSE TO INCIDENTS

An incident is any occurrence that has caused, or has the potential to cause, a negative impact on people, the environment or property (or a combination thereof). It also includes any significant departure from standard operating procedures. The reporting and investigation of all potential and actual incidents that could have a detrimental impact on human health, the natural environment or property is required so that remedial and preventive steps can be taken to reduce the potential or actual impacts because of all such incidents.

The actions resulting from any formal or informal investigations will be used to update the EMPr.

7.6.4 BUDGET FOR EMERGENCY RESPONSE

Costs for emergency response and management will be included in the capital expenditure budget for the construction phase and operational budget for the operational and decommissioning phases of the project.

7.6.5 VERIFICATION

An environmental emergency response system will be developed for the execution of emergency drills that will include the following, inter alia:

- Fire Drills
- Emergency Evacuation Drills
- Medical and Environmental Drills.

Reporting and monitoring requirements for the plan will include:

- Monthly inspections and audits
- Quarterly reporting of accidents/ incidents
- Reporting at the time of the incident and monthly spill reporting developed by the Environmental and Quality, Health and Safety departments
- Bi-annual emergency response drills
- Annual reporting on training

Emergency response drills and reporting will be maintained by the Project Manager and will provide information regarding required revisions to training or the emergency response actions. Each incident reported will be reviewed and investigated upon occurring. Actions will be identified where possible to improve the site's overall response to emergencies. Updates/revisions that are necessary to protect worker or community health and safety will be implemented immediately after approval by the General Manager. On a bi-annual basis, Key Performance Indicators (KPIs) will be compared against past-performance and analysed for trends to determine if there are areas for improvement. Changes because of the trend analysis and identified areas for improvement will be implemented following the project's change management system as required.

7.7 STORMWATER MANAGEMENT PLAN

The main principles in stormwater management include:

- Confine or divert any unpolluted water to a ‘clean’ water system, and polluted water to a ‘dirty’ water system;
- ‘Clean’ and ‘dirty’ water systems must be designed and constructed to prevent cross-contamination between the ‘clean’ and ‘dirty’ water systems; and
- Appropriate maintenance and management of storm water related infrastructure.

The proposed water systems or infrastructure are to be designed to prevent any potential contamination of natural water resources in the area.

A Storm Water Management and Surface Water Protection Plan cannot be compiled until the detailed designs are complete, which will only take place in the event that a third party off-take agreement can be concluded. It is stipulated in this EMPr that a Storm Water Management Plan must be compiled before any construction commences and implemented during the construction phase. This plan must indicate how all surface runoff generated as a result of the project and associated activities (during both the construction and operational phases) will be managed prior to entering any natural drainage system or wetland and how surface water runoff will be retained outside of any demarcated buffer zones and subsequently released to simulate natural hydrological conditions.

A Storm Water Management Plan will be required to support the relevant facility processes. A stormwater management plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems. The stormwater control systems must be inspected on an annual basis to ensure these are functional. Effective stormwater management must include effective stabilisation (gabions, Reno mattresses or similar) of exposed soil and the re-vegetation of any disturbed water courses.

7.8 EROSION MANAGEMENT PLAN

Exposed and unprotected soils are the main cause of erosion in most situations. Therefore, this erosion management plan and the revegetation and rehabilitation plan are closely linked to one another and should not operate independently but should rather be seen as complementary activities within the broader environmental management of the site and should therefore be managed together. This Erosion Management Plan addresses the management and mitigation of potential impacts relating to soil erosion, including:

- Material stockpiled for long periods (2 weeks) must be retained in a bermed area.
- Stockpiles not used in three (3) months after stripping must be seeded or covered with hessian or similar material to prevent dust and erosion.
- Sensitive areas need to be identified prior to construction so that the necessary precautions can be implemented.
- Any vegetation clearance must be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time.
- Areas to be cleared must be clearly demarcated and this footprint strictly maintained.
- Silt fences and erosion control measures must be implemented in areas where these risks are more prevalent.
- Wind screening and stormwater control must be undertaken to prevent soil loss from the site.
- Other erosion control measures that can be implemented are as follows:
 - Brush packing with cleared vegetation
 - Mulch or chip packing
 - Planting of vegetation
 - Hydroseeding / hand sowing
- All erosion control mechanisms need to be regularly maintained.
- Seeding of topsoil and subsoil stockpiles to prevent wind and water erosion of soil surfaces.

- Re-vegetation of disturbed surfaces must occur immediately after construction activities are completed. This must be done through seeding with indigenous grasses.
- No impediment to the natural water flow other than approved erosion control works and other necessary stormwater structures is permitted.
- To prevent stormwater damage, the increase in stormwater run-off resulting from construction activities must be estimated and the drainage system assessed accordingly.

MONITORING

The site must be monitored continuously during construction and operation in order to determine any indications of erosion. If any erosion features are recorded as a result of the activities on-site the Environmental Officer (during construction) or Site Manager (during operation) must:

- Assess the significance of the situation.
- Take photographs of the soil degradation.
- Determine the cause of the soil erosion.
- Inform the contractor/operator that rehabilitation must take place and that the contractor/operator is to implement a rehabilitation method statement and management plan.
- Monitor that the contractor/operator is taking action to stop the erosion and assist them where needed.
- Report and monitor the progress of the rehabilitation weekly and record all the findings in a site register.
- All actions with regards to the incidents must be reported on a monthly compliance report which will be submitted to the Competent Authority (during construction) and kept on file for consideration during the annual audits (during construction and operation).

The Contractor (in consultation with an appropriate specialist) must:

- Select a system/mechanism to treat the erosion.
- Design and implement the appropriate system/mechanism.
- Monitor the area to ensure that the system functions like it should. If the system fails, the method must be adapted or adjusted to ensure the accelerated erosion is controlled.
- Continue monitoring until the area has been stabilised.

7.9 TRAFFIC AND TRANSPORT MANAGEMENT PLAN

The purpose of a Traffic and Transportation Management Plan is to address regulatory compliance, traffic management practices, and protection measures to help reduce impacts related to transportation and the construction of temporary and long-term access within the vicinity of the project site. The objectives of this plan include the following:

- To ensure compliance with all legislation regulating traffic and transportation within South Africa National, Provincial, Local and associated guidelines.
- To avoid incidents and accidents while vehicles are being driven and while transporting personnel, materials, and equipment to and from the project site.
- To raise greater safety awareness in each driver and to ensure the compliance of all safe driving provisions for all the vehicles.
- To raise awareness to ensure drivers respect and follow traffic regulations.
- To avoid the deterioration of access roads and the pollution that can be created due to noise and emissions produced by equipment, machinery, and vehicles.

Mitigation and management measures include, but are not limited to the following:

- All vehicles used during the transport of materials and in the construction activities are required to be roadworthy per the National Road Traffic Act (NRTA) and display all pertinent certificates as required.
- All vehicles travelling to and from the site shall adhere to all laws imposed by the law enforcement agencies, and shall comply with any requests made by the law enforcement officials.

- For each convoy of abnormal vehicles/loads a designated safety officer shall be nominated. All abnormal vehicles and loads to be transported are required to have a valid permit before any trip is begun.
- The route must be assessed to determine if any structures or vegetation need to be temporarily or permanently relocated so as to avoid damage to the load as well as public and private property during the trips.
- A designated transport coordination manager must be appointed to oversee and manage the traffic safety officers. Additionally, the designated transport coordination manager must inform and keep up-to-date the interested and affected parties of all the activities taking place that may have a direct impact on them.
- A traffic safety officer shall be nominated to make all the necessary arrangements to maintain the required traffic measures for the duration of the project as outlined in the “Standard Specifications for Road and Bridge Works for State Road Authorities,” 1998 edition. The safety officer shall liaise daily with the transportation coordination manager to keep them apprised of the state of all the traffic arrangements.
- All construction vehicles that are entering the site shall also be available via radio or telephone communication to the transport coordination manager. So that in the event of an emergency, all vehicles can be accounted for.
- All vehicles shall comply with the posted speed limits on public roads as well as the speed limits within the development. For additional speed limits that are imposed on the construction traffic, refer to the South African Road Traffic Signs Manual (SARTSM), Volume 2, June 1999 for the restrictions.
- All construction traffic shall comply with the legal load requirements as outlined in the National Road Traffic Act and National Road Traffic Regulations.
- Construction traffic entering the site along public roads must be limited to times when peak hour traffic can be avoided. The peak traffic occurs during 7h00 to 8h30, and 16h00 to 17h30.
- The South African Road Traffic Signs Manual (SARTSM), Volume 2, June 1999 is to be used for all traffic during the construction activities of the proposed project.
- During periods of high construction traffic entering and exiting the site, it is recommended that flagmen help direct the traffic. This will enable the safe movement of construction and public traffic at the entrance and reduce the number of potential conflicts.

7.10 FAUNA MANAGEMENT PLAN

The purpose of this fauna management plan is to protect species, habitats and eco-system services, ensuring no net reduction to any critically endangered / endangered species and no net loss of any critical habitats (as defined by IFC Performance Standard 6) whilst minimising disturbance to other species and habitats to the extent practicable. This plan provides a strategy to control potential impacts on fauna during the construction and operation of the Hendrina GH&A facility

7.10.1 MANAGING IMPACT ON FAUNA

SNAKE FIND AND HANDLING:

During construction, especially clearing of vegetation, it is likely that snakes will be encountered onsite. The following steps need to be undertaken in the event of a snake onsite:

- All work in that area is to cease;
- The site foreman/ site supervisor is to be notified;
- Snake handling will be undertaken by suitably trained and certified onsite personnel. The site supervisor or foreman needs to contact the relevant onsite personnel, who will safely remove and release the snake at a suitable habitat.

The following measures need to be communicated to all staff to ensure both human and snake safety:

- Under no circumstances may any site staff handle snakes without the proper snake handling training.
- All staff are to be provided with the correct Personal Protective Equipment (PPE) to limit the potential for snake bites.

- Signage identifying the service provider appointed for snake handling must be erected around site. It is recommended that an individual onsite undergoes snake handling training to ensure that if an emergency arises it can be dealt with immediately.
- Intentional harming of snakes is prohibited onsite.

MAMMALS AND REPTILES

During the construction phase of the project the following mitigation measures need to be implemented and adhered to at all times to ensure that the impacts to fauna is managed and mitigated where possible.

WALK DOWN PRIOR TO CONSTRUCTION

Prior to the start of any construction or associated activities in areas of potential biodiversity concern, the Contractors will carry out a walk-through over the area accompanied by the ECO. The objective is to identify any sensitive habitats including potential for species of conservation interest (i.e. to consider the presence of any rare species of fauna, but establish possible risk of snake bites; inspect tree cavities for bats, etc.) that may be directly or indirectly affected by the proposed works.

Any important and significant habitats must be suitably demarcated and made a no-go area.

LIMIT THE DEVELOPMENT FOOTPRINT

- The development area must be clearly defined and marked off accordingly. All No- Go areas must be demarcated and warning signs prohibiting access erected.
- Areas to be cleared must be clearly marked in the field to eliminate unnecessary clearing/ disturbance.

LIMIT DISTURBANCE

- The extent of clearing and disturbance to the native vegetation must be kept to a minimum so that the impact on fauna and their habitats is restricted.
- Vehicles to adhere to speed limits at all times.
- The intentional harming and killing of animals will be prohibited through on-site supervision and worksite rules.
- Any litter onsite needs to be cleaned up immediately to prevent it being blown into the environment surrounding the development site.

INSPECTIONS AND MONITORING

- The following inspections and monitoring need to be undertaken during the construction phase:
- Observation of vegetation clearing activities by the Environmental Control Officer (ECO).
- Recording faunal fatalities to monitor success of relocation efforts.
- Regular monitoring of construction activities by the designated onsite personnel and the ECO.
- The ESHS team will collate details and investigate all Project-related wildlife complaints and incidents including instances of unauthorised hunting, poaching, bush trade, disturbance of breeding sites and injuries / fatalities. Corrective actions will be instigated where needed to avoid recurrence.

TRAINING

The contents of the Fauna Management Plan must be communicated to the staff through the induction training. On the job training can also be undertaken through the use of Environmental Toolbox Talks. All training must be undertaken as outlined in the relevant Training Procedures

Examples of Toolbox Talks include:

- Snakes bites
- Snake handling
- No-Go areas
- Encountering fauna onsite

- Poaching

7.11 AVIFAUNAL MANAGEMENT PLAN

The purpose of this avifaunal management plan is to provide mitigation and management measures onsite that to minimise the impacts on the priority bird species that potentially occur onsite. A number of the priority species are associated with the aquatic features on the site.

7.11.1 DESIGN MANAGEMENT PROCEDURES

- Ensure that key areas of conservation importance and sensitivity are avoided (as determined by the avifaunal specialist assessment).
- Where possible, installing transmission cables underground (subject to habitat sensitivities and in accordance with existing best practice guidelines for underground cable installation).
- Development in the remaining high sensitivity grassland must be limited as far as possible. The grassland is vital breeding, roosting and foraging habitat for a variety of SCC. These include Blue Crane (SA status near-threatened), Blue Korhaan (Global status near -threatened), White-bellied Bustard (SA Status Vulnerable), Denham's Bustard (SA Status Vulnerable).
- If a steel monopole pole design is used, the approved vulture friendly pole/tower design D-DT-7649 in accordance with the Eskom Distribution Technical Bulletin titled Refurbishment of 66/88kV line kite type frames with D-DT-7649 type top configuration - Reference Number 240-170000467 relating to bird friendly structures, must be used.
- If lattice type structures are used, it is imperative that a minimum vertical clearance of 1.8m is maintained between the jumper cables and/or insulator live ends, and the horizontal earthed components. Additional mitigation in the form of insulating sleeves on jumper cables present on strain poles and terminal poles is also recommended (if suitable insulation material is readily available).
- Limit construction of infrastructure in high sensitivity grassland as much as possible

7.11.2 CONSTRUCTION MANAGEMENT PROCEDURE

The following mitigation and management measures must be implemented for the displacement of priority species due to disturbance during the construction phase:

- A site- specific construction management Plan (CEMP) must be implemented, which gives appropriate detailed description of how construction activities must be conducted. All contractors are to adhere to the CEMP and must apply good environmental practice during construction..
- Providing adequate briefing for site personnel and, in particularly sensitive locations. Personnel must be adequately briefed on the need to restrict habitat destruction, and must be restricted to the actual building sites. An ecologist must be appointed during the construction period.
- No-go areas must be enforced, while associated infrastructure (roads, powerlines and substations) must be avoided where possible in these areas.
- Habitat destruction must be limited to what is absolutely necessary for the construction of the infrastructure, including the construction of new roads.
- Measures to control noise and dust must be applied according to current best practice in the industry.
- Conduct an inspection to identify SCC that may be breeding within the project footprint to ensure that the impacts on breeding species (if any) are adequately managed.
- Construction activity should be restricted to the immediate footprint of the infrastructure as far as possible.
- Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species. Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum
- Measures to control noise and dust should be applied according to current best practice in the industry.
- The mitigation measures proposed by the vegetation specialist must be strictly enforced, including rehabilitation of disturbed areas.

- Bird Flight Diverters must be fitted to the entire OHL according to the applicable Eskom Engineering Instruction (Eskom Unique Identifier 240 – 93563150: The utilisation of Bird Flight Diverters on Eskom Overhead Lines). These devices must be installed as soon as the conductors and earthwires are strung.

7.11.3 MONITORING

Monitoring of Red listed species nests (if any) to assess the impact of the construction activities.

7.12 SOIL MANAGEMENT PLAN

Some of the most significant impacts on soil properties occur as a result of activities associated with construction. Construction activity can have adverse impacts on soil in a number of ways by:

- Covering soil with impermeable materials, effectively sealing it and resulting in significant detrimental impacts on soils' physical, chemical and biological properties, including drainage characteristics.
- Contaminating soil as a result of accidental spillage or the use of chemicals.
- Over-compacting soil through the use of heavy machinery or the storage of construction materials.
- Reducing soil quality, for example by mixing topsoil with subsoil.
- Wasting soil by mixing it with construction waste or contaminated materials, which then have to be treated before reuse or even disposed of at landfill as a last resort.

Careful management of topsoil and subsoil is an important aspect of sustainable use of materials that are being stripped. Without a proper Soil Resource Plan there is the risk of losing, damaging or contaminating valuable soil resources. The purpose of this Soil Management Plan is to outline principles for soil management to ensure the integrity of the resource during and post-construction. This plan must be read together with the Emergency Response Plan in order to minimise the risk of contamination of soils.

7.12.1 SOIL HORIZONS

TOPSOIL

Topsoil is the top-most soil layer (0-25 cm) in undisturbed areas, however it should be noted that the majority of the site for the GH&A facility is farmland and no impacts are expected in undisturbed areas (areas where no construction or operational activities will be present). If no impacts are expected in undisturbed areas then the principals that follow do not apply. The principals are also applicable to any undisturbed areas affected by the power line. This soil layer is important as it contains nutrients, organic material, seeds, communities of micro-organisms, fungi and soil fauna. All the contents of the topsoil layer are necessary for soil processes such as nutrient cycling, and support growth of new plants. The biologically active upper layer of soil is fundamental in the development of soils and the sustainability of the entire ecosystem. Fungi, algae, cyanobacteria and non-vascular plants form a 'living crust' on the soil surface that influences the retention of resources (principally nutrients and water), as well as reducing the potential for soil erosion.

In general, the greatest concentration of seeds (i.e. up to 90% of the seedbank) is found in the top 5-10 cm of topsoil. Soil nutrients and other biological elements also have a higher concentration in the top 5 – 10 cm of soil, but can occur up to 25 cm.

SUBSOIL

Subsoil is soil generally deeper than 25 cm. The subsoil contains lower levels of nutrients, but the soil texture is still suitable for plant growth.

OVERBURDEN

Overburden is all the soil below the subsoil layer, generally characterised by a fine soil texture which is sometimes high in clay and salt content which makes plant growth difficult. Such soils comprise a sterile growth medium, devoid of nutrients, and depending on the clay content, are of high salinity and often

phytotoxic. Even shallow-lying overburden soils are largely depleted of nutrients. These soils constitute an unsuitable medium for the establishment of plants.

7.12.2 PRINCIPLES FOR SOIL MANAGEMENT

THE CORRECT HANDLING OF TOPSOIL

- Before beginning work on site, topsoil must be stripped from all areas that will be disturbed by construction activities. Appropriate equipment must be used and appropriate work practices must be implemented for soil stripping as mishandling soil can have an adverse effect on its properties.
- Topsoil must be stripped in the driest condition possible.
- Topsoil must be retained on site in order to be used in site rehabilitation. The correct handling of the topsoil layer is in most cases the key to rehabilitation success.
- It is important that the correct depth of topsoil is excavated in order to ensure good plant growth. If excavation is too shallow, then an important growth medium for new seedlings could be lost. If excavation is too deep, this could lead to the dilution of the seed and nutrient rich topsoil with deeper sterile soil.
- Topsoil and subsoil layers must never be mixed. The mixture of topsoil with the deeper sterile soil hinders the germination of seeds which are buried too deep in the soil layer. Mixture of soil layers also leads to the dilution of nutrient levels which are at highest concentration within the topsoil, resulting in lower levels of nutrients available for new seedlings.
- To enable soil to be reused on site at a later stage, it needs to be stored in temporary stockpiles to minimise any damage or loss of function. Stockpiles must not be higher than 2m. Alternatively, topsoil berms can be created on the site boundaries. There are a number of important considerations when creating stockpiles - including soil erosion, pollution to watercourses and the risk of flooding. These will be affected by the size, height and method of forming stockpiles, and how they are protected and maintained.
- Topsoil must be stored separately from other soil in heaps until construction in an area is complete.
- The duration of topsoil storage must be minimised as far as possible. Storing topsoil for long periods leads to seed bank depletion following germination during storage, and anoxic conditions develop inside large stockpile heaps.
- All stockpiles must be positioned away from drainage lines.
- Sediment fencing must be erected downslope of all stockpiles to intercept any sediment and upslope runoff must be diverted away from stockpiles.

STRIPPING OF SUBSOIL

- The following protocols must be followed when stripping subsoil:
- On many sites subsoil will not need to be stripped but merely protected from damage. However, on other sites it might need to be temporarily removed. Where subsoil is required to be stripped, this must be undertaken before commencement of construction from all areas that are to be disturbed by construction activities or driven over by vehicles.
- Subsoil stripping depths depend on the correct identification of the sub-soil types on an ad-hoc basis, where no formal survey data exists.
- Subsoil must be stripped in the driest condition possible.
- To enable soil to be reused on site at a later stage, it needs to be stored in temporary stockpiles to minimise any damage or loss of function. There are a number of important considerations when creating stockpiles - including soil erosion, pollution to watercourses and the risk of flooding. These will be affected by the size, height and method of forming stockpiles, and how they are protected and maintained.
- All stockpiles must be positioned away from drainage lines.
- Sediment fencing must be erected downslope of all stockpiles to intercept any sediment and upslope runoff must be diverted away from stockpiles.

7.13 CLOSURE AND DECOMMISSIONING PLAN

The purpose of the Decommissioning and Closure Plan is to give details as to the process to be followed when the Hendrina GH&A facility is decommissioned. The Decommissioning and Closure Plan should be read in conjunction with the EMPr for the facility. The general specifications of the EMPr is also relevant and must be adhered to during decommissioning of the facility.

7.13.1 PROJECT SPECIFIC DETAILS

The Hendrina GH&A facility is expected to be commissioned within 24 months of financial close and is expected to be operational for at least 25 years, where after it could be decommissioned, or its lifespan extended depending on the power generation requirements at the time.

Following the initial 25-year operational period of the wind facility, the continued economic viability will be investigated. If the facility is still deemed viable, the life of the facility will be extended. The facility will only be decommissioned once it is no longer economically viable. If a decision is made to completely decommission the facility, this will be subject to a separate authorisation and impact assessment process, all the components will be disassembled, reused and recycled or disposed. The site would be returned to its current use i.e., agriculture.

7.13.2 ACTIVITIES ASSOCIATED WITH DECOMMISSIONING

ACTIVITY	DETAILED DESCRIPTION
Site preparation	Site preparation activities similar to those undertaken in the construction phase will be required during the decommissioning phase. This will include confirming the integrity of site access to the site in order to accommodate the required equipment (e.g. lay down areas and decommissioning camp) and the mobilisation of decommissioning equipment
Disassemble and remove existing components	The components would be disassembled, and reused and recycled (where possible), or disposed of in accordance with regulatory requirements

Road traffic will temporarily increase due to the movement of decommissioning crews and equipment. There may be an increase in particulate matter (dust) in adjacent areas during the decommissioning phase. Additionally, there will be emissions from the diesel engines of construction machinery and equipment which may cause odour disturbance and localized impacts to air quality. Decommissioning activities may lead to temporary elevated noise levels from heavy machinery and an increase in trips to the project location.

The relevant mitigation measures contained under the construction section of the EMPr must be applied during decommissioning.

7.13.3 PRINCIPLES OF DECOMMISSIONING AND CLOSURE

In decommissioning the facility, the proponent must ensure that:

- All sites not already vegetated are vegetated as soon as possible after decommissioning is completed with species appropriate to the area (where the impacted area is an indigenous vegetation area - otherwise this is not applicable).
- Any fauna encountered during decommissioning are removed to safety by a suitably qualified person.

- All structures, foundations and sealed areas are demolished, removed and waste material which cannot be recycled disposed of at an appropriately licensed waste disposal site or as required by the relevant legislation.
- All access/service roads not required to be retained by landowners are closed and fully rehabilitated.
- Soil erosion and sedimentation control measures, as well as other mitigation measures used during construction will be re-implemented during the decommissioning phase and maintained until the site is stabilized.
- All vehicles adhere to low speed limits (i.e. 30km/h max) on the site, to reduce risk of faunal collisions as well as reduce dust.
- All disturbed areas are compacted, sloped and contoured to ensure drainage and runoff and to minimise the risk of erosion.
- All rehabilitated areas are monitored for erosion until the site is stabilized.
- Components of the facility are removed from the site and recycled or disposed of appropriately.
- Retrenchments must comply with South African Labour legislation of the day.
- Decommissioning and site restoration activities must be undertaken with the input of the landowner(s).
- The process for notification of decommissioning activities will be the same as the process for notification of construction activities. Decommissioning activities may require the notification of stakeholders given the potential for increased noise and traffic volumes at the project location.

DISPOSAL OF MATERIALS

Most of the materials used can be recycled. The majority of the glass and semiconductor materials can be recovered and re-used or recycled. Recyclable materials must be transported off-site by truck and managed at appropriate facilities in accordance with relevant waste management regulations. No waste materials may be left on-site.

All other structures and/or components must be appropriately disposed of at an appropriately licensed waste disposal site by a licensed contractor.

