Beverley, Beverley North and Four Mile Uranium Mines

MINERAL LEASE 6321

MINERAL LEASE 6387

MINERAL LEASE 6402

Including Extractive Minerals Leases:

6049-6051, 6392, 6384, 6385, 6048 & 6052

2021 Annual Compliance Report

REPORT	Mining Act 1971 and Mining Regulations 2011

2021 Mining Compliance Report – Beverley, Beverley North & Four Mile Mineral Leases

SECTION 1 - DECLARATION OF ACCURACY	
This report is prepared for the Department for Energy and Mining (DEM) to fulfil the annual mining compliance reporting requirements for the 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.	
Name:	Clancy Smith
Position:	Manager – HSSE, Regulatory & Compliance
Company / Agent:	Heathgate Resources Pty Ltd
Signature:	
Date:	31 March 2022
Summary of steps undertaken to review the compliance report to ensure its accuracy:	All data in this report has been provided and reviewed by discipline owners within Heathgate Resources, including Operations Manager, Manager – HSSE, Regulatory & Compliance, Senior Environment Advisor, Senior Radiation Advisor, Production & Resources Superintendent and Chief Geologist.

SECTION 2 – PUBLIC LIABILITY INSURANCE	
Public liability insurance	Please find a copy of the current public liability insurance provided as Appendix 1.

SECTION 3 – IDENTIFICATION						
Mine name(s):	Beverley	Beverley North	Four Mile	EML's (6049, 6050, 6051, 6329, 6384, 6385, 6048, 6052)		
Tenement holder(s):	Heathgate Resources Pty Ltd		Quasar Resources Pty Ltd	Heathgate Resources Pty Ltd		
Operating company:	Heathgate Resources Pty Ltd					
Tenement number(s):	6231	6387	6402	EML's (6049, 6050, 6051, 6329, 6384, 6385, 6048, 6052)		
PEPR(s) document Number:	Beverley Mine PEPR v7.3	Beverley North PEPR v13	Four Mile PEPR v3.2	6049 6050 6051 6392	6384 6385	6048 6052
PEPR document approval date:	05/09/2018	12/05/2016	04/10/2018	01/06/2016	28/02/2011	08/07/1999
Site contact:	**Name:**	Gary Birch – Operations Manager				
	Email:	Gary.Birch@heathgate.com.au				
	Phone number:	08 8110 0500				
Location details:	The Beverley ML 6321, Beverley North ML 6387, and Four Mile ML 6402 are located between the Northern Flinders Ranges and Lake Frome, approximately 550 km north of Adelaide and 300 km north-east of Port Augusta.					
Reporting period:	**From:**	1/1/2021	**To:**	31/12/2021		
Submission date:	31 March 2022					

SECTION 4 - TENEMENTS

All tenements operated by Heathgate Resources Pty Ltd (Heathgate) and included in this compliance report are summarised in Table 1 below.

Table 1: Tenement Summary

Tenement type	Tenement number	Tenement grant date	Tenement expiry date	Status of currency
ML	6321	16/8/2008	25/4/2022	Active
ML	6387	15/12/2010	25/4/2022	Active
ML	6402	26/4/2012	25/4/2022	Active
EML	6048	29/06/2013	25/04/2022	Active
EML	6049			
EML	6050			
EML	6051			
EML	6052			
EML	6384	02/12/2010	01/12/2031	Active
EML	6385	10/12/2010	09/12/2031	Active
EML	6392	03/11/2011	02/11/2032	Active

The tenement boundaries for Mineral Leases 6321, 6387 and 6402 are provided in Figure 1, and Figure 2 for all Extractive Mineral Leases.

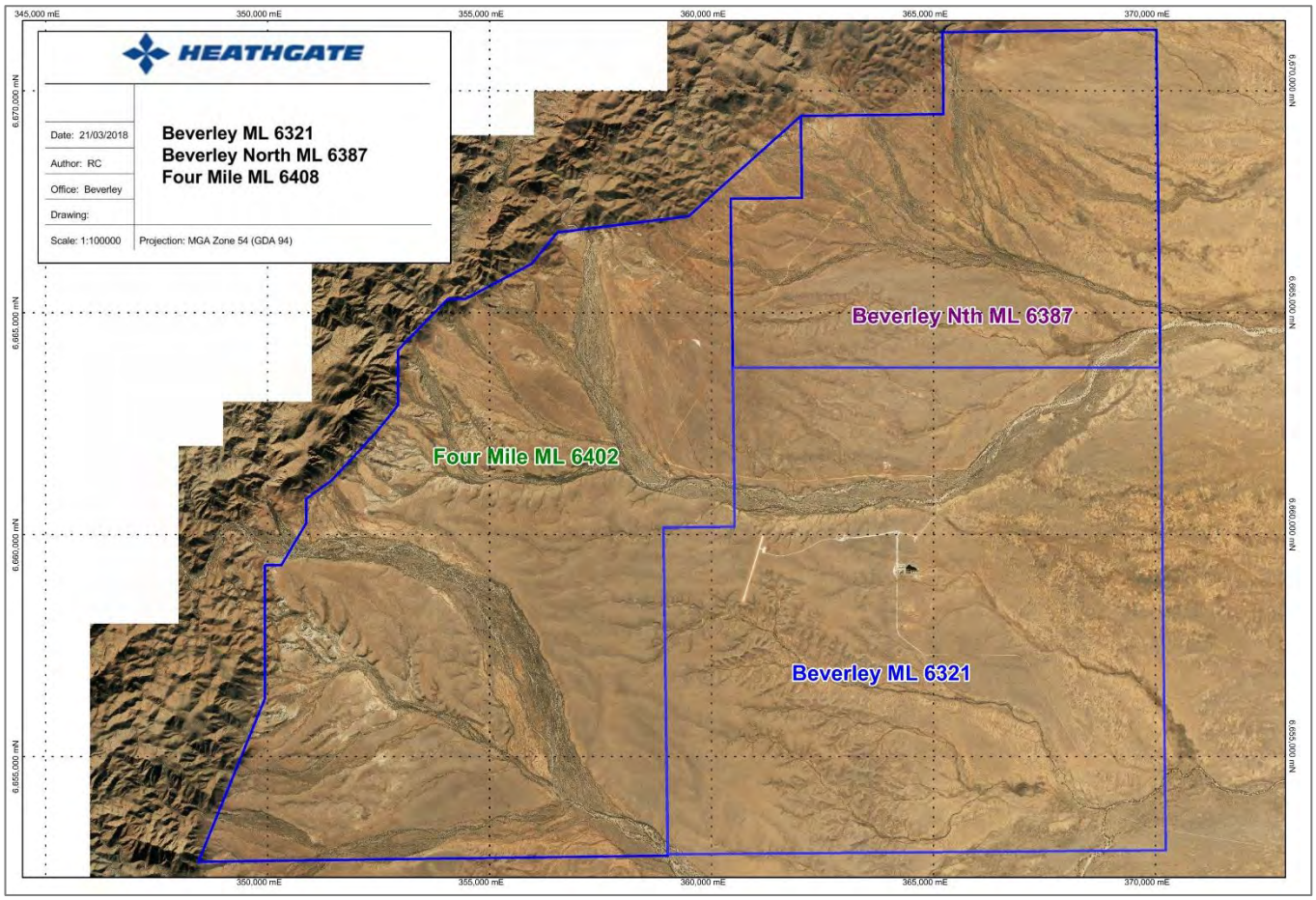

Figure 1: Beverley ML 6321, Beverley North ML 6387 and Four Mile ML 6402 Tenement Boundaries.

Figure 2: Extractive Mineral Leases

SECTION 5 – OTHER APPROVALS

Other key approvals held by Heathgate which provide authorisation to different aspects the mining operation, and relevant to Heathgate's environmental outcomes and tenement conditions are provided in Table 2.

Table 2: Other Approvals

Approval Document	Regulatory authority or other	Supporting documents	Relevant environmental outcome or tenement condition	Status of currency
Environmental Protection Authority (EPA) Licence Number 12918	Environment Protection Authority South Australia	Technical Report in Support of Application for Amendment: Addition of Waste Facility	Soil (Table 6) Groundwater (Table 8)	Current. Expiry 31 October 2025
Environment Protection Authority Licence 50975	Environment Protection Authority South Australia	Radiation Management Plan & Radioactive Waste Management Plan	Air quality (Table 11)	Current. Expiry in June 2022

SECTION 6 – ORE RESERVES AND MINERAL RESOURCES

During 2021 exploration activities were concentrated within the Four Mile ML. During the reporting period, 123 delineation holes were drilled within the Four Mile West region to further delineate the extent of the Four Mile West Resource. Details of the rehabilitation status of all exploration drilling will be provided in a separate submission, Appendix 2.

Ore Reserves and life of mine as of December 2021 will be reported to Government in a separate submission.

SECTION 7 – MINING, PROCESSING AND WASTE STORAGE ACTIVITIES

Please see Table 3 for a summary of In-situ recovery mining and processing activities carried out across all three mining tenements during the mine life, the current reporting period and predicted in the next reporting period.

Table 3: Ore mined and processed summary

Ore mined and processed – mine life	Ore processed – reporting period	Expected quantity of ore to be processed next reporting period
Beverley 7,400 Tonnes	Beverley – No production	Beverley – No production
Beverley North 1.77 Tonnes	Beverley North – No production	Beverley North – No production
Four Mile 11,552 Tonnes	Four Mile 2,178 Tonnes	Four Mile 2,200 Tonnes
Production Notes: Estimated production for 2022 consider installation of the new calciner drier.		

SECTION 8 – COMPLIANCE WITH ENVIRONMENTAL OUTCOMES AND LEADING INDICATOR CRITERIA – MINERAL LEASES

Tables 4 to 12 provide a summary of the compliance of the Beverley, Beverley North and Four Mile mining tenements with all operational outcomes, as specified in the tenement conditions or approved PEPR.

Table 4: Fauna Compliance Assessment

Aspect:	Fauna	**Tenement(s):**	Beverley ML 6321, Beverley North ML 6387, and Four Mile ML 6402
Outcome:	• No net adverse impacts from the site operations on native fauna abundance or diversity in the lease area and in adjacent areas from site operations (including fire).		
Other licence conditions:	• No introduction of new species of weeds, plant pathogens or pests (including feral animals), nor increase in abundance of existing weed or pest species in the lease area compared to adjoining pastoral properties.		

	Outcome measurement criteria:	**Compliance:**	**Demonstration of Compliance:**
1)	Results of monitoring program show no reduction of native vertebrate density and diversity compared with local area background.	Compliant	The annual fauna survey undertaken in spring 2021 by Ecosphere Ecological Solutions (Appendix 3), concluded that no reduction in native vertebrate density or diversity could be identified when compared with local area background.
2)	Results of monitoring program show no increase in feral vertebrates, compared with local area background	Compliant	The annual feral animal survey also undertaken in spring 2021 by Ecosphere Ecological Solutions (Appendix 3) concluded that there was no increase in feral vertebrates within the ML's when compared to local area background.

	Leading Indicator Criteria:	**Leading Indicator Summary:**
1)	Trends from the monitoring program	As detailed above, the annual fauna survey did not show decreasing or increasing trends in native and feral animals respectively when compared with relevant control sites off lease (Appendix 3).

Effectiveness of Existing Controls:	As no decreasing native fauna species abundance or diversity, or increasing feral vertebrate numbers have been identified, the effectiveness of existing controls has been demonstrated.
Supporting References:	Annual fauna monitoring reports are provided in Appendix 3.

Table 5. Vegetation Compliance Assessment

Aspect:	Vegetation	**Tenement(s):**	Beverley ML 6321, Beverley North ML 6387 and Four Mile ML 6402
Outcome:	• No permanent loss of abundance or diversity to native vegetation on or off the mining lease through clearance, dust/contaminant deposition, fire or other damage unless prior approval under the relevant legislation is obtained. • No introduction of new weeds, plant pathogens or pests (including feral animals), nor increase in abundance of existing weed or pest species in the lease area compared to adjoining pastoral areas. • No uncontrolled fires caused by mining operations.		

	Outcome measurement criteria:	**Compliance:**	**Demonstration of Compliance:**
1)	Demonstrate that all clearing is undertaken within the maximum area approved in the Native Vegetation Management Plan.	Compliant	All vegetation clearances have been carried out in accordance with the Native Vegetation Management Plan, documented with an Environmental Clearance Permit for each clearance event. All cleared areas are subject to and accounted for in SEB figures (Appendix 6).
2)	Flora and fauna surveys demonstrate no new weeds or feral animals (due to mining activities) nor statistically significant increase in abundance of existing weed or pest species in the lease area compared to adjoining pastoral areas.	Compliant	The annual vegetation survey undertaken in spring 2021 by Ecosphere Ecological Solutions concluded that no new weeds (due to mining activities) nor statistically significant increase in abundance of existing weeds in the lease area compared to adjoining pastoral areas (Appendix 4).
3)	Any fires caused by mining operations are controlled within the ML boundary.	Compliant	No fires were recorded on the Beverly, Beverley North or Four Mile MLs in 2021.

	Leading Indicator Criteria:	**Leading Indicator Summary:**
1)	Trends from the monitoring program	As detailed above, the annual vegetation survey concluded that no new weeds or feral animals (due to mining activities) nor statistically significant increase in abundance of existing weed or pest species in the lease area compared to adjoining pastoral areas (see Appendix 4).
2)	Progressive SEB accounting in the annual compliance report.	SEB accounting figures are contained Appendix 6 in this report

Effectiveness of Existing Controls:	As full compliance with operational outcomes for vegetation can be demonstrated, existing control measures specific to vegetation can also be demonstrated.
Supporting References:	Vegetation monitoring reports are provided in Appendix 4. SEB accounting figure are provided in Appendix 6.

Table 6: Soil Compliance Assessment

Aspect:	Soil	**Tenement(s):**	Beverley, Beverley North and Four Mile ML's
Outcome:	• Soil affected by mining activities is suitable for a return to (pre-mining) pastoral use.		
Other licence conditions:	• No contamination of land and soils either on or off the site caused by waste products and hazardous materials used in the mine operations that would compromise a return to pastoral use. • No adverse impacts to workers, public or the environment due to radon release, uranium bearing-dust, nor radiological aspects of seepages and spills (see also • Table 7 & 11).		

Outcome measurement criteria:		**Compliance:**	**Demonstration of Compliance:**
1)	All sites subject to mining or disposal solution spills meet the radiological criteria as defined in the RWMP.	Compliant	All radiological mining or disposal solution spills that occur outside active operational areas are remediated immediately. Spills that occur in accessible areas within active operational areas are remediated immediately. Any radiological spill that may occur within an active operational area that cannot be readily accessed is logged in our spill register and incident management system (InControl). The following details are recorded in InControl to ensure there is adequate remediation on conclusion of operations; spill coordinates, spill type and distribution extent. Heathgate's spill register and incident management system are available for review during every routine regulatory site inspection.
2)	Management and clean-up of spills will be undertaken in accordance with EPA and DPC requirements	Compliant	Soils that are radiologically affected above the operational contamination criteria will be remediated immediately and buried according to the RWMP. All chemical spills are either treated in-situ where appropriate or removed for disposal in a licenced EPA landfill facility. Preventative controls include. • Wellfields are continually checked by Wellfield Operators and Maintenance personnel. • Continual pressure monitoring of trunklines. • Continual flow monitoring of wellhouses. • Monitoring of wellhead drip trays.
3)	Spills of hazardous materials are assessed as soon as practicable and if so determined cleaned up a. Diesel spills to site specific criteria to be established using NEPM Risk Assessment methodology as recommended by EPA b. Acid or Alkali: spill sites returned to within local background range of pH.	Compliant	All chemical spills are logged within our spill register and incident management system InControl. Spill site coordinates are recorded, the extent of the spill assessed and cleaned up immediately. All chemical spills are either treated in-situ where appropriate or removed for disposal in a licenced EPA landfill facility. Heathgate's spill register and incident management system are provided for regulatory review during every routine regulatory site inspection. Spills are also registered on a map so that upon mine rehabilitation and closure these areas can be monitored, as required, to ensure that any soil affected by mining activities is suitable for return to pre-mining use.
4)	Off-road vehicle movements not approved via an Environmental Clearance Permit are investigated, reported and one of the following actions are taken: fenced off to prevent reuse and rehabilitated or converted to an authorised road subject to Significant Environmental Benefit (SEB).	Compliant	No unauthorised off-road vehicle movements occurred in 2021. An authorised turn around was carried out in the incorrect location in the vicinity of an approved access road. The incident was investigated with minimal vegetation or ground disturbance apparent over approximately 100m2. The incident was determined as non-wilful human error to be the root cause.

Leading Indicator Criteria:		**Leading Indicator Summary:**
1)	Leakage from double-lined ponds is compared to the Target Action Leakage Rate (TALR) of 22 mL/m^2/day	TALR were not exceeded during the reporting period.
2)	Water levels in ponds are checked at least weekly and after >10 mm of rainfall in a day and maintained at least 0.20 m below lowest level of rim	Process plant pond levels have remained within the minimum freeboard of 0.2m throughout the year.
3)	Any leaks detected by automatic systems or visual observation are logged as events and rectified	All leaks detected in process or mining infrastructure during routine operations continue to be logged in Heathgate's electronic maintenance system (Tech1). This maintenance system is also utilised to schedule and manage the completion of rectification works.
4)	Number and nature of spills and clean-ups	During the reporting period, 36 spill events were reported, documented and fully investigated. One reportable spill under the Bachmann Criteria was recorded involving 20 litres of thickener product mixed with flushing water, which sprayed outside the secondary containment, with no risk to staff.

		All spills were risk assessed, investigated and if required, contaminated areas were remediated as per PEPR and RWMP requirements. No reportable spills occurred during the reporting period.
5)	Number of non-compliant ECPs involving off-road incidents	As identified above there were no off road non-compliance during the reporting period.

Effectiveness of Existing Controls:	The management strategies to minimise the risks to soils has been effective during the reporting period. There were no off road incidents record and all spills were managed in accordance with PEPR requirements. Annual soil (creek sediment) monitoring is carried out annually in October/November. Significant rainfall in this period delayed the sample collection process with analysis yet to be received. Results will be submitted once available. It is expected analysis will confirm background analyte levels with no contaminations found in creek sediments, soil is suitable for pre-mining use.
Supporting References:	Beverley evaporation pond level graphs are provided in Appendix 5. Soil (creek sediment) graphs are provided in Appendix 14.

Table 7: Surface Water Compliance Assessment

Aspect:	Surface Water	**Tenement:**	Beverley ML 6321, Beverley North ML 6387 and Four Mile ML 6402
Outcome:	• No compromise of pastoral use of downstream surface water bodies.		
Other licence conditions:	• No adverse impacts to workers, public or the environment due to radon release, uranium bearing-dust, nor radiological aspects of seepages and spills (see also Table 6 & 11).		

Outcome measurement criteria:		**Compliance:**	**Demonstration of Compliance:**
1)	Water quality in; (a) Beverley – North and South Mulga Dams, and (b) Beverley North, Four Mile – downstream water storages (within 5 km of an individual mining/spill site, or the closest accessible significant temporary creek waterhole if there is no water storage within 5 km), shall be measured as soon as it is safe to do so following surface water flow, if there has been any release of mining solution into a flowing stream. This must show no compromise of pastoral use that it is attributable to mine operations.	Compliant	No spills occurred within or within the zone of influence of any ephemeral creek during 2021. There were no 1:10 ARI rainfall events during the reporting period;

Effectiveness of Existing Controls:	The management strategies to minimise the risks to surface water as detailed in the Beverley, Beverley North and Four Mile ML's have been effective to date and have not been modified during the reporting period. A review and update of flood plain mapping, and 1:100 year ARI levels have however been reviewed and updated by Tonkin Consulting in 2018. Surface water dam samples collected following the significant rainfall event confirm that existing controls are effective.
Supporting References:	Beverley Mine Floodplain Mapping – Modelling Summary Report, November 2018, Tonkin Consulting. Surface water graphs are provided in Appendix 13.

Table 8: Hydrogeology – Beverley Compliance Assessment

Environmental Aspect:	Hydrogeology	**Tenement(s):**	Beverley ML 6321
Outcome(s):	• No compromise to pastoral use of the Willawortina aquifer • No compromise of potential pastoral use (should it meet pastoral water quality standards) of the Namba aquifer outside the Beverley mining lease. • No compromise to other existing Great Artesian Basin users within the Beverley mine region		
Other licence conditions:	• The Lessee must, in constructing and operating the lease ensure that there is no compromise to the environmental values of the Namba aquifer outside of the mining lease. • The Lessee must, in constructing and operating the lease ensure that there is no compromise to the environmental values of the Eyre Formation aquifer outside the mining lease. • The Lessee must, in constructing and operating the lease ensure that there is no compromise to the environmental values of the Fractured Rock aquifer.		

Outcome measurement criteria:		**Compliance:**	**Demonstration of Compliance:**
1)	Monitoring of ECL parameters and EC demonstrates that the category of pastoral use of the Willawortina aquifer does not change adversely in relation to ANZECC/ ARMCANZ categories of water use, as a result of mining operations.	Compliant	No ECL exceedances were detected during the reporting period (see Appendix 9).
2)	Appropriate records show LLRW facilities built to design. Groundwater quality monitoring (ECL parameters and EC) shows no compromise of Willawortina that could be attributed to the LLRW facilities.	Compliant	All constructed and closed (LLRW) facilities include a verification that the repository was built in accordance with approved design specifications. Sump water is sampled and analysed where present, returning background levels (see Appendix 7).
3)	No migration of mining and disposal solutions outside the ML as demonstrated by Excursion Control Levels (ECL) monitoring and response.	Compliant	No ECL exceedances detected at any compliance lateral monitoring wells in operational wellfields, see Appendix 9.

4)	GAB use not to exceed the allocated volume specified by license conditions which are issued according to the requirements of the approved Water Allocation Plan, Far North Prescribed Wells Area (DWLBC).	Compliant	GAB extraction volumes for the reporting period were within the licence conditions, which are provided in Figure 7 of Appendix 8.
5)	The pressure in the GAB at the extraction bores remains higher than the maximum pressure in Namba aquifer	Compliant	GAB bores have higher pressure than the maximum pressure in the Namba. Pressure monitoring graphs are provided in Appendix 8.

Leading Indicator Criteria:		**Leading Indicator Summary:**
1)	Water pressures in Namba injection and monitor wells are less than the conservatively calculated aquitard fracture pressure of 760 kPa measured at the wellhead Trends of water level and ECL's	No mining was carried out in the Beverley ML during the reporting period. Activities were restricted to liquid disposal activities in the former Beverley East wellfields (see Appendix 9).
2)	Cell sump monitoring confirms that no water has entered the cell.	Ongoing monitoring of the well confirms minimal residual water is contained in the waste repository.
3)	ECL monitoring trends	No ECL monitoring trends were detected at operational compliance monitoring wells during the reporting period (see Appendix 9).
4)	Volume of water progressively taken from GAB. Water pressures and pressure trends in GAB and EC trends.	No water abstraction quantity or pressure trends from the GAB were identified during the reporting period (Appendix 8).

Effectiveness of Existing Controls:	As full compliance with all hydrogeological outcomes for the Beverley ML can be demonstrated, the effectiveness of all controls specified in the current approved PEPR can also be demonstrated.
Supporting References:	All hydrological data for GAB is provided in Appendix 8. All hydrogeological data for the former mining aquifer and overlying aquifer is provided in Appendix 9.

Table 9: Hydrogeology – Beverley North Compliance Assessment

Aspect:	Hydrogeology	**Tenement:**	Beverley North ML 6387
Outcome(s):	• No compromise to the environmental values of the overlying aquifer (Willawortina Aquifer). • No compromise to the environmental values of the target aquifers (Eyre or Namba Formations) outside the ML. • No compromise to the environmental values of the underlying aquifers (Fractured Rock or GAB Aquifers)		

Outcome measurement criteria:		**Compliance:**	**Demonstration of Compliance:**
1)	Namba Formation. Monitoring of ECL parameters and EC demonstrates no compromise of the environmental values of the overlying aquifer(s).	Compliant	No ECL exceedances in overlying compliance monitor wells were detected during the reporting period (see Appendix 10).
2)	No migration of mining solutions in the target aquifers outside the ML (except for areas where a Cross Boundary Agreement applies that has been accepted by the Director of Mines) as demonstrated by Excursion Control Limit (ECL) and EC monitoring and response. Compliance with the Eyre and Namba Formation outcome will be demonstrated by either no exceedance of ECLs at lateral monitor wells or by demonstration of compliance with the contingency measuresGroundwater quality monitoring (ECL parameters and EC) shows no compromise of Willawortina that could be attributed to the LLRW facilities.	Compliant	No ECL exceedances detected at any compliance lateral monitoring wells in operational wellfields in the reporting period (see Appendix 10).
3)	Monitoring of ECL parameters and EC demonstrates no compromise of the environmental values of the underlying aquifer as a result of mining activities.	Compliant	No ECL exceedances detected at any underlying monitoring wells in the reporting period (see Appendix 10).

Leading Indicator Criteria:		**Leading Indicator Summary:**
1)	Water levels and ECL level trends in overlying monitoring wells (ECL parameters).	No increasing or decreasing ECL or water level trends detected at any compliance monitor well in operational wellfields during the reporting period (Appendix 10). Monitor Well PAMW019 went into exceedance (SO_4) in the start of 2017 (Max value 6 g/L>ECL 2 g/L). Increased sulphate concentration is a result of excursion management actions undertaken in 2012 and the natural groundwater migration post mining. ECL parameters for PAMW019 in 2021 remained steady (see Appendix 10).
2)	Water quality and quality trends in the mined aquifer monitoring and observation wells (ECL parameters).	
3)	Water quality and quality trends in underlying aquifer monitoring wells (ECL parameters)	

Effectiveness of Existing Controls:	Given mining fluid continues to be effectively managed and no excursions of mining fluid have been detected, the effectiveness of existing controls can be demonstrated.
Supporting References:	All hydrological monitoring data for the Beverley North ML is provided in Appendix 10.

Table 10: Hydrogeology – Four Mile Compliance Assessment

Aspect:	Hydrogeology	**Tenement:**	Four Mile ML 6402
Outcome(s):	• No compromise to the environmental values of the overlying Willawortina or Namba aquifers. • No compromise to the environmental values of the target aquifer (Eyre Formation and FM Diamictite aquifer) outside the ML. • No compromise to the environmental values or reduction in aquifer pressure of the FRA outside the ML.		

	Outcome measurement criteria:	**Compliance:**	**Demonstration of Compliance:**
1)	Monitoring of ECPs will be used to demonstrate there has been no compromise to the environmental values of the Willawortina and Namba aquifers, should they be present and saturated, as a result of mining operations.	Compliant	No ECL exceedances were detected in any overlying aquifers during the reporting period (see Appendix 11).
2)	No migration of mining solution in the target aquifers (Eyre Formation or FM Diamictite aquifer) outside the ML (except for areas where a Cross-Boundary Co-ordination Agreement applies that has been accepted by the Director of Mines). The protection of environmental values of the Eyre Formation and FM Diamictite aquifers will be demonstrated by no exceedance[1] of two ECLs at lateral compliance monitor wells.	Compliant	No ECL exceedances detected at any lateral monitoring wells in the reporting period (see Appendix 11).
3)	In order to demonstrate that there has been no compromise to the; a) environmental values, or b) reduction in aquifer pressure of the FRA outside the ML, the following outcome measurement criteria's have been established: <u>FMNE (Unconnected hydrogeological setting):</u> • Maintenance of an upward pressure differential between the Eyre Formation outside the wellfield, at a lateral monitor well and a FRA monitor well underlying the wellfield. • No exceedance of two ECLs at designated underlying Wellfield FRA monitor wells. <u>FMW & FME (Variably connected hydrogeological setting):</u> • Maintenance of the inward pressure gradient i.e. as measured between FRA monitor wells near the ML Boundary and their paired FRA monitor wells adjacent the mining zone.	Compliant	No ECL exceedances detected at any underlying monitoring wells in the reporting period (see Appendix 11). All pressure differentials were maintained during the reporting period (Appendix 11).

	Leading Indicator Criteria:	**Leading Indicator Summary:**
1)	Water levels and water level trends, water quality and water quality trends in the Willawortina/Namba Formation.	No increasing or decreasing ECL and water level trends were detected in the overlying aquifer during the reporting period (Appendix 11).
2)	Water quality and water level trends in lateral monitor wells in the Eyre Formation and FM Diamictite Aquifers.	No increasing or decreasing ECL and water level trends were detected during in the mining aquifer during the monitoring period (Appendix 11).
3)	<u>Four Mile – All Areas</u> • Monitoring of water levels in the FRA on the Mine Lease Boundary records a reduction of aquifer pressure outside the natural fluctuation range. <u>FMNE (Unconnected hydrogeological setting)</u> • Water quality and quality trends in FRA monitor wells in unconnected settings. • A 30% reduction in the pressure differential between the Eyre Formation at a lateral monitoring well and the underlying FRA at a central FRA monitoring well. <u>FMW & FME (Variably connected hydrogeological setting)</u> • A 30% decrease in the FRA pressure gradient caused by an increase in pressure detected by the downgradient well of an FRA central-boundary monitor well pairs.	No increasing or decreasing ECL detected within the FRA. No pressure trends outside of agreed values detected. Routine monitoring of a fractured rock aquifer (FRA) underlying monitoring well (4UMW016), located on the Four Mile side of the Four Mile/Beverley North ML boundary returned a decrease in water level of 4.78 m from 18 May (40.60 m) to 15 June (45.38 m) As this represents a reduction in FRA pressure outside the ± 1.6 m range of recorded baseline fluctuations, it is a reportable event in

[1] Except for areas where a Cross Boundary Co-ordination Agreement applies that has been accepted by the Director of Mines, as demonstrated by ECP and EC monitoring and response.

Leading Indicator Criteria:		Leading Indicator Summary:
		accordance with the approved PEPR (v3.2). (Reported June 2021, DEM, EPA & DEW). It should be noted that 4UMW016 is approximately 5 kilometres away from any active mining wellfield, which is currently at Four Mile West. A 30% decrease between FRA monitor wells near the ML Boundary and their paired FRA monitor wells adjacent the mining zone. has not occurred

Effectiveness of Existing Controls:	Given mining fluid continues to be effectively managed and no excursions of mining fluid have been detected, the effectiveness of existing controls can be demonstrated.
Supporting References:	All hydrological monitoring data for the Four Mile ML is provided in Appendix 11.

Table 11: Air Quality / Radiation Compliance Assessment

Aspect:	Air Quality / Radiation	**Tenement:**	Beverley ML 6321, Beverley North ML 6387 and Four Mile ML 6402
Outcome:	• No adverse impacts to workers, public or the environment due to radon release, uranium bearing-dust, nor radiological aspects of seepages and spills (see • • Table 6 & • Table 7).		

Outcome measurement criteria:		Compliance:	Demonstration of Compliance:
1)	Estimated radiation doses to the public (and workers) within applicable limits as defined under the Radiation Protection and Control (RPC) Act 1982.	Compliant	• Radiation monitoring was carried out as per the approved monitoring plan. • Estimated doses to members of the public remained low and well below the annual limits (Appendix 12). • Uranium dust and radon decay products – monitored doses are calculated and are within applicable limits as defined in the RPC Act (Appendix 12).
Leading Indicator Criteria:			**Leading Indicator Summary:**
1)	Trends from monitoring of radon decay products and uranium dust in the: (a) Beverley – processing plant, ponds and accommodation camp areas, (b) Beverley North – satellite plants and wellfields remain below the investigation levels, and (c) Four Mile – wellfields remain below the investigation levels.		• Trends from uranium dust and radon decay products remain below investigation levels (Appendix 12).

Effectiveness of Existing Controls:	• As radiation doses to both employees and public remained low and within the applicable limits defined under the RPC Act 1982, the effectiveness of existing controls can be demonstrated.
Supporting References:	• Airborne radiological concentrations and dose assessments are provided in Appendix 12.

Table 12: Heritage

Aspect:	Heritage	**Tenement:**	Beverley ML 6321, Beverley North ML 6387 and Four Mile ML 6402
Outcome:	• No disturbance to Aboriginal artefacts or sites of significance caused by mine activity unless prior approval under the relevant legislation is obtained. • Beverley ML– Commitments to Traditional Owners, as set out in agreements, are met.		

Outcome measurement criteria:		Compliance:	Demonstration of Compliance:
1)	Documented Aboriginal Heritage Clearance surveys of all operational areas.	Compliant	All operational areas have fully documented Aboriginal Heritage Clearance (work area clearances) surveys completed.
2)	Commitments to Traditional Owners (TO) reviewed and discussed at the Beverley Advisory Committee (BAC) to the satisfaction of members (as the agreement is confidential the measurement criterion will be the absence of disputes requiring legal action).	Compliant	Routine quarterly advisory committee meetings with the Traditional Owners were canceled by mutual agreement during 2021 due to Coronavirus and their Prescribed Body Corporate (Adnyamathanha Traditional Lands Association) being in Special

			Administration (by directive from ORIC). No disputes requiring legal action occurred during the reporting period.
3)	Audits show flagged areas are not disturbed.	Compliant	No evidence of disturbance within flagged areas was identified during routine environmental audits.

Leading Indicator Criteria:		Leading Indicator Summary:
1)	Near-miss incident reports relating to potential disturbance of flagged areas.	• An approved off track turn around was carried out in the incorrect location. The action was carried out in vicinity of an unflagged heritage site creating the potential for disturbance. Aboriginal Liaison Officer inspection revealed no disturbance nor damage was sustained. The site has since been was flagged off.

Effectiveness of Existing Controls:	• Implementation of control measures as defined in the Beverley, Beverley North and Four Mile PEPR's are in place to reduce the risk of disturbance to Aboriginal artefacts or sites of significance.
Supporting References:	Incident reports and supervisor reports.

SECTION 9 – COMPLIANCE WITH ENVIRONMENTAL OUTCOMES AND LEADING INDICATOR CRITERIA – EXTRACTIVE MINERAL LEASES

Tables 13 to 20 provide a summary of the compliance of the EML's 6048, 6049, 6050, 6051, 6052, 6384, 6385 and 6392. as specified in the tenement conditions or approved PEPR.

Table 13: Native Vegetation

Aspect:	Vegetation	**Tenement(s):**	6049, 6050, 6051 & 6392
Outcome:	• Ensure no permanent loss of abundance or diversity on or off the Lease through clearance, dust/contaminant deposition, fire, other damage to native vegetation unless prior approval under the relevant legislation is obtained.		

Outcome measurement criteria:		Compliance:	Demonstration of Compliance:
1)	Measurement of and progressive accounting of the actual area cleared (by direct or indirect means) will show that all vegetation clearance has occurred within the approved area (see EMLs PEPR, 2016)	Compliant	Vegetation clearance has occurred across EML6049. This was the only EML to experience vegetation clearance during the reporting period. Cleared area is accounted for in SEB calculations.
2)	Equivalent SEB compensation accrued will be undertaken in the Annual Compliance Report (ACR) to demonstrate all clearing done with approval.	Compliant	
3)	Incident reports (or lack thereof) regarding fires, fuel spill or other damage.	Compliant	No incidents reported for the reporting period.
4)	Annual site inspections show no offsite damage or clearance of native vegetation derived from mining activities.	Non-Compliant	Heavy machinery used to excavate EML6049 was parked outside of the EML boundary on Wooltana Pastoral Lease without permission (Heathgate hold the Wooltana Pastoral Lease). Heathgate Environmental Staff and Aboriginal Liaison investigated and assessed the site to find no sites of significance had been disturbed and nominal disturbance to native vegetation had occurred given the gravel nature of the area. No other offsite damage or clearance of native vegetation was identified from mining activities on other EMLs.

Table 14: Weeds and Pests

Aspect:	Weeds and Pests (feral animals)	**Tenement(s):**	6049, 6050, 6051, 6384, 6385 & 6392
Outcome:	• No introduction of new species of weeds, plant pathogens or pests (including feral animals), nor increase in abundance of existing weed or pest species in the Lease area compared to adjoining land.		

Outcome measurement criteria:		Compliance:	Demonstration of Compliance:
1)	Comparison of quarry and analogue area, weed and pest inspections conducted on an annual basis show no significant increase or new introductions of weeds or pest species in the lease area due to mining compared to the analogue (EML's 6049, 6050, 6051 & 6392).	Compliant	No significant increase or new introductions of weeds or pests identified in lease area in comparison with surrounding area.
2)	Satisfactory outcome of annual inspections (EML's 6384 & 6385)	Compliant	

Table 15: Soil

Aspect:	Soil	Tenement(s):	6048 6049, 6050, 6051, 6052 & 6392
Outcome(s):	• The Lessee must in constructing and operating the Lease ensure that the existing soil quality and quantity is maintained • The lessee shall ensure that topsoil is progressively stripped ahead of quarrying and shall be temporarily stockpiled for use in the progressive rehabilitation of land disturbed by mining. • The lessee shall ensure that all land disturbed by quarrying operations is, when practicable to do so and in accordance with the appropriate seasonal conditions, progressively re-spread with topsoil and sown to a mixture of grasses to prevent soil erosion to the satisfaction of the Chief Inspector of Mine.		

Outcome measurement criteria:		Compliance:	Demonstration of Compliance:
1)	Results of annual environmental inspection including annual monitoring photos of topsoil stockpiles compared to baseline photos show no significant loss of topsoil.	Compliant	No significant loss of topsoil identified.
2)	Repair of any erosion if highlighted by annual environmental inspection (noted in ACR)	Not relevant	No erosion repairs required.
3)	Vegetation regrowth on closure is satisfactory.	Not relevant	Closure has not yet commenced

Table 16: Heritage

Aspect:	Heritage	Tenements:	6049, 6050, 6051 & 6392
Outcome:	• No disturbance to Aboriginal or European artefacts or sites of significance unless prior approval under the relevant legislation is obtained.		

Outcome measurement criteria:		Compliance:	Demonstration of Compliance:
1)	Mine records to demonstrate that work ceased on discovery and appropriate authorities advised of disturbance to any Aboriginal or European Heritage sites on the lease during mining operations and that work commenced only after appropriate authorization (EML's 6049, 6050, 6051 & 6392).	Compliant	Heritage surveys have been undertaken across all EMLs. No Aboriginal or European heritage sites encountered.
2)	Keep records of complaints and any artefacts discovered and investigate to demonstrate no inappropriate actions by mine operator (EML's 6385 & 6385).	Compliant	No artefacts identified within the EML. No complaints received during the reporting period.

Table 17. Hydrocarbon Management

Aspect:	Hydrocarbon management	Tenement(s):	6049, 6050, 6051, 6384, 6385 & 6392
Outcome(s):	• Hydrocarbon storage and refueling facilities to be bunded in accordance with Environment Protection Authority requirements (EML's 6049, 6050, 6051 & 6392). • No contamination of soils by fuel spills that would prevent return to pastoral use (6384 & 6385).		

Outcome measurement criteria:		Compliance:	Demonstration of Compliance:
1)	Records demonstrate that all spills (fuel and other contaminants) have been investigated, cleaned up and managed in accordance with requirements of the Environment Protection Act.	Compliant	Operator excavating EML6049 noted a small rock puncture on a Prime Mover fuel tank had caused 3 litres of diesel to leak onto the ground inside EML boundary. Tank was drained and repaired; contaminated soil excavated to HGR contaminated waste repository.

Table 18. Third Party Property

Aspect:	Third Party Property	Tenement(s):	6049, 6050, 6051, 6384, 6385 & 6392
Outcome(s):	• No unauthorised damage (including that caused by fire) to adjacent public or private property and infrastructure (including roads).		

Outcome measurement criteria:		Compliance:	Demonstration of Compliance:
1)	Any complaints of unauthorised damage will be recorded in the mine logbook at the time of the complaint and investigated within 7 days (or any other time as agreed with DSD Mining Regulation) to show that the mine operator did not cause the damage through mining operations (EML's 6049, 6050, 6051 & 6392).	Compliant	No complaints were received during the reporting period.
2)	Recording of any incident in relation to third party property damage and independent investigation of all incidents (EML's 6049, 6050, 6051 & 6392).	Compliant	No incidents of third party property damage occurred during the reporting period.
3)	Road used is kept in repair consistent with nearby parts of road not used (EMLs 6384 & 6385).	Not relevant	Road was not used during the reporting period.

Table 19. Unauthorised Access

Aspect:	Unauthorised Access	Tenement(s):	6049, 6050, 6051, 6384, 6385 & 6392
Outcome(s):	• No public injuries and or deaths resulting from unauthorised entry to the site that could have been reasonably prevented		

Outcome measurement criteria:	Compliance:	Demonstration of Compliance:

1)	Independent investigation of all incidents of entry of members of the public to the mining operations (which resulted in injury or death) to be completed in 14 days or as agreed with the Chief Inspector of Mines to demonstrate that the mine operator could not have reasonably prevented the incident from occurring.	Compliant	No incidents of entry of members of the public during the reporting period.

Table 20. Traffic

Aspect:	Traffic	**Tenement(s):**	6049, 6050, 6051 & 6392
Outcome(s):	• No traffic accidents involving the public at mine access points that could have been reasonably prevented by the lessee		

Outcome measurement criteria:		**Compliance:**	**Demonstration of Compliance:**
1)	All traffic accidents involving the public at mine access points are recorded in a mine logbook.	Compliant	No traffic accidents occurred during the reporting period.
2)	All incidents will be investigated by a suitable qualified independent third party within one calendar month (or any other time as agreed with DSD Mining Regulation) and the results of the investigation show that the incident could not have been reasonably prevent by the Tenement Holder.	Compliant	No incidents were reported during the reporting period.

SECTION 10 – COMPLIANCE WITH NON-OUTCOME BASED TENEMENT CONDITIONS

A compliance assessment of all non-outcome based tenement conditions associated with the Beverley, Beverley North and Four Mile mining tenements is provided in Tables 21, 22 and 23 respectively.

Table 21: Compliance with non-outcome based tenement conditions – Beverley ML

Non-Outcome Conditions – Beverley ML		**Compliance Status**	**Evidence demonstrating compliance with tenement condition**
1	Mining operations authorised by this lease must be only for the recovery of Uranium.	Compliant.	Mining operations are as detailed in Table 3.
2	The Lessee must keep accurate records of the quantity, value and manner of disposition of all minerals mined and, whenever required to do so, submit the records for inspection by any person authorised by the Director of Mines.	Compliant.	No records requested for inspection.
3	The Lessee must not conduct any mining operations on the land until a Mining and Rehabilitation Program (MARP) has been approved by the Minister.	Compliant.	A revision of the 2008 MARP was approved by DMITRE (now Department for Energy and Mining) on 9 December 2013. This document was re-named Beverley Mine PEPR, Version 7.3, September 8, 2018.
4	The MARP must comply with the requirements of guidelines approved by the Director of Mines and include environmental outcomes and criteria that are developed in consultation with relevant stakeholders.	Compliant.	The current Beverley Mine PEPR, v7.3, 2018, approved by DEM on September 8, 2018.
5	The Lessee agrees to the approved MARP being made available for public inspection.	Compliant.	The Beverley Mine PEPR is available to the public on the DEM website.
6	The Lessee must demonstrate upon request and to the Director of Mines, the Lessee's capability and competence to comply with the requirements of the Mining Act, 1971, the conditions of this lease and the MARP.	Not relevant.	No request has been made by the Director of Mines.
7	The Lessee accepts that the Director of Mines may withdraw a MARP approval if, in the Director's opinion, the Lessee has not complied with the approval, or has not demonstrated satisfactory capability to comply with the approval.	Not relevant.	No withdrawal request has been made from the Director of Mines.
8	The Lessee must provide to the Director of Mines, a Mining and Rehabilitation Compliance Report (MARCR) on operations carried out on the lease and compliance with the approved MARP. The MARCR must be submitted every year, within 3 months after the anniversary of the date the lease was granted, or at some other time agreed with the Director of Mines in accordance with guidelines approved by the Director of Mines. The Lessee agrees to the MARCR being made available for public inspection.	Compliant.	Evidence of compliance is detailed in this document.
9	The Lessee must, if requested by the Director of Mines, undertake an independent audit of achievement of the environmental outcomes in the MARP, by an independent expert approved by the Director of Mines. The audit will be made available to the public, in a manner and form as determined by the Director of Mines.	Compliant.	No independent audit was requested during the reporting period.
10	The Lessee must provide to PIRSA a Mine Completion Report prior to lease relinquishment, in accordance with guidelines approved by the Director of Mines.	Not relevant.	Mine closure did not commence during the reporting period.

Non-Outcome Conditions – Beverley ML		Compliance Status	Evidence demonstrating compliance with tenement condition
11	The Lessee must, prior to commencing operations under this lease and for the duration of the lease maintain public liability insurance to cover all operations under the lease in the name of the Lessee for a sum not less than $50 million or such greater sum as specified by the Director of Mines and make such amendments to the terms and conditions of the insurance as the Director of Mines may require.	Compliant.	See Appendix 1.
12	The Lessee must report any non-compliant criteria that demonstrate a breach of the environmental outcomes to be achieved (as detailed in the MARP) to the Director of Mines. A report must be provided after the Lessee becomes aware of the non-compliance, by the close of the next business day or such time period as specified in the MARP.	Compliant.	As identified in Table 4 to Table 12 for the reporting period.
13	The Lessee must, before commencing operations under this lease, lodge a bond in accordance with the Mining Act, 1971 of such an amount of the surety as determined from time to time by the Minister, to cover the full cost of rehabilitation liability assessed by an independent third party at any time. In requesting a review of the bond, the Minister may request that written quotes from a third party are obtained by the lessee for the cost of rehabilitating the site to the requirements specified in the approved MARP. The Lessee must meet all the charges and costs in obtaining and maintaining the Bond.	Compliant.	Full security bond held by the Department for Energy and Mining.
13	The Lessee must in constructing and operating the lease ensure that there are no public injuries and or deaths resulting from unauthorised entry to the site that could have been reasonably prevented.	Compliant	No safety or security events were recorded during the reporting period for unauthorised entry, injury or death of members of the public. A tourist group consisting of 3 vehicles used a minor station track along the southern edge of the mine lease (6km from operational areas) to access Paralana Hot Springs. The track was marked with a no unauthorised assess sign, adjoining a public road. The group were spoke to by an HGR operator, access restrictions were explained. As a preventative control measure, updated larger “No Unauthorized Access” signs have been installed at all potential access gates and points.
14	Where the pastoral lease holder differs from the mining lease holder, the Lessee must ensure that the occupier of the land is fully advised of their program of activities, particularly in regard to the impact of operations on the land and rehabilitation progress.	Not relevant	Heathgate is the lease holder of Wooltana Pastoral Lease.
15	The Lessee must, in constructing and operating the lease, ensure that there is no unauthorised damage to adjacent public or private infrastructure.	Compliant	No reported damage to adjacent public or private infrastructure was identified during the reporting period.
16	The Lessee must demonstrate prior to lease expiry or surrender that the following outcomes (in so far as they may be affected by mining operations) will be achieved indefinitely post mine closure to the satisfaction of the Director of Mines.	Not relevant	Mining not yet completed.
16a	No change, outside of natural background variation, to the water quality of the GAB.		
16b	No change, outside of natural background variation, to the water quality of the Willawortina Formation.		
16c	No compromise of potential pastoral use (should it meet pastoral water quality standards) of the Namba aquifer outside the Beverley mining lease.		
16d	The external visual amenity of the site is acceptable to relevant stakeholders.		
16e	Risks to the health and safety of the public and fauna are as low as reasonably achievable.		
16f	Ecosystem and landscape function is resilient, self-sustaining and indicating that the pre-mining ecosystem and landscape function will ultimately be achieved		
16g	All waste materials left onsite are chemically and physically stable		

Table 22: Compliance with non-outcome based tenement conditions – Beverley North ML

Non-Outcome Conditions – Beverley North ML		Compliance Status	Evidence demonstrating compliance with tenement condition
1	Mining operations authorised by this lease must be only for the recovery of Uranium.	Compliant.	Mining operations are as detailed in Table 3.
2	The Lessee must not commence or undertake any mining operations the land until a Mining and Rehabilitation Program (MARP) has been approved by the Minister and a bond has been paid in accordance with Section 62 of the Mining Act 1971.	Compliant.	The original MARP was approved in 2011, the current version 12.3 was approved on May 12, 2016. A full bond is held by DEM to cover all decommissioning and remedial requirements at Beverley North.
3	The Lessee must prepare a MARP that complies with the requirements of guidelines approved by the Director of Mines and include criteria that are developed in consultation with relevant stakeholders.		
4	The criteria included in the MARP must demonstrate clear and unambiguous achievement of the environmental and mine closure outcomes specified in the Second Schedule by: Including the specific parameters to be measured and monitored by the Lessee Specifying the locations that the parameters will be measured, or how these locations will be determined Clearly stating the acceptable values for demonstrating achievement of the outcome, with consideration of any inherent errors of measurement Specifying the frequency of monitoring by the Lessee Identifying what background[25]	Compliant.	All criteria described in the Beverley North PEPR (Version 12.3) approved by the DPC on May 12, 2016.
5	The Lessee Must implement and comply with the approved MARP.	Compliant.	Compliance demonstrated via this document.
6	The Lessee must review the MARP on request of the Director of Mines within a time specified in the request and submit the revised MARP for approval to the Director of Mines.	Not relevant.	No request has been made by the Director of Mines during the reporting period.
7	The Lessee agrees to the approved MARP being made available for public inspection.	Not relevant.	Beverley North PEPR (Version 12.3) is available to the public on the DEM website.
8	The Lessee must provide information as requested by and to the Director of Mines, on the Lessee's capability and competence to comply with the requirements of the Mining Act, 1971, the conditions of this lease, and the MARP in accordance with approved guidelines or as otherwise specified by the Director of Mines	Not relevant.	No request has been made by the Director of Mines during the reporting period.
9	The lessee must provide to the Director of Mines a Mining and Compliance Report (MARCR) on operations carried out on the Lease and compliance with the approved MARP. The MARCR must be submitted every year, within 2 months after the anniversary of the date the Lease was granted, or at some other time agreed with the Director of Mines in accordance with guidelines approved by the Director of Mines. The Lessee agrees to the MARCR being made available for public inspection.	Compliant.	Compliance demonstrated via this document.
10	The Lessee must, if requested by the Director of Mines, undertake an independent audit of achievement of the environmental outcomes in the MARP, by an independent expert approved by the Director of Mines and submit the audit to the Director of Mines. The lessee agrees to the audit being made available for public inspection. The Lessee must meet all the charges and costs in undertaking the independent audit.	Not relevant.	No request has been made by the Director of Mines during the reporting period.
11	At least 3 months prior to Lease relinquishment or expiry, the Lessee must provide to the Minister a Mine Completion Report prepared in consultation with the landowner and in accordance with guidelines approved by the Director of Mines, which demonstrates achievement of the closure criteria as specified in the current MARP.	Not relevant.	Mine closure has not yet commenced.
12	The Lessee must, prior to commencing operations under this Lease and for the duration of the lease maintain public liability insurance to cover all operations under the Lease in the name of the Lessee for a sum not less than $50 million or such greater sum as specified by the Director of Mines, and make such amendments to the terms and conditions of the insurance as the Director of Mines may require.	Complaint	See Appendix 1.

Non-Outcome Conditions – Beverley North ML		Compliance Status	Evidence demonstrating compliance with tenement condition
13	The Lessee must report any non-compliance with these conditions and approved MARP to the Director of Mines. A verbal notification must be provided within 24 hours, after the Lessee becomes aware of the non-compliance. A written report must be provided within 3 calendar days or such time period as approved by the Director of Mines.	Complaint	As identified in Table 4 to Table 12, no non-compliances have occurred in the reporting period.
14	In requesting a review of the bond required under the Mining Act 1971 the Minister may request that written quotes from a third party are obtained by the Lessee for the cost of rehabilitating the site to the requirements specified in the approved MARP.	No relevant.	No request has been made by the Minister for a third party review of the rehabilitation bond.
15	The Lessee must in constructing and operating the lease ensure there are no uncontrolled fires caused by mining operations.	Compliant	No uncontrolled fires occurred within the mining lease.
16	The Lessee must in constructing and operating the lease ensure that here are no public injuries and or deaths resulting from unauthorised entry to the site that could have been reasonably prevented.	Compliant	No unauthorised entry occurred during the reporting period.
17	Where the pastoral lease holder differs from the mining lease holder, the Lessee must ensure that the occupier of the land is fully advised of their program of activities, particularly in regard to the impact of operations on the land and rehabilitation process.	Not relevant	Heathgate are the holders of the Wooltana Pastoral Lease on which the Beverley North Operation is contained.
18	The Lessee must, in constructing and operating the lease ensure there is no unauthorised damage to adjacent public or private infrastructure.	Compliant	No unauthorised damage to public or private infrastructure occurred within the reporting period.

Table 23: Compliance with non-outcome based tenement conditions – Four Mile ML

Non-Outcome Conditions – Four Mile ML		Compliance Status	Evidence demonstrating compliance with tenement condition
1	Mining operations authorised by this Lease must only be for the recovery of uranium as outlined in the mining lease proposal document dated 7th January 2009 and subsequent response document dated 19th March 2009.	Compliant	Only uranium is mined within the Four Mile ML.
2	In accordance with Regulation 86(1)(a) the Lessee must provide a Compliance report every year, within 2 months after the anniversary of the date the Lease was granted, or at some other time agreed with the Minister.	Compliant	As per this report.
5	The Lessee agrees to the approved Program for Environment Protection and Rehabilitation (PEPR) (section 70B(5)) and any Compliance or Incident report submitted in accordance with Regulation 86 or 87 being made available for public inspection.	Compliant	Condition accepted.
6	In accordance with Regulation 90(1) the Lessee must, prior to commencing operations under this Lease and for the duration of the Lease, maintain public liability insurance to cover all operations under the Lease in the name of the Lessee for a sum not less than $50 million or such greater sum as specified by the Minister, and make such amendments to the terms and conditions of the insurance as the Minister may require.	Compliant	See Appendix 1.
7	In requesting a review of the bond required under the Mining Act 1971 the Minister may request that written quotes from an independent third party approved by the Minister are obtained by the Lessee for the cost of rehabilitating the site to the requirements specified in the approved Program under Regulation 65(2).	Compliant	Accepted. Fulfilled through PEPR obligations.
8	The Lessee must meet all the charges and costs in obtaining and maintaining the bond.	Compliant	Condition accepted.
9	The Lessee must, within 10 years of the cessation of mining, demonstrate performance against approved closure criteria such that the outcomes listed under ‘Closure and Rehabilitation’ in Condition 1 will be achieved.	Not yet relevant	
10	Ensure that all commercial or industrial waste is disposed of in accordance with relevant legislation	Compliant	All waste is managed and disposed of in line with EPA licence 12918.
11	The Lessee must take responsibility for establishing and implementing a Community Engagement Plan. This Community Engagement Plan must comply with the requirements approved by the Director of Mines.	Compliant	A community engagement plan is defined in the approved Four Mile PEPR v3.2.

Non-Outcome Conditions – Four Mile ML		Compliance Status	Evidence demonstrating compliance with tenement condition
12	The Lessee must ensure that the occupier of the land is fully advised of their program of activities, particularly in regard to the impact of operations on the land and rehabilitation progress.	Compliant	Heathgate is the owner of the Wooltana Pastoral Lease. The adjacent Arkaroola Pastoral Lease (Arkaroola Wilderness Sanctuary) form part of routine engagement activities.

SECTION 11 – RECTIFICATION OF NON-COMPLIANCES

Routine monitoring of a fractured rock aquifer (FRA) underlying monitoring well (4UMW016), located on the Four Mile side of the Four Mile/Beverley North ML boundary returned a decrease in water level of 4.78 m from 18 May (40.60 m) to 15 June (45.38 m) As this represents a reduction in FRA pressure outside the ± 1.6 m range of recorded baseline fluctuations, it is a reportable event in accordance with the approved PEPR (v3.2). (Reported June 2021, DEM, EPA & DEW). It should be noted that 4UMW016 is approximately 5 kilometres away from any active mining wellfield, which is currently at Four Mile West. A 30% decrease between FRA monitor wells near the ML Boundary and their paired FRA monitor wells adjacent the mining zone has not occurred.(See Appendix 11). Increased monitoring of this well was undertaken to reveal a gradual return to background levels. A thorough investigation for DEM, EPA and DEW was undertaken to determine possible cause and found

- There has been no increase in water level in any overlying Eyre monitor wells.
- There has been no change evident in any other FRA underlying wells. Therefore, it appears to be a localised situation.
- 4UMW016 has been integrity tested with no structural issues found.
- A 30% decrease in FRA gradient pressure has not occurred. 4UMW016 pressure pairs are WF05 and 4UMW004. Pressure differential is 24 m and 22 m respectively, therefore the 4.8 m decrease is less than a 30% pressure change. The water levels required to trigger a 30% pressure change would be > 6.9 m and > 6.5 m respectively. Refer to Figures 2.47 and 2.48. In addition, 4UMW016 has a higher pressure than the central paired FRA monitor wells (WF05 and 4UMW004).
- Water extraction volumes in the region of 4UMW016 at the time were, and continue to be, consistent with historic extraction volumes.
- There has been no recorded seismic activity noted from GA/SARIG. Note that the magnetometer at Arkaroola Resort was not functional at the time of the episode, thus the detection of local seismic events was not able to be investigated.
- The weather was stable, with no atmospheric fluctuations and a high-pressure system present during the period.
- Historically FRA water levels show no reduction in level due to drilling and mining activity, which is analogous to current mining activities.
- Exploration drilling was occurring in the vicinity (closest was 246 m) when the water level changed. Although a drilling induced connection between the FRA and Eyre formation was initially suspected, this was determined to be unlikely based on hydrogeological modelling and that no anomalies (with respect to encountering inordinate amounts of water loss or gain) were encountered by the drilling and logging teams. All exploration wells are cemented as standard procedure. Following cementing, monitoring of 4UMW016 showed the water level continued to fall, which further supports a drilling induced connection was unlikely.

