



**GEORGE**  
**TEL:** +27 (0) 44 873 4923 **FAX:** +27 (0) 44 874 5953  
**EMAIL:** info@sesc.net **WEBSITE:** www.sesc.net  
**ADDRESS:** Unit 17 Cathedral Square,  
 Cathedral Street, George, 6530  
**PO BOX:** 9087, George, 6530

**CAPE TOWN**  
**TEL:** +27 (0) 21 554 5195 **FAX:** +27 (0) 86 575 2869  
**EMAIL:** betsy@sesc.net **WEBSITE:** www.sesc.net  
**ADDRESS:** Tableview, Cape Town, 7441  
**PO BOX:** 443, Milnerton, 7435

# DRAFT PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT (POSEIA)

**PROPOSED HERCULES PV SOLAR CLUSTER PROJECT – ROODE KRAAL  
 SOLAR PV1 LOCATED ON THE REMAINDER OF THE FARM ROODE KRAAL  
 28, EMTHANJENI LOCAL MUNICIPALITY, PIXLEY KA SEME DISTRICT  
 MUNICIPALITY, NORTHERN CAPE PROVINCE.**



Application in terms of the National Environmental Management Act of 1998 (Act No. 107 of 1998), as amended, and the 2014 Environmental Impact Assessment (EIA) Regulations, as amended.

<b>APPLICANT:</b>	Roode Kraal Solar PV1 Contact: Mr. Lloyd Barnes & Mr Andrew Pearson
<b>ENVIRONMENTAL CONSULTANT:</b>	Sharples Environmental Services cc Madeleine Knoetze (EAPASA REG: 3230) Betsy Ditcham (EAPASA REG: 1480)
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## 1. Introduction

This Plan of Study for EIA has been compiled in terms of the content requirements listed in Appendix 2 of the National Environmental Management Act (NEMA) Environmental Impact Assessment Regulations. The **Plan of Study for EIA (POSEIA) describes how the EIA Phase will proceed** and includes details of the specialist studies already undertaken and those still proposed.

The proposed solar PV cluster will be located on the Remainder of the Farm Riet Fountain No. 6 (Hanover Major Registration division), the Remainder of the Farm Roodekraal No. 28 (Hanover Major Registration division), and Remainder of the Farm Hartebeest Hoek No. 31 (Hanover Major Registration division), Emthanjeni Local Municipality, Northern Cape. This does not include the properties affected as part of the grid infrastructure.

The future Hercules Solar PV Cluster will have a combined output capacity of 1 330 MW, with each proposed utility scale solar PV facility carrying a generation capacity ranging between 303 MW and 405 MW.

This **ANNEXURE** must be read alongside the Draft Scoping Report compiled for Proposed Hercules PV Solar Cluster Project – Roode Kraal Solar PV1 located on the Remainder of the Farm Riet Fountain 6 and the Remainder of the Farm Hartebeest Hoek 31, Emthanjeni Local Municipality, Pixley Ka Seme District Municipality, Northern Cape Province. This application excludes the relevant proposed transmission corridor, to be addressed as part of a separate application for Environmental Authorisation.

The 2014 EIA Regulations were promulgated in December 2014 and were amended in April 2017. These new Regulations pose time restrictions on the submission of the Draft Scoping Report, Final Scoping Report and the EIA Report, to the Department of Forestry, Fisheries and Environment (DFFE). As a direct result of these time restrictions most of the specialist environmental impact assessments are now required to take place upfront, prior to the submission of the Application Form and Final Scoping Report to DFFE. Another reason why the impact assessment specialist studies are required prior to the submission of the Final Scoping Report is because the content requirements of the Scoping Report now require the EAP to describe the impacts of the proposed development, including the nature, extent, significance, duration and possible mitigation measures.

Scoping Phase Specialist input has therefore already been obtained to inform the findings of the Draft Scoping Report as well as the preferred layout alternative of the proposed development.

## 2. Objectives of the Environmental Impact Assessment Process

The objective of the **environmental impact assessment (EIA) process** is to, through a consultative process:

- Determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- Describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the development footprint on the approved site as contemplated in the accepted Scoping Report;

- Identify the location of the development footprint within the approved site as contemplated in the accepted Scoping Report based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
- Determine the--
  - nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
  - degree to which these impacts-
    - (aa) can be reversed;
    - (bb) may cause irreplaceable loss of resources, and
    - (cc) can be avoided, managed or mitigated;
- Identify the most ideal location for the activity within the development footprint of the approved site as contemplated in the accepted Scoping Report based on the lowest level of environmental sensitivity identified during the assessment.
- Identify, assess, and rank the impacts the activity will impose on the development footprint on the approved site as contemplated in the accepted Scoping Report through the life cycle of the activity.
- Identify suitable measures to avoid, manage or mitigate identified impacts; and
- Identify residual risks that need to be managed and monitored.

The EIA Phase of the EIA Process will **further address potential environmental impacts** and benefits (direct, indirect and cumulative) associated with all of the life cycle stages of the project, including pre-construction, construction and operational stages of the life-cycle of the development. The EIA Phase will also effectively **respond to all input received from interested and affected parties and key Authorities** that provide comment on the Scoping Report and Plan of Study for EIA. The EIA will **provide the Authorities with sufficient information to make an informed decision** on whether or not the development should be authorized.

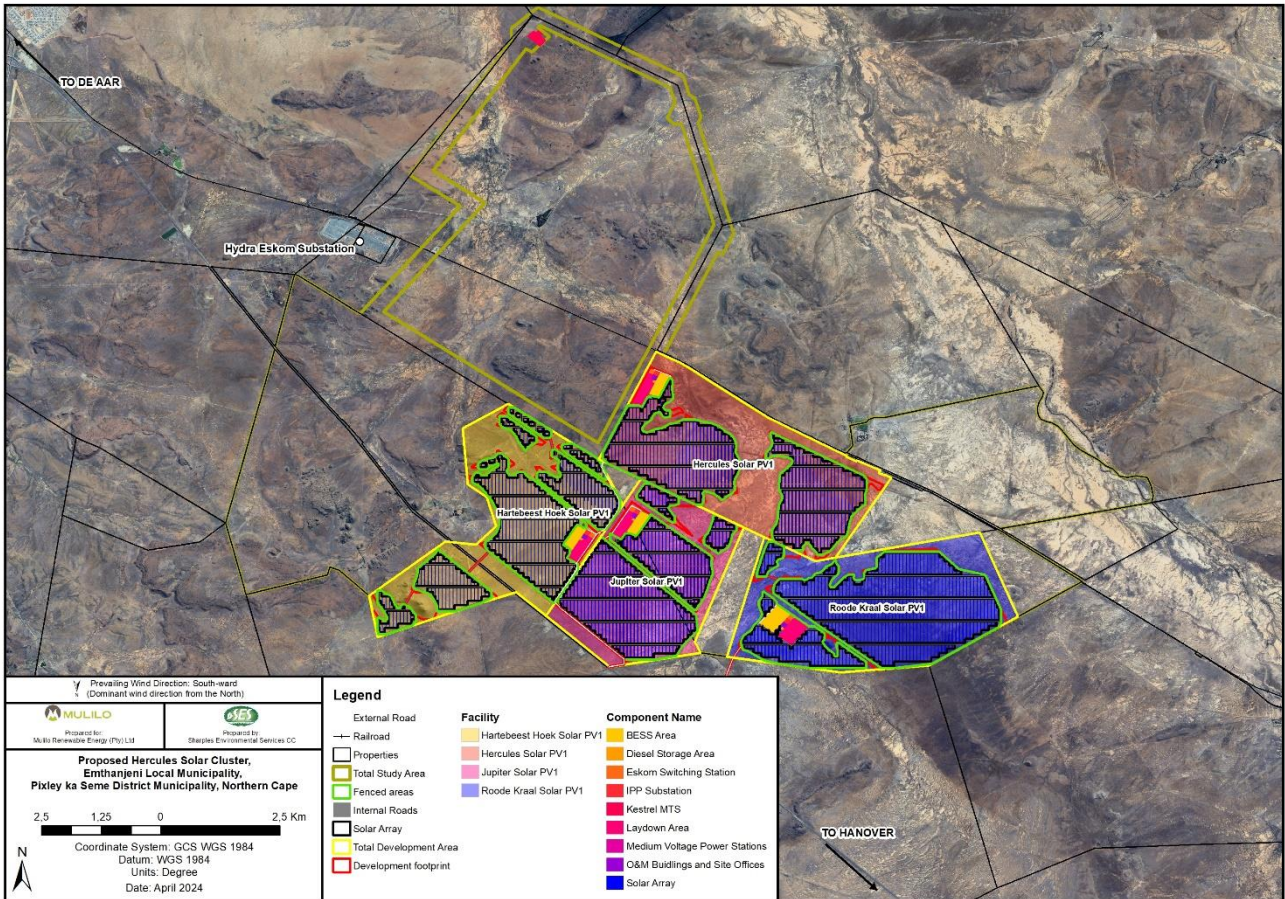
### 3. Description of Alternatives Considered & Assessed

#### 3.1 Site and Layout Alternatives

Consideration was given to the following aspects:

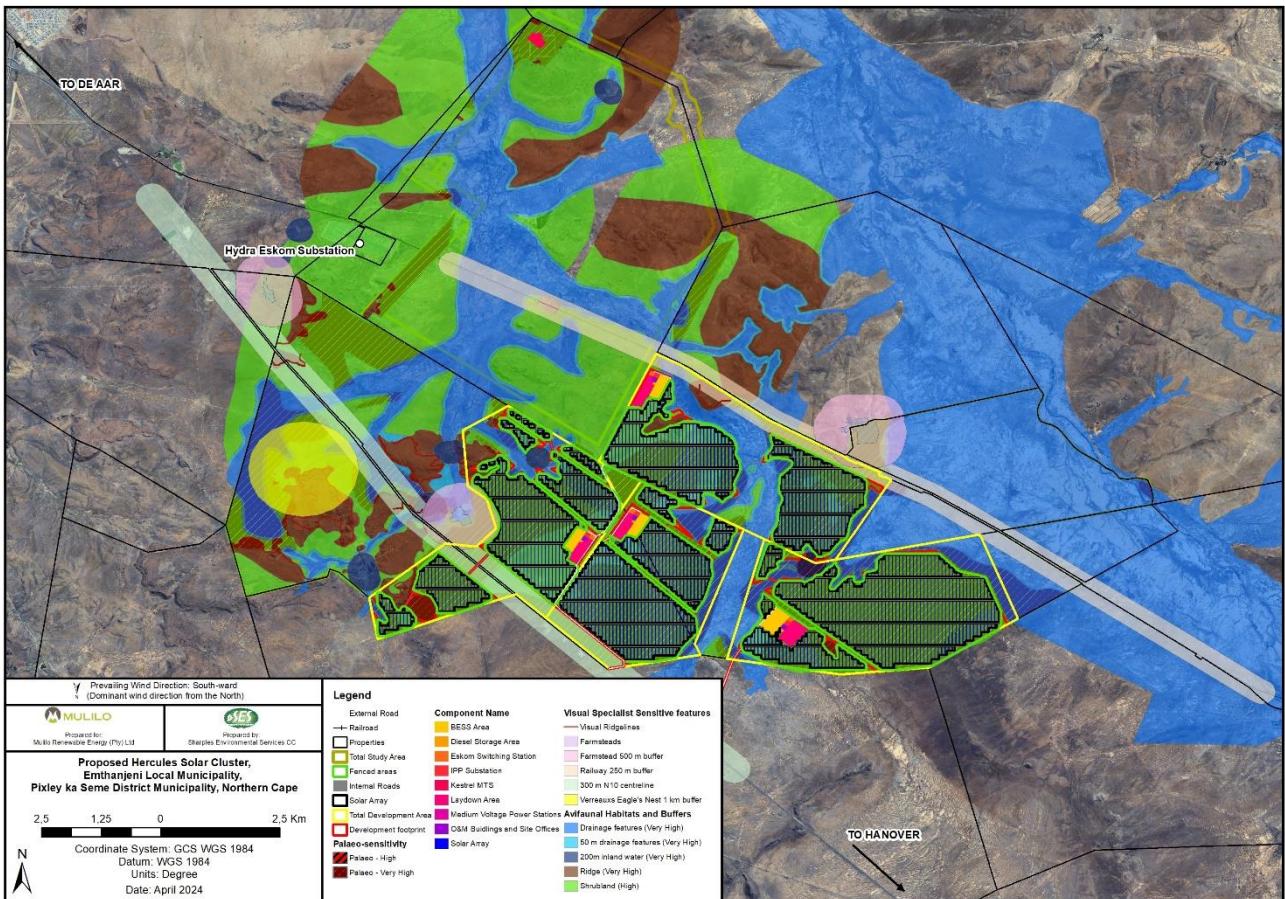
- Landowner requirements: Upon initial inspection (as conducted by the EAP), and further liaison with the directly affected landowners, the landowner requested that a portion of the remainder of the farm Riet Fountain 6 be excluded from the areas under consideration for the placement of the future Hercules Solar PV Cluster.
- Specialists' verification: Numerous specialists were appointed to undertake baseline assessments on the various farm portions under consideration. The following baseline specialist contribution were used to inform the layout of the proposed development:
  - Heritage and cultural resources and Palaeontological resources
  - Botanical, Faunal and Terrestrial Biodiversity assessment
  - Aquatic assessment.
  - Agricultural assessment.
  - Visual assessment.
  - Avifaunal Survey.

