

# **TETRA4 CLUSTER 2 GAS PRODUCTION PROJECT**

UPDATED ENVIRONMENTAL IMPACT ASSESSMENT PHASE PUBLIC PARTICIPATION



# APPLICATION HISTORY

1. S&EIA
2. Decision
3. Appeal
4. Appeal Decision
5. Updated EIA

19 May 2022	• Initial Public Notification and Call to Register
22 July 2022	• Submission of Application for Environmental Authorisation
30 July to 30 Aug 2022	• Scoping report public review and comment period • Public Open Days and Focus Group Meetings (23 - 25 August 2022)
17 November 2022	• PASA/DMRE acceptance of Scoping Report
2 December 2022 to 24 January 2023	• EIA report public review and comment period • Public Meeting and Focus Group Meetings (10 - 11 January 2023)
13 July 2023	• Environmental Authorisation granted
18 August 2023	• Appeals submitted against the granting of Environmental Authorisation
1 August 2024	• DFFE Ministers Decision on the appeals
September 2025	• Updated EIR for public review which shall then be submitted to the DMRE for reconsideration

## **APPEAL DECISION SCOPE OF WORK – EIA REPORT UPDATE**

1. Climate Change Study
2. Floodlines
3. Geohydrology

1. Updated Climate Change Specialist Study to include the following:
  - Address the issues raised by the Expert Critique relating to the GHG emissions calculations
  - Provide a more detailed analysis of the impacts of climate change on the various activities associated with the construction and operation of the project, and on the environment and affected communities
  - Expand further on more recent information relating to LNG as a viable bridging fuel for reducing GHG emissions
2. Consideration of climate change forecasts in the delineation of the 1:100-year floodline.
3. Updated Geohydrological (groundwater) specialist study following additional baseline aquifer characterisation and associated hydrogeology impacts and potential pollution source terms of the proposed activities.

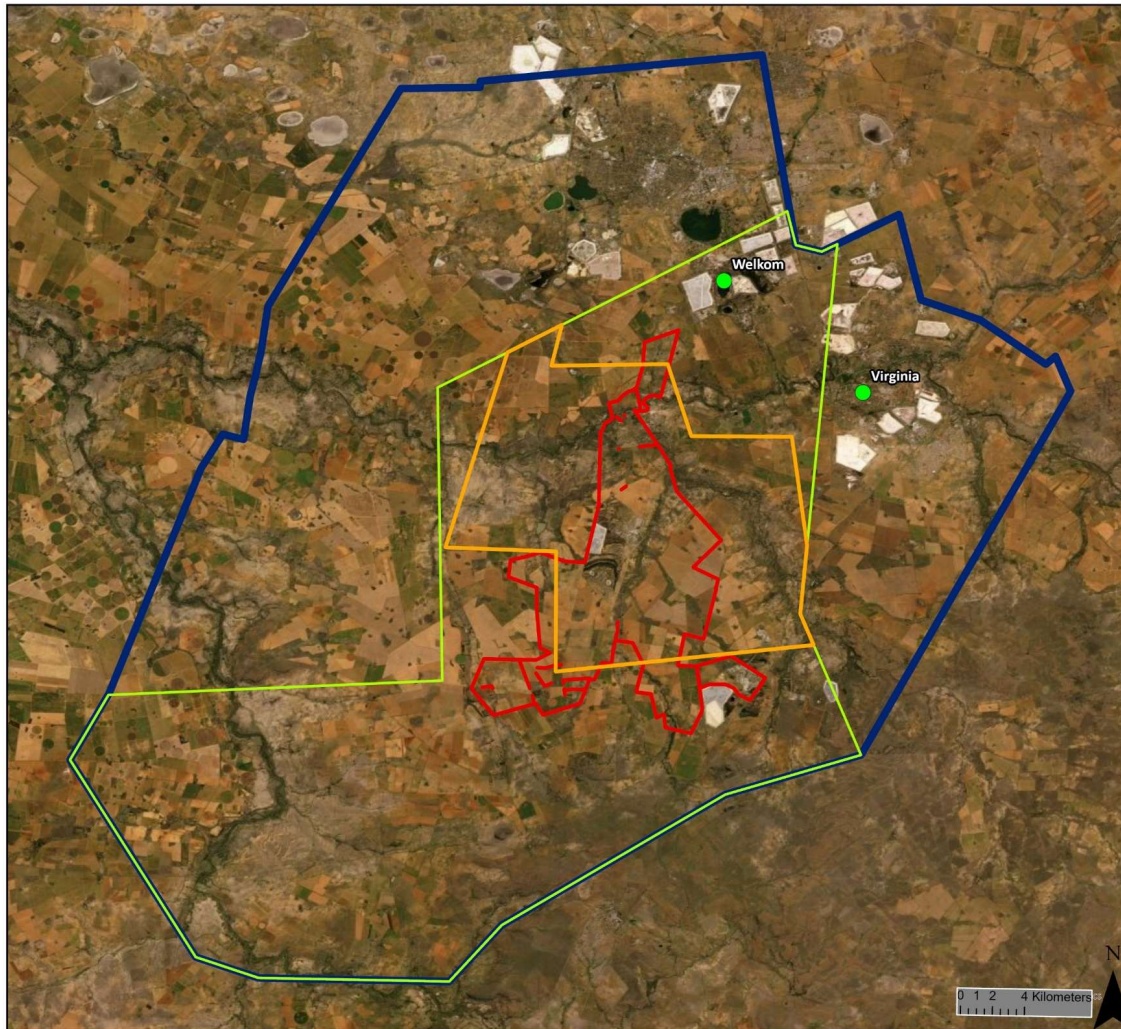
## APPLICANT AND EAP DETAILS

- Applicant: Tetra4 (Pty) Ltd – wholly owned subsidiary of Renergen.
- EAP: Environmental Impact Management Services (Pty) Ltd (EIMS) – Brian Whitfield (EAPASA Ref: 2022/4496)

## LEGAL FRAMEWORK

- Gas Production Right (Ref: 12/4/1/07/2/2) granted in 2011 covering ~187 000 hectares.
- Cluster 1 Environmental Authorisation (Ref: 12/04/07) granted in 2017 for production wells, pipelines, LNG Plant and associated infrastructure within the PR.
- Cluster 2 Environmental Authorisation is being applied for to increase gas production within the Production Right.



