



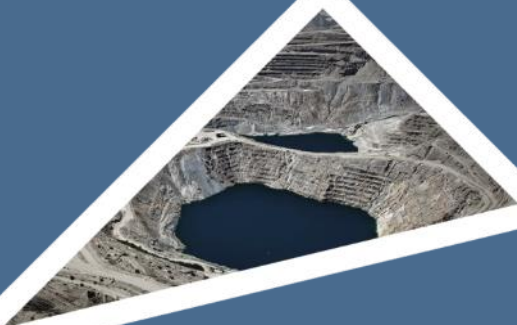
ENVIRONMENTAL
IMPACT
MANAGEMENT
SERVICES

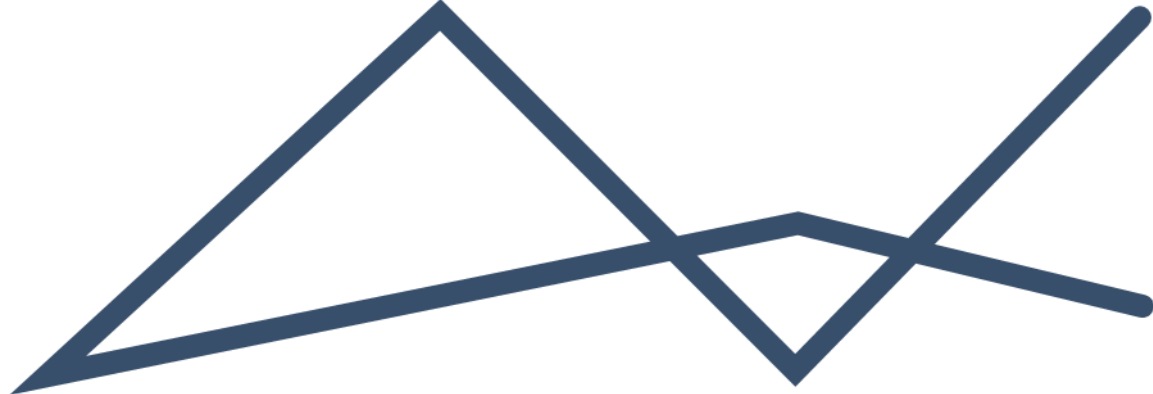
T 011 789 7170 E info@eims.co.za W www.eims.co.za

SIX – MONTHLY (ANNUAL) ENVIRONMENTAL AUDIT REPORT– DECEMBER 2019

TETRA4 CLUSTER 1 GAS PRODUCTION PROJECT

PASA Reference Number: 12/4/007





DOCUMENT DETAILS

EIMS REFERENCE: 1302

DOCUMENT TITLE: Six – Monthly (Annual) Environmental Audit Report

DOCUMENT CONTROL

	NAME	SIGNATURE	DATE
COMPILED:	Francois Barnard	Sent Electronically	2020/02/05
CHECKED:	Liam Whitlow	Sent Electronically	2020/02/05
AUTHORIZED:	Liam Whitlow	Sent Electronically	2020/02/05

REVISION AND AMENDMENTS

REVISION DATE:	REV #	DESCRIPTION
2020/02/05	ORIGINAL DOCUMENT	Draft Audit Report
2020/02/12	REVISION 1	Final Audit Report



Table of Contents

Executive Summary.....	3
1 INTRODUCTION.....	5
1.1 DETAILS OF THE HOLDER	6
1.2 BRIEF PROJECT DESCRIPTION.....	6
2 DETAILS OF THE AUDITOR.....	9
2.1 EXPERTISE OF THE AUDITOR	9
2.2 DECLARATION OF INDEPENDENCE	9
3 SCOPE, PURPOSE AND OBJECTIVE OF THE AUDIT	9
4 AUDIT METHODOLOGY	10
4.1 PROCEDURE FOR THE AUDIT	10
4.2 EVALUATION CRITERIA USED DURING THE AUDIT	10
4.3 CONSULTATION PROCESS UNDERTAKEN.....	10
5 RESULTS OF THE AUDIT.....	11
5.1 COMPLIANCE SUMMARY	11
5.2 COMPLIANCE EVALUATION.....	12
5.3 FINDINGS OF THE AUDIT	88
5.4 CONTINUED ADEQUACY OF THE EMPr	88
5.4.1 NEW IMPACTS IDENTIFIED.....	88
5.4.2 EFFECTIVENESS OF THE EMPr	88
5.4.3 SHORTCOMINGS IN THE EMPr	88
5.4.4 RECOMMENDATIONS.....	88
6 CONCLUSION.....	89
7 ASSUMPTIONS, LIMITATIONS AND GAPS IN KNOWLEDGE.....	89

List of Tables

Table 1: Details of the holder.	6
Table 2: Compliance evaluation of the EA conditions.	12
Table 3: Compliance evaluation of the EMPr commitments.	24



List of Abbreviations

Abbreviation	Item
CNG	Compressed Natural Gas
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Assessment Report
EIMS	Environmental Impact Management Services (Pty) Ltd
EMPr	Environmental Management Programme
HDD	Horizontal Directional Drilling
I&AP	Interested and Affected Party
LNG	Liquified Natural Gas
NEMA	National Environmental Management Act, Act 107 of 1998
PASA	Petroleum Agency of South Africa
Pr. Sc. Nat	Professional Natural Scientist



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 Tetra 4 Cluster 1 Gas Production Project (PASA Ref:12/4/007). As per Condition 5.4.8 of the EA, Environmental Audit Reports must be submitted to the PASA twice a year and the EMPr requires Environmental Audit Reports to be submitted to PASA on an annual basis. This Environmental Audit Report is the first 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.*
- 2) *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”.*

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 organisation or 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. 9 of these conditions were considered not applicable to the current phase of the project. Of the applicable conditions a total of 42 commitments were noted to be fully compliant, 0 partially compliant and 0 were non-compliant.