SECTION 12 – DISTURBANCE AND REHABILITATION ACTIVITIES

A summary of total surface disturbance, rehabilitation activities and planned rehabilitation activities within the Beverley, Beverley North and Four Mile mining tenements is provided in Table 24 below.

Table 24: Disturbance and rehabilitation activities

Domain / Area	Description of rehabilitation works carried out in the reporting period	Total disturbance (Ha)	Disturbance during 2021 (Ha)	Total area under rehabilitation (Ha)	Total area completely rehabilitated 2021 (Ha)	Estimated rehabilitation area 2022 (Ha)
Beverley ML	Rehabilitation Program underway in the South Region of Beverley ML 6321. Area covers approximately 57 Ha of wellfields that will have all infrastructure removed, non-essential roads removed and closure plan monitoring system in place to assess the success of the campaign.	555.26	2.3	57	0	57
Beverley North ML	Minor decommissioning of the Pepegoona Satellite plant was undertaken during 2020. Activities included removal of reusable infrastructure.	48.4	0.5	0	0	0
Four Mile ML	No rehabilitation works carried out during the reporting period.	189.85	22.75	0	0	5
TOTAL		**793.5**	**25.55**	**0**	**0**	**63**

Strategies implemented to avoid or minimise disturbance

To ensure minimal disturbance to vegetation and sensitive environmental areas, Heathgate has an Environmental Clearance Permit (ECP) system where a permit must be obtained prior to any work commencing in any undisturbed area or area under rehabilitation on the MLs. The ECP system ensures access networks are planned and sensitive habitat and soaks are protected in accordance with specific environmental and rehabilitation requirements.
The ECP system also ensures that all new areas of disturbance are measured by GPS which is then imported into a Geographic Information System (GIS) to enable accurate calculations of the total area disturbed for each year. All rehabilitated areas are also measured in this manner and this information forms the basis for Significant Environmental Benefit (SEB) accounting.
Disturbance to the surrounding environment is reduced with Heathgate adopting a removal of single use plastics policy, facilitating the use of reusable lunch boxes, cutlery and drinking vessels. A program exits whereby bulk steel, carboard, batteries, pallets, oils, emulsions, toner, tyres and cabling are collected and sent to an approved facility for recycling. These processes ultimately reduce the impact of the operation to the environment.

Provide a summary of any potential improvements learned from previous rehabilitation activities.

In 2018 it was highlighted that there were deficiencies in our ability to achieve rehabilitation within the planned timeframes set out for the project. This was primarily due to the heavy machinery, which is required for rehabilitation activities, being used across site for multiple purposes, including rehabilitation, drilling projects and production. This meant that access to essential equipment was restricted and therefore planned rehabilitation activities were protracted.
In response to this issue, a dedicated rehabilitation team was formed in 2019, and necessary equipment was procured in the 2019 year. Note that some vital equipment, including a dedicated GPU, arrived on site in the 1st quarter of 2020, therefore, however due to the impact of COVID 19 substantial delays have been encountered throughout 2021. The available focus of rehabilitation has been to process and reduce waste stored on site and remove surface infrastructure from the decommissioned Beverley wellfields. In 2021 approximately 2000 m3 of waste has been removed from decommissioned operational areas.

SECTION 13 – RECONCILIATION OF NATIVE VEGETATION CLEARANCE

In accordance with the Native Vegetation Plans for the Beverley, Beverley North and Four Mile PEPR's Significant Environmental Benefit (SEB) reconciliation compensation payment values are determined by undertaking an assessment of areas cleared between 1 January and 31 December for each given year. Mapping area disturbances is undertaken using GPS point measurements and utilising mapping software to determine the SEB compensation required. The assessment of vegetation clearance undertaken on all three tenements during this reporting period is provided in Table 25 below and shown in Figure 3. Clearance activity for 2021 was concentrated in the Four Mile ML region.

Table 25: Reconciliation of native vegetation clearance

Mine Lease	Total amount cleared to date	Total amount cleared in the reporting period	Estimated amount to be cleared in the next reporting period
Beverley ML	555.26	2.36	2
Beverley North ML	48.4	.5	1
Four Mile ML	189.85	22.75	15

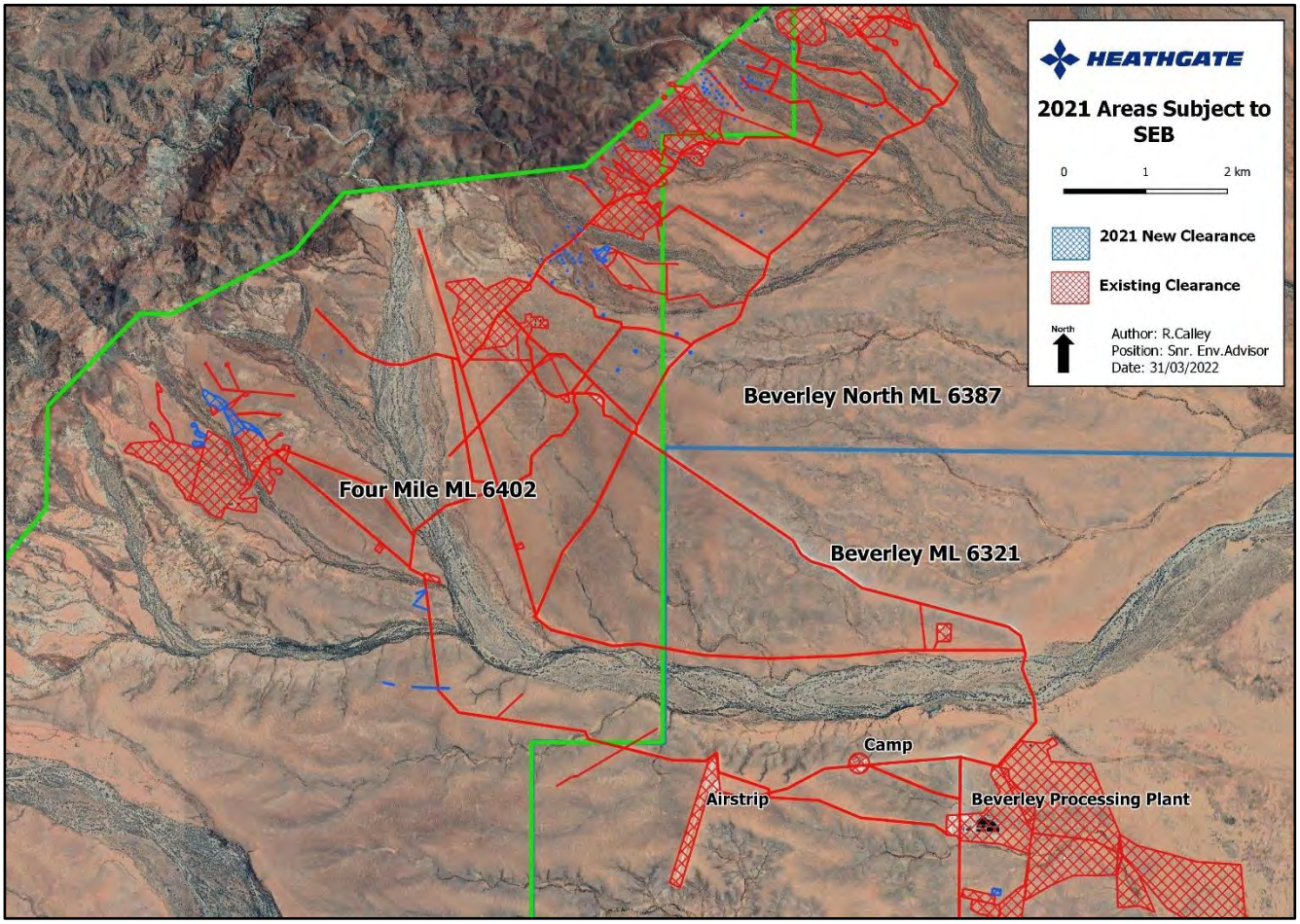

Figure 3: Areas subject to SEB 2021, totalling 25.55 Ha combined Beverley ML & Four Mile ML

SECTION 14 – ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 REPORTING

The Beverley, Beverley North and Four Mile operations are all subject to separate approvals under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), a summary of compliance against approval conditions is provided in Table 26, Table 27 and Table 28.

Table 26: Beverley ML: Compliance Against Conditions of Approval under the EPBC Act

No.	Condition	Compliance Status	Evidence demonstrating compliance with tenement condition
1	The person taking the action must ensure that, in undertaking the action, the following outcomes are achieved (in so far as they may be affected by mining operations):		
1(a)	No compromise to other existing Great Artesian Basin users within the Beverley mine region	Compliant	See Table 8 and Appendix 8.
1(b)	No compromise to pastoral use of the Willawortina aquifer.	Compliant	See Table 8 and Appendix 9.
1(c)	No compromise of potential pastoral use (should it meet pastoral water quality standards) of the Namba aquifer outside the Beverley mining lease.	Compliant	See Table 8 and Appendix 9.
1(d)	No loss of abundance or diversity on or off the Beverley mining lease to native vegetation through clearance or other damage unless prior approval under relevant legislation is obtained.	Compliant	See Table 5 and Appendix 4.
1(e)	No net adverse impacts from the site operations on native fauna abundance or diversity in the lease area and adjacent areas.	Compliant	See Table 4 and Appendix 3.
1(f)	No introduction of new weeds, plant pathogens or pests (including feral animals), or increase in abundance of existing weed or pest species in the lease area compared to adjoining pastoral areas.	Compliant	See Tables 4 & 5, and Appendices 3 and 4.
1(g)	No uncontrolled fires caused by mining operations.	Compliant	See Table 5.
1(h)	No disturbance to Aboriginal artefacts or sites of significance unless prior approval under the relevant legislation is obtained.	Compliant	See Table 12.
1(i)	No compromise of pastoral use of downstream surface water bodies.	Compliant	See Table 7 and Appendix 13.
1(j)	Soil affected by mining activities is suitable for return to pastoral use.	Compliant	See Table 6 and Appendix 14.
1(k)	No adverse impacts to the environment due to radon release, uranium-bearing materials, or radiological aspects of seepages and spills.	Compliant	See Table 11 and Appendix 12
1(l)	No contamination of land and soils either on or off the site caused by waste products and hazardous materials used in the mine operations that would compromise a return to pastoral use.	Compliant	See Table 6.
2	The person taking the action must develop a Monitoring Plan to measure the achievement of each outcome in Condition 1. The Monitoring Plan must specify:		
2(a)	Criteria to demonstrate the clear and unambiguous achievement of the outcomes specified above	Compliant.	An operational monitoring program was approved by the Minister on 11 November 2008 by approval of the Beverley Mine MARP.
2(b)	The parameters to be monitored		
2(c)	How frequency of monitoring will be determined		
2(d)	The responsibility for interpreting the monitoring results		
2(e)	The threshold triggers and the response activities		
2(f)	An outline of control and management strategies that may be used to achieve the groundwater outcomes in Condition 1		
2(g)	Reporting arrangements to management, external stakeholders and the public, including procedures for reporting non-compliance		
2(h)	The action cannot commence until the Monitoring Plan is approved by the Minister. The approved Plan must be implemented.		
3	The person taking the action must develop a Mine Closure and Completion Plan. The Plan must demonstrate that the following outcomes, in so far as they may be affected by mining operations, will be achieved indefinitely post mine closure:		
3 (a)	No change, outside of natural background variation, to the water quality of the Great Artesian Basin.	Compliant	A Mine Closure and Completion Plan was approved by the

No.	Condition	Compliance Status	Evidence demonstrating compliance with tenement condition
3 (b)	No change, outside of natural background variation, to the water quality of the Willawortina formation.	Compliant	Minister on 11 November 2008 by approval of the Beverley Mine MARP.
3 (c)	No compromise of potential pastoral use (should it meet pastoral water quality standards) of the Namba aquifer outside the Beverley mining lease.	Compliant	
3 (d)	Risks to the health and safety of the public and fauna are as low as reasonably achievable.	Compliant	
3 (e)	Ecosystem and landscape function is resilient, self-sustaining and indicating that the pre-mining ecosystem and landscape function will ultimately be achieved.	Compliant	
3 (f)	All waste materials left onsite are chemically and physically stable.	Compliant	
3 (g)	The action cannot commence until the Mine Closure and Completion Plan is approved by the Minister. The approved Plan must be implemented.	Compliant	
4	The person taking the action must prepare a Community Engagement Plan to enable open dialogue with stakeholders on compliance with the approval conditions. The action cannot commence until the Plan is approved by the Minister. The Plan must be implemented.	Compliant	The Community Engagement Plan was approved by the Minister on 11 November 2008 with the approval of the Beverley Mine MARP (now the Beverley Mine PEPR v7.3).
5	Within 14 days of commencement of the action, the person taking the action must advise the Department of the actual date of commencement.	Compliant	Formal advice provided to the Department in 2008.
6	Within three months of the anniversary of the date of commencement of the action and each year after, the person taking the action must provide a report to the Department addressing compliance with the conditions of this approval. Annual reports must be provided until the Minister is satisfied that the proponent has complied with all conditions of the approval.	Compliant	This document provides evidence of compliance against all conditions of approval.
7	If at any time after five years from the date of this approval, the Minister notifies the person taking the action in writing that the Minister is not satisfied that there has been substantial commencement of the action, the action must not thereafter be commenced without the written agreement of the Minister.	Not relevant	
8	Upon the direction of the Minister, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.	Not relevant	No request for an independent audit was requested during the reporting period.
9	If the person taking the action wishes to carry out any activity otherwise than in accordance with the Plans referred to in Conditions 2, 3 and 4, the person taking the action must submit a revised Plan for the Minister's approval. If the Minister approves the revised Plan submitted, the person taking the action must implement this Plan instead of the Plan originally approved.	Compliant.	No change requested during the reporting period.
10	If the Minister believes that it is necessary or desirable for the better protection of the environment to do so, the Minister may request the person taking the action to make specified revisions to the plan approved pursuant to Conditions 2, 3 and 4 and to submit a revised plan for the Minister's approval. The person taking the action must comply with any such request. If the Minister approves the revised plan pursuant to this paragraph, the person taking the action must implement this plan instead of the plan originally approved.	Not relevant.	No request made by the Minister during the reporting period.
11	The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the above conditions of approval and make them available upon request to the Department. Such records may be subject to audit by the Department and used to verify compliance with the conditions of approval.	Compliant.	All records maintained on site.

Table 27: Beverley North ML: Compliance Against Conditions of Approval under the EPBC Act

No.	Condition	Compliance Status	Evidence demonstrating compliance with tenement condition
1	The proponent must ensure that the action achieves the following outcomes:		
1(a)	No compromise of the Environmental Values of the Willawortina Formation, Fractured Rock or Great Artesian Basin aquifers;	Compliant	See Table 9 and Appendix 10.
1(b)	No compromise of the Environmental Values of the Namba Formation and Eyre Formation aquifers outside the Beverley North Mining Lease;	Compliant	See Table 9 and Appendix 10.
1(c)	No loss of abundance or diversity of native vegetation on or off the Beverley North Mining Lease through clearance, or any other damage, unless prior approval under the relevant legislation is obtained;	Compliant	See Table 5 and Appendix 4.
1(d)	No net adverse impacts (including from fire) from the site operations on native fauna abundance or diversity in the Beverley North Mining Lease area and adjacent areas;	Compliant	See Table 4 and Appendix 3.
1(e)	No introduction of new weeds, plant pathogens or pests (including feral animals), or increase in abundance of existing weed or pest species in the Beverley North Mining Lease compared to adjoining land;	Compliant	See Tables 4 and 5, and Appendices 3 and 4.
1(f)	No disturbance to Aboriginal artefacts or sites of significance unless prior approval under the relevant legislation is obtained;	Compliant	See Table 12.
1(g)	No compromise of pastoral use of downstream surface water bodies;	Compliant	See Table 7 and Appendix 13.
1(h)	Soil affected by mining activities is suitable for return to pre-mining land use following mine closure;	Compliant	See Table 6 and Appendix 14.
1(i)	No adverse impacts to the public or the environment from radiological aspects of the action;	Compliant	See Table 11.
1(j)	No disposal of waste within the Beverley North Mining Lease unless prior approval under the relevant legislation is obtained.	Compliant	No waste is transferred to the Beverley ML for disposal.
2	The proponent must implement control and management strategies to achieve the outcomes in condition 1. The control and management strategies may include the following in relation to the outcomes required under:		
2(a)	Condition 1(a) & (b) – the measures indicated at section 7.7.3 of the Public Environment Report;	Compliant	All control and management strategies utilised within the Beverley North ML are defined in the Beverley North PEPR v12.3.
2(b)	Condition 1(c), & (e) – the measures indicated at section 7.5.3 of the Public Environment Report;	Compliant	
2(c)	Condition 1(d) – the measures indicated at section 7.8.3 of the Public Environment Report;	Compliant	
2(d)	Condition 1(f) – the measures indicated at section 7.10.3 of the Public Environment Report;	Compliant	
2(e)	Condition 1(g) – the measures indicated at section 7.6.3 of the Public Environment Report	Compliant	
2(f)	Condition 1(h) – the measures indicated at section 7.4.3 of the Public Environment Report;	Compliant	
2(g)	Condition 1(i) – the measures indicated at sections 7.4.3, 7.6.3, 77.3 & 7.9.3 of the PER; and	Compliant	
2(h)	Condition 1(j) – the measures indicated at section 7.4.3 of the Public Environment Report.	Compliant	
3	The proponent must develop a Monitoring and Management Plan (the Monitoring Plan) to measure the achievement of each outcome in condition 1. The Monitoring Plan must specify:		
3(a)	The area to which the Monitoring Plan applies;	Compliant	The monitoring and management plan was incorporated in the Beverley North PEPR (Version 12.3) was approved by the Director of Mines in 2016.
3(b)	Criteria to demonstrate the clear and unambiguous achievement of the outcomes in condition 1;		
3(c)	The parameters to be monitored		
3(d)	Frequency of monitoring		
3(e)	The responsibility for interpreting the monitoring results;		
3(f)	Leading indicator criteria and the response activities that will be implemented if a leading indicator is reached;		
3(g)	An outline of control and management strategies that may be used to achieve the outcomes in condition 1; and		

No.	Condition	Compliance Status	Evidence demonstrating compliance with tenement condition
3(h)	Reporting arrangements to management, external stakeholders and the public.		
4	The Monitoring Plan must also include a program for obtaining monitoring data to validate predictions of enhanced natural attenuation of mining fluids and determine the impact of groundwater flush. The program must also take into account any cumulative impacts on groundwater arising from other in situ recovery mining activities.	Compliant	The monitoring plan is integrated into the Beverley North PEPR (Version 12.3).
5	The action must be confined to the area specified in the Monitoring Plan. The action cannot commence operation within the area designated in the Monitoring Plan until the Plan is approved by the Minister. The approved Monitoring Plan must be implemented.	Compliant	The monitoring plan is integrated into the Beverley North PEPR (Version 12.3).
6	The proponent must develop a Mine Closure Plan for the Beverley North Mining Lease (the Mine Closure Plan). The Mine Closure Plan must describe how the following outcomes, in so far as they may be affected by mining operations, will be achieved indefinitely post mine closure:		
6(a)	No compromise to the Environmental Values of the Willawortina Formation, Namba Formation, Eyre Formation, Fractured Rock and Great Artesian aquifers;	Compliant	Progressive rehabilitation is documented in the Annual Compliance Report. The Mine Closure and Completion Plan is integrated into Beverley North PEPR (Version 12.3). The status of progressive rehabilitation is documented in the Annual Compliance Report
6(b)	Risks to the health and safety of the public and fauna are as low as reasonably achievable;		
6(c)	Ecosystem and landscape function is resilient, self-sustaining and indicating the pre-mining ecosystem and landscape function will ultimately be achieved;		
6(d)	The site is physically stable; and		
6(e)	All waste materials left on site are chemically and physically stable.		
6(f)	No compromise to the ability of other existing mine lease operators to achieve their approved closure criteria.		
7	The action cannot commence operation until the Mine Closure Plan is approved by the Minister. The approved Mine Closure Plan must be implemented.	Compliant	The closure plan is integrated into Beverley North PEPR (Version 12.3).
8	The Mine Closure Plan must be revised by the proponent prior to mine closure to take into account the results of the monitoring in Condition 4 to validate predictions of enhanced natural attenuation of mining fluids. The revised Mine Closure Plan must:		
8(a)	Specify closure criteria that will be used to demonstrate the clear and unambiguous achievement of the closure outcomes;	Compliant	Compliant. The monitoring plan is integrated into Beverley North PEPR (Version 12.3)
8(b)	Show how closure criteria can be achieved within 10 years of the cessation of mining;		
8(c)	Include a program for monitoring progress towards achievement of closure criteria; and		
8(d)	Include remedial actions to be taken in the event that monitoring demonstrates that closure criteria will not be achieved in a 10 year period.		
9	The revised Mine Closure Plan must be submitted to the Minister for approval. The approved revised Mine Closure Plan must be implemented.	Compliant	Compliant. The monitoring plan is integrated into Beverley North PEPR (Version 12.3)
10	To secure compliance with Conditions 1 and 6 of this approval, the proponent must, before commencing operation of the mine, comply with any requirement under the relevant approval granted by the government of South Australia to provide a bond in accordance with s 62 of the Mining Act 1971 (SA).	Compliant	Compliant. Rehabilitation bond held by DPC.

Table 28: Four Mile ML: Compliance Against Conditions of Approval under the EPBC Act

No.	Condition	Compliance Status	Evidence demonstrating compliance with tenement condition
1	The person taking the action must ensure that the action does not result in any:		
1(a)	Adverse impacts on other existing users of water from the Great Artesian Basin.	Compliant	No GAB water is extracted within the Four Mile ML.
1(b)	Reduction in the Environmental Values of the Willawortina, Eyre Formation, Namba or Mt Painter Group Fractured Rock aquifers outside the Four Mile Mining Lease.	Compliant	See Table 10 and Appendix 11.
1(c)	Reduction in aquifer pressure of the Mt Painter Group Fractured Rock aquifer outside the Four Mile Mining Lease (in order to protect the Paralana Hot Springs).	Compliant	
1(d)	Permanent loss of abundance or diversity of native vegetation on or off the Four Mile Mining Lease through clearance, dust or contaminant deposition, fire or other damage unless prior approval under the relevant legislation is obtained.	Compliant	
1(e)	Net adverse impacts (including from fire) from the site operations on native fauna abundance or diversity in the Four Mile Mining Lease areas and adjacent areas.	Compliant	See Table 4 and Appendix 3.
1(f)	Introduction of new weeds, plant pathogens or pests (including feral animals), or increase in abundance of existing weed or pest species in the Four Mile Mining Lease compared to adjoining pastoral areas.	Compliant	See Table 5 and Appendix 4.
1(g)	Disturbance to Aboriginal artefacts or sites of significance unless prior approval under the relevant legislation is obtained.	Compliant	See Table 12.
1(h)	Compromise of pastoral use of downstream surface water bodies.	Compliant	See Table 7 and Appendix 13.
1(i)	Soil affected by mining activities being unsuitable for return to pre-mining land use following mine closure.	Compliant	See Table 6 and Appendix 14.
1(j)	Adverse impacts to the environment from radiological aspects of the action.	Compliant	See Table 11.
2	The person taking the action must not dispose of any unauthorised waste within the Four Mile ML.	Compliant	All waste is transferred to the Beverley ML for disposal.
3	The person taking the action must develop a Monitoring and Management Plan to measure the achievement of each outcome in Condition 1. The Monitoring and Management Plan must specify*:*		
3(a)	Criteria to demonstrate the clear and unambiguous achievement of the outcomes in Condition 1	Compliant	This monitoring and management plan is included in the Four Mile PEPR v3.2.
3(b)	The parameters to be monitored	Compliant	
3(c)	How frequency of monitoring will be determined	Compliant	
3(d)	The responsibility for interpreting the monitoring results	Compliant	
3(e)	The threshold triggers and the response activities that will be implemented if a threshold is reached.	Compliant	
3(f)	The trigger levels at which mining must cease until approval is obtained from the Minister to recommence.	Compliant	
3(g)	An outline of control and management strategies that may be used to achieve the groundwater outcomes in Condition 1.	Compliant	
3(h)	Reporting arrangements to management, external stakeholders and the public, including procedures for reporting non-compliance.	Compliant	
3(i)	The action cannot commence operation until the Monitoring Plan is approved by the Minister. The approved Monitoring Plan must be implemented.	Compliant	
4	The person taking the action must develop a Mine Closure and Completion Plan for the Four Mile Lease (the Mine Closure Plan). The Closure Plan must demonstrate that the following outcomes, in so far as they may be affected by mining operations, will be achieved indefinitely post mine closure:		Compliant. Plan is included in the Four Mile PEPR v3.2.
4(a)	No change, outside of natural background variation, to the water quality of the Namba aquifer.	Compliant	
4(b)	No reduction in the Environmental Values of the Mt Painter Fractured Rock aquifer.	Compliant	
4(c)	No change, outside of natural background variation, to the aquifer pressure in the Mt Painter Fractured Rock aquifer.	Compliant	

No.	Condition	Compliance Status	Evidence demonstrating compliance with tenement condition
4(d)	The health and safety of the public and fauna are not compromised	Compliant	
4(e)	Ecosystem and landscape function is resilient, self-sustaining and indicating that the pre-mining ecosystem and landscape function will ultimately be achieved.	Compliant	
4(f)	The action cannot commence operation until the Mine Closure Plan is approved by the Minister.	Compliant	
4(g)	The Mine Closure Plan must be revised by the person taking the action prior to mine closure to take into account the results of the monitoring in Condition 3 to validate predictions of enhanced natural attenuation of mining fluids.	Compliant	
4(h)	The revised Plan must be submitted to the Minister for approval. The revised Mine Closure Plan must: Specify closure criteria that will be used to demonstrate the clear and unambiguous achievement of the closure outcomes;	Compliant	
4(i)	Show how closure criteria can be achieved within 10 years of the cessation of mining;	Compliant	
4(j)	Include a program for monitoring progress towards achievement of closure criteria;	Compliant	
4(k)	Include remedial actions to be taken in the event that monitoring demonstrates that closure criteria will not be achieved in the 10 year period.	Compliant	
4(l)	The revised Mine Closure Plan must be submitted to the Minister for approval. The approved revised Mine Closure Plan must be implemented until the Minister is satisfied that the closure criteria have been achieved.	Compliant	Compliant, security bond held by DPC for the Four Mile operations.
5	To secure compliance with Condition 3 and 4 of this approval, the person taking the action must, before commencing operation of the mine, comply with any requirement under the relevant approval granted by the government of South Australia to provide a bond in accordance with s 62 of the Mining Act 1971 (SA).	Compliant	
6	To secure compliance with Conditions 3 and 4 of the approval;		Compliant as per the approval of the Four Mile PEPR.
6(a)	If at any time the Minister determines in writing that he is not satisfied that either the Monitoring and Management Plan or the Mine Closure Plan is not being or will not be implemented, the Minister may require the person taking the action to provide a bond in favour of the Commonwealth for the full cost of rehabilitation liability.	Compliant	
6(b)	The Minister may vary the bond amount required under Condition 6(a) to cover the full cost of rehabilitation liability at any time.	Compliant	
6(c)	In providing for or varying a bond amount in accordance with Condition 6 (a) and 6(b), the Minister may request that the person taking the action obtain written quotes for the cost of rehabilitation liability under the Mine Closure Plan from a third party approved by the Minister.	Compliant	
6(d)	The person taking the action must meet all the charges and costs in obtaining and maintaining the bond.	Compliant	
6(e)	The bond shall not be returned to the person taking the action unless and until the Minister is satisfied that the closure criteria specified in the approved Mine Closure Plan have been achieved.	Compliant	
7	The person taking the action must prepare a Community Engagement Plan to enable open dialogue with stakeholders on compliance with the approval conditions. The action cannot commence operation until the Community Engagement Plan is approved by the Minister. The Community Engagement Plan must be implemented.	Compliant	Compliant through approval of the Four Mile ML PEPR.
8	Within 14 days of commencement of the action, the person taking the action must advise the Department of the actual date of commencement.	Compliant	On 20 November 2013 Heathgate advised the DEH (C Twigg) and DSD (A M Smith) via email that the Four Mile Uranium Mine had commenced construction on 8 November 2013.

No.	Condition	Compliance Status	Evidence demonstrating compliance with tenement condition
9	Within three months of every anniversary of the commencement of the action, or by a date otherwise agreed by the Minister, the person taking the action must provide a report to the Department addressing compliance with the conditions of this approval. The person taking the action must ensure that the report is publicly available on the internet within 30 days of it being submitted to the Minister. Reports must be provided until the Minister is satisfied that the closure outcomes in Condition 4 have been met.	Compliant	Demonstrated via this report.
10	If at any time after five years from the date of this approval, the Minister notifies the person taking the action in writing that the Minister is not satisfied that there has been substantial commencement of the action, the action must not thereafter be commenced without the written agreement of the Minister.	Compliant	On 20 November 2013 Heathgate advised the DEH (C Twigg) and DSD (A M Smith) via email that the Four Mile Uranium Mine had commenced construction on 8 November 2013.
11	Upon the direction of the Minister, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.	Compliant	Accepted.
12	If the person taking the action wishes to carry out any activity otherwise than in accordance with the Plans referred to in Conditions 3, 4 and 7, the person taking the action must submit a revised Plan for the Minister's approval. If the Minister approves the revised Plan submitted, the person taking the action must implement this Plan instead of the Plan originally approved.	Compliant	Revisions to the Four Mile PEPR have been made and approved by all regulatory agencies, the last v3.2 in October 2018.
13	If the Minister believes that it is necessary or desirable for the better protection of the environment to do so, the Minister may request the person taking the action to make specified revisions to the Plan approved pursuant to Conditions 3, 4 and 7, and to submit a revised Plan for the Minister's approval. The person taking the action must comply with any such request. If the Minister approves the revised Plan pursuant to this paragraph, the person taking the action must implement this Plan instead of the Plan originally approved.	Compliant	The Minister has not directed for an independent audit to be undertaken since 2014.
14	The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the above conditions of approval and make them available upon request to the Department. Such records may be subject to audit by the Department and used to verify compliance with the conditions of approval.	Compliant	Accepted

SECTION 15 – COMPLAINTS

There were nil complaints raised by third parties for the reporting period.

SECTION 16 – MANAGEMENT SYSTEM REVIEWS

No management system reviews were undertaken during the reporting period.

SECTION 17 – VERIFICATION OF UNCERTAINTY

Uncertainties and assumptions within the PEPR for the Beverley, Beverley North and Four Mile operations relates specifically to closure, and are detailed in Table 29 below.

Table 29: Verification of Uncertainties – Beverley, Beverley North and Four Mile ML

Assumption or uncertainty	Estimated date to resolve	Progress in reporting period	Confirmed?	Additional works proposed to be undertaken in next reporting period
Field verification of natural attenuation model	On an annual basis, commencing in 2019, field monitoring of natural attenuation in the Eyre Formation was used to verify the natural attenuation (NA) model used for the Beverley North and Four Mile ML's.	Field NA verification monitoring commenced in 2018 (Appendix 10) & further work was undertaken this year to conclude field vs model NA verification.	Yes.	Continuation of the field NA verification monitoring program at Pepegoona. Completion of verification modelling by UIT June 2021 During 2020, Umweltleistungen (UIT) were commissioned by Heathgate to undertake a third-party review of the Pepegoona natural attenuation monitoring results against the geochemical modelled predictions. This report forms part of the final phase of natural attenuation verification, by assessing the fit of field monitoring results against the existing the predictions of the 2016 FEFLOW model and 1D TRN model. Due to the observed hydrogeological effects of barrier injection at the Pepegoona site, additional modelling work was also completed by UIT to ensure verification against the model could be completed. In addition to the verification work, UIT were also commissioned to provide recommendations for current and future natural attenuation monitoring. The now completed review found clear evidence of natural attenuation of uranium and sulphate as predicted by the models, with most monitoring locations showing no significant sulphate or uranium concentrations and a return of pH to background levels at monitor wells >100m from the mining area. Heathgate submitted the UIT independent review "Review study of natural attenuation (NA) of mining fluids from HGR ISR mining operations in the relevant Range Front aquifer system" to DEM on 31 August 2021.

SECTION 18 – CHANGES TO MINING OPERATIONS AND EMERGING ENVIRONMENTAL HAZARDS

Table 30 below provides a summary of any change(s) to mining operations endorsed under the approved PEPR for the reporting period. No emerging environmental hazards were identified during the reporting period.

Table 30: Changes to mining operations

Tenement	Description of change to existing mining operation	Significance Level (1-4)*	Date submitted to DEM	Date endorsed by DEM	Current status at the end of the reporting period
Beverley ML	**Plant modifications and a new drying and** packing plant.	Level 4	June 2018	October 2018	Construction of the new drying and packing plant has commenced, still in construction and commissioning phase.
Four Mile ML	Installation of a new Four Mile ML wellfields.	Level 4	June 2018	October 2018	

SECTION 19– TECHNICAL REPORTS

Studies and reports generated during the reporting period that support the achievement of tenement conditions and environmental outcomes in the approved PEPR are summarised in Table 31 below.

Table 31: Technical reports

Report Title
“Review study of natural attenuation (NA) of mining fluids from HGR ISR mining operations in the relevant Range Front aquifer system” , Umweltleistungen (UIT), Germany.
Beverley, Beverley North and Four Mile ML’s Annual Fauna Monitoring. Ecosphere Ecological Solutions Pty Ltd
Beverley, Beverley North and Four Mile ML’s Annual Flora Monitoring. Ecosphere Ecological Solutions Pty Ltd

20 – VOLUNTARY INFORMATION

A summary list of additional information beyond the minimum required by legislation to demonstrate compliance is provided in Table 32 and Table 33.

Table 32: Voluntary information

Item	Description
Mining Leases	Beverley ML 6321, Beverley North ML 6387, Four Mile ML 6402
Project Footprint (total)	793.5 Ha
Greenhouse Gas Emissions	17,360 T
Electricity Consumption	13,184 MWh
Annual Water Usage	106 ML
Water Management and Recycling	Process water circulates being returned to sourced mineralised aquifer.

Table 33: Community engagement – Add additional items as required

Community or wider environment support activities	Description
Community Consultative Committee Meetings	Routine quarterly advisory committee meetings with the Traditional Owners were canceled by mutual agreement during 2021 due to Coronavirus and their Prescribed Body Corporate (Adnyamathanha Traditional Lands Association – ATLA) being in Special Administration (by directive from ORIC).
ATLA – Special Administrators	Appointed in March 2020 – HGR maintained regular contact throughout 2021 with the Administrators and restructured sub-committees and its members.
Flinders Family Fun Day	On Oct 21, 2021, Heathgate representatives attended (and had an information booth) the Flinders Family Fun Day at Leigh Creek. Heathgate was lead sponsor of the event.
NAIDOC Day Celebrations	Regular celebrations consisting of the local community invited to site to for celebratory lunch additional cultural training and traditional food were cancelled due to COVID restrictions. Employed community members ran 2 celebratory dinners including commemorative gifts on site for all staff.
Royal Flying Doctors Service (RFDS) Fundraising Raffle	Annual RFDS Fundraising Raffle
Medical and Emergency Response Assistance	Beverley Mine Site Paramedic and ERT provided emergency medical assistance to members of the public on 2 occasions during 2021. This assistance involved attending serious vehicle accidents in the local area.
Beverley Weather Station	Beverley Weather Station provides a live information feed, login details made available to local pastoral stations and community enabling access to local weather data.
SA Water Visit to Nepabunna	Heathgate fly a technician from SA Water to site on a quarterly basis and provide transport to Nepabunna Community to conduct testing on the town water supply. During COVID restrictions this service was reduced to three visits facilitated by HGR,
Wild Dog Bait Injection Service	Attend the wild dog bait injection service with the neighbouring stations, coordinate efforts and baiting program.

APPENDIX 1– PUBLIC LIABILITY IINSURANCE

MARSH

Felicity Furby
Senior Account Executive - Corporate, Construction & Risk Management

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1 September 2021

To Whom It May Concern,

CERTIFICATE OF CURRENCY
PUBLIC & PRODUCTS LIABILITY

Our Ref: 056303

THIS CERTIFICATE OF CURRENCY PROVIDES A SUMMARY OF THE POLICY COVER AND IS CURRENT ON THE DATE OF ISSUE. IT IS NOT INTENDED TO AMEND, EXTEND, REPLACE OR OVERRIDE THE POLICY TERMS AND CONDITIONS CONTAINED IN THE ACTUAL POLICY DOCUMENT. THIS CERTIFICATE OF CURRENCY IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. WE ACCEPT NO RESPONSIBILITY WHATSOEVER FOR ANY INADVERTENT OR NEGLIGENT ACT, ERROR OR OMISSION ON OUR PART IN PREPARING THESE STATEMENTS OR IN TRANSMITTING THIS CERTIFICATE BY EMAIL OR FOR ANY LOSS, DAMAGE OR EXPENSE THEREBY OCCASIONED TO ANY RECIPIENT OF THIS LETTER.

INSURED	Heathgate Resources Pty Ltd, Quasar Resources Pty Ltd, Beverley Resources Pty Ltd, General Atomics Australia Pty Ltd and/or its/ their subsidiary and/or related bodies corporate, as defined in the Corporations Act 2001, (incluging those acquired or incorporated during the Period of Insurance) for their respective rights and interests.
ABN AND ITC DETAILS	ABN 31 011 018 232 ITC 100.00%
PERIOD OF INSURANCE	From: 1 September 2021 at 4 PM Local Time at the Place of the Insured's head office. To: 1 September 2022 at 4 PM Local Time at the Place of the Insured's head office. Any subsequent period for which the Insured has requested and the Insurer has accepted renewal.
INTEREST INSURED	All sums which the Insured shall become legally liable to pay to for Compensation (including but not limited to Additional Payments and expenses and amounts owing or liability incurred in respect of or arising out of a claim for recovery or contributions made pursuant to any legislation) in accordance with the law of any country or assumed under contract or agreement in respect of: a) Personal Injury b) Property Damage c) Advertising Liability first happening during the Period of Insurance as a result of an Occurrence within the Territorial Limits as stated herein and happening in connection with the Insured's Business.

LIMITS OF LIABILITY

The limit of the Insurer's liability:

(i) shall apply exclusive of indemnity provided for under Additional Payments;

(ii) shall not exceed the following amounts except as otherwise provided in the Policy;

(A) General Liability

$50,000,000 any one Occurrence or series of Occurrences arising from one originating cause.

(B) Product Liability

Not Insured any one Occurrence or series of Occurrences arising from one originating cause and in the aggregate during the Period of Insurance.

Should more than one Limit of Liability be applicable to any one Occurrence in respect of (A) and (B) above, such Limits of Liability shall not be aggregated - the highest single Limit of Liability only shall apply.

INSURER	PROPORTION	POLICY NUMBER
QBE Insurance (Australia) Ltd - GA	100.000%	AVA355366PLB

Felicity Furby
Senior Account Executive
Corporate, Construction & Risk Management

STD DOC [Policy Certificate of Currency for HEATHGAT - Policy 96303 - 01/09/2021 - FURBF]

APPENDIX 2 – EXPLORATON WITHIN THE ML's - SUMMARY REPORTS

SECTION A – HAS EXPLORATION, EXPLORATION REHABILITATION OR DO OUTSTANDING EXPLORAION LIABILITIES EXIST ON THE MINING LEASE

Have any exploration activities been conducted during the current reporting period?	Yes
Have rehabilitation activities been undertaken during the reporting period?	Yes
Is there any outstanding rehabilitation from current or previous reporting periods to be undertaken?	Yes

SECTION B – EXPLORATION ACTIVITIES

No exploration program notifications were provided during the current and previous reporting period.

Table 1 below provides a summary of all exploration activities undertaken during the current reporting period.

Table 1: Summary of exploration activities

Tenement	Program notification Submit date	Drillholes	Type of drilling	Total metres drilled	Cleared drill pads created	Number of new drill lines/access tracks	New drill line/access track length (km)	Ancillary exploration activities	Costeans	Comments/other approved activities
EL5916	NA	190	RM, DD	49,171.3m	190	NA	NA	NA	NA	
EL6449	NA	9	RM	2,945m	9	NA	NA	NA	NA	
TOTAL	**NA**	**199**	**RM, DD**	**52,116.3m**	**203**	**NA**	**NA**	**NA**	**NA**	

SECTION C – COMPLIANCE WITH APPROVED PROGRAMS & REHABILITATION

A summary of exploration activities, operational compliance and status of rehabilitation of all exploration sites is provided in Tables 2-6 below for the current reporting period.

Table 2: Cumulative summary of exploration activities

Tenement number	Program notification submit date	Drillholes /sites	Rehabilitated drill sites	Drill lines/ access tracks	Drill line/access track length (km)	Rehabilitated drill line/access track (km)	Costeans	Costeans rehabilitated	Comments
EL5916	NA	190	126	NA	NA	NA	NA	NA	The remaining 64 holes will be rehabbed in May 2022
EL6449	NA	9	6	NA	NA	NA	NA	NA	The remaining 3 holes will be rehabbed in May 2022
		199	132						

Table 3: Cumulative area of disturbance

Tenement number	Program notification submit date	Total area of disturbance - drillholes /sites (ha? m2)	Total area rehabilitated - drillholes /sites (area ha or m2)	Total area of disturbance - drill lines/ access track (ha or m2)	Total area rehabilitated - drill line/access track (ha or m2)	Total area of disturbance - Costeans (ha or m2)	Total area rehabilitated – costeans (ha or m2	Comments
EL5916	NA	11,940m	7,560m	NA	NA	NA	NA	The remaining 64 holes will be rehabbed in May 2022
EL6449	NA	540m	360m	NA	NA	NA	NA	The remaining 3 holes will be rehabbed in May 2022
		12,480m	7,920m	NA	NA	NA	NA	

Tenement	Program notification submit date	Drillhole	Date drilled	Drilling method*	Hole depth (m)	Number of sumps and dimensions	Drill pad size (m2)	Easting (GDA 94)	Northing (GDA 94)	Zone	Rehabilitation date	Status†	Planned rehabilitation date	Comments
EL5916	NA	FMC030	29/03/2021	DD	151.8	2 (3x5x2.5m)	60m	354389.75	6663683.86	54	18/04/2021	Y		
EL5916	NA	FMC031	14/05/2021	DD	156.5	2 (3x5x2.5m)	60m	354883.2188	6663162.91	54		N	1/05/2022	
EL5916	NA	FMC032	9/05/2021	DD	161	2 (3x5x2.5m)	60m	354823.49	6663241.77	54		N	1/05/2022	
EL5916	NA	FMC033	9/05/2021	DD	186	2 (3x5x2.5m)	60m	355337.06	6663923.49	54	9/07/2021	Y		
EL5916	NA	FMC034	16/05/2021	DD	176	2 (3x5x2.5m)	60m	354905.0313	6663746.95	54	25/06/2021	Y		
EL5916	NA	FMC035	17/05/2021	DD	176	2 (3x5x2.5m)	60m	354973.375	6663783.96	54	25/06/2021	Y		
EL5916	NA	FMC036	27/05/2021	DD	180	2 (3x5x2.5m)	60m	355034	6664262	54	28/03/2022	Y		
EL5916	NA	FMD0641	6/02/2021	RM	282	2 (3x5x2.5m)	60m	360419.125	6667338.67	54	6/03/2021	Y		
EL5916	NA	FMD0642	7/02/2021	RM	280	2 (3x5x2.5m)	60m	360276.8125	6667203.1	54	6/03/2021	Y		
EL5916	NA	FMD0643	8/02/2021	RM	298	2 (3x5x2.5m)	60m	360380.0313	6667313.51	54	6/03/2021	Y		
EL5916	NA	FMD0644	8/02/2021	RM	298	2 (3x5x2.5m)	60m	360419.2813	6667276.69	54	6/03/2021	Y		
EL5916	NA	FMD0645	13/02/2021	RM	286	2 (3x5x2.5m)	60m	360287.7813	6667254.1	54	6/03/2021	Y		
EL5916	NA	FMD0646	22/04/2021	RM	286	2 (3x5x2.5m)	60m	360997.125	6668079.15	54	21/08/2021	Y		
EL5916	NA	FMD0647	23/04/2021	RM	294	2 (3x5x2.5m)	60m	361021.375	6668306.24	54	24/07/2021	Y		
EL5916	NA	FMD0648	25/04/2021	RM	288	2 (3x5x2.5m)	60m	361091.0313	6668229.18	54	26/06/2021	Y		
EL5916	NA	FMD0649	27/04/2021	RM	288	2 (3x5x2.5m)	60m	360954.375	6668254.42	54	22/08/2021	Y		
EL5916	NA	FMD0650	28/04/2021	RM	288	2 (3x5x2.5m)	60m	361021.3438	6668183.2	54	26/06/2021	Y		
EL5916	NA	FMD0651	29/04/2021	RM	312	2 (3x5x2.5m)	60m	360920.4063	6668148.95	54	25/03/2022	Y		
EL5916	NA	FMD0652	1/05/2021	RM	282	2 (3x5x2.5m)	60m	360852.75	6668089.91	54	19/08/2021	Y		
EL5916	NA	FMD0653	2/05/2021	RM	288	2 (3x5x2.5m)	60m	360979.3438	6667957.56	54	18/08/2021	Y		
EL5916	NA	FMD0654	3/05/2021	RM	288	2 (3x5x2.5m)	60m	361094.9063	6667845.2	54	29/12/2021	Y		
EL5916	NA	FMD0655	6/05/2021	RM	300	2 (3x5x2.5m)	60m	361157.4063	6668028.97	54	19/08/2021	Y		
EL5916	NA	FMD0656	7/05/2021	RM	288	2 (3x5x2.5m)	60m	360793.4375	6668160.02	54	22/08/2021	Y		
EL5916	NA	FMD0657	8/05/2021	RM	347	2 (3x5x2.5m)	60m	361059.375	6667881.72	54	29/12/2021	Y		
EL5916	NA	FMD0658	10/05/2021	RM	300	2 (3x5x2.5m)	60m	360645.1875	6667898.95	54	18/08/2021	Y		
EL5916	NA	FMD0659	11/05/2021	RM	288	2 (3x5x2.5m)	60m	360688.625	6668068.34	54	30/12/2021	Y		
EL5916	NA	FMD0660	12/05/2021	RM	282	2 (3x5x2.5m)	60m	360560.2813	6667993.28	54	23/07/2021	Y		

EL5916	NA	FMD0661	13/05/2021	RM	282	2 (3x5x2.5m)	60m	360601.8125	6667947.74	54	30/12/2021	Y		
EL5916	NA	FMD0662	14/05/2021	RM	288	2 (3x5x2.5m)	60m	359949	6667189.14	54	16/10/2021	Y		
EL5916	NA	FMD0663	15/05/2021	RM	288	2 (3x5x2.5m)	60m	360792.875	6667912.63	54	29/12/2021	Y		
EL5916	NA	FMD0664	16/05/2021	RM	288	2 (3x5x2.5m)	60m	360894.0938	6668308.27	54		N	1/05/2022	
EL5916	NA	FMD0665	16/05/2021	RM	288	2 (3x5x2.5m)	60m	361078.3125	6668021.77	54	21/08/2021	Y		
EL5916	NA	FMD0666	17/05/2021	RM	294	2 (3x5x2.5m)	60m	361086.7813	6668108.17	54	25/03/2022	Y		
EL5916	NA	FMD0667	18/05/2021	RM	282	2 (3x5x2.5m)	60m	360016.8125	6667138.26	54	26/03/2022	Y		
EL5916	NA	FMD0668	19/05/2021	RM	288	2 (3x5x2.5m)	60m	359822	6667358.67	54	26/03/2022	Y		
EL5916	NA	FMD0669	20/05/2021	RM	288	2 (3x5x2.5m)	60m	359849.6875	6667239.11	54		N	1/05/2022	
EL5916	NA	FMD0670	21/05/2021	RM	282	2 (3x5x2.5m)	60m	360412.5938	6667882.82	54	23/07/2021	Y		
EL5916	NA	FMD0671	22/05/2021	RM	288	2 (3x5x2.5m)	60m	360699.6563	6667991.28	54	30/12/2021	Y		
EL5916	NA	FMD0672	22/05/2021	RM	282	2 (3x5x2.5m)	60m	360353.0938	6667821.22	54		N	1/05/2022	
EL5916	NA	FMD0673	23/05/2021	RM	300	2 (3x5x2.5m)	60m	361147.2813	6667951.79	54	21/08/2021	Y		
EL5916	NA	FMD0674	25/05/2021	RM	282	2 (3x5x2.5m)	60m	360749.3125	6667963.15	54	30/12/2021	Y		
EL5916	NA	FMD0675	26/05/2021	RM	282	2 (3x5x2.5m)	60m	361325	6667932	54	19/08/2021	Y		
EL5916	NA	FMD0676	26/05/2021	RM	282	2 (3x5x2.5m)	60m	360425.125	6667808.11	54	25/03/2022	Y		
EL5916	NA	FMD0677	27/05/2021	RM	282	2 (3x5x2.5m)	60m	360503.4375	6667737.12	54		N	1/05/2022	
EL5916	NA	FMD0678	28/05/2021	RM	330	2 (3x5x2.5m)	60m	360423.8125	6667673.49	54	25/03/2022	Y		
EL5916	NA	FMD0679	29/05/2021	RM	270	2 (3x5x2.5m)	60m	360136.4063	6664930.32	54	25/10/2021	Y		
EL5916	NA	FMD0680	29/05/2021	RM	258	2 (3x5x2.5m)	60m	359916	6664700.53	54	25/10/2021	Y		
EL6449	NA	FMD0681	30/05/2021	RM	296	2 (3x5x2.5m)	60m	360634.5625	6665144.5	54	16/10/2021	Y		
EL6449	NA	FMD0682	31/05/2021	RM	246	2 (3x5x2.5m)	60m	360803.5625	6664922.03	54	16/10/2021	Y		
EL6449	NA	FMD0683	1/06/2021	RM	282	2 (3x5x2.5m)	60m	361652.5	6666400.78	54	5/11/2021	Y		
EL6449	NA	FMD0684	2/06/2021	RM	348	2 (3x5x2.5m)	60m	361417.125	6666600.28	54	5/11/2021	Y		
EL5916	NA	FMD0685	4/06/2021	RM	292	2 (3x5x2.5m)	60m	360916.3438	6668026.07	54		N	1/05/2022	
EL6449	NA	FMD0686	4/06/2021	RM	385	2 (3x5x2.5m)	60m	363370.4375	6668282.9	54		N	1/05/2022	
EL6449	NA	FMD0687	5/06/2021	RM	342	2 (3x5x2.5m)	60m	363535.0625	6668137.41	54		N	1/05/2022	
EL5916	NA	FMD0688	7/06/2021	RM	290	2 (3x5x2.5m)	60m	361023.0625	6667920.2	54	29/12/2021	Y		
EL5916	NA	FMD0689	7/06/2021	RM	306	2 (3x5x2.5m)	60m	360699.7813	6667836.08	54	30/12/2021	Y		
EL6449	NA	FMD0690	6/06/2021	RM	364	2 (3x5x2.5m)	60m	362919.3125	6667941.3	54	29/12/2021	Y		

EL6449	NA	FMD0691	9/06/2021	RM	324	2 (3x5x2.5m)	60m	363098.7188	6667828.09	54	29/12/2021	Y		
EL5916	NA	FMD0692	8/06/2021	RM	292	2 (3x5x2.5m)	60m	360334.9375	6667589.87	54	25/03/2022	Y		
EL5916	NA	FMD0693	10/06/2021	RM	294	2 (3x5x2.5m)	60m	359187.8438	6666086.27	54		N	1/05/2022	
EL5916	NA	FMD0694	9/06/2021	RM	300	2 (3x5x2.5m)	60m	360814.0938	6667947.42	54		N	1/05/2022	
EL5916	NA	FMD0695	9/06/2021	RM	270	2 (3x5x2.5m)	60m	360529.4063	6667601.01	54	28/12/2021	Y		
EL5916	NA	FMD0696	10/06/2021	RM	300	2 (3x5x2.5m)	60m	360512.4688	6667668.56	54		N	1/05/2022	
EL5916	NA	FMD0697	10/06/2021	RM	290	2 (3x5x2.5m)	60m	360203.7188	6667560.86	54		N	1/05/2022	
EL5916	NA	FMD0698	11/06/2021	RM	286	2 (3x5x2.5m)	60m	360610.25	6667598.37	54	25/03/2022	Y		
EL5916	NA	FMD0699	11/06/2021	RM	300	2 (3x5x2.5m)	60m	360333.9688	6667742.26	54	28/12/2021	Y		
EL5916	NA	FMD0700	11/06/2021	RM	288	2 (3x5x2.5m)	60m	359218.2188	6666031.76	54		N	1/05/2022	
EL5916	NA	FMD0701	12/06/2021	RM	286	2 (3x5x2.5m)	60m	360953.375	6667820.84	54	30/12/2021	Y		
EL5916	NA	FMD0702	13/06/2021	RM	300	2 (3x5x2.5m)	60m	360806.4375	6667672.5	54	18/10/2021	Y		
EL5916	NA	FMD0703	11/06/2021	RM	288	2 (3x5x2.5m)	60m	359240.9688	6665988.28	54		N	1/05/2022	
EL5916	NA	FMD0704	13/06/2021	RM	303	2 (3x5x2.5m)	60m	359684.125	6666102.78	54	16/10/2021	Y		
EL5916	NA	FMD0705	12/06/2021	RM	282	2 (3x5x2.5m)	60m	359285.2813	6665898.71	54		N	1/05/2022	
EL5916	NA	FMD0706	13/06/2021	RM	280	2 (3x5x2.5m)	60m	359417.7188	6665769.91	54		N	1/05/2022	
EL5916	NA	FMD0707	14/06/2021	RM	294	2 (3x5x2.5m)	60m	360648.875	6667979.7	54	30/12/2021	Y		
EL5916	NA	FMD0708	14/06/2021	RM	276	2 (3x5x2.5m)	60m	359588.0313	6665715.66	54		N	1/05/2022	
EL5916	NA	FMD0709	15/06/2021	RM	294	2 (3x5x2.5m)	60m	360613.4375	6668015.69	54	30/12/2021	Y		
EL5916	NA	FMD0710	15/06/2021	RM	298	2 (3x5x2.5m)	60m	359718.5	6666064.17	54	17/10/2021	Y		
EL5916	NA	FMD0711	14/06/2021	RM	270	2 (3x5x2.5m)	60m	359309.6563	6665610.67	54	16/10/2021	Y		
EL5916	NA	FMD0712	17/06/2021	RM	300	2 (3x5x2.5m)	60m	359753.1563	6666025.36	54	18/10/2021	Y		
EL5916	NA	FMD0713	15/06/2021	RM	264	2 (3x5x2.5m)	60m	359730.875	6665361.28	54	16/10/2021	Y		
EL5916	NA	FMD0714	16/06/2021	RM	134	2 (3x5x2.5m)	60m	359145.375	6666202.31	54		N	1/05/2022	
EL5916	NA	FMD0715	19/06/2021	RM	304	2 (3x5x2.5m)	60m	360854.25	6668035.1	54	30/12/2021	Y		
EL5916	NA	FMD0716	27/06/2021	RM	334	2 (3x5x2.5m)	60m	360805.9063	6668093.24	54	30/12/2021	Y		
EL5916	NA	FMD0717	21/06/2021	RM	292	2 (3x5x2.5m)	60m	360919	6667961.63	54	22/08/2021	Y		
EL5916	NA	FMD0718	30/06/2021	RM	354	2 (3x5x2.5m)	60m	360938.4688	6668090.64	54	25/03/2022	Y		
EL5916	NA	FMD0719	24/06/2021	RM	292	2 (3x5x2.5m)	60m	360965.7813	6668122.6	54		N	1/05/2022	
EL5916	NA	FMD0720	5/07/2021	RM	246	2 (3x5x2.5m)	60m	360928.9688	6668201.36	54		N	1/05/2022	