DISMANTLING OF INFRASTRUCTURE

HYDROGEN AND AMMONIA FACILITY

- Disconnect all above ground wirings, cables and electrical interconnections.
- All tanks, containers, pipes and other steel parts will be dismantled and removed from the site and recycled accordingly
- High value components will be stripped. The remaining material will be reduced to shippable dimensions and transported off site for proper disposal. Control cabinets, electronic components, and internal cables will be removed.
- The area will be thoroughly cleaned of all debris.
- Applicants should seek the opinion from a waste consultant on how to correctly dispose of hazardous waste.

FOUNDATIONS

- Topsoil will be removed from an area surrounding the foundation and stored for later replacement. Foundations will either be excavated or remain in situ depending on industry best practice. In the event that foundations are removed they will be excavated to a depth sufficient to remove all anchor bolts, rebar, conduits, cable, and concrete.
- After removal of all noted foundation materials, the hole will be filled with clean sub-grade material of quality comparable to the immediate surrounding area.
- The sub-grade material will be compacted to a density similar to surrounding sub-grade material. All unexcavated areas compacted by equipment used in decommissioning shall be decompact in a manner to adequately restore the topsoil and sub-grade material to the proper density consistent and compatible with the surrounding area. The area will be thoroughly cleaned and all debris removed, and re-seeded.

TRANSFORMERS

- Disconnect and remove all electrical equipment.
- Remove electrical components and transport off-site to appropriate facility.

- Oil filled electrical equipment must be de-polluted, decommissioned and the constituent elements recovered for further re-recycling and reuse. Oil must be disposed of at a hazardous waste facility
- End of Life shutdown procedure including a risk assessment of the specific activities involved.
- Disposal according to local regulations and other international directives.
- Applicants should seek the opinion from a waste consultant on how to correctly dispose of hazardous waste.

OTHER INFRASTRUCTURE

- Consult with landowner(s) to determine if access roads must be left in place for their continued use. If not required, roads must be decommissioned, ripped and revegetated.
- Removal of fencing.
- Underground electrical lines running between inverters and the substation will be removed.
- All foundation materials will be removed from the site via truck and managed at appropriate facilities

LAND USE

Based on the zoning and current land use, it is assumed that the probable future use of the project location after decommissioning will be farming land. However, this will be confirmed prior to decommissioning to ensure that restoring the land to its current land use remains the most appropriate option.

7.14 HERITAGE AND PALAEOLOGICAL MANAGEMENT PLAN

The purpose of this document is to provide a response guideline should archaeological sites, palaeontological sites or graves become exposed during ground altering activities within the Hendrina GH&A Project area. Heritage resources are protected in terms of the National Heritage Resources Act, Act 25 of 1999 (NHRA).

7.14.1 CHANCE FIND PROCEDURE

The following procedural guidelines must be considered in the event that previously unknown heritage resources are exposed or found during the construction of the Hendrina GH&A facility Project area. This chance find procedure (CFP) must be read in conjunction with the Environmental Authorisation, the Environmental Management Programme, Final EIAR and the final layout archaeological ground-truthing report.

The Contractor or other person discovering a potentially significant site or artefact will initiate the following actions:

- If fossils occur in the footprint of any section of the project, the route for the grid connection (overhead powerline pole foundations/below ground piping), the hydrogen and ammonia facilities, access roads or infrastructure, they can be removed as per the Fossil Chance Find Protocol in the EMPr, and the project can continue. If no fossils are found, then no mitigation is required.
- When excavations begin the rocks and must be given a cursory inspection by the environmental officer or designated person.
- Any fossiliferous material (trace fossils, fossils of plants, insects, bone or coalified material) should be put aside in a suitably protected place. This way the project activities will not be interrupted.
- Photographs of similar fossils must be provided to the contractor/s to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones. This information will be built into the EMP's training and awareness plan and procedures.
- Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.
- If there is any possible fossil material found by the contractor/s /environmental officer then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible.
- Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained.

- Annual reports must be submitted to SAHRA as required by the relevant permits.
- If no good fossil material is recovered, then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.
- If no fossils are found and the excavations have finished, then no further monitoring is required.
- The Grievance Procedure and Guidance will apply to any stakeholder complaints relating to cultural heritage and chance finds;
- Chance find recording shall include the following:
 - Incident Notification;
 - Incident Report;
 - Incident (Chance Find) Investigation Report – e.g. detailing corrective actions, with digital images, maps and plans showing any locations that are no-go, limited access or present risks of further chance finds.

7.14.2 TRAINING, INSPECTION AND MONITORING

Since it is not practical to have a regular monitoring presence over the construction period by either an archaeologist or palaeontologist, environmental awareness training must be conducted by the EO for all contractors and subcontractors. The training must include, as a minimum, the following:

- Identifying potential features of heritage significance;
- Procedures for dealing with heritage resources discovered on site;
- Applicable Legislation pertaining to the protection of heritage resources; and
- The importance of protecting heritage resources.

The contents of the Heritage Management Plan must be communicated to the staff through the induction training. On the job training can also be undertaken through the use of Environmental Toolbox Talks.

7.15 HAZARDOUS SUBSTANCES MANAGEMENT PLAN

Hazardous substances are chemicals or materials that can cause acute or chronic harm to health, be it humans or the environment. The key potential sources of impact related to the management of hazardous chemical substances (HCS) and fuel during construction relate to the risk of accidental release of hydrocarbons to the environment, accidental exposure to workers, and fire and explosion risks.

Potential impacts associated with these risks, if poorly managed, include:

- Impact to soil and/or groundwater, which may result in degradation of the resource and requirement for remedial action;
- Impacts on pastoralist livelihoods due to contamination of pasture or water resources and consequent impacts to their, health, livelihood and animals;
- Impacts on human health & safety due to either direct exposure or through fire/explosion;
- Gas emissions associated with the combustion of fuel, are mainly compounds of nitrogen, carbon including very small traces of sulphur and particulate matter; and
- Fugitive emissions from HCS & fuel storage.

The purpose of this Hazardous Substances Management Plan (HSMP) is to provide a framework for the management of hazardous substances onsite during the construction and operation of the Hendrina GH&A facility:

- Ensure the handling and storage of hazardous substances are in accordance with relevant standards;
- To ensure that the storage and handling of chemicals and hydrocarbons on-site does not cause pollution to the environment or harm to persons;
- To ensure that the storage and maintenance of machinery onsite does not cause pollution of the environment or harm to persons.

7.15.1 HAZARDOUS SUBSTANCES MANAGEMENT PROCEDURE

A plan for managing the transportation, delivery, storage and handling of hazardous substances onsite is detailed below. A method statement detailing the specific storage and handling practices during construction must be prepared by the Contractor prior to the commencement of construction.

REGISTER OF HAZARDOUS SUBSTANCES

Contractors shall establish inventories or registers of hazardous substances on site. The inventory is to be updated when new hazardous substances are introduced to the workplace or the use of existing hazardous substances is discontinued. Both the chemicals' register and the Material Safety Data Sheets (MSDSs) must be readily available at a central location or near where the chemicals are being stored or used.

MSDS

It is standard practice that an MSDS is provided by the manufacturer or supplier of all hazardous substances. An MSDS is required for all chemicals and substances on site. These MSDSs are to be made available to all parties affected by the use or storage of the chemical. MSDSs are the key to communicating hazards and safe handling practices for chemicals. In addition, MSDS information is to be made available to all employees.

DELIVERIES

Transport of all hazardous substances must be in accordance with the relevant legislation and regulations. Contractors are responsible for identifying and securing any necessary permits for any proposed bulk fuel storage arrangements. The supplier will fill contractors fuel tanks; fuelling is the responsibility of the licensed contractor who will be supervised by the storage/work area supervisor. No 'black-market' or 'grey-import' fuels shall be used. All fuels purchased must be legitimate and subject to required duties and taxes.

Prior to fuel transfer the operator will verify that: all fuel transfer hoses have been connected properly and couplings are tight; transfer hoses are not obviously damaged; fuel transfer personnel are familiar with procedures; for fuelling stations, personnel are located at both the fuel truck and fuel transfer tank(s) and have the ability to shut off fuel flow manually; a means of communication has been established between the two people transferring fuel; and a high liquid level shutoff device can be substituted for the person at the delivery tank, in which case operation of the shutoff will be verified each time it is used; The fuel contractor will clean up and report any accidents or spills immediately to the project ESHS team.

ENVIRONMENT AND OCCUPATIONAL HEALTH AND SAFETY

The following requirements are additional to any applicable requirements established in other management plans such as the Occupational Health & Safety Management Plan:

- Storage facilities will have the applicable Material Safety Data Sheets (MSDS) available;
- Smoking will be strictly prohibited from any areas where fuel loading operations take place;
- Appropriate signage will be used to identify potential spill risks;
- Any accidental damage to containment structures will be inspected immediately and appropriate repairs undertaken. The extent of damage will be reported in writing to WP as well as remedial repairs effected together with the date of repairs and any follow up inspection. Any release of fuels or other substance will be cleaned up;
- All used fuel / oil products will be collected in tanks marked "Waste Oil"; and
- All hydrocarbon associated wastes will be managed in line with the Waste Management Plan.

MATERIALS STORAGE

- All chemicals, fuels and other hazardous materials are to be stored in designated and bunded areas, where the bunded area is impermeable and is impervious to the stored substance as per the requirements of SABS 089:1999 Part 1. The bunded area will contain 110% volume of the largest container stored.
- Bunds and service area platforms to be cleaned and maintained regularly.

- SABS approved Spill kits must be made available on-site for the clean-up of spills and leaks of contaminants. The relevant construction crew members must be trained in their use.
- Keep a record of all hazardous substances stored on site. Clearly label all the containers storing hazardous waste.
- The storage of flammable and combustible liquids such as oils will be in designated areas which are appropriately banded, and stored in compliance with Material Safety Data Sheets (MSDS) files and applicable regulations and safety instructions.
- Chemical and hydrocarbon storage facilities shall be covered to prevent rainfall ingress into secondary containment units and well-ventilated
- Any storage and disposal permits/approvals which may be required must be obtained, and the conditions attached to such permits and approvals will be compiled with.
- An effective monitoring system must be put in place to detect any leakage or spillage of all hazardous substances during their transportation, handling, installation and storage.

SPILL AND LEAK MANAGEMENT AND PREVENTION

- In the event of a major spill or leak of contaminants, the relevant authorities must be informed (as per the requirements of NEMA). The relevant construction crew members must be trained in their use.
- Spilled cement must be cleaned up immediately and, stored as hazardous waste and disposed of at a suitably licensed hazardous waste disposal facility.
- Any water that collects in bunds must not be allowed to stand. Should the water be contaminated, it is to be removed and treated prior to discharge, or disposed of as hazardous waste. Clean stormwater contained within the bunds may be reused.
- No chemicals must be stored or vehicle maintenance undertaken within 100m of wetlands or drainage lines.
- Construction machinery must be stored in an appropriately sealed area. If machinery cannot be stored in a sealed area then a drip tray must be used to prevent spillage from any leaks.
- As far as practicable, all equipment servicing / maintenance shall be undertaken within designated workshop areas.
- All generators on site, including generators that are not in use must be located in a banded area or on a drip tray.
- Banded areas and drip trays must be maintained on a regular basis.
- Diesel generators and water pumps shall be located in secondary containment areas or shall be self-contained to prevent loss of fuels and oils;
- Precautions must be in place to limit the possibility of oil and other toxic liquids from entering the soil or clean stormwater system.
- Upon completion of construction, the area must be cleared of potentially polluting materials.
- Emergency response planning will be managed via the Emergency Preparedness and Response Plan.

7.15.2 OPERATIONAL PHASE

During the operational phase of the project limited hazardous substances and chemicals will be stored onsite. During maintenance activities, contractors will need to produce a method statement detailing the specific storage and handling practices. The following measures need to be implemented onsite during the operational phase of the project.

- Hazardous substances must be stored in sealed containers within a clearly demarcated designated area.
- Care must be taken to ensure that spillage of oils and other hazardous substances are limited during maintenance. Handling of these materials must take place within an appropriately sealed and banded area.
- Should any accidental spillage take place, it must be cleaned up according to specified standards regarding bioremediation.
- The storage of flammable and combustible liquids such as oils will be in designated areas which are appropriately banded, and stored in compliance with Material Safety Data Sheets (MSDS) files and applicable regulations and safety instructions.

- Used oils and chemicals must be appropriately contained and disposed of in a correct manner by registered collector and disposal slips to be retained as proof
 - Appropriate disposal must be arranged with a licensed facility in consultation with the administering authority;
 - Waste must be stored and handled according to the relevant legislation and regulations.
-

7.15.3 INSPECTION, MONITORING AND TRAINING

Fuel storage areas must be inspected regularly to ensure bund stability, integrity, and function.

The contents of the Hazardous Substances Management Plan must be communicated to the staff through the induction training. On the job training can also be undertaken through the use of Environmental Toolbox Talks. All training must be undertaken as outlined in the relevant Training Procedure.

Examples of Toolbox Talks include:

- Storage of hazardous substances
 - Working with hazardous substances
 - Management of hazardous waste
 - Spill Prevention
-

7.16 WETLAND MONITORING PLAN

As the proposed Project Area includes large areas of wetland habitat, it is recommended that WET-health and WET-Ecoservices tools be used to re-evaluate PES, ES, and EIS as follows:

A suitably qualified wetland specialist should assess the health of the wetlands at the end of the Construction Phase.

Annually (one-yearly) upon closure and decommissioning for at least three years to ensure no emerging impacts are identified, which may need to be addressed.

Monitoring Element for Wetlands

- Wetland Extent;
- Wetland integrity;
- Wetland functionality;
- Soil disturbances;
- Linear infrastructure;
- Discharge points;
- Erosion status;
- Surface water quality and quantity;
- Vegetation basal cover;
- Vegetation species diversity.

A basic level 1 health assessment is necessary to detect changes to the health of vegetation (including alien invasion), hydrology, and geomorphology of the wetlands associated with the site. This allows for the determination of the Present Ecological State (PES).

The EIS of the wetlands should be determined to detect any alteration to functionality.

Requirements

- The transportation of soils or other substrates infested with AIPs should be strictly controlled
- Continuous erosion monitoring of rehabilitated areas should be undertaken and zones with excessive erosion should be identified. Erosion can either be quantified or the occurrence there-of simply recorded for the specific location. Immediate rectification of erosion points and ongoing prevention of future erosion must be prioritised

- The functionality of the surface water drainage systems should be assessed at the end of construction, and again at the end of the rehabilitation phase. This should preferably be done after the first major rains of the season and then after any major storm. An assessment of the wetlands will ensure that the drainage on the recreated profile matches the rehabilitation plan as well as to detect if a system is not functioning at preconstruction levels.

Frequency

- Erosion monitoring to be undertaken monthly during the construction and decommissioning phases.
- Wetland functionality to be undertaken at the end of the Construction Phase.
- Wetland functionality to be undertaken upon completion of the decommissioning phase.

Responsibility

- A wetland specialist must conduct the wetland monitoring at the end of construction and upon completion of the rehabilitation phase and provide a short memo to the Project Proponent (PP) and the Environmental Control Officer (ECO).
- The PP and the ECO should ensure erosion monitoring on-site.
- ECO to give training to sub-contractors and all workers on the operational procedures and mitigation measures.
- The PP and the ECO should be responsible to determine the effectiveness of erosion control structures.

7.17 GRIEVANCE MECHANISM

This Grievance Mechanism has been developed to receive and facilitate grievances and provide a solution to these concerns and grievances. The aim of the grievance mechanism is to ensure that grievances or concerns raised by local landowners, staff and or communities are addressed in a manner that:

- Provides accessible avenues for all internal and external stakeholders to contact management of the facility;
- Provides a predictable, transparent, and credible process to all parties, resulting in outcomes that are seen as fair, effective, lasting and dealt with in a timely manner;
- Builds trust as an integral component of staff and broader community relations activities; and
- Enables more systematic identification of issues and trends affecting a project, facilitating corrective action and pre-emptive engagement.

The aim of this Grievance Mechanism is to address grievances in a manner that does not require a potentially costly and time-consuming legal process. This grievance mechanism also ensures alignment with local and international best practices in human resources development and stakeholder engagement.

7.18 HIV/AIDS MANAGEMENT PLAN

The HIV/AIDS management plan will be compiled in the event that a suitable private off-take agreement is concluded.

The measures must be implemented on site during the construction and operational phases:

- Promote a non-discriminatory and supportive environment for people affected by HIV & AIDS.
- HIV-positive employees must be protected against unfair discrimination, victimisation or harassment.
- Sensitive issues surround HIV & AIDS and it is important to handle matters in a discreet and private manner
- Promote awareness and education programmes to inform employees about HIV & AIDS which will enable them to protect themselves and others against infection by HIV.
- Involve employees and their representatives in the planning and implementation of awareness and counselling programmes, especially as peer educators and counsellors.

7.19 COVID -19 MANAGEMENT

In line with the ongoing national response to COVID-19 it is essential for the need to be able to revisit the Covid-19 response and ensure it aligns with national requirements as they may change. In this event, this plan will need to be revised in order to address any shortcomings.

PREVENTION AND RESPONSE

A dedicated assignee with the responsibility to identify and implement/oversee actions to mitigate the effects of COVID-19 on the company and community should be assigned.

INFORMATION

Information dissemination and training are an effective way to reduce the risk for both the company and the general public.

COVID-19 symptoms include: fever, tiredness, difficulty breathing, dry cough, chills, repeated shaking with chills, muscle pain, headache, sore throat, and new loss of taste or smell. Some patients may have nasal congestion, runny nose, or diarrhoea. Symptoms may appear two to 14 days after exposure to the virus.

EMPLOYEE QUESTIONNAIRE

To prevent potentially infected staff from entering the workplace and infecting co-workers, a short questionnaire could be used. Workers should only report to work if they answer “no” to all the questions.

The following is an example:

- Have you, in the last two weeks, been in close contact with a person who has COVID-19?
- Have you, in the last two weeks, been in a country/region with a high number of cases of COVID-19?
- Do you have a fever?
- Have you used medications such as paracetamol or aspirin to suppress fever in the last 24 hours?
- Are you coughing (even mildly)?
- Do you currently experience shortness of breath?

PREVENTION METHODS

SICK PERSONS TO STAY HOME

Workers requested to stay away from work in cases where they exhibit any COVID-19 symptoms or have been in close contact with a confirmed COVID-19 patient during the previous 14 days. Workers who do not feel well should seek immediate medical advice. An employee who works while evidencing mild COVID-19 symptoms can risk spreading this infectious disease to others.

COUGH HYGIENE

To reduce the risk of infected persons spreading the virus by coughing and sneezing, workers are to be instructed to follow the cough etiquette outlined below:

- Cover the mouth and nose with a tissue when coughing or sneezing and dispose of the used tissue in a wastebasket.
- When no tissue is available, cough or sneeze into the upper sleeve or elbow, not into the hands.
- Clean hands after coughing or sneezing, preferably by thorough water-soap handwashing, following the recommendations of health organizations. If soap and water are not available, use a hand sanitizing gel.

SOCIAL DISTANCING

To prevent person-to-person infection, it is important to minimize direct contact as much as possible. The contractor is to inform workers about the hazards of close contacts, including with direct co-workers, and promote alternative behaviours, such as maintaining safe distances and using alternatives for handshakes.

HAND SANITATION

Promote frequent and thorough water-soap hand washing and provide enough places for workers to wash their hands. If soap and running water are not immediately available, provide alcohol-based hand rubs containing at least 60% alcohol. Ensure that these facilities are sufficient in number and are available close to the work area.

CLEANING AND DISINFECTING

Frequently – and at least daily - clean touched surfaces, such as tables, light switches, appliances, countertops, handles, desks, phones, keyboards, toilets, taps, sinks, and so forth. Use the cleaning agents that are routinely used in these areas and follow the directions on the labels. For multiuse equipment, clean after every use.

Workers are to be instructed to clean their work areas and equipment at the end of each shift. Equipment and instructions on how to do this are to be provided

8 CONCLUSION

The Proponent is proposing the development of a GH&A facility within the vicinity of the Hendrina Power Station in Mpumalanga in the Gauteng Province. The proposed facility will connect directly to the nearby Hendrina Collector substation through an up to 132kV powerline, which will supply the GH&A facility with green energy for the production of hydrogen (and ultimately Ammonia) via the Haber–Bosch process.

The EIA process assessed both biophysical and socio-economic environments and identified appropriate management and mitigation measures. The findings of the EIA process and associated Specialist studies conclude that there are no fatal flaws associated with the proposed development. The EIA process also considered the biophysical location of the proposed development, as well as the considerable potential use of this land.

As discussed previously, the purpose of the proposed GH&A facility provides the best opportunity for a zero emissions fuel and is the best feedstock for production of zero emission liquid fuels and some chemical and heat end-uses. Green hydrogen can be made at very high efficiency using electrolysis systems that are dynamically operated to complement renewable wind and solar power dynamics.

As the Hendrina GH&A facility will be powered by renewable energy, the need and desirability of renewable energy is therefore linked to the project as a whole. The GH&A Facility will serve to support these proposed neighbouring renewable facilities through guaranteed off-take. Renewable energy development is regarded as an important contribution to meeting international and national targets of reducing reliance on fossil fuels, such as coal, which contribute towards greenhouse gas emissions and resultant climate change. The need and desirability of proposed Hendrina GH&A Facility has been considered from an international, national and regional perspective.

It is therefore the opinion of the EAP that provided this project is mitigated, as per the mitigation and management measures outlined in this EMPr, the project will result in impacts that should not negatively affect the environment. It is the applicant's responsibility to ensure that this EMPr is made binding on the contractor by including the EMPr in the contract documentation. The contractor must thoroughly familiarise himself with the requirements of the EMPr and appoint an EO to oversee the implementation of the EMPr on a day-to-day basis. In addition, the applicant must appoint an external ECO to undertake monthly compliance audits during construction against the requirements of the EMPr as well as the EA.

Parties responsible for transgression of this EMPr must be held responsible for any corrective actions that may need to be undertaken. Parties responsible for environmental degradation through irresponsible behaviour/negligence must receive penalties.

WSP is of the opinion that the project can proceed, provided that the outlined mitigation measures of the EIA process and this EMPr are implemented effectively.

If you have any further enquiries, please feel free to contact:

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APPENDIX

A EAP CURRICULUM VITAE





ASHLEA STRONG, MEM, EAP

*Principal Consultant (Planning & Advisory Services),
Environment & Energy*



Years with the firm

8

Years of experience

18

Professional qualifications

EAPASA

Areas of expertise

Auditing

Energy

ESIR

Environmental Control

Infrastructure

Mining

Training

Waste Management

CAREER SUMMARY

Ashlea is a Principal Consultant with 18 years' experience in the environmental field. She currently provides technical and strategic expertise on a diverse range of projects in the environmental management field, including environmental scoping and impact assessment studies, environmental management plans, waste and water management, as well as the provision of environmental management solutions and mitigation measures.

Ashlea has been involved in the management of a number of large EIAs specifically within the energy sector such as the Medupi Power Station, and Pebble-Bed Modular Reactor (PBMR) and numerous Transmission Powerlines. She also has significant environmental auditing experience and expertise having undertaken over 70 compliance audits.

Ashlea holds a Masters in Environmental Management; a BTech (Nature Conservation), and a National Diploma (Nature Conservation). She is also a Registered Environmental Assessment Practitioner.

