Kimberley Phase 3 Ferrum Mookodi Powerline – Freshwater Ecological Basic Assessment and Walkdown

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Declaration	The Biodiversity Company and its associates operate as independent consultants under the auspice of the South African Council for Natural Scientific Professions. We declare that we have no affiliation with or vested financial interests in the proponent, other than for work performed under the Environmental Impact Assessment Regulations, Amended. We have no conflicting interests in the undertaking of this activity and have no interests in secondary developments resulting from the authorisation of this project. We have no vested interest in the project, other than to provide a professional service within the constraints of the project (timing, time and budget) based on the principals of science.	

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1 Introduction

The Biodiversity Company was appointed to conduct a freshwater impact and walkdown assessment as part of the Basic Assessment (BAR) to apply for Environmental Authorisation (EA) and a Water Use Licence (WUL) for the proposed 262 km powerline between the Ferrum and Mookodi substations as part of the Kimberley Strengthening Phase 3 scheme. A Basic Assessment process as a compliance report will be undertaken for the project in support of the application for authorisation. The proposed project includes the following:

i. Construction of a 400kV transmission powerline of ±260km from Ferrum Substation to Mookodi Substation.
ii. Upgrade the Mookodi Substation by installing:
    - 1 x 100MVAr busbar reactor at Mookodi 400kV busbar.
    - 1 x 400kV Mookodi feeder bay.
    - 1 x 400kV Line reactor at Mookodi 400kV.
iii. Upgrade the Ferrum Substation by installing
    - 1 x 100MVAr busbar reactor at Ferrum 400kV busbar.
    - 1 x 400kV Ferrum feeder bay.
    - 1 x 400kV Line reactor at Ferrum 400kV.

The powerline section assessed in this report is within the John Taolo Gaetsewe District Municipality in the Northern Cape Province and the Dr Ruth Segomotsi Mompati District Minucipality in the North West Province (Figure 1-1). 562 towers are proposed to be erected along the powerline section, which are numbered from the Ferrum substation to the Mookodi substation (Figure 1-2 - Figure 1-6).

The freshwater walkdown was completed between the 9th and 20th of September 2024. The purpose of the freshwater walkdown was to locate and identify any sensitive watercourses or freshwater features and identify buffers, sensitive sites, and no-go areas. Advise if there is a need to change the tower location based on the anticipated impact. Compile a risk assessment in accordance with the requirements of the DWS General Authorisation (GA) in terms of Section 39 of the NWA for water uses as defined in Section 21(c) or Section 21(i) (previously GN 509 of 2016 and GN 3139 of 2023). Compile a detailed report with the recommendation measures at each tower site and the proposed substation upgrade sites. As per the National Water Act, 1998 (Act No. 36 of 1998) the full extent of the project area with a 500 m regulated area (for water resource areas), hereafter referred to as the PAOI of Influence (PAOI), has been assessed.

