



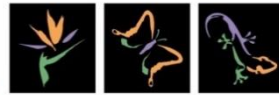
forestry, fisheries  
& the environment

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

**SANBI**

Biodiversity for Life

South African National Biodiversity Institute



**CSIR**  
Touching lives through innovation

# Webinar

## Draft Ecosystem Environmental Assessment Guideline

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**Biodiversity and Land Use Project**



# Protocol Implementation

## Step-by-step guidance for the Terrestrial and Aquatic Biodiversity Protocols

- Terrestrial Biodiversity Assessment
- Aquatic Biodiversity Assessment (excl. marine)

Reproduction of certain (but not all) specific sections of the Terrestrial and Aquatic Ecosystem Protocols that require guidance, using the numbering presented in the final gazetted version of the protocols.

Guidance is provided in text boxes immediately below each protocol requirements.



# Protocol Implementation: Screening Tool process

Proposed development footprint intersects with an environmental sensitivity in Screening Tool



Site sensitivity verification  
- Desktop  
- On-Site Inspection

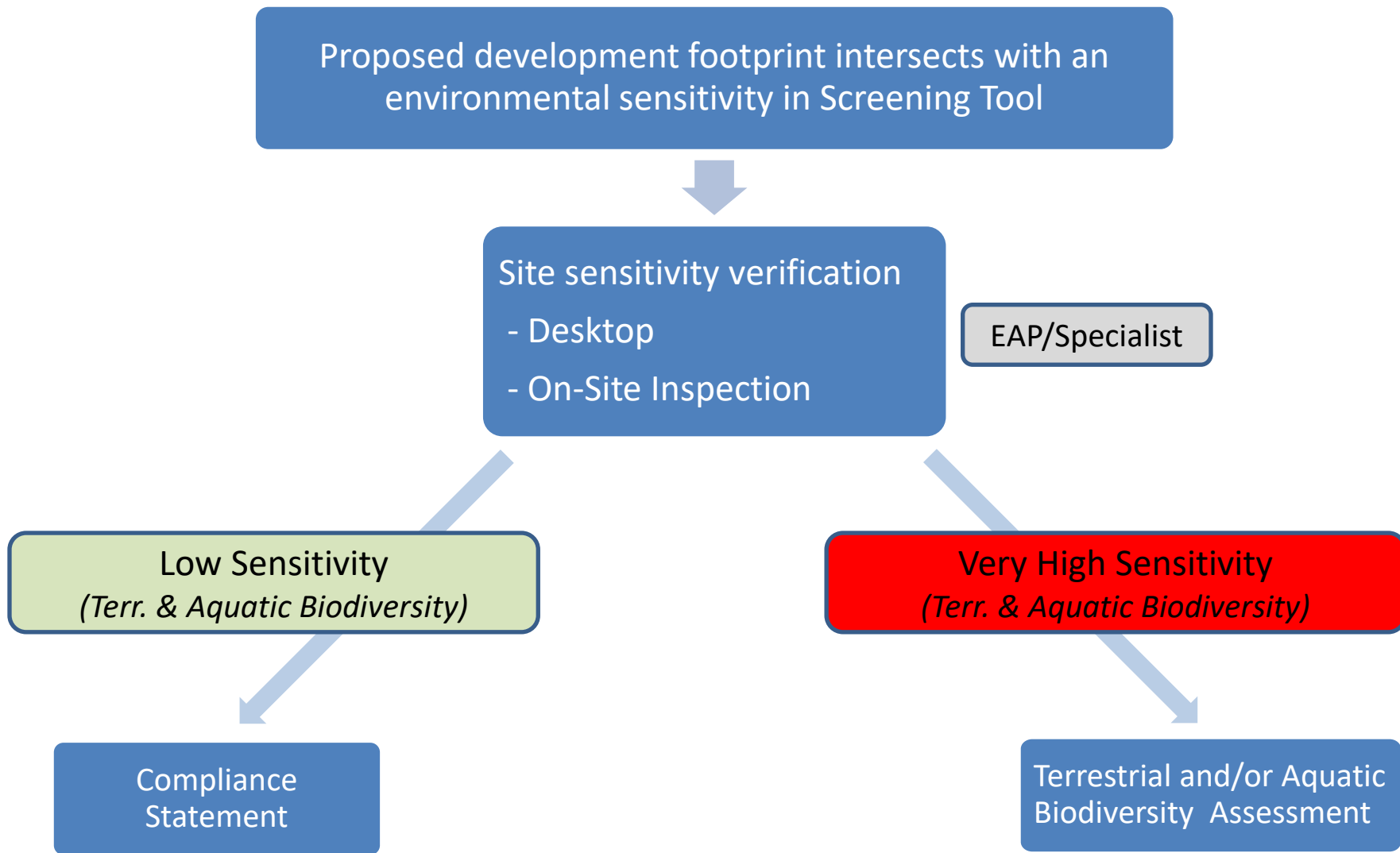
EAP/Specialist

Low Sensitivity  
*(Terr. & Aquatic Biodiversity)*

Very High Sensitivity  
*(Terr. & Aquatic Biodiversity)*

Compliance Statement

Terrestrial and/or Aquatic Biodiversity Assessment



# *Compliance Statement*

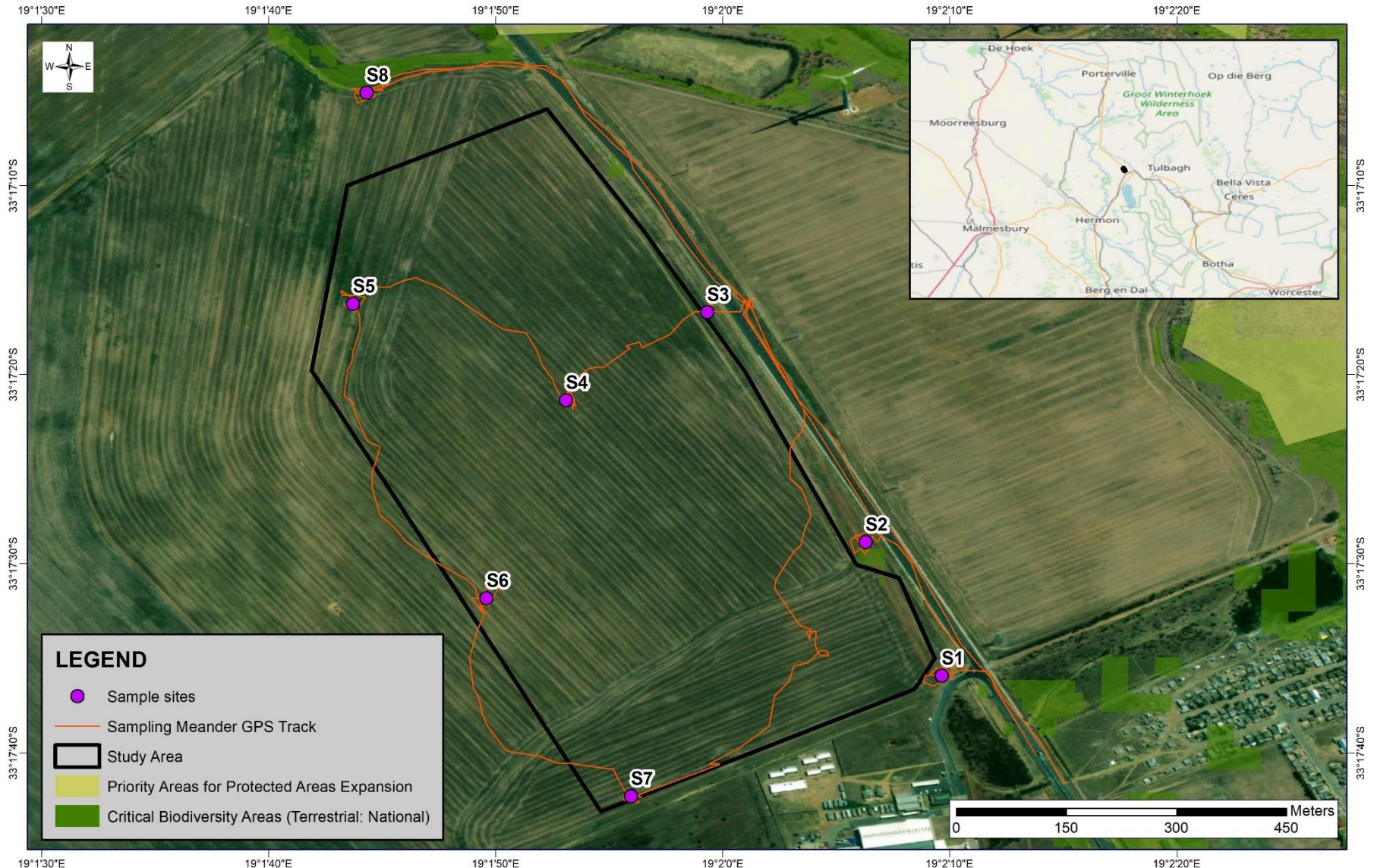
## *Terrestrial or Aquatic Ecosystem requirements*

- Specialist details
  - Name and contact details
  - SACNASP registration details
  - Experience details
  - Curriculum vitae attached
- Statement of independence
- Site inspection details
- Methodology
  - Desktop study
  - Field survey
- Results
  - Assumptions and limitations
  - Findings
