



QUARTERLY ACTIVITIES REPORT: QUARTER ENDED 31 MARCH 2011

HIGHLIGHTS

- Pilbara - all VTEM data processing and image generation completed
- Access to a proprietary geological database provide excellent potential to identify significant metalliferous targets within Fortescue Group rocks
- Integrated interpretation of VTEM, aeromagnetic, radiometric and geological data sets now enabled
- Ground EM surveys (delayed by wet weather) to commence shortly

CORPORATE:

TENEMENTS

Pilbara Minerals Limited holds 100% interests in 13 exploration licences totalling 559 blocks (approximately 1,800 km²) which are located in the West Pilbara Mining District in the northwest of Western Australia.

The Company is the 100% applicant for three exploration licences in the same district and in December 2010, Application for Exploration Licence 47/2261 was recommended for granting. This application (area 41.7 km²) includes a 3.5 km section of the eastern extension of the magnetic feature associated with the Mount Oscar iron deposit.

HERITAGE AGREEMENT NEGOTIATIONS

The Company is actively negotiating Heritage Agreements with Native Title Holders Ngaluma Coproration and with Native Title Claimants Yaburara Coastal Marthudunera and Kuruma Marthudunera in order to enable ground disturbing exploration activities.

EXPLORATION ACTIVITIES

WEST PILBARA PROJECT (W.A.)

Exploration Concepts and Targets

The Company is targeting volcanogenic massive sulphide deposits (potentially Cu-Zn-Au-Ag mineralised), layered basic intrusives (potentially Ni-Cu-PGM mineralised) and magnetite-bearing sequences (potentially iron mineralised) hosted within the Achaean greenstone-metasediment sequences that underlie widespread and mostly flat-lying cover rocks of the Late Achaean Fortescue Group.

Airborne Geophysical Survey Results

As previously reported, Pilbara's geophysical consultant has identified 13 primary and high priority targets identified by the airborne magnetic and VTEM (versatile time domain electromagnetics) surveys that were flown in 2010.

The target anomalies are located at depths of <100m to ~200-300m below surface. All of the prospective areas are covered by shallow-dipping Fortescue Group volcanics and sediments with thicknesses ranging from <100m to possibly >200m.

Ground Geophysical Surveys and Drill Hole Targeting

The airborne VTEM results are highly encouraging and Pilbara plans to drill the more prospective anomalies as soon as is practicable.

The next stage is to run ground surveys using fixed loop TEM (time domain electromagnetics) to precisely define anomalies and to select specific drill targets. The initial surveys will cover four high priority VTEM anomalies located on EL7/1097 (the westernmost licence) and approximately 30 km north of Pannawonica township.

Severe "wet" conditions in the West Pilbara region have so far prevented access to the survey areas. The geophysical contractor is closely monitoring river and access conditions and it is hoped that the survey (approximately two weeks duration) will be underway in late April

Ground geophysical surveys of this type are non-ground disturbing activities in terms of Heritage Agreements. Following completion of Heritage Agreements and any required heritage surveys, drilling should commence mid 2011.

Geophysical Data Processing,

During the quarter, Southern Geoscience, the Company's consultant geophysicists, carried out post-acquisition processing and enhancement of the final VTEM data which has resulted in the production of extensive albums of georeferenced plans and profile images. These enhanced VTEM compilations will be interpreted in conjunction with the Company's previously compiled regional magnetic and radiometric datasets, and with proprietary geological data.

New Target Concepts and Geological - Geophysical Interpretations

The Company is arranging to access proprietary un-published geological information relating to the Fortescue Group rocks of the Pilbara region. Certain of the concepts arising from this data have potential to generate major base and precious metal exploration targets within the Fortescue Group.

It is Pilbara's view that these new geological insights regarding the Fortescue Group sequence, when integrated with the Company's recently flown multi-source geophysical survey data, have excellent potential to generate a second set of economically significant base and precious metal exploration targets within the existing tenement package.

Thus, in addition to its initial concept of exploring for massive sulphide bodies in the Achaean basement sequence, Pilbara intends to utilise the same geophysical data to target metalliferous sulphide mineralisation in major igneous complexes within the overlying Fortescue Group sequence.

SELUMA IRON SANDS PROJECT (INDONESIA)

Following a period of due diligence investigations, during March the Company declined to exercise the Seluma option. Negative factors included deleterious constituents, resource potential less than initially surmised, and landowner and title issues.

Pilbara remains in touch with the Seluma vendors who have potentially offered an option over a substantially larger iron sand deposit elsewhere in Indonesian and which includes a pilot-scale separation plant and a modestly-size concentrate stockpile.

NEW PROJECTS

Pilbara's principal objective is to acquire an interest in a "company maker" deposit having good prospects for near-term development. This would support and complement the Company's longer time-frame exploration programmes in the Pilbara Region.

Pilbara is actively seeking such projects and continues to receive and appraise a range of offerings from a variety of sources both local and international.

In mid January, the Company resolved not to acquire an interest in a private Indonesian company claiming certain rights to gold prospects in North Sulawesi, Indonesia. A consultant geologist had visited the area in early January and carried out rock chip sampling; the geological report and assays were not encouraging and ownership of the critical title was not as represented by the vendor.

Following a consultant's field review in late January, the Company declined an offer to option a potential copper project in Chile.

At this time, Pilbara's principal commodity focus is on base metals, particularly copper, and gold-silver. Regions of significant interest include Western Australia, South America and southern Africa.



Gavan Farley

Director

The information pertaining to the technical content of this announcement has been compiled by Robert (Bob) Adamson, B.Sc., M.Sc. (Hons Geol), MAusIMM, CP (Geo). Mr Adamson is the principal of Robert G Adamson Consultants and a director of Pilbara Minerals Limited and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the December 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (The JORC Code). Mr. Adamson consents to the inclusion in this report of the matters based on his information in the form and context in which it appears