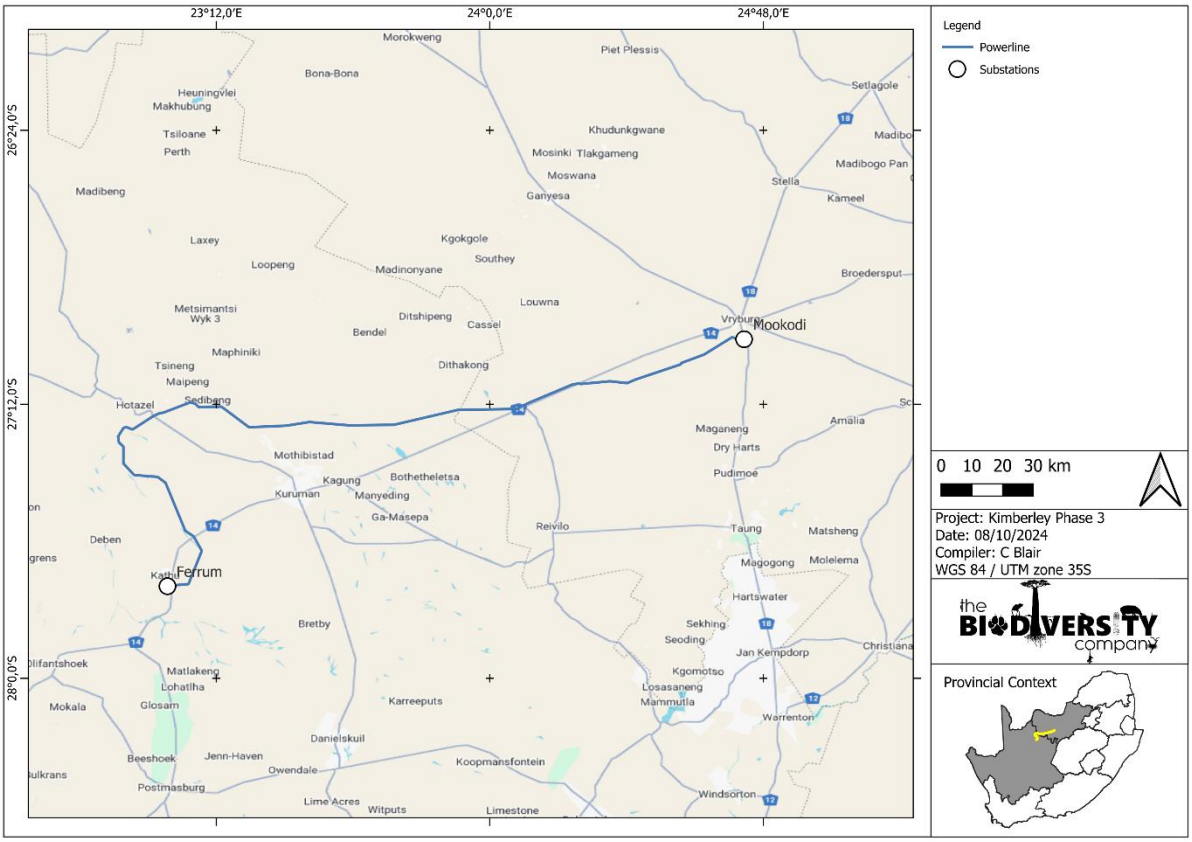


Figure 1-1 The project area

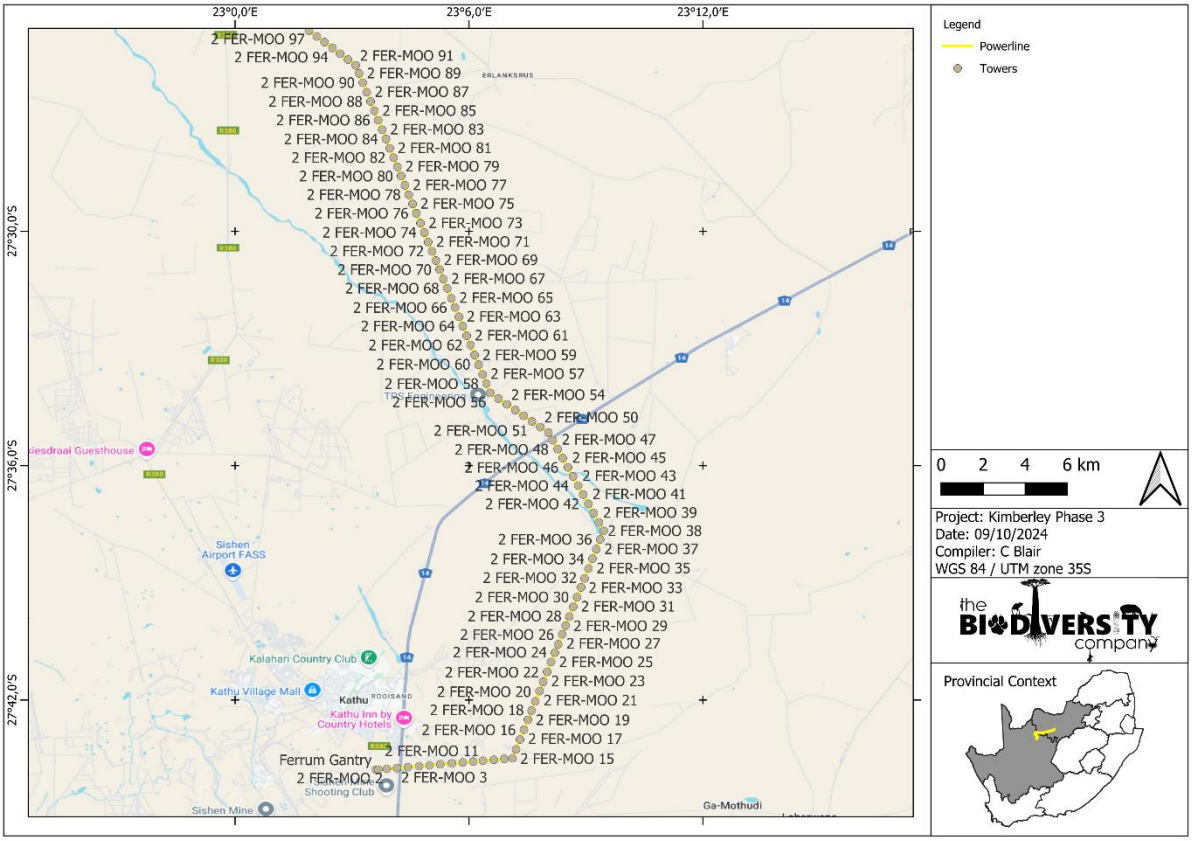


Figure 1-2 Towers 1 - 98

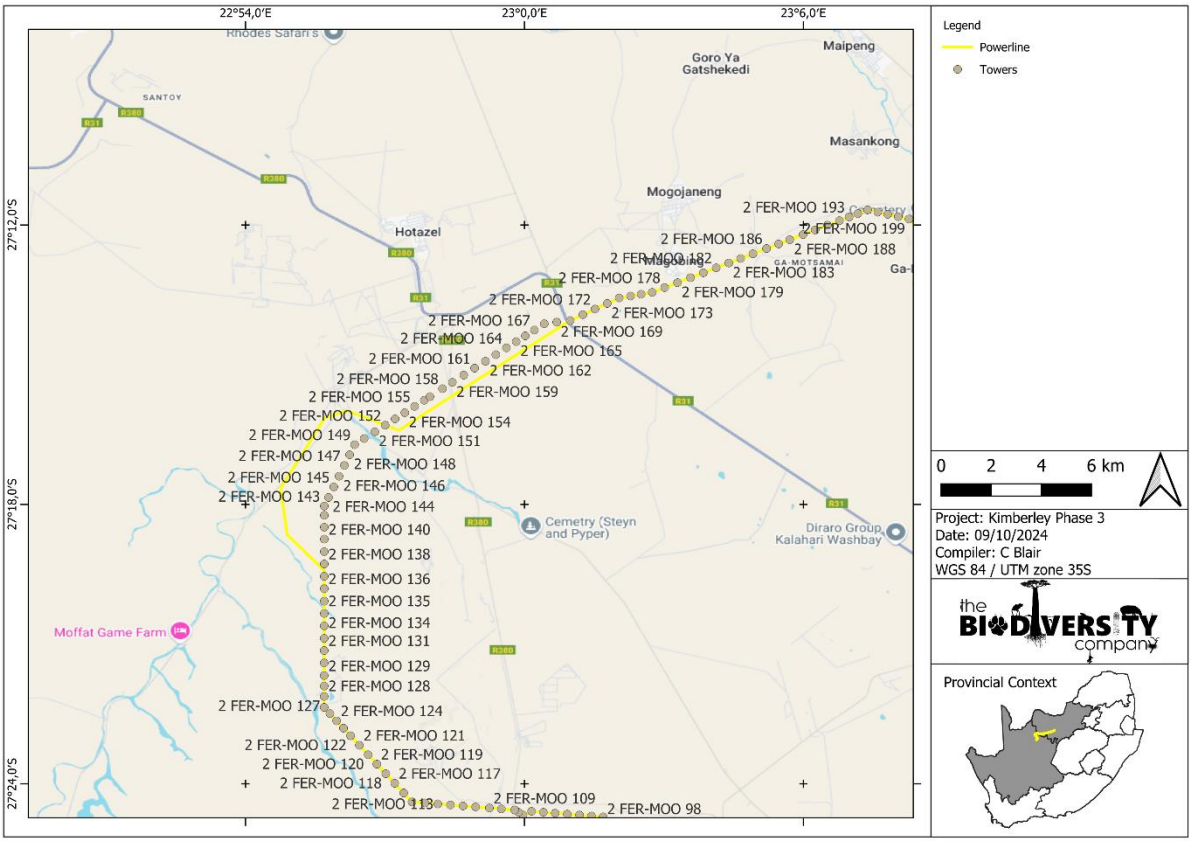


Figure 1-3 Towers 99-199

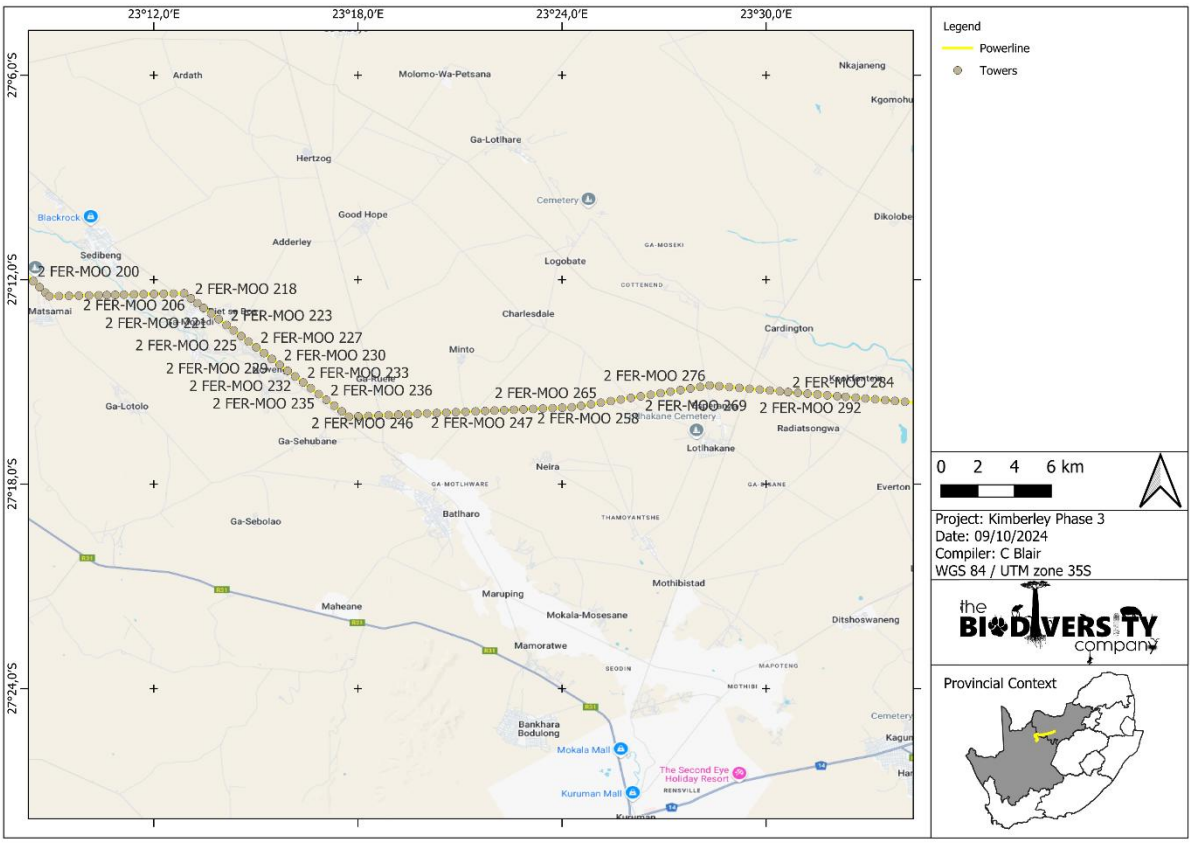


Figure 1-4 Towers 200-299

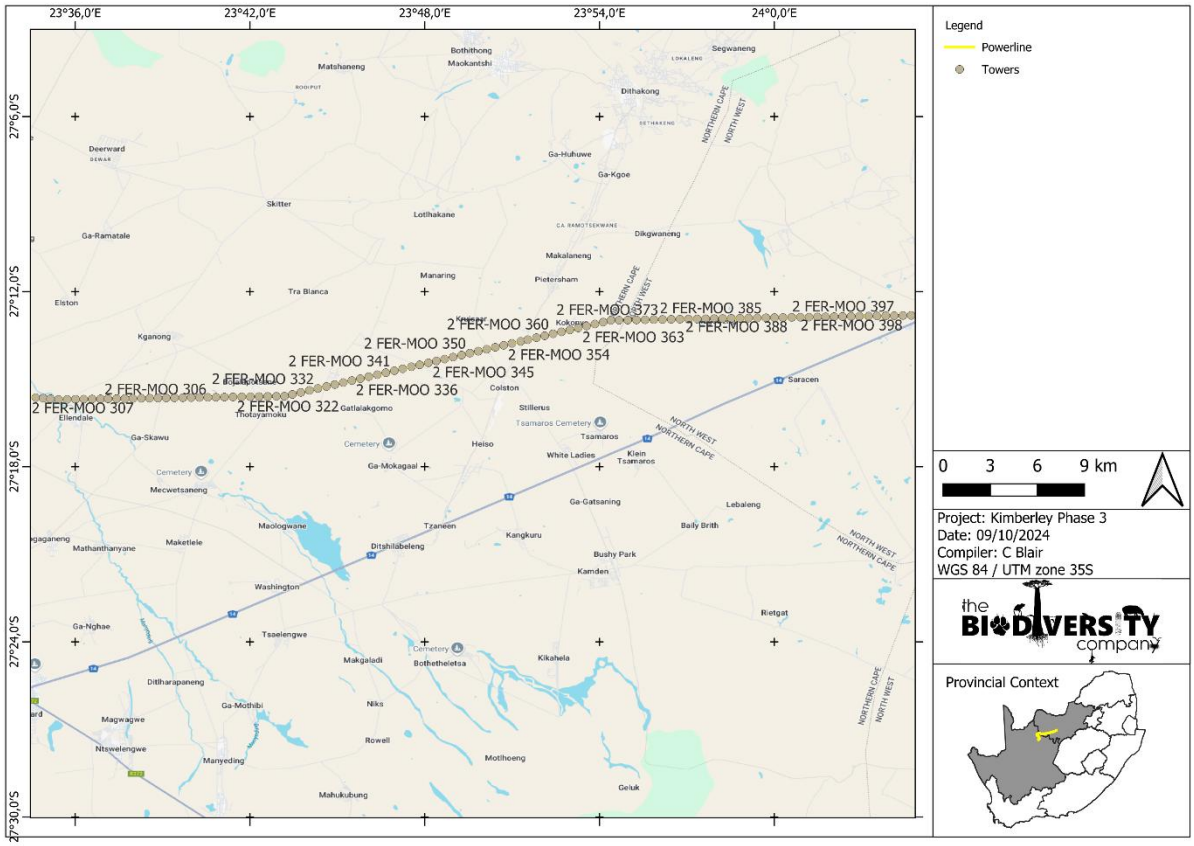


Figure 1-5 Towers 300-399

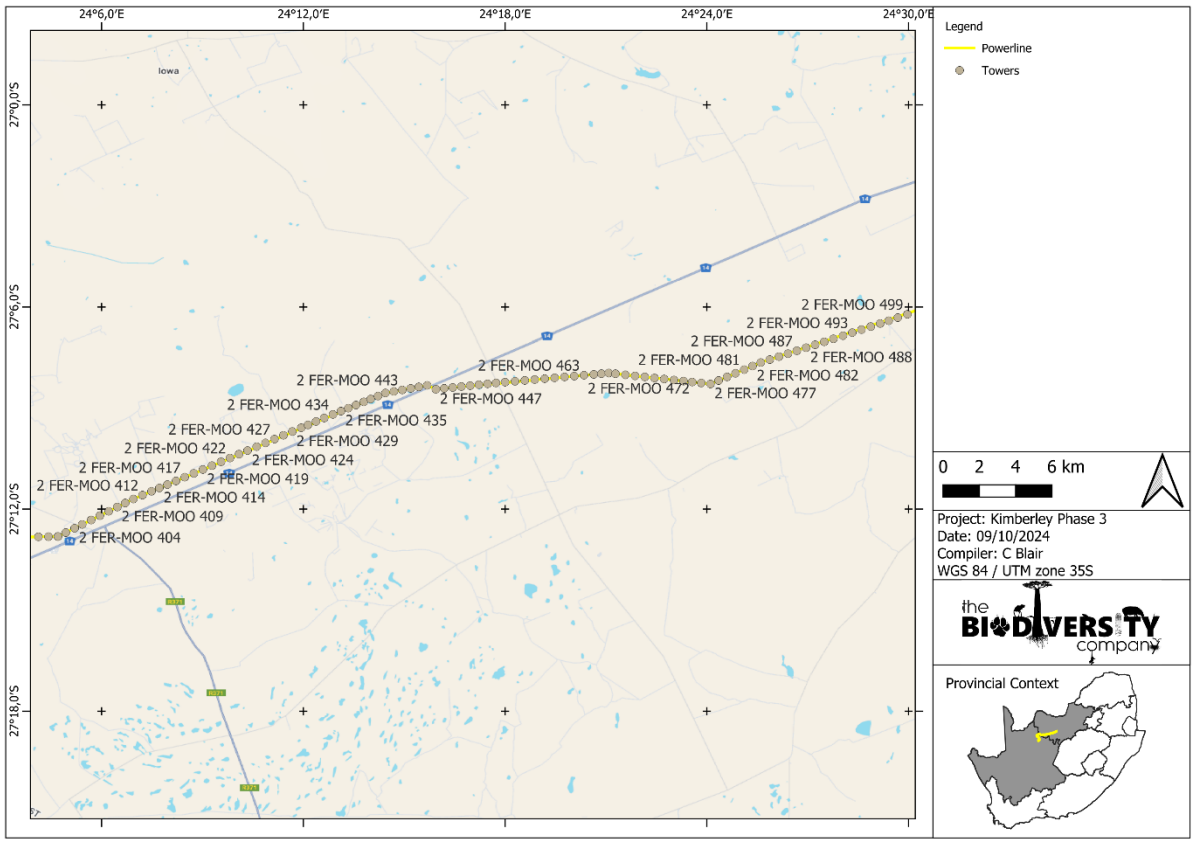


Figure 1-6 Towers 400-499

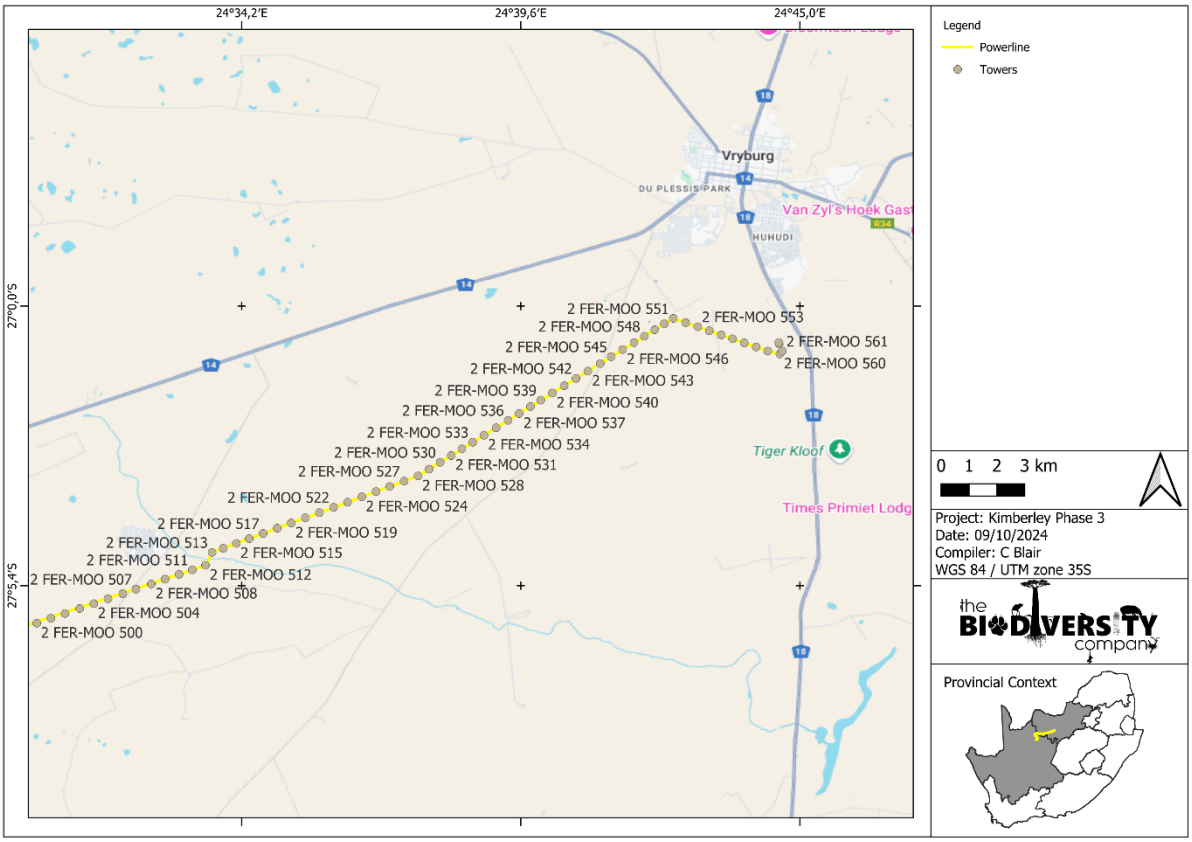


Figure 1-7 Towers 500-56

1.1 Terms of Reference

The aim of the assessment was to provide information to guide the proposed infrastructure development with respect to the current state of the associated water resources in the project area. This was achieved through the following:

- Review of existing information related to the development;
- Conduct an ecological walkdown for the planned footprint areas;
- An impact assessment for the proposed activities;
- Compilation of a report detailing the results of the walkdown:
    - Detail and ecological constraints identified for the planned infrastructure; and
    - Provide information and recommendations for the micro-siting of relevant infrastructure.
- Provide information to adequately inform any contractors, environmental officers and personnel pertaining to the ecological significance for the area.

1.2 Assumptions and Limitations

The following assumptions and limitations should be noted for the assessment:

- It is assumed that all information received from the client is relevant and correct;
- The assessment area was based on the spatial file provided by the client and any alterations to the development area subsequent to the site visit may affect the results;
- A single season survey was completed for this assessment. Thus, temporal trends were not investigated;
- All regional and site-specific environmental information are contained within the Pre-Feasibility Wetland Report (submitted) and were therefore not repeated within this document;
- Due to access issues associated with impenetrable vegetation walking to the location of every proposed tower was not possible. Where possible, a drive assessment was conducted instead alongside the corridor for these sites; and
- The GPS used in the assessment has an accuracy of 5 m and consequently any spatial features may be offset by 5 m.

2 Approach

2.1 Spatial Data

The powerline pylon positions were supplied by the client. The precise locations of each towers/pylon were visited and used as guidelines during the walkdown and ecosystem evaluation phase. GPS accuracy during the field surveys is accurate to 5 m. The findings for the pylons are discussed in the subsequent sections.

2.2 Ecologically Important Landscape Features

The GIS analysis pertaining to the relevance of the proposed project to ecologically important landscape features is summarised in Table 2-1.

Table 2-1 Summary of relevance of the proposed project to ecologically important landscape features

Desktop Information Considered	Relevant/Irrelevant	Section
South African Inventory of Inland Aquatic Ecosystems (SAIIAE)	Relevant – The PAOI overlaps with CR, EN and LC rivers and CR, LC, and unlisted wetlands	2.2.1
National Freshwater Priority Area	Relevant – The PAOI overlaps with non-priority as well as priority wetlands and non-priority as well as Upstream management area rivers.	2.2.2
Strategic Transmission Corridors (EGI)	Relevant – The PAOI is within the Northern Strategic Transmission Corridor	2.2.3

2.2.1 South African Inventory of Inland Aquatic Ecosystems

The South African Inventory of Inland Aquatic Ecosystems (SAIIAE) was released with the NBA in 2018. Ecosystem threat status (ETS) of river and wetland ecosystem types are based on the extent to which each river ecosystem type had been altered from its natural condition. Ecosystem types are categorised as CR, EN, VU or LT, with CR, EN and VU ecosystem types collectively referred to as 'threatened' (Van Deventer *et al*., 2019; Skowno *et al*., 2019). The PAOI overlaps with CR, EN and LC rivers and CR, LC, and unlisted wetlands (Figure 2-1).