A total of 107 commitments were identified in the EMPr that were evaluated. 30 of these conditions were considered not applicable to the current phase of the project. Of the applicable conditions a total of 77 commitments were noted to be fully compliant, 0 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 100% was obtained for the EA and EMPr and 0 findings were raised from the compliance evaluation. Based on the audit, the EMPr is considered adequate and effective to manage and mitigate the current activities and impacts of this project. Some shortcomings were however noted with the EMPr and these are described in Section 5.4.3, together with recommendations to address these shortcomings (Section 5.4.4). An EMPr amendment application was submitted to PASA for consideration, but no decision was made at the time of the audit.



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 30th 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 CNG 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. 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.

As per Condition 5.4.8 of the EA, Environmental Audit Reports must be submitted to the PASA twice a year, and the EMPR requires Environmental Audit Reports to be submitted to PASA on an annual basis. **This Environmental Audit Report is the first 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 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:

- 3) *“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.*
- 4) *The environmental audit report contemplated in sub-regulation (1) must-*
 - (e) *be prepared by an independent person with the relevant environmental auditing expertise;*
 - (f) *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;*
 - (g) *Contain the information set out in [Appendix 7](#); and*
 - (h) *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.

Company Name	Tetra4 (Pty) Ltd
Company Registration	2005/012157/07
Head Office Physical Address	1 Bompas Road, Dunkeld West, Johannesburg, 2196
Head Office Telephone Number	010 045 6000
Head Office Fax Number	010 045 6001
Head Office Contact Person	Khalid Patel (khalidp@tetra4.com)
Operations Physical Address	Mond van Doornrivier RE/38, Theunissen, 9414
Operations Contact Person	Robert Katzke (robertk@tetra4.com)

1.2 BRIEF PROJECT DESCRIPTION

The proposed Cluster 1 gas production operations is located approximately 20 km south west 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 in excess of 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. In addition to the pre-identified 13 wells, the drilling of 6 new wells within the boundary of Cluster 1 has been included in the EIA/EMPR. The drilling of these additional wells is required in order to ensure that the proposed Cluster 1 gas field development is economically viable and able to produce appropriate volumes of the gas resource. Gas extracted from the existing and new wells will be compressed via centralised compressors and sent via pipeline through to the combined helium and CNG (now LNG) plant for processing. 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 to the Production Right and, if successful, the exploration wells will be converted into production wells to be added to the Cluster 1 network.

At the time of the audit, the main contractor was appointed and commenced with the preparation works for the Cluster 1 construction activities. During the audit the following activities were being undertaken: 1) Gas extraction and compression undertaken from the HDR1 and MDR05 wells at the HDR1 plant, 2) a well site that is currently undergoing production testing (2057), 3) horizontal directional drilling for exploration at well NEA02HT4, 4) topsoil stripping of the area to be used as the construction camp for the Cluster 1 construction activities, 5) topsoil stripping at the EX01 well site.



Figure 1: Drilling at the NEA02HT4 drill site continued at the time of the audit.



Figure 2: Topsoil stripping for the construction camp, near HDR1 commenced.



Figure 3: Topsoil stripping at the EX01 well site commenced.



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 11 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; and*
- *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.*

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- 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 organisation or 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 10 December 2019 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 Tetra 4 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 was based on a pre-determined scoring system. Each condition of the EA and EMPr was weighted equally in order to determine a compliance score. The scoring criteria used during the audit are as follows:

- Full-Compliance: Indicating that the condition was fully complied with and provided with a compliance score of 4.
- Partial-Compliance: 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-Compliance: 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 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 Tetra 4 representative that were interviewed and assisted with the audit was Gerhard Muller - Tetra4 Environmental Officer.

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.

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 commitments were identified in the EA that were evaluated. 9 of these conditions were considered not applicable to the current phase of the project. Of the applicable conditions a total of 42 commitments were noted to be fully compliant, 0 partially compliant and 0 were non-compliant.

A total of 107 commitments were identified in the EMPr that were evaluated. 30 of these conditions were considered not applicable to the current phase of the project. Of the applicable conditions a total of 77 commitments were noted to be fully compliant, 0 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 100% was obtained for the EA and the EMPr.** A summary of the percentage of conditions of the EA and EMPr rated as Fully Compliant, Partially Compliant and Non-Compliant are presented Figure 4 and Figure 5 respectively.

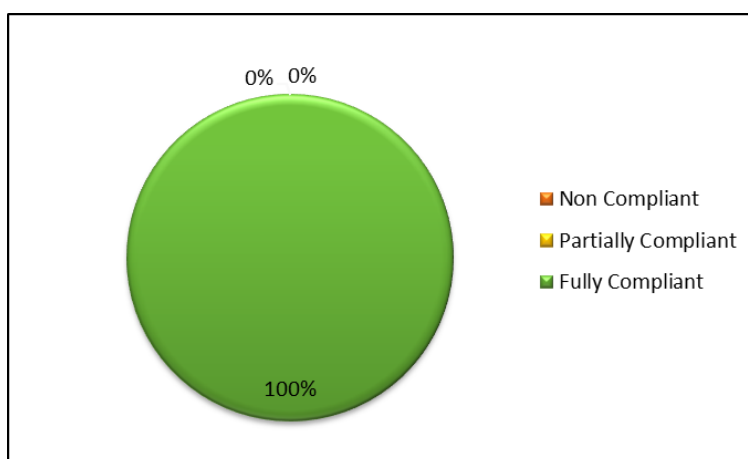


Figure 4: Distribution of compliance ratings for EA conditions.