EDUCATION

Masters in Environmental Management, University of the Free State, South Africa	2006
B Tech, Nature Conservation, Technikon SA, South Africa	2001
National Diploma in Nature Conservation, Technikon SA, South Africa	1999

ADDITIONAL TRAINING

Conduct outcomes based assessment (NQF Level 5), South African Qualifications Authority (SAQA)	2009
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PROFESSIONAL MEMBERSHIPS

Registered Environmental Assessment Practitioner (Registration Number: 2019/1005)	2020
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PROFESSIONAL EXPERIENCE

Energy Sector

- 100MW Solar Photovoltaic (PV) Plant (2021). Project Director. This project involved the compilation of a Basic Assessment and Environmental Management Plan for a 100MW Solar PV Plant near Springs in Gauteng, South Africa. Client: Calodex (Pty) Ltd.
- Erica 400kV Loop-in-Loop-out (LILO) Powerline (2020). Compilation of an environmental screening assessment for the Erica 400kV LILO Powerline in Cape Town, Western Cape, South Africa. Client: Eskom Holdings SOC Limited
- Nakonde and Mpika Wind Energy Projects (2018): Project Manager. Compilation of two Environmental Project Briefs for the establishment of meteorological masts at the Proposed Nakonde and Mpika Wind Project Sites in Zambia. Client: Globeleq
- Mozambique – Zambia Interconnector Powerline (2018): Project Manager. This project involved the compilation of the Environmental and Social Impact Assessment and Environmental and Social Management Plan for a 300km 400kV

- powerline between Tete, in Mozambique, and Chipata, in Zambia. Client: Southern African Power Pool (SAPP).
- Proposed Solar and Wind Projects located in the Northern and Western Cape Provinces (2015) Project Manager. This project involved the compilation of 15 Environmental Impact Assessments and Environmental Management Plans for 2 Solar and 2 Wind energy Projects near Aggenys and Sutherland respectively. Client: BioTherm Energy (Pty) Ltd.
 - Proposed Tabor - Nzhelele 400kV Transmission Lines and associated infrastructure, Limpopo Province, South Africa (2012): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for a 100km 400kV powerline between Louis Trichardt and Musina in the Limpopo Province. Client: Eskom Transmission.
 - Pebble Bed Modular Reactor Demonstration Plant and Associated Infrastructure, Western Cape, South Africa (2008): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for the proposed Pebble Bed Modular Reactor Demonstration Plant and Associated Infrastructure in the Western Cape Province. Client: Eskom Generation.
 - Proposed Bantamsklip – Kappa 765 kV Transmission Lines and associated infrastructure, Western and Northern Cape, South Africa (2008): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for four 260km 765kV powerlines between the Bantamsklip Nuclear Power Station Site and the proposed new Kappa Substation in the Karoo, Western Cape Province. Client: Eskom Transmissions.
 - Proposed Bantamsklip – Bacchus, Bacchus - Kappa and Bacchus – Muldersvlei 400 kV Transmission Lines and associated infrastructure, Western and Northern Cape, South Africa (2008): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for a number of 400kV powerlines between the Bantamsklip Nuclear Power Station Site and a number of substations, including Bacchus, Kappa and Muldersvlei, in the Western Cape Province. Client: Eskom Transmission.
 - Proposed Concentrated Solar Thermal Plant in the Northern Cape, South Africa (2006): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for the proposed Concentrated Solar Thermal Plant near Upington in the Northern Cape Province. Client: Eskom Holdings SOC Limited.
 - Proposed Underground Coal Gasification plant, Eskom, Mpumalanga, South Africa (2006): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for the proposed Underground Coal Gasification plant near the Majuba Power Station in the Mpumalanga Province. Client: Eskom Holdings SOC Limited.
 - Proposed new Coal-fired Power Station in the Lephalale Area for Eskom, Limpopo, South Africa (2005): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for the proposed new Coal-fired Power Station in the Lephalale Area in the Limpopo Province. Client: Eskom Generation.

Infrastructure Sector

- Proposed Kraft Paper Mill in Frankfort, Frankfort, Free State, South Africa (2013): Project Manager. This project involved the undertaking of an Environmental Impact Assessment, including the compilation of an Environmental Management Programme, for the proposed establishment of a



ASHLEA STRONG, MEM, EAP

Principal Consultant (Environmental Services), Environment & Energy

KRAFT paper mill in Frankfort in the Free State Province. Client: Industrial Development Corporation of SA (Pty) Ltd.

Mining Sector

- Establishment of the Proposed Rietvlei Opencast Coal Mine, Mpumalanga, South Africa (2013): Project Manager. This project involves the undertaking of an integrated environmental authorisation process, including an Environmental Impact Assessment, Environmental Management Programme Report, Waste Management License Application and Water Use License Application, for the establishment of an opencast coal mine north of Middelburg. Client: Rietvlei Mining Company.
- Inyanda Mine Pegasus South Expansion, Mpumalanga, South Africa (2011): Project Manager. This project included the compilation of an Environmental Impact Assessment, Environmental Management Plan, the Amendment of the existing Environmental Management Programme Report and the amendment of the existing Water Use License for the Inyanda Mine Pegasus South Expansion project, north of Middelburg in the Mpumalanga Province. Client: Exxaro Coal (Pty) Ltd.
- Sishen Infrastructure Program, Northern Cape, South Africa (2010): Project Manager. This project involved the compilation of an Environmental Impact Assessment and an Environmental Management Plan for the infrastructure expansion programme proposed by the Sishen Mine in the Northern Cape. Client: Sishen Iron Ore (Pty) Ltd.

Waste Management Projects

- Proposed continuous Ashing at Majuba Power Station, Mpumalanga, South Africa (2012): Project Manager. This project entailed the compilation Environmental Impact Assessment and Waste Management License Application for the proposed continuous ashing project at the Majuba Power Station in Mpumalanga. Client: Eskom Holdings SOC Limited.
- Proposed continuous Ashing at Tutuka Power Station, Mpumalanga, South Africa (2012): Project Manager. This project entailed the compilation Environmental Impact Assessment and Waste Management License Application for the proposed continuous ashing project at the Tutuka Power Station in Mpumalanga. Client: Eskom Holdings SOC Limited.
- Proposed extension of Ash Dams at Hendrina Power Station, Mpumalanga, South Africa (2011): Project Manager. This project entailed the compilation Environmental Impact Assessment and Waste Management License Application for the proposed extension of the ash dams at the Hendrina Power Station in Mpumalanga. Client: Hendrina Power Station.
- Phase 1 of the Environmental Impact Assessment for the Proposed Regional General and Hazardous Waste Processing Facility, Eastern Cape (2005). Project Manager. This project entailed the compilation Environmental Impact Assessment for the Proposed Regional General and Hazardous Waste Processing Facility in the Eastern Cape. Client: Coega Development Corporation.

Specialist Projects

- Strategic Environmental Assessment for the Development. Master Plan Greater Port Harcourt, Rivers State, Nigeria, Africa (2008): Senior Environmental Consultant. This project entailed the compilation of a Strategic Environmental Assessment for the City of Port Harcourt as part of the development of the Master Plan for the Greater Port Harcourt Area. Client: Port Harcourt Government

Auditing

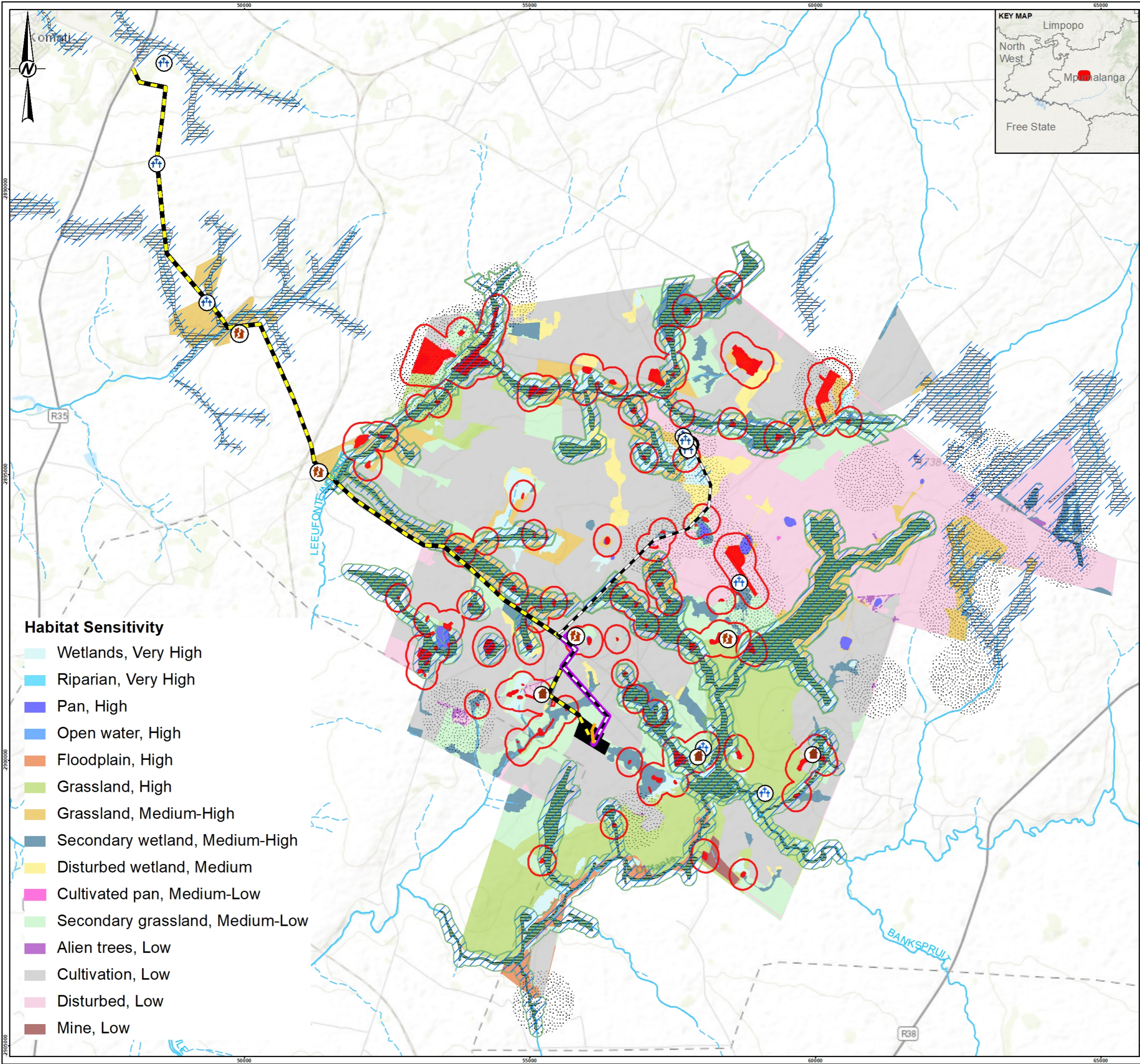
- Sasol Regulation 34 Audits (2019): Lead Auditor. Environmental compliance audits for 13 authorisations for the Sasol Owned Petrol Filling Stations. Client: Sasol Oil (Pty) Ltd

- Regulation 34 Audits at Mogalakwena Mine (2019). Project Manager. Environmental compliance audits of the EMPR and various environmental authorisations at the Mogalakwena Mine in the Limpopo Province. Client: Anglo American Platinum.
- Sasol Environmental Authorisations and Environmental Management Plans for the Secunda Operations (2019): Lead Auditor. Environmental compliance audits for 49 authorisations for the Sasol Secunda. Client: Sasol Secunda Operations
- Waste Management Licence Compliance Audit and PCB Plan Close Out Audit, Phalaborwa, Limpopo, South Africa (2019): Project Manager. Environmental compliance audit of a WML and the PCB Plan for the Palabora Mine. Client: Palabora Company
- Waste Management Licence Compliance Audit and PCB Plan Close Out Audit, Phalaborwa, Limpopo, South Africa (2019): Project Manager. Environmental compliance audit of a WML and the PCB Plan for the Palabora Mine. Client: Palabora Company
- Sasol Mining Water Use Licence Compliance, South Africa (2018): Project Manager. Environmental compliance audit of six WULs held by mining operations in Secunda. Client: Sasol Mining
- BioTherm Round 4 Lenders Technical Advisor (2018). Project Manager – Environmental. Environmental monitoring of the construction of the Konkoonsies II and Aggeneys Photovoltaic Solar Plants against the IFC Performance Standards. Client: Nedbank
- Waste Management License Audits for the Sasol Waste Ash Site, Secunda, Mpumalanga, South Africa (2014 - 2018): Lead Auditor. These projects involve the annual and biannual environmental compliance auditing of the Waste Management licenses for various waste facilities at the Secunda Site in Mpumalanga Province. Client: Sasol Chemical Industries: Secunda Synfuels Operations
- Compliance Audits at Kriel Colliery (2018): Project Manager. This project involved the environmental compliance audits of the Water Use Licenses held by Kriel Colliery in Mpumalanga. Client: Seriti Coal
- Compliance Audits at South 32 (2016 – 2017): Project Manager. This project involved the environmental compliance audits of the Water Use Licenses for the BMK, Douglas, Klipfontein and Middelburg Mine North and South Sections at South 32 in Mpumalanga. Client: South 32
- EMPR Performance Assessment Report at South 32 (2016): Project Manager. This project involved the formal assessment and verification of the Environmental Management Programme Report for the BMK, Douglas, Klipfontein and Middelburg Mine North and South Sections at South 32 in Mpumalanga. Client: South 32
- Compliance Audit for the Bokpoort Concentrating Solar Power (CSP) Facility, Groblershoop, Northern Cape, South Africa (2016): Lead Auditor. This project involved the environmental compliance auditing of the Waste Management License, Environmental Authorisation and Water Use License for the Bokpoort CSP Facility near Groblershoop in the Northern Cape Province. Client: ACWA Power Solafrica Bokpoort CSP Power Plant (Pty) Ltd.

APPENDIX

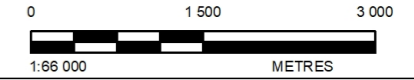
B SENSITIVITY MAP





- LEGEND**
- Built Environment
 - Burial Sites
 - Ruins
 - Option 1 Powerline 3km
 - Option 2 Powerline 8km
 - Option 2a Water (17km)
 - Option 3 Powerline 0.5km
 - H2 Option 2 (25ha)
 - 100m Wetland buffer
 - Wetlands
 - Rivers - Perennial
 - Rivers - Non perennial
 - Air Quality Dwelling Buffer (500m)
- Bat Sensitivity**
- High Sensitivity
 - 200m High Sensitivity Buffer
 - Moderate Sensitivity
 - 100m Moderate Sensitivity Buffer

- Habitat Sensitivity**
- Wetlands, Very High
 - Riparian, Very High
 - Pan, High
 - Open water, High
 - Floodplain, High
 - Grassland, High
 - Grassland, Medium-High
 - Secondary wetland, Medium-High
 - Disturbed wetland, Medium
 - Cultivated pan, Medium-Low
 - Secondary grassland, Medium-Low
 - Alien trees, Low
 - Cultivation, Low
 - Disturbed, Low
 - Mine, Low



NOTE(S)
 1. LINE NOTES
 2. LINE NOTES
 3. LINE NOTES

REFERENCE(S)
 1. COORDINATE SYSTEM: HARTEBEESTHOEK94 LO29
 2. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE

CLIENT
 ENERTRAG SA PTY LTD

PROJECT
 HENDRINA GREEN HYDROGEN

TITLE
 OPTION 2 SENSITIVITY

CONSULTANT		YYYY-MM-DD	2023/04/28
		DESIGNED	KM
		PREPARED	KM
		REVIEWED	TN
		APPROVED	TN

PROJECT NO. 41104000 **CONTROL** **REV.** **FIGURE**

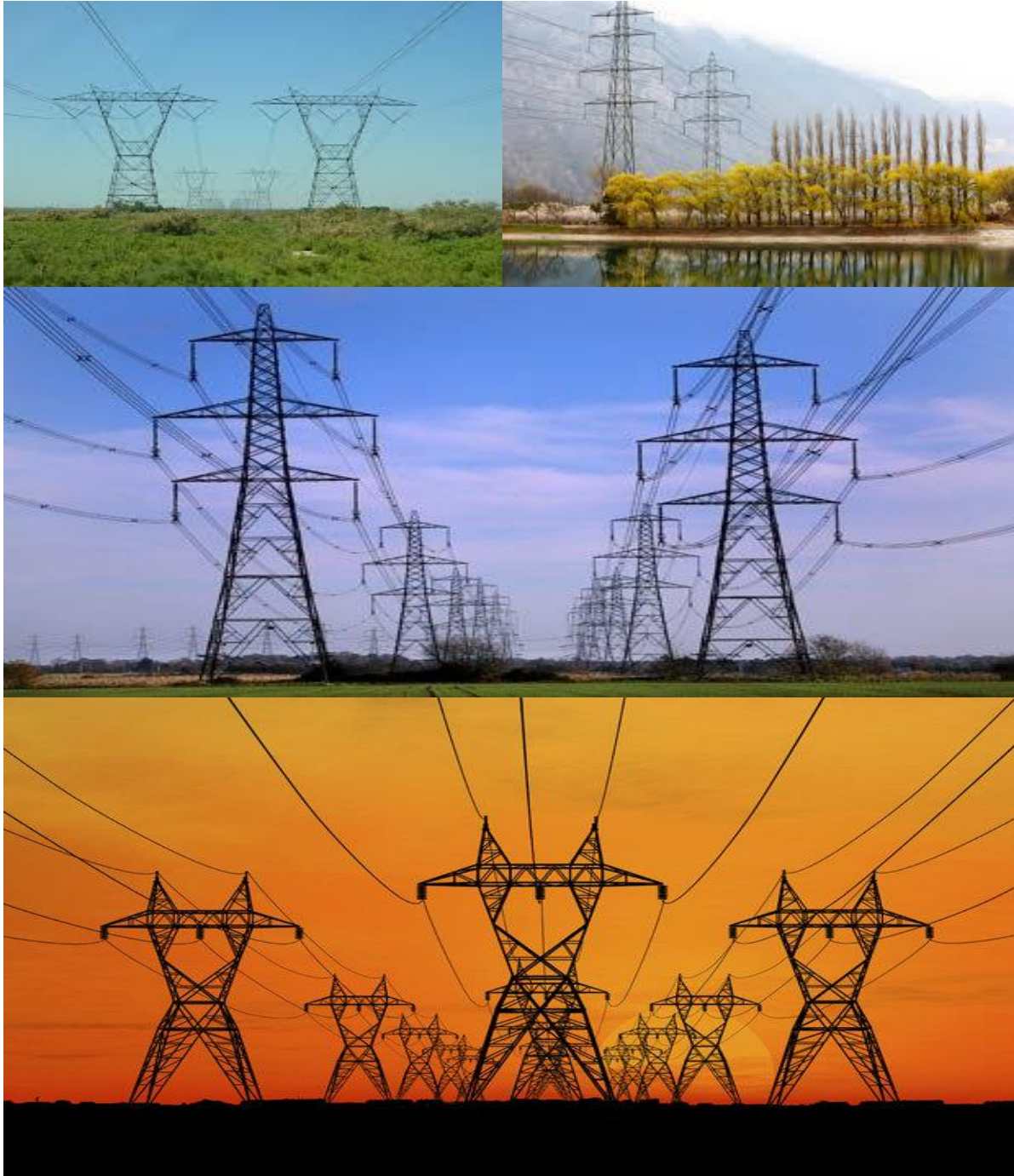
PATH: \\h1-v-arcc\GIS\GIS\WSP\Projects\41104000 - Hendrina Green Hydrogen\13_GIS\WAD\41104000_Sensitivity_Choice_2.mxd PRINTED ON: 2023/04/28 AT: 1:48:13 pm

THIS MEASUREMENT DOES NOT TAKE INTO ACCOUNT THE STRIKE SLIP HAS BEEN MODIFIED FROM 150MM TO 25MM

APPENDIX

C GENERIC EMPR FOR OVERHEAD POWERLINES

APPENDIX 1
GENERIC ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) FOR THE
DEVELOPMENT AND EXPANSION FOR OVERHEAD ELECTRICITY
TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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INTRODUCTION

1. Background

The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) requires that an environmental management programme (EMPr) be submitted where an environmental impact assessment (EIA) has been identified as the environmental instrument to be utilised as the basis for a decision on an application for environmental authorisation (EA). The content of an EMPr must either contain the information set out in Appendix 4 of the Environmental Impact Assessment Regulations, 2014, as amended, (EIA Regulations) or must be a generic EMPr relevant to an application as identified and gazetted by the Minister in a government notice. Once the Minister has identified, through a government notice, that a generic EMPr is relevant to an application for EA, that generic EMPr must be applied by all parties involved in the EA process, including, but not limited to, the applicant and the competent authority (CA).

2. Purpose

This document constitutes a generic EMPr relevant to applications for the development or expansion of overhead electricity transmission and distribution infrastructure, and all listed and specified activities necessary for the realisation of such infrastructure.

3. Objective

The objective of this generic EMPr is to prescribe and pre-approve generally accepted impact management outcomes and impact management actions, which can commonly and repeatedly be used for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of overhead electricity transmission and distribution infrastructure. The use of a generic EMPr is intended to reduce the need to prepare and review individual EMPrs for applications of a similar nature.

4. Scope

The scope of this generic EMPr applies to the development or expansion of overhead electricity transmission and distribution infrastructure requiring EA in terms of NEMA, i.e. with a capacity of 33 kilovolts or more. This generic EMPr applies to activities requiring EA, mainly activity 11 and 47 of the Environmental Impact Assessment Regulations Listing Notice 1 of 2014, as amended, and activity 9 of the Environmental Impact Assessment Regulations Listing Notice 2 of 2014, as amended, and all associated listed or specified activities necessary for the realisation of such infrastructure.

5. Structure of this document

This document is structured in three parts with an Appendix as indicated in the table below:

Part	Section	Heading	Content
A		Provides general and guidance	Definitions, acronyms, roles & responsibilities and documentation and reporting.

Part	Section	Heading	Content
		information and is not legally binding	
B	1	Pre-approved generic EMPr template	<p>Contains generally accepted impact management outcomes and impact management actions required for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of overhead electricity transmission and distribution infrastructure, which are presented in the form of a template that has been pre-approved.</p> <p>The template in this section is to be completed by the contractor, with each completed page signed and dated by the holder of the EA prior to commencement of the activity.</p> <p>Where an impact management outcome is not relevant, the words “not applicable” can be inserted in the template under the “responsible persons” column.</p> <p>Once completed and signed, the template represents the EMPr for the activity approved by the CA and is legally binding. The template is not required to be submitted to the CA as once the generic EMPr is gazetted for implementation, it has been approved by the CA.</p> <p>To allow interested and affected parties access to the pre-approved EMPr template for consideration through the decision-making process, the EAP on behalf of the applicant /proponent must make the hard copy of this EMPr available at a public location and where the applicant has a website, the EMPr should also be made available on such publicly accessible website.</p>
	2	Site specific information	<p>Contains preliminary infrastructure layout and a declaration that the applicant/holder of the EA will comply with the pre-approved generic EMPr template contained in <u>Part B: Section 1</u>, and understands that the impact management outcomes and impact management actions are legally binding. The preliminary infrastructure layout must be finalized to inform the final EMPr that is to be submitted with the basic assessment</p>

Part	Section	Heading	Content
			<p>report (BAR) or environmental impact assessment report (EIAR), ensuring that all impact management outcomes and actions have been either pre-approved or approved in terms of <u>Part C</u>.</p> <p>This section must be submitted to the CA together with the final BAR or EIAR. The information submitted to the CA will be considered to be incomplete should a signed copy of <u>Part B: section 2</u> not be submitted. Once approved, this Section forms part of the EMPr for the development and is legally binding.</p>
C		Site specific sensitivities/ attributes	<p>If any specific environmental sensitivities/ attributes are present on the site which require site specific impact management outcomes and impact management actions, not included in the pre-approved generic EMPr, to manage impacts, these specific impact management outcomes and impact management actions must be included in this section. These specific environmental attributes must be referenced spatially and impact management outcomes and impact management actions must be provided. These specific impact management outcomes and impact management actions must be presented in the format of the pre-approved EMPr template (<u>Part B: section 1</u>)</p> <p>This section will not be required should the site contain no specific environmental sensitivities or attributes. However, if <u>Part C</u> is applicable to the site, it is required to be submitted together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP, and must contain his/her name and expertise including a curriculum vitae. Once approved, Part C forms part of the EMPr for the site and is legally binding.</p> <p>This section applies only to additional impact management outcomes and impact management actions that are necessary for the avoidance, management and mitigation of impacts and risks associated with the specific development or expansion and which are not</p>

Part	Section	Heading	Content
			already included in <u>Part B: section 1</u> .
		Appendix 1	Contains the method statements to be prepared prior to commencement of the activity. The method statements are not required to be submitted to the competent authority.

6. Completion of part B: section 1: the pre-approved generic EMPr template

The template is to be completed prior to commencement of the activity, by providing the following information for each environmental impact management action:

- For implementation
 - a 'responsible person',
 - a method for implementation,
 - a timeframe for implementation
- For monitoring
 - a responsible person
 - frequency
 - evidence of compliance.

The completed template must be signed and dated by the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must be signed and dated on each page by the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

7. Amendments of the impact management outcomes and impact management actions

Once the activity has commenced, a holder of an EA may make amendments to the impact management outcomes and impact management actions in the following manner:

- Amendment of the impact management outcomes: in line with the process contemplated in regulation 37 of the EIA Regulations; and
- Amendment of the impact management actions: in line with the process contemplated in regulation 36 of the EIA Regulations.

8. Documents to be submitted as part of part B: section 2 site specific information and declaration

Part B: Section 2 has three distinct sub-sections. The first and third sub-sections are in a template format. Sub-section two requires a map to be produced.

Sub-section 1 contains the project name, the applicant's name and contact details, the site information, which includes coordinates of the corridor in which the proposed overhead

electricity transmission and distribution infrastructure is proposed as well as the 21-digit Surveyor General code of each cadastral land parcel and, where available, the farm name.

Sub-section 2 is to be prepared by an EAP and must contain his/her name and expertise including a curriculum vitae. This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout using the national web based environmental screening tool, when available for compulsory use at: <https://screening.environment.gov.za/screeningtool>. The sensitivity map shall identify the nature of each sensitive feature e.g. raptor nest, threatened plant species, archaeological site, etc. Sensitivity maps must identify features both within the planned working area and any known sensitive features in the surrounding landscape within 50m from the development footprint. The overhead transmission and distribution profile must be illustrated at an appropriate resolution to enable fine scale interrogation. It is recommended that <20 km of overhead transmission and distribution length is illustrated per page in A3 landscape format. Where considered appropriate, photographs of sensitive features in the context of tower positions must be used.

