

Mindarie Mineral Sands Project

Compliance Report January - December 2015

February 2016



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EXECUTIVE SUMMARY

Background

The Mindarie Mineral Sands Project is located approximately 150 km east of Adelaide in the Murray Mallee Region of South Australia and comprises eight mineral sands strandlines located in nine separate Mineral Leases and two Exploration Licences.

Australian Zircon NL commenced operations at Mindarie in 2006 by establishing the Primary Concentrator Plant (PCP), the Concentrate Upgrade Plant (CUP), the Mineral Separation Plant (MSP) and ancillary site infrastructure such as workshops and laboratories. Following construction and commissioning of plant and equipment, mining of mineral sands in the Mindarie A(2) strandline commenced in April 2007 at an initial design rate of 3.5 million tonnes per annum (Mtpa) of ore, for an estimated production of some 140,000 tpa of Heavy Mineral Concentrate (HMC).

Following completion of mining of the Mindarie A(2) strandline in July 2009 Australian Zircon began mining operations in the Mindarie C strandline, which commenced in a section of the strandline immediately west of the Karoonda Highway at the point closest to the PCP. In October 2009 Australian Zircon entered into voluntary administration and all operations ceased and the Mindarie project was put onto a care and maintenance regime.

The project is currently owned and operated by Murray Zircon Pty Ltd having acquired the project from Australian Zircon in June 2011.

A Program for Environment Protection and Rehabilitation (PEPR) for commencement of mining at Mindarie was prepared by Murray Zircon in accordance with the requirements of the *Mining Act, 1971*. The *Mindarie Mineral Sands Project, Mindarie C and A(2): Program for Environment Protection and Rehabilitation* was submitted to Department for Manufacturing, Innovation, Trade, Resources and Energy (DMITRE) on 8th December 2011 and approved on 19th April 2012.

Murray Zircon commenced heavy mineral sand mining and processing operations within the Mindarie C West (Stage 1) portion of the ML6226 strandline in October 2012. Mining operations comprised stripping topsoil, subsoil and overburden from the mining path and processing the ore into a heavy mineral concentrate. Mining continued in Stage 2 (Mindarie C East) through 2013 to 2015, when the natural end of the mining strand was reached. Mining and processing of ore ceased in March 2015 at which time all efforts were directed to rehabilitation of the mining strand.

In addition Murray Zircon relinquished mineral leases ML6222 (Halidon), ML6223 (Amiens) and ML6224 (Mindarie A1).

Purpose of this Compliance Report

The purpose of this *Compliance Report* is to demonstrate achievement of social and environmental outcomes against the approved PEPR and pre-existing Mining and Rehabilitation Plans (MARPs), relating to the Mindarie operations.

This report has been prepared in accordance with the requirements of *Guidelines for Miners: Preparation of a Compliance Report for Metallic and Industrial Operations (Regulation 86) in South Australia*, Version 5.0, December 2014.

Summary of Outcomes

With the development of the PEPR an additional 38 environmental monitoring criteria were prepared to satisfy the new lease conditions for ML6220 and ML6226. These criteria included measures to ensure that there would be no adverse environmental impacts and that all disturbed areas are returned to either the pre-mining native ecosystem function or pre-mining cultivated land use and productivity. To meet these commitments Murray Zircon developed and implemented a

comprehensive Environmental Management System (EMS) of monitoring procedures and reporting documentation.

The compliance assessment of the new operational and closure criteria showed that of the 38 criteria only one was not achieved for the mined and rehabilitated Mindarie A(2) strandline (geotechnical testing of completed rehabilitated land) and only one criterion was not achieved for the new Mindarie C strandline (daily PM10 averages were not below the specified limits).

Project Status

Mining and processing of ore at Mindarie ceased in March 2015 at which time all efforts were directed to rehabilitation of the mining strand. On completion of mine rehabilitation activities the process plant and administration area were placed into care and maintenance.

A Rehabilitation Mine Closure and Criteria Plan was developed prior commencement of mining to outline the objectives and closure criteria for returning mining affected areas to cropping land. It is Murray Zircon's intention to satisfy the Director of Mines that mine closure and rehabilitation outcomes have been achieved and sustained after mine closure.

1. INTRODUCTION

Murray Zircon Pty Ltd (Murray Zircon) submits this Annual Compliance Report as required by the *Mining Act 1971* and *Regulations 2011*, as well as the conditions of the Mineral Lease for the Mindarie Mineral Sands Project (ML6226 and associated tenements).

The Mindarie Mineral Sands Project is currently defined as six Mineral Leases and two Exploration Licences as outlined in Table 1 below and Figure 1 (Appendix A), and is owned and operated by Murray Zircon Pty Ltd.

Table 1: Identification of mine

Mine Name	Mindarie Mineral Sands Mine
PEPR	Mindarie Mineral Sands Project, Mindarie C and A(2)
PEPR date approved	19 th April 2011
Lease holder	Murray Zircon Pty Ltd
Operator	Murray Zircon Pty Ltd
Active Mineral Leases	ML6220 (Mindarie A2) ML6226 (Mindarie C)
Non-active Mineral Leases	ML6137 (Mercunda North) ML6219 (Lone Pine North) ML6221 (Long Tan) ML6225 (Mercunda East)
Relinquished Leases	ML6222 (Halidon) ML6223 (Amiens) ML6224 (Mindarie A1)
Miscellaneous Purposes Licences	MPL76 (Transfer Route 1) MPL77 (Transfer Route 2) MPL78 (Services Route 1) MPL79 (Services Route 2) MPL80 (Transmission Line) MPL140 (Camp Transmission Line)
Extractive Mineral Licences	EML6232 (Rubble Pit 1)
Exploration tenements	EL 4017 (Halidon) EL 4018 (Mantung)
Site contact	Albert Vandenberg General Manager (Operations) E: avandenberg@murrayzircon.com.au T: 8578 7800
Registered Mine Manager	Jarrold Pye
Site location details	108 Knights Well Road Mindarie SA 5309
Reporting period	1 January 2015 to 31 December 2015
Date of preparation of the report	January 2016

2. EXECUTIVE DECLARATION

This document has been prepared to fulfil the requirements under Regulation 86 for tenements listed herein. The information contained in this report is to the best of my knowledge a true and accurate record of the mining activities and compliance status for the reporting period.

Table 2: Executive Declaration

Name	Michelle Waters
Position	Environment Manager
Company	Murray Zircon
Signature	
Date	

3. TENEMENTS AND LICENCING

The mining operations are currently defined as those activities approved under the *Program for Environment Protection and Rehabilitation, Mindarie Mineral Sands Project, Mindarie C and A(2)*, which includes the Mindarie C strandline (ML6226) and the rehabilitated Mindarie A(2) strandline (ML6220).

Table 3: Tenement information

Tenement	Tenement Number	Approval date	Expiry date	Forward work plan
Mindarie A(2)	ML6220	9/05/2006	8/05/2016	No further work
Mindarie C	ML6226	9/05/2006	8/05/2016	Rehabilitation activities

In addition, and linked to, the approved PEPR, are a series of documents which predate the PEPR, including the Mining and Rehabilitation Plans for the construction of an electrical transmission line from Loxton as well as an extractives pit, and the Ministerial approval for the extraction of groundwater.

Table 4: Other Licences, Permits, Waivers, Native Title and Agreements

Licence/Permit	Authority	Supporting Document
MPL 80	PIRSA	Mining and Rehabilitation Program: Pyap-Mindarie Transmission Line
MPL140	DMITRE	Mindarie Mining Camp Transmission Line: Miscellaneous Purposes Licence Application
EML 6232	PIRSA	Mining and Rehabilitation Program: Rubble Pit, Mindarie
S128	Dept. for Water	Notice of Authorisation to Take Water in the Mallee Prescribed Wells Area

4. MINING OPERATIONS

The current mineable reserves for the Mindarie Mineral Sands Project comprise six individual and parallel northwest-southeast oriented strandlines up to 30 km long, several kilometres from each other as shown in Figure 1 (Appendix A). The six mineral sand strandlines are incorporated within the following Mineral Leases:

- ML6137 Mercunda North;
- ML6219 Lone Pine;
- ML6220 Mindarie A(2);
- ML6221 Long Tan;
- ML6225 Mercunda East; and
- ML6226 Mindarie C.

In addition Murray Zircon relinquished mineral leases ML6222 (Halidon), ML6223 (Amiens) and ML6224 (Mindarie A1).

4.1 Ore Reserves and Mine Life

Future mining of the ore reserves from the un-mined strandlines could potentially produce approximately 36 million tonnes of ore containing 4.3% heavy mineral. The potential total heavy mineral contained from this ore reserve is estimated to be 1.3 million tonnes.

Table 5: Ore Reserves and Mine Life

Ore Reserves (million tonnes)		Mineral Resources (million tonnes)		Mine Life
Proved	12	Measured	36	10 years
Probable	36	Indicated	155	
Total	48	Inferred	52	

4.2 Ore Mining

Mining of the Mindarie C strandline commenced in October 2012 and finished in March 2015 and comprised two stages known as Mindarie C West and Mindarie C East as shown in Figure 2.

Mindarie C West (Stage 1) was that portion of the mine to the west of the Karoonda Highway and contains 26 blocks or 'Cells' starting with Cell 1 in the west and finishing in approximately 2,600m with Cell 26.

Mindarie C East (Stage 2) was that portion of the mine to the east of the Karoonda Highway contains 67 cells starting with Cell 1 and finishing approximately 6,700m with Cell 67.

Mindarie C West

Operations in Mindarie C West during the 2015 reporting period comprised the following activities:

- replacement of overburden onto Cells 23 to 26;
- rehabilitation of Cells 18 to 26 with subsoil and topsoil; and
- seeding of Cells 18 to 26 with the sowing of a cover wheat crop.

