



# **MINERAL RESOURCES LIMITED**

**QUARTERLY EXPLORATION AND  
MINING ACTIVITIES REPORT  
APRIL TO JUNE, Q4 FY2016**







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### HIGHLIGHTS

#### MINING OPERATIONS

- Record total production of 12.427 Mt and shipping of 12.148 Mt of iron ore and manganese during FY2016.
- This quarter, total ore exports of 3.057 Mt achieved, being comparable with previous quarter.
- Cost control and operational efficiencies continue to receive strong emphasis.

'000 WMTS	Q3 FY16		Q4 FY16		TOTAL FY16	
	PRODUCED	SHIPPED	PRODUCED	SHIPPED	PRODUCED	SHIPPED
UTAH POINT						
Iron Valley	1,812	1,659	1,889	1,731	7,268	6,515
Other	-	63	-	53	-	159
Manganese	-	-	-	93	-	93
Total Utah Point	1,812	1,722	1,889	1,877	7,268	6,767
KWINANA BULK TERMINAL2						
Carina/J4	1,305	1,368	1,264	1,180	5,159	5,381
Total Ore	3,117	3,090	3,153	3,057	12,427	12,148

Note: 93,085 tonnes of Manganese from stockpile was shipped from Utah Point.



## OPERATIONAL HIGHLIGHTS

### IRON VALLEY IRON ORE PROJECT

- 11.0 million tonnes of DSO produced from Iron Valley since October 2014.
- Iron Valley operations achieved mining tonnages 4% above previous quarter.
- Construction of dewatering infrastructure and the implementation of dewatering program facilitated commencement of below water table mining.

The Iron Valley project achieved a milestone, with its 11 millionth tonne of ore mined during the quarter.

Production tonnages were 4% above the previous

quarter, with 1.889 Mt of iron ore mined and 1.877 Mt shipped for the current quarter.

Crushing plant performance was consistently above the annualised target rate of 7mtpa.

The current stage of mining at Iron Valley requires access to below water table ore later this year and initial required environmental approvals were gained.

The preliminary 100 litres/second dewatering scheme has been achieved through the completion of large scale production bores, pumping, piping and monitoring infrastructure. Further approvals are expected next quarter to allow the dewatering discharge rates to increase to the full level.

*Image top left  
Iron Valley: Dewatering  
pipeline facilitating below  
water table mining*

*Image top right  
Iron Valley: Excavator  
loading high grade ore*





*Image top: J4: Hitachi 2600 digger loading a Komatsu 1500 dump truck  
Image right: J4: New mine with progressive rehabilitation underway- topsoil ready to be pushed down*

## YILGARN IRON ORE PROJECT

- The Company achieved a milestone, exporting its 20 millionth tonne of Yilgarn iron ore through Kwinana Bulk Terminal (KBT) on vessel S430 MV Elizabeth on 20 June.
- MRL exported a record 5.381 Mt of iron ore from KBT for the financial year 2016, up from 4.907 Mt in the previous year.
- Completion of mining at Carina as planned with a smooth transition to the J4 mine.
- Progress towards the environmental approvals for proposed J5 and Bungalbin East mines is continuing with the Public Environmental Review submissions lodged with EPA during the quarter.

In accordance with the regional plan, the Carina pit achieved completion with 20 Mt being mined and exported from the mine since late 2010. The last truck left the pit in April, 2016.

The new J4 mine commenced mining operations in November 2015 and increased its operational capacity, shipping approximately 1Mt in the current quarter compared with 812,000 tonnes in

the previous quarter.

The ramp up in production at J4 was according to plan.

J4 open pit (East Pit) has advance rapidly down to the 404RL in the western end and 416RL in the eastern end.

An additional PC1250 excavator and 3 x 785 dump trucks were introduced to the operating fleet with additional staffing being transferred from the remaining Carina operations.

Progressive rehabilitation of the J4 waste dump has continued; with profiling of the 1st lift southern/eastern waste dump batters and top soil placed in preparation for spreading.