Sub-section 3 is the declaration that the applicant/proponent or holder of the EA in the case of a change of ownership must complete, which confirms that the applicant/EA holder will comply with the pre-approved generic EMPr template in Section 1 and understands that the impact management outcomes and actions are legally binding.

(a) Amendments to Part B: Section 2 – site specific information and declaration

Should the EA be transferred, Part B: Section 2 must be completed by the new applicant/proponent and submitted with the application for an amendment of the EA in terms of Regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted as part of such an application for an amendment to an EA will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr for the development and the EMPr becomes legally binding to the new EA holder.

PART A – GENERAL INFORMATION

1. DEFINITIONS

In this EMPr any word or expression to which a meaning has been assigned in the NEMA or EIA Regulations has that meaning, and unless the context requires otherwise –

"clearing" means the clearing and removal of vegetation, whether partially or in whole, including trees and shrubs, as specified;

"construction camp" is the area designated for key construction infrastructure and services, including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;

"contractor" - The Contractor has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract, are in line with the Environmental Management Programme and that Method Statements are implemented as described.

"hazardous substance" is a substance governed by the Hazardous Substances Act, 1973 (Act No. 15 of 1973) as well as the Hazardous Chemical and Substances Regulations, 1995;

"method statement" means a written submission by the Contractor to the Project Manager in response to this EMPr or a request by the Project Manager and ECO. The method statement must set out the equipment, materials, labour and method(s) the Contractor proposes using to carry out an activity identified by the Project Manager when requesting the Method Statement. This must be done in such detail that the Project Manager and ECO is able to assess whether the Contractor's proposal is in accordance with this specification and/or will produce results in accordance with this specification;

The method statement must cover applicable details with regard to:

- (i) Construction procedures;
- (ii) Plant, materials and equipment to be used;
- (iii) Transporting the equipment to and from site;
- (iv) How the plant/ material/ equipment will be moved while on site;
- (v) How and where the plant/ material/ equipment will be stored;
- (vi) The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- (vii) Timing and location of activities;
- (viii) Compliance/ non-compliance; and
- (ix) Any other information deemed necessary by the Project Manager.

"slope" means the inclination of a surface expressed as one unit of rise or fall for so many horizontal units;

“**solid waste**” means all solid waste, including construction debris, hazardous waste, excess cement/ concrete, wrapping materials, timber, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers);

“**spoil**” means excavated material which is unsuitable for use as material in the construction works or is material which is surplus to the requirements of the construction works;

“**topsoil**” means a varying depth (up to 300 mm) of the soil profile irrespective of the fertility, appearance, structure, agricultural potential, fertility and composition of the soil; and

“**works**” means the works to be executed in terms of the Contract

2. ACRONYMS and ABBREVIATIONS

CA	Competent Authority
cEO	Contractors Environmental Officer
dEO	Developer Environmental Officer
DPM	Developer Project Manager
DSS	Developer Site Supervisor
EAR	Environmental Audit Report
ECA	Environmental Conservation Act No. 73 of 1989
ECO	Environmental Control Officer
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
ERAP	Emergency Response Action Plan
EMPr	Environmental Management Programme Report
EAP	Environmental Assessment Practitioner
FPA	Fire Protection Agency
HCS	Hazardous chemical Substance
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act ,2004 (Act No. 10 of 2004)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
MSDS	Material Safety Data Sheet
RI&AP's	Registered interested and affected parties

3. ROLES AND RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) IMPLEMENTATION

The effective implementation of this generic EMPr is dependent on established and clear roles, responsibilities and reporting lines within an institutional framework. This section of the EMPr gives guidance to the various environmental roles and reporting lines, however, project specific requirements will ultimately determine the need for the appointment of specific person(s) to undertake specific roles and or responsibilities. As such, it must be noted that in the event that no specific person, for example, an environmental control officer (ECO) is appointed, the holder of the EA remains responsible for ensuring that the duties indicated in this document for action by the ECO are undertaken.

Table 0-1: Guide to roles and responsibilities for implementation of an EMPr

Responsible Person (s)	Role and Responsibilities
Developer's Project Manager (DPM)	<p><u>Role</u> The Project Developer is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). Where required, an environmental control officer (ECO) must be contracted by the Project Developer to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of the environmental authorisation (EA). The Project Developer is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he must ensure that the ECO is integrated as part of the project team while remaining independent.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be fully conversant with the conditions of the EA; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Developer and its Contractor(s); - Issuing of site instructions to the Contractor for corrective actions required; - Monitor the implementation of the EMPr throughout the project by means of site inspections and meetings. Overall management of the project and EMPr implementation; and - Ensure that periodic environmental performance audits are undertaken on the project implementation.
Developer Site Supervisor (DSS)	<p><u>Role</u> The DSS reports directly to the DPM, oversees site works, liaises with the contractor(s) and the ECO. The DSS</p>

Responsible Person (s)	Role and Responsibilities
	<p>is responsible for the day to day implementation of the EMPr and for ensuring the compliance of all contractors with the conditions and requirements stipulated in the EMPr.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Ensure that all contractors identify a contractor's Environmental Officer (cEO); - Must be fully conversant with the conditions of the EA. Oversees site works, liaison with Contractor, DPM and ECO; - Must ensure that all landowners have the relevant contact details of the site staff, ECO and cEO; - Issuing of site instructions to the Contractor for corrective actions required; - Will issue all non-compliances to contractors; and - Ratify the Monthly Environmental Report.
Environmental Control Officer (ECO)	<p><u>Role</u></p> <p>The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the cEO. The ECO provides feedback to the DSS and Project Manager regarding all environmental matters. The Contractor, cEO and dEO are answerable to the Environmental Control Officer for non-compliance with the Performance Specifications as set out in the EA and EMPr.</p> <p>The ECO provides feedback to the DSS and Project Manager, who in turn reports back to the Contractor and potential and Registered Interested &Affected Parties' (RI&AP's), as required. Issues of non-compliance raised by the ECO must be taken up by the Project Manager, and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the Performance Specification) must be endorsed by the Project Manager. The ECO must also, as specified by the EA, report to the relevant CA as and when required.</p>

Responsible Person (s)	Role and Responsibilities
	<p><u>Responsibilities</u></p> <p>The responsibilities of the ECO will include the following:</p> <ul style="list-style-type: none"> - Be aware of the findings and conclusions of all EA related to the development; - Be familiar with the recommendations and mitigation measures of this EMPr; - Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; - Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required; - Educate the construction team about the management measures contained in the EMPr and environmental licenses; - Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective; - Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; - In consultation with the Developer Site Supervisor order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; - Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns; - Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; - Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO); - Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc) as well as corrective and preventive actions taken; - Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken; - Assisting in the resolution of conflicts; - Facilitate training for all personnel on the site – this may range from carrying out the training, to reviewing the training programmes of the Contractor; - In case of non-compliances, the ECO must first communicate this to the Senior Site Supervisor, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance; - Maintenance, update and review of the EMPr; - Communication of all modifications to the EMPr to the relevant stakeholders.

Responsible Person (s)	Role and Responsibilities
<p>developer Environmental Officer (dEO)</p>	<p><u>Role</u> The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor's Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be fully conversant with the EMPr; - Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ; - Confine the development site to the demarcated area; - Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO); - Assist the contractors in addressing environmental challenges on site; - Assist in incident management; - Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared; - Assist the contractor in investigating environmental incidents and compile investigation reports; - Follow-up on pre-warnings, defects, non-conformance reports; - Measure and communicate environmental performance to the Contractor; - Conduct environmental awareness training on site together with ECO and cEO; - Ensure that the necessary legal permits and / or licenses are in place and up to date; - Acting as Developer's Environmental Representative on site and work together with the ECO and contractor;
<p>Contractor</p>	<p><u>Role</u> The Contractor appoints the cEO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described. External contractors must ensure compliance with this EMPr while performing</p>

Responsible Person (s)	Role and Responsibilities
	<p>the onsite activities as per their contract with the Project Developer. The contractors are required, where specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the development or expansion for overhead electricity transmission and distribution infrastructure activities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - project delivery and quality control for the development services as per appointment; - employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; - ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; - attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; - ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.
<p>contractor Environmental Officer (cEO)</p>	<p><u>Role</u></p> <p>Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the Environmental Control Officer and the public. As a minimum the cEO shall meet the following criteria:</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be on site throughout the duration of the project and be dedicated to the project; - Ensure all their staff are aware of the environmental requirements, conditions and constraints with respect to all of their activities on site;

Responsible Person (s)	Role and Responsibilities
	<ul style="list-style-type: none"> - Implementing the environmental conditions, guidelines and requirements as stipulated within the EA, EMPr and Method Statements; - Attend the Environmental Site Meeting; - Undertaking corrective actions where non-compliances are registered within the stipulated timeframes; - Report back formally on the completion of corrective actions; - Assist the ECO in maintaining all the site documentation; - Prepare the site inspection reports and corrective action reports for submission to the ECO; - Assist the ECO with the preparing of the monthly report; and - Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.

4. ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

To ensure accountable and demonstrated implementation of the EMPr, a number of reporting systems, documentation controls and compliance mechanisms must be in place for all overhead electricity transmission and distribution infrastructure projects as a minimum requirement.

4.1 Document control/Filing system

The holder of the EA is solely responsible for the upkeep and management of the EMPr file. At a minimum, all documentation detailed below will be stored in the EMPr file. A hard copy of all documentation shall be filed, while an electronic copy may be kept where relevant. A duplicate file will be maintained in the office of the DSS (where applicable). This duplicate file must remain current and up-to-date. The filing system must be updated and relevant documents added as required. The EMPr file must be made available at all times on request by the CA or other relevant authorities. The EMPr file will form part of any environmental audits undertaken as prescribed in the EIA Regulations.

4.2 Documentation to be available

At the outset of the project the following preliminary list of documents shall be placed in the filing system and be accessible at all times:

- Full copy of the signed EA from the CA in terms of NEMA, granting approval for the development or expansion;
- Copy of the generic and site specific EMPr as well as any amendments thereof;
- Copy of declaration of implementing generic EMPr and subsequent approval of site specific EMPr and amendments thereof;
- All method statements;
- Completed environmental checklists;
- Minutes and attendance register of environmental site meetings;
- An up-to-date environmental incident log;
- A copy of all instructions or directives issued;
- A copy of all corrective actions signed off. The corrective actions must be filed in such a way that a clear reference is made to the non-compliance record;
- Complaints register.

4.3 Weekly Environmental Checklist

The ECOs are required to complete a Weekly Environmental Checklist, the format of which is to be agreed prior to commencement of the activity. The ECOs are required to sign and date the checklist, retain a copy in the EMPr file and submit a copy of the completed checklist to the DSS on a weekly basis.

The checklists will form the basis for the Monthly Environmental Reports. Copies of all completed checklists will be attached as Annexures to the Environmental Audit Report as required in terms of the EIA Regulations.

4.4 Environmental site meetings

Minutes of the environmental site meetings shall be kept. The minutes must include an attendance register and will be attached to the Monthly Report that is distributed to attendees. Each set of minutes must clearly record "Matters for Attention" that will be reviewed at the next meeting.

4.5 Required Method Statements

The method statement will be done in such detail that the ECOs are enabled to assess whether the contractor's proposal is in accordance with the EMPr.

The method statement must cover applicable details with regard to:

- development procedures;
- materials and equipment to be used;
- getting the equipment to and from site;
- how the equipment/ material will be moved while on site;
- how and where material will be stored;
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- timing and location of activities;
- compliance/ non-compliance with the EMPr; and
- any other information deemed necessary by the ECOs.

Unless indicated otherwise by the Project Manager, the Contractor shall provide the following method statements to the Project Manager no less than 14 days prior to the commencement date of the activity:

- Site establishment – Camps, Lay-down or storage areas, satellite camps, infrastructure;
- Batch plants;
- Workshop or plant servicing;
- Handling, transport and storage of Hazardous Chemical Substance's;
- Vegetation management – Protected, clearing, aliens, felling;
- Access management – Roads, gates, crossings etc.;
- Fire plan;
- Waste management – transport, storage, segregation, classification, disposal (all waste streams);
- Social interaction – complaints management, compensation claims, access to properties etc.;
- Water – use (source, abstraction and disposal), access and all related information, crossings and mitigation;
- Emergency preparedness – Spills, training, other environmental emergencies;
- Dust and noise management methodologies;
- Fauna interaction and risk management – only if the risk was identified – wildlife interaction especially on game farms; and
- Heritage and palaeontology management.

The ECOs shall monitor and ensure that the contractors perform in accordance with these method statements. Completed and agreed method statements between the holder of the EA and the contractor shall be captured in Appendix 1.

4.6 Environmental Incident Log (Diary)

The ECOs are required to maintain an up-to-date and current Environmental Incident Log (environmental diary). The Environmental Incident Log is a means to record all environmental incidents and/or all non-compliance notice would not be issued. An environmental incident is defined as:

- Any deviation from the listed impact management actions (listed in this EMPr) that may be addressed immediately by the ECOs. (For example a contractor's staff member littering or a drip tray that has not been emptied);
- Any environmental impact resulting from an action or activity by a contractor in contravention of the environmental stipulations and guidelines listed in the EMPr which as a single event would have a minor impact but which if cumulative and continuous would have a significant effect (for example no toilet paper available in the ablutions for an afternoon); and
- General environmental information such as road kills or injured wildlife.

The ECOs are to record all environmental incidents in the Environmental Incident Log. All incidents regardless of severity must be reported to the Developer. The Log is to be kept in the EMPr file and at a minimum the following will be recorded for each environmental incident:

- The date and time of the incident;
- Description of the incident;
- The name of the Contractor responsible;
- The incident must be listed as significant or minor;
- If the incident is listed as significant, a non-compliance notice must be issued, and recorded in the log;
- Remedial or corrective action taken to mitigate the incident; and
- Record of repeat minor offences by the same contractor or staff member.

The Environmental Incident Log will be captured in the EAR.

4.7 Non-compliance

A non-compliance notice will be issued to the responsible contractor by the ECOs via the DSS or Project Manager. The non-compliance notice will be issued in writing; a copy filed in the EMPr file and will at a minimum include the following:

- Time and date of the non-compliance;
 - Name of the contractor responsible;
 - Nature and description of the non-compliance;
 - Recommended / required corrective action; and
 - Date by which the corrective action to be completed.
- The contractors shall act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the development site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The ECO should be made aware of any complaints. Any non-compliance with the agreed procedures of the EMPr is a transgression of the

various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause shall be reported to the relevant CA for them to deal with the transgression, as it deems fit. The contractor is deemed not to have complied with the EMPr if, inter alia, There is a deviation from the environmental conditions, impact management outcomes and impact management actions , as approved in generic and site specific EMPr as relevant as set out in the EMPr, which deviation has, or may cause, an environmental impact.

4.8 Corrective action records

For each non-compliance notice issued, a documented corrective action must be recorded. On receiving a non-compliance notice from the DSS, the contractor's cEO will ensure that the corrective actions required take place within the stipulated timeframe. On completion of the corrective action the cEO is to issue a Corrective Action Report in writing to the ECOs. If satisfied that the corrective action has been completed, the ECOs are to sign-off on the Corrective Action Report, and attach the report to the non-compliance notice in the EMPr file. A corrective action is considered complete once the report has signed off by the ECOs.

4.9 Photographic record

A digital photographic record will be kept. The photographic record will be used to show before, during and post rehabilitation evidence of the project as well used in cases of damages claims if they arise. Each image must be dated and a brief description note attached.

The Contractor shall:

1. Allow the ECOs access to take photographs of all areas, activities and actions.

The ECOs shall keep an electronic database of photographic records which will include:

1. Pictures of all areas designated as work areas, camp areas, development sites and storage areas taken before these areas are set up;
2. All bunding and fencing;
3. Road conditions and road verges;
4. Condition of all farm fences;
5. Topsoil storage areas;
6. All areas to be cordoned off during construction;
7. Waste management sites;
8. Ablution facilities (inside and out);
9. Any non-conformances deemed to be "significant";
10. All completed corrective actions for non-compliances;
11. All required signage;
12. Photographic recordings of incidents;
13. All areas before, during and post rehabilitation; and
14. Include relevant photographs in the Final Environmental Audit Report.

4.10 Complaints register

The ECOs shall keep a current and up-to-date complaints register. The complaints register is to be a record of all complaints received from communities, stakeholders and individuals. The Complaints Record shall:

1. Record the name and contact details of the complainant;
2. Record the time and date of the complaint;
3. Contain a detailed description of the complaint;
4. Where relevant and appropriate, contain photographic evidence of the complaint or damage (ECOs to take relevant photographs); and
5. Contain a copy of the ECOs written response to each complaint received and keep a record of any further correspondence with the complainant. The ECO's written response will include a description of any corrective action to be taken and must be signed by the Contractor, ECO and affected party. Where a damage claim is issued by the complainant, the ECOs shall respond as described in **(section 4.11)** below.

4.11 Claims for damages

In the event that a Claim for Damages is submitted by a community, landowner or individual, the ECOs shall:

1. Record the full detail of the complaint as described in **(section 4.10)** above;
2. The DPM will evaluate the claim and associated damage and submit the evaluation to the Senior Site Representative for approval;
3. Following consideration by the DPM, the claim is to be resolved and settled immediately, or the reason for not accepting the claim communicated in writing to the claimant. Should the claimant not accept this, the ECO shall, in writing report the incident to the Developer's negotiator and legal department; and
4. A formal record of the response by the ECOs to the claimant as well as the rectification of the method of making payments not amount will be recorded in the EMPr file.

4.12 Interactions with affected parties

Open, transparent and good relations with affected landowners, communities and regional staff are an essential aspect to the successful management and mitigation of environmental impacts.

The ECOs shall:

1. Ensure that all queries, complaints and claims are dealt within an agreed timeframe;
2. Ensure that any or all agreements are documented, signed by all parties and a record of the agreement kept in the EMPr file;
3. Ensure that a complaints telephone numbers are made available to all landowners and affected parties; and
4. Ensure that contact with affected parties is courteous at all times;

4.13 Environmental audits

Internal environmental audits of the activity and implementation of the EMPr must be undertaken. The findings and outcomes must be included in the EMPr file and be submitted to the CA at intervals as indicated in the EA.

An Environmental Audit Report must be prepared monthly. The report will be tabled as the key point on the agenda of the Environmental Site Meeting. The Report is submitted for acceptance at the meeting and the final report will be circulated to the Project Manager and filed in the EMPr file. At a frequency determined by the EA, the ECOs shall submit the monthly reports to the CA. At a minimum the monthly report is to cover the following:

- Weekly Environmental Checklists;
- Deviations and non-compliances with the checklists;
- Non-compliances issued;
- Completed and reported corrective actions;
- Environmental Monitoring;
- General environmental findings and actions; and
- Minutes of the Bi-monthly Environmental Site Meetings.

4.14 Final environmental audits

On final completion of the rehabilitation and/or requirements of the EA a final EAR is to be prepared and submitted to the CA. The EAR must comply with Appendix 7 of the EIA Regulations.

PART B: SECTION 1: Pre-approved generic EMPr template

5. IMPACT MANAGEMENT OUTCOMES AND IMPACT MANAGEMENT ACTIONS

This section provides a pre-approved generic EMPr template with aspects that are common to the development of overhead electricity transmission and distribution infrastructure. There is a list of aspects identified for the development or expansion of overhead electricity transmission and distribution infrastructure, and for each aspect a set of prescribed impact management outcomes and associated impact management actions have been identified. Holders of EAs are responsible to ensure the implementation of these outcomes and actions for all projects as a minimum requirement, in order to mitigate the impact of such aspects identified for the development or expansion of overhead electricity transmission and distribution infrastructure.

The template provided below is to be completed by providing the information under each heading for each environmental impact management action.

The completed template must be signed and dated on each page by both the contractor and the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must also be duly signed and dated on each page by the contractor and the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

5.1 Environmental awareness training

Impact management outcome: All onsite staff are aware and understands the individual responsibilities in terms of this EMPr.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All staff must receive environmental awareness training prior to commencement of the activities; - The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course; - Refresher environmental awareness training is available as and when required; - All staff are aware of the conditions and controls linked to the EA and within the EMPr and made aware of their individual roles and responsibilities in achieving compliance with the EA and EMPr; - The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum: <ul style="list-style-type: none"> a) Safety notifications; and b) No littering. - Environmental awareness training must include as a minimum the following: <ul style="list-style-type: none"> a) Description of significant environmental impacts, actual or potential, related to their work activities; b) Mitigation measures to be implemented when carrying out specific activities; c) Emergency preparedness and response procedures; 						

<ul style="list-style-type: none"> d) Emergency procedures; e) Procedures to be followed when working near or within sensitive areas; f) Wastewater management procedures; g) Water usage and conservation; h) Solid waste management procedures; i) Sanitation procedures; j) Fire prevention; and k) Disease prevention. <ul style="list-style-type: none"> – A record of all environmental awareness training courses undertaken as part of the EMPr must be available; – Educate workers on the dangers of open and/or unattended fires; – A staff attendance register of all staff to have received environmental awareness training must be available. – Course material must be available and presented in appropriate languages that all staff can understand. 						
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5.2 Site Establishment development

Impact management outcome: Impacts on the environment are minimised during site establishment and the development footprint are kept to demarcated development area.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – A method statement must be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location 						

<p>of key infrastructure and services (where applicable), including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;</p> <ul style="list-style-type: none"> - Location of camps must be within approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walk through; - Sites must be located where possible on previously disturbed areas; - The camp must be fenced in accordance with Section 5.5: Fencing and gate installation; and - The use of existing accommodation for contractor staff, where possible, is encouraged. 						
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5.3 Access restricted areas

Impact management outcome: Access to restricted areas prevented.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development; - Erect, demarcate and maintain a temporary barrier with clear signage around the perimeter of any access restricted 						

<p>area, colour coding could be used if appropriate; and</p> <ul style="list-style-type: none"> – Unauthorised access and development related activity inside access restricted areas is prohibited. 						
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5.4 Access roads

<p>Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Access to the servitude and tower positions must be negotiated with the relevant landowner and must fall within the assessed and authorised area; – An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities; – The access roads to tower positions must be signposted after access has been negotiated and before the commencement of the activities; – All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition – All contractors must be made aware of all these access routes. – Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense; – Maximum use of both existing servitudes and existing roads must be made to minimize further disturbance through the 						

<p>development of new roads;</p> <ul style="list-style-type: none"> - In circumstances where private roads must be used, the condition of the said roads must be recorded in accordance with section 4.9: photographic record; prior to use and the condition thereof agreed by the landowner, the DPM, and the contractor; - Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas or croplands - Access roads must only be developed on pre-planned and approved roads. 						
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5.5 Fencing and Gate installation

Impact management outcome: Minimise impact to the environment and ensure safe and controlled access to the site through the erection of fencing and gates where required.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Use existing gates provided to gain access to all parts of the area authorised for development, where possible; - Existing and new gates to be recorded and documented in accordance with section 4.9: photographic record; - All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner; - At points where the line crosses a fence in which there is no suitable gate within the extent of the line servitude, on the instruction of the DPM, a gate must be installed at the approval of the landowner; 						

<ul style="list-style-type: none"> - Care must be taken that the gates must be so erected that there is a gap of no more than 100 mm between the bottom of the gate and the ground; - Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate; - Original tension must be maintained in the fence wires; - All gates installed in electrified fencing must be re-electrified; - All demarcation fencing and barriers must be maintained in good working order for the duration of overhead transmission and distribution electricity infrastructure development activities; - Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where appropriate and would not cause harm to the sensitive flora; - Any temporary fencing to restrict the movement of life-stock must only be erected with the permission of the land owner. - All fencing must be developed of high quality material bearing the SABS mark; - The use of razor wire as fencing must be avoided; - Fenced areas with gate access must remain locked after hours, during weekends and on holidays if staff is away from site. Site security will be required at all times; - On completion of the development phase all temporary fences are to be removed; - The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely. 						
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5.6 Water Supply Management

Impact management outcome: Undertake responsible water usage.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All abstraction points or bore holes must be registered with the DWS and suitable water meters installed to ensure that the abstracted volumes are measured on a daily basis; - The Contractor must ensure the following: <ul style="list-style-type: none"> a. The vehicle abstracting water from a river does not enter or cross it and does not operate from within the river; b. No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and c. All reasonable measures to limit pollution or sedimentation of the downstream watercourse are implemented. - Ensure water conservation is being practiced by: <ul style="list-style-type: none"> a. Minimising water use during cleaning of equipment; b. Undertaking regular audits of water systems; and c. Including a discussion on water usage and conservation during environmental awareness training. d. The use of grey water is encouraged. 						

5.7 Storm and waste water management

Impact management outcome: Impacts to the environment caused by storm water and wastewater discharges during construction are avoided.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager; - All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility; - Natural storm water runoff not contaminated during the development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO; - Water that has been contaminated with suspended solids, such as soils and silt, may be released into watercourses or water bodies only once all suspended solids have been removed from the water by settling out these solids in settlement ponds. The release of settled water back into the environment must be subject to the Project Manager's approval and support by the ECO. 						

