MINEMAKERS							
Titleholder	3N 48 1 16 296 541 Minemakers Australia Pty Ltd						
Operator	Minemakers Australia Pty Ltd						
Tenements	EL 9979, EL 24607, EL 26185, EL 26451, EL 26452, EL 26584, EL 26585, EL 26586, EL26589 and EL 28233						
Report name	Grouped Annual Report (GR-097/09) EL 9979, EL 24607, EL 26185, EL 26451, EL 26452, EL 26584, EL 26585, EL 26586, EL26589 and EL 28233 (Wonarah Phosphate Project) for the period ending 8 January 2013						
Personal authors	A. Pellatt and R. Fulton						
Corporate author	Minemakers Australia Pty Ltd						
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Date of report	7 March 2012						
Datum/Zone	GDA94, Zone 53						
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100,000 map sheet	Wonarah 6158, Coolibah 6057, Joildung 6157, Ranken 6258 and Barry Caves 6257						
Contact details	Fulton, R. Minemakers Australia Pty Ltd PO Box 1704 West Perth WA 6874 Fax: (08) 9264 7099 Ph: (08) 9264 7000						
Email for technical details Email for expenditure	anniep@minemakers.com.au russellf@minemakers.com.au						



# <u>ABSTRACT</u>

This Combined Annual Report details work completed on EL 9979, EL 24607, EL 26185, EL 26451, EL 26452, EL 26584, EL 26585, EL 26586 and EL 28233 from 9 January 2012 to 8 January 2013. The tenements are held and operated by Minemakers Australia Pty Ltd and together with ML 27244, form the Wonarah Phosphate Project, with phosphate being the target commodity. The project area lies around a palaeohigh within the Georgina Basin. In 1967 the area was first pegged for phosphate potential by IMC Development Corporation and Minemakers Australia Pty Ltd has held the titles since 2008. Work since 2008 has defined two areas of JORC resources - Main Zone and Arruwurra. The resources lies mostly within ML 27244 but extend onto both EL 26451 and EL 26452. The local geology comprises basement granite of Palaeoproterozoic age, unconformably overlain by basalt of the Helen Springs Volcanics. The volcanics are unconformably overlain by dolomitic rocks of the Thorntonia Limestone equivalent in part. The overlying phosphate-bearing Upper Gum Ridge Formation is divided locally into five units and is overlain by mudstone, siltstone and sandstone of the Wonarah Formation. In the reporting year, an RC drilling program of 84 holes for 4005 m and 1262 assays (including checks) was conducted over the Northwest, Arruwurra West and Highway North prospects the purpose being to better understand the distribution of phosphate away for the JORC resource areas and to attempt to define the extent of shallow phosphate mineralisation encountered in 2010. An updated mineral resource estimation for the project was completed and a Measured Resource was defined for the first time. The total resource for both Main Zone and Arruwurra now totals 842 Mt at 18.1% P<sub>2</sub>O<sub>5</sub> (10% P<sub>2</sub>O<sub>5</sub> % cut-off) including 78.3 Mt at 20.8% P<sub>2</sub>O<sub>5</sub>. Hand-held XRF screening carried out on RC samples has not delineated any significant zones of yttrium mineralisation. Significant rehabilitation was also completed during the reporting year.



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# 1. INTRODUCTION

# 1.1 Location, accessibility, climate and topography

The Wonarah Phosphate Project is located in the Barkly region of the eastern Northern Territory, approximately 240km east of Tennant Creek. The nearest town is Camooweal in western Queensland, approximately 180km to the east.



Figure 1. Location of Wonarah Project

Access to the project is via the Barkly Highway, the main paved freight link between Queensland and the Northern Territory, which runs along the northern boundary of EL 26452. Access within the tenement is via a network of dozed tracks suitable for 4WD only.

The topography relief is very gentle with elevation ranging from about 250m at Arruwurra in the south-west part of the tenement to about 300m above sea level at the Main Zone in the north-eastern part of the tenement. The area is semi-desert with generally sparse tree and shrub cover.



# 1.2 Tenure

Minemakers Australia Pty Ltd (ABN 18 081 911 917), (MAPL") is the registered holder of Miners Right # 556124.

MAPL is 100% holder of Exploration Licences (EL) EL 9979, EL 24607, EL 26185, EL 26451, EL 26452, (formerly known as SEL 26451 and SEL 26452, respectively), EL 26584, EL 26585, EL 26586 and EL 28233 in accordance with the NT Mining Act & Regulations. EL 26589 was part of the Grouped Annual Report but was surrendered on 30 October 2012. ML 27244 also forms part of the Wonarah Phosphate Project and is contiguous, but does not have group reporting status and is reported separately but shown in figures for reference.

Tenement	Area	Date of	Expiry	Comments
	(km²)	grant		
EL 9979	68.7	31/01/02	30/1/14	
EL 24607	95.8	03/07/09	02/07/15	
EL 26185	149.03	15/01/08	14/01/14	
EL 26451	215.9	31/03/08	30/03/14	
EL 26452	938	09/01/08	08/01/14	
EL 26584	0.87	27/05/08	26/05/14	
EL 26585	0.53	27/05/08	26/05/14	
EL 26586	0.56	27/05/08	26/05/14	
EL 28233	12.92	04/03/11	03/03/17	

Table 1. Tenement details

EL 26452 and ELs 26584-26586 are located on NT Freehold Land (NT Portions 03747-03756) owned by the Arruwurra Aboriginal Corporation. ATC's NT Portion 1413 is excluded from EL 26452.

EL 26451 and EL 28233 is located on NT Portion 773, PPL 988 Dalmore Downs. EL 24607 is located on NT Portion 3976, Wakaya Aboriginal Land Trust. EL 9979 and 26185 are located on NT Portion 4246, VCL.

