



PREPARED FOR:

PREPARED BY:

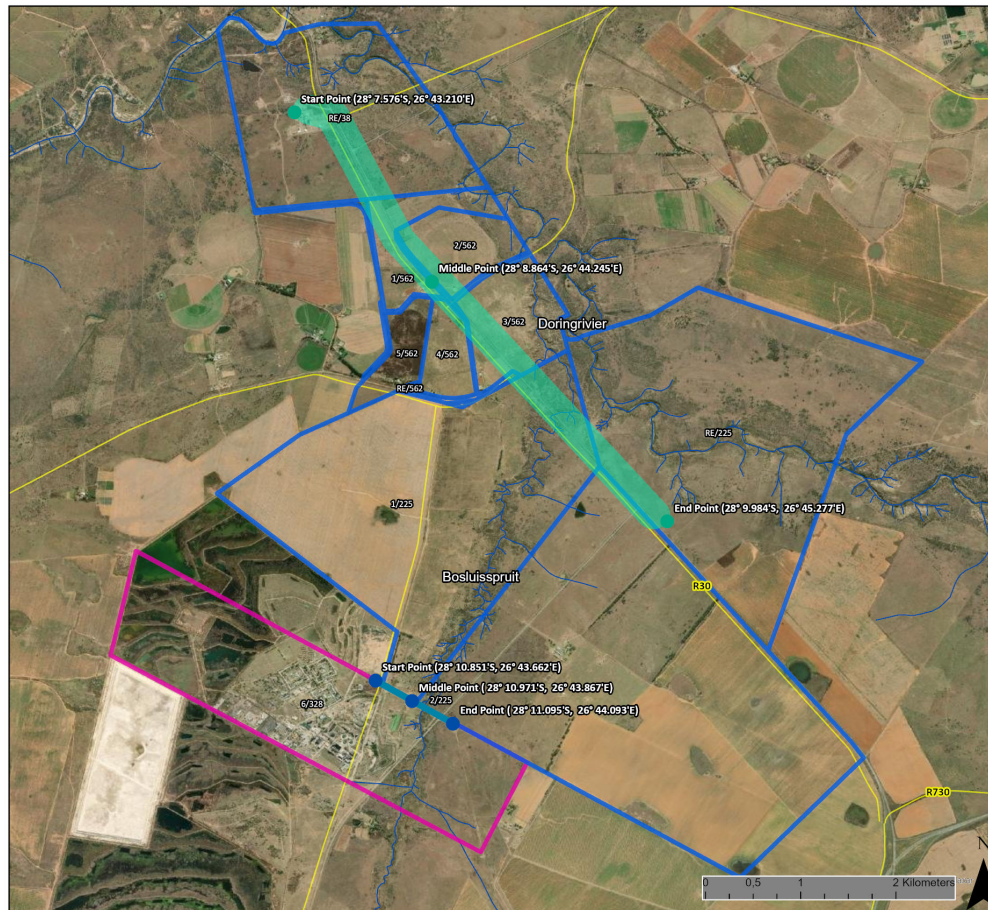
**TETRA4**  
**EIMS**

## Environmental Site Sensitivity and Verification Assessment

Site ID:	Tetra4 Powerlines BAR	Contractor:	EIMS
Location:	Virginia area, Free State Province	Inspector:	Qaphela Magaqa
Client representative:	Gerhard Muller	Inspection Date:	13 September 2022

