

INDEPENDENT GEOLOGIST'S REPORT

ON THE MINERAL ASSETS OF

PUBLIC HOLDINGS (AUSTRALIA) LIMITED

28 FEBRUARY 2018





ravensgate.com.au

This page has been left intentionally blank



February 2018

The Directors Public Holdings (Australia) Limited Level 1, 123 Whitehorse Road, Balwyn, Victoria, 3103

Dear Sirs

Independent Geologist's Report on the proposed Mineral Assets of Public Holdings (Australia) Limited

Ravensgate International Pty Ltd ATF Ravensgate Unit Trust (Ravensgate) has been commissioned by Public Holdings (Australia) Limited (PHA) (to be renamed 'First AU Limited') to provide an Independent Geologist's Report on mineral assets PHA proposes to acquire. PHA is an Australian public company with its registered office in Victoria. Ravensgate understands that PHA's securities are presently suspended from trading on the Australian Securities Exchange (ASX) and that PHA is seeking to undertake a transaction that will see its securities re-listed on the ASX via the acquisition of the mineral assets, an associated capital raising and re-compliance by PHA with Chapters 1 and 2 of the ASX Listing Rules (Transaction), and shareholders or potential investors may rely upon this report. This report is to be included in both a notice of meeting (Notice) and a prospectus (Prospectus) to be lodged by PHA with the ASX and Australian Securities and Investments Commission (ASIC) respectively. The funds raised pursuant to the Prospectus together with existing cash resources will be used for the purpose of acquisition, exploration, development and evaluation of the proposed mineral assets.

Following completion of the Transaction, the Gimlet, Emu Creek and Talga projects in Western Australia will comprise the mineral assets of PHA. A list of the tenements which will comprise these mineral assets is detailed in Table 2 of this report.

Ravensgate has completed a desktop review of the projects which involved compiling and reviewing the project's technical aspects, including previous work, regional geological setting, local geology, mineralisation, exploration potential and planned exploration. The objectives of this report are to provide a geological overview of each exploration project covering pertinent aspects in detail appropriate to the strategic importance of the project assigned by PHA.

This report is based on information provided by PHA, which includes technical reports by consultants, previous tenement holders and other relevant published and unpublished data for the project areas. A listing of the principal sources of information is included in this report. Ravensgate did not carry out a site visit to the project areas. Ravensgate is satisfied that there is sufficient current information available to allow an informed appraisal to be made. Ravensgate is of the opinion that no significant additional benefit would have been gained through a site visit to the project areas given their location and stage of development. Ravensgate has endeavoured, by making reasonable enquiries, to confirm the authenticity, accuracy and completeness of the technical data upon which this report is based. PHA has been given a final draft of this report and thereby given an opportunity to identify any material errors or omissions in it. Ravensgate has not verified the status of tenements or reviewed any issues regarding ownership, agreements or access pertaining to the tenements, which are being addressed in the Prospectus.

This report was prepared by Mr Neal Leggo (Principal Geologist) of Ravensgate in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code 2012 Edition) and the Code for the Technical Assessment and Valuation of Mineral and Petroleum Assets and Securities for Independent Expert Reports (VALMIN Code 2015 Edition). The report has also been prepared in accordance with ASIC Regulatory Guides 111 (Contents of Expert Reports) and 112 (Independence of Experts). Mr Leggo is a Member of The Australian Institute of Geoscientists. Mr Leggo is a full-time employee of Ravensgate and has sufficient experience which is relevant to the styles of



mineralisation and types of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code 2012 Edition.

The information in this report that relates to Technical Assessment of Mineral Assets reflects information compiled and conclusions derived by Mr Leggo. Mr Leggo has sufficient experience relevant to the Technical Assessment of the Mineral Assets under consideration and to the activity which he is undertaking to qualify as a Specialist as defined in the VALMIN Code 2015 Edition. Mr Leggo consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

Consent has been sought from PHA's representatives to include technical information and opinions expressed by them. No other entities referred to in this report have consented to the inclusion of any information or opinions and have only been referred to in the context of reporting any relevant activities.

Ravensgate and its employees are not, nor intend to be, directors, officers or employees of PHA and have no material interest in any of the projects or PHA. The relationship with PHA is solely one of professional association between client and independent consultant. The review work and this report are prepared in return for professional fees based upon agreed commercial rates and the payment of these fees is in no way contingent on the results of this Report.

In consideration of the definition provided in the VALMIN Code, the mineral assets of PHA are classified as Pre-Development Mineral Assets. The mineral properties are considered prospective, although subject to varying degrees of risk, to warrant further exploration and development of their economic potential consistent with the programs proposed by PHA.

Yours faithfully



Neal Leggo For and on behalf of: RAVENSGATE



INDEPENDENT GEOLOGIST'S REPORT ON THE MINERAL ASSETS OF PUBLIC HOLDINGS (AUSTRALIA) LIMITED

Prepared by RAVENSGATE on behalf of:

Public Holdings (Australia) Limited

Author(s):	Neal Leggo	Principal Geologist	BSc (Hons) Geology, MAIG, MSEG
Reviewer:	Albert G Thamm	Principal Consultant	MSc, FAusIMM (CP Management)
Date:	28 February 2018		
Copies:	Public Holdings (Australia) Limited	(2)	
	Ravensgate	(1)	
Project No: File Name:	PUB001 PUB001_IGR_2018_03_22_FINAL.	DOCX	



Neal Leggo For and on behalf of: RAVENSGATE

This report has been commissioned from and prepared by Ravensgate for the exclusive use of Public Holdings (Australia) Limited. Each statement or opinion in this report is provided in response to a specific request by Public Holdings (Australia) Limited to provide that statement or opinion. Each such statement or opinion is made by Ravensgate in good faith and in the belief that it is not false or misleading. Each statement or opinion contained within this report is based on information and data supplied by Public Holdings (Australia) Limited to Ravensgate, or otherwise obtained from public searches conducted by Ravensgate for the purposes of this report.



TABLE OF CONTENTS

EXE	CUTI	VE SUMMARY
1.	INTR	ODUCTION
	1.1	Terms of Reference
	1.2	Tenement Status Verification
	1.3	Disclaimer8
	1.4	Qualifications, Experience and Independence8
	1.5	Specialist Declarations and Consent9
	1.6	Competent Person Statement
	1.7	Principle Sources of Information
	1.8	Background Information
2.	GIML	ET PROJECT
	2.1	Location
	2.2	Tenure
	2.3	Regional Geology13
		2.3.1 Yilgarn Craton
		2.3.2 Regional Geology - Gimlet Area 13
	2.4	Local Geology and Mineralisation
	2.5	Exploration History
	2.6	Current Exploration
	2.7	Mineral Resources
	2.8	Nearby Deposits
	2.9	Exploration Potential and Targets
	2.10	Exploration Strategy - Gimlet Project20
3.	EMU	CREEK PROJECT
	3.1	Location
	3.2	Tenure
	3.3	Regional Geology213.3.1Regional Mineralisation23
	3.4	Local Geology and Mineralisation
	3.5	Exploration History
	3.6	Current Exploration
	3.7	Mineral Resources
	3.8	Nearby Mines and Deposits
		3.8.1 Base Metal Deposits
		3.8.2 Gold Deposits
	3.9	Exploration Potential and Targets
		3.9.1 Volcanogenic Massive Sulphide
		3.9.2 Archaean Conglomerate Gold
		31.3.3 Metal Delector Geochemistry



	3.10	0 Exploration Strategy - Emu Creek Project						
4.	TALO	LGA PROJECT						
	4.1	Location	33					
	4.2	Tenure	33					
	4.3	Regional Geology	33					
		4.3.1 Regional Geology - Talga Area						
	4.4	Local Geology and Mineralisation4.4.1Mineralisation	33					
	4.5	Exploration History	35					
	4.6	Current Exploration	38					
	4.7	Mineral Resources	38					
	4.8	Nearby Mines and Deposits	38					
	4.9	Exploration Potential and Targets	39					
		4.9.1 Cord Base Metal Prospect	39					
		4.9.2 Razorback Gold Prospect	41					
		4.9.3 Lithium Exploration	44					
		4.9.4 Minor Prospects	45					
	4.10	Exploration Strategy - Talga Project	46					
5.	PLAN	NNED EXPLORATION EXPENDITURE	47					
6.	REFE	ERENCES	48					
	6.1	WAMEX Open File Reports - Gimlet Project	50					
	6.2	WAMEX Open File Reports - Emu Creek Project	50					
	6.3	WAMEX Open File Reports - Talga Project	51					
7.	LIST	OF ABBREVIATIONS	52					
8.	GLOS	SSARY	54					

LIST OF TABLES

Table 1	Summary of Qualifications, Professional Memberships and Responsibilities	9
Table 2	Tenement Schedule	11
Table 3	Cord Prospect - Significant Historical Drill Intersections	36
Table 4	Razorback Gold Prospect - Significant Historical Drill Intersections	37
Table 5	Exploration Budget for \$7.5M Raising	47
Table 6	Exploration Budget for \$5.5M Raising	47



LIST OF FIGURES

Locality Map of PHA Projects	11
Gimlet Project Tenement Location Map	12
Evolving Understanding of the Yilgarn Craton	13
Geochemical Map of the Gimlet Tenements Highlighting the ESZ Area	15
Cross Section of Intermin's Jacques Find Gold Prospect - Illustrating the Target Geometry a Gimlet	t 17
Composite Cross Section of ESZ Regolith Anomaly Showing Historic Drill Holes and Illustrating Geometry of Supergene Gold Blanket	18
Aeromagnetic Image Gimlet Project with Anomalous Drill Intersections	19
Plan of Historic Drill Collars - East Gimlet Prospect	20
Regional Geological Map of the East Pilbara Terrane	22
Gold and Base Metal Mineralisation in the East Pilbara	24
Regional Geology of the Emu Creek Area showing Major Deposits	25
Interpretive Geology Plan of the Emu Creek Project	26
Hyperspectral Image with the Interpreted Hydrothermal Cells Outlined	28
Layout of Proposed VTEM Airborne Geophysical Survey over the Emu Creek Project	32
Generalised Stratigraphy of the Pilbara Supergroup	34
Geological Map of the Talga Tenements	35
Map of the Cord Prospect Showing Geology Drilling and Significant Intersections	40
Cross Section Cord Prospect	41
Photograph of the Razorback Prospect (from above looking east)	42
Map of the Razorback Prospect	42
Map of the Talga King Shear showing Rock Chip Results	43
Map of Razorback Prospect showing RC and Aircore Drilling	44
Cross Section of Razorback Prospect - 808,780E	44
	Locality Map of PHA Projects

LIST OF APPENDICES

APPENDIX 1	57
GEOCHEMICAL SAMPLING RESULTS - GREAT SANDY PTY LTD	57
APPENDIX 2	59
JORC CODE TABLE 1 - GEOCHEMICAL SAMPLING - GREAT SANDY PTY LTD	59



EXECUTIVE SUMMARY

Ravensgate International Pty Ltd ATF Ravensgate Unit Trust (Ravensgate) has been commissioned by Public Holdings (Australia) Limited (PHA) (to be renamed 'First AU Limited) to provide an Independent Geologist's Report on mineral assets PHA proposes to acquire. Ravensgate understands that PHA is undertaking a transaction to re-comply with Chapters 1 and 2 of the ASX Listing Rules and that this report is to be included in both a notice of meeting (Notice) and a prospectus (Prospectus) to be lodged by PHA with the ASX and ASIC respectively and may be relied upon by shareholders and potential investors.

Following completion of the Transaction, the Gimlet, Emu Creek and Talga projects in Western Australia will comprise the mineral assets of PHA. A map showing the location of the projects is presented in Figure 1, and a list of the tenements which will comprise the mineral assets is detailed in Table 2 of this report. No Mineral Resources or Exploration Targets have been reported for the projects.

Gimlet Project

The Gimlet project consists of one exploration licence with an area of 9.6km² located 15km northwest of Kalgoorlie. Geologically it lies in the Kalgoorlie Terrane of the Eastern Goldfields Superterrane of the Yilgarn Craton, a highly mineralised granite-greenstone terrane hosting world-class deposits of gold and nickel. The tenement holds significant potential for the discovery of orogenic lode gold mineralisation. The entire project area is blanketed by young sediments, under which a regolith profile of weathered Archaean lithologies is present within which extensive gold anomalies are preserved. A protracted history of previous exploration at Gimlet has delineated a 3.6km long, by up to 400m wide, north-northwest trending +100ppb gold anomaly named the Eastern Shear Zone. The gold in this extensive but discrete supergene anomaly is interpreted to be sourced from nearby underlying and possibly steeply dipping quartz lodes. This interpretation is supported by the results of detailed drilling at the Teal, Peyes Farm and Jacques gold deposits by Intermin Resources located just a few kilometres along strike to the southeast of the Gimlet tenement. Intermin commenced mining the Teal deposit in late 2016 with ore processed 22km north at the Paddington mill.

Since tenement grant in November 2016, exploration has consisted of research into historic exploration, assembling a database of existing exploration results and geological interpretation. Planned exploration programs for the Gimlet project are: compilation of a comprehensive digital database, re-interpretation of all historical drill results using 3D geological modelling software, aircore and RC drill programs targeting steeply dipping high grade gold lodes beneath the extensive Eastern Shear Zone and aircore and RC drill programs targeting the interpreted Peyes Farm Shear which runs into the Gimlet tenement 500m north of the operating Teal mine.

Emu Creek Project

The Emu Creek project is located 23km northwest of Nullagine in the East Pilbara region and consists of two granted exploration licences with a total area of 120.9km². It is positioned in a prospective location in terms of a regional geological and mineralisation setting, occurring within the East Pilbara Terrane which hosts several significant gold and base metal deposits. The tenements also cover areas of lowermost Fortescue Group rocks which host significant gold mineralisation at Beatons Creek 15kms to the south. Ravensgate considers the tenements primarily prospective for volcanogenic massive sulphide (VMS) style copper-gold-lead-zinc, for conglomerate hosted gold and also orogenic gold mineralisation.