The layout of the future Hercules Solar PV Cluster was specifically done in a manner to have minimal impact on any natural resources occurring within the confines of the study area, Figure 1. Figure 2 below provides an overlay of the various sensitivities and the layout of the Hercules cluster based on the abovementioned findings.



**Figure 1: Layout of the proposed Hercules Cluster (also included as Appendix C1 of the Scoping Report).**

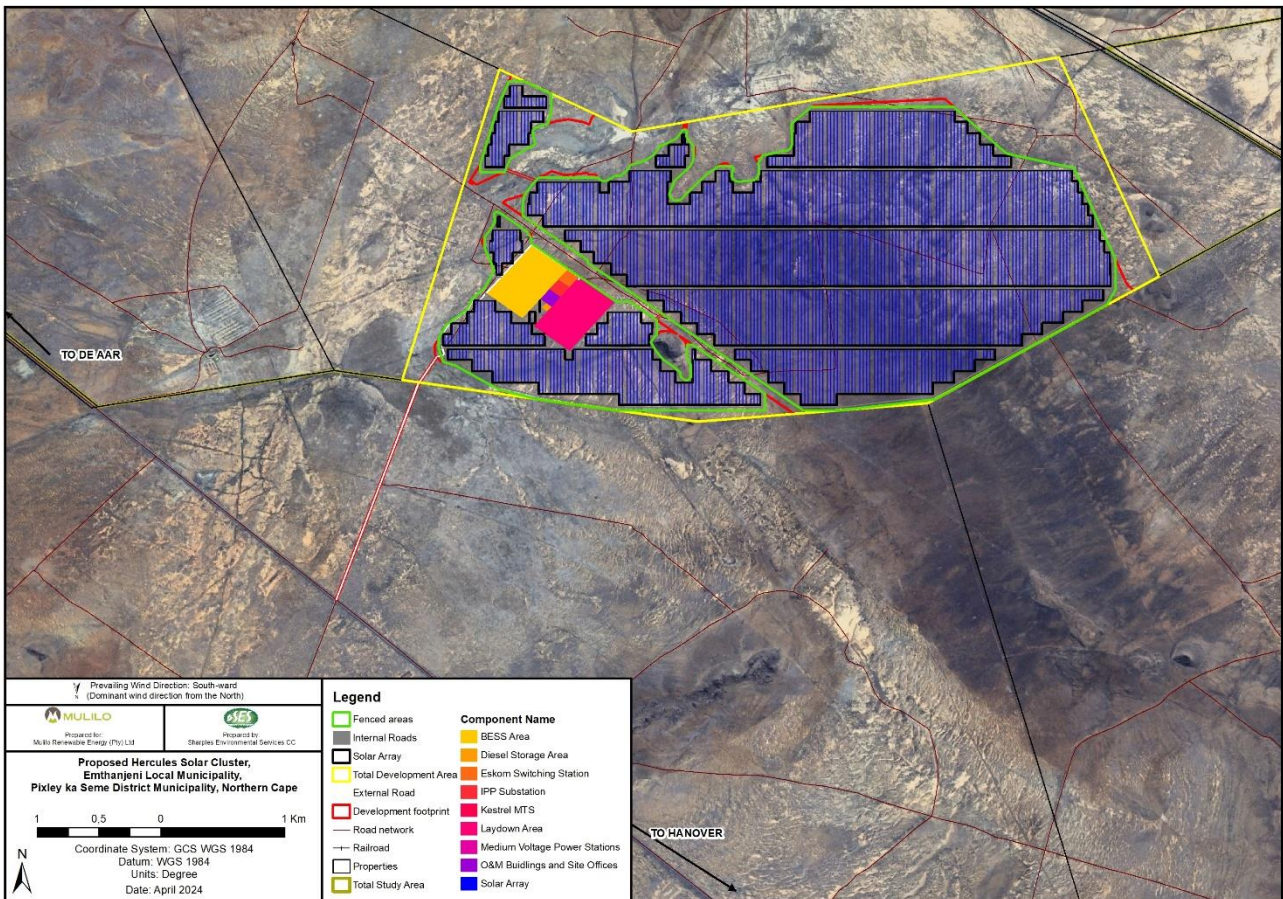




**Figure 2: Layout of the proposed Hercules Cluster with specialist sensitivities (also included as Appendix C1 as per the Scoping Report).**

It is proposed to construct a solar PV farm, as part of the proposed Hercules Solar PV Cluster including all auxiliary infrastructure on part of the remainder of the Farm Riet Fountain No. 6 (Hanover Major Registration division), with the access road located partially on the Remainder of the Farm Hartebeest Hoek No. 31 (Hanover Major Registration division).





**Figure 3: Proposed Layout – Roode Kraal Solar PV1.**

The proposed development will have an extent of approximately 1 120 ha and will have an output capacity of up to 405 MW. The development will include the following infrastructure (Figure 1 4):

- Solar field:
  - Solar Arrays: PV modules;
  - Single axis tracking technology maximum height of 5m (aligned north-south);
  - Solar module mounting structures comprised of galvanised steel and aluminium;
  - Foundations which will likely be drilled and concreted into the ground; and
  - Solar measurement and weather stations;
  - Central/string Inverters and MV transformers in in field;
  - DC coupled Battery Energy Storage System (BESS) containers distributed through PV field located adjacent to inverters;
  - Lithium Ion battery Cells, Modules, Racks and containers;
  - Power Conversion Equipment;
  - Battery Management System; and
  - Energy Management System.
- Associated Infrastructure
  - Medium Voltage (MV =22/33 kV) overhead powerlines and underground cables;
  - MV Collector stations;
  - Access road;
  - Internal gravel roads;
  - Fencing;
  - General maintenance area;

- Storm water channels and berms;
- Water storage tanks and pipelines;
- Temporary work area during the construction phase (i.e. laydown area); and
- O&M buildings, store.
- Project IPP Substation;
  - 132kV substation with an area of 200m x 200m;
  - HV transformer;
  - Substation Control Building;
  - HV metering, Scada and protection building;
  - MV collector switchgear buildings; and
  - Compensation equipment (Filters capacitors reactors statcoms).
- AC coupled BESS installation (with an area of 400m x 400m) at project substation and laydown area:
  - Solid State Battery technology- either Lithium-Ion or Sodium Sulphide (NaS);
  - Battery Cells, Modules, Racks and containers;
  - Power Conversion Equipment;
  - Battery Management System;
  - Energy Management System;
  - MV transformers;
  - MV cabling and collector stations;
  - Fencing;
  - Offices, workshop; and
  - Fire Protection systems.

The grid connection infrastructure for each project (which will be handed over to Eskom) may include:

- Onsite Switching Station (SS), adjacent to the IPP Substation;
  - 132kV Overhead Power Line (OHPL) – 30 m height from the switching station, with a length of <15km to a yet to be determined connection point;
  - Extension of the 132kV Busbar at the MTS;
  - 132kV Feeder Bay at the MTS;
  - Extension of the 400kV Busbar at the MTS; and
  - Installation of a new 400/132kV Transformer and bay at the MTS.

It should be noted that the gridlines associated with this development will undergo a separate environmental authorisation process. These gridlines will also affect properties not listed as part of this application.

This Preferred Layout Alternative 1 will be assessed against the No-Go Alternative. Due to the incorporation of the baseline study information as presented by the specialists, as well as the discussions held between the EAP and the landowners, the layout as per Figure 3 will be the only alternative assessed against the No-Go Alternative for the purpose of the Scoping Report.

The Layout Alternative 2, would be the development of the three affected properties in their entirety (without the consideration of the various sensitivities presented by the appointed specialists). This alternative will be weighed against the Preferred Layout Alternative 1.



## **3.2 Technology/Design Alternative**

Technology/Design alternatives provide for the consideration of different designs for either aesthetic purposes or for the purpose of providing materials or technologies in order to optimize the local benefits and sustainability.

### **3.2.1 Solar Facility Technology Alternatives**

#### **3.2.1.1 BESS (Battery Energy Storage System) Technology alternatives**

- BESS Technology Alternative 1 - Solid State Battery: Lithium Ion.
- BESS Technology Alternative 2 - Solid State Battery: Sodium Sulphur.
- BESS Technology Alternative 3 - Flow Battery: Vanadium Redox Flow.

The preferred the technology to be used for the purpose of this development will be determined at later stages of the process, through comparative assessment.

#### **3.2.1.2 Energy generation alternatives in terms of land use**

- Energy Generation Alternative 1: Solar Energy.
- Energy Generation Alternative 1: Wind Energy.
- Energy Generation Alternative 1: Other Renewable Alternatives.

The preferred the technology to be used for the purpose of this development will be determined at later stages of the process, through comparative assessment.

## **3.3 No-Go Alternative**

The "No Go" alternative is the option of not developing the proposed development and associated infrastructure. The no-development option would result in a lost opportunity in terms of the employment opportunities associated with the construction and operation phase as well as a loss of benefits associated with the load-sharing possibilities in terms of electricity generation.

The "no-go" alternative will result in the visual environment staying the same with the natural character of the area contributing to the "sense of place".

## 4. Description of Aspects to be Further Assessed by Specialists in the EIA Phase

### 4.1 Description of Identified Aspects (Impacts)

#### 4.1.1 Pre-Construction/Planning

The following potential environmental impacts have been identified by the EAP and by initial input from the various specialists as impacts that may impact upon the undertaking of the construction phase that needs to be addressed.

- **Legislative Compliance and Sustainability Impacts:** Failure to secure applicable legislative permits/licenses/authorizations/agreements, or failure to or plan for the incorporation of their relevant conditions, can lead to delays in terms of timeframes, as well as cost implications. Where legal non-compliance/s are observed, this can have legal penalties for the applicant.

#### 4.1.2 Construction Phase

The following potential environmental impacts have been identified by the EAP and by initial input from the various specialists as impacts that may occur during the construction phase that need to firstly be avoided and if unavoidable, mitigated to an acceptable level of impact significance.