1. Background					
Background of the project:	Tetra4 (Pty) Ltd wishes to construct a new dedicated overhead powerline as part of the proposed Cluster 2 LNG/LHe Plant expansion. A new 132 kV dual loop-in-loop-out (LILO) powerline of approximately 4 km in length to the Theseus-Oryx 132 kV Line. The proposed powerline will feed into a new 40 MVA substation at the LNG/LHe Plant. The applicant also wishes to connect an existing compressor station to the existing 33 kV Beatrix powerline. The 33kV powerline will be approximately 1 km in length.				
Project Aspects:	Yes	No	Details (provide specifications)	Location (DD MM SS)	
				Latitude	Longitude
❖ Pylons	<input checked="" type="checkbox"/>	<input type="checkbox"/>	132kV Pylons  The pylons are to be placed within the 300m corridor, the final alignment is to be determined once the final engineering designs have been concluded. The type of pylon to be used will likely be a 247 (double circuit) tower structure within a servitude of no more than 40m (as per Eskom building restrictions). These will require concrete foundations/plinths.	<u>Start Point</u> 28° 07'37.36"S	26°43'11.79"E
				<u>Mid Point</u> 28° 08'46.75"S	26°44'11.50"E
				<u>End point</u> 28° 09'57.93"S	26°45'17.52"E
❖ Pylons	<input checked="" type="checkbox"/>	<input type="checkbox"/>	33kV Pylons  The pylons are to be placed within a 50m corridor along the development corridor, the exact placement positions of the pylons are to be determined in the final engineering design reports. Wooden h-pole structures be used, and will be placed directly into the ground without requiring foundations.	<u>Start Point</u> 28°11'5.79"S	26°44'6.25"E
				<u>Mid Point</u> 28°10'58.29"S	26°43'52.53"E
				<u>End point</u> 28°10'50.77"S	26°43'38.76"E

## 2. Site Layout Plan



### Locality Map

1526 Tetra4 Powerline BA and WUL

#### Legend

- Places
- ~ Rivers
- Railway
- Proposed Infrastructure**
  - 33 kV Powerline Buffer (25m)
  - 132 kV Transmission Line Buffer (300m)
- Affected Properties**
  - Directly Affected Properties: 33kV
  - Directly Affected Properties: 132kV



Data Sources:  
CSG; ESRI, SANBI, DHSWS  
Coord System: GCS WGS 1984  
Datum: WGS 1984  
Units: Degree  
Ref: 1526\_Locality Map\_Update

Date: 2023/01/18  
EIMS Ref: Locality  
Compiled: CM  
Reviewed: QM  
Approved: LW



## 2. DEA Screening Tool Assessment

Aspect (132kV Powerline)	Very High	High	Medium	Low
Agriculture Theme	X			
Animal species				X
Aquatic Biodiversity Theme				X
Archeological and Cultural Heritage Theme				X
Civil Aviation Theme			X	
Defence Theme				X
Paleontology Theme	X			
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			
Aspect (33kV Powerline)	Very High	High	Medium	Low
Agriculture Theme			X	
Animal species				X
Aquatic Biodiversity Theme				X
Archeological and Cultural Heritage Theme				X
Civil Aviation Theme		X		
Defense Theme			X	
Paleontology Theme	X		X	
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

### 3.1 Site Assessment (132kV Powerline)

#### 3.1.1 Gradient (indicate the general gradient characteristics of site)

Aspect									
Powerline corridor area (132kV)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Is the site located on or in the immediate vicinity of any of the following:

	132kV Powerline			
	Yes	No	Comment	
Erosion Channels or areas of severe erosion/ destabilized soils	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Wetlands (within 32m)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The 132kV powerline crosses over the Bosluisspruit river. A wetland was identified along point 28° 8'49.21"S 26°44'10.31"E.	
Unstable slopes or geological features (rocky outcrops)	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Bare areas	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Other Sensitive or risk areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Are any existing servitudes and structures directly or indirectly affected by the proposed sites and routes (e.g. Eskom, public road servitudes and restrictions- 60m from National Road, farmer's water/irrigation supplies, etc.)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	The 132kV powerline route is along a public road (R30). There are powerlines located on either side of the road in some sections of the corridor. Some Tetra4 gas pipeline servitudes are located within some sections of the proposed powerline corridor A water pipeline servitude is located adjacent to the road. A centre pivot irrigation system within the proposed 132kV powerline corridor. SANRAL and the Provincial Roads department must be consulted regarding this project. Eskom needs to be consulted regarding the project.	

#### 3.1.2 Vegetation

Which of the listed descriptions best describes the general groundcover on and around the site?