Much of the project is underlain by the Kelly Greenstone Belt which consists of a sequence of mafic and felsic volcanic rocks with associated porphyry intrusive units. Previous explorers of this area have noted that the volcanic and porphyry assemblage outcropping represents a former active, near-vent environment, suitable for hosting VMS mineralisation, with intense alteration of the volcanic units mapped over a wide area. Mining of the Copper Hills deposit (not located on the project area) between 1952-1963 produced 15,730t of cupreous ore with a grade of 13% Cu. A number of small copper mines have been worked in the past with numerous smaller copper occurrences mapped by various explorers. At the Vuggy Hill prospect soil geochemistry identified two northeast trending gold anomalies 600m and 350m in length. RC drilling by Great Southern Mines in 1995 intersected broad zones of weak alteration and base metal anomalism and narrow zones of gold anomalism. Recent work has included acquisition and interpretation of hyperspectral and Landsat images of the entire project area. This outlined the location of large areas of minerals associated with hydrothermal alteration within the mafic and felsic rocks in the centre and south of the project and to the east and south of the Copper Cliff prospect. This is interpreted to indicate the former presence of two large hydrothermal cells which crosscut both the Euro Basalt and Wyman Formation volcanic units. It is well documented in the geological literature that such hydrothermal cells are spatially associated with VMS deposits and vein-style deposits.



Geophysics normally plays an important role in the exploration and discovery of base metal deposits, and it noteworthy that no geophysical surveys have been conducted on the tenements by previous explorers. There is potential for discovery of further base metal targets through regional geophysical surveys over prospective lithologies. Ravensgate considers that airborne electromagnetic surveys would be a most effective exploration tool at Emu Creek.

Palaeoplacer style gold mineralisation associated with the conglomerates of the Hardey Formation provide an exciting new exploration opportunity for the Emu Creek project. An extensive area of the Fortescue Group including conglomerates and coarse clastic sediments of the Hardey Formation occur along the eastern boundary. It appears that no previous exploration has targeted this possibility.

Novo Resources Beatons Creek project, located 15kms south of the Emu Creek project, is nearing completion of a prefeasibility study. Beatons Creek is a palaeoplacer gold deposit in Archaean aged sediments and its discovery has sparked a very significant increase in gold exploration and prospecting across the Pilbara with the resulting recognition of similar mineralisation in conglomerates of the lowermost Fortescue Group across the basin. Mineral Resources have been estimated for Beatons Creek of 6.4Mt @ 2.7g/t Au containing 560,000oz Au (combined Measured, Indicated ad Inferred). At the nearby Nullagine Gold Project, Millennium Minerals are currently mining a series of oxide gold deposits across 40km strike of the Mosquito Creek Formation.

Planned exploration programs for the Emu Creek project include: mapping, stream sediment sampling, panning and metal detecting in areas of Hardey Formation conglomerates; a VTEM airborne electromagnetic survey over the VMS prospective area with complimentary geological mapping and geochemical sampling.

Talga Project

The Talga project is also located in the East Pilbara region, 30km northeast of Marble Bar and 80km north of the Emu Creek project. It consists of five granted exploration licences covering an area of 207.9km2. The tenements cover an area of the Gorge Creek Group and older Warrawoona Group where metamorphosed mafic, felsic, ultramafic rocks and cherts occupy the arcuate eastern portion of the Marble Bar Greenstone Belt.

The tenements hold potential for the discovery of orogenic lode gold, VMS copper-gold, iron ore and lithium deposits. The Talga project occurs within one of the most prospective and mineralised Archaean greenstone terranes in the Pilbara, with the neighbouring Bamboo Creek deposits to the east and the Klondyke and Copenhagen gold deposits to the south all hosted in greenstones of the Warrawoona Group. Historic exploration has identified prospective geological settings with widespread gold and base metal geochemical anomalism, and has delineated a number of advanced prospects. There exist significant opportunities to build on earlier work at these prospects and also to undertake greenfields exploration particularly for lithium.

The Cord base metal prospect consists of series of mineralised gossans located towards the top of the Warrawoona Group. These have been interpreted to represent oxidised massive and/or disseminated VMS-style gold/base metal mineralisation by all previous explorers. A 13.5km strike length of the mineralised horizon has been identified through a combination of geological mapping, prospecting, rock-chip sampling and soil geochemistry, delineating a number of smaller prospects. Only about 1.8km has been drill tested and that only to a shallow depth. A recent geophysical review of existing surface and down-hole EM data review has recommended more detailed geological mapping preceding a re-interpretation of the EM data involving 3D inversion modelling.

The Razorback prospect represents an orogenic lode gold target, with mineralisation associated with multiple sulphidic breccia zones in an extensive chert unit which crops out as a prominent ridge with a length of 4km exhibiting anomalous gold-in-soil geochemistry. The 49 aircore holes drilled at the Razorback prospect, returned at least one intercept above 1g/t Au in 23 holes. Three angled RC drill holes all returned encouraging intersections. The majority of the drilling occurs within a 700m strike length, leaving over 3km of strike untested by drilling. Recent field work has identified a 300m long, 1-3m wide, auriferous quartz sulphide reef along the north face of the Razorback ridge.

The southern portion of the Talga tenements lies over the Mount Edgar Granite Batholith and hold significant lithium prospectivity, yet no previous holders have explored for lithium. Lithium is very often associated with pegmatitic tin mineralisation, having similar chemistry and mineralising mechanisms to tin. Alluvial tin is recorded from streams draining the Mount Edgar Granite's contact with the enclosing greenstone belt. The Moolyella tin field, one of the most prolific historical tin producing districts of the Pilbara, is located 20km south of the project.



Several kilometres east of Talga, the recently mined Spinifex Ridge iron ore deposit is hosted in banded iron formation (BIF) of the Nimingarra Iron Formation. Equivalents of this formation extend into the Talga project area and exploration in 2013 discovered the Eginbah iron prospect where outcropping iron ore is associated with hematite rich BIF units. Eight RC holes confirmed sub-surface haematite mineralisation, however PHA have indicated no iron ore exploration is planned.

Planned exploration programs for the Talga project include: Razorback and minor gold prospects: detailed structural mapping of the prospect area, geological mapping of the surrounding area, rock and soil sampling, and RC drilling of priority targets defined by previous shallow drilling and surface geochemical sampling. Cord VMS prospect: detailed structural mapping to determine the structural and geological setting of the multiple mineralised horizons along the 15km strike within the prospect area, reinterpretation of all existing data sets, and RC drilling to test priority targets defined by the reinterpretation. Lithium: test the Mount Edgar Granite area with a stream sediment sampling program and extensive geological mapping to locate and sample all pegmatites.

Planned Expenditure

PHA has provided to Ravensgate their proposed exploration expenditure for the period following the capital raising until 31 December 2019. For a raising of \$7.5M, PHA have allocated \$4,501,216 to direct exploration expenditure as detailed in Table 5 of Section 5. In the event of a lower raising of \$5.5M, PHA will allocate \$2,874,008 to direct exploration expenditure as detailed in Table 6. PHA's intended spread of expenditure across the three project areas is detailed in these tables.

Ravensgate considers that the exploration strategy and programs proposed by PHA are consistent with the mineral potential and status of the projects. The proposed expenditure is sufficient to meet the costs of the exploration programs proposed and to meet statutory tenement expenditure requirements.



1. INTRODUCTION

1.1 Terms of Reference

Ravensgate has been commissioned by PHA to provide an Independent Geologist's Report (IGR) on PHA's proposed mineral assets. This report has been prepared in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code 2012 Edition) and the Australasian Code for Public Reporting of Technical Assessments and Valuations of Mineral Assets for Independent Expert Reports (VALMIN Code 2015 Edition). The report has also been prepared in accordance with Australian Securities and Investments Commission (ASIC) Regulatory Guides 111 (Contents of Expert Reports) and 112 (Independence of Experts).

1.2 Tenement Status Verification

PHA has commissioned independent legal advice regarding the status of the tenements that are referred to in this report (as set out in the Tenement Schedule) underlying the mineral assets. Ravensgate has not reviewed the material contracts relating to the proposed mineral assets of PHA and is not qualified to make legal representations in this regard. Specific details regarding the tenements and any material agreements pertaining to them are detailed in the solicitor's report in the Prospectus.

1.3 Disclaimer

The authors of this report and Ravensgate are independent of PHA, its directors, senior management and advisors and have no economic or beneficial interest (present or contingent) in any of the mineral assets being reported on. Ravensgate is remunerated for this report by way of a professional fee determined in accordance with a standard schedule of commercial rates, which is calculated based on time charges for review work carried out, and is not contingent on the outcome of this report. Fees arising from the preparation of this report are listed in the Prospectus.

The relationship with PHA is solely one of professional association between client and independent consultant. None of the individuals employed or contracted by Ravensgate are officers, employees or proposed officers of PHA or any group, holding or associated companies of PHA.

The report has been prepared in compliance with the Corporations Act and ASIC Regulatory Guides 111 and 112 with respect to Ravensgate's independence as experts. Ravensgate regards RG112.31 to be in compliance whereby there are no business or professional relationships or interests which would affect the expert's ability to present an unbiased opinion within this report.

This Independent Geologist's Report has been compiled based on information available up to and including the date of this report, any statements and opinions are based on this date and could alter over time depending on exploration results, commodity prices and other relevant market factors.

1.4 Qualifications, Experience and Independence

Ravensgate has been consulting to the mining industry since 1997 with its services that include valuations, independent technical reporting, exploration management and Resource estimation. Our capabilities include reporting for all the major securities exchanges and encompass a diverse variety of commodity types. A summary of the Ravensgate personnel, their qualifications, professional memberships and responsibilities pertaining to this report are summarised in Table 1.



Table 1 Summary of Qualifications, Professional Memberships and Responsibilities

Name	Qualifications	Professional Memberships	Sections Responsible
Neal Leggo	BSc(Hons)	MAIG, MSEG	All Sections
Albert Thamm	MSc	FAusIMM	Peer Review All Sections

Author: Neal Leggo, Principal Geologist BSc (Hons) Geology, MAIG, MSEG.

Neal Leggo has over 30 years' experience in minerals geology including senior management, consulting, exploration, development, underground mining and open pit mining. He has extensive experience with a wide variety of commodities across numerous geological terrains within the Asia-Pacific region. Prior to joining Ravensgate, Neal worked for FMG leading a large field team undertaking fast-track exploration, delineation and feasibility study of a major new iron ore discovery in the Pilbara of WA. Previous to this Neal was Exploration Manager at Crescent Gold where he led a successful exploration team and also managed feasibility study and development work on seven gold deposits in preparation for mining. At Hatch he undertook numerous geological consulting assignments included scoping, prefeasibility and review studies, geological audit and due diligence. At BHP he modelled mineral resources including the Cannington, Mt Whaleback and Yandi world-class deposits. Previous to this, Neal worked 8 years in Mt Isa for MIM where roles included chief geologist for the Hilton underground lead zinc mine and exploration manager for Isa District. During the 1980s he worked as a field geologist across northern Australia on a wide variety of exploration projects and mines. Neal offers extensive knowledge of available geological, geophysical, geochemical and exploration techniques and methodologies, combined with strong experience in feasibility study, development and mining of mineral deposits. Neal holds the relevant gualifications and professional associations required by the ASX, JORC and VALMIN Codes in Australia to qualify as a Competent Person as defined in the JORC Code.

Peer Reviewer: Albert G Thamm, Principal Consultant, MSc, FAusIMM (CP Management).

Mr Thamm is an executive geologist with 30 years' industry experience including senior roles at audit and project reviews. Mr Thamm is a CP/QP for iron ore, diamonds, graphite, lithium, base metals, uranium and gold. This includes project review for Rio Tinto, One Steel, China Metallurgical Railway Corporation and Iron Road Ltd. Mr Thamm holds the relevant qualifications and experience as well as professional associations required by the ASX, JORC and VALMIN Codes in Australia to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. He is a Qualified Person under the rules and requirements of the Canadian Reporting Instrument NI43-101. Sam is a VALMIN Practitioner with the minimum five years valuation experience in conjunction with relevant technical assessment and geology experience to meet VALMIN 2015 compliance as a Specialist.

1.5 Specialist Declarations and Consent

The information in this report that relates to the Technical Assessment of Mineral Assets reflects information compiled and conclusions derived by Mr Neal Leggo, who is a Member of the Australian Institute of Geoscientists. Mr Leggo is not an employee of PHA. Mr Leggo has sufficient experience relevant to the Technical Assessment of the Mineral Assets under consideration and to the activity which he is undertaking to qualify as a Specialist as defined in the JORC Code (2012 Edition). Mr Leggo consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

Consent has been sought from PHA's representatives to include technical information and opinions expressed by them. No other entities referred to in this report have consented to the inclusion of any information or opinions and have only been referred to in the context of reporting any relevant activities.



1.6 Competent Person Statement

The information in this report that relates to Exploration Data is based on information compiled by Mr Brian Richardson a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy. Mr Richardson is the exploration manager of Great Sandy Pty Ltd and may receive consideration securities as a nominee of the vendors to the transaction to be undertaken by PHA. Mr Richardson has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the JORC Code (2012 edition). Mr Richardson consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

1.7 Principle Sources of Information

The principle sources of information used to compile this report comprise technical reports and data variously compiled by PHA, the vendors of the mineral assets and their respective partners or consultants, publicly available information such as ASX releases, government reports and discussions with PHA and vendor technical and corporate management personnel. A listing of the principal sources of information are included in the references attached to this report.

Figures used in this report have been prepared either by Ravensgate or by PHA with appropriate direction, input and review from Ravensgate.

Ravensgate did not carry out a site visit to the project areas. Ravensgate is satisfied that there is sufficient current information available to allow an informed appraisal to be made. Ravensgate is of the opinion that no significant additional benefit would have been gained through a site visit to the projects given their stage of development.

Ravensgate has endeavoured, by making all reasonable enquiries, to confirm the authenticity, accuracy and completeness of the technical data upon which this report is based. A final draft of this report was also provided to PHA, prior to finalisation by Ravensgate, requesting that PHA identify any material errors or omissions prior to its final submission. Ravensgate does not accept responsibility for any errors or omissions in the data and information upon which the opinions and conclusions in this report are based, and does not accept any consequential liability arising from commercial decisions or actions resulting from errors or omissions in that data or information.

1.8 Background Information

The projects discussed in this report are located in Western Australia. A locality map of the projects is presented in Figure 1 below. A summary of the tenement details are listed in Table 2 below. References, a glossary of terms and a list of abbreviations are included at the end of this report.