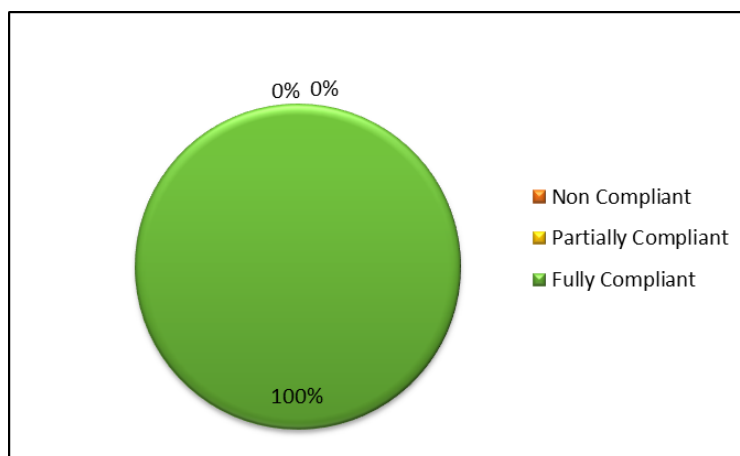


Figure 5: Distribution of compliance ratings for EA conditions.



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.

Table 2: Compliance evaluation of the EA conditions.

Ref #	Condition	Compliance Rating	Comments/ Verification
5,1	Scope of the Authorisation		
5.1.1	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 CNG 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.	N/A	The construction of the Helium Plants and Pipelines have not yet commenced.
5.1.2	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 Boschluisspruit 278 and Portion RE of the Farm Retreat 118 and Boshluisspruit 278)	4	The current activities are located within the application area.
5.1.3	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.
5.1.4	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	4	The EMPR was supplied to the relevant contractors and monitoring of the implementation is being undertaken by the EO and ECO.



Ref #	Condition	Compliance Rating	Comments/ Verification
	responsibility to ensure compliance with the conditions of this environmental authorisation.		
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	Some amendments to the EA was made and approved on 29 August 2019. It was reported that additional amendment to the EA and EMPR are being made, these amendments have however not yet been approved and as such are not yet in effect.
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.	4	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.
5.1.7	The holder of this authorisation must apply for an amendment of this authorisation in the case of a change of ownership or transfer of rights and/or obligations.	4	Tetra 4 is still the holder of the authorisation. Renergen is the holding company of Tetra 4.
5,2	Notification and Appeal of Authorisation		
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&APs) 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.



Ref #	Condition	Compliance Rating	Comments/ Verification
5.2.2	<i>The notification contemplated above must amongst other issues:</i>		
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.
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&APs 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&APs 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.
5,3	Commencement of the Activity(s)		
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. 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.



Ref #	Condition	Compliance Rating	Comments/ Verification
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 located within the boundary of Cluster 1.	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.
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	Management, Monitoring and Auditing of Operations Including Reporting Requirements		
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 Cluster 1 EMPR throughout all the phases of the proposed production activities within Cluster 1.	4	The EMPR are 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,	N/A	Statement. Noted.



Ref #	Condition	Compliance Rating	Comments/ Verification
	if convicted, liable for penalties contemplated in Section 49B(1) of NEMA.		
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 are being made, these amendments have however not yet been approved and as such are not yet in effect.
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. No concerns with regards to the awareness of the requirements of the EMPR was noted at the time of the audit.
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 at the site office at all times.	4	The EMPR are referred to in the contractual documentation and provided to the contractors.
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.



Ref #	Condition	Compliance Rating	Comments/ Verification
5.4.7	The appointed ECO must, at drilling and construction stages (trenching and laying of pipelines and construction of the helium and CNG 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 PRASA currently during construction/exploration. The 6 th monthly ECO report for Cluster 1 was submitted to PRASA in January 2020.
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	This first biannual audit was done in December 2019. The report assessed the compliance with the EA and EMPr, identified new impacts and risks, identified shortcomings within the EMPr. The report will be submitted to PRASA by Tetra 4, once completed.
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 audit, the EMPr is considered adequate and effective to manage and mitigate the current activities and impacts of this project.
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	Specific Conditions		



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 landowners 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 assumed that this condition refers to the operational phase as it refers 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 landowners to ensure that they are aware and to detail any special conditions for access.
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 new HDD well (NEA02HT4) was placed within the assessed area of 2057, outside of environmentally sensitive areas. The compressor site has not yet been established. The new exploration well (2057) drilled was located within 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	The drilling of the HDD well (NEA02HT4) commenced. 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 Bosluisspruit and Sand Rivers and un-weathered sedimentary Bedrock, must be done under the supervision of an independent and qualified Palaeontologist.	N/A	Trenching for the pipeline has not yet commenced.



Ref #	Condition	Compliance Rating	Comments/ Verification
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 are mostly finalised for the Cluster 1 Pipelines and Wells. Access agreements are in place with landowners where wells are currently located. The agreements that are in place were submitted to the PASA on 17 April 2019. Ongoing consultation with landowners continues.
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 landowner and community forum meeting was held recently and similar meetings will be held by the contractor before pipeline construction commences.



Ref #	Condition	Compliance Rating	Comments/ Verification
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 and are still being finalised. It was reported that the wayleave for the access road to the HDR1 site did not require a Traffic Management/Safety Plan.
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	No warning signage was erected along the R30 yet, as the specific requirements and legality of the signage were still being investigated. Limited construction activities were taking place at the time of the audit, as the establishment of the construction camp was still taking place.
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 site at 2057 is being stored above ground and the final disposal method are still being determined. Drilling water from the NAE02HT4 drill site are re-used in the drilling operations.
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 18 th 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 rainwater from getting in contact with the waste.	2	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 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 waste skips for the waste (Domestic, concrete and sludge) at the NAE02HT4 drill site were not placed on impermeable and chemical resistant floors and were not provided with lids. These skips are however