Natural veld - good condition <input type="checkbox"/>	Natural veld with scattered aliens <input type="checkbox"/>	Natural veld with heavy alien infestation <input checked="" type="checkbox"/>	Veld dominated by alien species <input type="checkbox"/>	Gardens <input type="checkbox"/>
Sport field <input type="checkbox"/>	Cultivated land <input checked="" type="checkbox"/>	Paved surface <input type="checkbox"/>	Building or other structure <input type="checkbox"/>	Bare soil <input type="checkbox"/>

				<input checked="" type="checkbox"/>			
Comments on vegetation composition:							
Comments on weed species/type		<p>Fourteen (14) Invasive alien species were identified within the Tetra4 project area during the Terrestrial Biodiversity Specialist study. These species are listed under the Alien and Invasive Species List 2020, Government Gazette No. GN1003 as Category 1b. Category 1b species must be controlled by implementing an IAP Management Programme, in compliance of section 75 of the NEMBA.</p> <p>It has been noted by the specialist that the natural vegetation is degraded, however, still provides essential ecosystem services and needs to be protected against further fragmentation.</p>					
3.1.3 Land cover/ use description: Describe the land uses on the site							
132kV Powerline		The powerline corridor is located along agricultural cultivated land and grazing land, farmstead (building) degraded natural and riparian vegetation cover, gravel and tarred provincial roads.					
3.2 Site Assessment (33kV Powerline)							
3.2.1 Gradient (indicate the general gradient characteristics of site)							
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the site located on or in the immediate vicinity of any of the following:							
				33kv Powerline			
				Yes	No	Comment	
Erosion Channels or areas of severe erosion/ destabilized soils				<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Wetlands (within 32m)				<input checked="" type="checkbox"/>	<input type="checkbox"/>	The 33kV powerline corridor crosses over Bosluisspruit River	
Unstable slopes or geological features (rocky outcrops)				<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Bare areas				<input checked="" type="checkbox"/>	<input type="checkbox"/>	Some areas along the corridor are bare	
Other Sensitive or risk areas?				<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Are any existing servitudes and structures directly or indirectly affected by the proposed sites and routes (e.g. Eskom, public road servitudes and restrictions- 60m from National Road, farmer's water/irrigation supplies, etc.)?				Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<p>The development corridor starts at a Tetra4 compressor station.</p> <p>Some powerline servitudes are intersected the proposed powerline corridor. Eskom guidelines of construction near existing powerlines.</p> <p>A Tetra4 pigging station is located along the proposed development corridor</p> <p>Tetra4 gas pipeline servitude located along the proposed powerline corridor</p>	
3.2.2 Vegetation							
Which of the listed descriptions best describes the general groundcover on and around the site?							



Natural veld - good condition <input type="checkbox"/>	Natural veld with scattered aliens <input type="checkbox"/>	Natural veld with heavy alien infestation <input checked="" type="checkbox"/>	Veld dominated by alien species <input type="checkbox"/>	Gardens <input type="checkbox"/>
Sport field <input type="checkbox"/>	Cultivated land <input type="checkbox"/>	Paved surface <input type="checkbox"/>	Building or other structure <input type="checkbox"/>	Bare soil <input checked="" type="checkbox"/>
Comments on vegetation composition:				
Comments on weed species/type	<p>Fourteen (14) Invasive alien species were identified within the Tetra4 project area during the Terrestrial Biodiversity Specialist study. These species are listed under the Alien and Invasive Species List 2020, Government Gazette No. GN1003 as Category 1b. Category 1b species must be controlled by implementing an IAP Management Programme, in compliance of section 75 of the NEMBA.</p> <p>It has been noted by the specialist that the natural vegetation is degraded, however, still provides essential ecosystem services and needs to be protected against further fragmentation.</p>			
3.2.3 Land cover/ use description: Describe the land uses on the site				
33kV Powerline	Bare soils with scattered vegetation cover with heavy alien infestation.			
4. General Comments and Recommendations				
N/A				



## 5. Site Photos

132kV Powerline Start: 13/09/2022 09:49:00; **GPS Coordinates:** -28.127931, 26.723724



N



NE



E



SE



SW



W

132kV Alternative 1 surroundings: 13/09/2022 09:53:59; **GPS Coordinates:** -28.131054, 26.725546



N



NE



E



S



SW



W



NW

132kV Alternative 2: 13/09/2022 09:55:33; GPS Coordinates: -28.131199, 26.725355



N



NE



E



SE





S



SW



W



NW

132kV Alternative 1: 13/09/2022 09:56:10; GPS Coordinates: -28.135328, 26.727722



N



NE



E



SE



S



SW



W



NW

132kV Alternative 2: 13/09/2022 09:57:00; GPS Coordinates: -28.135594, 26.727667





N



NE



E



SE



S



SW – Existing powerline pylon and animal grazing



W



NW

132kV Alternative 1: 13/09/2022 10:00:08; GPS Coordinates: -28.142211, 26.732120



N



NE



E – Cultivated agricultural land with a pivot irrigation system







**S**



**SW**



**W**



**NW**

132kV Alternative 2: 13/09/2022 10:01:38; **GPS Coordinates:** -28.142350, 26.732061