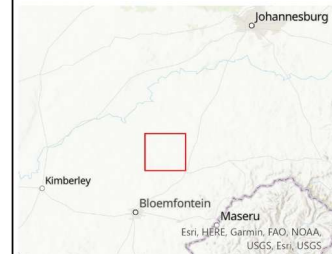


## Project History and Mineral Tenure

1473 Tetra4 Cluster 2

### Legend

-  Production Right Boundary (2010 EMP) ... 1
-  Approved 2011 Study Area
-  Cluster 1 Approved Area (2017)
-  Cluster 2 Application Area (2022)
-  Places



### Data Sources:

CSG; ESRI  
 Coord System: GCS WGS 1984  
 Datum: WGS 1984  
 Units: Degree  
 Ref: Project History and Mineral Tenure

Date: 2022/06/29  
 EIMS Ref: Project History  
 Compiled: CM  
 Reviewed: BW  
 Approved: LW



# PROJECT LOCATION

Masilonyana and Matjhabeng  
Local Municipalities

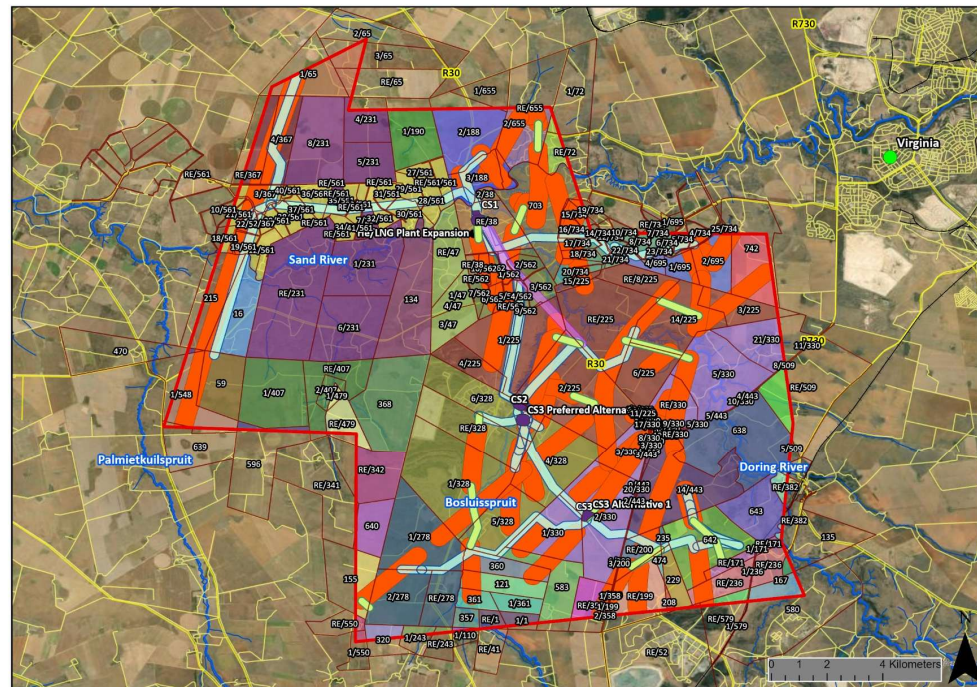
~27 500 hectares





# FARM PORTIONS WITHIN APPLICATION AREA

284 Farm Portions



Legend

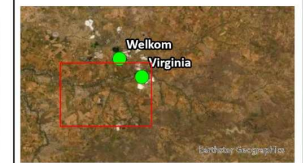
Adamsons Vley No. 655	Cabriere No. 215	Grusde No. 229	Klein Pan No. 320	Mooivlei No. 357	Vaalbank No. 190
Annex Glen Ross No. 562	Carlo No. 596	Hakkies No. 695	Kleinbegin No. 134	Nortier No. 361	Vlaakan No. 358
Annex Grusde No. 474	Damplaats No. 341	Hakkies No. 695	Kovno No. 235	Palmietkuil No. 548	Welgelegen No. 382
Annex Mooivlakte No. 208	Dankbaarheid No. 16	Hakkies No. 742	Langlaagte No. 110	Palmietkuil No. 328	Weltevreden No. 638
Blaauwdrift No. 188	De Klerks Kraal No. 231	Harmonie No. 579	Leeuwaarden No. 171	Paulina No. 470	Weltevreden No. 443
Bloemhoek No. 509	Die Mond No. 479	Helpmekaar No. 47	Leeuwbulb No. 52	Richelieu No. 135	Zoetendal No. 243
Boschuis Spruit No. 278	Digitto No. 642	Jonkers Rust No. 72	Leeuwbulb No. 580	Rondehoek No. 200	Zonderzorg No. 342
Braklaagte No. 41	Doom River No. 330	Jordaan No. 1	Lekkerlewe No. 643	Siberia No. 464	Zonderzorg No. 640
Brakspruit No. 121	Doorn River No. 330	Jordaan Rust No. 59	Middelplaat No. 583	Spoorleggerswoning 54 No. 167	
Bruintjes Hoogte No. 367	Enkeldoorn No. 360	Kaalpan No. 65	Mond Van Doornrivier No. 38	Stille Woning No. 703	
Bruintjes Hoogte No. 367	Frisgewaag No. 550	Kalkoenkrans No. 225	Mooifontein No. 639	Terra Blanda No. 155	
Bryan No. 561	Glen Ross No. 734	Klein Palmiet Kuil No. 407	Mooivlakte No. 199	Toulon No. 368	

## Cadastral / Infrastructure

1473 Tetra4 Cluster 2 Project

### Legend

- Study Area
- Places
- Railway
- Roads
- Rivers
- Infrastructure
- Compressor Stations
- LNG/LHe Plant
- Project Footprint Buffer Zones
- Pipeline (300m)
- Wells Tansects (600m)
- Transmission Loop Buffer (300m)
- Extensions



### Data Sources:

CSG; ESRI, SANBI, DHSWS  
Coord System: GCS WGS 1984  
Datum: WGS 1984  
Units: Degree  
Ref: Cadastral Infrastructure

Date: 2022/08/12  
EIMS Ref: Cad Infrast.  
Compiled: CM  
Reviewed: BW  
Approved: LW