Project	Tenement ID	Registered Holder	No. Block s	Area (km²)	Status	End Date	Expenditure Commitment
Gimlet	E26/174	Drillabit Pty Ltd	5	9.58	Granted	6/11/21	\$15,000
Emu Creek	E46/732	Giralia Resources Pty Ltd	25	79.58	Granted	31/1/18	\$75,000
Emu Creek	E46/1066	Atlas Iron Limited	13	41.29	Granted	6/9/20	\$20,000
Talga	E45/3679	Great Sandy Pty Ltd	40	127.94	Granted	11/6/22	\$80,000
Talga	E45/3857	Great Sandy Pty Ltd	7	22.39	Granted	10/02/18	\$30,000
Talga	EL45/4136	Great Sandy Pty Ltd	3	9.60	Granted	15/9/18	\$20,000
Talga	EL45/4137	Great Sandy Pty Ltd	12	38.39	Granted	15/9/18	\$30,000
Talga	EL45/4615	Great Sandy Pty Ltd	3	9.60	Granted	2/5/21	\$15,000

Notes: Specific details regarding the tenements and any material agreements pertaining to them are available in the Solicitor's Report within the Prospectus.



2. GIMLET PROJECT

2.1 Location

The Gimlet project is centred 15km northwest of Kalgoorlie in Western Australia (Figure 1). The main land use in the area is mining. The project can be accessed from Kalgoorlie via the Goldfields Highway then mine roads. Access within the project area is through flat terrain and open vegetation using mining and exploration tracks. Being close to Kalgoorlie, infrastructure for support of exploration and mining is excellent. A number of gold processing plants are operating in the area including Paddington, Kalgoorlie KCGM and Kanowna Belle (Figure 2).

2.2 Tenure

The project consists of one exploration licence (E26/174) with a total area of approximately 9.6km^2 . The licence details are listed in Table 2 and its location is shown in Figure 2. The project site lies within the traditional lands of the Widji people with whom Native Title agreements are being developed.







2.3 Regional Geology

2.3.1 Yilgarn Craton

The project is located in the Paleo- to Neoarchaean Yilgarn Craton (Block) of Western Australia, a highly mineralised granite-greenstone terrane with world-class deposits of gold and nickel, and significant iron and volcanic massive sulphide (VMS) base-metal deposits (Wyche *et al.*, 2012). The earliest widely used subdivision of the Yilgarn Craton (Gee *et al.*, 1981) contained four components - the Eastern Goldfields (containing the Norseman - Wiluna Belt), Southern Cross and Murchison Provinces; and the Western Gneiss Terrane (sub-divided into Northwest and Southwest). According to Wyche (2007), the relationships between these regions were enigmatic, with the boundaries not strictly based on observed geological features (Figure 3A).

Cassidy *et al.*, (2006) divided the Yilgarn Craton into terranes defined on the basis of distinct sedimentary and magmatic associations, geochemistry and ages of volcanism. The Narryer (formerly the Northwest Gneiss) and South West terranes in the west are dominated by granite and granitic gneiss with minor supracrustal greenstone inliers, whereas the Youanmi Terrane and the Eastern Goldfields Superterrane contain substantial greenstone belts separated by granite and granitic gneiss (Wyche *et al.*, 2012). Subsequent revision has further subdivided the Eastern Goldfields Superterrane into the Kalgoorlie, Kurnalpi, Burtville and Yamarna terranes (Figure 3B) (Pawley *et al.*, 2012).



Figure 3 Evolving Understanding of the Yilgarn Craton

(Modified from (A) Gee et al., 1981 and (B) Pawley et al., 2012)

The Ida Fault (B), which marks the boundary between the western Yilgarn Craton and the Eastern Goldfields Superterrane, is a major structure that extends to the base of the crust (Drummond *et al.*, 2000). Greenstone stratigraphies in the western Yilgarn differ from those in the Eastern Goldfields Superterrane in such things as the relative abundance of lithologies (especially komatiite and banded iron formation) suggesting a substantially different depositional regime. According to Wyche (2007), the greenstones in much of the western Yilgarn are typically older than those in the Eastern Goldfields Superterrane. The major mafic dominated successions in the western Yilgarn, date back to 3.0 Ga (e.g. Pidgeon and Wilde, 1990), whereas the mafic and felsic successions of the Eastern Goldfields Superterrane were largely deposited after 2.8 Ga (e.g. Barley *et al.*, 2003).

2.3.2 Regional Geology - Gimlet Area

The Gimlet project is located in the Kalgoorlie Terrane of the Eastern Goldfields Superterrane. The Kalgoorlie Terrane has been further divided into structurally bound domains, which preserve



dismembered and thrust-repeated parts of the stratigraphy. The Gimlet Project occurs between the Zulieka and Abattoir Shears, within the Ora Banda Domain, which is characterised by felsic volcanics/volcaniclastic and sedimentary rocks of lower to middle greenschist metamorphic grade.

The thickest succession in the Kalgoorlie Terrane is the Black Flag Beds and these underlie much of the Gimlet tenement. They lie stratigraphically above the Paringa Basalt and are locally intruded by thick mafic sills (e.g. Golden Mile Dolerite) and felsic (andesite to rhyolite) porphyries and granitoids. The Black Flag Beds are dominated by fine grained sediments of the turbidite facies, with local thick breccia and conglomerate and rare lava facies of dacite-rhyolite. Deposition was entirely within a deep-water environment (Pawley *et al.*, 2012).

Several phases of compressive deformation have affected the Kalgoorlie Terrane: D1 - south over north thrust stacking and recumbent folding; D2 - transpressive regime involving northnorthwesterly striking upright folding; D3 - transcurrent faulting and associated en échelon folding; and D4 - continued shortening. The present structural configuration of the Kalgoorlie Terrane is dominated by north-northwesterly trending faults, anastomosing shear zones, regional folds, and elongate granitoid batholiths. Terrane and domains are bounded by regional structures which show evidence for prolonged and complex movement histories. These domainand terrane-boundary faults are interpreted as original compressive structures, but many were reactivated during post-D3 extension. The Zuleika Shear (11km west of the Gimlet Project) is defined by a complex zone of attenuation and stratigraphic mismatch that in places is over 1km wide. The eastern boundary of the Ora Banda domain is along the Bardoc Tectonic Zone to the north of the project, however this branches southwards to become the Abattoir and Boorara Shears. The Bardoc-Boorara shear zone, locally up to 3km wide, consists of many interleaved and attenuated slices of various greenstone lithologies, commonly very strongly foliated. The Abattoir Shear (2km east of the Gimlet Project) lies west of a narrow, sheared sequence of mafic and ultramafic rocks. These greenstones overlie, and are similar to, the sequence in the Kambalda Domain, and may represent a structural repetition (Cassidy et al., 2006).

Gold mineralisation in the Kalgoorlie Terrane occurs in a variety of structural and metamorphic settings, mainly related to the D3 - D4 deformation events. Witt (1993) recorded the total historical gold production from the Black Flag Beds in the Kalgoorlie Terrane as 17,800oz from eight mines. Open cut production from Binduli, the only mine operated in the modern era, amounted to approximately 360,000oz of gold. Production has recommenced with the opening of the Teal mine (Section 2.5)

2.4 Local Geology and Mineralisation

The entire project area is covered by Cainozoic alluvium, sand dunes, clay pans and salt lake sediments. Salt lake sediments, of up to 40m thickness, consist of interbedded argillites, arenites and evaporite minerals (gypsum, halite) locally intermixed with sandplain deposits. These are commonly surrounded by dunes of sand, silt, and gypsum. Palaeochannels are present in the base of the sequence. Quaternary alluvium occupies present-day drainage channels and floodplains, and consists of unconsolidated clay, silt, sand, and pebbles.

Under this cover, a regolith profile of weathered Archaean lithologies is present within which extensive gold anomalies are preserved. The previous exploration at Gimlet has successfully located a 3.6km long, by up to 400m wide, north-northwest trending +100ppb gold anomaly extending along the eastern margin of the project, named the Eastern Shear Zone (ESZ) area. It is effectively a regolith geochemical anomaly preserved below the cover sediments (Figure 4). The gold here predominantly occurs as thin, patchy supergene zones developed on oxidation interfaces. The central 1.2km long section of the anomaly, is more coherent and has some continuity at a 0.5g/t gold cut-off in a maximum down hole gold plot (Morgan, 2008). The gold in this extensive but discrete supergene anomaly is interpreted to be sourced from nearby underlying and possibly steeply dipping quartz lodes, with strong support provided by the results of detailed drilling at the nearby Teal, Peyes Farm and Jacques prospects (refer Section 2.5).





Figure 4 Geochemical Map of the Gimlet Tenements Highlighting the ESZ Area

Note: Map shows historic drill collars colour coded by maximum down hole gold intersection for individual samples.

Historic drilling has defined two northwest trending palaeochannels up to 40m thick and carry anomalous gold in basal sand and gravel (individual samples up to 1g/t). The channels are approximately 2km long. The drilling has logged sand and gravel within the channels over 400m widths. Within the sand channels, the thickness increases from the edge where it may be 1m thick, to 10 - 15m in the centre of the channel. The grades and thicknesses of mineralised sand intersected to date have been sub-economic (Morgan, 2008).

2.5 Exploration History

The Gimlet Project (formerly Horan's Dam prospect) received minimal exploration until the 1990's due to the extensive lacustrine sediment cover and the perception that felsic and sedimentary sequences were not prospective for gold mineralisation. Previous explorers have carried out regional geochemical sampling, aircore, RAB, RC and diamond drilling programs totalling approximately 22,000m and acquired airborne magnetic, gravity and radiometric data. Compilations of previous exploration have been undertaken by Delta Gold (Watkins, 2001) and Pandell (Morgan, 2008) and these form the basis of this summary.

Exploration work including some drilling is recorded from 1976 (Mitchell/Menzel prospecting syndicate) and 1985 (Sanidine) however no useful results survive from this work. The area was previously held as licence E26/58, from 1993 to 2007, by Domain Mining; the licence was explored under various joint venture agreements. In 1991 a reconnaissance drill traverse (BHP136 - BHP148) by BHP returned significant gold intersections including 4m @ 0.55g/t Au from 34m in BHP136, and 2m @ 2.71g/t Au from 40m in BHP148. Denis O'Meara Prospecting



followed up these holes with several phases of aircore and limited RC drilling between 1994 and 1997. From 1998 to 1999 Yamarna Goldfields NL identified a new sulphide gold-copper zone to the southeast of BHP148 mineralisation and confirmed gold mineralisation in the vicinity of BHP136. De Grey Mining undertook RAB and aircore programs, and two diamond drill holes in the period to June 2003. An interpretation of airborne magnetic, regional gravity, and downhole EM (electromagnetic) was also completed by Southern Geoscience Consultants for De Grey. Over the period from 1994 to 2003, drilling to follow-up the intersection in BHP136 defined a 3.6km long, by up to 400m wide, north-northwest trending +100ppb gold corridor extending along the then eastern margin of the project (ESZ). Within this anomaly a more coherent 1,200m long zone +0.5g/t gold was identified from 6,604,000mN to 6,605,100mN. This central section was up to 300m in width in the south (343,700mE - 344,000mE), tapering to 100m in the north (343,500mE - 343,600mE). A program of RC drilling comprising 37 holes (HDRC01 - 37) totalling 2,888m was completed by De Grey Mining in May and June 2004 (Peebles, 2004). The holes were spread over 6 E-W lines between 6,604,600mN and 6,605,600mN, and were designed to infill previous drilling on the ESZ mineralisation. In 2004, an Aircore drilling program comprising 130 holes for 7,857m was completed with holes drilled to top of fresh rock to test for supergene and potential bedrock gold mineralisation. Several east-west lines were drilled on a 40m spacing to infill and extend the coverage of the ESZ, and 4 lines were located to test for palaeochannel mineralisation. Overall the program did not significantly extend the ESZ and showed that the extent of palaeochannel sediments was more restricted than previously interpreted.

Exploration licence 26/120 was granted to Domain Mining Pty Ltd on 4 May 2008, comprising eight sub-blocks. A transfer of title to Pandell Pty Ltd was completed during 2009. Pandell engaged Mincorp to complete a review of available data, and provide recommendations for the Gimlet Project (Morgan, 2008). Pandell in JV with Laconia completed two drilling programs in 2009. 22 RC holes for 2,160m targeted below the previously-identified ESZ testing for the presence of primary mineralisation below the supergene mineralisation. Several significant results were reported, but generally the results were disappointing in the primary zone. In 2010 the JV completed 20 holes for 1,594m. The program focused on the northern portion of the ESZ, to test the potential for supergene gold mineralisation and to further the understanding of geology in this area.

Intermin have most recently held the easternmost portion of the Gimlet tenement until surrendered and they drilled a number of exploration holes although most of their activity was concentrated on the Teal and Peyes Farm prospects to the south.

2.6 Current Exploration

Since E26/174 was granted in November 2016, exploration has consisted of research into historic exploration, assembling a database of existing exploration results and geological interpretation.

2.7 Mineral Resources

No Mineral Resources or Exploration Targets have been reported for the Gimlet project.

2.8 Nearby Deposits

Gold mineralisation within the area surrounding the Gimlet project dominantly occurs as epigenetic style deposits. Major gold deposits located within 25km of the project include: the Kalgoorlie Superpit, Mt. Charlotte, Kanowna Bell, Mt Pleasant, Kundana, Raleigh, Frogs Legs, White Foil and Binduli (Figure 2).

Teal, Peyes Farm and Jacques Find

More locally, Intermin Resources Limited (Intermin) have discovered significant gold mineralisation at three prospects immediately south and east of the Gimlet licence in geological settings similar to that underlying Gimlet (Figure 4).

Intermin commenced open pit mining of its Teal gold deposit in late 2016 with ore processed 22km north at the Paddington mill. At commencement of mining the Mineral Resource estimate was 0.837Mt at 2.67g/t Au for 71,700oz Au (Intermin, 2016). The geology at Teal and Peyes Farm prospects consists of Black Flag shales and siltstones that have been strongly sheared with a sub vertical cleavage trending roughly 330°. Mineralisation comprises a well defined supergene blanket located above shears and quartz within structurally controlled felsic schists, tuffs and porphyry rocks at depth. It is strongly influenced by flexures along the northwest striking Peyes



Farm Shear Zone which trends parallel to the regional geology. Pervasive carbonate, and silicasericite alteration occurs throughout. Gold mineralisation is hosted by quartz-carbonate-pyritearsenopyrite vein array with individual veins dipping from 60° to 90° east within a sub-vertical shear zone. Zones of dilation are interpreted to be related to flexures along the north-northwest trending shear zones, especially when reoriented into the north-south direction. A TFMMR geophysical survey by Delta Gold in 2001 delineated a major shear zone extending north for at least 5km. The survey confirmed that the Peyes Farm prospect is coincident with a major jog in this structure (Morgan, 2008).