EL 26452 and ELs 26584-26586 are subject to a confidential Deed For Exploration (19 March 2009) between MAPL and the Central Land Council (CLC).

Exploration drilling programs have been authorised by the Dept of Resource Development, Primary Industries, Fisheries & Mines (Mining Management Plan): Wonarah Project Authorisation 0413-01, 0413-02, 0413-03, 0413-04 and 0417-02.

MAPL has obtained sacred site clearances through the Central Land Council: Sacred Site Clearance Certificate C2008-008, C2008-087, C2009-003, C2010-032 and C2012-094. The tenements are shown in Figure 2.





Figure 2. Combined Annual Reporting tenements and prospect zones



# 2. REGIONAL AND LOCAL GEOLOGY

# 2.1 Deposit style and model

Minemakers Australia is seeking to develop a large sedimentary phosphate deposit within the Georgina Basin. The Georgina Basin is an extensive late Proterozoic to early Palaeozoic basin that extends from northwestern Queensland through much of the eastern Northern Territory area and which hosts several large sedimentary phosphate deposits. A map representing the regional geological setting is presented in Figure 3.

Sedimentary phosphate deposits are restricted in their occurrence globally. The model for phosphate deposition requires upwelling, cold phosphate-saturated water depositing phosphate onto the continental shelf where the required narrow pH range is locally present. Co-deposition with carbonate occurs at slightly higher pH values. Carbonate deposition becomes dominant at higher pH. Post-depositional reworking and replacement of carbonate facies by phosphatic mineralisation is probably an important factor in upgrading phosphorite grades to economic levels.



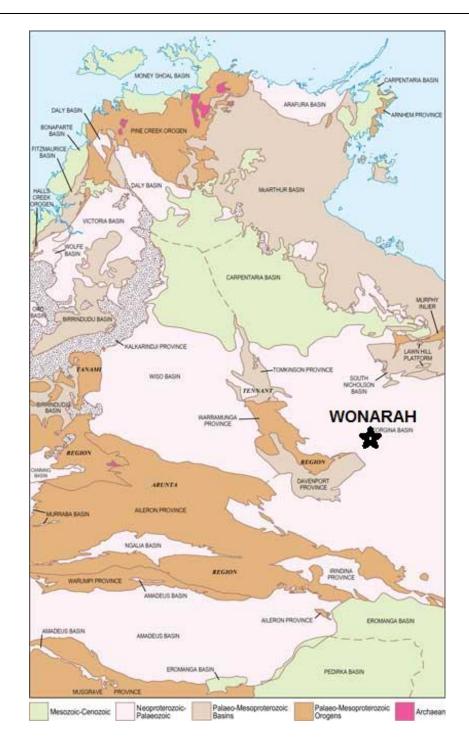


Figure 3. Regional geological setting



# 2.2 Regional geology

The Wonarah phosphate project is situated in the central western Georgina Basin, a large late Proterozoic to early Palaeozoic basin that extends from northwestern Queensland through much of the eastern Northern Territory.

Basement rocks in this part of the Georgina Basin are comprised of granites of unknown age. They are possibly correlates of the Palaeo-proterozoic rocks of the Tennant Creek region. Mesoproterozoic sediments and volcanics are overlain by the Early Cambrian Helen Springs Volcanics (formerly Peaker Piker Volcanics). A northeast-southwest trending basement high runs through the Wonarah project area.

Overlying Middle Cambrian sediments are divided into two basin-wide sequences. Sequence One deposited clastics, carbonates, organic shales and minor phosphorites during gradual transgression which was abruptly terminated by rapid regression. In the Wonarah region, basement highs are flanked by on lapping dolomitic rocks equivalent to the Thorntonia Limestone. An erosional unconformity is represented by the development of a karst surface.

Sequence Two deposited shallow clastics, carbonates, grainstones, peritidal phosphorites and phosphatic limestones in a transgressive tract system. At Wonarah dolostone, mudstone and phosphorite of the lower Middle Cambrian Upper Gum Ridge Formation overlie Sequence One rocks and basement highs. This formation contains major phosphorite mineralisation and is equivalent to the Beetle Creek Formation on the eastern Margin of the basin which hosts Phosphate Hill and Lady Annie-D-Tree phosphate deposits. The overlying Wonarah Beds are Middle Cambrian mudstone, siltstone and dolostones. Silcrete, ferricrete and calcrete regolith are extensively developed and large areas are covered by stabilised aeolian sand.

# 2.3 **Project Geology**

# 2.3.1 Main Zone

Basement in the Main Zone area is alkali feldspar granite of Palaeo-proterozoic age. Zircons were obtained from the granite and a 207 Pb/206 Pb age of 1838±12 Ma was estimated using LA-ICPMS at the University of Tasmania. These are overlain by the Helen Springs Volcanics. The top of the basalt is extremely weathered and a ferruginous and manganiferous duricrust is developed locally. Where less weathered, the basalt is vesicular, amygdaloidal and irregularly porphyritic. Dolomitic rocks of the Thorntonia Limestone equivalent are present above the basalt at the southeastern extremity of the Main Zone. To the east and the south the carbonate rocks are developed extensively.

The overlying phosphate-bearing Upper Gum Ridge Formation is divided into five main units: a basal, indurated high grade phosphorite; muddy to sandy, clay-rich transitional sediments; a chert breccia phosphorites; a mudstone phosphorite; and a convolute mudstone.



The basal Transitional Phosphorite is a laterally discontinuous high grade indurated phosphorite up to 3m thick developed throughout the eastern and southern part of the Main Zone.

The Transition Sediments (TUN) are laterally continuous, 4-6m thick and comprised of clay-rich mudstone and siltstone with minor phosphorite, dolomite, sandstone and basal epiclastic.