An additional production bore (Bore 2) was established in June outside of the pit which will allow for an alternate water source during periods of mining around the in-pit dewatering bore (Bore 3). Mining of the material left around Bore 3 at surface began in June.

An additional infill grade control drilling program covering the west pit was completed in June.





*Carina: Rehabilitation well underway*





## CARINA IRON ORE MINE REHABILITATION

With mining at Carina now finished, MRL has an environmental commitment to complete rehabilitation of the site prior to official closure. Progressive rehabilitation started in 2014 and is close to completion

This has included the re-profiling, ripping and seeding of the Carina waste rock dump as well as many access roads, exploration pads and borrow pits around site that are no longer required. Progressive rehabilitation is already underway at parts of the J4 operation despite this operation being less than 12 months old.

## BUNGALBIN EAST AND J5 MINES

The EPA is assessing the J5 and Bungalbin East Iron Ore Project by way of a Public Environmental Review (PER).

Environmental approval for the J5 and Bungalbin East iron ore project moved a step closer with the submission of the draft Public Environmental Review (PER) to the Environmental Protection Authority on 29 April 2016.

The draft PER identifies the potential environmental impacts of the project, taking into account MRL's strategy to mitigate these in the first instance, minimise impacts during mining operations and rehabilitate the environment following mining.

The PER is expected to be open for public comment during the next quarter.





## WODGINA SITE ACQUISITION

MRL has entered into an agreement with Global Advanced Metals Pty Ltd (GAM) for the purchase of GAM's Wodgina mine assets.

The acquisition is a good fit with existing MRL Pilbara operations and is located 100 kms from Port Hedland.

The agreement, involves MRL acquiring from GAM

the Wodgina site and all associated infrastructure assets, including a 13MW gas fired power station, 387 bed camp, mineral processing assets and mineral rights other than Tantalum, which shall be retained by GAM.

The transaction is currently subject to the completion process.

*Red Gully: Empire Oil and Gas production facility located 150 km north of Perth*

## STRATEGIC SHAREHOLDING IN EMPIRE OIL AND GAS

In June, MRL made a strategic 19.36% cornerstone investment in Empire Oil and Gas NL ("Empire", ASX: EGO).

Empire is a Perth Basin onshore conventional gas and condensate producer and explorer with its Red Gully production and processing facility located 150 km north of Perth and 2kms from the Dampier to Bunbury Natural Gas pipeline to which it is connected with its own service pipeline spur. Empire also has significant undeveloped resources.

MRL's strategic investment in Empire expands on the Company's growth in power generation activities by securing access to gas supplies. It supports development of MRL's LNG power strategy whereby mine sites and heavy plant will

be progressively switched from diesel to the more economical and environmentally friendly LNG.

Energy costs from power generation and mobile equipment operation are driven by an overwhelming reliance on diesel fuels and MRL is at the forefront of transitioning mine site operations from diesel to LNG.

MRL's first installation of LNG fuelled power will be at the Mt Marion lithium project (43.1% MRL owned) where mining ore commenced during the quarter.

Subsequent to the acquisition of its Empire stake, MRL executed a binding term sheet to refinance Empire's AUD \$15.1m pre-existing debt obligation through a 2 year capital facility.





## MT MARION LITHIUM PROJECT

- MRL boosts equity in Mt Marion Project to 43.1%.
- Mt Marion's current total Indicated and Inferred Mineral Resources has been boosted 160% to 60.5 Mt at 1.36% Li<sub>2</sub>O.
- Mining commenced during the quarter with Pit 1 underway.
- Crushing Plant commissioned during the quarter.
- Civil construction activities very advanced with mining, storage and handling facilities near completion.
- Processing infrastructure construction underway.

On June 3, MRL exercised an option to purchase a further 13.1% at an agreed price lifting its equity interest in the Mt Marion Lithium Project to 43.1%.

The other project participants are Neometals Ltd, now with a reduced 13.8% interest, and Jiangxi Ganfeng Lithium Co. Ltd (one of the world's largest Lithium producers) remaining with a 43.1% interest. Ganfeng has entered into an offtake agreement for 100% of the mine's initial production.