Photo 1: Mindarie C West cover crop



Mindarie C East

Operations in Mindarie C East commenced in late 2013 and during the reporting period comprised the following activities:

- mining Cells 59 to 71 were stripped of topsoil and subsoil;
- overburden removal occurred from Cells 57 to 67 with ore mined from Cells 47 to 67;
- tailings were deposited in two separate in-pit tailings cells at Cells 1 to 4 and Cells 26-29;
- overburden was directly returned to Cells 39 to 67;
- rehabilitation of Cells 1 to 67 with subsoil and topsoil; and
- seeding of Cells 1 to 67 with the sowing of a cover wheat crop.

Photo 2: Mindarie C East mining pit



Processing of the ore was undertaken on site at the Primary Concentration Plant (PCP) which processed approximately 500 tonnes per hour of ore at a feed grade of approximately 3% heavy mineral to produce approximately 120,000 tonnes per annum heavy mineral concentrate (HMC). HMC was stockpiled on site and off loading was undertaken by a third party contractor who maintained a separate EPA approved occupational radiation monitoring program.

The following tables provide a summary of the ore and overburden mined for the project, as well as the heavy mineral concentrate produced.

Table 6: Ore mined

Area	Ore Mined (Mine Life)	Ore Mined (2015 Reporting Period)	Ore to Be Mined (2016)	End of Reporting Period (Stockpile)
MCW	1,541,233 BCM	0 BCM	0 BCM	0 BCM
MCE	2,256,491 BCM	410,713 BCM	0 BCM	0 BCM

Table 7: Overburden mined

Area	Overburden Mined (Mine Life)	Overburden Mined (2015 Reporting Period)	Overburden to be Mined
MCW	3,996,100 BCM	0 BCM	0 BCM
MCE	9,326,810 BCM	1,958,936 BCM	0 BCM

Photo 3: Mindarie project primary concentration plant



Table 7: HMC produced (tonnes)

Concentrate produced (Mine Life)	Concentrate produced (2015)	Concentrate to be Produced (2016)	End of Reporting Period (Stockpile)
205,428	22,187	0	11,306

Care and Maintenance

Mining and processing of ore ceased in March 2015 at which time all efforts were directed to rehabilitation of the mining strand. On completion of mine rehabilitation activities the process plant and administration area were placed into care and maintenance.

5. VOLUNTARY INFORMATION

5.1 General Project Characteristics

Key characteristics of the project are summarised in Table 9 below.

Table 8: Key characteristics of the Mindarie C project

Activity	Description
Project footprint	63 ha Mindarie C West 100 ha Mindarie C East 53 ha Mindarie C Far East
Open pit dimensions (at any given time)	1-2 km long, 120 m wide, 26 m deep
Mining method	Conventional open pit dry mobile hole
Available minerals in HMC	90% heavy mineral grade containing zircon at 23%, rutile at 10%, ilmenite at 65%
Waste to ore ratio	3:1
Mining operation	120,000 tpa HMC
Treatment rate	500 tonne per hour pumped to PCP
Mine life	Two years and eight months
Hours of operations	Continuous – 24 hours per day, 7 days per week
Power source	66 kV overhead powerline from Pyap/Loxton substation
Total power requirement	1,500 MW/month
Raw water source	6 GL/yr with a maximum of 42.6GL over 10 years
Transport route	Trucked to Port Adelaide (possibility to transport via rail to Port Adelaide in the future)
Accommodation	80 person on-site camp
Employees	Operations: approximately 30–40 employees plus approximately 35–40 contractors
Project capital expenditure	\$15 million

5.2 Community Consultation

During the reporting period Murray Zircon undertook a variety of activities to engage with different areas of the community including:

- **MMCCC Meetings:** Murray Zircon facilitated meetings of the Murray Mallee Community Consultative Committee (Mineral Sands) providing project updates to stakeholders on a quarterly basis;
- **MMCCC Sub-Committee Meetings:** Murray Zircon facilitated on-one-on meetings with the affected landowners of the A(2) and C mining strands;
- **Local Council briefings and presentations:** Murray Zircon provided project presentations to the District Council of Karoonda East Murray as required;
- **Contact Point:** Murray Zircon established a point of contact including phone number and email address for the community to make enquiries about the project;
- **One on one stakeholder meetings:** Murray Zircon has met with key stakeholders such as East Murray Area School and the Wanbi Hotel as required;
- **Council Newsletter:** Project status update included in the District Council of Karoonda East Murray Quarterly newsletter;
- **Website:** Developed Murray Zircon website to provide project information, company announcements and key documents; and

- Industry: Murray Zircon representatives have presented project information at various industry events (AusIMM, SACOME etc.).

5.3 Community Participation

During the reporting period Murray Zircon participated in a variety of community participation activities including:

- donating approximately 2,000 drink containers within the 10 cent deposit scheme to the East Murray Area School as part of their general fundraising activities;
- hiring East Murray Area School Community Hall and facilities for MMCCC meetings; and
- employees purchasing special lunches from East Murray Area School students as part of camp fundraising activities.

5.4 Changes to Management

There were no changes to management during the reporting period.

6. PROJECT VARIATIONS

An amendment to the PEPR was submitted for approval during the reporting period, in relation to the following:

- an adjustment to the maximum project clearance footprints for both Mindarie C East and West to adjust the maximum mine operational footprint;
- a notification of the changes to the existing mining and processing operations;
- a review of the project bond costs; and
- updated Environmental Risk Assessment.

The following table provide a summary changes to the project as detailed in the approved PEPR.

Table 9: Project Variations

Description of change	Date submitted	Document Number	Date approved
Increase of mine maximum operational footprint	March 2015	PEPR Amendment 02	In Progress
Change of mining methodology and cell size	March 2015	PEPR Amendment 02	In Progress

Photo 4: Original mine methodology footprint



7. COMPLAINTS

During the reporting period no third party complaints were registered directly with the company in relation to operations at Mindarie.

Photo 5: Rehabilitated Mindarie A(2) strandline



8. COMPLIANCE ASSESSMENT

As outlined previously, there are a number of approvals for the Mindarie Mineral Sands Project. An assessment of the project against these approvals/licence requirements has been undertaken as part of this *Compliance Report*.

In relation to this *Compliance Report* the following documents have been assessed for compliance in conjunction with the relevant Lease/Licence condition:

- *Mindarie Mineral Sands Project, Mindarie C and A(2): Program for Environment Protection and Rehabilitation*;
- *Mining and Rehabilitation Program: Pyap-Mindarie Transmission Line* (Parsons Brinkerhoff 2006);
- *Mining and Rehabilitation Program, Rubble Pit, Mindarie* (Parsons Brinkerhoff 2006); and
- South Australian Government Gazette 16/03/2007 *Notice of Authorisation to Take Water in the Mallee Prescribed Wells Area* (Green Management Zone).

8.1 Mindarie A(2) ML6220

With the development of the PEPR an additional seven mine closure criteria were developed to satisfy new ML6220 lease conditions as determined by DMITRE. These criteria included measures to ensure that all disturbed areas are returned to either the pre-mining native ecosystem and landscape function or pre mining cultivated land use and productivity.

Details of the compliance assessment for ML6220 are provided in Appendix B.

Compliance Assessment

As the Mindarie A(2) strandline was rehabilitated prior the finalisation of the PEPR one of the new compliance criteria outcomes was not achieved during the reporting period, this being:

- Appropriate geotechnical testing, such as dynamic cone penetrometers, at 100 metre spacing along the centreline of the strand at the completion of rehabilitation indicate that post mining rehabilitated surface is within $\pm 15\%$ of adjacent un-mined (cropped areas) or similar use.

To rectify the non-compliances as listed above, Murray Zircon will undertake (where possible) the necessary monitoring or measurement activity in conjunction with the geotechnical testing on the Mindarie C rehabilitation works.

The following table provide a summary of the Non Compliances for ML6220 in relation to the approved PEPR.

Table 11: ML6220 Compliance Summary

Tenement	Type of Non Compliance	Description	Status
ML6220	Environmental Outcome	Geotechnical testing not completed along the centreline of the strand at the completion of rehabilitation	Currently being addressed in conjunction with ML6226 completion

All other compliance criteria outcomes for ML6220 were met during the reporting period.

8.2 Mindarie C ML6226 Compliance

With the development of the PEPR an additional 31 operational and closure criteria were developed to satisfy new ML6226 lease conditions as determined by DMITRE. These criteria included measures to ensure that there would be no adverse environmental impacts and that all disturbed areas are returned to either the pre-mining native ecosystem and landscape function or pre mining cultivated land use and productivity.

One of the new compliance criteria outcomes for ML6226 was not met during the reporting period, this being:

- monthly review of PM10 measurements by mobile real time sampler (such as T-BAM) located at sensitive receptors demonstrates mining operations compliance with NEPM 1998 (<50 µg/m³/day, with <5 days exceedance/year).

Whilst the daily average over the 12 month reporting period was 19 µg/m³ the maximum occurred during the months of December, January and February coinciding with harvesting and extreme northerly wind patterns. It should however be noted that the National Environment Protection (ambient Air Quality) Measure and the relevant Australian Standard that it derives from only apply to populations greater than 25,000.

The following table provide a summary of the Non Compliances for ML6226 in relation to the approved PEPR.

Table 12: Compliance Summary

Tenement	Type of Non Compliance	Description	Status
ML6226	Environmental Outcome	Dust exceed 50 µg/m ³ /day for more than 5 days	Dust suppressant used on stockpiles Water cart used on roads and mining pit area

All other compliance criteria outcomes for ML6220 were met during the reporting period and details of the compliance assessment are provided in Appendix C.