## PROJECT OVERVIEW

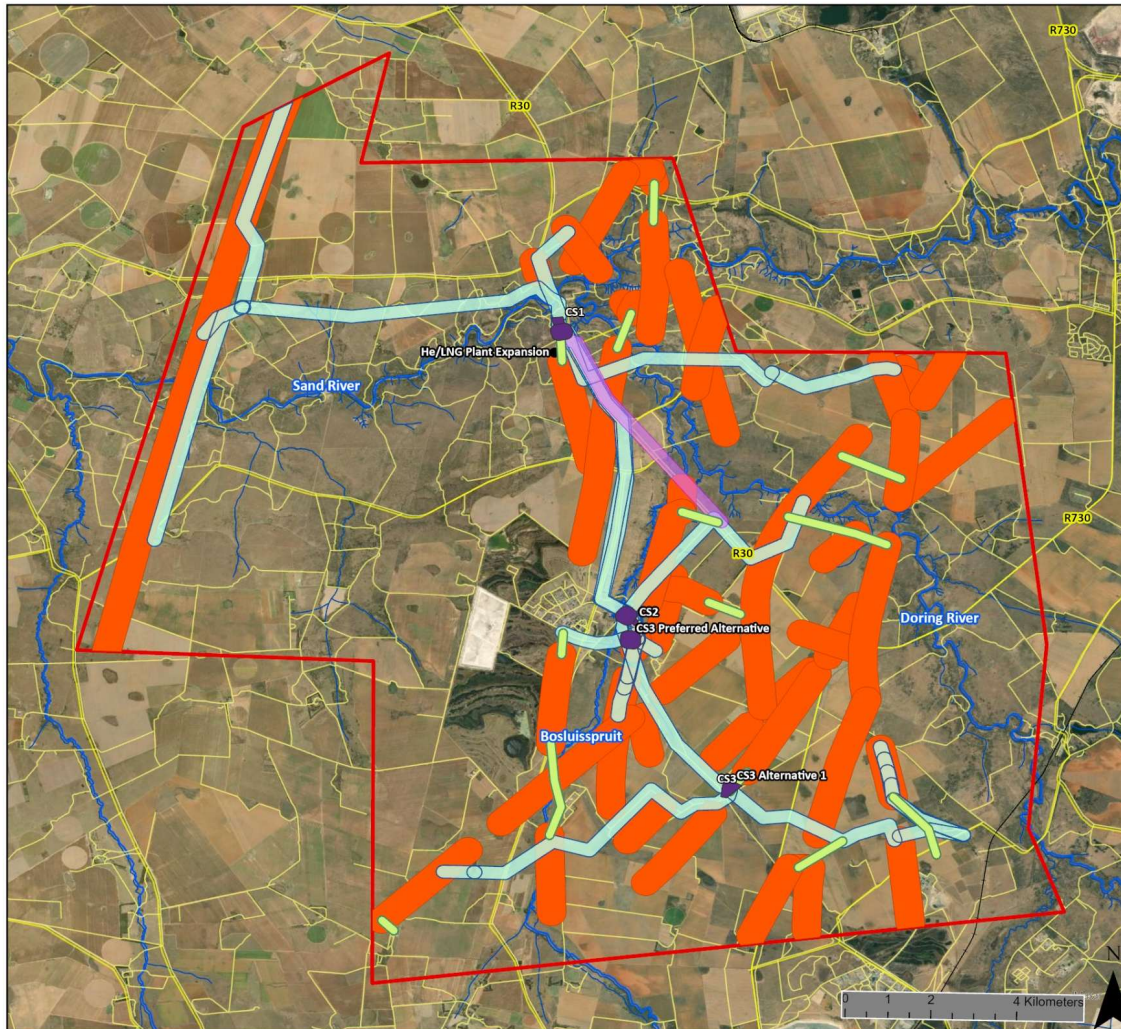
- Production Right
- Cluster 1 Gas Production
- Cluster 2 Gas Production

### ■ Overview:

- Cluster 2 development aims to produce a total of ~45 Million Standard Cubic Feet per Day of gas (Methane and Helium).
- The construction is planned to take ~3 years to complete.
- The operational timeframe for the project is ~20 years.

## **PROJECT INFRASTRUCTURE DESCRIPTION**

- ~400 exploration wells
- ~300 production wells
- ~480 km of gas transmission pipelines
- ~28 booster stations
- 3 compressor stations
- Access roads
- LNG/LHe Plant



## Locality Map

1473 Tetra4 Cluster 2 Project

### Legend

- Study Area
- Places
- Railway
- Roads
- Rivers
- Infrastructure**
  - Compressor Stations
  - LNG/LHe Plant
- Project Footprint Buffer Zones**
  - Pipeline (300m)
  - Wells Tansects (600m)
  - Transmission Loop Buffer (300m)
  - Extensions



Data Sources:  
CSG, ESRI, SANBI, DHSWS  
Coord System: GCS WGS 1984  
Datum: WGS 1984  
Units: Degree  
Ref: Locality Map

Date: 2022/07/19  
EIMS Ref: Locality  
Compiled: CM  
Reviewed: BW  
Approved: LW





