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PERILYA BROKEN HILL OPERATIONS

Perilya Broken Hill Limited



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1. Introduction

1.1. Background

The Perilya operations comprise of three mining operations and several exploration tenements in the Broken Hill area of NSW. The mining operations and exploration tenements subject to the audit are detailed in Table 1. The leases and licences are all held by Perilya Broken Hill Limited.

Table 1 Details of the mining leases and exploration licences subject to audit

TITLE	GRANTED	LAST RENEWED	EXPIRY DATE
CML4 (1973)	8 July 1987	23 December 2008	23 June 2024
CML5 (1973)	8 July 1987	23 December 2008	17 June 2021
CML6 (1973)	8 July 1987	23 December 2008	18 March 2021
CML8 (1973)	2 July 1987	23 December 2008	29 June 2024
CML9 (1973)	2 July 1987	15 May 2018	2 July 2034
CML10 (1973)	2 July 1987	23 December 2008	4 September 2024
CML11 (1973)	2 July 1987	23 December 2008	9 June 2021
CML12 (1973)	2 July 1987	23 December 2008	16 October 2019
CML13 (1973)	2 July 1987	23 December 2008	14 September 2020
ML1249 (1973)	6 January 1992	23 December 2008	1 March 2020
EPL2379 (1973)	10 May 1962	16 October 2018	10 May 2020

It was noted that renewal applications were submitted and pending for CMLs 11, 12, 13 and ML1249.

CMLs 4, 5, and 6 are generally referred to as the northern leases and include the North Mine and the Potosi Mine. CMLs 8, 9, 10, 11, 12, and 13 are generally referred to as the southern leases and include the Southern Operations and the Site D tailings storage facility (TSF). All three mines were operational at

the time of the audit however, it was noted that the North Mine restarted operations in December 2018 after a period of eight years in care and maintenance. Ore from all three mining operations is processed at the Southern Operations processing plant from where tailings are transferred by pipeline to the Site D TSF.

Regional exploration has been undertaken on the surrounding exploration tenements in the past two years. Drilling on EPL2379 included the drilling of three holes on privately owned lands. Exploration drilling was also in progress on CML5 at the time of the audit.

As part of the compliance audit program, an audit of the mining operations and exploration activities associated with the Perilya operations was undertaken between 18 June and 20 June 2019.

1.2. Audit objectives

The objectives of the audit were to:

- undertake a compliance audit of the Southern Operations, North Mine, Potosi Mine and regional exploration activities, operated by Perilya Broken Hill Limited, against the requirements of the *Mining Act 1992* and the conditions of the mining leases and exploration licences issued pursuant to that Act
- assess the operational performance of the Perilya mining and exploration operations and the ability of the titleholder and/or operator to implement management systems and controls to provide for sustainable management of the operations.

1.3. Audit scope

The scope of the audit included:

- the mining activities associated with the Southern Operations, North Mine and Potosi Mine
- the exploration activities on EPL2379 and CML5
- a review of documents and records pertaining to the mining and exploration activities
- the assessment of compliance for the period commencing 1 August 2017 and ending 17 June 2019.

1.4. Audit criteria

The audit criteria against which compliance was assessed included:

- *Mining Act 1992*, specifically, Sections 5, 6, 30, 140, 163C to 163E, 163G, 378D
- Mining Regulation 2016, specifically clauses 59 to 68.

Mining activities

- Conditions attached to the mining leases listed in Table 1
- Commitments made in the mining operations plan for the Southern Operations, Broken Hill dated January 2013
- Commitments made in the mining operations plan for the Broken Hill North Mine prepared by R.W. Corkery & Co. Pty. Limited and dated 10 December 2018, as amended by mining operations plan for the Broken Hill North Mine Amendment 1, dated 7 February 2018
- Commitments made in the mining operations plan for the Potosi Operations (2018-2020) prepared by Perilya Broken Hill Limited and dated 25 September 2018
- Exploration reporting: A guide for reporting on exploration and prospecting in New South Wales (Version 2, March 2016).

Exploration activities

- Conditions attached to EPL2379 (renewals dated 18 July 2017 and 16 October 2018)
- Exploration reporting: A guide for reporting on exploration and prospecting in New South Wales (Version 2, March 2016)
- Exploration code of practice: Environmental management (Version 2, April 2017)
- Exploration code of practice: Rehabilitation (Version 2, April 2017)
- Exploration code of practice: Community consultation (Version 1.1, May 2016)
- Exploration code of practice: Produced water management, storage and transfer (Version 2, April 2017)
- ESB28: Environmental Incident Reporting Requirements (October 2007).

1.5. Publishing and disclosure of information

This audit report will be published on the NSW Resources Regulator's website consistent with Section 365 of the *Mining Act 1992*.

This audit report may be publicly released consistent with the *Government Information (Public Access) Act 2009*.

2. Audit methods

The audit process involved interviewing site personnel, reviewing documentation and sampling records provided by the titleholder and/or operator and a site inspection of the operations to determine the level of compliance of the operations and assess the status of the operational performance. The audit process and methodology are described in more detail below.

2.1. Opening meeting

The opening meeting was held onsite at the Perilya Southern Operations Mine office on 18 June 2019. The audit team was introduced, and the scope of their responsibilities was shared to the auditees. The objectives and scope of the audit were outlined. The methods to be used by the team conducting the audit were explained, including interviewing personnel, reviewing documentation, examining records and a site inspection to assess specific compliance requirements.

2.2. Site interviews and inspections

2.2.1. Data collection and verification

Where possible, documents and data collected during the audit process were reviewed on site. Several documents were unable to be reviewed on site and were provided following the site visit.

All information obtained during the audit process was verified by the audit team, where possible. For example, statements made by site personnel were verified by viewing documentation and/or site inspections where possible. Where suitable verification could not be provided, this has been identified in the audit findings as not determined.

2.2.2. Site inspections

A site inspection was undertaken at the following areas:

- Site D Tailings Storage Facility including:
 - seepage of groundwater in an area at the base of the northern embankment of cell 3
 - site of June 2019 tailings pipeline spill
 - rehabilitation on cells 1 and 2
 - topsoil stockpiles on cell 1
 - operational cell 3.

- Southern Operations including:
 - rehabilitated former TSFs - Site A and Site B
 - laydown area and vegetative material stockpiles on former TSF Site C
 - rehabilitation on former tailings storage facilities on land at Robinson College.
- North Mine including:
 - new ore processing shed
 - waste rock emplacements
 - topsoil stockpiles on waste rock emplacement
 - new evaporation ponds.
- Potosi Mine waste rock emplacement
- exploration drill holes:
 - CML5 site 2 (hole no. PDS15142) – drilled 2019 and capped
 - CML5 site 3 (hole no. PDS15143 to PDS15145 (three holes) – drilled 2019 and capped
 - CML5 Longstar drilling site – drilling in progress
 - EPL2379 hole LBH-111 – drilled and capped
 - EPL2379 holes LBH-110 and LBH-109 (two holes) – drilled and capped.

2.3. Closing meeting

The closing meeting was held onsite at the Perilya Southern Operations office on 20 June 2019. Participants at the meeting discussed outstanding matters, presented preliminary findings and outlined the process for finalising the audit report.