**N**



**NE**



**E**



**SE**



**S – Farmstead located within proposed corridor**



**SW**



**W**



**NW**

132kV Alternative 1: 13/09/2022 10:05:38; **GPS Coordinates:** -28.146938, 26.736463





N



NE



E



SE



S



SW



W



NW

132kV Alternative 2: 13/09/2022 10:06:27; GPS Coordinates: -28.147004, 26.736198



N



NE



E



SE





S



SW – Existing powerline pylon



W – Tetra4 Gas pipeline servitude



NW – Wetland to be confirmed by a wetland delineation.

132kV Alternative 1: 13/09/2022 10:08:20; GPS Coordinates: -28.151501, 26.740686



N



NE



E



SE



S



SW



W



NW

132kV Alternative 2: 13/09/2022 10:10:00; GPS Coordinates: -28.151605, 26.740504





N



NE



E



SE



S



SW



W



NW

132kV Alternative 1 Bosluisspruit river crossing: 13/09/2022 10:13:13; GPS Coordinates: -28.155773, 26.744488



N



NE



E



SE





SW



W



NW

132kV Alternative 1 Bosluisspruit river crossing : 13/09/2022 10:15:00; **GPS Coordinates:** -28.155763, 26.744373



N



NE



E



SE



S



SW



W



NW

132kV Alternative 1: 13/09/2022 10:19:59; **GPS Coordinates:** -28.156195, 26.744934





N



NE



E



SE



S



SW



W



NW

132kV Alternative 2: 13/09/2022 10:20:57; GPS Coordinates: -28.156248, 26.744811



N



NE



E



SE





S



SW



W



NW

132kV Alternative 1: 13/09/2022 10:22:00; **GPS Coordinates:** -28.164408, 26.752509



N



NE



E



SE



S



SW – Theseus Oryx 132 kV Powerline.



W



NW

132 kV End: 13/09/2022 10:23:00; **GPS Coordinates:** -28.164624, 26.752270





N



NE



E



SE



S



SW – The 132 kV LILO is to be connected to the 132 kV powerline spanning across on the image above.



W



NW

33 kV Start: 13/09/2022 10:33:47; **GPS Coordinates:** -28.185038, 26.734965



N



NE



E



SE





S



SW



W – Tetra4 Compressor Station



NW

33 kV Road Crossing: 13/09/2022 10:37:42; GPS Coordinates: -28.184359, 26.733778



N



NE



E



SE



S – Existing gas pipeline servitude



SW



W



NW

33 kV Stream Crossing: 13/09/2022 10:40:36; GPS Coordinates: -28.183617, 26.732532





N



NE



E – Gas pipeline servitude and Pigging station



SE



S



SW



W



NW

33 kV Mine Trench to end - : 13/09/2022 10:54:43; GPS Coordinates: -28.181666, 26.729124



N



NE



E



SE –





S - Beatrix Mine trench with mine slurry discharge



SW



W



NW – 33 kV powerline to be connected to the existing powerline above





## 6. Verification findings and motivation:

It is important to note that each powerline had a separate DEA screening tool report due to the distances between them, however, the table below will depict the highest level of sensitivity of the two reports as these are a combined application.