Diamond drill holes targeted beneath flat lying supergene gold mineralisation at Peyes Farm intersected wide zones of intensely sheared to mylonitic silica-sericite-pyrite altered felsic volcanics and/or porphyry intrusives in steep structural orientations. Similar geology is reported for the Jacques Find in a parallel structure (Intermin, 2017), which is illustrated in the schematic cross section below (Figure 5).

Figure 5 Cross Section of Intermin's Jacques Find Gold Prospect - Illustrating the Target Geometry at Gimlet



Source: Intermin, 2017



2.9 Exploration Potential and Targets

The Gimlet tenement holds significant potential for the discovery of orogenic lode gold mineralisation. It is located immediately along strike and to the west of the Teal, Peyes Farm and Jacques Find gold deposits (Figure 4). Intermin recently commenced mining the Teal deposit and their exploration drilling continues apace across these neighbouring tenements. Historic exploration over the Gimlet tenement has identified widespread gold anomalism and similar host rocks and structural settings to the nearby Teal deposit. The results from Intermin's recent drilling program at Jacques Find (Figure 5) has highlighted the potential for significant gold mineralisation extending directly northwards into the eastern portion of the Gimlet tenement.

Figure 6 Composite Cross Section of ESZ Regolith Anomaly Showing Historic Drill Holes and Illustrating Geometry of Supergene Gold Blanket



Note: Orange >0.1g/t Au, Red >0.5g/t Au, Magenta >1.0g/t Au (Source: Richardson, 2017)

Past exploration at Gimlet has successfully located a regolith gold anomaly 3.6km long, 400m wide, +100ppb named the ESZ. This horizontal supergene gold anomaly contains numerous narrow but high grade gold intercepts which form a flat lying blanket as illustrated in Figure 6. The gold in this extensive but discrete supergene anomaly is interpreted to be sourced from nearby underlying quartz lodes similar to the ore systems of Teal and Jacques (as described in Section 2.5 above).





Figure 7 Aeromagnetic Image Gimlet Project with Anomalous Drill Intersections

Note: The location some of the better drill intersects are highlighted with width and gold grade annotated. These are intended to highlight the overall tenor of this broad geochemical anomaly rather than mark specific targets for follow-up.

This exploration model is supported by regional mineralisation trends. The Black Flag Beds west and northwest of Kalgoorlie host gold mineralisation related to north-northwest trending D3 structures, north-northeast trending D4 structures and altered intrusive felsic porphyries in the Binduli - Janet Ivey system located 15 to 30km to the south of Gimlet.

Gold at the ESZ prospect predominantly occurs as thin, patchy supergene zones developed on oxidation interfaces. Supergene mineralisation appears well developed close to porphyry contacts especially when oriented into a north-south direction. In the central section of the anomaly more coherent, thicker and multiple stacked mineralised blankets are accompanied by quartz veining and strong sericitic alteration (Figure 6), but only weak mineralisation has been discovered in the unweathered bedrock to date.

Morgan (2008) in his independent technical review of the Gimlet project made the following observations: Only a small number of deeper RC drill holes on five sections in the north have tested the fresh zone of the ESZ. These 60° inclined holes were not long enough to provide overlapping coverage. Over the project as a whole, the spread of the 385 drill collars on plan suggests that geochemical sampling coverage over parts of the property is good, however it should be noted that of the 23,876m drilled, only 4% is from fresh or weakly weathered bedrock, and 11% from weathered saprock.

In the eastern portion of E26/174 another target for future exploration has been defined by PHA. This area appears to have received significantly less drilling than the rest of the tenement (Figure 8), yet is directly along strike from the Teal mine 2km to the south. It is interpreted that the Peyes Farm Shear extends north-northwest into PHA ground. The excellent results from



Intermin's recent drilling programs highlight the potential for gold mineralisation to extend northwards into the under drilled Gimlet tenement.



Figure 8 Plan of Historic Drill Collars - East Gimlet Prospect

Note: Image interpretation indicates that not all historic drill holes have been found in the literature searches conducted of the WAMEX. It is likely unrecorded drilling has occurred at some stage(s) in the past.

2.10 Exploration Strategy - Gimlet Project

PHA has indicated to Ravensgate that they will undertake a systematic, staged approach with respect to their exploration program focusing on gold. Currently planned exploration programs for the Gimlet project are:

- Compilation of a comprehensive digital database capturing all historical drilling within the Gimlet project area.
- Re-interpretation of all historical drill results using 3D geological modelling software.
- Aircore and RC drill programs targeting steeply dipping high grade gold lodes beneath the extensive Eastern Shear Zone and targeting the interpreted Peyes Farm Shear which runs into the Gimlet tenement 500m north of the operating Teal mine.

Ravensgate considers that the exploration strategy proposed by PHA is consistent with the mineral potential and status of the Gimlet project. In Ravensgate's opinion further exploration of $E_{26}/174$ is warranted.



3. EMU CREEK PROJECT

3.1 Location

The Emu Creek project is centred 23km northwest of Nullagine in the East Pilbara region of Western Australia (Figure 1). The main land uses in the region are cattle grazing and mining. Access to the project area Marble Bar is via Warrawoona to Corunna Downs homestead and then by station tracks. Access within the project area uses station and exploration tracks but the terrain is often dissected and rugged. The area has an arid climate with very hot summers and mild to warm winters. Rainfall mostly occurs in the summer months of December to February. Cyclones can occur between November and April, which generate significant rainfall causing flash flooding and preventing travel. Project access tracks are generally impassable in wet weather. Limited infrastructure exists in the area, with no grid power. A gold processing plant is situated at the Nullagine project approximately 40km to the southeast and there is a small tailings operation at Bamboo Creek 90km to the north (Figure 10).

3.2 Tenure

The project consists of two granted exploration licences with a total area of 120.9km². The licence details are listed in Table 2 and their location is shown in Figure 12.

In November 2016 Great Sandy Pty Ltd (Great Sandy) entered into a farm-in and joint venture agreement with the tenement holder, Atlas Iron. Under the terms of the agreement, Great Sandy has the right to earn a 51% equity in the tenements by the expenditure of \$190,000 within a 24-month period. Great Sandy then has the right to earn an additional 19% equity by the completion of a Bankable Feasibility Study within 5 years of the agreement date. Great Sandy has entered into an agreement with PHA for PHA to acquire Great Sandy's interests in the Emu Creek project. A summary of this agreement is set out in the material contracts section of the Prospectus.

The Copper Hills deposit is excised from the project tenements.

3.3 Regional Geology

The Pilbara region, in which the Emu Creek project is located, contains three major Archaean-Paleoproterozoic tectonic divisions:

- The Pilbara Craton, composed of early crust (3.80-3.53Ga), granite-greenstone terranes (3.53-3.07Ga), volcano-sedimentary basins (3.05-2.93Ga), and post-orogenic granites (2.89-2.83Ga);
- The Fortescue, Hamersley, and Turee Creek basins (2.78-2.42Ga), composed of a thick succession of interbedded clastic and chemical sedimentary rocks and volcanic rocks; and
- The Ashburton Basin (2.21-1.79Ga), composed of the volcano-sedimentary rocks.

A major geological mapping project, conducted jointly by the Geological Survey of Western Australia (GSWA) and Geoscience Australia between 1995 and 2002 (Huston et al., 2002a), provided a much improved geological understanding of the Pilbara Craton (Huston et al., 2002b). Significantly this work excluded the Fortescue, Hamersley, and Turee Creek basins from the Pilbara Craton, units which had been previously grouped in by earlier workers.

The oldest part of the Pilbara Craton is 3.80-3.53Ga crust, which has been identified by geochronology in rare outcrops of gneissic granite and gabbroic anorthosite. Between 3.53-3.23Ga, mantle plume activity resulted in the deposition of at least eight successive volcanic cycles on the early crust. The resulting volcanic plateau is now exceptionally well preserved as the 15-20km thick Pilbara Supergroup. Large volumes of granitic magma were intruded during the same period, and thick continental crust had been established by 3.23Ga. A major rifting event between 3.23-3.16Ga split this crust into three continental microplates defining the East Pilbara, Karratha and Kurrana terranes separated by two northeast-trending basins of oceanic crust (Hickman and Van Kranendonk, 2012).





Figure 9 Regional Geological Map of the East Pilbara Terrane

Most of the domes are separated by Paleoarchean-Mesoarchean boundary faults within the greenstones. Dome names: C = Carlindi; M = Muccan; W = Warrawagine; Y = Yule; E = Mount Edgar; S = Shaw; O = Corunna Downs; I = Yilgalong. (Source: Hickman, 2010)



The East Pilbara Terrane (Figure 9) provides the world's most complete record of Paleoarchaean crustal evolution from 3.53Ga to 3.23Ga. Stratigraphy, structure, geochronology, and geochemistry collectively testify that the evolution of this terrane was dominated by volcanism, magmatic intrusion, and deformation during repeated episodes of heating and melting of underlying older crust and mantle over 300Ma. The Pilbara Supergroup of the East Pilbara Terrane is predominantly volcanic and 15-20km thick. Thick partial sections of this succession are recognised in almost all greenstone belts of the terrane. The three component groups (Warrawoona, Kelly, and Sulphur Springs) of the Pilbara Supergroup are separated by two major erosional unconformities (Hickman and Van Kranendonk, 2012).

Where best preserved, the Pilbara Supergroup is composed of eight ultramafic-mafic-felsic volcanic cycles. Geochronology on the felsic formations of successive cycles, and on contemporaneous granitic intrusions, some of which are subvolcanic, indicates that most of the cycles spanned no more than 10-15Myr; these cycles are interpreted to have resulted from successive mantle plume events (Hickman and Van Kranendonk, 2012).

A characteristic feature of the East Pilbara Terrane is the regional outcrop pattern of granitic domes separated by arcuate belts of volcano-sedimentary rocks (greenstones) visible on geological maps (Figure 9) and satellite imagery that has been variously described as "dome-and-syncline", "dome-and-basin", or "dome-and-keel" structure. Whereas some previous workers have interpreted this pattern as either the result of cross-folding or core complex formation, neither of these are consistent with the full set of geological and geophysical features of the region. The most widely accepted interpretation is that the dome-and-keel structure arose from punctuated episodes of doming by partial convective overturn of the thick, dense greenstone succession into a partially molten granitic middle crust from 3.46-2.94Ga (Hickman and Van Kranendonk, 2012).

These basement rocks are overlain by a series of Archaean sedimentary and volcanic rocks accumulated during ongoing basin development (Figure 9). From youngest to oldest these sequences are:

- Hamersley Group (Mt Bruce Supergroup) (2.63-2.45Ga).
- Fortescue Group (Mt Bruce Supergroup) (2.78-2.63Ga).
- DeGrey Supergroup (2.97-2.93Ga); and
- George Creek Group (3.02-3.05Ga);

Regional Mineralisation

Gold and base metal mineralisation of the East Pilbara is shown in Figure 10 which illustrates the regional geological mapping, highlighting the location of the major mines, deposits and prospects in relation to the project tenements.

Mineralisation in the East Pilbara Terrane occurred during a sequence of magmatic pulses related to mantle plumes, and extended over almost 300Myr. Deposit types associated with these events include: volcanic-hosted massive sulphide deposits; hydrothermal barite deposits; polymetallic and base metal deposits in porphyritic felsic stocks; porphyry copper mineralisation; and mesothermal (orogenic) gold deposits in shear zones around granitic domes. The latter is the most important in the Warrawoona Greenstone Belt generally and the project area specifically. In the southeast Pilbara Craton, the Mosquito Creek Orogeny was accompanied by similar orogenic gold deposits between 2.93-2.90Ga. A number of these deposits are currently in production feeding the Golden Eagle ore processing plant of Millennium Minerals. Shear-hosted gold mineralisation occurred at 2.89Ga in the Mount York area of the East Pilbara Terrane (Hickman and Van Kranendonk, 2012).





Figure 10 Gold and Base Metal Mineralisation in the East Pilbara

Erosion of the earlier Archaean primary deposits during later Archaean times has locally resulted in the formation of palaeoplacer gold deposits in Neoarchaean conglomerate beds (Hickman and Little, 1978). The Fortescue Group unconformably overlies a wide variety of older Archaean rocks around the perimeter to the Nullagine sub-basin known to host orogenic gold deposits. The basal unit of the Fortescue Group, the Mount Roe Basalt, is discontinuously exposed along the margins of the Nullagine sub-basin (Hickman, 1979; Blake, 2001). The Hardey Formation either unconformably overlies the Mount Roe Basalt or older Archaean basement and consists of up to 1,700m of mostly terrigenous clastic sedimentary rocks deposited in braided fluvial, lacustrine and alluvial fan settings (Blake, 1993; Blake et al., 2004). Both these units are prospective for palaeo-placer gold deposits.

Blake (2001) subdivides the Hardey Formation above the Spinaway Porphyry in the Nullagine sub-basin into two unconformable packages, P3 and P4. Auriferous conglomerates exposed in the Beatons Creek area near Nullagine occur in Package P4 of the Fortescue Group (Blake, 2001), not at the base of the Hardey Formation as stated in some earlier Mines Department and Geological Survey reports (e.g. Hickman, 1983). A felsic tuff near the base of a relatively well stratified sequence immediately overlying the auriferous conglomerates is dated 2,752 \pm 5Ma (Blake et al., 2004) and provides a minimum age constraint on their formation.

The Sulphur Springs cluster of volcanogenic massive sulphide (VMS) base metal deposits are located 95km northwest of Emu Creek, occur in similar stratigraphy and contain a Mineral Resource of 17Mt @ 4.4% Zn and 1.3% Cu with Au and Ag credits (VentureX, 2017).



The geology of the area surrounding the Emu Creek project is shown in Figure 11 highlighting the proximity of the Nullagine Gold Operation and the Beatons Creek conglomerate gold project to the south. The location of mineral occurrences of gold and base metals in the GSWA database are also shown. The arrangement of prospective Fortescue Group rocks at the margins of the basin are also noted.



Figure 11 Regional Geology of the Emu Creek Area showing Major Deposits

3.4 Local Geology and Mineralisation

The Emu Creek project is located in the Archaean Kelly Greenstone Belt which consists of a sequence of mafic and felsic volcanic rocks with associated porphyry intrusive units. An interpretive geology plan of the Emu Creek Project is presented in Figure 12.

The area has been the subject of many years of exploration, mostly for VMS deposits and numerous copper, zinc, silver, barite and gold occurrences were discovered within the project area (Section 3.5).