2.4. Compliance assessment definitions

The reporting of results from the compliance audit was determined based on the definitions presented in Table 2.

Table 2 Audit assessment categories

ASSESSMENT	CRITERIA
Compliance	Sufficient and appropriate evidence is available to demonstrate that the particular requirement has been complied with.
Non-compliance	<p>Clear evidence has been collected to demonstrate that the particular requirement has not been complied with. There are three subcategories of non-compliance reflecting the severity and level of risk associated with the non-compliance:</p> <p>NC1 – the absence of planning or implementation of a required operational element which has the potential to result in a significant risk</p> <p>NC2 – an isolated lapse or absence of control in the implementation of an operational element which is unlikely to result in a significant risk</p> <p>NC3 – an administrative or reporting non-compliance which does not have a direct environmental or safety significance</p> <p>Note: The identification of a non-compliance in this audit may or may not constitute a breach of, or offence under, the <i>Mining Act 1992</i>. Non-compliances identified in this audit report may be further investigated by the NSW Resources Regulator and regulatory actions may be undertaken.</p>
Observation of concern	<p>Where an auditee may be compliant at the time of the audit but there are issues that exist that could result in the potential for future non-compliance if not addressed.</p> <p>Observation of concern was also used where an issue may not have particular compliance requirements, but which was not conducive to good management or best practice.</p>
Suggestion for improvement	Where changes in processes or activities inspected or evaluated at the time of the audit could deliver improvement in relation to risk minimisation, sustainable outcomes and management practices.
Not determined	<p>The necessary evidence has not been collected to enable an assessment of compliance to be made within the scope of the audit.</p> <p>Reasons why the audit team could not collect the required information include:</p>

ASSESSMENT	CRITERIA
	<ul style="list-style-type: none"> ■ insufficient information on the file relating to the period covered by the audit or insufficient evidence collected to reach a conclusion ■ the wording on the criteria (approval condition) meant that no evidence could be gathered, or it was too difficult to gather the evidence. <p>A 'not determined' assessment was also made where the condition was outside of the scope of the audit.</p>
<p>Not applicable</p>	<p>The circumstances of the authorisation or title holder have changed and are no longer relevant, e.g. no longer mining, mining equipment and plant has been removed, etc.</p> <p>An invoking element in the criteria was not activated within the scope of the audit.</p>

2.5. Reporting

Following completion of the site audit, the audit checklists were completed, and audit notes were reviewed to compile a list of outstanding matters to be noted in the audit report. This report was prepared to provide an overview of the operational performance of the site in relation to the mining operations and exploration activities and identify any non-compliances or observations of concern noted by the auditors during the site inspections and interviews.

The draft audit findings were forwarded to Perilya for comment. Consideration was given to the representations made during the finalisation of the audit report as discussed in the audit findings.

3. Audit findings – mining operations

3.1. Mining operations plan

Mining operations plans (MOPs) are required for each mining operation in accordance with the conditions attached to each of the mining leases as follows:

- condition 3 of CML4, CML5, CML6, CML8, CML9, CML10, CML11, CML12 and CML13 - mining operations plan
- condition 3 of CML9 – mining operations plan and annual rehabilitation report.

MOPs have been prepared and approved for each of the three Perilya mining operations as listed in Table 3.

Table 3 Summary of MOP submission and approval details for each mining operation

MINING OPERATION	MOP SUBMISSION	MOP APPROVAL
Southern Operations CML8 to CML13	INW14/675/DOI 1 November 2013 Amendment submitted DOC19/149469 19 February 2019	OUT14/601/DOI 23 January 2014 Amendment withdrawn DOC19/404509 17 May 2019
North Mine CML4 and CML5	Original submission: INW18/3333/DOI 9 February 2018 Amended by: DOC18/985973 11 December 2018	Original approval: OUT18/4257/DOI 9 March 2018 Amended by: DOC19/57836 24 January 2019
Potosi Mine CML6	DOC18/734178 25 September 2018	DOC18/819145 31 October 2018

3.1.1. Southern Operations

Sections 3 and 4 of the approved MOP provide a description of the proposed activities over the MOP term. Condition 3 of the mining leases requires that operations are carried out in accordance with an

approved MOP. During the site inspection, it was observed that Perilya had stockpiled topsoil on the top of cell 1 at Site D TSF (refer to Figure 1) that is not consistent with the activities described in the MOP. This issue was raised as observation of concern no. 1. Perilya staff advised that an opportunity arose to recover some excess topsoil from a water pipeline project (unrelated to the mining activities). Given Perilya was forecasted to have a topsoil deficit in the long term, the opportunistic recovery of this topsoil was seen to benefit rehabilitation outcomes.

Figure 1 Windrowed topsoil stockpiles on cell 1 Site D TSF



Section 5 of the Southern Operations MOP describes the controls to manage the environmental issues associated with the mining and processing operations. Controls relevant to manage the risks to successful rehabilitation outcomes were reviewed during the audit, including:

- erosion and sedimentation
- contaminated land
- weeds and pests
- hydrocarbon contamination.

Erosion was observed at several sites within the Southern Operations area. For example, the embankments of the former tailings storage facility, Site A-B and the operational facility, Site D, had some deep erosion scours and rilling as shown in Figure 2 and Figure 3. Waste rock was being used as rock armouring to fill the erosion scours and stabilise the embankments (refer to Figure 4).

Section 5.4 of the approved MOP indicated that rock materials used in engineering works would be characterised. No evidence of characterisation of waste rock was provided to verify the implementation of this control. There was concern that there was potential for the geochemistry of the waste rock to present a risk to rehabilitation outcomes and these risks were unknown and unmanaged. This was

raised as non-compliance no. 1. Perilya should undertake a chemical characterisation of waste rock to be used for armouring of embankments and assess and manage any risks that arise from this use.

Figure 2 Erosion scours on the embankments of cell 1 Site D TSF



Figure 3 Waste rock being used to rock armour the TSF embankment



Figure 4 Erosion on the embankments of former TSF Site A-B



Section 5.7 of the approved MOP stated that areas of contamination were identified in the Eastern Precinct of the Southern Operations site. A preliminary site contamination assessment was done in 2011, which provided recommendations for further work and remedial actions. Perilya has commenced some works in this area, however progress has been slow.

Section 5.10 of the approved MOP outlines controls for weeds and pest management. The MOP states that Perilya has an ongoing program targeting the control of pest species on its tenements. Pest species (or evidence of their presence) were observed on site. It was also noted that grazing pest animals have impacted the success of rehabilitation on some areas of the site. Discussions with Perilya staff identified that there are no pest animal management plans or management actions to control the impact of pest animal species on areas of rehabilitation. This was raised as observation of concern no. 2. Perilya should review the risks associated with the impact of pest animals and implement controls as required.

Evidence was provided by Perilya to indicate that weed management is being undertaken. For example, weed management activities were targeting mesquite as described in the report from White Leeds Arid Wetlands documenting the 2018 mesquite program.