The Chert Breccia Phosphorite forms a distinctive, laterally continuous horizon, 1-10m thick, and comprised of yellow, grey or pink, variably friable or indurated, low to high grade phosphorite with abundant dark grey chert. Chert averages 50-60%.

The Mudstone Phosphorite is the main phosphate-bearing unit at Wonarah and is comprised of 1-10m of yellow and pink mudstone phosphorite with trace to minor dark grey chert. The mineralogy is dominated by fluorapatite,  $Ca_5$  (PO<sub>4</sub>)<sub>3</sub>F, although XRD analysis indicates the either the presence of hydroxyl fluorapatite or carbonate fluorapatite (francolite) in minor amounts or the minor substitution of hydroxyl or carbonate within the apatite structure. The MPH is variably friable or indurated with the indurated phosphorite typically being high to very high grade (30-40 % P<sub>2</sub>O<sub>5</sub>).

The Convolute Mudstone is a 1-10m thick unit of white, light grey and yellow clay-rich variably convolute mudstone with minor siltstone and fine sandstone interbeds. It generally contains minor (<10 %)  $P_2O_5$ . Crandallite, a lateritic phosphate mineral with the composition CaAl<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>(OH)<sub>5</sub>.H<sub>2</sub>O,

The Wonarah Beds overlie the Convolute Mudstone and are comprised of mudstone and siltstone with minor chert, the Hangingwall Mudstone. The Wonarah Beds thicken towards the east and south away from the basement high that defines the western fringe of the Main Zone. Dolomitic units, the Hangingwall Dolostone, are present east and south of the Main Zone.

Regolith is extensively developed throughout the Main Zone with silcrete and ferricrete present in most holes. Low silcrete ridges are prominent features. Colluvial and alluvial deposits are common and extensive stabilised aeolian deposits cover much of the regolith.

The phosphatic units thin and peter out towards the basement high which trends in a northeast-southwest direction towards Arruwurra. To the east and south the phosphatic units, although still present with grade and thickness, are too deep to be of economic interest at this time.

A stratigraphic column and schematic section are presented in Figure 4 and Figure 5, respectively.



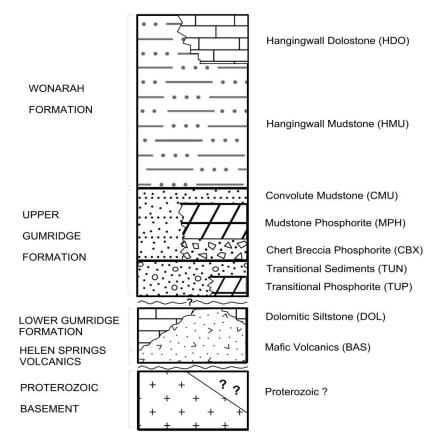


Figure 4. Regional stratigraphic column

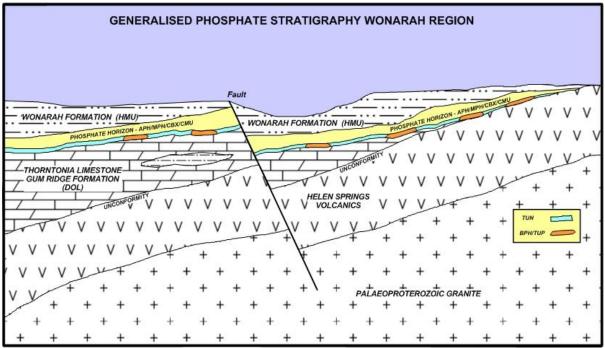


Figure 5. Schematic regional geology section.



# 2.3.2 Arruwurra

At Arruwurra, the economic phosphate mineralisation occupies a broad northeastsouthwest trending shelf sloping gently to the southwest. The shelf drops away sharply at the western end and along the southeastern edge. Mineralisation outcrops in the northeast before petering out against the basement high to the north.

Basement at Arruwurra is similar to the Main Zone and comprised of alkali feldspar granite of possible Palaeo-proterozoic age. This is overlain by the Helen Springs Volcanics which are similar in character to Main Zone. Thorntonia Limestone equivalent dolomites and dolostones overlay the basalt along the southeastern and southern margin of the deposit. An abrupt change in lithology and depth to basalt basement indicates a probable fault which has thrown the deposit side upwards. A karst surface is present on the dolomite.

The Upper Gum Ridge Formation at Arruwurra is somewhat attenuated in comparison to the Main Zone. The stratigraphic equivalent of the high grade Transitional Phosphorite is called the Basal Phosphorite at Arruwurra and is the main unit of economic importance. It is a strongly indurated, very high grade brown phosphorite mudstone which averaged approximately 2 m in thickness and is developed throughout the north-eastern part of Arruwurra. The overlying Transitional Sediments are thinner than in the Main Zone and are comprised of 1-3 m of mudstone, siltstone and phosphorite. The Chert Breccia Phosphorite is absent at Arruwurra and the overlying Arruwurra Phosphorite (APH) is the stratigraphic equivalent of the Mudstone Phosphorite. The Arruwurra Phosphorite is grey to yellow and is more chert-rich that the Mudstone Phosphorite at the Main Zone. The unit varies in thickness from 1 to 6 m and is thickest along a north-east trending axis through the centre of the deposit. The Arruwurra Phosphorite is overlain by and, near surface, interdigitates with a limestone carbonate unit in the northeastern part of the deposit area. Outcropping high grade phosphorites occur in this area.

The Convolute Mudstone is not logged at Arruwurra. The Hangingwall Mudstone unit is similar to the Main Zone except in the far east of Arruwurra where dolomitic and calcareous units, the Hangingwall Dolomite, are present.