- **Agricultural Potential Impact - Loss of agricultural land** that has the potential to be used for cultivation of crops or other agricultural purposes (opportunity cost) is not relevant for this property because it would require an environmental process to be undertaken to establish crops on this property. Currently, the site is utilised for game farming and small-scale livestock grazing practices. As per the outcome of the assessment done by the appointed Agricultural specialist (Johann Lanz, 2022), it is hereby confirmed that the agricultural impact of the proposed development was assessed and found to be very low as the areas of High significance will be completely avoided.
- **Botanical Impact - Destruction, further loss and fragmentation of the habitats, ecosystems and vegetation community, including protected species:** Site clearing before construction will result in the blanket clearing of vegetation within the affected footprint. A number of Species of Conservation Concern, have been identified within the study area. A majority of the vegetation on site could be considered as Ecological Corridors for migrating fauna. These areas are also considered important foraging and nesting habitats. Three distinct vegetation communities were identified within the study area, with the Shrubland vegetation being the largest contributor to the natural landscape (in terms of extent).
- **Botanical Impact – Spread and/or establishment of alien and/or invasive species (especially plants):** The establishment of these species could potentially lead to the loss of vegetation and habitat. Indirectly, alien and/or invasive species could cause the spread of potentially dangerous diseases due to invasive and pest species.
- **Faunal Impact – Displacement of faunal community due to habitat loss, direct mortalities and disturbance (road collisions, noise, dust, vibration and poaching):** Activities associated with vegetation clearing and killing of perceived dangerous or tradable fauna, may lead to increased mortalities among faunal species.
- **Freshwater Resources Impact – Loss or degradation of watercourse:** The proposed development will see to the use and formalisation of existing tracks and servitudes that leads through the watercourses. Existing infrastructural corridors will be used as far as possible.
- **Freshwater Resources Impact – Increased bare surfaces, flood peaks and potential for erosion:** Vegetation clearing and exposure of bare soils within and upslope of the aquatic habitat during

construction will decrease the soil binding capacity and cohesion of the upslope soils and thus increase the risk of erosion and sedimentation downslope.

- **Freshwater Resources Impact – Introduction and spread of alien and invasive vegetation:** Sources of modification that result from livestock within the game farms include where livestock trample watercourse banks removing vegetation and causing erosion. These disturbed areas create habitat availability for alien invasives to inhabit.
- **Freshwater Resources Impact – Decreased flow inputs:** During the construction and installation phase of the proposed development, excavation of the soils will be required. This will lead to the alteration of the Hydrological Regime of the site, leading to decreased flow inputs to the watercourses.
- **Freshwater Resources Impact – Increased sediment loads to downstream reaches:** Removal of vegetation, particularly in the drainage areas has the potential to decrease infiltration and increase surface runoff. It also has the potential to result in erosion of the drainage area while at the same time increasing sediment loads and potentially toxicants delivered downstream.
- **Contamination impact - Environmental pollution due to water runoff, spills from vehicles and erosion:** During the construction phase, equipment will be used that could potentially pollute the biological resources, should the plant not be managed in a satisfactory manner. Construction activities will generate waste. In addition, fuel, oil, lubricants and other pollutants may leak from vehicles/ machinery and contaminate the soil. Pollution and soil contamination could also occur from chemical toilets, cement mixing directly on the soil and storm water runoff may flow over the site camp area and carry contaminants off-site.
- **Dust & Noise Impact – Associated with Construction Activities:** Dust impacts may result due to construction activities and excavation activities on the site. Excavations and associated earth-moving activities may generate noise and vibration which may pose a nuisance to surrounding residents and other land users. Movement of heavy vehicles to & from the site may generate noise, which may affect surrounding residents.
- **Heritage Impact - The loss of Heritage resources, including Archaeological and Paleontological:** Due to land clearing and excavations on the site. The appointed heritage and cultural specialist has indicated that it expected that some areas (the rock engraving sites) will be of very high sensitivity, these will be identified as part of the detailed Heritage and Archaeological impact assessment undertaken.
- **Palaeontological Impact – Impacting areas of Palaeontological sensitivity –** Based on the findings of the Palaeontological assessment, numerous areas (based on the geology of the site) with a very high potential of fossiliferous material to be unearthed was identified. There is a potential that these areas could be unearthed during the construction phase of the proposed development.
- **Socio-Economic Impact – Creation of employment and business opportunities:** Members from the local communities in the area, specifically De Aar, would be in a position to qualify for most of the low skilled and semi-skilled opportunities. The business-related opportunities will be linked to the hospitality (accommodation) and services sector (catering, security, transport etc.).
- **Socio-Economic Impact – Impact of construction workers on local communities:** The presence and behaviour of construction workers can impact negatively on local communities. Members from the local communities in the area, specifically De Aar, would be at potential risk depending on where non-local construction workers are accommodated during the construction phase.
- **Socio-Economic Impact – Influx of job seekers:** The construction phase of the proposed development can cause an influx of jobseekers to the area and this has the potential to impact negatively on local communities. However, the potential for the influx of jobseekers is also influenced by the location of the project. Projects located in relatively remote, rural areas are less likely to attract jobseekers.
- **Socio-Economic Impact – Risk to safety, livestock and farm infrastructure:** The movement and activities of construction workers can impact on farming operations. The impacts include damage



to fences and gates, gates being left open resulting in loss of livestock, increased risk of petty theft and stock theft etc.

- **Socio-Economic Impact – Increased risk of grass fires:** The construction phase can increase the risk of grass fires, which in turn can impact on farming operations. The impacts include loss of grazing, damage to structures, fences, and gates, etc. These impacts impact on the livelihood of farmers.
- **Socio-Economic Impact – Nuisance impacts associated with construction related activities:** Limited dust and noise impacts may result due to construction activities on the site. Excavations and associated earth-moving activities may generate noise and vibration which may pose a nuisance to surrounding residents and other land users. Movement of heavy vehicles to & from the site may generate noise, which may affect surrounding residents. Construction related activities, including the movement of heavy construction vehicles of and on the site, has the potential to create dust, noise and safety impacts and damage roads. The impacts will be largely local and can be effectively mitigated.
- **Socio-Economic Impact – Loss of farmland:** The construction phase will result in the loss of farmland, including grazing and or crops depending on the location. These impacts impact on the livelihood of farmers. However, loss of land and crops can be addressed by minimising the disturbance footprint and compensation for losses.
- **Traffic & Safety Impact:** It is proposed to deliver a significant number of materials and equipment to the site during the construction phase of the development. Numerous truck trips will be required every day that could cause a temporary disturbance to traffic in the area. Impacts are expected to occur to the traffic in the area due to increased truck and construction vehicle traffic expected during the construction phase. Construction vehicles may impact on the existing road conditions (road capacity and congestion). Vehicles may impact on road safety conditions due to an increase in construction phase vehicles entering and exiting the site and they may impact on the condition of the existing road network.
- **Visual Impact:** The construction phase is associated with temporary disturbance as a result of construction (trench excavations, vehicles, machinery, fencing & signage) that may have a negative visual impact to the area. These impacts will be seen on a regional, local and site scale.

#### 4.1.3 Operation Phase

- **Botanical Impact - Invasion by exotic and alien species:** Post construction disturbed areas having no vegetation cover are often susceptible to invasion by weedy and alien species, which can not only become invasive but also prevent natural flora from becoming established. The project will promote the establishment of disturbance-tolerant biota, including colonization by invasive alien species, weeds and pioneer plants within the remaining habitat. Although this impact is initiated during the construction phase it is likely to persist into the operational phase.
- **Botanical Impact - Disturbances to ecological processes:** Activity may result in disturbances to ecological processes.
- **Faunal Impact – Direct mortality of fauna:** During the operational phase of the proposed development, specifically regarding the avifauna using these areas for nesting and migratory purposes, there is a likelihood of electrocution of the species due to the installation of the overhead powerlines.
- **Faunal impact - Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to noise, dust, heat radiation and light pollution:** This impact could be seen in unrehabilitated land, due to the humming of the cooling fans of the battery energy storage facility, heat radiation from the solar panels, and light pollution.
- **Freshwater Resources Impact – Disturbance/Loss of aquatic vegetation and habitat:** Roads, pipelines and culverts create migration barriers to biota, resulting in reach to zone scale instream biological impacts. Localised scour around structures or flow impediments may result and alter the

natural bank and channel, channel bank stability and floodplain processes. Road and pipeline crossings that concentrate diffuse flows and can also inadvertently trigger gully formation.

- **Freshwater Resources Impact – Erosion of the banks and sedimentation of the watercourses:** Where soil erosion problems initiated during the construction phase are not timeously and adequately addressed, these can persist into the operational phase of the development project and continue to have a negative impact downstream. The impact of road and pipe crossings will be considerable and, if not mitigated against, will result in further erosion. Surface runoff and velocities will be increased, and flows will be concentrated by stormwater infrastructure.
- **Socio-Economic Impact – Improve energy security and support the renewable energy sector:** South Africa's energy crisis, which started in 2007 and is ongoing, has resulted in widespread rolling blackouts (referred to as load shedding) due to supply shortfalls. The load shedding has had a significant impact on all sectors of the economy and on investor confidence. A review of the REIPPPP and establishment of renewable energy facilities not only addresses environmental issues associated with climate change and consumption of scarce water resources, but also create significant socio-economic opportunities and benefits, specifically for historically disadvantaged, rural communities.
- **Socio-Economic Impact – Creation of employment opportunities:** The direct employment opportunities associated with the operational phase of renewable energy projects are relatively limited. However, a review of the REIPPPP indicates that the benefits associated with the operation of renewable energy projects are significant and extend beyond direct employment opportunities.
- **Socio-Economic Impact – Benefits associated with income generated for the affected farmers:** The generation of additional income represents a significant benefit for the local affected farmer(s) and reduces the risks to their livelihoods posed by droughts and fluctuating market prices for sheep and farming inputs, such as feed etc.
- **Socio-Economic Impact -Benefits associated with the socio-economic contributions:** The revenue from the proposed development can be used to support a number of social and economic initiatives in the area, including Creation of jobs, education, support for and provision of basic services, school feeding schemes, training and skills development, and support for Small, Medium and Micro Enterprises.
- **Socio-Economic Impact – Potential impact on property values:** This is usually linked to the visual impact associated with the proposed facility and associated infrastructure and the potential impact on the areas rural sense of place.
- **Socio-Economic Impact - Tourism:** Renewable energy projects do have the potential to impact on an areas sense of place. In some instances, this can impact on tourism activities. In other cases, local landowners have indicated that the potential visual impacts and impact on tourism activities are not regarded as an issue.
- **Visual Impact – Land use character & “sense of place”:** Renewable energy projects do have the potential to impact on an areas sense of place. In some instances, this can impact on existing or proposed tourist facilities and also on property values. In other cases local landowners have indicated that the potential visual impacts are not regarded as an issue.
- **Visual impact – Impact on the commuters travelling via the N10:** There is a potential that the proposed development will lead to glare which can cause temporary 'blindness' of the road users.
- **Climate impact –** Due to the transformation of land/change of character of the proposed development area, the impacting of water resources (to some extent), specifically during the determination of the access roads into the proposed development site, the glare from the solar panel creating altered micro-climatic conditions (specifically when evaluated cumulatively).

## 4.2 Aspects Considered in the Scoping Phase

The following **Specialist Baseline Assessment** input has been undertaken, in order to **inform the design, layout and infrastructure requirements** of the development proposal and **fulfill the content requirements of the Scoping Report in terms of the expected impact significance**:

- An **Agricultural Baseline Assessment** was produced by Johann Lanz, dated 2022.
- A **Visual Baseline Assessment** was undertaken by David Gibbs, dated 2022.
- A **Combined Terrestrial Biodiversity, Botanical, and Animal Baseline Assessment**, was undertaken by The Biodiversity Company, dated 2022.
- An **Aquatic Baseline Assessment**, was undertaken by The Biodiversity Company, dated 2022.
- **Avifaunal Surveys** are being undertaken by The Biodiversity Company, 2022 – 2023.
- A **Heritage and Palaeontological Verification** was undertaken by ACO Associates, dated 2022.
- A **Socio-Economic Baseline Assessment** was undertaken by Tony Barbour, dated 2022.

Technical input was supplied by:

- **Mulilo Renewable (Pty) Ltd – Engineering Input**

The assessments listed above have therefore informed the Draft Scoping Report and associated proposed preferred layout plan.

## 4.3 Aspects Proposed to be considered during the EIA Phase

It is proposed to undertake the following additional Specialist Impact Assessment Studies and Technical Reports during the EIA Phase:

- An **updated Agricultural Compliance Statement** that must include a comparative assessment of the proposed layout alternatives of the site.
- An **updated Visual Impact Assessment** that must include a comparative assessment of the proposed layout alternatives of the site.
- An **updated Combined Terrestrial Biodiversity, Botanical, and Animal Impact Assessment** that must include a comparative assessment of the proposed layout alternatives of the site.
- An **updated Avifaunal Impact Assessment** that must include a comparative assessment of the proposed layout alternatives of the site.
- An **updated Aquatic Impact Assessment** that must include a comparative assessment of the proposed layout alternatives of the site.
- An **updated Integrated Heritage Impact Assessment** that must include a comparative assessment of the proposed layout alternatives of the site.
- An **updated Socio-Economic Impact Assessment** that must include a comparative assessment of the proposed layout alternatives of the site.