- Proposed impact management actions
  - List practical actions required to mitigate impacts
- Conclusion



# Compliance Statement

## Terrestrial or Aquatic Ecosystem requirements



# Assessment Requirements Terrestrial & Aquatic Ecosystems

1. Scope
2. Specialist Assessment and Minimum Report Content Requirements
  - General Information

*Very High Sensitivity Rating (process to follow)*

- 2.1 – 2.3 Competencies, Assessment Spatial Extent, Baseline description
- 3.1 Terrestrial Biodiversity Specialist Assessment Report requirements

- (4.) Low Sensitivity Rating (process to follow)*
- Compliance Statement requirements



# Assessment Requirements

## Terrestrial Ecosystems

### Very High Sensitivity Rating (process to follow)

2.1 The assessment must be prepared by a specialist registered with the South African Council for Natural Scientific Professionals (SACNASP), with expertise in the field of terrestrial biodiversity.

The specialist must be registered with the South African Council for Natural Scientific Professionals (SACNASP) with expertise in the field of terrestrial or aquatic biodiversity as relevant.

The SACNASP registration number of the specialist must specified in the report.

# Assessment Requirements

## Terrestrial Ecosystems

### Very High Sensitivity Rating (process to follow)

2.2 The assessment must be undertaken on the preferred site and within the proposed development footprint.

The impact assessment must be undertaken for the applicant's preferred location for the proposed development.

The assessment must include assessment of impacts not only on receptors within the development footprint of the preferred site, but of all receptors of direct and indirect impacts related to all project activities within the preferred site.