The Emu Creek project also covers an extensive area of the Fortescue Group including conglomerates and coarse clastic sediments of the Hardey Formation that occur along the eastern boundary of the Emu Creek project Figure 12. The project has the potential to host significant palaeoplacer style gold mineralisation associated with the conglomerates of the Hardey Formation. No gold has been reported from these rocks, however there is no record of



previous exploration work covering them. GSWA mapping has delineated a number of conglomerate units in the Hardey Formation and Mount Roe Basalt which are depicted on the 1:100,000 map sheets, these are highlighted on Figure 12 as they are considered prospective for Archaean conglomerate gold mineralisation.



Figure 12 Interpretive Geology Plan of the Emu Creek Project

3.5 Exploration History

Exploration activity over the tenement area has waxed and waned with successive metal price cycles since the 1950s, with a peak of activity in the 1990s.

Regional exploration programs mostly employing stream sediment geochemistry were conducted during the 1960s and 70s by several companies including Pacminex, Noranda and BHP.

Hawkstone Minerals drilled seven inclined diamond and percussion holes along a chert horizon located about 750m northeast of the Copper Hills mine in 1970. Some of these holes encountered disseminated chalcopyrite with some zinc in the rhyolitic volcanic breccias adjacent to this chert. The best recorded intersection was 1.22m at 0.73% Cu (Fox, 1982).

Mapping by BHP in 1978 indicated the presence of acid volcanic rocks consistent with a very active near-vent volcanic environment suitable for the occurrence of VMS mineralisation.

In 1982 the Mitchell prospecting syndicate reviewed all previous data and concluded that the volcanic belt is highly prospective for volcanogenic precious and base metals. They identified



the Copper Cliff prospect, a zone of malachite staining and chlorite alteration with rock chip sampling returning a maximum values of 13.5% Cu, 340g/t Ag and 3.88g/t Au. The zone coincides with a west-southwest trending photo lineament and area of intense alteration over a strike length of 2km (Fox, 1982).

Between 1983-1987 Kalgoorlie Southern Gold Mines in joint venture with the Mitchell syndicate identified lead-zinc and sporadic gold-silver mineralisation in the Copper Cliff shear zone (Donkey Flats prospect). Rock sampling returned assays up to 11.6g/t Au, 23.5% Zn and 6.8% Pb and stream sediment sampling identified seven anomalous zones. Highly encouraged by their exploration results Kalgoorlie Southern recommended drilling several targets at Donkey Flats but the company was liquidated in 1987 before any drilling was conducted (KSGM, 1984).

From 1992 to 1994, Bacome Pty Ltd explored the Emu Creek area as part of their much larger Coongan base metal project (Pitt, 1993). Their target was base metal mineralisation similar to the then recently discovered Sulphur Springs project. The Sulphur Springs cluster of VMS base metal deposits are located 95km northwest of Emu Creek, occur in similar stratigraphy and contain Mineral Resources of 17Mt @ 4.4% Zn and 1.3% Cu (Section 3.8.1). Bacome carried out extensive geological mapping at 1:40,000, 1:25,000 and 1:5,000 scale; collected 1,350 rock chip samples, some BLEG stream sediment sampling; soil sampling; and drilling five diamond and one percussion drill hole at the Vuggy Hill prospect located 2.5km north of the Copper Hills mine. This work discovered a number of new base metal prospects within the Emu Creek area and identified a number of significant gold stream and soil anomalies that were never followed up (Pitt and Strong, 1994).

In 1994 Great Southern Mines NL (GSM) purchased the Coongan base metal project from Bacome and continued base metal exploration. Vanderplank (1994) was commissioned to undertake a technical review of previous work. He noted that all previous exploration had concentrated on prospecting, mapping and drilling gossans, while geochemical techniques were lacking and recommended an extensive program of stream sediment sampling over the 640km^2 of tenement. For base metals he recommended alteration mapping focusing on detecting the footwall alteration zones associated with VMS deposits. He also noted that the good chemical anomalies including the high grade gold assays identified by the Mitchell Syndicate at Donkey Flats were never followed up and drilled. GSM flew 1:25,000 aerial photography, developed a detailed drainage map, collected 3,754 BLEG and -80mesh stream sediment samples over entire project area which identified 21 gold anomalies and a number of base metal anomalies. In 1995 these geochemical anomalies were followed up with soil grids, rock chip sampling and RC drilling of selected targets. Most drilling returned disappointing results with either sub-economic grades or narrow widths. Vuggy Hill was only significant target in PHA's tenements. Here soils identified two northeast trending gold anomalies (at 7ppb Au threshold) 600m and 350m in length. RC drilling intersected broad zones of weak alteration and base metal anomalism and narrow zones of gold anomalism (Ingram, 1997).

In 1997-98 Garry Strong in JV with Bacome explored E47/428. They drilled two RC drill holes testing for southwestern extensions of mineralisation intersected in previous drilling by Bacome. Results were disappointing and the ground was surrendered (Strong, 1999).

None of the WAMEX reports detail any gold exploration over the Fortescue Group rocks within the project area.

3.6 Current Exploration

It had been noted in multiple mapping programs that the volcanic and porphyry assemblage represents a former active, near-vent environment, suitable for hosting VMS mineralisation. Intense alteration of the volcanic units is noted over a wide area. Great Sandy have undertaken field inspections and rock chip geochemistry to confirm the findings and conclusions of earlier explorers.

Recent work by Great Sandy has included acquisition and interpretation of hyperspectral and Landsat images of the entire project area. This outlined the location of large areas of minerals associated with hydrothermal alteration within the mafic and felsic rocks in the centre and south of the project and to the east and south of the Copper Cliff prospect (Figure 13).





Figure 13 Hyperspectral Image with the Interpreted Hydrothermal Cells Outlined

Analysis of a series of such hyperspectral images has revealed pervasive pyrophyllite and phyllic alteration, also extensive jarosite and alunite development which indicates strong sulphating of sulphides. This alteration displays circular form. Great Sandy interpreted this extensive area of very strong pyrophyllite and phyllic alteration to have formed when large volumes of hot mineralising fluids moved through the felsic and mafic sequence. It is interpreted to indicate the former presence of a large hydrothermal cell (vent) which crosscuts both the Euro Basalt and Wyman Formation volcanic units. It is possible that a deep lying porphyry/granodiorite intrusion has acted as a heat source driving a large hydrothermal cell. Such a hydrothermal cell provides a source of the base metal and gold mineralisation hosted predominantly within felsics to the west and southwest of the centre of this interpreted vent.

It is well documented in the geological literature that such hydrothermal cells are spatially associated with VMS deposits and vein-style deposits. The ultimate source of the base metal, gold and silver mineralisation within the project area may be this hypothesised hydrothermal cell.

During recent field work Great Sandy undertook a limited mapping and rock sampling program along a line of historic shallow workings and shafts within a northwest trending fault structure. Quartz and porphyry veins fill the extensive fracture which was traced for approximately 600m on surface with the fracture continuing a similar distance further west. High order copper assays were recorded up to 12.4% Cu with anomalous gold up to 1.52ppm Au. A number of these northwest trending fractures can be seen across the project area. The JORC Code Table 1 commentary for this recent geochemical exploration work by Great Sandy is provided in Appendix 1.

3.7 Mineral Resources

No Mineral Resources or Exploration Targets have been reported for the Emu Creek project.



3.8 Nearby Mines and Deposits

3.8.1 Base Metal Deposits

In the immediate Emu Creek area, the only mining activity has been on the Copper Hills deposit between 1952-1963 which produced 15,730t of cupreous ore with a grade of 13% Cu. A number of small copper mines have been worked in the past and are documented in GSWA reports. Numerous other smaller copper occurrences have been found by various explorers. These have generally been attributed to hydrothermal fluids mineralising shears and fractures.

The Sulphur Springs and nearby Kangaroo Caves VMS base metal deposits are located 95km northwest of Emu Creek (Figure 10). VentureX Resources have defined combined Mineral Resource of 17Mt @ 4.4% Zn and 1.3% Cu with Au and Ag credits (VentureX, 2017). A 2017 engineering study on the Sulphur Springs copper-zinc project (which was based on these resources, a 2012 feasibility study and a 2016 optimisation study) resulted in a robust project with appropriate up front capital costs and reduced operating costs. A current work program includes confirmatory drilling and metallurgical test work on a zone of high grade, near-surface supergene copper (VentureX, 2017).

3.8.2 Gold Deposits

The nearby Marble Bar mineral field was developed as a result of the gold rushes to the Pilbara in the late 1880s. The historic Klondyke mine lies in the Warrawoona Mining Centre (Figure 11) and is reported to have produced 23,936oz of gold from 25,191t of ore at an average grade of approximately 30g/t Au, with an addition 716oz produced from alluvial and dollied material. Prior to 1940 the Copenhagen deposit had been worked via small scale excavation and fossicking defining the surface expression of the high grade lode. These form the basis of Calidus Resources' Warrawoona Gold Project (410,000oz Au) which is now being successfully explored following their listing on the ASX on 22 June 2017 (Calidus, 2017, Leggo, 2017).

The Bamboo Creek gold field was mined in the 1890's, 1970's, and from 1985 onwards. Haoma Mining Bamboo Creek gold processing plant (Figure 11) in currently treating bulk conglomerate samples from their Comet gold deposit, with engineering works planned to allow recommencement of tailings processing (Haoma, 2017).

Historic mines near the town of Nullagine exploited pyritic gold-bearing reefs from the late 1800's.

Millennium Minerals are currently mining a series of oxide gold deposits across 40km strike of the Mosquito Creek Formation (Figure 11) called the Nullagine Gold Project. It produced 86,325oz Au in 2016 through their 2Mtpa Golden Eagle CIL ore treatment plant. At February 2017 Mineral Resources were reported at 31.8Mt @ 1.3g/t Au for 1.28Moz, which included Ore Reserves of 3.99Mt @ 1.4g/t Au for 185,900oz (Millennium, 2017).

The other significant gold mine in the Pilbara Craton is the Paulsens mine of Northern Star Resources near Pannawonica in the West Pilbara which produced approximately 80,000oz Au in 2015-2016.

Beatons Creek Gold Deposit

A number of gold deposits in the area are heading toward development of mining operations. Most notably Novo Resources' Beatons Creek project, located 15kms south of the Emu Creek project (Figure 11), is nearing completion of a prefeasibility study (Novo Resources, 2017a). Beatons Creek is a palaeoplacer gold deposit in Archaean aged sediments and its discovery has sparked a very significant increase in gold exploration and prospecting across the Pilbara with the resulting recognition of similar mineralisation in conglomerates of the lowermost Fortescue Group across the basin.

Mineral Resources have been estimated for Beatons Creek by independent consultants Tetra Tech (Van Heerden, 2015) of 6.4Mt @ 2.7g/t Au containing 560,000oz Au (combined Measured, Indicated ad Inferred). Oxide and sulphide mineral resources were estimated for seven reefs by multi-pass ordinary kriging of capped drill holes and costean samples and include 8% at the Measured classification and 45% at Indicated.

3.9 Exploration Potential and Targets



The Emu Creek project is positioned in a prospective location in terms of a regional geological and mineralisation setting, occurring within the East Pilbara Terrane which hosts several significant gold deposits as detailed in Section (3.3). The tenements also cover areas of lowermost Fortescue Group rocks which host significant gold mineralisation at Beatons Creek. Ravensgate considers the tenements primarily prospective for VMS style copper-gold-lead-zinc, for conglomerate hosted gold and also orogenic gold mineralisation.

3.9.1 Volcanogenic Massive Sulphide

It has been noted in multiple mapping programs that the volcanic and porphyry assemblage at Emu Creek represents a former active, near-vent environment, suitable for hosting VMS mineralisation. Intense alteration of the volcanic units is noted over a wide area.

Geophysics normally plays an important role in the exploration and discovery of base metal deposits, and it noteworthy that no geophysical surveys have been conducted on the tenements by previous explorers. There is potential for discovery of further base metal targets through regional geophysical surveys over prospective lithologies. Ravensgate considers that airborne electromagnetic surveys would be a most effective exploration tool at Emu Creek. The implementation of gravity surveys would also provide valuable data to aid base metal exploration.

3.9.2 Archaean Conglomerate Gold

The Emu Creek project also covers an extensive area of the Fortescue Group including conglomerates and coarse clastic sediments of the Hardey Formation. This is the same formation which hosts the 560,000oz Au gold deposit at Beatons Creek some 15km south of PHA's proposed tenements (Section 3.8.2). This stratigraphy is now considered highly prospective across the region with the Pilbara currently undergoing a new 'gold rush' triggered by the further discovery of a significant quantity of gold nuggets at the Purdy's Reward and Comet Well prospects in the West Pilbara by ASX listed Artemis Resources and regional JV partner Canadian listed Novo Resources Inc. Large nuggets were found shedding from and contained within palaeoconglomerates of the Hardey Formation (Artemis Resources, 2017). Exploration at Purdy's Reward has moved rapidly forward with the most recent public announcement (Novo Resources, 2017c) providing detailed information about the significant aerial extent, grade and geology of the mineralisation. Diamond drilling of 69 holes within a 1,550m long by 500m wide area found the sequence dips at 4-7 degrees and indicated continuity of the conglomerate sequence is strong. The results of three bulk samples (~300kg) from costean exposure of conglomerate returned calculated head grades of 15.7, 17.7 and 1.3g/t Au. Novo stated that virtually all gold occurs as coarse nuggets within conglomerate matrix; most nuggets are rounded and flattened consistent with primary alluvial transport and deposition; and that assessment of geological data indicates Purdy's Reward has a near-shore fluvial depositional environment periodically reworked by marine processes (Novo Resources, 2017b).

Other stratigraphic horizons within the lower Fortescue Group are also the focus of Archaean conglomerate gold exploration with some early discoveries being made such as Loudens Patch where gold nuggets are concentrated in a palaeo-conglomerate at the base of the Mount Roe Basalt, unconformably overlying the Mallina Formation of the De Grey Supergroup (De Grey Mining, 2017).