# 5. Methodology for Assessing the Environmental Aspects

## 5.1 Methodology for Agricultural Input

Johann Lanz has already produced an Agricultural Baseline Compliance Statement on the full extent of the proposed area (encompassing all 3 properties). The updated proposed Site Layout Plan has since been revised to respond to the recommendations made in the various specialist reports as well as input from the engineers.



The methodology includes the following:

**Phase 1 (Status Quo of Study Area & Site Visit & Baseline Report – to be included in Scoping Report)**

- ✓ Undertake site sensitivity verification including:
  - a desk top analysis, using satellite imagery;
  - a preliminary on-site inspection; and
  - any other available and relevant information.
  - The outcome of the site sensitivity verification must be recorded in the form of a report that:
    - confirms or disputes the current use of the land and the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.;
    - contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and
    - is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations.
- ✓ A baseline description of the agro-ecosystem must be provided. The Baseline description must explain any current agricultural activities, the existing environmental attributes and impacts on any alternative sites.
- ✓ Identify and list all legislation and permit requirements that are relevant to the development proposal in context of the study.
- ✓ Detailed features required of the baseline description is provided in the Gazetted Protocols, this includes:
  - The assessment must be undertaken based on a site inspection as well as an investigation of the current production figures, where the land is under cultivation or has been within the past 5 years, and must identify:
    - the extent of the impact of the proposed development on the agricultural resources; and
    - whether or not the proposed development will have an unacceptable impact on the agricultural production capability of the site, and in the event where it does, whether such a negative impact is outweighed by the positive impact of the proposed development on agricultural resources.
  - The status quo of the site must be described, including the following aspects which must be considered as a minimum in the baseline description of the agroecosystem:
    - the soil form/s, soil depth (effective and total soil depth), top and sub-soil clay percentage, terrain unit and slope;
    - where applicable, the vegetation composition, available water sources as well as agro-climatic information;
    - the current productivity of the land based on production figures for all agricultural activities undertaken on the land for the past 5 years, expressed as an annual figure and broken down into production units;
    - the current employment figures (both permanent and casual) for the land for the past 3 years, expressed as an annual figure; and
    - existing impacts on the site, located on a map (e.g. erosion, alien vegetation, non-agricultural infrastructure, waste, etc.).
  - Confirm Sensitivity of the Site.
- ✓ Based on the findings the specialist is to heed the section 1.1. of the protocol which indicates that, “An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being of “very high” or “high” sensitivity for agricultural resources must submit an Agricultural Agro-Ecosystem Specialist Assessment, unless:

1.1.1. the application includes a linear activity for which impacts to the agricultural resource are temporary and the land in the opinion of the soil scientist or agricultural specialist, based on the mitigation and remedial measures, can be returned to the current land capability within two years of the completion of the construction phase;

1.1.2. the impact on agricultural resources is from an electricity pylon; or

1.1.3. information gathered from the site sensitivity verification differs from the designation of “very high” or “high” agricultural sensitivity, and it is found to be of a “medium” or “low” sensitivity.

1.2. Should paragraphs 1.1.1; 1.1.2; or 1.1.3 apply, an Agricultural Compliance Statement must be submitted.

## **Phase 2, (Compliance Statement Content – to be included in the EIA)**

- ✓ The compliance statement must be prepared by a soil scientist or agricultural specialist registered with the SACNASP.
- ✓ be applicable to the preferred site and proposed development footprint;
- ✓ confirm that the site is of “low” or “medium” sensitivity for agriculture; and
- ✓ indicate whether or not the proposed development will have an unacceptable impact on the agricultural production capability of the site.
- ✓ The compliance statement must contain, as a minimum, the following information:
  - contact details and relevant experience as well as the SACNASP registration number of the soil scientist or agricultural specialist preparing the assessment including a curriculum vitae;
  - a signed statement of independence;
  - a map showing the proposed development footprint (including supporting infrastructure) with a 50m buffered development envelope, overlaid on the agricultural sensitivity map generated by the screening tool;
  - calculations of the physical development footprint area for each land parcel as well as the total physical development footprint area of the proposed development including supporting infrastructure;
  - confirmation that the development footprint is in line with the allowable development limits contained in Table 1 below;

<b>Table 1: Allowable development limits for renewable energy generation developments generating electricity of 20 MW or more</b>		
<b>Criteria (land capability evaluation value and category of crop boundary)</b>	<b>Allowable development limits in hectares per MW of installed generation capacity (with sensitivity ratings from the national web based environmental screening tool shown in brackets)</b>	
	<b>Within field crop boundaries</b>	<b>Outside field crop boundaries</b>
Land capability evaluation value of 11 – 15; Irrigation, horticulture/viticulture, shade-net; high value agricultural areas with a priority rating A and/or B	0 (Very High Sensitivity)	0 (Very High Sensitivity)
Land capability evaluation value of 8 – 10; all cultivated areas including sugarcane; high value agricultural areas with a priority rating C and/or D	0.20 (High Sensitivity)	0.35 (Medium Sensitivity)
Land capability evaluation value of 6 - 7;	0.25 (High Sensitivity)	2.50 (Low Sensitivity)
Land capability evaluation value of 1 - 5;	0.30 (High Sensitivity)	2.50 (Low Sensitivity)

- confirmation from the specialist that all reasonable measures have been taken through micro-siting to avoid or minimise fragmentation and disturbance of agricultural activities;
- a substantiated statement from the soil scientist or agricultural specialist on the acceptability, or not, of the proposed development and a recommendation on the approval, or not, of the proposed development;
- any conditions to which this statement is subjected;
- in the case of a linear activity, confirmation from the agricultural specialist or soil scientist, that in their opinion, based on the mitigation and remedial measures proposed, the land can be returned to the current state within two years of completion of the construction phase;
- where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr; and
- a description of the assumptions made and any uncertainties or gaps in knowledge or data.

## 5.2 Methodology for Animal Input

The Biodiversity Company has already produced an Animal Baseline Assessment on the full extent of the proposed area (encompassing all 3 properties). The updated proposed Site Layout Plan has since been revised to respond to the recommendations made in the various specialist reports as well as input from the engineers.

The methodology includes the following:

### Phase 1 (Status Quo Assessment – to be included in Scoping Report)

- ✓ The assessment must contextualize the study area in order to provide a baseline description of the ecological system, the terrestrial biodiversity and any significant terrestrial features must be provided.
- ✓ The assessment must identify the following:
  - ✓ Potential for habitat or ecosystem on receiving environment, if any.



- ✓ Potential for Species of Conservation Concern (SCC) or lack thereof.
- ✓ Confirmation of the presence or lack of, of animal features identified in the screening tool.
- ✓ Undertake a site visit and ground-truth biodiversity information. Where required, undertake baseline surveys and/or studies to supplement the information base and inform the assessment. The site inspection to determine the presence or likely presence of SCC must be undertaken in accordance with the Species Environmental Assessment Guidelines.
- ✓ Estimate the trajectory of change in the context of the 'No-Go' Alternative due to existing impacts.
- ✓ Assessment criteria to be aligned with the promulgated Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes (October 2020).
- ✓ The Specialist must inform the EAP of the final outcome of the baseline study for scoping, advising whether a compliance statement or impact assessment was applicable.

### **Phase 2 (Terrestrial Animal Species Specialist Assessment Report – to be included in EIA)**

- ✓ In accordance with the Gazetted Protocols, the findings of the assessment must be written up in a Terrestrial Animal Species Specialist Assessment Report.
- ✓ A baseline study must be provided to advise the scoping phase of the EIA, and thereafter a detailed impact assessment must be provided.
- ✓ Terrestrial Animal Species Specialist Assessment Report must include the following:
  - ✓ The Identification, prediction and description of potential impacts on terrestrial ecology during the construction and operational phases of the project. Impacts are described in terms of their extent, intensity, and duration. The other aspects that must be included in the evaluation are probability, reversibility, irreplaceability, mitigation potential, and confidence in the evaluation.
  - ✓ This must be undertaken for all of the alternatives and must be rated with and without mitigation to determine the significance of the impacts.
  - ✓ The degree to which the impacts and risks can cause loss of irreplaceable resources.
  - ✓ Recommend actions that should be taken to avoid impacts on sensitive ecology, in alignment with the mitigation hierarchy, and any measures necessary to restore disturbed areas or ecological processes.
  - ✓ Identify areas of high importance or sensitivity on which impacts should *preferably* be avoided or prevented or, where they cannot altogether be avoided, should at least be *minimized* (e.g. through buffers or setbacks).
  - ✓ Identify areas that are known to be important for biodiversity but are degraded or invaded by alien species and require rehabilitation/restoration, including areas that could improve connectivity and reduce fragmentation in the landscape.
  - ✓ An accurate description and map of the areas and features of importance to biodiversity and their sensitivity to the proposed development. Possibly recommend alternatives.
  - ✓ Rehabilitation guidelines for disturbed areas associated with the proposed project.
  - ✓ Any monitoring protocol that is deemed necessary
- ✓ A substantiated statement, based on the findings of the specialist assessment, regarding the acceptability, or not, of the proposed development, if it should receive approval or not must be included.
- ✓ As a minimum, as per the Gazetted Protocol (October 2020), the assessment must be undertaken in accordance with the Species Environmental Assessment Guideline; and must;
  - ✓ identify the SCC which were found, observed or are likely to occur within the study area;
  - ✓ provide evidence (photographs or sound recordings) of each SCC found or observed within the study area, which must be disseminated by the specialist to a recognized online

- database facility (the preferred platform is iNaturalist.org but any other national or international virtual museum), immediately after the site inspection has been performed;
- ✓ identify the distribution, location, viability and provide a detailed description of population size of the SCC, identified within the study area;
  - ✓ identify the nature and the extent of the potential impact of the proposed development on the population of the SCC located within the study area;
  - ✓ determine the importance of the conservation of the population of the SCC identified within the study area, based on information available in national and international databases, including the IUCN Red List of Threatened Species, South African Red List of Species, and/or other relevant databases;
  - ✓ determine the potential impact of the proposed development on the habitat of the SCC located within the study area;
  - ✓ include a review of relevant literature on the population size of the SCC, the conservation interventions as well as any national or provincial species management plans for the SCC. This review must provide information on the need to conserve the SCC and indicate whether the development is compliant with the applicable species management plans and if not, include a motivation for the deviation;
  - ✓ identify any dynamic ecological processes occurring within the broader landscape that might be disrupted by the development and result in negative impact on the identified SCC, for example, fires in fire-prone systems;
  - ✓ identify any potential impact of ecological connectivity in relation to the broader landscape, resulting in impacts on the identified SCC and its long term viability;
  - ✓ determine buffer distances as per the Species Environmental Assessment Guidelines used for the population of each SCC;
  - ✓ discuss the presence or likelihood of additional SCC including threatened species not identified by the screening tool, Data Deficient or Near Threatened Species, as well as any undescribed species (should be assessed as "High Sensitivity"); or roosting and breeding or foraging areas used by migratory species where these species show significant congregations, occurring in the vicinity; and
  - ✓ identify any alternative development footprints within the preferred site which would be of "low" or "medium" sensitivity as identified by the screening tool and verified through the site sensitivity verification.

### 5.3 Methodology for Aquatic Input

The Biodiversity Company has already produced an Aquatic Baseline Assessment on the full extent of the proposed area (encompassing all 3 properties). The updated proposed Site Layout Plan has since been revised to respond to the recommendations made in the various specialist reports as well as input from the engineers.

The methodology includes the following:

#### Phase 1 (Contextualisation of study area – included in the Scoping Report)

- ✓ Contextualization of the study area in terms of important biophysical characteristics and the latest available aquatic conservation planning information (including but not limited to vegetation, CBAs, Threatened ecosystems, any Red data book information, NFEPA data, broader catchment drainage and protected areas).
- ✓ Desktop delineation and illustration of all watercourses within and surrounding the study area utilising available site-specific data such as aerial photography, contour data and water resource data.