8.3 MPL80 Compliance

All compliance criteria outcomes for MPL80 were met during the reporting period and details of the compliance assessment are provided in Appendix D.

8.4 EML6232 Compliance

All compliance criteria outcomes for EMPL6232 were met during the reporting period and details of the compliance assessment are provided in Appendix E.

8.5 Notice to Take Water Compliance

All compliance criteria outcomes for the *Notice of Authorisation to Take Water in the Mallee Prescribed Wells Area* were met during the reporting period and details of the compliance assessment are provided in Appendix F.

9. COMPLIANCE WITH LEADING INDICATOR CRITERIA

The environmental management system has built-in leading indicator criteria to meet the conditions of the mining leases as determined by DMITRE. To ensure the control strategies used by Murray Zircon during the operation of the mine are effective the monitoring of soil, mine closure, progressive rehabilitation and groundwater were determined to be of significance to require leading indicator criteria in addition to compliance criteria.

9.1 Mindarie A(2) ML6220 Leading Indicator Criteria

In relation to the previously mined ML6220 (Mindarie A(2)) no further mining operations were undertaken during the reporting period. All rehabilitation activities have been deemed complete and control has been handed back to the respective landowners for the commercial management of the properties associated with ML6220. Therefore the leading indicator criteria for ML6220 are no longer applicable.

Table 13: ML6220 leading indicator criteria

Leading indicator criteria	Triggered	Comments
Weekly review of records during rehabilitation indicate all overburden, subsoil and topsoil within the lease are replaced using scrapers/landplanes in separate layers in similar order as removed in accordance with the Soil Dig Procedure	N/A	N/A

9.2 Mindarie C ML6226 Leading Indicator Criteria

During the reporting period the following leading indicator criteria were used as triggers for further investigation and monitoring:

Table 14: ML6226 leading indicator criteria

Leading indicator criteria	Triggered	Comments
Weekly noise levels in dB (or following complaints) measured by hand held noise level meter taken at sensitive receptors reach 85% of the EPA Noise Policy limit	Y	Ambient (non-mining) noise levels consistently average 85%
Monthly inspection of the road pavement condition at mine access points by visual inspection and photomonitoring show that all traffic accidents involving the public at mine access points could have been reasonably prevented	Y	Poor road pavement conditions reported to DCKEM
Monthly inspection of the condition of road traffic signage at mine access points indicates compliance with Australian Standard AS:1742 <i>Manual of Uniform Traffic Control Devices</i>	N	N/A
Quarterly audit of the total number of records indicate that all employees and contractors have been inducted to the <i>Traffic Management Plan</i>	N	N/A
Monthly housekeeping inspections of lease area by visual observations show all extraneous flammable/combustible materials stored in accordance with AS 1940-2004: <i>The Storage and Handling of Flammable and Combustible Liquids</i>	N	N/A

Leading indicator criteria	Triggered	Comments
Monthly inspections of conditions of lease boundary gates, fences and site infrastructure by visual observation indicate no interference or damage which could lead to public injuries and or deaths that could have been reasonably prevented as a result of unauthorised entry to the site	N	N/A
Daily review of PM10 measurements by mobile real time sampler located at sensitive receptors demonstrates mining operations compliance with NEPM 1998 <50 µg/m3/year, with <5 days exceedance/year	Y	Additional water truck movements to mitigate road dust
Monthly review of waste inspection records indicate less than five occurrences of incorrectly disposed of waste on lease area in accordance with the Waste Management Plan	N	N/A
Fortnightly visual inspections indicate the correct storage, transport and distribution of petroleum hydrocarbon or chemicals in accordance with EPA <i>Bunding and Spill Management Guidelines 2007</i>	Y	Additional bunding installed
Weekly visual inspections of the effectiveness of silt traps and surface drainage systems to ensure no loss of containment	N	N/A
Inspection of drainage containment system after rain events that generate runoff confirms no loss of containment	N	N/A
Quarterly review of extraction records show that water extraction is in accordance with the <i>Authorisation to Take Water</i>	N	N/A
Monthly and six monthly groundwater quality measurements from each existing monitoring wells, landholder wells and production wells do not exceed existing baseline conditions by two standard deviations	N	N/A
Daily visual inspection of pipeline to occur within two hours of automatic control system indicating loss of pressure and or flow differential in slurry system to indicate spill/leak between mine and plant sites in accordance with the emergency management procedures	N	N/A
Weekly visual inspection shows that separate topsoil and subsoil stockpiles are established in accordance with Top Soil and Subsoil Management and Monitoring Plan	N	N/A
Clarity wedge readings every six hours of tailings discharge water and decanting pump indicate water clarity of greater than 30	N	N/A
Six hourly visual inspections of tailings cells indicate beaching angles greater than five degrees off horizontal with a hand held clinometer and recorded in a log book	N	N/A
Weekly review of records during rehabilitation indicate all overburden, subsoil and topsoil within the lease are replaced using scrapers/landplanes in separate layers in similar order as removed in accordance with the Soil Dig Procedure	N	N/A
On completion of rehabilitation, the rehabilitated land is trafficable by landowner's equipment consistent with adjacent unmined land	N/A	N/A

10. CLOSURE AND REHABILITATION

Rehabilitation activities during the reporting period included the replacement of overburden, subsoil and topsoil onto areas where mining had been completed.

Table 15 details the disturbed areas for each active tenement associated with the project and the area of rehabilitation undertaken.

Table 15: Closure

Tenement	2015 (Actual)			2016 (Anticipated)		
	New disturbed (ha)	Total disturbed (ha)	Rehabilitated (ha)	New disturbed (ha)	Total disturbed (ha)	Rehabilitated (ha)
ML6220 Mindarie A(2)	0	0	0	0	0	0
ML6226 Mindarie C East	115	120	120	0	0	0
ML6226 Mindarie C West	0	65	65	0	0	0
EML6232 Rubble Pit 1	0	0	0	0	0	0

10.1 Commercial Cropping Activities

Seeding of commercial cover crops commenced late April 2015 and occurred through to September 2015. Regular photomonitoring occurred of the crops on a monthly basis to assess the effectiveness of these rehabilitation activities.

Rural Directions Pty Ltd was also engaged to undertake professional agronomy services and assess the crop performances. The methodology to assess crop performance was to compare rehabilitated mined areas with adjacent non-mined areas so as to provide a direct comparison of land management under the same seasonal conditions. A combination of physical counts, visual assessment and landowner observations were used to assess the relative grain yield of rehabilitated mined and adjacent non-mined land.

The report prepared by Rural Directions notes that the 2015 season was one that had strong early potential that was limited by below average rainfall in winter and spring. A severe early heatwave in early October also compromised grain fill and lead to grain quality issues across much of South Australia and the mallee region.

The season involved large areas of cover crops being sown for the first time over newly rehabilitated land. These cover crops were either cereal rye or wheat and generally established well and provided adequate cover, with small areas suffering wind erosion. Barley was also sown on two properties as a commercial crop and had patchy results, which was in accordance with the district.

Generally the rehabilitated mined areas performed well relative to the adjacent unmined areas, noting that:

- grain yields were generally below average due to low weight and poor quality grain as a result of the heatwave;
- there were no observable differences between mined and unmined rehabilitated land; and
- areas of stockpiles on some of the western cells Mindarie A(2) and the far east (Mindarie C) showed issues with root growth as a result of potential compaction.

Photo 6: Rehabilitated Mindarie C West strandline



10.2 Native Vegetation Rehabilitation

During the reporting period two areas native revegetation of approximately 2ha each were removed from areas on Knights Well Road and McCabes Road as per the Significant Environmental Benefit (SEB) provided in the PEPR. The condition assessment of this native vegetation ranged from very poor to poor and it was noted the remnant vegetation was dominated by weed species. It should be noted that no flora species with a State or National conservation rating were identified in this area.

Table 16: Native Vegetation Disturbance

Tenement	2015 (Actual)			2016 (Anticipated)		
	New disturbed (ha)	Total disturbed (ha)	Rehabilitated (ha)	New disturbed (ha)	Total disturbed (ha)	Rehabilitated (ha)
<u>ML6226</u> McCabes Road	0	5	5	0	0	0
<u>ML6226</u> Knights Well Road	0	5	5	0	0	0

Even though a SEB payment was made prior mining, Murray Zircon is committed to replanting the areas disturbed by mining as well as infilling additional areas to improve the biodiversity of the region, and as such 5 ha was replanted for each of the 2 ha disturbed.

A re-planting regime was developed in conjunction with the local NRM Officer and Greening Australia (based on SEB assessments by COOE) and commenced in May and was completed in October.

Photo 7: Mining through Knights Well Road



Photo 8: Reinstated gravel pavement and native vegetation along Knights Well Road



11. COMMONWEALTH EPBC ACT, 1999

The Mindarie Mineral Sands Project is not subject to any approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999*.

Photo 9: Worm compost being spread before cover crop seeding



12. AUDITS AND REVIEWS

Internal Environmental Management System (EMS) reviews were undertaken on an as-needs basis to ensure that the procedures and reporting templates reflected changes in operations, legislation or acquisition of new monitoring equipment. All internal Murray Zircon audits were completed by Michelle Waters (Environment Manager) who is a qualified Lead Auditor in Environmental Management Systems.