Stabilised aeolian sand covers much of the area and is underlain by ferricrete, silcrete, and, above the carbonate unit in the northeast, calcrete and black soil.

# 3. REVIEW OF PREVIOUS WORK

#### 3.1 Prior ownership

IMC Development Corporation was granted PL 1802 over the Wonarah region on 18 July 1967 covering a total area of 3309 square miles (8570.31 km<sup>2</sup>) (CR19680030). The tenure converted to PA 2161 Wonarah (CR19690022) on renewal on 12 December 1968 due to conditions governing the expiry and renewal of prospecting Licenses in NT. The area was relinquished and declared Ministerial Reserve No 819 by the Northern Territory Government.

EL1084 was granted to ICI Australia Ltd and Australian Fertilizers Ltd on 8 May 1976 for an area of 410 square miles (1061.9 km<sup>2</sup>) north and adjacent to the Barkly



Highway. The adjacent EL1083, located south of the Barkly Highway, was granted in February 1978 for a total area of 848.5 km<sup>2</sup> (CR19780059).

The area to the south of the Ministerial Reserve 819 was taken up by CRA Exploration Pty Ltd (CRAE) and EL3571 was granted on 25 May 1983. The project was abandoned in April 1985.

In September 1997 Rare Earths and Minerals Pty Ltd and Pilbara Chemical Corporation NL applied for four exploration Licenses, covering the Wonarah phosphate deposit and adjacent areas including the former CRAE tenure.

In January 1998 AKD entered into an exclusive option with REM/PCC to acquire the project and subsequently EL 9976 was applied for by AKD Ltd (Australian Kimberley Diamonds N/L, changed to INDO Mines Ltd in 1996) which was granted on 6 February 1998. In March 1999 Rio Tinto Exploration Pty Limited (RTE) entered into a farm-in and joint venture agreement for EL 9976 with Indo Mines (AKD N/L). RTE was the manager of this tenement. EL's 22167 and 22168 were applied for by RTE on 31 August 1999 and granted on 4 August 2000 (CR2001-0280). RTE withdrew from the joint venture in November 2002 due to a determination that the project was NPV negative.

The underlying land tenure is Arruwurra Aboriginal Corporation NT freehold. Tenure information was extracted from the Consultant Geologists' report within the Minemakers Prospectus where reports are not cited.

# 3.2 Historical exploration

#### Pre-Minemakers

During the period of 1967 to 1971 IMC Development Corporation drilled 139 vertical rotary-percussion holes within PA2161, accompanied by mapping of photo patterns and soil types, radiometric traverses, analysis of B.M.R. gravity data and radiometric logging of open water bore holes. The drill pattern was spaced at 1 hole per 5.5 km<sup>2</sup> with no two holes less than 1.2 km apart (CR2000071). IMC described a common phosphorite association within silt-chert, with the main chert concentration located above the phosphorite, and an extensive but non-DSO Phosphorite was defined using the widely spaced drilling pattern. The phosphorite was located at depths of 17 m to 45 m and reached a maximum thickness of 18 m at the eastern end of the deposit.

Beneficiation studies (CR19690022) were undertaken on 6 samples taken from samples of clayey-siltstone-chert. The study produced a high-grade beneficiated product with an overall BPL recovery of 45-48 %. Flotation concentrate of the samples yielded 77.8 % BPL, 7.8 % Insol, 2.8 % total I & A and a CaO/P<sub>2</sub>O<sub>5</sub> ratio of 1.32.

Following completion of the 139 open hole rotary percussion series, (total of 18,733 ft or 5709.8 m) calculations of the phosphorite were reported in CR19700038 as 669 million short tons (606.8 Mt) averaging 15.73 %  $P_2O_5$ , calculated at a cut off average at 10 %  $P_2O_5$ . A total of 532 million short tons (482.5 Mt), using a cut-off of 14 %  $P_2O_5$  averaging 16.74 %  $P_2O_5$  and 307 million short tons (278.4 Mt) averaging 18.98 %  $P_2O_5$  indicated using a cut-off average of 18 %  $P_2O_5$ . Restrictions applied included



limitation of phosphorite reserves to 2000 ft (6096 m) beyond a drill hole on the margins of the deposit.

IMC's second calculation of reserves was made extending the limit of phosphorite to 4000 ft (1219 m) beyond a hole. Calculations were reported as : at 10 %, 14 % and at 18 %  $P_2O_5$  cut-off reserves were 970 million short tons (879.8 Mt) at 15.71 %  $P_2O_5$ , 771 million short tons (699.3 Mt) at 16.46 %  $P_2O_5$  and 418 million short tons (379.1 Mt) at 18.96 %  $P_2O_5$  respectively. Calculations were undertaken using the polygon method, with consideration to the widely spaced drilling. Mining-related limiting factors were not accounted for in the calculations.

At that time, conditions did not allow for an economic deposit.

Between 1976 and 1979, ICI and AFL tenure was marked by problematic re-location of IMC drilling and a rotary percussion drilling program (CR19780059) on the eastern side of the mineralisation, of 10 rotary-percussion holes (9 holes for 514 m and a 5 m hole abandoned). The program intersected phosphorite at depth, accompanied by drilling difficulties that plagued IMC in the same area. Drilling results indicated a thickening of the phosphorite on the eastern edge of the Wonarah volcanic high and confirmed the depths and phosphate grades, and indicated reasonable continuity of the phosphorite bed over an area of some 6 square kilometres at overburden ratios of less than 7/1" (CR197800007). Results from a 1979 metallurgical investigation were not cited.

In 1983-1984 CRAE carried out a low-level aeromagnetic survey, to define the volcanic basement, however internal review of commodity targets and lack of transport infrastructure closed the project in 1985.