- ✓ A risk/screening assessment of the identified aquatic ecosystems to determine which ones will be impacted upon by the proposed development and therefore require ground truthing and detailed assessment.

It should be noted that following the site verification visit, as per point 1: General Matters of the Protocol For the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Aquatic Biodiversity,

“ 1.2. Where the information gathered from the site sensitivity verification differs from the screening tool designation of “very high” aquatic biodiversity sensitivity, and it is found to be of a “low” sensitivity, an Aquatic Biodiversity Compliance Statement must be submitted.”

And,

“1.4. If any part of the proposed development footprint falls within an area of “very high” sensitivity, the assessment and reporting requirements prescribed for the “very high” sensitivity apply to the entire footprint, excluding a linear activity for which impacts on aquatic biodiversity are temporary and the land in the opinion of the aquatic biodiversity specialist, based on the mitigation and remedial measures, can be returned to the current state within two years of the completion of the construction phase, in which case a compliance statement applies. In the context of this protocol, development footprint means the area on which the proposed development will take place and includes any area that will be disturbed.”

## **Phase 2 (Delineation and classification – included in the Scoping Report)**

- ✓ Ground truthing, infield identification, delineation and mapping of any potentially affected aquatic ecosystems in terms of the Department of Water and Sanitation (DWA 2008) Updated Manual for the Identification and Delineation of Wetlands and Riparian Areas.
- ✓ Field delineation must follow the accepted national protocol and should result in a map that includes the identified boundary and the field data collection points (which should include at least one point outside the wetland or riparian area), and a report that explains how and when the boundary was determined.
- ✓ Classification of the identified aquatic ecosystems in accordance with the, ‘National Wetland Classification System for Wetlands and other Aquatic Ecosystems in South Africa’ (Ollis et al. 2013) and WET-Ecoservices (Kotze et al. 2009).
- ✓ Description of the identified watercourses with photographic evidence.

### **A baseline description of the site is to be compiled and is to reflect the following aspects**

- ✓ The aquatic ecosystem types, the presence of aquatic species, and composition of aquatic species communities, their habitat, distribution and movement patterns.
- ✓ The threat status of the ecosystem and species as identified by the screening tool.
- ✓ An indication of the national and provincial priority status of the aquatic ecosystem, including a description of the criteria for the given status (i.e. if the site includes a wetland or a river freshwater ecosystem priority area or sub catchment, a strategic water source area, a priority estuary, whether or not they are free -flowing rivers, wetland clusters, a critical biodiversity or ecologically sensitivity area).
- ✓ A description of the ecological importance and sensitivity of the aquatic ecosystem including:
  - the description (spatially, if possible) of the ecosystem processes that operate in relation to the aquatic ecosystems on and immediately adjacent to the site (e.g. movement of surface and subsurface water, recharge, discharge, sediment transport, etc.); and (b) the historic ecological condition (reference) as well as present ecological state of rivers (in-stream, riparian and floodplain habitat), wetlands and/or estuaries in terms of possible changes to the channel and flow regime (surface and groundwater).



- Ecological infrastructure, processes and services within the site and immediate surroundings.
- ✓ Identify alternative development footprints within the preferred site which would be of a “low” sensitivity as identified by the screening tool and verified through the site sensitivity verification and which were not considered appropriate.

In the case of the specialist identifying that the sensitivity is low and as per 1.4 above, a Compliance Statement should be undertaken, as follows:

### **Phase 3 (Aquatic Assessment – included in the EIA)**

- ✓ Conduct a Present Ecological State (PES), functional importance assessment and Ecological Importance and Sensitivity (EIS) assessment of the delineated wetland habitats, utilising the latest tools, such as:
  - Level 2 WET-Health tool (Macfarlane et al., 2009/2018) – PES
  - WET-Ecoservices (Kotze et al., 2009/2018) and/or the Wetland EIS assessment tool of Roundtree and Kotze (2013). - Functional assessment
- ✓ Conduct a Present Ecological State (PES) and Present Ecological Importance and Sensitivity (EIS) assessment of the delineated river/riparian habitats, utilising:
  - Qualitative Index of Habitat Integrity (IHI) tool adapted from (Kleynhans, 1996) – PES
  - DWAF (DWS) River EIS tool (Kleynhans, 1999) – EIS
- ✓ Indicate the Recommended Ecological Category (REC) of the potentially impacted aquatic ecosystems.

### **Phase 4 (Impact Assessment – included in the EIA)**

- ✓ Identification, prediction and description of potential impacts on aquatic habitat during the construction and operational phases of the project. Impacts are described in terms of their extent, intensity, and duration. The other aspects that must be included in the evaluation are probability, reversibility, irreplaceability, mitigation potential, and confidence in the evaluation.
- ✓ All direct, indirect, and cumulative impacts for each alternative must be rated with and without mitigation to determine the significance of the impacts.

Confirm:

- ✓ Is the proposed development consistent with maintaining the priority aquatic ecosystem in its current state and according to the stated goal.
- ✓ Is the proposed development consistent with maintaining the resource quality objectives for the aquatic ecosystems present.
- ✓ How will the proposed development impact on fixed and dynamic ecological processes that operate within or across the site? This must include:
  - impacts on hydrological functioning at a landscape level and across the site which can arise from changes to flood regimes (e.g. suppression of floods, loss of flood attenuation capacity, unseasonal flooding or destruction of floodplain processes);
  - will the proposed development change the sediment regime of the aquatic ecosystem and its sub-catchment (e.g. sand movement, meandering river mouth or estuary, flooding or sedimentation patterns);
  - what will the extent of the modification in relation to the overall aquatic ecosystem be (e.g. at the source, upstream or downstream portion, in the temporary / seasonal / permanent zone of a wetland, in the riparian zone or within the channel of a watercourse, etc.); and
  - to what extent will the risks associated with water uses and related activities change;
- ✓ How will the proposed development impact on the functioning of the aquatic feature? This must include:
  - base flows (e.g. too little or too much water in terms of characteristics and requirements of the system);

- quantity of water including change in the hydrological regime or hydroperiod of the aquatic ecosystem (e.g. seasonal to temporary or permanent; impact of over-abstraction or instream or off-stream impoundment of a wetland or river);
- change in the hydrogeomorphic typing of the aquatic ecosystem (e.g. change from an unchannelled valley-bottom wetland to a channelled valley-bottom wetland);
- quality of water (e.g. due to increased sediment load, contamination by chemical and/or organic effluent, and/or eutrophication);
- fragmentation (e.g. road or pipeline crossing a wetland) and loss of ecological connectivity (lateral and longitudinal); and
- the loss or degradation of all or part of any unique or important features associated with or within the aquatic ecosystem (e.g. waterfalls, springs, oxbow lakes, meandering or braided channels, peat soils, etc.);
- ✓ how will the proposed development impact on key ecosystems regulating and supporting services especially: (a) flood attenuation; (b) streamflow regulation; (c) sediment trapping; (d) phosphate assimilation; (e) nitrate assimilation; (f) toxicant assimilation; (g) erosion control; and (h) carbon storage
- ✓ how will the proposed development impact community composition (numbers and density of species) and integrity (condition, viability, predator-prey ratios, dispersal rates, etc.) of the faunal and vegetation communities inhabiting the site?

#### **Phase 5 (Mitigation and monitoring – included in the EIA)**

- ✓ Recommend actions that should be taken to avoid impacts on aquatic habitat, in alignment with the mitigation hierarchy, and any measures necessary to restore disturbed areas or ecological processes.
- ✓ Determination and mapping of any necessary buffer zones with consideration to the Buffer zone guidelines for rivers, wetlands and estuaries (Macfarlane & Bredin, 2016).
- ✓ Rehabilitation guidelines for disturbed areas associated with the proposed project and monitoring.

## **5.4 Methodology for Heritage Input**

The ACO Associates cc has already produced a Heritage desktop assessment on the full extent of the proposed area (encompassing all 3 properties). The updated proposed Site Layout Plan has since been revised to respond to the recommendations made in the various specialist reports as well as input from the engineers.

The methodology includes the following:

#### **Phase 1 (Status Quo Assessment – Site Verification – Included in Scoping Report)**

- ✓ The assessment must contextualize the study area in order to provide a baseline description of the heritage resources.
- ✓ Review available historic information the AIA.
- ✓ Review legal and planning context.
- ✓ Defining the Heritage and Aesthetic components of the environment.
- ✓ Analyze and identify the types of Historic resources present from tangibles like landscape, to intangibles like traditions, and knowledge.
- ✓ Determine the significance of the identified resources.
- ✓ Grade the heritage resources on site and the site in terms of its context in the landscape.
- ✓ Compile NID and submit with Compliance Statement, or if it is determined that an impact assessment is required, continue on with Phase 2.

**Phase 2 (Assessment and analysis – Included in the Scoping Report)**

- ✓ The report must include a heritage resource analysis and constraints map.
- ✓ Provide an assessment of the character of the landscape to determine historic characteristics, scenic resources, historic sensitive areas and historic resources must be included
- ✓ Explain the correlation between the above to determine the varying levels of potential impact.
- ✓ Establish any further heritage constraints to guide the development process through establishing thresholds of impact significance.

**Phase 3 (Impact Assessment in EIA)**

- ✓ Assess the degree of and nature of significance.
- ✓ Assess both positive and negative impacts based on social history, public memory and cultural landscape information.
- ✓ Include an interpretation of the regional cultural landscape issues and the impact of the development in relation to these issues.
- ✓ Address heritage issues that arose during the process.
- ✓ Describe variables that could influence the historic landscape. 6. Incorporating the heritage related studies with an integrated set of recommendations
- ✓ Conclude the Heritage Impact and cumulate impacts.
- ✓ Suggest mitigating and management guidelines.
- ✓ A substantiated statement, based on the findings of the specialist assessment, regarding the acceptability, or not, of the proposed development, if it should receive approval or not must be included

**5.5 Methodology for Plant Species Input**

The Biodiversity Company has already produced a Plant Species Baseline Assessment on the full extent of the proposed area (encompassing all 3 properties). The updated proposed Site Layout Plan has since been revised to respond to the recommendations made in the various specialist reports as well as input from the engineers.

The methodology includes the following:

**Phase 1 (Status Quo Assessment – Included in Scoping Report)**

- ✓ The assessment must contextualize the study area in order to provide a baseline description of the ecological system, the terrestrial plant biodiversity and any significant terrestrial features must be provided.
- ✓ The assessment must identify the following;
  - ✓ Terrestrial critical biodiversity areas (CBAs)
  - ✓ Terrestrial ecological support areas (ESAs)
  - ✓ Protected areas as defined by the National Environmental Management: Protected Areas Act, 2004
  - ✓ Priority areas for protected area expansion
  - ✓ Indigenous forests
- ✓ Undertake a site visit and ground-truth biodiversity information. Where required, undertake baseline surveys and/or studies to supplement the information base and inform the assessment.
- ✓ Estimate the trajectory of change in the context of the 'No-Go' Alternative due to existing impacts.
- ✓ Assessment criteria to be aligned with the promulgated Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes (October 2020).

Following the site verification visit, in which the Specialist confirms the presence, likely presence or confirmed absence of a SCC identified within the site identified as "low" sensitivity by the screening tool, the Specialist is to confirm the need for a Compliance Statement or a Terrestrial Plant Species Assessment and undertake this report/statement in accordance with the Gazetted Protocol (October 2020).