EL5916	NA	FMD0721	4/07/2021	RM	364	2 (3x5x2.5m)	60m	361116.1875	6668066.76	54	25/03/2022	Y		
EL5916	NA	FMD0722	7/07/2021	RM	334	2 (3x5x2.5m)	60m	360735.4063	6668118.63	54	25/03/2022	Y		
EL5916	NA	FMD0723	10/07/2021	RM	352	2 (3x5x2.5m)	60m	360142.5	6667473.61	54		N	1/05/2022	
EL5916	NA	FMD0724	11/07/2021	RM	292	2 (3x5x2.5m)	60m	360427.0625	6667747.49	54	28/12/2021	Y		
EL5916	NA	FMD0725	12/07/2021	RM	292	2 (3x5x2.5m)	60m	360217.1563	6667412.03	54		N	1/05/2022	
EL5916	NA	FMD0726	13/07/2021	RM	280	2 (3x5x2.5m)	60m	360304.2813	6667411.86	54		N	1/05/2022	
EL5916	NA	FMD0727	15/07/2021	RM	280	2 (3x5x2.5m)	60m	360250.625	6667461.71	54		N	1/05/2022	
EL5916	NA	FMD0728	16/07/2021	RM	280	2 (3x5x2.5m)	60m	359653.2813	6666129.85	54	16/10/2021	Y		
EL5916	NA	FMD0729	18/07/2021	RM	280	2 (3x5x2.5m)	60m	359617.375	6666164.19	54	16/10/2021	Y		
EL5916	NA	FMD0730	19/07/2021	RM	280	2 (3x5x2.5m)	60m	360188.9063	6667099.1	54	25/03/2022	Y		
EL5916	NA	FMD0731	22/07/2021	RM	280	2 (3x5x2.5m)	60m	360149.1563	6667143.86	54	25/03/2022	Y		
EL5916	NA	FMD0732	23/07/2021	RM	292	2 (3x5x2.5m)	60m	359921.125	6667425.32	54	25/03/2022	Y		
EL5916	NA	FMD0733	24/07/2021	RM	286	2 (3x5x2.5m)	60m	360005.25	6667314.83	54		N	1/05/2022	
EL5916	NA	FMD0734	29/07/2021	RM	290	2 (3x5x2.5m)	60m	360035.0313	6667284.51	54		N	1/05/2022	
EL5916	NA	FMD0735	30/07/2021	RM	304	2 (3x5x2.5m)	60m	359956.375	6667344.56	54		N	1/05/2022	
EL5916	NA	FMD0736	1/08/2021	RM	286	2 (3x5x2.5m)	60m	360083.9688	6667216.53	54		N	1/05/2022	
EL5916	NA	FMD0737	2/08/2021	RM	292	2 (3x5x2.5m)	60m	360126.7813	6667171.35	54		N	1/05/2022	
EL5916	NA	FMD0738	4/08/2021	RM	292	2 (3x5x2.5m)	60m	360158.4688	6667301.83	54		N	1/05/2022	
EL5916	NA	FMD0739	5/08/2021	RM	316	2 (3x5x2.5m)	60m	359924.1875	6667288.46	54		N	1/05/2022	
EL5916	NA	FMD0740	6/08/2021	RM	298	2 (3x5x2.5m)	60m	360141.125	6667353.96	54		N	1/05/2022	
EL5916	NA	FMD0741	8/08/2021	RM	328	2 (3x5x2.5m)	60m	359848.375	6667407.18	54	25/03/2022	Y		
EL5916	NA	FMD0742	10/08/2021	RM	298	2 (3x5x2.5m)	60m	360438.2813	6667599.67	54		N	1/05/2022	
EL5916	NA	FMD0743	12/08/2021	RM	304	2 (3x5x2.5m)	60m	359530.7813	6666929.03	54	26/03/2022	Y		
EL5916	NA	FMD0744	13/08/2021	RM	292	2 (3x5x2.5m)	60m	361133	6667809	54	25/03/2022	Y		
EL5916	NA	FMD0745	14/08/2021	RM	322	2 (3x5x2.5m)	60m	361222	6667955	54	19/08/2021	Y		
EL5916	NA	FMD0746	16/08/2021	RM	298	2 (3x5x2.5m)	60m	360931.2813	6668363.42	54	25/03/2022	Y		
EL5916	NA	FMD0747	17/08/2021	RM	298	2 (3x5x2.5m)	60m	359669.75	6666862.74	54	26/03/2022	Y		
EL5916	NA	FMD0758	9/09/2021	RM	184	2 (3x5x2.5m)	60m	358967.125	6666036.66	54		N	1/05/2022	
EL5916	NA	FMD0759	11/09/2021	RM	244	2 (3x5x2.5m)	60m	359099.1875	6665748.42	54	5/11/2021	Y		
EL6449	NA	FMD0766	28/09/2021	RM	358	2 (3x5x2.5m)	60m	362030.125	6668630.55	54		N	1/05/2022	

EL5916	NA	FMD0767	29/09/2021	RM	358	2 (3x5x2.5m)	60m	361978.75	6668654.08	54		N	1/05/2022	
EL5916	NA	FMD0768	1/10/2021	RM	356	2 (3x5x2.5m)	60m	361649.1563	6668408.79	54	10/12/2021	Y		
EL5916	NA	FMD0769	3/10/2021	RM	146	2 (3x5x2.5m)	60m	358952.4688	6665921.28	54		N	1/05/2022	
EL5916	NA	FMD0770	7/10/2021	RM	286	2 (3x5x2.5m)	60m	358826.0938	6665833.88	54		N	1/05/2022	
EL5916	NA	FMD0779	25/10/2021	RM	376	2 (3x5x2.5m)	60m	361877.625	6668925.21	54		N	1/05/2022	
EL5916	NA	FMD0782	30/10/2021	RM	178	2 (3x5x2.5m)	60m	359102.3438	6666126.97	54		N	1/05/2022	
EL5916	NA	FMD0783	30/10/2021	RM	292	2 (3x5x2.5m)	60m	359728.0625	6666128.57	54		N	1/05/2022	
EL5916	NA	FMD0784	31/10/2021	RM	298	2 (3x5x2.5m)	60m	359640.875	6666061.01	54		N	1/05/2022	
EL5916	NA	FMD0785	31/10/2021	RM	276	2 (3x5x2.5m)	60m	359375.6875	6666003.01	54		N	1/05/2022	
EL5916	NA	FMD0786	1/11/2021	RM	276	2 (3x5x2.5m)	60m	359450.9688	6666006.16	54		N	1/05/2022	
EL5916	NA	FMD0787	1/11/2021	RM	288	2 (3x5x2.5m)	60m	359669.875	6666032.84	54		N	1/05/2022	
EL5916	NA	FMD0788	3/11/2021	RM	292	2 (3x5x2.5m)	60m	359433.0938	6666056.23	54		N	1/05/2022	
EL5916	NA	FMD0791	5/11/2021	RM	296	2 (3x5x2.5m)	60m	359343.1875	6666045.49	54		N	1/05/2022	
EL5916	NA	FMD0793	14/11/2021	RM	292	2 (3x5x2.5m)	60m	359148	6666057	54		N	1/05/2022	
EL5916	NA	FMD0794	19/11/2021	RM	286	2 (3x5x2.5m)	60m	359075.0313	6666018.64	54		N	1/05/2022	
EL5916	NA	FMD0795	18/11/2021	RM	300	2 (3x5x2.5m)	60m	359693.1563	6666153.9	54		N	1/05/2022	
EL5916	NA	FMD0796	23/11/2021	RM	310	2 (3x5x2.5m)	60m	359241.0938	6666154.02	54		N	1/05/2022	
EL5916	NA	FMD0797	21/11/2021	RM	282	2 (3x5x2.5m)	60m	359758.75	6666154.23	54		N	1/05/2022	
EL5916	NA	FMD0798	27/11/2021	RM	292	2 (3x5x2.5m)	60m	359255	6666113	54		N	1/05/2022	
EL5916	NA	FMD0799	22/11/2021	RM	282	2 (3x5x2.5m)	60m	359741.8438	6666190.06	54	26/03/2022	Y		
EL5916	NA	FMD0800	27/11/2021	RM	294	2 (3x5x2.5m)	60m	359793	6666182	54	26/03/2022	Y		
EL5916	NA	FMD0801	28/11/2021	RM	276	2 (3x5x2.5m)	60m	359445	6666102	54		N	1/05/2022	
EL5916	NA	FMD0802	29/11/2021	RM	308	2 (3x5x2.5m)	60m	359382.125	6666275.61	54	2/08/2021	Y		
EL5916	NA	FMD0804	2/12/2021	RM	314	2 (3x5x2.5m)	60m	359346.4063	6666346	54		N	1/05/2022	
EL5916	NA	FMD0806	7/12/2021	RM	206	2 (3x5x2.5m)	60m	359286.4375	6666434.36	54		N	1/05/2022	
EL5916	NA	FMD0807	10/12/2021	RM	312	2 (3x5x2.5m)	60m	359422.3438	6666406.55	54		N	1/05/2022	
EL5916	NA	FMD0809	11/12/2021	RM	312	2 (3x5x2.5m)	60m	359449.625	6666395.18	54		N	1/05/2022	
EL5916	NA	FWD0428	13/01/2021	RM	182	2 (3x5x2.5m)	60m	356527.0625	6664876.7	54	15/03/2021	Y		
EL5916	NA	FWD0429	15/01/2021	RM	180	2 (3x5x2.5m)	60m	356317.6875	6664827.29	54	15/03/2021	Y		
EL5916	NA	FWD0431	21/01/2021	RM	182	2 (3x5x2.5m)	60m	354541	6663718	54	10/02/2021	Y		

EL5916	NA	FWD0433	24/01/2021	RM	188	2 (3x5x2.5m)	60m	354835	6663749	54	10/02/2021	Y		
EL5916	NA	FWD0435	26/01/2021	RM	196	2 (3x5x2.5m)	60m	354987	6663781	54	6/02/2021	Y		
EL5916	NA	FWD0436	27/01/2021	RM	192	2 (3x5x2.5m)	60m	354917	6663739	54	9/02/2021	Y		
EL5916	NA	FWD0437	29/01/2021	RM	214	2 (3x5x2.5m)	60m	354351	6663603	54	15/02/2021	Y		
EL5916	NA	FWD0438	29/01/2021	RM	184	2 (3x5x2.5m)	60m	354332	6663557	54	19/02/2021	Y		
EL5916	NA	FWD0439	30/01/2021	RM	184	2 (3x5x2.5m)	60m	354309	6663517	54		N	1/05/2022	
EL5916	NA	FWD0440	13/02/2021	RM	196	2 (3x5x2.5m)	60m	355115.6563	6664156.41	54	26/02/2021	Y		
EL5916	NA	FWD0441	14/02/2021	RM	196	2 (3x5x2.5m)	60m	355096.625	6664189.07	54	1/03/2021	Y		
EL5916	NA	FWD0442	15/02/2021	RM	196	2 (3x5x2.5m)	60m	355137.875	6664139.01	54	27/02/2021	Y		
EL5916	NA	FWD0443	16/02/2021	RM	196	2 (3x5x2.5m)	60m	355166.75	6664117.7	54	27/02/2021	Y		
EL5916	NA	FWD0444	17/02/2021	RM	196	2 (3x5x2.5m)	60m	355208.8125	6664075.14	54	28/02/2021	Y		
EL5916	NA	FWD0445	20/02/2021	RM	196	2 (3x5x2.5m)	60m	355180.5938	6664076.25	54	28/02/2021	Y		
EL5916	NA	FWD0447	1/03/2021	RM	200	2 (3x5x2.5m)	60m	355002	6664276.03	54	14/03/2021	Y		
EL5916	NA	FWD0448	2/03/2021	RM	202	2 (3x5x2.5m)	60m	354916.125	6664323.71	54	14/03/2021	Y		
EL5916	NA	FWD0449	3/03/2021	RM	184	2 (3x5x2.5m)	60m	354917.4063	6664598.64	54	14/03/2021	Y		
EL5916	NA	FWD0450	4/03/2021	RM	176	2 (3x5x2.5m)	60m	354777.8438	6664542.1	54	14/03/2021	Y		
EL5916	NA	FWD0454	17/03/2021	RM	218	2 (3x5x2.5m)	60m	355398.375	6663957.36	54	28/03/2021	Y		
EL5916	NA	FWD0456	19/03/2021	RM	210	2 (3x5x2.5m)	60m	355268.0938	6663999.09	54	24/03/2021	Y		
EL5916	NA	FWD0457	20/03/2021	RM	214	2 (3x5x2.5m)	60m	355225.9688	6664035.04	54	21/03/2021	Y		
EL5916	NA	FWD0469	4/04/2021	RM	190	2 (3x5x2.5m)	60m	354845.5313	6663393.49	54	8/04/2021	Y		
EL5916	NA	FWD0470	4/04/2021	RM	190	2 (3x5x2.5m)	60m	354906.2188	6663387.58	54	8/04/2021	Y		
EL5916	NA	FWD0471	6/04/2021	RM	190	2 (3x5x2.5m)	60m	354873	6663705	54	13/04/2021	Y		
EL5916	NA	FWD0473	9/04/2021	RM	196	2 (3x5x2.5m)	60m	354884.75	6663750.15	54	15/04/2021	Y		
EL5916	NA	FWD0475	11/04/2021	RM	190	2 (3x5x2.5m)	60m	354951.0625	6663738.39	54	15/04/2021	Y		
EL5916	NA	FWD0476	13/04/2021	RM	198	2 (3x5x2.5m)	60m	354836.9063	6663668.68	54	24/04/2021	Y		
EL5916	NA	FWD0477	23/04/2021	RM	202	2 (3x5x2.5m)	60m	355000.0313	6663760.13	54	9/05/2021	Y		
EL5916	NA	FWD0478	24/04/2021	RM	199	2 (3x5x2.5m)	60m	354965.3438	6663784.2	54	9/05/2021	Y		
EL5916	NA	FWD0479	30/04/2021	RM	196	2 (3x5x2.5m)	60m	354945.25	6663792.39	54		N	1/05/2022	
EL5916	NA	FWD0480	1/05/2021	RM	196	2 (3x5x2.5m)	60m	354924.1563	6663801.04	54	9/05/2021	Y		
EL5916	NA	FWD0481	3/05/2021	RM	202	2 (3x5x2.5m)	60m	354999.7188	6663833.01	54	11/05/2021	Y		

EL5916	NA	FWD0482	2/05/2021	RM	190	2 (3x5x2.5m)	60m	354832.875	6663690.2	54	21/05/2021	Y		
EL5916	NA	FWD0483	5/05/2021	RM	202	2 (3x5x2.5m)	60m	354774	6663623	54	12/05/2021	Y		
EL5916	NA	FWD0484	7/05/2021	RM	198	2 (3x5x2.5m)	60m	354736.8438	6663593.96	54	13/05/2021	Y		
EL5916	NA	FWD0485	9/05/2021	RM	200	2 (3x5x2.5m)	60m	354763.875	6663571.04	54	13/05/2021	Y		
EL5916	NA	FWD0487	10/05/2021	RM	202	2 (3x5x2.5m)	60m	354833.625	6663686.94	54	21/05/2021	Y		
EL5916	NA	FWD0489	30/05/2021	RM	196	2 (3x5x2.5m)	60m	354735.3125	6663717.16	54	5/06/2021	Y		
EL5916	NA	FWD0490	31/05/2021	RM	196	2 (3x5x2.5m)	60m	354724.8125	6663738.87	54	5/06/2021	Y		
EL5916	NA	FWD0491	4/06/2021	RM	202	2 (3x5x2.5m)	60m	354859.9375	6663588.24	54		N	1/05/2022	
EL5916	NA	FWD0492	5/06/2021	RM	216	2 (3x5x2.5m)	60m	354910	6663547	54		N	1/05/2022	
EL5916	NA	FWD0493	6/06/2021	RM	198	2 (3x5x2.5m)	60m	354730.7188	6663728.34	54		N	1/05/2022	
EL5916	NA	FWD0495	19/06/2021	RM	222	2 (3x5x2.5m)	60m	355439	6663917	54	28/06/2021	Y		
EL5916	NA	FWD0499	25/06/2021	RM	225	2 (3x5x2.5m)	60m	355428.6875	6663864.9	54	8/07/2021	Y		
EL5916	NA	FWD0503	30/06/2021	RM	220	2 (3x5x2.5m)	60m	355299	6663986	54	16/07/2021	Y		
EL5916	NA	FWD0505	2/07/2021	RM	196	2 (3x5x2.5m)	60m	354783	6663587	54		N	1/05/2022	
EL5916	NA	FWD0506	3/07/2021	RM	202	2 (3x5x2.5m)	60m	354857	6663570	54		N	1/05/2022	
EL5916	NA	FWD0507	3/07/2021	RM	202	2 (3x5x2.5m)	60m	354899	6663559	54		N	1/05/2022	
EL5916	NA	FWD0508	4/08/2021	RM	202	2 (3x5x2.5m)	60m	354990	6663836	54	16/08/2021	Y		
EL5916	NA	FWD0509	6/08/2021	RM	195	2 (3x5x2.5m)	60m	354810	6663752	54	15/08/2021	Y		
EL5916	NA	FWD0510	7/08/2021	RM	188	2 (3x5x2.5m)	60m	354642.4063	6663695.2	54	15/08/2021	Y		
EL5916	NA	FWD0511	8/08/2021	RM	190	2 (3x5x2.5m)	60m	354663.6875	6663695.37	54	15/08/2021	Y		
EL5916	NA	FWD0512	21/08/2021	RM	201	2 (3x5x2.5m)	60m	355018.0313	6663823.08	54	26/08/2021	Y		
EL5916	NA	FWD0513	14/08/2021	RM	202	2 (3x5x2.5m)	60m	354766.875	6663750.29	54	24/08/2021	Y		

Table 4: Drillhole/site rehabilitation status

* AC = aircore/vacuum, RM = rotary mud, RC = reverse circulation, RAB = rotary air blast, D = diamond, P = percussion, V = vibracore, O = other.

† C = drill site completely rehabilitated, N = no rehabilitation completed, PR = partial rehabilitation (specify remaining rehabilitation to be completed within the comments section).

Table 5: Access track/drill line rehabilitation status

Tenement	Program notification submit date	Track identification	Tracks/lines created (km)	Rehabilitated tracks/lines (km)	Area of disturbance (ha or m2)	Rehabilitation date	Rehabilitation method	Tracks/lines to be rehabilitated (km)	Planned rehabilitation date	Comments
NA										

Rehabilitation activities planned for the next reporting period.

NA

Table 6 demonstrates how drillholes that intersect a single confined aquifer, multiple aquifers or artesian aquifers were abandoned in accordance with DEM Earth Resources Information Sheet M21, *Mineral exploration drillholes – general specifications for construction and backfilling*.

Tenement	Drillhole	Aquifer(s) intersected (yes or no)	Backfilling requirements (e.g. cuttings only or cuttings and cement grout plugs)	Total depth	Drilling completion date	Aquifer formation name	Aquifer interval (from–to) (m)	Type of aquifer(s) intersected (e.g. unconfined, confined or artesian)	Cementing interval (from–to) (m)	Comment (including the environmental value of each aquifer determined according to the current Environment Protection (Water Quality) Policy)
EL5916	FMC030	Y	Cutting + grout	151.8	29/03/2021	Namba	17 - 46	confined	0 - 151.8	
EL5916	FMC030	Y	Cutting + grout	151.8	29/03/2021	Eyre	46 - 88	confined	0 - 151.8	
EL5916	FMC030	Y	Cutting + grout	151.8	29/03/2021	Four Mile Diamictite	93 - 141	confined	0 - 151.8	
EL5916	FMC031	Y	Cutting + grout	156.5	14/05/2021	Namba	19 - 85	confined	0 - 156.5	
EL5916	FMC031	Y	Cutting + grout	156.5	14/05/2021	Eyre	85 - 135	confined	0 - 156.5	
EL5916	FMC031	Y	Cutting + grout	156.5	14/05/2021	Four Mile Diamictite	138 - 166	confined	0 - 156.5	
EL5916	FMC032	Y	Cutting + grout	161	9/05/2021	Namba	51 - 89	confined	0 - 161	
EL5916	FMC032	Y	Cutting + grout	161	9/05/2021	Eyre	89 - 136	confined	0 - 161	
EL5916	FMC032	Y	Cutting + grout	161	9/05/2021	Four Mile Diamictite	141 - 158	confined	0 - 161	
EL5916	FMC033	Y	Cutting + grout	186	9/05/2021	Namba	53 - 104	confined	0 - 186	
EL5916	FMC033	Y	Cutting + grout	186	9/05/2021	Eyre	104 - 155	confined	0 - 186	
EL5916	FMC033	Y	Cutting + grout	186	9/05/2021	Four Mile Diamictite	163 - 172	confined	0 - 186	
EL5916	FMC034	Y	Cutting + grout	176	16/05/2021	Namba	47 - 82	confined	0 - 176	
EL5916	FMC034	Y	Cutting + grout	176	16/05/2021	Eyre	82 - 131	confined	0 - 176	
EL5916	FMC034	Y	Cutting + grout	176	16/05/2021	Four Mile Diamictite	143 - 174	confined	0 - 176	
EL5916	FMC035	Y	Cutting + grout	176	17/05/2021	Namba	37 - 86	confined	0 - 176	
EL5916	FMC035	Y	Cutting + grout	176	17/05/2021	Eyre	86 - 134	confined	0 - 176	
EL5916	FMC035	Y	Cutting + grout	176	17/05/2021	Four Mile Diamictite	146 - 174	confined	0 - 176	
EL5916	FMC036	Y	Cutting + grout	180	27/05/2021	Namba	48 - 103	confined	0 - 180	
EL5916	FMC036	Y	Cutting + grout	180	27/05/2021	Eyre	103 - 136	confined	0 - 180	
EL5916	FMC036	Y	Cutting + grout	180	27/05/2021	Four Mile Diamictite	148 - 174	confined	0 - 180	

EL5916	FMD0641	Y	Cutting + grout	282	6/02/2021	Namba	70 - 215	confined	0 - 282	
EL5916	FMD0641	Y	Cutting + grout	282	6/02/2021	Eyre	215 - 262	confined	0 - 282	
EL5916	FMD0642	Y	Cutting + grout	280	7/02/2021	Namba	72 - 220	confined	0 - 280	
EL5916	FMD0642	Y	Cutting + grout	280	7/02/2021	Eyre	220 - 267	confined	0 - 280	
EL5916	FMD0643	Y	Cutting + grout	298	8/02/2021	Namba	66 - 213	confined	0 - 298	
EL5916	FMD0643	Y	Cutting + grout	298	8/02/2021	Eyre	213 - 263	confined	0 - 298	
EL5916	FMD0644	Y	Cutting + grout	298	8/02/2021	Namba	60 - 218	confined	0 - 298	
EL5916	FMD0644	Y	Cutting + grout	298	8/02/2021	Eyre	218 - 263	confined	0 - 298	
EL5916	FMD0645	Y	Cutting + grout	286	13/02/2021	Namba	52 - 214	confined	0 - 286	
EL5916	FMD0645	Y	Cutting + grout	286	13/02/2021	Eyre	214 - 265	confined	0 - 286	
EL5916	FMD0646	Y	Cutting + grout	286	22/04/2021	Namba	83 - 213	confined	0 - 286	
EL5916	FMD0646	Y	Cutting + grout	286	22/04/2021	Eyre	213 - 274	confined	0 - 286	
EL5916	FMD0648	Y	Cutting + grout	288	25/04/2021	Namba	78 - 207	confined	0 - 288	
EL5916	FMD0648	Y	Cutting + grout	288	25/04/2021	Eyre	207 - 276	confined	0 - 288	
EL5916	FMD0649	Y	Cutting + grout	288	27/04/2021	Namba	75 - 203	confined	0 - 288	
EL5916	FMD0649	Y	Cutting + grout	288	27/04/2021	Eyre	203 - 278	confined	0 - 288	
EL5916	FMD0650	Y	Cutting + grout	288	28/04/2021	Namba	76 - 208	confined	0 - 288	
EL5916	FMD0650	Y	Cutting + grout	288	28/04/2021	Eyre	208 - 279	confined	0 - 288	
EL5916	FMD0651	Y	Cutting + grout	312	29/04/2021	Namba	75 - 207	confined	0 - 312	
EL5916	FMD0651	Y	Cutting + grout	312	29/04/2021	Eyre	207 - 277	confined	0 - 312	
EL5916	FMD0652	Y	Cutting + grout	282	1/05/2021	Namba	68 - 212	confined	0 - 282	
EL5916	FMD0652	Y	Cutting + grout	282	1/05/2021	Eyre	212 - 273	confined	0 - 282	
EL5916	FMD0653	Y	Cutting + grout	288	2/05/2021	Namba	73 - 215	confined	0 - 288	
EL5916	FMD0653	Y	Cutting + grout	288	2/05/2021	Eyre	215 - 271	confined	0 - 288	
EL5916	FMD0654	Y	Cutting + grout	288	3/05/2021	Namba	74 - 219	confined	0 - 288	
EL5916	FMD0654	Y	Cutting + grout	288	3/05/2021	Eyre	219 - 270	confined	0 - 288	
EL5916	FMD0655	Y	Cutting + grout	300	6/05/2021	Namba	78 - 220	confined	0 - 300	
EL5916	FMD0655	Y	Cutting + grout	300	6/05/2021	Eyre	220 - 284	confined	0 - 300	
EL5916	FMD0656	Y	Cutting + grout	288	7/05/2021	Namba	67 - 195	confined	0 - 288	
EL5916	FMD0656	Y	Cutting + grout	288	7/05/2021	Eyre	195 - 269	confined	0 - 288	
EL5916	FMD0657	Y	Cutting + grout	347	8/05/2021	Namba	67 - 219	confined	0 - 347	
EL5916	FMD0657	Y	Cutting + grout	347	8/05/2021	Eyre	219 - 267	confined	0 - 347	

EL5916	FMD0658	Y	Cutting + grout	300	10/05/2021	Namba	71 - 210	confined	0 - 300	
EL5916	FMD0658	Y	Cutting + grout	300	10/05/2021	Eyre	210 - 269	confined	0 - 300	
EL5916	FMD0659	Y	Cutting + grout	288	11/05/2021	Namba	70 - 187	confined	0 - 288	
EL5916	FMD0659	Y	Cutting + grout	288	11/05/2021	Eyre	187 - 271	confined	0 - 288	
EL5916	FMD0660	Y	Cutting + grout	282	12/05/2021	Namba	72 - 179	confined	0 - 282	
EL5916	FMD0660	Y	Cutting + grout	282	12/05/2021	Eyre	179 - 266	confined	0 - 282	
EL5916	FMD0661	Y	Cutting + grout	282	13/05/2021	Namba	72 - 185	confined	0 - 282	
EL5916	FMD0661	Y	Cutting + grout	282	13/05/2021	Eyre	185 - 269	confined	0 - 282	
EL5916	FMD0662	Y	Cutting + grout	288	14/05/2021	Namba	75 - 217	confined	0 - 288	
EL5916	FMD0662	Y	Cutting + grout	288	14/05/2021	Eyre	217 - 269	confined	0 - 288	
EL5916	FMD0663	Y	Cutting + grout	288	15/05/2021	Namba	67 - 221	confined	0 - 288	
EL5916	FMD0663	Y	Cutting + grout	288	15/05/2021	Eyre	221 - 270	confined	0 - 288	
EL5916	FMD0664	Y	Cutting + grout	288	16/05/2021	Namba	69 - 183	confined	0 - 288	
EL5916	FMD0664	Y	Cutting + grout	288	16/05/2021	Eyre	183 - 271	confined	0 - 288	
EL5916	FMD0665	Y	Cutting + grout	288	16/05/2021	Namba	78 - 214	confined	0 - 288	
EL5916	FMD0665	Y	Cutting + grout	288	16/05/2021	Eyre	214 - 271	confined	0 - 288	
EL5916	FMD0666	Y	Cutting + grout	294	17/05/2021	Namba	62 - 220	confined	0 - 294	
EL5916	FMD0666	Y	Cutting + grout	294	17/05/2021	Eyre	220 - 274	confined	0 - 294	
EL5916	FMD0667	Y	Cutting + grout	282	18/05/2021	Namba	74 - 219	confined	0 - 282	
EL5916	FMD0667	Y	Cutting + grout	282	18/05/2021	Eyre	219 - 265	confined	0 - 282	
EL5916	FMD0668	Y	Cutting + grout	288	19/05/2021	Namba	75 - 216	confined	0 - 288	
EL5916	FMD0668	Y	Cutting + grout	288	19/05/2021	Eyre	216 - 279	confined	0 - 288	
EL5916	FMD0669	Y	Cutting + grout	288	20/05/2021	Namba	77 - 213	confined	0 - 288	
EL5916	FMD0669	Y	Cutting + grout	288	20/05/2021	Eyre	213 - 271	confined	0 - 288	
EL5916	FMD0670	Y	Cutting + grout	282	21/05/2021	Namba	86 - 202	confined	0 - 282	
EL5916	FMD0670	Y	Cutting + grout	282	21/05/2021	Eyre	202 - 267	confined	0 - 282	
EL5916	FMD0671	Y	Cutting + grout	288	22/05/2021	Namba	90 - 207	confined	0 - 288	
EL5916	FMD0671	Y	Cutting + grout	288	22/05/2021	Eyre	207 - 267	confined	0 - 288	
EL5916	FMD0672	Y	Cutting + grout	282	22/05/2021	Namba	87 - 208	confined	0 - 282	
EL5916	FMD0672	Y	Cutting + grout	282	22/05/2021	Eyre	208 - 269	confined	0 - 282	
EL5916	FMD0673	Y	Cutting + grout	300	23/05/2021	Namba	87 - 214	confined	0 - 300	
EL5916	FMD0673	Y	Cutting + grout	300	23/05/2021	Eyre	214 - 271	confined	0 - 300	

EL5916	FMD0674	Y	Cutting + grout	282	25/05/2021	Namba	57 - 212	confined	0 - 282	
EL5916	FMD0674	Y	Cutting + grout	282	25/05/2021	Eyre	212 - 270	confined	0 - 282	
EL5916	FMD0675	Y	Cutting + grout	282	26/05/2021	Namba	51 - 223	confined	0 - 282	
EL5916	FMD0675	Y	Cutting + grout	282	26/05/2021	Eyre	223 - 271	confined	0 - 282	
EL5916	FMD0676	Y	Cutting + grout	282	26/05/2021	Namba	78 - 196	confined	0 - 282	
EL5916	FMD0676	Y	Cutting + grout	282	26/05/2021	Eyre	196 - 268	confined	0 - 282	
EL5916	FMD0677	Y	Cutting + grout	282	27/05/2021	Namba	76 - 198	confined	0 - 282	
EL5916	FMD0677	Y	Cutting + grout	282	27/05/2021	Eyre	198 - 269	confined	0 - 282	
EL5916	FMD0678	Y	Cutting + grout	330	28/05/2021	Namba	70 - 202	confined	0 - 330	
EL5916	FMD0678	Y	Cutting + grout	330	28/05/2021	Eyre	202 - 267	confined	0 - 330	
EL5916	FMD0679	Y	Cutting + grout	270	29/05/2021	Namba	58 - 215	confined	0 - 270	
EL5916	FMD0679	Y	Cutting + grout	270	29/05/2021	Eyre	215 - 256	confined	0 - 270	
EL5916	FMD0680	Y	Cutting + grout	258	29/05/2021	Namba	60 - 216	confined	0 - 258	
EL5916	FMD0680	Y	Cutting + grout	258	29/05/2021	Eyre	216 - 249	confined	0 - 258	
EL6449	FMD0681	Y	Cutting + grout	296	30/05/2021	Namba	55 - 228	confined	0 - 296	
EL6449	FMD0681	Y	Cutting + grout	296	30/05/2021	Eyre	228 - 252	confined	0 - 296	
EL6449	FMD0682	Y	Cutting + grout	246	31/05/2021	Namba	61 - 209	confined	0 - 246	
EL6449	FMD0682	Y	Cutting + grout	246	31/05/2021	Eyre	209 - 213	confined	0 - 246	
EL6449	FMD0683	Y	Cutting + grout	282	1/06/2021	Namba	83 - 206	confined	0 - 282	
EL6449	FMD0683	Y	Cutting + grout	282	1/06/2021	Eyre	206 - 212	confined	0 - 282	
EL6449	FMD0684	Y	Cutting + grout	348	2/06/2021	Namba	80 - 231	confined	0 - 348	
EL6449	FMD0684	Y	Cutting + grout	348	2/06/2021	Eyre	231 - 259	confined	0 - 348	
EL5916	FMD0685	Y	Cutting + grout	292	4/06/2021	Namba	90 - 215	confined	0 - 292	
EL5916	FMD0685	Y	Cutting + grout	292	4/06/2021	Eyre	215 - 274	confined	0 - 292	
EL6449	FMD0686	Y	Cutting + grout	385	4/06/2021	Namba	91 - 242	confined	0 - 385	
EL6449	FMD0686	Y	Cutting + grout	385	4/06/2021	Eyre	242 - 269	confined	0 - 385	
EL6449	FMD0687	Y	Cutting + grout	342	5/06/2021	Namba	73 - 211	confined	0 - 342	
EL6449	FMD0687	Y	Cutting + grout	342	5/06/2021	Eyre	211 - 221	confined	0 - 342	
EL5916	FMD0688	Y	Cutting + grout	290	7/06/2021	Namba	100 - 217	confined	0 - 290	
EL5916	FMD0688	Y	Cutting + grout	290	7/06/2021	Eyre	217 - 269	confined	0 - 290	
EL5916	FMD0689	Y	Cutting + grout	306	7/06/2021	Namba	82 - 196	confined	0 - 306	
EL5916	FMD0689	Y	Cutting + grout	306	7/06/2021	Eyre	196 - 269	confined	0 - 306	

EL6449	FMD0690	Y	Cutting + grout	364	6/06/2021	Namba	73 - 228	confined	0 - 364	
EL6449	FMD0690	Y	Cutting + grout	364	6/06/2021	Eyre	228 - 271	confined	0 - 364	
EL6449	FMD0691	Y	Cutting + grout	324	9/06/2021	Namba	88 - 208	confined	0 - 324	
EL6449	FMD0691	Y	Cutting + grout	324	9/06/2021	Eyre	208 - 222	confined	0 - 324	
EL5916	FMD0692	Y	Cutting + grout	292	8/06/2021	Namba	91 - 211	confined	0 - 292	
EL5916	FMD0692	Y	Cutting + grout	292	8/06/2021	Eyre	211 - 268	confined	0 - 292	
EL5916	FMD0693	Y	Cutting + grout	294	10/06/2021	Namba	50 - 168	confined	0 - 294	
EL5916	FMD0693	Y	Cutting + grout	294	10/06/2021	Eyre	168 - 248	confined	0 - 294	
EL5916	FMD0694	Y	Cutting + grout	300	9/06/2021	Namba	85 - 209	confined	0 - 300	
EL5916	FMD0694	Y	Cutting + grout	300	9/06/2021	Eyre	209 - 280	confined	0 - 300	
EL5916	FMD0695	Y	Cutting + grout	270	9/06/2021	Namba	92 - 205	confined	0 - 270	
EL5916	FMD0695	Y	Cutting + grout	270	9/06/2021	Eyre	205 - 266	confined	0 - 270	
EL5916	FMD0696	Y	Cutting + grout	300	10/06/2021	Namba	78 - 202	confined	0 - 300	
EL5916	FMD0696	Y	Cutting + grout	300	10/06/2021	Eyre	202 - 269	confined	0 - 300	
EL5916	FMD0697	Y	Cutting + grout	290	10/06/2021	Namba	79 - 195	confined	0 - 290	
EL5916	FMD0697	Y	Cutting + grout	290	10/06/2021	Eyre	195 - 269	confined	0 - 290	
EL5916	FMD0698	Y	Cutting + grout	286	11/06/2021	Namba	68 - 205	confined	0 - 286	
EL5916	FMD0698	Y	Cutting + grout	286	11/06/2021	Eyre	205 - 270	confined	0 - 286	
EL5916	FMD0699	Y	Cutting + grout	300	11/06/2021	Namba	84 - 197	confined	0 - 300	
EL5916	FMD0699	Y	Cutting + grout	300	11/06/2021	Eyre	197 - 270	confined	0 - 300	
EL5916	FMD0700	Y	Cutting + grout	288	11/06/2021	Namba	53 - 203	confined	0 - 288	
EL5916	FMD0700	Y	Cutting + grout	288	11/06/2021	Eyre	203 - 248	confined	0 - 288	
EL5916	FMD0701	Y	Cutting + grout	286	12/06/2021	Namba	79 - 221	confined	0 - 286	
EL5916	FMD0701	Y	Cutting + grout	286	12/06/2021	Eyre	221 - 265	confined	0 - 286	
EL5916	FMD0702	Y	Cutting + grout	300	13/06/2021	Namba	77 - 215	confined	0 - 300	
EL5916	FMD0702	Y	Cutting + grout	300	13/06/2021	Eyre	215 - 274	confined	0 - 300	
EL5916	FMD0703	Y	Cutting + grout	288	11/06/2021	Namba	53 - 205	confined	0 - 288	
EL5916	FMD0703	Y	Cutting + grout	288	11/06/2021	Eyre	205 - 254	confined	0 - 288	
EL5916	FMD0704	Y	Cutting + grout	303	13/06/2021	Namba	91 - 216	confined	0 - 303	
EL5916	FMD0704	Y	Cutting + grout	303	13/06/2021	Eyre	216 - 264	confined	0 - 303	
EL5916	FMD0705	Y	Cutting + grout	282	12/06/2021	Namba	55 - 206	confined	0 - 282	
EL5916	FMD0705	Y	Cutting + grout	282	12/06/2021	Eyre	206 - 269	confined	0 - 282	

EL5916	FMD0706	Y	Cutting + grout	280	13/06/2021	Namba	57 - 213	confined	0 - 280	
EL5916	FMD0706	Y	Cutting + grout	280	13/06/2021	Eyre	213 - 257	confined	0 - 280	
EL5916	FMD0707	Y	Cutting + grout	294	14/06/2021	Namba	74 - 210	confined	0 - 294	
EL5916	FMD0707	Y	Cutting + grout	294	14/06/2021	Eyre	210 - 269	confined	0 - 294	
EL5916	FMD0708	Y	Cutting + grout	276	14/06/2021	Namba	54 - 214	confined	0 - 276	
EL5916	FMD0708	Y	Cutting + grout	276	14/06/2021	Eyre	214 - 252	confined	0 - 276	
EL5916	FMD0709	Y	Cutting + grout	294	15/06/2021	Namba	76 - 171	confined	0 - 294	
EL5916	FMD0709	Y	Cutting + grout	294	15/06/2021	Eyre	171 - 268	confined	0 - 294	
EL5916	FMD0710	Y	Cutting + grout	298	15/06/2021	Namba	86 - 214	confined	0 - 298	
EL5916	FMD0710	Y	Cutting + grout	298	15/06/2021	Eyre	214 - 264	confined	0 - 298	
EL5916	FMD0711	Y	Cutting + grout	270	14/06/2021	Namba	117 - 215	confined	0 - 270	
EL5916	FMD0711	Y	Cutting + grout	270	14/06/2021	Eyre	215 - 255	confined	0 - 270	
EL5916	FMD0712	Y	Cutting + grout	300	17/06/2021	Namba	47 - 214	confined	0 - 300	
EL5916	FMD0712	Y	Cutting + grout	300	17/06/2021	Eyre	214 - 262	confined	0 - 300	
EL5916	FMD0713	Y	Cutting + grout	264	15/06/2021	Namba	84 - 195	confined	0 - 264	
EL5916	FMD0713	Y	Cutting + grout	264	15/06/2021	Eyre	195 - 255	confined	0 - 264	
EL5916	FMD0714	Y	Cutting + grout	134	16/06/2021	Namba	22 - 117	confined	0 - 134	
EL5916	FMD0714	Y	Cutting + grout	134	16/06/2021	Eyre	117 - 126	confined	0 - 134	
EL5916	FMD0715	Y	Cutting + grout	304	19/06/2021	Namba	83 - 221	confined	0 - 304	
EL5916	FMD0715	Y	Cutting + grout	304	19/06/2021	Eyre	221 - 272	confined	0 - 304	
EL5916	FMD0716	Y	Cutting + grout	334	27/06/2021	Namba	67 - 202	confined	0 - 334	
EL5916	FMD0716	Y	Cutting + grout	334	27/06/2021	Eyre	202 - 274	confined	0 - 334	
EL5916	FMD0717	Y	Cutting + grout	292	21/06/2021	Namba	101 - 208	confined	0 - 292	
EL5916	FMD0717	Y	Cutting + grout	292	21/06/2021	Eyre	208 - 273	confined	0 - 292	
EL5916	FMD0718	Y	Cutting + grout	354	30/06/2021	Namba	93 - 211	confined	0 - 354	
EL5916	FMD0718	Y	Cutting + grout	354	30/06/2021	Eyre	211 - 276	confined	0 - 354	
EL5916	FMD0721	Y	Cutting + grout	364	4/07/2021	Namba	77 - 216	confined	0 - 364	
EL5916	FMD0721	Y	Cutting + grout	364	4/07/2021	Eyre	216 - 273	confined	0 - 364	
EL5916	FMD0722	Y	Cutting + grout	334	7/07/2021	Namba	67 - 194	confined	0 - 334	
EL5916	FMD0722	Y	Cutting + grout	334	7/07/2021	Eyre	194 - 271	confined	0 - 334	
EL5916	FMD0723	Y	Cutting + grout	352	10/07/2021	Namba	75 - 201	confined	0 - 352	
EL5916	FMD0723	Y	Cutting + grout	352	10/07/2021	Eyre	201 - 272	confined	0 - 352	

EL5916	FMD0724	Y	Cutting + grout	292	11/07/2021	Namba	81 - 199	confined	0 - 292	
EL5916	FMD0724	Y	Cutting + grout	292	11/07/2021	Eyre	199 - 269	confined	0 - 292	
EL5916	FMD0725	Y	Cutting + grout	292	12/07/2021	Namba	74 - 207	confined	0 - 292	
EL5916	FMD0725	Y	Cutting + grout	292	12/07/2021	Eyre	207 - 270	confined	0 - 292	
EL5916	FMD0726	Y	Cutting + grout	280	13/07/2021	Namba	82 - 203	confined	0 - 280	
EL5916	FMD0726	Y	Cutting + grout	280	13/07/2021	Eyre	203 - 264	confined	0 - 280	
EL5916	FMD0727	Y	Cutting + grout	280	15/07/2021	Namba	78 - 212	confined	0 - 280	
EL5916	FMD0727	Y	Cutting + grout	280	15/07/2021	Eyre	212 - 269	confined	0 - 280	
EL5916	FMD0728	Y	Cutting + grout	280	16/07/2021	Namba	65 - 216	confined	0 - 280	
EL5916	FMD0728	Y	Cutting + grout	280	16/07/2021	Eyre	216 - 265	confined	0 - 280	
EL5916	FMD0729	Y	Cutting + grout	280	18/07/2021	Namba	61 - 224	confined	0 - 280	
EL5916	FMD0729	Y	Cutting + grout	280	18/07/2021	Eyre	224 - 266	confined	0 - 280	
EL5916	FMD0730	Y	Cutting + grout	280	19/07/2021	Namba	80 - 221	confined	0 - 280	
EL5916	FMD0730	Y	Cutting + grout	280	19/07/2021	Eyre	221 - 265	confined	0 - 280	
EL5916	FMD0731	Y	Cutting + grout	280	22/07/2021	Namba	64 - 221	confined	0 - 280	
EL5916	FMD0731	Y	Cutting + grout	280	22/07/2021	Eyre	221 - 264	confined	0 - 280	
EL5916	FMD0732	Y	Cutting + grout	292	23/07/2021	Namba	56 - 205	confined	0 - 292	
EL5916	FMD0732	Y	Cutting + grout	292	23/07/2021	Eyre	205 - 277	confined	0 - 292	
EL5916	FMD0733	Y	Cutting + grout	286	24/07/2021	Namba	77 - 210	confined	0 - 286	
EL5916	FMD0733	Y	Cutting + grout	286	24/07/2021	Eyre	210 - 273	confined	0 - 286	
EL5916	FMD0734	Y	Cutting + grout	290	29/07/2021	Namba	77 - 213	confined	0 - 290	
EL5916	FMD0734	Y	Cutting + grout	290	29/07/2021	Eyre	213 - 270	confined	0 - 290	
EL5916	FMD0735	Y	Cutting + grout	304	30/07/2021	Namba	84 - 220	confined	0 - 304	
EL5916	FMD0735	Y	Cutting + grout	304	30/07/2021	Eyre	220 - 276	confined	0 - 304	
EL5916	FMD0736	Y	Cutting + grout	286	1/08/2021	Namba	88 - 208	confined	0 - 286	
EL5916	FMD0736	Y	Cutting + grout	286	1/08/2021	Eyre	208 - 267	confined	0 - 286	
EL5916	FMD0737	Y	Cutting + grout	292	2/08/2021	Namba	82 - 216	confined	0 - 292	
EL5916	FMD0737	Y	Cutting + grout	292	2/08/2021	Eyre	216 - 266	confined	0 - 292	
EL5916	FMD0738	Y	Cutting + grout	292	4/08/2021	Namba	84 - 209	confined	0 - 292	
EL5916	FMD0738	Y	Cutting + grout	292	4/08/2021	Eyre	209 - 269	confined	0 - 292	
EL5916	FMD0739	Y	Cutting + grout	316	5/08/2021	Namba	77 - 222	confined	0 - 316	
EL5916	FMD0739	Y	Cutting + grout	316	5/08/2021	Eyre	222 - 275	confined	0 - 316	

EL5916	FMD0740	Y	Cutting + grout	298	6/08/2021	Namba	76 - 209	confined	0 - 298	
EL5916	FMD0740	Y	Cutting + grout	298	6/08/2021	Eyre	209 - 269	confined	0 - 298	
EL5916	FMD0741	Y	Cutting + grout	328	8/08/2021	Namba	76 - 174	confined	0 - 328	
EL5916	FMD0741	Y	Cutting + grout	328	8/08/2021	Eyre	174 - 276	confined	0 - 328	
EL5916	FMD0742	Y	Cutting + grout	298	10/08/2021	Namba	76 - 206	confined	0 - 298	
EL5916	FMD0742	Y	Cutting + grout	298	10/08/2021	Eyre	206 - 265	confined	0 - 298	
EL5916	FMD0743	Y	Cutting + grout	304	12/08/2021	Namba	68 - 209	confined	0 - 304	
EL5916	FMD0743	Y	Cutting + grout	304	12/08/2021	Eyre	209 - 269	confined	0 - 304	
EL5916	FMD0744	Y	Cutting + grout	292	13/08/2021	Namba	68 - 217	confined	0 - 292	
EL5916	FMD0744	Y	Cutting + grout	292	13/08/2021	Eyre	217 - 268	confined	0 - 292	
EL5916	FMD0745	Y	Cutting + grout	322	14/08/2021	Namba	71 - 217	confined	0 - 322	
EL5916	FMD0745	Y	Cutting + grout	322	14/08/2021	Eyre	217 - 272	confined	0 - 322	
EL5916	FMD0746	Y	Cutting + grout	298	16/08/2021	Namba	52 - 154	confined	0 - 298	
EL5916	FMD0746	Y	Cutting + grout	298	16/08/2021	Eyre	154 - 269	confined	0 - 298	
EL5916	FMD0747	Y	Cutting + grout	298	17/08/2021	Namba	70 - 212	confined	0 - 298	
EL5916	FMD0747	Y	Cutting + grout	298	17/08/2021	Eyre	212 - 265	confined	0 - 298	
EL5916	FMD0758	Y	Cutting + grout	184	9/09/2021	Namba	44 - 113	confined	0 - 184	
EL5916	FMD0758	Y	Cutting + grout	184	9/09/2021	Eyre	113 - 166	confined	0 - 184	
EL5916	FMD0759	Y	Cutting + grout	244	11/09/2021	Namba	52 - 199	confined	0 - 244	
EL5916	FMD0759	Y	Cutting + grout	244	11/09/2021	Eyre	199 - 232	confined	0 - 244	
EL6449	FMD0766	Y	Cutting + grout	358	28/09/2021	Namba	80 - 210	confined	0 - 358	
EL6449	FMD0766	Y	Cutting + grout	358	28/09/2021	Eyre	210 - 279	confined	0 - 358	
EL5916	FMD0767	Y	Cutting + grout	358	29/09/2021	Namba	75 - 212	confined	0 - 358	
EL5916	FMD0767	Y	Cutting + grout	358	29/09/2021	Eyre	212 - 276	confined	0 - 358	
EL5916	FMD0768	Y	Cutting + grout	356	1/10/2021	Namba	81 - 230	confined	0 - 356	
EL5916	FMD0768	Y	Cutting + grout	356	1/10/2021	Eyre	230 - 279	confined	0 - 356	
EL5916	FMD0770	Y	Cutting + grout	286	7/10/2021	Namba	65 - 177	confined	0 - 286	
EL5916	FMD0770	Y	Cutting + grout	286	7/10/2021	Eyre	177 - 225	confined	0 - 286	
EL5916	FMD0779	Y	Cutting + grout	376	25/10/2021	Namba	83 - 198	confined	0 - 376	
EL5916	FMD0779	Y	Cutting + grout	376	25/10/2021	Eyre	198 - 280	confined	0 - 376	
EL5916	FMD0782	Y	Cutting + grout	178	30/10/2021	Namba	27 - 126	confined	0 - 178	
EL5916	FMD0782	Y	Cutting + grout	178	30/10/2021	Eyre	126 - 161	confined	0 - 178	

EL5916	FMD0783	Y	Cutting + grout	292	30/10/2021	Namba	72 - 216	confined	0 - 292	
EL5916	FMD0783	Y	Cutting + grout	292	30/10/2021	Eyre	216 - 263	confined	0 - 292	
EL5916	FMD0784	Y	Cutting + grout	298	31/10/2021	Namba	83 - 221	confined	0 - 298	
EL5916	FMD0784	Y	Cutting + grout	298	31/10/2021	Eyre	221 - 262	confined	0 - 298	
EL5916	FMD0785	Y	Cutting + grout	276	31/10/2021	Namba	56 - 211	confined	0 - 276	
EL5916	FMD0785	Y	Cutting + grout	276	31/10/2021	Eyre	211 - 257	confined	0 - 276	
EL5916	FMD0786	Y	Cutting + grout	276	1/11/2021	Namba	56 - 212	confined	0 - 276	
EL5916	FMD0786	Y	Cutting + grout	276	1/11/2021	Eyre	212 - 260	confined	0 - 276	
EL5916	FMD0787	Y	Cutting + grout	288	1/11/2021	Namba	81 - 223	confined	0 - 288	
EL5916	FMD0787	Y	Cutting + grout	288	1/11/2021	Eyre	223 - 264	confined	0 - 288	
EL5916	FMD0788	Y	Cutting + grout	292	3/11/2021	Namba	72 - 220	confined	0 - 292	
EL5916	FMD0788	Y	Cutting + grout	292	3/11/2021	Eyre	220 - 263	confined	0 - 292	
EL5916	FMD0791	Y	Cutting + grout	296	5/11/2021	Namba	60 - 217	confined	0 - 296	
EL5916	FMD0791	Y	Cutting + grout	296	5/11/2021	Eyre	217 - 255	confined	0 - 296	
EL5916	FMD0793	Y	Cutting + grout	292	14/11/2021	Namba	49 - 131	confined	0 - 292	
EL5916	FMD0793	Y	Cutting + grout	292	14/11/2021	Eyre	131 - 222	confined	0 - 292	
EL5916	FMD0794	Y	Cutting + grout	286	19/11/2021	Namba	44 - 140	confined	0 - 286	
EL5916	FMD0794	Y	Cutting + grout	286	19/11/2021	Eyre	140 - 176	confined	0 - 286	
EL5916	FMD0795	Y	Cutting + grout	300	18/11/2021	Namba	59 - 216	confined	0 - 300	
EL5916	FMD0795	Y	Cutting + grout	300	18/11/2021	Eyre	216 - 265	confined	0 - 300	
EL5916	FMD0796	Y	Cutting + grout	310	23/11/2021	Namba	53 - 197	confined	0 - 310	
EL5916	FMD0796	Y	Cutting + grout	310	23/11/2021	Eyre	197 - 258	confined	0 - 310	
EL5916	FMD0797	Y	Cutting + grout	282	21/11/2021	Namba	72 - 216	confined	0 - 282	
EL5916	FMD0797	Y	Cutting + grout	282	21/11/2021	Eyre	216 - 263	confined	0 - 282	
EL5916	FMD0798	Y	Cutting + grout	292	27/11/2021	Namba	64 - 203	confined	0 - 292	
EL5916	FMD0798	Y	Cutting + grout	292	27/11/2021	Eyre	203 - 257	confined	0 - 292	
EL5916	FMD0799	Y	Cutting + grout	282	22/11/2021	Namba	54 - 215	confined	0 - 282	
EL5916	FMD0799	Y	Cutting + grout	282	22/11/2021	Eyre	215 - 263	confined	0 - 282	
EL5916	FMD0800	Y	Cutting + grout	294	27/11/2021	Namba	59 - 215	confined	0 - 294	
EL5916	FMD0800	Y	Cutting + grout	294	27/11/2021	Eyre	215 - 263	confined	0 - 294	
EL5916	FMD0801	Y	Cutting + grout	276	28/11/2021	Namba	83 - 220	confined	0 - 276	
EL5916	FMD0801	Y	Cutting + grout	276	28/11/2021	Eyre	220 - 262	confined	0 - 276	

EL5916	FMD0802	Y	Cutting + grout	308	29/11/2021	Namba	57 - 208	confined	0 - 308	
EL5916	FMD0802	Y	Cutting + grout	308	29/11/2021	Eyre	208 - 263	confined	0 - 308	
EL5916	FMD0804	Y	Cutting + grout	314	2/12/2021	Namba	38 - 179	confined	0 - 314	
EL5916	FMD0804	Y	Cutting + grout	314	2/12/2021	Eyre	179 - 263	confined	0 - 314	
EL5916	FMD0806	Y	Cutting + grout	206	7/12/2021	Namba	79 - 105	confined	0 - 206	
EL5916	FMD0806	Y	Cutting + grout	206	7/12/2021	Eyre	105 - 130	confined	0 - 206	
EL5916	FMD0807	Y	Cutting + grout	312	10/12/2021	Namba	70 - 209	confined	0 - 312	
EL5916	FMD0807	Y	Cutting + grout	312	10/12/2021	Eyre	209 - 266	confined	0 - 312	
EL5916	FMD0809	Y	Cutting + grout	312	11/12/2021	Namba	84 - 214	confined	0 - 312	
EL5916	FMD0809	Y	Cutting + grout	312	11/12/2021	Eyre	214 - 265	confined	0 - 312	
EL5916	FWD0428	Y	Cutting + grout	182	13/01/2021	Namba	47 - 108	confined	0 - 182	
EL5916	FWD0428	Y	Cutting + grout	182	13/01/2021	Eyre	108 - 158	confined	0 - 182	
EL5916	FWD0429	Y	Cutting + grout	180	15/01/2021	Namba	23 - 125	confined	0 - 180	
EL5916	FWD0429	Y	Cutting + grout	180	15/01/2021	Eyre	125 - 151	confined	0 - 180	
EL5916	FWD0431	Y	Cutting + grout	182	21/01/2021	Namba	38 - 68	confined	0 - 182	
EL5916	FWD0431	Y	Cutting + grout	182	21/01/2021	Eyre	68 - 118	confined	0 - 182	
EL5916	FWD0431	Y	Cutting + grout	182	21/01/2021	Four Mile Diamictite	130 - 169	confined	0 - 182	
EL5916	FWD0431	Y	Cutting + grout	182	21/01/2021	Four Mile Gravel	169 - 174	confined	0 - 182	
EL5916	FWD0433	Y	Cutting + grout	188	24/01/2021	Namba	34 - 82	confined	0 - 188	
EL5916	FWD0433	Y	Cutting + grout	188	24/01/2021	Eyre	82 - 129	confined	0 - 188	
EL5916	FWD0433	Y	Cutting + grout	188	24/01/2021	Four Mile Diamictite	141 - 178	confined	0 - 188	
EL5916	FWD0433	Y	Cutting + grout	188	24/01/2021	Four Mile Gravel	178 - 186	confined	0 - 188	
EL5916	FWD0435	Y	Cutting + grout	196	26/01/2021	Namba	37 - 110	confined	0 - 196	
EL5916	FWD0435	Y	Cutting + grout	196	26/01/2021	Eyre	110 - 134	confined	0 - 196	
EL5916	FWD0435	Y	Cutting + grout	196	26/01/2021	Four Mile Diamictite	147 - 193	confined	0 - 196	
EL5916	FWD0436	Y	Cutting + grout	192	27/01/2021	Namba	38 - 108	confined	0 - 192	
EL5916	FWD0436	Y	Cutting + grout	192	27/01/2021	Eyre	108 - 130	confined	0 - 192	
EL5916	FWD0436	Y	Cutting + grout	192	27/01/2021	Four Mile Diamictite	143 - 188	confined	0 - 192	
EL5916	FWD0437	Y	Cutting + grout	214	29/01/2021	Namba	31 - 68	confined	0 - 214	
EL5916	FWD0437	Y	Cutting + grout	214	29/01/2021	Eyre	68 - 84	confined	0 - 214	
EL5916	FWD0437	Y	Cutting + grout	214	29/01/2021	Four Mile Diamictite	89 - 134	confined	0 - 214	
EL5916	FWD0438	Y	Cutting + grout	184	29/01/2021	Namba	30 - 65	confined	0 - 184	