5.8 Solid and hazardous waste management

Impact management outcome: Waste is appropriately stored, handled and safely disposed of at a recognised waste facility.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All measures regarding waste management must be undertaken using an integrated waste management approach; - Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided; - A suitably positioned and clearly demarcated waste collection site must be identified and provided; - The waste collection site must be maintained in a clean and orderly manner; - Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal; - Staff must be trained in waste segregation; - Bins must be emptied regularly; - General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company; - Hazardous waste must be disposed of at a registered waste disposal site; - Certificates of safe disposal for general, hazardous and recycled waste must be maintained. 						

5.9 Protection of watercourses and estuaries

Impact management outcome: Pollution and contamination of the watercourse environment and or estuary erosion are prevented.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities; - In the event of a spill, prompt action must be taken to clear the polluted or affected areas; - Where possible, no development equipment must traverse any seasonal or permanent wetland - No return flow into the estuaries must be allowed and no disturbance of the Estuarine Functional Zone should occur; - Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available; - There must not be any impact on the long term morphological dynamics of watercourses or estuaries; - Existing crossing points must be favored over the creation of new crossings (including temporary access) - When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: <ul style="list-style-type: none"> a) Water levels during the period of construction; No altering of the bed, banks, course or characteristics of a watercourse 						

<p>b) During the execution of the works, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that construction equipment is well maintained;</p> <p>c) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and</p> <p>d) Appropriate rehabilitation and re-vegetation measures for the watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows.</p>						
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5.10 Vegetation clearing

Impact management outcome: Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>General:</p> <ul style="list-style-type: none"> - Indigenous vegetation which does not interfere with the development must be left undisturbed; - Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species; - Search, rescue and replanting of all protected and endangered species likely to be damaged during project development must be identified by the relevant specialist and completed prior to any development or clearing; 						

<ul style="list-style-type: none"> - Permits for removal must be obtained from the Department of Agriculture, Forestry and Fisheries prior to the cutting or clearing of the affected species, and they must be filed; - The Environmental Audit Report must confirm that all identified species have been rescued and replanted and that the location of replanting is compliant with conditions of approvals; - Trees felled due to construction must be documented and form part of the Environmental Audit Report; - Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris; - Only a registered pest control operator may apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered pest control operator, supervision of a registered pest control operator or is appropriately trained; - A daily register must be kept of all relevant details of herbicide usage; - No herbicides must be used in estuaries; - All protected species and sensitive vegetation not removed must be clearly marked and such areas fenced off in accordance to Section 5.3: Access restricted areas. <p>Servitude:</p> <ul style="list-style-type: none"> - Vegetation that does not grow high enough to cause interference with overhead transmission and distribution infrastructures, or cause a fire hazard to any plantation, must not be cut or trimmed unless it is growing in the road access area, and then only at the discretion of the Project Manager; - Where clearing for access purposes is essential, the maximum width to be cleared within the servitude must be in accordance to distance as agreed between the land 						
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<p>owner and the EA holder</p> <ul style="list-style-type: none"> - Alien invasive vegetation must be removed according to a plan (in line with relevant municipal and provincial procedures, guidelines and recommendations) and disposed of at a recognised waste disposal facility; - Vegetation must be trimmed where it is likely to intrude on the minimum vegetation clearance distance (MVCD) or will intrude on this distance before the next scheduled clearance. MVCD is determined from SANS 10280; - Debris resulting from clearing and pruning must be disposed of at a recognised waste disposal facility, unless the landowners wish to retain the cut vegetation; - In the case of the development of new overhead transmission and distribution infrastructures, a one metre "trace-line" must be cut through the vegetation for stringing purposes only and no vehicle access must be cleared along the "trace-line". Alternative methods of stringing which limit impact to the environment must always be considered. 						
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5.11 Protection of fauna

Impact management outcome: Minimise disturbance to fauna.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present; - The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the 						

<p>development programme;</p> <ul style="list-style-type: none"> - Breeding sites must be kept intact and disturbance to breeding birds must be avoided. Special care must be taken where nestlings or fledglings are present; - Nesting sites on existing parallel lines must documented; - Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds; - Bird guards and diverters must be installed on the new line as per the recommendations of the specialist; - No poaching must be tolerated under any circumstances. All animal dens in close proximity to the works areas must be marked as Access restricted areas; - No deliberate or intentional killing of fauna is allowed; - In areas where snakes are abundant, snake deterrents to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and - No Threatened or Protected species (ToPs) and/or protected fauna as listed according NEMBA (Act No. 10 of 2004) and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits. 						
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5.12 Protection of heritage resources

Impact management outcome: Minimise impact to heritage resources.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identify, demarcate and prevent impact to all known 						

<p>sensitive heritage features on site in accordance with the No-Go procedure in Section 5.3: Access restricted areas;</p> <ul style="list-style-type: none"> - Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance; - All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/palaeontologist (or the South African Police Services), so that a systematic and professional investigation can be undertaken. Sufficient time must be allowed to remove/collect such material before development recommences. 						
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5.13 Safety of the public

<p>Impact management outcome: All precautions are taken to minimise the risk of injury, harm or complaints.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc.; - All unattended open excavations must be adequately fenced or demarcated; - Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding; - Ensure structures vulnerable to high winds are secured; - Maintain an incidents and complaints register in which all 						

incidents or complaints involving the public are logged.						
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5.14 Sanitation

Impact management outcome: Clean and well maintained toilet facilities are available to all staff in an effort to minimise the risk of disease and impact to the environment.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Mobile chemical toilets are installed onsite if no other ablution facilities are available; - The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances; - Where mobile chemical toilets are required, the following must be ensured: <ul style="list-style-type: none"> a) Toilets are located no closer than 100 m to any watercourse or water body; b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause; c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance with the EMPr; d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to prevent toilet paper from being blown out; e) Toilets are emptied before long weekends and workers holidays, and must be locked after working hours; f) Toilets are serviced regularly and the ECO must inspect 						

toilets to ensure compliance to health standards; – A copy of the waste disposal certificates must be maintained.						
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5.15 Prevention of disease

Impact Management outcome: All necessary precautions linked to the spread of disease are taken.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Undertake environmentally-friendly pest control in the camp area; – Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV AIDS; – The Contractor must ensure that information posters on AIDS are displayed in the Contractor Camp area; – Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable; – Free condoms must be made available to all staff on site at central points; – Medical support must be made available; – Provide access to Voluntary HIV Testing and Counselling Services. 						

5.16 Emergency procedures

Impact management outcome: Emergency procedures are in place to enable a rapid and effective response to all types of environmental emergencies.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project; - The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation; - All staff must be made aware of emergency procedures as part of environmental awareness training; - The relevant local authority must be made aware of a fire as soon as it starts; - In the event of emergency necessary mitigation measures to contain the spill or leak must be implemented (see Hazardous Substances section 5.17). 						

5.17 Hazardous substances

Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible; - All hazardous substances must be stored in suitable 						

<p>containers as defined in the Method Statement;</p> <ul style="list-style-type: none"> - Containers must be clearly marked to indicate contents, quantities and safety requirements; - All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers; - Bunded areas to be suitably lined with a SABS approved liner; - An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis; - All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS); - All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet; - Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available; - The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers; - The tanks/ bowsers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and the volume inside the bund must be 130% of the total capacity of all the storage tanks/ bowsers (110% statutory requirement plus an allowance for rainfall); - The floor of the bund must be sloped, draining to an oil separator; 						
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<ul style="list-style-type: none"> - Provision must be made for refueling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained; - All empty externally dirty drums must be stored on a drip tray or within a bunded area; - No unauthorised access into the hazardous substances storage areas must be permitted; - No smoking must be allowed within the vicinity of the hazardous storage areas; - Adequate fire-fighting equipment must be made available at all hazardous storage areas; - Where refueling away from the dedicated refueling station is required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used; - An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times; - The responsible operator must have the required training to make use of the spill kit in emergency situations; - An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken; - In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008. Refer to Section 5.7 for procedures concerning storm and waste water management and 5.8 for solid and hazardous waste management. 						
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5.18 Workshop, equipment maintenance and storage

Impact management outcome: Soil, surface water and groundwater contamination is minimised.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area; - During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. The relevant local authority must be made aware of a fire as soon as it starts; - Leaking equipment must be repaired immediately or be removed from site to facilitate repair; - Workshop areas must be monitored for oil and fuel spills; - Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available; - The workshop area must have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed; - Water drainage from the workshop must be contained and managed in accordance Section 5.7: storm and waste water management. 						

5.19 Batching plants

Impact management outcome: Minimise spillages and contamination of soil, surface water and groundwater.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Concrete mixing must be carried out on an impermeable surface; – Batching plants areas must be fitted with a containment facility for the collection of cement laden water. – Dirty water from the batching plant must be contained to prevent soil and groundwater contamination – Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; – A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; – Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; – Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; – Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to Section 5.20: Dust emissions) – Any excess sand, stone and cement must be removed or reused from site on completion of construction period and disposed at a registered disposal facility; – Temporary fencing must be erected around batching plants 						

in accordance with Section 5.5: Fencing and gate installation.						
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5.20 Dust emissions

Impact management outcome: Dust prevention measures are applied to minimise the generation of dust.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO; - Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re- vegetated or stabilised as soon as is practically possible; - Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; - During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level; - Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind; - Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO; 						

<ul style="list-style-type: none"> - Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas; - Straw stabilisation must be applied at a rate of one bale/10 m² and harrowed into the top 100 mm of top material, for all completed earthworks; - For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust. 						
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5.21 Blasting

Impact management outcome: Impact to the environment is minimised through a safe blasting practice.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Any blasting activity must be conducted by a suitably licensed blasting contractor; and - Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such activity taking place on Site. 						

5.22 Noise

Impact Management outcome: Unnecessary noise is prevented by ensuring that noise from construction activities is mitigated.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

<ul style="list-style-type: none"> - The Contractor must keep noise level within acceptable limits, Restrict the use of sound amplification equipment for communication and emergency only; - All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained; - Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers; - Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff. Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management. 						
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5.23 Fire prevention

Impact management outcome: Prevention of uncontrollable fires.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Designate smoking areas where the fire hazard could be regarded as insignificant; - Firefighting equipment must be available on all vehicles located on site; - The local Fire Protection Agency (FPA) must be informed of construction activities; - Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site; 						

- Two way swop of contact details between ECO and FPA.						
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5.24 Stockpiling and stockpile areas

Impact management outcome: Erosion and sedimentation as a result of stockpiling are reduced.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All material that is excavated during the project development phase (either during piling (if required) or earthworks) must be stored appropriately on site in order to minimise impacts to watercourses, watercourses and water bodies; - All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods; - Topsoil stockpiles must not exceed 2 m in height; - During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.); - Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material. 						

5.25 Finalising tower positions

Impact management outcome: No environmental degradation occurs as a result of the survey and pegging operations.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - No vegetation clearing must occur during survey and pegging operations; - No new access roads must be developed to facilitate access for survey and pegging purposes; - Project manager, botanical specialist and contractor to agree on final tower positions based on survey within assessed and approved areas; - The surveyor is to demarcate (peg) access roads/tracks in consultation with ECO. No deviations will be allowed without the prior written consent from the ECO. 						

5.26 Excavation and Installation of foundations

Impact management outcome: No environmental degradation occurs as a result of excavation or installation of foundations.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All excess spoil generated during foundation excavation must be disposed of in an appropriate manner and at a recognised disposal site, if not used for backfilling purposes; - Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes; - Management of equipment for excavation purposes must 						

<p>be undertaken in accordance with Section 5.18: Workshop equipment maintenance and storage; and</p> <ul style="list-style-type: none"> – Hazardous substances spills from equipment must be managed in accordance with Section 5.17: Hazardous substances. – Batching of cement to be undertaken in accordance with Section 5.19 : Batching plants; – Residual cement must be disposed of in accordance with Section 5.8: Solid and hazardous waste management. 						
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5.27 Assembly and erecting towers

Impact management outcome: No environmental degradation occurs as a result of assembly and erecting of towers.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Prior to erection, assembled towers and tower sections must be stored on elevated surface (suggest wooden blocks) to minimise damage to the underlying vegetation; – In sensitive areas, tower assembly must take place off-site or away from sensitive positions; – The crane used for tower assembly must be operated in a manner which minimises impact to the environment; – The number of crane trips to each site must be minimised; – Wheeled cranes must be utilised in preference to tracked cranes; – Consideration must be given to erecting towers by helicopter or by hand where it is warranted to limit the extent of environmental impact; – Access to tower positions to be undertaken in accordance 						

<p>with access requirements in specified in Section 8.4: Access Roads;</p> <ul style="list-style-type: none"> - Vegetation clearance to be undertaken in accordance with general vegetation clearance requirements specified in Section 8.10: Vegetation clearing; - No levelling at tower sites must be permitted unless approved by the Development Project Manager or Developer Site Supervisor; - Topsoil must be removed separately from subsoil material and stored for later use during rehabilitation of such tower sites; - Topsoil must be stored in heaps not higher than 1m to prevent destruction of the seed bank within the topsoil; - Excavated slopes must be no greater than 1:3, but where this is unavoidable, appropriate measures must be undertaken to stabilise the slopes; - Fly rock from blasting activity must be minimised and any pieces greater than 150 mm falling beyond the Working Area, must be collected and removed; - Only existing disturbed areas are utilised as spoil areas; - Drainage is provided to control groundwater exit gradient with the spill areas such that migration of fines is kept to a minimum; - Surface water runoff is appropriately channeled through or around spoil areas; - During backfilling operations, care must be taken not to dump the topsoil at the bottom of the foundation and then put spoil on top of that; - The surface of the spoil is appropriately rehabilitated in accordance with the requirements specified in Section 5.29: Landscaping and rehabilitation; 						
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<ul style="list-style-type: none"> - The retained topsoil must be spread evenly over areas to be rehabilitated and suitably compacted to effect re-vegetation of such areas to prevent erosion as soon as construction activities on the site is complete. Spreading of topsoil must not be undertaken at the beginning of the dry season. 						
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5.28 Stringing

Impact management outcome: No environmental degradation occurs as a result of stringing.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Where possible, previously disturbed areas must be used for the siting of winch and tensioner stations. In all other instances, the siting of the winch and tensioner must avoid Access restricted areas and other sensitive areas; - The winch and tensioner station must be equipped with drip trays in order to contain any fuel, hydraulic fuel or oil spills and leaks; - Refueling of the winch and tensioner stations must be undertaken in accordance with Section 5.17: Hazardous substances; - In the case of the development of overhead transmission and distribution infrastructure, a one metre "trace-line" may be cut through the vegetation for stringing purposes only and no vehicle access must be cleared along "trace-lines". Vegetation clearing must be undertaken by hand, using chainsaws and hand held implements, with vegetation being cut off at ground level. No tracked or wheeled 						

<p>mechanised equipment must be used;</p> <ul style="list-style-type: none"> - Alternative methods of stringing which limit impact to the environment must always be considered e.g. by hand or by using a helicopter; - Where the stringing operation crosses a public or private road or railway line, the necessary scaffolding/ protection measures must be installed to facilitate access. If, for any reason, such access has to be closed for any period(s) during development, the persons affected must be given reasonable notice, in writing; - No services (electrical distribution lines, telephone lines, roads, railways lines, pipelines fences etc.) must be damaged because of stringing operations. Where disruption to services is unavoidable, persons affected must be given reasonable notice, in writing; - Where stringing operations cross cultivated land, damage to crops is restricted to the minimum required to conduct stringing operations, and reasonable notice (10 work days minimum), in writing, must be provided to the landowner; - Necessary scaffolding protection measures must be installed to prevent damage to the structures supporting certain high value agricultural areas such as vineyards, orchards, nurseries. 						
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5.29 Socio-economic

Impact management outcome: Socio-economic development is enhanced.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

<ul style="list-style-type: none"> - Develop and implement communication strategies to facilitate public participation; - Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process; - Sustain continuous communication and liaison with neighboring owners and residents - Create work and training opportunities for local stakeholders; and - Where feasible, no workers, with the exception of security personnel, must be permitted to stay over-night on the site. This would reduce the risk to local farmers. 						
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5.30 Temporary closure of site

Impact management outcome: Minimise the risk of environmental impact during periods of site closure greater than five days.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Bunds must be emptied (where applicable) and need to be undertaken in accordance with the impact management actions included in sections 5.17: management of hazardous substances and 5.18 workshop, equipment maintenance and storage; - Hazardous storage areas must be well ventilated; - Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service; - Emergency and contact details displayed must be displayed; - Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and 						

<p>emergency personnel;</p> <ul style="list-style-type: none"> - Night hazards such as reflectors, lighting, traffic signage etc. must have been checked; - Fire hazards identified and the local authority must have been notified of any potential threats e.g. large brush stockpiles, fuels etc.; - Structures vulnerable to high winds must be secured; - Wind and dust mitigation must be implemented; - Cement and materials stores must have been secured; - Toilets must have been emptied and secured; - Refuse bins must have been emptied and secured; - Drip trays must have been emptied and secured. 						
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5.31 Landscaping and rehabilitation

Impact management outcome: Areas disturbed during the development phase are returned to a state that approximates the original condition.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed to a registered waste site and certificates of disposal provided; - All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983 - All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983; - Berms that have been created must have a slope of 1:4 and 						

<p>be replanted with indigenous species and grasses that approximates the original condition;</p> <ul style="list-style-type: none"> - Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners; - Rehabilitation of tower sites and access roads outside of farmland; - Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition; - Stockpiled topsoil must be used for rehabilitation (refer to Section 5.24: Stockpiling and stockpiled areas); - Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion; - Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed; - Subsoil must be ripped before topsoil is placed; - The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; - Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled ; - Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; - Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil. - Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture 						
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<p>is carefully selected to ensure the following:</p> <ul style="list-style-type: none">a) Annual and perennial plants are chosen;b) Pioneer species are included;c) Species chosen must be indigenous to the area with the seeds used coming from the area;d) Root systems must have a binding effect on the soil;e) The final product must not cause an ecological imbalance in the area						
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6 ACCESS TO THE GENERIC EMPr

Once completed and signed, to allow the public access to the generic EMPr, the holder of the EA must make the EMPr available to the public in accordance with the requirements of regulation 26(h) of the EIA Regulations.

PART B: SECTION 2

7 SITE SPECIFIC INFORMATION AND DECLARATION

7.1 Sub-section 1: contact details and description of the project

7.1.1 Details of the applicant:

Enertrag South Africa (Pty) Ltd is the project proponent (Applicant) with regards to the application for the construction and operation of the Hendrina Green Energy up to 132kV OHPL connection to the associated with the Hendrina Green Hydrogen and Ammonia (GH&A) Facility. This facility will connect into the Common Collector Substation (subject to a separate EA application) in order to supply green energy to the Hendrina GH&A Facility.

PROPONENT: ENERTRAG SA (PTY) LTD

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Refer to Section 1.2 of the EMPr

7.1.2 Details and expertise of the EAP:

WSP was appointed in the role of Independent EAP to undertake the BA processes for the proposed construction of the powerline. The CV of the EAP is available in Appendix A. The EAP declaration of interest and undertaking is included in Appendix B.

EAP WSP GROUP AFRICA (PTY) LTD

Contact Person:	Ashlea Strong
Physical Address:	Building C, Knightsbridge, 33 Sloane Street, Bryanston, Johannesburg
Postal Address:	P.O. Box 98867, Sloane Park 2151, Johannesburg
Telephone:	011 361 1392
Fax:	011 361 1301
Email:	Ashlea.Strong@wsp.com

Refer to Section 1.3 of the EMPr

7.1.3 Project name:

Proposed Hendrina Green Hydrogen and Ammonia up to 132kV grid connection and substation

7.1.4 Description of the project:

Refer to Section 3 of the EMPr

The proposed facility will connect directly to the nearby Hendrina Collector substation through an up to 132kV powerline, which will supply the GH&A facility with green energy for the production of hydrogen (and ultimately Ammonia) via the Haber-Bosch process.

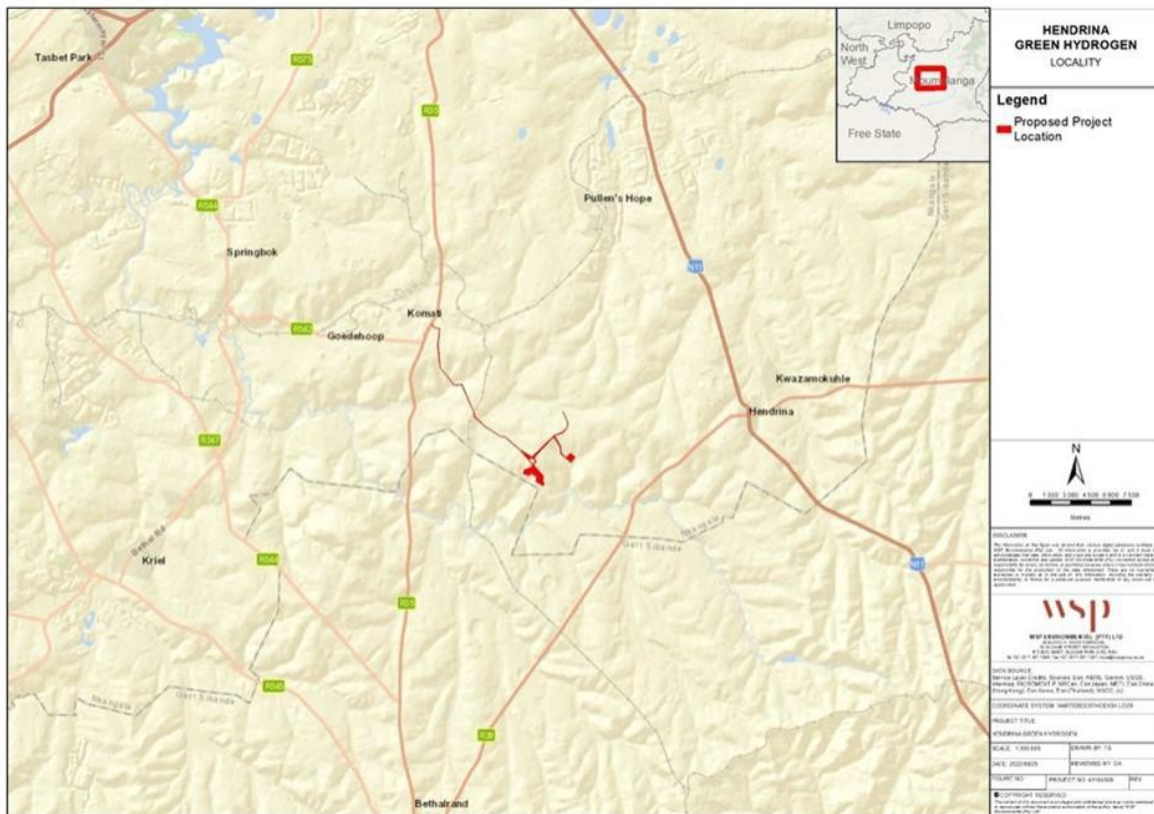


Figure 0-1: Locality of the Proposed Hendrina Green Hydrogen and Ammonia facility, in the Mpumalanga Province

7.1.5 Project location:

Refer to Section 3.1 of the EMPr

The proposed Hendrina GH&A Facility will be developed in an area of approximately 25 hectares (ha), 17km west of Hendrina, in Mpumalanga. The proposed Hendrina GH&A Facility falls within the Steve Tshwete Local Municipality of the Nkangala District Municipality. The 132kV powerline is illustrated below.