Table 17: Environmental Management System Review

Aspect Reviewed	Date	Reviewer	Updates
Transmission Line Inspection Form	January 2015	Michelle Waters	Inclusion of third party damage and or access
Fencing Supplies Delivery Form	May 2015	Michelle Waters	Signoff added for acceptance of delivery by landowner
Nuclear Density Gauge Inspection Record	June 2015	Michelle Waters	Addition of gauge locations for clarity
Mindarie C Surface Gamma Baseline Record	October 2015	Michelle Waters	Amended to include closure gamma data

In addition an external audit of the 2015 Annual Compliance Report was completed by Maria Pedicini (Principal Environmental Scientist) of Environmental Projects. The findings of this audit were that performance of the project against conditions of the Lease and PEPR approvals were considered satisfactory with the exception of the following:

Table 18: Audits

Aspect	Date	Auditor	Issues	Comments
Outcomes criteria	March 2016	Maria Pedicini	Appropriate geotechnical testing not undertaken on Mindarie A(2).	This item is currently being addressed in conjunction with ML6226 completion.
Outcomes criteria	March 2016	Maria Pedicini	PM10 greater than 50ug/m/day exceeded for five days	It is noted that the measurement criteria are levels applied to areas where populations are greater than 25,000, not for remote or rural areas.

13. VERIFICATION OF UNCERTANTIES

No new or emerging environmental hazards were identified in relation to mining operations during the reporting period.

Photo 10: Emergent cover crop Mindarie C East



14. TECHNICAL REPORTS

The following technical reports were prepared in relation to the Mindarie Mineral Sands Project:

- *Annual Native Vegetation Assessment of the Mindarie C Strandline* (Care of Our Environment, 2016) – an annual survey was undertaken to assess native vegetation abundance, diversity and conditions at sites along and adjacent the Mindarie C strandline. The objective of the assessment was to establish the current condition of vegetation post-commencement of mining activities; and
- *Mindarie Crop Performance 2015* (Rural Directions, 2016) – an assessment was commissioned to evaluate the performance of crops on the rehabilitated Mindarie A(2) and portion of Mindarie C mining strandlines. The assessment included reviews of plant establishment, disease pressure, grain yield and grain quality.

The following table provide a summary of the technical reports compiled in relation to the approved PEPR.

Table 19: Technical Reports

Technical Report	Author
Annual Native Vegetation Assessment of the Mindarie C Strandline 2015	Care of Our Environment
Mindarie Crop Performance 2015	Rural Directions

15. FORWARD WORK PLANS

No further mining activities are proposed for the Mindarie operations at this time.

A *Rehabilitation Mine Closure and Criteria Plan* was developed prior commencement of mining to outline the objectives and closure criteria for returning mining affected areas to cropping land. The *Rehabilitation Mine Closure and Criteria Plan* has been reviewed and agreed upon by Murray Zircon as well as all relevant landholders.

Murray Zircon must demonstrate to the satisfaction of the Director of Mines that the following mine closure and rehabilitation outcomes (in so far as they may be affected by mining operations) are expected to be achieved and sustained after mine closure:

- integrate and harmonise final landforms and vegetation with the surrounding landscape;
- the risks (including radiological) to the health and safety of the public and fauna are as low as reasonably practical;
- the site is physically stable;
- no compromise of the quality and quantity of ground and or surface water to existing users and water dependent ecosystems;
- all mine waste materials left onsite are chemically and physically stable;
- no industrial or commercial waste left onsite; and
- where applicable for all disturbed areas either re-establishment of the pre-mining native ecosystem and landscape function or pre-mining cultivated land use and productivity. .

Final close-out monitoring will demonstrate that all mining related areas have been restored to near background conditions and can be released without restriction.

16. MINISTERIAL DETERMINATION CHECKLIST

A checklist of this Annual Compliance Report against the checklist of Ministerial Determination Guidelines MG03 (Guidelines for Miners: Preparation of a Compliance Report for Metallic and Industrial Operations) is shown in Table 20 below.

Table 20: Ministerial Determination Checklist

Section	Included
Executive summary	Y
1. Introduction	Y
Tenement number(s)	Y
Name of the mine operation	Y
General location details	Y
Name(s) of the mine owner and mine operator(s)	Y
Site Contact	Y
Registered Mine Manager, <i>Mines Works Inspection Act, 1920</i>	Y
Reference and approved date of relevant PEPR being reported against	Y
Person accepting responsibility for the report	Y
Dates of the reporting period for the report	Y
Date of preparation of the report.	Y
2. Executive Declaration	Y
3. Tenements	Y
Summary table of all tenements including ML, MPL, EML etc.	Y
4. Other Licences, Permits, Waivers, Native Title and Agreements	Y
Summary table of all licences, permits, waivers, native title and other agreements relevant to the PEPR.	Y
Where applicable, provide a statement that all waivers for exempt land required for the current operation are in place in accordance with the Mining Act	Y
5. Mining operations	Y
<i>Ore reserves and mine life</i>	Y
New delineation or exploration drilling activities on or off the lease (if required)	N/A
Review of reserves (if required)	Y
Other potential sources of ore (e.g. from nearby mines) (if required)	N/A
<i>Overburden, Ore and Concentrate</i>	
Overburden	Y
Ore	Y
Concentrate	Y
6. Voluntary information	Y
7. Project Variation Summary	

Summary table of any changes/project variations submitted to DSD	Y
8. Complaints	
Summary table of complaints made by members of the public during the reporting period	Y
Indicate how concerns or complaints by third parties were addressed.	Y
9. Compliance Summary	
Summary table of non-compliances (if relevant)	Y
10. Compliance Tables	
For each outcome in PEPR state if “complied”, “not complied”, or “unable to demonstrate compliance”	Y
For each outcome in the PEPR provide summary criteria data that supports the conclusion above	Y
For each lease or licence condition (other than environmental outcomes) state if “complied”, “not complied”, or “unable to demonstrate compliance”	Y
For each leading indicator criterion state if any were triggered in the reporting period	Y
If triggered, (if required)	Y
<ul style="list-style-type: none"> What actions were taken 	Y
<ul style="list-style-type: none"> An assessment of the effectiveness of the current control strategies or criteria 	Y
10.1 Closure	
Where native vegetation has been cleared in the reporting period, the following must be included: (if required)	Y
<ul style="list-style-type: none"> a reconciliation between the approved maximum clearance in hectares, 	Y
<ul style="list-style-type: none"> the amount cleared in the reporting period, 	Y
<ul style="list-style-type: none"> the total amount cleared to date, 	Y
<ul style="list-style-type: none"> an estimated amount to be cleared in the next reporting period. 	Y
11. Non-Outcome Based Lease Conditions	
If you have any lease conditions which do not have an outcome measurement criteria relating to it please list the compliance status and evidence against each condition in a summary table	Y
12. Rectification of Non-Compliances	
If a “not complied” is recorded, the following must be included: (if required)	Y
<ul style="list-style-type: none"> date of the incident 	Y
<ul style="list-style-type: none"> state if the incident was a Reportable Incident under Regulation 87. If so the report must also state the date the incident was initially reported to the Minister and the date the written report was provided to the Minister. 	Y
<ul style="list-style-type: none"> what environmental outcome or lease condition was breached 	Y
<ul style="list-style-type: none"> if and how the noncompliance was, or is planned to be, rectified 	Y
<ul style="list-style-type: none"> what measures, if any, will be taken to prevent recurrence. 	Y
Progress update on previous non-compliances not fully rectified at time of last report	Y
13. Disturbance and Rehabilitation Activities	
Information on areas disturbed and current rehabilitation status	Y
The amount of land disturbed	Y
Vegetation cleared	Y
New measures implemented to avoid or control environmental impact	N/A