### **Phase 3: (Terrestrial Plant Specialist Assessment Report - EIA)**

- ✓ In accordance with the Gazetted Protocols, the findings of the assessment must be written up in a Terrestrial Plant Specialist Assessment Report.
- ✓ A baseline study must be compiled to inform the scoping phase. Thereafter the specialist may complete the final detailed study.
- ✓ Terrestrial Plant Specialist Assessment Report must include the following;
  - The Identification, prediction and description of potential impacts on terrestrial ecology during the construction and operational phases of the project. Impacts are described in terms of their extent, intensity, and duration. The other aspects that must be included in the evaluation are probability, reversibility, irreplaceability, mitigation potential, and confidence in the evaluation.
  - This must be undertaken for all of the alternatives and must be rated with and without mitigation to determine the significance of the impacts.
  - The degree to which the impacts and risks can cause loss of irreplaceable resources.
  - Recommend actions that should be taken to avoid impacts on sensitive ecology, in alignment with the mitigation hierarchy, and any measures necessary to restore disturbed areas or ecological processes.
  - Identify areas of high importance or sensitivity on which impacts should preferably be avoided or prevented or, where they cannot altogether be avoided, should at least be minimized (e.g. through buffers or setbacks).
  - Identify areas that are known to be important for biodiversity but are degraded or invaded by alien species and require rehabilitation/restoration, including areas that could improve connectivity and reduce fragmentation in the landscape.
  - An accurate description and map of the areas and features of importance to biodiversity and their sensitivity to the proposed development. Possibly recommend alternatives.
  - Rehabilitation guidelines for disturbed areas associated with the proposed project.
  - Any monitoring protocol that is deemed necessary
- ✓ A substantiated statement, based on the findings of the specialist assessment, regarding the acceptability, or not, of the proposed development, if it should receive approval or not must be included
- ✓ Minimum requirements for report content include that the assessment must be undertaken in accordance with the Species Environmental Assessment Guideline and must:
  - Identify the SCC which were found, observed or are likely to occur within the study area;
  - provide evidence (photographs) of each SCC found or observed within the study area, which must be disseminated by the specialist to a recognized online database facility9 immediately after the site inspection has been performed
  - identify the distribution, location, viability and detailed description of population size of the SCC identified within the study area;
  - identify the nature and the extent of the potential impact of the proposed development to the population of the SCC located within the study area;

- determine the importance of the conservation of the population of the SCC identified within the study area, based on information available in national and international databases including the IUCN Red List of Threatened Species, South African Red List of Species, and/or other relevant databases;
- determine the potential impact of the proposed development on the habitat of the SCC located within the study area;
- include a review of relevant literature on the population size of the SCC, the conservation interventions as well as any national or provincial species management plans for the SCC.
- This review must provide information on the need to conserve the SCC and indicate whether the development is compliant with the applicable species management plans and if not, a motivation for the deviation;
- identify any dynamic ecological processes occurring within the broader landscape, that might be disrupted by the development and result in negative impact on the identified SCC, for example, fires in fire-prone systems;
- identify any potential impact on ecological connectivity within the broader landscape, and resulting impacts on the identified SCC and its long-term viability;
- determine buffer distances as per the Species Environmental Assessment Guidelines used for the population of each SCC; and
- discuss the presence or likelihood of additional SCC including threatened species not identified by the screening tool, Data Deficient or Near Threatened Species, as well as any undescribed species and
- identify any alternative development footprints within the preferred development site which would be of “low” sensitivity” or “medium” sensitivity as identified by the screening tool and verified through the site sensitivity verification.

## 5.6 Methodology for Socio-Economic Input

Tony Barbour has already produced a Socio-Economic Baseline Assessment on the full extent of the proposed area (encompassing all 3 properties). The updated proposed Site Layout Plan has since been revised to respond to the recommendations made in the various specialist reports as well as input from the engineers.

The methodology includes the following:

### Typical Baseline Information Required in the Scoping Phase Report

- Social and economic characteristics of the affected area;
- Demographic profile of the area (population numbers, race, age, gender, income, education and employment levels etc);
- Policy and planning framework for the site and surrounds (see below);
- Social and economic trends (historic and current) in the affected area;
- Social and economic drivers, both current and historical, in the affected areas, including key economic sectors;
- Social context of how people run their lives and the key factors that affect them on a day-to-day basis (livelihood strategies);
- An understanding of social networks, intra- and inter-household, community and extend support systems affected by the proposed development;
- Institutional arrangements, structures and capacity of the local authorities;
- An understanding of the institutional, local leadership and other power relationships that may be affected by the development;



- Level of services (housing, water, electricity, schools, clinics, policing etc) and current state of infrastructure in the area;
- Social and economic initiatives and opportunities;
- Local, regional and national social and economic policies, programmes, and plans affecting the area;
- Individuals, communities, organisations and institutions who are likely to be affected by the project/plan/policy, with specific emphasis on vulnerable individuals, communities, organisations and institutions;
- Land uses and ownership patterns in the area;
- Use and access to natural resources and livelihood strategies, especially in rural areas;
- Cultural beliefs and value systems;
- Contextual maps and aerial photographs indicating the location of the site and the nature of the surrounding land uses and activities;
- Zoning and land use maps of the area;
- The Need and Desirability of the project in this location and this time should please be detailed;
- Potential alternatives;
- Capacity of the local authority to provide services for the project (water, sewage and electricity);
- The estimated capital expenditure and an indication of where goods and labour will come from;
- Information on the number of direct employment opportunities associated with the construction and operational phase of the project;
- Breakdown of the job categories and associated skills requirements during the construction and operational phase of the project;
- Indication of the timing of the construction and operational phase of the project;
- Information on empowerment, training and capacity development components associated with the proposed development; and
- Indication of the target market for the proposed development.

#### **Information Required in the Detailed Socio-Economic Impact Assessment Report**

- Description of the proposed project, including information on the location, size, planned sequence of activities, life span, existing land uses on the site and surrounding land uses, proximity of nearest towns, roads and services, etc;
- Description of the methodology, including assumptions and limitations;
- Description of the key risks and uncertainties that may influence the impact assessment findings, including a clear statement of limitations and/or gaps in knowledge or information;
- Description of the Legislative, policy and planning context;
- Description of the socio-economic and institutional environment;
- Identification and assessment of social impacts;
- Monitoring and Evaluation framework;
- Summary of key findings and recommendations; and
- References and sources of information.

### **5.7 Methodology for Terrestrial Biodiversity Input**

The Biodiversity Company has already produced a Terrestrial Biodiversity Baseline Assessment on the full extent of the proposed area (encompassing all 3 properties). The updated proposed Site Layout Plan has since been revised to respond to the recommendations made in the various specialist reports as well as input from the engineers.

The methodology includes the following:

**Phase 1: (Baseline Study – Included in Scoping Report)**

The assessment must provide a baseline description of the site which includes, as a minimum, the following aspects:

- ✓ A description of the ecological drivers or processes of the system and how the proposed development will impact these;
- ✓ A description of the ecological infrastructure, functioning, processes and services (e.g. fire, migration, pollination, etc.) that operate within the preferred site;
- ✓ A description of the ecological corridors that the proposed development would impede including migration and movement of flora and fauna;
- ✓ Indicate whether or not the proposed development will have any impact on biodiversity features;
- ✓ An indication and description of any significant terrestrial landscape features, including rare or important flora- faunal associations, presence of strategic water source areas (SWSAs) or freshwater ecosystem priority area (FEPA) sub catchments;
- ✓ A description of terrestrial biodiversity and ecosystems on the preferred site, including:
  - main vegetation types;
  - threatened ecosystems, including listed ecosystems as well as locally important habitat types identified;
  - ecological connectivity, habitat fragmentation, ecological processes and fine - scale habitats; and
  - species, distribution, important habitats (e.g. feeding grounds, nesting sites, etc.) and movement patterns identified;
  - Species of Conservation Concern
- ✓ Make reference to the allocated sensitivity as per the screening tool, state whether or not this sensitivity is accurate and recommend appropriate reclassification if it is not.
- ✓ The assessment must identify any alternative development footprints within the preferred site which would be of a "low" sensitivity as identified by the screening tool and verified through the site sensitivity verification.
- ✓ The specialist must confirm the need for either a Compliance Statement or an Impact Assessment.

Based on the results of a site visit, the following aspects are to be identified, discussed and applied to form the base for assessment:

- ✓ Terrestrial Critical Biodiversity Areas (CBAs), including:
  - the reasons why an area has been identified as a CBA;
  - an indication of whether or not the proposed development is consistent with maintaining the CBA in a natural or near natural state or in achieving the goal of rehabilitation;
  - percentage of site (erven/farm portions) covered by CBA
  - percentage of CBA (specify degraded/transformed and pristine) lost to proposed development layout alternatives (if layout is available).
  - the impact on species composition and structure of vegetation with an indication of the extent of clearing activities in proportion to the remaining extent of the ecosystem type(s);
  - the impact on ecosystem threat status;
  - the impact on explicit subtypes in the vegetation;
  - the impact on overall species and ecosystem diversity of the site; and
  - the impact on any changes to threat status of populations of species of conservation concern in the CBA;

- Inclusion of any necessary buffer areas, including the identification of zones of sensitivity within the CBA that are priority to maintain ecological integrity.
- ✓ Terrestrial Ecological Support Areas (ESAs), including:
  - Percentage/quantity of site (erven/farm portions) covered by ESA
  - percentage of ESA lost to development (if layout is available)
  - the impact on the ecological processes that operate within or across the site;
  - the extent the proposed development will impact on the functionality of the ESA; and
  - loss of ecological connectivity (on site, and in relation to the broader landscape) due to the degradation and severing of ecological corridors or introducing barriers that impede migration and movement of flora and fauna;
  - Inclusion of any necessary buffer areas, including the identification of zones of sensitivity within the ESA that are priority to maintain ecological integrity.
- ✓ Protected areas as defined by the National Environmental Management: Protected Areas Act, 2004 including-
  - an opinion on whether the proposed development aligns with the objectives or purpose of the protected area and the zoning as per the protected area management plan;
- ✓ Priority areas for protected area expansion, including-
  - the way in which in which the proposed development will compromise or contribute to the expansion of the protected area network;
- ✓ SWSAs including:
  - the impact(s) on the terrestrial habitat of a SWSA; and
  - the impacts of the proposed development on the SWSA water quality and quantity (e.g. describing potential increased runoff)
- ✓ FEPA sub catchments, including-
  - the impacts of the proposed development on habitat condition and species in the FEPA sub catchment;
- ✓ Indigenous forests, including:
  - impact on the ecological integrity of the forest; and
  - percentage of natural or near natural indigenous forest area lost and a statement on the implications in relation to the remaining areas.
- ✓ Vegetation present onsite, including:
  - percentage of vegetation cover on the proposed site (erven/farm portions)
    - percentage of indigenous vegetation cover
    - percentage of alien invasive vegetation cover
  - percentage of vegetation cover to be lost due to development (provision of layouts depending)
    - percentage indigenous vegetation lost
    - percentage of alien invasive vegetation to be cleared
  - visualisation (map/illustration) of alien and indigenous vegetation loci.
- ✓ Identification of core ecosystem areas within the proposed site, as well as a description of the Ecosystem services and process provided.
- ✓ An indication and description of any Species of Conservation Concern
  - If search and rescue is recommended please provide a description of appropriate removal, maintenance and reinstatement methodology.
- ✓ Specify location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant)
- ✓ Determine the need for a Compliance Statement or a Terrestrial Biodiversity Assessment Report, as per point 1: General Information of the Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity, it is stated:

- 1.3. However, where the information gathered from the site sensitivity verification differs from the designation of “very high” terrestrial biodiversity sensitivity on the screening tool and it is found to be of a “low” sensitivity, then a Terrestrial Biodiversity Compliance Statement must be submitted.

### **Phase 3: (Terrestrial Biodiversity Assessment Report – Included in EIA)**

The Terrestrial Biodiversity Specialist Assessment Report must discuss the following aspects:

- ✓ A description of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);
- ✓ additional environmental impacts expected from the proposed development;
- ✓ any direct, indirect and cumulative impacts of the proposed development;
- ✓ the degree to which impacts and risks can be mitigated;
- ✓ the degree to which the impacts and risks can be reversed;
- ✓ the degree to which the impacts and risks can cause loss of irreplaceable resources;
- ✓ proposed impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);
- ✓ how the mitigation hierarchy was applied when determining mitigation measures and recommendations.
- ✓ a motivation must be provided if there were development footprints identified as the site verification visit, that were identified as having a “low” terrestrial biodiversity sensitivity and that were not considered appropriate;
- ✓ a substantiated statement, based on the findings of the specialist assessment, regarding the acceptability, or not, of the proposed development, if it should receive approval or not; and
- ✓ any conditions to which this statement is subjected.
- ✓ Identification of any buffer areas.