EL5916	FWD0438	Y	Cutting + grout	184	29/01/2021	Eyre	65 - 83	confined	0 - 184	
EL5916	FWD0438	Y	Cutting + grout	184	29/01/2021	Four Mile Diamictite	90 - 134	confined	0 - 184	
EL5916	FWD0439	Y	Cutting + grout	184	30/01/2021	Namba	27 - 50	confined	0 - 184	
EL5916	FWD0439	Y	Cutting + grout	184	30/01/2021	Eyre	50 - 83	confined	0 - 184	
EL5916	FWD0439	Y	Cutting + grout	184	30/01/2021	Four Mile Diamictite	88 - 128	confined	0 - 184	
EL5916	FWD0439	Y	Cutting + grout	184	30/01/2021	Four Mile Gravel	128 - 132	confined	0 - 184	
EL5916	FWD0440	Y	Cutting + grout	196	13/02/2021	Namba	25 - 113	confined	0 - 196	
EL5916	FWD0440	Y	Cutting + grout	196	13/02/2021	Eyre	113 - 140	confined	0 - 196	
EL5916	FWD0440	Y	Cutting + grout	196	13/02/2021	Four Mile Diamictite	154 - 185	confined	0 - 196	
EL5916	FWD0440	Y	Cutting + grout	196	13/02/2021	Four Mile Gravel	185 - 187	confined	0 - 196	
EL5916	FWD0441	Y	Cutting + grout	196	14/02/2021	Namba	32 - 110	confined	0 - 196	
EL5916	FWD0441	Y	Cutting + grout	196	14/02/2021	Eyre	110 - 140	confined	0 - 196	
EL5916	FWD0441	Y	Cutting + grout	196	14/02/2021	Four Mile Diamictite	153 - 183	confined	0 - 196	
EL5916	FWD0441	Y	Cutting + grout	196	14/02/2021	Four Mile Gravel	183 - 189	confined	0 - 196	
EL5916	FWD0442	Y	Cutting + grout	196	15/02/2021	Namba	62 - 111	confined	0 - 196	
EL5916	FWD0442	Y	Cutting + grout	196	15/02/2021	Eyre	111 - 143	confined	0 - 196	
EL5916	FWD0442	Y	Cutting + grout	196	15/02/2021	Four Mile Diamictite	156 - 186	confined	0 - 196	
EL5916	FWD0442	Y	Cutting + grout	196	15/02/2021	Four Mile Gravel	186 - 188	confined	0 - 196	
EL5916	FWD0443	Y	Cutting + grout	196	16/02/2021	Namba	53 - 113	confined	0 - 196	
EL5916	FWD0443	Y	Cutting + grout	196	16/02/2021	Eyre	113 - 145	confined	0 - 196	
EL5916	FWD0443	Y	Cutting + grout	196	16/02/2021	Four Mile Diamictite	157 - 188	confined	0 - 196	
EL5916	FWD0443	Y	Cutting + grout	196	16/02/2021	Four Mile Gravel	188 - 190	confined	0 - 196	
EL5916	FWD0444	Y	Cutting + grout	196	17/02/2021	Namba	37 - 108	confined	0 - 196	
EL5916	FWD0444	Y	Cutting + grout	196	17/02/2021	Eyre	108 - 147	confined	0 - 196	
EL5916	FWD0444	Y	Cutting + grout	196	17/02/2021	Four Mile Diamictite	158 - 192	confined	0 - 196	
EL5916	FWD0444	Y	Cutting + grout	196	17/02/2021	Four Mile Gravel	192 - 196	confined	0 - 196	
EL5916	FWD0445	Y	Cutting + grout	196	20/02/2021	Namba	35 - 108	confined	0 - 196	
EL5916	FWD0445	Y	Cutting + grout	196	20/02/2021	Eyre	108 - 145	confined	0 - 196	
EL5916	FWD0445	Y	Cutting + grout	196	20/02/2021	Four Mile Diamictite	156 - 190	confined	0 - 196	
EL5916	FWD0445	Y	Cutting + grout	196	20/02/2021	Four Mile Gravel	190 - 196	confined	0 - 196	
EL5916	FWD0447	Y	Cutting + grout	200	1/03/2021	Namba	10 - 105	confined	0 - 200	

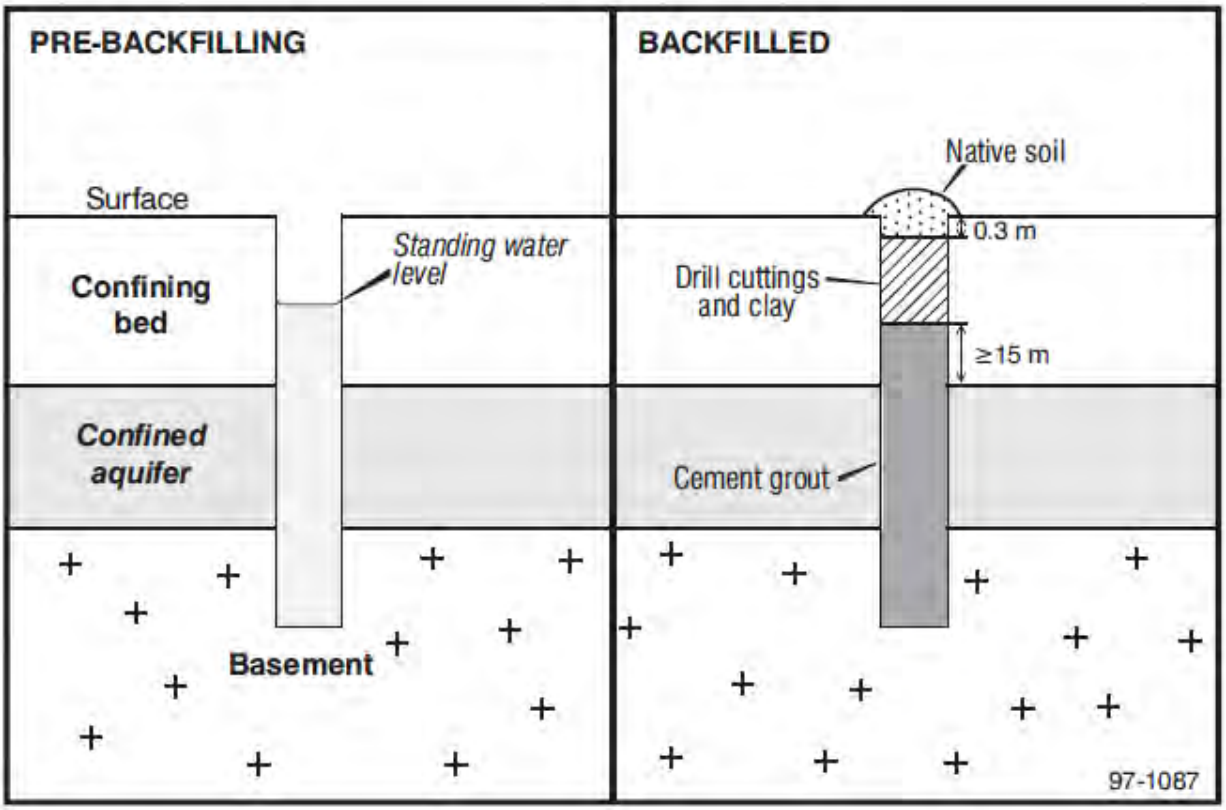
EL5916	FWD0447	Y	Cutting + grout	200	1/03/2021	Eyre	105 - 135	confined	0 - 200	
EL5916	FWD0447	Y	Cutting + grout	200	1/03/2021	Four Mile Diamictite	146 - 178	confined	0 - 200	
EL5916	FWD0447	Y	Cutting + grout	200	1/03/2021	Four Mile Gravel	178 - 183	confined	0 - 200	
EL5916	FWD0448	Y	Cutting + grout	202	2/03/2021	Namba	23 - 99	confined	0 - 202	
EL5916	FWD0448	Y	Cutting + grout	202	2/03/2021	Eyre	99 - 129	confined	0 - 202	
EL5916	FWD0448	Y	Cutting + grout	202	2/03/2021	Four Mile Diamictite	138 - 175	confined	0 - 202	
EL5916	FWD0448	Y	Cutting + grout	202	2/03/2021	Four Mile Gravel	175 - 178	confined	0 - 202	
EL5916	FWD0449	Y	Cutting + grout	184	3/03/2021	Namba	41 - 99	confined	0 - 184	
EL5916	FWD0449	Y	Cutting + grout	184	3/03/2021	Eyre	99 - 124	confined	0 - 184	
EL5916	FWD0449	Y	Cutting + grout	184	3/03/2021	Four Mile Diamictite	130 - 164	confined	0 - 184	
EL5916	FWD0450	Y	Cutting + grout	176	4/03/2021	Namba	43 - 90	confined	0 - 176	
EL5916	FWD0450	Y	Cutting + grout	176	4/03/2021	Eyre	90 - 115	confined	0 - 176	
EL5916	FWD0450	Y	Cutting + grout	176	4/03/2021	Four Mile Diamictite	124 - 157	confined	0 - 176	
EL5916	FWD0454	Y	Cutting + grout	218	17/03/2021	Namba	63 - 116	confined	0 - 218	
EL5916	FWD0454	Y	Cutting + grout	218	17/03/2021	Eyre	116 - 157	confined	0 - 218	
EL5916	FWD0454	Y	Cutting + grout	218	17/03/2021	Four Mile Diamictite	164 - 199	confined	0 - 218	
EL5916	FWD0454	Y	Cutting + grout	218	17/03/2021	Four Mile Gravel	199 - 200	confined	0 - 218	
EL5916	FWD0456	Y	Cutting + grout	210	19/03/2021	Namba	42 - 98	confined	0 - 210	
EL5916	FWD0456	Y	Cutting + grout	210	19/03/2021	Eyre	98 - 151	confined	0 - 210	
EL5916	FWD0456	Y	Cutting + grout	210	19/03/2021	Four Mile Diamictite	160 - 192	confined	0 - 210	
EL5916	FWD0456	Y	Cutting + grout	210	19/03/2021	Four Mile Gravel	192 - 194	confined	0 - 210	
EL5916	FWD0457	Y	Cutting + grout	214	20/03/2021	Namba	43 - 97	confined	0 - 214	
EL5916	FWD0457	Y	Cutting + grout	214	20/03/2021	Eyre	97 - 148	confined	0 - 214	
EL5916	FWD0457	Y	Cutting + grout	214	20/03/2021	Four Mile Diamictite	159 - 193	confined	0 - 214	
EL5916	FWD0469	Y	Cutting + grout	190	4/04/2021	Namba	44 - 88	confined	0 - 190	
EL5916	FWD0469	Y	Cutting + grout	190	4/04/2021	Eyre	88 - 135	confined	0 - 190	
EL5916	FWD0469	Y	Cutting + grout	190	4/04/2021	Four Mile Diamictite	141 - 180	confined	0 - 190	
EL5916	FWD0470	Y	Cutting + grout	190	4/04/2021	Namba	42 - 112	confined	0 - 190	
EL5916	FWD0470	Y	Cutting + grout	190	4/04/2021	Eyre	112 - 137	confined	0 - 190	
EL5916	FWD0470	Y	Cutting + grout	190	4/04/2021	Four Mile Diamictite	145 - 182	confined	0 - 190	
EL5916	FWD0471	Y	Cutting + grout	190	6/04/2021	Namba	49 - 79	confined	0 - 190	

EL5916	FWD0471	Y	Cutting + grout	190	6/04/2021	Eyre	79 - 130	confined	0 - 190	
EL5916	FWD0471	Y	Cutting + grout	190	6/04/2021	Four Mile Diamictite	143 - 183	confined	0 - 190	
EL5916	FWD0473	Y	Cutting + grout	196	9/04/2021	Namba	42 - 80	confined	0 - 196	
EL5916	FWD0473	Y	Cutting + grout	196	9/04/2021	Eyre	80 - 130	confined	0 - 196	
EL5916	FWD0473	Y	Cutting + grout	196	9/04/2021	Four Mile Diamictite	143 - 182	confined	0 - 196	
EL5916	FWD0473	Y	Cutting + grout	196	9/04/2021	Four Mile Gravel	182 - 185	confined	0 - 196	
EL5916	FWD0475	Y	Cutting + grout	190	11/04/2021	Namba	41 - 83	confined	0 - 190	
EL5916	FWD0475	Y	Cutting + grout	190	11/04/2021	Eyre	83 - 132	confined	0 - 190	
EL5916	FWD0475	Y	Cutting + grout	190	11/04/2021	Four Mile Diamictite	144 - 183	confined	0 - 190	
EL5916	FWD0476	Y	Cutting + grout	198	13/04/2021	Namba	56 - 83	confined	0 - 198	
EL5916	FWD0476	Y	Cutting + grout	198	13/04/2021	Eyre	83 - 130	confined	0 - 198	
EL5916	FWD0476	Y	Cutting + grout	198	13/04/2021	Four Mile Diamictite	142 - 194	confined	0 - 198	
EL5916	FWD0477	Y	Cutting + grout	202	23/04/2021	Namba	55 - 87	confined	0 - 202	
EL5916	FWD0477	Y	Cutting + grout	202	23/04/2021	Eyre	87 - 136	confined	0 - 202	
EL5916	FWD0477	Y	Cutting + grout	202	23/04/2021	Four Mile Diamictite	147 - 184	confined	0 - 202	
EL5916	FWD0478	Y	Cutting + grout	199	24/04/2021	Namba	45 - 85	confined	0 - 199	
EL5916	FWD0478	Y	Cutting + grout	199	24/04/2021	Eyre	85 - 133	confined	0 - 199	
EL5916	FWD0478	Y	Cutting + grout	199	24/04/2021	Four Mile Diamictite	146 - 183	confined	0 - 199	
EL5916	FWD0479	Y	Cutting + grout	196	30/04/2021	Namba	49 - 85	confined	0 - 196	
EL5916	FWD0479	Y	Cutting + grout	196	30/04/2021	Eyre	85 - 133	confined	0 - 196	
EL5916	FWD0479	Y	Cutting + grout	196	30/04/2021	Four Mile Diamictite	145 - 189	confined	0 - 196	
EL5916	FWD0480	Y	Cutting + grout	196	1/05/2021	Namba	50 - 84	confined	0 - 196	
EL5916	FWD0480	Y	Cutting + grout	196	1/05/2021	Eyre	84 - 131	confined	0 - 196	
EL5916	FWD0480	Y	Cutting + grout	196	1/05/2021	Four Mile Diamictite	144 - 190	confined	0 - 196	
EL5916	FWD0481	Y	Cutting + grout	202	3/05/2021	Namba	48 - 95	confined	0 - 202	
EL5916	FWD0481	Y	Cutting + grout	202	3/05/2021	Eyre	95 - 135	confined	0 - 202	
EL5916	FWD0481	Y	Cutting + grout	202	3/05/2021	Four Mile Diamictite	148 - 187	confined	0 - 202	
EL5916	FWD0482	Y	Cutting + grout	190	2/05/2021	Namba	47 - 85	confined	0 - 190	
EL5916	FWD0482	Y	Cutting + grout	190	2/05/2021	Eyre	85 - 129	confined	0 - 190	
EL5916	FWD0482	Y	Cutting + grout	190	2/05/2021	Four Mile Diamictite	141 - 187	confined	0 - 190	
EL5916	FWD0483	Y	Cutting + grout	202	5/05/2021	Namba	45 - 81	confined	0 - 202	
EL5916	FWD0483	Y	Cutting + grout	202	5/05/2021	Eyre	81 - 133	confined	0 - 202	

EL5916	FWD0483	Y	Cutting + grout	202	5/05/2021	Four Mile Diamictite	142 - 178	confined	0 - 202	
EL5916	FWD0484	Y	Cutting + grout	198	7/05/2021	Namba	43 - 81	confined	0 - 198	
EL5916	FWD0484	Y	Cutting + grout	198	7/05/2021	Eyre	81 - 132	confined	0 - 198	
EL5916	FWD0484	Y	Cutting + grout	198	7/05/2021	Four Mile Diamictite	141 - 182	confined	0 - 198	
EL5916	FWD0485	Y	Cutting + grout	200	9/05/2021	Namba	44 - 79	confined	0 - 200	
EL5916	FWD0485	Y	Cutting + grout	200	9/05/2021	Eyre	79 - 133	confined	0 - 200	
EL5916	FWD0485	Y	Cutting + grout	200	9/05/2021	Four Mile Diamictite	141 - 183	confined	0 - 200	
EL5916	FWD0487	Y	Cutting + grout	202	10/05/2021	Namba	22 - 104	confined	0 - 202	
EL5916	FWD0487	Y	Cutting + grout	202	10/05/2021	Eyre	104 - 130	confined	0 - 202	
EL5916	FWD0487	Y	Cutting + grout	202	10/05/2021	Four Mile Diamictite	141 - 182	confined	0 - 202	
EL5916	FWD0489	Y	Cutting + grout	196	30/05/2021	Namba	39 - 89	confined	0 - 196	
EL5916	FWD0489	Y	Cutting + grout	196	30/05/2021	Eyre	89 - 126	confined	0 - 196	
EL5916	FWD0489	Y	Cutting + grout	196	30/05/2021	Four Mile Diamictite	139 - 187	confined	0 - 196	
EL5916	FWD0490	Y	Cutting + grout	196	31/05/2021	Namba	38 - 76	confined	0 - 196	
EL5916	FWD0490	Y	Cutting + grout	196	31/05/2021	Eyre	76 - 125	confined	0 - 196	
EL5916	FWD0490	Y	Cutting + grout	196	31/05/2021	Four Mile Diamictite	139 - 187	confined	0 - 196	
EL5916	FWD0491	Y	Cutting + grout	202	4/06/2021	Namba	44 - 91	confined	0 - 202	
EL5916	FWD0491	Y	Cutting + grout	202	4/06/2021	Eyre	91 - 135	confined	0 - 202	
EL5916	FWD0491	Y	Cutting + grout	202	4/06/2021	Four Mile Diamictite	146 - 196	confined	0 - 202	
EL5916	FWD0492	Y	Cutting + grout	216	5/06/2021	Namba	38 - 113	confined	0 - 216	
EL5916	FWD0492	Y	Cutting + grout	216	5/06/2021	Eyre	113 - 139	confined	0 - 216	
EL5916	FWD0492	Y	Cutting + grout	216	5/06/2021	Four Mile Diamictite	149 - 198	confined	0 - 216	
EL5916	FWD0493	Y	Cutting + grout	198	6/06/2021	Namba	40 - 76	confined	0 - 198	
EL5916	FWD0493	Y	Cutting + grout	198	6/06/2021	Eyre	76 - 126	confined	0 - 198	
EL5916	FWD0493	Y	Cutting + grout	198	6/06/2021	Four Mile Diamictite	139 - 187	confined	0 - 198	
EL5916	FWD0495	Y	Cutting + grout	222	19/06/2021	Namba	40 - 119	confined	0 - 222	
EL5916	FWD0495	Y	Cutting + grout	222	19/06/2021	Eyre	119 - 157	confined	0 - 222	
EL5916	FWD0495	Y	Cutting + grout	222	19/06/2021	Four Mile Diamictite	165 - 199	confined	0 - 222	
EL5916	FWD0495	Y	Cutting + grout	222	19/06/2021	Four Mile Gravel	199 - 200	confined	0 - 222	
EL5916	FWD0499	Y	Cutting + grout	225	25/06/2021	Namba	48 - 110	confined	0 - 225	
EL5916	FWD0499	Y	Cutting + grout	225	25/06/2021	Eyre	110 - 158	confined	0 - 225	
EL5916	FWD0499	Y	Cutting + grout	225	25/06/2021	Four Mile Diamictite	164 - 214	confined	0 - 225	

EL5916	FWD0503	Y	Cutting + grout	220	30/06/2021	Namba	50 - 98	confined	0 - 220	
EL5916	FWD0503	Y	Cutting + grout	220	30/06/2021	Eyre	98 - 153	confined	0 - 220	
EL5916	FWD0503	Y	Cutting + grout	220	30/06/2021	Four Mile Diamictite	162 - 197	confined	0 - 220	
EL5916	FWD0505	Y	Cutting + grout	196	2/07/2021	Namba	33 - 87	confined	0 - 196	
EL5916	FWD0505	Y	Cutting + grout	196	2/07/2021	Eyre	87 - 133	confined	0 - 196	
EL5916	FWD0505	Y	Cutting + grout	196	2/07/2021	Four Mile Diamictite	141 - 184	confined	0 - 196	
EL5916	FWD0505	Y	Cutting + grout	196	2/07/2021	Four Mile Gravel	184 - 186	confined	0 - 196	
EL5916	FWD0506	Y	Cutting + grout	202	3/07/2021	Namba	44 - 86	confined	0 - 202	
EL5916	FWD0506	Y	Cutting + grout	202	3/07/2021	Eyre	86 - 135	confined	0 - 202	
EL5916	FWD0506	Y	Cutting + grout	202	3/07/2021	Four Mile Diamictite	146 - 185	confined	0 - 202	
EL5916	FWD0507	Y	Cutting + grout	202	3/07/2021	Namba	37 - 92	confined	0 - 202	
EL5916	FWD0507	Y	Cutting + grout	202	3/07/2021	Eyre	92 - 137	confined	0 - 202	
EL5916	FWD0507	Y	Cutting + grout	202	3/07/2021	Four Mile Diamictite	146 - 189	confined	0 - 202	
EL5916	FWD0507	Y	Cutting + grout	202	3/07/2021	Four Mile Gravel	189 - 192	confined	0 - 202	
EL5916	FWD0508	Y	Cutting + grout	202	4/08/2021	Namba	31 - 96	confined	0 - 202	
EL5916	FWD0508	Y	Cutting + grout	202	4/08/2021	Eyre	96 - 136	confined	0 - 202	
EL5916	FWD0508	Y	Cutting + grout	202	4/08/2021	Four Mile Diamictite	148 - 195	confined	0 - 202	
EL5916	FWD0509	Y	Cutting + grout	195	6/08/2021	Namba	46 - 100	confined	0 - 195	
EL5916	FWD0509	Y	Cutting + grout	195	6/08/2021	Eyre	100 - 128	confined	0 - 195	
EL5916	FWD0509	Y	Cutting + grout	195	6/08/2021	Four Mile Diamictite	141 - 180	confined	0 - 195	
EL5916	FWD0510	Y	Cutting + grout	188	7/08/2021	Namba	39 - 100	confined	0 - 188	
EL5916	FWD0510	Y	Cutting + grout	188	7/08/2021	Eyre	100 - 123	confined	0 - 188	
EL5916	FWD0510	Y	Cutting + grout	188	7/08/2021	Four Mile Diamictite	136 - 176	confined	0 - 188	
EL5916	FWD0511	Y	Cutting + grout	190	8/08/2021	Namba	29 - 81	confined	0 - 190	
EL5916	FWD0511	Y	Cutting + grout	190	8/08/2021	Eyre	81 - 124	confined	0 - 190	
EL5916	FWD0511	Y	Cutting + grout	190	8/08/2021	Four Mile Diamictite	137 - 177	confined	0 - 190	
EL5916	FWD0512	Y	Cutting + grout	201	21/08/2021	Namba	44 - 110	confined	0 - 201	
EL5916	FWD0512	Y	Cutting + grout	201	21/08/2021	Eyre	110 - 139	confined	0 - 201	
EL5916	FWD0512	Y	Cutting + grout	201	21/08/2021	Four Mile Diamictite	151 - 189	confined	0 - 201	
EL5916	FWD0513	Y	Cutting + grout	202	14/08/2021	Namba	43 - 81	confined	0 - 202	
EL5916	FWD0513	Y	Cutting + grout	202	14/08/2021	Eyre	81 - 127	confined	0 - 202	
EL5916	FWD0513	Y	Cutting + grout	202	14/08/2021	Four Mile Diamictite	141 - 180	confined	0 - 202	

Date prepared	Location details	Comments
31/03/2022	All exploration drillholes	All drillholes grouted from end of hole to near surface – backfilled with cuttings



SECTION D – PHOTOS

Photo-monitoring

The photographs below demonstrate compliance with approved environmental outcomes.

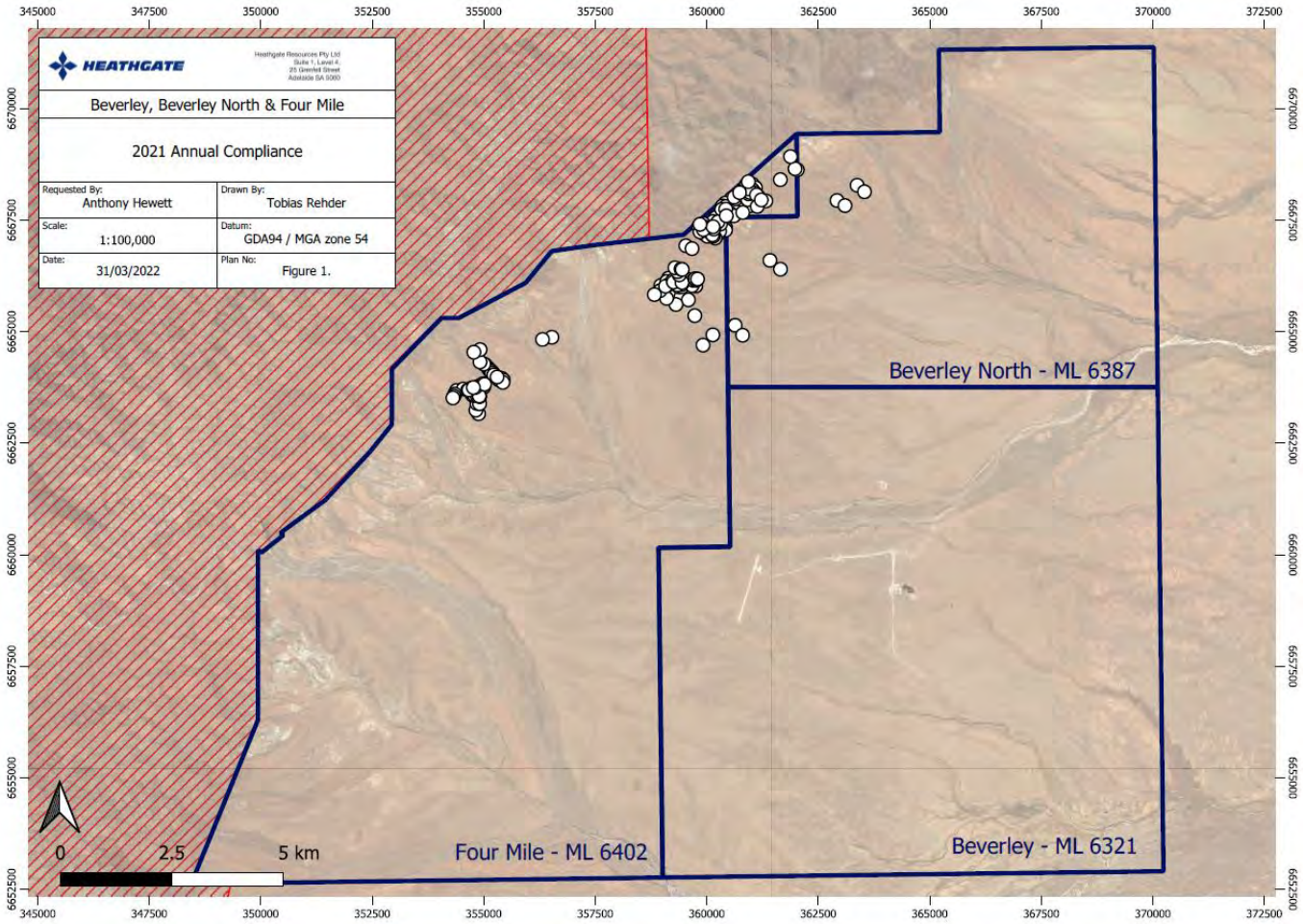
Site identification/details	Date taken	Easting (GDA94)	Northing (GDA94)	Zone	Comments
FMD0660 – Pre-Drill	14/01/2021	360560.29	6667993.28	54	Peg before drilling

Site identification/details	Date taken	Easting (GDA94)	Northing (GDA94)	Zone	Comments
FMD0660 – Post-Drill	23/03/2021	360560.29	6667993.28	54	Post drilling disturbance

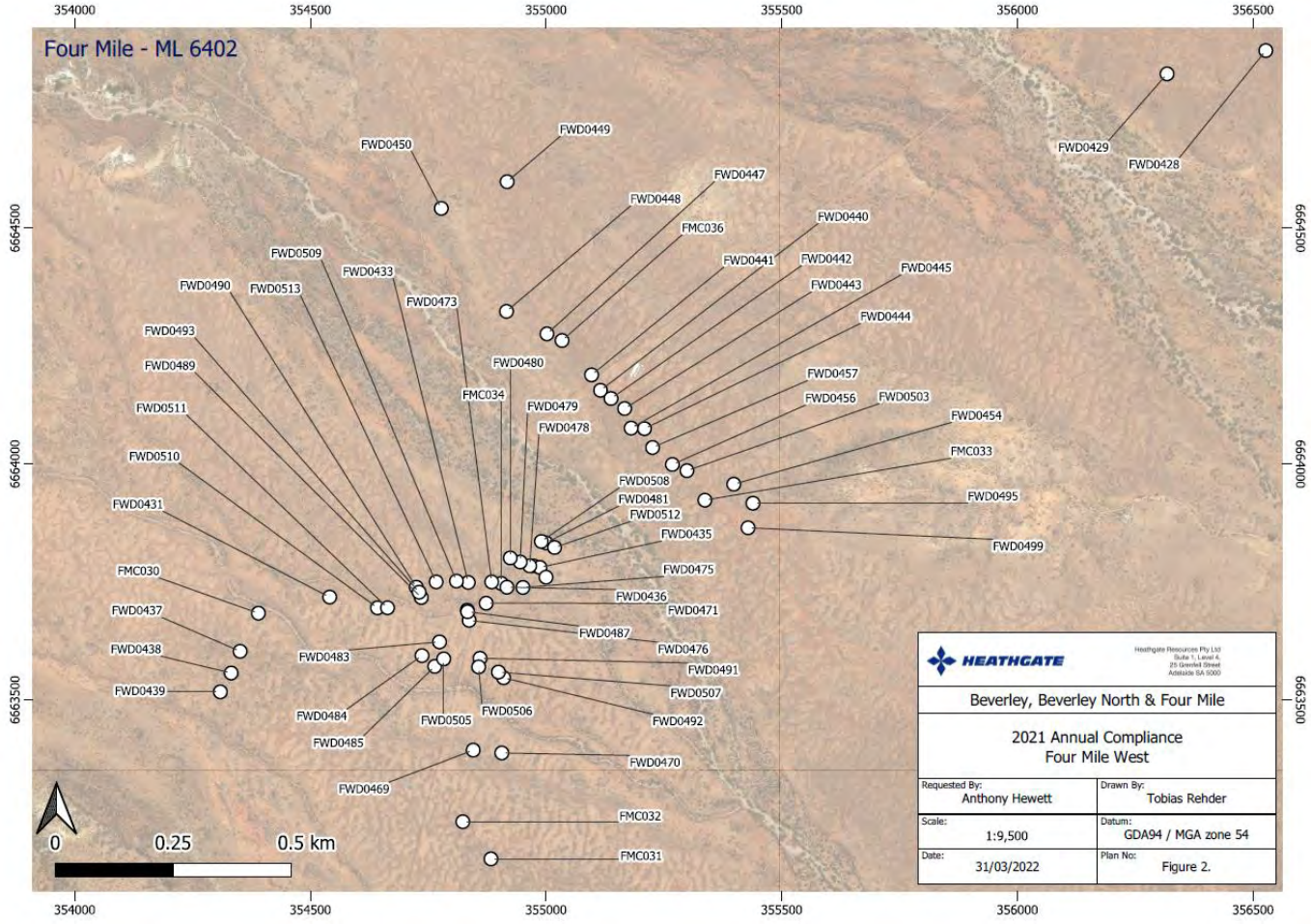
Site identification/details	Date taken	Easting (GDA94)	Northing (GDA94)	Zone	Comments
FMD0660 – Post-Rehab	23/03/2021	360560.29	6667993.28	54	Rehabilitation of drillhole

SECTION E – MAPS

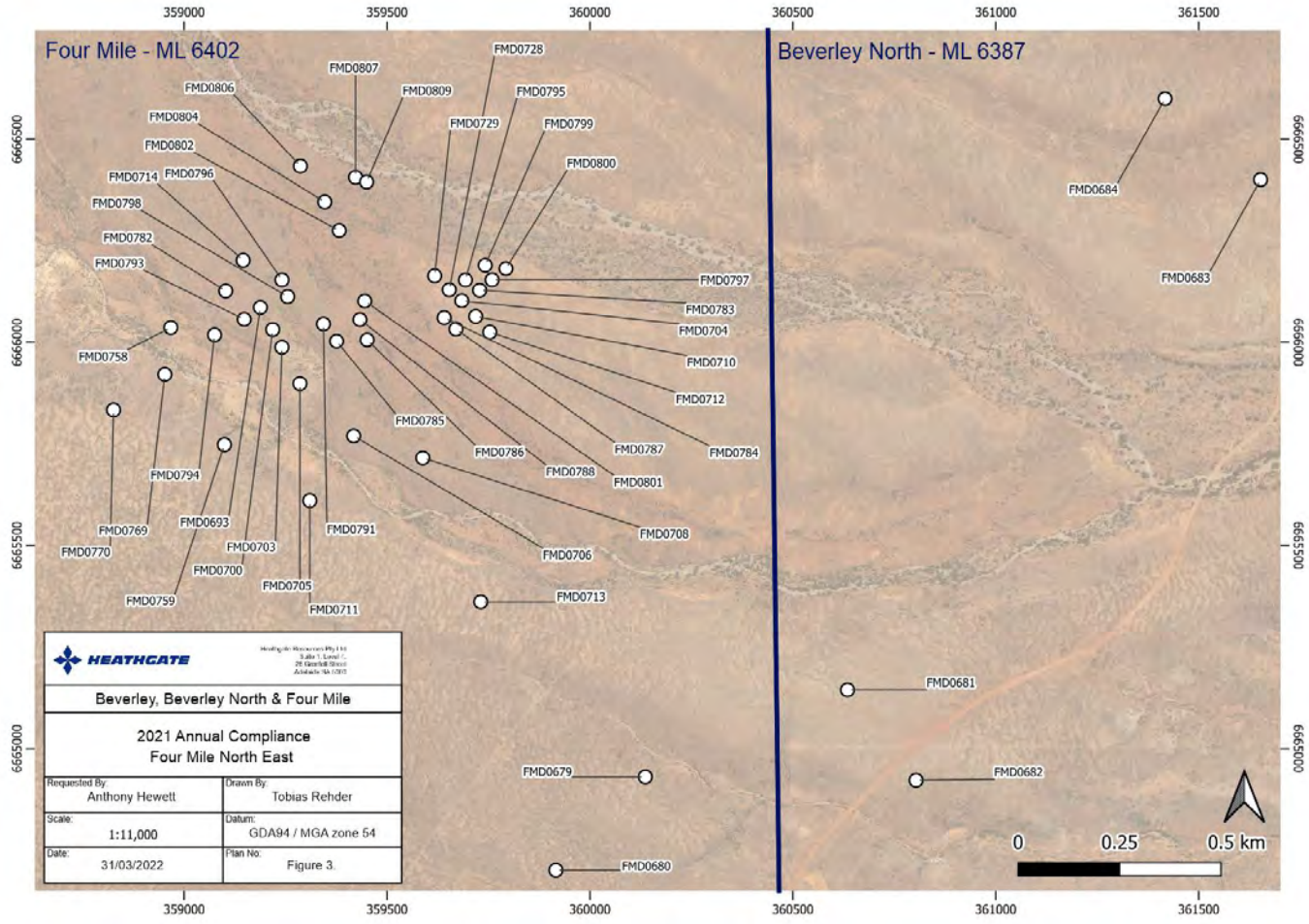
Date prepared	Site identification/details	Comments
25/03/2021	Beverley, Beverley North & Four Mile Mine Lease Exploration - Overview	



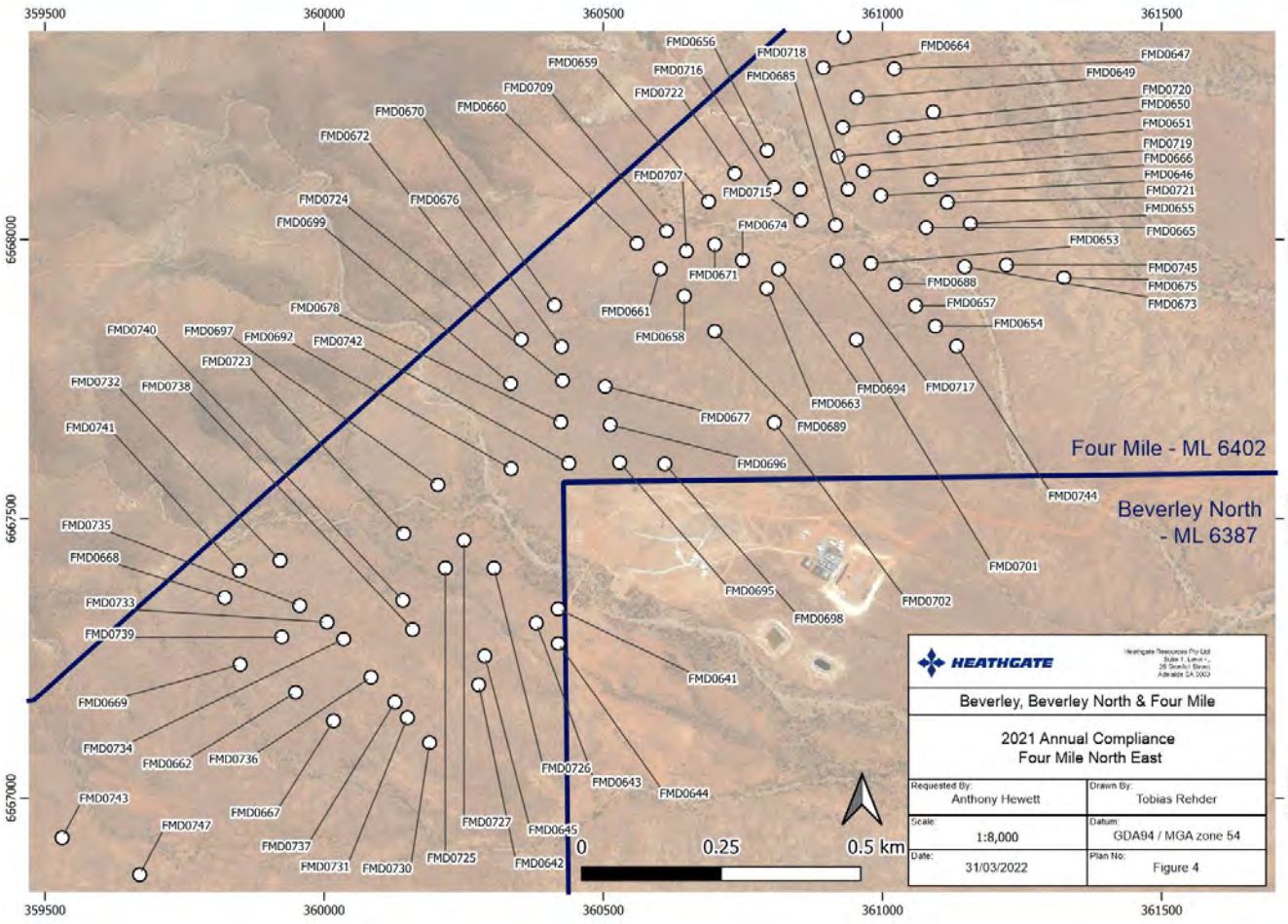
Date prepared	Site identification/details	Comments
25/03/2021	Four Mile Mine Lease Exploration – Four Mile West	



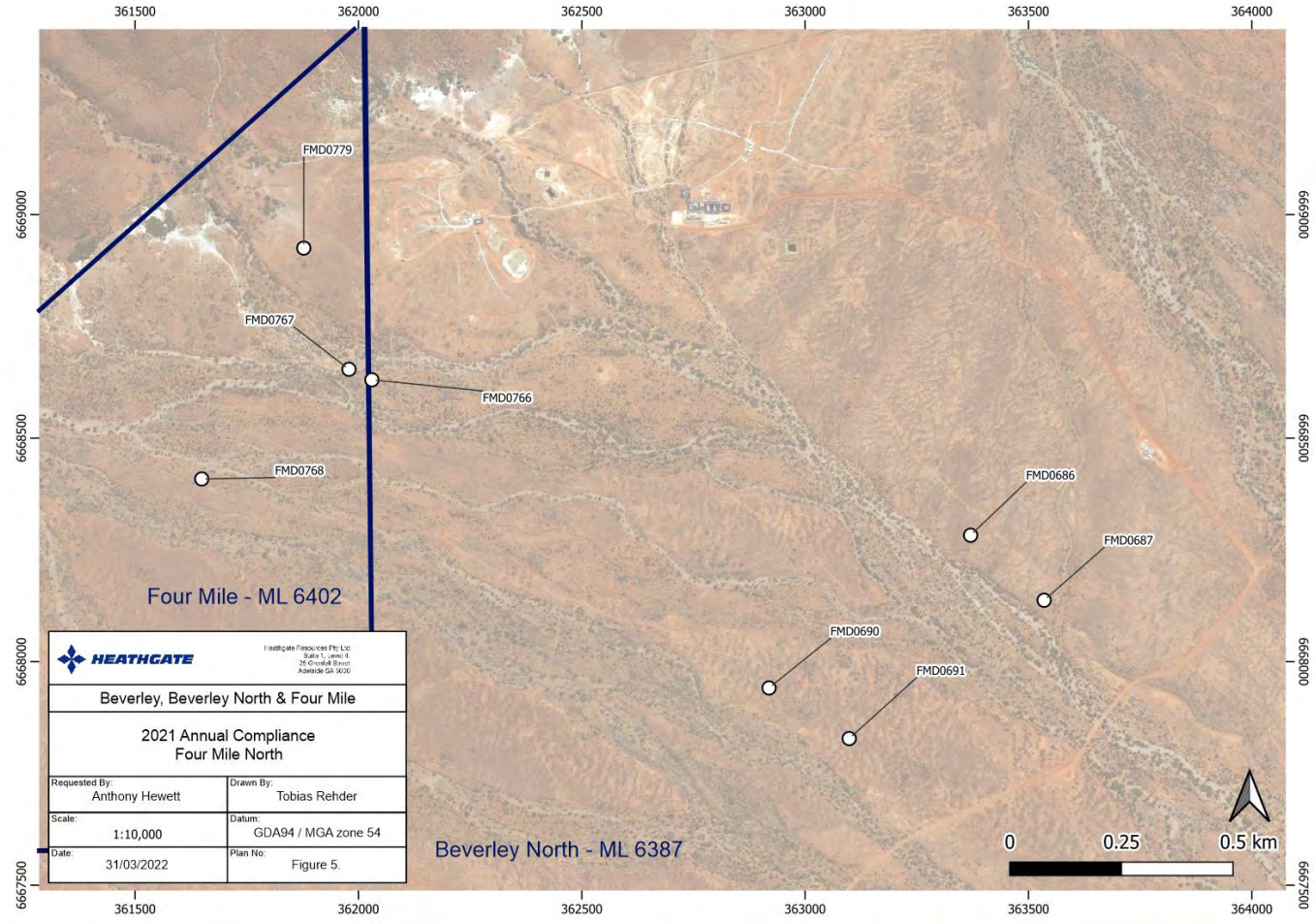
Date prepared	Site identification/details	Comments
25/03/2021	Four Mile Mine Lease Exploration – Four Mile North East	



Date prepared	Site identification/details	Comments
25/03/2021	Four Mile Mine Lease Exploration – Four Mile North East	



Date prepared	Site identification/details	Comments
25/03/2021	Four Mile Mine Lease Exploration – Four Mile North	



APPENDIX 3 – 2021 FAUNA SURVEY REPORT

Document information and distribution

Document information	
Item	**Detail**
Project number	JX0707
Document title	Beverley, Beverley North and Four Mile ML's Annual Fauna Monitoring
Client	Heathgate Resources Pty Ltd
Prepared by	Cat Lynch and Andrew Sinel
Reviewed by	-
Review date	-
Document status	Draft
Version number	1

Document distribution				
Authors	**Document status**	**Version number**	**Date of issue**	**Issued to**
Cat Lynch, Andrew Sinel	Draft	1	17/02/2022	Rohan Calley, Heathgate

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Acronyms and definitions

Abbreviation	Description
BoM	Bureau of Meteorology
CBD	Central Business District
Ecosphere	Ecosphere Ecological Solutions Pty Ltd
GPS	Global Positioning System
Heathgate	Heathgate Resources Pty Ltd
ISR	In-situ Recovery
Km	Kilometre
ML	Mining Lease
NPW Act	*National Parks and Wildlife Act 1972*
PEPR	Program for Environmental Protection and Rehabilitation
SA	South Australia
UOC	Uranium Oxide Concentrate

Executive Summary

Heathgate Resources Pty Ltd requires an annual fauna monitoring program to be conducted as per the Company Compliance Monitoring Plan which is specified in the Program for Environmental Protection and Rehabilitation (PEPR). Specific outcomes related to fauna include:

- no net adverse impacts from the site operations (including fire) on native fauna abundance or diversity in the lease area.
- no introduction of new species of weeds, plant pathogens or pests (including feral animals), nor increase in abundance of existing weed or pest species in the lease area compared to adjoining pastoral properties.
- results of monitoring program show no reduction of native vertebrate density and diversity compared with local area background.

Seasonal conditions for the twelve-month period (1st October 2020 – 30 September 2021) recorded a total of 159 mm of rainfall at the Beverley main weather station, up slightly on the previous year's total of 141mm, the majority of which fell between October 2020 and January 2021. Mostly dry conditions were experienced in the lead up to the fauna survey with only 9.8 mm falling within the three months prior to the survey.

The Beverley, Beverley North and Four Mile annual fauna monitoring survey was conducted from the 20th -25th October 2021. A total of twelve pitfall trapping sites (eight impact and four control sites) were employed in 2021, the same methodology as the previous four years. Pitfall traps were each checked morning and evening for a total of four nights per site. Avian point count surveys were performed at the 12 fauna monitoring sites. One-way ANOVAs were used to determine differences between two treatments: either the variation between control and impact sites or the variation across years (2017 to 2021) for the suite of fauna assemblages systematically surveyed.

Daily was warm with most days reaching around 30 degrees with overnight temperatures being mild averaging around 15 degrees. The total trap effort for the fauna trapping assessment in 2021 was 576 trap nights. As there were eight impact sites and four control sites, the total trap nights for these treatments were 384 and 192, respectively. This trap effort was consistent with the previous three survey periods.

A total of 175 (down from 187 in 2020) individuals were trapped for the trapping period 20-25th October 2021 represented by 14 species of which there were seven mammal species and seven reptiles. This equates to an average abundance of 14.58 individuals per site, slightly less than in 2019 which had a mean abundance of 15.58. Individual class abundances included

117 mammals and 58 reptiles. Mean species richness and abundance of both mammals and reptiles was higher at impact sites than control sites for the survey period, although no statistically significant difference was recorded. There is no significant difference in small mammal abundance or reptile abundance or species diversity between impact and control sites for the five-year monitoring period (2017-2021). Significantly higher mammal species richness has been recorded at impact sites in the five-year period, however this can be explained by the captures of a Dusky Hopping-mouse and Sandy Inland Mouse at impact sites in 2020 and 2021.

Avian species abundance and richness was lower in 2021 compared to 2020 because of the drier conditions experienced at the site following exceptional seasonal conditions prior to the 2020 survey. The most abundant bird species recorded was the Zebra Finch, with reasonably high numbers of Budgerigars and Crested Pigeons also recorded.

The overall observations and quantitative data of the fauna survey show there was no statistically significant difference in small mammal, reptile or bird mean abundance or reptile or bird species diversity at comparative control and impact sites over the five-year monitoring period (2017-2021). The significant difference in species diversity of mammals detected was driven by the capture of only one or two individuals of two different species and is unlikely to represent an actual disparity in species richness as a result of mining impacts. Overall, this indicates that mining operations are having a negligible effect on abundance and species diversity across the three faunal groups locally at the impact sites and within the wider region.

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1 Introduction

Heathgate Resources Pty Ltd (Heathgate) operates the Beverley Mining Lease ML 6321, Beverley North Mining Lease ML 6387 and Four Mile Uranium Mine (Four Mile) ML 6402 tenements in northern South Australia. Mining is by in-situ recovery (ISR) method. The Four Mile, Beverley and Beverley North MLs are located approximately 520 km north north-east of the Adelaide Central Business District, in the north-east pastoral region of South Australia (SA) (Figure 1). The ML's are situated on the eastern side of the Gammon Ranges approximately 30 km north-east of the Arkaroola Village within the Wooltana Crown Lease (Volume 1289 Folio 38).

Heathgate Resources Pty Ltd requires an annual fauna monitoring program to be conducted as per the Company Compliance Monitoring Plan which is specified in the Program for Environmental Protection and Rehabilitation (PEPR). Specific outcomes related to fauna include:

- no net adverse impacts from the site operations (including fire) on native fauna abundance or diversity in the lease area.
- no introduction of new species of weeds, plant pathogens or pests (including feral animals), nor increase in abundance of existing weed or pest species in the lease area compared to adjoining pastoral properties.
- results of monitoring program show no reduction of native vertebrate density and diversity compared with local area background.

Ecosphere Ecological Solutions (Ecosphere) was contracted by Heathgate to conduct the 2021 annual fauna monitoring assessment for the Beverley, Beverley North and Four Mile ML's.

1.1 Objectives

The objective of the fauna monitoring program aims to make comparative analysis of the abundance and diversity of fauna within impact sites adjacent to mining operations compared to control site >5 kms from impact sites by:

- conducting a fauna trapping program to record the abundance and diversity of reptiles, small mammals and amphibians (if conditions allow) at control and impact sites.
- conducting point counts to record the abundance and diversity of birds within control and impact sites.

- setting camera traps to record the abundance and diversity of introduced/exotic fauna species of concern.

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Figure 1. Location of the Beverley, Beverley North and Four Mile ML's.

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2 Background

2.1 Research Licensing

The survey and research of fauna during the 2021 Beverley, Beverley North and Four Mile monitoring period was undertaken under the following licence in accordance with the *National Parks and Wildlife Act 1972* (NPW Act).

Mr A Sinel, Ecosphere Ecological Solutions Pty Ltd:

- Permit to undertake scientific research, Beverley, Beverley North and Four Mile Annual Fauna monitoring: 48/2021.
- Wildlife Ethics Committee 35/2020 Beverley, Beverley North and Four Mile Leases Annual Fauna monitoring.

2.2 Environmental setting

2.2.1 Vegetation

The monitoring sites are situated within the dominant vegetation structure within the Beverley and Four Mile areas which is a self-mulching clay and stony plains landforms which are predominantly covered by *Astrebla pectinata* (Mitchell Grass) and short-lived sub shrubs of the genus *Sclerolaena*. The site grades from heavy clays at the base of the range to flatter stony plains in the east.

2.2.2 Climate

Historical long term rainfall data (comparative mean monthly totals) were taken from the nearest reliable weather station which is the Gammon Ranges (Wooltana, 017056) station (BOM, 2020). Data has been collected at this site since 1877, which shows a long term mean annual rainfall of 195.6 mm, with the heaviest falls typically occurring between December and March (Figure 2). The wettest months historically correspond with the highest mean maximum temperatures.

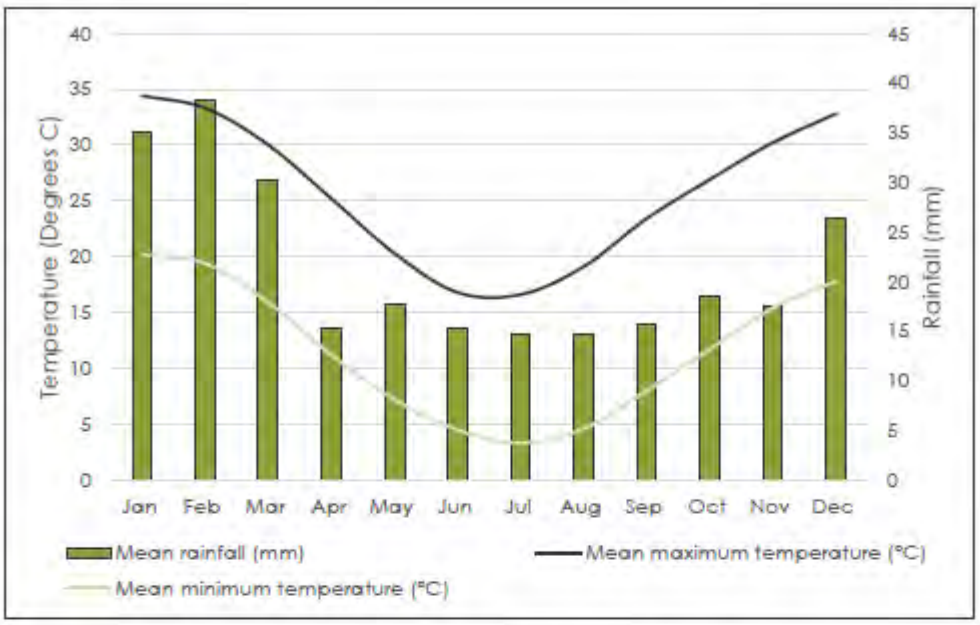

Figure 2. Long term climate data for Wooltana weather station (017056).

The twelve-month period (1st October 2020 – 30 September 2021) recorded a total of 159 mm of rainfall at the Beverley main weather station, approximately 80 % of the long-term mean annual rainfall (Figure 3). Dry conditions preceded the fauna survey were recorded with only 9.8 mm falling within the three months prior representing only 5 % of the average annual rainfall for Wooltana.

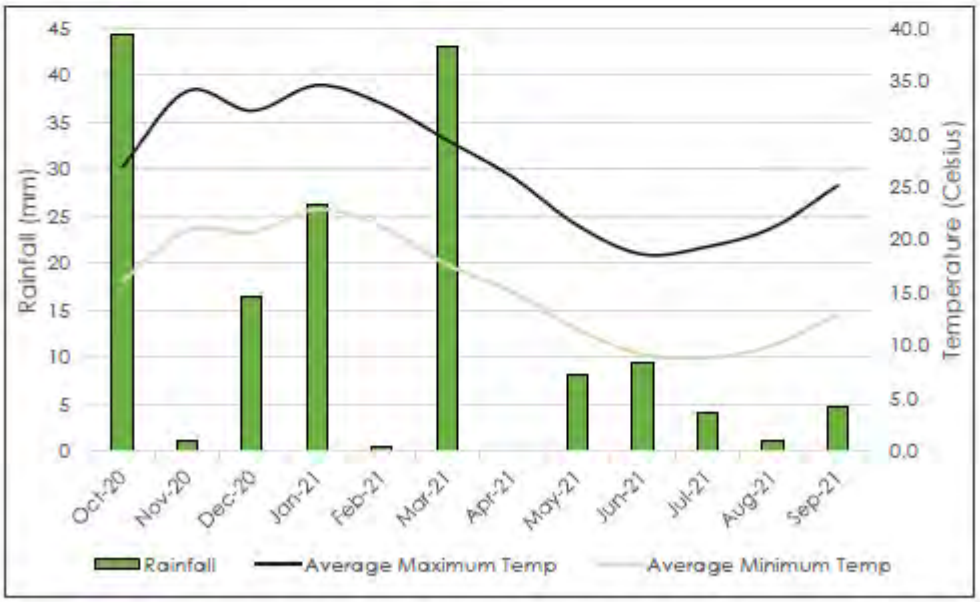

Figure 3. Summary of weather data from Beverley Weather Station main for twelve-month period from start October 2020 to end September 2021.

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2.2.3 Previous monitoring

Fauna surveys have been conducted annually since 2000. A review of the monitoring methodology was conducted prior to the 2017 fauna survey. The monitoring sites used to monitor fauna in the Beverley, Beverley North and Four Mile ML's were reviewed and changes implemented to align with operating ISL mining locations. The sites employed since 2017 have remained consistent through to 2021.

3 Methods

The Beverley, Beverley North and Four Mile annual fauna monitoring survey was conducted from the 20th -25th October 2021. Andrew Sinel was the survey team leader and co-ordinated the fauna monitoring survey. Three survey teams operated across the monitoring sites over the six-day trapping period:

- Andrew Sinel and Sue Kenny undertook pitfall trap line installation, morning and afternoon pitfall trap checks, terrestrial fauna identification, and pit line removal.
- Matt Launer and Cat Lynch undertook pitfall trap line installation, morning and afternoon pitfall trap checks, terrestrial fauna identification and pit line removal.
- Rob Kelman undertook pitfall line trap installation and avian point count surveys.