Figure 0-2: Locality of the Preferred Alternative

Coordinates	Latitude	Longitude
Preferred Alternative		
PL1-A (START)	26°12'19.20"S	29°33'41.35"E
PL1-B	26°12'3.63"S	29°33'49.99"E
PL1-C	26°11'35.49"S	29°33'21.66"E
PL1-D	26°11'25.87"S	29°33'29.33"E
PL1-E	26°11'20.24"S	29°33'21.94"E
PL1-F (END)	26°11'17.23"S	29°33'25.04"E

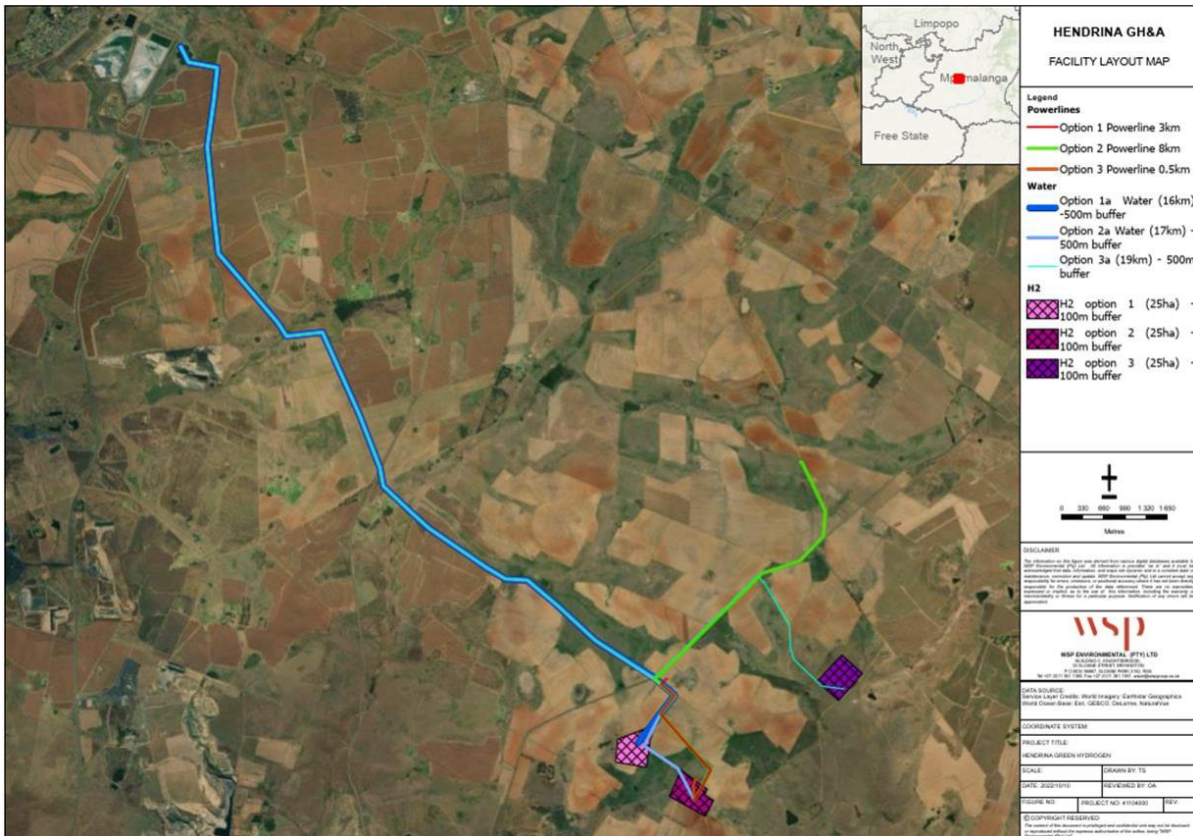


Figure 0-3: Proposed Project Infrastructure

7.16 Preliminary technical specification of the overhead transmission and distribution:

Refer to Section 3 of the EMPr

The proposed project overhead powerline grid connection infrastructure will comprise the following key components:

- 1 x up to 132kV transmission line (either single or double circuit) between the Hendrina Green Hydrogen Facility and the nearby Collector Substation.
- The length of the preferred 132kV powerline is approximately 100m pending detailed design.
- The servitude width for 1x up to 132kVA transmission line is 32m.
- For up to 132kV structures, concrete foundation sizes may vary depending on design type up to 80m² (10m by 8m), with depths reaching up to 3.5m typically in a rectangular 'pad' shape. The actual number of structures required will vary according to the final route alignment determined. A working area of approximately 100m x 100m will be required.

7.2 Sub-section 2: Development footprint site map

This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout. The sensitivity map must be prepared from the national web based environmental screening tool, when available for compulsory use at: <https://screening.environment.gov.za/screeningtool>. The sensitivity map shall identify the nature of each sensitive feature e.g. raptor nest, threatened plant species, archaeological site, etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features in the surrounding landscape. The overhead transmission and distribution profile shall be illustrated at an appropriate resolution to enable fine scale interrogation. It is recommended that <20 km of overhead transmission and distribution length is illustrated per page in A3 landscape format. Where considered appropriate, photographs of sensitive features in the context of tower positions shall be used.

Refer to Section 3.4 of the EMPr

The Table 0-1 below indicates the sensitivities identified by the screening tool and the specialist verification of those sensitivities in the area of the preferred up to 132kV powerline connection to the substation.

Table 0-1 - Assessment Protocols and Site Sensitivity Verifications

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
Agricultural Assessment	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Agricultural Resources</i>	High Sensitivity	High and Medium Sensitivity
Terrestrial Biodiversity Impact Assessment	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity</i>	Very high Sensitivity	High and Low Sensitivity
Aquatic Biodiversity Impact Assessment	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Aquatic Biodiversity</i>	Very High Sensitivity	High and Low Sensitivity
Plant Species	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species</i>	Medium Sensitivity	Medium Sensitivity
Animal Species	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species</i>	Medium Sensitivity	Low Sensitivity
Avifauna Impact Assessment	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species</i>	Medium Sensitivity	High and Low Sensitivity

Bat Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	No Sensitivity Identified	High and Medium Sensitivity
Archaeological and Cultural Heritage Impact Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Low Sensitivity	Low Sensitivity
Civil Aviation	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Medium Sensitivity	Low Sensitivity
Defence	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Low Sensitivity	Low Sensitivity
Palaeontology Impact Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Very High Sensitivity	Low Sensitivity
Visual (Landscape) Impact Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	No Sensitivity Identified	Medium Sensitivity
Social Impact Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	No Sensitivity Identified	Low to Medium Sensitivity

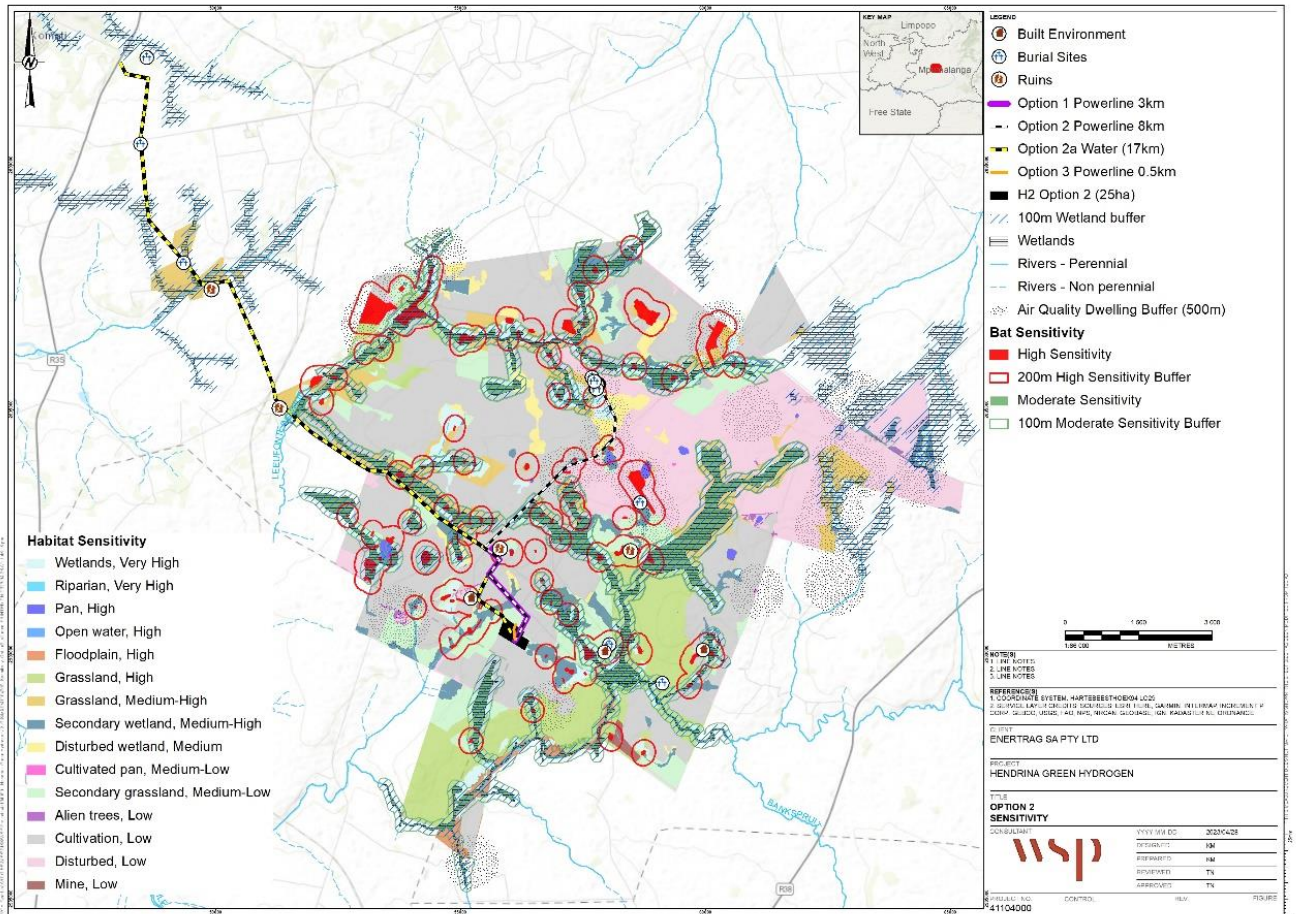


Figure 0-4: Overall Site Sensitivity – Preferred Site

7.3 Sub-section 3: Declaration

The proponent/applicant or holder of the EA affirms that he/she will abide and comply with the prescribed impact management outcomes and impact management actions as stipulated in part B: section 1 of the generic EMPr and have the understanding that the impact management outcomes and impact management actions are legally binding. The proponent/applicant or holder of the EA affirms that he/she will provide written notice to the CA 14 days prior to the date on which the activity will commence of commencement of construction to facilitate compliance inspections.

5 May 2023

Signature Proponent/applicant/ holder of EA

Date:

7.4 Sub-section 4: amendments to site specific information (Part B; section 2)

Should the EA be transferred to a new holder, Part B: Section 2 must be completed by the new holder and submitted with the application for an amendment of the EA in terms of Regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted for an amendment to an environmental authorisation will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr for the development and the EMPr becomes legally binding to the new EA holder.

PART C

8 SITE SPECIFIC ENVIRONMENTAL ATTRIBUTES

If any specific environmental sensitivities/attributes are present on the site which require more specific impact management outcomes and impact management actions, not included in the pre-approved generic EMPr template, to manage impacts, those impact management outcomes and actions must be included in this section. These specific management controls must be referenced spatially, and must include impact management outcomes and impact management actions. The management controls including impact management outcomes and impact management actions must be presented in the format of the pre-approved generic EMPr template. This applies only to additional impact management outcomes and impact management actions that are necessary.

If Part C is applicable to the development as authorised in the EA, it is required to be submitted to the CA together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP and the name and expertise of the EAP, including the curriculum vitae are to be included. Once approved, Part C forms part of the EMPr for the site and is legally binding.

This section will **not be required** should the site contain no specific environmental sensitivities or attributes.

The **Avifaunal mitigation** measures specified in the **Tables 0-1 & 0-2** below are prescribed by the avifaunal specialist (Chis van Rooyen Consulting, 2023), with regards to the overhead powerline and its possible impact on the priority avifaunal sensitive species in the area. The complete Avifaunal impact assessment report can be found in **Appendix H-2 of the EIAR**.

The **wetland monitoring plan** specified in the **Table 0-3** below are prescribed by the Wetland specialist (Stephen Burton, 2023), with regards to the overhead powerline and its possible impact on the wetlands in the area. The complete wetland impact assessment report can be found in **Appendix H-4 of the EIAR**.

The **Chance Find procedure** for fossils and heritage finds on site is specified in the **Table 0-3** below are prescribed by the Wetland specialist Jaco van der Walt (Beyond Heritage, 2023), with regards to the overhead powerline and its possible impact on the identified heritage finds (Ruins and burial sites) in the area. The complete heritage impact assessment report can be found in **Appendix H-4 of the EIAR**.

Furthermore, all site-specific mitigation pertaining to the Green Hydrogen and Ammonia facility are included in the main EMPr.

Table 0-2: Management Plan for the Planning and Design Phase

Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
Mortality of avifauna, specifically Cape Vulture, due to electrocutions on the overhead powerline poles/towers	Reduction of avian electrocution mortality	<p>If a steel monopole pole design is used, the approved vulture friendly pole/tower design D-DT-7649 in accordance with the Eskom Distribution Technical Bulletin titled Refurbishment of 66/88kV line kite type frames with D-DT-7649 type top configuration - Reference Number 240-170000467 relating to bird friendly structures, must be used.</p> <p>If lattice type structures are used, it is imperative that a minimum vertical clearance of 1.8m is maintained between the jumper cables and/or insulator live ends, and the horizontal earthed components. Additional mitigation in the form of insulating sleeves on jumper cables present on strain poles and terminal poles is also recommended (if suitable insulation material is readily available).</p>	Construct the powerline using a minimum vertical clearance of 1.8m between the jumper cables and/or insulators and the horizontal earthed component on the lattice structure.	Once-off	Contractor and EO

Table 0-3: EMPr for the Construction Phase

Avifauna: Mortality due to collision with the overhead powerline					
Impact	Mitigation/Management Objectives and Outcomes	Mitigation/Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
Mortality of avifauna due to collisions with the overhead powerline.	Reduction of avian collision mortality	Bird Flight Diverters must be fitted to the entire OHL according to the applicable Eskom Engineering Instruction (Eskom Unique Identifier 240 – 93563150: The utilisation of Bird Flight Diverters on Eskom Overhead Lines). These devices must be installed as soon as the conductors and earthwires are strung.	Fit Eskom approved Bird Flight Diverters on the entire length of line	Once-off	Contractor and EO

As the proposed Project Area includes large areas of wetland habitat, it is recommended that WET-health and WET-Ecoservices tools be used to re-evaluate PES, ES, and EIS as follows:

- A suitably qualified wetland specialist should assess the health of the wetlands at the end of the Construction Phase;
- Annually (one-yearly) upon closure and decommissioning for at least three years to ensure no emerging impacts are identified, which may need to be addressed.

Table 0-4: Wetland Monitoring Programme

Monitoring Element Wetlands	Comment	Requirements	Frequency	Responsibility
<ul style="list-style-type: none"> • Wetland Extent; • Wetland integrity; • Wetland functionality; • Soil disturbances; • Linear infrastructure; • Discharge points; • Erosion status; • Surface water quality and quantity; • Vegetation basal cover; • Vegetation species diversity. 	<ul style="list-style-type: none"> • A basic level 1 health assessment is necessary to detect changes to the health of vegetation (including alien invasion), hydrology, and geomorphology of the wetlands associated with the site. This allows for the determination of the Present Ecological State (PES); and • The EIS of the wetlands should be determined to detect any alteration to functionality. 	<ul style="list-style-type: none"> • The transportation of soils or other substrates infested with AIPs should be strictly controlled; • Continuous erosion monitoring of rehabilitated areas should be undertaken and zones with excessive erosion should be identified. Erosion can either be quantified or the occurrence there-of simply recorded for the specific location. Immediate rectification of erosion points and ongoing prevention of 	<ul style="list-style-type: none"> • Erosion monitoring to be undertaken monthly during the construction and decommissioning phases. • Wetland functionality to be undertaken at the end of the Construction Phase; and • Wetland functionality to be undertaken upon completion of the decommissioning phase. 	<ul style="list-style-type: none"> • A wetland specialist must conduct the wetland monitoring at the end of construction and upon completion of the rehabilitation phase and provide a short memo to the Project Proponent (PP) and the Environmental Control Officer (ECO); • The PP and the ECO should ensure erosion monitoring on-site; • ECO to give training to sub-contractors and all workers on the operational procedures and mitigation measures; and

		<p>future erosion must be prioritised; and</p> <ul style="list-style-type: none"> • The functionality of the surface water drainage systems should be assessed at the end of construction, and again at the end of the rehabilitation phase. This should preferably be done after the first major rains of the season and then after any major storm. An assessment of the wetlands will ensure that the drainage on the recreated profile matches the rehabilitation plan as well as to detect if a system is not functioning at preconstruction levels. 		<ul style="list-style-type: none"> • The PP and the ECO should be responsible to determine the effectiveness of erosion control structures.
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Heritage Chance Find Procedure

The following procedural guidelines must be considered in the event that previously unknown heritage resources are exposed or found during the construction of the Hendrina GH&A facility Project area. This chance find procedure (CFP) must be read in conjunction with the Environmental Authorisation, the Environmental Management Programme, Final EIAR and the final layout archaeological ground-truthing report.

The Contractor or other person discovering a potentially significant site or artefact will initiate the following actions:

- If fossils occur in the footprint of any section of the project, the route for the grid connection (overhead powerline pole foundations/below ground piping), the hydrogen and ammonia facilities, access roads or infrastructure, they can be removed as per the Fossil Chance Find Protocol in the EMP, and the project can continue. If no fossils are found, then no mitigation is required.
- When excavations begin the rocks and must be given a cursory inspection by the environmental officer or designated person.
- Any fossiliferous material (trace fossils, fossils of plants, insects, bone or coalified material) should be put aside in a suitably protected place. This way the project activities will not be interrupted.
- Photographs of similar fossils must be provided to the contractor/s to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones. This information will be built into the EMP's training and awareness plan and procedures.
- Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.
- If there is any possible fossil material found by the contractor/s /environmental officer then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible.
- Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained.
- Annual reports must be submitted to SAHRA as required by the relevant permits.
- If no good fossil material is recovered, then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.

- If no fossils are found and the excavations have finished, then no further monitoring is required.

The Grievance Procedure and Guidance will apply to any stakeholder complaints relating to cultural heritage and chance finds;

Chance find recording shall include the following:

- Incident Notification;
- Incident Report;

Incident (Chance Find) Investigation Report – e.g. detailing corrective actions, with digital images, maps and plans showing any locations that are no-go, limited access or present risks of further chance finds.

APPENDIX 1: METHOD STATEMENTS

To be prepared by the contractor prior to commencement of the activity. The method statements are **not required** to be submitted to the CA.

APPENDIX

D GENERIC EMPR FOR SUBSTATIONS

GENERIC ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) FOR THE
DEVELOPMENT AND EXPANSION OF SUBSTATION INFRASTRUCTURE FOR THE
TRANSMISSION AND DISTRIBUTION OF ELECTRICITY



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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INTRODUCTION

1. Background

The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) requires that an environmental management programme (EMPr) be submitted where an environmental impact assessment (EIA) has been identified as the environmental instrument to be utilised as the basis for a decision on an application for environmental authorisation (EA). The content of an EMPr must either contain the information set out in Appendix 4 of the Environmental Impact Assessment Regulations, 2014, as amended (EIA Regulations) or must be a generic EMPr relevant to an application as identified and gazetted by the Minister in a government notice. Once the Minister has identified, through a government notice that a generic EMPr is relevant to an application for EA, that generic EMPr must be applied by all parties involved in the EA process, including but not limited to the applicant and the competent authority (CA).

2. Purpose

This document constitutes a generic EMPr relevant to applications for the development or expansion of substation infrastructure for the transmission and distribution of electricity, and all listed and specified activities necessary for the realisation of such infrastructure.

3. Objective

The objective of this generic EMPr is to prescribe and pre-approve generally accepted impact management outcomes and impact management actions, which can commonly and repeatedly be used for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of substation infrastructure for the transmission and distribution of electricity. The use of a generic EMPr is intended to reduce the need to prepare and review individual EMPrs for applications of a similar nature.

4. Scope

The scope of this generic EMPr applies to the development or expansion of substation infrastructure for the transmission and distribution of electricity requiring EA in terms of NEMA. This generic EMPr applies to activities requiring EA, mainly activity 11 and 47 of the Environmental Impact Assessment Regulations Listing Notice 1 of 2014, as amended, and activity 9 of the Environmental Impact Assessment Regulations Listing Notice 2 of 2014, as amended, and all associated listed or specified activities necessary for the realization of such infrastructure.

5. Structure of this document

This document is structured in three parts with an Appendix as indicated in the table below:

Part	Section	Heading	Content
A		Provides general guidance and information	Definitions, acronyms, roles & responsibilities and documentation and reporting.

Part	Section	Heading	Content
		and is not legally binding	
B	1	Pre-approved generic EMPr template	<p>Contains generally accepted impact management outcomes and impact management actions required for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of substation infrastructure for the transmission and distribution of electricity, which are presented in the form of a template that has been pre-approved.</p> <p>The template in this section is to be completed by the contractor, with each completed page signed and dated by the holder of the EA prior to commencement of the activity.</p> <p>Where an impact management outcome is not relevant, the words “not applicable” can be inserted in the template under the “responsible persons” column.</p> <p>Once completed and signed, the template represents the EMPr for the activity approved by the CA and is legally binding. The template is not required to be submitted to the CA as once the generic EMPr is gazetted for implementation, it has been approved by the CA.</p> <p>To allow interested and affected parties access to the pre-approved EMPr template for consideration through the decision-making process, the EAP on behalf of the applicant /proponent must make the hard copy of this EMPr available at a public location and where the applicant has a website, the EMPr should also be made available on such publicly accessible website.</p>
	2	Site specific information	<p>Contains preliminary infrastructure layout and a declaration that the applicant/holder of the EA will comply with the pre-approved generic EMPr template contained in <u>Part B: Section 1</u>, and understands that the impact management outcomes and impact management actions are legally binding. The preliminary infrastructure layout must be</p>

Part	Section	Heading	Content
			<p>finalized to inform the final EMPr that is to be submitted with the basic assessment report (BAR) or environmental impact assessment report (EIAR), ensuring that all impact management outcomes and impact management actions have been either pre-approved or approved in terms of <u>Part C</u>.</p> <p>This section must be submitted to the CA together with the final BAR or EIAR. The information submitted to the CA will be considered to be incomplete should a signed copy of <u>Part B: section 2</u> not be submitted. Once approved, this Section forms part of the EMPr for the development and is legally binding.</p>
C		Site specific sensitivities/ attributes	<p>If any specific environmental sensitivities/ attributes are present on the site which require site specific impact management outcomes and impact management actions, not included in the pre-approved generic EMPr, to manage impacts, these specific impact management outcomes and impact management actions must be included in this section. These specific environmental attributes must be referenced spatially and impact management outcomes and impact management actions must be provided. These specific impact management outcomes and impact management actions must be presented in the format of the pre-approved EMPr template (<u>Part B: section 1</u>)</p> <p>This section will not be required should the site contain no specific environmental sensitivities or attributes. However, if <u>Part C</u> is applicable to the site, it is required to be submitted together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP and must contain his/her name and expertise including a curriculum vitae. Once approved, Part C forms part of the EMPr for the site and is legally binding.</p> <p>This section applies only to additional impact management outcomes and impact</p>

Part	Section	Heading	Content
			management actions that are necessary for the avoidance, management and mitigation of impacts and risks associated with the specific development or expansion and which are not already included in <u>Part B: section 1</u> .
Appendix 1			Contains the method statements to be prepared prior to commencement of the activity. The method statements are not required to be submitted to the competent authority.

6. Completion of part B: section 1: the pre-approved generic EMPr template

The template is to be completed prior to commencement of the activity, by providing the following information for each environmental impact management action:

- For implementation
 - a 'responsible person',
 - a method for implementation,
 - a timeframe for implementation
- For monitoring
 - a responsible person
 - frequency
 - evidence of compliance.

The completed template must be signed and dated by the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must be signed and dated on each page by the holder of the EA. This template once signed and dated is legally binding. The holder of the EA will remain responsible for its implementation.

7. Amendments of the impact management outcomes and impact management actions

Once the activity has commenced, a holder of an EA may make amendments to the impact management outcomes and impact management actions in the following manner:

- Amendment of the impact management outcomes: in line with the process contemplated in Regulation 37 of the EIA Regulations; and
- Amendment of the impact management actions: in line with the process contemplated in Regulation 36 of the EIA Regulations.

8. Documents to be submitted as part of part B: section 2 site specific information and declaration

Part B: Section 2 has three distinct sub-sections. The first and third sub-sections are in a template format. Sub-section two requires a map to be produced.

Sub-section 1 contains the project name, the applicant's name and contact details, the site information, which includes coordinates of the property or farm in which the proposed substation infrastructure is proposed as well as the 21-digit Surveyor General code of each cadastral land parcel and, where available, the farm name.

Sub-section 2 is to be prepared by an EAP and must contain his/her name and expertise including a curriculum vitae. This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout using the national web based environmental screening tool, when available for compulsory use at: <https://screening.environment.gov.za/screeningtool>. The sensitivity map shall identify the nature of each sensitive feature e.g. threatened plant species, archaeological site, etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features and within 50 m from the development footprint.

Sub-section 3 is the declaration that the applicant (s)/proponent (s) or holder of the EA in the case of a change of ownership must complete which confirms that the applicant/EA holder will comply with the pre-approved 'generic EMPr' template in Section 1 and understands that the impact management outcomes and impact management actions are legally binding.

(a) Amendments to Part B: Section 2 – site specific information and declaration

Should the EA be transferred, Part B: Section 2 must be completed by the new applicant/proponent and submitted with the application for an amendment of the EA in terms of regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted as part of such an application for an amendment to an EA will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr for the development and the EMPr becomes legally binding to the new EA holder.

PART A – GENERAL INFORMATION

1. DEFINITIONS

In this EMPr any word or expression to which a meaning has been assigned in the NEMA or EIA Regulations has that meaning, and unless the context requires otherwise –

"clearing" means the clearing and removal of vegetation, whether partially or in whole, including trees and shrubs, as specified;

"construction camp" is the area designated for key construction infrastructure and services, including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;

"contractor" - The Contractor has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract, are in line with the Environmental Management Programme and that Method Statements are implemented as described.