Ref #	Condition	Compliance Rating	Comments/ Verification
			sealed and regular inspections are taking place to identify spillage from these skips. The waste skips will only be at the site temporarily, during the drilling operations.
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 NEA02HT4 have drip trays in place to contain spillages from these chemicals. The fuel bowser at NEA02HT4 has a concrete bund and is roofed. Drip trays are used under the drill rig and water pump to contain spillages as far as possible. Water from the drill rig platform is diverted to lined sumps to reduce the risk of pollution.
5.5.15	The holder must develop a storm water management plan for the combined helium and CNG 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 /CNG plant is not yet being constructed. These plans will be developed closer to commencement of construction.
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 construction camp and HDR1 site that might have to be 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 Cluster 1 gas production has not yet commenced.
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 (July 2019 - December 2019) one incident was reported to the authorities. The incident related to the spillage of water from well 2057. After investigation from the soil specialist, it was reported that the spillage had no potential to cause pollution.
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 03rd of May 2017 are deemed to be the conditions of the EA and must therefore be adhered to.	4	The mitigation from the EIR was included in the EMPR. Compliance to the EMPR is being monitored on a continuous basis by the EO and ECO.
5,6	General		
5.6.1	A copy of the authorisation and the EMPR must be kept onsite to ensure appropriate implementation of the mitigation measures.	4	A copy of the EA and EMPR is available at the HDR1 office.
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.



Ref #	Condition	Compliance Rating	Comments/ Verification
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 EMP commitments.

Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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.	Planning and Design
2	Management of sensitive areas	Any drill sites or infrastructure routes that are located inside medium, high or very high sensitive sites on the sensitivity/constraint map require a site specific EMP. The EMP must address the sensitive aspects on site. Site specific EMP must be compiled by an EAP and must, where applicable, include input from professional (Pr.Sc.Nat) ecologists, cultural heritage specialists. All recommendations of the site specific EMP will be considered an extension of the requirements of this EMPR.	4	It is understood that this condition came from the original EMPR from 2010 that covered a much larger area. The 2017 EMPR only covered Cluster 1, as such the 2017 EMPR could be considered a site specific EMPR for the pipeline route and six proposed exploration wells. Additionally, a pre-commencement inspection and report gets compiled before any new activity commence or new area is disturbed. A Pre-commencement inspection was undertaken, and a management report prepared to identify any sensitivities at the NEA02HT4 drilling site. The assessment and reports were done by the Tetra4 Environmental Officer. The NEA02HT4 drilling site is within 1km from the existing 2057 well and within 50m of the EIA approved pipeline route, which was assessed during the 2017 EIA/EMP.	Planning and Design



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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. It is understood that pipeline will be placed underground and is planned to be below 1.5m. This will be confirmed when construction starts.	Planning and Design
4	Environmental and safety practices	All pipelines and facilities will be designed and constructed in accordance with best practices and international gas standards.	4	It was reported that the designs of the pipelines are done by professional engineers and according to international gas standards.	Planning and Design
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.	Planning and Design
6	Public safety	A hazardous installation risk assessment must be conducted prior to construction.	4	An 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 an MHI risk assessment was done in February 2017.	Planning and Design
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	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.	Planning and Design



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
		compression stations when located in proximity to local, provincial and national roads.			
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 fall within the building restriction area of the National Road.	4	It was reported that the pipelines will be located outside of road reserves and that wayleaves would be obtained for all road crossings. Exemption is being applied for the Blaawdrift 188/3 property to encroach into the SANRAL servitude. This will be confirmed during the construction phase as and when it progresses.	Planning and Design
9	Management of sensitive areas	Once prospective drilling sites are identified, an Environmental Assessment Practitioner (EAP) or Ecologist (registered Professional Natural Scientist) must undertake a site-specific assessment to assess the site for any potential site-specific environmental sensitivities prior to commencement.	4	It is understood that this condition came from the original EMPR from 2010 that covered a much larger area. The 2017 EMPR only covered Cluster 1, as such the 2017 EMPR could be considered a site specific EMPR for the pipeline route and six proposed exploration wells. Additionally, a pre-commencement inspection and report gets compiled before any new activity commence or new area is disturbed. A Pre-commencement inspection was undertaken, and a management report prepared to identify any sensitivities at the NEA02HT4 drilling site. The assessment and reports were done by the Tetra4 Environmental Officer. The NEA02HT4 drilling site is within 1km from the existing 2057 well and within 50m of	Planning and Design



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
				the EIA approved pipeline route, which was assessed during the 2017 EIA/EMP.	
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. This will be confirmed as construction continues. 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 are required, dust suppression is required to be done by the contractor.	Planning and Design



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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	It is understood that this condition came from the original EMPR from 2010 that covered a much larger area. The 2017 EMPR only covered Cluster 1, as such the 2017 EMPR could be considered a site specific EMPR for the pipeline route and six proposed exploration wells. Additionally, a pre-commencement inspection and report gets compiled before any new activity commence or new area is disturbed. A Pre-commencement inspection was undertaken, and a management report prepared to identify any sensitivities at the NEA02HT4 drilling site. The assessment and reports were done by the Tetra4 Environmental Officer. The NEA02HT4 drilling site is within 1km from the existing 2057 well and within 50m of the EIA approved pipeline route, which was assessed during the 2017 EIA/EMP. The site specific EMPs should be included in any amendment of the EMPr going forward.	Planning and Design
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 well sites visited at the time of the audit did not infringe on the landowner's surface activities. The location of the sites is consulted with the landowners during the pre-commencement assessments undertaken and during the landowner agreement negotiations.	Planning and Design



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
13	Disturbance/ destruction of sacred natural sites	Once final production drilling footprints are determined and confirmed for implementation, a public participation process should be undertaken during which the I&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&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&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&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&AP from the outset. Any development (including exploration drilling) within 500 m of a confirmed Sacred Natural Site should adhere to	4	It was reported that a public participation process was undertaken from 10 January to 20 February 2019. One potential sacred natural site was identified but it was located outside of the final footprints of the Cluster 1 area.	Planning and Design



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
		the recommended groundwater, surface water and wetlands mitigation measures.			