3.1 Mammal and reptile monitoring

A total of twelve pitfall trapping sites (eight impact and four control sites) were employed in 2021 (Table 1 & Figure 4).

Table 1. Summary of fauna monitoring locations at the Beverley, Beverley North and Four Mile areas 2021.

Site ID	Site location	Coordinates (UTM 54J)		Habitat type
		Easting	Northing	
BU14	Impact site	364945	6658189	Tableland
FOU003	Impact site	358017	6664148	Tableland
FOU004	Impact site	356219	6664908	Tableland
FOU005	Impact site	356172	6663291	Tableland
FM26	Impact site	359997	6666011	Tableland
NM10	Impact site	364343	6661883	Tableland
BN01	Impact site	360792	6666882	Tableland
BN03	Impact site	363861	6668351	Tableland
CON02	Control site	361421	6650746	Tableland
CON03	Control site	372646	6657670	Tableland
PE18	Control site	369712	6665518	Tableland
BE25	Control site	361502	6653146	Tableland

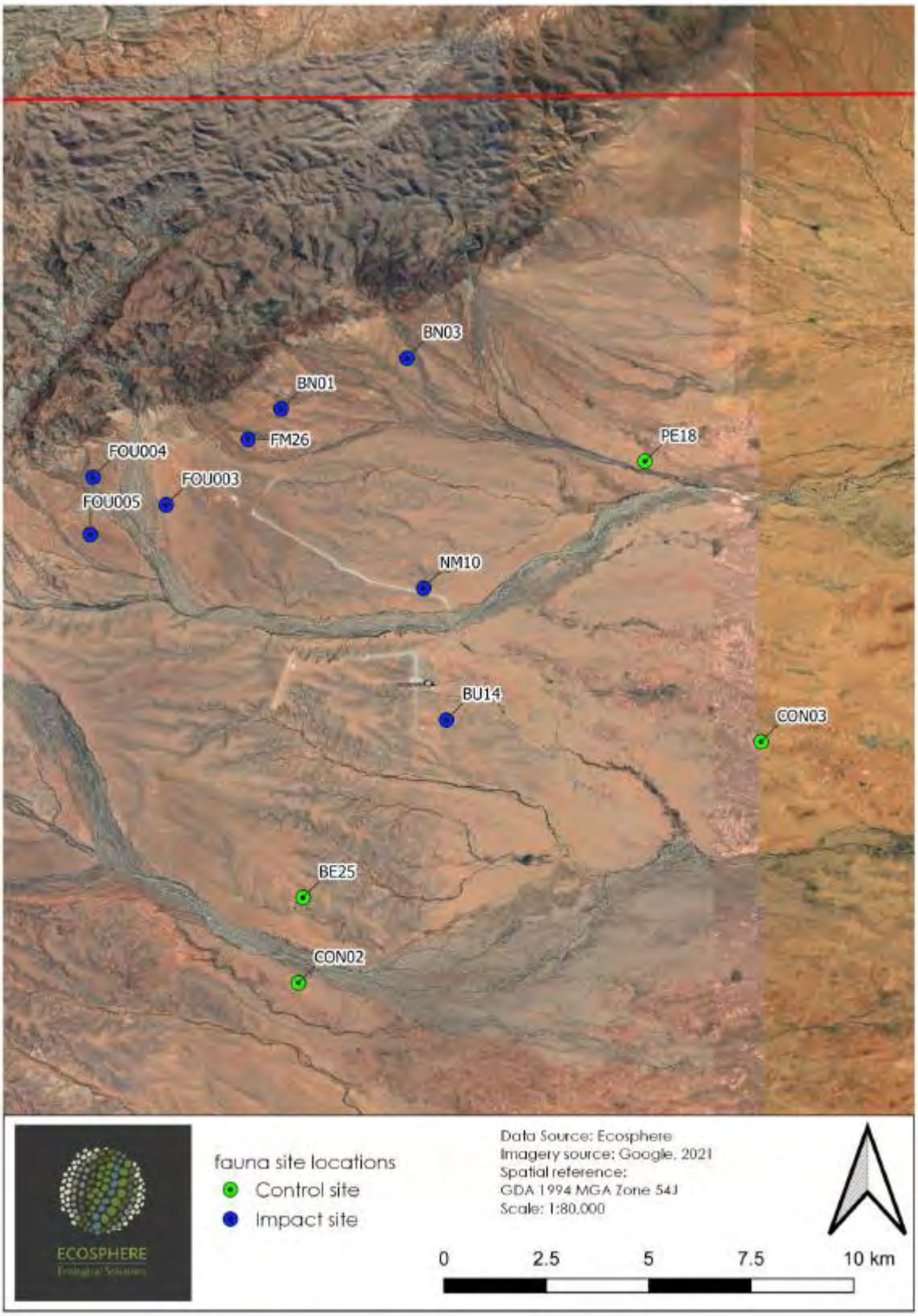

Figure 4. Locations of fauna monitoring sites, 2021.

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Pitfall trapping lines were set-up and surveyed utilising the following methodology:

- Set-up: Two permanent 70 m transects, each with six pitfall buckets, placed at 10 m intervals along the transect. Pitfall buckets of 225 mm diameter and 600 mm deep were used to target small to medium sized mammals, reptiles and amphibians (if conditions allowed).
- Survey: Pitfall traps were each checked morning and evening for a total of four nights per site. Captured mammals and reptiles were temporarily marked with non-toxic texta along the underside of the tail to distinguish first and subsequent recapture of individuals. This enabled a better estimation of population sizes. Each captured individual was checked for the presence of previous texta markings. If present, the individual was recorded as a 'recapture'.

Datasheets were used to record the following capture data:

- monitoring site number/identification.
- date of trapping session.
- trap session (morning or afternoon session).
- capture method (pitfall, other).
- species.
- sex (mammals and selected reptile species only).
- age-class (adult, sub-adult, juvenile).
- first capture (no texta markings) or recapture (animal with marked tail).

3.2 Camera trapping

Four camera trap sites were used to assess the numbers and diversity of introduced species, particularly vertebrate predators (Figure 5). This involved motion sensor cameras used in conjunction with bait stations. Four sites were selected (three impact and one control sites) for two consecutive nights at each location. This resulted in a total of 8 trap nights for the cameras.

Cameras were set up on a peg which was secured into the ground. A photograph was taken of any animal within the field of view of the camera. All images were downloaded and analysed on a computer following the completion of the field survey.

Figure 5. Camera trap locations 2021.

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3.3 Avian surveys

Avian point count surveys were performed at the 12 fauna monitoring sites (Figure 4). Each of the monitoring sites were surveyed for 30 minutes in the morning and afternoon. At each site, a single observer conducted an area search, walking 100 m from the perimeter of the pitfall trapping line or within the 100 m flora monitoring peg. The surveyor recorded all birds that could be positively identified by sight within 100 m of the marker and of which were in similar habitat of the site. All birds observed more than 100 m away from the peg, or birds observed within different habitat adjoining the site, were recorded as off-site. Datasheets were used to record the following data:

- identification method (seen or heard).
- bird activity (e.g., flying overhead, flying over circling, resting or foraging on tree/shrub/ground).
- number of individuals observed.
- distance from observer.
- any other notable observations were also recorded.

3.4 Field survey limitations

It is likely that not all fauna species present in the area were observed as part of the survey due to variable factors. This may be due to low abundance at the time of the survey, the behaviour of species (e.g., avoidance of unfamiliar objects such as traps, human disturbance, nocturnal birds) and movements (e.g., small home ranges). Additionally, climatic conditions (e.g., prevailing weather conditions, rainfall, season and moon phase) and available resources may reduce the likelihood of fauna being detected during the monitoring period (e.g., amphibians). Capture results can therefore vary within and between survey periods due to such variables identified above. Subsequently this highlights the need for long-term monitoring to observe and assess possible data trends in species abundance or diversity. Only gibber plains / stony plain tableland areas were systematically surveyed as these are the areas impacted by active mining operations.

3.5 Statistical analyses

One-way ANOVAs were used to determine differences between two treatments: either the variation between control and impact sites or the variation across years (2017 to 2021) for the suite of fauna assemblages systematically surveyed.

4 Assessment outcomes

4.1 Weather

Daily weather data was obtained from the Beverley Main weather station (Table 2). Most days reached around 30 degrees with cool overnight temperatures ranging from 13-20 degrees. This is considered good conditions for movement of small mammals with night time temperatures above 12 degrees correlating with movement of animals.

Table 2. Weather conditions during the survey period.

Date	Maximum temp (°C)	Minimum temp (°C)	Average wind Speed (km/h)	Rainfall (mm)
19/10/2021	33.6	18.6	10.7	0
20/10/2021	29.5	13.8	8.1	0
21/10/2021	31.8	18.2	7.6	0
22/10/2021	34.3	20.4	12.1	0
23/10/2021	33.9	17.9	15.7	0
24/10/2021	27.8	13.6	18	0
25/10/2021	23.4	14.2	10.6	0
19/10/2021	25.1	12.1	7.3	0

*Shaded area shows actual trapping nights.

4.2 Trap effort

The total trap effort for the fauna trapping assessment in 2021 was 576 trap nights (Table 3). As there were eight impact sites and four control sites, the total trap nights for these treatments were 384 and 192, respectively. This trap effort was consistent with the previous three survey periods.

Table 3. Pitfall trapping effort for 2021 survey period.

Treatment	Sites	Trap nights	Traps/site	Trap effort/site	Total trap effort
Control	4	4	12	48	192
Impact	8	4	12	48	384
Total	12	4	12	48	576

4.3 Pitfall trapping overview

A total of 175 (down from 187 in 2020) individuals were trapped for the period 20-25th October 2021 (Table 4) represented by 14 species (seven mammals and seven reptiles). This equates to an average abundance of 14.58 individuals per site, slightly less than in 2020 which had a mean abundance of 15.58. Individual class abundances included 117 mammals and 58 reptiles. No fauna species of conservation significance were recorded during the 2021 survey.

Captures of note included 4 of Giles' Planigale (*Planigale gilesi*, 0 caught in 2020). Captures of the exotic house Mouse (*Mus musculus*) were much lower than in 2020, with only two caught compared to 21 in 2020. Captures of the Central Short-tailed mouse (*Leggadina forresti*) were similar to 2020. There were fewer Fat-tailed Dunnart (*Sminthopsis crassicaudata*) captures (35 compared to 60 in 2020), but higher Stripe-faced Dunnart (*Sminthopsis macroura*) captures (38 compared to 22 in 2020).

There was one capture of each of the Robust Tree Dtella (*Gehyra purpurescens*) and Adelaide Snake-eye (*Morethia adelaidensis*), neither of which were caught in 2020. No *Ctenotus* species were captured in 2021.

Table 4. Pitfall trapping captures 2020-2021.

Class	Scientific Name	Common Name	2020	2021
MAMMALIA	*Leggadina forresti*	Central Short-tailed Mouse	23	24
	Mus musculus	House Mouse	21	2
	Notomys fuscus	Dusky Hopping-mouse	1	
	Planigale gilesi	Giles' Planigale		4
	Planigale tenuirostris	Narrow-nosed Planigale	7	13
	Pseudomys hermannsburgensis	Sandy Inland Mouse	1	1
	Sminthopsis crassicaudata	Fat-tailed Dunnart	60	35
	Sminthopsis macroura	Stripe-faced Dunnart	22	38
REPTILIA	*Anilios bituberculatus*	Rough-nosed Blind Snake	1	
	Anilios endoterus	Centralian Blind Snake	1	
	Ctenotus leonhardii	Common Desert Ctenotus	2	
	Ctenotus regius	Eastern Desert Ctenotus	2	
	Ctenotus strauchii	Short-legged Ctenotus	5	
	Delma tincta	Excitable Delma		
	Diplodactylus tessellatus	Tessellated Gecko	5	2
	Gehyra purpurascens	Robust Tree Dtella		1
	Heteronotia binoei	Bynoe's Gecko	1	
	Lucasium damaeum	Beaded Gecko	1	
	Menetia greyii	Dwarf Skink	4	25

Class	Scientific Name	Common Name	2020	2021
	Morethia adelaidensis	Adelaide Snake-eye		1
	Pogona vitticeps	Central Bearded Dragon	4	3
	Suta suta	Curl Snake	3	1
	Tympanocryptis tetraporophora	Eyrean Earless Dragon	23	25
		Total	**187**	**175**
		Mean	**15.58**	**14.58**

14

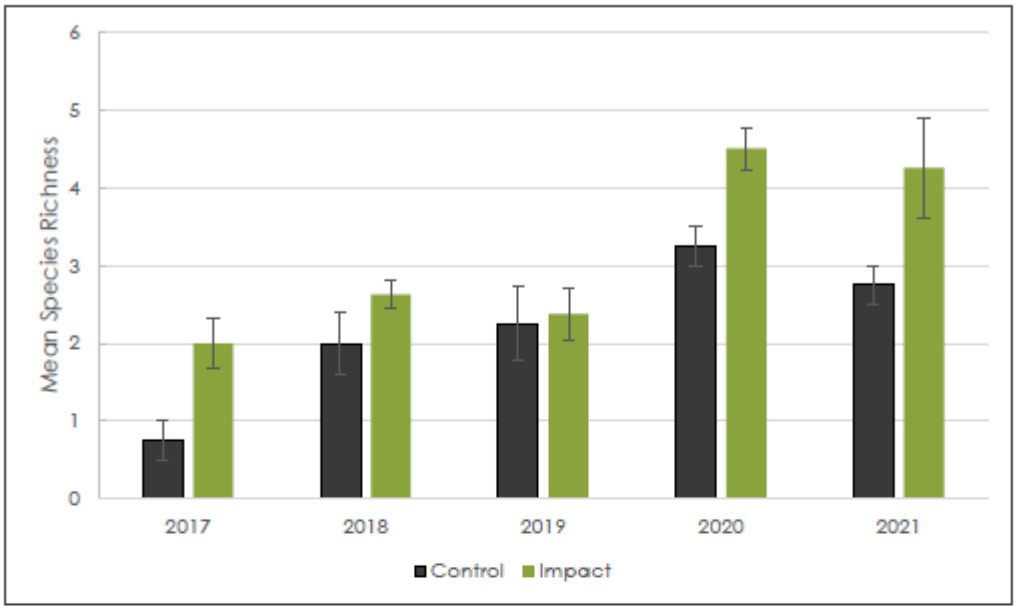

Figure 7. Mean species richness of mammals at control and impact sites 2017-2021.

4.4.2 All years

There is no significant difference in small mammal abundance between control and impact sites for all years 2017-2021 (df = 58, F value = 2.5712, p = 0.114). There is a significantly higher mammal species richness for all years 2017-2021 at impact sites (df = 58, F value = 7.73, p = 0.007. This is consistent with the significant difference recorded after the 2020 survey.

4.5 Reptiles

A total of 58 reptiles were trapped during the 2021 season, 12 individuals from four control sites and 46 individuals from eight impact sites (Table 5). Mean abundance was higher at impact sites for reptiles with 5.75 individuals captured per site as compared to 3 individual captures per site at control sites. This is the first year mean abundance was noticeably higher at impact sites compared to control sites (although mean abundance was slightly higher at impact sites in 2018). This was largely due to the presence of small skink species at impact sites which were absent from all but one control site. The abundance of the Eyrean Earless Dragon (*Tympanocryptis tetraporophora*) was also much higher at impact sites compared to control sites. No *Ctenotus* skink species were recorded at any sites for the first time. The Adelaide Snake-eye (*Morethia adelaidensis*) was recorded for the first time during the five-year monitoring period (2017-2021).

Table 5. The numbers of each reptile species captured at control and impact sites during the fauna trapping assessment within the Beverley, Beverley North and Four Mile MLs, spring 2021.

Scientific Name	Common Name	Control	Impact	Total
Diplodactylus tessellatus	Tessellated Gecko		2	2
Gehyra purpurascens	Robust Tree Dtella	1		1
Menetia greyii	Dwarf Skink	4	21	25
Morethia adelaidensis	Adelaide Snake-eye		1	1
Pogona vitticeps	Central Bearded Dragon	1	2	3
Suta suta	Curl Snake		1	1
Tympanocryptis tetraporophora	Eyrean Earless Dragon	6	19	25
	Total	**12**	**46**	**58**
	Mean	**3**	**5.75**	**4.83**

4.5.1 Trapping analysis

The mean number of reptiles captured at control sites (3.0 ± 1.29) was less than impact sites (5.75 ± 1.16) (Figure 8). The species richness was also higher at impact sites (2.38 ± 0.26) than control sites (1.5 ± 0.5) (Figure 9). Reptile abundance was not significantly between control and impact sites in 2021 ($P = 0.18$). Species richness was also not significantly different between control than impact sites in 2021 ($p = 0.12$).

4.4.2 All years

There is no significant difference in small mammal abundance between control and impact sites for all years 2017 -2020 (df = 46, F value = 1.608, p = 0.211). There is a significantly higher mammal species richness for all years 2017-2020 at impact sites (df = 46, F value = 5.02, p = 0.02. This has been the case in individual years however this is the first time in four years that impact sites have become significantly higher in richness over time. This has been a direct result of the captures of Dusky Hopping Mouse and Sandy Inland Mouse in impact sites 2020.

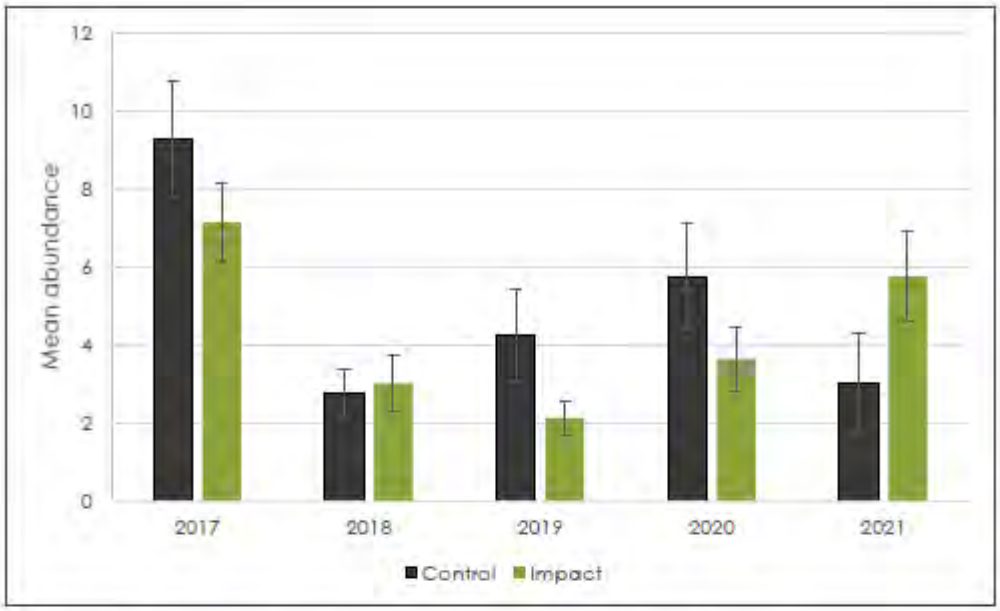

Figure 8. Mean abundance of reptiles at control and impact sites 2017-2021.

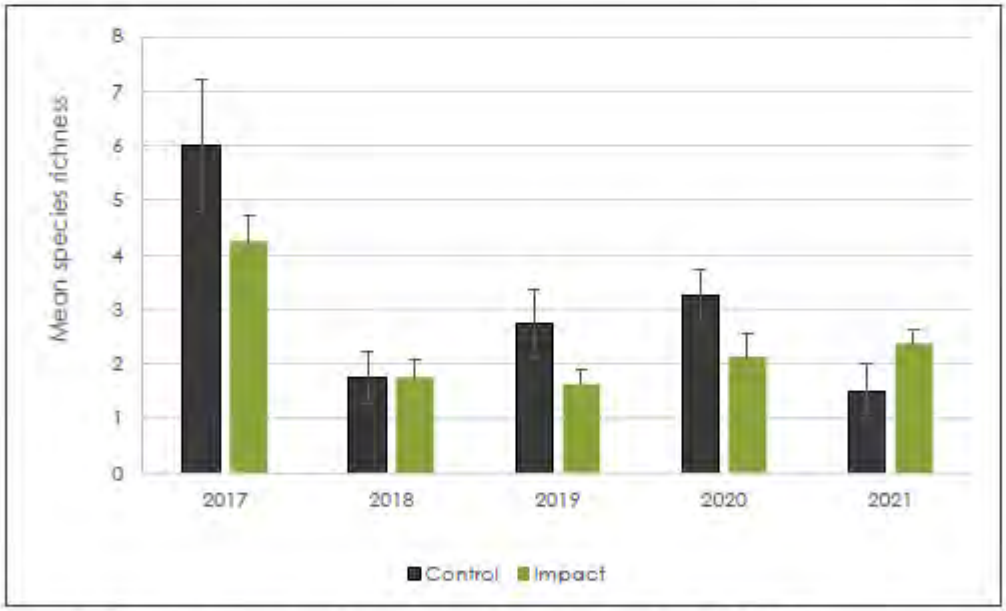

Figure 9. Mean species richness of reptiles at control and impact sites 2017-2021.

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4.5.2 All years

The mean reptile abundance at control and impact sites was not significantly different over the five-year period 2017 to 2021 (df = 58, F value = 0.64, p = 0.43).

Mean species richness was also not significantly different at control and impact sites for the five-year period 2017 to 2021 (df =58, f value = 1.95, p = 0.17).

Of note is that no *Ctenotus* skink species were recorded at any sites for the first time in 2021. However, there does not appear to be a declining trend in *Ctenotus* spp. over time, but it is difficult to detect a trend due to low captures in 2018 and 2019 (Figure 10). There does not appear to be a decline in the Skinks guild more broadly (Figure 11).

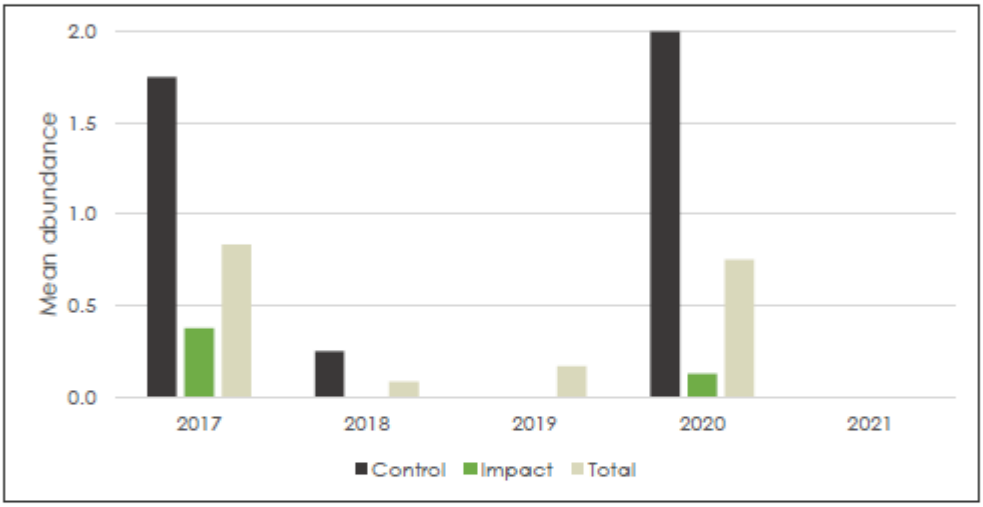

Figure 10. Mean abundance of Ctenotus species at control and impact sites 2017-2021.

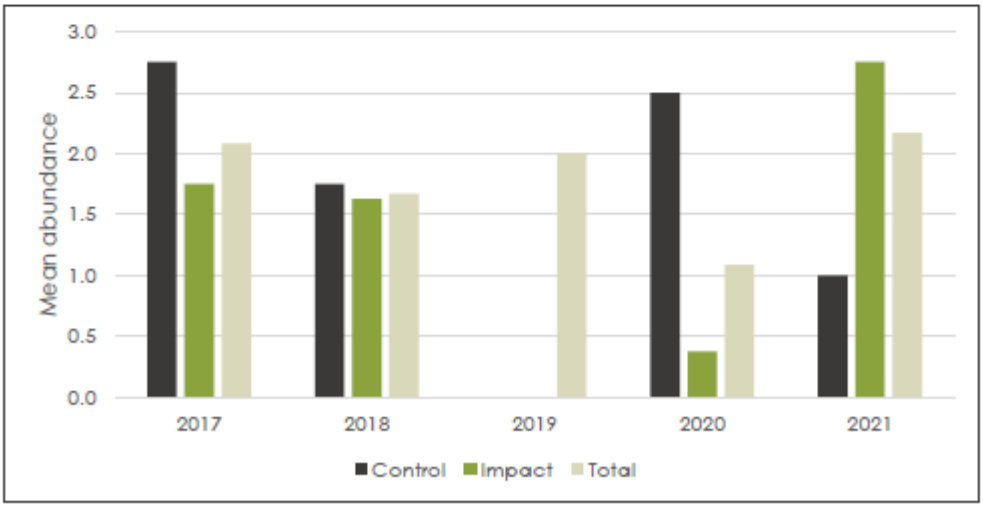

Figure 11. Mean abundance of skink species at control and impact sites 2017-2021.

4.6 Birds

4.6.1 Overview

Twenty-four avian species were recorded from within point count sites (Table 6). Mean abundance was slightly higher at impact sites, with 25.88 individuals per site recorded compared to 19.75 individuals per site at control sites. The most abundant species was the Zebra Finch (*Taeniopygia guttata*). Budgerigars (*Melopsittacus undulatus*) and Crested Pigeons (*Ocyphaps lophotes*) were also relatively abundant. There were no observations of several species recorded in 2020 such as Orange or Crimson Chats, Cockatiels, Flock Bronzewings or Australian Pratincoles. This is not unexpected given these species rely on good seasonal conditions and standing water in the landscape, which was absent during the 2021 survey. The Hooded Robin (*Melanodryas cucullata*) (Figure 12) was recorded for the first time during the five-year monitoring period (2017-2021).

Table 6. The number of individuals for each bird species recorded at control and impact point count sites over the Beverley Mine Project area, spring 2021.

Scientific Name	Common Name	Control	Impact	Total
Anthus australis	Australian Pipit	0	2	2
Aquila audax	Wedge-tailed Eagle	0	5	5
Artamus cinereus	Black-faced Woodswallow	2	13	15
Artamus personatus	Masked Woodswallow	0	2	2
Cacatua sanguinea sanguinea	Little Corella	9	13	22
Certhionyx variegatus	Pied Honeyeater	0	1	1
Corvus coronoides	Australian Raven	5	4	9
Dromaius novaehollandiae	Emu	2	4	6
Eolophus roseicapilla	Galah	7	6	13
Falco cenchroides	Nankeen Kestrel	2	4	6
Gavicalis virescens	Singing Honeyeater	1	4	5
Geopelia cuneata	Diamond Dove	0	1	1
Hieraaetus morphnoides	Little Eagle	1	0	1
Melanodryas cucullata	Hooded Robin	0	2	2
Melopsittacus undulatus	Budgerigar	0	38	38
Neopsephotus bourkii	Bourke's Parrot	0	3	3
Ocyphaps lophotes	Crested Pigeon	7	31	38
Oreoica gutturalis	Crested Bellbird	0	1	1
Petrochelidon nigricans	Tree Martin	3	19	22
Petroica goodenovii	Red-capped Robin	0	1	1
Psephotellus varius	Mulga Parrot	0	2	2
Psophodes cristatus	Chirruping Wedgebill	0	2	2

Scientific Name	Common Name	Control	Impact	Total
Rhipidura leucophrys	Willie Wagtail	0	1	1
Taeniopygia guttata	Zebra Finch	40	48	88
	Total	**79**	**207**	**286**
	Mean	**19.75**	**25.88**	**23.83**

Figure 12. A juvenile Hooded Robin observed at one of the impact monitoring sites.

Opportunistic bird species observations were made during the survey but are not used as quantitative analysis in this section due to inconsistencies in methods. A range of avian family groups was recorded as being present across all mining leases.

4.6.2 Point count analysis

The mean number of birds recorded at impact sites (25.875 ± 7.87) and control sites (19.75 ± 6.17) (Figure 13) was not significantly different ($p = 0.644$). Species richness was greater at impact sites (6.25 ± 1.09) than at control sites (3.75 ± 0.75) (Figure 14) however this difference also was not statistically significant ($p = 0.127$).

4.6.3 All years

The mean abundance of individuals within control and impact sites over the five-year monitoring period (2017-2021) shows no statistical difference (df =58, F value = 0.068, p = 0.795). Mean species richness also showed no significance in the variance over the monitoring period (df 58, F value = 0.859, p = 0.358).

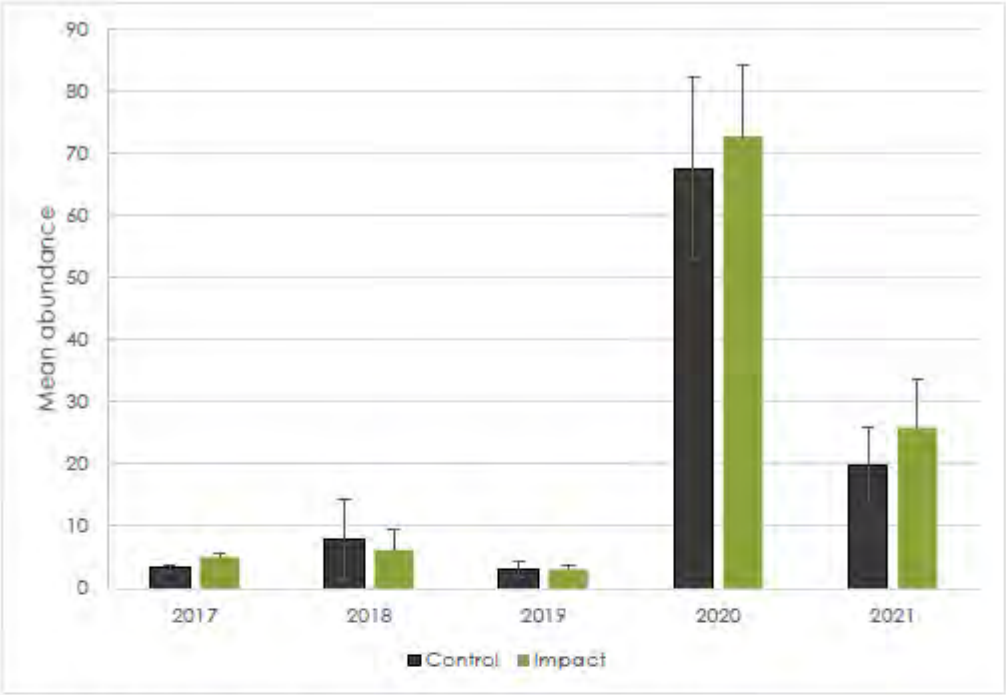

Figure 13. Mean abundance of birds at control and impact sites 2017-2021.

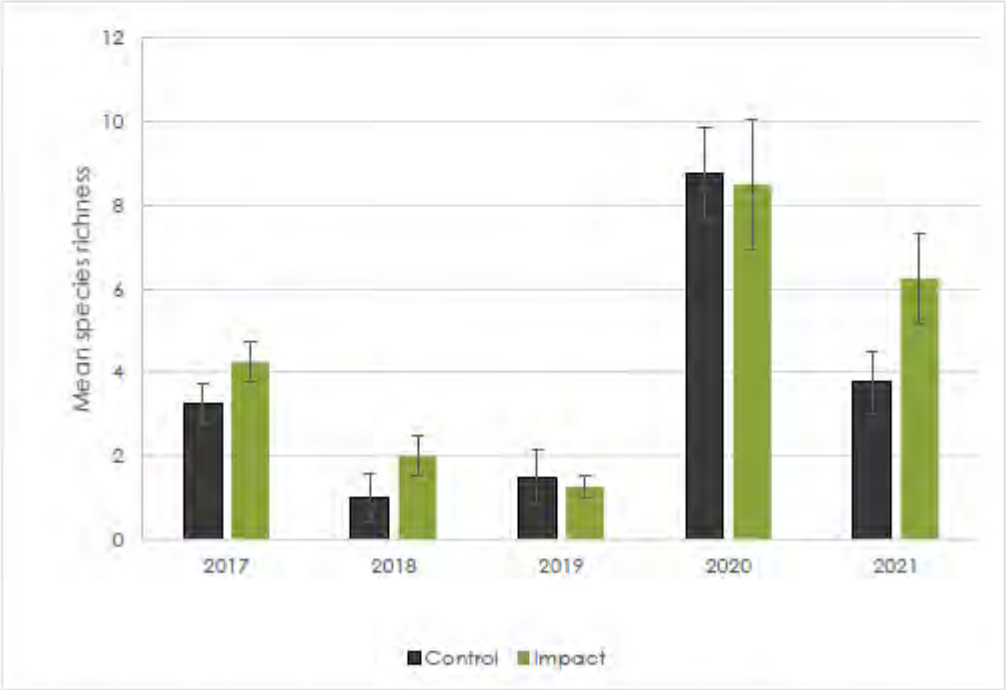

Figure 14. Mean species richness of birds at control and impact sites 2017-2021.

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4.7 Camera trapping results

Camera trapping results did not detect any records of feral pest species. As with previous years, camera locations were primarily associated with water points such as the Four Mile tanks, reverse osmosis outlet wetland, North Mulga Dam and Pepegoona bore. This was determined as the most likely place to record cats and or foxes during this time of year. No fauna pest species were observed through camera traps nor were ant records made as opportunistic observations. There was no evidence during the surveys that there has been an increase in the number of feral predators within or external to the Beverley and Four Mile leases.

Species most commonly recorded at camera trapping points were Red Kangaroo, Euro, Corella, Crested Pigeon, Bearded Dragon, Bronze-winged Pigeon, Raven and Galah.

Figure 15, Trail camera 1 with Red Kangaroo and Bronze-winged Pigeon drinking.

5 Discussion

Rainfall in the months prior to the survey was very limited, with only 9.8 mm falling in the three months prior to the survey and 27.4 mm falling in the six months prior to the survey. This meant that conditions on site were very dry. This was highlighted by the relatively low bird species abundance and richness recorded across all sites, and the slightly lower abundance of small mammals.

5.1 Mammals

Mammal abundance decreased slightly, mainly due to fewer captures of the introduced House Mouse (*Mus musculus*) which would have experienced a population decrease in response to the dry conditions compared to in 2020. Another rodent, the native Forrest's Mouse (*Leggadina forresti*), was recorded in similar numbers to what was recorded in 2020. This is likely a legacy from the population increase in 2020, with native rodent populations reproducing in response to the good seasonal conditions, and population declines not being as rapid in dry conditions as that observed in House Mice.

At the time of writing this report, Beverley has experienced an exceptionally wet spring and summer, with 301 mm falling in the four months to 2 February 2022. Given these ongoing good seasonal conditions, populations of small mammals are expected to increase across the region.

Based on the existing knowledge of surveys under the current methodology, there are no results that suggest the mine operations are having any impact of the abundance or species richness of mammals within the local or wider regional area.

5.2 Reptiles

Reptile abundance and species richness differed to that observed in previous years, with impact sites showing a higher mean abundance and species richness than control sites for the first time. However, there was no statistically significant difference in these values. The ongoing annual monitoring will allow us to determine whether this difference continues or whether the trapping results will revert to previously observed trend of a higher abundance and species richness at impact sites for the previous four-year period (2017-2020).

The absence of any captures of *Ctenotus* species during this 2021 survey is of note. This may be explained by the dry conditions and time since rain prior to the survey. Only 27.4 mm of rain was recorded at Beverley in the six months prior to the survey, which likely limited the food resources available for species such as *Ctenotus* (i.e. arthropods etc) and so, while individuals

may have been present during the survey and daytime temperatures were high enough for reptiles to be active, they were not active so as to conserve energy. While it is difficult to determine if *Ctenotus* species are declining over time at Beverly due to low captures in previous years, it would be useful to compare results of other pitfall trapping surveys in the region to determine whether the paucity of *Ctenotus* is a consistent trend observed more widely, or if it is limited to the Beverley site and, if so, this observation warrants further investigation if the trend continues.

5.3 Birds

The 2021 avian survey recorded a decrease in abundance and species richness across both impact and control sites, which was not unexpected given the seasonal conditions were much drier than that experienced in 2020. Abundance and species richness was still much higher than that recorded during the 2017-2019 surveys, which is likely a legacy from the good conditions experienced in 2020, with species such as Budgerigars (*Melopsittacus undulatus*) and Pied Honeyeaters (*Certhionyx variegatus*) still present in relatively lower numbers. Wading and aquatic species that were recorded in 2020, such as Black-fronted and Red kneed Dotterels and Whiskered Terns, were not recorded during this survey.

5.4 Amphibians

No amphibians were observed during the 2021 season. This was as expected due to the dry conditions preceding and during the survey.

5.5 Summary

The overall observations and quantitative data of the fauna survey show there was no statistically significant difference in reptile or bird mean abundance or mean species richness at comparative control and impact sites in 2021. There was a statistically significant difference in species richness of mammals at impact sites in comparison to control sites in 2021 as well as significantly higher for impact than control sites over the five-year period 2017-2021. This indicates that mining operations are having a negligible effect on abundance and species diversity across the three faunal groups locally at the impact sites and within the wider region.

There has been an unexplained increase in species richness within impact sites in 2021 and for the five-year period since 2017. A higher percentage of impact sites are located near the Gammon Range area associated with the Four Mile Lease. There are two hypotheses for the significant species richness totals associated with the impact sites. One is that fauna species have a more rapid response in areas where rainfall closer to the Gammon Ranges is higher than that observed away from the range despite being the same landform. This alone maybe

enough to drive higher species richness totals. The other is that the highly puffing clay soils and increased ephemeral drainage lines in proximity to sites associated with the fringe of the range provides a slightly more variable habitat despite the sites all sharing the same landform type.

6 References

Bureau of Meteorology (2022) Climate Model Summary for February to June 2022. Commonwealth of Australia 2021, Bureau of Meteorology. Online resource viewed 8/2/2022. < http://www.bom.gov.au/climate/model-summary/#region=NINO34 >.

Bureau of Meteorology (2019) Climate Data Online, Climate Statistics for Australian Locations. Online resource viewed 20/11/2019. http://www.bom.gov.au/climate/averages/tables/cw_016001.shtml

Heathgate Resources Pty Ltd (2018) Beverley Mine Program for Environment Protection and Rehabilitation. Beverley Uranium Mine ML 6321 – PEPR 2018 (v7.3)

7 Appendices

Appendix 1. Fauna monitoring pitfall trapping data mammals 2021.

Control Impact	Scientific Name	Common Name	Number
Control	*Leggadina forresti*	Central Short-tailed Mouse (Forrest's Mouse)	10
	Sminthopsis crassicaudata	Fat-tailed Dunnart	9
	Sminthopsis macroura	Stripe-faced Dunnart	9
Impact	*Leggadina forresti*	Central Short-tailed Mouse (Forrest's Mouse)	14
	Mus musculus	House Mouse	2
	Planigale gilesi	Planigale tenuirostris	4
	Planigale tenuirostris	Narrow-nosed Planigale	13
	Pseudomys hermannsburgensis	Sandy Inland Mouse	1
	Sminthopsis crassicaudata	Fat-tailed Dunnart	26
	Sminthopsis macroura	Stripe-faced Dunnart	29
		Grand Total	117

Appendix 2. Fauna monitoring pitfall trapping data reptiles 2021.

Control Impact	Scientific Name	Common Name	Number
Control	*Gehyra purpurascense*	Robust Tree Dtella	1
	Menetia greyii	Dwarf Skink	4
	Pogona vitticeps	Central Bearded Dragon	1
	Tympanocryptis tetraporophora	Eyrean Earless Dragon	6
Impact	*Diplodactylus tessellatus*	Tessellated Gecko	2
	Menetia greyii	Dwarf Skink	21
	Morethia adelaidensis	Adelaide Snake-eye	1
	Pogona vitticeps	Central Bearded Dragon	2
	Suta suta	Curl Snake	1
	Tympanocryptis tetraporophora	Eyrean Earless Dragon	19
		Grand Total	58

Appendix 3. Avian point count data, 2021.

Control Impact	Scientific Name	Common Name	Number
Control	*Artamus cinereus*	Black-faced Woodswallow	2
	Cacatua sanguinea sanguinea	Little Corella	9
	Corvus coronoides	Australian Raven	5
	Dromaius novaehollandiae	Emu	2
	Eolophus roseicapilla	Galah	7
	Falco cenchroides	Nankeen Kestrel	2
	Gavicalis virescens	Singing Honeyeater	1
	Hieraaetus morphnoides	Little Eagle	1
	Ocyphaps lophotes	Crested Pigeon	7
	Petrochelidon nigricans	Tree Martin	3
	Taeniopygia guttata	Zebra Finch	40
Impact	*Anthus australis*	Australian Pipit	2
	Aquila audax	Wedge-tailed Eagle	5
	Artamus cinereus	Black-faced Woodswallow	13
	Artamus personatus	Masked Woodswallow	2
	Cacatua sanguinea sanguinea	Little Corella	13
	Certhionyx variegatus	Pied Honeyeater	1
	Corvus coronoides	Australian Raven	4
	Dromaius novaehollandiae	Emu	4
	Eolophus roseicapilla	Galah	6
	Falco cenchroides	Nankeen Kestrel	4
	Gavicalis virescens	Singing Honeyeater	4
	Geopelia cuneata	Diamond Dove	1
	Melanodryas cucullata	Hooded Robin	2
	Melopsittacus undulatus	Budgerigar	38
	Neopsephotus bourkii	Bourke's Parrot	3
	Ocyphaps lophotes	Crested Pigeon	31
	Oreoica gutturalis	Crested Bellbird	1
	Petrochelidon nigricans	Tree Martin	19
	Petroica goodenovii	Red-capped Robin	1
	Psephotellus varius	Mulga Parrot	2
	Psophodes cristatus	Chirruping Wedgebill	2
	Rhipidura leucophrys	Willie Wagtail	1
	Taeniopygia guttata	Zebra Finch	48
		Total	286

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Appendix 4. Individual site summary all captures.

Control Impact	Site Name.	AVES	MAMMALS	REPTILES	Total
Control	BE25	31	10	6	47
	CON02	60	3	4	67
	CON03	30	12	0	42
	PE18	1	3	2	6
Impact	BN01	28	8	1	37
	BN03	4	5	3	12
	BU14	10	8	6	24
	FM26	29	4	4	37
	FOU03	12	10	10	32
	FOU04	61	23	4	88
	FOU05	4	20	9	33
	NM10	16	11	9	36
	Total	**286**	**117**	**58**	**461**

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APPENDIX 4 – 2020 ANNUAL FLORA SURVEY

Beverley, Beverley North and Four Mile ML's Annual Flora Monitoring, 2021

January 31, 2021

PREPARED FOR:

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Document information and distribution

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Glossary

BOM	Bureau of Meteorology
Ecosphere	Ecosphere Ecological Solutions Pty Ltd
Heathgate	Heathgate Resources Pty Ltd
ISR	In-situ Recovery
ML	Mining Lease
NRM	Natural Resources Management (Board)
NRM Act	*Natural Resources Management Act 2004*
PEPR	Program for Environmental Protection and Rehabilitation
SAAL	South Australian Arid Lands
UOC	Uranium Oxide Concentrate

Executive Summary

Ecosphere Ecological Solutions (Ecosphere) was engaged by Heathgate Resources Pty Ltd (Heathgate) to conduct the 2021 annual flora monitoring assessment for the Beverley, Beverley North and Four Mile Mining Leases (ML's). Dry conditions in the lead up period of four months prior to the survey resulted in similar observations to the past three years with overall annual rainfall being below average and conditions drier than average.

Species cover values were up slightly from the previous few years however this was as a response from winter rainfall by short lived perennial species and was attributed to a single species, Sclerolaena ventricosa (Salt Bindyi) which is a common and widespread species within the Beverley and wider northeast pastoral zone.

Species richness showed a slightly upward but overall similar trend to the previous few years and again was attributed to short lived perennial forb growth. Grass species showed little response in 2021 and this reflects timing of rainfall where soring rains will set grass species into action as distinct from pioneering forb species.

No significant difference between control and impact sites was experienced and trends were consistent across the board.

No significant weed species outbreaks were recorded during the survey, and this also is reflective of dry conditions not supporting annual growth. Some weed presence around areas typically recording weds such as stormwater outlets etc was observed but no weeds outside of those considered naturalised throughout the northeast pastoral zones were encountered. No target weeds for the region were observed in 2021.

Mitchell Grass the primary stabilising species within the area continued to decline slowly in the absence of consistent summer rainfall. At the time of drafting this report, repeat rainfall events have occurred in the Beverley area and a welcome response from Mitchell grass is expected this year aiding stability of the ecosystems present, especially in the absence of high numbers of kangaroos in 2022.

Disturbance to vegetation within the Beverley and Four Mile ML's is limited to the actual work and infrastructure footprints only and no evidence of indirect disturbances such as dust impacts, erosion, weed invasion or breakdown of ecosystem function is provided by the outcomes of this survey.

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1 Introduction

Heathgate Resources Pty Ltd (Heathgate) operates the Beverley Mining Lease ML 6321, Beverley North Mining Lease ML 6387- and Four-Mile Uranium Mine (Four Mile) ML 6402 tenements in northern South Australia. Mining is undertaken by in-situ recovery (ISR) method. The Four Mile, Beverley and Beverley North Mining Leases (ML's) are located approximately 520 km north north-east of the Adelaide Central Business District, in the north-east pastoral region of South Australia. The study area is situated on the eastern side of the Gammon Ranges approximately 30 km north-east of the Arkaroola Village (Figure 1) within the Wooltana Crown Lease (Volume 1289 Folio 38).

Heathgate requires an annual flora monitoring program to be conducted as part of its Programs for Environmental Protection and Rehabilitation (PEPR). Specific outcomes related to vegetation include;

- No permanent loss of abundance or diversity to native vegetation on or off the Beverley, Beverley North and Four Mile ML's, through clearance, dust contaminant deposition, fire or other damage unless prior approval under the relevant legislation is obtained.
- No introduction of new weeds, plant pathogens or pests (including feral animals), nor increase in abundance of existing weed or pest species in the lease areas compared to adjoining pastoral areas.

Ecosphere Ecological Solutions (Ecosphere) was contracted by Heathgate to conduct the 2021 annual flora monitoring assessment for the Beverley, Beverley North and Four Mile ML's.

1.1 Objectives

The overall objective of the flora monitoring survey is to demonstrate compliance with conditions as stated under the relevant ML's PEPR.

Specifically, the aims of the flora monitoring report were to:

- Make a comparative analysis between the sites within the operational mining (impact) area and the undisturbed (control) sites.
- Provide quantitative analysis on the vegetation cover values at the control and impact sites for all flora species.
- Provide quantitative analysis on plant species richness at the control and impact sites for flora species.

- Assess the species presence and abundance of target alien species within the ML's.

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Figure 1. General location of the Beverley, Beverley North and Four Mile ML's.

2 Background

2.1 Environmental setting

2.1.1 Vegetation

Historically, the vegetation within the Beverley, Beverley North and Four Mile ML's have been shown to exceed the species richness observed within pastoral areas. Cover values were typically lower than that of areas further away from the ML's. The topography to the southeast of the ML's is flat sand plain with the steeper areas within the ML's adjacent to the range are emphasised by numerous and prominent drainage channels.

2.2.2 Climate

Historical long term rainfall data (comparative mean monthly totals) were taken from the nearest reliable weather station which is the Gammon Ranges (Wooltana, 017056) station (BOM, 2021). Data has been collected at this site since 1877, which shows a long term mean annual rainfall of 195.6 mm, with the heaviest falls typically occurring between December and March (Figure 2). The wettest months historically correspond with the highest mean maximum temperatures.

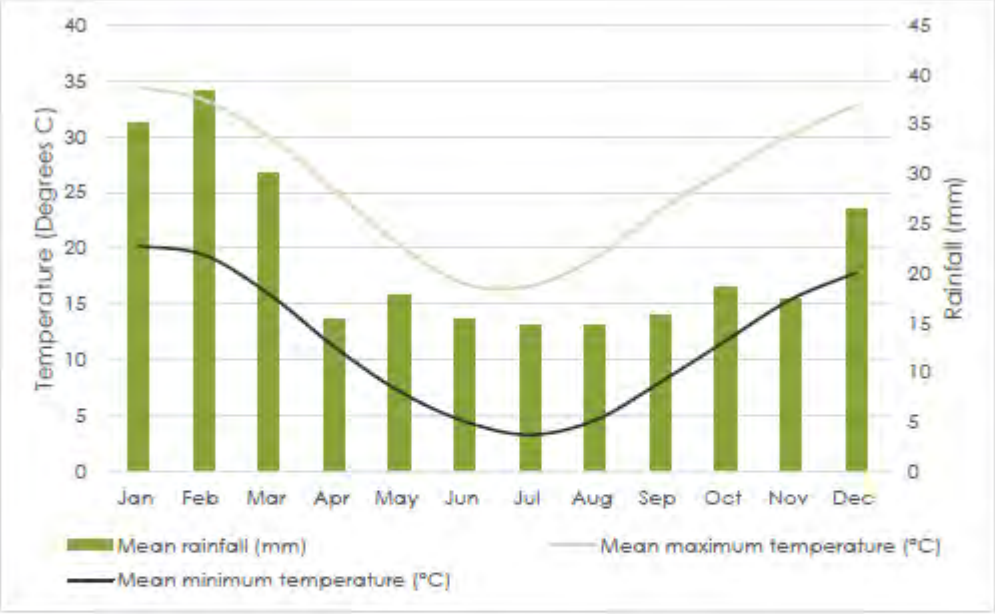

Figure 2. Long term climate data for Wooltana weather station (017056).

The twelve-month period leading up to the flora and fauna survey (September 2020 – September 2021) recorded 142 mm of rainfall at the Beverley weather station, below the annual average for Wooltana (Figure 3). The six-month period prior to the survey (including September) recorded just 18 mm of rain. Average monthly maximum temperatures were around average long-term conditions (Figure 3).

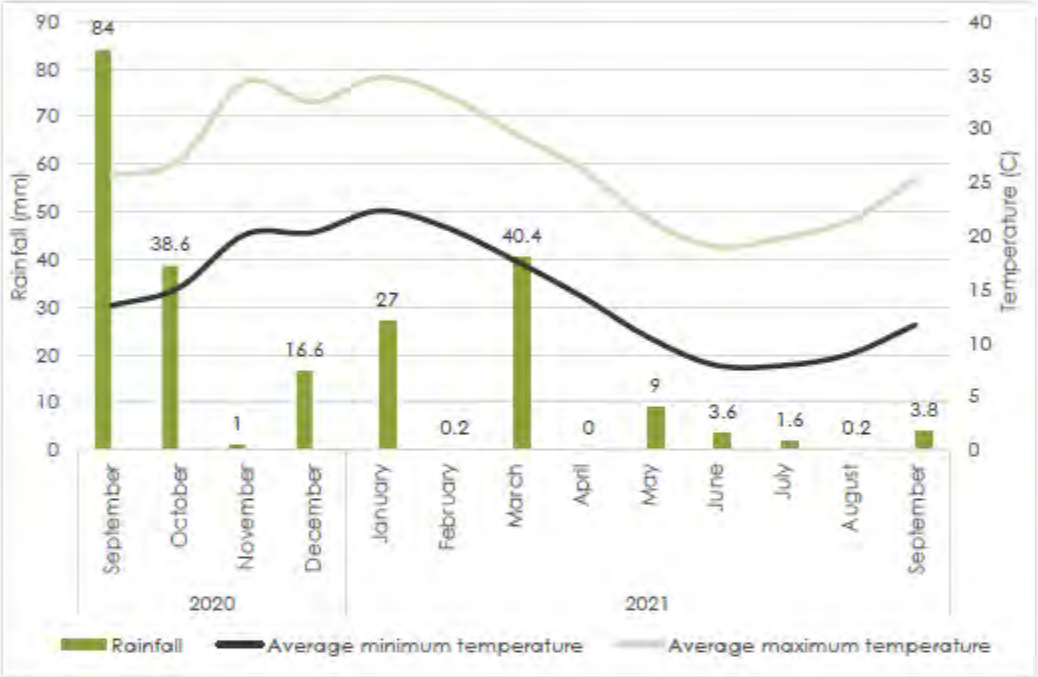

Figure 3. Summary of weather data from Beverley Weather Station for twelve months preceding 2021 flora survey.

3 Methods

3.1 Floristics

The methods in 2021remained the same as those employed historically. This includes the assessment of 29 permanent flora plots comprised of 19 impact monitoring sites (excludes FM 25 which has been invaded by infrastructure) and 10 control sites, located >5 km from any infrastructure (Figure 4). Each site individual Identification number and location is provided in Appendix 1.

The field survey was comprised of four elements:

- Plant species cover;
- Plant species richness;
- Photo point monitoring; and
- Weed assessment.

3.1.1 Plant species cover

Flora cover was measured using 5 x 2 monitoring plots. Flora cover was recorded for all species within the 10 individual one m^2 plots, which were aligned as five plots on each side of a 5 m tape, strung between two 500 mm marker pegs, 5 m from the photo peg. Photo pegs were identified by a 1500 mm galvanised star dropper displaying the site name. The sites are permanently marked with star droppers to ensure ongoing consistency for size and location each year. All flora species within each plot are quantified with a percentage cover score, which is a measure of percentage of above-ground parts of a plant species when viewed from directly above (i.e., the proportion of ground within the site occupied by the vertical projection of the species). Cover for each species within individual plots are totalled and divided by 10 to give an overall quadrat cover score. Because the vegetation may be layered, the cover of all species combined for each site may total greater than 100 %.

3.1.2 Species richness

All flora species within the 10 m^2 quadrat are recorded and totalled as an overall species richness for each site. Mean species richness is calculated as the mean of the total number of species recorded in each site. Species richness is calculated per quadrat and categorised by life-cycle and lifeform:

- Life-form was allocated as forb, grass, shrub or subshrub.

- Life-cycle was allocated as long lived perennial, short-lived perennial, annual, or ephemeral.

The allocation of flora species to lifeform and lifecycle is based on knowledge of the local life history traits of the plant species as well as site specifics, as lifeform can vary dependent on local conditions.

3.1.3 Photo point monitoring

Photo point monitoring enables the assessment of changes in vegetation condition over time and between seasons. Photographs are taken four times each year by Heathgate environmental staff, in addition to the annual flora monitoring survey photographs. Photographs are standardised and are taken from the quadrat markers and the comparison of photographs can show any obvious visual changes in the vegetation, which may not be easily detected in the vegetation cover or species richness data analysis. Elements which are assessed include;

- general health of vegetation in whole vegetation zone;
- evidence of natural regeneration in whole vegetation zone;
- signs of disturbance either by stock or humans in whole vegetation zone; and
- any impacts from mining activities in whole vegetation zone.

3.1.4 Weed monitoring

Weed monitoring was undertaken as an opportunistic ramble survey. Weed species in the arid zone are typically introduced through vectors which carry seed into new areas mixed in with mud or soil. Alternatively, weed species can be introduced through flooding events when seed stock travels downstream.

Areas such as creeks or drainage zones adjacent to roadsides, reverse osmosis outlet sites, shakedown areas for transport vehicles and junctions where vehicles consistently stop, have a higher-than-average likelihood of infiltration by exotic species and were therefore identified and targeted for weed assessment. Additionally, a search at the camp, offices, well houses and associated infrastructure, such as lay down yards, was also conducted.