Section 5.10 of the MOP also includes a commitment that 'all large machinery and vehicles used in rehabilitation activities, particularly those that have operated away from the Broken Hill area, would be required to be washed down and be free of all foreign soil prior to entering the mining lease'. No evidence was available to demonstrate that this commitment was implemented. This was confirmed by Perilya staff who indicated that, although a safety inspection is done for all plant and machinery entering the site, this inspection does not include washing down equipment. This was raised as observation of concern no. 3. Perilya should implement a process for ensuring plant and equipment used in rehabilitation activities is washed down as specified in the MOP.

Section 5.18 of the approved MOP states that hydrocarbon contamination is controlled by the prevention of spills of oily wastes or fuels, clean-up of any contaminated areas and the recycling or appropriate disposal of hydrocarbon wastes. A full assessment of hydrocarbon handling, use, storage and management was beyond the scope of this audit, but it was noted that spill kits and bunding were observed in the processing areas traversed during the site inspection.

3.1.2. North Mine

Sections 3 and 4 of the approved North Mine MOP provide a description of proposed activities over the MOP term. Condition 3 of the mining lease requires that operations are carried out in accordance with an approved MOP. During the site inspection, it was observed that Perilya had stockpiled topsoil on the top of a waste emplacement at North Mine (refer to Figure 5). This was not consistent with the description of activities provided in the MOP and was raised as observation of concern no. 4.

Discussions with Perilya staff identified that the topsoil was recovered during the recent construction of the evaporation ponds and was stockpiled on the waste emplacement awaiting reuse in rehabilitation. As with the Southern Operations site, the North Mine is forecast to have a topsoil deficit in the long term, so recovering available topsoil during construction activities is seen as beneficial to rehabilitation outcomes.

Figure 5 Topsoil stockpiled on the top of a waste emplacement at North Mine



Section 3 of the approved MOP for North Mine identified six key risks to rehabilitation that must be managed:

- geology, geochemistry and waste rock characterisation
- soil types and suitability
- contaminated land
- hazardous materials
- visual
- historic heritage.

Although these issues have been identified as requiring management, the MOP did not provide details on how these issues were to be managed in the operational phases. However, the MOP did provide a trigger action response plan for how these issues were to be managed when rehabilitation was in progress. Management of these issues during the operational phases of the mine (for example hazardous materials management) may avoid some of the risks to rehabilitation in the long term.

3.1.3. Potosi Mine

A waste rock enclosure (WRE) was established at the Potosi Mine during the time the mine was operated by Pasminco Mining Ltd. The WRE is the most significant area of rehabilitation required on the Potosi site and was partially rehabilitated before the transfer to Perilya in 2002. This included grading the batters, ripping and topsoiling, however vegetation establishment appeared limited.

Inspections of the Potosi Mine by the Regulator in 2017 identified significant erosion on the batters of the Potosi WRE. The waste emplacement was inspected during the audit and it was observed that Perilya had undertaken significant remedial works to address the erosion issues on the WRE batters. Generally, the batters were reshaped and ripped along the contour (refer to Figure 6). This work stabilised the batters and no further evidence of erosion was observed.

Topsoil that was washed down the embankments during the erosion episodes was generally recovered and respread, although it was respread to a lesser depth than originally spread because the greater depth of topsoil was considered to have contributed to the erosion of the batters in the first instance. This was discussed in the approved MOP for the Potosi Mine and the reshaping, topsoiling and ripping of the embankments was consistent with the approach outlined in the MOP.

The top of the WRE has not been rehabilitated at the time of writing and remains in use as a temporary storage for waste rock (refer to Figure 7), which is routinely reused in the underground operations to stabilise void space. This use was consistent with the approved MOP.

As with the Southern Operations, evidence was sighted of pest animals impacting the rehabilitation at Potosi Mine. Perilya should review the risks associated with the impact of pest animals and implement controls as required.

Figure 6 Batters of the Potosi WRE reshaped and ripped



Figure 7 Storage of waste rock on top of the Potosi WRE



3.2. Rehabilitation

3.2.1. Rehabilitation progress

Risk assessments were done for each mining operation as part of the development of the current MOP for each site. However, the risk assessments presented in the MOP were very generic and not reflective of the actual risks that require management to facilitate successful rehabilitation outcomes. Given the generic nature of the risk assessments, there has been no assessment or ranking of rehabilitation priorities. As a result, rehabilitation progress has been slow. It is acknowledged that the heritage status of the Perilya operations may have an impact on some rehabilitation outcomes, but this needs to be factored into a risk-based rehabilitation program.

Rehabilitation trials were conducted more than 10 years ago on the top of cell 1 at the Site D TSF, however, there is no evidence of further rehabilitation trials at either North Mine or Potosi Mine. Section 8.2 of the North Mine MOP indicated that the company would undertake a range of rehabilitation trials commencing in year 1. Two rehabilitation trial areas were proposed to be established, however no evidence was sighted during the inspection to indicate that these trial areas were established. This was raised as observation of concern no. 5.

The North Mine MOP has delineated an area between the Cosmopolitan Pit and the mine residential area as 'Domain 5 – Mining Disturbance Area'. This domain includes areas of previous and historic mining disturbance and, as a result, this domain is potentially contaminated. The rehabilitation performance indicators and completion criteria listed in Table 11 of the MOP lists the objective for Domain 5 as 'domain is free from hazardous materials and contaminants'. The expected completion for this was the end of year 2, by March 2020. The landform was proposed to be suitable for growth medium development at a rate of four hectares per year from year 2. A contamination assessment was completed for Domain 5 and works to remediate the area were identified. During interviews on site, Perilya staff stated that the realistic timeline for rehabilitation of this area was five to eight years. This was not consistent with the approved MOP. It was noted that only limited works have been undertaken in Domain 5 to date and Perilya was not on track to complete these rehabilitation commitments by March 2020. This was raised as observation of concern no. 6.

Table 15 in the Southern Operations MOP indicates that the Site C top surface would be in a decommissioning phase by 2018, with an indicator of completion being that the area was no longer in use and was recognised as a rehabilitation area. During the site inspection, it was observed that some areas of the Site C top surface were reshaped and being used for the storage of rehabilitation resources (refer to Figure 8). The remaining area of Site C top surface was still in use as a laydown area (refer to

Figure 9) and was not on track for land establishment by 2019 as indicated in the MOP. This is raised as non-compliance no.2.

Figure 8 Part of Site C top surface - reshaped and used for storage of rehabilitation resources



Figure 9 Remainder of Site C top surface used as a laydown area



Based on the observations made on site, Perilya is behind in its rehabilitation progress at all three sites. It was noted that a draft Rehabilitation Management Plan for Southern Operations has been prepared to address the rehabilitation issues. Future inspections by the Regulator will monitor the implementation of the rehabilitation management plan.

3.2.2. Rehabilitation monitoring

Rehabilitation monitoring appeared to be limited at all three mining operations. The Southern Operations MOP and the Potosi MOP included very limited information on rehabilitation monitoring. Analogue sites have reportedly been established for the Potosi operations, but none have been established for the Southern Operations. Discussions with Perilya staff identified that rehabilitation monitoring is limited to a five-yearly vegetation inspection and photo monitoring program and annual erosion monitoring.

