



forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

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SPECIALIST DECLARATION FORM – AUGUST 2023

Specialist Declaration form for assessments undertaken for application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

REPORT TITLE

WP9396_Impala-Zircon_Statement_Rev0.5

Kindly note the following:

1. This form must always be used for assessment that are in support of applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting, where this Department is the Competent Authority.
2. This form is current as of August 2023. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at <https://www.dffe.gov.za/documents/forms>.
3. An electronic copy of the signed declaration form must be appended to all Draft and Final Reports submitted to the department for consideration.
4. The specialist must be aware of and comply with 'the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the act, when applying for environmental authorisation - GN 320/2020', where applicable.

1. SPECIALIST INFORMATION

Title of Specialist Assessment	RFI ASSESSMENT
Specialist Company Name	ITC Services
Specialist Name	Henk Goosen
Specialist Identity Number	9609015092082
Specialist Qualifications:	B. Eng Electronic
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SPECIALIST DECLARATION FORM – AUGUST 2023

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2. DECLARATION BY THE SPECIALIST

I, Henk Goosen declare that –

- I act as the independent specialist in this application;
- I am aware of the procedures and requirements for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act (NEMA), 1998, as amended, when applying for environmental authorisation which were promulgated in Government Notice No. 320 of 20 March 2020 (i.e. "the Protocols") and in Government Notice No. 1150 of 30 October 2020.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing –
 - any decision to be taken with respect to the application by the competent authority; and;
 - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 24F of the NEMA Act.

Signature of the Specialist



ITC Services

Name of Company:

07 Jun 2026

Date

SPECIALIST DECLARATION FORM – AUGUST 2023

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Henk Goosen, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the Specialist



ITC Services

Name of Company

06/07/2026

Date



71353546
SGT

Signature of the Commissioner of Oaths

07 Jun 2026

Date





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WORK PACKAGE: RFI STATEMENT

CLIENT / APPLICANT	Selahle Consultancy and Projects
SUBJECT	RFI Statement of the Proposed Powerline applicable to: Impala Zircon temporary By-Pass 132kV line
SYSTEM	Impala Zircon temporary By-Pass 132kV line
DATE OF WORK	21 April 2026
REPORT NUMBER	WP_9396
REVISION	1.0
DATE ISSUED	22 July 2026

SUMMARY OF FINDINGS:

The Powerline associated with this project will not cause any RFI to the surrounding area as long as the good practice RFI mitigation installation guidelines are used. This will reduce the potential for arcing, sparking and corona effects.

From an RFI perspective, the project is deemed suitable for progression.

DOCUMENT APPROVAL

	Name and Designation	Signature	Date
Report prepared by:	H Goosen (EMC Engineer and Consultant)		22 July 2026
Report reviewed and authorised by:	CFH Fouche (Technical Director)		22 July 2026

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HISTORY SHEET				
REV	DATE	AUTHOR	PAGES AFFECTED	CHANGE PROPOSAL
0.5	21 April 2026	H Goosen	All	Drafting of initial report
0.1	22 July 2026	H Goosen	1	Signed Final Document

CLIENT INFORMATION	
Client Name	Selahle Consultancy and Projects
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Contact Person:	Sinnah Mhlongo

This template is effective from 1 June 2023.

ACRONYMS AND ABBREVIATIONS

Acronym or abbreviation	Definition
AMA	Astronomy Management Authority
DFFE	Department of Forestry, Fishery and Environment
EIRP	Effective isotropic Radiated Power
Electrical equipment	Any electrical machinery, electrical systems, appliances, or devices, including any wireless data communication used for the operation of these facilities, used for construction, distribution and transmission power systems, exploration, farming, household, manufacturing, maintenance, or mining purposes
Electrical infrastructure	Any infrastructure or facility, including any wireless data communication used for the operation of the electrical infrastructure, to be used in any way for electricity generation, electricity distribution, electricity transmission, or for a distribution or transmission power system, and electrical facilities and equipment used for these applications
EMI	Electromagnetic Interference
FSPL	Free Space Path Loss
OHL	Over Head Line
PV	Photo Voltaic
RF	Radio Frequency
RFI	Radio Frequency Interference
SEF	Solar Energy Facility

REFERENCED AND APPLICABLE DOCUMENTS

Number	Document
[1]	EMC ADCO 6th EMC Market Surveillance Campaign 2014
[2]	CR-NAVFAC-EXWC-PW-1504 Renewable Energy, Photovoltaic Systems Near Airfields: EMI (April 2015)
[3]	REPO Electro-Magnetic Interference from Solar Photovoltaic Arrays (April 2017)
[4]	RF DISTURBANCES PRODUCED BY HIGH-POWER PHOTOVOLTAIC SOLAR PLANTS Lappeenranta University of Technology
[5]	RADIO MOBILE RF Propagation simulation program by Roger Coude'
[6]	SPLAT – RF Signal Propagation, Loss, And Terrain analysis tool
[7]	CISPR 11/SANS 211 Industrial, Scientific and Medical Equipment Radio Frequency disturbance characteristics – Limits and methods of measurement
[8]	Government Gazette vol. 490 Cape Town 18 April 2006 No. 36 of 2005: Electronic Communications act, 2005.
[9]	Noise and Vibration control TM 5-805-4 United States. Department of the Army.; United States. Department of the Air Force. 1995
[10]	R. van der Riet, "Technical Standard for the Interconnection of Embedded Generation," [Online]. Available: [https://resource.capetown.gov.za/documentcentre/ Documents/Procedures,%20guidelines%20and%20regulations/ Technical_Standard_for_the_Interconnection_of_Embedded_Generation.pdf]
[11]	CISPR 32:2015/A1:2019 Electromagnetic compatibility of multimedia equipment - Emission requirements.

