



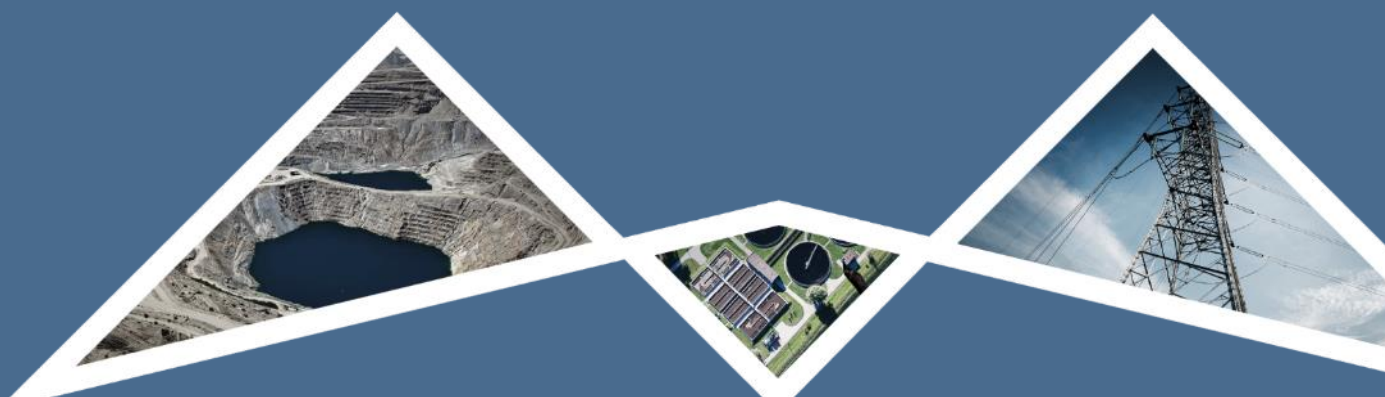
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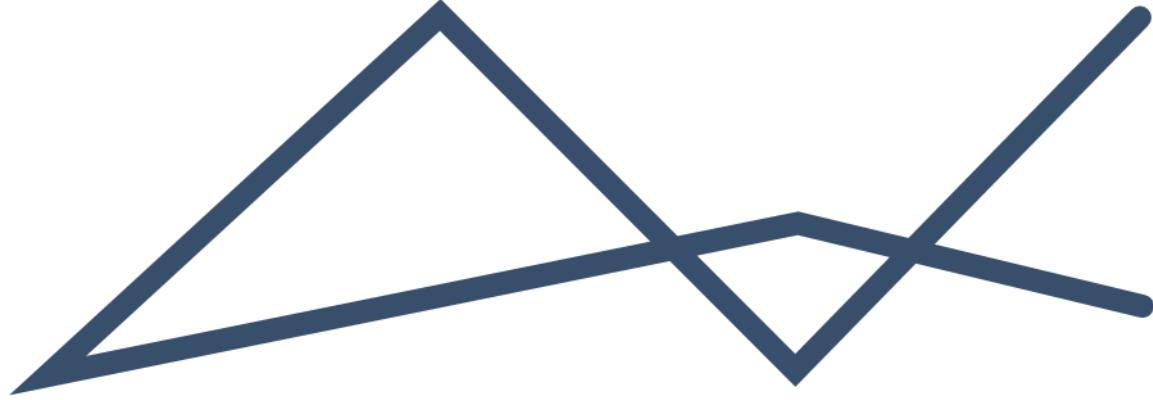
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# SIX – MONTHLY / ANNUAL ENVIRONMENTAL AUDIT REPORT – JUNE 2021

TETRA4 CLUSTER 1 GAS PRODUCTION PROJECT

PASA Reference Number: 12/4/007





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## List of Abbreviations

Abbreviation	Item
<b>AIDS</b>	Acquired Immune Deficiency Syndrome
<b>BID</b>	Background Information Document
<b>COVID-19</b>	Coronavirus Disease 2019
<b>CLF</b>	Community Liaison Forum
<b>CLO</b>	Community Liaison Officer
<b>CNG</b>	Compressed Natural Gas
<b>DHSWS</b>	Department of Human Settlements, Water and Sanitation (Previously DWS)
<b>DWS</b>	Department of Water and Sanitation
<b>EA</b>	Environmental Authorisation
<b>EAP</b>	Environmental Assessment Practitioner
<b>ECO</b>	Environmental Control Officer
<b>EHS</b>	Environmental Health and Safety
<b>EIA</b>	Environmental Impact Assessment
<b>EIR</b>	Environmental Impact Assessment Report
<b>EIMS</b>	Environmental Impact Management Services (Pty) Ltd
<b>EMPr</b>	Environmental Management Programme
<b>EMPR</b>	Environmental Management Programme Report
<b>EMS</b>	Environmental Management System
<b>EO</b>	Environmental Officer
<b>EPCM</b>	Engineering, Procurement and Project Management
<b>HDD</b>	Horizontal Directional Drilling
<b>HIV</b>	Human Immunodeficiency Virus,
<b>I&amp;AP</b>	Interested and Affected Party
<b>ID</b>	Identification Document
<b>IFC</b>	International Finance Corporation



Abbreviation	Item
<b>LNG</b>	Liquified Natural Gas
<b>MSDS</b>	Material Safety Data Sheet
<b>NEMA</b>	National Environmental Management Act, Act 107 of 1998
<b>NOx</b>	Oxides of nitrogen, especially as atmospheric pollutants.
<b>PASA</b>	Petroleum Agency of South Africa
<b>Pr. Sc. Nat</b>	Professional Natural Scientist in terms of the South African Council of Natural Scientific Professionals
<b>SAHRA</b>	South African Heritage Resources Agency
<b>SANRAL</b>	South African National Roads Agency
<b>SLP</b>	Social and Labour Plan
<b>SMS</b>	Short Message Service
<b>VOC</b>	Volatile Organic Compound



## EXECUTIVE SUMMARY

Environmental Impact Management Services (Pty) Ltd (EIMS) was appointed by Tetra4 (Pty) Ltd to undertake the Six-monthly Environmental Audit of the Environmental Authorisation (EA) and Environmental Management Programme (EMPr) for the Tetra4 Cluster 1 Gas Production Project (PASA Ref:12/4/007). Condition 5.4.8 of the EA requires that Environmental Audit Reports must be submitted to the PASA twice a year, and the EMPr requires that Environmental Audit Reports be submitted to PASA on an annual basis. This Environmental Audit Report is the fourth six – monthly Environmental Audit Report for the Tetra4 Cluster 1 Gas Production Project and fulfils the requirements of the annual and six-monthly Environmental Audit Reports, as per the requirements of the EA and EMPr. The audit is undertaken in accordance with Regulation 34 and Appendix 7 of the National Environmental Management Act, Act 107 of 1998 (NEMA) Environmental Impact Assessment (EIA) Regulations, 2014. Regulation 34 states:

- 1) *“The holder of an environmental authorisation must, for the period during which the environmental authorisation and EMPr, and where applicable the closure plan, remain valid-*
  - (a) Ensure that the compliance with the conditions of the environmental authorisation and the EMPr, and where applicable the closure plan, is audited; and*
  - (b) Submit an environmental audit report to the relevant competent authority.”*

The **scope** of the audit is to assess compliance of the Cluster 1 Gas Production Project with the conditions of the EA and EMPr and to confirm the continued adequacy of the EMPr. The **purpose** of the audit is to ensure compliance with the requirement of the EA and EMPr and the NEMA EIA Regulation 34 to undertake scheduled compliance audits. The **objectives** of the audit are to determine:

- The level of performance against and compliance of the project with the provisions of the requisite EA and EMPr; and
- The ability of the measures contained in the EMPr, to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity.

The compliance evaluations of the EA and EMPr have been described in Table 2 and Table 3 and is based on the evaluation criteria described in section 4.2 of this report.

A total of 51 commitments were identified in the EA that were evaluated. Seven (7) of these conditions were considered not applicable to the current phase of the project. Of the applicable conditions a total of 43 commitments were noted to be fully compliant, 1 partially compliant and 0 were non-compliant.

A total of 108 commitments were identified in the EMPr that were evaluated. Fourteen (14) of these conditions were considered not applicable to the current phase of the project. Of the applicable conditions a total of 92 commitments were noted to be fully compliant, 2 partially compliant and 0 were non-compliant.

The level of compliance for each commitment was calculated according to the methodology described in section 4.2. **Utilising this scoring system, a total compliance score of 98.86% was obtained for the EA and 98.94% EMPr. Three (3) findings/deficiencies were raised from the compliance evaluation and are described in Table 4, Section 5.3 of the report. Based on the audit, the EMPr is considered adequate and effective to manage and mitigate the current activities and impacts of this project.**



## 1 INTRODUCTION

Molopo South Africa Exploration and Production (Pty) Ltd (now Tetra4 (Pty) Ltd) conducted an Environmental Impact Assessment (EIA) and submitted the EIA and Environmental Management Programme (EMPr) in support of their Production Right application for natural gas on 09 December 2010. The EMPr (Ref: 12/4/1/07/2/2) was approved by the Petroleum Agency South Africa (PASA) on the 30<sup>th</sup> of June 2011. The Production Right application area stretches from Welkom and Virginia in the north-east to the west of Theunissen in the south. In 2016, an EIA was undertaken for an Environmental Authorisation (EA) Application to extend gas production operations within the existing Production Right, to amend the existing EMPr and include the combined helium and LNG plant and any activities not previously authorised to the gas production development. Furthermore, the issued Production Right makes provision to undertake site specific EMPrs within the Production Right area where the area is delineated as of medium to high environmental sensitivity. The EMPr (Cluster 1) audited here is, in effect, the first of these site specific EMPrs. This EMPr therefore serves to amend and replace the EMPr approved in 2010 for the Cluster 1 area. Tetra4 received Environmental Authorisation (PASA Ref:12/4/007) for the Cluster 1 Gas Production Project on 29 September 2017 and the 2017 EIA and EMPr forms part of this approval.

Condition 5.4.8 of the EA requires that Environmental Audit Reports must be submitted to the PASA twice a year, and the EMPr requires that Environmental Audit Reports be submitted to PASA on an annual basis. **This Environmental Audit Report is the fourth, six – monthly Environmental Audit Report for the Tetra4 Cluster 1 Gas Production Project and fulfils the requirements of the annual and six-monthly Environmental Audit Report, as per the requirements of the EA and EMPr.** The audit was undertaken in accordance with Regulation 34 and Appendix 7 of the National Environmental Management Act, Act 107 of 1998 (NEMA) Environmental Impact Assessment (EIA) Regulations, 2014: Regulation 34 states:

- 2) *“The holder of an environmental authorisation must, for the period during which the environmental authorisation and EMPr, and where applicable the closure plan, remain valid-*
  - (c) *Ensure that the compliance with the conditions of the environmental authorisation and the EMPr, and where applicable the closure plan, is audited; and*
  - (d) *Submit an environmental audit report to the relevant competent authority.*
- 3) *The environmental audit report contemplated in sub-regulation (1) must-*
  - (a) *be prepared by an independent person with the relevant environmental auditing expertise;*
  - (b) *provide verifiable findings, in a structured and systematic manner, on*
    - i) *The level of performance against and compliance of an organisation or project with the provisions of the requisite environmental authorisation or EMPr and, where applicable, the closure plan; and*
    - ii) *The ability of the measures contained in the EMPr, and where applicable the closure plan, to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity;*
  - (c) *Contain the information set out in [Appendix 7](#); and*
  - (d) *Be conducted and submitted to the competent authority at intervals as indicated in the environmental authorisation”.*





## 1.1 DETAILS OF THE HOLDER

Details of the holder are summarised in Table 1 below.

Table 1: Details of the holder.

<b>Company Name</b>	Tetra4 (Pty) Ltd
<b>Company Registration</b>	2005/012157/07
<b>Head Office Physical Address</b>	1 Bompas Road, Dunkeld West, Johannesburg, 2196
<b>Head Office Telephone Number</b>	010 045 6010
<b>Head Office Fax Number</b>	010 045 6001
<b>Head Office Contact Person</b>	Khalid Patel (khalid@renergen.co.za)
<b>Operations Physical Address</b>	Mond van Doornrivier RE/38, Theunissen District, 9414
<b>Operations Telephone Number</b>	010 045 6000
<b>Operations Contact Person</b>	Vusi Dlamini
<b>Environmental Manager</b>	Gerhard Muller (Gerhard@renergen.com)

## 1.2 BRIEF PROJECT DESCRIPTION

The Cluster 1 gas production operations is located approximately 20 km southwest of the town of Virginia, within the Matjhabeng and Masilonyana Local Municipalities, in the Free State Province. Although the production area is extensively disturbed by various land use activities such as crop cultivation, mining and urban development, sensitive sites occur within the production area that include pockets of pristine vegetation, ridges, and drainage lines, which may still have high ecological value. The geology of the area is comprised of predominantly Karoo, Ventersdorp and Witwatersrand Supergroup lithologies complete with younger dolerite intrusions. Major fault systems associated with closely spaced zones of fractures and joints provide a preferential pathway for a combination of abiogenic and biogenic gas to reach the surface. As such, the gas at the surface or close to the surface, is a direct emission from the linked fault system.

Tetra4 adopted a phased production approach where natural gas will be extracted from various existing and planned gas wells within the production field and sent via pipelines to the compressors for compression and distribution. The phased approach will span over a period of approximately 25 years. The production method entails the drilling of gas wells via a combination of diamond and percussion drilling to depths more than 300m below the surface. The drilling is aimed at intercepting major and minor faults that act as preferential pathways for gas to flow to the surface.

Tetra4 have identified 13 existing wells that will be utilised for initial production activities. These 13 wells and the supporting infrastructure required for production related activities is referred to as Cluster 1 and comprises the first gas field for development within the approved Production Right area. The final product of the gas processing includes helium and LNG, both of which will be temporarily stored in tankers and trucked away via trailer to be sold to end users. In addition to gas production and processing activities, further exploration wells will be drilled in accordance with the Production Right and, if successful, the exploration wells will be converted into production wells to be added to the Cluster 1 network. Layout maps of the Cluster 1 Gas Extraction Project area illustrating the existing and proposed gas extraction wells, the EIA approved construction corridor, proposed gas pipelines and the identified wetland areas are provided in Figure 1 to Figure 6.

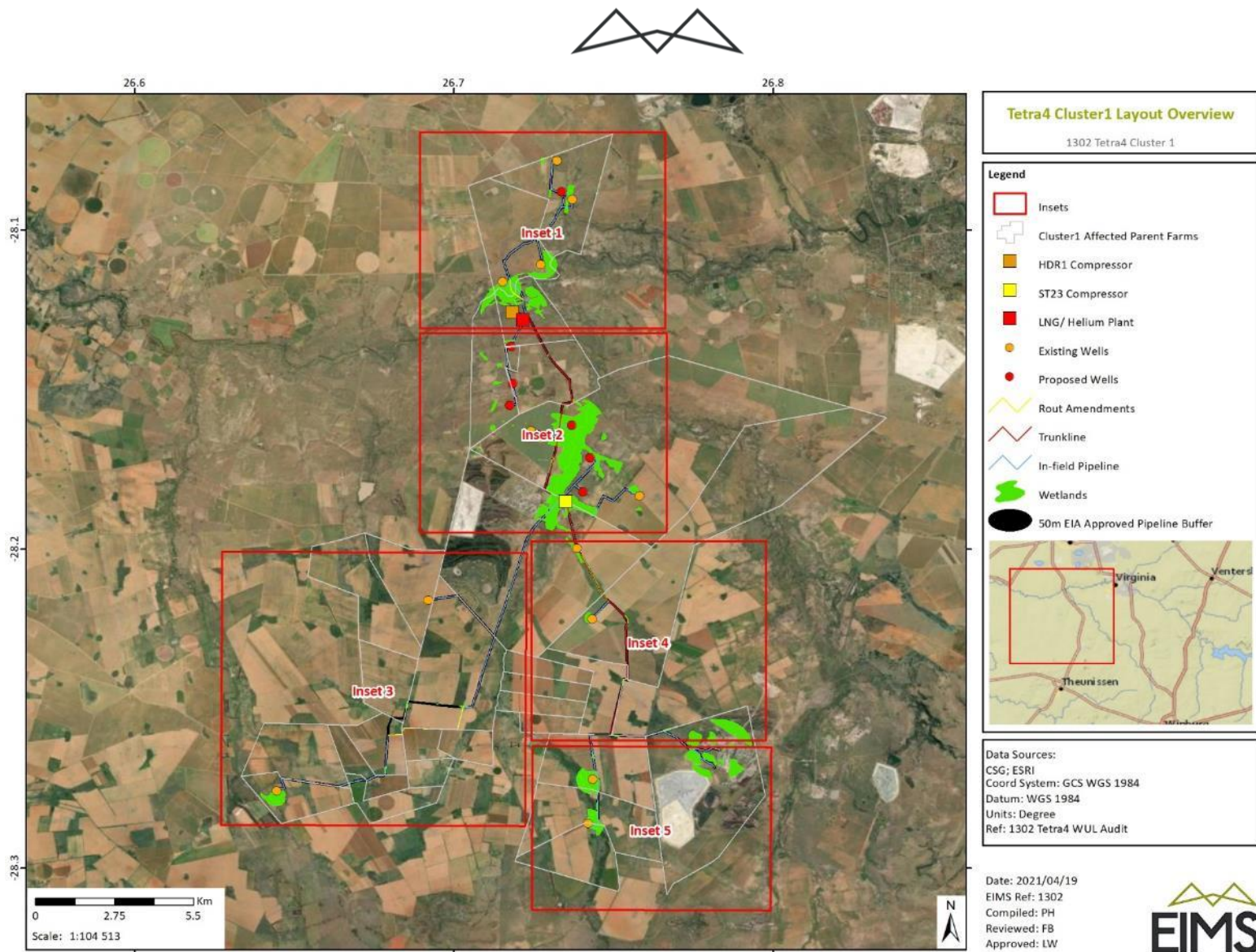


Figure 1: Layout Map of the Cluster 1 Gas Production Project area (Overview)<sup>1</sup>.

<sup>1</sup> The layout map includes the wells and pipelines that were included in the EIA. Not all the infrastructure will be constructed during this phase of the development.



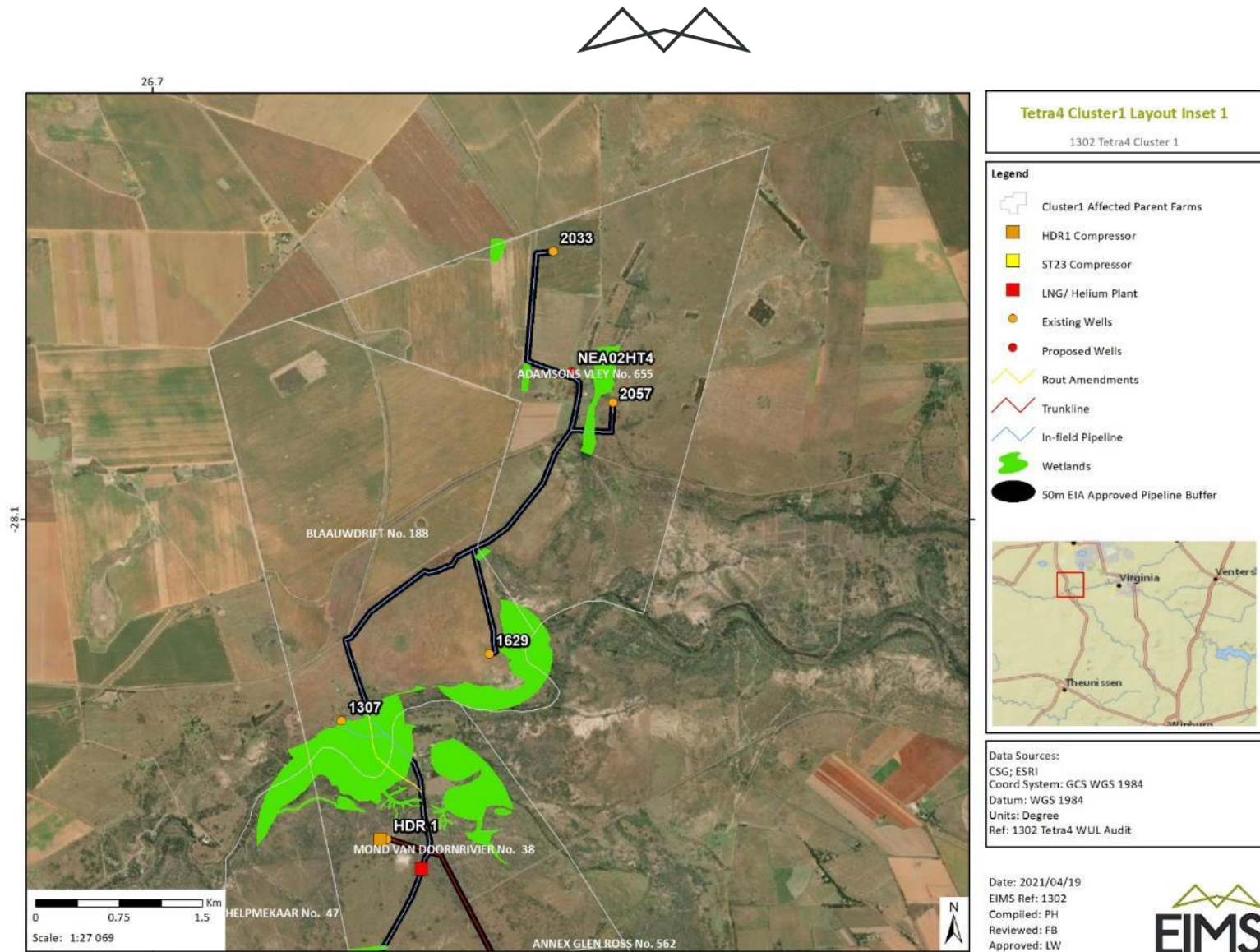


Figure 2: Layout Map of the Cluster 1 Gas Production Project area (Inset 1)<sup>2</sup>.