In 1992-1993 the area was explored for diamondiferous diatremes based on airborne magnetic and radiometric surveys. A program of loam sampling was undertaken and in 1993 one hole was drilled to test a ground magnetic anomaly, within EL 9976, which intersected a thin phosphatic claystone unit overlying mafic volcanic.

In January 2000, Rio Tinto Technical Services conducted a Prefeasibility Study using available data, which identified a "global resource estimate of 1955 Mt at 14.4 %  $P_2O_5$ " (CR20000071), at depths ranging from 30 and 50 m, with a maximum assayed grade of 28.6 %  $P_2O_5$ .

During 2000-2001, RTE drilled three phases of mainly RC holes (120 holes, 6215.5 m), minor PAB (2 holes, 130 m) and 12 diamond holes for 296.1 m core and 368.1 m of pre-collar, with accompanied down-hole gamma ray logging. A gravity survey was undertaken to define basement highs, with limited success. The drilling program focused upon ground with no previous drilling and placed a series of closely spaced holes within the well mineralised region in the southern area of the mineralisation identified by IMC, enabling them to define an Inferred Resource.

A 23 square kilometre resource, that mainly excludes the area drilled by IMC, was delineated within mudstone phosphorite, but did not include the underlying lower grade chert breccia phosphorite, which runs poorer lateral continuity. The inferred mineral resource was reported as 115 Mt at 22 %  $P_2O_5$  at a cut-off grade of 15 %.

Following additional infill drilling, a recalculation and delineation of an inferred resource in December 2001 was reported as 72 Mt at 23 % P<sub>2</sub>O<sub>5</sub>, at a cut-off of 15



%. The drill density and pattern was noted as uneven with some holes up to 1800 m apart and the author of the resource report advised caution if this category was to be considered in economic studies.

Rio Tinto carried out beneficiation tests to determine the potential of upgrading the Wonarah ore, based upon tests limited to washing and screening. The deleterious elements were reduced but the process failed to give a major increase in grade.

A combination of reduced estimate size and failure to upgrade the mineralisation economically lowered the projects potential and after RTE initiated a reverse economic study, indicating that the project was then NPV negative, withdrew from the joint venture in 2002.

Exploration also included field work on the outcropping phosphorite beds at Arruwurra, where rock chip sampling indicated that the grade was high but of unknown extent. Joint venture exploration activity also included interpretation of Landsat 5 Thematic Mapping of regolith types, petrological study of core samples and the Arruwurra outcrop and soil sampling.

Historical exploration information was extracted from the Consultant Geologists' report within the Minemakers Prospectus where reports are not cited.

#### Minemakers

Minemakers commenced field work at Wonarah in February 2008.

During the year ended January 2009 the following work was carried out:

- 220 reverse circulation percussion holes were completed for 10,500 m
- 40 PQ, HQ and NQ sized diamond cored holes were competed for 1,990 m
- 4,973 split RC samples were submitted for XRF analysis of major oxide elements
- 109 crushed core samples were submitted for XRF analysis of major oxide elements
- The majority of metres drilled were tested for magnetic susceptibility and gamma radiation by hand-held instruments
- Metallurgical test work was carried out at Optimet Laboratories in Adelaide to determine optimal beneficiation pathways for phosphorite ore
- An airborne EM survey was carried out by Fugro Airborne Surveys Corporation Ontario, with the purpose of providing information that could be used to map the geology and structure of the surveyed area as part of program to delineate potential ground water resources
- A scoping study was commenced and then terminated in December prior to commencement of a full feasibility study

During the year ended January 2010 the following work was carried out:

- 1,066 reverse circulation percussion holes were completed for 52,491 m
- 58 PQ and HQ-sized diamond cored holes were competed for 1,326 m
- 19,712 split RC samples were submitted for XRF analysis of major oxide elements
- 599 crushed core samples were submitted for XRF analysis of major oxide elements
- The majority of metres drilled were tested for magnetic susceptibility and gamma radiation by hand-held instruments



• A full feasibility study was conducted into mining "direct shipping ore" DSO from the Arruwurra deposit

During the year ended January 2011 the following work was carried out:

- Completion of a full feasibility study into mining at the Arruwurra deposit
- Conversion of the part of SEL 26452 containing the majority of the JORCcompliant resources to ML status
- 100 reverse circulation percussion holes were completed for 4,347 m
- 1,462 samples split RC samples were submitted for XRF analysis of major oxide elements
- All RC samples were tested for gamma radiation and a number were tested for magnetic susceptibility
- 20 samples from the mineralised zones (drilled in previous years) were submitted for REE content by ICP-MS
- 92 soil samples were collected for analysis using a proprietary lonic leach method
- A ground magnetic survey to better define some magnetic anomalies

During the year ended January 2012 the following work was carried out:

- RC program comprising 83 holes for 4,797 m
- Y testing of RC chips from this program and previous drilling
- Updated resource calculation: 252 Mt Indicated @  $18.2\% P_2O_5 (10\% P_2O_5 \text{ cut-off})$ and 395 Mt Inferred ( $18\% P_2O_5 \text{ cut-off}$ )
- Review of metallurgical test work
- Enabling feasibility study
- Rehabilitation procedures manual
- Exploration activities site audit

# 4. WORK COMPLETED DURING THE REPORTING PERIOD

# 4.1 Geological

# 4.1.1 RC Drilling

The purpose of the 2012 drill program was to:

- Further test the shallow mineralisation in the north-west corner of the project area known from historical drilling and Minemakers' 2010 regional RC program at 500x500m spacing
- Further test the area around mineralised holes in the south-west part of the project area. This mineralisation was discovered in 2010 by a very wide-spaced drill program and indicated the potential for significant phosphate mineralisation albeit deeper than mineralisation in the Main Zone.