\* receptor – environmental components (e.g. flora/fauna communities or habitat types) that may be affected, adversely or beneficially, by the proposed project activities within the area of influence.



# Assessment Requirements

## *Terrestrial Ecosystems*

### **Very High Sensitivity Rating (process to follow)**

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

2.3.1. A description of the ecological drivers or processes of the system and how the proposed development will impact these;

2.3.2. Ecological functioning and ecological processes that operate within the preferred site;

See the definitions section for clarity on the difference between ecological drivers, functioning, and processes.

Examples of ecological processes include, amongst others, climate change refugia, edaphic interfaces, upland-lowland gradients, fire regimes, range shifts (e.g. season or long-term migration), community structure, trophic interactions, pollination, invasive species, shrub expansion/loss, forest expansion/loss, fire (frequency, severity, timing, extent), acidification, succession, nutrient cycling, herbivory, phenology, and primary productivity/biomass.

# *Assessment Requirements*

## *Terrestrial Ecosystems*

Potential impacts on ecological drivers, functioning, and processes could include, amongst others:

- i. impedance of species movement and migration corridors due to construction of buildings, roads, fences etc.;
- ii. cessation of natural fire regimes due to the developer not being willing to accommodate fire for vegetation management at appropriate natural intervals and scales;
- iii. changes in community structure and species turnover due to vegetation clearing and inappropriate vegetation management;
- iv. disruption of pollination due to application of pesticides; and
- v. impedance of climate change resilience.

# Assessment Requirements

## Terrestrial Ecosystems

2.3.3. The ecological corridors that the proposed development would impede including migration and movement of flora and fauna;

Ecological corridors include various features in the landscape that may include and allow for connectivity between BPAs, including CBAs, PAs and others.

Consult the [National Biodiversity Assessment](#) and relevant Provincial and Bioregional/Biodiversity Sector Plans and climate resilience areas, and other sources to identify areas that may serve as ecological corridors within the preferred site and project area of influence (i.e. ecosystems that are required to maintain or restore effective ecological connectivity).

Consultant with the relevant species specialists for the EIA to determine any habitat/ecosystem needs of relevant species within both the preferred site and project area of influence.

Spatially delineate and describe in detail the ecological corridors (at site and landscape level) within the preferred site and project area of influence.

Impacts on ecological corridors at both the landscape and site levels must be considered.

# *Assessment Requirements*

## *Terrestrial Ecosystems*

2.3.4. The description of any significant terrestrial landscape features (including presence of threatened ecosystems, strategic water source areas (SWSAs) or freshwater ecosystem priority area (FEPA) sub catchments;

The ST will spatially represent all terrestrial landscape features that have been mapped. Following field work by the specialist, any additional landscape features found on site must be mapped and described.

# *Assessment Requirements*

## *Terrestrial Ecosystems*

2.3.5. A description of terrestrial biodiversity and ecosystems on the preferred site, including:

(a) Main vegetation types;

See the latest version of the Vegetation Map of South Africa, and the relevant Provincial and Bioregional/Biodiversity Sector Plans for finer-scale vegetation maps. Include descriptions of the vegetation types present within both the preferred site and the area of influence. Include information on the ecosystem threat status and protection level of all relevant vegetation types from the latest version of either the National Biodiversity Assessment or the national list of threatened ecosystems, whichever is the most recent of the two.

# Assessment Requirements

## Terrestrial Ecosystems

2.3.5. A description of terrestrial biodiversity and ecosystems on the preferred site, including:

- (b) Threatened ecosystems as determined in the National Biodiversity Assessment and listed ecosystems, as well as locally important habitat types identified.

See the latest version of either the [National Biodiversity Assessment](#) or the [national list of threatened ecosystems](#), whichever is the most recent of the two.

See the relevant [Provincial and Bioregional/Biodiversity Sector Plans for finer-scale vegetation maps](#).

Important habitats can include, for example, threatened vegetation types present at a site but that are not reflected at that locality due to fine-scale delineation limitations (e.g. the [national list of threatened ecosystems](#) reflects a Critical Endangered ecosystem only on a neighbouring property, not within the preferred site, but during the Site Sensitivity Verification it is clear that the Critical Endangered ecosystem is present within the preferred site.

# Assessment Requirements

## Terrestrial Ecosystems

2.3.5. A description of terrestrial biodiversity and ecosystems on the preferred site, including:

- (c) Ecological connectivity, habitat fragmentation, ecological processes and fine-scale habitats;

All current ecological corridors, connectivity (at site and landscape level), habitat fragmentation, ecological processes and fine-scale habitats within the preferred site and the area of influence must be documented and mapped.

CBAs and ESAs function as ecological corridors, enable site and landscape level connectivity, and support ecological processes. Consult the BPAs, Provincial and any relevant Bioregional/Biodiversity Sector and Ecosystem Management Plans to determine what ecological corridors, connectivity (at site and landscape level), habitat fragmentation, ecological processes and fine-scale habitats are present. This will likely require consideration of the potential for such features being present and extrapolation down to the site and landscape level.

Various quantitative methods are available to assess habitat fragmentation, including spatially in GIS, which should be applied as relevant to the scale of fragmentation present (i.e. site vs. landscape) (Larrey-Lassalle et al., 2018; Zhu *et al.*, 2021; Young and Jarvis, 2001).

# Assessment Requirements

## Terrestrial Ecosystems

2.3.5. A description of terrestrial biodiversity and ecosystems on the preferred site, including:

- (d) Species, distribution, important habitats (e.g. feeding grounds, nesting sites, etc.) and movement patterns identified;

For SCCs, see the [Species Environmental Assessment Guideline](#).