An inspection of the rehabilitation completed on the top of cells 1 and 2 at Site D showed that there were marked differences in rehabilitation success between the two sites. Vegetation establishment on cell 2 was reasonably good (refer to Figure 10), while vegetation establishment on cell 1 was poor (refer to Figure 11). No records of rehabilitation methodologies or monitoring data were available for review to determine why there was such a marked difference in rehabilitation between the two adjacent sites (for example, differences in topsoil depth, ameliorants applied, seeds mixes used etc).

Figure 10 Revegetation on cell 2 of Site D TSF



Figure 11 Revegetation on cell 1 of Site D TSF



It was also noted that Perilya staff interviewed during the audit did not appear to have a good understanding of why the different rehabilitation outcomes occurred at Site D. Without an understanding of the methodologies used on the completed rehabilitation, there was potential for past mistakes to be repeated.

The lack of rehabilitation monitoring strategies and lack of rehabilitation records was raised as observation of concern no. 7. Perilya should review the rehabilitation monitoring strategies and develop and implement more effective strategies for monitoring the success of rehabilitation.

3.2.3. Rehabilitation resources

Management of topsoil and any cleared vegetation, including mulch, is a key component for successful rehabilitation outcomes. Poor topsoil handling and stockpiling practices may result in a significant loss of viable seed and topsoil quality. Management and maintenance of soil stockpiles is essential to prevent erosion and weed infestation, and to retain maximum soil reserves for use during rehabilitation works.

As noted in Sections 3.1.1 and 3.1.2, Perilya has salvaged topsoil and vegetation/habitat resources for use in rehabilitation, with topsoil stockpiled at Site D TSF and a waste emplacement at North Mine, and the vegetation resources being stored on the decommissioned Site C TSF. It was noted that there were no management strategies or controls in the Southern Operations MOP or the North Mine MOP for the management of topsoil or vegetation resources that have been salvaged. For example, inspection processes for erosion and weed management on the topsoil stockpiles have not been documented or implemented.

Management of topsoil and vegetation resources was raised as observation of concern no. 8. Perilya should review the risks associated with the stockpiling of topsoil and vegetation resources and implement controls to manage those risks to ensure the viability of these key rehabilitation resources.

3.3. Reporting

3.3.1. Annual rehabilitation reporting

Condition 4(a) of CMLs 4, 5, 6, 8, 10, 11, 12, 13 and ML1249 require the preparation and submission of an annual environmental management report (AEMR) which, among other things, is required to detail progress towards final rehabilitation objectives. Condition 3(f) of CML9 requires the submission of an annual rehabilitation report that provides a detailed review of the progress of rehabilitation against the performance measures and criteria established in the approved MOP. Details of reports submitted for each operation for the audit scope period are summarised in Table 4.

Table 4 Summary of annual rehabilitation reports submitted

MINING OPERATION	2017	2018
Southern Operations	DOC18/405972 Original submission: 12 March 2018 Revised submission: 20 June 2018 Accepted: 21 June 2018	DOC19/92676 Submitted: 30 January 2019 Accepted: pending further information
North Mine	INW17/56314/DOI Submitted: 15 September 2017 Accepted: 15 January 2018	DOC18/698161 Submitted: 12 September 2018 Accepted: 19 December 2018
Potosi Mine	INW18/12332/DOI Submitted: 27 November 2017 Accepted: 29 October 2018	DOC18/922909 Submitted: 20 November 2018 Accepted: 19 December 2018

Significant issues have been identified by the Regulator in the annual environmental management reports submitted by Perilya. These issues have resulted in the Regulator requiring reports to be revised and resubmitted. Key issues of concern identified by the Regulator generally relate to the failure to progress rehabilitation on the site and the lack of rehabilitation trials and monitoring.

3.3.2. Annual exploration reporting – mining leases

Section 163C of the Mining Act, clause 59 of the Mining Regulation, and condition 11 of the mining leases for CMLs 4, 5, 6, 8, 10, 11, 12, and 13, require the preparation and submission of an annual report that provides full particulars of all exploration and other operations or activities conducted during the 12-month period.

In April 2014, Perilya obtained approval for group reporting for CMLs 4, 5, 6, 8, 9, 10, 11, 12, 13 and ML1249 and have been providing a group report for these leases since that time. The due date for reporting for this group of leases is 8 August each year. The reports submitted during the audit scope period are summarised in Table 5.

Table 5 Summary of exploration reports submitted during the audit scope period

LEASES	2017 REPORT	2018 REPORT
CML4, 5, 6, 8, 9, 10, 11, 12, 13, and ML1249	Due: 8 August 2017 Submitted: 8 August 2017	Due: 8 August 2018 Submitted: 6 August 2018

Both reports were prepared in accordance with the relevant departmental guidelines and provide information on the production and exploration activities during the reporting period and an outline of proposed exploration activities for the next reporting period. The reports were accepted by Division of Resources and Geoscience (DRG) as satisfactory.

3.3.3. Compliance and environmental incident reporting

CMLs 4, 5, 6, 8, 10, 11, 12 and 13 do not currently include conditions requiring the reporting of environmental incidents or non-compliances. Upon renewal in 2018, condition 4 of CML9 now requires Perilya to notify the Regulator upon becoming aware of any breaches of the conditions of the lease, or breaches of the Mining Act or Regulations. CML9 also now includes condition 5 which requires the lease holder to provide environmental incident notifications and reports to the Regulator no later than seven days after those incident notifications and reports are sent to the relevant authorities under the *Protection of the Environment Operations Act 1997*.

Two environmental incidents are known to have occurred during the audit scope period, both relating to the operations of the Site D TSF.

In September 2018, the Regulator’s inspectors identified a possible leak from the Site D TSF, which was impacting the area to the north of cell 3 (refer to Figure 12 and Figure 13). The Regulator referred the incident to the Environment Protection Authority (EPA) which issued a pollution reduction program to Perilya to contain and manage the surface and groundwater impacts.

Although the EPA is the lead regulator for the potential pollution incident, the Regulator will continue to assess the site in relation to the safety of the dam and the risks to rehabilitation outcomes for the TSF site.

Figure 12 Seepage from possible TSF leak



Figure 13 Salt scalding from possible leakage from Cell 3



On 15 June 2019, Perilya notified a tailings line break to the EPA. Notification of the incident was made to the Regulator on 17 June 2019, which is compliant with the requirements of condition 5 of CML9. The area of the tailings line spill was inspected during the audit (refer to Figure 14 and Figure 15). The EPA is the lead regulator for this incident, but the Regulator will be reviewing the site remediation to monitor any risks to successful rehabilitation outcomes. Further testing and analysis, such as a sampling validation report, may be required to demonstrate that any contamination risks have been mitigated.

Figure 14 Site of tailings line leak at Site D TSF



Figure 15 Tailings spillage at Site D TSF



3.4. Other mining compliance requirements

3.4.1. Notice to landholders

Condition 1 of the mining leases requires the lease holder to provide a notice in writing to each landholder within the lease area advising that the lease has been granted or renewed. Only CML9 was renewed within the audit scope period, but several other leases have renewals pending.

Perilya uses the services of a mining agent, Hetherington Exploration & Mining Title Services, for tenement management. Hetherington undertook the landholder notification on behalf of Perilya for the CML9 renewal. It was noted that CML9 was renewed on 15 May 2018, so notification was required to be provided to the landholders by 15 August 2018. Letters and postage receipts were provided by Perilya as evidence that notification of landholders was done on 13 August 2018, therefore Perilya was compliant with Condition 1 of the lease.