An RC drilling program was conducted in September-October 2012 comprising 84 holes for 4005 m with depth ranges from 23-75 m. Location of holes is shown in Figures 6 and 7.

In the north-west part of the tenement the following drilling occurred:

- EL26452 51 holes for 2333 metres
- EL26451 13 holes for 548 metres
- EL28233 2 holes for 71 metres



In the south-west part of the project area the following drilling occurred:

- EL9979 6 holes for 347 metres
- EL26185 6 holes for 409 metres
- EL24607 6 holes for 297 metres

The drilling was carried out by Kennedy Drilling, Kalgoorlie using a KD 150 RCA rig mounted on a MAN 6x6 truck with a Sullair 1150 cfm x 350 psi auxiliary compressor and a 1400 cfm x 700 psi Hurricane 636-41B booster. The hole diameter was 4  $\frac{3}{4}$  diameter.

#### Table 2. Summary drilling table

Hole Type	e Type Hole number range		Total metres	
RC	WNRC1688-1771	84	4005	
TOTAL		84	4005	

Hole ID	Dip (-⁰)	Azimuth (°)	MGA East (m)	MGA North	Sample Interval	From (m)	Cut-off 10% P <sub>2</sub> O <sub>5</sub>	Total depth
	. ,			(m)	(m)	. ,		(m)
WNRC1705	-90	360	637996	7797993	1	17	16m @ 11.36% P <sub>2</sub> O <sub>5</sub>	44
WNRC1736	-90	360	636501	7801499	1	34	14m @ 11.74% P <sub>2</sub> O <sub>5</sub>	43
WNRC1747	-90	360	628005	7774004	1	36	22m @ 10.43% P <sub>2</sub> O <sub>5</sub>	62
WNRC1748	-90	360	626000	7776006	1	45	14m @ 23.30% P <sub>2</sub> O <sub>5</sub>	65
WNRC1751	-90	360	616999	7774999	1	60	10m @ 23.23% P <sub>2</sub> O <sub>5</sub>	60
WNRC1752	-90	360	621004	7777000	1	40	17m @ 11.25% P <sub>2</sub> O <sub>5</sub>	71
WNRC1753	-90	360	623005	7776996	1	44	17m @ 15.29% P <sub>2</sub> O <sub>5</sub>	65
WNRC1754	-90	360	625005	7776998	1	51	10m @ 18.58% P <sub>2</sub> O <sub>5</sub>	62
WNRC1755	-90	360	627005	7776900	1	37	10m @ 13.13% P <sub>2</sub> O <sub>5</sub>	47
WNRC1762	-90	360	636998	7802505	1	23	17m @ 16.54% P <sub>2</sub> O <sub>5</sub>	47
WNRC1769	-90	360	637500	7801501	1	24	10m @ 12.18% P <sub>2</sub> O <sub>5</sub>	38
WNRC1770	-90	360	637504	7802000	1	29	17m @ 13.67% P <sub>2</sub> O <sub>5</sub>	47

Drill sections are included at Appendix 1.



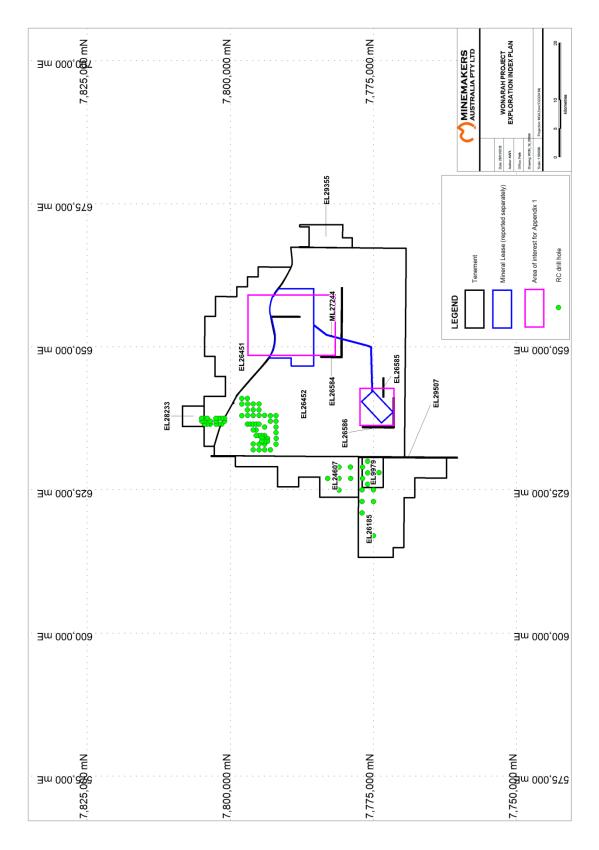


Figure 6. Exploration Index Plan.