For each ecosystem type, list all dominant and indicator species identified in the field (including all relevant SCCs and non-SCCs that are dominants or indicator species).



# *Assessment Requirements*

## *Terrestrial Ecosystems*

Guidance is also provided for:

2.3.6 Identification of any alternative development footprints.

2.3.7. Assessment based on the results of a site inspection undertaken on the preferred site and must identify:

- BPA features
- Impacts

# *Assessment Requirements*

## *Terrestrial Ecosystems*

### **Terrestrial Biodiversity Specialist Assessment Report**

3.1.1. Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae.

Include the name and contact details of the Specialist, their SACNASP registration number, their field of expertise, and a curriculum vitae that includes all relevant qualifications and work experience, including relevant project information reflecting expertise in the field of terrestrial or aquatic biodiversity as relevant.

# *Assessment Requirements*

## *Terrestrial Ecosystems*

### **Terrestrial Biodiversity Specialist Assessment Report**

3.1.2. A signed statement of independence by the specialist;

Include a statement of independence signed and dated by the specialist declaring the work as their own and any and all conflicts of interest that may exist, including financial, non-financial and indirect.

# Assessment Requirements

## Terrestrial Ecosystems

### Terrestrial Biodiversity Specialist Assessment Report

3.1.3. A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;

Include a statement signed and dated by the specialist documenting the duration, date and season of the site inspection and the implications of the season in which the fieldwork was conducted to the outcome of the assessment (*e.g. level of confidence that all ecosystem features were identified, sufficiently documented, and appropriately assessment*).

# *Assessment Requirements*

## *Terrestrial Ecosystems*

### **Terrestrial Biodiversity Specialist Assessment Report**

Guidance is also provided for:

- 3.1.4. Description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;
- 3.1.5 Assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations;
- 3.1.6. Location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);
- 3.1.7. Additional environmental impacts expected from the proposed development;
- 3.1.8. Any direct, indirect, and cumulative impacts of the proposed development;
- 3.1.9. The degree to which each impact and risk should be mitigated;

# *Assessment Requirements*

## *Terrestrial Ecosystems*

### **Terrestrial Biodiversity Specialist Assessment Report**

Guidance is also provided for:

- 3.1.10. The degree to which the impacts and risks can be reversed;
- 3.1.11. The degree to which the impacts and risks can cause loss of irreplaceable resources;
- 3.1.12. Proposed impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);
- 3.1.13. Motivation if there were development footprints identified as per paragraph 2.3.6 above that were identified as having a "low" terrestrial biodiversity sensitivity and that were not considered appropriate;
- 3.1.14. 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;
- 3.1.15. Any conditions to which this statement is subjected.

# General Guidelines

## 7.1 Qualifications and limitations of specialist

## 7.2 Fieldwork

- Seasonality with specific reference to the EA process
- Preparation for fieldwork surveys
- Permitting considerations
- Prevention of the accidental translocation of species
- Health and safety considerations



# General Guidelines

## 7.3 Data interpretation, presentation and reporting

- General layout of a specialist report
- Application of the precautionary principle and 'absence data'
- Project context
- Biodiversity Management Plans (BMPs) for specific ecosystems
- Previous studies
- Description of sampling limitations
- Description of sampling effort
- Photographic evidence
- Reporting of fieldwork results
- Mapping standards
- Mitigation of impacts





# General Guidelines

## 7.4 Impact analysis

- Description of current impacts
- Description of anticipated project impacts
- Worked example
- Sensitivity of ecosystem receptors

## 7.5 Suitability of the proposed project and its activities

## 7.6 Data dissemination

## 7.7 A copy of the original specialist report as an appendix

## 7.8 Key reference documents



# Impact Rating Methodology

The EIA regulations specify that the impacts must be assessed to identify potentially significant impact and risk, including -

- (i) cumulative impacts;
- (ii) the nature, significance, and consequences of the impact and risk;
- (iii) the extent and duration of the impact and risk;
- (iv) the probability of the impact and risk occurring;
- (v) the degree to which the impact and risk can be reversed;
- (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and
- (vii) the degree to which the impact and risk can be avoided, managed, or mitigated;



# Example: Impact Rating Methodology

Element	Description	Questions applied to the test of significance
<b>Consequence</b>	<p>An impact or effect can be described as the change in an environmental parameter, which results from a particular project activity or intervention. Here, the term “consequence” refers to:</p> <ul style="list-style-type: none"> <li>(a) The sensitivity of the receiving environment, including its capacity to accommodate the kinds of changes the project may bring about.</li> <li>(b) The type of change and the key characteristics of the change (these are magnitude, extent and duration).</li> <li>(c) The importance of the change (the level of public concern/ value attached to environment by the stakeholders and the change effected by the project).</li> </ul> <p>The following should be considered in the determination of impact consequence:</p> <ul style="list-style-type: none"> <li>(a) Standards and guidelines (thresholds).</li> <li>(b) Scientific evidence and professional judgment.</li> <li>(c) Points of reference from comparable cases.</li> <li>(d) Levels of stakeholder concern.</li> </ul>	<p>Will there be a change in the biophysical and/or social environment?</p> <p>Is the change of consequence (of any importance)?</p>
<b>Probability</b>	<p>Likelihood/chances of an impact occurring.</p>	<p>What is the likelihood of the change occurring?</p>
<b>Effectiveness of the management measures</b>	<p>Significance of the impact needs to be determined both without management measures and with management measures.</p> <p>The significance of the unmanaged impact needs to be determined so there is an appreciation of what could occur in the absence of management measures and of the effectiveness of the proposed management measures.</p>	<p>Will the management measures reduce impact to an acceptable level?</p>