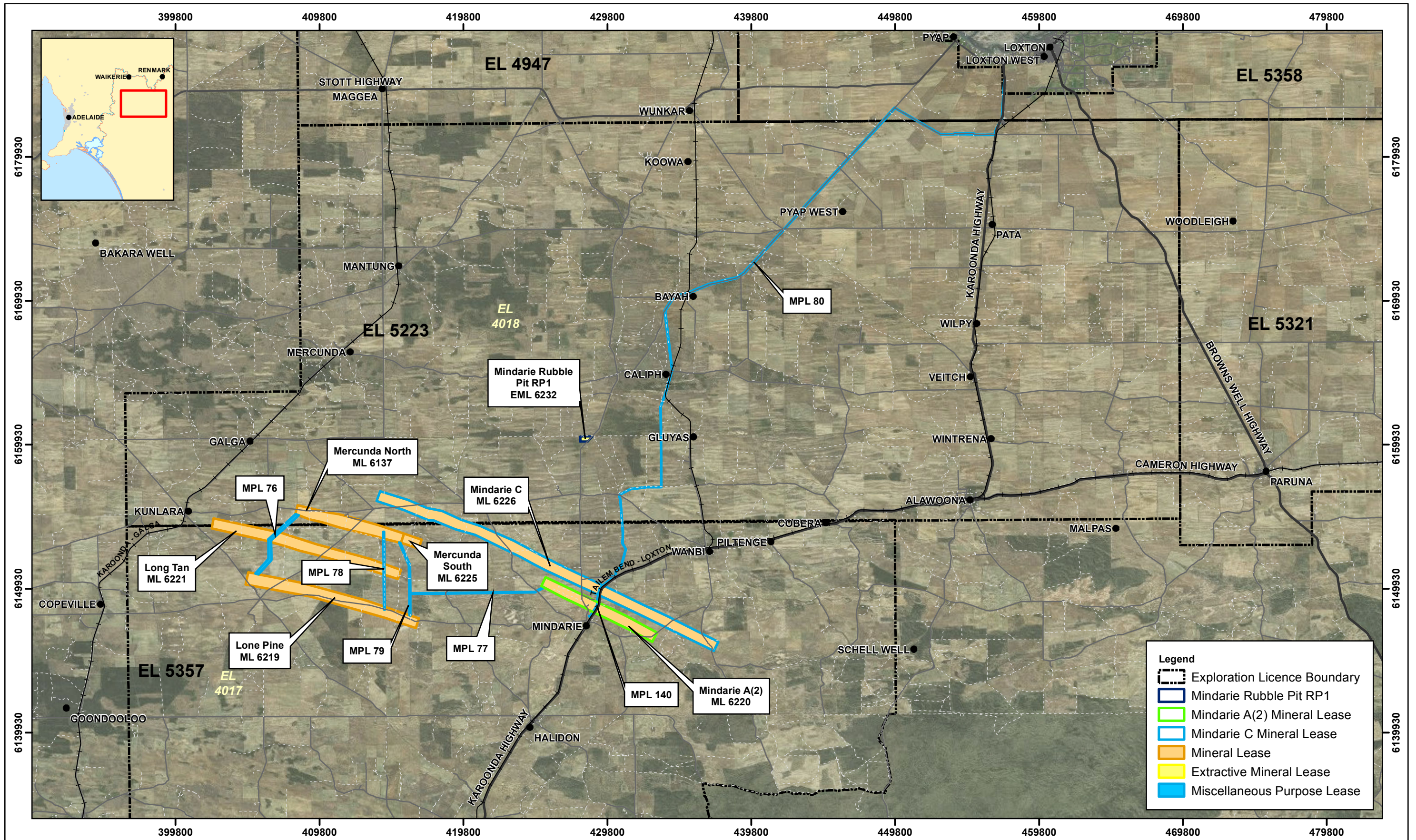
Revegetation or rehabilitation earthworks conducted.	Y
Evidence (by using closure and rehabilitation criteria in the current approved PEPR) of the effectiveness of rehabilitation being progressively undertaken.	Y
Any problems or potential improvements learned from previous rehabilitation	N/A
An assessment of risks that rehabilitation may or may not be achieved as planned	N/A
New strategies to be undertaken to achieve rehabilitation outcomes (if required)	N/A
14. Environment Protection and Biodiversity Conservation Act reporting	
Demonstration of compliance with EPBC conditions (if required)	N/A
15. Audits and Reviews	
If an audit or review of any part of the operation management system was conducted during the reporting period, the following information on the audit or review must be included: (if required)	Y
<ul style="list-style-type: none"> when the audit or review was undertaken 	Y
<ul style="list-style-type: none"> who undertook the audit or review 	Y
<ul style="list-style-type: none"> what aspect(s) of the management system was/were audited/reviewed 	Y
<ul style="list-style-type: none"> what issues, or recommendations for improvement, were noted 	Y
<ul style="list-style-type: none"> an assessment of the potential for any issues identified in the audit/ review to lead to a noncompliance with approved environmental outcomes 	Y
<ul style="list-style-type: none"> what corrective action that has or will be taken to address any issues. 	Y
16. Verification of Uncertainties	
Changes or failures of mining operations	N/A
Increases to areas disturbed	N/A
New baseline environmental data	N/A
Reported to DSD	N/A
Uncertainties table	N/A
17. Technical Reports	
Summary of technical data studies and reports generated in reporting period	Y
18. Forward Work Plan	
Action description	Y
Responsibility	N/A
Proposed Completion Date	N/A
19. Ministerial Determination Checklist	
This checklist	Y

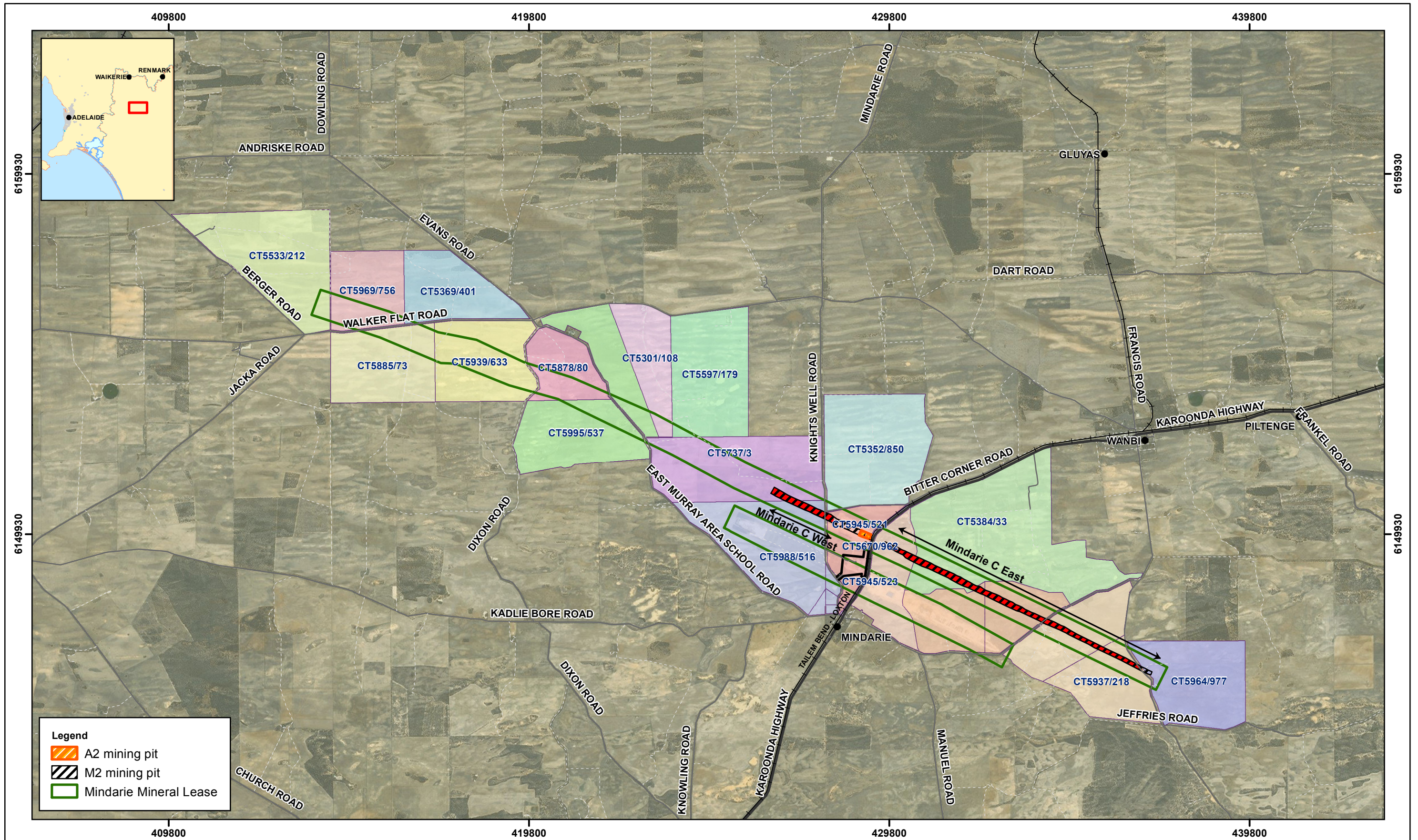
17. REFERENCES

- COOE Pty Ltd, 2013: *Knights Well Road Vegetation Assessment, Significant Environmental Benefit (SEB)*;
- COOE Pty Ltd, 2016: *Annual Native Vegetation Assessment of the Mindarie C Strandline 2015*;
- DMITRE, 2011: *Ministerial Determination 009: Reporting Periods and Minimum Information Required to be Provided in a Compliance Report for a Mineral Lease and Any Associated Miscellaneous Purposes Licence for Metallic and Industrial Minerals*;
- Environmental Projects, 2016: *Independent Audit of Murray Zircon 2015 Annual Compliance Report*;
- Murray Zircon, 2012: *Mindarie Mineral Sands Project, Mindarie C and A(2): Program for Environment Protection and Rehabilitation (PEPR)*;
- Murray Zircon Pty Ltd, 2012: *Radiation Management Plan Incorporating the Radioactive Waste Management Plan*;
- Parsons Brinkerhoff, 2006: *Mining and Rehabilitation Program: Pyap-Mindarie Transmission Line*;
- Parsons Brinkerhoff, 2006: *Mining and Rehabilitation Program, Rubble Pit, Mindarie*; and
- Rural Directions Pty Ltd, 2016: *Mindarie Crop Performance 2015*.

Appendix A

Figures





Legend

- A2 mining pit
- M2 mining pit
- Mindarie Mineral Lease

PARSONS BRINCKERHOFF

Murray Zircon

Data source: PIRSA, DPTI, Esri DigitalGlobe

Map no: 2269602A_GIS_002_A1

Author: RP

Approved by: -

Date: 21/12/2015

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Map no: 2269602A_GIS_002_A1

Author: RP

Approved by: -

Date: 21/12/2015

0 1 2
km

1:100,000

Scale ratio correct when printed at A3

Projection: Transverse Mercator
Coordinate system: GDA 1994 MGA Zone 54

PRELIMINARY

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Mindarie Mineral Sands Project
Figure 2
Mindarie A(2) Mineral Lease (ML 6220)
and Mindarie C Mineral Lease (ML 6226)

PARSONS BRINCKERHOFF

Appendix B

Compliance Assessment
ML6220 (Mindarie A(2))