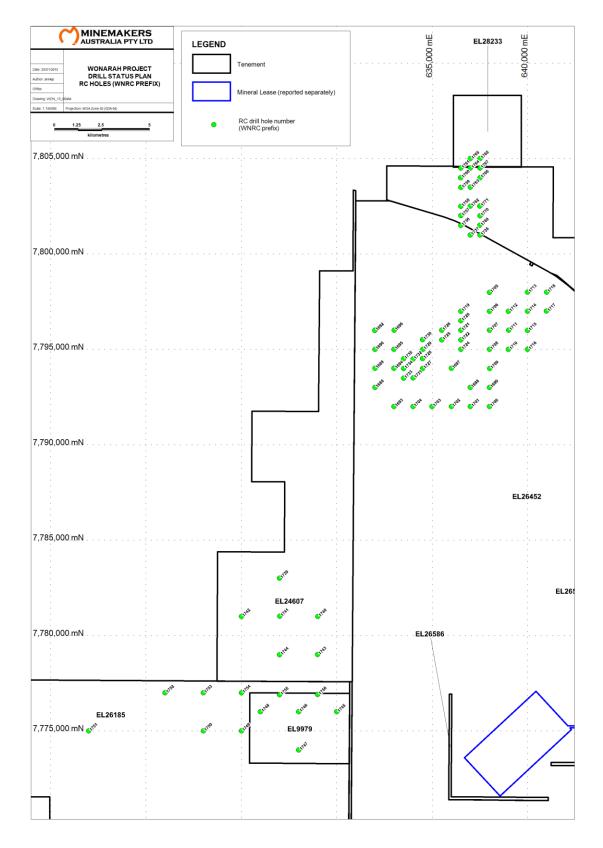


Figure 7. Drill hole status



# 4.2 Geochemical

# 4.2.1 Drilling

A total of 1262 samples, including originals, duplicates, standards and blanks were sent for laboratory analysis. All RC samples were submitted to Amdel in Mt Isa. Samples were dried at 105-110  $^{\circ}$  C then crushed in a Boyd crusher. A nominal 100 g sample was rotary split from the bulk then pulverised in a tungsten-carbide mill to minimise iron contamination. A sub-sample of the analytical pulp was fused with lithium metaborate to form a glass disc which was then analysed by XRF for the following oxides:P<sub>2</sub>O<sub>5</sub>, Al<sub>2</sub>O<sub>3</sub>, CaO, K<sub>2</sub>O, Total Fe as Fe<sub>2</sub>O<sub>3</sub>, MgO, MnO, Na<sub>2</sub>O, SiO<sub>2</sub>, TiO<sub>2</sub> (lower detection limit of 0.01 % for each.) A minimum laboratory repeat rate from the pulp sample of 1 in 20 samples is carried out.

# 4.2.2 Yttrium sampling

A hand held portable XRF machine was used to yttrium values over selected one metre intervals from chip trays of both holes drilled during the reporting period and from holes completed in previous years. The target intervals were from within the target horizon within the ore zone up to the probable overlying unconformity. The yttrium readings are interpreted to reflect the mineral xenotime. This work is intended as a reconnaissance scan to determine whether laboratory analyses, further to those already undertaken for yttrium, are justified.

# 4.3 Mineral Resource Estimation Update

MAPL engaged the services of MPR Geological Consultants Pty Ltd (MPR), Perth to complete an updated Mineral Resource estimation for the Wonarah project based on the requirement to feed a beneficiation plant. The original Mineral Resource estimate for Wonarah and Arruwurra study was completed in 2009. This estimate contains resources in the Measured category for the first time.

This update incorporates drilling results from Highway North during 2011 and since there has been no additional sampling at Arruwurra since the 2009 estimate, the estimates for Arruwurra remain unchanged.

	Measured		Indicated		Measured	+ Indicated	Inferred	
	Mt P <sub>2</sub> O <sub>5</sub> %		Mt	Mt P <sub>2</sub> O <sub>5</sub> % Mt		P <sub>2</sub> O <sub>5</sub> %	Mt	P <sub>2</sub> O <sub>5</sub> %
Arruwurra	25.7	18.7	27.7	17.8	53.4	18.2	82	16
Main Zone	52.6	21.8	194	17.4	247	18.3	460	18
Total	78.3	20.8	222	17.5	300	18.3	542	18

Table 4. Wonarah Mineral Estimate at 10 % P <sub>2</sub> O <sub>5</sub> cut-off	:

MPR used Ordinary Kriging of one metre drill hole composites within mineralised domains using Vulcan, Gemcom and GS3 software to complete the estimation. Bulk densities of 1.7 to 2.0t/bcm were derived from immersion measurements of MAPL's diamond core.

The full report is provided as Appendix 2.



# 5.0 ENVIRONMENT

#### 5.1 Environmental disturbance

Rehabilitation was ongoing during the year. During the course of the project, 1577 RC holes and 114 diamond holes have been drilled. This includes holes drilled on the ML, originally SEL26452. The status of rehabilitation is as follows:

Rehabilitation Record to End of 2012 – RC	Total	% Complete	Number Remaining
Total RC holes drilled	1577		
Total Pads	1569		
Holes permanently capped and buried to 0.3 Metres	1577	100.0	0
Holes with Plastics removed from site	1493	94.7	84
Holes with RC material removed or buried	1493	94.7	84

Table 6. Rehabilitation status diamond drilling (mainly on ML27244)

Rehabilitation Record to End of 2012 – Diamond	Total	% Complete	Number Remaining
Total Diamond holes drilled	114		
Total Diamond only Pads	29		
Total sumps excavated	78		
Holes permanently capped and buried to 0.3 Metres	114	100.0	0
Sumps filled in	78	100.0	0

As reported last year, during the 2011 field season, Minemakers agreed to subcontract rehabilitation field work to Arunga Land Protectors Alliance ("ALPA"), a company set up as a partnership between a traditional owner and a Queenslandbased mining interest.

In a practical sense this arrangement did not work out and work that was scheduled to be carried out in 2011 did not happen. Through a combination of access problems due to the extended wet and ineffective work practices, ALPA failed to meet acceptable targets in relation to rehabilitation.

In 2012, Minemakers entered into an agreement for provision of rehabilitation services with TGS Indigenous Mining Services, a company wholly-owned by a traditional owner. Services provided by TGSIMS proved to be excellent and during the year all outstanding RC disturbances, except for the 2012 RC program and all diamond drilling disturbance (on ML27244) was rehabilitated. TGSIMS was able to provide a 1.5t excavator which was ideal for access partly rehabilitated areas with a minimal amount of disturbance. RC material from 2009 and 2010 was buried on site rather than carted away, which would have caused damage to rehabilitating tracks.