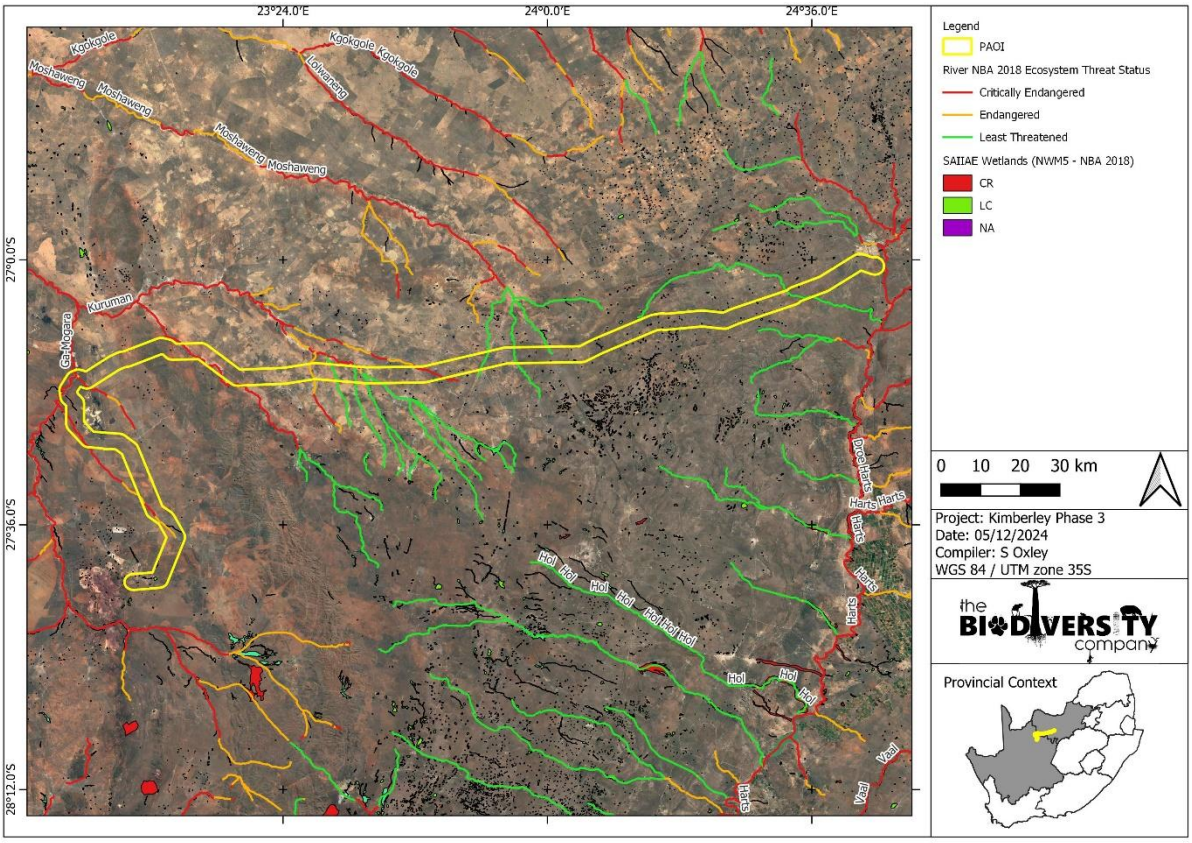


Figure 2-1 Map illustrating ecosystem threat status of rivers and wetland ecosystems in relation to the PAOI

2.2.2 National Freshwater Ecosystem Priority Area Status

In an attempt to better conserve aquatic ecosystems, South Africa has categorised its river systems according to set ecological criteria (i.e., ecosystem representation, water yield, connectivity, unique features, and threatened taxa) to identify Freshwater Ecosystem Priority Areas (FEPAs) (Driver *et al*., 2011). The FEPAs are intended to be conservation support tools and envisioned to guide the effective implementation of measures to achieve the National Environment Management Biodiversity Act's (NEM:BA) biodiversity goals (Nel *et al*., 2011).

Figure 2-2 shows that the PAOI overlaps with non-priority as well as priority wetlands and non-priority as well as Upstream management area rivers.

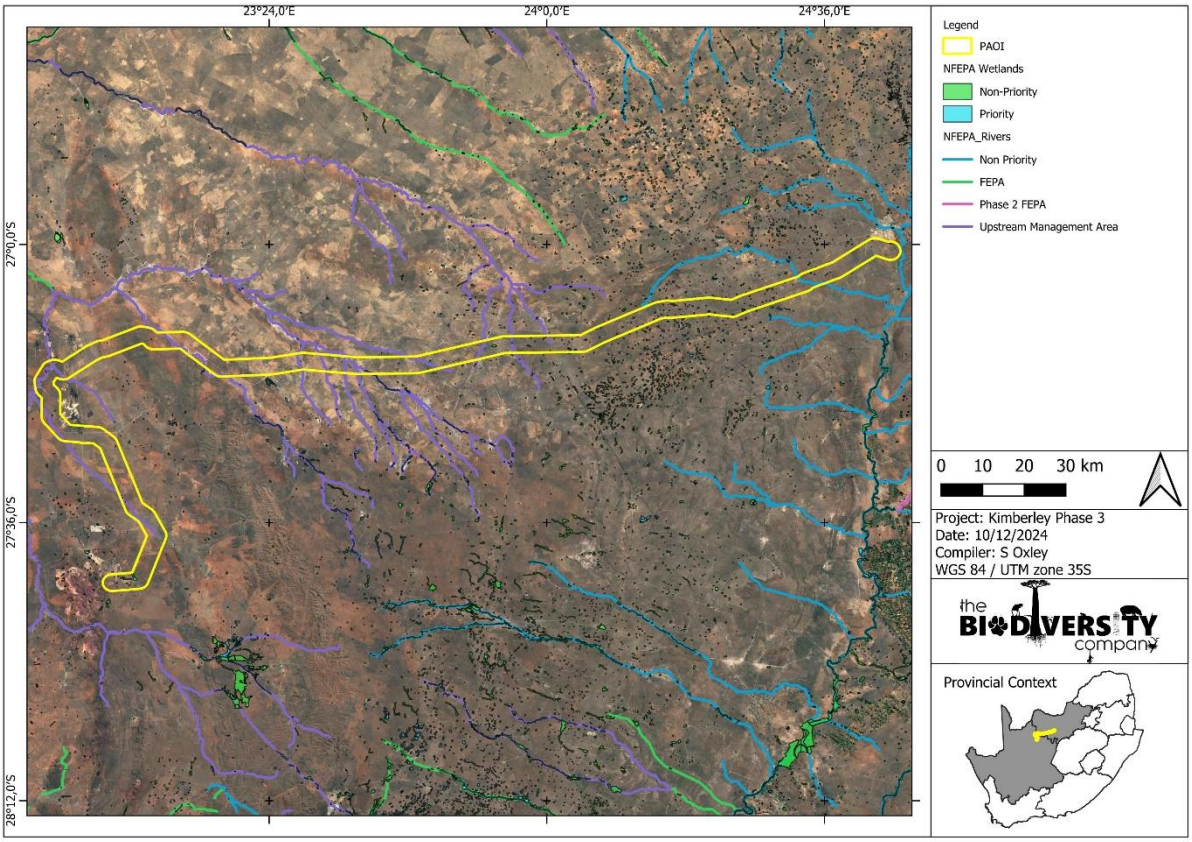


Figure 2-2 The PAOI in relation to the National Freshwater Ecosystem Priority Areas

2.2.3 Strategic Transmission Corridors

On 16 February 2018, Minister Edna Molewa published Government Notice No. 113 in Government Gazette No. 41445, which identified 5 strategic transmission corridors important for the planning of electricity transmission and distribution infrastructure as well as the procedure to be followed when applying for environmental authorisation for electricity transmission and distribution expansion when occurring in these corridors.

On 29 April 2021, Minister Barbara Dallas Creecy published Government Notice No. 383 in Government Gazette No. 44504, which expanded the eastern and western transmission corridors and gave notice of the applicability of the application procedures identified in Government Notice No. 113, to these expanded corridors. More information on this can be obtained from https://egis.environment.gov.za/egi.

Figure 2-3 shows the PAOI is within the Northern Strategic Transmission Corridor (EGI).

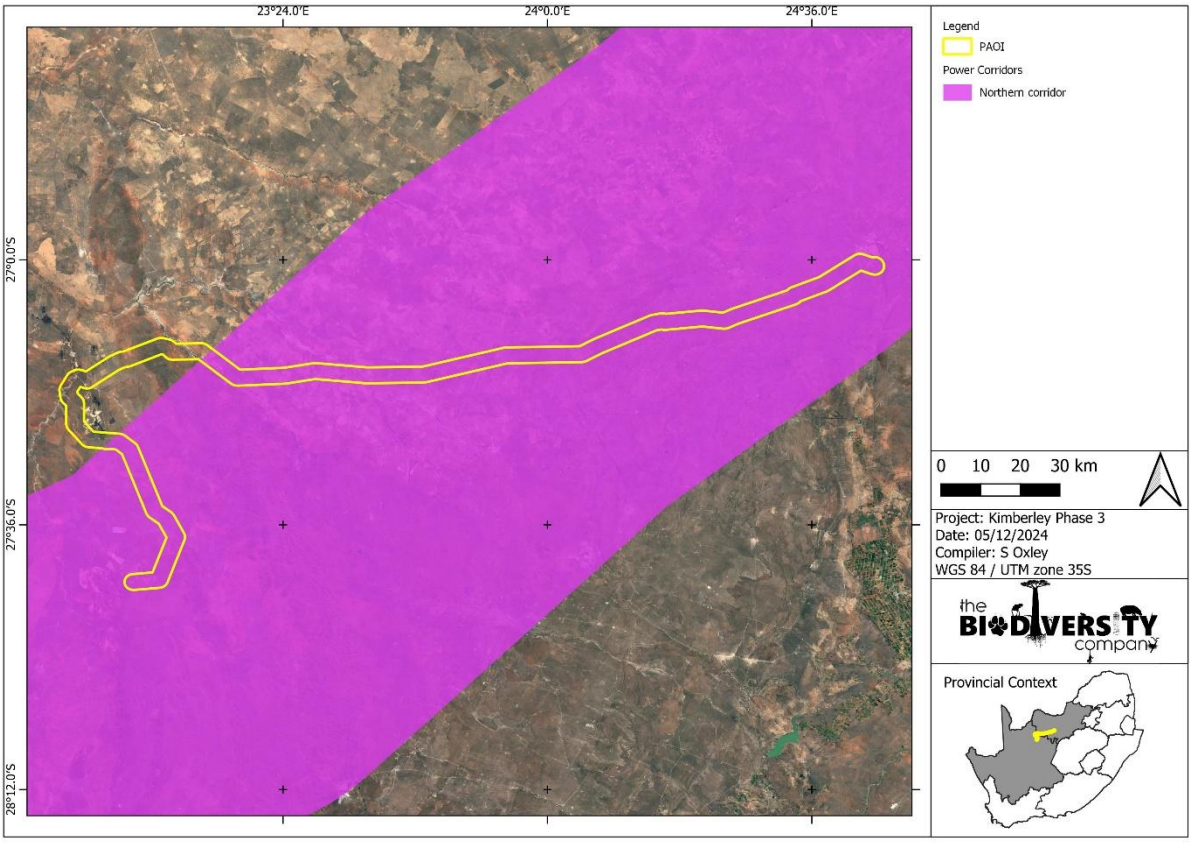


Figure 2-3 The PAOI in relation to the strategic transmission corridors

2.3 Ecological Information

2.3.1 Aquatic Ecology

Table 2-2 presents the defined areas for regulation and the associated legislation that is applicable for the delineated watercourse.

Table 2-2 Area of regulation and the associated legislation

Regulatory authorization required	Zone of applicability
Water Use License Application in terms of the National Water Act, 1998 (Act No. 36 of 1998). GN 4167 as published in the Government Gazette 49833 of 2023. GN 509 as published in the Government Gazette 40229 of 2016.	In accordance with GN 4167 of 2023, previously GN509 of 2016,as it relates to the National Water Act, 1998 (Act 36 of 1998), a regulated area of a watercourse in terms of water uses as listed in Section 21c and 21i is defined as: • the outer edge of the 1 in 100 year flood line and/or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam; • in the absence of a determined 1 in 100 year flood line or riparian area the area within 100 m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench; or • a 500 m radius from the delineated boundary (extent) of any wetland or pan in terms of this regulation.

Listed activities in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) EIA Regulations (2014), as amended. Department of Environmental Affairs and Development Planning (DEA&DP)	Activity 12 of Listing Notice 1 (GN 327) of the National Environmental Management Act, 1998 (Act No.107 of 1998) EIA regulations, 2014 (as amended) states that: The development of: (xii) Infrastructure or structures with a physical footprint of 100 square meters or more; Where such development occurs— *a)* Within a watercourse; *b)* In front of a development setback; or *c)* If no development setback has been adopted, within 32 meters of a watercourse, measured from the edge of a watercourse. Excluding – dd) where such development occurs within an urban area… Activity 19 of Listing Notice 1 (GN 327) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) EIA regulations, 2014 (as amended) states "The infilling or depositing of any material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic meters from a watercourse."

2.3.2 Sensitive Areas

The legal definition of the extent of a watercourse is defined in the amendment of the General Authorisation for section 21 (c) and (i) water uses. The extent of the watercourse is defined as:

- A river, spring or natural channel in which water flows regularly or intermittently "within the outer edge of the 1 in 100 year floodline or riparian habitat measured from the middle of the watercourse from both banks"; and
- Wetlands and pans "within 500 m radius from the boundary (temporary zone) of any wetland or pan".

An example of the watercourse extent is provided in Figure 2-4. As a result, all available aspects of a watercourse described were considered. Riparian areas have high conservation value and can be considered the most important part of a watershed for a wide range of values and resources. They provide important habitat for a large volume of wildlife and often forage for domestic animals. The vegetation they contain are an important part of the water balance for the hydrological cycle through evapotranspiration. They are crucial for riverbank stability and in preventing erosion within the channel (Elmore and Beschta, 1987). This is especially true for ephemeral systems where due to the dry nature of the system, the habitat provided by vegetation within the riparian area are the only existing aspect of the watercourse until thunderstorm events.