<sup>2</sup> Wells 2033 and 1629 will not be tied in during this phase of the development.

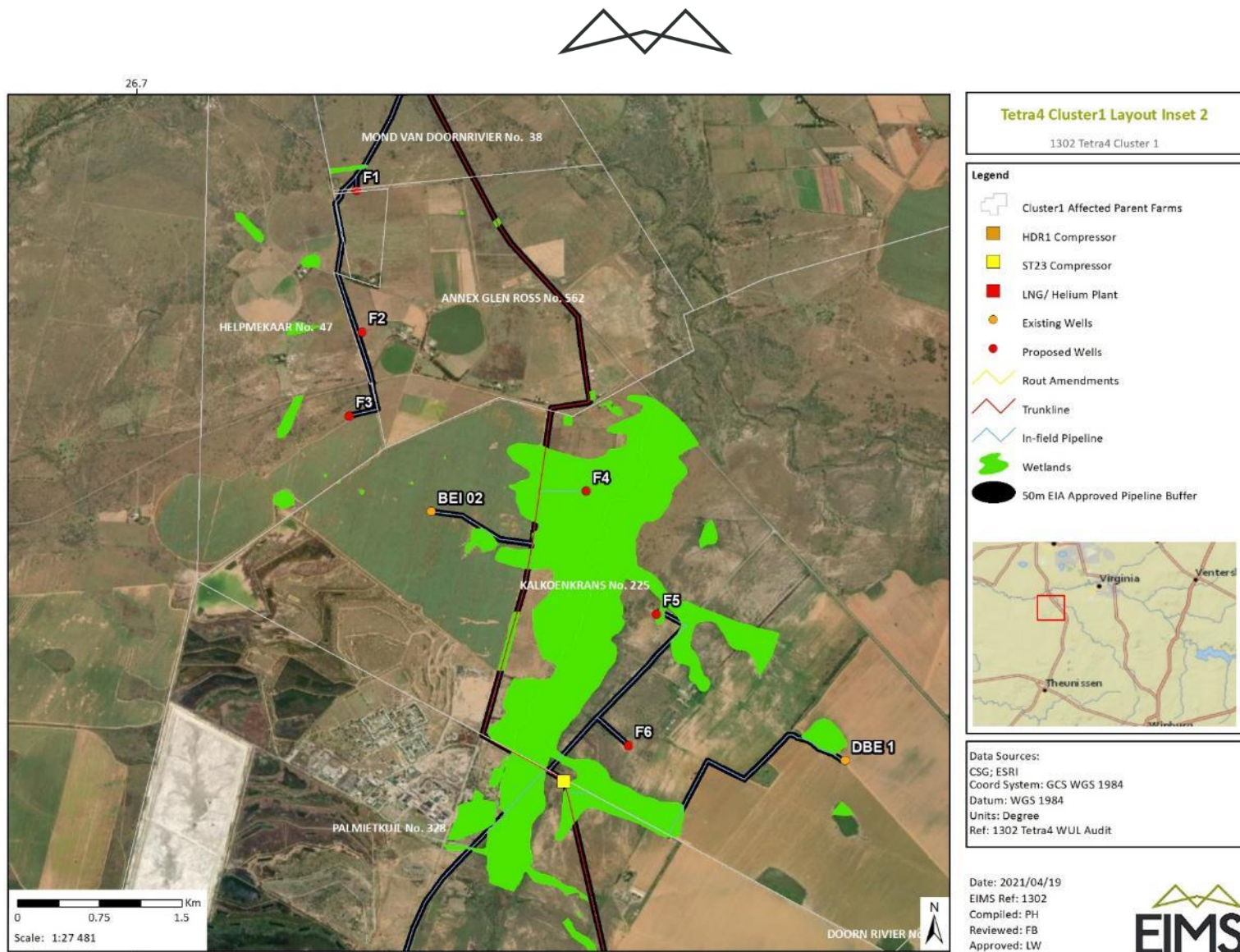


Figure 3: Layout Map of the Cluster 1 Gas Production Project area (Inset 2).<sup>3</sup>

<sup>3</sup> Wells F1 to F6 will not be drilled and tied in during this phase of the development.



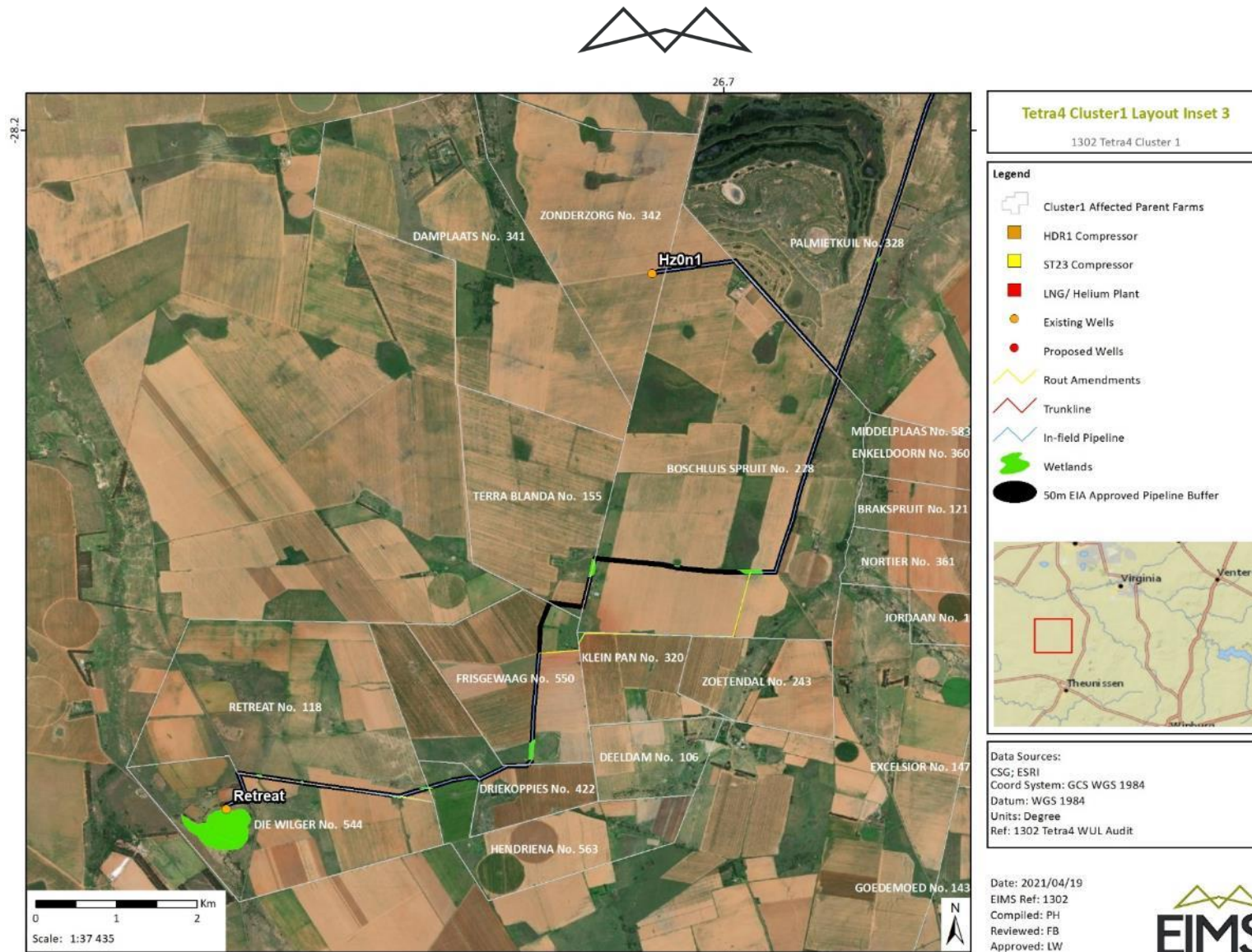


Figure 4: Layout Map of the Cluster 1 Gas Production Project area (Inset 3).

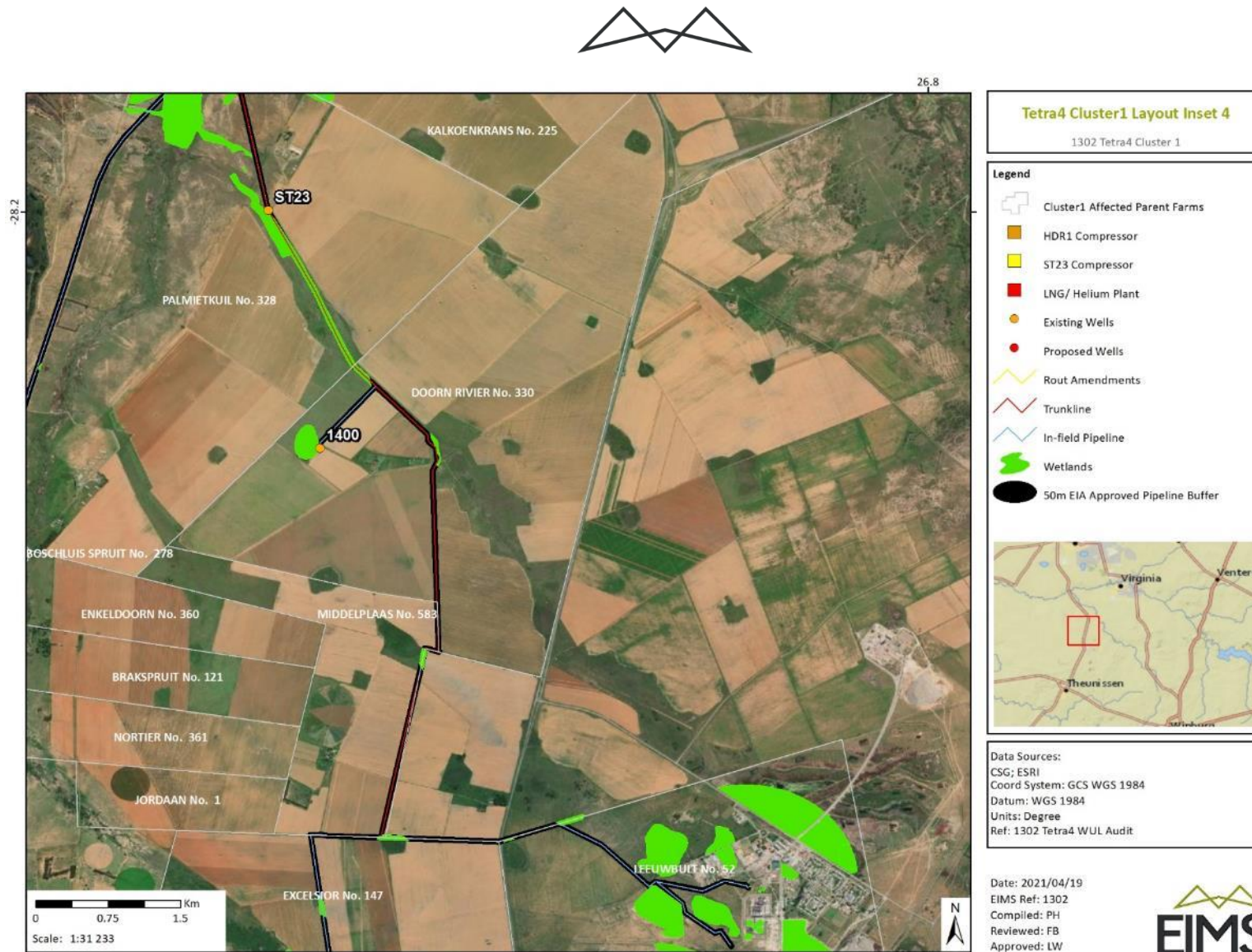


Figure 5: Layout Map of the Cluster 1 Gas Production Project area (Inset 4).<sup>4</sup>

<sup>4</sup> The project is not planning to tie in at the mine on Leeuwbult No. 52 during this phase of the development.



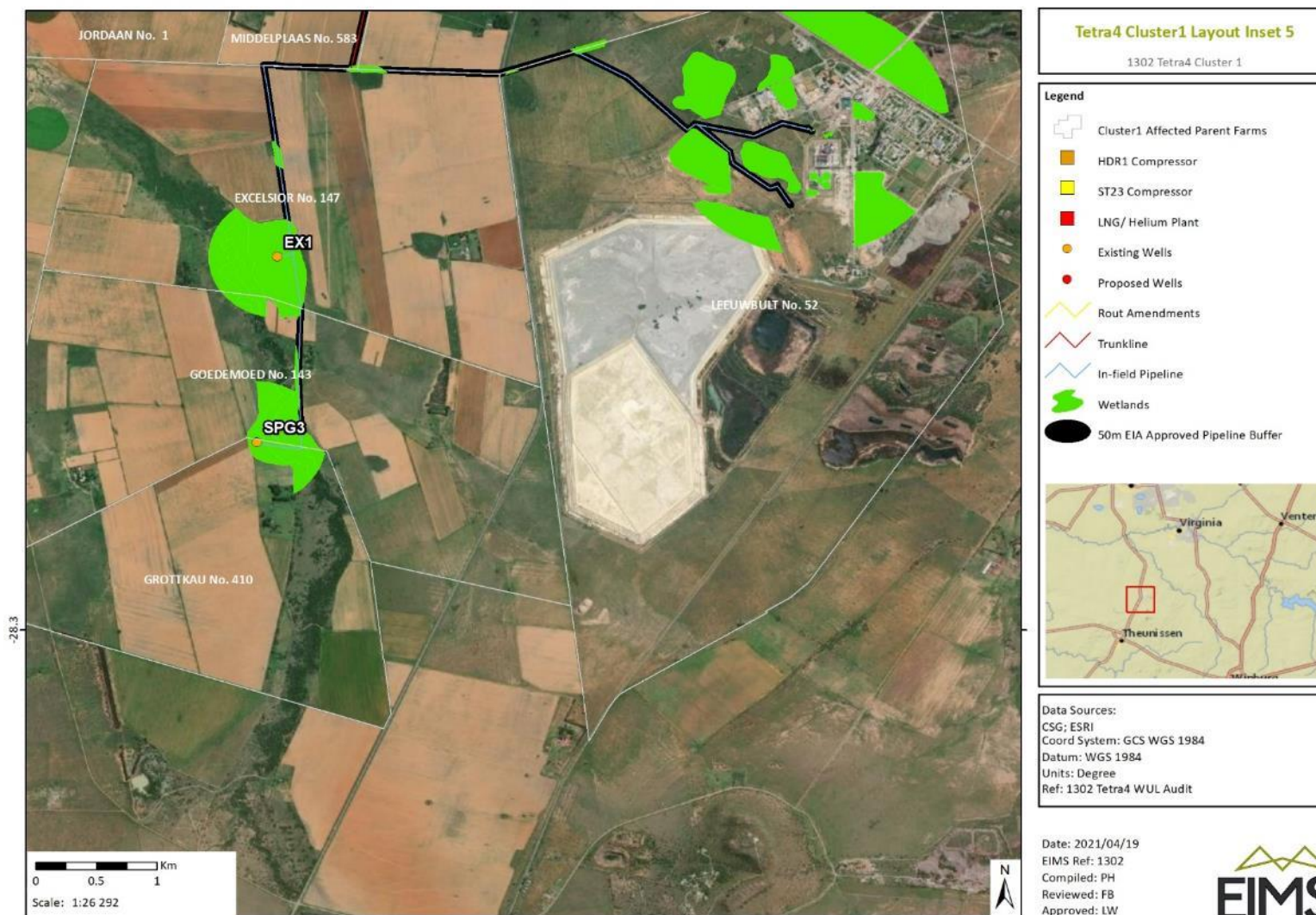


Figure 6: Layout Map of the Cluster 1 Gas Production Project area (Inset 5).<sup>5</sup>

<sup>5</sup> The project is not planning to tie in at the mine on Leeuwbult No. 52 during this phase of the development.



### 1.3 SUMMARY OF ACTIVITIES UNDERTAKEN DURING THE REPORTING PERIOD

The main contractor commenced with the preparation works for the Cluster 1 construction activities at the end of 2019 with the preparation of the construction camp. Establishment of the well platforms was the first construction activities to commence with the excavation and installation of the pipeline undertaken generally from wells Retreat, SPG03 and 2057 toward HDR1 and the proposed Helium/ LNG plant. At the time of the audit, the construction of the gas gathering production wells and pipeline was completed and commissioned together with Compressor Station A (ST23) and Compressor Station B (HDR1) Construction of the Helium/ LNG Plant commenced in July 2020 and continued during the audit. Based on the progress reports provided, as well as the site visit, the following activities were applicable to the audit:

- Continued gas extraction and compression undertaken from the HDR1 and MDR05 wells at the HDR1 plant.
- Layer and concrete works of the platforms at the LNG/ Helium process plant adjacent to the HDR1 site and construction camp continued.
- Installation of the main compressor components at the LNG/ Helium process plant continued.
- Helium compressor units were installed at the helium compressor Block H on the LNG/ Helium plant platform.
- Installation of equipment at the compressor Station A (ST23) and compressor Station B (HDR1) was completed and commissioned.
- Trenching and installation of the Cluster 1 gas trunkline and infield pipelines and wells were completed and mostly commissioned. Re-drilling of the well SPG3 was being undertaken to remove blockages.
- Installation of the pigging stations at the Sand and Boschuispruit river crossings and the low point drains were completed.
- Reinstatement of the trench was completed along the installed pipeline route. A punch list was created to record the outstanding items that must be addressed in specific areas to ensure adequate reinstatement and final rehabilitation.
- Since the previous six-monthly Environmental Audit (December 2020) exploration drilling activities took place at seven exploration wells. These include P2V2, MDR1, P007, P0010, P0013, R2D2 and C3PO. At the time of the audit, the drilling activities at these wells were completed. The MDR1 well were undergoing yield testing, P0012 log tested and R2D2/C3PO were being cased. P007 and P0010 were rehabilitated and P2V2's rehabilitation was outstanding.





Figure 7: Layer works at the platforms of the LNG/Helium process plant complex.



Figure 8: Concrete works for the construction of the bund wall around the LNG storage vessels.



Figure 9: Main compressor units installed.





Figure 10: Installation of the compressor equipment at compressor Station A (ST23) was completed and commissioned.



Figure 11: Installation of the compressor equipment at compressor Station B at the LNG/ Helium Plant was completed and commissioned.





Figure 12: Installation of the Cluster 1 gas wells was mostly completed (EX01, 1400, ST23, DBE1).