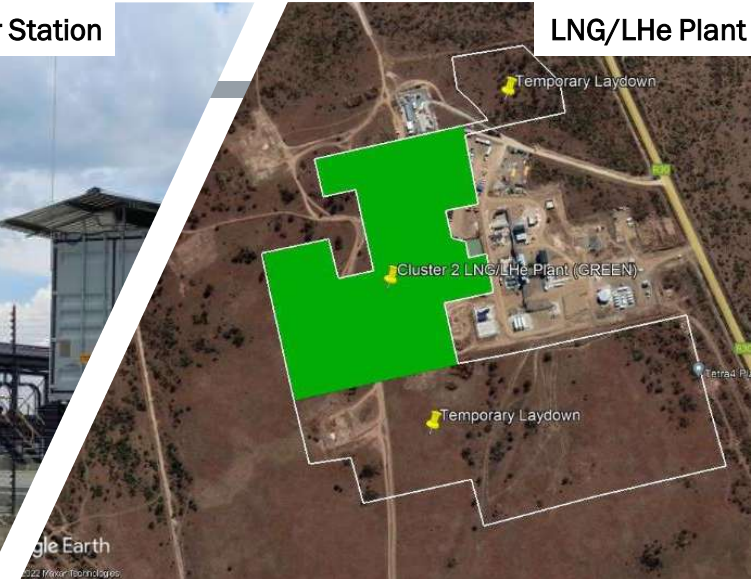
Pigging Station



Compressor Station



LNG/LHe Plant



Production Well

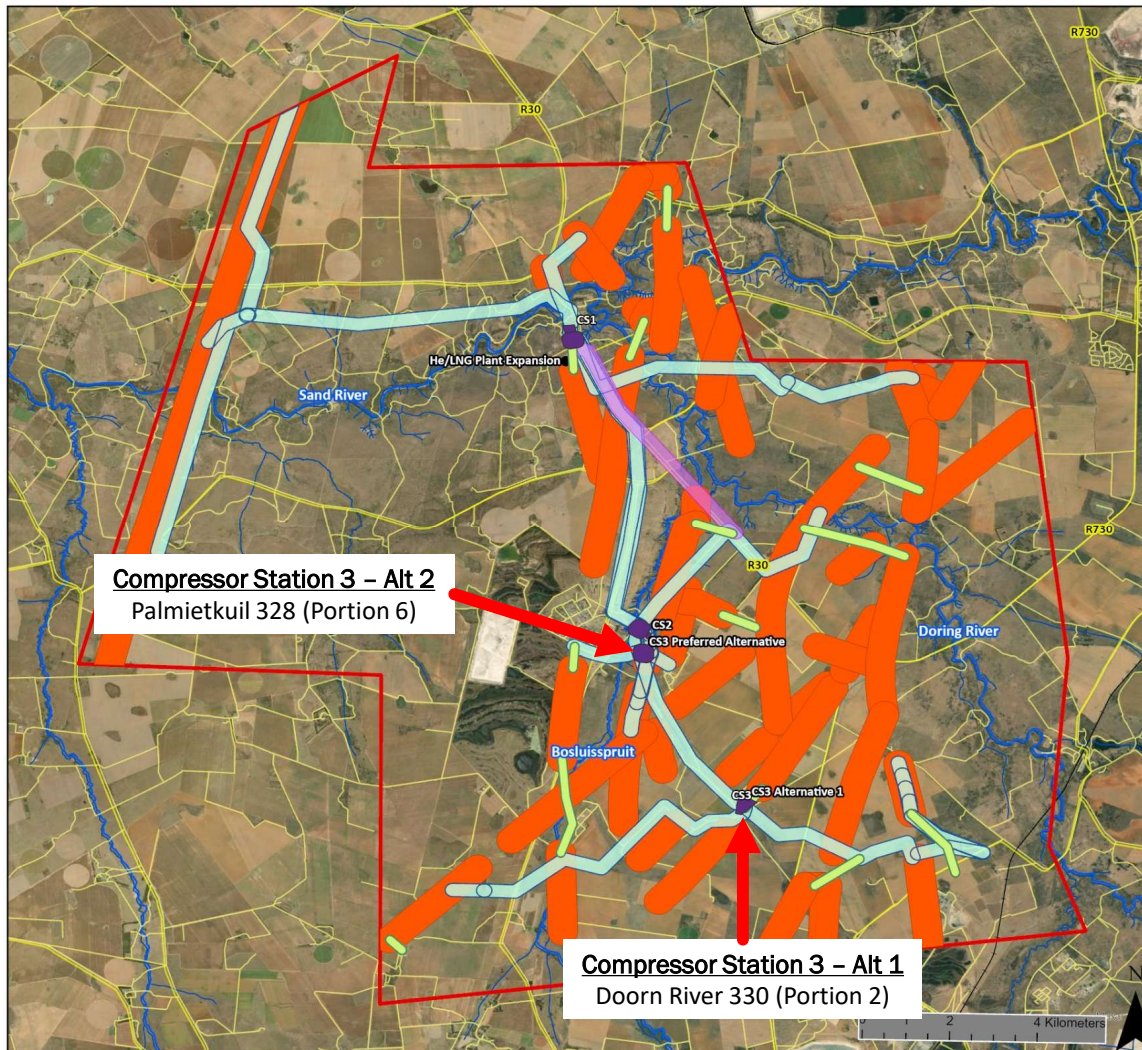


Low Point Drain

# ALTERNATIVES

Alternative Category	Alternative	Alternative Description Summary	Advantages	Disadvantages/ Risks	Final Recommended Alternative
Location Alternatives	Compressor station 3 – Alt 1	Doorn River 330 (Portion 2).	Well positioned within the southern gas pipeline network to balance the system without expensive reinforced pipeline network.	Availability of electricity supply / connection unlikely.  Increased visual and social impacts as compared to Alt 2	No
	Compressor station 3 – Alt 2	Adjacent to the existing Cluster 1 Compressor Station A on farm Palmietkuil 328 (Portion 6).	Electricity supply is confirmed as the existing Cluster 1 CSA is already connected to the Eskom grid.  Reduced visual and social impacts as compared to Alt 1	Would require a more costly pipeline design in the southern gas pipeline network.	Yes
Layout Alternatives	Based on a sensitivity mapping, no-go areas to be excluded.				Yes
No-Go Alternative	No-Go	The proposed Cluster 2 project will not take place at all.	No additional environmental impacts from the status quo.	No local and regional economic benefits or job creation.	No
















## Locality Map

1473 Tetra4 Cluster 2 Project

### Legend

-  Study Area
-  Places
-  Railway
-  Roads
-  Rivers
- Infrastructure**
  -  Compressor Stations
  -  LNG/LHe Plant
- Project Footprint Buffer Zones**
  -  Pipeline (300m)
  -  Wells Tansects (600m)
  -  Transmission Loop Buffer (300m)
  -  Extensions



Data Sources:  
 CSG; ESRI, SANBI, DHSWS  
 Coord System: GCS WGS 1984  
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 Ref: Locality Map

Date: 2022/07/19  
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# SPECIALIST STUDIES

SPECIALIST DISCIPLINE
Agriculture, Soils and Hydropedology (soil water)
Air Quality and Health Risk
Climate Change and Greenhouse Gas
Economic
Geohydrology (groundwater)
Heritage and Palaeontology
Hydrology (surface water)
Noise
Social
Terrestrial Biodiversity
Visual
Wetland and Aquatic