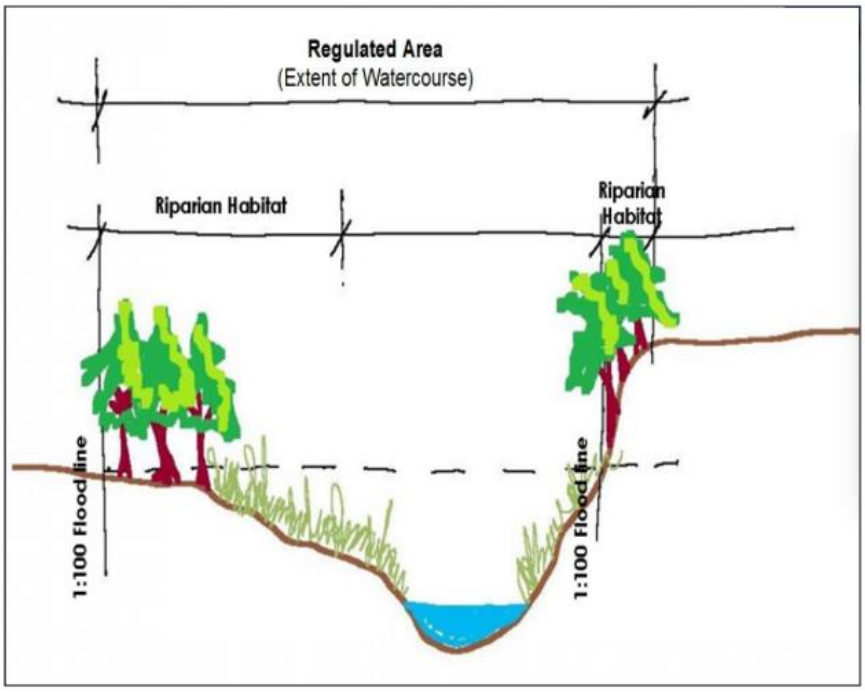


Figure 2-4 The extent of a watercourse (DWA, 2012)

The desktop delineations of the watercourse extents and riparian zones for the proposed PAOI are presented in Figure 2-5 and Figure 2-6. The desktop watercourse features identified along the powerline are ecologically important watercourse features, highlighting the wetlands, rivers, and drainage lines within the PAOI. The datasets which present the following watercourse features are:

- River NBA 2018 Ecosystem Threat Status;
- South African Inventory of Inland Aquatic Ecosystems (SAIIAE); and
- National Freshwater Priority Area (NFEPA).

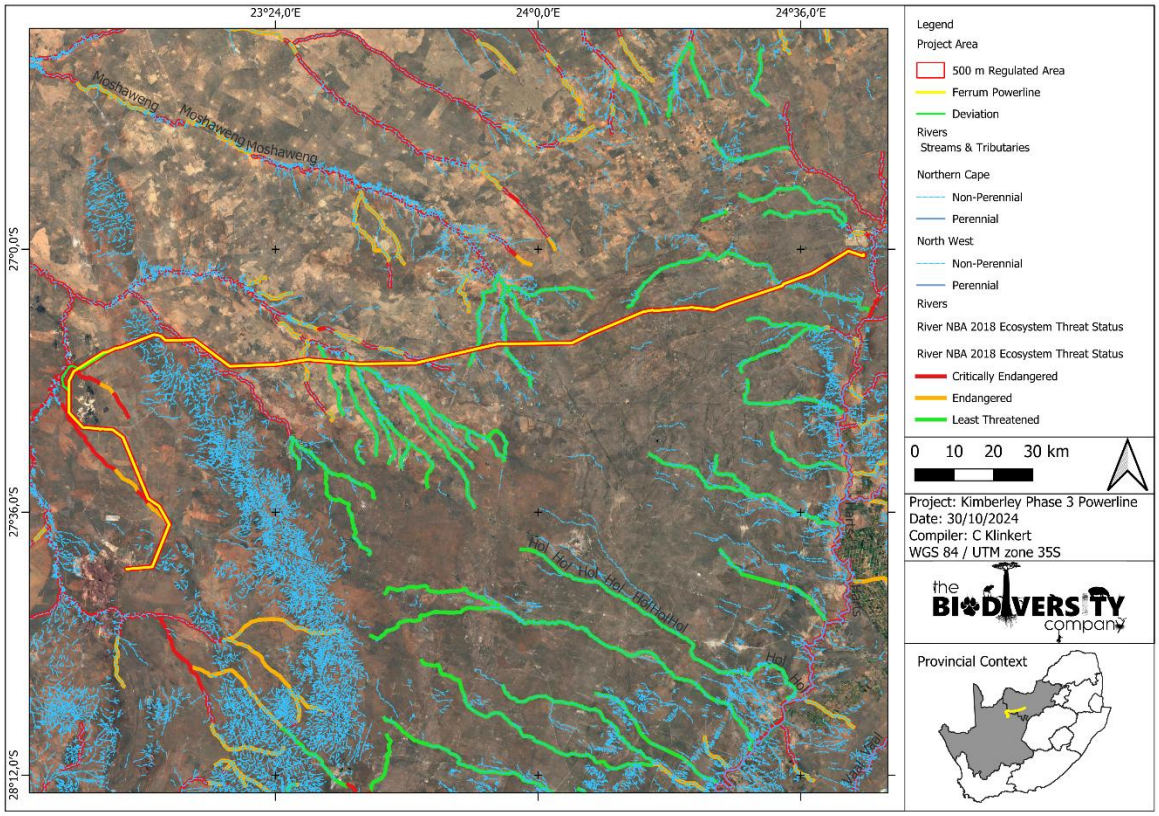


Figure 2-5 ***Desktop river and tributary delineations along the proposed Kimberley Phase 3 Ferrum Mookodi Powerline.***

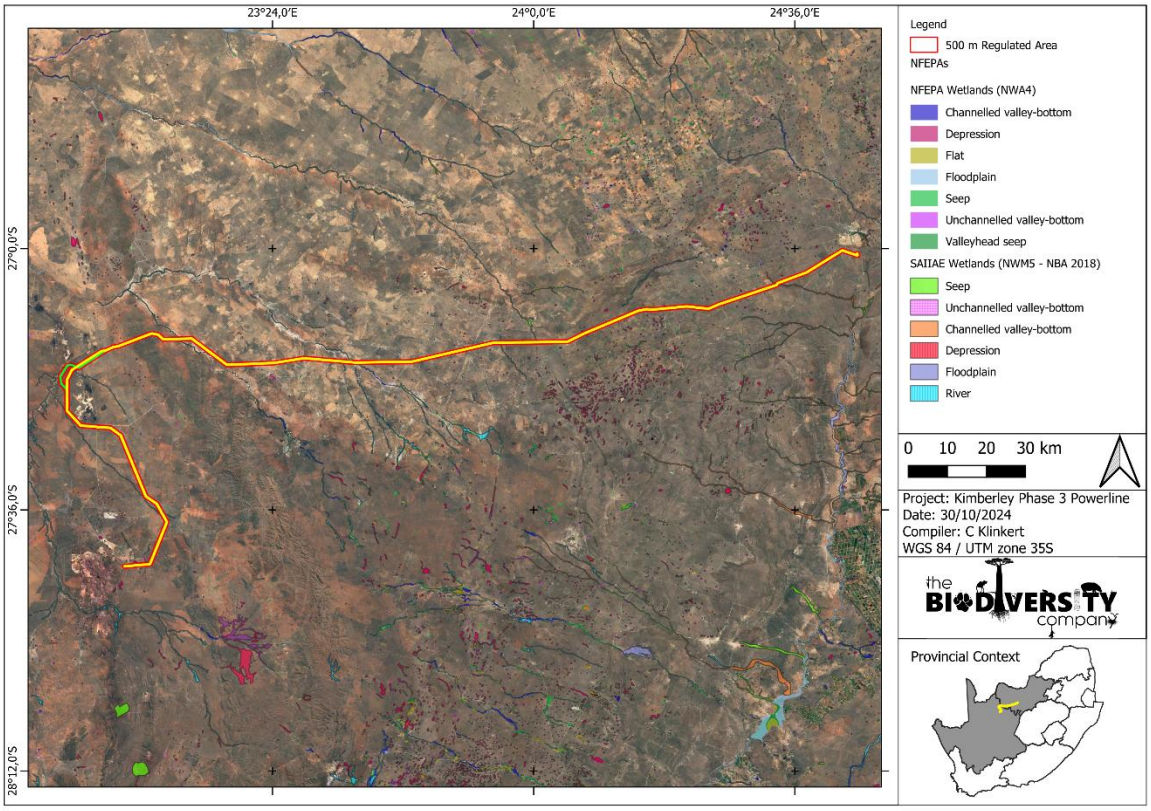


Figure 2-6 ***Desktop wetland and watercourse delineations along the proposed Kimberley Phase 3 Ferrum Mookodi Powerline.***

2.4 Walkdown

The walkdown assessment covered the majority of the powerline. Certain portions of the powerline were not able to be surveyed on foot due to access restrictions. However, all of the sensitive areas were identified and surveyed. During the walkdown assessment multiple water resources were identified and delineated (Figure 2-8). Due to the scale of the project, three main hydrogeomorphic units have been used to classified the different watercourse features. The numerous features that are intercepted by the proposed powerline have been grouped into one of the three watercourse features, namely:

- Riverine systems including the associated riparian zone (HGM 1);
- Wetland systems (HGM 2); and
- Drainage features (HGM 3).

The different watercourse features were grouped according to their sensitivity, functionality as well as the impacts of the pylons on the systems. During the walkdown it was evident that multiple pylons will be situated within drainage features and wetland buffer zones, and several pylons will be located within close proximity to riverine systems and riparian zones. The delineations of the watercourses within the project area of influence are shown in Figure 2-9 to Figure 2-14.

Figure 2-7 Examples of the different water resources found during the walk down. A & B) Riverine systems; C) Riverine system with riparian zone; and D) Riparian zone

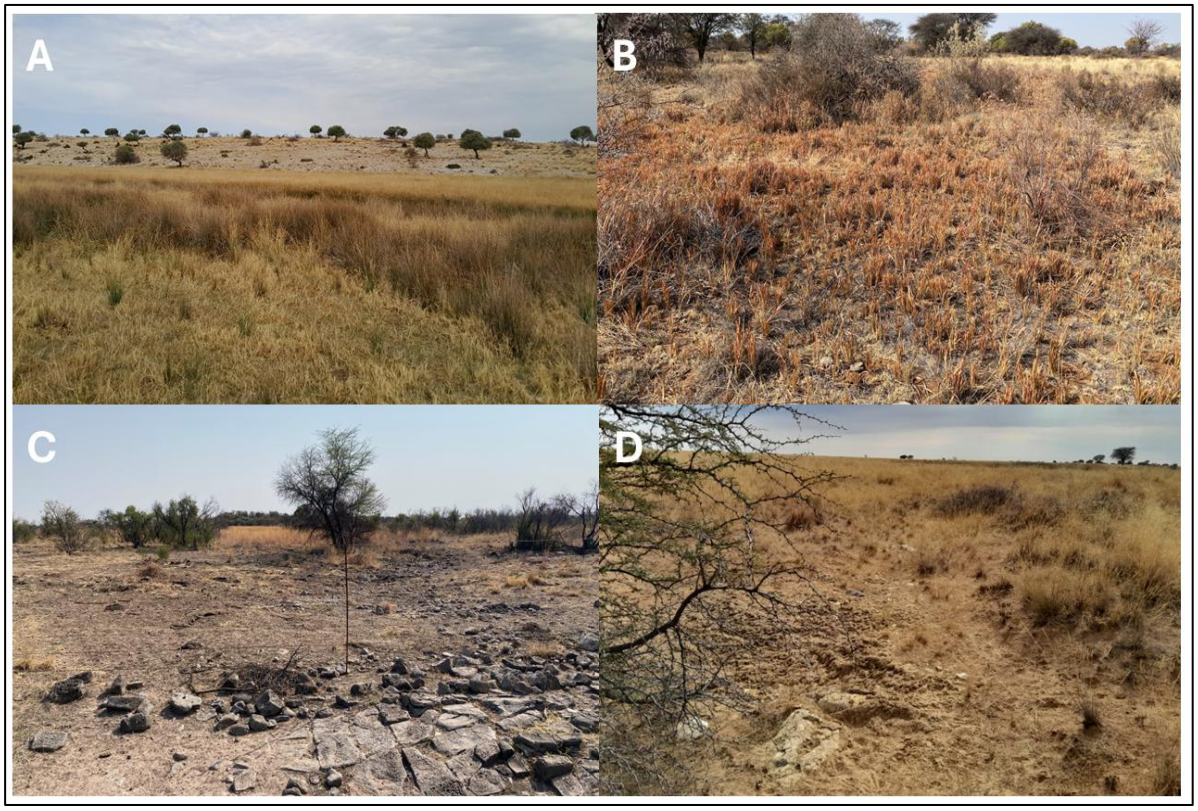


Figure 2-8 Examples of the different water resources found during the walk down. A & B) Wetlands; and C & D) Drainage features

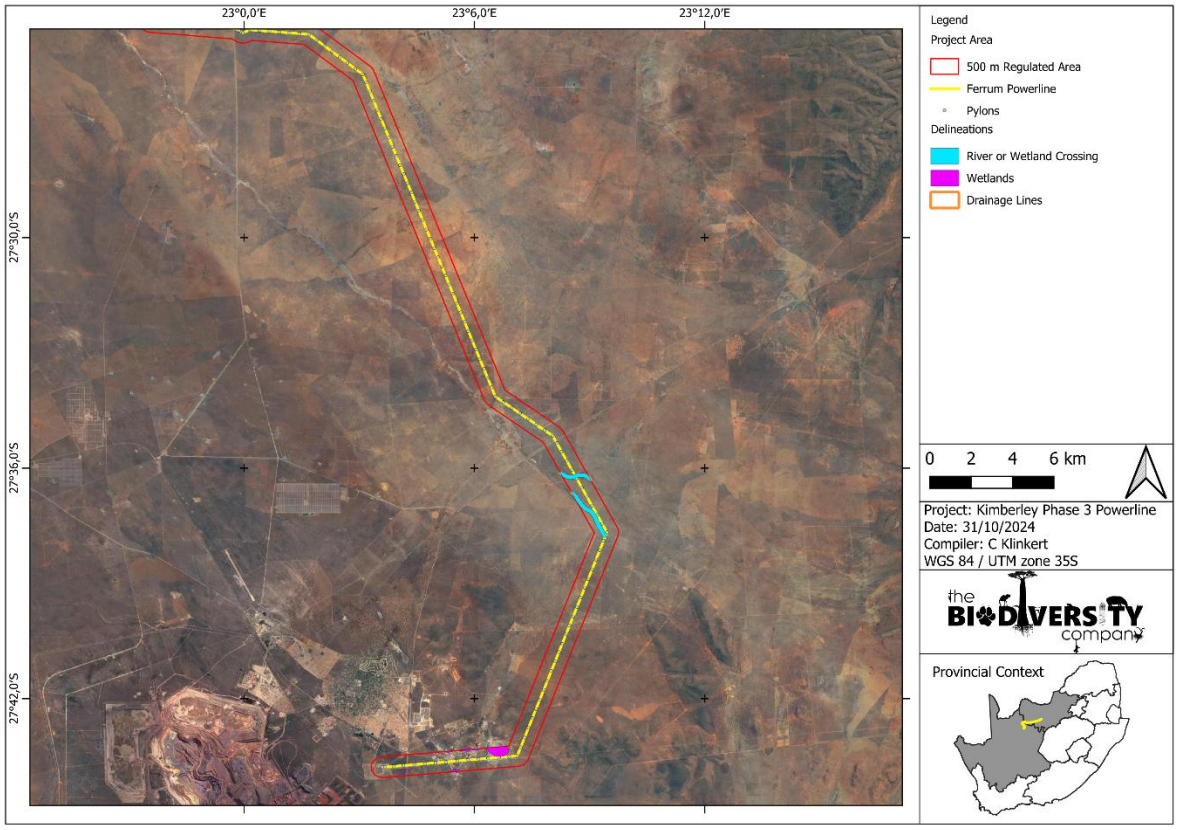


Figure 2-9 Field delineations of the water resources between Ferrum Gantry and pylon 2 FER MOO 99.