3.1.5 Field survey limitations

The seasonal conditions in the lead up to the field survey were not optimal for detection of annual and ephemeral flora species due to extremely low rainfall (Figure 3). Identification of

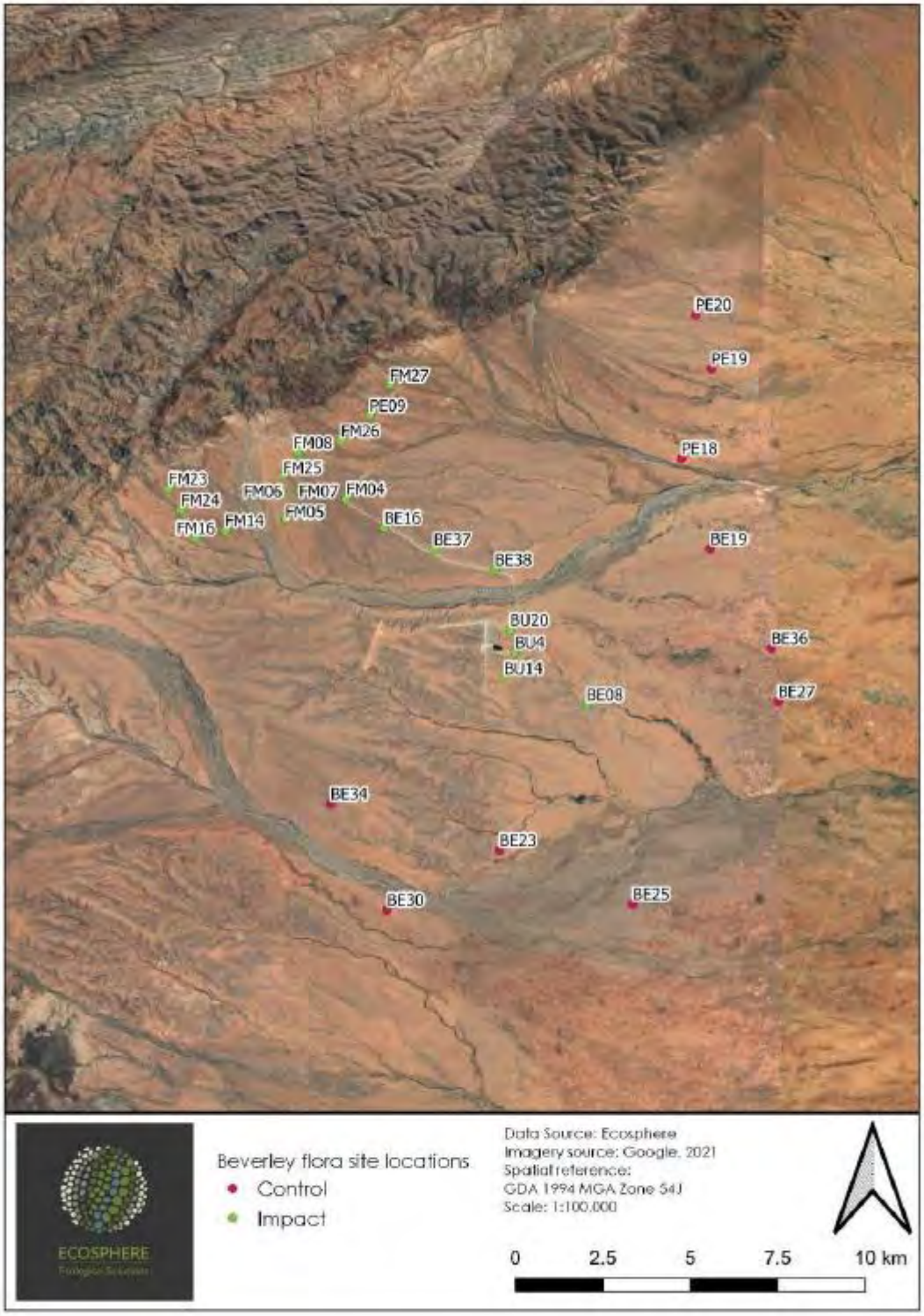

Figure 4. Location of flora monitoring plots (excluding FM 24) assessed in 2021.

14

4 Assessment outcomes

4.1 Flora species cover control/impact comparisons

Fora cover values give an indictive condition where the amount of groundcover in arid environments is highly beneficial to long term sustainability of environments. The ability for areas to gain cover following rain events indicates that ecosystems are functioning as expected and not subjected to longer term loss of condition.

4.1.1 Overall flora cover values

Overall cover is reflective of all flora species present and following rainfall is expected to be annual species. In 2021 there was a small rebound in overall cover from a low observed from 2018 (Table 1 & Figure 5). Control cover increased to 15.93% and impact sites 7.8%. The difference in cover was directly attributed to *Sclerolaena ventricosa* (Salt Bindyi) a short-lived perennial or biannual forb species that will typically only last a season if conditions are not favourable (Table 2).

There was an overall statistically significant difference in cover values between control and impact sites in 2021 (P-value <0.05(0.011)) however given the seasonal conditions and limited number of species represented, it is not likely to remain that way for the longer term.

Table 1. Mean cover values for control and impact sites, 2011-2021.

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Control	36.27	32.27	20.60	11.98	14.32	9.78	16.20	6.42	5.33	3.91	15.93
Impact	28.76	20.62	15.68	7.29	8.14	11.08	12.42	5.41	4.08	2.54	7.80

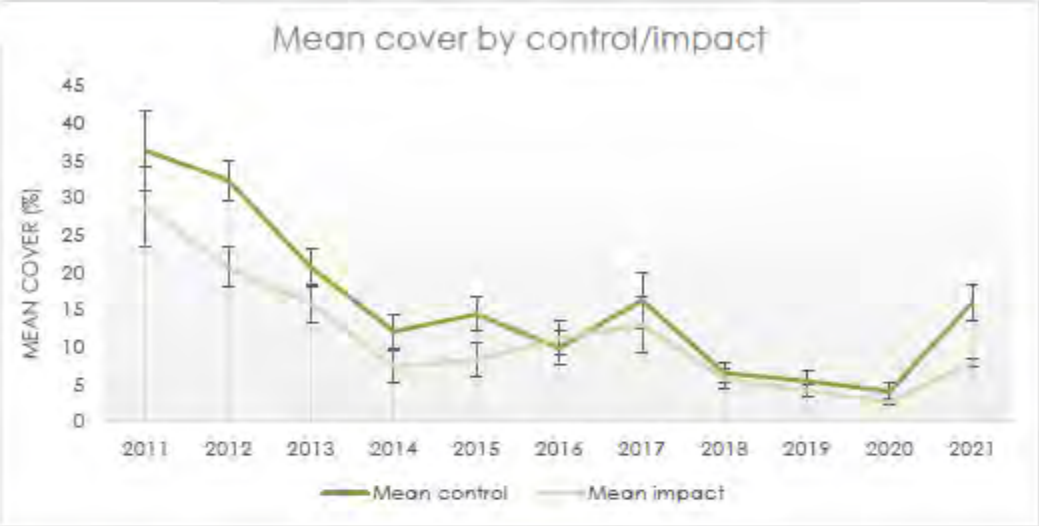

Figure 5. Overall cover values for control and impact sites 2011-2021 with standard error.

Table 2. Average cover values for individual species at control and impact sites in 2021.

Species	Control	Impact
Sclerolaena ventricosa	7.73	0.54
Astrebla pectinata	3.16	1.61
Sclerolaena intricata	0.94	2.33
Sclerolaena divaricata	0.46	0.58
Maireana coronata	0.97	0.00
Euphorbia stevenii	0.00	0.89
Salsola australis	0.13	0.74
Atriplex angulata	0.61	0.01
Sida trichopoda	0.51	0.11
Sclerolaena longicuspis	0.06	0.53
Sclerolaena brachyptera	0.19	0.17
Euphorbia tannensis	0.20	0.14
Dissocarpus biflorus	0.29	0.00
Sporobolus actinocladus	0.20	0.00
Trianthema triquetra	0.17	0.01
Enneapogon avenaceus	0.12	0.06
Maireana aphylla	0.12	0.00
Hibiscus brachysiphonius	0.02	0.02
Aristida contorta	0.04	0.00
Malacocera tricornis	0.00	0.02
Neobassia proceriflora	0.00	0.02
Plantago drummondii	0.00	0.01
Dissocarpus paradoxus	0.01	0.00
Leiocarpa leptolepis	0.00	0.01
Tripogonella loliiformis	0.00	0.01
	15.93	7.80

4.1.2 Flora cover by land use

Flora cover by land use is determined by looking at individual land use types within and external to the ML's. Trends were consistent across all differing land uses however the transport corridor had the lowest response in terms of overall cover across all the variables (Figure 6). This is likely to be due to the stony landform present in many sites adjacent to the transport corridor located on a ridgeline which is not suited to growth of the key increaser species in 2021, *Sclerolaena ventricosa*.

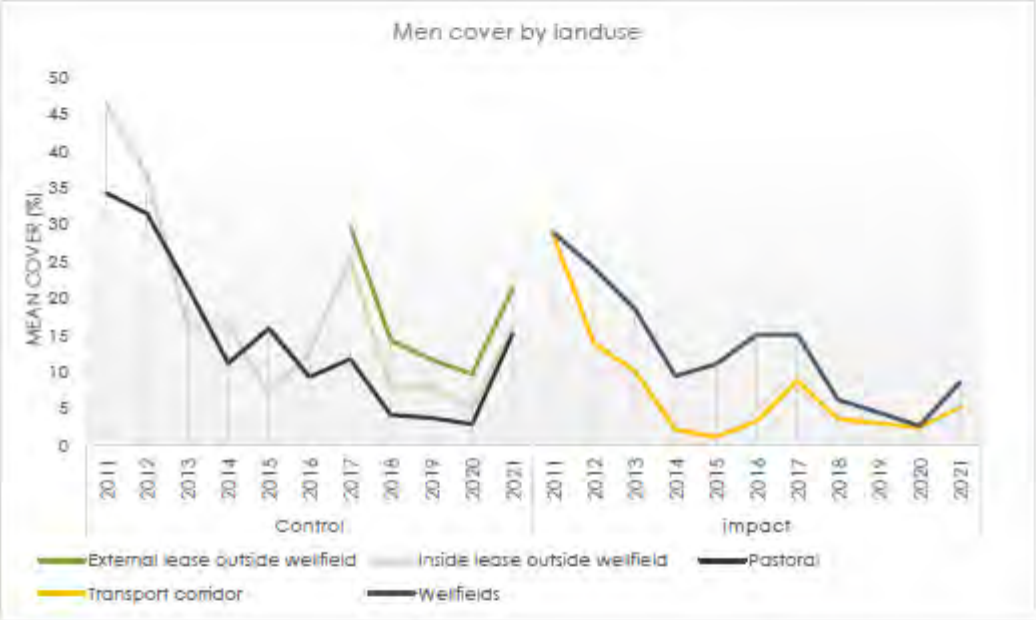

Figure 6. Average cover values for all species at different land use types at control and impact sites 2011-2021.

4.1.3 Flora cover by lifecycle

Flora cover by lifecycle was provided by short lived perennial species and minor increase in annual species (Figure 7). Impact sites had increased short lived perennial mean cover, provided by *Sclerolaena ventricosa* (Salt Bindyi). As discussed earlier in section 4.1.1, the short-lived perennial species showed the most ardent response to conditions that were favourable earlier in the year with most annual species already drying off prior to the survey.

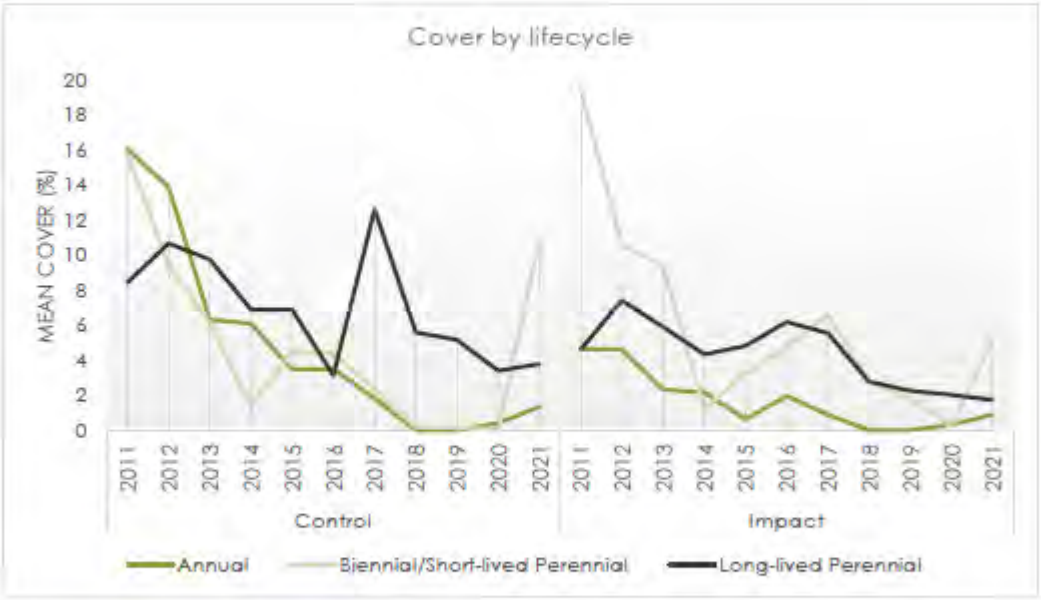

Figure 7. Flora species cover by lifecycle 2011-2021.

4.1.4 Flora cover by lifeform

Flora species cover by lifeform also supports the increase in the aforementioned forbs at control sites. (Figure 8). Trends were otherwise consistent at control and impact sites with forbs and shrubs increasing slightly. Figure 8 also shows that grasses overall showed no increase both from a perennial and annual perspective.

Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring

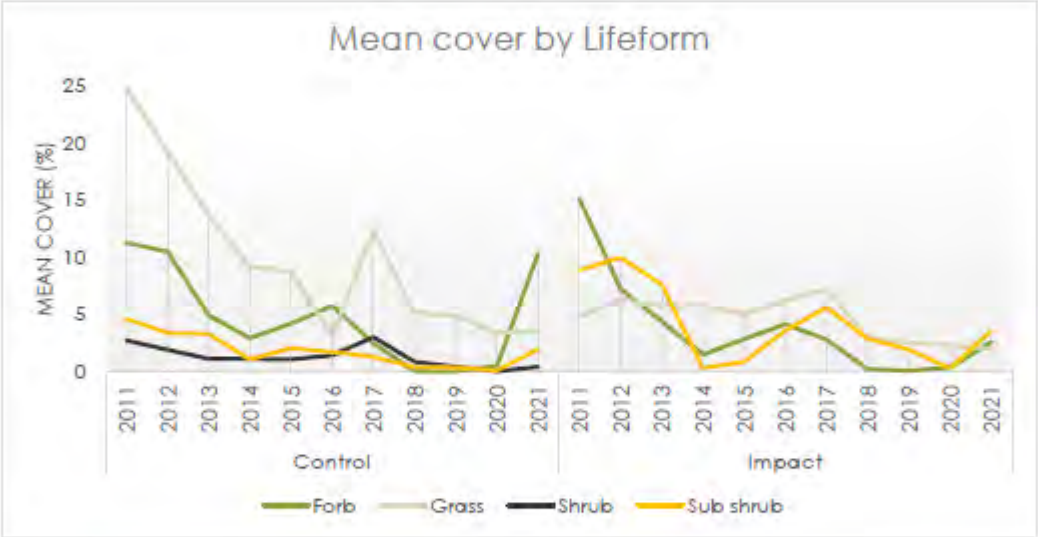

Figure 8. Flora species mean cover by lifeform 2011-2021.

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4.1.6 Astrebla key lifeform cover

Astrebla pectinata (Mitchell Grass) is the key perennial stabilising species present at Beverley and to a slightly lesser extent at Four Mile. There was a continued downward trend in cover for this species (Figure 9 & Table 3) and this is supported in annual photo point images. Cover at control and impact sites was marginally lower than the previous year.

Table 3. Mean Mitchell Grass cover 2011-2021.

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Control	6.75	7.38	7.42	5.68	7.48	4.27	13.02	5.69	5.40	3.69	3.51
Impact	3.10	5.36	4.75	4.31	4.80	6.18	6.83	3.23	2.69	2.45	2.04

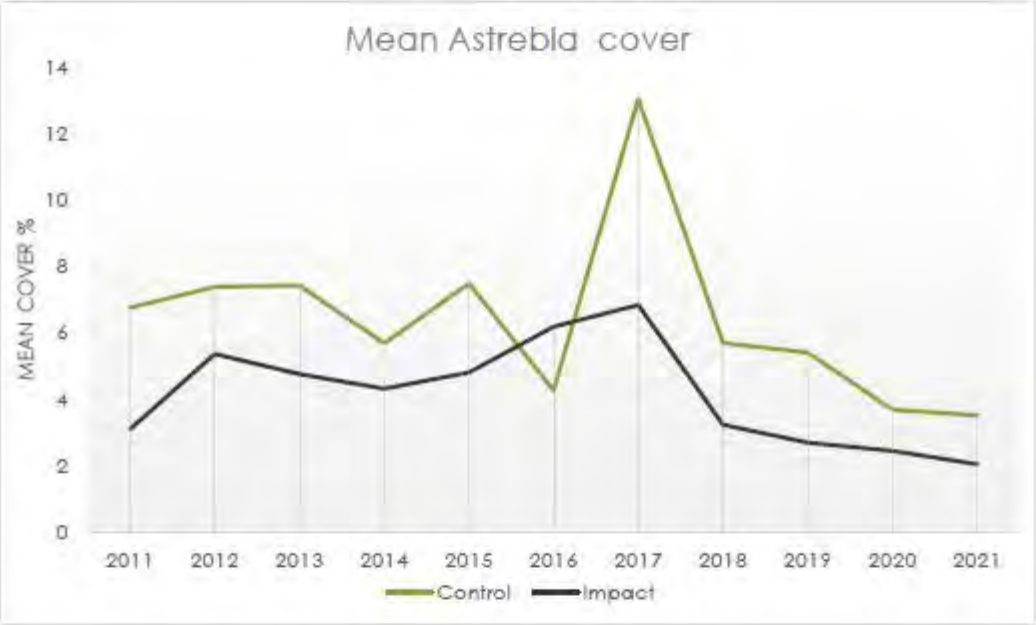


Figure 9. Mean cover of Mitchell Grass at control and impact sites 2001-2021.

4.2 Flora species richness control impact comparisons

4.2.1 Overall species richness

Species richness shows a moderate increase in species presence with an average of five species per plot in 2021 (Table 4 & Figure 10). Control sites were slightly higher than impact sites however trends at these sites have remained similar with past years. The change in mean richness between control and impact sites in 2021 was not statistically significant (P-value >0.05 (0.0644)).

Table 4. Mean species richness for control and impact sites 2011-2021.

Con/Imp	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Control	9.83	14.33	10.33	6.67	10.50	10.67	7.10	1.90	1.70	2.20	6.20
Impact	7.75	15.75	10.00	9.20	5.40	9.75	5.85	2.70	2.42	2.74	4.95

Figure 10. Mean species richness from 2011 – 2021 with standard error.

A total of 25 flora species were recorded across all sites in 2021(Table 5). *Astrebla pectinata* (Mitchell Grass) was the most widespread species recorded at 72% of sites assessed. Other species widespread included *Sclerolaena intricata* (Tangled Poverty Bush), *S. ventricosa* (Salt Bindyi) and *Salsola australis* (Buckbush).

Table 5 Percent of sites individual species recorded at during 2021 survey.

Species	Control	Impact	Total
Astrebla pectinata	80.00	68.42	72.41
Sclerolaena intricata	40.00	68.42	58.62
Sclerolaena ventricosa	80.00	36.84	51.72
Salsola australis	30.00	63.16	51.72
Sclerolaena divaricata	50.00	42.11	44.83
Sida trichopoda	50.00	42.11	44.83
Euphorbia stevenii	0.00	63.16	41.38
Sclerolaena brachyptera	30.00	21.05	24.14
Euphorbia tannensis	50.00	5.26	20.69
Sclerolaena longicuspis	20.00	21.05	20.69
Sporobolus actinocladus	50.00	0.00	17.24
Atriplex angulata	30.00	5.26	13.79
Enneapogon avenaceus	20.00	10.53	13.79
Hibiscus brachysiphonius	10.00	10.53	10.34
Dissocarpus biflorus	20.00	0.00	6.90
Maireana coronata	20.00	0.00	6.90
Trianthema triquetra	10.00	5.26	6.90
Plantago drummondii	0.00	10.53	6.90
Aristida contorta	10.00	0.00	3.45
Dissocarpus paradoxus	10.00	0.00	3.45
Maireana aphylla	10.00	0.00	3.45
Leiocarpa leptolepis	0.00	5.26	3.45
Malacocera tricornis	0.00	5.26	3.45
Neobassia proceriflora	0.00	5.26	3.45
Tripogonella loliiformis	0.00	5.26	3.45

4.2.3 Species richness by land use

The lease sites (PE sites) showed the highest increase in species richness (Figure 11) however these sites are also commonly the lowest when conditions are very dry. Overall trends were consistent with each other and will not show significant changes until good seasonal conditions persist.

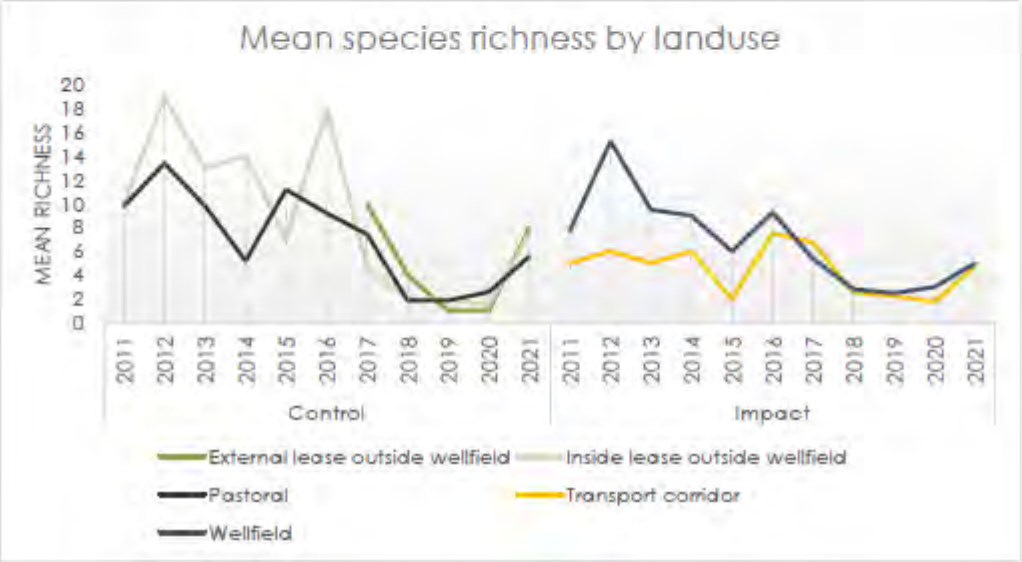


Figure 11. Mean species richness by land use- at control and impact sites.

4.2.4 Species richness by lifecycle

Species richness by lifecycle shows the increase in short lived perennial forbs, consistent with cover results and a slight decrease in annual species. (Figure 12). The primary increase in 2021 is shown by the bounce back of the short-lived perennial forbs at control sites after extremely low cover and richness in the previous two years.

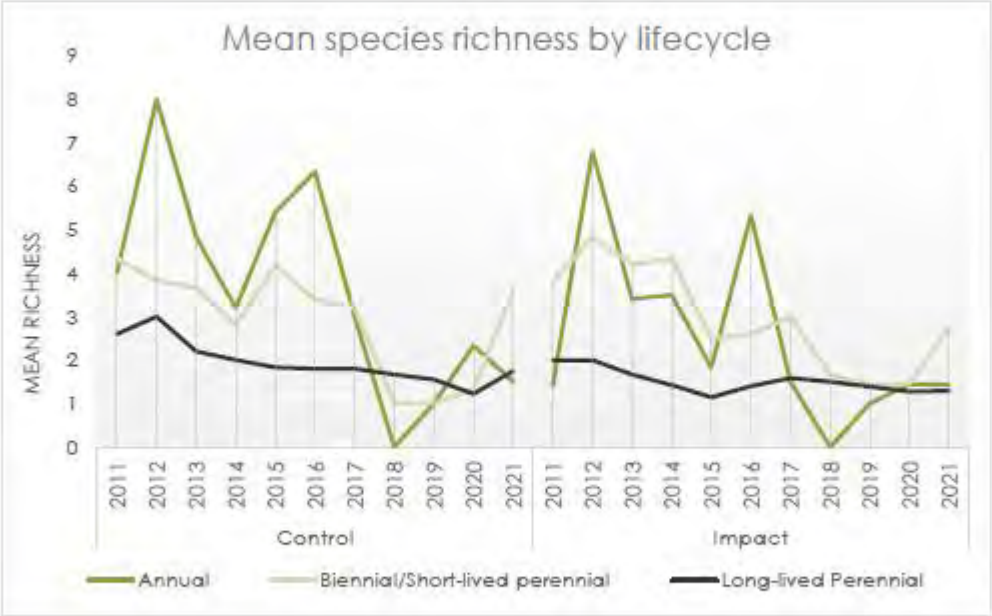


Figure 12. Mean species richness for control and impact sites by lifecycle 2011-2021.

4.2.5 Species richness by lifeform

Species richness by lifeform shows the consistency with cover values where grasses have contributed little in 2021 (Figure 13).

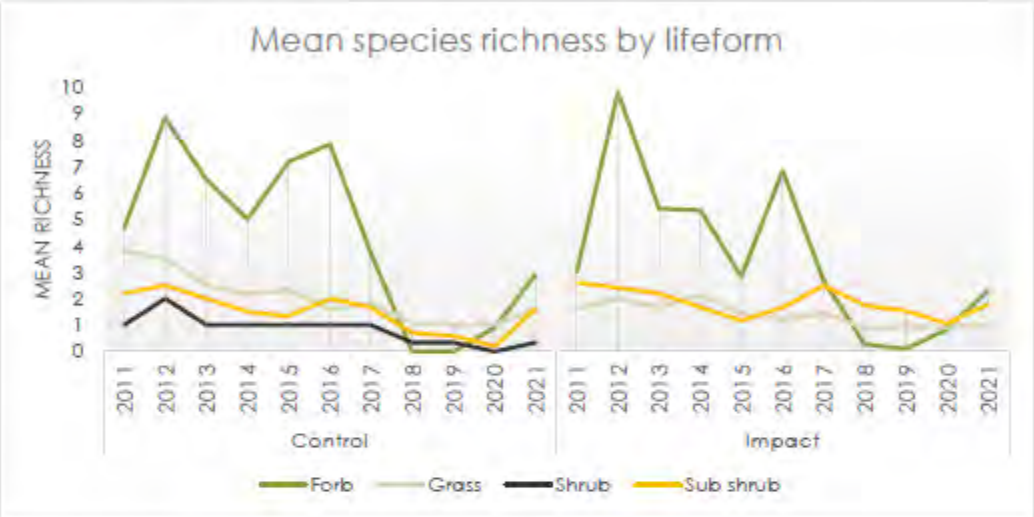


Figure 13. Mean species richness change from 2011-2021 at control and impact sites.

4.3 Alien species

As shown by the monitoring plot results, the primary species present were short lived perennial forbs. Very few weeds were present during the assessment however annual species were present around stormwater outlets and other moisture providing environments around d the ML's. these were not posing significant risks to the surrounding environment and restricted to small areas where moisture was present.

Figure 14. Typical weed individuals including Ruby Dock and Prickly lettuce around run off zones associated with infrastructure.

Species that occur as widespread throughout the entire arid region were present. No recommendations are made regarding these weeds except to monitor and destroy if outbreaks exceed the normal distribution expected for these species such as within natural environments. No weeds were recorded within monitoring plots in 2021 and no evidence of outbreaks of new weed species were noted.

4.4 Photo point monitoring

Photo points comparison from 2018 shows changes- in forb cover generally from a series of very dry years. See Appendix 2 for all photo points from 2018-2021. The photos support the quantitative continued decline of Mitchell grass however this is small over a very extended period. As per previous years, the presence of a cow pat at BE 19 shows the very gradual and minor change that occurs in these environments in the absence of significant rainfall. This pat is over three years old and still in intact condition.

General soil cover was much improved in 2021. The cover is visibly better however a lot of this is litter and forb cover and short term until wind will blow this into retention areas. Significant summer rains will result in changes occurring over longer-term periods in 2022.

5 Discussion

Overall, the vegetation cover and species richness has changed only very marginally and is as would be expected given the ongoing dry conditions experienced in the region.

No significant changes in species cover or richness were observed between control and impact sites was observed. Small spurts of rainfall have allowed for the germination of some species however at the time of the survey annual species were absent and only the longer lived short lived perennial forbs were present.

Mitchell Grass tussocks failed to get enough rain in the previous summer to generate any real leaf growth and as a result continue to stay present as tussocks with dead culms. A period of rain and follow up falls is required to burst these into life. Other previous attempts by these to get going has been hindered by cattle and large of numbers of kangaroos. The kangaroo numbers have dropped dramatically across all parts of the arid zone within the dog fence, and this will allow plants to regenerate following good rainfall when it comes whereas previously high numbers have grazed off most new growth. There has not been enough summer rainfall in the past few years to stimulate significant growth for this species. The tussocks remain in place however no leaf or culm growth has been experienced in previous years. At the time of the report significant rainfall has occurred and this was a follow up to previous summer rains so a large response from this species will be expected in 2022. The numbers of kangaroos are also lower than normal, and this should allow these grasses to fulfil some growth potential this year.

6 References

Bureau of Meteorology (2021) Climate Data Online, Climate Statistics for Australian Locations. Online resource viewed 20/1/2021. http://www.bom.gov.au/climate/averages/tables/cw_016001.shtml

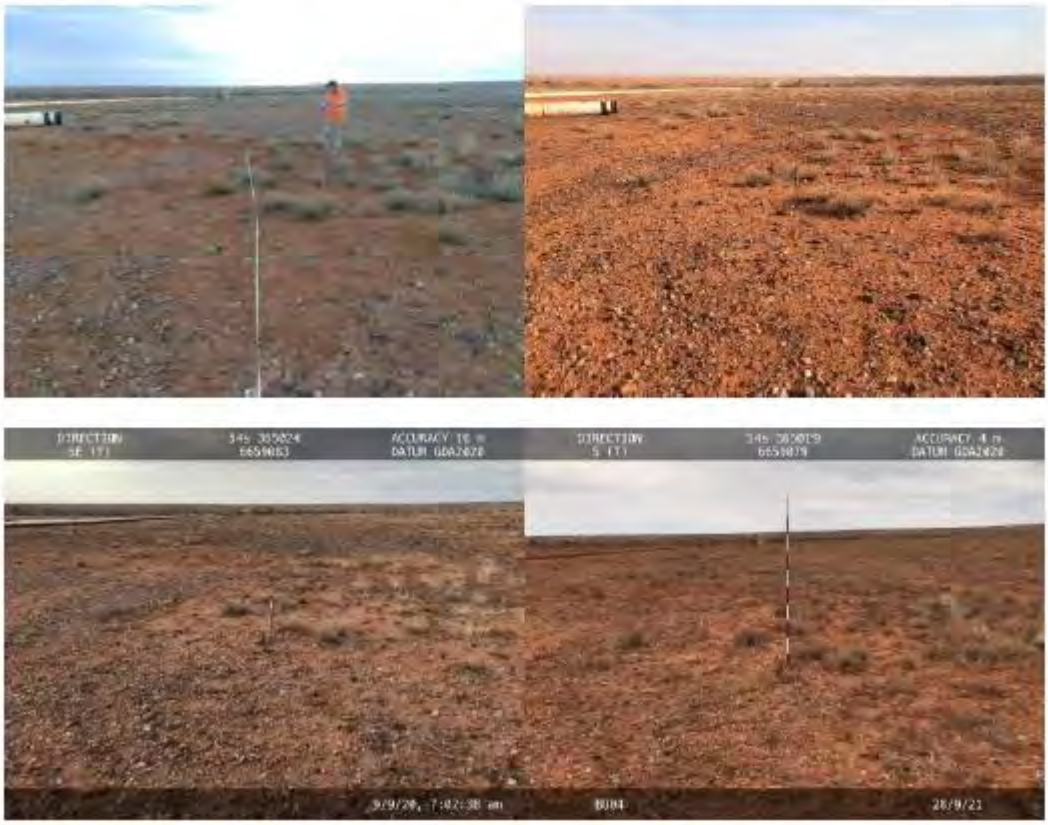
Heathgate Resources Pty Ltd (2018) Beverley Mine Program for Environment Protection and Rehabilitation. Beverley Uranium Mine ML 6321 – PEPR 2018 (v7.3)

7 Appendices

Appendix 1. Flora monitoring locations

	Site	Easting	Northing
Control	PE18	369712	6665518
	PE19	370531	6668475
	PE20	370056	6670243
	BE19	370571	6662554
	BE23	364657	6652574
	BE25	368486	6650847
	BE27	372571	6657557
	BE30	361461	6650573
	BE34	359802	6654035
	BE36	372350	6659309
Impact	BU4	365023	6659080
	BU14	364721	6658311
	BU20	364867	6659817
	BE08	367084	6657382
	BE37	362648	6662437
	BE16	361221	6663134
	BE38	364410	6661795
	PE09	360760	6666813
	FM04	360119	6664062
	FM05	358389	6663374
	FM06	358283	6664289
	FM07	358777	6664303
	FM08	358731	6665559
	FM14	356664	6662981
	FM16	355827	6662726
	FM23	354945	6664505
	FM24	355391	6663633
	FM25	358303	6664824
	FM26	360175	6665871
	FM27	361294	6667962

Appendix 2. Site photo points photos from September 2018, 2019, 2020 and 2021.



BU04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ACCURACY 8 m
DATUM GDA2020
DIRECTION
N (T)
54s 364720
6658315
ACCURACY 8 m
DATUM GDA2020
BU14

BU14

Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring

BU20

Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring

BE08

BE16

Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring

BE19

36

Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring

BE23

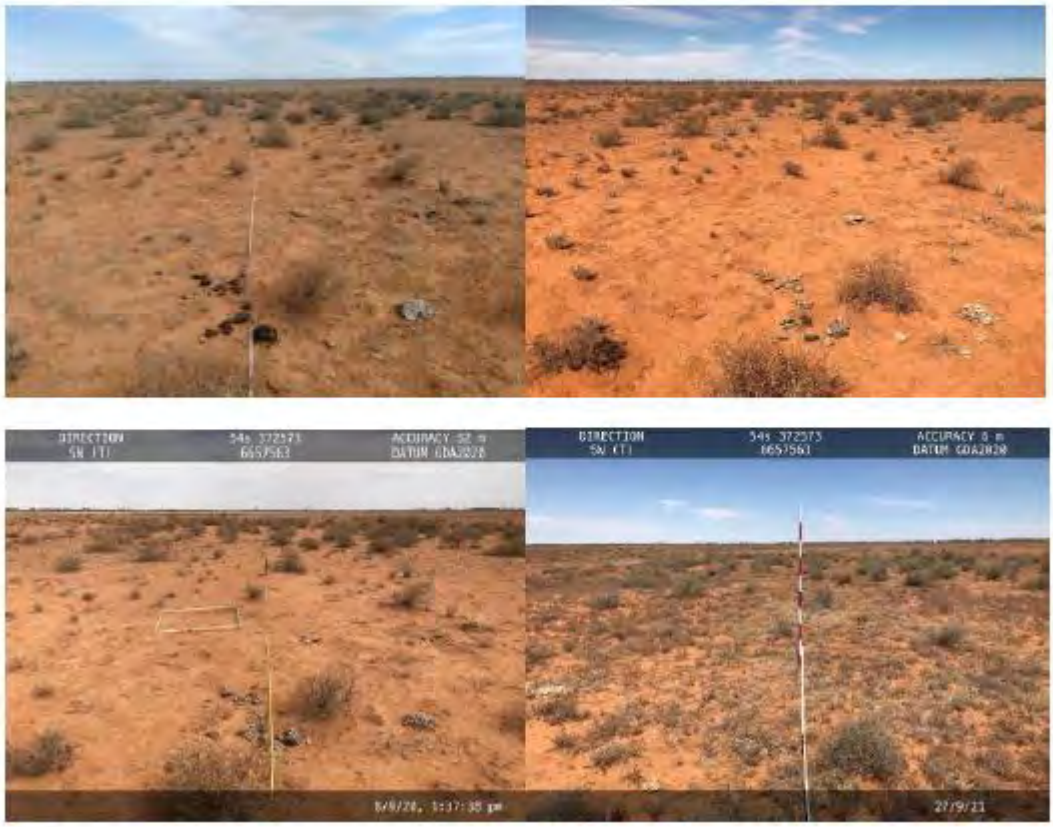
37

Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring

BE25

38

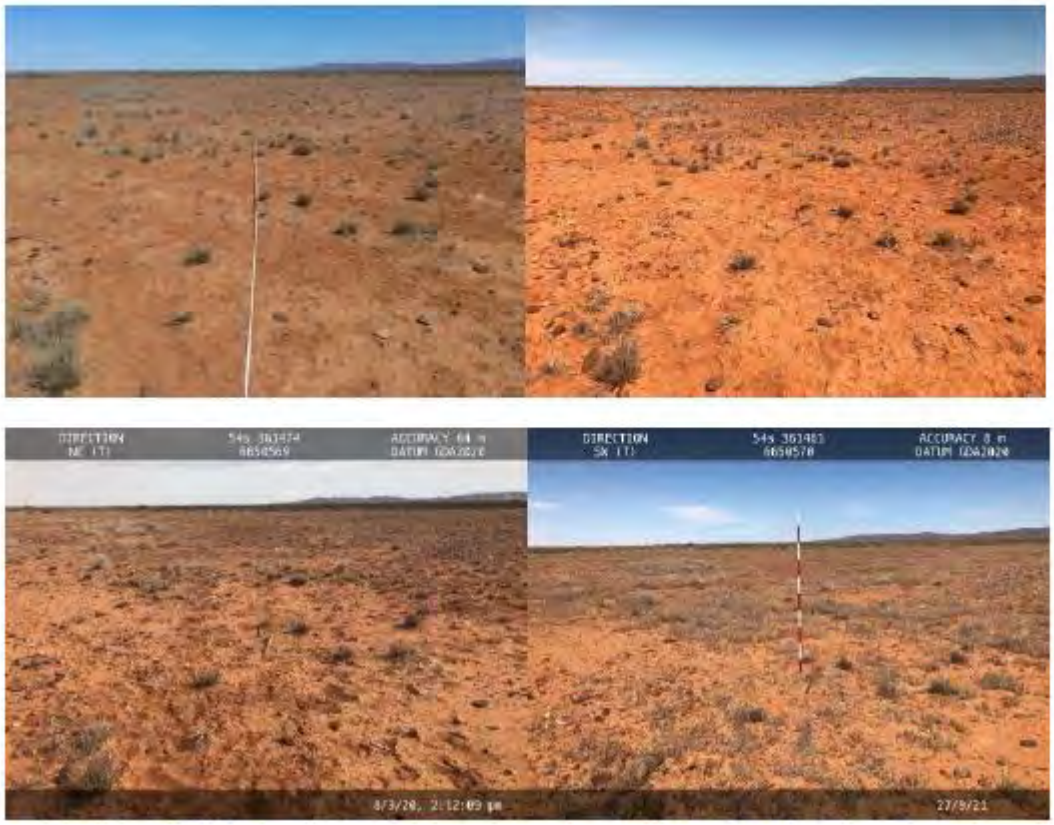
Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring



BE27

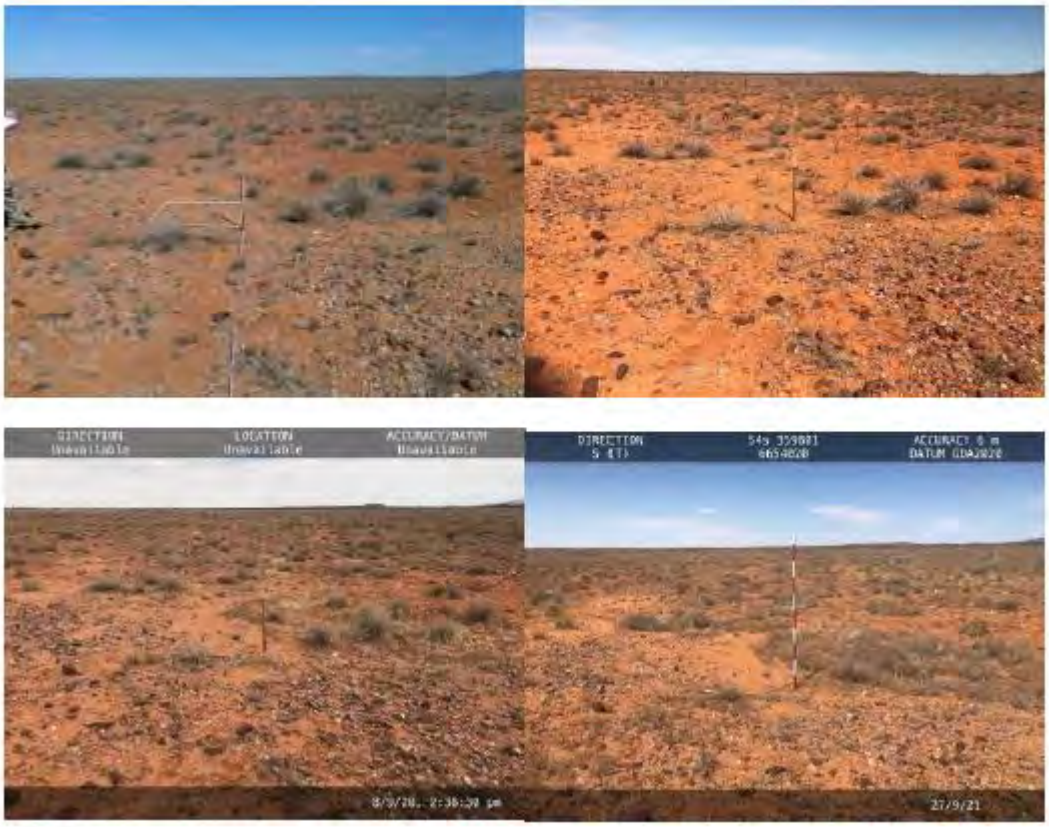
39

Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring



BE30

Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring



BE34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DATUM GDA2020
BE35
27/9/21

BE36


DIRECTION
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LOCATION
Unavailable
ACCURACY/DATUM
Unavailable
DIRECTION
SE (T)
BE37

BE37


DIRECTION
E (T)
ACCURACY 16 m
DATUM GDA2020
DIRECTION
SW (T)
ACCURACY 6 m
DATUM GDA2020
PE09

PE09

Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring

PE15

Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring

PE18

46

Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring

PE19

47

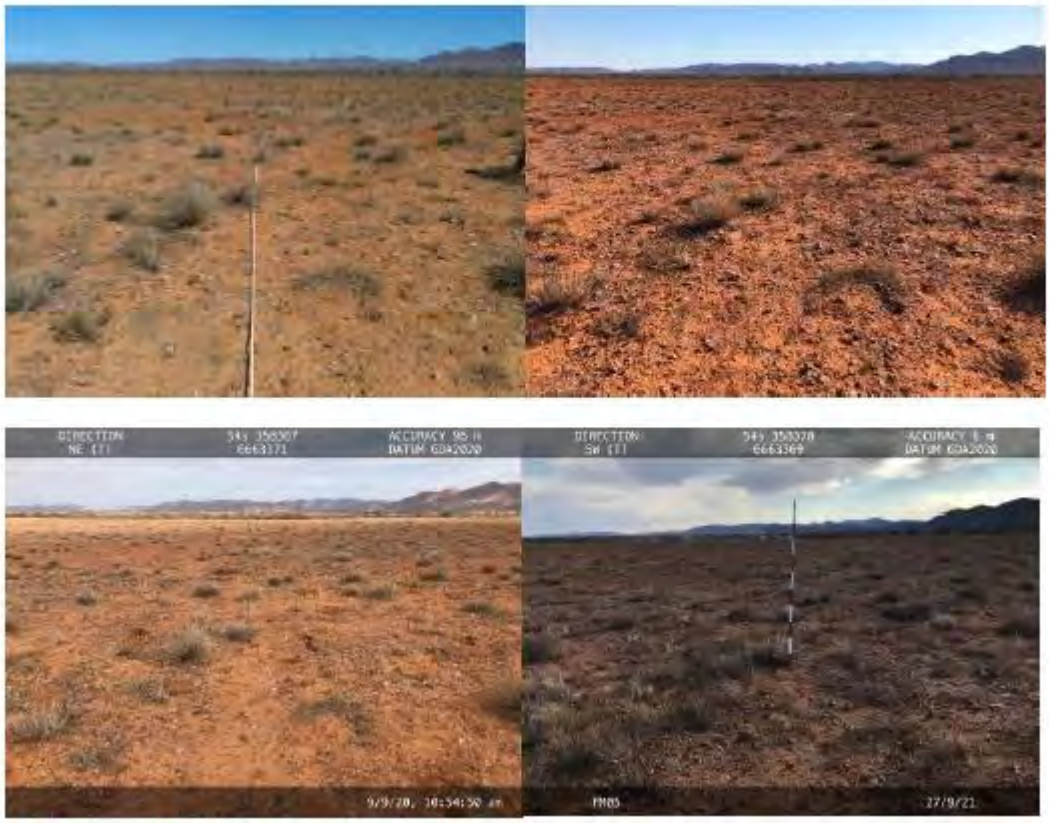
Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring

PE20

Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring

FM04

Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring



FM05

Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring

FM06

FM08

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Annual Flora- Monitoring

FM14

53

Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring

FM16

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FM25

Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring

FM26

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Beverley, Beverley North and Four Mile ML's
Annual Flora- Monitoring

FM27

57

APPENDIX 5 – BEVERLEY POND LEVEL DATA

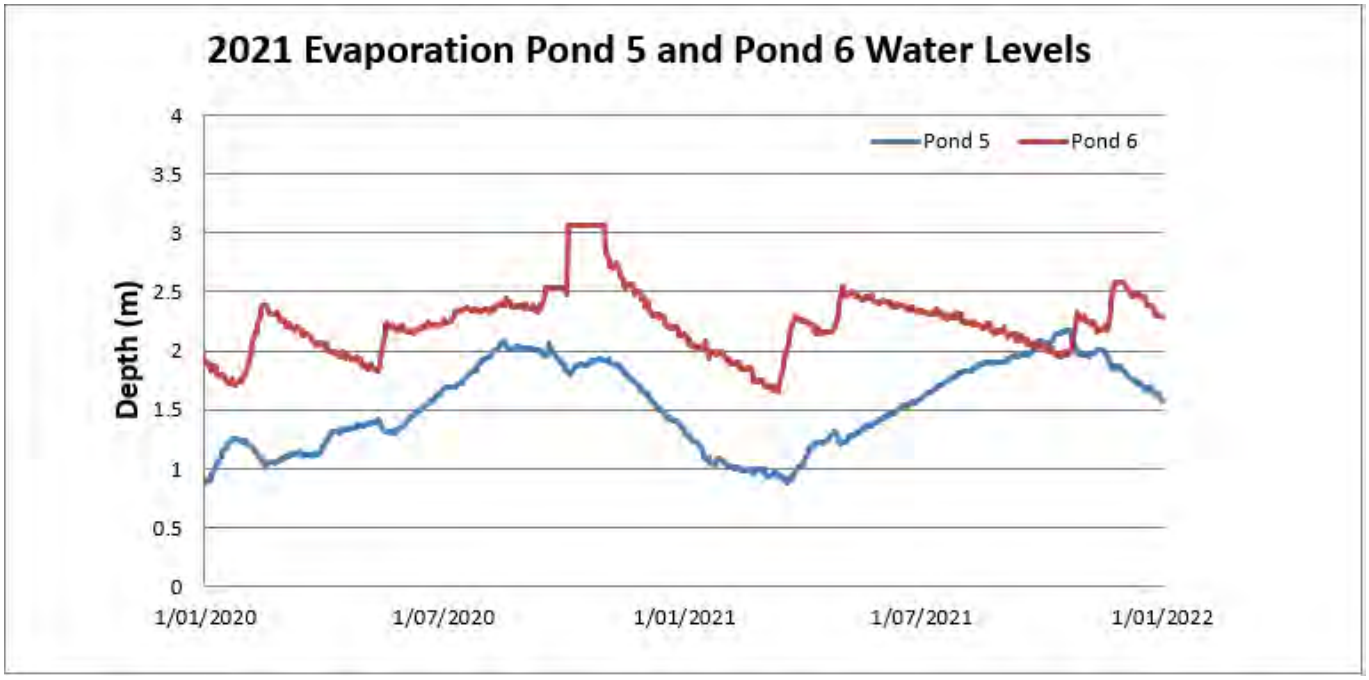


Figure 4: 2021 Beverley Plant Evaporation Pond 5 and 6 Water Levels

APPENDIX 6 – SIGNIFICANT ENVIRONMENTAL BENEFIT CALCULATIONS

Significant Environment Benefit Calculations

Table 34: Native Vegetation Clearance (all ML's) & SEB Calculations[2]

2021	Total Area Cleared (Ha)	SEB Value *GST Exc.*	Administration Fee *GST Exc.*	TOTAL *GST Exc*	SEB Point Loss	Total Hectares Required *(Ha)*
Four Mile 6402	22.75	$39,577.99	$2,176.79	$41,754.78	735.91	91.99
Beverley 6321 & Beverley North 6387	2.8	$4069.18	$223.80	$4,292.98	75.66	9.45
Combined Total	**25.55**	**$43,647.17**	**$2400.59**	**$46,047.76**	**811.57**	**101.44**

[2] Obtained using Native Vegetation Assessment Sheets

APPENDIX 7 – WASTE REPOSITORY GROUNDWATER SEEPAGE MONITORING

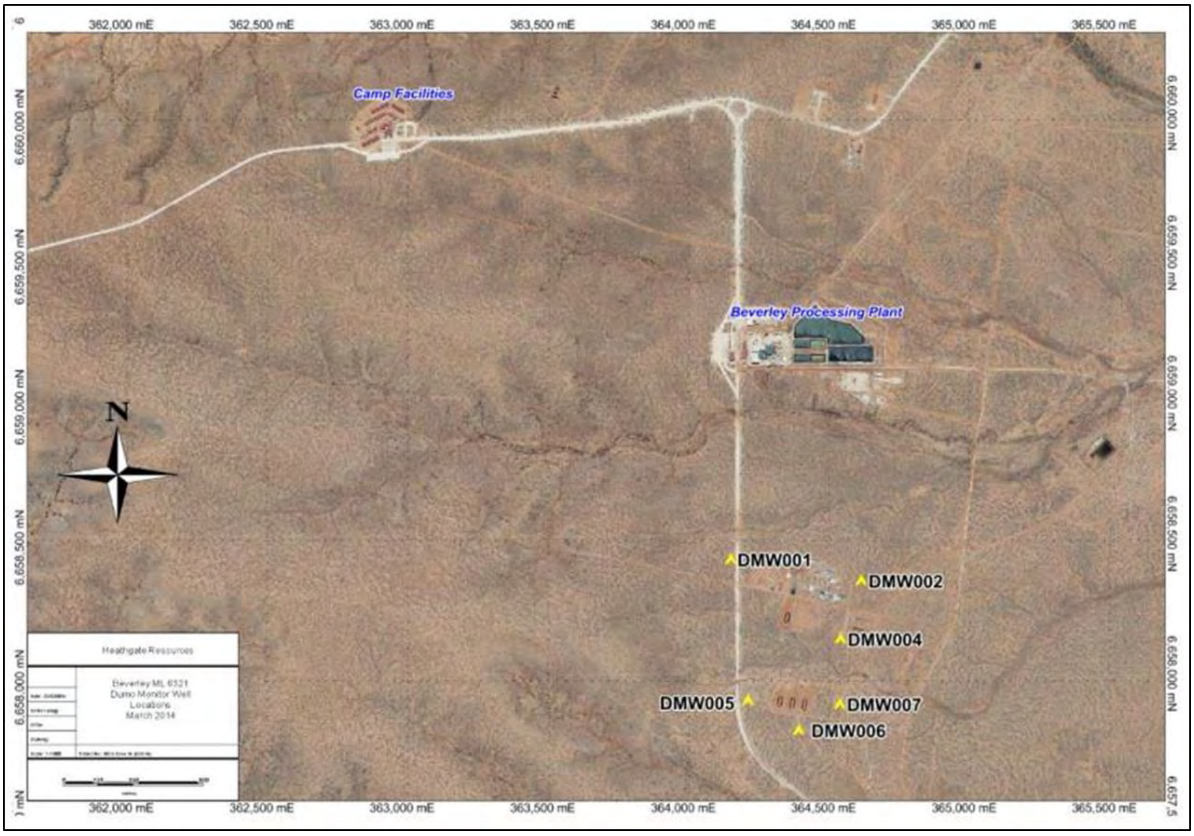
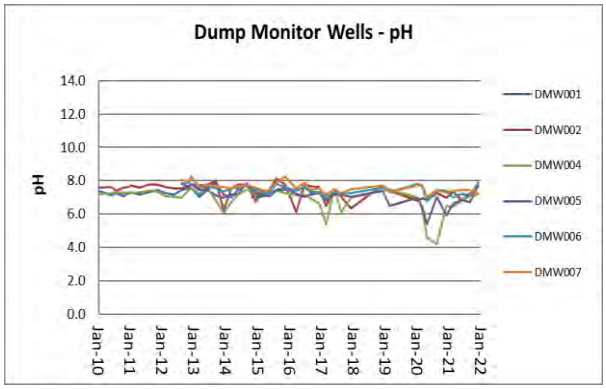
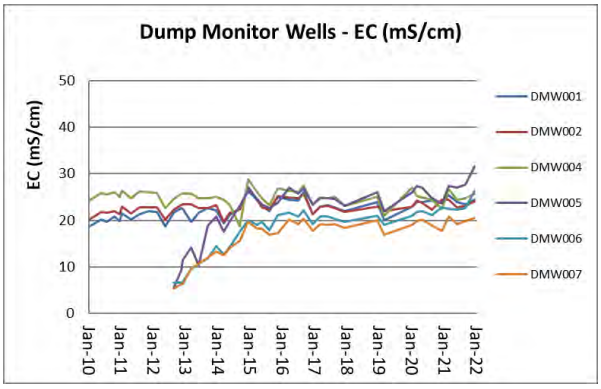
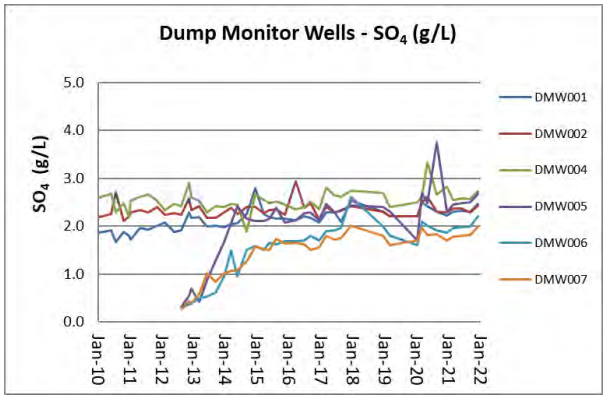


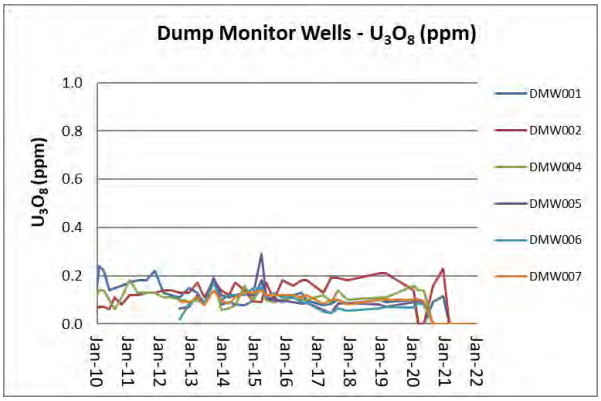
Figure 5: Waste Repository – Monitor Well Sampling Locations

Waste Repository Groundwater Monitoring Results: Willawortina Formation









APPENDIX 8 – GREAT ARTESIAN BASIN (GAB) GROUNDWATER MONITORING RESULTS

Figure 6: GAB Extraction Locations & Sampling Points

GAB MONITORING RESULTS

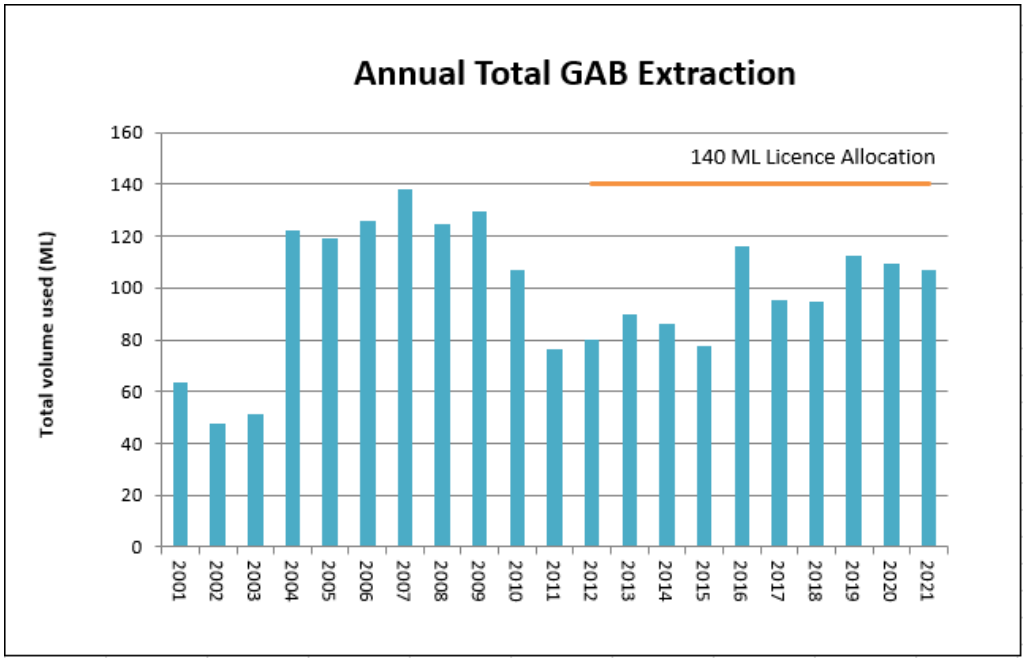


Figure 7: Annual Total GAB Extraction (2001 – 2021)

