

## 1. Terms of Reference

### 1.1 Objectives of Assessment

It is important that specialists bear in mind, both during fieldwork and in subsequent reporting, that the generic ToR and principal objectives for the specialist studies are to:

- Describe the existing baseline characteristics of the study area and place this in a regional context;
- Identify and assess potential impacts of the project and the alternatives (if any are presented to the specialist), including impacts associated with the construction and operation phases, using SRK's prescribed impact rating methodology (**Annexure A**);
- Indicate the acceptability of alternatives and recommend a preferred alternative;
- Identify and describe potential cumulative impacts of the proposed development in relation to proposed and existing developments in the surrounding area;
- Recommend mitigation measures to avoid and/or minimise impacts and/or optimise benefits associated with the proposed project; and
- Recommend and draft a monitoring campaign, if applicable.

We envisage that the main deliverables from the specialist will be vegetation and avifauna specialist input (directly into the BA Report as far as possible<sup>1</sup>) and a separate Wetland Impact Assessment Report consisting of the following components:

- Baseline description: a description of the environment of the study area in its current state, relevant to the specialist's field of study; and
- Impact assessment: an assessment of how the proposed project will alter the *status quo* as described in the baseline description, and recommended measures to mitigate and monitor impacts.

Specialists should determine the spatial scope of their assessments using their professional judgment.

<sup>1</sup> The specialist has been provided with a copy of the BA Report indicating those sections where the specialist must provide input.

Partners AH Bracken, MJ Braune, JM Brown, CD Dalglish, JR Dixon, DM Duthe, BM Engelsman, R Gardiner, DJD Gibson, GC Howell, WC Joughin, DA Kilian, PR Labrum, B Liber, DJ Mahlangu, RRW McNeill, HAC Meintjes, JA Middleton, MJ Morris, WA Naismith, GP Nel, VS Reddy, PN Rosewarne, PE Schmidt, PJ Shepherd, MJ Sim, VM Simposya, AA Smithen, HFJ Theart, KM Uderstadt, DJ Venter, ML Wertz, MD Wanless, A Wood

Directors AJ Barrett, JR Dixon, PR Labrum, DJ Mahlangu, VS Reddy, PE Schmidt, PJ Shepherd

Associate Partners R Armstrong, L Coetser, M Hinsch, JA Lake, V Maharaj, SA McDonald, RD O'Brien, M Ristic, JJ Slabbert, AT van Zyl, D Visser

Consultants AC Burger, BSC(Hons); JAC Cowan, PrSciNat, BSc(Hons); JH de Beer, PrSci Nat, MSc; T Hart, MA, TTHD; GA Jones, PrEng, PhD; TR Stacey, PrEng, DSc; OKH Steffen, PrEng, PhD; PJ Terbrugge, PrSciNat, MSc; DW Warwick, PrSciNat, BSc(Hons)

SRK Consulting (South Africa) (Pty) Ltd

Reg No 1995.012890.07

#### African Offices:

Cape Town	+ 27 (0) 21 659 3060
Durban	+ 27 (0) 31 279 1200
East London	+ 27 (0) 43 748 6292
Johannesburg	+ 27 (0) 11 441 1111
Kimberley	+ 27 (0) 53 861 5798
Pietermaritzburg	+ 27 (0) 33 347 5069
Port Elizabeth	+ 27 (0) 41 509 4800
Pretoria	+ 27 (0) 12 361 9821
Rustenburg	+ 27 (0) 14 594 1280
Accra	+ 23 (3) 24 485 0928
Harare	+ 263 (4) 49 6182
Lubumbashi	+ 243 (0) 81 999 9775

#### Group Offices:

Africa
Asia
Australia
Europe
North America
South America



## 1.2 General ToR for Specialist Studies

SRK has noted that there is a tendency for specialist studies to over-deliver on baseline and under-deliver on impact assessment and mitigation. Noting that the purpose of the studies is not academic, but to inform an EIA process, specialists should devote considerable effort to the impact assessment and recommendations for mitigation and not be overly focused on the baseline.

Note that the General ToR may not apply equally to all deliverables from the specialist, but are included so as to provide a comprehensive guideline. Specialists should disregard those elements of the ToR which are not applicable.