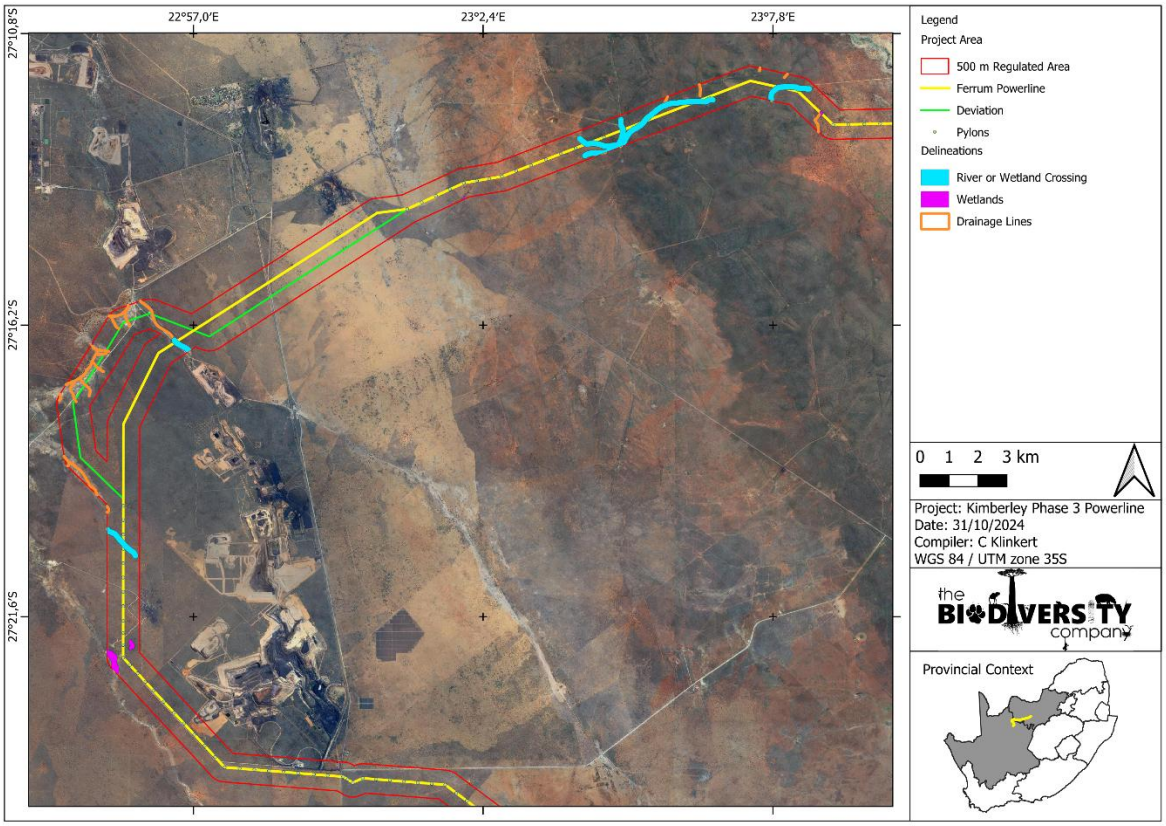


Figure 2-10 ***Field delineations of the water resources between pylon 2 FER MOO 100 and pylon 2 FER MOO 200, and the proposed deviation powerline route.***

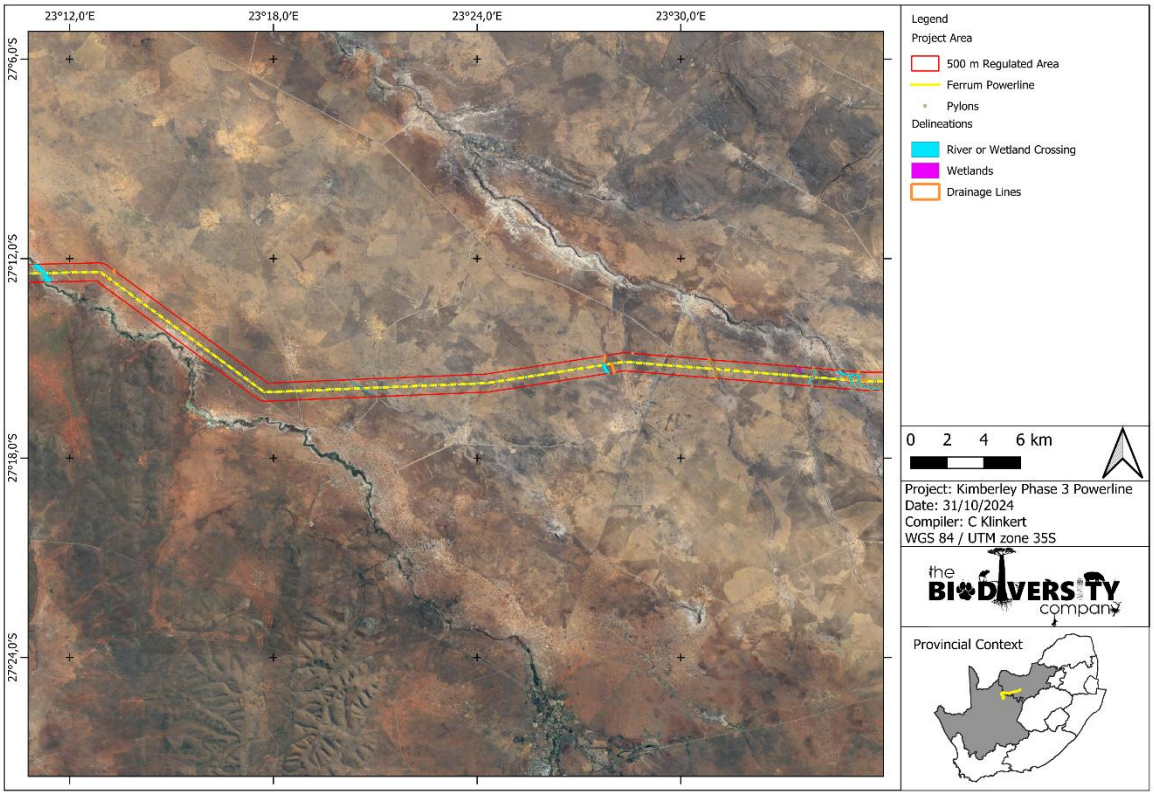


Figure 2-11 ***Field delineations of the water resources between pylon 2 FER MOO 201 and pylon 2 FER MOO 305.***

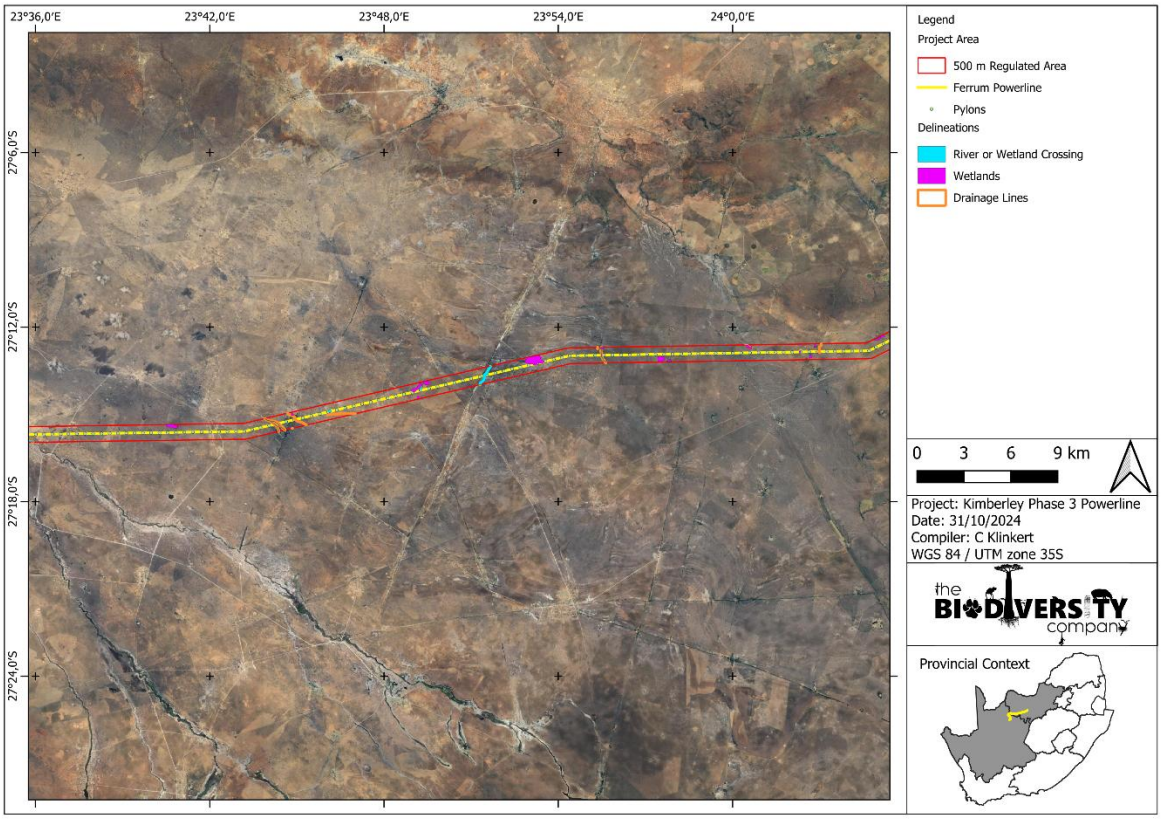


Figure 2-12 Field delineations of the water resources between pylon 2 FER MOO 306 and pylon 2 FER MOO 400.

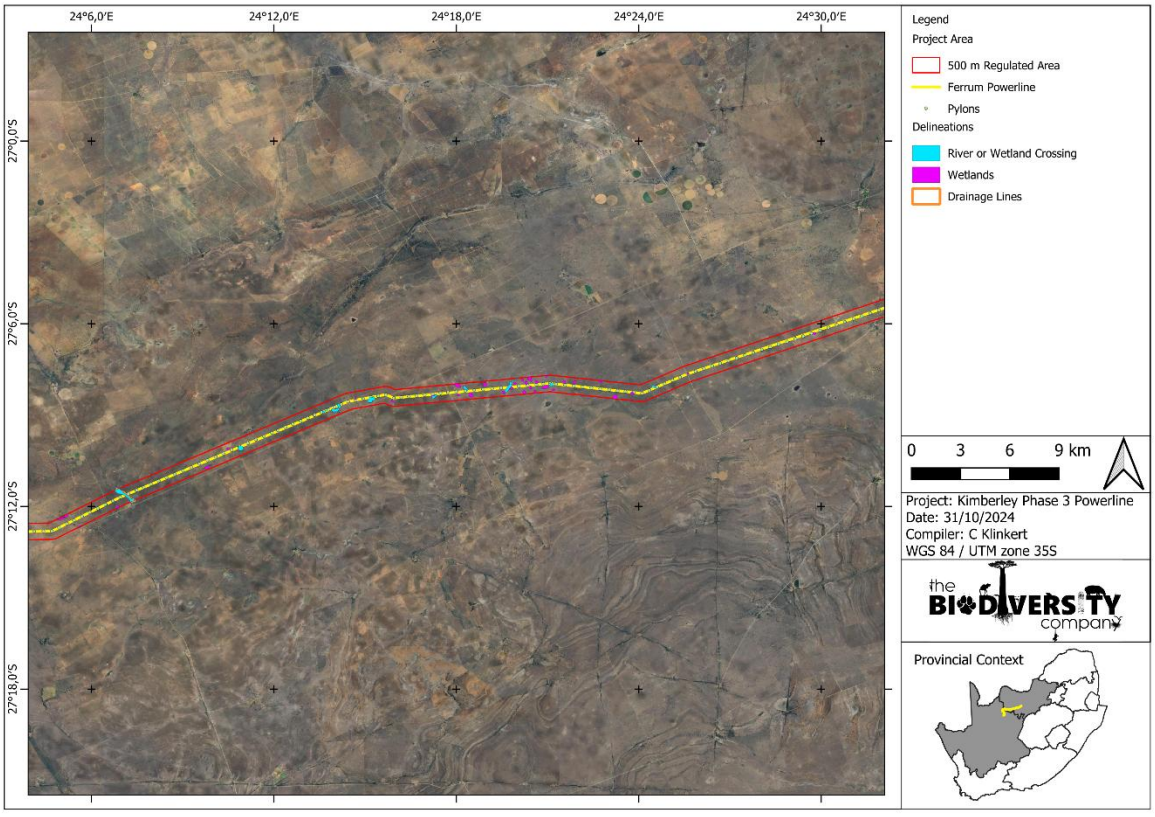


Figure 2-13 Field delineations of the water resources between pylon 2 FER MOO 400 and pylon 2 FER MOO 500.