Table B.1 Compliance Assessment of PEPR compliance criteria

Outcome	Compliance Criteria	Compliance	Evidence
Final landforms and vegetation will be integrated and harmonised with the surrounding landscape.	At completion of rehabilitation the topography of the mined area will be surveyed for integration with surrounding landscape and presence of elevated crown.	Compliant	Review of post mine landforms completed.
The site will be physically stable.	Records at completion of rehabilitation indicate that all overburden, subsoil and topsoil within the lease are replaced using scrapers/landplanes in separate layers in similar order as removed in accordance with the Soil Dig Procedure.	Compliant	Review of Ground Disturbance Permits: <i>CORP-ENV-FORM-004</i>
All mine waste materials left on site will be chemically and physically stable.	Appropriate geotechnical testing, such as dynamic cone penetrometers, at 100 metre spacing along the centreline of the strand at the completion of rehabilitation indicate that post mining rehabilitated surface is within $\pm 15\%$ of adjacent un-mined (cropped areas) or similar use.	Not compliant	Geophysical testing not undertaken of post mined land.
Where applicable for all disturbed areas there will be either re-establishment of the pre-mining native ecosystem and landscape function or pre mining cultivated land use and productivity.	Annual ecosystem assessment by suitably qualified third party of rehabilitated areas of native vegetation (refer to locations A2, B2, C2) in comparison to control sites A1, B1 and C1 have achieved or are predicted to reach ecosystem function.	Compliant	<i>Native Vegetation Assessment of the Mindarie C Mining Strandline</i> , COOE 2015
Where applicable for all disturbed areas there will be either re-establishment of the pre-mining native ecosystem and landscape function or pre mining cultivated land use and productivity.	Annual crop yield measured as tonnes per hectare or bags per hectare based on the best 3 of 5 cropping seasons of previously mined area is equal to (i.e. 95%) or better than the comparable yield from the applicable landholders adjoining paddock (for a period of 5 years following closure) based on historical data prior to the commencement of mining operations.	Compliant	<i>Mindarie Crop Performance 2015</i> , Rural Directions 2016. <i>CORP-ENV-REC-034</i>
There will be no compromise of the quality and quantity of ground and/or surface water to existing users and water dependent ecosystems.	Annual groundwater quality measurements (for EC, pH, uranium, thorium, TDS) from each existing monitoring well, landholder wells and production wells do not exceed existing baseline conditions by two standard deviations.	Compliant	Review of groundwater quality data: <i>REGIONAL WELLS (FIELD RESULTS)</i> <i>REGIONAL WELLS (LABORATORY RESULTS)</i>
	Annual records indicate that annual groundwater extraction rates of production wells (measured by flow meter) are in accordance with approved Water Allocation Plan (average 42GL over 10 years and not exceeding 6GL per water use year).	Compliant	Review of groundwater extraction data: <i>CORP-ENV-REC-022</i>

Appendix C

Compliance Assessment
ML6226 (Mindarie C)

Table C.1 Compliance Assessment of PEPR compliance criteria

Outcome	Compliance Criteria	Compliance	Evidence
No loss of abundance or diversity of native vegetation on or off the lease through: Clearance Unless prior approval under relevant legislation is obtained	Annual review of native vegetation clearance permits demonstrate all clearance has been authorised under the <i>Native Vegetation Act, 1991</i> as per the Native Vegetation Management and Monitoring Plan (Appendix E).	Compliant	Review of Ground Disturbance Permits: <i>CORP-ENV-REC-035</i>
No loss of abundance or diversity of native vegetation on or off the lease through: Dust/contaminant deposition Unless prior approval under relevant legislation is obtained	Annual native vegetation species abundance or diversity assessment through visual observations and photomonitoring assessments indicate no decrease in abundance or diversity of native vegetation due to mining operations (refer to locations A2, B2, C2 in Figure 4.9, Appendix L) in comparison to control sites A1, B1 and C1.	Compliant	<i>Annual Native Vegetation Assessment of the Mindarie C Mining Strandline</i> , COOE 2016
No loss of abundance or diversity of native vegetation on or off the lease through: Fire, or Other damage Unless prior approval under relevant legislation is obtained	Annual native vegetation species abundance and diversity assessments indicate no decrease in abundance or diversity of native vegetation as a result of fires caused by mining operations (refer to locations A2, B2, C2 in Figure 4.9, Appendix L) in comparison to control sites A1, B1 and C1.	Compliant	<i>Annual Native Vegetation Assessment of the Mindarie C Mining Strandline</i> , COOE 2016
No loss of abundance or diversity of native vegetation on or off the lease through: Fire, or Other damage Unless prior approval under relevant legislation is obtained	Annual review of records indicate that any new weed species found on lease area are treated in accordance with Weed Management and Monitoring Plan (Appendix E) and or landowner agreements within 72 hours of reporting infestations .	Compliant	Review of weed eradication measures: <i>CORP-ENV-REC-001</i>
No sustained increase in abundance of introduced (feral) species in the Lease area compared to adjoining land	Annual review of records indicate that the Weed and Pest Management and Monitoring Plan (Appendix E) has been implemented.	Compliant	Review of weed eradication measures: <i>CORP-ENV-REC-001</i>
No adverse public nuisance impacts from noise emanating from the Lease	Quarterly total noise levels in dB measured as 24hr continuous attended monitoring at sensitive receptors (refer to locations D, E and F Figure 4.1, Appendix L) show that mining operations do not exceed the EPA Noise Policy of <52dBA during the day and <45dBA during night.	Compliant	Review of noise monitoring database: <i>CORP-ENV-REC-020</i>
No traffic accidents involving the public at mine access points that could have been reasonably prevented	Independent investigations of all recorded traffic accidents at mine access points indicate that they could not have been reasonably prevented.	N/A	N/A

Table C.1 Compliance Assessment of PEPR compliance criteria

Outcome	Compliance Criteria	Compliance	Evidence
No disturbance to Aboriginal artefacts or sites of significance unless prior approval under the relevant legislation is obtained	Records show that if an Aboriginal site or artefact is discovered that work ceases and appropriate procedures are followed approval sought under the <i>Aboriginal Heritage Act 1988</i> .	N/A	N/A
	Weekly visual inspection and photomonitoring records show no disturbance to the existing Aboriginal site in comparison to baseline photomonitoring.	Compliant	Review of Aboriginal heritage inspection records: <i>CORP-ENV-REC-009</i>
No disturbance to European artefacts or sites of significance unless prior approval under the relevant legislation is obtained	There are no sites of European heritage on the Mindarie C lease.	N/A	There are no sites of European heritage on the Mindarie C lease.
No unauthorised damage (including caused by fire) to adjacent public or private property and infrastructure	Records show that damage (including caused by fire) to adjacent public or private property and infrastructure was managed in compliance with landowner agreements.	N/A	No damage to public or private property was recorded.
No public injuries and or deaths resulting from unauthorised entry to the site that could have been reasonably prevented	Records show that independent third party review was sought as required to assess that public injuries and or deaths resulting from unauthorised entry to the site (by damage to gates, fences and site infrastructure) could not have been reasonably prevented .	N/A	No public injuries and or deaths resulted from unauthorised entry to the site.
No adverse public health and/or nuisance impacts to local residents from dust generated by mining operations	Monthly review of PM10 measurements by mobile real time sampler (such as T-BAM) located at sensitive receptors demonstrates mining operations compliance with NEPM 1998 (<50 µg/m ³ /day, with <5 days exceedance/year).	Not compliant	Dust exceed 50 µg/m ³ /day for more than 5 days. It should be noted that the NEPM only applies to populations greater than 25,000.
	All community complaints from the public regarding dust arising from the lease area addressed within 48 hours and assessed against the NEPM criteria.	N/A	Review of community complaints records: <i>CORP-ENV-REC-015</i>
No adverse public health and/or nuisance impacts to local residents from air emissions generated by mining operations	Annual review of storage and disposal records indicate putrescible waste collected weekly by Council and transported off the lease areas in accordance with the Waste Management Plan.	Compliant	All waste disposed offsite weekly as per regular Council collection.
No adverse public health and/or nuisance impacts to local residents from air emissions generated by mining operations	Records demonstrate that all operational vehicles and equipment used on lease areas have appropriate emission control devices (according to vehicle specifications) prior to commencement of use and at scheduled maintenance times.	Compliant	Review of vehicle inspection records: <i>CORP-ENV-REC-018</i>
No adverse public health and/or nuisance impacts to local residents from air emissions and dust generated by mining operations At closure: The risks (including radiological) to the health and safety of the public and fauna are as low as reasonably	Monitoring at completion of rehabilitation demonstrates no adverse public health and/or nuisance impacts to local residents from air emissions and dust generated by mining operations in compliance with EPA approved Radiation Management Plan	N/A	Rehabilitation not complete.
	Records demonstrate that at completion of rehabilitation removal and burial of low level radioactive material from ponds occurs in accordance with the EPA approved Radiation Waste Management Plan such that no adverse public health and/or nuisance impacts to local residents from air	N/A	Rehabilitation not complete.