1. INTRODUCTION

The Impala Zircon temporary By-Pass 132kV line Project entails the maintenance and refurbishment of the Impala Zircon 132kV powerline located in Empangeni, under Richards Bay. The existing line extends approximately 10.582 km but Eskom is only responsible for about 7.6 km.

An important aspect in evaluating the feasibility of a new power line project is the assessment of potential Radio Frequency Interference (RFI) emissions and their impact on existing electrical and electronic infrastructure. Overhead transmission lines do not inherently emit radio frequency signals under normal operating conditions. However, improper installation, poor conductor joints, damaged hardware, or inadequate maintenance can result in arcing, sparking, or corona discharge, which may generate unintended electromagnetic emissions.

It's important to recognize that both Radio Frequency Interference (RFI) and electromagnetic interference (EMI) can cause substantial impact on critical infrastructure such as airports, high-RF sites, railway line control apparatus, cell phone towers, and EMI-sensitive equipment within proximity. In instances where the PV facility does indeed impact upon existing infrastructure, strategies for EMI mitigation will need to be implemented.

2. AIM

The aim of this document is to provide a Radio Frequency Interference (RFI) statement regarding the potential RFI impact of the proposed power line. This statement confirms that, provided good engineering and installation practices are followed, the power line infrastructure is not expected to generate significant RFI, and any potential emissions will be minimal.

The DFFE Screening Report did not identify any RF-sensitive features within the vicinity of the proposed Powerline Project.

3. LOCATION



Figure 1 – Proposed Powerline Layout



Figure 2 – Proposed Powerline Layout - Legend

4. GENERAL GOOD PRACTISE RFI MITIGATION METHODS

When conducting repairs and maintenance on an existing power line, several proactive measures can be implemented to minimise the potential emission of Radio Frequency Interference (RFI) or Electromagnetic Interference (EMI). These include:

- Verifying that all line hardware, joints, and grid-related connections comply with the applicable design and construction standards [10].
- Using approved compression connectors and fittings to prevent high-resistance joints that may lead to corona discharge or sparking.
- Avoiding sharp edges, protrusions, or improperly terminated conductors that may result in localised electric field intensification.
- Ensuring that all metallic non-current-carrying parts are properly bonded and connected to the earthing system.

The purpose of effective electrical bonding and earthing is twofold. Firstly, it establishes equipotential conditions across the structure, ensuring reliable fault-current dissipation and lightning protection. Secondly, it reduces the likelihood of corona discharge, arcing, and static charge accumulation, thereby minimising the risk of unintended electromagnetic emissions. A properly designed and maintained earthing system is therefore essential in preventing unintentional RFI from transmission infrastructure.

5. POTENTIAL NOISE SOURCES FROM THE GRID CONNECTIONS AND TRANSMISSION LINES

In a high voltage environment, the RFI sources are generally arcing and sparking related. Corona from the lines are generally not associated with high frequency (above 30MHz) interference. Gap-type corona interference can extend to beyond 1GHz. Typical causes of RFI from grid connections are listed below.

- Corona discharge at the surface of the conductors, insulators, and fittings.
- Sparking at the insulators.
- Sparking at mounting hardware and contacts.
- Control equipment in the substation.
- Micro arcing.

Weather conditions has a 10 to 20 dB impact on the noise source with corona being worst during wet weather conditions and sparking/ arcing being worst during dry weather conditions.

5.1 CORONA DISCHARGE

Corona discharge occurs when the electrical field close to a conductor is higher than the electrical withstand capability of the air, resulting in an electrical break down. The breakdown occurs at a local level, hence no flash over will occur. The discharge energy will be fairly low and the frequency band of concern is also low.

Any equipment, fittings and insulators energised to high voltage may generate corona.

Corona is a normal effect and is worst during wet weather conditions.

5.2 SPARKING

Sparking occurs when there is sufficient voltage ($>$ withstand capability of air) to cause electrical breakdown of the air between two metallic objects (avalanche ionisation) and the development of an arc. At least one of the metallic components is electrically floating. This is not necessarily a single event as the components can be charged again after the discharge. The discharge energy is much higher than for corona and the frequency range extends into the GHz domain.

Sparking (gap discharge) is mostly associated with bad contacts and inferior installation practises.

Sparking is worst during dry weather conditions.

5.3 ARCING

Arcing is when ionised air forms a conductive current path between an earthed component and component at line potential. Arcing is associated with a fault condition, of short duration and the arc will normally be interrupted by the protection circuits.

5.4 SWITCHING EVENTS

Switching events such as capacitor bank switching will cause voltage and current transients with frequency components into the GHz band due to steep dV/dt and dI/dt gradients.

6. CONCLUSION AND RECOMMENDATIONS

The Powerline associated with this project will not cause any RFI to the surrounding area as long as the good practice RFI mitigation installation guidelines are used. This will reduce the potential for arcing, sparking and corona effects.

From an RFI perspective, the project is deemed suitable for progression.

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