# 6.0 CONCLUSIONS AND RECOMMENDATIONS

#### 6.1 Drilling

- Drilling in the north-west part of the project area returned generally disappointing results with the phosphate mineralisation being patchy and low to medium grade. The lack of continuity of mineralisation has downgraded the prospectivity in the area south of the Barkly Highway on EL26452, however some holes immediately to the north of the highway on EL26451 encountered reasonable mineralisation and it is likely that further drilling may define a relatively shallow, small, medium grade resource. WNRC1762 returned 10m @ 19.2% P<sub>2</sub>O<sub>5</sub> from 28m including 6m @ 21.0% P<sub>2</sub>O<sub>5</sub> from 34m; WNRC1770 returned 9m @ 13.8% P<sub>2</sub>O<sub>5</sub> from 33m and WNRC1769 returned 3m @ 18.0% P<sub>2</sub>O<sub>5</sub> from 27m These holes are all located in the vicinity of WNRC1558 (drilled in 2010) which returned 6m @ 24.5% P<sub>2</sub>O<sub>5</sub> from 31m. Two nearby holes just south of the highway on EL26451 also returned significant mineralisation WNRC1736 with 3m @ 21.8% P<sub>2</sub>O<sub>5</sub> from 136m in 14m @ 11.7% P<sub>2</sub>O<sub>5</sub> from 34m and WNRC1737 with 2m @ 25.0% P<sub>2</sub>O<sub>5</sub> from 32m
- 2. Drilling in the south-west part of the project area on EL9979, EL26185 and EL24607 returned some encouraging results. Although the drill spacing is around 2000x2000m there is mineralisation in almost every hole including some thick intervals and high grade intervals.WNRC1748 with 14m @ 23.3% P<sub>2</sub>O<sub>5</sub> from 45m, WNRC1747 with 22m @ 10.4% P<sub>2</sub>O<sub>5</sub> from 36m and WNRC1751 with 10m @ 23.2% P<sub>2</sub>O<sub>5</sub> from 60m give an indication of the grade and thickness of mineralisation in this area. The mineralisation is of a similar nature to the Main Zone but is 10-20m deeper. Based on drilling to date and assuming a continuity not dissimilar to the Main Zone there is the potential for up to a billion tonnes of phosphate rock at reasonable grade to be hosted in this area, which is open to the west and south.

New resource estimations for the entire project area were made by Jon Abbott of Hellman and Schofield. The purpose of this work was to use a lower cut-off to provide a resource suitable for feed into a beneficiation plant. At the lower cut-off of around 10% a Measured Resource was able to be estimated for Wonarah for the first time (Table 4).

In 2013, it is planned to conduct some more RC drilling in the south-west area to further define the extent and nature of mineralisation there and some further RC drilling north of the Barkly Highway on EL26451 to better define the mineralisation present there. These programs will involve approximately 100 holes for about 5000 m of RC drilling.

# 6.2 Yttrium sampling

Minemakers commenced a program of analysis for yttrium within and above the phosphatic sediment interval at Wonarah, following the announcement of the occurrence of significant yttrium and other rare earth elements associated with phosphate mineralisation at the Korella deposit south of Mt Isa. This deposit is hosted in a similar stratigraphic setting to Wonarah and elevated yttrium had been previously noted at Wonarah. At Korella, the yttrium is contained within the mineral xenotime and the mineralisation occurs as a thin, coherent blanket (3-5 m thick) draped over the main phosphate beds.



At Wonarah, RC dust samples are routinely collected for each metre of RC drilling and placed in chip trays. The chip trays are stored and are therefore available for subsequent analysis using a hand-held XRF unit. Hand-held analysis commenced late 2011 and is ongoing. A certified yttrium standard is used to calibrate the Omega XRF device. Results to date indicate that elevated levels of yttrium are present in the uppermost phosphate strata, generally associated with the waning stage of phosphate mineralisation and within an interval that is likely to have been sub-aerially exposed based on the presence of lateritic phosphate minerals such as crandallite.

At this stage of the analytical program yttrium levels appear to be within a lower range than at Korella. 8 out of 3300 analyses have exceeded 1000 ppm Y with a peak reading of 2068 ppm. The majority of samples within the prospective stratigraphic horizon sit within the range of about 100-300 ppm Y. By comparison, the JORC resource at Korella has a grade of 960 ppm Y.

This work will be given a much lower priority going forward as there does not appear to be much yttrium at Wonarah.

#### 6.3 Environmental rehabilitation

Minemakers now has an effective partnership with a traditional owner contractor for rehabilitation work. During 2012 some previously unrehabilitated RC and diamond sites dating back to 2009, 2010 and 2011 field seasons were remediated. A total of 575 RC sites were remediated or received further attention during the year.

It is now standard operating practice to temporarily cap RC and diamond holes and then permanently cap and bury collars to 0.4m within a week of completion of drilling.

All plastics have been removed other than those for the 2012 drill season.

All diamond sumps have been filled in and it is standard practice to do this immediately on completion of drilling. There is now a bobcat on site.

During the year some sites that were used for water search drilling in 2009 were identified and some of these sites require further rehabilitation. This work will be carried out in 2013.

All damaged tracks (from the early 2011 wet season) were remediated by the rehabilitation contractor other than two badly washed out sections of tracks that will require material to be carted and dumped to prevent further erosion. This work commenced in early 2013.

Photography of drill sites and tracks is ongoing.



# 7. **REFERENCES**

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APPENDICES Appendix 1 – Drill sections



Appendix 2 – Technical Report Mineral Resource Estimation for the Wonarah Phosphate Project Northern Territory, Australia