# UPDATED SPECIALIST STUDY

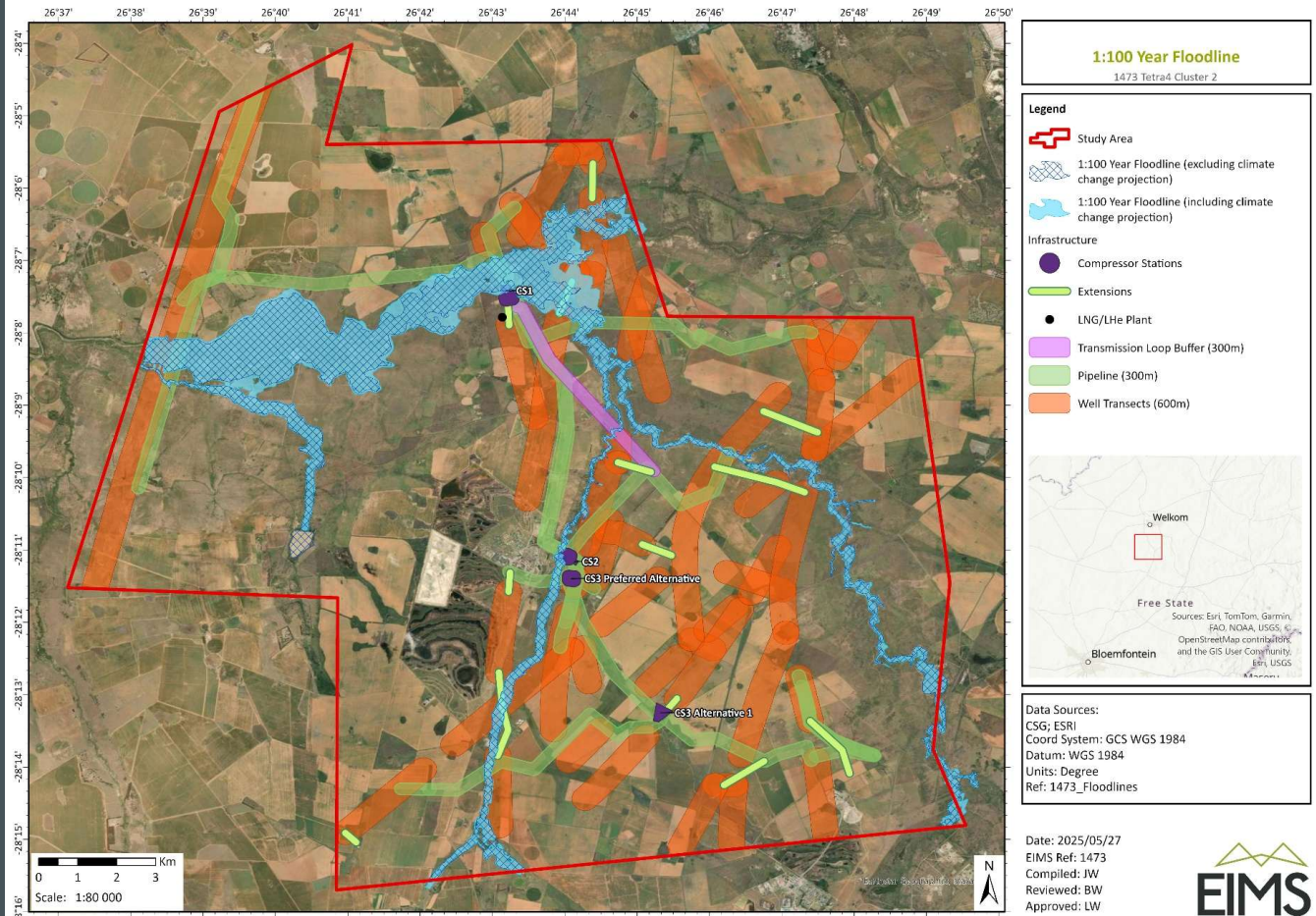
Updated Climate Change  
Assessment

- The estimated Scope 1 and 2 CH<sub>4</sub> emissions from the operational phase of Cluster 2 accounts for 78% of the total CO<sub>2</sub>-eq emissions of the project.
- Even though CH<sub>4</sub> emissions are 28 times more effective than CO<sub>2</sub> at trapping heat in the atmosphere over a 100-year timescale, studies show natural gas has a lower life cycle GHG impact than coal with a lifetime of roughly a decade.
- Natural gas releases 46% less CO<sub>2</sub>-eq lifecycle emissions compared to coal-fired facilities and 49% less than diesel-fired facilities for the same electricity generation rate.
- The IPCC report indicates that natural gas will result in less than 51% direct- and 40% lifecycle CO<sub>2</sub>-eq emissions compared to CO<sub>2</sub>-eq emissions from coal.
- The projects' contribution to the national CO<sub>2</sub>-eq emissions is only 0.09%, and 0.12% to the national energy sector CO<sub>2</sub>-eq.

# UPDATED SPECIALIST STUDY

Updated Floodlines (Hydrology)