The specialist study and report structure shall be based on the requirements outlined below.

### 1.2.1 Approach to the Study

The specialist is to provide an outline of the approach used in the study. Assumptions, limitations and sources of information must also be clearly identified. The knowledge of local people should, where possible, be incorporated in the study. The description of the approach shall include a short discussion of the appropriateness of the methods used in the specialist study. The assessment of the data shall, where possible, be based on accepted scientific techniques, failing which the specialist is to make judgments based on professional expertise and experience.

### 1.2.2 Description of the Affected Environment or Baseline

A description of the affected environment must be provided, both at a site-specific level and for the wider region, the latter to provide an appropriate context. The focus of this description shall be relevant to the specialist's field of expertise. It is essential that the uniqueness or "irreplaceability" of the site be understood in the context of the surrounding region, at a local, regional and, if necessary, national scale. This will largely be based on comparison with existing data sources, where available.

The specialist must provide an indication of the sensitivity of the affected environment. Sensitivity, in this instance, refers to the capacity of an environment to tolerate disturbance (taking the environment's natural capacity to recover from disturbance as well as existing cumulative impacts into account). For example, if very little disturbance results in the permanent loss of the biodiversity of a habitat, the affected environment could be categorised as having a low tolerance to disturbance and is consequently a highly sensitive habitat. If, on the other hand, a habitat is able to withstand significant disturbance without a marked impact on its biodiversity, the affected environment could be categorised as having a high tolerance to disturbance (i.e. 'low sensitivity' habitat). While the sensitivity of individual species/aspects is a valid and important part of the study, the specialist should not focus only on these aspects: the sensitivity of the overall system is very important.

#### **NOTE:**

The specialist must provide a sufficiently comprehensive description of the existing environment in the study area to ensure that an adequate assessment of the potential impacts of the proposed Project can be made. The baseline should include data collected through a thorough literature review as well as field surveys, if required. This data should not simply comprise lengthy species inventories, however. The specialist must obtain an understanding of the overall system of which their specialist discipline is a part, in order to understand how changes to that system will affect their subject.

### 1.2.3 Impact Assessment and Identification

Clear statements identifying the potential environmental impacts of the proposed project must be presented. This includes potential impacts for the construction and operation phases of the project. The specialist shall clearly identify the suite of potential **direct, indirect and cumulative**

environmental impacts<sup>2</sup>. Direct impacts require a quantitative assessment which must follow the prescribed impact assessment methodology. Indirect and cumulative impacts should be described qualitatively.

The specialist shall assess environmental impacts and also indicate any fatal flaws, i.e. very significant adverse environmental impacts which cannot be mitigated and which will jeopardise the project and/or activities in a particular area (if appropriate). Note that all conclusions will need to be thoroughly backed up by scientific evidence.

Specialists must clearly state the impact to be assessed, followed by a narrative description of the impact and must then present the assessment of the impact, using the prescribed impact rating system, in the format provided as Annexure A. An electronic version of the prescribed assessment table will be provided to all specialists.

Specialists must recommend **practicable mitigation and optimisation measures** or management actions that effectively avoid, minimise or eliminate negative impacts, enhance beneficial impacts, and assist project design. The significance of impacts must be assessed both without and with assumed effective mitigation. If appropriate, specialists must differentiate between essential mitigation measures which must be implemented (i.e. implicit in the “assuming mitigation” rating) and best practice mitigation measures which are recommended to comply with best practice, but which do not affect the impact rating. Unsubstantiated recommendations for further studies should be avoided.

Specialists are also required to recommend appropriate **monitoring** and review programmes to track the efficacy of mitigation measures (if appropriate). This should include where to monitor (locations), what (parameters/determinands), when (frequency and duration), how (methods) and who.

#### 1.2.4 Environmental Acceptability and Comparison of Alternatives

The specialist is required to indicate the environmental acceptability of the site, process or technology alternatives (if any are presented for assessment). Thereafter, the specialist must also indicate the environmentally preferred alternative and provide a brief synopsis – in the form of bullet points – motivating the choice of preferred alternative. A comparison between the No Go alternative and the proposed development alternatives must also be included.