"hazardous substance" is a substance governed by the Hazardous Substances Act, 1973 (Act No. 15 of 1973) as well as the Hazardous Chemical and Substances Regulations, 1995;

"method statement" means a written submission by the Contractor to the Project Manager in response to this EMPr or a request by the Project Manager and ECO. The method statement must set out the equipment, materials, labour and method(s) the Contractor proposes using to carry out an activity identified by the Project Manager when requesting the Method Statement. This must be done in such detail that the Project Manager and ECO is able to assess whether the Contractor's proposal is in accordance with this specification and/or will produce results in accordance with this specification;

The method statement must cover as a minimum applicable details with regard to:

- (i) Construction procedures;
- (ii) Plant, materials and equipment to be used;
- (iii) Transporting the equipment to and from site;
- (iv) How the plant/ material/ equipment will be moved while on site;
- (v) How and where the plant/ material/ equipment will be stored;
- (vi) The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- (vii) Timing and location of activities;
- (viii) Compliance/ non-compliance; and
- (ix) Any other information deemed necessary by the Project Manager.

“**slope**” means the inclination of a surface expressed as one unit of rise or fall for so many horizontal units;

“**solid waste**” means all solid waste, including construction debris, hazardous waste, excess cement/ concrete, wrapping materials, timber, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers);

“**spoil**” means excavated material which is unsuitable for use as material in the construction works or is material which is surplus to the requirements of the construction works;

“**topsoil**” means a varying depth (up to 300 mm) of the soil profile irrespective of the fertility, appearance, structure, agricultural potential, fertility and composition of the soil;

“**works**” means the works to be executed in terms of the Contract

2. ACRONYMS and ABBREVIATIONS

CA	Competent Authority
cEO	Contractors Environmental Officer
dEO	Developer Environmental Officer
DPM	Developer Project Manager
DSS	Developer Site Supervisor
EAR	Environmental Audit Report
ECA	Environmental Conservation Act No. 73 of 1989
ECO	Environmental Control Officer
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
ERAP	Emergency Response Action Plan
EMPr	Environmental Management Programme Report
EAP	Environmental Assessment Practitioner
FPA	Fire Protection Agency
HCS	Hazardous chemical Substance
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act ,2004 (Act No. 10 of 2004)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
MSDS	Material Safety Data Sheet
RI&AP's	Registered Interested and affected parties

3. ROLES AND RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) IMPLEMENTATION

The effective implementation of this generic EMPr is dependent on established and clear roles, responsibilities and reporting lines within an institutional framework. This section of the EMPr gives guidance to the various environmental roles and reporting lines, however, project specific requirements will ultimately determine the need for the appointment of specific person(s) to undertake specific roles and or responsibilities. As such, it must be noted that in the event that no specific person, for example, an environmental control officer (ECO) is appointed, the holder of the EA remains responsible for ensuring that the duties indicated in this document for action by the ECO are undertaken.

Table 1: Guide to roles and responsibilities for implementation of an EMPr

Responsible Person(s)	Role and Responsibilities
Developer's Project Manager (DPM)	<p><u>Role</u> The Project Developer is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). Where required, an environmental control officer (ECO) must be contracted by the Project Developer to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of the environmental authorisation (EA). The Project Developer is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he must ensure that the ECO is integrated as part of the project team while remaining independent.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be fully conversant with the conditions of the EA; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Developer and its Contractor(s); - Issuing of site instructions to the Contractor for corrective actions required; - Monitor the implementation of the EMPr throughout the project by means of site inspections and meetings. Overall management of the project and EMPr implementation; and - Ensure that periodic environmental performance audits are undertaken on the project implementation.
Developer Site Supervisor (DSS)	<p><u>Role</u> The DSS reports directly to the DPM, oversees site works, liaises with the contractor(s) and the ECO. The DSS</p>

Responsible Person(s)	Role and Responsibilities
	<p>is responsible for the day to day implementation of the EMPr and for ensuring the compliance of all contractors with the conditions and requirements stipulated in the EMPr.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Ensure that all contractors identify a contractor's Environmental Officer (cEO); - Must be fully conversant with the conditions of the EA. Oversees site works, liaison with Contractor, DPM and ECO; - Must ensure that all landowners have the relevant contact details of the site staff, ECO and cEO; - Issuing of site instructions to the Contractor for corrective actions required; - Will issue all non-compliances to contractors; and - Ratify the Monthly Environmental Report.
Environmental Control Officer (ECO)	<p><u>Role</u></p> <p>The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the cEO. The ECO provides feedback to the DSS and Project Manager regarding all environmental matters. The Contractor, cEO and dEO are answerable to the Environmental Control Officer for non-compliance with the Performance Specifications as set out in the EA and EMPr.</p> <p>The ECO provides feedback to the DSS and Project Manager, who in turn reports back to the Contractor and potential and Registered Interested &Affected Parties' (RI&AP's), as required. Issues of non-compliance raised by the ECO must be taken up by the Project Manager, and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the Performance Specification) must be endorsed by the Project Manager. The ECO must also, as specified by the EA, report to the relevant CA as and when required.</p>

Responsible Person(s)	Role and Responsibilities
	<p><u>Responsibilities</u></p> <p>The responsibilities of the ECO will include the following:</p> <ul style="list-style-type: none"> - Be aware of the findings and conclusions of all EA related to the development; - Be familiar with the recommendations and mitigation measures of this EMPr; - Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; - Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required; - Educate the construction team about the management measures contained in the EMPr and environmental licenses; - Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective; - Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; - In consultation with the Developer Site Supervisor order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; - Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns; - Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; - Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO); - Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc.) as well as corrective and preventive actions taken; - Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken; - Assisting in the resolution of conflicts; - Facilitate training for all personnel on the site – this may range from carrying out the training, to

Responsible Person(s)	Role and Responsibilities
	<ul style="list-style-type: none"> - reviewing the training programmes of the Contractor; - In case of non-compliances, the ECO must first communicate this to the Senior Site Supervisor, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance; - Maintenance, update and review of the EMPr; - Communication of all modifications to the EMPr to the relevant stakeholders.
<p>developer Environmental Officer (dEO)</p>	<p><u>Role</u></p> <p>The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor's Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be fully conversant with the EMPr; - Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ; - Confine the development site to the demarcated area; - Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO); - Assist the contractors in addressing environmental challenges on site; - Assist in incident management; - Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared; - Assist the contractor in investigating environmental incidents and compile investigation reports; - Follow-up on pre-warnings, defects, non-conformance reports; - Measure and communicate environmental performance to the Contractor; - Conduct environmental awareness training on site together with ECO and cEO;

Responsible Person(s)	Role and Responsibilities
	<ul style="list-style-type: none"> - Ensure that the necessary legal permits and / or licenses are in place and up to date; - Acting as Developer's Environmental Representative on site and work together with the ECO and contractor;
Contractor	<p><u>Role</u></p> <p>The Contractor appoints the cEO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described. External contractors must ensure compliance with this EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the development or expansion of substation infrastructure for the transmission and distribution of electricity activities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - project delivery and quality control for the development services as per appointment; - employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; - ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; - attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; - ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.
contractor Environmental Officer (cEO)	<p><u>Role</u></p> <p>Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors,</p>

Responsible Person(s)	Role and Responsibilities
	<p>labourers, the Environmental Control Officer and the public. As a minimum the cEO shall meet the following criteria:</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be on site throughout the duration of the project and be dedicated to the project; - Ensure all their staff are aware of the environmental requirements, conditions and constraints with respect to all of their activities on site; - Implementing the environmental conditions, guidelines and requirements as stipulated within the EA, EMPr and Method Statements; - Attend the Environmental Site Meeting; - Undertaking corrective actions where non-compliances are registered within the stipulated timeframes; - Report back formally on the completion of corrective actions; - Assist the ECO in maintaining all the site documentation; - Prepare the site inspection reports and corrective action reports for submission to the ECO; - Assist the ECO with the preparing of the monthly report; and - Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.

4. ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

To ensure accountable and demonstrated implementation of the EMPr, a number of reporting systems, documentation controls and compliance mechanisms must be in place for all substation infrastructure projects as a minimum requirement.

4.1 Document control/Filing system

The holder of the EA is solely responsible for the upkeep and management of the EMPr file. As a minimum, all documentation detailed below will be stored in the EMPr file. A hard copy of all documentation shall be filed, while an electronic copy may be kept where relevant. A duplicate file will be maintained in the office of the DSS (where applicable). This duplicate file must remain current and up-to-date. The filing system must be updated and relevant documents added as required. The EMPr file must be made available at all times on request by the CA or other relevant authorities. The EMPr file will form part of any environmental audits undertaken as prescribed in the EIA Regulations.

4.2 Documentation to be available

At the outset of the project the following preliminary list of documents shall be placed in the filing system and be accessible at all times:

- Full copy of the signed EA from the CA in terms of NEMA, granting approval for the development or expansion;
- Copy of the generic and site specific EMPr as well as any amendments thereof;
- Copy of declaration of implementing generic EMPr and subsequent approval of site specific EMPr and amendments thereof;
- All method statements;
- Completed environmental checklists;
- Minutes and attendance register of environmental site meetings;
- An up-to-date environmental incident log;
- A copy of all instructions or directives issued;
- A copy of all corrective actions signed off. The corrective actions must be filed in such a way that a clear reference is made to the non-compliance record;
- Complaints register.

4.3 Weekly Environmental Checklist

The ECOs are required to complete a Weekly Environmental Checklist, the format of which is to be agreed prior to commencement of the activity. The ECOs are required to sign and date the checklist, retain a copy in the EMPr file and submit a copy of the completed checklist to the DSS on a weekly basis.

The checklists will form the basis for the Monthly Environmental Reports. Copies of all completed checklists will be attached as Annexures to the Environmental Audit Report as required in terms of the EIA Regulations.

4.4 Environmental site meetings

Minutes of the environmental site meetings shall be kept. The minutes must include an attendance register and will be attached to the Monthly Report that is distributed to attendees. Each set of minutes must clearly record "Matters for Attention" that will be reviewed at the next meeting.

4.5 Required Method Statements

The method statement will be done in such detail that the ECOs are enabled to assess whether the contractor's proposal is in accordance with the EMPr.

The method statement must cover applicable details with regard to:

- development procedures;
- materials and equipment to be used;
- getting the equipment to and from site;
- how the equipment/ material will be moved while on site;
- how and where material will be stored;
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- timing and location of activities;
- compliance/ non-compliance with the EMPr; and
- any other information deemed necessary by the ECOs.

Unless indicated otherwise by the Project Manager, the Contractor shall provide the following method statements to the Project Manager no less than 14 days prior to the commencement date of the activity:

- Site establishment – Camps, Lay-down or storage areas, satellite camps, infrastructure;
- Batch plants;
- Workshop or plant servicing;
- Handling, transport and storage of Hazardous Chemical Substance's;
- Vegetation management – Protected, clearing, aliens, felling;
- Access management – Roads, gates, crossings etc.;
- Fire plan;
- Waste management – transport, storage, segregation, classification, disposal (all waste streams);
- Social interaction – complaints management, compensation claims, access to properties etc.;
- Water – use (source, abstraction and disposal), access and all related information, crossings and mitigation;
- Emergency preparedness – Spills, training, other environmental emergencies;
- Dust and noise management methodologies;
- Fauna interaction and risk management – only if the risk was identified – wildlife interaction especially on game farms; and
- Heritage and palaeontology management.

The ECOs shall monitor and ensure that the contractors perform in accordance with these method statements. Completed and agreed method statements between the holder of the EA and the contractor shall be captured in Appendix 1.

4.6 Environmental Incident Log (Diary)

The ECOs are required to maintain an up-to-date and current Environmental Incident Log (environmental diary). The Environmental Incident Log is a means to record all environmental incidents and/or all non-compliance notice would not be issued. An environmental incident is defined as:

- Any deviation from the listed impact management actions (listed in this EMPr) that may be addressed immediately by the ECOs. (For example a contractor's staff member littering or a drip tray that has not been emptied);
- Any environmental impact resulting from an action or activity by a contractor in contravention of the environmental stipulations and guidelines listed in the EMPr which as a single event would have a minor impact but which if cumulative and continuous would have a significant effect (for example no toilet paper available in the ablutions for an afternoon); and
- General environmental information such as road kills or injured wildlife.

The ECOs are to record all environmental incidents in the Environmental Incident Log. All incidents regardless of severity must be reported to the Developer. The Log is to be kept in the EMPr file and at a minimum the following will be recorded for each environmental incident:

- The date and time of the incident;
- Description of the incident;
- The name of the Contractor responsible;
- The incident must be listed as significant or minor;
- If the incident is listed as significant, a non-compliance notice must be issued, and recorded in the log;
- Remedial or corrective action taken to mitigate the incident; and
- Record of repeat minor offences by the same contractor or staff member.

The Environmental Incident Log will be captured in the EAR.

4.7 Non-compliance

A non-compliance notice will be issued to the responsible contractor by the ECOs via the DSS or Project Manager. The non-compliance notice will be issued in writing; a copy filed in the EMPr file and will at a minimum include the following:

- Time and date of the non-compliance;
- Name of the contractor responsible;
- Nature and description of the non-compliance;
- Recommended / required corrective action; and
- Date by which the corrective action to be completed.
- The contractors shall act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the development site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The ECO should be made aware of any complaints. Any non-compliance with the agreed procedures of the EMPr is a transgression

of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause shall be reported to the relevant CA for them to deal with the transgression, as it deems fit. The contractor is deemed not to have complied with the EMPr if, inter alia, There is a deviation from the environmental conditions, impact management outcomes and impact management actions activities, as approved in generic and site specific EMPr as relevant as set out in the EMPr, which deviation has, or may cause, an environmental impact.

4.8 Corrective action records

For each non-compliance notice issued, a documented corrective action must be recorded. On receiving a non-compliance notice from the DSS, the contractor's cEO will ensure that the corrective actions required take place within the stipulated timeframe. On completion of the corrective action the cEO is to issue a Corrective Action Report in writing to the ECOs. If satisfied that the corrective action has been completed, the ECOs are to sign-off on the Corrective Action Report, and attach the report to the non-compliance notice in the EMPr file. A corrective action is considered complete once the report has signed off by the ECOs.

4.9 Photographic record

A digital photographic record will be kept. The photographic record will be used to show before, during and post rehabilitation evidence of the project as well used in cases of damages claims if they arise. Each image must be dated and a brief description note attached.

The Contractor shall:

1. Allow the ECOs access to take photographs of all areas, activities and actions.

The ECOs shall keep an electronic database of photographic records which will include:

1. Pictures of all areas designated as work areas, camp areas, development sites and storage areas taken before these areas are set up;
2. All bunding and fencing;
3. Road conditions and road verges;
4. Condition of all farm fences;
5. Topsoil storage areas;
6. All areas to be cordoned off during construction;
7. Waste management sites;
8. Ablution facilities (inside and out);
9. Any non-conformances deemed to be "significant";
10. All completed corrective actions for non-compliances;
11. All required signage;
12. Photographic recordings of incidents;
13. All areas before, during and post rehabilitation; and
14. Include relevant photographs in the Final Environmental Audit Report.

4.10 Complaints register

The ECOs shall keep a current and up-to-date complaints register. The complaints register is to be a record of all complaints received from communities, stakeholders and individuals. The Complaints Record shall:

1. Record the name and contact details of the complainant;
2. Record the time and date of the complaint;
3. Contain a detailed description of the complaint;
4. Where relevant and appropriate, contain photographic evidence of the complaint or damage (ECOs to take relevant photographs); and
5. Contain a copy of the ECOs written response to each complaint received and keep a record of any further correspondence with the complainant. The ECO's written response will include a description of any corrective action to be taken and must be signed by the Contractor, ECO and affected party. Where a damage claim is issued by the complainant, the ECOs shall respond as described in **(section 4.11)** below.

4.11 Claims for damages

In the event that a Claim for Damages is submitted by a community, landowner or individual, the ECOs shall:

1. Record the full detail of the complaint as described in **(section 4.10)** above;
2. The DPM will evaluate the claim and associated damage and submit the evaluation to the Senior Site Representative for approval;
3. Following consideration by the DPM, the claim is to be resolved and settled immediately, or the reason for not accepting the claim communicated in writing to the claimant. Should the claimant not accept this, the ECO shall, in writing report the incident to the Developer's negotiator and legal department; and
4. A formal record of the response by the ECOs to the claimant as well as the rectification of the method of making payments not amount will be recorded in the EMPr file.

4.12 Interactions with affected parties

Open, transparent and good relations with affected landowners, communities and regional staff are an essential aspect to the successful management and mitigation of environmental impacts.

The ECOs shall:

1. Ensure that all queries, complaints and claims are dealt within an agreed timeframe;
2. Ensure that any or all agreements are documented, signed by all parties and a record of the agreement kept in the EMPr file;
3. Ensure that a complaints telephone numbers are made available to all landowners and affected parties; and
4. Ensure that contact with affected parties is courteous at all times;

4.13 Environmental audits

Internal environmental audits of the activity and implementation of the EMPr must be undertaken. The findings and outcomes included in the EMPr file and submitted to the CA at intervals as indicated in the EA.

The ECOs must prepare a monthly EAR. The report will be tabled as the key point on the agenda of the Environmental Site Meeting. The Report is submitted for acceptance at the meeting and the final report will be circulated to the Project Manager and filed in the EMPr file. At a frequency determined by the EA, the ECOs shall submit the monthly reports to the CA. At a minimum the monthly report is to cover the following:

- Weekly Environmental Checklists;
- Deviations and non-compliances with the checklists;
- Non-compliances issued;
- Completed and reported corrective actions;
- Environmental Monitoring;
- General environmental findings and actions; and
- Minutes of the Bi-monthly Environmental Site Meetings.

4.14 Final environmental audits

On final completion of the rehabilitation and/or requirements of the EA a final EAR is to be prepared and submitted to the CA. The EAR must comply with Appendix 7 of the EIA Regulations.

PART B: SECTION 1: Pre-approved generic EMPr template

5. IMPACT MANAGEMENT OUTCOMES AND IMPACT MANAGEMENT ACTIONS

This section provides a pre-approved generic EMPr template with aspects that are common to the development of substation infrastructure for the transmission and distribution of electricity. There is a list of aspects identified for the development or expansion of substation infrastructure for the transmission and distribution of electricity, and for each aspect a set of prescribed impact management outcomes and associated impact management actions have been identified. Holders of EAs are responsible to ensure the implementation of these outcomes and actions for all projects as a minimum requirement, in order to mitigate the impact of such aspects identified for the development or expansion of substation infrastructure for the transmission and distribution of electricity.

The template provided below is to be completed by providing the information under each heading for each environmental impact management action.

The completed template must be signed and dated on each page by both the contractor and the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must also be duly signed and dated on each page by the contractor and the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

5.1 Environmental awareness training

Impact management outcome: All onsite staff are aware and understands the individual responsibilities in terms of this EMPr.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – All staff must receive environmental awareness training prior to commencement of the activities; – The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course; – Refresher environmental awareness training is available as and when required; – All staff are aware of the conditions and controls linked to the EA and within the EMPr and made aware of their individual roles and responsibilities in achieving compliance with the EA and EMPr; – The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum: <ul style="list-style-type: none"> a) Safety notifications; and b) No littering. – Environmental awareness training must include as a minimum the following: <ul style="list-style-type: none"> a) Description of significant environmental impacts, actual or potential, related to their work activities; b) Mitigation measures to be implemented when carrying out specific activities; c) Emergency preparedness and response procedures; 						

<ul style="list-style-type: none"> d) Emergency procedures; e) Procedures to be followed when working near or within sensitive areas; f) Wastewater management procedures; g) Water usage and conservation; h) Solid waste management procedures; i) Sanitation procedures; j) Fire prevention; and k) Disease prevention. <ul style="list-style-type: none"> – A record of all environmental awareness training courses undertaken as part of the EMPr must be available; – Educate workers on the dangers of open and/or unattended fires; – A staff attendance register of all staff to have received environmental awareness training must be available. – Course material must be available and presented in appropriate languages that all staff can understand. 						
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5.2 Site Establishment development

Impact management outcome: Impacts on the environment are minimised during site establishment and the development footprint are kept to demarcated development area.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – A method statement must be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location of key infrastructure and services (where applicable), including 						

<p>but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;</p> <ul style="list-style-type: none"> - Location of camps must be within approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walk through; - Sites must be located where possible on previously disturbed areas; - The camp must be fenced in accordance with Section 5.5: Fencing and gate installation; and - The use of existing accommodation for contractor staff, where possible, is encouraged. 						
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5.3 Access restricted areas

Impact management outcome: Access to restricted areas prevented.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development; - Erect, demarcate and maintain a temporary barrier with clear signage around the perimeter of any access restricted area, colour coding could be used if appropriate; and 						

<ul style="list-style-type: none"> – Unauthorised access and development related activity inside access restricted areas is prohibited. 						
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5.4 Access roads

Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities; – All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition – All contractors must be made aware of all these access routes. – Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense; – Maximum use of both existing servitudes and existing roads must be made to minimize further disturbance through the development of new roads; – In circumstances where private roads must be used, the condition of the said roads must be recorded in accordance with section 4.9: photographic record; prior to use and the condition thereof agreed by the landowner, the DPM, and the contractor; – Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas or 						

croplands <ul style="list-style-type: none"> – Access roads must only be developed on a pre-planned and approved roads. 						
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5.5 Fencing and Gate installation

Impact management outcome: Minimise impact to the environment and ensure safe and controlled access to the site through the erection of fencing and gates where required.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Use existing gates provided to gain access to all parts of the area authorised for development, where possible; – Existing and new gates to be recorded and documented in accordance with section 4.9: photographic record; – All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner; – At points where the line crosses a fence in which there is no suitable gate within the extent of the line servitude, on the instruction of the DPM, a gate must be installed at the approval of the landowner; – Care must be taken that the gates must be so erected that there is a gap of no more than 100 mm between the bottom of the gate and the ground; – Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate; – Original tension must be maintained in the fence wires; – All gates installed in electrified fencing must be re-electrified; – All demarcation fencing and barriers must be maintained in 						

<p>good working order for the duration of the development activities;</p> <ul style="list-style-type: none"> - Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where applicable; - Any temporary fencing to restrict the movement of life-stock must only be erected with the permission of the land owner. - All fencing must be developed of high quality material bearing the SABS mark; - The use of razor wire as fencing must be avoided; - Fenced areas with gate access must remain locked after hours, during weekends and on holidays if staff is away from site. Site security will be required at all times; - On completion of the development phase all temporary fences are to be removed; - The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely. 						
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5.6 Water Supply Management

Impact management outcome: Undertake responsible water usage.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All abstraction points or bore holes must be registered with the DWS and suitable water meters installed to ensure that the abstracted volumes are measured on a daily basis; - The Contractor must ensure the following: <ul style="list-style-type: none"> a. The vehicle abstracting water from a river does not 						

<p>enter or cross it and does not operate from within the river;</p> <p>b. No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and</p> <p>c. All reasonable measures to limit pollution or sedimentation of the downstream watercourse are implemented.</p> <p>– Ensure water conservation is being practiced by:</p> <p>a. Minimising water use during cleaning of equipment;</p> <p>b. Undertaking regular audits of water systems; and</p> <p>c. Including a discussion on water usage and conservation during environmental awareness training.</p> <p>d. The use of grey water is encouraged.</p>						
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5.7 Storm and waste water management

<p>Impact management outcome: Impacts to the environment caused by storm water and wastewater discharges during construction are avoided.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>– Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager;</p> <p>– All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility;</p> <p>– Natural storm water runoff not contaminated during the</p>						

<p>development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO;</p> <ul style="list-style-type: none"> – Water that has been contaminated with suspended solids, such as soils and silt, may be released into watercourses or water bodies only once all suspended solids have been removed from the water by settling out these solids in settlement ponds. The release of settled water back into the environment must be subject to the Project Manager's approval and support by the ECO. 						
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5.8 Solid and hazardous waste management

Impact management outcome: Wastes are appropriately stored, handled and safely disposed of at a recognised waste facility.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – All measures regarding waste management must be undertaken using an integrated waste management approach; – Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided; – A suitably positioned and clearly demarcated waste collection site must be identified and provided; – The waste collection site must be maintained in a clean and orderly manner; – Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal; – Staff must be trained in waste segregation; – Bins must be emptied regularly; 						

<ul style="list-style-type: none"> - General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company; - Hazardous waste must be disposed of at a registered waste disposal site; - Certificates of safe disposal for general, hazardous and recycled waste must be maintained. 						
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5.9 Protection of watercourses and estuaries

Impact management outcome: Pollution and contamination of the watercourse environment and or estuary erosion are prevented.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities; - In the event of a spill, prompt action must be taken to clear the polluted or affected areas; - Where possible, no development equipment must traverse any seasonal or permanent wetland - No return flow into the estuaries must be allowed and no disturbance of the Estuarine functional Zone should occur; - Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available; - There must not be any impact on the long term morphological dynamics of watercourses or estuaries; - Existing crossing points must be favored over the creation of 						

<p>new crossings (including temporary access)</p> <ul style="list-style-type: none"> - When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: <ul style="list-style-type: none"> a) Water levels during the period of construction; No altering of the bed, banks, course or characteristics of a watercourse b) During the execution of the works, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that construction equipment is well maintained; c) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and d) Appropriate rehabilitation and re-vegetation measures for the watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows. 						
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5.10 Vegetation clearing

<p>Impact management outcome: Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>General:</p> <ul style="list-style-type: none"> - Indigenous vegetation which does not interfere with the development must be left undisturbed; - Protected or endangered species may occur on or near the 						

<p>development site. Special care should be taken not to damage such species;</p> <ul style="list-style-type: none"> - Search, rescue and replanting of all protected and endangered species likely to be damaged during project development must be identified by the relevant specialist and completed prior to any development or clearing; - Permits for removal must be obtained from the relevant CA prior to the cutting or clearing of the affected species, and they must be filed; - The Environmental Audit Report must confirm that all identified species have been rescued and replanted and that the location of replanting is compliant with conditions of approvals; - Trees felled due to construction must be documented and form part of the Environmental Audit Report; - Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris; - Only a registered pest control operator may apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered pest control operator, supervision of a registered pest control operator or is appropriately trained; - A daily register must be kept of all relevant details of herbicide usage; - No herbicides must be used in estuaries; - All protected species and sensitive vegetation not removed must be clearly marked and such areas fenced off in accordance to Section 5.3: Access restricted areas. <p>Alien invasive vegetation must be removed and disposed of at a licensed waste management facility.</p>					
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5.11 Protection of fauna

Impact management outcome: Disturbance to fauna is minimised.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present; - The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme; - Breeding sites must be kept intact and disturbance to breeding birds must be avoided. Special care must be taken where nestlings or fledglings are present; - Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds; - No poaching must be tolerated under any circumstances. All animal dens in close proximity to the works areas must be marked as Access restricted areas; - No deliberate or intentional killing of fauna is allowed; - In areas where snakes are abundant, snake deterrents to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and - No Threatened or Protected species (ToPs) and/or protected fauna as listed according NEMBA (Act No. 10 of 2004) and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits. 						