Including climate change  
projection

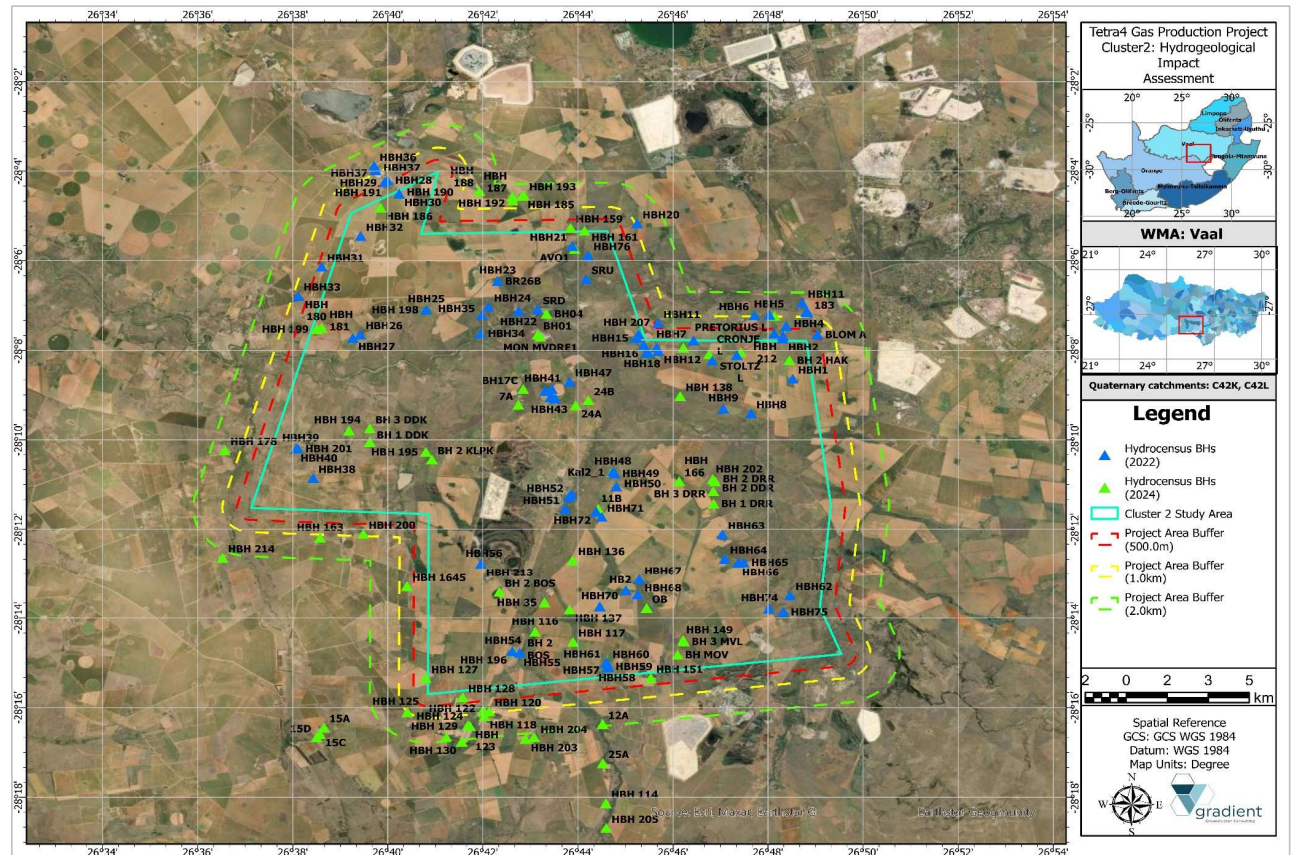




# UPDATED SPECIALIST STUDY

Updated Geohydrology  
Assessment

Additional hydrocensus



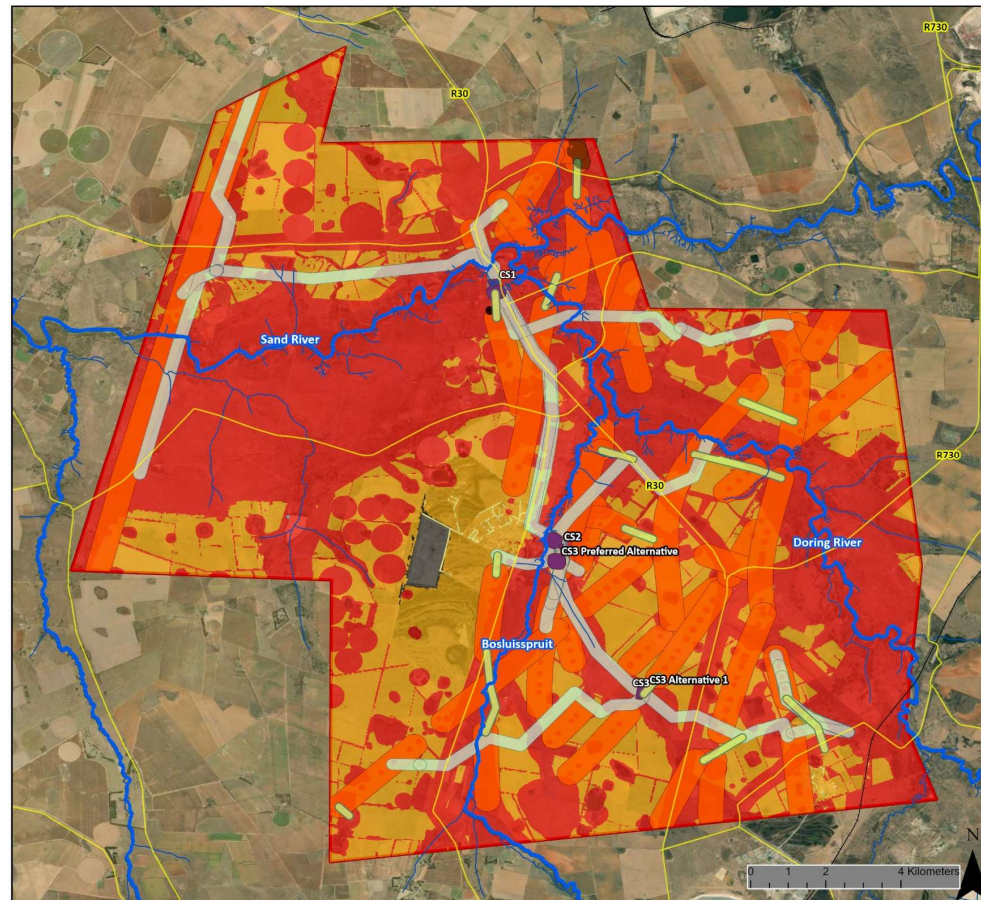
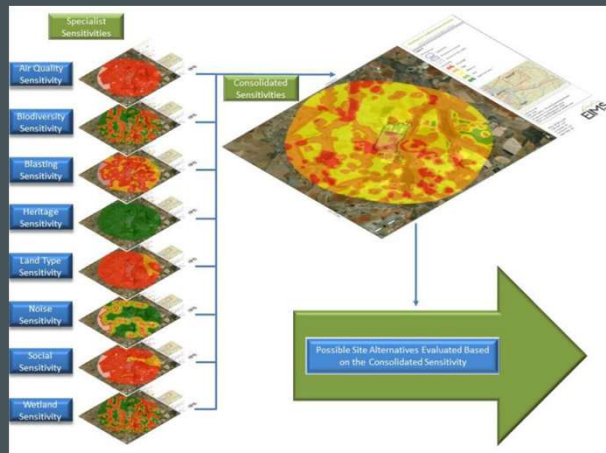
# UPDATED SPECIALIST STUDY