## **5.8 Methodology for Terrestrial Visual Input**

The David Gibbs has already produced a Visual Baseline Assessment on the full extent of the proposed area (encompassing all 3 properties). The updated proposed Site Layout Plan has since been revised to respond to the recommendations made in the various specialist reports as well as input from the engineers.

The methodology includes the following:

### **Phase 1 (Contextualization of development and area – Included in Scoping Report)**

- ✓ A baseline description of the area must be provided in order to contextualise the receiving environment, the following must be identified and described;
  - Landscape types, landscape character and sense of place, generally based on geology, landforms, vegetation cover and land use patterns;
  - Viewsheds, and view catchment areas, generally based on topography;
  - Important view points and view corridors within the affected environment, including sensitive receptors;
  - Visual exposure of the area – the geographic area from which the project will be visible, or view catchment area. *High, Moderate and Low visual exposure*;
  - Indication of distance radii from the proposed project to the various view points and receptors;
  - Determination of the visual absorption capacity (VAC) of the landscape, usually based on vegetation cover or urban fabric in the area;

- Landscape integrity – the compatibility or congruence of the project with the qualities of the existing landscape or townscape, or the 'sense of place'. (*Low compatibility – visually intrudes, Medium compatibility or High compatibility*).
- ✓ The baseline description of the receiving environment must be coupled with a description of the following:
  - Determination of the relative visibility, or visual intrusion, of the proposed project.
  - Determination of the relative compatibility or conflict of the project with the surroundings;
  - A comparison of the existing situation with the probable effect of the proposed project, through visual simulation, generally using photo-montages.
  - Visibility of the project – based on distance from the project to selected viewpoints i.e. *Highly, Moderately visible and Marginally visible*.
- ✓ The visual specialist should use the table below to identify what category and type of development is proposed in order to determine the significance of the visual impact expected.

**Table1: Categorisation of issues to be addressed by the visual assessment**

Type of environment	Type of development (see Box 2) Low to high intensity				
	Category 1 development	Category 2 development	Category 3 development	Category 4 development	Category 5 development
Protected/wild areas of international, national, or regional significance	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected	Very high visual impact expected
Areas or routes of high scenic, cultural, historical significance	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected
Areas or routes of medium scenic, cultural or historical significance	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected
Areas or routes of low scenic, cultural, historical significance / disturbed	Little or no visual impact expected. Possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected
Disturbed or degraded sites / run-down urban areas / wasteland	Little or no visual impact expected. Possible benefits	Little or no visual impact expected. Possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected

Table 1: Categorization of issues to be addressed by the Visual Assessment

## Phase 2 (Impact Assessment – Included in EIA Phase)

The following assessment methodology should be applied by the Visual Impact Specialist:

### Determination of Extent (Scale):

<b>Site Specific</b>	The impact is limited to the development site (development footprint) or part thereof.
<b>Local</b>	The impacted area includes the whole or a measurable portion of the site, but could affect the area surrounding the development, including the neighbouring properties and wider municipal area.



<b>Regional</b>	The impact would affect the broader region (e.g. neighbouring towns) beyond the boundaries of the adjacent properties.
<b>National</b>	The impact would affect the whole country (if applicable).

**Determination of Duration:**

<b>Temporary</b>	The impact will be limited to part of the construction phase or less than one month.
<b>Short term</b>	The impact will continue for the duration of the construction phase, or less than one year.
<b>Medium term</b>	The impact will continue for part the operational phase
<b>Long term</b>	The impact will continue for the entire operational lifetime of the development, but will be mitigated by direct human action or by natural processes thereafter.
<b>Permanent</b>	This is the only class of impact that will be non-transitory. Such impacts are regarded to be irreversible, irrespective of what mitigation is applied.

**Determination of Probability:**

<b>Improbable</b>	The possibility of the impact occurring is very low, due either to the circumstances, design or experience.
<b>Probable</b>	There is a possibility that the impact will occur to the extent that provisions must therefore be made.
<b>Highly probable</b>	It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up to mitigate the activity before the activity commences.
<b>Definite</b>	The impact will take place regardless of any prevention plans.

**Determination of Significance (without mitigation):**

<b>No significance</b>	The impact is not substantial and does not require any mitigation action.
<b>Low</b>	The impact is of little importance, but may require limited mitigation.

<b>Medium</b>	The impact is of sufficient importance and is therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.
<b>Medium-High</b>	The impact is of high importance and is therefore considered to have a negative impact. Mitigation is required to manage the negative impacts to acceptable levels.
<b>High</b>	The impact is of great importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.
<b>Very High</b>	The impact is critical. Mitigation measures cannot reduce the impact to acceptable levels. As such the impact renders the proposal unacceptable.

#### Determination of Significance (with mitigation):

<b>No significance</b>	The impact will be mitigated to the point where it is regarded to be insubstantial.
<b>Low</b>	The impact will be mitigated to the point where it is of limited importance.
<b>Medium</b>	Notwithstanding the successful implementation of the mitigation measures, the impact will remain of significance. However, taken within the overall context of the project, such a persistent impact does not constitute a fatal flaw.
<b>High</b>	Mitigation of the impact is not possible on a cost-effective basis. The impact continues to be of great importance, and, taken within the overall context of the project, is considered to be a fatal flaw in the project proposal.

#### Determination of Reversibility:

<b>Completely Reversible</b>	The impact is reversible with implementation of minor mitigation measures
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<b>Partly Reversible</b>	The impact is partly reversible but more intense mitigation measures
<b>Barely Reversible</b>	The impact is unlikely to be reversed even with intense mitigation measures
<b>Irreversible</b>	The impact is irreversible and no mitigation measures exist

**Determination of Degree to which an Impact can be Mitigated:**

<b>Can be mitigated</b>	The impact can be completely mitigated
<b>Can be partly mitigated</b>	The impact can be partly mitigated
<b>Can be barely mitigated</b>	It is possible to mitigate the impact only slightly
<b>Not able to mitigate</b>	It is not possible to mitigate the impacts

**Determination of Loss of Resources:**

<b>No loss of resource</b>	The impact will not result in the loss of any resources
<b>Marginal loss of resource</b>	The impact will result in marginal loss of resources
<b>Significant loss of resources</b>	The impact will result in significant loss of resources
<b>Complete loss of resources</b>	The impact will result in a complete loss of all resources

**Determination of Cumulative Impact:**

<b>Negligible</b>	The impact would result in negligible to no cumulative effects
<b>Low</b>	The impact would result in insignificant cumulative effects
<b>Medium</b>	The impact would result in minor cumulative effects
<b>High</b>	The impact would result in significant cumulative effects

**Table 2: Methodology in determining the extent, duration, probability, significance, reversibility and cumulative impact of an environment.**

### **5.9 Terms of Reference Provided to All Specialists**

Specialists in their field of expertise verified site sensitivity as per the relevant applicable themes, as identified in the DEA Environmental Screening Tool, and advise on appropriate reporting format, ie: Compliance Statement or Impact Assessment Report as per the relevant theme, which includes: Agriculture, Aquatic, Animal, Archaeological, Heritage and Cultural, Paleontological, Plant and Terrestrial Biodiversity.

Further to this Specialists must consider baseline data and identify and assess impacts according to predefined rating scales. Specialists will also suggest optional or essential ways in which to mitigate negative impacts and enhance positive impacts. Further, specialists will, where possible, take into consideration the cumulative effects associated with this and other projects which are either developed or in the process of being developed in the local area. The results of these specialist studies will be integrated into a Draft Environmental Impact Assessment (EIAR) Report.

**Specialists' reports must comply with content requirements as listed in the specific environmental theme protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts, published in Government Notice No: 320, Government Gazette 43110, and Government Notice No. 1150 Government Gazette 43855, on March 2020 and October 2020, respectively, where applicable.**

**The specific environmental theme protocol is to replace Appendix 6 of the EIA Regulations, 2014 (as amended 2017), as promulgated in terms of Section 24 (5) of the NEMA 1998 (Act No. 107 of 1998), however where a specialist assessment is required and no specific environmental theme protocol has been prescribed, the required level of assessment must be based on the findings of the site sensitivity verification and must comply with Appendix 6 of the EIA Regulations.**

**Environmental themes as per the DEA Screening Tool and Relevant Protocols include:**

Impact Assessment	Protocol	Sensitivity	Conducted	Appointed Specialist	Findings of screening Tool	Comments and findings
Agriculture	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf</a>	Medium	Yes	Johann Lanz	<ul style="list-style-type: none"> <li>• Low – Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low</li> <li>• Medium - Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate</li> </ul>	The Baseline assessment undertaken for the proposed development has been included as part of Annexure H of the Scoping Report.
Archeological & Cultural Heritage	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>	Low	Yes	ACO Associates cc	Low Sensitivity	Kindly see Annexure H of the Draft Scoping Report for a summary of ACO Associates' findings.
Paleontology	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>	Very High		ACO Associates cc	<ul style="list-style-type: none"> <li>• Medium – Features with a medium paleontological sensitivity</li> <li>• Very High – Features with a Very High paleontological sensitivity</li> </ul>	
Geotechnical	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>	Not provided	No	N/A	Not Provided	<p>The applicant has site-specific geotechnical investigations which they undertake during the design phase of the project. This will be used to determine the foundation requirements of the proposed development. Furthermore, the final design of the foundations is done by engineers strictly according to generally acceptable as well as Eskom-specific engineering standards and norms, taking the site-specific geotechnical constraints and recommendations into account.</p> <p>The geotechnical assessment will not be undertaken for the purpose of the EIA process as the findings thereof will not have an impact on the viability of the proposed development.</p>
Socio-Economic	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>	Not Provided	Yes	Tony Barbour	Not Provided	The Baseline assessment undertaken for the proposed development has been included as part of Annexure H of the Scoping Report.



Impact Assessment	Protocol	Sensitivity	Conducted	Appointed Specialist	Findings of screening Tool	Comments and findings
	ment_Assessment_Protocols.pdf					
<b>Landscape/ Visual</b>	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>	Very High	Yes	David Gibbs	<ul style="list-style-type: none"> <li>High – Slope between 1:4 and 1:10</li> <li>Low – Slope less than 1:10</li> <li>Medium – Within 1000 m of a wetland</li> </ul>	The Baseline assessment undertaken for the proposed development has been included as part of Annexure H of the Scoping Report.
<b>RFI Assessment</b>	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>	Very High	No	N/A	<ul style="list-style-type: none"> <li>High - Between 18 and 30 km from a Weather Radar installation and within the radar's line of sight</li> </ul>	During the site verification done by the EAP, no weather radar installations were seen from the site. The desktop assessment undertaken by the EAP indicated that the De Aar Weather station is located along Smouspoort Road, approximately 16.5 km north-west from the development (in the far western reaches of De Aar). Additionally, based on the topography of the landscape, the site is located within a separate micro-topographic catchment and is therefore not located within the radar's line of sight. Therefore, the EAP is of the opinion that an RFI assessment would not be required for the proposed development.
<b>Civil Aviation</b>	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Civil_Aviation_Installations_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Civil_Aviation_Installations_Assessment_Protocols.pdf</a>	Low		N/A	<ul style="list-style-type: none"> <li>Low – No major or other types of civil aviation aerodromes.</li> </ul>	No airport or civil aviation aerodrome was seen from site or within the immediate area. The protocols have not identified specific requirements for areas of low sensitivity. As such, no further action will be undertaken.
<b>Defense Assessment</b>	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Defence_Installations_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Defence_Installations_Assessment_Protocols.pdf</a>	Low		N/A	<ul style="list-style-type: none"> <li>Low – Low Sensitivity</li> </ul>	No impacts on existing Defence areas were noted on the site during the EAP's site verification visit. The protocols have not identified specific requirements for areas of low sensitivity. As such, no further action will be undertaken.