Figure 13: Installation of the pigging stations was completed.



Figure 14: Rehabilitation of the pipeline was mostly completed with some punch items to be addressed.



Figure 15: Yield testing taking place at MDR1.





Figure 16: Well logging taking place at well P0012.



Figure 17: Installation of the casings at wells R2D2 and C3PO continued.





Figure 18: Rehabilitation around exploration well P007 was completed.



Figure 19: Rehabilitation around exploration well P0010 was completed.



Figure 20: Rehabilitation around exploration well P2V2 was not completed.

## 2 DETAILS OF THE AUDITOR

The environmental audit was undertaken by Francois Barnard from EIMS. Francois' details are described in section 2.1.

### 2.1 EXPERTISE OF THE AUDITOR

Francois is an environmental scientist offering environmental management, auditing, monitoring, training, rehabilitation, and project management services. He is a registered Professional Natural Scientist who holds a BSc Honours degree in environmental sciences from the North-West University in Potchefstroom and is a trained environmental auditor (Aspects International, 2012). The auditing training included all aspects of environmental auditing as well as EMS auditing in terms of ISO14001. In addition, he is trained on the ISO14001:2015 environmental standard and has completed the EMS lead auditor training in terms of ISO14001:2015. He has over 12 years' experience in the environmental management and environmental and social auditing field on numerous projects and facilities in the energy, mining, infrastructure development and conservation management sectors. He is conversant with the South African environmental legislation as well as sustainability auditing, including Equator Principles, IFC Performance Standards and World Bank EHS guidelines. Francois has a thorough understanding of the environmental and social assessment and permitting processes and is experienced in the review, compilation and implementation of environmental and social management plans, procedures and method statements in line with best practice standards and systems, as well as document tracking and record keeping. A detailed CV can be provided on request.

### 2.2 DECLARATION OF INDEPENDENCE

*I, Francois Barnard, declare that –*

- *I act as the independent Environmental Auditor;*
- *I will perform the work relating to the environmental audits in an objective manner, even if this results in views and findings that are not favourable to the Client;*
- *I declare that there are no circumstances that may compromise my objectivity in performing such work;*





- *I have expertise in conducting environmental audits, including knowledge of the environmental Acts, regulations and any guidelines that have relevance to the audited operations;*
- *I will comply with the relevant Acts, regulations, and all other applicable legislation;*
- *I have no, and will not engage in, conflicting interests in the audit process;*
- *I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the NEMA; and*
- *I do not have and will not have any vested interest (either business, financial, personal, or other) in the audit other than remuneration for work performed.*

### **3 SCOPE, PURPOSE AND OBJECTIVE OF THE AUDIT**

The **scope** of the audit is to assess compliance of the Cluster 1 Gas Production Project with the conditions of the approved EA and EMPr and to confirm the continued adequacy of the EMPr. The **purpose** of the audit is to ensure compliance with the requirement of the EA and EMPr and the NEMA EIA Regulation 34 to undertake scheduled compliance audits. The **objectives** of the audit are to determine:

- The level of performance against and compliance of the project with the provisions of the requisite EA and EMPr; and
- The ability of the measures contained in the EMPr, to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity.

### **4 AUDIT METHODOLOGY**

#### **4.1 PROCEDURE FOR THE AUDIT**

Initial documentation was obtained and reviewed in preparation for the audit. A checklist was prepared based on the requirements of the EA and EMPr for the pre-construction, construction, operational and closure phases. Following the initial checklist preparation and documentation review, a site visit was undertaken on 1 July 2021 to determine compliance with the EA and EMPr. Compliance with the requirements was evaluated using the pre-determined scoring criteria as described in Section 4.2 and the results of the audit are described in Section 5 of this report.

The report provides recommendations for improvement based on general findings and site observations. The Environmental Audit is primarily a Compliance Audit against the conditions of the approved EA and EMPr. Findings from the audit and site inspection that did not relate to an EMPr condition did not contribute to the audit score. However, where deficiencies have been identified that do not necessarily correspond to EMPr conditions, these findings have been used to provide recommendations for improvement.

Various documentation and records were required during the audit to confirm compliance with the requirements. Where possible, documentation and records were made available electronically for review prior to the site visit. The rest of the information required for verification of compliance was provided during and after the site inspection.

There is wide variety of South African environmental legislation and Tetra4 is required to comply with all relevant legislation. Whilst consideration was given to the relevant environmental legislation, a full comprehensive legal compliance audit is beyond the scope of this audit. Where reference is made to legislation or other statutory provisions in this report, the original legislation or other statutory provisions will always take precedence and the reader is directed to revert to the original legislation or statutes.

#### **4.2 EVALUATION CRITERIA USED DURING THE AUDIT**

The evaluation criteria for compliance scoring were based on a pre-determined scoring system. Each condition of the EA and EMPr was weighted equally to determine a compliance score. The scoring criteria used during the audit are as follows:



- Fully Compliant: Indicating that the condition was fully complied with and provided with a compliance score of 4.
- Partially Compliant: Indicating that the condition has not been fully complied with and that additional measures are required to obtain full compliance. Partial compliances were provided with a compliance score of 2.
- Non-Compliant: Indicating that the condition has not been complied with and provided with a compliance score of 0.
- Not Applicable (N/A): Indicating that the condition is not currently applicable. Not applicable conditions were removed from the total number of conditions from which the compliance score was calculated during this reporting period.

### 4.3 CONSULTATION PROCESS UNDERTAKEN

The findings of this assessment are based on visual inspection of the relevant construction, exploration and production areas, interviews, as well as documentation reviewed. No physical testing or chemical analysis was performed during the assessment and information provided by employees was verified by inspection and review only. The Project representatives that were interviewed and assisted with the audit was:

- Gerhard Muller - Tetra4 Environmental Manager (EM);
- Chandre Kok– Tetra4 Environmental Officer (EO); and
- Kevin Booth – EPCM EO.

As per the Regulation 34 of the EIA Regulations, 2014, all potential and registered interested and affected parties should be notified of the submission of the report to the authorities and the report should be made available to anyone on request and it should be made available on a publicly accessible website, where the holder has such a website. The previous 6-Monthly NEMA Audit Report that was undertaken in December 2020 was submitted to PASA via email on 7 April 2021.

## 5 RESULTS OF THE AUDIT

The results of the audit have been described in this section of the report. The results include a summary of compliance with the requirements of EA and EMPr, the results of the compliance evaluation, summary of findings as well as a discussion on the continued adequacy of the EMPr within sections 5.1, 5.2, 5.3 and 5.4 respectively.

### 5.1 COMPLIANCE SUMMARY

A total of 51 conditions (commitments) were identified in the EA that were evaluated. Seven (7) of these conditions were considered not applicable to the current phase of the project. Of the applicable conditions a total of 43 commitments were noted to be fully compliant, 1 partially compliant and 0 were non-compliant.

A total of 108 commitments were identified in the EMPr that were evaluated. Fourteen (14) of these conditions were considered not applicable to the current phase of the project. Of the applicable conditions a total of 92 commitments were noted to be fully compliant, 2 partially compliant and 0 were non-compliant.

The level of compliance for each commitment was calculated according to the methodology described in section 4.2. Utilising this scoring system, **a total compliance score of 98.86% was obtained for the EA and 98.94% for the EMPr.** A summary of the number of conditions of the EA and EMPr rated as Fully Compliant, Partially Compliant and Non-Compliant are presented Figure 21 and Figure 22 respectively.

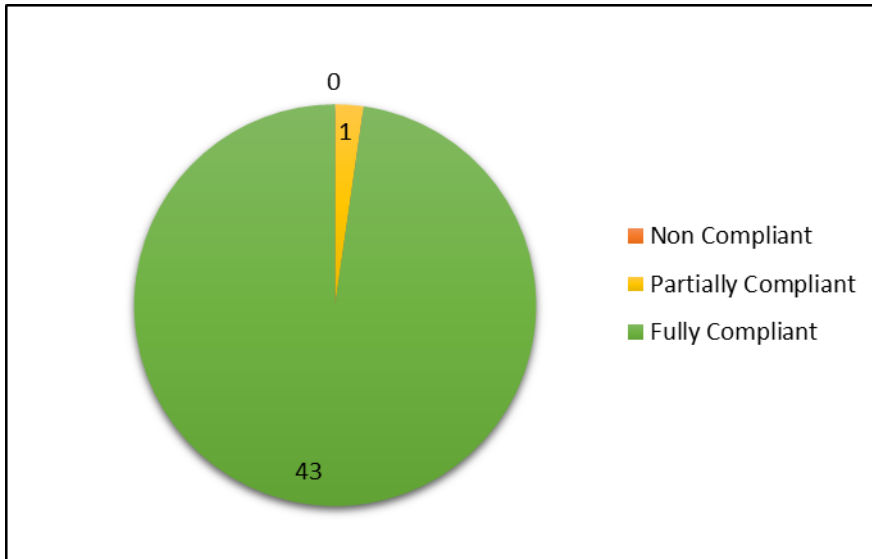


Figure 21: Distribution of compliance ratings for EA conditions.

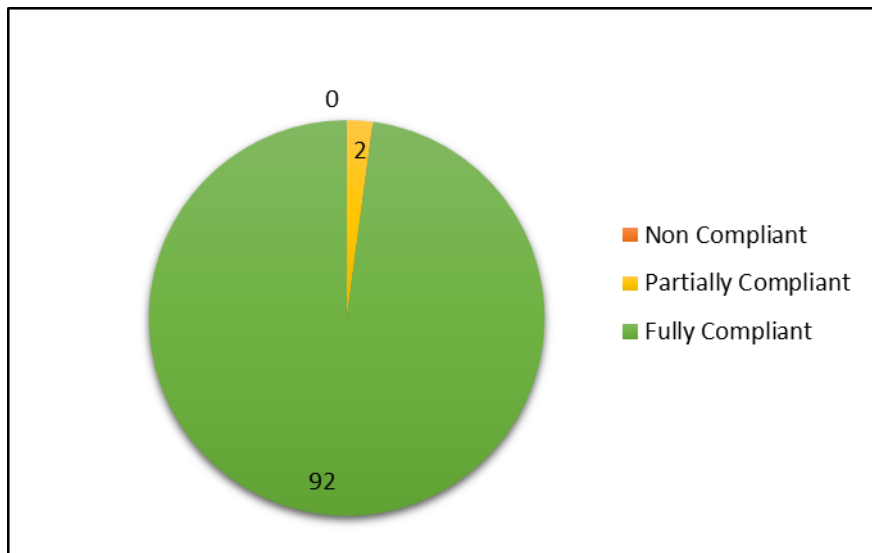


Figure 22: Distribution of compliance ratings for EMPr conditions.



## 5.2 COMPLIANCE EVALUATION

The compliance evaluation of the EA and EMPr are provided in Table 2 and Table 3. The conditions were rated according to the compliance evaluation criteria described in 4.2. The text highlighted in blue shows the amendments of the EA that was approved on 30 August 2019 and the text highlighted in green shows the amendments of the EMPr on 1 September 2020.

Table 2: Compliance evaluation of the EA conditions.

Ref #	Condition	Compliance Rating	Comments/ Verification
<b>5,1</b>	<b>Scope of the Authorisation</b>		
<b>5.1.1</b>	This authorisation authorises the holder to undertake all the activities prescribed under section 3 above. The location alternatives HP1 located next to the HDR1 well and HP2 located at Sibanye Shaft 1 for the combined helium and LNG plant are approved. Furthermore, the preferred pipeline route alternatives P2 and P4 which connect all the existing and new wells to HP1 and HP2 respectively (as described in the EIR) are also approved.	4	The pipelines and facilities are following the IEA approved route corridor as far as possible. The EA indicates drilling of up to 6 exploration wells. It might however be an error due to the EIA/EMPr indicating that more wells will be drilled, additional to the 6 identified wells. An amendment to the EA should be considered to correct the error.
<b>5.1.2</b>	The authorised activities must only be carried within the application area specified in section 4 above and appendix 2. (Also See EA Amendment regarding Portion 2 of Boschluispruit 278 and Portion RE of the Farm Retreat 118 and Boschluispruit 278)	4	The current activities are located within the application area.
<b>5.1.3</b>	The holder of this authorisation (hereafter referred to as the holder) is responsible for ensuring compliance with the conditions of this authorisation, and recommendations made in the Environmental Impact Assessment Report (EIR) and Environmental Management Programme Report (EMPR) dated 03rd of May 2017.	4	The applicant has appointed an Environmental Officer and ECO that are monitoring the implementation of the EA, EIA and EMPR.
<b>5.1.4</b>	Any person(s) acting on behalf of the holder, inclusive of contractor(s), subcontractor(s), consultant, and employee are also subject to the conditions of this authorisation. This condition however does not exonerate the holder from its accountability and responsibility to ensure compliance with the conditions of this environmental authorisation.	4	The EMPR was supplied to the relevant contractors and monitoring of the implementation is being undertaken by the EO and ECO. The EMPR was included as part of the EPCM contract and are include as part of the basis of design provided to the exploration drilling contractors.



Ref #	Condition	Compliance Rating	Comments/ Verification
5.1.5	Any changes to, or deviations from, and amendments to the proposed activities, conditions of this authorisation, and recommendations in the S&EIR and EMPR must be approved, in writing, by the Department before such changes or deviations are effected. The Department reserves the right to request the submission of information deemed necessary to assess and evaluate the significance and impacts such changes, deviations and amendments before such changes, deviations and amendments are authorised or not. Any changes, deviations and amendments may be subject to provisions of Chapter 5 of the EIA Regulations, 2014 pertaining to the amendments of the authorisation and EMPR.	4	Amendment to the EA was made and approved on 29 August 2019 and the EMPR was approved on 1 September 2020.
5.1.6	This authorisation does not absolve the holder from complying with any other statutory obligations that may be applicable to the proposed activities.	2	The holder is aware of the requirement to comply with other statutory obligations. An EO and ECO have been appointed to monitor compliance to environmental legislation, where applicable. Drilling in proximity of wetlands /watercourses requires a WUL or GA for Section 21 c and i water uses. Storage of hazardous drilling waste might trigger Waste Management Licence (WML). The EA covers storage of hazardous waste, but only for the knockout water, and not for drilling waste in lagoons. The storage of the drilling waste at P2V2 for longer than 90 days triggers the requirement for a WML.
5.1.7	The holder of this authorisation must apply for an amendment of this authorisation in the case of a change of ownership of transfer of rights and/or obligations.	4	Tetra 4 is still the holder of the authorisation. Renergen is the holding company of Tetra 4.
<b>5.2</b>	<b>Notification and Appeal of Authorisation</b>		
5.2.1	The holder must, in writing, within fourteen days of the date of this amended authorisation, notify all registered interested and affected parties (I&As) of the outcome of the application.	4	The EA was signed by DMR on 21 September 2017 and by PASA on 29 September 2017. The notification (Letters, emails, faxes) went out on 3 October 2017.
5.2.2	The notification contemplated above must amongst other issues:		
5.2.2.1	Stipulate the date of the decision, and the date of the issue of the amended authorisation.	4	The notification letter included the date of the authorisation.



Ref #	Condition	Compliance Rating	Comments/ Verification
5.2.2.2	Provide reasons for the decision, included in Appendix 1 of this amended authorisation.	4	The notification letter included the reasons for the decision.
5.2.2.3	Inform registered I&As of the Appeals Procedure provided for in terms of the National Environmental Management Act, 1998: National Appeals Regulations (GN R 993 of 08 December 2014).	4	The notification letter included the appeals procedure.
5.2.2.4	Draw the attention of the I&As to the manner in which they may access the decision, including obtaining the copy of the authorisation.	4	The notification letter included the manner in which they may access the decision and where they can obtain the authorisation.
<b>5.3</b>	<b>Commencement of the Activity(s)</b>		
5.3.1	The authorised activities shall not commence within 20 days of the date of this authorisation, pending potential lodgement of appeal(s).	4	The 2017 EMPR for Cluster 1 replaces the 2010 EMPR for the activities within Cluster 1. No additional activities /Cluster 1 activities took place within 20 days of the issuing of the 2017 EA.
5.3.2	Where an appeal is lodged against the decision by any party, the amended authorisation or any provision or condition of the amended authorisation will be suspended in accordance with section 43(7) of the National Environmental Management Act, 1998; and as such you may not commence with any activity, unless authorised in writing by the competent authority and/or the decision on the appeal has been taken.	4	No appeal was lodged for the Cluster 1 EA. No Cluster 1 activity commenced before the EA was issued.
5.3.3	A thirty (30) day written notice must be given to the Petroleum Agency SA prior to the commencement of any of the authorised production activities <a href="#">located within the boundary of Cluster 1</a> .	4	Notice of construction commencement was sent on 18 April 2019.
5.3.4	The authorised activities must commence within a period of 5 years from the date of issue of this authorisation. If commencement of the authorised activities does not occur within the said period, the authorisation lapses, and where the holder still intends undertaking the authorised activity(s), a new application for authorisation in terms of the EIA Regulations, 2014 must be obtained.	4	The Authorisation is dated 21 September 2017 and the 5-year period will be applicable on 20 September 2022. The authorised activities commenced in December 2019.



Ref #	Condition	Compliance Rating	Comments/ Verification
5.3.5	Any requests for extension of the commencement period of this authorisation should be lodged with the competent authority before the expiry of the environmental authorisation in accordance with amendments to Regulation 28(1) of EIA Regulations, 2014.	N/A	Extension is not applicable as the activities commenced within 2019 and within the timeframe.
5,4	<b>Management, Monitoring and Auditing of Operations Including Reporting Requirements</b>		
5.4.1	The Environmental Management Programme (EMPR) submitted with the Environmental Impact Assessment Report (EIR) is hereby approved. It is hence mandatory for the holder to implement all recommendations and management measures stipulated in the <a href="#">Cluster 1</a> EMPR throughout all the phases of the proposed production activities <a href="#">within Cluster 1</a> .	4	The EMPR is being implemented. The EO and ECO are appointed to monitor and ensure compliance to the EMPR.
5.4.2	Any non-compliance with the EMPR constitutes non-compliance with this authorisation, and any non-compliance with this authorisation may result in its suspension and may render the holder guilty of offence in terms of section 49A of NEMA, and may, if convicted, liable for penalties contemplated in Section 49B(1) of NEMA.	N/A	Statement. Noted.
5.4.3	Should there be changes in the operation and management of the authorised activities, the EMPR must be amended to accommodate those changes and submitted to the competent authority for approval before implementation takes place. The amendment(s) to the EMPR must be done in accordance with Regulations 36 and 37 of the EIA Regulations: 2014.	4	Amendment to the EA and EMPR were made and were done in accordance with the applicable EIA Regulations.
5.4.4	The holder of the authorisation must implement necessary measures to ensure that operators, contractors and subcontractors have full awareness of the recommendations on the EMPR before commencing with any authorised activity.	4	Awareness of the requirements of the EMPR has been done with Tetra 4 and contractor employees. Supervisors signed for that they received and understand the requirements of the EMPR. Requirements of the EMPR are conveyed to site personnel via procedures and toolbox talks. The EMPR is included as part of the basis of design provided to the exploration drilling contractors.
5.4.5	The EMPR must be included in all contractual documentation entered thereto between the holder and contractor(s). Furthermore, a copy of the EMPR must be kept <a href="#">at the site office at all times</a> .	4	The EMPR is referred to in the contractual documentation and provided to the contractors. The EMPR is available at the client and contractor EOs.