3.4.2. Co-operation agreement

Condition 8 of CML9 requires the lease holder to make reasonable attempts to enter into a co-operation agreement with the holders of any overlapping titles. This condition does not appear in any of the other Perilya mining leases. A search of Minview and department records confirmed that there were no titles that overlap with CML9, so this condition is not applicable at this stage.

It was noted that although CML7 does not overlap CML9 or any of the other Perilya leases, Perilya does maintain a relationship with CBH Resources Pty Ltd, the lease holder for CML7, which contains the Rasp Mine.

3.4.3. Prescribed dam

CMLs 5, 6, 8, 9, 10 and 11 each include a condition requiring approval for any mining within the notification area of the Site D TSF, which is a prescribed dam under the *Dams Safety Act 1978*. A review of the Perilya mapping systems confirmed that Perilya has identified the prescribed dam notification area and can map the mining activities in relation to this area. It was noted that at the time of the audit, mining activities had not encroached into the notification area, so further approvals were not required.

3.4.4. Blasting

Being older leases, CML4, 5, 6, 8, 10, 11, 12, and 13 include condition 15 relating to blasting, which requires the monitoring of both ground vibration and blast overpressure. These conditions generally replicate the blasting conditions in the environment protection licence issued by the EPA. However, the EPL for Southern Operations only requires the monitoring of ground vibration and does not require the monitoring of blast overpressure. It was noted that the newer leases like CML9 no longer include the blasting condition.

Blasting underground is carried out by Perilya about three to four times per week. Eight blast monitors are located around the town of Broken Hill to monitor and record each blast. Four of these monitors are associated with the Southern Operations, however only one of these monitors measures overpressure as well as vibration (located at Robinson College). The failure to monitor blast overpressure at Southern Operations is non-compliant with the requirements of condition 15. This issue was raised as non-compliance no. 3 and ranked NC3. It was noted that the monitoring of ground vibration only at Southern Operations was consistent with the conditions on the EPL.

Review of the blast monitoring data showed that there had been no exceedances of the blast monitoring criteria during the audit scope period.

3.4.5. Special conditions relating to reserves

Each of CMLs 4, 5, 6, 8, 9, 10, 11, 12 and 13 include special conditions relating to a range of public reserves and temporary commons. Generally, Perilya must conduct operations so as not to interfere with the public use and enjoyment of these reserves and commons. A review of the Perilya mapping systems confirmed that Perilya is aware of the presence of the reserves identified in the lease conditions and has mapped the location of these reserves in relation to its operations. No issues of concern were identified at the time of the audit.

3.4.6. Assets of Country Energy

Several of the leases include conditions relating to the assets of Country Energy or Essential Energy that require Perilya to conduct operations in a manner that does not interfere with or cause damage to these assets. A review of the Perilya mapping systems confirmed that Perilya has mapped the location of these assets in relation to its activities. It was also observed that Perilya has implemented permit to work systems to control activities undertaken near aboveground or underground electrical assets:

- High Voltage Electrical Vicinity Permit
- Excavation Permit – Surface Production Maintenance

Examples to confirm the implementation of the permit to work process were sighted by the auditors. No issues of concern were identified at the time of the audit.

4. Audit findings - exploration activities

4.1. Exploration within CML5

The requirements for exploration activities within CML5 are contained in the conditions of title and in the approved MOP for the Potosi Mine as follows:

- Condition 7 – Rehabilitation
- Condition 11 – Reports
- Condition 17 – Exploratory drilling
- Potosi MOP section 2.3 – Activities over the MOP term: Exploration

Exploration reporting under condition 11 of CML5 was discussed in section 3.3.2 of this report. The remaining compliance requirements are discussed in the following sections:

4.1.1. Notification to DPI Water

Condition 17(1) of CML5 requires the lease holder to notify DPI Water, at least 28 days before commencement of drilling operations, of the intention to drill exploratory holes and provide information on the location of the proposed holes.

Perilya provided evidence to verify that notification to DPI Water was made on 23 June 2016, with the notification made using the standard notification template. A plan showing the location of the drill holes accompanied the notification.

4.1.2. Environmental management

Drilling was in progress on CML5 (refer to Figure 16) and was inspected during the audit. Neither the conditions of title for CML5, nor the approved MOP specify requirements for environmental management of exploration drilling within the mining lease. Given there were no specific compliance requirements, the audit focussed on the environmental performance of the drilling activities.

Perilya used a contract driller to complete the drilling program. Drilling activities were overseen by the Perilya exploration manager or the exploration field supervisor. Environmental controls observed on the drilling site included:

- Use of bunded aboveground sumps for drilling fluids (refer to Figure 17)
- Spill and drip control matting under the drill rig and lighting plant (refer to Figure 18)

- Self-bunded pallets for the storage of drilling chemicals
- Safety data sheets available for drilling chemicals, fuels and oils used and stored on site
- Spill kit readily available on site.

The drill site was observed to be well managed and no issues of concern were identified at the time of the audit.

Figure 16 Longstar Drilling exploration drill site in CML5



Figure 18 Use of spill control matting under the drill rig



Figure 17 Use of bunded aboveground sumps



4.1.3. Rehabilitation

Section 2.3 of the approved MOP for the Potosi Mine identified that rehabilitation of exploration drill sites would be undertaken as soon as reasonably practical after completion of the drilling activities. Commencement of works to rehabilitate historic drill sites on CML5 was also proposed to be undertaken during the term of the MOP, with this rehabilitation to include cutting casing below ground level. During the site inspection, the auditors observed several historic drill collars (drilled about 2008) that were capped but had casing extending above the surface (refer to Figure 19). Given that some of those drill collars were within the Wilyama Common, casing above ground level could represent a public safety hazard. It was noted that the titleholder maintains a list of all drill holes that were capped or require further rehabilitation. A program is in place to progressively review the rehabilitation status of historic drill holes and complete outstanding works.

Figure 19 Hole drilled in 2008, casing still extending above ground level



After the previous audit of the Perilya exploration activities in 2016, the exploration manager introduced a rehabilitation diary to document rehabilitation completed on each drill hole and the ongoing monitoring of that rehabilitation. A review of the rehabilitation diary by the auditors showed that the diary was regularly maintained. Details of rehabilitation methods used are recorded for monitoring and evaluation. Monitoring photographs were taken six months and 12 months following the completion of drilling and stored electronically.

The holes drilled as part of the 2019 drilling program have been capped but have not had rehabilitation completed (refer to Figure 20 and Figure 21).

Figure 20 Hole PD515142, drilled 2019, capped but not yet rehabilitated



Figure 21 Holes PD515143 to PD515145, drilled 2019, capped



4.2. Exploration within EPL2379

4.2.1. Work program

Condition 1 of EPL2379 requires the licence holder to carry out the operations described in the approved work program. Work program WP-EPL2379-2018-2020 was approved by DRG on 17 July 2018 as part of the renewal of EPL2379. Year 1 of the program (May 2018 to May 2019) included downhole geophysical surveying, mapping and rock chip sampling and review of existing geophysical data. The 2019 annual activity report indicated that this work was completed, and the exploration program was on track.