#### 1.3 Specialist Input ToR

The following ToR apply to the specialist vegetation/avifauna input:

- Undertake a site visit to understand the floral integrity along the proposed powerline route and at the site of the proposed substation;
- Provide vegetation input directly into the BA Report describing pertinent characteristics including (amongst others): condition, ecological importance, conservation importance and floral assemblages.
- Identify and assess potential impacts on vegetation and avifauna (in a separate report) resulting from the proposed project (including impacts associated with the construction and operations phases) using SRK’s prescribed impact rating methodology; and

<sup>2</sup> An **indirect** impact is an effect that is related to but removed from a proposed action by an intermediate step or process. An example would be increased hunting and illegal logging in the concession area (following mining) as a result of improved access.

**Cumulative** impacts occur when:

- Different impacts of one activity or impacts of different activities on the natural and social environment take place so frequently in time or so densely in space that they cannot be assimilated; or
- Impacts of one activity combine with the impacts of the same or other activities in a synergistic manner.

- Recommend mitigation measures to avoid and/or minimise impacts and/or optimise benefits associated with the proposed project and monitoring of the impacts.

#### **1.4 Wetland Impact Assessment ToR**

The following ToR apply to this study:

- Undertake a site visit to the study area;
- Determine the Ecological Importance and Sensitivity and Present Ecological State of identified wetland features within 500 m of the project footprint based on databases such as the NFEPA database (2011), the BGIS website and available fine scale plans;
- Classify the identified wetlands according the Classification System for Wetlands and other Aquatic Ecosystems in South Africa. User Manual: Inland systems (Ollis et al., 2013);
- Determine the ecosystem services provided by the wetlands to the ecology of the area and to people within the area according to the method of Kotze et al (2008);
- Determine wetland health according to the resource directed measures guideline as advocated by Macfarlane et al., (2009);
- Delineate the wetland features and buffer zones according to “DWAF, 2005: A practical Guideline Procedure for the Identification and Delineation of Wetlands and Riparian Zones”;
- Identify and assess potential impacts on wetland features resulting from the proposed project (including impacts associated with the construction and operation phases) using SRK’s prescribed impact rating methodology;
- Identify and describe potential cumulative impacts resulting from the proposed project in relation to proposed and existing developments in the surrounding area;
- Recommend mitigation measures to avoid and/or minimise impacts and/or optimise benefits associated with the proposed project and monitoring of the impacts; and
- Assist SRK in responding to any comments received from stakeholders.

## Annexure A: Impact Assessment Methodology

## Impact Assessment Methodology for EIAs - Instructions to Specialists

The significance of all potential impacts that would result from the proposed Project is determined in order to assist decision-makers. The significance rating of impacts is considered by decision-makers, as shown below.

- **INSIGNIFICANT:** the potential impact is negligible and **will not** have an influence on the decision regarding the proposed activity.
- **VERY LOW:** the potential impact is very small and **should not** have any meaningful influence on the decision regarding the proposed activity.
- **LOW:** the potential impact **may not** have any meaningful influence on the decision regarding the proposed activity.
- **MEDIUM:** the potential impact **should** influence the decision regarding the proposed activity.
- **HIGH:** the potential impact **will** affect a decision regarding the proposed activity.
- **VERY HIGH:** The proposed activity should only be approved under special circumstances.

The **significance** of an impact is defined as a combination of the **consequence** of the impact occurring and the **probability** that the impact will occur. The significance of each identified impact<sup>3</sup> must be rated according to the methodology set out below:

**Step 1** – Determine the **consequence** rating for the impact by determining the score for each of the three criteria (A-C) listed below and then **adding** them<sup>4</sup>. The rationale for assigning a specific rating, and comments on the degree to which the impact may cause irreplaceable loss of resources and be irreversible, must be included in the narrative accompanying the impact rating:

Rating	Definition of Rating	Score
<b>A. Extent</b> – <i>the area over which the impact will be experienced</i>		
Local	Confined to project or study area or part thereof (e.g. site)	1
Regional	The region, which may be defined in various ways, e.g. cadastral, catchment, topographic	2
(Inter) national	Nationally or beyond	3
<b>B. Intensity</b> – <i>the magnitude of the impact in relation to the sensitivity of the receiving environment, taking into account the degree to which the impact may cause irreplaceable loss of resources</i>		
Low	Site-specific and wider natural and/or social functions and processes are negligibly altered	1
Medium	Site-specific and wider natural and/or social functions and processes continue albeit in a modified way	2
High	Site-specific and wider natural and/or social functions or processes are severely altered	3
<b>C. Duration</b> – <i>the timeframe over which the impact will be experienced and its reversibility</i>		
Short-term	Up to 2 years (i.e. reversible impact)	1
Medium-term	2 to 15 years (i.e. reversible impact)	2
Long-term	More than 15 years (state whether impact is irreversible)	3

<sup>3</sup> This does not apply to minor impacts which can be logically grouped into a single assessment.

<sup>4</sup> Please note that specialists are welcome to discuss the rating definitions as they apply to their study with the EIA team.

The combined score of these three criteria corresponds to a **Consequence Rating**, as follows:

Combined Score (A+B+C)	3 – 4	5	6	7	8 – 9
Consequence Rating	Very low	Low	Medium	High	Very high

**Example 1:**

Extent	Intensity	Duration	Consequence
Regional 2	Medium 2	Long-term 3	<b>High</b> 7

**Step 2** – Assess the **probability** of the impact occurring according to the following definitions:

Probability– the likelihood of the impact occurring	
Improbable	< 40% chance of occurring
Possible	40% - 70% chance of occurring
Probable	> 70% - 90% chance of occurring
Definite	> 90% chance of occurring

**Example 2:**

Extent	Intensity	Duration	Consequence	Probability
Regional 2	Medium 2	Long-term 3	<b>High</b> 7	Probable

**Step 3** – Determine the overall **significance** of the impact as a combination of the **consequence** and **probability** ratings, as set out below:

		Probability			
		Improbable	Possible	Probable	Definite
Consequence	Very Low	<b>INSIGNIFICANT</b>	<b>INSIGNIFICANT</b>	<b>VERY LOW</b>	<b>VERY LOW</b>
	Low	<b>VERY LOW</b>	<b>VERY LOW</b>	<b>LOW</b>	<b>LOW</b>
	Medium	<b>LOW</b>	<b>LOW</b>	<b>MEDIUM</b>	<b>MEDIUM</b>
	High	<b>MEDIUM</b>	<b>MEDIUM</b>	<b>HIGH</b>	<b>HIGH</b>
	Very High	<b>HIGH</b>	<b>HIGH</b>	<b>VERY HIGH</b>	<b>VERY HIGH</b>

**Example 3:**

Extent	Intensity	Duration	Consequence	Probability	Significance
Regional 2	Medium 2	Long-term 3	<b>High</b> 7	Probable	<b>HIGH</b>

**Step 4** – Note the **status** of the impact (i.e. will the effect of the impact be negative or positive?)

**Example 4:**

Extent	Intensity	Duration	Consequence	Probability	Significance	Status
Regional 2	Medium 2	Long-term 3	<b>High</b> 7	Probable	<b>HIGH</b>	<b>– ve</b>

**Step 5** – State your level of **confidence** in the assessment of the impact (high, medium or low).

Depending on the data available, you may feel more confident in the assessment of some impact than others. For example, if you are basing your assessment on extrapolated data, you may reduce the confidence level to low, noting that further groundtruthing is required to improve this.

**Example 5:**

<i>Extent</i>	<i>Intensity</i>	<i>Duration</i>	<i>Consequence</i>	<i>Probability</i>	<i>Significance</i>	<i>Status</i>	<i>Confidence</i>
Regional 2	Medium 2	Long-term 3	<b>High</b> 7	Probable	<b>HIGH</b>	– ve	High

**Step 6** – Identify and describe practical **mitigation** and **optimisation** measures that can be implemented effectively to reduce or enhance the significance of the impact. Mitigation and optimisation measures must be described as either:

- **Essential:** best practice measures which must be implemented and are non-negotiable; and.
- **Best Practice:** recommended to comply with best practice, with adoption dependent on the proponent's risk profile and commitment to adhere to best practice, and which must be shown to have been considered and sound reasons provided by the proponent if not implemented.