# Example: Impact Rating Methodology

Characteristics used to describe consequence		Sub-components	Terms used to describe the characteristic
<b>Type</b>			Biophysical, social or economic
<b>Nature</b>			Direct or indirect, cumulative etc.
<b>Status</b>			Positive (a benefit), negative (a cost) or neutral
<b>Phase of project</b>			During pre-construction (if applicable e.g. resettlement), construction, operation, decommissioning/post closure
<b>Timing</b>			Immediate, delayed
<b>Magnitude/Significance</b>	Sensitivity of the receiving environment/ receptors		High, medium or low sensitivity  Low capacity to accommodate the change (impact)/ tolerant of the proposed change
	Severity/ intensity (degree of change measured against thresholds and/or professional judgment)		Gravity/ seriousness of the impact  Intensity/ influence/ power/ strength
	Level of stakeholder concern		High, medium or low levels of concern  All or some stakeholders are concerned about the change
<b>Spatial extent or population affected</b>			Area/ volume covered, distribution, population
The area/population affected by the impact			Site/Local (social impacts should distinguish between site and local), regional, national or international
The boundaries at local and regional extents will be different for biophysical and social impacts.			
<b>Duration (and reversibility)</b>			Short term, long term
Length of time over which an impact occurs and potential for recovery of the endpoint from the impact			Intermittent, continuous  Reversible/ irreversibility  Temporary, permanent

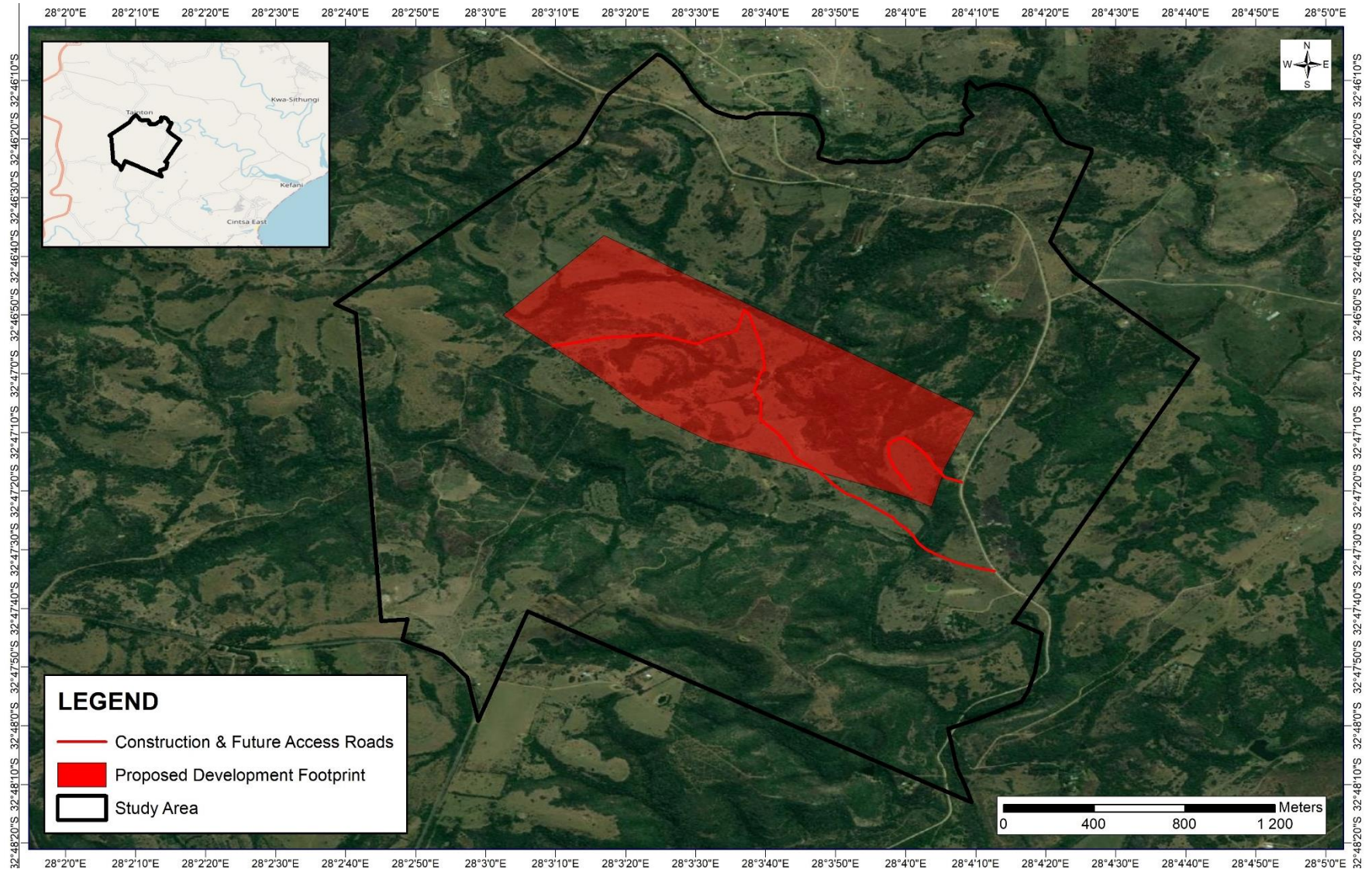
# Terrestrial and Aquatic Specialist Study Fieldwork Methodology Requirements and Key Considerations