The 2.77-2.63Ga Fortescue Group is commonly compared to the Ventersdorp Supergroup of the Witwatersrand Basin in South Africa, which is similar in both age, composition and tectonostratigraphic setting (Thorne and Trendall, 2001). The mineralisation model employed by Novo Resources in the Pilbara is based on similarities between placer deposits hosted by conglomerates in the late Archaean Fortescue Group and auriferous reefs in the Witwatersrand basin, South Africa which were first noted over a century ago (Van Heerden, 2015). Although the similarity in the age of the host rocks between these two areas was not recognized for many years, the development of locally high grade gold in conglomerates containing significant concentrations of rounded detrital pyrite, and apparent lateral continuity over at least hundreds of meters in the case of some of the Beatons Creek reefs, drew immediate comparisons with the South African deposits. Both sequences contain voluminous basaltic andesite lavas interspersed with terrestrial to shallow marine sedimentary rocks and lesser felsic volcanics and/or high-level intrusions. Both the Fortescue (Pilbara) and Ventersdorp (Witwatersrand) groups were deposited after protracted depositional hiatuses (>100 million years), during which compressional



deformation, metamorphism and exhumation of older rocks occurred. In both cases these basement rocks hosted orogenic gold deposits. Additionally, deposition of the Fortescue Group and Ventersdorp Supergroup sequences were both followed by major marine transgression events, involving deposition of thick sequences of chemical sediments (carbonate, banded iron formation) and lesser marine clastics (i.e. Cluniespoort Group, Kaapvaal Craton and Hamersley Group, Pilbara Craton). Despite the large amount of academic and mining company research conducted since their discovery in 1886, there is still no consensus on how and when the giant Witwatersrand gold deposits formed. (Van Heerden, 2015). Genetic models will continue to be debated, but there are sufficient basic geological similarities to the largest of all the world's gold deposits to be encouraged to explore the Fortescue Group for conglomerate style gold.

3.9.3 Metal Detector Geochemistry

An important aspect of these recent Archaean conglomerate gold discoveries is the extensive and successful use of portable metal detectors as an exploration tool. In essence the metal detector is a small scale geophysical device. Metal detectors have long been used by individual prospectors throughout the goldfields of Western Australia to locate gold nuggets. A new form of geochemical exploration is now being implemented in Western Australia with the systematic and scientific use of metal detectors to identify a different type of gold anomaly - the occurrence of coarse gold and nuggets. Systematic metal detecting can be effectively used across areas already tested by conventional geochemical techniques (stream sediments, soils, BLEG) which have failed to detect coarser gold anomalism.

A search of WAMEX has failed to locate any reports detailing gold exploration over the Fortescue Group rocks within the Emu Creek project area.

3.10 Exploration Strategy - Emu Creek Project

PHA has indicated to Ravensgate that they will undertake a systematic, staged approach with respect to their exploration program focusing primarily on gold but also lithium and base metals. Significant previous exploration has been undertaken across the project area for orogenic gold and VMS deposits, but this forms a database to support further exploration. The situation for lithium and Archean conglomerate gold is essentially grassroots with no previous testing for these having been undertaken.

The next phase of exploration at Emu Creek will involve the following;

- Compilation of a comprehensive digital database of all relevant surface geochemical results for the project area,
- Geological mapping and geochemical sampling,
- Mapping, stream sediment sampling, panning and metal detecting in areas of Hardey Formation conglomerates,
- VTEM airborne electromagnetic survey over the prospective area currently defined by historical mapping, geochemical sampling and hyperspectral imagery and interpretation (Figure 14).

Ravensgate considers that the exploration strategy proposed by PHA is consistent with the mineral potential and status of the Emu Creek project.



Figure 14 Layout of Proposed VTEM Airborne Geophysical Survey over the Emu Creek Project



Note: Proposed 400m spaced flight lines shown in purple. Background is a Landsat image. Scale is provided by 2km square grid; grid north is upwards.



4. TALGA PROJECT

4.1 Location

The Talga project is also located in the East Pilbara region of Western Australia, 30km northeast of Marble Bar and 80km north of PHA's Emu Creek project (Figure 10). The main land uses in the region are cattle grazing and mining. The project can be accessed from Marble Bar via the Marble Bar Road, Bamboo Creek Road and minor station tracks. Access within the project area uses station and exploration tracks but the terrain is often dissected and rugged.

4.2 Tenure

The Talga project consists of five granted exploration licences, E45/3679, E45/3857, E45/4136, E45/4137 and E45/4615 covering 65 blocks and an area of 207.9km². The licence details are listed in Table 2 and location shown in Figure 16.

4.3 Regional Geology

The regional geology and mineralisation of the Pilbara region has been described in Section 3.3 on the Emu Creek project and illustrated in Figure 9 and Figure 10.

4.3.1 Regional Geology - Talga Area

The tenements cover an area of the Archaean Gorge Creek Group and older Archaean Warrawoona Group where metamorphosed mafic, felsic, ultramafic rocks and cherts occupy the arcuate eastern portion of the Marble Bar Greenstone Belt. This greenstone belt, is sandwiched between the Muccan and Mount Edgar Granitoid Complex of the Pilbara Craton. Major structures in the Marble Bar Greenstone Belt are the South Muccan Shear Zone (SMSZ) and the western extension of the Bamboo Creek Shear Zone.

The Warrawoona Group is one of three components of the Pilbara Supergroup of the East Pilbara Terrane, the other components being the Kelly and Sulphur Springs Groups. These components are separated by two major erosional unconformities as illustrated in the stratigraphic column of Figure 15.

4.4 Local Geology and Mineralisation

The project area is dominated by an east trending, metamorphosed greenstone and metasediment sequence, the northeastern portion of the Marble Bar Greenstone Belt. This sequence has been folded and structurally deformed by the emplacement of the Muccan and Mount Edgar Granitoid Complex to the north and south, respectively. Regional tectonism and granite emplacement has resulted in strong tilting of the greenstone-metasediment sequence, typically dipping 60-80° to the north with subsequent thrust faulting, and possible sequence repetition locally. Outcrop exposure is generally very good with the exception of heavy, talus scree slopes on some of the prominent chert ridges and the Eight-Mile Creek drainage system that runs through the project area (Baker, 2007). Figure 16 shows the bedrock geology for the project area as taken from the detailed (1:100,000) government mapping available for the district.

Regional metamorphism in the project area was generally low grade, except adjacent to the granitiod complexes, where it reached lower amphibolite facies. The Muccan Granitiod Complex is situated to the immediate north of the project area and is expressed as a flat expanse of well-drained spinifex plain. The southern contact of this complex is a sharp intrusive contact with the greenstone units. This implies a strong structural control contributing to the shape of this complex, which has also been extensively sheared by the easterly trending SMSZ.





Figure 15 Generalised Stratigraphy of the Pilbara Supergroup

(after Hickman, 2011)





Warrawoona Group

Gap Intrusion

Euro Basalt

Wyman Formation

Strutton Intrusion

Strelley Pool Chert

Panorama Formation

Figure 16 Geological Map of the Talga Tenements

Alluvials

Gorge Creek Group

Black Range Dolerite

Nimingarra Formation

The SMSZ is a 0.5 - 2km wide zone of strong shearing contained within the greenstone sequence, parallel to the southern contact of the Muccan Granitoid Complex. It is bound to the south by regionally prominent chert hills that form Talga Peak (geographical feature) immediately north of the Warrawagine Road. These cherts possibly represent a late stage major thrust fault system. The greenstone sequence, north of these cherts is expressed as a 1-2km wide easterly trending valley extending across the entire northern portion of the project. This valley contains polymetallic gossanous exposures extending west from the Cord prospect for 15km (Baker, 2010).

Apex Basalt

Towers Formation

Duffer Formation

Mount Ada Basalt

North Star Basalt

McPhee Form

Mount Edgar Granitoid

Muccan Granitoid

To the south of Talga Peak, the predominantly mafic greenstone and meta-sediment sequences of rocks extend for a further 7-8km south to the Mount Edgar Granitoid Complex. The Duesenberg gold prospect is located in the central portion of the project area, 2.5km south of the Warrawagine Road, along and adjacent to a prominent chert feature which hosts several small historical gold workings. The contact between the Mount Edgar Granitoid Complex and the Warrawoona Group rocks (metamorphosed mafic, felsic, ultramafic rocks and cherts) is sharply discordant. The contact zone is intruded by sparse, thin pegmatite and granitoid dykes (Baker, 2007).

4.4.1 Mineralisation

Prospects

Mineral Occurrences

Gold

Base Metal

The Talga project area was historically explored for gold, base metals and tin, with more recent exploration for iron ore. Discoveries of gold, base metal and haematite mineralisation have been made. Several kilometres east of Talga, the Spinifex Ridge iron ore deposit is hosted in banded iron formation (BIF) of the Nimingarra Iron Formation, which extends into the Talga project area.

There is no known previous exploration for lithium, however there was alluvial tin recovered from historic workings in the southeast area of the southernmost tenement (E45/3679).

4.5 Exploration History

A long history of exploration for the Talga project area is recorded in the WAMEX database with a search recording 77 open file reports of previous tenement holders.



21°S

NORTH

5

Kilometers

Anglo American explored a broad region around Talga from 1969 to 1972 with an extensive program of stream sediment sampling. A number of base metal anomalies were followed up. The discovery of copper-molybdenum in the Coppin Gap area focused their attention away from Talga. Hawkstone Minerals explored for nickel from 1969 to 1970 in ultrabasic volcanics of the McPhee Formation undertaking mapping, soil sampling, IP, EM and magnetic geophysical surveys, and diamond and percussion drilling, without success (Perring, 1993).

In 1975 Esso Exploration Australia Inc. commenced base metal exploration at the Cord prospect with limited soil and rock chip sampling and an IP ground geophysical survey. A single diamond drill hole tested the gossan and IP anomaly and intersected massive pyrite but with only weak base metal assays (Semple, 1975). Later explorers failed to locate the collar of the ESSO drill hole.

In the early 1990s Poseidon Exploration Limited held the Talga area and undertook field inspections and rock chip sampling of old workings and prospects. The surrender report (Perring, 1993) provided an excellent summary of previous work and a scholarly review of the potential of the volcanic units to host VMS and orogenic gold deposits.

Compass Resources, explored the project area for gold and base metals during the mid to late-1990's as part of a much larger tenement holding. Compass undertook aerial photography; rock, soil and stream geochemical surveys; detailed geological mapping; aeromagnetic interpretation; with limited drilling being undertaken at the Duesenberg prospect (Robinson, 1998).

From 2006 to 2010 the project area was explored by Mining Projects Group under a joint venture with Oakover Gold. Most activity occurred prior to 2008 when funding options were severely reduced. The activities involved geological mapping, comprehensive rock chip and soil sampling programs, aircore and RC drilling, and ground EM and downhole EM surveys. These activities resulted in the identification of an extensive structurally controlled VMS style gossanous horizon at the Cord prospect (within E45/3679), and the discovery of significant gold mineralisation at the Razorback (Duesenberg) prospect (E45/4137). The Cord base metal prospect (Figure 16) was identified by mapping, soil and rock chip sampling, followed by relatively shallow reconnaissance aircore drilling. Widths of gossanous material ranged up to 40m, with geochemical anomalism being returned in widths of up to 26m. Surface sampling returned assays of up to 14.3% Cu and 12.9g/t Au. A number of polymetallic gossanous horizons were identified striking over 15km along the Cord Valley. A shallow aircore (128 holes for 3,863m) and RC follow up program (26 holes for 3,380m) returned highly anomalous results from multiple stacked sulphide lenses. A downhole EM program identified conductors beneath the current drilling at Cord, indicating that the best mineralisation has not been intersected to date.

Hole ID	MGA_E MGA z50	MGA_N MGA z50	From (m)	To (m)	Interval (m)	Au (ppb)	Ag (g/t)	Cu (ppm)	Pb (ppm)	Zn (ppm)
TPAC139	810506.015	7685266.784	19	35	16	158	5	3212	50	101
TPAC160	810535.34	7685271.064	26	36	10	86	6	6099	23	57
TPAC162	810717.847	7685288.782	28	31	3	68	5	2792	10	67
TPRC005	810530.648	7685310.747	72	79	7	113	15	8069	748	300
TPRC006	810577.815	7685313.824	77	84	7	59	1	2023	33	140
TPRC008	810677.206	7685329.364	103	105	2	171	6	2064	17	170
TPRC015	810640.962	7685180.51	69	72	3	106	33	2275	23	128
TPRC018	810120.361	7685140.372	75	81	6	58	3	2110	44	141

Table 3	Cord Prospect - Significant Historical Drill Intersections
---------	--

The Razorback prospect (Figure 16) represents a gold target, with mineralisation associated with a chert unit which crops out as a prominent ridge. Forty-nine aircore drill holes were completed at the prospect, 14 of which returned at least one significant intersection. Gold mineralisation appears to occur as an en echelon series at a slight angle to the strike of the main ridge.



Intersections range from surface to 50m downhole depth, depending upon drill collar position. The majority of the drilling occurs within a 700m strike length, leaving approximately 3km of strike untested by drilling. The average hole depth is 55m which tests about 48m vertical depth. Subsequent RC drilling returned encouraging intersections in all three drill holes, particularly the westernmost hole (TPRC027) (Baker, 2007 and 2010).

Hole ID	MGA_E MGA z50	MGA_N MGA z50	From (m)	To (m)	Interval (m)	Au (g/t)
TPAC079	808779	7680590	0	16	16	1.99
TPAC080	808778	7680614	24	29	5	2.23
TPAC080	808778	7680614	50	58	8	1.57
TPAC088	808840	7680600	42	55	13	1.79
TPAC097	809145	7680475	4	8	4	4.69
TPAC101	809081	7680507	28	30	2	6.23
TPAC102	808998	7680507	2	7	5	1.63
TPRC027	808779	7680624	62	71	9	1.12

 Table 4
 Razorback Gold Prospect - Significant Historical Drill Intersections

In 2009 Mining Projects Group reported encouraging iron results from a single rock chip traverse across a BIF unit in the western portion of the Talga Peak tenement E45/4137 (previously E45/2650). This sampling indicated a potential width of up to 50m and reported an average grade of 48.5% Fe from composite sampling across the BIF unit. Baker (2010) noted that this ridge is associated with the SMSZ, the major regional structure which run east-west through the project area and extending eastwards to the Spinifex Ridge iron ore project.

Mithril Resources Ltd explored the western most part of the Talga project area between 2009 and 2013. Mithril undertook a systematic base metal exploration program including historical data compilation, rock-chip and soil sampling, an airborne VTEM survey, a ground EM survey and RC drilling. The geophysical surveys defined a conductive horizon over 2km in length possibly corresponding to a sulphide-bearing quartz rich horizon. Limited rock sampling along this poorly exposed horizon returned a best assay of 309ppb Au with slightly elevated copper values. Three angled RC holes were drilled to test the weakly conductive horizon. Zones of elevated gold mineralisation were intersected in holes CTWRC002 (3m @ 0.42ppm Au from 209m) and CTWRC003 (15m @ 0.13ppm Au from 209m) which Mithril regarded as significant. This prospect is now held within E45/4654. Mithril's final report (Lockhead, 2015) concluded the following: "The amount of sulphide intersected in the drilling is unlikely to be enough to fully explain the conductors and further work is warranted. Holes were cased with 50mm PVC for DHEM and that would be an obvious first step to determine if further drilling is justified. The elevated gold in the drilling is highly encouraging and this fact alone justifies further work on this extensive horizon which has been mapped at surface for over 2km of strike on Mithril's ground." Mithril withdrew from the East Pilbara project in 2014 with no further work conducted.