Ref #	Condition	Compliance Rating	Comments/ Verification
5.4.6	The holder must before the commencement of the authorised activities, appoint an independent and experienced Environmental Control Officer (ECO) who will ensure that the conditions of this authorisation and provisions of the EMPR are implemented and adhered to.	4	EIMS has been appointed as the independent ECO for the Cluster 1 project. Monthly compliance inspections are undertaken, and reports prepared.
5.4.7	The appointed ECO must, at drilling and construction stages (trenching and laying of pipelines and construction of the helium and LNG plant and associated infrastructure) submit monthly reports to the Petroleum Agency SA. Submission of quarterly environmental monitoring reports is also mandatory during production operations.	4	Monthly ECO reports are submitted to PASA currently during construction and drilling stages. The 22nd monthly ECO report (May 2021) for Cluster 1 was submitted to PASA in June 2021.
5.4.8	The holder must submit an environmental audit report to the Petroleum Agency SA biannually (twice a year) carried out by an independent and qualified environmental practitioner in accordance with Appendix 7 of the EIA Regulations, 2014. At a minimum, the audit report must evaluate compliance with the conditions of this authorisation and provisions of the EMPR; identify and assess any new impacts and risks from undertaking the authorised activities; identify shortcomings in the EMPR; and identify if findings of the previous audit were addressed including opinion on the effectiveness of preventive and corrective actions implemented.	4	The first biannual audit was done in December 2019 and the report was submitted to PASA in February 2020. The 2nd biannual audit was undertaken in June 2020 and the report submitted to PASA in August 2020. The 3rd bi-annual audit was undertaken on 14 December 2020 and submitted on 7 April 2021. The June 2021 audit is the 4th 6-monthly audit.
5.4.9	Where shortcomings in terms of Regulation 34(4) are identified, the holder must submit recommendations to amend the EMPR in order to rectify any shortcomings that may have been identified in the audit report contemplated in 5.4.8 above.	4	Based on the June NEMA audit, the EMPr was considered adequate and effective to manage and mitigate the current activities and impacts of this project. No concerns were noted in the area inspected at the time of the audit.
5.4.10	The holder of this authorisation must keep all records relating to monitoring and auditing and make them available for inspection to any relevant and competent authority in respect of this development.	4	Records relating to monitoring and auditing are kept and can be made available on request.
5,5	<b>Specific Conditions</b>		





Ref #	Condition	Compliance Rating	Comments/ Verification
5.5.1	The holder or the appointed ECO must within 30 days prior to the commencement of the authorised production activities, distribute notifications to all affected land owners informing them of the operational plans. The said notification must among other issues include the commencement and anticipated completion date(s) of each of the proposed activities, details of the contractors including subcontractors, sketch plan showing the operation areas, and procedure to lodge complaints and report any environmental and safety matters arising from the operations.	N/A	It is uncertain if this condition refers only to production activities. A community meeting was however undertaken to introduce the communication procedures with the stakeholders. Pre-commencement assessments are done before a property is entered and before any work is done on a property. These assessments are done in conjunction with the land owners to ensure that they are aware and are provided to detail any special conditions for access. A community liaison offer was appointed who correspond with the landowners on any concerns raised.
5.5.2	If the final positions of the new wells and compressor site(s) as described in the EIR are altered, the new and final positions must be placed within the assessed Cluster 1 area, and must (where practically possible) avoid environmentally sensitive areas, including areas of historical/ cultural/ heritage significance.	4	The known infrastructure was placed in the assessed Cluster 1 area.
5.5.3	Drilling fluids and muds must strictly be water-based and biodegradable. In this regard, the holder is required to submit Material Safety Data Sheets for drilling fluids to the Petroleum Agency SA at least 60 days before drilling operations commence.	4	It was confirmed that the drilling fluid is water based and biodegradable and a copy of the MSDS was sent to PRASA.
5.5.4	Any excavations exceeding a depth of 3 meters, traversing the potentially sensitive alluvial deposits at Boschluispruit and Sand Rivers and unweathered sedimentary Bedrock, must be done under the supervision of an independent and qualified Palaeontologist.	4	A palaeontologist monitored excavations at the Sand River and Boshluispruit.
5.5.5	The holder must obtain land use and access agreements prior to commencement of the proposed activities, and submit copies of such to the Petroleum Agency SA at least 30 days before the commencement of the authorised activities. Furthermore, in order to avoid conflict of interests with the current land-use activities, the applicant must consult on an ongoing basis with the affected surface landowners and keep them informed of the project development.	4	Land use and access agreements were finalised for the Cluster 1 Pipelines and Wells. Access agreements are in place with land owners where wells are currently located. The agreements that are in place were submitted to the PASA on 17 April 2019. Ongoing consultation with land owners continues.



Ref #	Condition	Compliance Rating	Comments/ Verification
5.5.6	The holder must develop a grievance mechanism and claims procedure and share the content thereof with affected landowners before the authorised operations commence. A copy of the grievance mechanism and claims procedure, including proof of communication with affected landowners must be submitted to the Petroleum Agency SA at least 30 days before the commencement of the authorised activities.	4	Grievance mechanism and claims procedure are in place and the information was shared with the relevant stakeholders. The grievance mechanism was sent on the 17th of April 2019 and the proof of communication with affected parties was sent on the 24th of April 2019 to PASA.
5.5.7	The holder must undertake an asset and infrastructure baseline study, in consultation with all affected landowners, before the authorised activities commence, and submit the report in question to the Petroleum Agency SA at least 30 days before authorised activities commence.	4	An infrastructure baseline study assessment was done and submitted to PASA on 18 April 2019.
5.5.8	The holder must convene a special meeting with landowners and communities before operations commence to ensure that they understand the technical and safety aspects of the proposed operations. Periodic feedback meetings with affected landowners and relevant regulatory authorities on the progress of operations, compliance status and to address stakeholders' issues concerning the project must take place.	4	A land owner and community forum (kick-off meeting) was held 17 November 2019 and included the contractor. Ongoing consultation with land owners continue.
5.5.9	The holder must develop a traffic safety plan especially for the turn-offs from the R30 in consultation with the relevant Roads Authority in order to ensure that the safety of road users is not compromised.	4	A draft Traffic Safety Plan (Work Instruction) was developed. A meeting was held with the regional traffic safety manager within February 2020 to advise on the road signage that was required and that was installed. It was reported that the wayleave for the access road to the HDR1 site did not require a Traffic Management/Safety Plan. The traffic safety plan will have to be amended for the new access to the plant area.
5.5.10	Appropriate notification signs, warning the communities about the hazards around sites including the presence of heavy vehicles, must be erected at construction and operational sites.	4	Road signage (speed limits, directions, no entry) was erected along the local access routes to the well sites and construction areas where activities were being undertaken and more permanent signage was established at the entrance to the HDR1 and construction camp area.
5.5.11	Wastewater produced during drilling operations and gas processing operations must be stored in above ground storage containers or tanks, and must be tested and, where necessary, treated before disposal at an appropriate or licensed disposal facility.	4	The wastewater from the drilling sites was stored in sumps and re-used. Water test is conducted to determine the final disposal of the wastewater.



Ref #	Condition	Compliance Rating	Comments/ Verification
5.5.12	An integrated waste management approach based on waste minimization must be implemented and must incorporate waste avoidance, reduction, recycling, treatment, re-use and disposal where appropriate. The holder must therefore develop an integrated waste management plan for implementation during operations. The said must be submitted to the Petroleum Agency SA at least 60 days before authorised activities commence.	4	The waste management plan and IWWMP was submitted to PASA on 18th of March 2019.
5.5.13	Waste storage sites must have impermeable and chemical resistant floors and must be covered or roofed to prevent direct sunlight or rain water from getting in contact with the waste.	4	It is assumed that this condition relates to more permanent operational areas as it is not feasible to have impermeable and chemical resistant floors at temporary work fronts all along the pipeline Right of Way. The waste storage area at the HDR1 site has impermeable concrete floors and the containers were provided with lids that were closed at the time of use. The main plant waste area was still being constructed.
5.5.14	The storage of hydrocarbons and/or chemicals and any operating equipment with hydrocarbons and/chemicals must have bund walls with adequate capacity to contain maximum volume that is stored or contained.	4	The chemical storage area at HDR1 and the construction camp had drip trays in place to contain spillages from these chemicals. The fuel bowser at the construction camp had a concrete bund. Drip trays are used under equipment that has the potential of spillage to ground. The hazardous storage area at the main laydown area was busy being moved to the new laydown area.
5.5.15	The holder must develop a storm water management plan for the combined helium and LNG plant, and must submit such to the Petroleum Agency SA at least 60 days before the operation of the plant commences.	N/A	The helium/LNG plant is still being constructed. These plans will be developed closer to commencement of operation.
5.5.16	Potentially occurring protected plant species such as <i>Merwillia plumbea</i> and <i>Crinum bulbispermum</i> and protected tree species such as <i>Acacia erioloba</i> must not be removed or disturbed unless necessary permission is granted by the relevant departments i.e. Department of Environmental Affairs and Department of Agriculture, Fisheries and Forestry.	4	Search and rescue operations takes place before a new activity commence, the protected plant species are identified and the relevant permits are applied for before removal/relocation. Some protected plant species were identified in the vicinity of the plant area and HDR1 site that was relocated.
5.5.17	The holder must develop and implement sound groundwater monitoring programme(s) that will ensure that potential impacts of gas production on ground water levels and quantity are prevented and/or managed. The programme to be developed must be submitted to the Agency at least 60 days before authorised activities commence.	4	It was confirmed that a comprehensive baseline groundwater monitoring programme was undertaken. The baseline monitoring reports that include the monitoring programme was submitted to PASA on 5 March 2019.



Ref #	Condition	Compliance Rating	Comments/ Verification
5.5.18	The integrity of the pipelines is crucial in preventing gas leakage or explosions. The holder must develop inspection mechanisms for the proposed production pipelines and submit such to the Petroleum Agency SA at least 30 days before production operations (gas extraction and transportation to the production plant) commence.	N/A	The full Cluster 1 gas production has not yet commenced. The pipelines are however filled with gas and commissioned up to the compressor stations.
5.5.19	Emergency incidents must be addressed and reported to the Petroleum Agency SA in accordance with section 30 of NEMA. In addition, the holder is required to notify the Petroleum Agency SA within 24 hours of the occurrence of an emergency incident.	4	During the reporting period (January to June 2021) no incidents were reported to the authorities.
5.5.20	The holder must develop emergency preparedness and response plans for responding to potential emergency incidents and submit such to the Petroleum Agency SA, at least 60 days before commencement of the authorised activities.	4	The EPRP has been submitted to PASA on 17 April 2019.
5.5.21	All recommended mitigation measures included in the EIR dated 03 <sup>rd</sup> of May 2017 are deemed to be the conditions of the EA and must therefore be adhered to.	4	The mitigation measures from the EIR were included in the EMPR. Compliance with the EMPR is being monitored on a monthly basis by the EO and ECO.
5,6	<b>General</b>		
5.6.1	A copy of the authorisation and the EMPR must be kept onsite to ensure appropriate implementation of the mitigation measures.	4	Copies of the EA and EMPR are available at the HDR1 office and construction camp.
5.6.2	The Department shall not be responsible for any damages or losses suffered by the holder in an instance where the operation is temporarily stopped for reasons of non-compliance with the conditions as set out herein.	N/A	Statement. Noted.
5.6.3	In view of the above, and having taken into consideration environmental management principles as set out in section 2 NEMA, and information presented in the EIR and EMPR, and subject to compliance with conditions of the EA and recommendations of the EMPR, the Department is satisfied that the proposed activities will not be in conflict with the objectives of the Integrated Environmental Management set out in Chapter 5 of NEMA and will not result in any detrimental risks to the environment and public. The authorisation is accordingly granted.	N/A	Statement. Noted.



Table 3: Compliance evaluation of the EMPr commitments.

Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification
1	Water quality baseline	The pre-production condition of the water resources must be utilised as the target for post-production closure objectives. All necessary measures must be taken to ensure that the post-production water quality as the same as pre-production baselines levels. In order to achieve this relevant water pre-construction water sampling must be undertaken to determine the baseline.	4	The baseline conditions were determined.
2	Management of sensitive areas	Any drill sites or infrastructure routes located inside medium, high or very high sensitive sites on the sensitivity /constraint map require a site-specific pre-commencement assessment. The pre-commencement assessment must address the sensitive aspects on site, as identified in the overall sensitivity / constraint map. The pre-commencement assessment must be compiled by the site Environmental Officer (EO) with a suitable environmental qualification and experience. All recommendations of the pre-commencement assessment must be implemented on site. The completeness and adequacy of the pre-commencement assessment in respect of identifying and managing on site sensitivities must be included in the monthly ECO reports and annual independent audit.	4	Pre-construction assessments are being undertaken for new drill sites infrastructure routes. Pre-construction assessments for exploration wells P7, P10, P12, P13 and R2D2/C3PO were reviewed.
3	Impacts on land-use	Infrastructure routes should follow existing servitudes and farm boundaries wherever possible. Where necessary pipelines should be laid underground below plough ripping level. In the event that surface pipelines are to be utilised, written approval must first be obtained from the relevant landowner. Pipelines that will be buried at a minimum of 1.5m below surface which is deeper than the rip-depth to ensure that the farmer has full utilization of their land.	4	Based on the alignment sheets, the pipeline routes follow existing servitudes as far as possible. Recommendations on the route alignment were also made by the specialist to reduce the impact of the pipelines. The pipeline was being placed underground and is below 1.5m in agricultural areas.



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification
4	Environmental and safety practices	All pipelines and facilities will be designed and constructed in accordance with best practices and international gas standards.	4	The designs of the pipelines and facilities are done by professional engineers and according to international gas standards. The requirements are included in the contracts of the contractors.
5	Impacts on land-use	The identified drill site should, where possible, not infringe on the landowners' surface activities. Irrigation Pivot points should remain unaffected by infrastructure, and must be deviated around or buried to allow for continued pivot irrigation operation.	4	The well sites visited at the time of the audit did not infringe on the landowner's surface activities.
6	Public safety	A hazardous installation risk assessment must be conducted prior to construction.	4	A MHI risk assessment was undertaken for the CNG plant (HDR1 site) in September 2016 and for the pipelines, helium plant, proposed CNG plant and trailer a MHI risk assessment was done in February 2017, and for the LNG Plant in June 2019.
7	Impacts of Infrastructure	The location of any servitudes or third-party infrastructure must be identified prior to commencement at a specific site and the necessary approvals obtained. This specifically includes the necessary consents for the location of pipes and compression stations when located in proximity to local, provincial and national roads.	4	The servitudes and third-party infrastructure have been identified and the necessary approvals obtained. A third-party infrastructure register has been prepared by Tetra 4.
8	Impacts on Traffic Safety	SANRAL will only allow pipelines to be laid outside the road reserve and boundary, and should preferably not be located within 10 metres of such boundaries. All pipes within a distance of 60 metres from the National Road reserve will require SANRAL approval as this falls within the building restriction area of the National Road.	4	Pipelines are located outside of road reserve and wayleaves are obtained for road crossings. Exemption is being applied for the Blaawdrift 188/3 property to encroach into the SANRAL servitude.
9	Management of sensitive areas	Once prospective drilling sites are identified, a suitably trained EO must undertake a site-specific pre-commencement assessment to assess the site for any potential environmental sensitivities prior to commencement. Should environmental sensitivities be	4	A pre-commencement inspection and report gets compiled before any new activity commence or new area is disturbed. This includes the exploration drilling activities.



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification
		identified, the relevant Tetra4 Response or Action Plan Procedures must be adhered to.		
10	Access roads	Existing roads should be used where possible. Decisions regarding the siting/location of new roads should be done with agreement of the landowner. Fence lines should be followed as far as practical. No trees shall be removed unless authorised by a suitably qualified environmental professional. Protected tree species may not be removed, unless relocation is deemed viable by the specialist ecologist and relevant permits are obtained. Construction of drill sites and associated access roads on steep gradients shall be avoided as far as possible. In case of new access roads, adequate drainage and erosion protection in the form of off-cut berms or trenches should be provided where necessary. Access routes across rivers, streams and wetland areas should be avoided as far as possible. Where such crossings are unavoidable, the relevant authorisations must be obtained, if applicable. Minimise the frequency of vehicle travel on unsurfaced roads where possible.	4	Existing roads are used as far as possible. Landowners are being consulted with regards to location of new roads. Fence lines are followed as far as possible. Currently, no protected trees were removed. No drill sites or access roads on steep gradients were noted in the areas inspected at the time of the audit. No erosion concerns were noted on the access roads at the time of the audit. New access roads across wetlands/watercourses are avoided as far as possible. If access on unsurfaced roads is required, dust suppression is required to be done by the contractor.
11	Management of sensitive areas	After any site specific assessment, the Environmental Management Programme must be amended to include any site specific requirements. The site assessment must include a survey of the preferred footprint area (including access routes) to identify any potential sensitive/ red data species (flora and fauna).	4	The pre-commencement assessments are considered extensions of the EMPr and the assessments aims to identify potential sensitive and red data species.
12	Impacts on land-use	The location of the drilling site should be done so as to impact minimally on the daily activities of the landowner. The location of the site should be consulted with the landowner. Drilling site should not be situated near visually sensitive areas or residential areas. Steep areas should be avoided.	4	The location of the sites is consulted with the landowners during the pre-commencement assessments undertaken and during the landowner agreement negotiation to ensure that they do not infringe on the landowner's surface activities.
13	Disturbance/ destruction of sacred natural sites	Once final production drilling footprints are determined and confirmed for implementation, a public participation	4	A public participation process was undertaken from 10 January to 20 February 2019. One



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification
		<p>process should be undertaken during which the I&amp;APs are invited to come forward and state whether they are aware of any sacred water sites (secret or not) located within a 500 m radius area from each proposed drilling position. Care must be taken during the public participation to ensure that the cartographic and location information presented to the I&amp;APs contains clear enough information for them to confidently recognise the positions of such proposed drilling site(s) should these be located anywhere in proximity to the properties and landscapes they have knowledge of (English, Afrikaans and Sesotho). Should an I&amp;AP state that such a sacred site is indeed located within 500 m of a proposed drilling position, an experienced team comprising a heritage specialist and geohydrologist must accompany the I&amp;AP to the sacred site for confirmation purposes. The heritage specialist and geohydrologist must compile a letter to indicate the findings of their fieldwork (i.e. whether such a sacred site was indeed identified within 500 m from the proposed drilling position). All aspects relating to the location of the sacred site must be kept strictly confidential. At no stage will any information regarding the position of the sacred site (GPS coordinates, property description etc.) be contained in the letter, or in any other report, or document. The confidential manner in which this mitigation will be approached and undertaken with regards to the locations of Sacred Natural Sites, must be clearly communicated to the I&amp;AP from the outset. Any development (including exploration drilling) within 500 m of a confirmed Sacred Natural Site should adhere to the recommended groundwater, surface water and wetlands mitigation measures.</p>		<p>potential sacred natural site was identified but it was located outside of the final footprints of the Cluster 1 area.</p>





Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification
14	Consideration of additional production footprints on heritage sites	The relevant heritage screening in accordance with Section 38 of the NHRA, must be completed by a suitably trained EO for all new drill sites and pipeline routes if heritage features are observed or suspected to be on site as part of a site specific pre-commencement assessment. If the proposed activity exceeds the NHRA Section 38 thresholds, a Phase 1 HIA must be completed. The EO must undergo training by a suitably qualified heritage specialist / archaeologist in the identification of potential heritage sensitivities occurring within this study area. Pre-commencement records must be kept as well as the resulting action plans.	4	A pre-commencement inspection and report gets compiled before any new activity commence or new area is disturbed.
15	Loss of watercourse habitat	Locate pipeline/ trunkline alignments/ compressors outside of buffered watercourses (sensitive watercourse habitat) as far as possible. Buffered watercourses within proximity to the construction footprints should be demarcated on site for the entire construction process to help indicate sensitive areas and prevent unauthorised access. Unavoidable crossings should ideally be located perpendicular to the direction of flow at the shortest possible crossing distances. Long crossings along the length of wetlands, rivers and drainage lines should be avoided as far as practically possible. Aboveground pipeline watercourse crossings that are suspended on plinths are recommended as opposed to the excavation, lowering and infilling of pipelines in watercourses. Tetra 4 should make provision in the design phase for permanent access tracks/ roads that will be required for the maintenance of the pipeline. A construction method statement should be prepared by the contractor with input from a watercourse specialist prior to the start of construction.	4	A Water Use Licence was obtained on 22 January 2019 (08/C42K/CL/8861) for construction within wetlands/watercourses where it could not have been avoided. The wetlands within proximity of the pipeline construction areas were demarcated. A construction method statement was prepared for the wetland and watercourse crossings and input from a watercourse specialist/ hydrologist was provided.
16	Destruction/ damage to archaeological sites	An archaeological watching brief (monitoring of excavation during construction) must be implemented for TET 9 along the banks of the river. Should any	4	An archaeologist was present during the excavations for the drilling at the sand river.