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
14	Consideration of additional production footprints on heritage sites	The planning of all additional gas production footprints must take cognisance of the heritage sensitivities depicted on the heritage sensitivity maps for Cluster 1. To the extent possible, identified heritage sensitivities must be avoided in the establishment of additional footprints. As soon as any additional gas production footprints are confirmed, a suitably qualified heritage specialist, with expertise in archaeology, must be appointed to undertake a walkthrough. The appointed heritage specialist will be responsible for undertaking heritage walkthroughs of the additional footprint areas to identify any heritage sites located there. The appointed heritage specialist will be responsible for compiling a report containing the findings of the heritage walkthroughs, assessing the heritage significance of such identified heritage sites, assessing the impact of the proposed activities on the identified heritage sites and outlining mitigation measures. The report would be a subsequent heritage impact assessment aimed specifically at the additional footprints and must be submitted to the heritage authorities for approval.	4	No additional gas production footprints are applicable outside of the areas assessed during the cluster 1 EIA/HIA.	Planning and Design



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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 specialists 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 demarcation of wetlands and the method statement from the contractor will be confirmed before construction of the pipeline commence.	Planning and Design



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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 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.	N/A	Construction within this area has not yet commenced and no additional footprint within 100m of the sand river was proposed at the time of the audit.	Planning / Construction
17	Flora and fauna direct and indirect mortality	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.	4	Pre-commencement assessments are undertaken by the EO 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.	Planning / Construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
18	Reducing groundwater available to existing users.	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 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).	4	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.	Planning / Construction
19	Loss of agricultural land	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 (>1 m minimum) to avoid interference with arable agriculture activities.	4	The infrastructure locations are determined in consultation with the landowners and are located outside of agricultural areas as far as possible. The pipeline is planned to be buried below	Planning / Construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
				1.5m and will be confirmed during construction.	
20	Disruption of watercourse hydrology	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.	N/A	The construction of the pipelines has not yet commenced.	Planning / Construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
21	Decrease in surface water quality	Design and implement a site-specific stormwater management plan for the compressor and helium/CNG 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 plants has not yet commenced. No erosion or stormwater concerns were noted at the HDR1 site. Septic tanks will be located outside of the buffered watercourses.	Planning / Construction
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	4	A comprehensive groundwater monitoring programme is being undertaken and the information will be considered for the update of the numerical groundwater model.	Planning/ Construction/ Operation



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
		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.			
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.	Planning/ Construction/ Operation



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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	Well designs are done by qualified engineers and then these designs are approved by PASA. Casings are in place at production wells. Groundwater monitoring continues to determine if there are any leaks and associated contamination.	Planning/ Construction/ Operation
25	Enviro-legal compliance	Holder to obtain all necessary permits to comply with all legislative requirements.	4	All the required permits are in place for the activities noted on site. A Section 21 (j) water use will have to be applied for abstraction of groundwater for the safe continuation and the production activities. This will be applied for when the required data is obtained from the current tests being done at well 2057 and NEA02HT4.	Pre-construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
26	Enviro-legal compliance	A heritage specialist should be appointed prior to commencing with the site establishment to identify any potential impacts on heritage features. Necessary legal processes need to be complied with.	4	This requirement is from the 2010 EIA/EMPR. A heritage specialist assessment was undertaken for HDR1 and a HIA was undertaken for the Cluster 1 project which included the pipeline route and the existing and planned exploration wells.	Pre-construction
27	Impacts of cultural and heritage features	A phase 1 HIA must be completed for all new drill sites and pipeline routes.	4	This requirement is from the 2010 EIA/EMPR. A heritage specialist assessment was undertaken for HDR1 and a HIA was undertaken for the Cluster 1 project which included the pipeline route and the existing and planned exploration wells. It was reported that this is a limiting factor on ongoing explorations work and that Tetra 4 is planning to amend this condition.	Pre-construction
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 landowners.	4	Landowner agreements are concluded before any work is allowed to be undertaken a property.	Pre-construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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.	Pre-construction/ construction
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 EO to identify potentially listed/protected species and obtain permits, when applicable.	Pre-construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
31	Loss of heritage features	A heritage specialist should be appointed to assess the selected site for any potential occurrence of heritage artefacts or potential archaeological sites.	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.	Pre-construction
32	Impacts on land-use	Where applicable, the pipes will be buried between the harvesting season and the next seasons planting to minimise disturbance of the farming operations.	N/A	The construction pipeline has not yet commenced for the Cluster 1 project.	Construction
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.	Construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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 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.	4	Pre-commencement assessments are done in consultation with landowners before any activities on the properties.	Construction
35	Management of topsoils	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.	4	During the clearing of the office areas at HDR1 the 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.	Construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
36	Water pollution and waste management	To mitigate the effluent from long term drilling sites (>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; Sump areas should be surrounded by a berm or earth wall of at least 50 cm which can withstand heavy rainfall; 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 (<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.	4	Topsoil were stripped and stored for rehabilitation at the NEA02HT4 drilling site. PVC lined sumps and aboveground storage units are used for drilling water. Drip trays are used under mobile equipment. The drill rig was placed on a concrete base to reduce the risk of pollution from spillages.	Construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
37	Stormwater control and management	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.	4	The stormwater system at the HDR1 site were upgraded to address ponding within the HDR1 site. No drainage or erosion concerns were noted at the time of the audit.	Construction
38	Noise, vibration, visual and dust impacts	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.	4	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.	Construction
39	Fugitive emissions (dust) from exploration/production drilling	In controlling vehicle entrained particulate matter, it is recommended that water (at an application rate of 2 litre/m ² -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. The need for dust control to be informed by the ECO.	4	Evidence of dust control was noted at the HDR1 facility and no dust concerns were noted in the areas inspected at the time of the audit. Dust monitoring recently commenced for the Cluster 1 project to determine the baseline and to determine any dust impacts near sensitive receptors.	Construction
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. Limited Cluster 1 construction activities were being undertaken at the time of the audit.	Construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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. Limited Cluster 1 construction activities were being undertaken at the time of the audit.	Construction
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 is not applicable yet and no alien plant concerns were noted at the time of the audit. This will be confirmed when construction of the pipeline starts.	Construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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.	N/A	No construction activities were being undertaken near heritage features at the time of the audit.	Construction
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.	N/A	Construction within these areas have not yet commenced.	Construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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.	N/A	Construction within these areas have not yet commenced.	Construction
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 (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.	N/A	Construction within these areas have not yet commenced.	Construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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 Bosluispruit (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 Bosluisspruit 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.	N/A	Construction within these areas have not yet commenced.	Construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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 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 Bosluisspruit channel near existing well SPG3.	N/A	Construction within these areas have not yet commenced.	Construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
49	Watercourse erosion	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 head cut development and the formation of a channel. Surface flows should also be spread out in channelled watercourse crossings though 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 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	N/A	Construction within these areas have not yet commenced.	Construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
		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.			