Impact Assessment	Protocol	Sensitivity	Conducted	Appointed Specialist	Findings of screening Tool	Comments and findings
<b>Aquatic Biodiversity</b>	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf</a>	Very High	Yes	The Biodiversity Company	<ul style="list-style-type: none"> <li>• Very High – Wetlands_(River)</li> </ul>	The Baseline assessment undertaken for the proposed development has been included as part of Annexure H of the Scoping Report.
<b>Terrestrial Animal Species</b>	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf</a>	High		The Biodiversity Company	<ul style="list-style-type: none"> <li>• High – Aves - <i>Neotis ludwigii</i></li> <li>• Low – Subject to confirmation</li> <li>• Medium – Aves – <i>Aquila rapax</i></li> <li>• Aves – <i>Neotis ludwigii</i></li> </ul>	The Baseline assessment undertaken for the proposed development has been included as part of Annexure H of the Scoping Report.
<b>Terrestrial Plant Species</b>	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf</a>	Low		The Biodiversity Company	<ul style="list-style-type: none"> <li>• Low – Low Sensitivity</li> </ul>	The Baseline assessment undertaken for the proposed development has been included as part of Annexure H of the Scoping Report.
<b>Terrestrial Biodiversity</b>	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf</a>	Very High		The Biodiversity Company	<ul style="list-style-type: none"> <li>• Very High – Ecological Support Area</li> </ul>	The Baseline assessment undertaken for the proposed development has been included as part of Annexure H of the Scoping Report.

General requirements of all protocols (specific environmental and general) state that:

- A site sensitivity verification must be undertaken by an environmental assessment practitioner or a specialist.
- The outcome of the site sensitivity verification must be recorded in the form of a report that--
  - (a) confirms or disputes the current use of the land and the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.;
  - (b) contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and
  - (c) is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations (EIA Regulations).
- Specialist reports may only be undertaken by a specialist registered with the South African Council for Natural Scientific Professionals (SACNASP) with expertise in the relevant field.

Specialist reports should include as a minimum:

1. Details of-
  - a. the specialist who prepared the report; and
  - b. the expertise of that specialist to compile a specialist report including a curriculum vitae;
2. A declaration that the specialist is independent in a form as may be specified by the competent authority;
3. An indication of the scope of, and the purpose for which, the report was prepared;
4. An indication of the quality and age of base data used for the specialist report;
5. A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;
6. The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;
7. A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;
8. Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;
9. An identification of any areas to be avoided, including buffers;
10. A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;
11. A description of any assumptions made and any uncertainties or gaps in knowledge;
12. A description of the findings and potential implications of such findings on the impact of the proposed activity, or activities.
13. Any mitigation measures for inclusion in the EMPr;
14. Any conditions for inclusion in the environmental authorisation;
15. Any monitoring requirements for inclusion in the EMPr or environmental authorisation;
16. A reasoned opinion-
  - a. whether the proposed activity, activities or portions thereof should be authorised;
  - b. regarding the acceptability of the proposed activity or activities; and
  - c. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;

17. A description of any consultation process that was undertaken during the course of preparing the specialist report;
18. A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and
19. Any other information requested by the competent authority.

In addition to the above, specialists are expected to:

- Review the Scoping Report to familiarize themselves with all relevant issues or concerns relevant to their field of expertise;
- In addition to the impacts listed in the Scoping Report, identify any issue or aspect that needs to be assessed and provide expert opinion on any issue in their field of expertise that they deem necessary in order to avoid potential detrimental impacts;
- Assess the degree and extent of impacts employing the criteria and methodology set out in the Scoping Report of all identified impacts and issues that the preferred project activity and its proposed alternatives, **including that of the no-go alternative**, may have;
- Identify and list all legislation and permit requirements, relevant to their field of study, required before construction may commence.
- Reference all sources of information and literature consulted; and
- Include an executive summary to the report.

The specialist is expected to prepare a report that addresses the scope of the work as set out above, and as per the specific environmental theme protocol, where applicable.

The following assessment methodology will be provided to all the specialists so that the same impact significance methodology is used across the board:

**Table 3: Methodology in determining the extent, duration, probability, significance, reversibility and cumulative impact of an environmental impact**

Determination of Extent (Scale):

<b>Site Specific</b>	1	The impact is limited to the development site (development footprint) or part thereof.
<b>Local</b>	2	The impacted area includes the whole or a measurable portion of the site, but could affect the area surrounding the development, including the neighbouring properties and wider municipal area.
<b>Regional</b>	3	The impact would affect the broader region (e.g. neighbouring towns) beyond the boundaries of the adjacent properties.
<b>National</b>	4	The impact would affect the whole country (if applicable).

Determination of Duration:

<b>Temporary</b>	1	The impact will be limited to part of the construction phase or less than one month.
<b>Short term</b>	2	The impact will continue for the duration of the construction phase, or less than one year.
<b>Medium term</b>	3	The impact will continue for part the operational phase

<b>Long term</b>	4	The impact will continue for the entire operational lifetime of the development, but will be mitigated by direct human action or by natural processes thereafter.
<b>Permanent</b>	5	This is the only class of impact that will be non-transitory. Such impacts are regarded to be irreversible, irrespective of what mitigation is applied.

**Determination of Probability:**

<b>Improbable</b>	1	The possibility of the impact occurring is very low, due either to the circumstances, design or experience.
<b>Probable</b>	2	There is a possibility that the impact will occur to the extent that provisions must therefore be made.
<b>Highly probable</b>	3	It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up to mitigate the activity before the activity commences.
<b>Definite</b>	4	The impact will take place regardless of any prevention plans.

**Determination of Significance (without mitigation):**

<b>No significance</b>	1	The impact is not substantial and does not require any mitigation action.
<b>Low</b>	2	The impact is of little importance, but may require limited mitigation.
<b>Medium</b>	3	The impact is of sufficient importance and is therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.
<b>Medium-High</b>	4	The impact is of high importance and is therefore considered to have a negative impact. Mitigation is required to manage the negative impacts to acceptable levels.
<b>High</b>	5	The impact is of great importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.
<b>Very High</b>	6	The impact is critical. Mitigation measures cannot reduce the impact to acceptable levels. As such the impact renders the proposal unacceptable.

**Determination of Significance (with mitigation):**

<b>No significance</b>	1	The impact will be mitigated to the point where it is regarded to be insubstantial.
<b>Low</b>	2	The impact will be mitigated to the point where it is of limited importance.
<b>Medium</b>	3	Notwithstanding the successful implementation of the mitigation measures, the impact will remain of significance. However, taken within the overall context of the project, such a persistent impact does not constitute a fatal flaw.

<b>High</b>	4	Mitigation of the impact is not possible on a cost-effective basis. The impact continues to be of great importance, and, taken within the overall context of the project, is considered to be a fatal flaw in the project proposal.
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#### Determination of Reversibility:

<b>Completely Reversible</b>	1	The impact is reversible with implementation of minor mitigation measures
<b>Partly Reversible</b>	2	The impact is partly reversible but more intense mitigation measures
<b>Barely Reversible</b>	3	The impact is unlikely to be reversed even with intense mitigation measures
<b>Irreversible</b>	4	The impact is irreversible and no mitigation measures exist

#### Determination of Degree to which an Impact can be Mitigated:

<b>Can be mitigated</b>	1	The impact can be completely mitigated
<b>Can be partly mitigated</b>	2	The impact can be partly mitigated
<b>Can be barely mitigated</b>	3	It is possible to mitigate the impact only slightly
<b>Not able to mitigate</b>	4	It is not possible to mitigate the impacts

#### Determination of Loss of Resources:

<b>No loss of resource</b>	1	The impact will not result in the loss of any resources
<b>Marginal loss of resource</b>	2	The impact will result in marginal loss of resources
<b>Significant loss of resources</b>	3	The impact will result in significant loss of resources
<b>Complete loss of resources</b>	4	The impact will result in a complete loss of all resources



**Determination of Cumulative Impact:**

<b>Negligible</b>	1	The impact would result in negligible to no cumulative effects
<b>Low</b>	2	The impact would result in insignificant cumulative effects
<b>Medium</b>	3	The impact would result in minor cumulative effects
<b>High</b>	4	The impact would result in significant cumulative effects

The Significance ratings have been calculated based on the Consequence, Probability and the Reversibility of the impacts.

The following formulas were used to calculate the Significance:

$$\text{Significance} = (\text{Consequence} \times \text{Likelihood}) + \text{Reversibility}$$

where:

$$\text{Consequence} = \text{Degree of Loss} + \text{Extent} + \text{Duration}$$

and:

$$\text{Likelihood} = \text{Probability} + \text{Level of Mitigation}$$

Significance ratings of impacts after mitigation have been colour coded for ease of reference, as follows:

<b>POSITIVE IMPACTS</b>	<b>Rating</b>	<b>NEGATIVE IMPACTS</b>
Very High	90-108	Very High
High	76-90	High
Medium-High	61-75	Medium-High
Medium	46-60	Medium
Low-Medium	31-45	Low-Medium
Low	16-30	Low
Negligible	0-15	Negligible

## 6. Consultation with the Competent Authority

Section 7 (Duties of Competent Authorities (CA)) of the NEMA EIA Regulations of 2014, as amended (GNR 326 of 2017) states that “Where a Competent Authority is requested by an applicant to comment in terms of these Regulations, such competent Authority must submit its comments within 30 days”. In an effort to ensure that the Final EIA Report contains sufficient information for DFFE to make an informed decision and to ensure they satisfy the content requirements listed in the EIA Regulations of 2014, as amended, DFFE will be requested to provide comment on the draft Environmental Impact Assessment Report when it is made available for a period of 30 days Public Participation.

The CA could comment on whether they deem it necessary to conduct additional specialist assessments other than what is proposed already in this POSEIA when they accept the Final Scoping Report.

## 7. Public Participation Process (PPP) during the EIA Phase

The EIAR, still to be compiled, will take into account all comments received from interested and affected parties (I&APs), commenting Authorities and the CA during the Public Participation Phase/s on the Scoping Report. The EIAR will respond to each written comment received in a “Comments & Response” Table. In addition, further changes to the layout, development proposal or proposed specialist input to be undertaken, will be informed by the comments received during the Scoping Phase 30-day Public Participation Period.

This process will comply with the NEMA, 1998 (Act 107 of 1998), of the EIA Regulations of 2014, as amended (GNR 326 of 2017), section 41 “Public Participation Process”.

There is however only 1 opportunity for the public and commenting authorities to provide input during the EIA Process. There is **one 30-day PP period** on the Draft EIA Report, after which the report is revised and submitted for final decision making.

## 8. Description of Tasks to be undertaken during the EIA Phase

The following tasks are proposed to be undertaken during the EIA Phase:

### Environmental Impact Assessment Report & Specialist Assessments & WULA

- Compilation of the Terms of Reference for additional specialist input for the EIA phase specialist reports required / addendums to previous impact reports.
- Management of the appointment of the additional specialists and input;
- Review of specialist assessments and provide detailed comments for amendment (if required).
- Project management meetings with applicant and specialists.
- Additional site visits with specialists, authorities and I & AP's, if required.
- Co-ordination of various specialists input to produce sensitivity maps and site layouts for inclusion in the EIA Report.
- Compile EIA Report;
- Compile Environmental Management Programme;
- Submit EIA & EMP to DFFE.
- Compile WULA Report. The WULA will be undertaken by an appropriately registered specialist;

### 30 days Public Participation on EIA Report (including WULA)

- Conduct 30 days PP on EIA Report – including printing colour hardcopies and courier to all key commenting Authorities;
- Written Notification letters to I & AP's;
- Uploading onto website;
- Respond to each comment received;
- Project management meetings and focus group meetings with I & AP's;
- Update Comments & Response Table;
- Update I & AP Database;
- Update EIA Report and EMP based on all comments received during PP;
- Printing and submission of hardcopies to DFFE and to client.
- Submit WULA to DWS.

DFFE provide 106 days to submit the EIA Report from the day the Scoping Report is accepted. During which time 30 days PP must be undertaken on the EIA Report and the EIA Phase specialist assessments. The EIA Report and EMP must also be updated prior to submission.

## **9. Measures to Avoid, Reverse, Mitigate or Manage Impacts**

Based on general impact identification, the relevant management measures and mitigation has been addressed in the Draft Scoping Report, Section 9.4 – 9.6.