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification
		<p>additional development footprints within 1 000 m of the Sand River be proposed, archaeological field surveys of the proposed development footprint areas should be undertaken to identify any tangible remains of the battle of Zand River and the Old Diamond Mine at Welgegund. This must include the associated heritage impact assessment to address any perceived significant impacts on this battle and old diamond mine and its associated tangible remains. A heritage specialist must be appointed to undertake the archaeological field surveys as well as the compilation of a heritage impact assessment report, which must be implemented.</p>		
17	Flora and fauna direct and indirect mortality	<p>Search and rescue of species of concern. Obtain permits for disturbance/destruction of any listed/protected species found on site. Where possible, undertake activities in previously disturbed areas and/or habitats with lower sensitivity. Where possible, locate activities on the boundaries of existing disturbance. Use existing access roads as much as possible.</p>	4	<p>Pre-commencement assessments are undertaken by the EOs to identify potentially listed/protected species and obtain permits, when applicable. Activities are planned on boundaries of existing disturbance and existing roads are used as far as possible.</p>
18	Reducing groundwater available to existing users.	<p>A hydrocensus must be undertaken within a 500m radius around each future gas production target to confirm the presence of private boreholes that have not already been identified as part of the 2016 hydrocensus. All private boreholes inside this zone must be visited and inspected. The information gathered must be used to plan for, and implement, groundwater management measures. A photo must be taken of each private borehole within the 500m radius for future record. Where possible, the sustainable yields of private boreholes that fall within the zones of impact above must be determined prior to Tetra4 commencing with any groundwater abstraction. Complete a pumping test on the boreholes within the zones of impact. The testing requirements for each borehole should be evaluated based on field conditions. A sound groundwater monitoring programme must be</p>	4	<p>It is understood that no additional wells were drilled that were not included in the 2016 hydrocensus. A comprehensive baseline groundwater study was undertaken, and groundwater monitoring continues for the production activities at HDR1.</p>



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		<p>implemented in the hydrocensus boreholes that will be affected, as well as in the newly drilled monitoring boreholes and in the gas production wells. Should the results of the monitoring programme indicate a negative impact on private groundwater users as a result of Tetra4's activities, alternative arrangements must be negotiated with the affected parties. Tetra4 must apply for a water use license in the event that groundwater abstraction for the project triggers the requirements of the National Water Act (Act 38 of 1996).</p>		
19	Loss of agricultural land	<p>Ensure that as much of the infrastructure as possible is sited away from agricultural lands. Utilize servitudes, farm roads and any other routes to avoid sensitive areas. Ensure that pipelines are buried at sufficient depth (&gt;1 m minimum) to avoid interference with arable agriculture activities.</p>	4	<p>The infrastructure locations are determined in consultation with the landowners and are located outside of agricultural areas as far as possible. The pipeline is buried below 1.5m.</p>
20	Disruption of watercourse hydrology	<p>Pipeline crossings through wetlands and other watercourses should ideally be raised aboveground on plinths to prevent preferential flow along their length. In areas where this is not possible, trench breakers with a low hydrological conductivity should be used to reduce water movement in bedding and padding material along the buried pipeline in wetlands and other watercourses. Long and/or steep approaches that border watercourses (specifically wetlands) should receive trench breakers that will help to restrict the desiccation impact on wetlands due to preferential drainage. It is recommended that input be obtained from a geotechnical specialist or geohydrologist regarding the use and positioning of trench breakers along buried sections of the pipeline. Other crossings through depression (pan) and flat wetland require trench-breakers or other forms of underground barriers/plugs to prevent preferential drainage along the pipeline/trunkline alignment.</p>	4	<p>Trench breakers were installed in wetland and watercourse areas.</p>



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21	Decrease in surface water quality	Design and implement a site-specific stormwater management plan for the compressor and helium/LNG plant that will enable dispersed release of runoff at outlets, with outlets located outside (upslope) of buffered watercourses (where possible). Ensure separation of clean and dirty water and provide for adequate dirty water containment. Ensure that sufficient ablution facilities are available on site and that septic tanks are located outside of buffered watercourses. Stabilise new channels that form as a result of headcut erosion or other forms of erosion once they are recorded.	4	The construction of the plant has not yet been completed. No erosion or stormwater concerns were noted at the HDR1 site and at the compressor stations. Septic tanks are located outside of the buffered watercourses. Adequate ablution facilities were available in the areas inspected at the time of the audit.
22	Improvement of numerical modelling results	A groundwater monitoring programme must be implemented. On-site rainfall must be measured at the Helium Plant on a daily basis. Tetra4 must undertake geophysical surveys at the remainder of the gas production wells in a similar fashion to what has been completed to date. These surveys must be used to identify additional groundwater monitoring borehole drilling targets as the project progresses. Pumping tests and/or slug tests can also be considered on private boreholes within the zones of influence discussed above that are not already equipped, provided that the geological logs are available for the boreholes (21A, 21B, 21D, 22A, 22B, 4A, 11C, 15E, 17E, 22D, 23D, 24D, 25A, 25B, 25D, OB, OC, ZA). The hydrocensus boreholes can only be tested after permission was obtained from landowners. The information obtained from the activities listed above must be interpreted and incorporated into the existing conceptual model for the project. This data as well as the results of the groundwater monitoring programme must be used to update and re-calibrate the numerical groundwater flow and contaminant transport model for the project on an annual basis.	4	A comprehensive groundwater monitoring programme is being undertaken and the information will be considered for the update of the numerical groundwater model currently being updated. The site visit for the update was undertaken during the February 2021 sampling event, but the report is still being prepared. A weather station was established at the HDR1 site.



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23	Influx of people looking for economic opportunities	Communication to stakeholders about the nature and extent of economic opportunities should be undertaken. No unrealistic expectations should be created and the recruitment policy giving preference to local labour should be communicated from the beginning of the project. The local area of influence should be agreed with stakeholders early on in the process.	4	Pre-commencement stakeholder engagement took place in 2019 and included the nature and extent of economic opportunities. Ongoing engagement with the landowners and affected communities continues and is reported within the Weekly CLO reports.
24	Stray gas migration affecting groundwater quality	Well design to be undertaken according to designs developed by a qualified well engineer. The existing production boreholes should be assessed and where relevant retrospectively amended to ensure suitable integrity to align with the design objectives of the MPRDA Regulations. The recommended gas well construction configuration is such that the upper 300 – 450m of the geological succession is cased off using a combination of telescopic drilling, steel casing and cementation between the well annulus and the casing towards isolating the shallow Karoo potable aquifer from the deep-seated gas production zone and the saline formation water associated with the production zone. In the unlikely event that produced water has to be extracted from gas production wells, this water should be stored in sealed containers, removed from site and disposed of to a suitable environment/waste management facility. A groundwater monitoring programme (to monitor gas pressure and potential leaks) must be implemented in the gas well, as well as in the monitoring and hydrocensus boreholes to detect dissolved methane and ethane gas. Well construction according to the relevant standards and regulations.	4	The new well designs are based on the design prepared by a well engineer, Eliot Johnson. It was reported that the well design was sent and approved by PASA. Casings are in place for the new wells, and these are confirmed during well CBL logging. Groundwater monitoring continues to determine if there are any leaks and associated contamination from the production wells and the monitoring programme will be expanded as more wells go into production phase. Monitoring at the exploration drilling sites should be implemented as the network expands.
25	Enviro-legal compliance	Holder to obtain all necessary permits to comply with all legislative requirements.	2	Exploration drilling within the regulated area of a watercourse would require a Water Use Licence or General Authorisation in terms of the National Water Act. Tetra4 is currently in the process of



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				<p>applying for a General Authorisation. The exploration drilling of certain of the exploration wells were located within the regulated area of a watercourse without the required authorisations. Additionally, the EA covers re-use, treatment and storage of hazardous waste (Categories: B2, B4 and C2), but only for the knockout water, and not for the storage of drilling waste in lagoons. The drilling waste/sludge at P2V2 has been stored for longer than 90 days and would require a Waste Management Licence.</p>
26	Enviro-legal compliance	<p>The relevant heritage screening in accordance with Section 38 of the NHRA, must be completed by a suitably trained EO for all new drill sites and pipeline routes, if heritage features are observed or suspected to be on site as part of a site specific pre-commencement assessment. If the proposed activity exceeds the NHRA Section 38 thresholds, a Phase 1 HIA must be completed. The EO must undergo training by a suitably qualified heritage specialist / archaeologist in the identification of potential heritage sensitivities occurring within this study area. Pre-commencement records must be kept as well as the resulting action plans.</p>	4	<p>Pre-commencement assessments are undertaken by the EO to screen if any heritage features are observed or suspected to be on site. The resultant action plans are kept and implemented.</p>
27	Impacts of cultural and heritage features	<p>The relevant heritage screening in accordance with Section 38 of the NHRA, must be completed by a suitably trained EO for all new drill sites and pipeline routes if heritage features are observed or suspected to be on site as part of a site specific pre-commencement assessment. If the proposed activity exceeds the NHRA Section 38 thresholds, a Phase 1 HIA must be completed. The EO must undergo training by a suitably qualified heritage specialist / archaeologist in the identification of potential heritage sensitivities occurring within this study area.</p>	4	<p>Pre-commencement assessments are undertaken by the trained EO to screen if any heritage features are observed or suspected to be on site. The resultant action plans are kept and implemented.</p>



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		Pre-commencement records must be kept as well as the resulting action plans.		
28	Landowner Consultations	Landowners must be consulted and all reasonable requests complied with. A written landowner agreement should be negotiated and concluded prior to commencement. Should this not be possible, a record should be kept of reasonable negotiations with the land owners.	4	Landowner agreements are concluded before any work is allowed to be undertaken a property.
29	Temporary construction camps, laydowns, offices.	The camp and office site shall be sited and fenced (where necessary) in consultation with the landowner and tenants. No camp and office site shall be situated closer than 100 meters from any stream, spring, dam or pan, and 100 meters from any residential area or farm homestead. In the event that any infrastructure is located closer than 100m from any residential area or homestead then written consent must be obtained from the relevant landowner/ occupier. The area required for the camp and site office shall be kept to a minimum, as to reduce the impact on surrounding ecology. Activities should be restricted to the agreed or fenced area. In the case where water will be required, the water supply pipelines laid down should be done in accordance to the agreement with the landowner and tenants, in such a manner that the surface and natural vegetation are not unduly disturbed (where necessary). Only legal water supplies may be utilised. An approved chemical toilet service supplier should be used to supply and maintain chemical toilets for the duration of the proposed activity on the site. Portable toilets (preferred) should be used and sited on the campsite in such a way that they do not cause water pollution, odour or other forms of pollution. Any impact such as noise, dust, bright lights etc. that may cause disturbance to landowners or tenants, will be kept to a minimum. No structures older than 60 years are to be impacted on without the necessary permits.	4	The construction of the construction camp commenced in December 2019. The camp is located on the property owned by Tetra 4 and the activities currently complies to these requirements.



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30	Management of sensitive species	If sensitive species occur within the preferred footprint, the first option should be to relocate the proposed footprint followed by the alternative of preparing a relocation plan (prepared by a suitably qualified specialist).	4	Pre-commencement assessments are undertaken by the EOs to identify potentially listed/protected species and obtain permits, when applicable.
31	Loss of heritage features	The relevant heritage screening in accordance with Section 38 of the NHRA, must be completed by a suitably trained EO for all new drill sites and pipeline routes, if heritage features are observed or suspected to be on site as part of a site specific pre-commencement assessment. If the proposed activity exceeds the NHRA Section 38 thresholds, a Phase 1 HIA must be completed. The EO must undergo training by a suitably qualified heritage specialist / archaeologist in the identification of potential heritage sensitivities occurring within this study area. Pre-commencement records must be kept as well as the resulting action plans.	4	A heritage assessment was undertaken for the HDR1 site when it was established. A HIA was included as part of Cluster 1 EIA undertaken in 2017 for the Cluster 1 pipeline routes and wells. Pre-commencement assessments are undertaken by the EO to screen if any heritage features are observed or suspected to be on site. The resultant action plans are kept and implemented.
32	Impacts on land-use	The pipelines will be buried in accordance with the schedule as agreed upon with landowners to minimise disturbance to farming operations.	4	Access was negotiated and agreed with landowners before access.
33	Impacts on Traffic Safety	A consulting engineer with a transportation background should be consulted in order to ensure that access features along roads are acceptable to SANRAL, and allow for the consideration and approval of safety to motorists and the general public.	4	Formal approval was obtained from SANRAL for the access to the HDR1 Plant and the new construction camp. An application for approval of the main access to the LNG/Helium plant was approved by the Free State Department of Police, Roads and Transport in June 2021.
34	Landowner Consultations	Landowners should be notified of the intention to carry out production activities at the identified drilling sites. Assess routes should be planned in consultation with relevant landowners. Areas to be disturbed or cleared (for access, pipelines and drill sites) should be communicated to the landowner prior to clearing. The relevant construction and operation scheduling must be communicated to applicable landowners. Landowners	4	Pre-commencement assessments are done in consultation with landowners before any activities on the properties.





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		<p>should be consulted regarding the position of the production site footprint. Agreement should be obtained from landowners, for the use of the land, water, power and final rehabilitation outcome.</p>		
35	Management of topsoil	<p>Topsoil should be removed from areas that are to be cleared and stockpiled separately for later use during rehabilitation. Topsoil should be stockpiled for the minimal amount of time and should not exceed 1.5m in height, or have a slope steeper than 1:2. Stockpiles should ideally not stand for longer than a period of 12 months.</p>	4	<p>During the clearing of the infrastructure areas, topsoil was stripped and stockpiled for use during rehabilitation. The topsoil was not stockpiled higher than 1.5 meters and no evidence of erosion was noted. The topsoil at the plant will be stored for longer than 12 months in this case, but it should not be the case during pipeline construction. Topsoil is tripped over the footprint of the trench and used for rehabilitation purposes.</p>
36	Water pollution and waste management	<p>To mitigate the effluent from long term drilling sites (&gt;3 years): Separation pits (sumps) for wastewater and grease and oil polluted fluids should be excavated and constructed to treat wastewater; Where excavating these pits, topsoil and subsoil should be stored separately; Sump areas should be lined with PVC to prevent seepage; In order to contain non-biodegradable oil and fuel spills, drip pans or PVC lining should be provided for mobile pans and drip pans; For stationary drill rigs, thin concrete slabs and/or with PVC lining should be installed before the stationary drill rigs are erected; <b>Sump areas must be designed to accommodate the 1:100 year flood event. Clean and dirty water streams must be separated. The location and design of the sumps must be in accordance with the applicable GN 704 conditions;</b> and Sump areas should be constructed in such a way that clean water (stormwater) is diverted away from these areas. To mitigate effluent from short term drillings sites (&lt;3 years): The topsoil layer of the surface area required for the drill should be excavated</p>	2	<p>Most of the exploration drill sites comply with the requirement of the EMPr. It was however noted that the exploration well site P13 did not comply with the requirements. Topsoil was not stripped in the affected areas before disturbance. Spill prevention measures were not used to prevent spillages during use and storage of hazardous substances and evidence of hydrocarbon spills were noted.</p>



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		<p>and stored according to accepted topsoil management practices; A contiguous impervious PVC layer (e.g. large silage sheets) is placed under the drill (within the excavated area) to collect any spills; Spills of hazardous substances should be collected and disposed of according to the approved EMPR requirements at a suitably licensed facility; Collected spills from the drill must not be allowed to contaminate the soils and/or the closed water system utilised for the drilling fluids; and It is recommended that where possible, closed, above ground tanks are utilised for future drilling as opposed to sumps/pits.</p>		
37	Stormwater control and management	<p>All clean water should be diverted away from the site. Minimize the area that is disturbed during production activities in order to minimize the potential stormwater disturbance and to reduce the sediment loads to receiving water courses. Adequate drainage and erosion protection in the form of cut-off berms or trenches should be provided where necessary.</p>	4	<p>No drainage or erosion concerns were noted in the areas inspected at the time of the audit.</p>
38	Noise, vibration, visual and dust impacts	<p>The contractor must prevent labourers from loitering in the area and causing noise disturbance. Ensure that all equipment is in a good working condition to ensure that no additional noise is admitted from them. Light impact should be kept to a minimum (e.g. use of full cut-off lighting fixtures if necessary). Retain vegetation where possible to maintain its natural noise and visual screening function. Reduce speed limit on gravel roads to reduce noise generation.</p>	4	<p>No noise and visual nuisance concerns were noted at the time of the audit. No complaints were received relating to noise, vibration, visual or dust impacts.</p>
39	Fugitive emissions (dust) from exploration/production drilling	<p>In controlling vehicle entrained particulate matter, it is recommended that water (at an application rate of 2 litre/m<sup>2</sup>-hour), be applied on all unpaved road sections to ensure a minimum of 50% control efficiency (CE). In addition, binding agents or chemical suppressants should be considered for application on all unpaved road</p>	4	<p>Evidence of dust control was noted and no dust concerns were noted in the areas inspected at the time of the audit. Dust monitoring continued for the Cluster 1 project to determine the baseline and to determine any dust impacted near sensitive receptors.</p>



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		sections. The need for dust control to be informed by the ECO.		
40	Loss of farm labour to the Cluster 1 project	If any farm labourers apply for positions at Tetra 4 or one of its contractors, Tetra 4 or the contractor must ensure that the labourer is aware that the position may only be temporary and what the long term consequences of taking the position are.	4	Stakeholder awareness sessions were undertaken to inform stakeholders of employment processes and opportunities.
41	Potential for conflict between local residents and newcomers about economic opportunities.	Preference for employment should be given to the local community. The recruitment policy must be communicated openly and made available to the public if requested.	4	Stakeholder awareness sessions were undertaken to inform stakeholders of employment processes and opportunities. Local employment is being monitored and reported on.
42	Loss / destruction of natural habitat	Where possible, locate infrastructure in previously disturbed places and/or habitats with a lower sensitivity score. Rehabilitate disturbed areas as soon as possible. Control alien plants.	4	The alignment of the pipelines and location of the facilities are mostly located in previously disturbed areas, as far as possible. Rehabilitation of the pipeline was taking place concurrently. Alien plants were being controlled.
43	Disturbance/ destruction of graves (including possible stillborn and unmarked graves)	Where construction activities are closer than 50m from a demarcated grave site adequate warning signage or barricading must be installed to prevent inadvertent disturbance of the site and where applicable within the buffer. For destruction of possible stillborn and unmarked graves the following mitigations apply: written notification to SAHRA that reconnaissance excavation (digging by hand to a depth of approximately half a metre by a heritage specialist within and up to a buffer of 25m from the identified historic to recent farm worker accommodation) will be undertaken; reconnaissance excavation of the structures undertaken to assess whether any graves are indeed located on site; should evidence for graves be found, a comprehensive grave relocation procedure must be implemented; and ensure that a suitably accredited heritage specialist is appointed to undertake the necessary mitigation work, where applicable.	4	Known heritage features were demarcated during construction in the vicinity of these features.



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44	Disturbance/ destruction of cemeteries	The placement of the development footprints for the six proposed well positions at F1, F2, F3, F4, F5 and F6 as well as the proposed compressor site at ST23 must be done in such a way that a buffer area of at least 50m is allowed between these development footprints and the heritage sites identified, where possible. Should any construction be required closer than 50m of a cemetery, a heritage specialist should be consulted to monitor the excavation during construction and necessary permission from SAHRA obtained, where necessary.	4	The ST23 compressor site and recent exploration wells are located more than 50m from the heritage sites identified. Pre-construction assessments were undertaken for the new exploration wells to confirm the proximity to known heritage features and to identify any additional heritage features.
45	Disturbance/ destruction of Stone Age sites	Ensure that the placement of the development footprints of the six proposed well positions as well as the one compressor site at ST23 are done in such a way that a buffer of undeveloped space of at least 50m is maintained between the development footprints and these sites, where possible. Where construction activities are closer than 50m from a demarcated historic site, adequate warning signage or barricading must be installed to prevent inadvertent disturbance of the site and where applicable within the buffer. For destruction/disturbance of archaeological sites the relevant permissions and permits must be obtained from SAHRA prior to commencement of destruction activities.	4	The ST23 compressor site and recent exploration wells are located more than 50m from the heritage sites identified. Pre-construction assessments were undertaken for the new exploration wells to confirm the proximity to known heritage features and to identify any additional heritage features.
46	Disturbance/ destruction of historic sites and structures	For destruction/disturbance of historic sites the relevant permissions and permits must be obtained from SAHRA prior to commencement of destruction activities. This may include recording of site by way of measured drawings, photographs, and qualitative descriptions. Compilation of Phase 2 Heritage Report containing the recorded data. Submission of permit application to SAHRA/Free State Heritage to allow for the disturbance to the site. A Phase 2 Heritage Report must accompany the permit. Ensure that necessary monitoring is undertaken well in advance of the actual construction, where applicable. An archaeological watching brief	N/A	Destruction or disturbance of heritage features were not required.