Table C.1 Compliance Assessment of PEPR compliance criteria

Outcome	Compliance Criteria	Compliance	Evidence
practical The site is physically stable All mine waste materials left on site are chemically and physically stable	emissions and dust generated by mining operations		
No water contaminated as a result of mining operations leaves the Lease area or results in loss of or contamination of soil on or off the lease	Quarterly audits and inspection records demonstrate that waste is stored and correctly disposed in accordance with the Commercial and Industrial Waste Management and Monitoring Plan and no evidence of waste disposed of on-site	Compliant	All waste disposed offsite weekly as per regular Council collection.
No adverse impact to the quality and quantity of surface water caused by mining operations to existing users and water dependent ecosystems	Records demonstrate that all spills within the lease areas are recorded, reported to the EPA and DMITRE (as required) and clean up actions completed, in accordance EPA / DMITRE agreed procedures to ensure that no contaminated water leaves the lease area	Compliant	Review of Environmental Incident records: <i>CORP-ENV-REC-016</i>
No water contaminated as a result of mining operations leaves the Lease area or results in loss of or contamination of soil on or off the lease. No adverse impact on the quality and quantity of surface water caused by mining operations to existing users and water dependent ecosystems	Monthly photographic inspections and written reports of the effectiveness of silt traps and surface drainage systems to demonstrate systems are operating in accordance with the design specifications	Compliant	All surface drainage systems designed internally to the mine pit.
No adverse impact to the quality and quantity of ground water caused by mining operations to existing users and water dependent ecosystems	Annual records indicate that annual groundwater extraction rates of production wells (measured by flow meter) are in accordance with approved Water Allocation Plan (average 42GL over 10 years and not exceeding 6GL per water use year)	Compliant	Review of groundwater extraction data: <i>CORP-ENV-REC-022</i>
No adverse impact to the quality and quantity of ground water caused by mining operations to existing users and water dependent ecosystems	Records demonstrate that all spills within the lease areas are recorded, reported to the EPA and DMITRE (as required) and clean up actions completed, in accordance EPA / DMITRE agreed procedures to ensure that no contaminated water leaves the lease area	Compliant	Review of Environmental Incident records: <i>CORP-ENV-REC-016</i>
	Fortnightly visual inspections indicate the correct storage, transport and distribution of petroleum hydrocarbon or chemicals in accordance with EPA <i>Bunding and Spill Management Guidelines 2007</i>	Compliant	Review of hydrocarbon inspection records: <i>CORP-ENV-REC-003</i>
	Annual groundwater quality measurements (for EC, pH, uranium, thorium, TDS) from each existing monitoring well, landholder wells and production wells (refer Figure 5.4, Appendix L) do not exceed existing baseline conditions by two standard deviations	Compliant	Review of groundwater quality data: <i>REGIONAL WELLS (FIELD RESULTS)</i> <i>REGIONAL WELLS (LABORATORY RESULTS)</i>
Ensure that the existing top and sub soil quality and quantity is maintained	Weekly review of Soil Dig Permit (Ground Disturbance Permits) records indicates that all overburden, subsoil and topsoil within the lease area are removed in separate layers with scrapers/landplanes	Compliant	Review of ground disturbance records: <i>CORP-ENV-REC-035</i>

Table C.1 Compliance Assessment of PEPR compliance criteria

Outcome	Compliance Criteria	Compliance	Evidence
Ensure that the existing top and sub soil quality and quantity is maintained	Annual review of inspection records indicate that all slurry spills from ruptured/split pipelines are managed in accordance with the emergency management procedures and notified to DMITRE within 48 hours	Compliant	Review of PCP operator logs.
Ensure that the existing top and sub soil quality and quantity is maintained	Fortnightly visual inspections indicate the correct storage, transport and distribution of petroleum hydrocarbon or chemicals in accordance with EPA <i>Bunding and Spill Management Guidelines 2007</i>	Compliant	Review of hydrocarbon inspection records: <i>CORP-ENV-REC-003</i>
	Records demonstrate that all spills within the lease areas are recorded, reported to the EPA and DMITRE (as required) and clean up actions completed, in accordance EPA / DMITRE agreed procedures to ensure that no contaminated water leaves the lease area	Compliant	Review of hydrocarbon inspection records: <i>CORP-ENV-REC-003</i>
Ensure that the existing top and sub soil quality and quantity is maintained	Quarterly audits and inspection records demonstrate that waste is stored and correctly disposed in accordance with the Commercial and Industrial Waste Management and Monitoring Plan (Appendix L), and no evidence of waste disposed of on-site	Compliant	All waste disposed offsite weekly as per regular Council collection.
Ensure that the existing top and sub soil quality and quantity is maintained	Monthly photographic inspection of soil stockpiles to ensure topsoil and subsoil volume is maintained through separate stockpiles (managed with survey reference markers) as established immediately following construction of stockpiles	Compliant	Review of stockpile inspection records: <i>CORP-ENV-REC-012</i>

Appendix D

Compliance Assessment
MPL80 (Pyap Transmission Line)

Table D.1 Compliance Assessment of MARP compliance criteria

Condition	Comments	Status
3.1.5 Statutory electrical clearance to vegetation must be maintained to minimise the risk of fire.	Assessment of power line during the reporting period showed that clearance of vegetation will be required in the near future.	Compliant
3.1.6 Once stringing operations are completed, the construction area would be cleaned of remaining waste material. Restoration works would then be carried out so that the land is returned to as close to its original state as possible.	Complete	N/A
During routine operations environmental inspections will be undertaken at six-monthly intervals. Ad-hoc inspections will be made during maintenance activities or in response to non-frivolous complaints by stakeholders.	Six monthly inspections have been undertaken to ensure that adequate vegetation clearance is maintained.	Compliant
6.3.4 Flora <ul style="list-style-type: none"> ■ Where possible, existing tracks adjacent to fence lines will be utilised. ■ Avoid storage of equipment in areas with native vegetation ■ Avoid locating access tracks in native vegetation ■ Rehabilitation of any impacted areas, using indigenous plant species for revegetation 	Assessments of power lines are undertaken from main roads where possible.	Compliant
6.3.6 Fauna <ul style="list-style-type: none"> ■ Ensure site personnel have received sufficient training in native fauna identification and are aware that significant fauna may be in the area, particularly during spring. 	Assessments of power lines are undertaken from main roads where possible. All personnel undertaken MZ Environment and Safety Inductions.	Compliant
6.3.7 Heritage <ul style="list-style-type: none"> ■ If at any time during operations, any significant Aboriginal items or anything they suspect to be a significant Aboriginal item then work will stop at the location and the project manager will be informed, who will in turn inform the Minister (Department for Aboriginal Affairs and Reconciliation). ■ The contractor will be responsible to report the identification of potentially significant items with follow-up by the Leasee. 	No items of Aboriginal Heritage were identified during the reporting period.	Compliant
6.3.9 Wildfire <ul style="list-style-type: none"> ■ Adequate provision and maintenance of clearance between transmission lines and vegetation (trimming expected every three years) ■ Liaise with local Country Fire Service ■ Include an emphasis on bushfire risk in employee and contractor inductions ■ Fit all mobile equipment with fire extinguishers ■ Make mine water truck available to assist with fire control ■ Make mine earthmoving equipment available for firebreak preparation. 	Six monthly inspections have been undertaken to ensure that adequate vegetation clearance is maintained.	Compliant

Table D.1 Compliance Assessment of MARP compliance criteria

Condition	Comments	Status
<p>6.3.10 Contaminant and concrete spills</p> <ul style="list-style-type: none"> ■ All refuelling done with personnel in attendance ■ All spills to be reported to the Environment Officer or delegate within 24 hours ■ Spill kit available for minor spills, with contaminated soil removed from site and appropriately disposed of, then rehabilitation. ■ Contractor to capture and recycle all wash down water, dilute with sufficient fresh water to avoid staining, or disposal to appropriate treatment facility <p>All spills requiring cleanup to be reported to PIRSA within 3 working days.</p>	No operational activities occur on MPL80.	N/A
<p>6.3.11 Solid waste</p> <ul style="list-style-type: none"> ■ Contractor to provide containers as necessary to hold solid waste ■ Solid waste recycled or disposed to licensed landfill 	No operational activities occur on MPL80.	N/A
<p>6.6</p> <ul style="list-style-type: none"> ■ Minor complaints will be recorded and provided to the Minister on an annual basis and available for inspection at any time during working hours. 	No complaints regarding MPL80 were received during the reporting period.	N/A
<p>8.1.1</p> <ul style="list-style-type: none"> ■ Land disturbed during construction will be stabilised. ■ Where native vegetation must be cleared or trimmed, it will be put to the side. Following construction of the transmission line, cut vegetation will be spread on cleared areas to act as mulch and a seed source, and to assist in erosion control. 	Six monthly inspections have been undertaken to ensure that adequate vegetation clearance is maintained.	Compliant
<p>8.2</p> <ul style="list-style-type: none"> ■ Final land use and landform of disturbed areas, at the completion of their effective use, shall be stable and either revegetated or stabilised (depending on previous land use) to minimise erosion potential from water and wind. Wires will be removed then the stobie poles removed from their sockets. Concrete bases will be left in situ as the area involved is very small and their removal would cause disruption to established plants. 	Power line still in operational use.	N/A
<p>8.2.1</p> <ul style="list-style-type: none"> ■ Returning any remnant native vegetation to as near to its original state or a more diverse equivalent will ensure that there is no net conservation loss as a result of the project. ■ A follow-up ecological survey will be undertaken once the decision to decommission and remove the transmission line has been made. 	Power line still in operational use.	N/A
<p>8.2.2</p> <ul style="list-style-type: none"> ■ Rehabilitation of the farmland that may be disturbed during the decommissioning and removal of the transmission line will be carried out in close collaboration with the landowner or leaseholder. 	Power line still in operational use.	N/A

Appendix E

Compliance Assessment
EML6232 (Rubble Pit 1)