In 2012 Great Sandy Pty Ltd (Great Sandy) commenced exploring the Talga project area, initially for gold and base metals, then iron ore. Initial field exploration activities conducted during 2012-2013 confirmed the location of all the main prospects, located important drill holes and confirmed the previously reported base metal and gold mineralisation. Activities included: desktop review of relevant past exploration activities and results; field visits including helicopter-assisted reconnaissance surveys including the Cord and Duesenberg prospects with ten rock chip and five soil samples collected (rock chip sample 572013 returned the best result of 27.5% Cu and 0.42g/t Au from the Cord prospect); Survey of selected historical drill collars using hand-held GPS. This rock chip sampling is covered by the JORC Code Table 1 Commentary included as Appendix 1 below.



During 2013 Great Sandy's exploration focus switched to iron ore and quickly outcropping iron ore associated with hematite rich Archaean BIF units was discovered at the Eginbah iron prospect within E45/4137. Helicopter supported surface sampling returned assays above 60% Fe and mapping defined massive conformable goethite-hematite outcrops extending up to 300m in length and 30m in width. The mineralisation was interpreted as the along strike equivalent of the high grade iron ore being mined at the time at the Spinifex Ridge deposit. The narrow but extensive BIF units were regarded as part of the Nimingarra Formation which has been caught up in the broad SMSZ. This prospective stratigraphy containing the narrow BIF units is interpreted to trend in a southwesterly direction through E45/3679, E45/4137 and E45/3857. In 2014 eight RC holes were drilled for 812m over the Eginbah prospect, within E45/4137. Results were disappointing with respect to grade, however it was encouraging that the drilling confirmed the existence of lode style haematite mineralisation. This style of mineralisation is host for the high grade hematite deposits mined historically at Mt Goldsworthy, Shay Gap and more recently Spinifex Ridge. Due to the significant fall in iron prices during the last guarter of 2014, no further drilling was undertaken. However, the potential remains for a high grade low tonnage direct shipping iron ore deposit to be discovered within the Talga project area. Great Sandy did not undertake further exploration for iron ore due to the price remaining low and the iron values returned from the drilling already completed.

No record of historic lithium exploration over the Talga project tenements has been identified by this review.

4.6 Current Exploration

The focus for exploration at the Talga project during the 2015-2016 reporting period returned to gold and base metals at existing prospect areas, plus lithium within a newly recognised geological setting. Work done for gold and base metals consisted of a renewed review of the previous work completed, along with field visits and rock chip sampling. The main target areas were around the Razorback gold and Cord base metals prospects. Details are provided in Section 4.9.

The Talga tenements within and adjacent to the Mount Edgar Granite batholith have the potential to host lithium mineralisation associated with tin and tantalum bearing pegmatites. Work done for lithium has involved a desktop review of the prospectivity of the project tenements for lithium mineralisation and a field visit. At this early stage no specific anomalies or prospects have been identified.

Iron ore work remains suspended.

4.7 Mineral Resources

No Mineral Resources or Exploration Targets have been reported for the Talga project.

4.8 Nearby Mines and Deposits

Section 3.8 (Emu Creek) of this IGR has described the main copper and gold mines and deposits in the East Pilbara, the locations of which are shown in Figure 10.

Known mineralisation within the area surrounding the Talga project dominantly occurs as orogenic gold deposits. The Talga tenements sit some 15km west from the Bamboo Creek gold mine. These gold deposits hosted in the bedding-parallel, brittle-ductile Bamboo Creek shear zone within a komatiite sequence of the Warrawoona Group. Production from the Bamboo Creek mining centre totalled 779,350t @ 8.15g/t Au from 1897-1995. Haoma Mining NL currently operate a 350,000 tpa gold plant at Bamboo Creek (Richardson, 2016).

At the historic Warrawoona Mining Centre 40km south of Talga, Calidus have estimated Mineral Resources of 5.6Mt @ 2.08g/t for Klondyke and 0.18Mt @ 6.1g/t for Copenhagen deposits and are actively drilling to increase resources (Calidus, 2017). These orogenic lode gold deposits, hosted in high-magnesium basaltic lavas with lesser tholeiite, andesite, sodic dacite, potassic rhyolite, chert and BIF and are also structurally sandwiched between granitoid complexes to the north and the south.

Two other mineral deposits of note in the immediate district are the large Coppin Gap coppermolybdenum deposit and the recently closed Spinifex Ridge iron ore mine. The Coppin Gap deposit is one of Australia's largest undeveloped molybdenum deposits containing a resource of 500Mt @ 0.06% Mo, 0.09% Cu, 1.7g/t Ag. Mineralisation is associated with a phase of 2,978 ±102



Ma calc-alkaline quartz-feldspar porphyries and granodiorites intruding the Archaean greenstone belt volcanics and sediments. The deposit was subject to an extensive development program which resulted in completion of full permitting and publication of definitive feasibility study in 2008. At current low molybdenum prices the project is uneconomic and remains on care and maintenance. The Spinifex Ridge high grade hematite deposit was mined out in 2013 producing over 1Mt of iron ore grading over 60% Fe (Moly Mines Limited, 2017).

4.9 Exploration Potential and Targets

The tenements hold potential for the discovery of orogenic lode gold mineralisation. They also hold prospectivity for VMS copper-gold, iron ore and lithium deposits. The Talga project occurs within one of the most prospective and mineralised Archaean greenstone terranes in the Pilbara, with the neighboring Bamboo Creek deposits to the east and the Klondyke and Copenhagen gold deposits to the south all hosted in greenstones of the Warrawoona Group. Historic exploration has identified prospective geological settings with widespread gold and base metal geochemical anomalism, and has delineated a number of advanced prospects. There exist significant opportunities to build on earlier work at these prospects and also to undertake greenfields exploration particularly for lithium.

4.9.1 Cord Base Metal Prospect

The Cord base metal prospect (E45/3679) is the most advanced prospect within the project area. It represents a VMS style target, with enrichment of precious metals. The prospect was identified by Esso in 1975 with most subsequent work undertaken by Mining Projects Group last decade. Refer to Section 4.5 for a description of this work.

The Cord prospect consists of a series of apparently VMS-related gossans located towards the top of the Warrawoona Group. These gossans have been interpreted to represent oxidised massive and/or disseminated VMS-style gold/base metal mineralisation by all previous explorers. The massive and semi-massive sulphides intersected at Cord contain significant levels of base metals (copper, lead and zinc) together with high silver levels. A list of significant intercepts in the historical drilling is provided in Table 3 in Section 4.5. This geochemical signature, together with the volcanic host lithologies, indicates a geological environment with the potential to host VMS-style base metal deposits. A 13.5km strike length of the mineralised horizon has been identified through a combination of geological mapping, prospecting, rock-chip sampling and soil geochemistry, delineating a number of smaller prospects (refer Section 4.9.4). Figure 17 illustrates the geology of the central portion of the Cord prospect and the location of aircore and RC drill holes. Figure 18 provides a cross section at easting 810,835mE illustrating the geometry of the mineralisation and several significant intersections. Only about 1.8kms has been drill tested and that only to a shallow depth (Baker, 2007).

Recent work by Great Sandy includes a geophysical review of existing surface and down-hole EM data review. This recommended more detailed geological mapping preceding a reinterpretation of the EM data involving 3D inversion modelling (Richardson, 2016).





Figure 17 Map of the Cord Prospect Showing Geology Drilling and Significant Intersections

Note: Geology taken from GSWA 1:100K mapping





Figure 18 Cross Section Cord Prospect

4.9.2 Razorback Gold Prospect

The Razorback prospect was formerly called Duesenberg prospect. It represents an orogenic lode gold target, with mineralisation associated with multiple sulphidic breccia zones in an extensive chert unit which crops out as a prominent ridge (Figure 19), with a length of 4km exhibiting anomalous gold-in-soil geochemistry. The gold-in-soil anomaly is open to the east, which provides an opportunity for extension with further geochemical sampling (Figure 20).



Figure 19 Photograph of the Razorback Prospect (from above looking east)



Figure 20 Map of the Razorback Prospect



Recent field work by Great Sandy has identified a 300m long, 1-3m wide, auriferous quartz sulphide reef (vein) along the north face of the Razorback ridge. It is associated with a shear zone and was named the Talga King Shear. Rock chip sampling returning a best assay of 7.89g/t Au, with outcrop pattern and all sample results shown on Figure 21. The JORC Code Table 1 commentary for this recent geochemical exploration work by Great Sandy is provided in Appendix 1.



Figure 21 Map of the Talga King Shear showing Rock Chip Results



Previous explorer, Mining Projects Group, completed 49 aircore drill holes at the Razorback prospect, designed to test only the more obvious gold in-soil anomalies. Of these, 23 returned at least one intercept above 1g/t Au with a best intercept of 12g/t Au. The collar location of the central aircore holes is shown on Figure 21, along with the highest downhole intersection. Gold mineralisation at Razorback appears to occur in an en echelon series of structures at a slight angle to the strike of the main ridge. The majority of the drilling occurs within a 700m strike length, leaving over 3km of strike untested by drilling. The average aircore hole depth is 55m which tests about 48m vertical depth. This was followed up with three angled RC drill holes which all returned encouraging intersections, particularly the westernmost hole a best intercept of TPRC027: 9m @ 1.12g/t Au from 56m (Baker, 2007; Richardson, 2017b). Figure 22 provides a map showing the location of historic drill holes and Figure 23 is a cross section through RC drill hole TPRC027 and four aircore holes. A list of significant intercepts in the historical drilling is provided in Table 4 in Section 4.5.

The identification of broad zones of weak gold mineralisation by the aircore and RC drilling, justifies further detailed evaluation through follow up drilling. Geological mapping suggests an apparent southeasterly structural trend, possibly controlling mineralisation. More detailed structural work will aid targeting. The Razorback prospect has only been partially tested by drilling and still has the potential to host a significant gold resource.



Figure 22 Map of Razorback Prospect showing RC and Aircore Drilling



Figure 23 Cross Section of Razorback Prospect - 808,780E



4.9.3 Lithium Exploration

Great Sandy have assessed the potential within the Talga project tenements for lithium prospectivity. Early workers have not explored for lithium. Lithium is very often associated with pegmatitic tin mineralisation, having similar chemistry and mineralising mechanisms to tin. The project is strategically located to the north of the Moolyella tin field, one of the most prolific



historical tin producing districts of the Pilbara. The southern part of E45/3679 lies over the Mount Edgar Granite Batholith (Figure 16). Alluvial tin is recorded from streams draining this granite's contact with the enclosing greenstone belt. Historic alluvial tin workings are located 20km south of the Talga project area. DMP records of tin dredging claim boundaries confirm that alluvial tin deposits have a spatial association with the granite/greenstone contact. The source of this tin is interpreted to be undiscovered and unreported pegmatites some of which are interpreted to lie within the Talga tenements (Richardson and Stone, 2016). A GSWA report on the geology of the Mount Edgar Batholith (Davy and Lewis, 1986) notes that is the "younger" post-tectonic granite at Moolyella and also to the north within the Talga tenement E45/3679. The post-tectonic granites are the source for the tin/tantalite and lithium-bearing pegmatites within the region.

To the south of Talga, recent exploration by Great Sandy has discovered significant lithium mineralisation within extensive pegmatites within its Brockman River project (E45/4669) located immediately south of the Moolyella tin field. Preliminary reconnaissance mapping and sampling over a small part of this tenement discovered swarms of well mineralised lithium bearing pegmatites. Some of the pegmatites were traced for over 700m. The mineralisation occurs in lithium-rich mica, lepidolite and spodumene minerals. The Moolyella tin field and surrounding area, which includes the Mount Edgar Granite batholith and adjacent greenstone belts, are thus now regarded as prospective for lithium (Richardson, 2017a).

Further work is planned to locate and sample all pegmatites within the Talga project area. Tenement E45/3679 has over 14kms of prospective granite/greenstone contact in an area of good outcrop allowing for cost effective prospecting.

4.9.4 Minor Prospects

Packard and Niagra Prospects

The Packard and Niagra gold-copper prospects are situated in the Cord Valley 8km and 6km west along strike from the Cord prospect (Figure 16). They were identified and tested by Mining Projects Group and are associated with a strongly gossanous, ferruginous and veined chert horizon. At Niagra anomalous gold-in-rock geochemistry defined an area 250m x 25-50m trending 080° and centred on 804700E and 7684000N. Numerous rockchip results >0.5g/t Au were reported (up to 7.1g/t Au) with anomalous copper (up to 0.1% Cu), arsenic (up to 0.5% As), antimony (up to 393ppm Sb), silver and lead (Baker, 2010). At the Packard gold-copper prospect a 700m long zone of float and outcrop hosts two mineralised structures and may correlate stratigraphically with the northern gossan at the Cord prospect. The observed structures are up to 8m in width and up to 20m apart. Rock chip sampling produced encouraging results from several outcropping gossanous zones and returning geochemical results up to 12.9g/t Au, 6.6g/t Ag and 14.3% Cu (Baker, 2010).

These prospects were covered by an EM survey of the Cord valley which identified some coincident conductors. Drill testing the EM targets reported narrower intercepts (3-18m) of variable sulphidic horizons beneath geochemical anomalous gossanous chert horizons within comparable stratigraphy to the Cord prospect. Significant results from the Packard prospect include TPRC34 which returned 4m @ 1.09g/t Au and 0.04% Cu from a veined gossanous zone (Baker, 2010). In reviewing the complete set of results, Mining Projects Group took the position that the potential for shallow to moderate depth base metal VMS style mineralisation along the Cord Valley was diminished. As such it was decided not to conduct any down hole geophysical surveys or further drill programs at these prospects (Baker, 2010).

Mithril Gold Prospect

This prospect is in the central eastern part of E45/4654 west of the Packard prospect (Figure 16). It was identified in an EM survey by Mithril in 2013 as a weakly conductive horizon over 2km in length possibly corresponding to sulphidic quartz rich outcrops. Limited rock sampling along this poorly exposed horizon returned a best assay of 309ppb Au with slightly elevated copper values. Zones of elevated gold mineralisation were intersected in two of three RC drill holes (refer Section 4.5).