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		(monitoring of excavation during construction) must be implemented for the identified heritage feature TET 9 (a concrete drift and adjacent bridge) along the banks of the Sand River at Blaauwdrift.		
47	Disturbance/ destruction of palaeontological sites	Two areas have been identified where a pipeline route will traverse potentially sensitive alluvial deposits ranging in thicknesses between 4 m and 15 m at the Boschluispruit (GPS coordinates 28°11'4.46"S 26°43'54.24"E) and the Sand River (GPS coordinates S 28° 7' 4.33" E 26° 43' 9.88"E). Any excavation exceeding a depth of 1m into these overbank deposits will require monitoring by a palaeontologist during the construction phase of the pipelines. It is advised that a palaeontologist is brought in once to monitor trench excavations into the overbank sediments at the Boschluispruit and Sand River crossings before the pipeline is installed. The palaeontologist must apply for a valid permit from SAHRA for the collection/removal of fossils encountered during the excavations. For the proposed surface infrastructure, it is advised that a palaeontologist is brought in on one occasion to train the ECO of the project to identify potential fossil remains in the unlikely event of fossil exposure. If fossils are encountered and reported, a palaeontologist must be appointed to remove the fossils after applying for a valid collection permit from SAHRA.	4	A palaeontologist was appointed and monitored the excavations at the Sand River and Boshluispruit.
48	Disruption of aquatic communities	Ideally, no vehicle access tracks/roads should transect through watercourses. Access tracks/roads should be designed in such a way to minimise overlap with watercourses. Use existing access roads/tracks as far as possible. Construction and unavoidable access tracks/roads through wetlands, rivers and other watercourses must provide habitat connectivity between upstream and downstream reaches (e.g., flume pipes and/or culverts) and to reduce the risk of scour erosion	4	Vehicle access was limited in the watercourses inspected at the time of the audit. Access tracks were constructed over a trench created by the mine and perennial drainage line towards pigging stations within the wetland area at the Boschluispruit. Additional access tracks might have to be created within the Boschluispruit



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		<p>and channel incision within the watercourse. No unauthorised driving should be allowed through watercourses. Driving can only occur on specially designed tracks/roads that minimised the risk of erosion and surface flow concentration. No perched flumes should be present in temporary construction running tracks and/or permanent access tracks. In the case of aboveground pipelines, the pipeline should not be located 'flush' along the surface profile of the watercourse with no gap between the natural ground level and the pipeline. Aboveground pipelines should rather be suspended on plinths of a sufficient height that will allow the free movement of indigenous fauna present within the study area, such as tortoises, as recorded in the Boschluispruit channel near existing well SPG3.</p>		<p>wetland to allow access to the pigging stations and low point drains during the wet seasons.</p>
49	Watercourse erosion	<p>Prevent the use of only one or two flume pipes in access/running tracks located in watercourses, specifically unchanneled valley bottom wetland and seep wetlands where concentrated flows can result in headcut development and the formation of a channel. Surface flows should also be spread out in channelled watercourse crossings through the use of several flume pipes to prevent channel incision and scour erosion. Access tracks should be maintained during the entire construction process and removed once construction is completed. Flume pipes should be monitored and kept free of blockages. Construction in watercourses should ideally occur during the dry season. Any new erosion features identified should be stabilised during the construction process (soft interventions such as hay bales, rock packs, runoff control berms and 'bio-socks' are recommended). Erosion control features should be maintained. Keep vegetation clearing to a minimum on the adjacent slopes to prevent erosion on approaches</p>	4	<p>No erosion was noted in the watercourse inspected at the time of the audit. Dewatering and uncontrolled runoff were not noted in the areas inspected at the time of the audit. Shaping of certain sections of the Boschluispruit wetland was undertaken to reinstate the natural flow path of the wetland and prevent future erosion.</p>



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		bordering watercourses. Small temporary contour berms may be used to help control runoff on approaches should it be required. Drainage furrows that may be required to create dry working conditions should ideally be avoided as they can easily erode during high flow events. Development of a watercourse monitoring plan before the onset of the construction phase, and the development and implementation of a watercourse rehabilitation plan during the latter half of the construction phase to ensure the eroded wetlands and other watercourses are stabilised and rehabilitated. Dewatering discharges at construction sites should be done in a silt bay to prevent erosion and sedimentation in adjacent watercourses. Runoff from the construction footprint should be controlled on site to prevent concentrated point releases of water into downslope watercourses. Care needs to be taken not to initiate or aggravate erosion in watercourses.		
50	Noise impacts from construction activities	The use of smaller/quieter equipment when operating near receptors. Ensuring that equipment is well maintained and fitted with the correct and appropriate noise abatement measures. Engine bay covers over heavy equipment could be pre-fitted with sound absorbing material. Heavy equipment that fully encloses the engine bay should be considered, ensuring that the seam gap between the hood and vehicle body is minimised. Where possible only undertake construction activities during the day. If night-time activities are required, do not operate closer than 500m from any sensitive receptors. Ensure a good working relationship between the developer and all potentially noise-sensitive receptors. Communication channels should be established to ensure prior notice to the sensitive receptor if work is to take place close to them (especially if work is to take place within 500m from them at night).	4	No excessive noise nuisance was noted at the time of the audit and construction is taking place during the day. A designated Community Liaison Officer is appointed with open lines of communication between the project and the landowners and the communities.



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		Information that should be provided to potentially sensitive receptor(s) includes: Proposed working dates, the duration that work will take place in an area, and working times; The reason why the activity is taking place; The construction methods that will be used; and Contact details of a responsible person where any complaints can be lodged should there be an issue of concern. When simultaneous noise emitting activities are to take place close to potential noise-sensitive receptors, co-ordinate the working time with periods when the receptors are not at home.		
51	Potential opportunity for education, skills development, and training	Tetra 4 should liaise with local training institutions or service providers to determine whether there are any opportunities to offer internships and practical experience for their students. Tetra 4 must ensure that skills development requirements form part of their contracts with sub-consultants as prescribed in the SLP. The skills development requirements and bursaries for local learners as discussed in their Social and Labour Plan (SLP) must be implemented.	4	Tetra 4 is offering internships/ training to students and is implementing the SLP. Reports on the implementation of the SLP is submitted to the PASA.
52	Increase in social pathologies such as prostitution, sexually transmitted diseases, teenage pregnancies and alcohol and substance abuse	Toolbox talks should include talks about the impact of promiscuous behaviour as well as HIV/AIDS and Tuberculosis (TB), in accordance with existing Tetra4 Human Resources (HR) Policy. A workforce code of conduct should be developed to maximise positive employee behaviour in the local community and optimise integration.	4	HIV and AIDS were included in toolbox talks and Tetra 4 implements a code of conduct and an AIDS Policy.
53	Establishment of informal settlements close to the project area	No informal settlers should be allowed on private property within the development area. If any person erects an illegal structure the landowner and police should be informed immediately and asked to remove the structure.	N/A	No informal settlers were noted in the areas inspected at the time of the audit.
54	Safety aspects associated with open trenches (people and animals)	Open trenches to be fenced or barricaded where necessary, and should be clearly demarcated. The time that any trench remains open should be limited. Access	4	Open trenches are barricaded, where applicable and the project aims to limit open trenches as far





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		to areas with open fences should be controlled. There must be a protocol on how to rescue a stranded animal from a trench.		as possible. Open excavations were filled with hay bales if it left open overnight.
55	Increase sediment loads	Progressive rehabilitation of disturbed land should be carried out to minimize the amount of time that bare soils are exposed to the erosive effects of rain and subsequent runoff. Traffic and movement over stabilised areas should be controlled (minimised and kept to certain paths), and damage to stabilised areas should be repaired timeously and maintained. The total footprint area to be cleared for drilling should be kept to a minimum by demarcating the drilling areas and restricting removal of vegetation to these areas only.	4	Progressive rehabilitation was noted in most areas inspected. The disturbance at the drilling sites was kept to a minimum. Rehabilitation of exploration well P2V2 was not yet undertaken at the time of the audit.
56	Spillage of oils, fuel and chemicals	The placement of drip trays under the drilling rigs should be implemented and recorded to minimize the contamination of waste oil from the drilling rig. Drilling fluids should be biodegradable and should be kept in a lined mud pit or surface container. Proper rehabilitation and off-site removal of excess fluids should take place. Oil recovered from the drilling rigs and any vehicle on site should be collected, stored and disposed of at licenced facilities or provided to accredited vendors for recycling.	4	Drilling fluid is regarded as biodegradable. Drilling water was contained in PVC lined mud sumps. Good rehabilitation was noted at most historic drill sites. Spills from hazardous substances were however noted at the P13 exploration drill site at the time of the audit.
57	Increased soil erosion	Ensure that topsoil (0-30 cm approx.) and subsoil (30 cm +) are stored separately during excavation, so they can be replaced in the correct order. Ensure that pipeline route is re-vegetated as soon as possible after construction and that soil surface is in good condition.	4	Topsoil was stripped and stored at the infrastructure areas and the construction camp. During pipeline construction, the topsoil is stripped over the trench and stockpiled separate from the subsoil. Good rehabilitation efforts were noted in numerous areas along the pipeline route.
58	Loss/ management of heritage features	Should any artefacts, fossils or graves be uncovered during the production activity, the Applicant, the relevant SAHRA authority and SAPS (in the case of a grave) should be notified immediately and necessary permitting procedures followed. All activities within this	N/A	No artefacts, fossils or graves were discovered in the areas disturbed at the time of the audit.



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		<p>area should be stopped immediately until permitted to proceed by the EAP/ECO.</p>		
59	Spill response and pollution clean-up	<p>All necessary measures should be taken to prevent spills from occurring on site. However, should a spill occur, the following procedure must be followed: A spill response kit should be available on site at all times. Where potential contaminants are transported along access roads, emergency containment and mitigation measures must be developed to minimize impacts should accidental spills occur. Any spillage will be investigated and immediate action must be taken. In the event of a significant spill (&gt;35 litres) of any hazardous substance, these must also be recorded and reported to the PASA, DWA and the local/provincial authority where necessary. Depending on the nature and the extent of the spill, contaminated soil must be either excavated or treated on-site.</p> <p>The EO should determine the exact method of treatment. Clean up should be immediate and to the satisfaction of the EO. A register of the treatment method and clean up close out report must be kept and be made available reviewed by the ECO during independent audits.</p> <p>Treatment could include the use of absorbent material or hydrocarbon-digesting substances. It is therefore, recommended that a spill kit and hydrocarbon digesting substance should be kept on site at all times. Clean up should be immediate and to the satisfaction of the ECO. Excavation of contaminated soil must involve careful removal of soil using appropriate tools/machinery to storage containers until treated or disposed of at a licensed hazardous landfill site. Materials used for the remediation of spills must be used according to product specification and guidance for use. A record of all spills and actions taken to remediate the spills should be kept</p>	4	<p>Spill prevention measures were implemented in the areas inspected at the time of the audit. Drip trays were readily available and in use in the construction and operational areas. Spill kits were available, and spills are recorded within spill registers and tracked for corrective action. Evidence of minor hydrocarbon spills were however noted at the P13 exploration well site.</p>



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		at all times. Proper and frequent maintenance should be done to minimise spillage risk.		
60	Fire safety	The contractor must take all reasonable measures to ensure that fires are not started as a result of operational activities on site, and shall also ensure that their operations comply with the Occupational Health and Safety Act (Act No. 85 of 1993). The following measures will be taken to reduce the risk of fires: No open fires are permitted on site; Every possible precaution shall therefore be taken when working with potential flammable equipment or liquids near potential sources of combustion. Such precautions include having an approved fire extinguisher immediately available at the site of any such activities; The contractor shall ensure that there is basic firefighting equipment available on site at all times. The contractor shall appoint a member of his staff to be responsible for the installation and inspection of this equipment; and the contractor is to ensure that he/she has the contact details of the nearest fire station in case of an emergency. <i>A fire and safety officer must be appointed as legally required. Firebreaks must also be implemented.</i>	4	Firefighting equipment is available and a designated safety officer and firefighting officers were appointed for the pipeline contractor. Fire breaks were recommended at the HDR1 parking area. Evidence of an open fire was noted at compressor station A (ST23). It could not have been confirmed who was responsible for the fire, but it was recommended that open fires should monitored and prevented by the project personnel.
61	Movement on site	Reduce speed limits (especially on gravel roads) to reduce dust emissions and accident risk. Keep the amount of vehicle movement on site as minimal as possible. Gates should be kept closed (unless otherwise agreed to in writing with the relevant landowner). Newly constructed access roads should be well maintained.	4	No concerns were noted with regards to dust and use of access roads at the time of the audit. No complaints regarding dust and roads were reported.
62	Blockage of floral and faunal seasonal and dispersal movements	Where possible, undertake activities in previously disturbed areas and/or habitats with lower sensitivity. Where possible, locate activities on the boundaries of existing disturbance. Use existing access roads as much as possible. Rehabilitate disturbed areas as soon as possible.	4	The current activities are undertaken in previously disturbed areas as far as possible. Existing access roads are used as far as possible and disturbed areas are rehabilitated.



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63	Pollution of wetland habitats	Control all waste sources emanating from proposed activities. Maintain minimum distances from aquatic and wetland habitats, where possible. Undertake activities in previously disturbed areas and/or habitats with lower sensitivity.	4	Waste is adequately controlled at the areas where activities are taking place. Distances from aquatic and wetland habitats are maintained as far as possible.
64	Decrease in surface water quality in watercourses	Store all hazardous materials (Incl. hydrocarbons) in a bunded area, outside of buffered watercourses. Stripped and excavated subsoil and topsoil stockpiles should be stored outside of buffered wetland areas and be protected from erosion. This may not be possible for long wetland crossings in seep and other wetlands, in which case topsoil can be stored on low berms within the wetland on geotextile material. Topsoil and subsoil should however be protected from erosion. Approaches that border watercourses, particularly those along steep and long slopes, should receive runoff control measures to prevent siltation and concentrated flow into watercourses. Inspect vehicles for leaks and repair all leaks immediately. Any generators used in watercourses should be used with a functional drip tray. Ensure that sufficient ablation facilities are available on site and that they are located outside of buffered watercourses. Stabilise new channels that form as a result of headcut erosion or other forms of erosion once they are recorded. Sediment deposition should be prevented in watercourses and especially watercourse channels through the following measures: Implementing stormwater control measures around construction areas; and Dewatering during excavation activities in watercourses should be released in a silt bay with sufficient capacity that filters and retains sediment before the water is released into the watercourses. Sediment deposition events into watercourses should be evaluated by an experienced ECO/ wetland specialist and based on the magnitude of the impact recommendations	4	It is assumed that this condition refers to activities within wetland and watercourse areas. The wetlands and watercourses were demarcated within and near construction areas. Potentially polluting substances were kept outside of the wetland areas. No erosion concerns were noted within the wetland areas.



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		can be made regarding the removal of deposited material.		
65	Potential health risks to people and animals if waste (including sewage) is not managed properly (pests e.g. rodents)	Tetra 4 must develop a waste management strategy and employ an EO/ECO that oversees all the environmental aspects of the project, especially during the construction phase. There must be a formal procedure in place on how to report incidents to ensure grievances are recorded. Education about waste management must be shared during Toolbox talks. In areas where there are lots of animals, plastic safety ribbons (hazard tape) should not be used. There should be enough portable toilets during the construction phase to ensure that the contractors do not use the bush as a toilet facility.	4	A Tetra 4 waste management procedure was developed. An EO and ECO was appointed to monitor and ensure compliance to the requirements of the EMPR. An incident procedure and grievance mechanism are in place and implemented. Waste was managed appropriately during the audit. Chemical toilets were provided at the active works fronts at the time of the audit.
66	Health and Safety	All personnel should be aware of the procedures to follow in the case of a health or environmental emergency such as in the case of an accidental injuries or spills. Workers should be advised on sexual transmitted diseases and preventative measures against sexual transmitted diseases should be put in place-for example provision of condoms in camp site. Personnel should be provided with safety clothing and no person should be allowed to enter construction site without prior authorization by site manager. The construction site should be surrounded with danger tape and/or other suitable safety signage in order to alert pedestrians and vehicles about the construction activity. The drill rig should be provided with necessary hazard protection systems (e.g. a gas blowout prevention system; or Washington well head).	4	Emergency Response Procedures are in place and employees were made aware of these procedures. A designated safety team is appointed to implement and audit the safety requirements. No safety concerns were noted at the time of the audit.
67	Security	Landowners should be notified prior to accessing their land. <b>Workers should be easily identifiable by clothing and Identity Document (ID) badges with clear ID photographs. No workers allowed on site without adequate supervision and identification, as stipulated in the Tetra4 Contractors Agreement.</b> Workers may not	4	No security concerns were noted during the audit. It was noted that employees and workers were provided with identifiable clothing and ID badges were rolled out. Supervisors were present at the work fronts. Access gates at the work fronts were





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		<p>receive any visitors while they are within the production area. No worker will be allowed to sleep or overnight within the active construction area, except for minimal security personnel and only if communicated to the applicable landowner. Workers will not be allowed to keep or use alcohol, recreational drugs, traditional or modern weapons, snares or otherwise dangerous objects onsite, or to enter the sites while on the influence of alcohol or drugs. Workers will not be allowed to keep (or have in their possession at any point in time) any animals, including livestock, poultry, wildlife or pets. Although field workers conducting initial geological surveys will be allowed to cover large and unpredictable tracts of land (in principle the entire production area), workers should be restricted to access roads/tracks and drilling sites and will not be allowed to wander off into the rest of the property or surrounding land. Disturbance should be limited to the minimum and agreed upon footprint, and no vehicle turning, parking or access, or other form of disturbance e.g., vegetation clearance, soil compaction or excavation will be allowed outside these areas. All access gates should be kept closed if desired by the landowner. A complaints register should be maintained to log complaints by landowners, occupants and other Interested and Affected Parties, and response to such complaints. The complaints register should be provided to PASA on an annual basis, and at any point in time if requested by the PASA. Relevant farm access protocols must be complied with.</p>		<p>kept closed, where required. A grievance mechanism with complaints register is available. Project vehicles were clearly identifiable. The grievance register was provided to PASA on 14 April 2021.</p>
68	Handling, storage, and disposal of hazardous waste and effluent	<p>All hazardous chemicals should be stored on an impermeable bunded surface. All relevant legislation regarding hazardous chemical transport, handling, storage, use and disposal should be adhered to. Any effluent containing oil, grease or other industrial substances should be collected in a suitable receptacle</p>	4	<p>Hazardous chemicals at the HDR1 site and the construction camp were stored within designated hazardous chemical storage areas within drip trays or an impervious floor. Industrial effluent from the operations is collected in containers and</p>



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		and removed from site, either for resale or for appropriate disposal at a recognized appropriately licensed facility. The contents of drips/ sumps/ drip pans should be disposed of at a recognized appropriately licensed facility. Records should be kept of the disposal of all hazardous waste.		appropriately disposed. Drip trays are readily available at the construction areas for use. The laydown area's hazardous substance storage area was being moved from the old section of the laydown area to the new section. It was however noted that hydrocarbon substances were stored and managed at the P13 exploration well without the use of drip trays or spill prevention measures in place.
69	Generation and disposal of general waste	Non-biodegradable refuse such as glass bottles, plastic bags, scrap metal etc., should be stored in a container at a collection point and collected on a regular basis and disposed of at a recognised waste disposal facility. Biodegradable refuse generated in the production area, vehicle yard storage area or any other area should either be handled as above (as in the case of non-biodegradable waste). Sufficient drums/containers should be place on site for the disposal of general waste. No littering is to take place on the site or surrounding areas by the Contractor and staff. Waste disposal drums should be emptied on regular bases. The drums should be water and scavenger proof. Precautions shall be taken to prevent any refuse from spreading on and from the drill site. No waste is allowed to be burned on site.	4	General waste was appropriately managed in the areas inspected at the time of the audit.
70	Damage to farm roads and existing infrastructure	If private roads are affected by project activities it is the responsibility of Tetra 4 to maintain these roads as long as they use it. Tetra 4 should engage with the relevant farmers about road maintenance, as some of landowners have preferential ways in which the roads must be maintained. The road maintenance agreements must be formalised before construction commences. It is recommended that construction be planned for the dry season. Tetra 4 must provide all the affected landowners with a construction schedule to ensure that they know	4	Pre-commencement assessments are undertaken before any new activity commence or new area are impacted. This includes notification of landowners and agreement with landowners. Evidence of minor repairs to gravel access roads was noted. No complaints were recorded with regards to access road use at the time of the audit. An infrastructure register was developed before the commencement of construction. Damage to