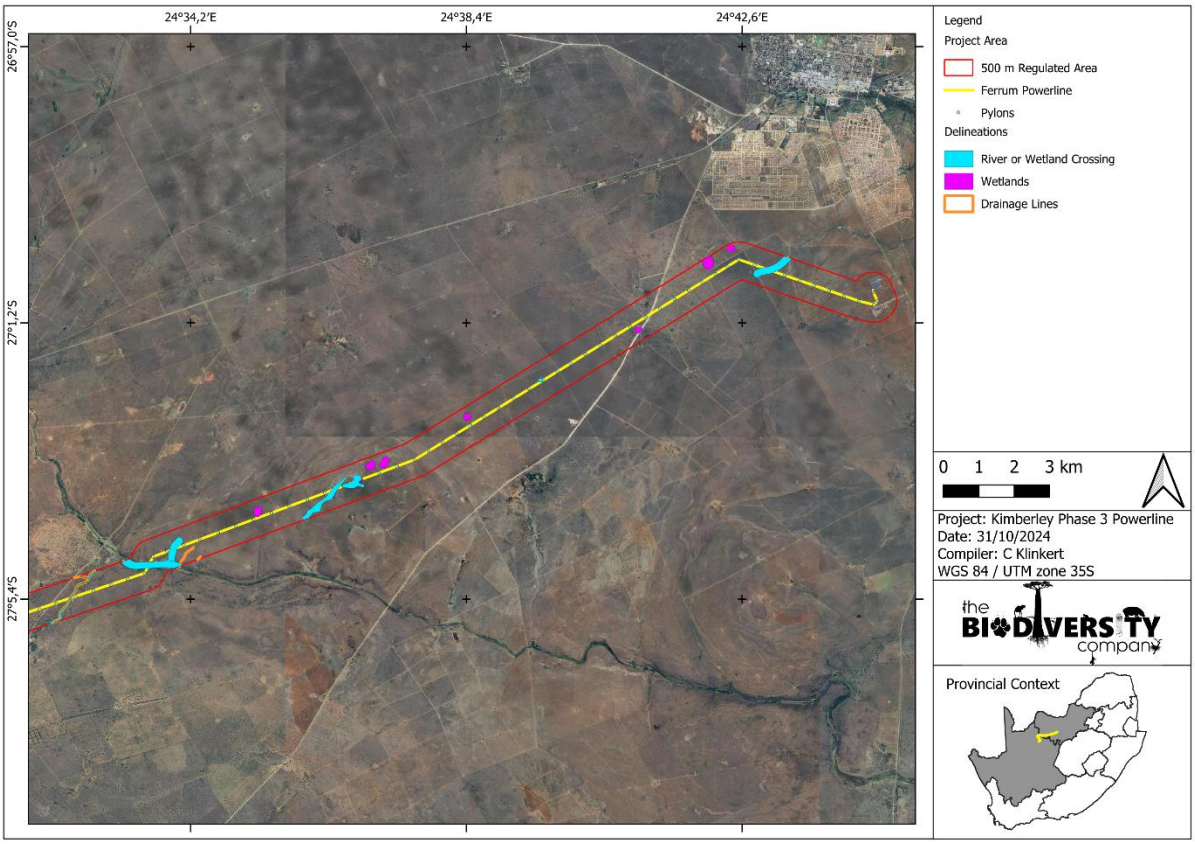


Figure 2-14 Field delineations of the water resources between pylon 2 FER MOO 500 and Gantry at the Mookodi Substation

The findings of the walkdown are presented in Table 2-3. Using the delineations and the in-field data gathered, it was found that multiple pylons should be moved before the final route can be approved. The main focus is on the pylons that are located within or near a main watercourse, including a riverine system with a riparian zone, or a wetland. These pylons may cause high adverse impacts to the watercourse systems; therefore, recommendations have been made to reduce foreseen impacts. During this assessment it was found that 20 proposed pylons locations are within or close to a riverine system with a riparian zone, or a wetland. However, only 11 of these pylons are recommended to be moved. The remaining 9 pylons may be placed at the proposed location, as long as all of the mitigations measures provided in the EIA are met. These pylons will have the biggest impact on the water resources and should be moved, (where necessary), and thoroughly implement mitigation measures to limit their impacts on the water resources. Additionally, a possible deviation to the powerline between the pylons 137 and 152 has been identified as a high impact to the wetland system which runs parallel to the deviation powerline. Hence, the portion of the powerline proposed as a deviation will have a high impact on the nearby watercourses and is not the ideal powerline route with regards to watercourses.

The pylons located within wetland buffer zones, or within or in close proximity to the delineated drainage features will also have impacts on the water resources but to a lesser degree than the pylons close to the riparian zones and wetlands. During this assessment it was found that 32 proposed pylon locations are within or close to the drainage features and/or wetland buffer zones. However, only 21 of these pylons are recommended to be moved (if possible). The

remaining 11 pylons may be placed at the proposed location, as long as all of the mitigations measures provided in the EIA are met.

Thus, a total of 32 pylons should be moved before the Kimberley Phase 3 Ferrum Mookodi powerline can commence. *It is important that if pylons cannot be moved that all the mitigations provided are adhered to.*

Table 2-3 Impact rating of the different pylons to the water resources.

No Impact	Impact to Drainage Features (Alluvial Fans)/ Within Wetland Buffer	Impact to Riparian Zone/ Wetland
Ferrum Gantry	12 (minimise impacts through mitigations)	Deviation between 137 to 152 (pylon cannot be placed within the 100 m river buffer; minimise impacts through mitigations)
1 to 11 and 13	14 and 15 (minimise impacts through mitigations)	211 and 212 (minimise impacts through mitigations)
16 to 20	21 (minimise impacts through mitigations)	299 to 301 (minimise impacts through mitigations)
22 to 27	28 (move 50 m south; minimise impacts through mitigations)	338 (move 40 m west; minimise impacts through mitigations)
29 to 37	38 to 40 (move 30 m east. Minimise impacts through mitigations)	339 (move 100 m –west or south; minimise impacts through mitigations)
41 to 43	Deviation between 137 to 152 (pylon cannot be placed within the 100 m river buffer. minimise impacts through mitigations)	411 and 412 (minimise impacts through mitigations)
44 (minimise impacts through mitigations)	177 (move 30 m east; minimise impacts through mitigations)	426 (move 130 m east or west; minimise impacts through mitigations)
45 to 71	183 (move 70 m north; minimise impacts through mitigations)	437 (move 30 m west; minimise impacts through mitigations)
72 (minimise impacts through mitigations)	186 (move 40 m west; minimise impacts through mitigations)	444 (move 50 m north; minimise impacts through mitigations)
73 to 125	187 (move 40 m east; minimise impacts through mitigations)	466 (move 100 m north or west; minimise impacts through mitigations)
126 to 127 (minimise impacts through mitigations)	190 (move 50 m south-east; minimise impacts through mitigations)	479 (move 40 m north or east; minimise impacts through mitigations)
128 to 133	198 (move 50 m south-east; minimise impacts through mitigations)	512 and 513 (minimise impacts through mitigations)
134 to 135 (minimise impacts through mitigations)	211 and 212 (minimise impacts through mitigations)	523 (move 50 m west; minimise impacts through mitigations)
136 to 149	249 (move 100 m east or west; minimise impacts through mitigations)	524 (move 100 m south or southeast; within a wetland buffer; minimise impacts through mitigations)
150 to 151 (minimise impacts through mitigations)	293 (move 30 m west; minimise impacts through mitigations)	525 (move 50 m east; within a wetland buffer; minimise impacts through mitigations)
152 to 170 (including deviation)	232 (move 50 m west; minimise impacts through mitigations)	537 (move 100 m east or south; minimise impacts through mitigations)
171 to 174 and 176	340 (move 40 m west; minimise impacts through mitigations)	
175 (minimise impacts through mitigations)	349 (move 20 m south; minimise impacts through mitigations)	
178 to 181	377 (move 40 m west; minimise impacts through mitigations)	
182 (minimise impacts through mitigations)	405 (move 50 m east; minimise impacts through mitigations)	
184 to 185 and 188	432 (minimise impacts through mitigations)	
189 (minimise impacts through mitigations)	461 (move 170 m northeast or east; minimise impacts through mitigations)	
191 (minimise impacts through mitigations)	471 and 472 (minimise impacts through mitigations)	
192 to 195	491 (move 100 m south or southwest; minimise impacts through mitigations)	

196 to 197 and 199 (minimise impacts through mitigations)	508 (move 50 m east; minimise impacts through mitigations)	
200	521 (move 50 m north; minimise impacts through mitigations)	
201 (minimise impacts through mitigations)	547 (move 20 west; minimise impacts through mitigations)	
202 to 207 and 210	553 (move 100 east or southeast; minimise impacts through mitigations)	
208 to 209 (minimise impacts through mitigations)		
213 to 249		
250 to 273 and 275		
274 and 276 to 278 (minimise impacts through mitigations)		
279 to 284		
285 to 286 (minimise impacts through mitigations)		
287 to 292		
294 to 296 (minimise impacts through mitigations)		
297 to 298		
302 to 330		
331 and 333 (minimise impacts through mitigations)		
334 to 337		
341 to 347		
348 (minimise impacts through mitigations)		
350 to 356		
357 (minimise impacts through mitigations)		
358 to 362 and 365		
363 to 364 (minimise impacts through mitigations)		
366 to 368 (minimise impacts through mitigations)		
369		
370 to 371 (minimise impacts through mitigations)		
372 to 376		
378 to 386		
387 to 389 (minimise impacts through mitigations)		
390 to 394		
395 to 397 (minimise impacts through mitigations)		
398 to 404		
406 to 410		
413 to 425		
427 to 431		
433 to 436		
438 (minimise impacts through mitigations)		
439 to 443		
445 to 451		
452 (minimise impacts through mitigations)		
453 to 455		
456 and 458 (minimise impacts through mitigations)		
457 and 459		
460 (minimise impacts through mitigations)		

462 to 465 (minimise impacts through mitigations)		
467 to 470 (minimise impacts through mitigations)		
473 to 475 and 478		
476 to 477 (minimise impacts through mitigations)		
480 to 485		
486 (minimise impacts through mitigations)		
487 to 490		
492 to 507		
509 to 510 (minimise impacts through mitigations)		
511		
514 to 515 (minimise impacts through mitigations)		
516 to 520		
526 and 529 (minimise impacts through mitigations)		
527 to 528 and 530 to 532		
533 to 534 (minimise impacts through mitigations)		
535 to 536		
537 to 546		
548 to 552		
554 (minimise impacts through mitigations)		
555 to 557		
558 to 559 (minimise impacts through mitigations)		
560 to 562		
Gantry		

2.5 Buffer Requirements

The buffer requirements for all wetlands within PAOI were calculated using the Site-Based Tool: Determination of buffer zone requirements for wetland ecosystems (Macfarlane *et al.,* 2014), as well as NEMA buffer guidelines as per NEMA (Act no. 107 of 1998). The recommended buffer zones were calculated and are presented in Table 2-4 below. According to the buffer guidelines the maximum required buffer should be applied to a system (Macfarlane, *et al*., 2014). A minimum buffer zone strip of at least 32 meters wide is required for rivers as per NEMA (Act no. 107 of 1998).

The main stem rivers classified as NFEPA scale rivers are given a **32 m** buffer, the wetland systems, including all of the wetland types identified along the powerline, were given a **25 m** buffer, and the drainage features, including non-perennially drainage lines and tributaries were given a **15 m** buffer. A summary of the prescribed buffers are presented below in Table 2-4.

Table 2-4 Buffer requirements for the relevant wetland features

Aspect	Post-Mitigation
NBA Rivers and Riparian Zones	32 m
Wetlands	25 m
Drainage Features	15 m

2.6 Observations

The following are observations made in the general area during the walkdown. These are discussed below due to the nature of the occurrence of these fauna and flora being ubiquitous throughout the area:

- All drainage features and the majority of the wetlands assessed within the regulated area lacked surface water (dry) at the time of the walkdown.
- The exceptions to the point above where surface water was present included specific river crossings, namely:
    - Kuruman River (pylons 211 and 212);
    - Matlhwaring River (pylons 300 and 301); and
    - Korobela (pylons 512 and 513).
- The riparian zones, wetlands and the drainage features ranged between the present ecological state (PES) classes “C – Moderately Modified” and “D – Largely Modified”.
- The ecosystem services of the systems were rated as follows:
    - Moderately High for the riparian zones and saturated rivers;
    - Intermediate for the wetlands and large drainage features; and
    - Moderately Low for the singular and smaller drainage lines.

- Some powerline towers were noted to be located within the watercourses or in close proximity to the watercourse or drainage lines/ areas. Therefore, alternative positions or locations were suggested. These suggestions are based solely on water resources features and layers for the project area. Therefore, other sensitivity layers (such as soils, terrestrial fauna, and flora) should be consulted before approval.

2.7 Site Sensitivity Verification

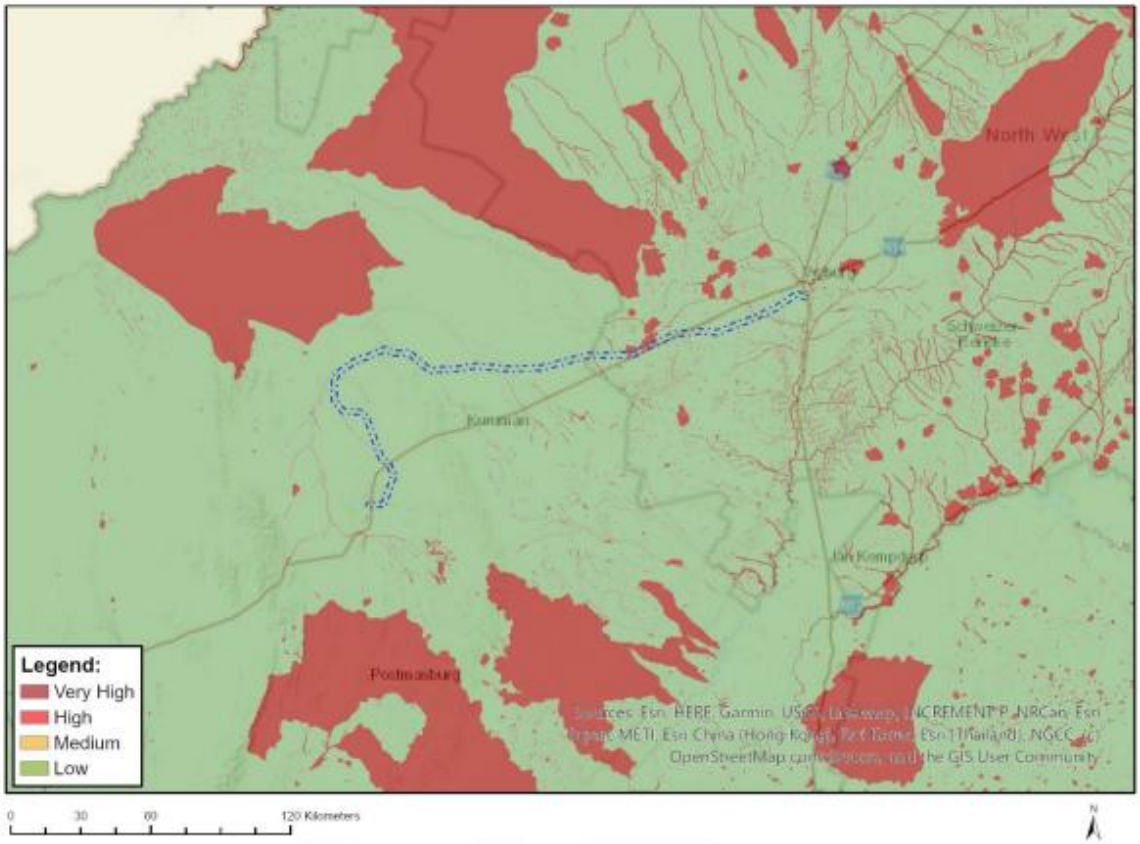
2.7.1 Desktop Ecological Sensitivity

The following is deduced from the National Web-based Environmental Screening Tool (Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended):

- Aquatic Biodiversity Theme sensitivity as “Low” for the (Figure 2-15), attributed to the absence of wetland system; and

- Designated Critical Biodiversity Areas (CBA), Ecological Support Areas (ESA), rivers and wetlands are assigned a “Very High” sensitivity.