Updated Geohydrology  
Assessment

Updated groundwater flow and  
contaminant transport model

- Various management scenarios were modelled for the purposes of planning and decision making:
  - **Scenario 01:** Steady state water balance ( $\infty$ ).
  - **Scenario 02a:** Migration of saline groundwater from the deep fractured aquifer to the overlying potable aquifer(s) during the operational gas production phase.
  - **Scenario 02b:** Migration of stray methane (CH<sub>4</sub>) gas emanating from the production zone to the overlying potable aquifer(s) during the operations gas production phase.
  - **Scenario 03:** Migration of the TDS pollution plume emanating from the evaporation dam footprint area during the operational gas production phase.
  - **Scenario 04a:** Migration of saline groundwater from the deep, fractured aquifer to the overlying, potable aquifer(s) during the decommissioning and post-closure phase (50-year and 100-year scenarios).
  - **Scenario 04b:** Migration of stray methane (CH<sub>4</sub>) gas emanating from the production zone to the overlying, potable aquifer(s) during the decommissioning and post-closure phase (50-year and 100-year scenarios).
  - **Scenario 05:** Migration of the TDS pollution plume emanating from the evaporation dam footprint area during the post-closure and decommissioning phase (50-year and 100-year scenarios).
  - **Scenario 06:** Evaluating the effect of implementation of a liner or barrier system underneath the evaporation dam on the TDS pollution plume migration.
  - **Scenario 07:** Evaluating the effect of climatic change i.e., wet vs. dry cycle rainfall scenarios on the TDS pollution plume migration.

# SENSITIVITY MAPPING



**EIA Risk Based Combined Sensitivity Map**  
1473 Tetra4 Phase 2 BA WULA

- Legend**
- Study Area
  - Places
  - Railway
  - Rivers
  - Infrastructure
  - Compressor Stations
  - LNG/LHe Plant
  - Extensions
  - Pipeline (300m)
  - Wells Tansects (600m)
  - Risk Adverse Sensitivity Ranking
  - Low
  - Medium
  - High
  - No-Go



**Data Sources:**  
CSG; ESRI  
Coord System: GCS WGS 1984  
Datum: WGS 1984  
Units: Degree  
Ref: 1473 Combined Sensitivity Map

Date: 2022/10/18  
EIMS Ref: 1473  
Compiled: CM  
Reviewed: BW  
Approved: LW





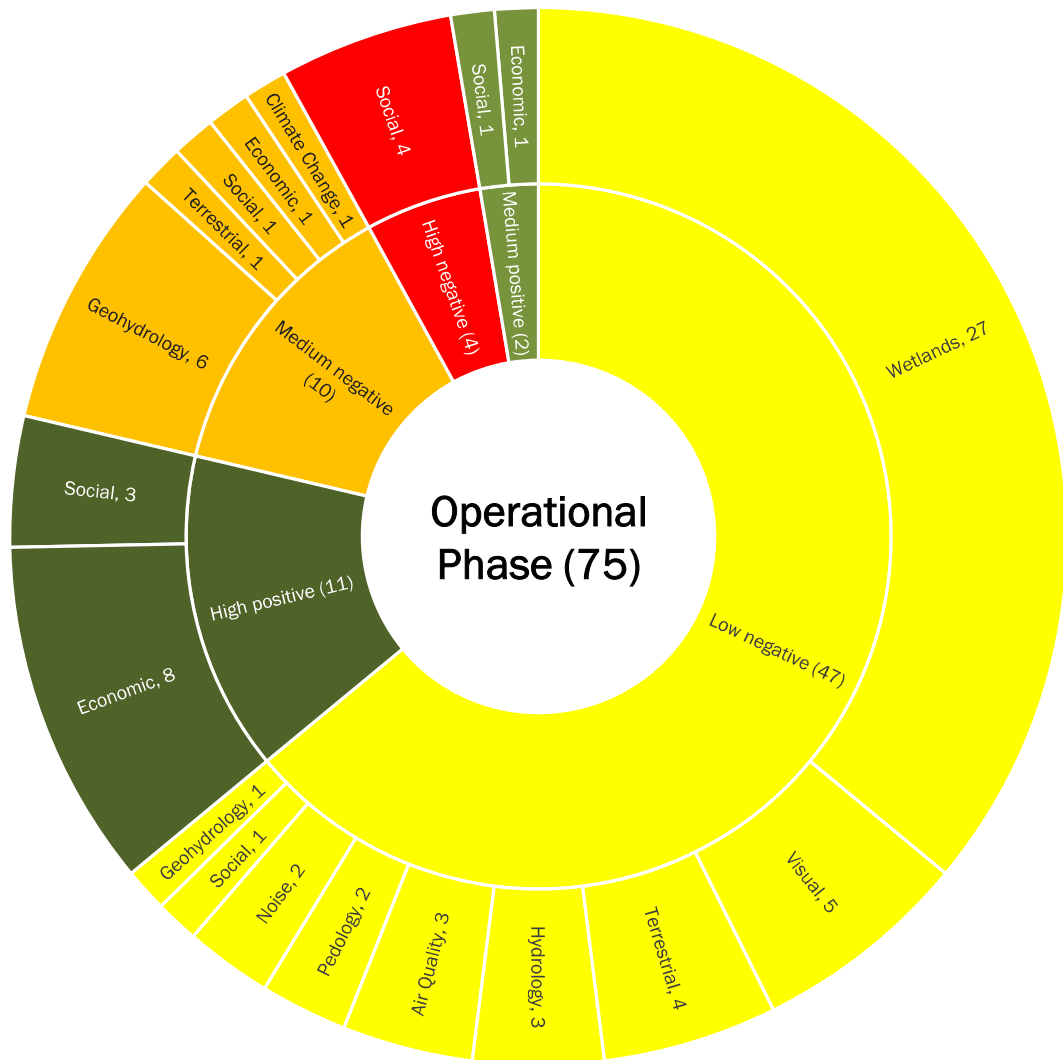
## IMPACTS AND ASSESSMENT

- 225 impacts identified and assessed for the various project phases (planning, construction, operation, decommissioning, rehabilitation and closure).
  - Pre- and Post-mitigation Impacts assessed according to:
    - Nature
    - Extent
    - Duration
    - Magnitude
    - Reversibility
    - Probability
  - Priority factors applied based on:
    - Cumulative Impact
    - Irreplaceable Loss of Resources

Environmental Significance Rating	
Value	Description
$\leq -17$	<b>High negative</b> (i.e. where the impact must have an influence on the decision process to develop in the area).
$> -17 \leq -9$	<b>Medium negative</b> (i.e. where the impact could influence the decision to develop in the area).
$> -9 < 0$	<b>Low negative</b> (i.e. where this impact would not have a direct influence on the decision to develop in the area).
0	<b>No impact</b>
$> 0 < 9$	<b>Low positive</b> (i.e. where this impact would not have a direct influence on the decision to develop in the area).
$\geq 9 < 17$	<b>Medium positive</b> (i.e. where the impact could influence the decision to develop in the area).
$\geq 17$	<b>High positive</b> (i.e. where the impact must have an influence on the decision process to develop in the area).