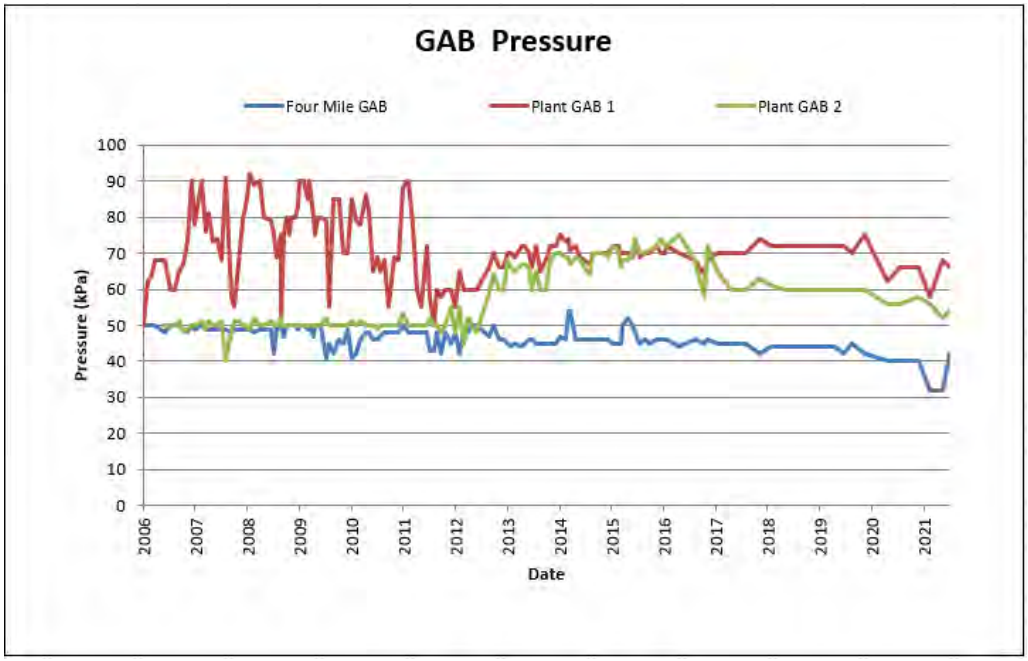


Figure 8: Pressure of GAB bores during 2006 – 2021

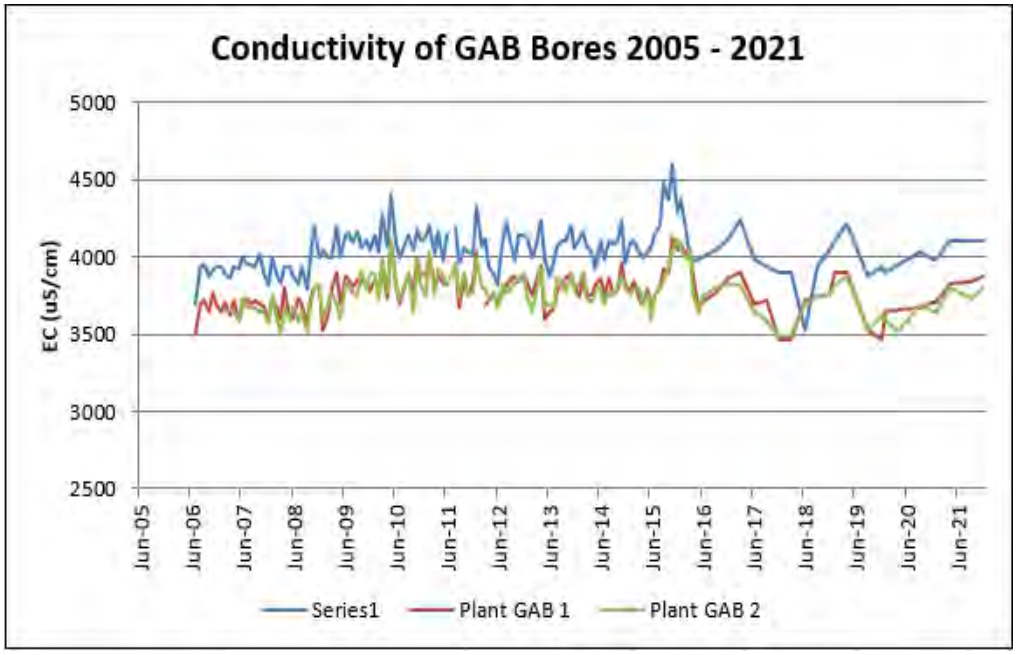


Figure 9: Electrical conductivity (EC) of the three GAB bores 2006 – 2021

APPENDIX 9 – BEVERLEY ML GROUNDWATER MONITORING RESULTS

Willawortina Formation (Overlying Formation) Monitoring Results

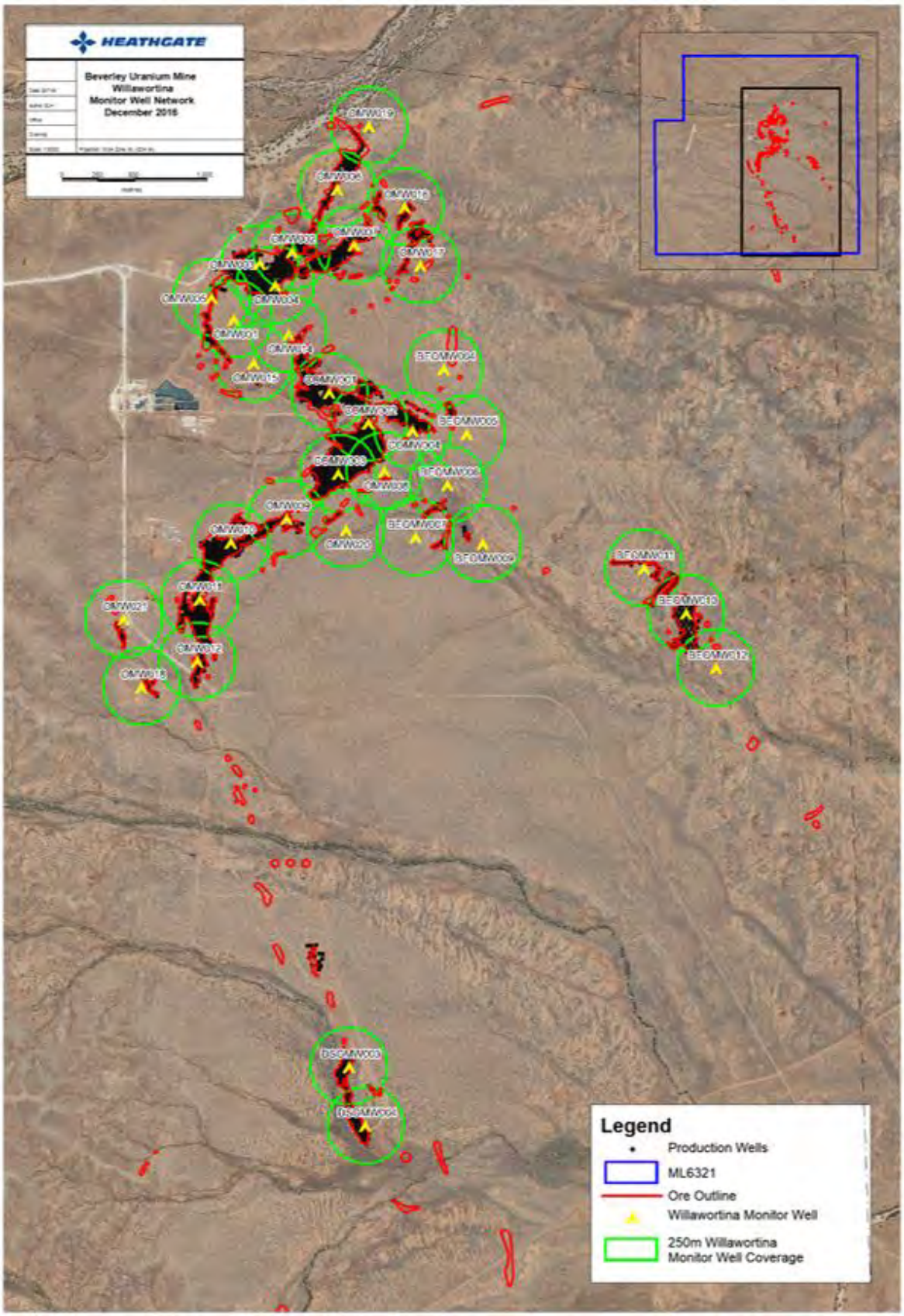


Figure 10: Beverley ML - Willawortina Formation monitor well locations

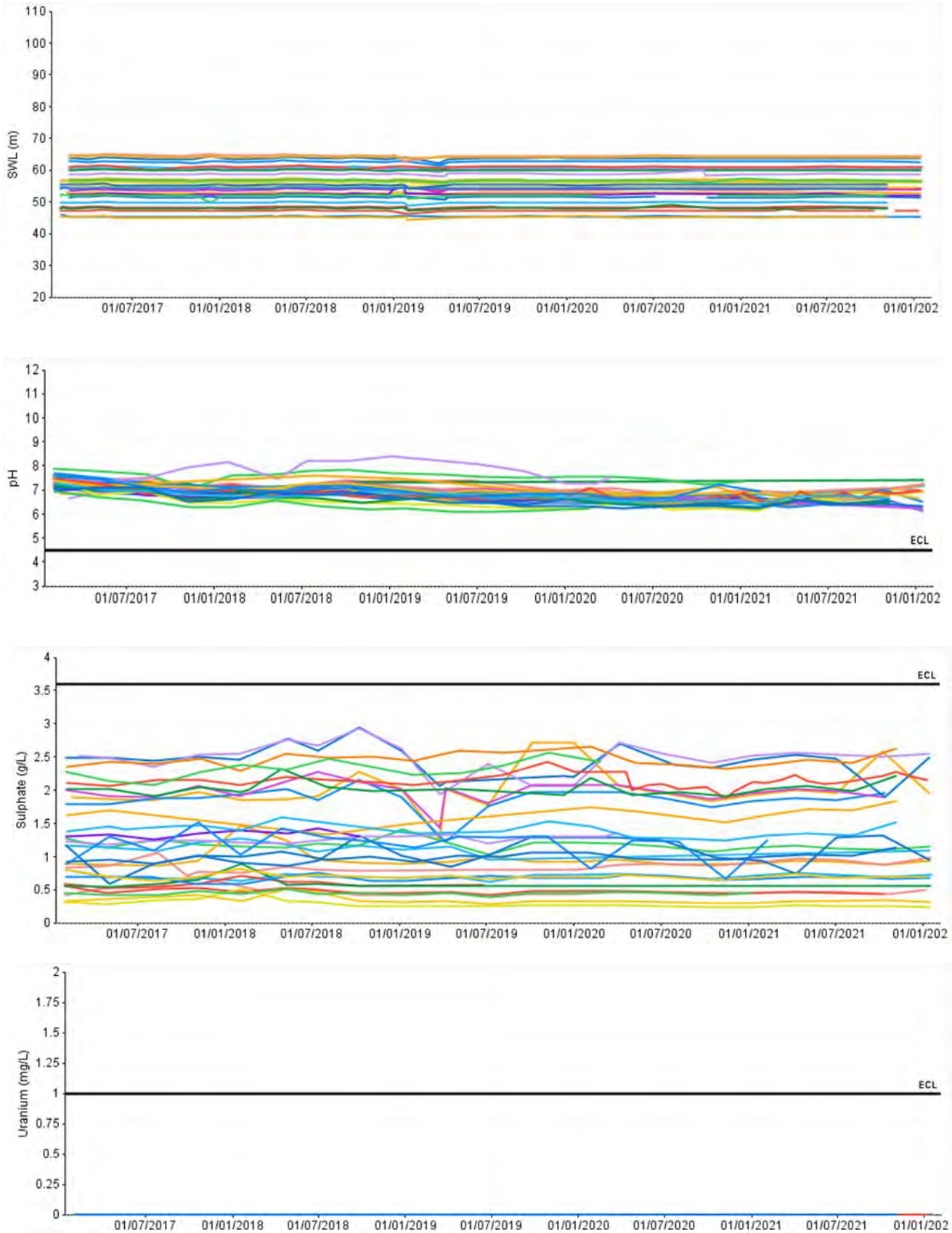


Figure 11: Overlying Monitor Wells: Willawortina Formation Chemistry Graphs.

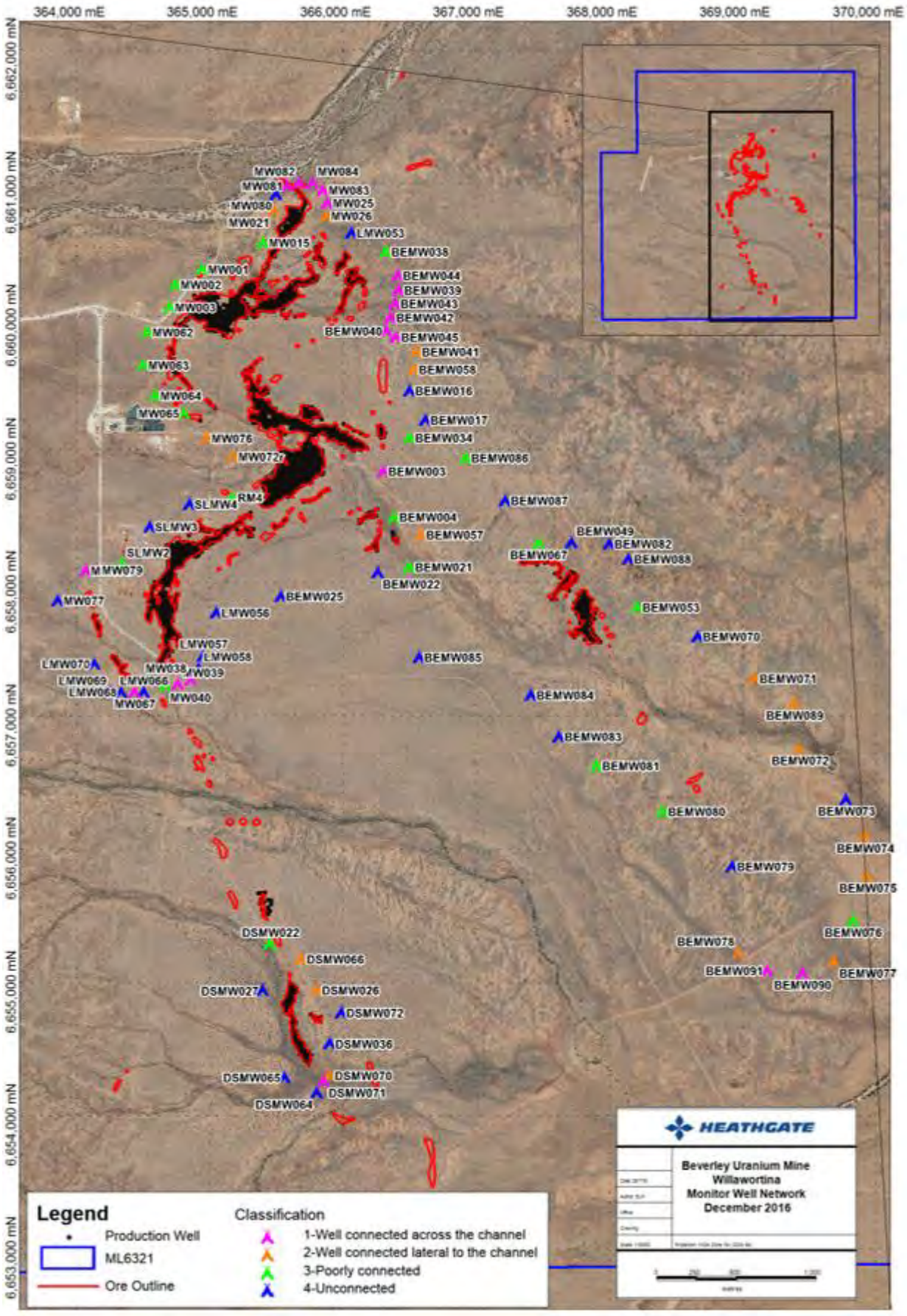


Figure 11: Beverley ML - Namba Formation monitor well locations

Figure 13: Lateral – Perimeter Monitor Wells Namba Formation (Type 1-3) Chemistry Graphs

APPENDIX 10 – BEVERLEY NORTH ML GROUNDWATER MONITORING RESULTS

Beverley North Namba, Eyre and Fractured Rock (FRA) Formation Aquifer Monitoring Results

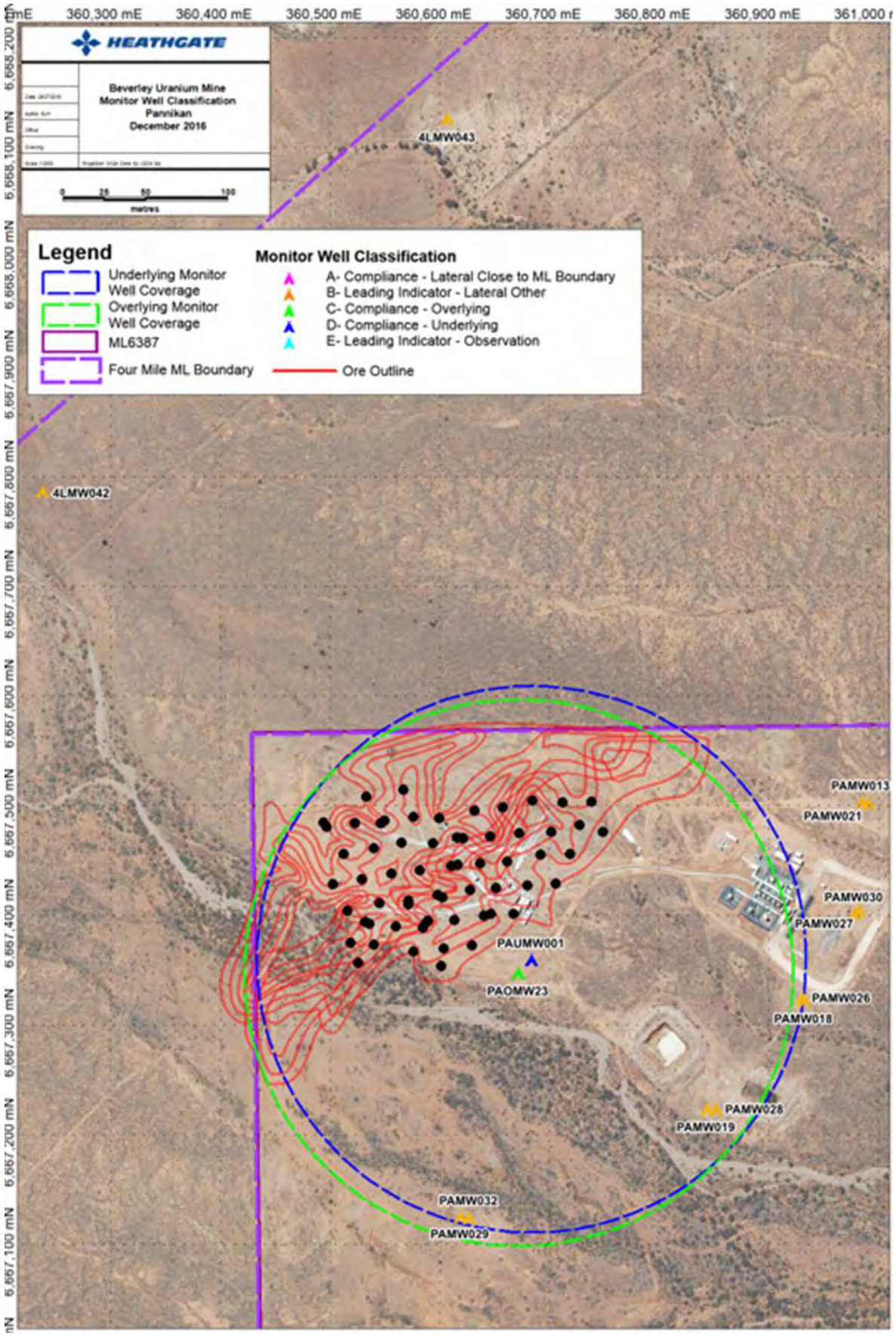


Figure 12: Monitor well locations and classification – Pannikan (Beverley North)

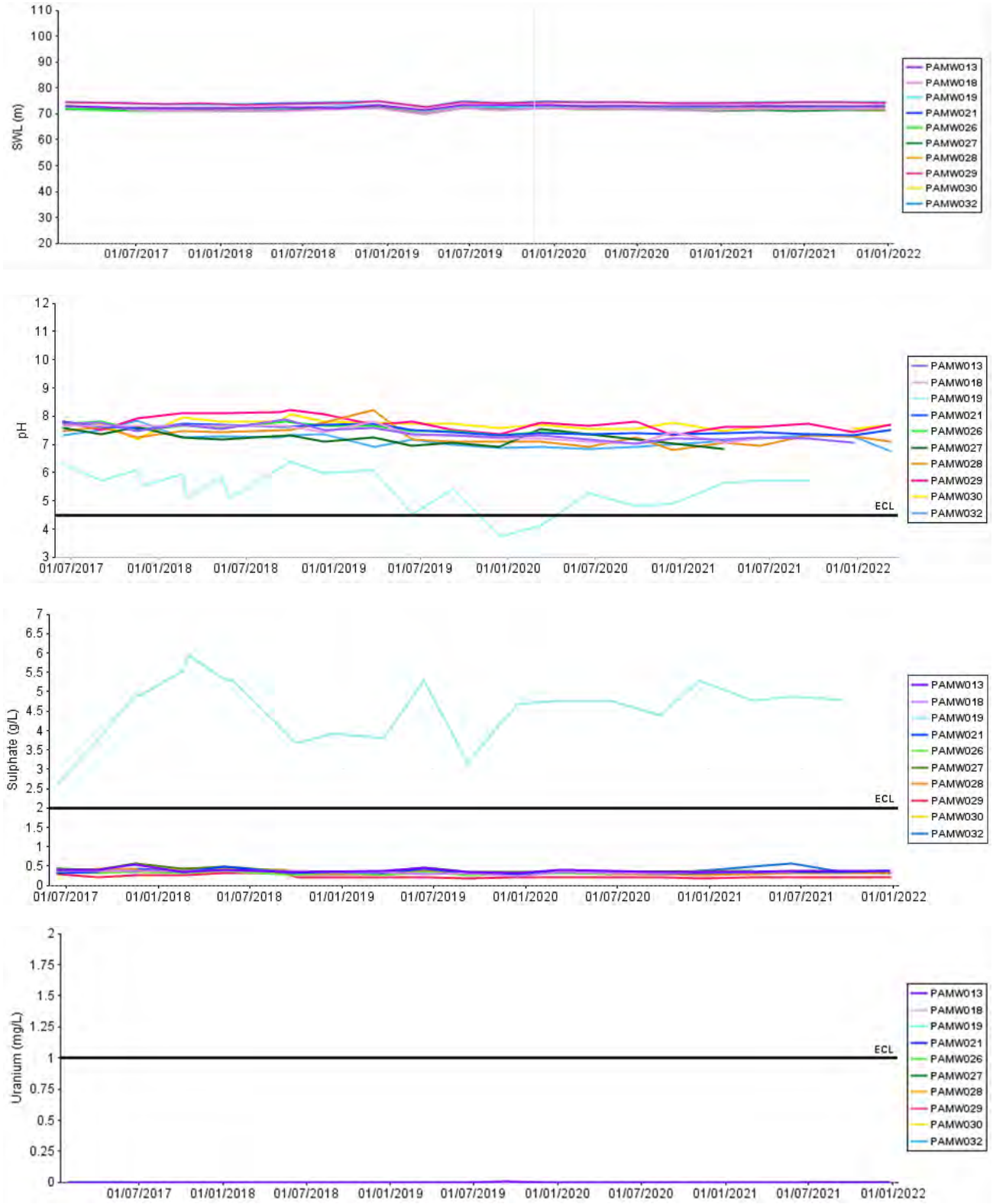


Figure 15: Lateral – Perimeter Monitor Wells Eyre Formation Chemistry Graphs

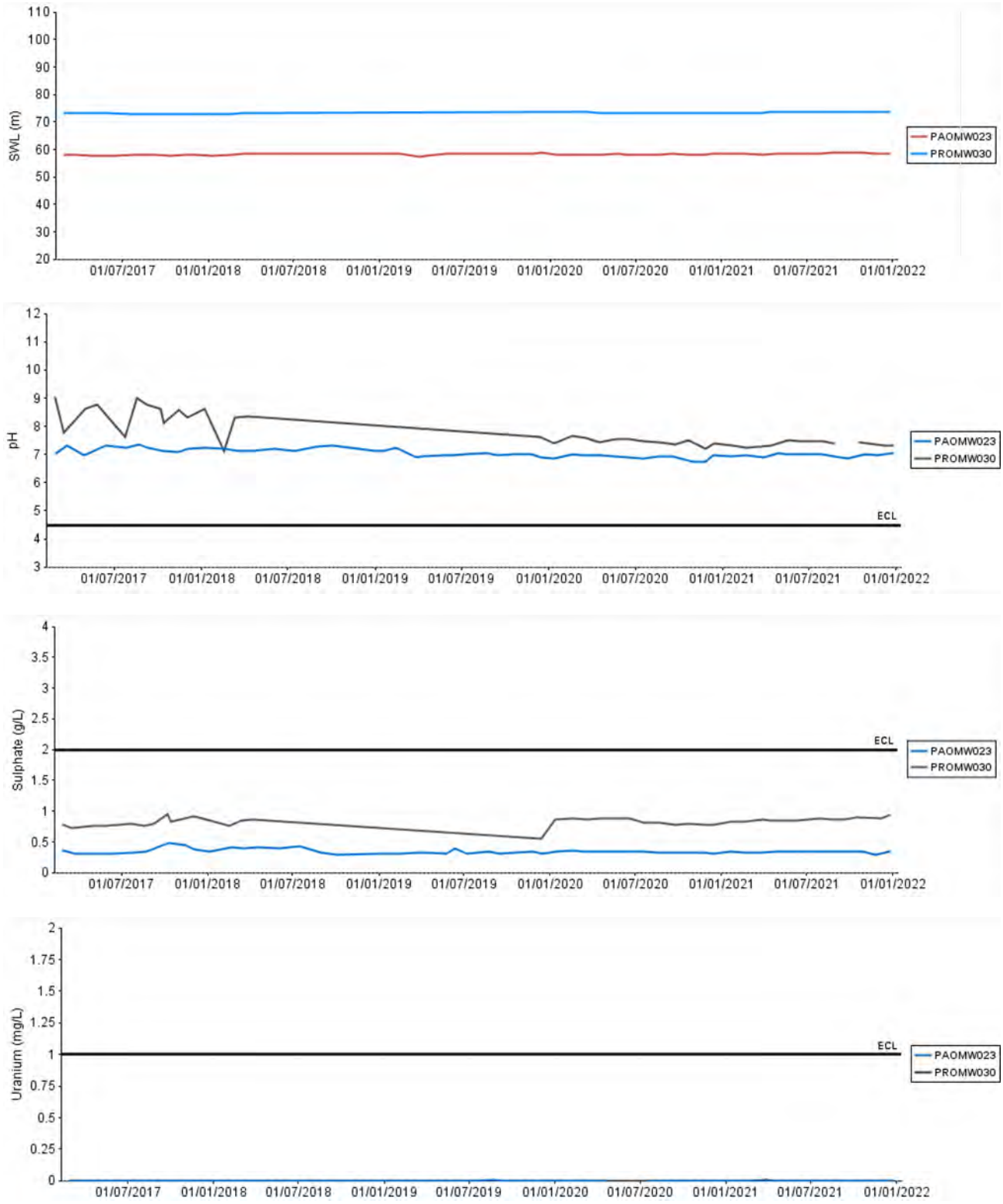


Figure 16: Overlying Monitor Wells: Namba Formation Chemistry Graphs

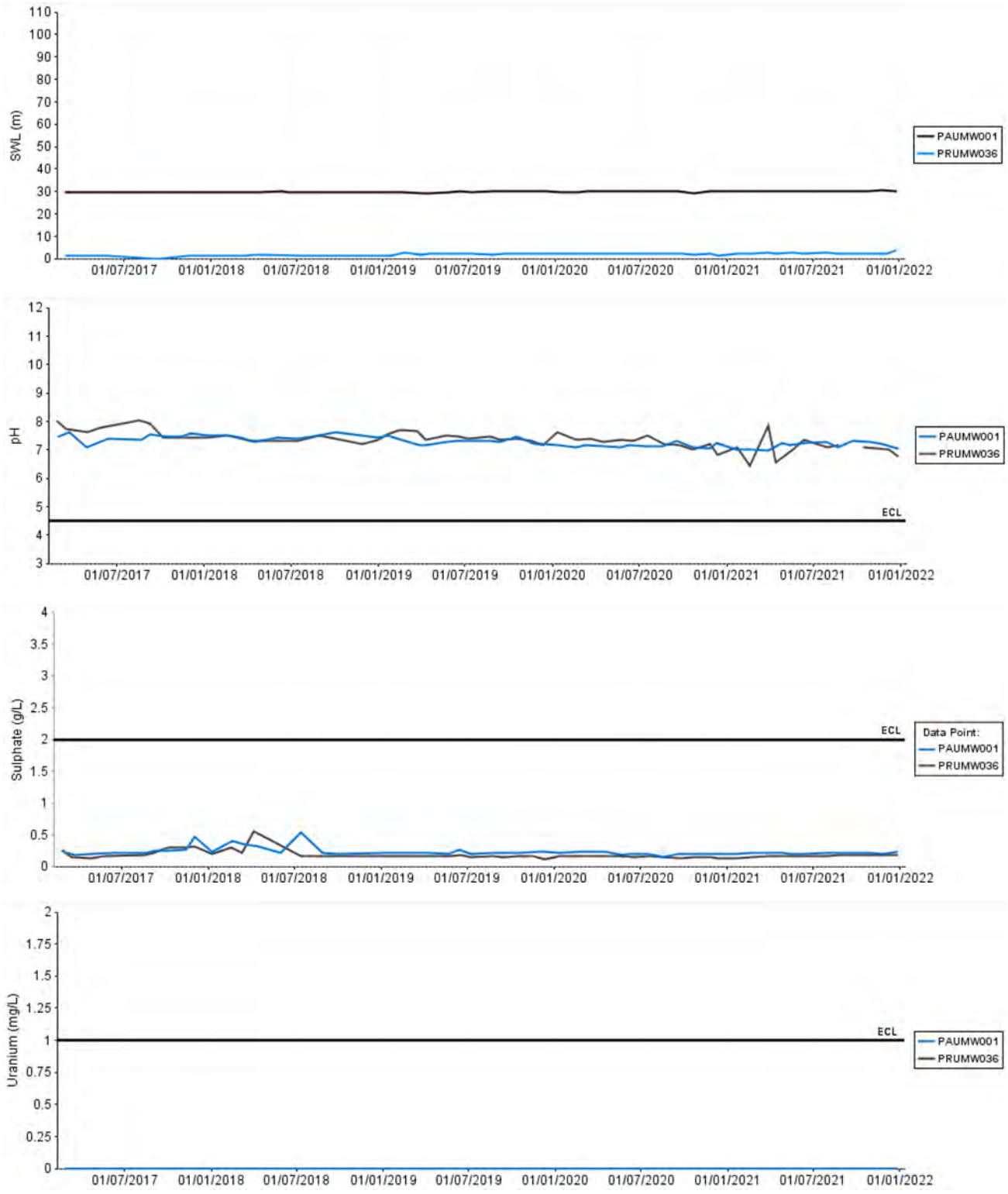


Figure 17: Underlying Monitor Wells: Fractured Rock Aquifer (FRA) Chemistry Graphs

Pepegoona Natural Attenuation Field Verification Monitoring Results

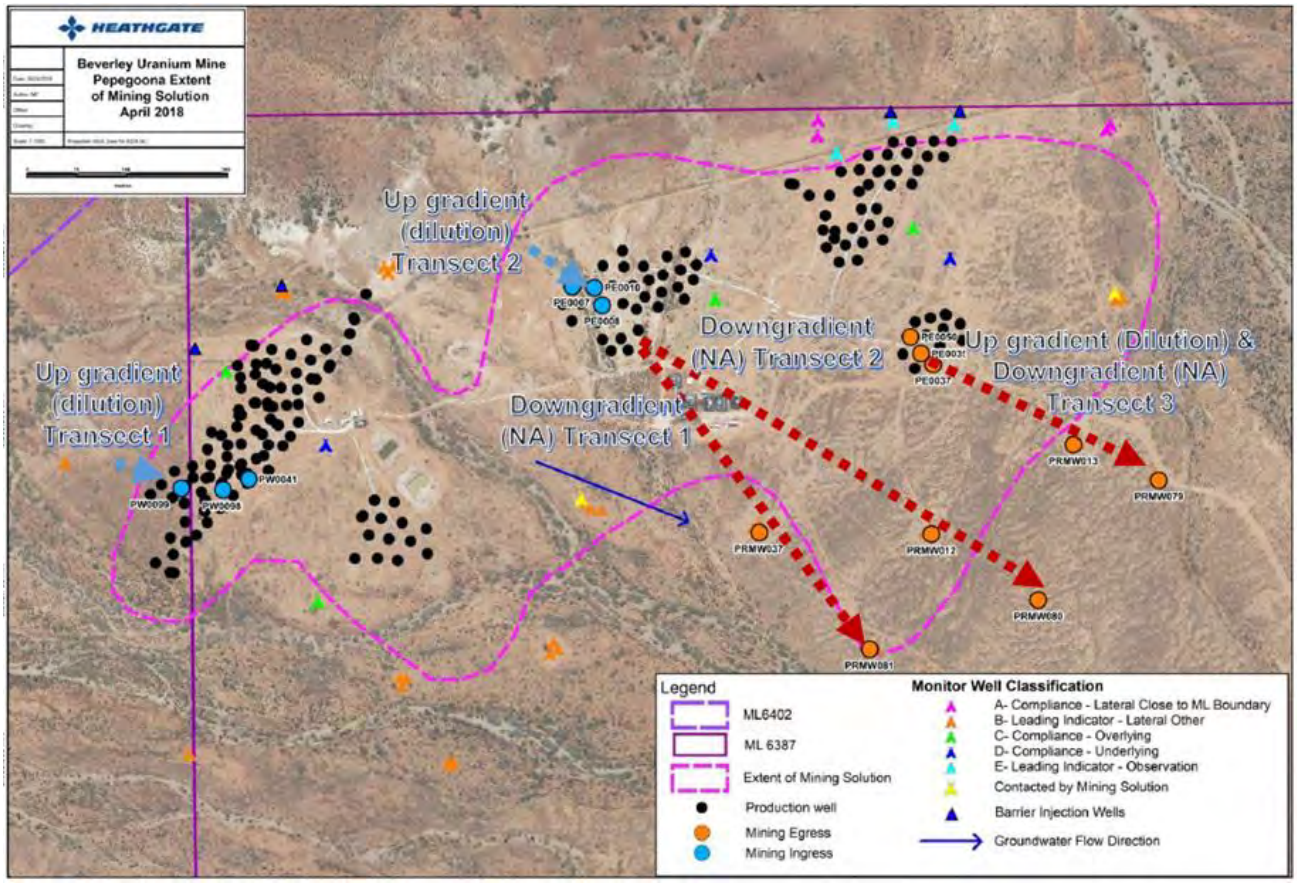
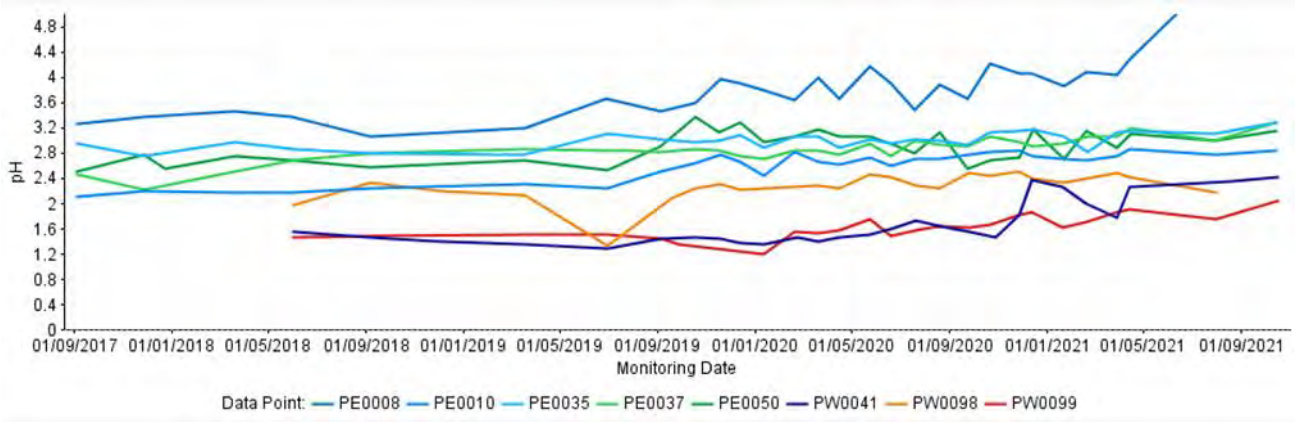


Figure 13: Pepegoona Natural Attenuation Monitoring Locations

Natural Attenuation Monitoring Results – Dilution Transects



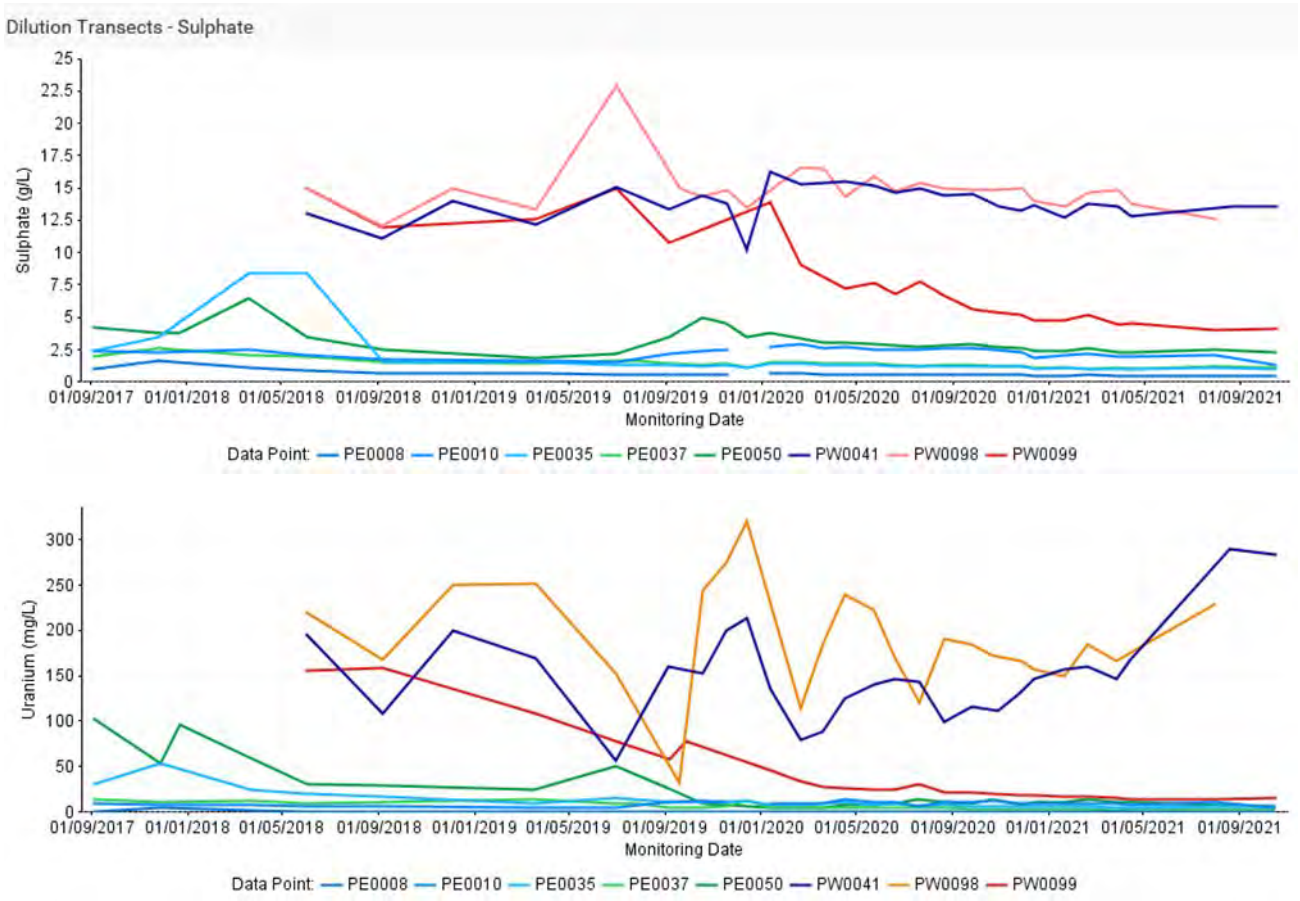
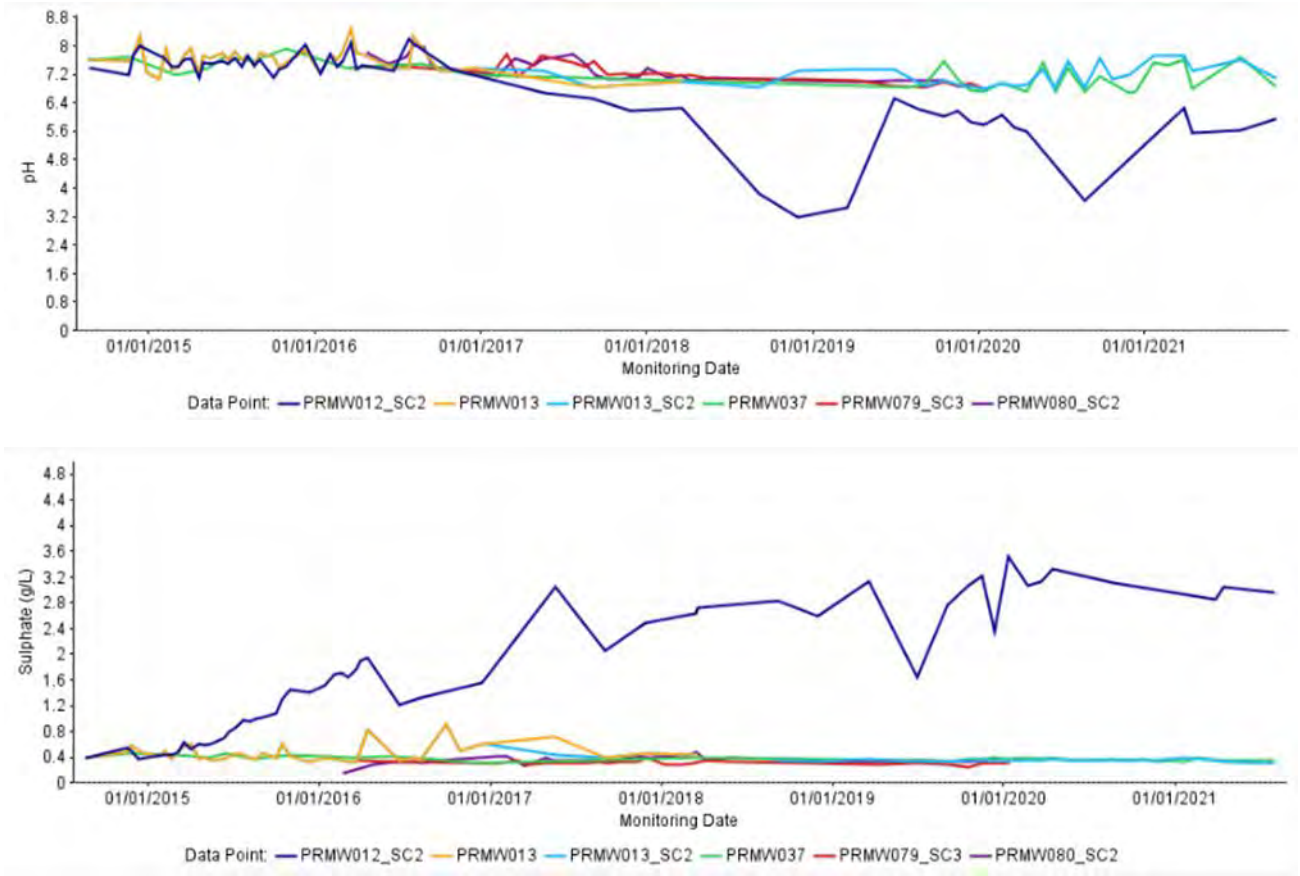


Figure 18: Dilution Transects Monitor Wells Chemistry Graphs

Natural Attenuation Monitoring Results - Attenuation (NA) Transects



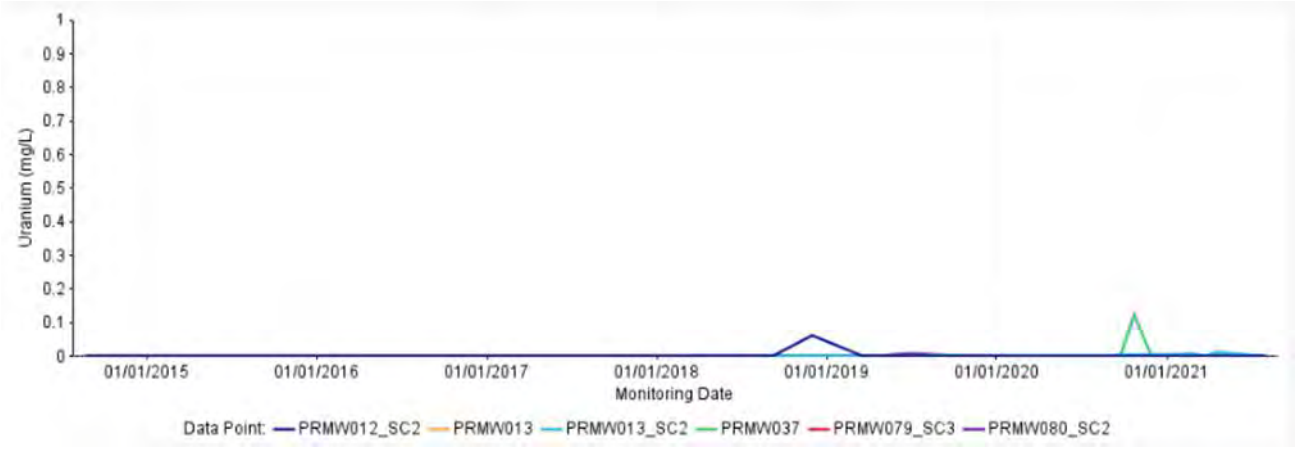


Figure 19 : Attenuation (NA) Transects Monitor Wells Chemistry Graphs

Appendix 11 – Four Mile ML: Groundwater Monitoring Results

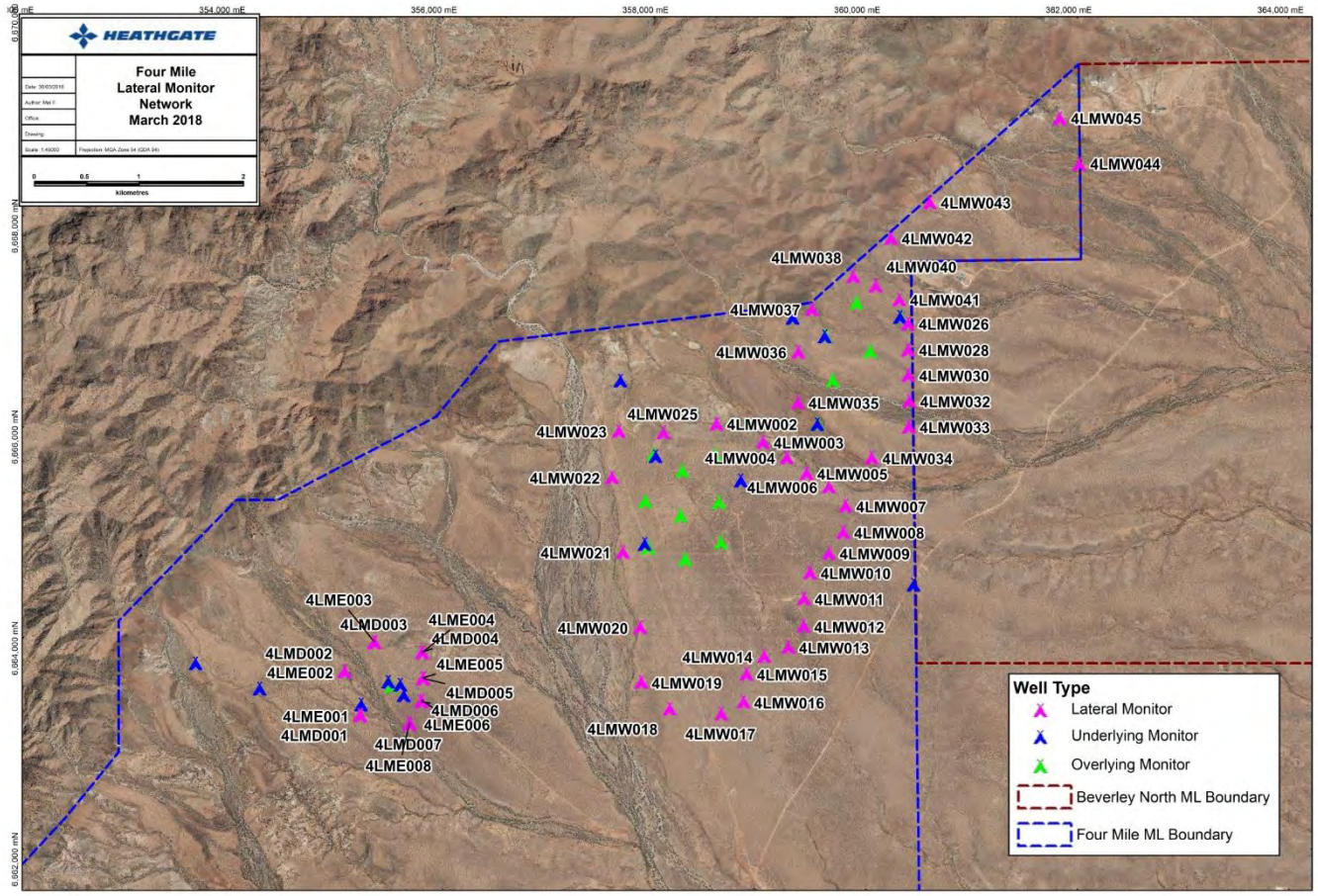
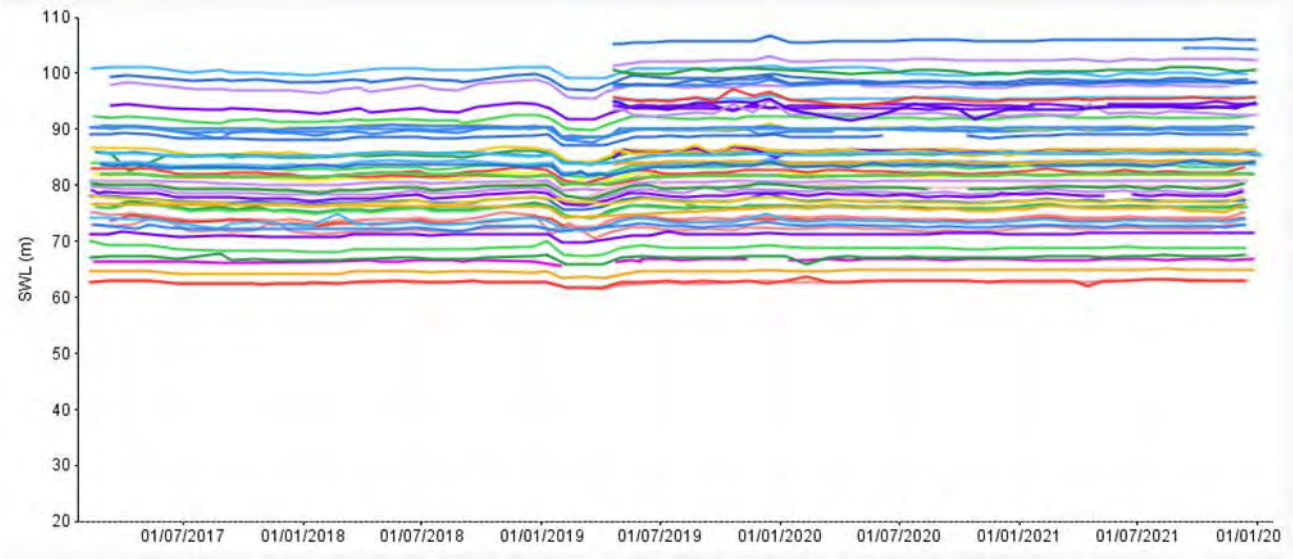