Table E.1 Compliance Assessment of MARP compliance criteria

Outcome	Comments	Status
Pre clearance inspections prior to clearing vegetation will be used to highlight (flag) significant vegetation, including areas with mature trees, trees with hollows and habitat suited to conservation-significant fauna.	No operational activities occurred on EML6232 during the reporting period	N/A
Cleared vegetation will be stockpiled for later respreading on adjacent areas of current native vegetation that will be cleared for mining and revegetated the same year.	No operational activities occurred on EML6232 during the reporting period	N/A
Topsoil will be removed by scraper or grader and stored locally ready for future use in revegetation of mined out areas	No operational activities occurred on EML6232 during the reporting period	N/A
Vegetation clearing will be undertaken just prior to site works in order to reduce erosion and topsoil loss resulting from soil exposure.	No operational activities occurred on EML6232 during the reporting period	N/A
Cleared native vegetation will be stored on-site and stored for use as mulch and habitat during revegetation works. Cleared weeds will be removed from site and disposed of appropriately according to local practice.	No operational activities occurred on EML6232 during the reporting period	N/A
Stockpiling of cleared native vegetation will occur in cleared areas on site, not in areas of native vegetation (treed areas).	No operational activities occurred on EML6232 during the reporting period	N/A
Where clearance is required, utilise existing cleared areas (e.g. farm tracks, fire breaks, easements) within the vegetation patch.	No operational activities occurred on EML6232 during the reporting period	N/A
Where possible avoid clearance during conservation significant fauna sensitive periods (e.g. breeding season, young dispersal).	No operational activities occurred on EML6232 during the reporting period	N/A
Obtain approval from PIRSA as delegated decision makers of the Native Vegetation Council under the Native Vegetation Act 1991 and Regulations 2003.	No operational activities occurred on EML6232 during the reporting period	N/A
Relocate fauna habitat (e.g. hollow logs) as per the site Fauna Management Plan.	No operational activities occurred on EML6232 during the reporting period	N/A
Rehabilitate areas cleared of native vegetation as a result of project activities with indigenous native species.	No operational activities occurred on EML6232 during the reporting period	N/A
All earth moving machinery and equipment is clean prior to entering the site and excavation.	No operational activities occurred on EML6232 during the reporting period	N/A
Ensure that weeds are not introduced to the site through other activities.	No operational activities occurred on EML6232 during the reporting period	N/A
Ensure topsoil stockpiles are located in an area away from obvious weed outbreaks.	No operational activities occurred on EML6232 during the reporting period	N/A
Ensure that any weeds existing at the site prior to excavation are controlled by appropriate methods, or not further exacerbated by mining activities.	No operational activities occurred on EML6232 during the reporting period	N/A
Minimise as much as practicable, the movement of topsoil, (particularly if there are dormant seeds existing in the topsoil – many of these can be activated through disturbance).	No operational activities occurred on EML6232 during the reporting period	N/A

Table E.1 Compliance Assessment of MARP compliance criteria

Outcome	Comments	Status
Contribute to or implement coordinated local feral animal control programmes (and native animal control programmes) as required.	Feral animal control undertaken in conjunction with NRM Board.	Compliant
Ensure all quarry machinery is washed down and decontaminated if they have travelled to the project site via the Branched Broomrape Containment Area, or through areas known to contain Phytophthora and Mundulla Yellows.	No operational activities occurred on EML6232 during the reporting period. EML6232 was sprayed regularly for significant weed species.	Compliant
If broomrape is noted within the project area a control programme will be implemented immediately in consultation with the Branched Broomrape Control Centre within the Department of Water, Land and Biodiversity Conservation (1800 245 704). In the unlikely event that Phytophthora is identified within the project area, strategies to minimize the spread (Guidelines, DEH/TSA/PIRSA, 2003). In the unlikely event that Mundulla Yellows is identified on site, general hygiene practices will be used.	No operational activities occurred on EML6232 during the reporting period. EML6232 was sprayed regularly for significant weed species. Broomrape, Phytophthora and Mundulla Yellows were not observed on EML6232 during the reporting period.	Compliant
Liaise with the landowner and Pest Plant and Animal Board (or its successor) to discuss the most effective feral/problem native animal control measures, as necessary.	Feral animal control undertaken in conjunction with NRM Board. All adjacent landowners were contacted during rabbit and fox baiting to notify them of the use of 1080 baits.	Compliant
Flora		
Yearly photo monitoring of existing vegetation will be undertaken to show no loss or damage to native vegetation.	No operational activities occurred on EML6232 during the reporting period. Six monthly photomonitoring of EML6232 was undertaken.	Compliant
Records of annual weed and vegetation assessment (conducted in spring) will be kept to show no new or increased presence of pests and plant diseases in area.	Six monthly surveys of pest animal and weed were undertaken during the reporting period.	Compliant
Native vegetation areas identified will be flagged and all operators will be made aware that these areas of vegetation are not to be disturbed.	No operational activities occurred on EML6232 during the reporting period	N/A
The origin of trucks will be checked to ensure they are cleaned if from declared areas (e.g. Broomrape).	No operational activities occurred on EML6232 during the reporting period	N/A
Fauna		
Integrity of fences and waste storage areas will be checked yearly, records to indicate either there has been no breaches of barriers, or if breached, no deaths of native fauna.	No operational activities occurred on EML6232 during the reporting period. Six monthly inspections of fence lines were undertaken.	Compliant
Records of all feral animals encountered on lease will be kept, and will demonstrate that no new or increased presence of feral animals in the area.	No operational activities occurred on EML6232 during the reporting period. No records of pest animals were kept, however pest animal control undertaken in conjunction with NRM Board.	Compliant
All pits, potential fauna traps or chemical storage areas will be secured to ensure no deaths or injuries to native fauna.	The pit was shaped by previous operators to ensure native fauna were able safe ingress and egress.	Compliant
Waste will be appropriately covered and stored.	No operational activities occurred on EML6232 during the reporting period.	N/A

Table E.1 Compliance Assessment of MARP compliance criteria

Outcome	Comments	Status
Heritage		
No reasonable complaints from Aboriginal groups concerning damage to sites.	No operational activities occurred on EML6232 during the reporting period. During this time there were no complaints received by Aboriginal groups.	Compliant
Heritage awareness training will be conducted for all personnel. Ensure operators read the guidelines as soon as employment commences.	No operational activities occurred on EML6232 during the reporting period. No personnel were trained or inducted into Aboriginal heritage awareness.	N/A
Public safety		
A complaints register will be maintained and all complaints will be investigated to demonstrate no impacts on public health, amenity and safety due to mining operations.	No operational activities occurred on EML6232 during the reporting period. During this time there were no complaints received from the public regarding EML6232.	Compliant
All operators will be made aware of the dangers of large trucks entering public roads and drivers will obey speed limits.	No operational activities occurred on EML6232 during the reporting period	N/A
Road turnout to be upgraded to avoid damage to public road.	No operational activities occurred on EML6232 during the reporting period	N/A
Integrity of fences and signage will be checked yearly and records either show no breaches of barriers, or if breached, no evidence of unauthorised entry. Unsafe areas will be securely fenced and warning signs in place.	No operational activities occurred on EML6232 during the reporting period. Six monthly inspections of fence lines were undertaken.	Compliant
Operations will not cause fires. Fire extinguishers will be kept on site or low cut grasses will be maintained to reduce fire risk.	No operational activities occurred on EML6232 during the reporting period.	N/A
Noise levels will be monitored for any complaints received; results will demonstrate that noise levels in areas off the lease comply with the EPA requirements. The plant will only operate between the hours of 8:00 am and 6:00 pm.	No operational activities occurred on EML6232 during the reporting period.	N/A
Photographic evidence on high risk days (high wind/dry conditions) will be obtained to demonstrate low visible dust from the lease area.	No operational activities occurred on EML6232 during the reporting period.	N/A
A water truck will be available at all times and used on windy days when necessary	No operational activities occurred on EML6232 during the reporting period.	N/A
Annual photo monitoring of mining operations from public areas showing that the pit and infrastructure is not visible.	No operational activities occurred on EML6232 during the reporting period. Six monthly photomonitoring of EML6232 was undertaken.	Compliant
Native trees will be planted along road side.	Native vegetation was planted along the boundary fence line of EML6232	Compliant

Appendix F

Compliance Assessment
Water Allocation

Table F.1 Compliance Assessment of Water Allocation conditions

Water Allocation Condition	Comments	Status
<p><u>Condition 1</u> A maximum of 6,000 megalitres can be taken from the Murray Group Limestone Aquifer per water use year.</p>	<p>Water levels and meter readings were recorded weekly during the reporting period. Monitoring indicates that care and maintenance activities during the reporting period were within the conditions of the <i>Notice of Authorisation to Take Water in the Mallee Prescribed Wells Area</i>.</p>	Compliant
<p><u>Condition 2</u> No more than 42,920 megalitres shall be taken from the Murray Group Limestone Aquifer over the 10 years of this authorisation (based on an average of 4, 292 ML per water use year).</p>	<p>Water levels and meter readings were recorded weekly during the reporting period. Monitoring indicates that care and maintenance activities during the reporting period were within the conditions of the <i>Notice of Authorisation to Take Water in the Mallee Prescribed Wells Area</i>.</p>	Compliant
<p><u>Condition 3</u> The water user must not take water except through a meter, fitted to the satisfaction of the Minister.</p>	<p>All production wells were fitted with water meters during the reporting period.</p>	Compliant
<p><u>Condition 4</u> The water user must immediately report any fault or suspected fault with the meter or meters.</p>	<p>No water meters were faulty during the reporting period.</p>	Compliant
<p><u>Condition 5</u> The water user must not cause, suffer or permit any interference with a meter used for the purposes of measuring the quantity of water used under this Notice or any interference with pipe or fittings that may affect the accuracy of a meter, without the Minister's authority.</p>	<p>No water meters have been interfered with during the reporting period.</p>	Compliant
<p><u>Condition 6</u> The water user must not adjust or alter the meter without the Minister's authority.</p>	<p>No water meters were adjusted or altered during the reporting period.</p>	Compliant
<p><u>Condition 7 and 8</u> The water user must not permit deposits of sand, soil or any other material to build up around a meter.</p>	<p>All production well meters were free from deposition of sand, soil or any other material.</p>	Compliant
<p><u>Condition 9</u> The water user must keep vegetation cleared away from the meter.</p>	<p>All production well meters were free from vegetation during the reporting period and were sprayed for weeds as part of site weed management.</p>	Compliant
<p><u>Condition 10</u> The water user must not damage or destroy the meter.</p>	<p>All production well meters were inspected by the Department for Water during the reporting period and found to be operational.</p>	Compliant

Table F.1 Compliance Assessment of Water Allocation conditions

Water Allocation Condition	Comments	Status
<p><u>Condition 11</u> The water user must comply with the terms and conditions, as authorised under the Mining Act, 1971, of Mineral Leases 6137, 6219, 6220, 6221, 6222, 6223, 6225 and 6226.</p>	<p>All terms and conditions of operational leases were met.</p>	<p>Compliant</p>