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	CBA 1
Very High	CBA 2
Very High	ESA 1
Very High	ESA 2
Very High	Rivers_C
Very High	Rivers_Z
Very High	Wetlands_(River)
Very High	Wetlands_Eastern Kalahari Bushveld Bioregion (Depression)
Very High	Wetlands_Eastern Kalahari Bushveld Bioregion (Seep)
Very High	Wetlands_Eastern Kalahari Bushveld Bioregion (Valley-bottom)

Figure 2-15 Aquatic Biodiversity Theme Sensitivity for the project area

2.7.2 Screening Tool Comparison

The allocated sensitivities for each of the relevant themes are either disputed or validated for the assessed areas as presented in Table 2-5 below. A summative explanation for each result is provided as relevant. The specialist assigned ratings are based on the presence (very high)

or absence (low) of features and do not necessarily relate to the ecological or functional characteristics of the identified systems.

Table 2-5 Summary of the screening tool vs specialist assigned sensitivities

Features	Screening Tool Theme	Environmental Screening Tool Sensitivity	Specialist Sensitivity	Tool Validated or Disputed by Specialist - Reasoning
Rivers	Aquatic Biodiversity Theme	Very High	Very High	Screening Tool Sensitivity Validated. Rational for the specialist assigned 'Very High' rating: These riverine systems were verified to be present and represent systems that include or have connectivity to main river channels. Subsequently, increasing their importance in terms of biodiversity.
Wetlands	Aquatic Biodiversity Theme	Very High	Very High	Screening Tool Sensitivity Validated. Rational for the specialist assigned 'Very High' rating: These wetland areas were verified to be present and represent systems that include or have connectivity to main river channels. Subsequently, increasing their importance in terms of biodiversity.

3 Risk / Impact Assessment

The section below and associated tables serve to indicate and summarise the significance of perceived impacts on the aquatic ecology of the powerline development. Potential impacts were evaluated against the data captured during the desktop and field assessment to identify relevance to the project area.

As per the Department of Environmental Affairs (2013) mitigation hierarchy (Figure 3-1), these risks should be minimised through the implementation of the various mitigation measures as outlined below. The mitigation actions required to lower the risk of the project related impacts are provided after the impact ratings section of this report.

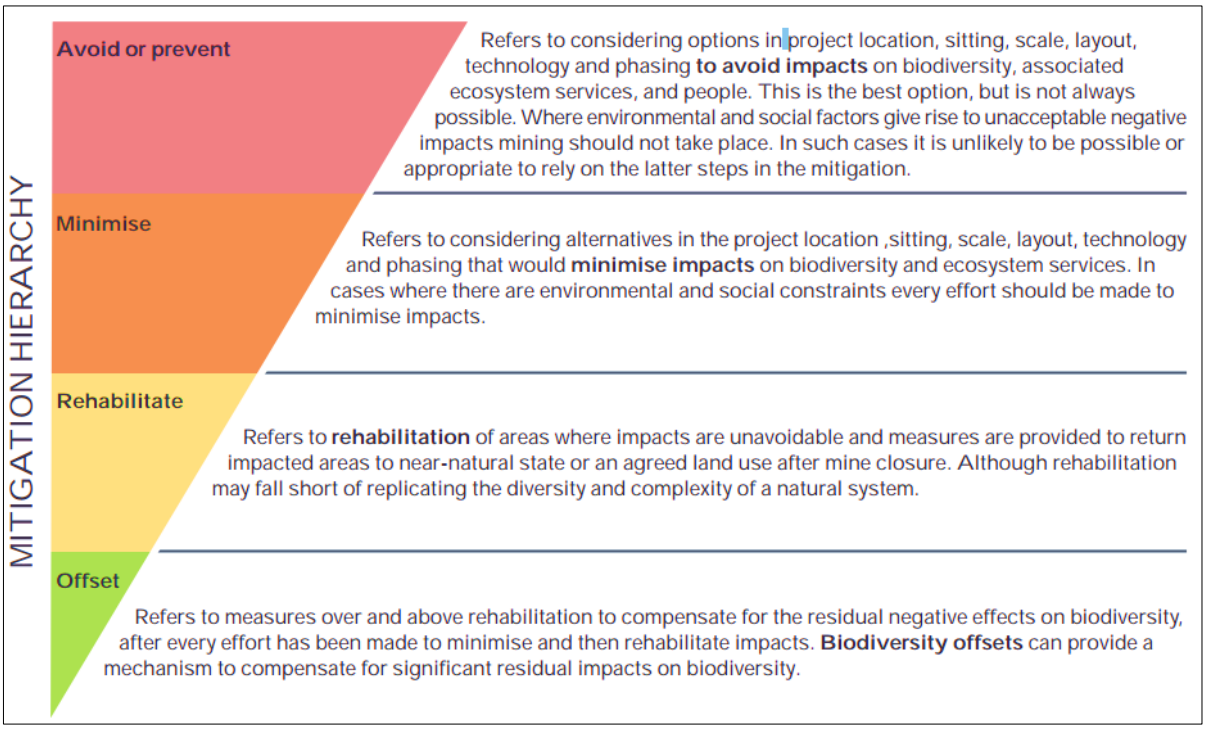


Figure 3-1 The mitigation hierarchy as described by the DEA (2013).

The risks posed by the proposed development to watercourses within the project areas are provided in the following tables for scenarios with mitigation, as it is assumed mitigation will be implemented. Two risk assessments were compiled; one for the rivers and riparian zones, and one for the wetlands and drainage features.

Three levels of risk have been identified and determined for the overall risk assessment - these include low, medium, and high risk. High risk areas are associated with watercourses that will be directly impacted on by the proposed developments. Medium risk refers to watercourses that are either on the periphery of the infrastructure and at an indirect risk, or watercourses that could be avoided if feasible. Low risk areas are watercourses beyond the project area that would be avoided. No high risks are expected for the powerline developments. This distinction is primarily based on infrastructures proximity to a watercourse with each potential risk further unpacked in the relevant sections.

3.1 Present Impacts to the Aquatic Ecosystem

Considering the anthropogenic activities and influences within the landscape, several current impacts to the watercourses were observed within the project area. These include:

- Existing farm roads and main roads (and associated altered surface hydrology and wash of hydrocarbons into watercourses;
- Erosion from slopes, riverbanks, and roads (especially roads lacking anti-erosion measures); and
- Reduced vegetation cover and diversity resulting from disturbances to the wetlands, including livestock, informal developments and villages.

Anthropogenic activities drive habitat destruction causing displacement of aquatic and terrestrial fauna and flora and possibly direct mortality. Land clearing for development infrastructure (all inclusive) destroys local wildlife habitat and can lead to the loss of local breeding grounds, nesting sites and wildlife movement corridors such as rivers, streams and drainage lines and their associated riparian area. The removal of natural vegetation from these areas and their respective buffers will reduce the habitat available for fauna and may reduce ecological integrity and species diversity within the area depending on the intensity and footprint of clearing and destruction caused.

3.1.1 Anticipated Risks / Impacts

During construction (and without mitigation) the clearing and preparation of the powerline towers and storage of equipment may lead to the disturbance and degradation of watercourse vegetation, increased bare surfaces, runoff, and potential for erosion. Additionally, the excavation, levelling and installation of towers may lead to increased sediment loads and contamination of watercourses from building materials and chemicals through runoff, hydrocarbons due to leaks and spillages from machinery, equipment & vehicles as well as contamination and eutrophication of watercourse systems with human sewerage and litter. It is also assumed that most, if not all of the watercourses and buffers identified can be avoided for the development.

Once constructed, the routine operation and maintenance of the powerline route will invariably result in the degradation of vegetation due to mandatory and routine clearing of vegetation within the powerline servitude. These routes together with any residual disturbances from construction may facilitate proliferation of alien and invasive species, if not managed appropriately. Risks associated with decommissioning the powerline infrastructure centre on vegetation degradation from vehicle access and increased bare surfaces, runoff, and potential for erosion from the removal of the tower infrastructure.

Overall, the majority of the anticipated risks are considered to have a Low impact significance provided that the mitigation measures presented in section 3.7 are effectively implemented, and the pylons located within wetland systems that are high risk are moved as suggested. The only moderate risks that presented for the rivers and riparian zones are relating to hydrological alternations and disturbed riverbanks and surrounding topography. Under this assumption, it is the opinion of the specialist that the proposed development of the powerline can be favourably considered.

3.2 Assessment of Significance

The assessment of risk significance considers pre-mitigation as well as implemented post-mitigation scenarios. Mitigation measures must be implemented to negate potential impacts to water resources. This section represents the risk / impact assessment for the proposed activity.

3.3 Risk Assessment

This assessment has been completed in accordance with the requirements of the published Government Notice (GN) 4167 by the Department of Water and Sanitation (DWS) (previously GN 509 of 2016 and GN 3139 of 2023). The said notice was published in the Government Gazette (no. 49833) under Section 39 of the National Water Act (Act no. 36 of 1998) in December 2023, for a Water Use Licence (WUL) in terms of Section 21(c) & (i) water uses. The GN 4167 process provides an allowance to apply for a WUL for Section 21(c) & (i) under a General Authorisation (GA), as opposed to a full Water Use Licence Application (WULA). A water use (or potential) qualifies for a GA under GN 4167 when the proposed water use/activity is subjected to analysis using the DWS Risk Assessment Matrix (RAM), provided the identified risks are all considered a low risk and the applicant is listed under Appendix D1 or Appendix D2 of the same notice. This assessment will implement the RAM and provide a specialist opinion on the appropriate water use authorisation.

The various risks anticipated for the different aspects and activities associated with the project were previously detailed above and the associated risk ratings are provided on the following tables.

Table 3-1 Summative results of the Risk Assessment conducted for the proposed project on the Riparian zones

Phase	Activity	Impact	Pre-Mitigation Risk Ratings	Post- Mitigation Risk Ratings
CONSTRUCTION	Site Preparation	Clearing of vegetation for project infrastructure	M	L
		Alteration of surface topography (excavations, reshaping and compacting)	M	M
	Site camp operation	Stormwater management (potential erosion and sedimentation)	L	L
		Increase bare surface, runoff	L	L
		Storage of chemicals, mixes, and fuels with associated accident spills	L	L
		Indiscriminate dumping of waste products or construction materials	L	L
		Stockpiling of soils	L	L
		Operation of vehicles, equipment, and machinery	L	L
	Access	Construction and upgrade of access roads	M	M
		Alteration of hydrodynamic patterns due to crossing construction	M	L
	Landscaping	Final landscaping and reshaping	+	+
OPERATIONAL	Stormwater	Operation of stormwater management infrastructure roads (runoff generated from hardened surfaces)	M	M
	Pollution	Waste Management	M	L

	Maintenance	Maintenance of infrastructure (powerlines and roads)	**L**	**L**
	Watercourse interference	Operation of wetland crossings (culverts)	**M**	**M**
	Access	Vehicle Traffic	**L**	**L**

Table 3-2 Summative results of the Risk Assessment conducted for the proposed project on the Drainage features (Alluvial fans)

Phase	Activity	Impact	Pre-Mitigation Risk Ratings	Post- Mitigation Risk Ratings
CONSTRUCTION	Site Preparation	Clearing of vegetation for project infrastructure	**M**	**L**
		Alteration of surface topography (excavations, reshaping and compacting)	**M**	**L**
	Site camp operation	Stormwater management (potential erosion and sedimentation)	**L**	**L**
		Increase bare surface, runoff	**L**	**L**
		Storage of chemicals, mixes, and fuels with associated accident spills	**L**	**L**
		Indiscriminate dumping of waste products or construction materials	**L**	**L**
		Stockpiling of soils	**L**	**L**
		Operation of vehicles, equipment, and machinery	**L**	**L**
	Access	Construction and upgrade of access roads	**M**	**L**
		Alteration of hydrodynamic patterns due to crossing construction	**L**	**L**
	Landscaping	Final landscaping and reshaping	**+**	**+**
OPERATIONAL	Stormwater	Operation of stormwater management infrastructure for parking spaces, houses and roads (runoff generated from hardened surfaces)	**M**	**L**
	Pollution	Waste Management	**L**	**L**
	Maintenance	Maintenance of infrastructure (powerlines and roads)	**L**	**L**
	Watercourse interference	Operation of wetland crossings (culverts)	**M**	**L**
	Access	Vehicle Traffic	**L**	**L**

3.4 Impact Assessment

An impact assessment has also been conducted, using the methodology provided. The impact significance is calculated as follows (Appendix A):

This rating is formulated by adding the sum of the numbers assigned to extent (E), duration (D) and magnitude (M) and multiplying this sum by the probability (P) of the impact. S=(E+D+M) P

Table 3-3 Legend for Impact Significance

Score	Significance	Description of Significance
(<30)	Low	The activity will have a low impact in the environment. This impact would not have a direct influence on the decision to develop in the area.
(30-60)	Medium	Medium Impact – the activity will have a medium impact on the environment. The impact could influence the decision to develop in the area unless it is effectively mitigated.
(>60)	High	The activity will have a high impact on the environment. The impact must have an influence on the decision process to develop in the area.

Several medium impacts were identified for the construction and operational phases of the project, but the overall residual impact was determined to be low. The following tables present the impact ratings for the construction and operational phases of the project.