Assessment for specialist studies and motivation:					
Screening Tool Specialist Study Required:	Level of Sensitivity:	Suggested Sensitivity:	Required Assessment	level of	Motivation
Aquatic Biodiversity	Low	Low	None.	<input type="checkbox"/>	A full DFFE protocol compliant specialist Aquatic and Wetland Impact Assessment has been undertaken as part of the Tetra4 Cluster 2 Gas Production Project. The powerline has been assessed by the specialist in this combined report.  The proposed powerlines cross through wetlands and watercourses.
			Compliance Statement	<input type="checkbox"/>	
			Full Assessment	<input checked="" type="checkbox"/>	
			Other	<input type="checkbox"/>	
Archaeological and Cultural Heritage	Low	Low	None.	<input type="checkbox"/>	A full DFFE protocol compliant specialist Heritage Impact Assessment has been undertaken as part of the Tetra4 Cluster 2 Gas Production Project. The powerline has been assessed by the specialist in this combined report.
			Compliance Statement	<input type="checkbox"/>	
			Full Assessment	<input checked="" type="checkbox"/>	
			Other	<input type="checkbox"/>	
Paleontology	Very High	Medium	None.	<input type="checkbox"/>	full DFFE protocol compliant specialist Paleontology Impact Assessment has been undertaken as part of the Tetra4 Cluster 2 Gas Production Project. The powerline has been assessed by the specialist in this combined report.
			Compliance Statement	<input type="checkbox"/>	
			Full Assessment	<input checked="" type="checkbox"/>	
			Other	<input type="checkbox"/>	
Terrestrial Biodiversity	Very High	Very High	None.	<input type="checkbox"/>	A full DFFE protocol compliant specialist Terrestrial Biodiversity Impact Assessment has been undertaken as part of the Tetra4 Cluster 2 Gas Production Project. The powerline has been assessed by the specialist in this combined report.
			Compliance Statement	<input type="checkbox"/>	
			Full Assessment	<input checked="" type="checkbox"/>	
			Other	<input type="checkbox"/>	
Agriculture Theme	Very High	Very High	None.	<input type="checkbox"/>	A full DFFE protocol compliant specialist Pedological Impact Assessment has been undertaken as part of the Tetra4 Cluster 2 Gas Production Project. The powerline has been assessed by the specialist in this combined report.  The 132kV powerline corridor traverses through areas with agricultural fields equipped with an irrigation pivot.
			Compliance Statement	<input type="checkbox"/>	
			Full Assessment	<input checked="" type="checkbox"/>	
			Other	<input type="checkbox"/>	
Animal Species	Low	Low	None.	<input checked="" type="checkbox"/>	A full DFFE protocol compliant specialist Terrestrial Biodiversity Impact Assessment

			Compliance Statement	<input type="checkbox"/>	has been undertaken as part of the Tetra4 Cluster 2 Gas Production Project. The powerline has been assessed by the specialist in this combined report.
			Full Assessment	<input type="checkbox"/>	
			Other		
Civil Aviation Theme	High	Low	None.	<input checked="" type="checkbox"/>	The powerlines are to be constructed in an area with existing powerlines in the immediate vicinity. Based on the predicted height of the 132kV pylons of 32m, the construction of the powerlines is unlikely to cause significant impact to aviation. The Civil Aviation Authority will be notified of the EA application
			Compliance Statement	<input type="checkbox"/>	
			Full Assessment	<input type="checkbox"/>	
			Other		
Defense Theme	Low	Low	None.	<input checked="" type="checkbox"/>	No defense infrastructure was identified on site
			Compliance Statement	<input type="checkbox"/>	
			Full Assessment	<input type="checkbox"/>	
			Other		

#### Guidance notes:

- 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 terrestrial animal species must submit a Terrestrial Animal Species Specialist Assessment Report.
- 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 “medium sensitivity” for terrestrial animal species must submit either a Terrestrial Animal Species Specialist Assessment Report or a Terrestrial Animal Species Compliance Statement, depending on the outcome of a site inspection undertaken in accordance with paragraph 4.
- 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 “low” sensitivity for terrestrial animal species must submit a Terrestrial Animal Species Compliance Statement.
- Where the information gathered from the site sensitivity verification differs from the screening tool designation of “very high” or “high”, for terrestrial animal species sensitivity and it is found to be of a “low” sensitivity, then a Terrestrial Animal Species Compliance Statement must be submitted.
- Where the information gathered from the site sensitivity verification differs from the screening tool designation of “low” terrestrial animal species sensitivity and it is found to be of a “very high” or “high” terrestrial animal species sensitivity, a Terrestrial Animal Species Specialist Assessment must be conducted.
- If any part of the development falls within an area of confirmed “very high” or “high” sensitivity, the assessment and reporting requirements prescribed for the “very high” or “high” sensitivity, apply to the entire development footprint. Development footprint in the context of this protocol means, the area on which the proposed development will take place and includes the area that will be disturbed or impacted.