It was noted that the exploration manager maintained a spreadsheet that detailed each of the regional tenements, including the status of the work program, outstanding rehabilitation and reporting dates.

4.2.2. Access agreements

Section 140 of the Mining Act states that ‘the holder of a prospecting title must not carry out prospecting operations on any particular area of land except in accordance with an access arrangement or arrangements applying to that area of land’. The access arrangement is required to be agreed in writing between the holder of the prospecting title and each landholder of that area of land.

The 2016 drilling in EPL2379 was undertaken on privately owned property. Perilya negotiated an access agreement with the land owners, which was last renewed and signed by the land owner in March 2018. The access agreement was available electronically for review by the auditors. Access routes to the drilling sites within the property were specified by the land owner and this information was conveyed to

the drilling crew. The exploration manager maintained contact with the land owner during the drilling operations.

4.2.3. Native title and exempt areas

Condition 2 relating to native title is listed as not applicable to EPL2379. The 2016 drilling was undertaken on privately owned land and was not within any exempt areas, therefore further approvals under section 30 of the Mining Act were not required.

4.2.4. Exploration activity approvals

The drilling undertaken in 2016 was classified as an assessable prospecting operation. Section 23A of the Mining Act requires the holder of an exploration licence to obtain an activity approval prior to carrying out assessable prospecting operations. Perilya submitted an application for activity approval as detailed in Table 6.

Table 6 Summary details of exploration activity approvals

TITLE	DESCRIPTION	SUBMITTED	APPROVED
EPL2379	Two drill sites with up to three drill holes per site	INW16/18383/DOI 26 April 2016	OUT16/18155 5 May 2016

Drilling had been completed at the time of the audit but it was observed that two holes had been drilled from one site and three holes drilled from the second site. This was consistent with the information contained in the application and approval.

4.2.5. Community consultation

Condition 3 of EPL2379 requires the licence holder to carry out community consultation in relation to the planning and conduct of exploration activities. Community consultation is required to be carried out in accordance with the requirements of *Exploration code of practice: Community consultation*.

The community consultation report submitted in 2019 references the community consultation strategy and assesses the outcomes of consultation against the objectives of the strategy. Perilya has assessed the activity impact of its exploration activities on EPL2379 as low, in accordance with the guidance in Table 2 of the code of practice. Given the remote nature of the site and the small scale of the activities, the auditors agree with this assessment.

The exploration manager maintains records of consultation that provide details of who was consulted, the method of consultation, matters discussed, outcomes of consultation and any actions taken to address community concerns. The consultation undertaken and the records maintained by the exploration manager, were generally consistent with the mandatory requirements of the code of practice.

4.2.6. Environmental management and rehabilitation

Condition 4 of EPL2379 requires the licence holder to prevent or minimise, so far as is reasonably practicable, any harm to the environment arising from the activities carried out under the licence. Environmental management obligations are generally contained in the Exploration code of practice: Environmental management. However, drilling on EPL2379 was conducted in 2016 under the previous licence conditions that did not reference the code of practice.

The activity approval application submitted by Perilya described the measures to be implemented to minimise environmental impacts. An assessment of compliance against the activity approval documentation was undertaken during the audit. Drilling had been completed at the time of the audit, so it was not possible to verify implementation of all controls listed in the activity application. The focus of the site inspection was on management and rehabilitation of the drill sites.

The exploration manager developed a comprehensive risk assessment process for the exploration activities. An environmental risk assessment is undertaken before the commencement of any drilling program to identify and assess threats to successful rehabilitation outcomes. Risk controls were reported as implemented during the drilling process, but given that drilling had been completed at the time of the audit, these could not be verified.

Condition 6 of EPL2379 requires the licence holder to carry out rehabilitation of all disturbance caused by activities carried out under the exploration licence, in accordance with the requirements of the Exploration code of practice: Rehabilitation. However, drilling was conducted in 2016 under the previous licence conditions that did not reference the code of practice. Consequently, specific rehabilitation objectives and completion criteria were not required to be developed and submitted. Given this, the focus of the audit was on the performance of the rehabilitation processes implemented by Perilya.

It was noted that a rehabilitation checklist was used at the completion of the drilling program to ensure rehabilitation was completed in line with the objectives and completion criteria. A rehabilitation diary was maintained by the exploration manager, which documented each location rehabilitated, including the methods used and any outstanding rehabilitation to be completed. This information was used to track the progress of rehabilitation of each drill hole.

A photographic diary was also maintained with photos taken before, during and after drilling. Photo monitoring was also undertaken at six months and 12 months after completion of drilling to track the progress of the rehabilitation.

Where rehabilitation was identified as not meeting the criteria, the information was entered in the rehabilitation diary with any corrective actions required, and a follow-up date set for review and close out. This process allows the exploration manager to review the methods used and adjust methods accordingly, if monitoring shows that rehabilitation is not on track to achieve the desired completion criteria.

The holes drilled in 2016 were inspected and found to be capped but not grouted. The exploration manager advised that further downhole logging and other investigations may still be undertaken from these holes. Preliminary rehabilitation has been carried out, including removal of all drilling infrastructure and wastes and raking of the ground around each hole (refer to Figure 22 and Figure 23).

Figure 22 Hole LBH-111, drilled 2016 and capped



Figure 23 Holes LBH-109 and LBH-110, drilled 2019 and capped



4.2.7. Annual activity reporting

Section 163C of the Mining Act, clause 59 of the Mining Regulation and condition 8 of EPL2379 require the licence holder to submit an activity report annually within one calendar month following grant anniversary date. Annual activity reports are required to be prepared in accordance with the *Exploration guideline: Annual activity reporting for prospecting titles*.

Condition 8 came into effect in October 2018 when EPL2379 was renewed. The 2019 annual report was lodged as an annual activity report in accordance with the guideline, but the 2017 and 2018 reports were both submitted as annual geological reports under the previous licence conditions. Details of the reports submitted are summarised in Table 7.

Table 7 Summary of annual reports submitted for EPL2379

2017	2018	2019
GS2017/0295 (RE0009302)	GS2018/0802 (RE0010496)	GS2019/0612 (RE0011832)
Received: 7 April 2017	Received: 5 April 2018	Received: 22 May 2019

The 2019 annual activity report included the required four components:

- Annual geological report
- Revised work program
- Annual community consultation report
- Annual environmental and rehabilitation compliance report.

The exploration manager maintains a regional tenement spreadsheet which tracks dates for renewals, reporting, payments, and other compliance obligations. No issues of concern were identified and generally, reports were submitted within the required timeframes and accepted as satisfactory.

4.3. Core and sample storage

Clause 65 of the Mining Regulation requires the holder of an authority to, so far as is reasonably practicable, collect, retain and preserve:

- all drill cores remaining after sampling
- characteristic samples of the rock or strata encountered in any drill holes.

All core and samples collected are required to be labelled, stored and managed in a manner that preserves the integrity of the core or samples.

Core and samples from exploration on both the mining leases and the exploration licences are stored at the North Mine core yard. An inspection of the core yard was undertaken during the audit.