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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). 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.	4	No excessive noise nuisance was noted at the time of the audit. The main Cluster 1 construction activities have not yet commenced.	Construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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	It was reported that Tetra 4 is offering internships/ training to students. The implementation of the SLP will be confirmed during subsequent audits as the main construction activities have not yet commenced.	Construction
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. Tetra 4 should develop an in-house infectious diseases strategy to address health issues within the workforce and align the strategy with a community HIV strategy implemented by a non-profit organisation. Local schools and farm worker communities must be included in the strategy. The strategy should include voluntary counselling and testing and training of peer educators. A workforce code of conduct should be developed to maximise positive employee behaviour in the local community and optimise integration.	N/A	The main Cluster 1 construction activities have not yet commenced. It was reported that Tetra 4 is applying for an amendment to this condition, but it was not yet approved. It was however noted that HIV and AIDS were included in toolbox talks.	Construction
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.	Construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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 to areas with open fences should be controlled. There must be a protocol on how to rescue a stranded animal from a trench.	N/A	The main Cluster 1 construction activities have not yet commenced. No open trenches were noted at the time of the audit.	Construction
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	The main Cluster 1 activities have not yet commenced that includes the construction of pipelines and facilities that would require progressive rehabilitation. Reinstatement were undertaken at the drill sites visited at the time of the audit. The disturbance at the drilling site at NEA02HT4 were kept to a minimum.	Construction
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	Drip trays are in place and the drilling fluid is regarded as biodegradable. Drilling water is contained in aboveground storage and PVC lined mud sumps.	Construction
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	The main Cluster 1 construction activities have not yet commenced. No progressive rehabilitation areas were applicable at the time of the audit. Topsoil were stripped and stored at the temporary	Construction



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
				office area being established at HDR1 as well as the NEA02HT4 site.	
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 area should be stopped immediately until permitted to proceed by the EAP/ECO.	N/A	No artefacts, fossils or graves were discovered in the areas disturbed at the time of the audit.	Construction/ Operation



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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 (>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. The site manager should determine the exact method of treatment in consultation with a suitably qualified specialist. 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 at all times. Proper and frequent maintenance should be done to minimise spillage risk.</p>	4	<p>Spill prevention measures were implemented in the areas inspected at the time of the audit. A spill kit was available at the HDR1 plant, NEA02HT4, EX01 and the construction camp. Spills are recorded within spill registers and tracked for corrective action.</p>	Construction/ Operation



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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. A fire and safety officer must be appointed as legally required. Firebreaks must also be implemented.	4	No evidence of open fires was noted on site and firefighting equipment is available. A designated safety officer has been appointed for the contractor. The main Cluster 1 construction activities have however not yet commenced.	Construction/ Operation
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.	Construction/ Operation



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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 main Cluster 1 construction activities have not yet commenced. The current activities are undertaken in previously disturbed areas as far as possible. Existing access roads are used as far as possible.	Construction/ Operation
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.	Construction/ Operation



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
64	Decrease in surface water quality in watercourses	<p>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 ablution 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 can be made regarding the removal of deposited material.</p>	4	<p>It is assumed that this condition refers to activities within wetland and watercourse areas. The main Cluster 1 construction activities within wetland and watercourses have not yet commenced except for the layer works at EX01. Drip trays were available at EX01 at the time of the audit.</p>	Construction/ Operation



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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 EMP. 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 work fronts at the time of the audit.	Construction/ Operation
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 injury or spill. 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 the safety requirements. No safety concerns were noted at the time of the audit.	Construction/ Operation/ Decommissioning



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
67	Security	Landowners should be notified prior to accessing their land. The number and identity of workers, the purpose of the visit and specific areas to be visited, should be provided in the notification. 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. For each property at any point in time, group size of workers should be kept to a minimum. Labourers and contract workers (if any) should be accompanied by a responsible supervisor at all times. Workers may not 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	4	Minimal Cluster 1 construction activities have commenced except for the layer works at EX01 and SPG03. No security concerns were noted during the audit. It was noted that employees and workers were provided with identifiable clothing and ID badges were being rolled out. Supervisors were present at the work fronts. Access gates at the work fronts were kept closed, where required. A grievance mechanism with complaints register is available.	Construction/ Operation/ Decommissioning



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
		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.			
68	Handling, storage, and disposal of hazardous waste and effluent	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 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.	4	Hazardous chemicals at the HDR1 site is stored within a designated hazardous chemical storage area within drip trays on an impervious floor. Industrial effluent is collected in containers and appropriately disposed. The hydrocarbons and chemicals stored within the container at the HDD site camp were placed within drip trays.	Construction/ Operation/ Decommissioning
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	4	Waste is stored appropriately and disposed at the municipal waste disposal facility.	Construction/ Operation/ Decommissioning



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
		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.			
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 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	4	Currently, private access road usage is limited except for EX01 and SPG03. Pre-commencement assessments are undertaken before any new activity commence or new area are impacted. This includes notification of landowners. Tetra 4 committed to comply to this condition, once the main construction activities commence.	Construction/ Operation/ Decommissioning