5.12 Protection of heritage resources

Impact management outcome: Impact to heritage resources is minimised.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> Identify, demarcate and prevent impact to all known sensitive heritage features on site in accordance with the No-Go procedure in Section 5.3: Access restricted areas; Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance; All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/palaeontologist (or the South African Police Services), so that a systematic and professional investigation can be undertaken. Sufficient time must be allowed to remove/collect such material before development recommences. 						

5.13 Safety of the public

Impact management outcome: All precautions are taken to minimise the risk of injury, harm or complaints.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc.; 						

<ul style="list-style-type: none"> - All unattended open excavations must be adequately fenced or demarcated; - Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding; - Ensure structures vulnerable to high winds are secured; - Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged. 						
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5.14 Sanitation

Impact management outcome: Clean and well maintained toilet facilities are available to all staff in an effort to minimise the risk of disease and impact to the environment.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Mobile chemical toilets are installed onsite if no other ablution facilities are available; - The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances; - Where mobile chemical toilets are required, the following must be ensured: <ul style="list-style-type: none"> a) Toilets are located no closer than 100 m to any watercourse or water body; b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause; c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance 						

<p>with the EMPr; d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to prevent toilet paper from being blown out; e) Toilets are emptied before long weekends and workers holidays, and must be locked after working hours; f) Toilets are serviced regularly and the ECO must inspect toilets to ensure compliance to health standards; – A copy of the waste disposal certificates must be maintained.</p>						
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5.15 Prevention of disease

Impact Management outcome: All necessary precautions linked to the spread of disease are taken.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Undertake environmentally-friendly pest control in the camp area; – Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV AIDS; – The Contractor must ensure that information posters on AIDS are displayed in the Contractor Camp area; – Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable; – Free condoms must be made available to all staff on site at central points; – Medical support must be made available; – Provide access to Voluntary HIV Testing and Counselling 						

Services.						
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5.16 Emergency procedures

Impact management outcome: Emergency procedures are in place to enable a rapid and effective response to all types of environmental emergencies.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project; - The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation; - All staff must be made aware of emergency procedures as part of environmental awareness training; - The relevant local authority must be made aware of a fire as soon as it starts; - In the event of emergency necessary mitigation measures to contain the spill or leak must be implemented (see Hazardous Substances section 5.17). 						

5.17 Hazardous substances

Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives 						

<p>substituted where possible;</p> <ul style="list-style-type: none"> - All hazardous substances must be stored in suitable containers as defined in the Method Statement; - Containers must be clearly marked to indicate contents, quantities and safety requirements; - All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers; - Bunded areas to be suitably lined with a SABS approved liner; - An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis; - All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS); - All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet; - Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available; - The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers; - The tanks/ bowsers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and the volume inside the bund must be 130% of the total capacity of all the storage tanks/ bowsers (110% statutory requirement plus an allowance for rainfall); 					
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<ul style="list-style-type: none"> - The floor of the bund must be sloped, draining to an oil separator; - Provision must be made for refueling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained; - All empty externally dirty drums must be stored on a drip tray or within a bunded area; - No unauthorised access into the hazardous substances storage areas must be permitted; - No smoking must be allowed within the vicinity of the hazardous storage areas; - Adequate fire-fighting equipment must be made available at all hazardous storage areas; - Where refueling away from the dedicated refueling station is required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used; - An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times; - The responsible operator must have the required training to make use of the spill kit in emergency situations; - An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken; - In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008. Refer to Section 5.7 for procedures concerning storm and waste water management and 5.8 for solid and hazardous waste management. 					
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5.18 Workshop, equipment maintenance and storage

Impact management outcome: Soil, surface water and groundwater contamination is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area; - During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. The relevant local authority must be made aware of a fire as soon as it starts; - Leaking equipment must be repaired immediately or be removed from site to facilitate repair; - Workshop areas must be monitored for oil and fuel spills; - Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available; - The workshop area must have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed; - Water drainage from the workshop must be contained and managed in accordance Section 5.7: Storm and waste water management. 						

5.19 Batching plants

Impact management outcome: Minimise spillages and contamination of soil, surface water and groundwater.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Concrete mixing must be carried out on an impermeable surface; - Batching plants areas must be fitted with a containment facility for the collection of cement laden water. - Dirty water from the batching plant must be contained to prevent soil and groundwater contamination - Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; - A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; - Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; - Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; - Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to Section 5.20: Dust emissions) - Any excess sand, stone and cement must be removed or reused from site on completion of construction period and disposed at a registered disposal facility; - Temporary fencing must be erected around batching plants in accordance with Section 5.5: Fencing and gate 						

<i>installation.</i>						
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5.20 Dust emissions

Impact management outcome: Dust prevention measures are applied to minimise the generation of dust.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO; - Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re- vegetated or stabilised as soon as is practically possible; - Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; - During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level; - Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind; - Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO; - Vehicle speeds must not exceed 40 km/h along dust roads 						

<p>or 20 km/h when traversing unconsolidated and non-vegetated areas;</p> <ul style="list-style-type: none"> - Straw stabilisation must be applied at a rate of one bale/10 m² and harrowed into the top 100 mm of top material, for all completed earthworks; - For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust. 						
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5.21 Blasting

<p>Impact management outcome: Impact to the environment is minimised through a safe blasting practice.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Any blasting activity must be conducted by a suitably licensed blasting contractor; and - Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such activity taking place on Site. 						

5.22 Noise

<p>Impact Management outcome: Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The Contractor must keep noise level within acceptable limits, Restrict the use of sound amplification equipment for 						

<p>communication and emergency only;</p> <ul style="list-style-type: none"> - All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained; - Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers; - Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff. Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management. 						
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5.23 Fire prevention

Impact management outcome: Prevention of uncontrollable fires.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Designate smoking areas where the fire hazard could be regarded as insignificant; - Firefighting equipment must be available on all vehicles located on site; - The local Fire Protection Agency (FPA) must be informed of construction activities; - Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site; 						

- Two way swop of contact details between ECO and FPA.						
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5.24 Stockpiling and stockpile areas

Impact management outcome: Reduce erosion and sedimentation as a result of stockpiling.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All material that is excavated during the project development phase (either during piling (if required) or earthworks) must be stored appropriately on site in order to minimise impacts to watercourses, watercourses and water bodies; - All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods; - Topsoil stockpiles must not exceed 2 m in height; - During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.); - Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material. 						

5.25 Civil works

Impact management outcome: Impact to the environment minimised during civil works to create the substation terrace.

Impact Management Actions	Implementation			Monitoring		
	Responsible	Method of	Timeframe for	Responsible	Frequency	Evidence of

	person	implementation	implementation	person		compliance
<ul style="list-style-type: none"> - Where terracing is required, topsoil must be collected and retained for the purpose of re-use later to rehabilitate disturbed areas not covered by yard stone; - Areas to be rehabilitated include terrace embankments and areas outside the high voltage yards; - Where required, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; - These areas can be stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; - Rehabilitation of the disturbed areas must be managed in accordance with Section 5.35: Landscaping and rehabilitation; - All excess spoil generated during terracing activities must be disposed of in an appropriate manner and at a recognised landfill site; and - Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes. 						

5.26 Excavation of foundation, cable trenching and drainage systems

Impact management outcome: No environmental degradation occurs as a result of excavation of foundation, cable trenching and drainage systems.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
- All excess spoil generated during foundation excavation must be disposed of in an appropriate manner and at a						

<p>licensed landfill site, if not used for backfilling purposes;</p> <ul style="list-style-type: none"> - Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes; - Management of equipment for excavation purposes must be undertaken in accordance with Section 5.18: Workshop, equipment maintenance and storage; and - Hazardous substances spills from equipment must be managed in accordance with Section 5.17: Hazardous substances. 						
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5.27 Installation of foundations, cable trenching and drainage systems

<p>Impact management outcome: No environmental degradation occurs during the installation of foundation, cable trenching and drainage system.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Batching of cement to be undertaken in accordance with Section 5.19: Batching plants; and - Residual solid waste must be disposed of in accordance with Section 5.8: Solid waste and hazardous management. 						

5.28 Installation of equipment (circuit breakers, current Transformers, Isolators, Insulators, surge arresters, voltage transformers, earth switches)

<p>Impact management outcome: No environmental degradation occurs as a result of installation of equipment.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

<ul style="list-style-type: none"> - Management of dust must be conducted in accordance with Section 5. 20: Dust emissions; - Management of equipment used for installation must be conducted in accordance with Section 5.18: Workshop, equipment maintenance and storage; - Management hazardous substances and any associated spills must be conducted in accordance with Section 5.17: Hazardous substances; and - Residual solid waste must be recycled or disposed of in accordance with Section 5.8: Solid waste and hazardous management. 						
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5.29 Steelwork Assembly and Erection

Impact management outcome: No environmental degradation occurs as a result of steelwork assembly and erection.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - During assembly, care must be taken to ensure that no wasted/unused materials are left on site e.g. bolts and nuts - Emergency repairs due to breakages of equipment must be managed in accordance with Section 5. 18: Workshop, equipment maintenance and storage and Section 5.16: Emergency procedures. 						

5.30 Cabling and Stringing

Impact management outcome: No environmental degradation occurs as a result of stringing.		
Impact Management Actions	Implementation	Monitoring

	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Residual solid waste (off cuts etc.) shall be recycled or disposed of in accordance with Section 6.8: Solid waste and hazardous Management; - Management of equipment used for installation shall be conducted in accordance with Section 5.18: Workshop, equipment maintenance and storage; - Management hazardous substances and any associated spills shall be conducted in accordance with Section 5.17: Hazardous substances. 						

5.31 Testing and Commissioning (all equipment testing, earthing system, system integration)

Impact management outcome: No environmental degradation occurs as a result of Testing and Commissioning.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Residual solid waste must be recycled or disposed of in accordance with Section 5.8: Solid waste and hazardous management. 						

5.32 Socio-economic

Impact management outcome: enhanced socio-economic development.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

<ul style="list-style-type: none"> - Develop and implement communication strategies to facilitate public participation; - Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process; - Sustain continuous communication and liaison with neighboring owners and residents - Create work and training opportunities for local stakeholders; and - Where feasible, no workers, with the exception of security personnel, must be permitted to stay over-night on the site. This would reduce the risk to local farmers. 						
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5.33 Temporary closure of site

Impact management outcome: Minimise the risk of environmental impact during periods of site closure greater than five days.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Bunds must be emptied (where applicable) and need to be undertaken in accordance with the impact management actions included in sections 5.17: Hazardous substances and 5.18: Workshop, equipment maintenance and storage; - Hazardous storage areas must be well ventilated; - Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service; - Emergency and contact details displayed must be displayed; - Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and 						

<p>emergency personnel;</p> <ul style="list-style-type: none"> – Night hazards such as reflectors, lighting, traffic signage etc. must have been checked; – Fire hazards identified and the local authority must have been notified of any potential threats e.g. large brush stockpiles, fuels etc.; – Structures vulnerable to high winds must be secured; – Wind and dust mitigation must be implemented; – Cement and materials stores must have been secured; – Toilets must have been emptied and secured; – Refuse bins must have been emptied and secured; – Drip trays must have been emptied and secured. 						
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5.34 Dismantling of old equipment

<p>Impact management outcome: Impact to the environment to be minimised during the dismantling, storage and disposal of old equipment commissioning.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – All old equipment removed during the project must be stored in such a way as to prevent pollution of the environment; – Oil containing equipment must be stored to prevent leaking or be stored on drip trays; – All scrap steel must be stacked neatly and any disused and broken insulators must be stored in containers; – Once material has been scrapped and the contract has been placed for removal, the disposal Contractor must ensure that any equipment containing pollution causing substances is dismantled and transported in such a way as 						

<p>to prevent spillage and pollution of the environment;</p> <ul style="list-style-type: none"> - The Contractor must also be equipped to contain and clean up any pollution causing spills; and - Disposal of unusable material must be at a licensed waste disposal site. 						
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5.35 Landscaping and rehabilitation

Impact management outcome: Areas disturbed during the development phase are returned to a state that approximates the original condition.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed of to a registered waste site; - All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983 - All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983; - Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that approximates the original condition; - Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners; - Rehabilitation of access roads outside of farmland; - Indigenous species must be used for with species and/grasses to where it compliments or approximates the 						

<p>original condition;</p> <ul style="list-style-type: none"> – Stockpiled topsoil must be used for rehabilitation (refer to Section 5.24: Stockpiling and stockpiled areas); – Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion; – Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed; – Subsoil must be ripped before topsoil is placed; – The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; – Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; – Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; – Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil. – Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: <ul style="list-style-type: none"> a) Annual and perennial plants are chosen; b) Pioneer species are included; c) Species chosen must be indigenous to the area with the seeds used coming from the area; d) Root systems must have a binding effect on the soil; e) The final product must not cause an ecological imbalance in the area 					
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6 ACCESS TO THE GENERIC EMPr

Once completed and signed, to allow the public access to the generic EMPr, the holder of the EA must make the EMPr available to the public in accordance with the requirements of Regulation 26(h) of the EIA Regulations.

PART B: SECTION 2

7 SITE SPECIFIC INFORMATION AND DECLARATION

7.1 Sub-section 1: contact details and description of the project

7.1.1 Details of the applicant:

Enertrag South Africa (Pty) Ltd is the project proponent (Applicant) with regards to the application for the construction and operation of the up to 132kV OHPL connection to the associated Hendrina Green Hydrogen and Ammonia (GH&A) Facility.

This facility will connect into the Common Collector Substation (subject to a separate EA application) in order to supply green energy to the Hendrina GH&A Facility.

This EMPr considers the on-site substation infrastructure required for the operation of the hydrogen and ammonia production facility known as Hendrina Green Hydrogen and Ammonia Facility.

PROPONENT: ENERTRAG SA (PTY) LTD

Company Registration:	Enertrag SA (Pty) Ltd
Contact Person:	Mercia Grimbeek
Postal Address	Suite 104, Albion Springs, 183 Main Road, Rondebosch, Cape Town, South Africa 7700
Telephone:	071 752 8033
Email:	sandhishajaynarain@enertrag.com

Refer to Section 1.2 of the EMPr

7.1.2 Details and expertise of the EAP:

WSP was appointed in the role of Independent EAP to undertake the BA processes for the proposed construction of the powerline. The CV of the EAP is available in Appendix A. The EAP declaration of interest and undertaking is included in Appendix B.

EAP WSP GROUP AFRICA (PTY) LTD

Contact Person:	Ashlea Strong
Physical Address:	Building C, Knightsbridge, 33 Sloane Street, Bryanston, Johannesburg
Postal Address:	P.O. Box 98867, Sloane Park 2151, Johannesburg
Telephone:	011 361 1392
Fax:	011 361 1301
Email:	Ashlea.Strong@wsp.com

Refer to Section 1.3 of the EMPr

7.1.3 Project name:

Proposed Hendrina GH&A Substation Infrastructure

7.1.4 Description of the project:

The proposed facility will connect directly to the nearby Collector substation through an up to 132kV powerline, which will supply the GH&A facility with green energy for the production of hydrogen (and ultimately Ammonia) via the Haber–Bosch process.

The proposed project substation infrastructure entails the construction and operation of an onsite substation as part of the Hendrina GH&A facility (with a footprint of approximately 5ha) within the hydrogen and Ammonia facility footprint, which includes but not limited to:

- A high voltage substation yard to allow for multiple up to 132kV feeder bays and transformers.
- Standard substation electrical equipment, i.e., transformers, busbars, office area, operation and control room, workshop, and storage area, feeder bays, transformers, busbars, stringer strain beams, insulators, isolators, conductors, circuit breakers, lightning arrestors, relays, capacitor banks, batteries, wave trappers, switchyard, metering and indication instruments, equipment for carrier current, surge protection and outgoing feeders, as may be needed.
- The control building, telecommunication infrastructure, oil dam(s) etc,
- Workshop and office area within the substation footprint,
- All the access road infrastructure to and within the substation

— Associated infrastructure including but not limited to:

- o Lighting
- o fencing,
- o and buildings required for operation



Figure 0-2: Proposed Project Infrastructure (GH&A Facility-Green, 132kv line-Red and Substation-White)

7.2 Sub-section 2: Development footprint site map

This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout. The sensitivity map must be prepared from the national web based environmental screening tool, when available for compulsory use at: <https://screening.environment.gov.za/screeningtool>. The sensitivity map shall identify the nature of each sensitive feature e.g. threatened plant species, archaeological site, etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features within 50 m from the development footprint.

Refer to Section 3.4 of the EMPr

The Table 0-1 below indicates the sensitivities identified by the screening tool and the specialist verification of those sensitivities in the area of the preferred up to 132kV powerline connection to the substation.

Table 0-1 - Assessment Protocols and Site Sensitivity Verifications

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
Agricultural Assessment	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Agricultural Resources</i>	High Sensitivity	High and Medium Sensitivity
Terrestrial Biodiversity Impact Assessment	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity</i>	Very high Sensitivity	High and Low Sensitivity
Aquatic Biodiversity Impact Assessment	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Aquatic Biodiversity</i>	Very High Sensitivity	High and Low Sensitivity
Plant Species	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species</i>	Medium Sensitivity	Medium Sensitivity
Animal Species	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species</i>	Medium Sensitivity	Low Sensitivity
Avifauna Impact Assessment	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species</i>	Medium Sensitivity	High and Low Sensitivity
Bat Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	No Sensitivity Identified	High and Medium Sensitivity
Archaeological and Cultural Heritage Impact Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Low Sensitivity	Low Sensitivity
Civil Aviation	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Medium Sensitivity	Low Sensitivity

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
Defence	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	Low Sensitivity	Low Sensitivity
Palaeontology Impact Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	Very High Sensitivity	Low Sensitivity
Visual (Landscape) Impact Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	No Sensitivity Identified	Medium Sensitivity
Social Impact Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	No Sensitivity Identified	Low to Medium Sensitivity

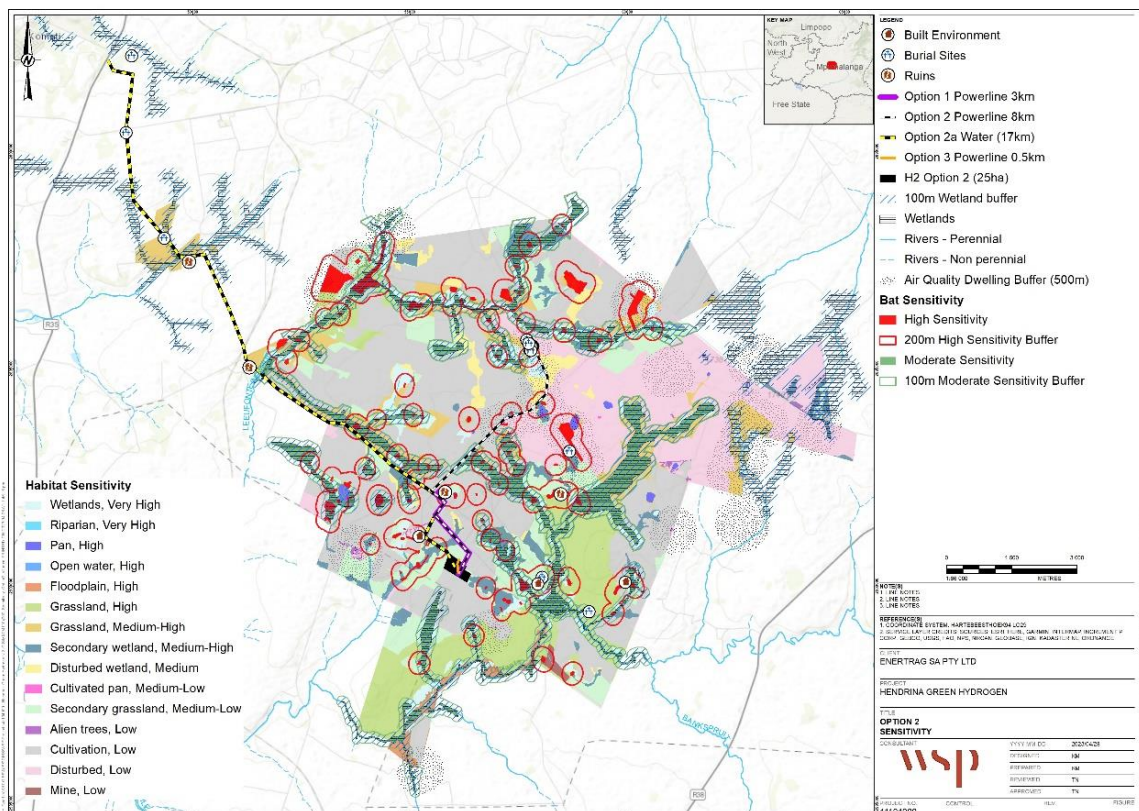


Figure 0-3: Overall Site Sensitivity of the Preferred Site

7.3 Sub-section 3: Declaration

The proponent/applicant or holder of the EA affirms that he/she will abide and comply with the prescribed impact management outcomes and impact management actions as stipulated in part B: section 1 of the generic EMPr and have the understanding that the impact management outcomes and impact management actions are legally binding. The proponent/applicant or holder of the EA affirms that he/she will provide written notice to the CA 14 day prior to the date on which the activity will commence of commencement of construction to facilitate compliance inspections.

Signature Proponent/applicant/ holder of EA

Date:

5 May 2023

7.4 Sub-section 4: amendments to site specific information (Part B; section 2)

Should the EA be transferred to a new holder, Part B: Section 2 must be completed by the new holder and submitted with the application for an amendment of the EA in terms of Regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted for an amendment to an environmental authorisation will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr for the development and the EMPr becomes legally binding to the new EA holder.

PART C

8 SITE SPECIFIC ENVIRONMENTAL ATTRIBUTES

If any specific environmental sensitivities/attributes are present on the site which require more specific impact management outcomes and actions, not included in the pre-approved generic EMPr template, to manage impacts, those impact management outcomes and impact management actions must be included in this section. These specific management controls must be referenced spatially, and must include impact management outcomes and impact management actions. The management controls including impact management outcomes and impact management actions must be presented in the format of the pre-approved generic EMPr template. This applies only to additional impact management outcomes and impact management actions that are necessary.

If Part C is applicable to the development as authorised in the EA, it is required to be submitted to the CA together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP and the name and expertise of the EAP, including the curriculum vitae are to be included. Once approved, Part C forms part of the EMPr for the site and is legally binding.

This section will **not be required** should the site contain no specific environmental sensitivities or attributes.

NOT REQUIRED

No Environmental Sensitivities Identified within the Substation Site Footprint refer to the combined sensitivity map (**Figure 0-7**)

APPENDIX 1: METHOD STATEMENTS

To be prepared by the contractor prior to commencement of the activity. The method statements are **not required** to be submitted to the CA.