Core from the drilling in progress on CML5 was observed to be placed into modular plastic core trays by the drilling crew (refer to Figure 24). The driller marks the core trays as core is placed, including noting

where core is manually broken to fit into the trays. This information is checked by the Perilya field supervisor who collects the core trays each day for delivery to the core yard for logging.

Examples of cores from exploration on the mining leases and the exploration licences were reviewed at the core yard. Generally, all core is stored in core trays, either in core tray racks or in the core shed (refer to Figure 25 and Figure 26). Trays were observed to be labelled with hole number, depth, and tray number (refer to Figure 27) and any loss of core noted.

No significant issues of concern were identified at the core yard. Perilya advised that no core samples have been requested by DRG and generally, core is not disposed.

Figure 24 Driller placing core in trays at the drill site



Figure 26 Core trays racks at North Mine with core layout tables in the foreground



Figure 25 Core shed at North Mine with labelled core trays in the foreground



Figure 27 Example of labelled core tray



5. Compliance management

5.1. Identifying compliance obligations

It was noted that Perilya had established a reporting calendar to track regular reporting requirements including the payment of rents, levies and royalties. However, Perilya does not have any existing systems in place for identifying, managing or tracking other compliance obligations for its three mining operations. Consequently, there were non-compliances and observations of concern detected during the audit. The development of some simple compliance management and tracking tools may provide the lease holder with a better understanding of the compliance requirements and obligations arising from the conditions of mining leases and the obligations contained in the mining operations plans. The development of a compliance management system was raised as **suggestion for improvement No. 1**.

For the exploration activities, it was noted that the exploration manager had taken onboard the findings of the previous audit undertaken by the Regulator in 2016, implementing a more rigorous and detailed compliance management system for the exploration program. This included an electronic database that captures data on all the regional tenements held by the titleholder. For example, for each tenement, all work programs, activity approvals and exploration licence conditions are saved within the respective tenement folder in the database. This information was observed to be easily retrievable and trackable.

5.2. Subcontractor management

Perilya was using a contract driller for the exploration drilling programs. Responsibility for safety and environmental controls was often passed to a contract driller, however the exploration licence holder retained accountability for the compliance of its contractors. Management of these contractors is essential to ensure that compliance obligations can be met.

Evidence was sighted to confirm that the exploration manager conducted site specific inductions with the drill rig operators before drilling. Any specific requirements for land access or specific environmental controls were conveyed to the drilling crew during the induction.

During drilling operations, safety and environmental inspections were conducted by the Perilya field supervisor each week. The results of the inspections were recorded on the drill audit checklist which was maintained and checked by the exploration manager. Any issues of concern were raised with the driller, and corrective actions agreed.

For the exploration program, contractor management was observed to be generally well managed.

5.3. Inspections, monitoring and evaluation

There was no evidence sighted during the audit to indicate that Perilya had implemented an effective inspection or monitoring program for the three mining operations to monitor compliance with its obligations. An electronic work order system was in place for routine physical works, but this did not extend to compliance inspections. Annual erosion inspections were reported to be completed, but given the erosion issues observed in places, this inspection program or the implementation of corrective actions, did not appear to be effective.

It was noted that Perilya used the Vault and Maximo software systems for incident management and corrective actions, but these systems were typically only used for work health and safety issues and were not routinely used for environmental issues. Further implementation of these systems and the development of robust and rigorous compliance inspection and monitoring programs may assist in achieving a higher level of compliance across the mining operations. This was raised as suggestion for improvement no. 2.

For the exploration activities, the exploration manager provided evidence of the methods used to inspect and monitor key risk controls. Generally, inspections of drilling and rehabilitation activities were undertaken with these inspections documented on a series of inspection checklists. An internal reporting and information management system was used to capture and track information requiring any decision making or management review. This system appears to be effective in managing the exploration activities and identifying any issues requiring corrective action.

5.4. Training and competency

A review of the training and competency systems and processes used by Perilya was not within the scope of the audit for the three mining operations. However, an assessment of the systems used for the exploration activities was undertaken.

The documentation for the drilling contract was noted to include requirements for the driller to have a Certificate III in Drilling Operations. The exploration manager requires proof of certification and evidence of experience before a driller can undertake any operational duties.

For Perilya employees undertaking exploration duties, the exploration manager maintains a training register and record data base. It was noted that training records and contractor qualification records were maintained by the exploration manager.

A site specific exploration induction identifies operational, environmental and safety risks to supplement the existing training of staff and contractors.

5.5. Record keeping

Sections 163D and 163E of the Mining Act relate to the creation and maintenance of records required under the Act, the Regulations, or a condition of title. Specific requirements for the types of records to be maintained for exploration activities are detailed in the mandatory requirements of the exploration codes of practice. Records must be kept in a legible form for production to any inspector and must be maintained for a period of four years after the expiry or cancellation of the title.

Record keeping was identified as an issue in relation to the three mining operations. Perilya was unable to provide records of rehabilitation methodologies for the Site D cells 1 and 2, and there were limited records of environmental inspections and corrective actions.

Perilya uses the Vault document management system, but it was noted that this system did not capture all records for the site. Apart from the generic risk assessments provided in the MOPs, risk assessments and inspection records for rehabilitation and environmental issues did not appear to be maintained. More effective implementation of the Vault system and the development of procedures for the creation and management of records, including inspection records, would be beneficial. This was raised as **suggestion for improvement no. 3**.

For the exploration activities, the exploration manager has well maintained electronic records. For example, drilling risk assessments, drill logs, inspection records and rehabilitation records were observed to be available and readily retrievable when requested by the audit team.

5.6. Titleholder response to draft audit findings

Perilya was provided with a copy of the draft audit report and invited to submit a response. A copy of the response is provided in Appendix 1.

Perilya considered the audit report to be both fair and reasonable. A minor correction to the information on blast monitors was identified and this correction was made to the text in Section 3.4.4. It was noted that Perilya had undertaken to procure another linear microphone to measure the northern side of the operation (closest to residences) for overpressure as well as vibration.

6. Audit conclusions

From the evidence reviewed during the audit and observations made on site during the audit site inspections, it was concluded that Perilya Broken Hill Limited had achieved a moderate level of compliance with the requirements of the mining leases and MOPs in relation to mining operations undertaken at Southern Operations, North Mine and Potosi Mine. A high level of compliance has been achieved in relation to exploration activities undertaken on EPL2379.

Perilya has developed some rudimentary systems for compliance management, but further development of these systems would be beneficial to promote a more active approach to compliance management on site.

Two non-compliances ranked NC2, one non-compliance ranked NC3, eight observations of concern and three suggestions for improvement were noted by the auditor as summarised in

Table 8, Table 9 and Table 10. Regulatory actions may be undertaken in relation to the non-compliances and observations of concern identified during the audit.