Table 3-4 Impact assessment for the construction phase

Impact	Prior to mitigation							Post mitigation						
	Duration of the Impact	Extent of the Impact	Magnitude of the Impact	Reversibility	Probability of Occurrence	**Significance**	Significance	Duration of the Impact	Extent of the Impact	Magnitude of the Impact	Reversibility	Probability of Occurrence	**Significance**	Significance
Clearing of vegetation for project infrastructure	4	3	4	4	4	44		3	2	4	3	3	27	
	Long term (ceases after the operational life span of the project)	Regional (within the three local municipalities)	Low	Irreversible	High probability (most likely to occur)		**Medium**	Medium term (5-15 years)	Local (site boundary and immediate surrounds)	Low	Barely reversible	Medium probability (distinct probability that the impact will occur)		**Low**
Alteration of surface topography (excavations, reshaping and compacting)	4	3	4	4	4	44		3	2	2	3	3	21	
	Long term (ceases after the operational life span of the project)	Regional (within the three local municipalities)	Low	Irreversible	High probability (most likely to occur)		**Medium**	Medium term (5-15 years)	Local (site boundary and immediate surrounds)	Minor	Barely reversible	Medium probability (distinct probability that the impact will occur)		**Low**
Stormwater management (potential erosion and sedimentation)	3	2	4	3	3	27		3	2	2	2	2	14	
	Medium term (5-15 years)	Local (site boundary and immediate surrounds)	Low	Barely reversible	Medium probability (distinct probability that the impact will occur)		**Low**	Medium term (5-15 years)	Local (site boundary and immediate surrounds)	Minor	Partly reversible	Low probability (unlikely to occur)		**Low**
Increase bare surface, runoff	3	2	4	3	3	27		2	2	2	2	2	12	
			Low				**Low**			Minor				**Low**

	Medium term (5-15 years)	Local (site boundary and immediate surrounds)		Barely reversible	Medium probability (distinct probability that the impact will occur)			Short term (1-5 years)	Local (site boundary and immediate surrounds)		Partly reversible	Low probability (unlikely to occur)		
Storage of chemicals, mixes, and fuels with associated accident spills	3	2	4	2	3	27		2	1	2	1	2	10	
	Medium term (5-15 years)	Local (site boundary and immediate surrounds)	Low	Partly reversible	Medium probability (distinct probability that the impact will occur)		**Low**	Short term (1-5 years)	Site (site only)	Minor	Completely reversible	Low probability (unlikely to occur)		**Low**
Indiscriminate dumping of waste products or construction materials	2	2	4	2	3	24		1	1	2	1	2	8	
	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Low	Partly reversible	Medium probability (distinct probability that the impact will occur)		**Low**	Immediate (<1 year)	Site (site only)	Minor	Completely reversible	Low probability (unlikely to occur)		**Low**
Stockpiling of soils	2	2	4	3	3	24		2	2	2	2	2	12	
	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Low	Barely reversible	Medium probability (distinct probability that the impact will occur)		**Low**	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Minor	Partly reversible	Low probability (unlikely to occur)		**Low**
Operation of vehicles, equipment, and machinery	2	2	4	2	3	24		2	2	2	2	2	12	
	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Low	Partly reversible	Medium probability (distinct probability that the impact will occur)		**Low**	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Minor	Partly reversible	Low probability (unlikely to occur)		**Low**
Construction and upgrade of access roads	4	3	4	3	4	44		2	2	2	3	2	12	
	Long term (ceases after the	Regional (within the	Low	Barely reversible	High probability		**Medium**	Short term (1-5 years)	Local (site boundary and	Minor	Barely reversible	Low probability		**Low**

	operational life span of the project)	three local municipalities)			(most likely to occur)				immediate surrounds)			(unlikely to occur)		
Alteration of hydrodynamic patterns due to crossing construction	4	3	4	4	4	44		2	2	2	2	2	12	
	Long term (ceases after the operational life span of the project)	Regional (within the three local municipalities)	Low	Irreversible	High probability (most likely to occur)		**Medium**	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Minor	Partly reversible	Low probability (unlikely to occur)		**Low**
Final landscaping and reshaping	2	2	4	3	3	24		2	2	2	2	2	12	
	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Low	Barely reversible	Medium probability (distinct probability that the impact will occur)		**Low**	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Minor	Partly reversible	Low probability (unlikely to occur)		**Low**

Table 3-5 Impact assessment for the operation phase

Impact	Prior to mitigation							Post mitigation						
	Duration of the Impact	Extent of the Impact	Magnitude of the Impact	Reversibility	Probability of Occurrence	**Significance**	Significance	Duration of the Impact	Extent of the Impact	Magnitude of the Impact	Reversibility	Probability of Occurrence	**Significance**	Significance
Operation of stormwater management infrastructure for parking spaces, houses and roads (runoff generated from hardened surfaces)	3	3	6	3	3	36		2	2	4	2	3	24	
	Medium term (5-15 years)	Regional (within the three local municipalities)	Moderate (environmental functions altered but continue)	Barely reversible	Medium probability (distinct probability that the impact will occur)		**Medium**	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Low	Partly reversible	Medium probability (distinct probability that the impact will occur)		**Low**
	3	2	4	2	3	27		2	1	2	2	2	10	

Waste Management	Medium term (5-15 years)	Local (site boundary and immediate surrounds)	Low	Partly reversible	Medium probability (distinct probability that the impact will occur)		**Low**	Short term (1-5 years)	Site (site only)	Minor	Partly reversible	Low probability (unlikely to occur)		**Low**
Maintenance of infrastructure (powerlines and roads)	3	2	4	2	3	27		2	2	2	2	2	12	
	Medium term (5-15 years)	Local (site boundary and immediate surrounds)	Low	Partly reversible	Medium probability (distinct probability that the impact will occur)		**Low**	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Minor	Partly reversible	Low probability (unlikely to occur)		**Low**
Operation of wetland crossings (culverts)	3	3	6	3	3	36		2	2	4	2	2	16	
	Medium term (5-15 years)	Regional (within the three local municipalities)	Moderate (environmental functions altered but continue)	Barely reversible	Medium probability (distinct probability that the impact will occur)		**Medium**	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Low	Partly reversible	Low probability (unlikely to occur)		**Low**
Vehicle Traffic	3	2	6	3	4	44		2	2	2	2	2	12	
	Medium term (5-15 years)	Local (site boundary and immediate surrounds)	Moderate (environmental functions altered but continue)	Barely reversible	High probability (most likely to occur)		**Medium**	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Minor	Partly reversible	Low probability (unlikely to occur)		**Low**

3.5 Cumulative Impact

The quantitative impact of the proposed project in isolation on freshwater biodiversity is anticipated to be “Low” provided that the suggested mitigation measures are implemented. The cumulative impact of the proposed project on freshwater biodiversity is anticipated to be “Medium”. It should be noted that pre-existing modifications to the systems do exist and are attributed to the land uses in the catchment therefore, the system’s integrity and functionality conditions are not expected to deteriorate further as a result of the proposed activities (unless in the event where mitigation measures are unsuccessful).

No irreplaceable loss of freshwater biodiversity is anticipated at this stage, however in the long-term a marginal loss of systems is potentially attributed to changes of the wetness regime within the area which are not only dependent on land use but also local climate variations.

Table 3-6 Summative results of the Cumulative Impact Assessment for the proposed development

Nature of the Impact: Cumulative wetland habitat disturbance and degradation within the region. The proposed project will inevitably result in some level of hydrological impact on the adjacent watercourses. Due to the natural connectivity of watercourses in the local catchment these impacts have the potential to extend beyond the project footprint and would theoretically be exacerbated when impacts of surrounding land uses and or similar projects are considered.						
Status		**Cumulative Effect**	**Impact Significance**	**Can impact be mitigated?**	**Is the impact acceptable?**	**Proposed Mitigation Measures**
Impact in isolation	Negative	1	10	Yes	Yes	Demarcate areas to be developed; Avoid all sensitive environmental features; Implement all recommended mitigation measures at a project level.
Cumulative impact	Negative	2	42			

3.6 Recommendations

The following are recommendations made in support of the water resource assessment:

- Avoid the delineated watercourse areas where feasible;
- In a case where the tower is located within the delineated watercourse, try and relocate the tower at the highest point to avoid the micro-channel or preferential flow paths;
- If possible, try to avoid the wider area of the watercourse;
- Take special precautions in order to prevent erosion;
- The use of existing roads preferable used to avoid additional impact to the area;
- A competent Environmental Control Officer (ECO) must oversee the construction and rehabilitation phase of the project, with watercourse areas as a priority; and
- An infrastructure monitoring and service plan must be compiled and implemented during the operational phase.

3.7 Mitigation Measures

The purpose of the Biodiversity Impact Management Actions is to present the mitigations in such a way that they can be incorporated into the Environmental Management Programme (EMPr), allowing for more successful implementation and auditing of the mitigations and monitoring guidelines. This mitigation table must be read in conjunction with the Generic Environmental Management Programme (EMPR) for the development and expansion of substation infrastructure for the transmission and distribution of electricity as per No. 42323 GOVERNMENT GAZETTE, 22 MARCH 2019.

Restrict the disturbance and clearance footprint to within 5 m on either side of the proposed powerline route (10 m disturbance corridor). The following measures apply:

- Avoid wetlands and buffers where feasible.
- Implement a rehabilitation plan for any disturbed wetlands. Cleared areas must be rehabilitated and stabilised to avoid impacts to adjacent wetland and buffer areas.
- Although the prescribed post-mitigation buffer as per the national buffer determination tool is 15 m attempt wherever possible to maintain a 33 m buffer on the delineated wetlands to lower the potential for bird collisions which are highest near water resources.
- Reduce the disturbance footprint and the unnecessary clearing of vegetation when traversing the identified drainage lines.
- Make use of existing access routes as much as possible, before new routes are considered. Any selected “new” route must not encroach into the wetland areas.
- Keep tower base excavation and soil heaps neat and tidy.
- Limit construction activities in proximity (< 50 m) to wetlands to the dry season when storms are least likely to wash concrete and sand into wetlands. This is only where towers are within wetlands and buffer areas.
- Ensure soil stockpiles and concrete / building sand are sufficiently safeguarded against rain wash.
- Mixing of concrete must under no circumstances take place in any wetland or their buffers. Scrape the area where mixing and storage of sand and concrete occurred to clean once finished.
- Limit the placement of towers within wetlands and buffer areas where feasible.
- Do not situate any of the construction material laydown areas within any wetland or buffer area. Try adhering to a 30 m buffer in these instances.
- No machinery should be allowed to park in any wetlands or buffer areas.
- Promptly remove all alien and invasive plant species that may emerge during construction (i.e. weedy annuals and other alien forbs) must be removed.

- Limit soil disturbance
- The use of herbicides is not recommended in or near wetlands (opt for mechanical removal).
- Appropriately stockpile topsoil cleared from the powerline footprint.
- Clearly demarcate powerline construction footprint, and limit all activities to within this area.
- Minimize unnecessary clearing of vegetation beyond the tower footprints and powerline corridors.
- Lightly till any disturbed soil around the tower footprint to avoid compaction.
- See mitigation for increased bare surfaces, runoff and potential for erosion
- Re-instate topsoil and lightly till transmission tower disturbance footprint.
- Make sure all excess consumables and building materials / rubble is removed from site and deposited at an appropriate waste facility.
- Appropriately contain any generator diesel storage tanks, machinery spills (e.g. accidental spills of hydrocarbons oils, diesel etc.) or construction materials on site (e.g. concrete) in such a way as to prevent them leaking and entering wetland or buffer areas.
- Mixing of concrete must under no circumstances take place within the wetland or buffer areas.
- Check for oil leaks, keep a tidy operation, and promptly clean up any spills or litter.
- Provide appropriate sanitation facilities for workers during construction and service them regularly.
- The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected must be disposed of at a licensed disposal facility;
- The Contractor must be in possession of an emergency spill kit that must be complete and available at all times on site;
- Any possible contamination of topsoil by hydrocarbons must be avoided. Any contaminated soil must be treated in situ or be placed in containers and removed from the site for disposal in a licensed facility;
- Clear vegetation in line with the 2010 Eskom Environmental Procedure Document entitled "Procedure for vegetation clearance and maintenance within overhead powerline servitudes";
- Avoid the use of herbicides and diesel to treat stumps within the wetland and buffer areas;

- Make use of existing access routes as much as possible, before new routes are considered. Any selected “new” route must not encroach into the wetland areas; and
- In line with the 2010 Eskom Environmental Procedure Document entitled "Procedure for vegetation clearance and maintenance within overhead powerline servitudes" all alien vegetation along the transmission servitude should be managed in terms of the Regulation GNR.1048 of 25 May 1984 (as amended) issued in terms of the Conservation of Agricultural Resources Act, Act 43 of 1983. By this Eskom is obliged to control category 1, 2 and 3 plants to the extent necessary to prevent or to contain the occurrence, establishment, growth, multiplication, propagation, regeneration and spreading such plants within servitude areas.

4 Conclusions and Recommendations

Several watercourse features were identified along the proposed powerline route, including riverine systems with riparian zones, perennial and non-perennial wetlands, as well as drainage lines. The majority of the proposed powerline posed no impact to the surrounding watercourses; however several watercourse features intersect along the proposed powerline. In certain cases, the proposed pylon placements are within sensitivity freshwater areas, and such as, suggested relocations for these specific pylons have been made.

Due to the relatively low-impact nature of the proposed development, the majority of the anticipated impacts to the identified watercourses were rated as “Low”. However, a few of these impacts were rated as “Moderate” risks to the watercourses, post-mitigation. Despite this, it is the opinion of the specialist that the proposed powerline development may be favourably considered for the appropriate application.

4.1 Impact Statement

A risk assessment was conducted for the proposed project. The post-mitigation risks for the project presented within the “Low” consequence and significance categories. It is further anticipated that the cumulative impact of the proposed project will be “Medium” and no irreplaceable loss of resources is anticipated to occur.

4.2 Specialist Opinion

Considering the assessment findings and the assumption that the suggested mitigation measures will be implemented, no fatal flaws are evident for the proposed project at this stage. It is the opinion of the specialists that the project may be favourably considered for authorisation.

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6 Appendix Items

6.1 Appendix A: Impact Assessment Significance Rating

Impact assessment must take account of the nature, scale, and duration of impacts on the environment whether such impacts are positive or negative. Each impact is also assessed according to the project phases:

- Construction;
- Operation; and
- Decommissioning.

Duration of the Impact	Rating
Immediate (<1 year)	1
Short term (1-5 years)	2
Medium term (5-15 years)	3
Long term (ceases after the operational life span of the project)	4
Permanent	5
Extent of the Impact	**Rating**
Site (site only)	1
Local (site boundary and immediate surrounds)	2
Regional (within the three local municipalities)	3
National	4
International	5
Magnitude of the Impact	**Rating**
None	0
Minor	2
Low	4
Moderate (environmental functions altered but continue)	6
High (environmental functions temporarily cease)	8
Very high / Unsure (environmental functions permanently cease)	10
Reversibility	**Rating**
Completely reversible	1
Partly reversible	2
Barely reversible	3
Irreversible	4
Probability of Occurrence	**Rating**
None (the impact will not occur)	0
Improbable (probability very low due to design or experience)	1
Low probability (unlikely to occur)	2
Medium probability (distinct probability that the impact will occur)	3
High probability (most likely to occur)	4
Definite.	5

	Significance	Description of Significance
(<30)	Low	The activity will have a low impact in the environment. This impact would not have a direct influence on the decision to develop in the area.
(30-60)	Medium	Medium Impact – the activity will have a medium impact on the environment. The impact could influence the decision to develop in the area unless it is effectively mitigated.
(>60)	High	The activity will have a high impact on the environment. The impact must have an influence on the decision process to develop in the area.

6.2 Appendix B: Specialist Declaration of Independence

I, Andrew Husted, declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.

Andrew Husted

Freshwater Ecologist

The Biodiversity Company

December 2024

I, Divan van Rooyen, declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.

Divan van Rooyen

Freshwater Ecologist

The Biodiversity Company

December 2024

6.3 Appendix C – Specialist CVs

Available on request