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
		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.			
71	Displacement of faunal species	Where possible, undertake activities in previously disturbed places and/or habitats with a lower sensitivity score. Rehabilitate disturbed areas as soon as possible.	4	The activities were being undertaken in previously disturbed areas as far as possible.	Construction/ Operation/ Decommissioning
72	Increase in poaching incidents	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.	4	No concerns relating to poaching were noted at the time of the audit.	Construction/ Operation/ Decommissioning
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 draft Traffic Safety Plan (Work Instruction) was developed and are still being finalised. It was reported that the wayleave for the access road to the HDR1 site did not require a Traffic Management/Safety Plan. Road signage (speed limits, directions, no entry) was erected along the local access routes to the EX01 and SPG03 well sites. No warning signage was erected along the R30 yet, as the specific requirements and legality of the signage were still being investigated. Limited construction activities were taking place at the time of the audit, as the establishment of the construction camp was still taking place	Construction/ Operation/ Decommissioning



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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	The revegetation of the pipeline and temporary facility areas are not yet applicable. Dust suppression were noted that the HDR1 plant at the time of the audit. No lighting concerns were noted at the time of the audit. A community liaison officer was recently appointed, and the stakeholder meetings commenced. 6-monthly CLF meetings will be undertaken when construction of the pipelines commence. Rehabilitation monitoring will continue during the main construction phase.	Construction/ Operation/ Decommissioning



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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 avoided. Remnant erosion features that remain after the rehabilitation phase should be stabilised with the assistance of a civil engineer with wetland rehabilitation experience. Rehabilitation interventions for remnant erosion features should be based on a site survey and a formal design with quality control measures during its implementation. Input from a wetland specialist with rehabilitation experience is also advised. 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.	4	The main Cluster 1 pipeline construction activities have not yet commenced. As such, construction activities in watercourses is not yet applicable. A Water Use Licence was obtained for Section 21 c and i activities within wetlands and watercourses.	Construction/ Operation/ Decommissioning



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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 recently appointed, and pre-commencement meetings were held with stakeholders.	Construction/ Decommissioning/ Rehab and Closure
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 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 estimated amount of water required for the drilling activities.	4	The management, storage and disposal of contaminated water and condensate are managed appropriately. Drilling water is kept in a closed circuit and re-circulated to the drilling machine. At the time of the audit, the design of the domestic effluent at the old toilets at the HDR1 site could not be confirmed. As such, it could not be confirmed if the effluent disposal system was designed and build as to prevent pollution of natural resources. The toilets have subsequently been locked and not in use. The system at the new offices and toilets is a closed system.	Operation
78	Social issues	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	4	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.	Operation



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
		<p>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 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>			



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
79	Safety and nuisance impacts where trench has to be opened to repair faults	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.	N/A	The main Cluster 1 production activities have not yet commenced.	Operation
80	Public perceptions about safety associated with gas production	Tetra 4 should compile a background information document (BID) explaining the process and potential risks in laymen terms. This should be distributed to local stakeholders. Special sessions to inform the farm workers in their native languages must be conducted. They can also consider a media awareness campaign on local radio stations and press statements to local papers.	N/A	The main Cluster 1 production activities have not yet commenced.	Operation
81	Pollution of soil profile due to leakage/spillage	Ensure that any possible source of leakage/spillage is contained and that bulk storage facilities are isolated from surrounding soils, especially wetland. Ensure that pipeline construction is done properly, taking soil characteristics (clay content and water content) into account.	N/A	It is assumed that this condition is an operational phase requirement and not yet applicable.	Operation



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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.	Operation
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.	Operation
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.	All Phases
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 are not yet applicable.	Decommissioning



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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 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.	N/A	The decommissioning and closure phase (post construction) is not yet applicable.	Decommissioning and Closure
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	N/A	The decommissioning and closure phase are not yet applicable.	Decommissioning and Closure



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
		<p>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. 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>			



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
88	Well casing and/or cementation failure affecting groundwater quality	Well abandonment and plugging to comply with the requirements of the Petroleum Regulations, 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 reservoir 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 re-cemented 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 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.	N/A	Rehabilitation and closure are not yet applicable.	Rehab and Closure



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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 are available on site and the appointed sub-contractors are made aware of their obligations under the EMPR.	All Phases
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 all are aware of the procedures.	All Phases
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 are retained as far as possible and an alien invasive plant eradication programme is being implemented.	All Phases



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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, 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.	4	An asset register was developed, and utilities and servitudes were considered during the pipeline layout planning. Pre-commencement assessments are done before a new area is disturbed.	All Phases
93	Water abstraction	The necessary DWA (DWS) permits should be obtained 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 from the landowners. The abstraction undertaken at well 2057 was an exercise to determine the amount of water that is required to be abstracted. This information will be used to apply for a Section 21 j Water Use from the DWS.	All Phases



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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. 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.	4	A CLO was recently appointed, and stakeholder meetings commenced. All agreements with landowners are formally recorded.	All Phases



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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 as well as to discuss environmental issues and assist Tetra 4 with obtaining a social license to operate.</p>	4	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.	All Phases



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
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 communicate the mitigation and monitoring measures to the affected parties. Putting shade nets against fences close to dwellings during the construction phase should be investigated. Low-frequency alarms, or buzzers can be used instead of the current system. The need for the alarms must be explained to the affected stakeholders, and acceptable solutions must be developed with the input of the stakeholders.	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.	All Phases
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. Industrial vehicles should not travel during peak traffic times. If practical and required by the landowner, access routes to land/infrastructure should be reinstated in the	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. This will continue to be monitored during the construction phase.	All Phases