*Essential* mitigation and optimisation measures must be inserted into the completed impact assessment table. The impact should be re-assessed with mitigation, by following Steps 1-5 again to demonstrate how the extent, intensity, duration and/or probability change after implementation of the proposed mitigation measures. *Best practice* measures must also be inserted into the impact assessment table, but not considered in the “with mitigation” impact significance rating.

**Example 6: A completed impact assessment table**

	<i>Extent</i>	<i>Intensity</i>	<i>Duration</i>	<i>Consequence</i>	<i>Probability</i>	<i>Significance</i>	<i>Status</i>	<i>Confidence</i>
Without mitigation	Regional 2	Medium 2	Long-term 3	<b>High</b> 7	Probable	<b>HIGH</b>	– ve	High
<b>Essential mitigation measures:</b> <ul style="list-style-type: none"> <li>• Xxx1</li> <li>• Xxx2</li> <li>• Xxx3</li> </ul> <b>Best practice mitigation measures:</b> <ul style="list-style-type: none"> <li>• Yyy1</li> <li>• Yyy2</li> </ul>								
With mitigation	Local 1	Low 1	Long-term 3	<b>Low</b> 5	Improbable	<b>VERY LOW</b>	– ve	High

**Step 7** – Summarise all impact significance ratings as follows in your executive summary:

Impact	<i>Consequence</i>	<i>Probability</i>	<i>Significance</i>	<i>Status</i>	<i>Confidence</i>
Impact 1: XXXX	Medium	Improbable	<b>LOW</b>	–ve	High
With Mitigation	Low	Improbable	<b>VERY LOW</b>		High
Impact 2: XXXX	Very Low	Definite	<b>VERY LOW</b>	–ve	Medium
With Mitigation:	<i>Not applicable</i>				



## Annexure B: Example of Presentation of Impacts

### Example: Presentation of each impact

#### Potential Impact A1: Loss of Avifauna Habitat

As part of the implementation of the new port infrastructure, all vegetation within its footprint will be cleared (including the mangrove and reedbeds in the swamp area). The reclamation of the coal stockyard will also imply the elimination of the intertidal muddy strip in this area. These areas are resting, feeding and nesting habitats for various avifauna species.

This transformation corresponds to a direct loss of habitat for the avifauna. These habitats, especially the swamp and mangrove, have suffered many pressures in this region and are thus relatively scarce (the swampy area affected by the project area is the only such area in the northern bank of the Matola channel, and the project will affect roughly 40% of the existing marshland).

These habitats host a large variety of birds that will be affected by this loss. Many birds will lose natural refuges and will become vulnerable to predation. On days with strong winds, the mangrove serves as a wind break and protects birds from this natural phenomenon. A large part of the resident birds feed and breed in this place. The weavers form large nesting colonies during the summer in the swamp zone.

Although the loss of marshland corresponds to a significant change in natural processes (considering its scarcity in the region), no protected bird species were identified using or nesting in this habitat.

This impact is considered to be local in extent, but of medium intensity and extending over the long term. The impact is therefore assessed to be of **medium** significance and with the implementation of mitigation is reduced to **low** (Table ).

**Table 1: Significance of the potential loss of avifauna habitat**

	<b>Extent</b>	<b>Intensity</b>	<b>Duration</b>	<b>Consequence</b>	<b>Probability</b>	<b>Significance</b>	<b>Status</b>	<b>Confidence</b>
Without mitigation	Local 1	Medium 2	Long term 3	<b>Medium</b> 6	Definite	<b>MEDIUM</b>	- ve	High
<b>Essential Mitigation Measures:</b> <ul style="list-style-type: none"> <li>Limit removal of vegetation and reclamation to the areas required for the project only</li> </ul> <b>Best Practice Mitigation Measures</b> <p>Limit disturbance of avifauna habitats including wetlands, mangroves and the intertidal zone as far as possible</p>								
With mitigation	Local	Low	Long term	Low	Definite	<b>LOW</b>	- ve	High