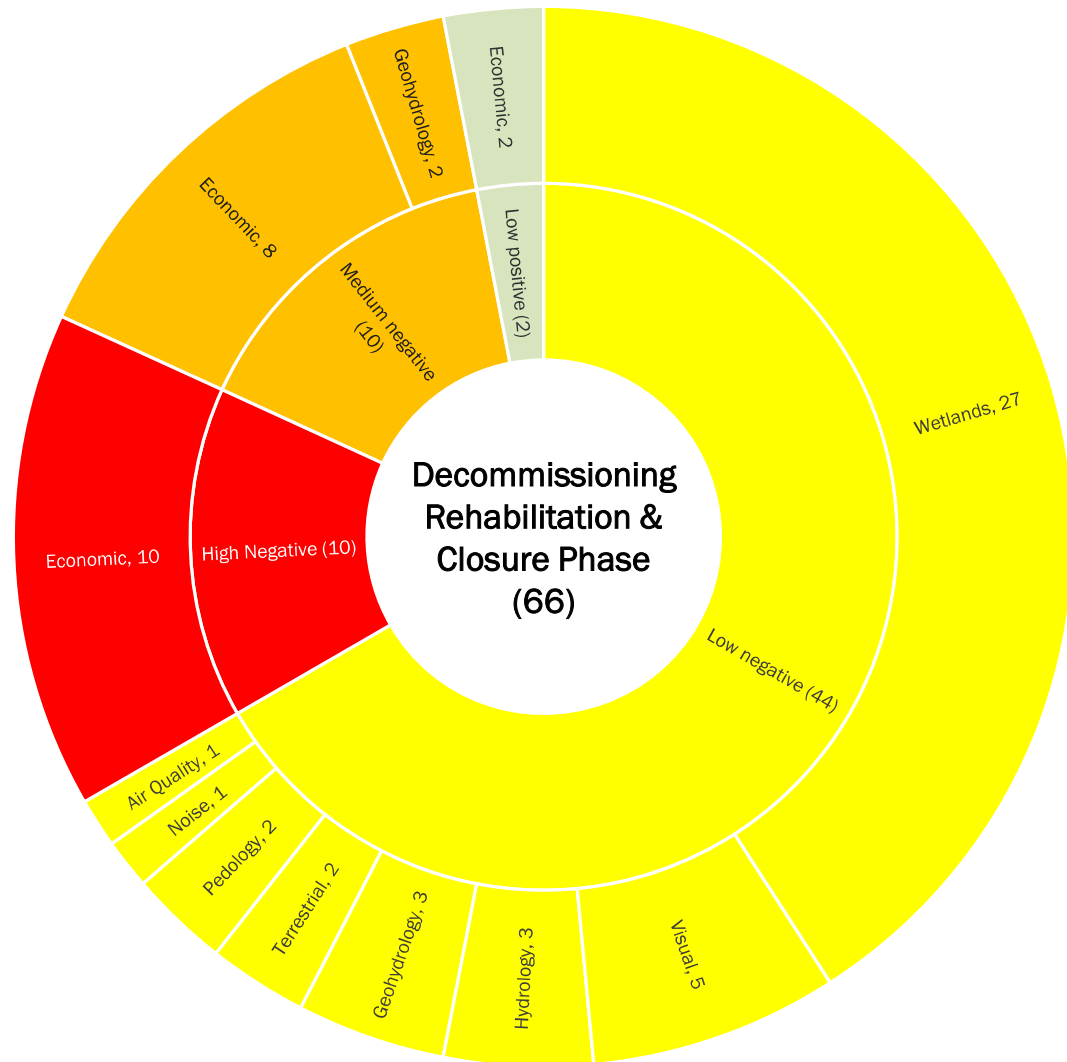


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## Environmental Significance Rating

Value	Description
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$\geq 17$	<b>High positive</b> (i.e. where the impact must have an influence on the decision process to develop in the area).





## AMENDED EMPR

- On 21 April 2021, the Minister of Forestry, Fisheries and Environment published the Generic Environmental Management Programme (EMPr) for Gas Pipeline Infrastructure (refer to GN373 of 23 April 2021).
- Revised Tetra4 EMPr includes generic EMPr and additional mitigation measures identified through EIA process.

## **MITIGATION HIGHLIGHTS SUMMARY**

- A revised landowner contract must be finalized prior to commencement of construction.
- Tetra4 will engage with each individual affected landowner regarding the detailed planned works on their properties and suitable annual compensation.
- Tetra4's activities will cause a certain level of economic displacement for some of the affected farmers. In the event that the farmer disagrees with the compensation offered, the actual impact on their livelihoods must be assessed by an agricultural economist or suitably experienced third party.
- Affected landowners must be provided with the construction schedule and when revisions to the schedule are made, these must be communicated to the affected landowners.
- Farm safety must be a priority and the landowners and Tetra4 must agree on security measures prior to construction on their farms.

# ENVIRONMENTAL IMPACT STATEMENT

- Overall Impact Environmental Impact Statement:
  - The findings of the specialist studies conclude that there are no fatal flaws that should prevent the proposed project from proceeding, provided that the recommended mitigation and management measures are implemented.
  - EAP and specialist team conclude that the project should be authorized based on:
    - The nature and extent of the proposed project;
    - The limited level and extent of disturbance predicted as a result of the production activities;
    - The overall findings of the specialist studies;
    - The significance levels of the majority of identified negative impacts can generally be reduced to an acceptable level by implementing the recommended mitigation measures;
    - The project should be authorized with conditions identified by the EAP included in the decision; and
    - It is assumed that compliance with the EMPr will be adhered to.

## WHO TO CONTACT

- Contact Person: Mbali Tshabalala
- EIMS Reference Number: 1473
- Postal Address: P.O. Box 2083; Pinegowrie; 2123
- Telephone: (011) 789 7170/ Fax: (086) 571 9047
- E-mail: [tetracluster2@eims.co.za](mailto:tetracluster2@eims.co.za)

*Please include the project reference number **1473** in all correspondence.*

**EIA Report comment period: 10 September to 13 October 2025**



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# DISCUSSION