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		<p>when construction will take place on their properties. Any changes to the construction schedule must be communicated to the farmers at least a week in advance. Before the project commences Tetra 4 should compile an asset and infrastructure baseline of any landowner infrastructure that may be affected by the project. Photographs and GPS co-ordinates of the infrastructure must be included in the baseline. A copy of the baseline affecting their property should be given to each landowner, who should sign off the document to ensure that it is accurate. Tetra 4 should keep the master document. If any damage occurs it should be reinstated to its pre-project status. If the infrastructure must move, it must be done at Tetra 4's cost. Tetra 4 must ensure that the construction team has a copy of the asset and infrastructure baseline to guarantee that no infrastructure will be damaged due to ignorance during the construction phase of the project. Notice of any service interruptions must be given at least 24 hours before the interruption takes place – a SMS or e-mail system can be used for this purpose.</p>		<p>infrastructure gets reported as an incident and tracked for corrective action.</p>
71	Displacement of faunal species	<p>Where possible, undertake activities in previously disturbed places and/or habitats with a lower sensitivity score. Rehabilitate disturbed areas as soon as possible.</p>	4	<p>The activities were being undertaken in previously disturbed areas as far as possible and rehabilitation was being undertaken concurrently.</p>
72	Increase in poaching incidents	<p>If areas are fenced, the fences must be checked for snares on a daily basis for the duration of the construction period. All incidences must be reported to the closest police station. Anti-poaching toolbox talks should form part of the induction process of all the fencing teams. Any contractor or employee caught poaching should be removed from site.</p>	4	<p>No concerns relating to poaching were noted at the time of the audit.</p>



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73	Safety of all road users compromised as a result of access points on the R30	Tetra 4 should compile and implement a traffic safety plan specifically for the turn-offs from the R30. This plan should form part of the Health and Safety requirements for all contractors. Appropriate road signage must be used at the entry and exit points to the site. Although Tetra 4 cannot take responsibility for all road users, they should include road safety toolbox talks. Tetra 4 should liaise with the responsible roads authority to ensure road signs are updated and maintained.	4	A Journey Management Plan (Work Instruction) was developed by the contractor. Road signage was installed to the entrance to HDR1 plant and the construction camp in collaboration with the road's authority.
74	Loss/change of sense of place due to visual impacts and project activities	Re-vegetation of exposed areas as soon as possible. Dust suppression methods applied where necessary to reduce visual impact of dust. Lighting on site should be pointed downwards and away from oncoming traffic and nearby residents. Create a community liaison forum (CLF) that communicates the mitigation and monitoring measures to the affected parties. This forum can also act as a platform to discuss environmental issues. The CLF can meet twice a year to discuss all the concerns about the project and to share new project information. It can be an important aspect assisting Tetra 4 with obtaining a social license to operate. Successful rehabilitation will go a long way in recreating a rural sense of place.	4	Good rehabilitation efforts were noted in construction areas. No dust concerns were noted due to dust suppression. No lighting concerns were noted at the time of the audit. A community liaison officer was appointed, and the stakeholder engagement continues. 6-monthly CLF meetings will be undertaken when the COVID-19 pandemic is under control. Regular liaison is undertaken with landowners.
75	Watercourse erosion	Use existing access roads as far as possible. Unavoidable new permanent access roads/tracks in watercourses should be designed to prevent erosion downstream of the crossings by using several flume pipes, preferably culverts, or other structures, such as concrete fords. All temporary and permanent vehicle access tracks/roads in watercourses will require approval from DWS in the form of a Water Use License. New permanent access roads/tracks should be located along existing infrastructure footprints as far as possible and at areas that will enable the shortest crossing distance through watercourses. Long crossings along the length of watercourses (parallel to its flow direction) should be	4	A Water Use Licence was obtained for Section 21 c and i activities within wetlands and watercourses. New access roads might have to be constructed at the Boschluispruit wetland. No erosion concerns were noted in the watercourse areas inspected at the time of the audit.





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		<p>avoided. Remnant erosion features that remain after the rehabilitation phase should be addressed until full rehabilitation and closure is achieved. Rehabilitation interventions should be considered with care and not worsen erosion once implemented. Identified permanent access tracks should be maintained during the entire operational phase of the project and blockages should be removed, while erosion features should be repaired once observed. Concrete fords (low water bridges) are preferred as crossing structures in larger watercourse channels, compared to culverts and flume pipes, which are more likely to result in erosion and require more regular maintenance. The Helium plant should receive stormwater mitigation measures at its outlets that will prevent concentrated flow. Stormwater mitigation measures and flow outlets should be located outside of buffered watercourses.</p>		
76	Increase in social licence to operate due to management of nuisance impact	Tetra 4 should appoint a dedicated person, community liaison officer (CLO) to communicate with the landowners. The person must have enough authority and access to management to ensure that he can assist with dealing with everyday issues. Tetra 4 should establish a CLF that meets at least twice a year. The forum can be used to share information and give feedback on general and environmental issues. Before the project commences, the construction programme must be shared with the affected parties.	4	A CLO was appointed and pre-commencement meetings were held with stakeholders in April 2019 and Nov 2019. Six-monthly CLF meetings were postponed due to COVID-19, although regular liaison continues and open lines of communication kept between the project, landowners and the communities.
77	Pollution prevention and usage of water sources	All contaminated water and spillage will be drained from the containment area into primary and secondary fully lined sumps. Drilling water should be kept in closed circuit and re-circulated to the drilling machine. Water condensate from the gas polishing process (Dehydration) should be treated to remove volatile compounds before evaporation. Make up water will be introduced when required. All domestic effluent water from the site should	4	The management, storage and disposal of contaminated water and condensate were managed appropriately. Drilling water is generally kept in a closed circuit and re-circulated to the drilling machine. The sewage systems at the new offices and construction camp are closed systems.



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		<p>be collected and disposed of in an appropriate and legal manner such as a French drain system which is situated not closer than 100 metres from any streams, rivers, pans, dams or boreholes. Do not exceed the water abstraction permit and General Authorisation (GA) limits for water use for drilling activities. All LNG processing facilities and storage vessels must include adequate (at least 110% containment volume) secondary liquid containment areas (e.g. bunds).</p>		<p>The Helium/LNG plant complex will have a wastewater treatment facility.</p>
78	Social issues	<p>All areas posing risk to interface communities during the site establishment phase of the proposed development need to be properly marked and visible to reduce accidents. The health and safety of the interface communities and workers should not be compromised in any way. All gates on the landowners' property (and where relevant adjacent properties traversed) are to be closed if found closed and left open if found open. Contact with the affected parties shall be courteous at all times. The rights of the affected parties shall be represented at all times. Any impact such as noise, dust, bright lights etc. that may cause disturbance to landowners or tenants, will be kept to a minimum. Damage to infrastructure shall not be tolerated and any damage shall be rectified immediately by the contractor. A record of all damage and remedial actions shall be kept on site. Access to the production area should be strictly controlled. Labour should be transported to and from site to discourage loitering in adjacent areas and to prevent possible increase in crime or disturbance. Workers should be easily identifiable by clothing and ID badges (with clear ID photographs). Workers should carry with them at all times a letter from the applicant/employer, stating their identity, role/task description, and landline number which the landowner may phone to confirm ID and other information given by the worker. The drill site</p>	4	<p>It is understood that this requirement relates to the operational phase of the project. The only area that are in the production phase is HDR1. Access to the production site is restricted. Limited workers are employed at the Production Site.</p>



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		<p>shall be fenced, where necessary to prevent any loss or injury to persons or livestock during the production phase. Fires will only be allowed in facilities or equipment specially constructed for this purpose. If required by applicable legislation, a firebreak shall be cleared around the perimeter of the camp and office sites. Sufficient ablution facilities should be made available. The applicant must take reasonable measures to prevent any disruption to the landowners use of the properties (e.g. farming). Landowners/tenants should be compensated for loss of arable land.</p>		
79	<p>Safety and nuisance impacts where trench has to be opened to repair faults</p>	<p>Affected landowners should be informed if it is necessary to open the trench for repair work. They must be given at least 24 hours' notice, unless it is an emergency. They must be notified on what date and time the trenches will be re-opened, how big a team will be on their property and what kind of equipment will be used. Open trenches to be fenced or barricaded where necessary, and should be clearly demarcated. Access to areas with open fences should be controlled. If any damage is done to the property or harvest of the landowner, they must be compensated for their losses.</p>	N/A	<p>The main Cluster 1 production activities have not yet commenced.</p>
80	<p>Public perceptions about safety associated with gas production</p>	<p>Awareness must be undertaken with the stakeholders (including local community members and workers) explaining the process and potential risks of gas production in laymen terms. This should be distributed in and round the affected farms and communities in the form of site notices including in the representative local languages where possible.</p>	N/A	<p>The main Cluster 1 production activities have not yet commenced.</p>
81	<p>Pollution of soil profile due to leakage/spillage</p>	<p>Ensure that any possible source of leakage/spillage is contained and that bulk storage facilities are isolated from surrounding soils, especially wetlands. Geotechnical assessment must be undertaken to inform the pipeline design.</p>	N/A	<p>It is assumed that this condition is an operational phase requirement and not yet applicable.</p>



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82	Contamination from leakage and spillage	The pipeline needs to be inspected regularly to find and fix any leakages. A water quality monitoring plan needs to be produced and implemented to determine any changes in the water quality. Any water (Incl. condensate) generated at the conventional and unconventional well heads need to be captured in some form of dirty water storage facility. This water can be tested and treated (if needed) and used for irrigation or discharge into the environment if found to be suitable. Should the water be found to be unsuitable for irrigation or discharge into the environment, the contaminated water will be disposed of at a suitable licenced facility.	N/A	It is assumed that this condition is an operational phase requirement and not yet applicable.
83	Pollution of habitats	Control all waste sources emanating from operations activities. A defined waste management system must be implemented according to the hierarchy of waste management (avoid, reduce, reuse, recycle, dispose). All wastes generated must be stored and disposed of according to relevant legal requirements.	4	Waste management was appropriately management in the operational areas (HDR1) inspected at the time of the audit.
84	Interruption in services	Notice of any planned service interruptions must be given at least a day before the interruption takes place – a SMS or e-mail system can be used for this purpose.	N/A	No planned service interruption was applicable for the reporting period.
85	Contamination from leakage and spillage	All wells should be capped to prevent the spilling of contaminated groundwater. The water quality monitoring plan should be implemented in this phase to monitor any deterioration of the water quality.	N/A	The decommissioning and closure phase is not yet applicable.
86	Post construction decommissioning activities	Rehabilitate area to its original landform or as agreed to by the landowner, tenants and authorities. Rip compacted surfaces where necessary as part of the rehabilitation. Re-vegetation should be done where required. The use of indigenous species to the specific area should be promoted. Weed species should be eradicated at all disturbed areas. This must be monitored for a period following rehabilitation to ensure that alien invasive plants do not establish themselves. Re-vegetation of cleared areas should occur directly after	4	Most of the gas gathering construction areas have rehabilitated and vegetation established. Weed control was implemented where required.





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		production activities are completed. Disturbed areas should be correctly compacted, ripped and graded/sloped. Regular inspections should be carried out during the entire rehabilitation process and ongoing maintenance must be implemented until the area is fully rehabilitated.		
87	Final closure decommissioning	Rehabilitate area to its original landform or as agreed to by the landowner, tenants and authorities. Rehabilitation should be carried out in accordance with the approved rehabilitation plan prepared prior to commencement (where possible). Rip compacted surfaces where necessary as part of the rehabilitation. Re-vegetation should be done where required. The use of indigenous species to the specific area should be promoted. Weed species should be eradicated at all disturbed areas. This must be monitored for a period of time following rehabilitation to ensure that alien invasive plants do not establish themselves. Re-vegetation of cleared areas should occur directly after production activities are completed. Boreholes should be properly sealed after production activities have ceased in order to prevent potential dewatering of shallow aquifers as well as to avoid creating potential pathways for the transport of contaminants into aquifers. Inactive gas holes should be sealed off at least 1.5 meter below surface and covered with soil. Active gas discharge stacks should be fenced off in as small as practical areas. The production footprint area and all other areas impacted on by production and other activities, should be suitably rehabilitated (where necessary) to re-attract faunal species to the area, to provide suitable habitat for their re-establishment, and to prevent the loss of land use capacity. Disturbed areas should be correctly compacted, ripped and graded/sloped. Regular inspections should be carried out during the entire rehabilitation process.	N/A	The final decommissioning and closure phase is not yet applicable.



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		<p>Landowners/tenants should be compensated for loss of arable land, where applicable. All pipelines and other infrastructure must be removed (unless permitted under the specific approved closure plan) and the sites rehabilitated as per the closure requirements. In the event that the landowner wishes to utilise the infrastructure this must be agreed to and handed over in writing. Provision should be made in instances where a farmer wants to retain a borehole or section of pipeline for water supply. Written agreement must be obtained in such cases.</p>		
88	Well casing and/or cementation failure affecting groundwater quality	<p>Well abandonment and plugging to comply with the requirements of the approved rehabilitation plan and accepted best practice. Tetra4 to implement well-specific plugging requirements protect the shallow potable Karoo aquifers at closure. Well design to be done by a qualified engineer who will take corrosion, pressures, temperatures, exposure times, production life and well rehabilitation into consideration. The cement seals to be pumped as a water-cement slurry down the casing to the bottom of the well, leaving a sheath of cement to set and harden. The integrity of the seals should, where applicable, be pressure tested before the next phase of drilling commences. If the well fails the pressure test, the casing will be recemented before drilling continues. Testing to be implemented to ensure that the plug is placed at the proper level and provides adequate protection of permeable zones, for example the fracture zones from which gas was produced and the overlying Karoo aquifers. These tests should include tagging the top of the plug. Pressure testing should be undertaken on the seal but care should be taken not to damage the seal during pressure testing. Swabbing can be undertaken to remove fluids from the well. Upon completion of the rehabilitation of the well, a surface casing vent flow test</p>	-	<p>This condition refers to final rehabilitation and closure of the production/ exploration wells and were not verified during this audit.</p>



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		should be considered to determine whether gas or liquid or a combination thereof is escaping from the casing. If gas is detected during this test, additional seals should be designed and implemented. A groundwater and gas monitoring programme to be implemented at each well to serve as an early detection mechanism.		
89	Environmental Awareness	All personnel should undergo environmental awareness and induction training. A register should be kept of all attendees. Toolbox talks should be scheduled to ensure continuous environmental awareness training. Emergency procedures should be communicated and displayed prominently on the site. A copy of the EMPr should be available on the work site at all times. Appointed sub-contractors must be made aware of their obligations under this EMPr.	4	Environmental awareness, induction training and toolbox talks are done, and attendance registers are kept. Emergency procedures are in place and communicated. The EMPr is available on site and the appointed sub-contractors are made aware of their obligations under the EMPr.
90	Emergency Response	Emergency procedures should be displayed prominently on site. Ensure that all emergency response protocols are in place and that all workers are aware of the procedures.	4	Emergency procedures are displayed, and workers are aware of the procedures.
91	Management of flora and fauna	Vegetation should be retained as far as possible. Establish an alien invasive plant eradication programme for the control of weed species. This must be monitored for a period of time following rehabilitation to ensure that alien invasive plants do not establish themselves. Unnecessary damage or disturbance to vegetation should be prevented. No trees or shrubs should be felled or damaged for the purpose of obtaining firewood, unless otherwise agreed to with the landowner. Areas outside the footprint (including all infrastructure) should be considered as no-go areas. No faunal species are allowed to be purposefully killed. Any potential protected or sensitive areas should be clearly demarcated and noted as no-go areas.	4	Vegetation is retained as far as possible, and an alien invasive plant eradication programme is being implemented. A fauna relocation register is kept. Wetland and no-go areas are demarcated.
92	Damage to private property	All piped, lines and other utility infrastructure and servitudes should be identified prior to construction. Any damage to public or private property, including roads,	4	An asset register was developed, and utilities and servitudes were considered during the pipeline



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		stormwater systems, fences, gates, buildings and other structures, pipes, lines and other utilities or infrastructure and movable properties, should be repaired, replaced or otherwise compensated for as agreed with the affected person.		layout planning. Pre-commencement assessments are done before a new area is disturbed. Property damage incidents are recorded and tracked for corrective action.
93	Water abstraction	The necessary DWS permits should be obtained if it is expected that DWS abstraction limits will be triggered before water abstraction is undertaken. Obtain agreement from landowner to abstract water from existing boreholes. If required, abstraction of water should be kept within the permit limits as issued to the landowner by DWA. Water may only be obtained from approved sources.	4	The water use is determined and monitored to ensure it is below the GA limits and it is done in consultation and under agreement with the landowners. Water that will be used in the helium plant will be obtained from a municipal water source.
94	Interference with existing land uses/livelihoods	Tetra 4 must appoint a CLO that deals with the affected landowners throughout the life of the project. If existing activities will be affected negatively Tetra 4 must enter into negotiations with the affected parties as soon as reasonably achievable to ensure the affected parties are compensated fairly or can make additional arrangements. Interference with existing livelihoods should be avoided if possible. If any new activities are planned for a property, Tetra 4 must consult with the landowner and take reasonable steps to obtain his consent to execute the activity on his/her land. A system to arrange access to properties must be devised and formalised. All reasonable efforts must be taken to obtain agreement on the system with the landowners and it must be formalised. Access must be arranged at least 24 hours prior, except in emergencies, when the landowners should also be informed immediately. If routine access is required, the landowners must be provided with a roster indicating dates and approximate times that access will be required. Tetra 4 must compensate the landowners for any damage to property or goods if it was due to behaviour of their contractors.	4	A CLO was appointed, and ongoing stakeholder engagement continues. All agreements with landowners access agreements are formally recorded.





Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification
		<p>Sub-contractors must be made aware of this and a clause spelling out their liability should be included in their contracts. All contractors should sign a code of conduct as part of their induction process. Induction must explicitly include aspects such as closing gates and littering. Toolbox talks must be designed to include social and environmental aspects. A fining system must be put in place for any transgressions affecting the landowners.</p>		
95	Interference with existing land uses/livelihoods	<p>If a farmer reports any invasion of alien species as a result of Tetra 4, immediate action must be taken to ensure the invasion does not spread further. If any damage was done as a result of their activities, Tetra 4 should carry the cost of rehabilitation and compensate the farmer for his losses. If needed an external mediation process should be followed. There must be a formal procedure in place on how to report incidents and a claims procedure to ensure records of all grievances are kept. Environmental incidents must be reported to the CLO, who must inform the EO. In order to receive compensation, the claim forms must be submitted to the Tetra 4 CLO. Compensation should follow the IFC principles, which states that market related prices should be paid, and if anything is restored, it must be to the same or better standards than before. A water census should be conducted before the project commences and each affected party should be given the records affecting their property. Tetra 4 should keep records of all the properties. If any decline in the volume or quality of water occurs that can be linked to Tetra 4 activities, Tetra 4 should provide the affected parties with water of equivalent or better quality (depending on use) until such a time that the quality and availability is restored to pre-project levels. Create a CLF to communicate the mitigation and monitoring measures to affected parties</p>	4	<p>A grievance mechanism is in place. A CLO was appointed, and a CLF was established. Groundwater quality monitoring is taking place and includes water level monitoring.</p>



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification
		as well as to discuss environmental issues and assist Tetra 4 with obtaining a social license to operate.		
96	Nuisance factor due to increase in ambient dust and noise levels	Waste management measures to be adhered to in order to minimise waste and associated nuisances from affecting neighbouring receptors. Complaints or grievance register kept on site indicating nature of complaint and how complaint was addressed. Create a CLF that communicates the mitigation and monitoring measures to the affected parties. Any alarm systems to be used must be designed to avoid nuisance to surrounding landowners as far as practically and reasonably possible.	4	No dust or noise nuisance was noted during the audit. A formal grievance mechanism is in place to ensure that any nuisance can be reported and addressed.
97	Local travel patterns (longer travelling times and need to change routes due to increase in traffic)	Before construction commences Tetra 4 must meet individually with each applicable landowner to discuss their movement patterns and needs. Tetra 4 must provide all the affected landowners with a construction schedule to ensure that they know when construction will take place on their properties. It is important to inform the affected stakeholders about the possibility of changed travel patterns (as previously agreed) as soon as possible. It is recommended that construction be done outside the peak planting and harvesting seasons. Any changes to the construction schedule must be communicated to the farmers at least a week in advance. As far as possible obstruction of access routes and sensitive areas must be avoided. If it cannot be avoided both parties must agree on alternative routes, and Tetra 4 should carry the cost of implementing the alternatives. <del>Industrial vehicles should not travel during peak traffic times.</del> If practical and required by the landowner, access routes to land/infrastructure should be reinstated in the decommissioning phase. This must be done in conjunction with the landowners.	4	A pre-commencement assessment is done before a new area is entered or disturbed. Formal landowner agreements are put in place before construction starts.