MRL is the operator, servicing the project with a life-of-mine, build-own-operate (BOO) contract for the mining, processing and supply chain activities from mine to the customer's nominated port in China.

Construction activities are well advanced at the Mount Marion Project and progressing according to plan.

MRL's construction team is undertaking the manufacture and assembly of key on-site equipment for the processing plant.

MRL will install its first LNG Power generation system at Mt Marion. Three LNG gensets having been delivered to site and a design upgrade to incorporate a 4th and 5th LNG generator completed. LNG provides greater certainty over energy costs and produces savings of up to 40%. The site will initially be powered by a diesel fuelled power station until the LNG units are commissioned.

Shipping and storage have been negotiated with Fremantle Port securing an export pathway. Annual exports of approximately 400,000 tonnes are planned.

Subsequent to Quarter's end, the project partners took a major step in the evaluation of the patented ELi Process that could see low cost battery grade lithium products extracted from spodumene concentrate.

Results of the Feasibility Study announced to the ASX on 11 July 2016, following a positive Prefeasibility Study in 2012, have confirmed the proposed production project is technically feasible and economically viable.

The ELi Process converts spodumene concentrate into a high purity lithium chloride solution, then uses electrolysis to produce high purity lithium hydroxide and lithium carbonate, both high value products used in the lithium ion battery industry.

*Image top left:*  
Pegmatite: Five tonne specimen posed with the mining team at Mt Marion

*Image top right:* Mt Marion: Sunrise at the ROM with ore stockpile commenced



## MT MARION EXPLORATION PROGRAM

In 2015, the project partners approved an exploration drilling program to extend the Mt Marion lithium resource. During the Quarter, 19,383 metres of RC drilling and 668 metres of diamond drilling was completed, with the programme ongoing.

Mt Marion's current total Indicated and Inferred Mineral Resources have been boosted 160% with a new Mineral Resource Estimate published on 5 July 2016.

The results of the recent drilling programme has increased the Mineral Resource Estimate to Indicated and Inferred Mineral Resources of 60.5 Mt at 1.36% Li<sub>2</sub>O and 1.09% Fe, at a cut-off grade of 0.3% Li<sub>2</sub>O (Table 1), compared to 23.24 Mt at 1.39% Li<sub>2</sub>O, at a cut-off grade of 0% Li<sub>2</sub>O previously.

For more detailed information, refer to MRL's 5 July, 2016 ASX release: 'Mineral Resource Estimate increases 160% to 60.5 Mt'.

The next phase of exploration drilling continues and the Company has:

1. Identified deep seated pegmatite in Area 2W;
2. Gained a better understanding of the pegmatite on the western side of Area 1; and
3. Commenced the extension of the pegmatite in Area 4.

The partners are assessing the viability of angled diamond holes to understand the structural position of the deep seated pegmatite and complete the drill out of Area 2W.

**Table 1** Mt Marion Resource Table for 0.3% Li<sub>2</sub>O cut-off

CATEGORY (JORC, 2012)	TONNAGE (MT)	LI <sub>2</sub> O (%)	FE (%)
Indicated	26.4	1.33	1.09
Inferred	34.1	1.39	1.08
<b>Total</b>	<b>60.5</b>	<b>1.36</b>	<b>1.09</b>

*Figure may not sum due to rounding*

*Significant figures do not imply an added level of precision*





## COMMUNITY ENGAGEMENT

The Company continues to be engaged with local communities.

During the next quarter MRL will meet with the Southern Cross community to discuss MRL's plans and the benefits that the Yilgarn Iron Ore Extension Project delivers to the region. Further community information meetings will be scheduled as we progress through the approval and development process.

MRL also runs a comprehensive community sponsorship program through direct contributions to community organisations and participation in community initiatives.

In this quarter, the Company has continued with its regional Schools' Sponsorship Program in the Yilgarn region with funds being allocated to support local schools. Further support of sporting and community groups continued during the quarter.

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