Guidance provided for:

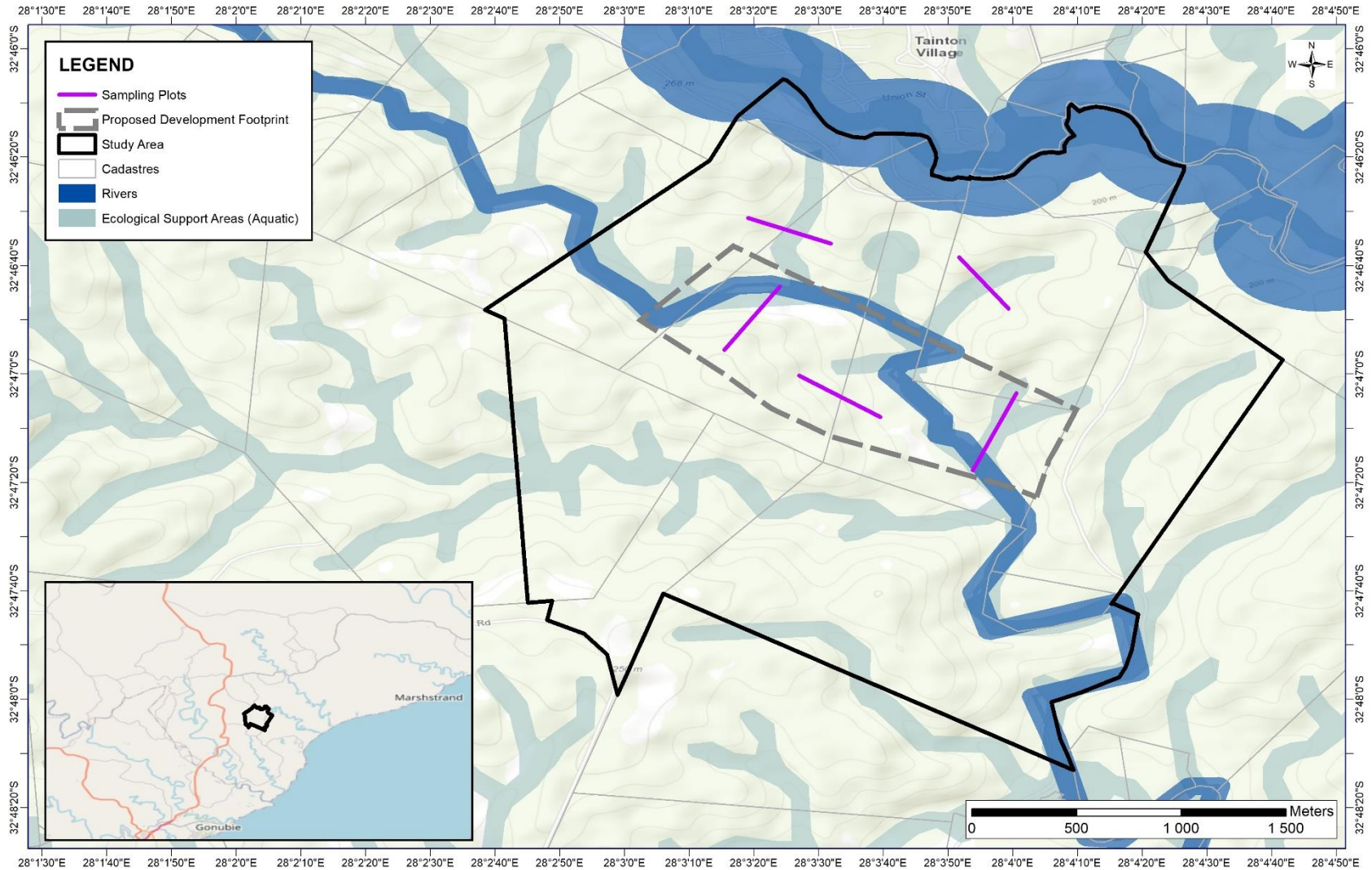
- Compliance with legal requirements for aquatic studies
- Area of Influence of a project
- Management Objectives (for ecosystems)
- Dominant and indicator species (including fish)
- Delineation and Mapping
  - Delineation of Terrestrial Ecosystems
  - Delineation of Wetlands
  - Mapping ecological condition
- Sampling Considerations
- Classification of Aquatic Ecosystems
- Assessing Present Ecological State
- Assessing Ecological Importance and Sensitivity of an (aquatic) ecosystem
- Monitoring