Figure 20: Groundwater monitoring locations – Four Mile ML

Eyre Formation & Four Mile Diamictite



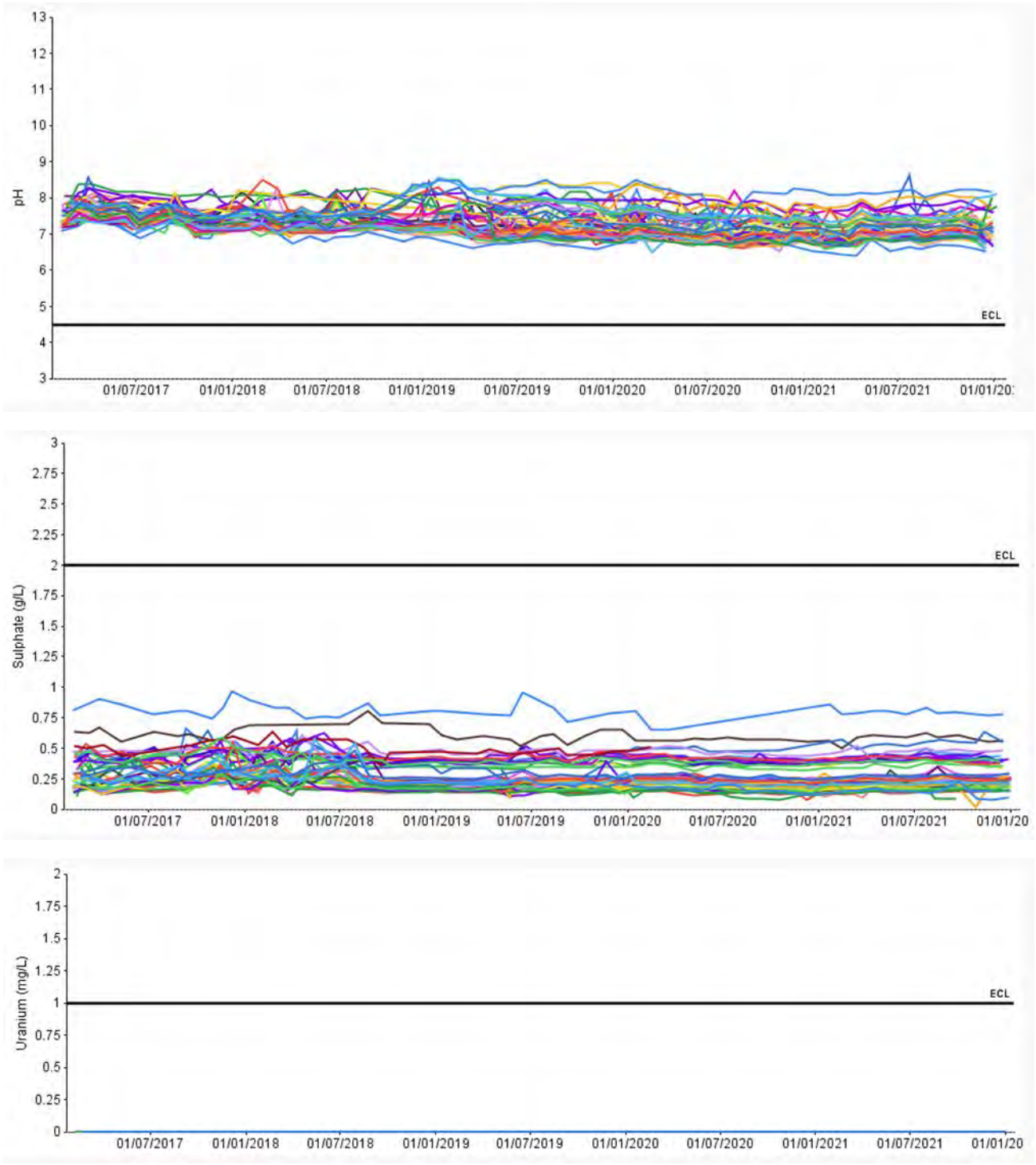
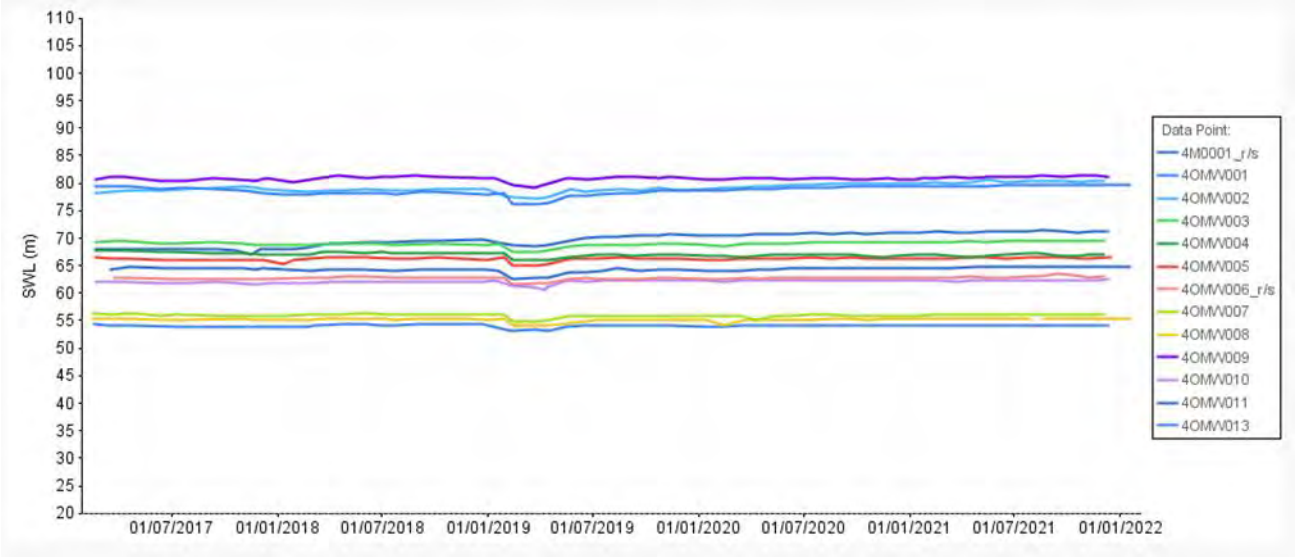
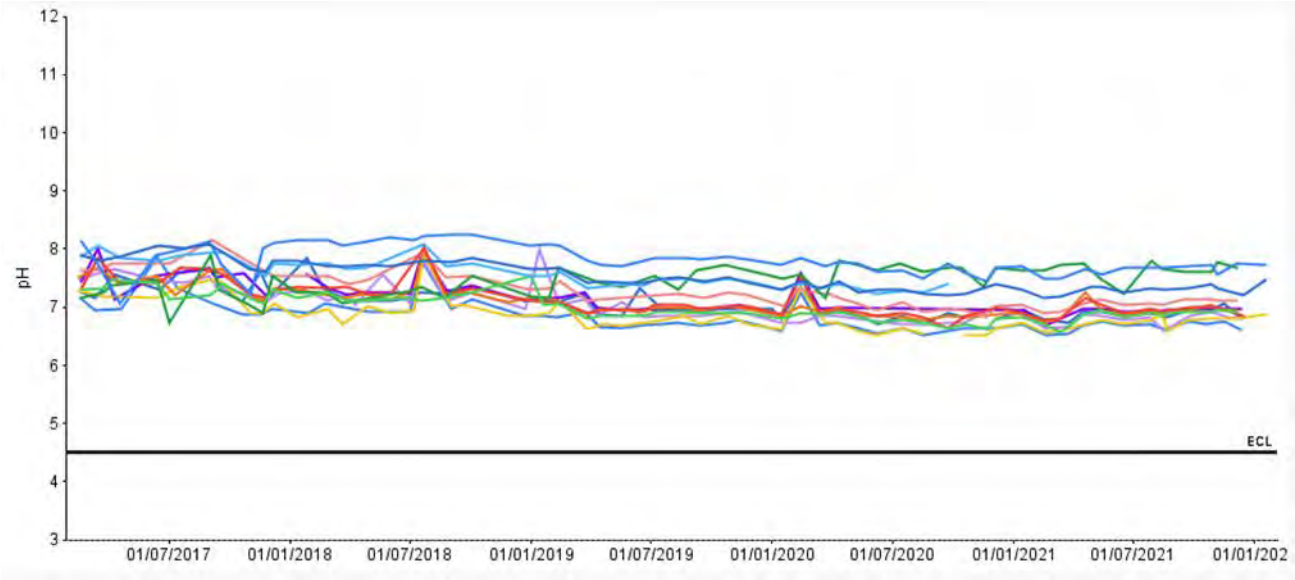
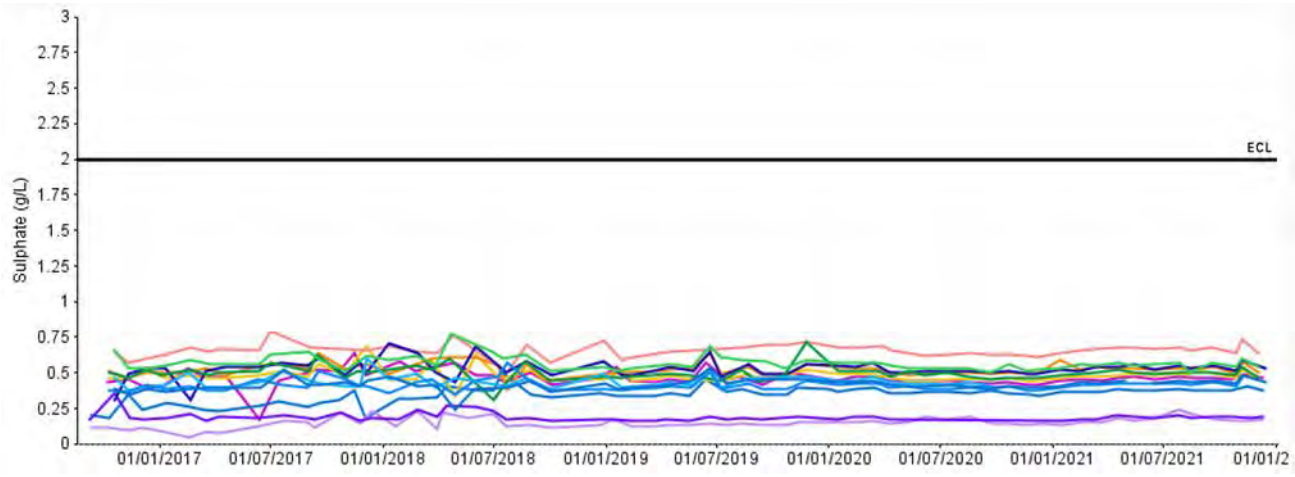


Figure 21: Eyre Formation & Four Mile Diamictite Monitor Well Chemistry Graphs

Overlying Monitor Wells: Namba Formation







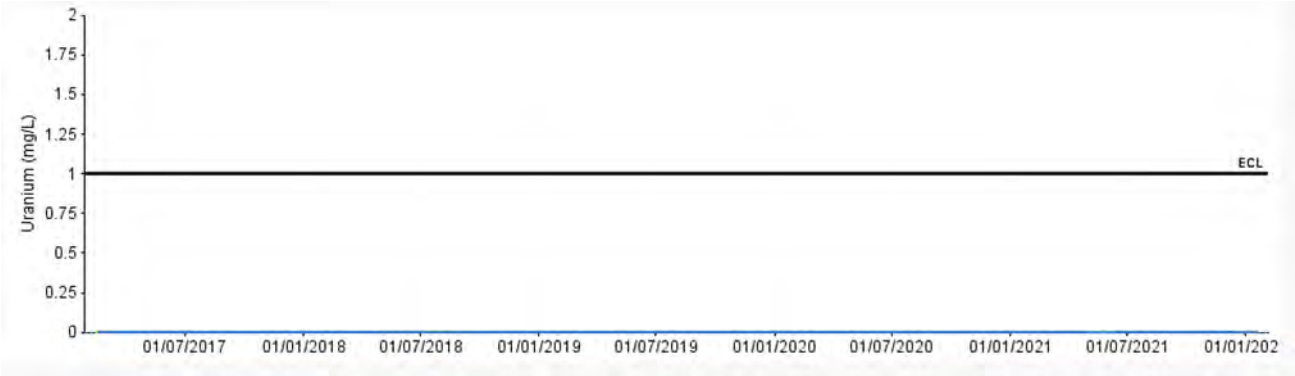
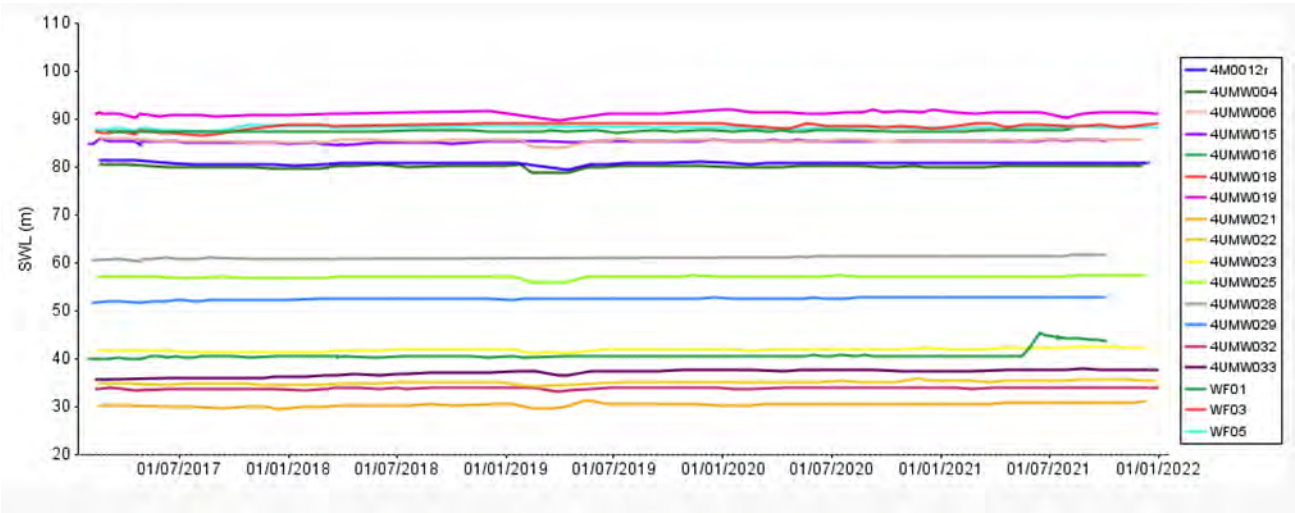
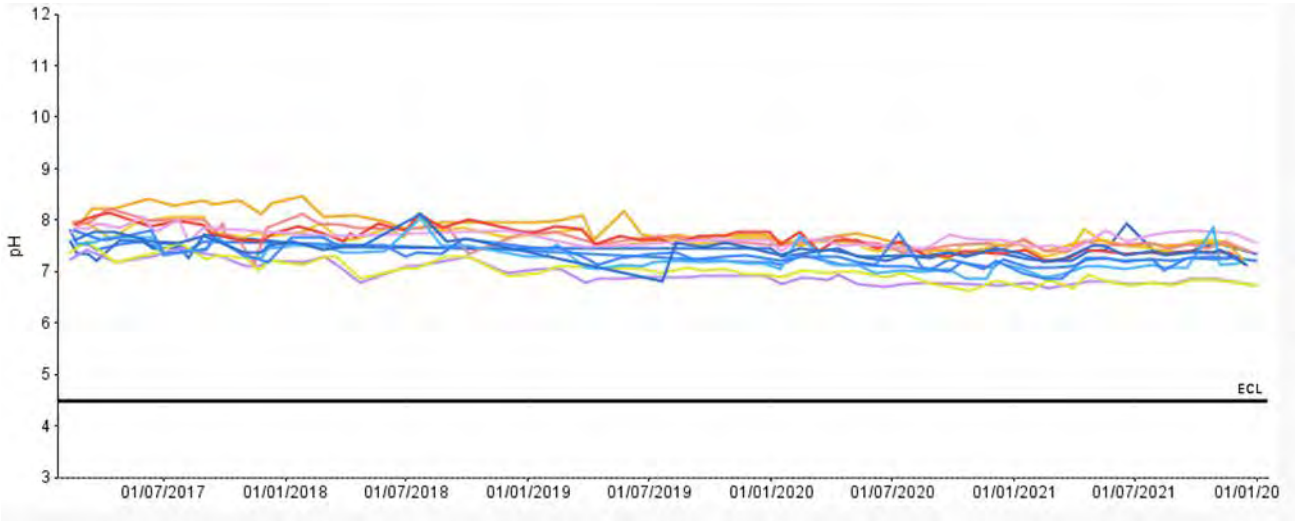


Figure 22: Overlying Monitor Wells Namba Formation Chemistry Graphs

Underlying Monitor Wells: Fractured Rock Aquifer (FRA)





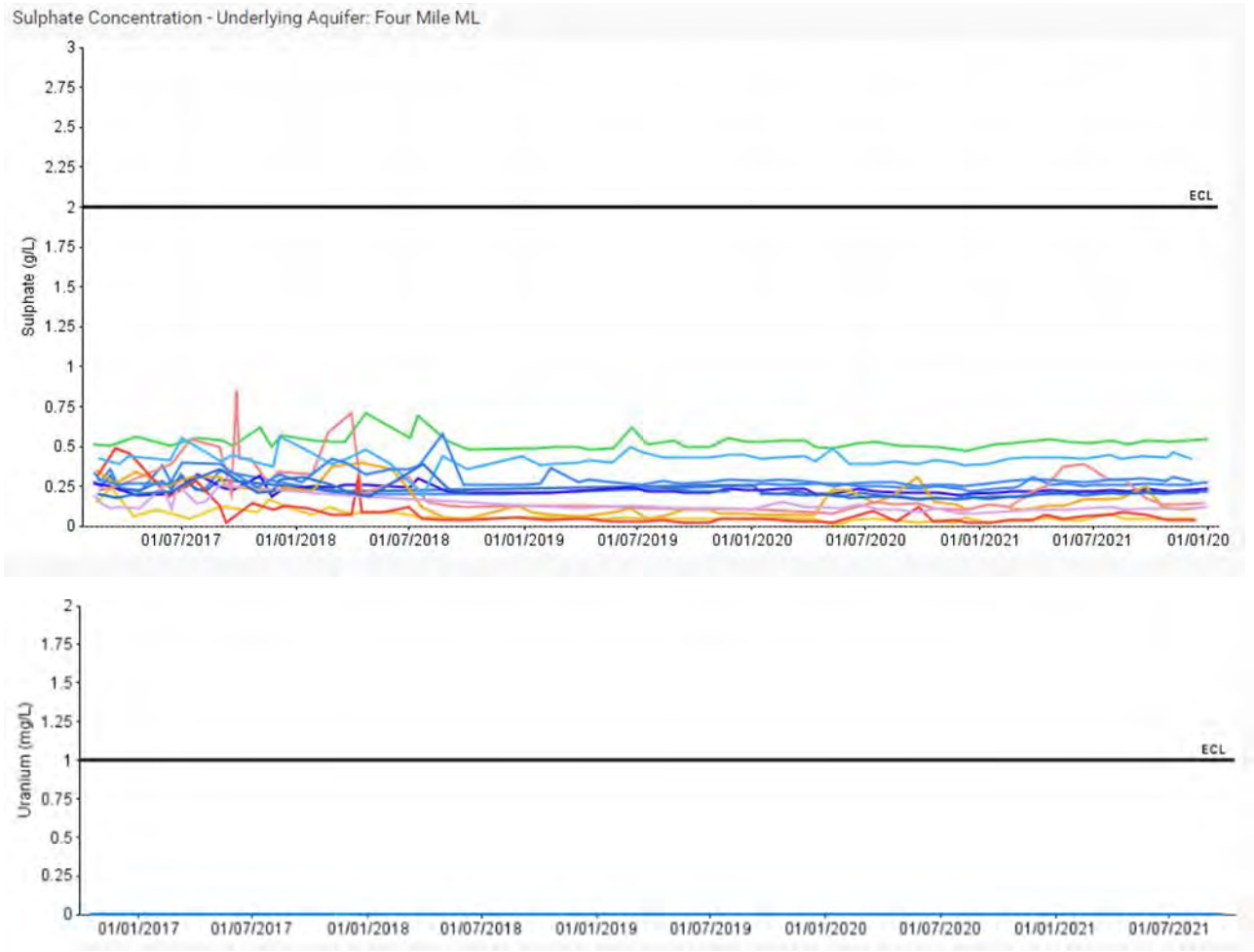
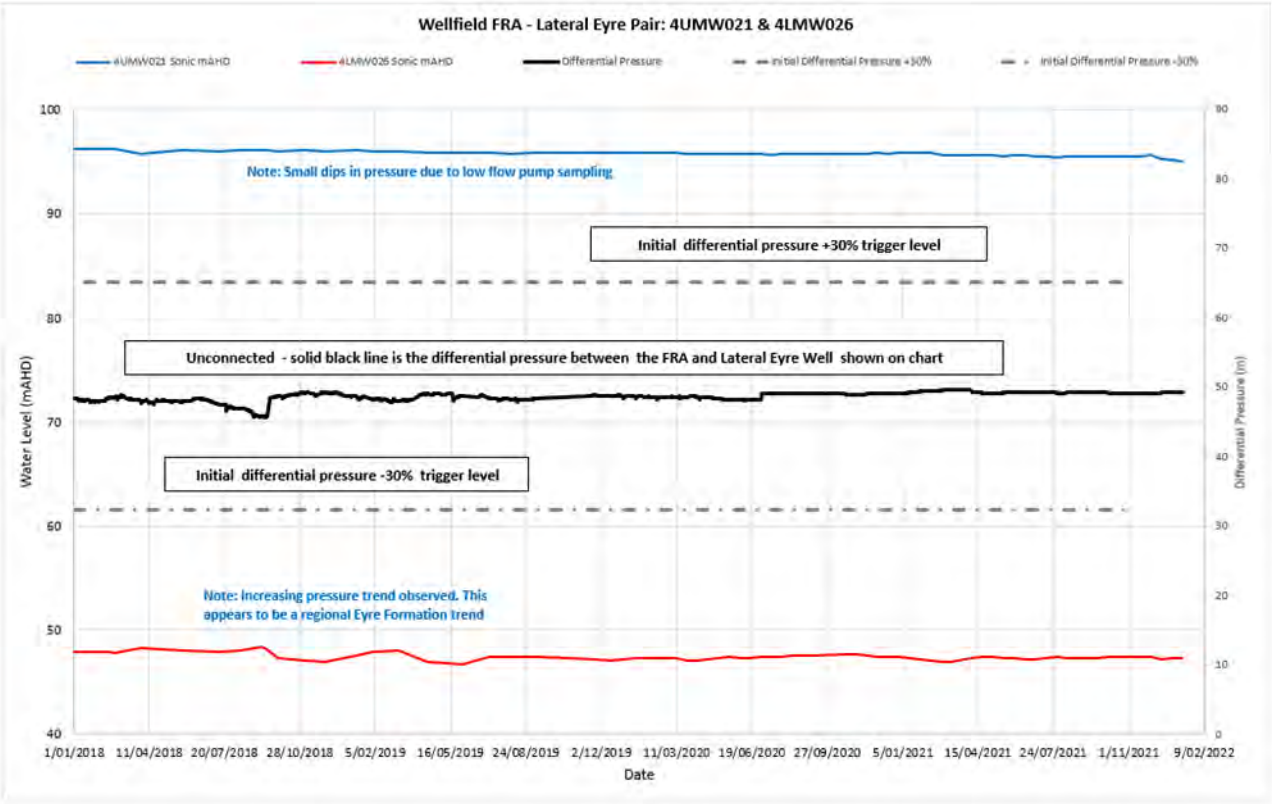
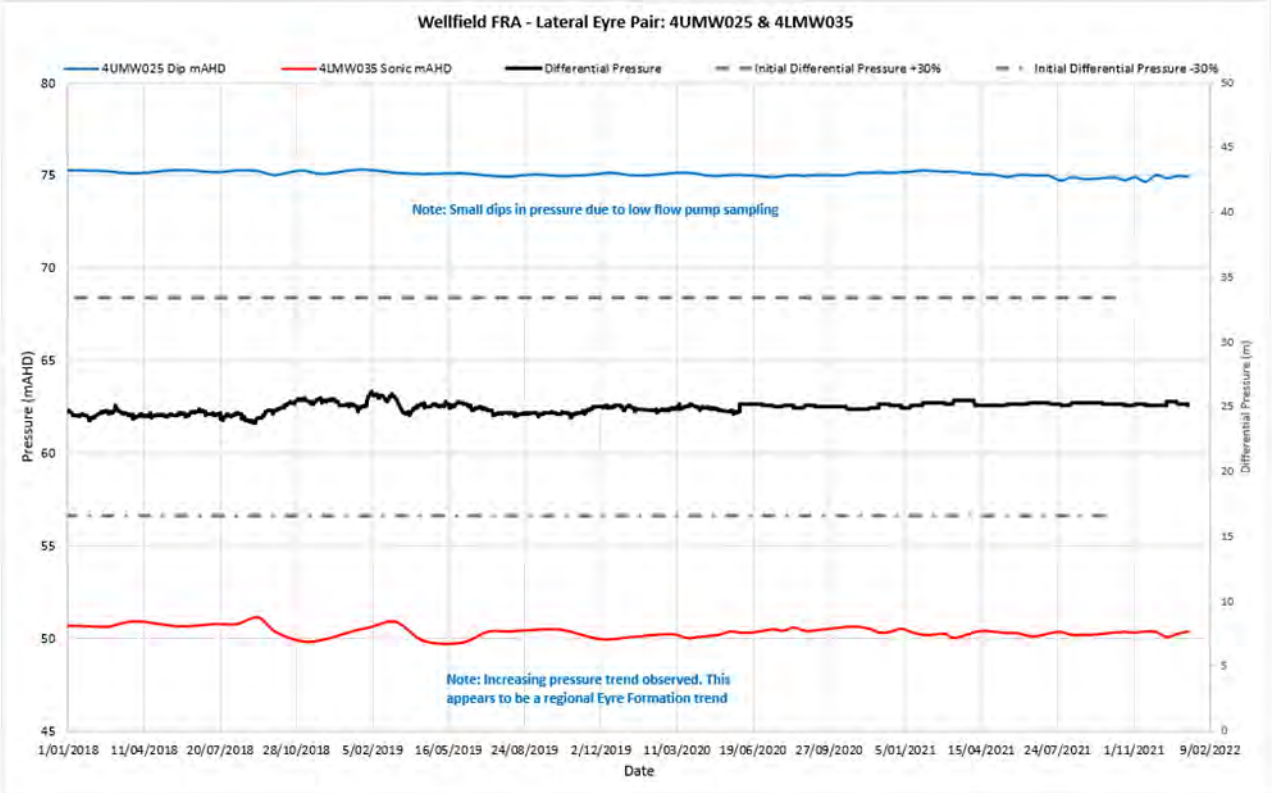


Figure 23: Underlying Monitor Wells: Fractured Rock Aquifer (FRA) Chemistry Graphs

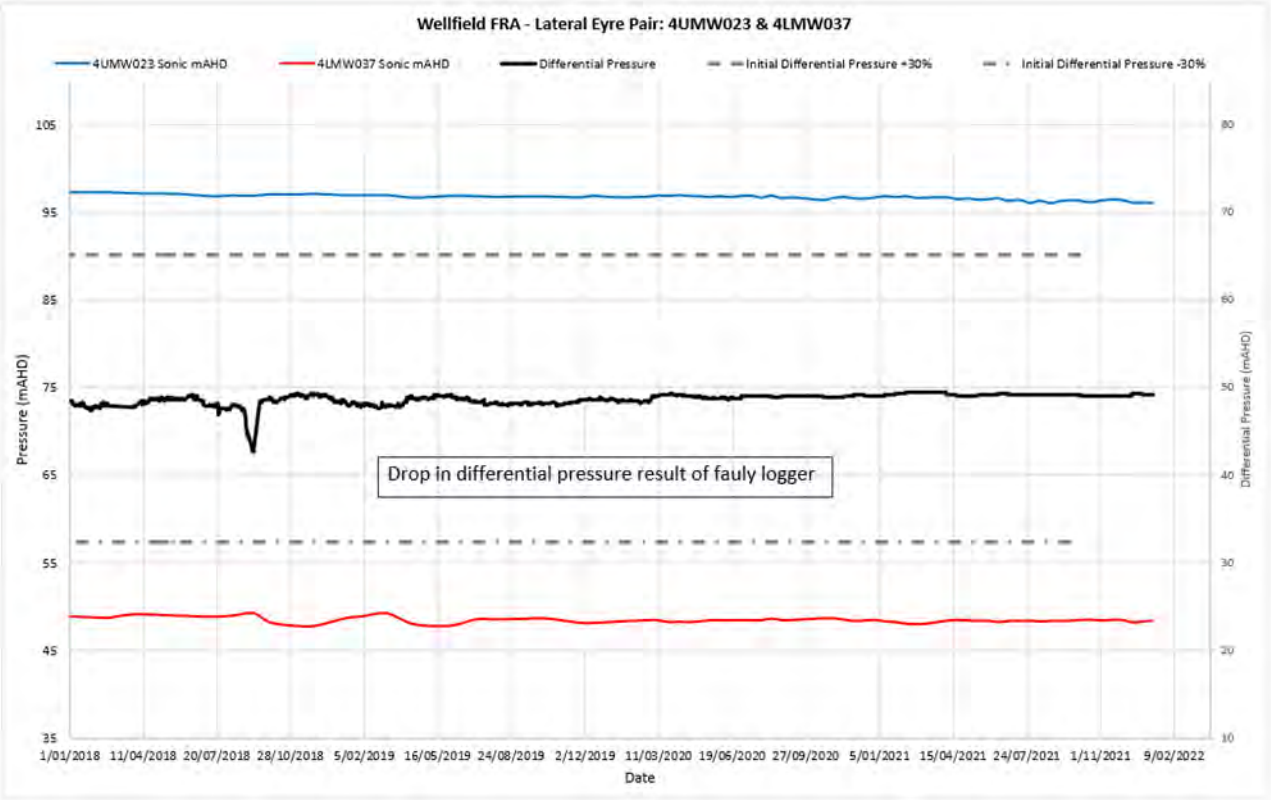
FOUR MILE EAST AND WEST – Lateral & Underlying Monitor Wells: Eyre Formation & Fractured Rock Aquifer (FRA) – Unconnected Pressure Monitoring Pairs



Unconnected monitor pair 4UMW021 & 4LMW026

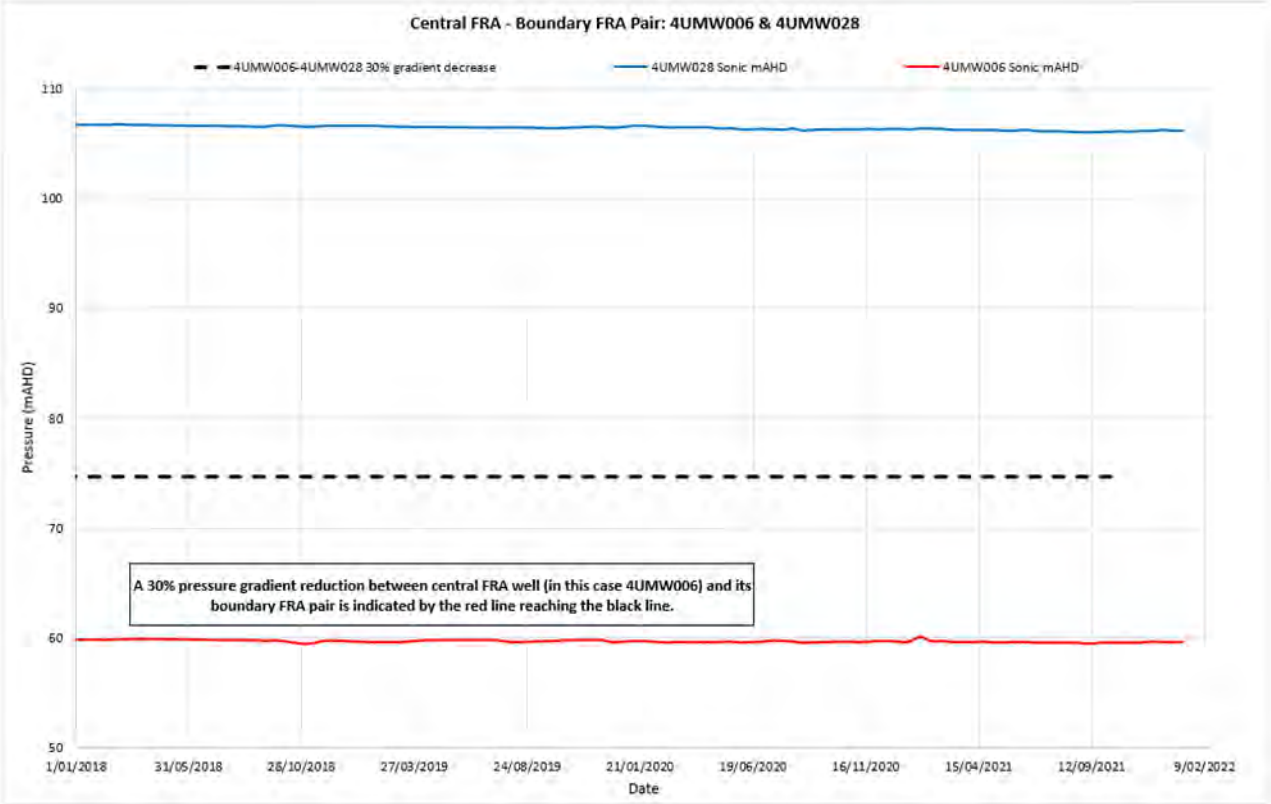


Unconnected monitor pair: 4UMW025 & 4LMW035

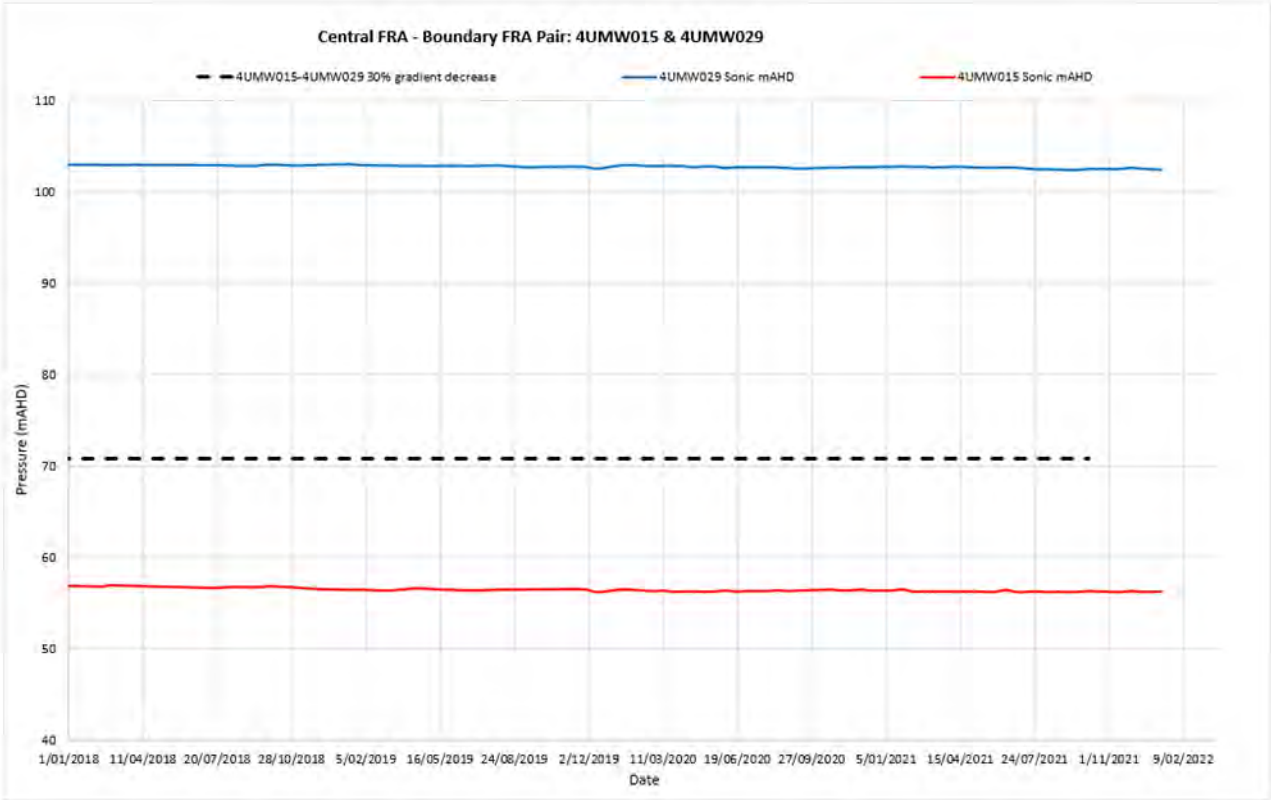


Unconnected monitor pair: 4UMW023 & 4LMW037

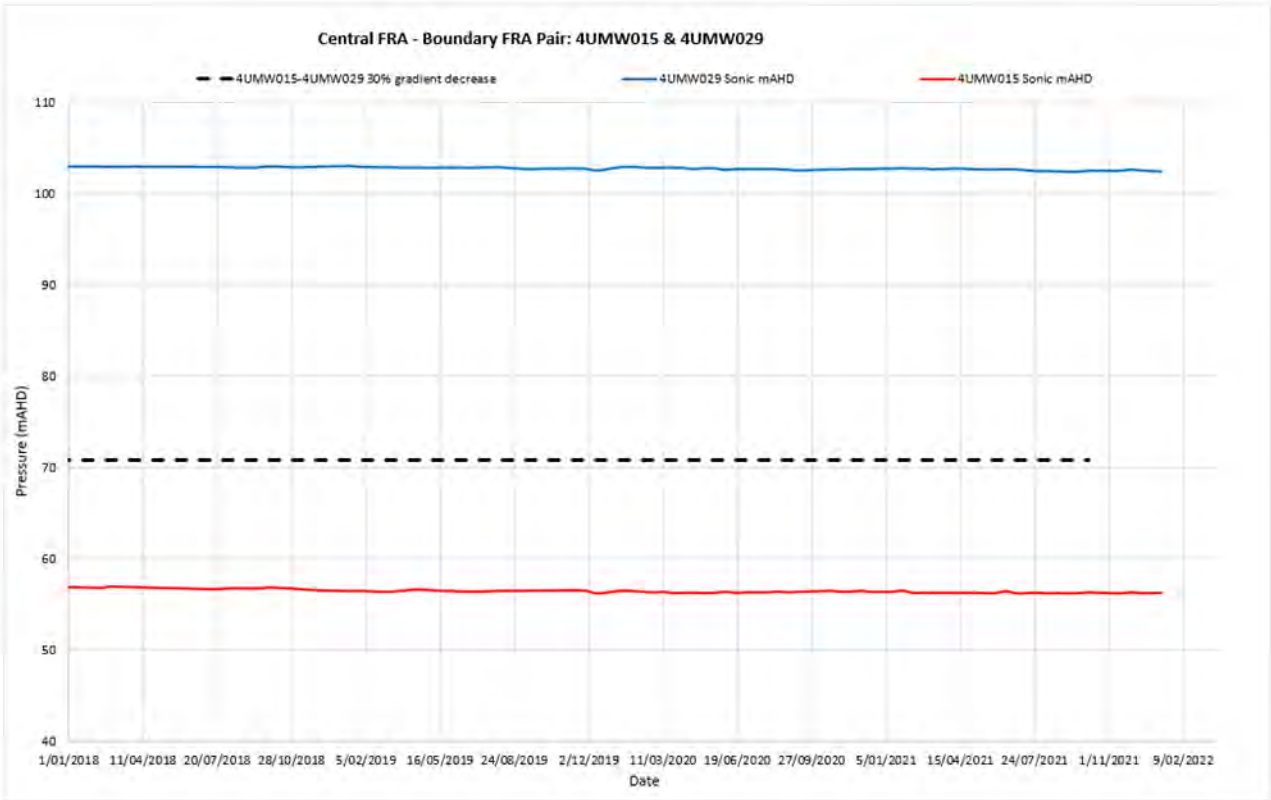
FOUR MILE EAST AND WEST – Underlying Monitor Wells: Fractured Rock Aquifer (FRA) – Variably Connected Pressure Monitoring Pairs



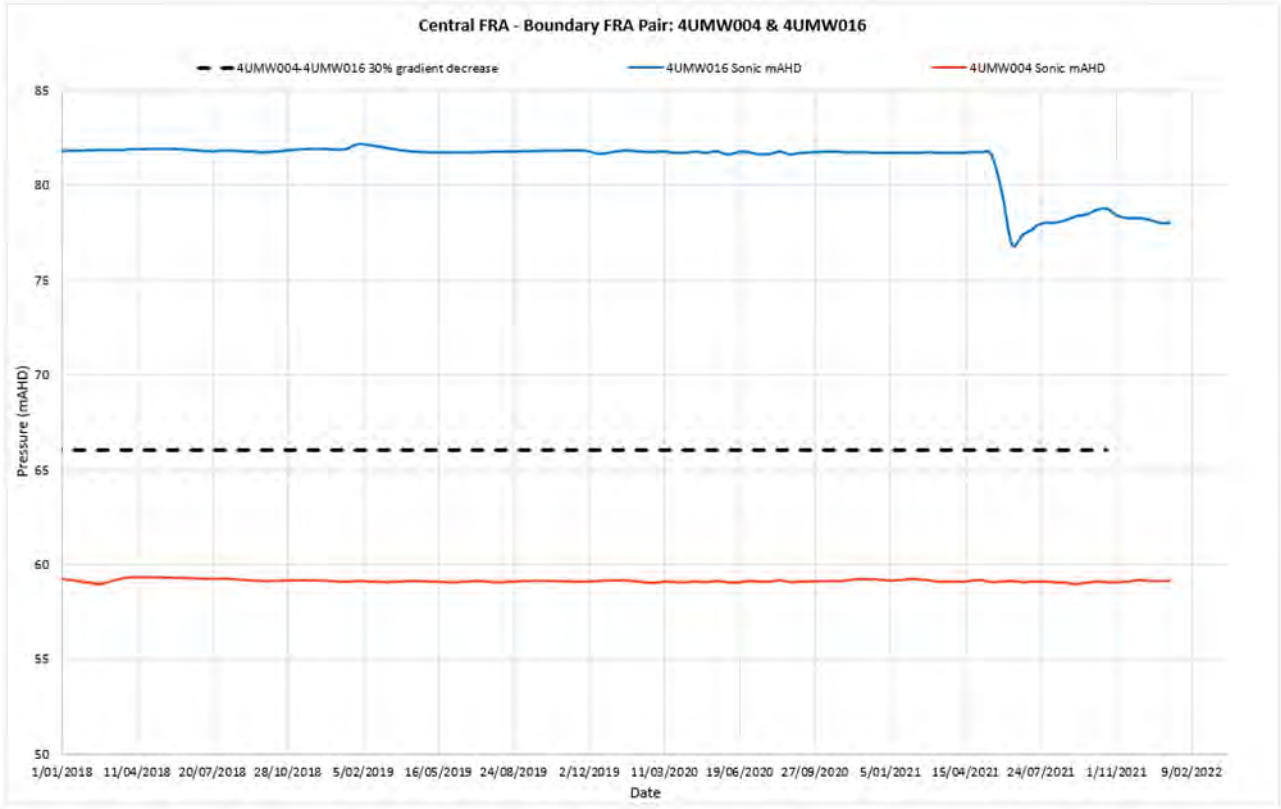
Central monitor pair: 4UMW006 & 4UMW028



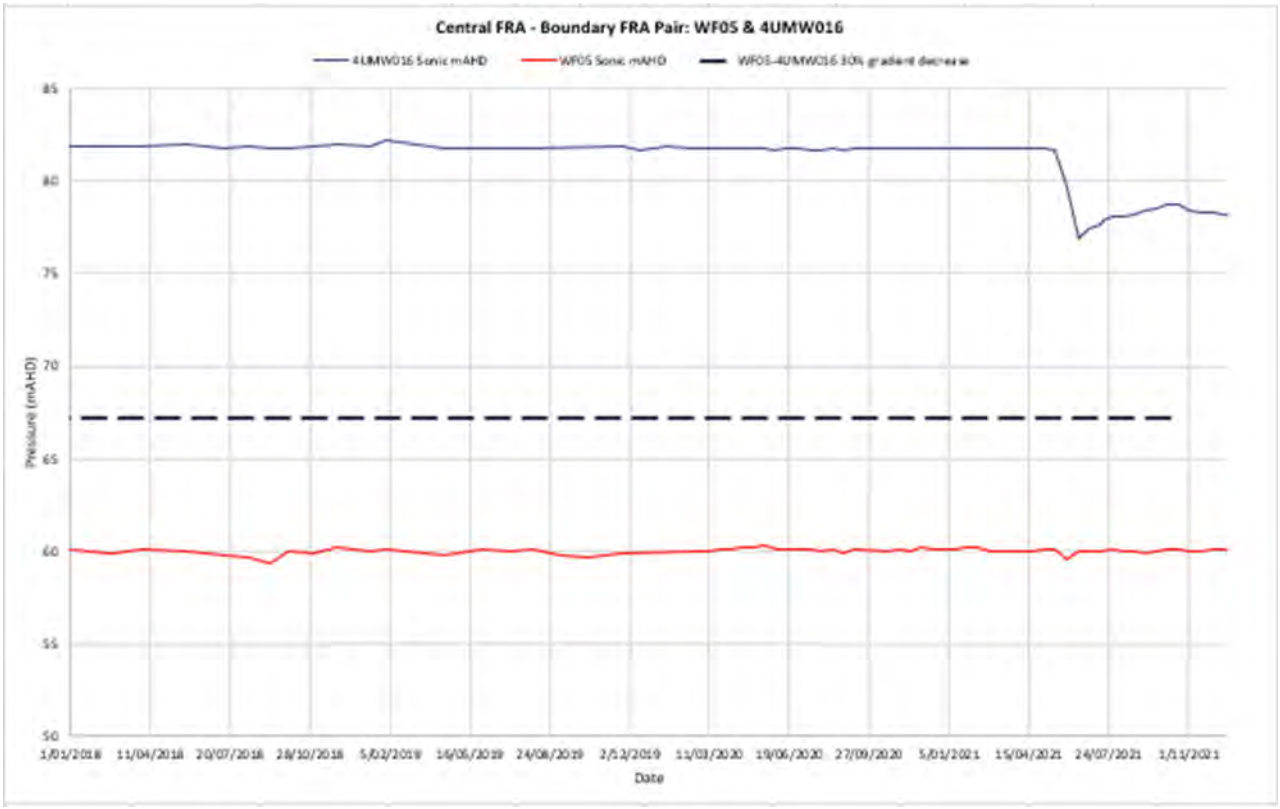
Central monitor pair: 4UMW015 & 4UMW021



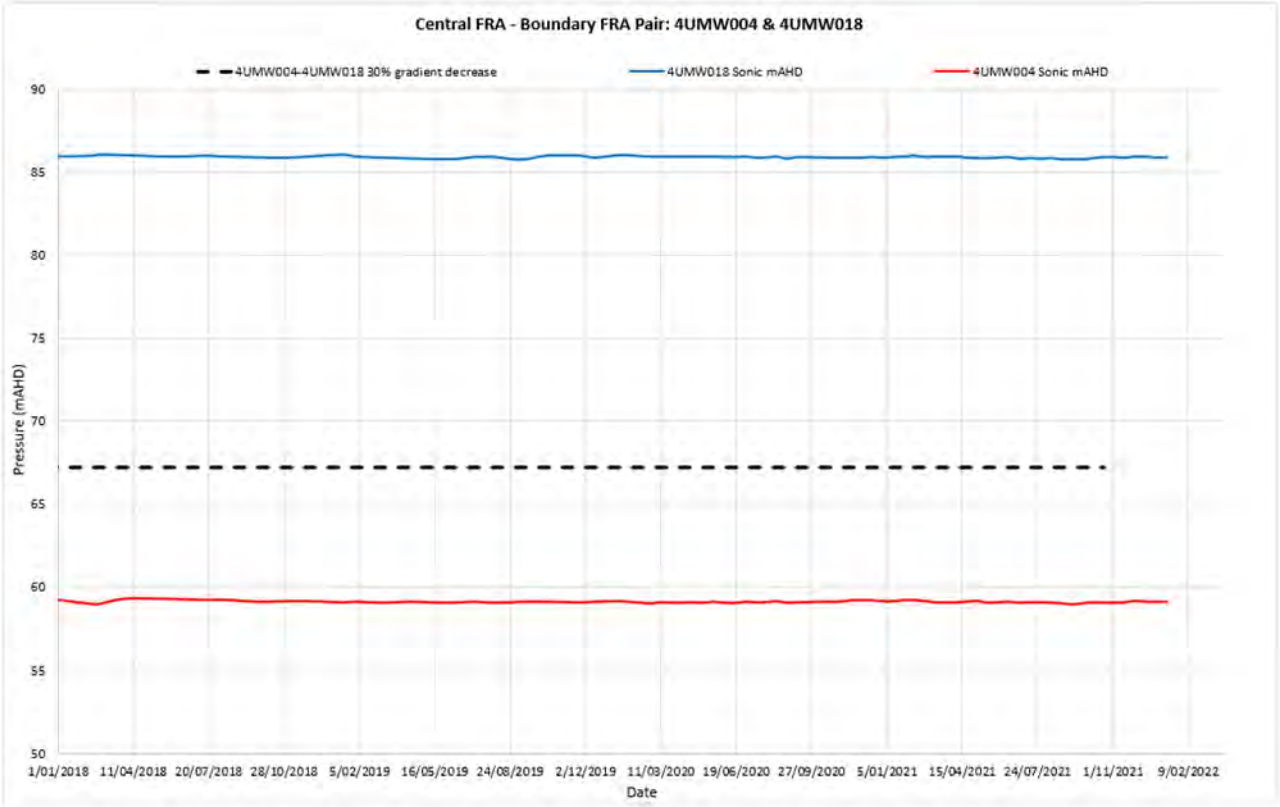
Central monitor pair: 4UMW015 & 4UMW029



Central monitor pair: 4UMW004 & 4UMW016



Central monitor pair: WF05 & 4UMW016



Central monitor pair: 4UMW004 & 4UMW018

APPENDIX 12 – AIRBORNE RADIONUCLIDE CONCENTRATIONS & DOSE ASSESSMENT

APPENDIX 12.1 – AIRBORNE RADIONUCLIDE CONCENTRATIONS

Radon Decay Products

The Potential Alpha Energy Concentration (PAEC) of radon decay products was measured throughout the plants and wellfield areas. Monitoring was conducted according to the approved Standard Operating Procedure (SOP). The average and maximum concentrations measured at various locations throughout the year are given in Table 35. Radon Decay Products monitoring throughout the site showed PAEC to remain consistently low. Average concentrations across the site remain well below the internal investigation level of 2 μJm-3.

Table 35:Radon Decay Product PAEC in the Plant and Wellfield - 2021

Location	PAEC (μJm^{-3})		
	Average	Max	Number 12 Hours Samples
Drilling	0.09	0.37	4
Environmental	0.06	0.18	2
Other	0.05	0.11	1
Plant Clean	0.03	0.37	8
Plant Supervised	0.09	3.00	78
Wellfield	0.28	15.2	14

Long Lived Alpha Activity

Long Lived Alpha Activity (LLAA) sampling was conducted throughout the Plant and clean areas and in the Wellfield. Monitoring was conducted according to the approved SOP and frequencies. Long Lived Alpha Activity in dust monitoring conducted in the Plant, Wellfield and other areas of the site remain low and well below the investigation level of 0.4 Bq/m^3. Details of the average, maximum and minimum concentrations are given in Table 36 below.

Table 36: LLAA Concentrations from Dust at the Plant and Wellfield – 2021

Location	LLAA (Bq m^{-3})				
	Average	Max	Min	Std Dev	Number
Environmental	0.01	0.02	0.00	0.02	2
Beverley FLT	0.04	0.04	0.04	--	1
Other	0.00	0.00	0.00	--	1
Plant Clean	0.03	0.58	0.00	0.09	37
Plant Supervised	0.02	0.13	0.00	0.02	64
Wellfield	0.03	0.12	0.00	0.02	27

APPENDIX 12.2 – DOSE ASSESSMENT

The public dose calculated includes contributions from Beverley, Beverley North and Four Mile operations. The estimated dose to a person living at the Beverley accommodation camp is 0.18 mSv (excluding the contribution from natural background radon). Table 37 below shows the separation of dust and radon dose in mSv. The nearest residence occupied by a member of public is the North Mulga outstation, and considering the distance from Beverley Mine, the annual dose received by a person living there will be less than 0.18 mSv, well below the applicable annual dose limit of 1 mSv.

Table 37: Public dose details

	Dose (mSv)
Dust dose (including natural background)	0.025
Radon dose (excluding background)	0.153
Total dose	0.178
Percentage of the Public Dose limit (annual)	17.8%

APPENDIX 13 – SURFACE WATER MONITORING RESULTS

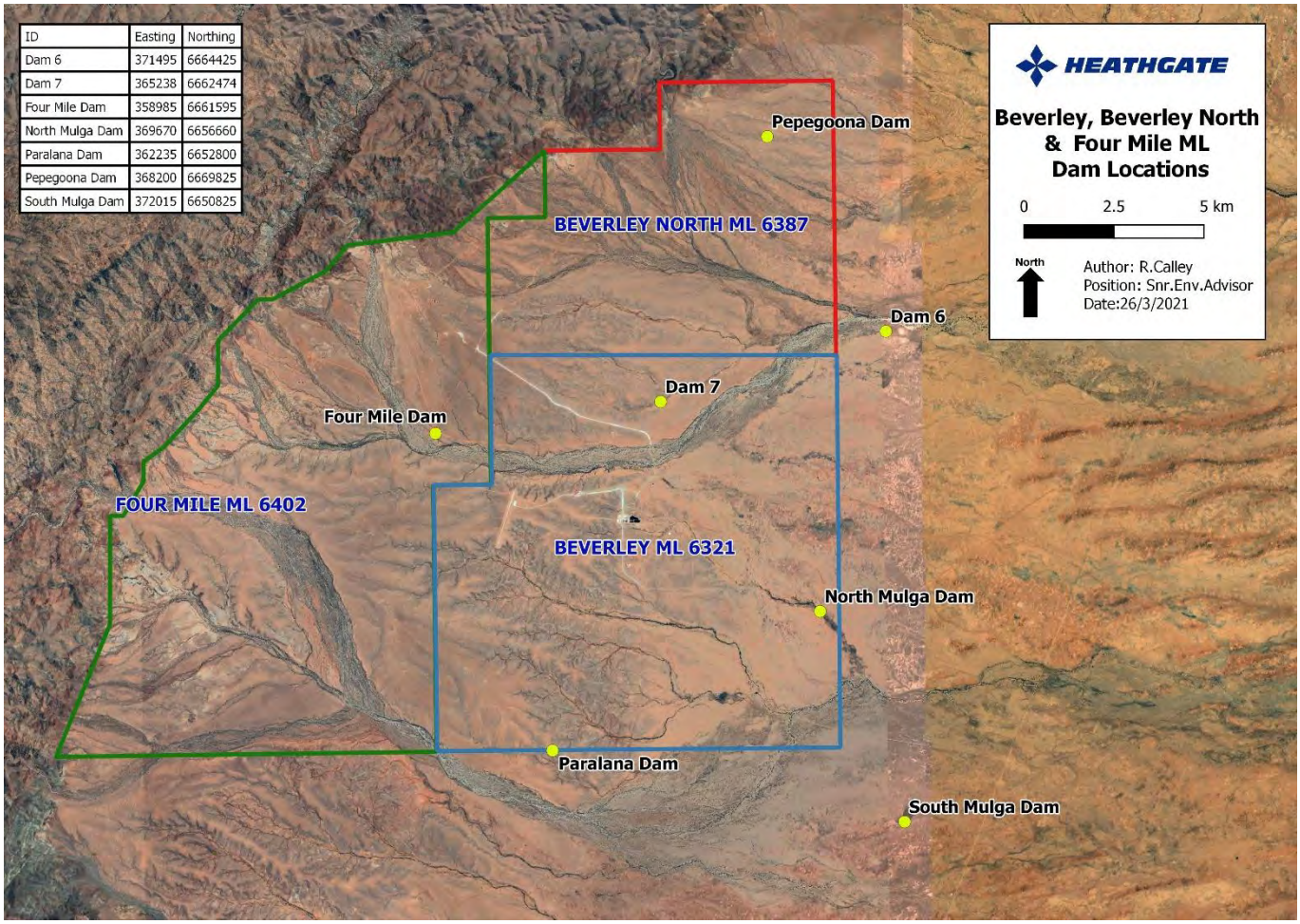


Figure 24: Surface Water Sampling Locations

No downstream surface water storage sampling parameters were triggered in the 2021 monitoring period.

APPENDIX 14 – SOIL (CREEK SEDIMENT) MONITORING RESULTS

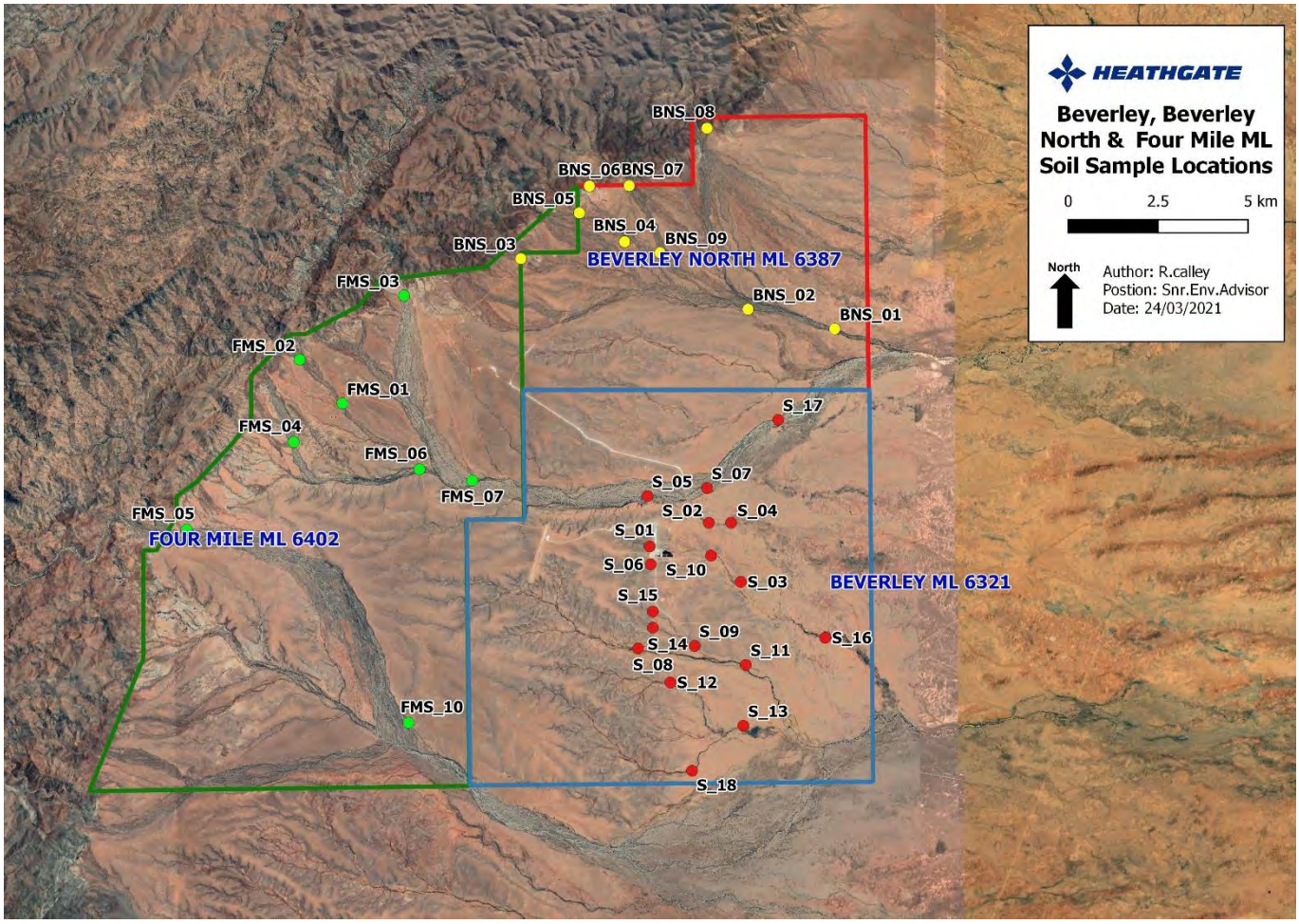


Figure 25: Soil (Creek Sediment) Sampling Locations

Due to significant rainfall during the sampling period analysis has been delayed. Results will be suppled as soon as available. It is predicted analysis will be consistent with baseline.