Table 8 Summary of non-compliances

NON-COMPLIANCE NO.	DESCRIPTION OF ISSUE	RECOMMENDATION
1 NC2	Section 5.4 of the approved MOP indicated that rock materials used in engineering works would be characterised. No evidence of characterisation of waste rock was provided to verify the implementation of this control. There was concern that there was potential for the geochemistry of the waste rock to present a risk to rehabilitation outcomes. These risks were currently unknown and unmanaged.	Perilya should undertake a chemical characterisation of waste rock to be used for armouring of embankments and assess and manage any risks that arise from this use.
2 NC2	Table 15 in the Southern Operations MOP indicates that the Site C top surface would be in a decommissioning phase by 2018, with an indicator of completion being that the area was no longer in use and was recognised as a rehabilitation area. During the site inspection, it was observed that some areas of the Site C top surface have been reshaped and were being used for the storage of rehabilitation resources. The remaining area of Site C top surface was still in use	

NON-COMPLIANCE NO.	DESCRIPTION OF ISSUE	RECOMMENDATION
	as a laydown area and was not on track for land establishment by 2019, as indicated in the MOP.	
3 NC3	CML4, 5, 6, 8, 10, 11, 12, and 13 include condition 15 relating to blasting, which requires the monitoring of both ground vibration and blast overpressure. Blasting underground was carried out by Perilya about three to four times per week. Eight blast monitors were located around the town of Broken Hill to monitor and record each blast. Four of these monitors were associated with the Southern Operations, however only one of these monitors measures overpressure as well as vibration (located at Robinson College). The failure to monitor blast overpressure at Southern Operations was non-compliant with the requirements of condition 15.	

Table 9 Summary of observations of concern

OBSERVATION OF CONCERN NO.	DESCRIPTION OF ISSUE	RECOMMENDATION
1	Condition 3 of the mining leases requires that operations are carried out in accordance with an approved MOP. During the site inspection, it was observed that Perilya stockpiled topsoil on the top of cell 1 at the Site D TSF which was not consistent with the activities described in the MOP.	
2	Section 5.10 of the approved MOP outlines controls for weeds and pest management. The MOP states that Perilya has an ongoing program targeting the control of pest species on its tenements. Pest species (or evidence of their presence) were observed on site. It was also noted that grazing pest animals appear to have impacted the success of rehabilitation on some areas of the site. Discussions with Perilya staff identified that there were no pest animal management plans or management	Perilya should review the risks associated with the impact of pest animals and implement controls as required.

OBSERVATION OF CONCERN NO.	DESCRIPTION OF ISSUE	RECOMMENDATION
	actions to control the impact of pest animal species on areas of rehabilitation. This was not consistent with the controls identified in the MOP.	
3	Section 5.10 of the MOP also includes a commitment that <i>'all large machinery and vehicles used in rehabilitation activities, particularly those that have operated away from the Broken Hill area, would be required to be washed down and be free of all foreign soil prior to entering the mining lease'</i> . No evidence was available to demonstrate that this commitment has been implemented. This was confirmed by Perilya staff who indicated that, although a safety inspection was done for all plant and machinery entering the site, this inspection did not include washing down equipment.	Perilya should implement a process for ensuring plant and equipment used in rehabilitation activities are washed down as specified in the MOP.
4	Sections 3 and 4 of the approved North Mine MOP provide a description of proposed activities over the MOP term. Condition 3 of the mining leases requires that operations are carried out in accordance with an approved MOP. During the site inspection, it was observed that Perilya stockpiled topsoil on the top of a waste emplacement at North Mine. This was not consistent with the description of activities provided in the MOP.	
5	Rehabilitation trials were conducted more than 10 years ago on the top of cell 1 at the Site D TSF, however, there was no evidence of further rehabilitation trials at either North Mine or Potosi Mine. Section 8.2 of the North Mine MOP indicated that the company would undertake a range of rehabilitation trials commencing in year 1. Two rehabilitation trial areas were proposed to be established, however no evidence was sighted during the site inspection to indicate that these trial areas were established.	Establish rehabilitation trials at North Mine as outlined in the approved MOP.
6	The North Mine MOP has delineated an area between the Cosmopolitan Pit and the mine residential area as <i>'Domain 5 – Mining Disturbance Area'</i> . This domain	Undertake works to complete rehabilitation

OBSERVATION OF CONCERN NO.	DESCRIPTION OF ISSUE	RECOMMENDATION
	<p>includes areas of previous and historic mining disturbance and as a result, this domain is potentially contaminated. The rehabilitation performance indicators and completion criteria listed in Table 11 of the MOP lists the objective for Domain 5 as <i>'domain is free from hazardous materials and contaminants'</i>. The expected completion for this is the end of year 2, by March 2020. The landform is proposed to be suitable for medium growth development at a rate of four hectares per year from year 2. A contamination assessment has been completed for Domain 5 and works to remediate the area were identified. During interviews on site, Perilya staff stated that the realistic timeline for rehabilitation of this area was five to eight years. This was not consistent with the approved MOP. It was noted that only limited works have been undertaken in Domain 5 to date and Perilya is not on track to complete these rehabilitation commitments by March 2020.</p>	<p>of Domain 5 as listed in the approved MOP.</p>
<p>7</p>	<p>Rehabilitation monitoring appears to be limited at all three mining operations. The Southern Operations MOP and the Potosi MOP include very limited information on rehabilitation monitoring. Analogue sites have reportedly been established for the Potosi operations, but none have been established for the Southern Operations. Discussions with Perilya staff identified that rehabilitation monitoring was limited to a five-yearly vegetation inspection and photo monitoring program and annual erosion monitoring. It was noted that there was a lack of rehabilitation records to verify rehabilitation methodologies.</p>	<p>Perilya should review the rehabilitation monitoring strategies and develop and implement more effective strategies for monitoring the success of rehabilitation.</p>
<p>8</p>	<p>Perilya has salvaged topsoil and vegetation/habitat resources for use in rehabilitation, with topsoil being stockpiled at Site D TSF and a waste emplacement at North Mine. Also, the vegetation resources are being stored on the decommissioned Site C TSF. It was noted that there were no management strategies or controls in the Southern Operations MOP or the North Mine MOP</p>	<p>Perilya should review the risks associated with the stockpiling of topsoil and vegetation resources and implement controls to manage those risks to ensure the viability of</p>

OBSERVATION OF CONCERN NO.	DESCRIPTION OF ISSUE	RECOMMENDATION
	for the management of topsoil or vegetation resources that have been salvaged. For example, inspection processes for erosion and weed management on the topsoil stockpiles have not been documented or implemented.	these key rehabilitation resources.

Table 10 Summary of suggestions for improvement

SUGGESTIONS FOR IMPROVEMENT	DESCRIPTION OF ISSUE
1	Perilya did not have any existing systems in place for identifying, managing or tracking other compliance obligations for its three mining operations. Consequently, there were non-compliances and observations of concern detected during the audit. The development of some simple compliance management and tracking tools may provide the lease holder with a better understanding of the compliance requirements and obligations arising from the conditions of mining leases and the obligations contained in the mining operations plans.
2	It was noted that Perilya used the Vault and Maximo software systems for incident management and corrective actions. However, these systems were typically only used for work health and safety issues and not routinely used for environmental issues. Further implementation of these systems and the development of robust and rigorous compliance inspection and monitoring programs may assist in achieving a higher level of compliance across the mining operations.
3	Perilya used the Vault document management system, but it was noted that this system did not capture all records for the site. Apart from the generic risk assessments provided in the MOPs, risk assessments and inspection records for rehabilitation and environmental issues did not appear to be maintained. More effective implementation of the Vault system and the development of procedures for the creation and management of records, including inspection records, would be beneficial.