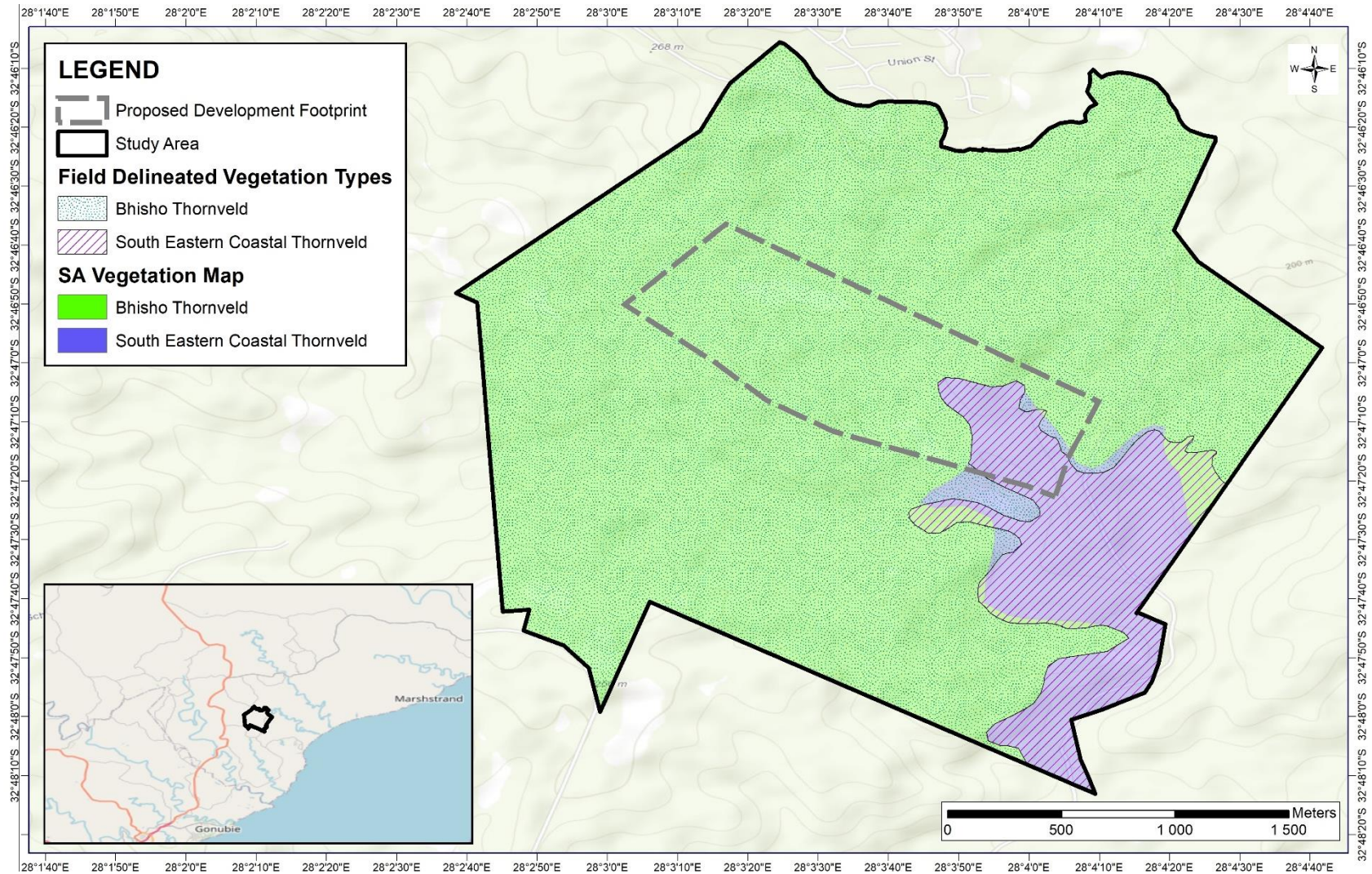
# Terrestrial and Aquatic Specialist Study Fieldwork Methodology Requirements and Key Considerations



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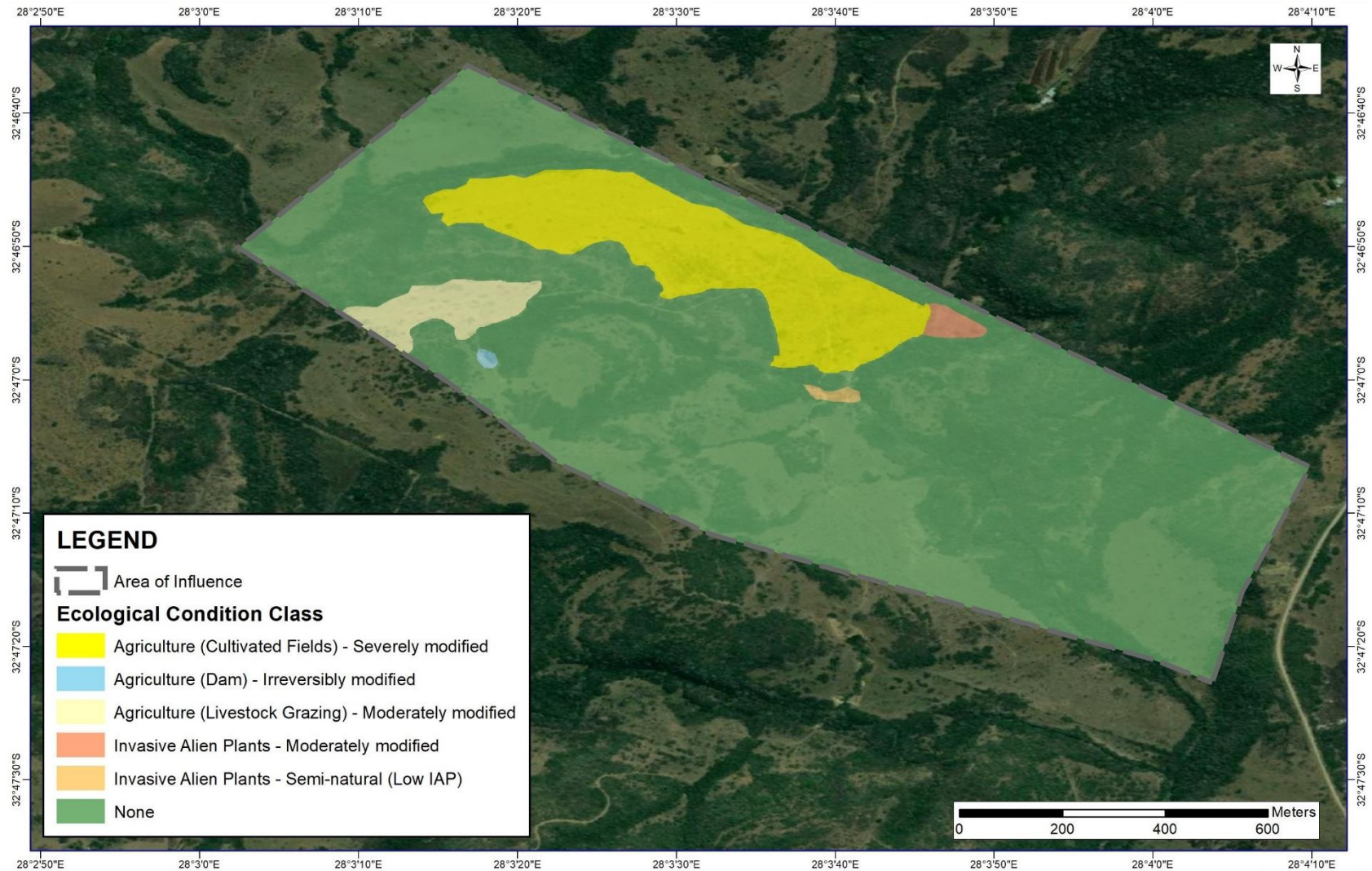