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification
98	Greenhouse gas emissions including odour nuisance and health impacts	The use of low-NOx burners should be considered for operation of the Helium and LNG plant. Products, liquid fuels and chemicals should be stored in areas where there are provisions for containment of spills. Implementing vapour recovery systems to control losses of VOCs for storage tanks and other applicable units should be considered. A suitable and effective gas leak detection system must be designed and implemented to monitor gas leaks from the pipelines and other production infrastructure. A suitable boil off gas recovery system must be installed. Automatic shutdown systems and pressure release valves must be implemented where appropriate.	N/A	The LNG/ helium plant is still under construction. The requirements of this conditions are not yet applicable.
99	Fugitive emissions (dust) including health impacts	Vehicle speeds on unpaved roads should be keep as low as reasonably possible. Unnecessary travelling of vehicles on untreated roads should be avoided. In controlling vehicle entrained particulate matter, it is recommended that water (at an application rate of 2 litre/m <sup>2</sup> -hour), be applied on all unpaved road sections to ensure a minimum of 50% control efficiency (CE). In addition, binding agents or chemical suppressants should be considered for application on all unpaved road sections. During construction and rehabilitation phases, stockpiles of fine or erodible material should be treated regularly with water sprayers to reduce their potential for erosion.	4	No dust concerns were noted and the areas inspected at the time of the audit.
100	Employment opportunities	Contractors should be required to make use of a certain proportion of local labour - it is acknowledged that not all skills will be available locally. Jobs should be advertised in a way that is accessible to all members of society and labour desks (labour registration stations) should be in accessible areas. No unrealistic expectations should be created and the recruitment policy giving preference to local labour should be communicated from the beginning of the project. The local area of influence should be agreed with the stakeholders early on in the process.	4	Local labour is being used as far as possible. The contractor was tracking the employment figures.



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification
101	Habitat fragmentation and edge effects	Undertake activities in previously disturbed areas and/or habitats with lower sensitivity where possible. Locate activities on the boundaries of existing disturbance where possible. Use existing access roads as much as possible. Rehabilitate disturbed areas as soon as possible.	4	The pipeline routes and infrastructure location were planned to avoid pristine and sensitive areas as far as possible.
102	Loss of watercourse habitat/ Alterations of the river banks and river bed	Locate pipeline/trunkline alignments outside of buffered watercourses (sensitive watercourse habitat) as far as possible. Buffered watercourses should be demarcated on site for the entire construction process to help indicate sensitive areas and prevent unauthorised access. Mitigation for pipeline construction primarily includes the avoidance of watercourse crossings. Where crossings are unavoidable, crossings should be located along existing infrastructure features, such as roads, dam walls and existing pipelines. Unavoidable crossings should ideally be located perpendicular to the direction of flow at the shortest possible crossing distances. Long crossings along the length of wetlands, rivers and drainage lines should be avoided as far as practically possible. Horizontal directional drilling is recommended for the Sand River and Boschluispruit crossings, as opposed to the clearing, temporary damming, excavation, lowering and infilling of pipelines in these river watercourses. <a href="#">Vegetation clearing, topsoil stripping, trenching and infilling to bury the pipeline, are considered to be an acceptable approach in other types of watercourse crossings.</a> The construction servitude should however not remain bare (stripped for longer than a month at a time), while trenches should not remain open for more than five days. It is therefore recommended that the pipeline be completely constructed in sections, rather than removing all of the topsoil and creating open trenches across the entire study area for prolonged periods of time. The servitude width should be restricted	4	The pipeline routes were planned to avoid watercourses as far as possible. The mitigation measures were being implemented in the areas inspected at the time of the audit. Horizontal directional drilling was implemented to reduce the impact of construction on the Sand River and Boschluispruit watercourses.



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification
		<p>in watercourse crossings to reduce the footprint of the impact. Topsoil material should only be stripped in the area where trench excavation is required, while the surrounding area in the servitude is only cleared of vegetation. Limited topsoil stripping is conditional on the prevention of soil compaction by heavy motorised vehicles (HMs) through the use and maintenance of running tracks. Examples of running tracks include bogmats or rock aggregate combined with geotextile fabric and flume pipes. <b>Alternatively topsoil across the entire width of the construction servitude (often referred to as the right of way) can be stripped and stored separately outside of buffered watercourses. Removed topsoil and subsoil should be sorted separately in stockpiles and protected from erosion when required. Additional erosion protection measures should be implemented for stockpiles that are to be stored for an extended duration.</b></p>		
103	Loss of watercourse habitat/ Alterations of the river banks and river bed	<p><b>A construction method statement should be prepared by the contractor prior to the start of construction. Conditions stated in the water use license should also be implemented. The use of old and new quarry sites for bedding and padding material, as well as other needs (e.g. the discard of spoil material) should not be located within wetlands and other watercourse types. Watercourse crossings and construction methods affecting watercourse must comply with the approved water use licence and associated DWS approved method statements. The use of sites outside the study area will also be subject to environmental authorisation. Provision should be made in the design phase for permanent access tracks/roads that will be required for the maintenance of the pipeline. After completion of the construction phase, the reinstatement of the original topography of the watercourse (its geomorphological</b></p>	4	<p>Construction method statements were prepared by the contractor for the wetland/watercourse crossings. The main watercourses were crossed using horizontal directional drilling to limit the impact to the watercourses. Good rehabilitation efforts were noted at the watercourse crossings inspected at the time of the audit.</p>





Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification
		<p>template) should be undertaken followed by re-vegetation activities. The following mitigation measures are recommended: Limit the construction activities to the smallest area possible; Reinstatement of the geomorphological template of the watercourse crossing using subsoil material, followed by topsoil material on top. This should be done as soon as possible after completion of construction activities; During the reinstatement of watercourse profiles to the pre-construction profile, entrenched gullies and channels may have to be cut back to create a lower gradient that will not be susceptible to erosion; Once the crossing has been shaped and topsoil reintroduced to stripped areas, biojute can be applied according to specification to avoid rill formation and undercutting below biojute material. During the start of the growing season the annual grass <i>Eragrostis tef</i> can be introduced through manual broadcasting on reinstated watercourse surfaces. <b>Rehabilitated areas within watercourse boundaries must be protected from overgrazing. Protection methods must be identified in consultation with the respective landowners.</b></p>		
104	Impacts on local economy	<p><del>Comply with the prescripts of the mining charter, B-BBEE codes and the Social and Labour Plan.</del></p>	N/A	This condition was removed as part of the amendment that was approved in September 2020.
105	Contamination of alluvial and sand aquifers	<p>Implement good housekeeping practices, regular inspections as well as sound environmental training. An emergency response protocol must be implemented at the operations that are aimed at early detection and swift reaction speed. Where possible and reasonable daily inspections (focused on detecting leaks and spills) of drilling pads, pipelines, compressors and the helium plant must be implemented. An on-site communication system must be put in place to ensure that instructions are given</p>	N/A	No potential impact of alluvial and sand aquifers is applicable at this stage of the project. Pollution is overall well managed in all areas.



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification
		<p>and carried out with efficiency. In the event of a spill occurring, a method statement must be completed that describes how, where and when clean-ups will be undertaken. The on-site communication system must make provision for continual review and improvement of spill management. The necessary equipment and personal protection equipment (PPE) must be kept on site to clean spills up and leaks. Tetra4 personnel must receive adequate training on the use of the equipment and the disposal of waste material generated during a spill. All such wastes must be treated as hazardous. The waste must be placed in a dedicated sealed container on site, which must be disposed of to a licensed facility. All on-site vehicle and equipment maintenance must be undertaken within an area of secondary containment, such as a bund or over a drip tray, to prevent accidental soil contamination. Oil and diesel stored on site must be placed within a suitably sized bund. The dispensing of hydrocarbons must be undertaken with due care to prevent or contain spills. All hazardous waste generated must be contained and stored in suitably sealed, banded and protected areas to avoid spills and leaks. Waste must be collected and disposed of off site in a responsible manner so as to prevent groundwater contamination off site.</p>		
106	Secondary economic opportunities e.g. transport, domestic services, catering, etc.	Procurement targets to be in line with the existing Social Labour Plan (SLP).	4	The SLP is being implemented and monitoring report was being submitted to the PASA.
107	Impacts on safety and security of local residents due to presence of unfamiliar people in the area	Tetra 4 should work with the existing farmers' security groups (Sector 4 Security group/ AgriSec) and farmers' associations (Virginia and Theunissen) to create a farm access protocol for everybody that need to access the properties, and a safety plan. Tetra 4 should also become a member of these forums, and an existing WhatsApp	4	No security concerns were noted in the areas inspected at the time of the audit. Tetra4 and the contractor meets with each individual landowner before different stages off access requirements, to discuss access arrangements and routes, this is



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification
		<p>group. Farms that are equipped with alarms are all connected to a central point at AgriSec, and this is a good point of departure for Tetra 4 to consider security arrangements for their own assets and to link in and work with existing systems. Pictures, make and registration numbers of all vehicles used by Tetra 4 on site should be provided to the farmer's security group and distributed to all affected landowners to ensure that they will be able to identify these vehicles if they access their properties. Consider using an electronic vehicle tracking system (e.g., TeleMatrix) that can identify drivers and send electronic alerts (e-mail/SMS) to assist with knowing the whereabouts of drivers and informing affected parties when vehicles enter and exit property (geo-fencing). Tetra 4 should give a roster to the farmers stating dates and approximate times that contractors will be on the farms. All access arrangements should as far as possible be made at least 24 hours before access is required. Tetra 4 must meet with the landowners before the construction phase commences and formalise security arrangements in writing and where appropriate include the existing forums. All contractors and employees need to wear photo identification cards. Vehicles should be marked as construction vehicles and should have relevant logos clearly exhibited. Entry and exit points of the site should be controlled. Areas where materials are stockpiled must be fenced, where appropriate. If a security company is used, their schedules should be communicated to the farmers, especially to those farmers that have Tetra 4 infrastructure. It must be considered that guards changing shifts contribute to the impact of strangers accessing properties, and therefore a system that considers the safety of both the Tetra 4 infrastructure and the safety of the landowners must be implemented. Under no circumstances should anyone be</p>		<p>captured in the access form. Vehicles and personnel are clearly visible and identifiable, and the contractor have printed access cards for site personnel. Open lines of communication are available and regular liaison takes place between the CLO, contractor and the landowners.</p>



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification
		allowed to erect a dwelling for security forces on any of the farms. The necessary sanitation facilities must be made available, and some form of shelter from the elements. Health and safety officer to be appointed on site.		
108	Encroachment/ invasion of alien plants (specifically into watercourses)	Restrict the clearing of watercourse vegetation as far as possible. Areas that have been cleared should be re-vegetated with indigenous species or other suitable plant species, such as Eragrostis tef, after construction and initial rehabilitation work (reinstatement of the geomorphological template) is completed. Compile and implement an alien plant control program with a particular focus on alien control in watercourses (including wetlands) during the rehabilitation phase of the project. Rehabilitate disturbed areas as soon as possible. Restrict new footprints to disturbed areas as far as possible. Regular monitoring should be undertaken in the watercourses to check any possible invasion by alien vegetation so that they can be weeded out before they grow and spread out.	4	Good rehabilitation efforts were noted at the watercourse crossing inspected during the audit. No concerns were noted with regards to alien vegetation within the wetlands/watercourse inspected at the time of the audit.



### 5.3 FINDINGS OF THE AUDIT


From the compliance evaluation, certain deficiencies were raised against the requirements of the EA/EMPr. A description of the key deficiencies raised from the audit is provided in Table 4. These deficiencies should be addressed to improve the compliance with the relevant legislative requirements and EA/EMPr as well as to reduce the impact to the natural resources during the implementation of the project. The table of deficiencies can be used to prepare an action plan to address and track the corrective actions of the deficiencies over time.

Table 4: List of deficiencies raised during the audit.

No.	Requirement	Description	Photographic Record	Recommendation
1	<p><u>EA Condition 5.1.6:</u> This authorisation does not absolve the holder from complying with any other statutory obligations that may be applicable to the proposed activities.</p> <p><u>EMPr Condition 25:</u> Holder to obtain all necessary permits to comply with all legislative requirements.</p>	<p>Exploration drilling within the regulated area of a watercourse/ wetland would require a Water Use Licence or General Authorisation in terms of the National Water Act. Tetra4 is currently in the process of applying for a General Authorisation for exploration activities within the regulated areas of watercourses. The exploration drilling of certain of the current exploration wells were located within the regulated area of a watercourse without the required authorisations.</p>	N/A	<p>It is recommended that the watercourses/wetlands within the proximity of the exploration activities are identified and that a Water Use Licence or General Authorisation application process be undertaken for exploration activities within the regulated areas of the watercourses/ wetlands. Exploration activities should not be undertaken within the regulated areas of a watercourse/ wetland without the required Authorisations.</p>





No.	Requirement	Description	Photographic Record	Recommendation
2	<p><u>EA Condition 5.1.6:</u> This authorisation does not absolve the holder from complying with any other statutory obligations that may be applicable to the proposed activities.</p> <p><u>EMPr Condition 25:</u> Holder to obtain all necessary permits to comply with all legislative requirements.</p>	<p>The EA covers re-use, treatment, and storage of hazardous waste (Categories: B2, B4 and C2), but only for the knockout water, and not for the storage of drilling waste in lagoons (C1). The drilling waste/sludge at P2V2 has been stored for longer than 90 days and would require a Waste Management Licence for the continued storage of this waste.</p>		<p>The waste must be removed and adequately disposed within 90 days. It is recommended that the EA is amended to include the storage of hazardous waste in lagoons as a waste management activity if the drilling waste will be stored in lagoons for a period longer than 90 days.</p>
3	<p><u>EMPr Condition 36:</u> To mitigate effluent from short term drillings sites (&lt;3 years): The topsoil layer of the surface area required for the drill should be excavated and stored according to accepted topsoil management practices; A contiguous impervious PVC layer (e.g. large silage sheets) is placed under the drill (within the excavated area) to collect any spills; Spills of hazardous substances should be collected and disposed of according to the approved EMPr requirements at a suitably licensed facility; Collected spills from the drill must not be allowed to contaminate the soils and/or the closed water system utilised for the drilling fluids; and It is recommended that where possible, closed, above ground tanks are utilised for future drilling as opposed to sumps/pits.</p>	<p>The exploration well site P13 did not comply with certain requirements of the EMPr. Topsoil was not stripped in the affected areas before disturbance. Spill prevention measures were not used to prevent spillages during use and storage of hazardous substances and evidence of hydrocarbon spills were noted within the exploration area.</p>		<p>All drilling waste should be removed and appropriately disposed. Contaminated topsoil from hydrocarbon spills should be removed and the topsoil replaced. Disturbed areas should be reinstated and rehabilitated to its original conditions before disturbance.</p>



## 5.4 CONTINUED ADEQUACY OF THE EMPr

The continued adequacy of the EMPr is discussed in this section of the report. A EMPr amendment application was submitted to PASA and approved in September 2020. The amendment application included, *inter alia*, the change from Compressed Natural Gas (CNG) to Liquefied Natural Gas (LNG) and various other amendments to the EMPr that would address inaccuracies, clarify vague requirements and to ease the implementation of the requirements of the EMPr.

### 5.4.1 NEW IMPACTS IDENTIFIED

Based on the areas inspected during the audit, no new impacts were identified.

### 5.4.2 EFFECTIVENESS OF THE EMPr

Based on the information review, and areas inspected during the audit, the EMPr is currently considered adequate and effective to manage and mitigate the current activities and impacts of the project.

### 5.4.3 SHORTCOMINGS IN THE EMPr

Based on the information review and areas inspected during this audit, it is the auditor's interpretation that the EMPr did not have any shortcomings.

### 5.4.4 RECOMMENDATIONS

It is recommended that the project should continue to undertake the site-specific pre-commencement assessments for new exploration areas. The pre-commencement assessments and the associated site-specific mitigation measures should be considered an extension of the EMPr and compliance with these mitigation measures should continue to be enforced. The assessments should include the proximity of the activities to the regulated areas of watercourses/ wetland and the associated licencing requirements. An amendment to the EA should be considered to include the storage of drilling waste in lagoons as a waste management activity in the EA, if the storage of drilling waste will be stored for longer than 90 days.

## 6 CONCLUSION

EIMS was appointed by Tetra4 to undertake the second Six - monthly (Annual) Environmental Audit to assess compliance with the conditions of the EA and EMPr. Based on the evaluation criteria described in Section 4.2, a **total compliance score of 98.86% was obtained for the EA and 98.94% for the EMPr. Three (3) findings/deficiencies were raised from the compliance evaluation and are described in Table 4 of Section 5.3. Based on the audit, the EMPr is considered adequate and effective to manage and mitigate the current activities and impacts of this project.**

Tetra4 should be reminded of the requirements of Regulations 34 of the EIA Regulations, 2014 with regards to findings of the adequacy of the EMPr and access to the audit report. Regulation 34 states:

- 4) *“Where the findings of the environmental audit report contemplated in sub-regulation (1) indicate-*
  - a) *insufficient mitigation of environmental impacts associated with the undertaking of the activity; or*
  - b) *insufficient levels of compliance with the environmental authorisation or EMPr and, where applicable the closure plan;*

*the holder must, when submitting the environmental audit report to the competent authority in terms of sub-regulation (1), submit recommendations to amend the EMPr or closure plan in order to rectify the shortcomings identified in the environmental audit report.*
- 5) *When submitting recommendations in terms of sub-regulation (4), such recommendations must have been subjected to a public participation process, which process has been agreed to by the competent authority and was appropriate to bring the proposed amendment of the EMPr and, where applicable the closure plan, to the attention of potential and registered interested and affected parties, including organs of state which*



*have jurisdiction in respect of any aspect of the relevant activity and the competent authority, for approval by the competent authority.*

- 6) *Within 7 days of the date of submission of an environmental audit report to the competent authority, the holder of an environmental authorisation must notify all potential and registered interested and affected parties of the submission of that report, and make such report immediately available-*
- a) to anyone on request; and*
  - b) on a publicly accessible website, where the holder has such a website.”*

## **7 ASSUMPTIONS, LIMITATIONS AND GAPS IN KNOWLEDGE**

The following assumptions, limitations and gaps in knowledge apply to the audit:

- The information contained in this report was sourced from information and data supplied by third parties that is assumed to be complete, valid and true.
- This report is based on information available at the time of the assessment. The information, data, observations and evidence on what this report is based is beyond the control of EIMS and may change without notice. EIMS will not be liable for any loss or damage which may arise directly or indirectly because of such changes.
- Where reference is made to legislation or other statutory provisions in this report the original legislation or other statutory provisions will always take precedence and the reader is directed to revert to the original legislation or statutes.