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
		decommissioning phase. This must be done in conjunction with the landowners.			
98	Greenhouse gas emissions including odour nuisance and health impacts	To lower exhaust emissions from vehicles and machinery, equipment suppliers or contractors should be required to ensure compliance with appropriate emission standards for production fleets. Maintenance and repair of diesel engines should be carried out as prescribed by manufacturer in order to maximize combustion and reduce gaseous emissions. Apply fuel efficient driving and operating practices on all vehicles. The use of low-NOx burners in combustion systems should be considered for operation of the Helium and CNG 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.	N/A	Construction only commenced in December 2019; the scheduled servicing of vehicle will be confirmed during the subsequent six-monthly audits. The Helium and CNG/LNG plant have not yet been established.	All Phases
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 ² -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	4	Dust suppression was applied at the HDR1 plant area. No dust concerns were noted, and the areas inspected at the time of the audit.	All Phases



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
		be treated regularly with water sprayers to reduce their potential for erosion.			
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.	N/A	The main Cluster 1 pipeline construction activities have not yet commenced. This will be confirmed during the subsequent audits.	All Phases
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 are planned to avoid pristine and sensitive areas as far as possible.	All Phases



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
102	Loss of watercourse habitat/ Alterations of the riverbanks 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 Bosluisspruit crossings, as opposed to the clearing, temporary damming, excavation, lowering and infilling of pipelines in these river watercourses. Vegetation clearing, topsoil stripping, trenching and infilling to bury the pipeline, are considered to be an acceptable approach in other types of watercourse crossings. 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 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	4	The pipeline routes were planned to avoid watercourses as far as possible. The implementation of the mitigation measures will be monitored during the construction of the pipelines.	All Phases



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
		<p>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 (HMTVs) through the use and maintenance of running tracks. Examples of running tracks include bogmats or rock aggregate combined with geotextile fabric and flume pipes. 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 on geotextile fabric, and protected with silt fences to prevent loss of material during rainfall events. A construction method statement should be prepared by the contractor with input from a watercourse specialists prior to the start of construction. Mitigation measures recommended should be considered along with other recommendations based on more recent information in order to accommodate any unforeseen changes in the design and infrastructure. 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. A watercourse specialists should be appointed to evaluate proposed sites located outside of the study area. The use of sites outside the study are 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</p>			



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
		the watercourse (its geomorphological template) should be undertaken followed by re-vegetation activities. The following mitigation measures are recommended: Limit the construction activities to the smallest area possible; Reinstate 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 Eragrostis tef can be introduced through manual broadcasting on reinstated watercourse surfaces. Areas that are exposed to grazing should be fenced off for the first year to help enable the establishment of this pioneer species, which will be replaced by indigenous wetland species through natural selection.			
103	Impacts on local economy	Comply with the prescripts of the mining charter, B-BBEE codes and the Social and Labour Plan.	N/A	It was reported that the Social and Labour Plan are still being prepared and implementation of the Plan will be confirmed once complete.	All Phases
104	Contamination of alluvial and sand aquifers	Implement good housekeeping practices, regular inspections as well as sound environmental training. An emergency response protocol must be	N/A	The main Cluster 1 activities have not yet commenced. No potential impact of	All Phases



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
		<p>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 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>		alluvial and sand aquifers is applicable at this stage of the project.	



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
105	Secondary economic opportunities e.g. transport, domestic services, catering, etc.	Tetra 4 should ensure at least 70% of secondary economic opportunities are given to local contractors. A percentage of goods as determined by Tetra 4 and the relevant stakeholders must also be procured locally. Services and goods must be procured locally as far as reasonably possible. Aspects of this positive impact will occur by default when the construction force lives locally, and they utilise local services and support local shops.	N/A	The main Cluster 1 pipeline construction activities have not yet commenced. The impact on secondary economic opportunities will be monitored during the subsequent audits.	All Phases
106	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 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	N/A	No security concerns were noted in the areas inspected at the time of the audit. The main pipeline construction activities have not commenced at the time of the audit. This will be monitored during the construction and operational phase of the project.	All Phases



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
		<p>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 logo's 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 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.</p>			



Ref #	Impact/ Aspect	Condition	Compliance Rating	Comments/ Verification	Phase
107	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.	N/A	Construction of the pipeline within wetlands and watercourses have not yet commenced.	All Phases



5.3 FINDINGS OF THE AUDIT

No findings, against the requirements of the EA and EMPr, were recorded during the audit.

5.4 CONTINUED ADEQUACY OF THE EMPr

The continued adequacy of the EMPr is discussed in this section of the report.

5.4.1 NEW IMPACTS IDENTIFIED

Based on the areas inspected at the time of the audit, no new impacts were identified that were not identified in the approved EMPr.

5.4.2 EFFECTIVENESS OF THE EMPr

Based on the information review, and areas inspected at the time of 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

The following shortcomings in the EMPr were noted during the audit:

- The requirements for the storage of hazardous and general waste is not adequately addressed within the EMPr.
- The requirements for the Septic Tank and French Drain System for domestic effluent was not clearly defined.

5.4.4 RECOMMENDATIONS

The following recommendations should be considered to address the shortcomings of the EMPr:

- Prescribe the requirements for hazardous and general waste storage areas during the exploration, construction and operational phases of the project. It was noted that the Tetra 4 Waste Management Procedure address the requirements for general and hazardous waste storage areas and should be considered.
- Prescribe or elaborate on the septic tank and french drain system that should be used for the disposal of domestic effluent at the plants/camps.

Additional to the recommendations provided above, it is recommended that any additional mitigation measures and requirements from the site specific EMPrs and assessment reports are incorporated into or appended to the main EMPr in future to ensure that all relevant EMPr requirements are easily accessible and available when required.

.



6 CONCLUSION

EIMS was appointed by Tetra 4 to undertake the first 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 100% was obtained for the EA and the EMPr and 0 findings/deficiencies were raised from the compliance evaluation. Based on the audit, the EMPr is considered adequate and effective to manage and mitigate the current activities and impacts of this project.** Some shortcoming were however noted with the EMPr and these are described in Section 5.4.3 and recommendations to address these shortcomings are proposed in Section 5.4.4.

Tetra 4 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.
- No representation or warranty, express or implied, is or will be made in relation to, and no responsibility or liability is or will be accepted by EIMS in relation to the accuracy of this report.
- 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.