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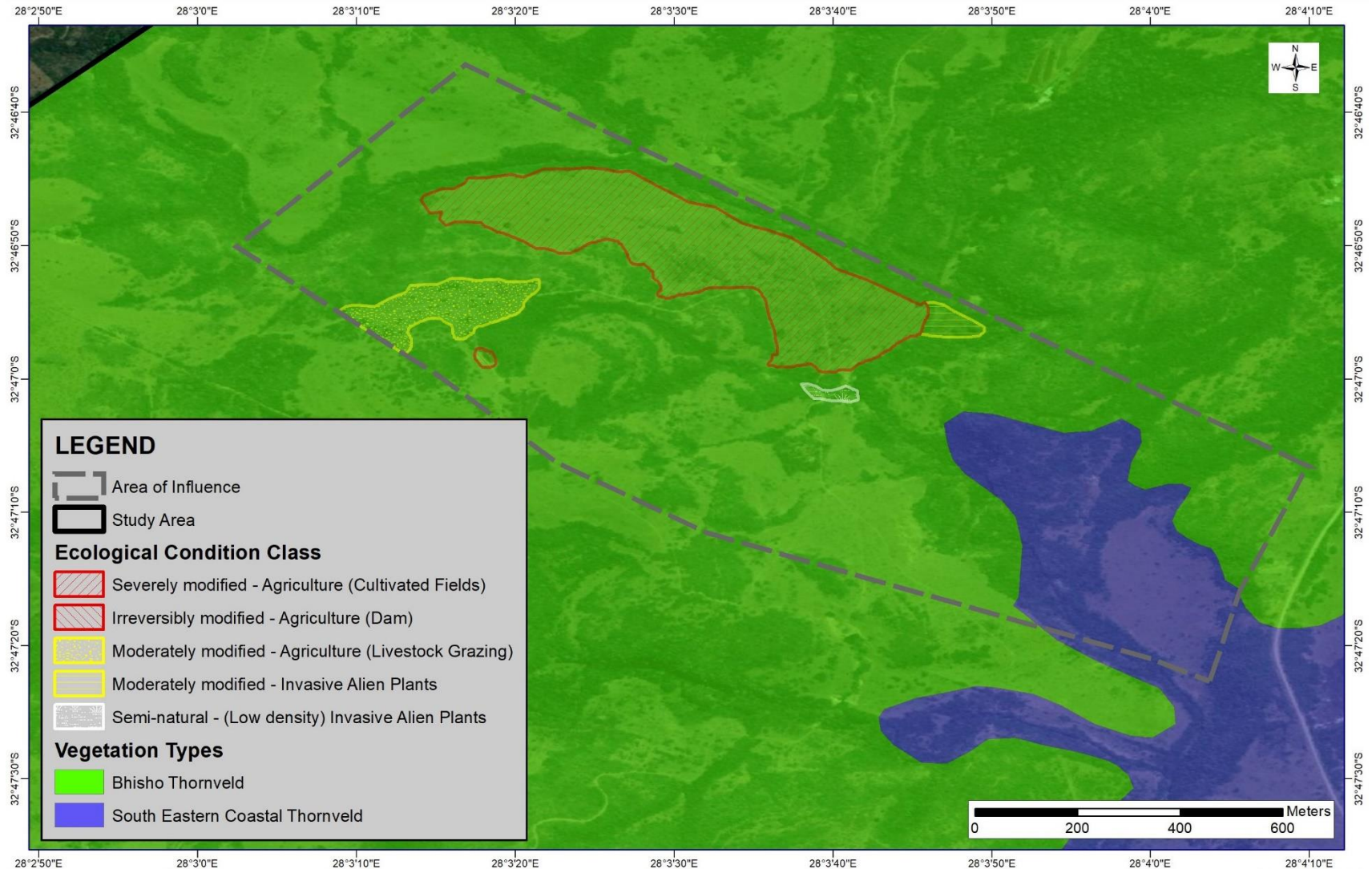




# Terrestrial and Aquatic Specialist Study Fieldwork Methodology Requirements and Key Considerations



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