Eginbah Iron Ore Prospect

Great Sandy explored for iron ore from 2013 to 2014. Prior to this there was little exploration for iron over the Talga area.



Outcropping iron ore associated with hematite rich Archaean BIF units was identified by surface mapping within E45/4137 and named the Eginbah hematite prospect. The host unit can be traced for over 10km within the project area as well-defined BIF unit mapped by the GSWA as an 'unassigned' member of the Archaean Gorge Creek Group and described as thinly bedded black, white and red BIF interbedded with ferruginous chert. The unit is strongly deformed where it is caught up in the regionally extensive SMSZ. The BIF is probably the along strike extension of the Nimingarra Iron Formation, the host rock for the Spinifex Ridge iron ore deposit. In places the BIF units occur as two distinct horizons, 50 to 100m wide, separated by an unmineralised chert or sandstone unit.

Due to the significant fall in iron prices in late 2014 and the modest iron grades returned from an initial drilling program at Eginbah, iron ore exploration was suspended. However, the geological setting of the Eginbah mineralisation is similar for the high grade hematite deposits mined historically at Mt Goldsworthy, Shay Gap and, more recently and locally, Spinifex Ridge. The potential remains for a high grade, low tonnage direct shipping iron ore deposit to be discovered within the Talga project area. Great Sandy have not undertaken further exploration for iron ore due to the price remaining low.

4.10 Exploration Strategy - Talga Project

PHA has indicated to Ravensgate that they will undertake a systematic, staged approach with respect to their exploration program focusing primarily on gold but also copper and lithium. Currently planned exploration programs for the Talga project are as follows.

Razorback and minor gold prospects:

- Detailed structural mapping of the prospect area,
- Geological mapping of the surrounding area,
- Rock and soil sampling, and
- RC drilling of priority targets defined by previous shallow aircore drilling, RC drilling and surface geochemical sampling.

Cord VMS prospect:

- Detailed structural mapping of the Cord Valley with the objective of determining the structural and geological setting of the multiple mineralised horizons along the 15km strike within the prospect area,
- The re-interpretation of all existing drilling, surface geochemical and geophysical data sets,
- RC drilling program to test priority targets defined by the reinterpretation.

Target Generation:

The Talga tenements within and adjacent to the Mount Edgar Granite batholith have the potential to host lithium mineralisation associated with tin and tantalum bearing pegmatites. Planned initial exploration will involve an extensive geological mapping, rock and stream sediment sampling program.

Ravensgate considers that the exploration strategy proposed by PHA is consistent with the mineral potential and status of the Talga project. In Ravensgate's opinion, further exploration of the Talga area is warranted.



5. PLANNED EXPLORATION EXPENDITURE

PHA has provided to Ravensgate their proposed exploration expenditure for the period following the capital raising ending 31 December 2019, which is summarised in the following tables. Table 5 provides the budget for a capital raising of \$7.5M, and Table 6 provides the budget for a capital raising of \$5.5M. These budgets include source funds of \$304,000 from PHA cash at bank at 31/12/2017, in addition to the proceeds from the public offer.

Category	Budget AUD	Percentage
Exploration Expenditure		
Gimlet Project	1,981,000	25.1
Emu Creek Project	1,508,000	19.3
Talga Project	1,012,000	13.0
Administration Costs	1,113,000	14.3
Estimated Expenses of the Offer	898,000	11.5
Working capital	1,292,000	16.6
TOTAL FUNDS ALLOCATED	7,804,000	100

Table 5Exploration Budget for \$7.5M Raising

Table 6Exploration Budget for \$5.5M Raising

Category	Budget AUD	Percentage
Exploration Expenditure		
Gimlet Project	1,250,000	21.5
Emu Creek Project	988,000	17.0
Talga Project	636,000	11.0
Administration Costs	1,113,000	19.2
Estimated Expenses of the Offer	748,000	12.9
Working capital	1,069,000	18.40
TOTAL FUNDS ALLOCATED	5,804,000	100

Ravensgate considers that the proposed exploration budget is consistent with the mineral potential and status of the projects. The proposed expenditure is sufficient to meet the costs of the exploration programs proposed and to meet statutory tenement expenditure requirements.



6. REFERENCES

Artemis Resources, 2017. Purdy's Reward Exploration Update - Karratha, Western Australia. ASX Announcement dated, 3 November 2017.

ASIC, 2007. Australian Securities and Investments Commission, Regulatory Guide 111, Content of Expert Reports.

Barley, M. E., Brown, S. J. A., Cas, R. A. F., Cassidy, K. F., Champion, D. C., Gardoll, S. J. & Krapez, B., 2003. An integrated geological and metallogenic framework for the eastern Yilgarn Craton: developing geodynamic models of highly mineralised Archaean granite-greenstone terranes. Australian Minerals Industry Research Association Report 624.

Baxter, J.L., 1974. Geological Survey of Western Australia, 1:250 000 Geological Series Explanatory Notes, Murgoo, Western Australia, 23 pp.

Blake, T.S., 2001, Cyclic continental mafic tuff and flood basalt volcanism in the Late Archaean Nullagine and Mount Jope Supersequences in the eastern Pilbara, Western Australia: Precambrian Research, v. 107, p. 139-177.

Blake, T.S., Buick, R., Brown, S.J.A., and Barley, M.E., 2004, Geochronology of a Late Archaean flood basalt province in the Pilbara Craton, Australia: constraints on basin evolution, volcanic and sedimentary accumulation, and continental drift rates: Precambrian Research, v. 133.

Cassidy, K.F., Champion, D.C., Krapez, B., Barley, M.E., Brown, S.J.A., Blewett, R.S., Groenewald, P.B. and Tyler, I.M., 2006. A revised geological framework for the Yilgarn Craton, Western Australia: Geological Survey of Western Australia, Record 2006/8, 8 pp.

Calidus Resources Limited, 2017. Prospectus. Lodged with ASIC on 5 May 2017.

Davy, R. and Lewis, J. D., 1986. The Mount Edgar Batholth Pilbara Area, WA Geochemistry And Petrography. GSWA Report 17.

De Grey Mining, 2017. Gold nuggets confirm important new conglomerate discovery - Loudens Patch. ASX Announcement dated 26 September 2017.

Drummond, B.J., Goleby, B.R. and Swager, C.P., 2000. Crustal signature of Late Archaean tectonic episodes in the Yilgarn Craton, Western Australia: evidence from deep seismic sounding: Tectonophysics v. 329, pp. 193-221.

Earth Science Australia, 2015. <u>http://earthsci.org/mineral/mindep/depfile/clas_dep.htm</u>.

Frimmel, H., Hennigh, Q., 2015. First whiffs of atmospheric oxygen triggered onset of crustal gold cycle. Miner. Deposita 50, 5-23.

Gee R.D., Baxter J.L., Wilde S.A. & Williams I.R., 1981. Crustal development in the Archaean Yilgarn Block, Western Australia, Geol. Soc. Aust., Spec. Publ., 7, 43-56.

Groenewald, P.B., Painter, M.G.M., Robert, F.I., McCabe, M., and Fox, A., 2000, East Yilgarn geoscience database, 1:100 000 geology Menzies to Norseman – An explanatory note: Western Australia Geological Survey, Report 78, 53p.

Haoma Mining, 2017. Annual Report for Year Ended June 30, 2017. ASX Announcement dated, 3 November 2017.

Hickman, A.H., 1983. Geology of the Pilbara Block and its environs: Western Australia Geological Survey, Bulletin 127.

Hickman, A. H., 1979. Nullagine, Western Australia: Geological Survey of Western Australia 1:250,000 Geological Series Explanatory Notes.

Hickman, A.H. and Little, S.L., 1978. 1:250,000 Geological Series Explanatory Notes Marble Bar Western Australia Sheet SF-508. Geological survey of Western Australia.

Hickman, A.H., Smithies, R.H. and Tyler, I.M., 2010. Evolution of active plate margins: West Pilbara Superterrane, De Grey Superbasin, and the Fortescue and Hamersley Basins - a field guide: Geological Survey of Western Australia, Record 2010/3, 74 pp.

Hickman, A.H., 2010. Pilbara Supergroup of the East Pilbara Terrane, Pilbara Craton: updated lithostratigraphy and comments on the influence of vertical tectonics. GSWA Annual Review 2009-10.

Hickman, A.H. and Van Kranendonk, M.J., 2012. Early Earth evolution: evidence from the 3.5-1.8 Ga geological history of the Pilbara region of Western Australia. Episodes, 35(1), pp.283-297.



Huston, D.L., Hickman, A.H. and Collins, P.L.F., 2002a, Preface to 'A Special Issue Devoted to the Early to Middle Archean Mineral Deposits of the North Pilbara Terrain, Western Australia': Economic Geology, v. 97, pp. 691-693.

Huston, D.L., Sun, S.-S., Blewett, R., Hickman, A.H., Van Kranendonk, M.J., Phillips, D., Baker, D. and Brauhart, C., 2002b, The timing of mineralisation in the Archaean Pilbara Craton, Western Australia: Economic Geology, v. 97, pp. 733-755.

Intermin Resources Limited, 2016. Robust Mineral Resource for Teal Gold Project. ASX/Media Release dated 24 May 2016.

Jones, C.B., 1990. Coppin Gap Copper-Molybdenum deposit: in Hughes, F.E. (Ed.), 1990 Geology of the Mineral Deposits of Australia & Papua New Guinea The AusIMM, Melbourne Mono 14, v1.

JORC, 2012. Australasian Code for Reporting of Mineral Resources and Ore Reserves (The JORC Code) prepared and jointly published by: The Joint Ore Reserve Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and the Minerals Council of Australia (JORC) The JORC Code 2012 Edition - Effective 20 December 2012 and mandatory from 1 December 2013 (Published December 2012).

Law, J.D.M., Phillips, G.M., 2005. Hydrothermal replacement model for Witwatersrand Gold. In: Hedenquist, J.W., Thompson, J.F.H., Goldfarb, R.J., Richards, J.P. (Eds.), One Hundreth Anniversary Volume. Society of Economic Geologists, Inc., Littleton, Colorado, pp. 799-811.

Leggo, N., 2017. Independent Geologist's Report on the Australian Mineral Assets of Keras (Gold) Australia Pty Ltd for Pharmanet Group Limited by Ravensgate Mining Industry Consultants, dated 10 April 2017. *Published in* Calidus Resources Limited, 2017.

McCrow, B., 2007. Independent Geologist's Report for Bellamel Mining Limited in Bellamell Mining Prospectus dated 2 October 2007.

McCuaig, T.C., Beresford, S. and Hronsky, J., 2010. Translating the mineral systems approach into an effective exploration targeting system: Ore Geology Reviews, v. 38, pp. 128-138.

Millennium Minerals Limited, 2017. Annual Report Year Ended 31 Dec 2016.

Morgan, A.M., 2008. Review Of The Gimlet Gold Project, Kalgoorlie, Western Australia,

Moly Mines Limited, 2017. www.molymines.com.au

MinCorp Consultants Pty Ltd for Pandell Pty Ltd, 30 Sept 2008.

Novo Resources, 2017a. Novo Targets Resource Expansion and Prefeasibility at Beatons Creek. Vancouver, British Columbia, May 16, 2017 (GLOBE NEWSWIRE) by Novo Resources Corp (TSX-V:NVO)

Novo Resources, 2017b. Novo Provides Exploration Update From Purdy's Reward. TSX Announcement. Vancouver, BC, December 21, 2017 - Novo Resources Corp. (TSXV:NVO)

Pawley, M.J., Wingate, M.T.D., Kirkland, C.L., Wyche, S., Hall, C.E., Romano, S.S. and Doublier, M.P., 2012. Adding pieces to the puzzle: episodic crustal growth and a new terrane in the northeast Yilgarn Craton, Western Australia: Australian Journal of Earth Sciences: An International Geoscience Journal of the Geological Society of Australia, 59:5, 603-623.

Richardson, B., 2017a. A Summary Report on Great Sandy Pty Ltd's Pilbara Lithium Projects. Unpublished Denis O'Meara Prospecting report dated 24 August 2017.

Richardson, 2017b. WA Gold And Base Metal Exploration Projects Information And Review. Unpublished Denis O'Meara Prospecting report dated October 2017.

Swager, C. P., 1997. Tectono-stratigraphy of the late Archaean greentone terranes in the southern Eastern Goldfields, Western Australia: Precambrian Research, v. 83, p. 11-42.

Thorne, A.M. and Trendall, A.F., 2001, Geology of the Fortescue Group, Pilbara Craton, Western Australia: Geological Survey of Western Australia Bulletin 144.

VALMIN, 2015. Australasian Code for Public Reporting of Technical Assessments and Valuations of Mineral Assets - The VALMIN Code, 2015 Edition.

Van Heerden, A. 2015. NI 43-101 Technical Resource Report Beatons Creek Gold Project Pilbara Region, Australia. Independent report for Novo Resources Corp by Tetra Tech - October 1, 2015.

Van Kranendonk, M. J., Collins, W. J., Hickman, A. H., and Pawley, M. J., 2004. Critical tests of vertical vs. horizontal tectonic models for the Archaean East Pilbara Granite-Greenstone



Terrane, Pilbara Craton, Western Australia: Precambrian Research, v.131, p. 173-211, doi:10.1016/j.precamres.2003.12.015.

Van Kranendonk, M.J., Hickman, A.H., Smithies, R.H., Williams, I.R., Bagas, L. and Farrell T.R., 2006, Revised lithostratigraphy of Archean supracrustal and intrusive rocks in the northern Pilbara Craton Western Australia: Geological Survey of Western Australia, Record 2006/15, p57.

VentureX, 2017. Annual Report of VentureX Resources Limited. ASX Announcement dated 29 Sept 2017.

Witt, W.K., 1987. Stratigraphy and layered mafic/ultramafic intrusions of the Ora Banda sequence, Bardoc 1:100,000 sheet, Eastern Goldfields; An Excursion Guide. in Witt and Swager ed. Second Eastern Goldfields Field Conference, 1987; Geol. Soc. of Aust., W.A. Div.

Witt, W.K., 1993. Gold Mineralization in the Eastern Goldfields, Western Australia Menzies-Kambalda Region. GSWA Report 39.

Wyche, S., 2007. Towards a Unified Stratigraphy for Yilgarn Greenstones. In: Bierlein, F. P., and Knox-Robinson C. M., (Eds.) 2007. Proceedings of Geoconferences (WA) Inc Kalgoorlie '07 Conference. Record 2007/14. p.18-22.

Wyche, S., Fiorentini, M. L., Miller, J. L., and McCuaig, T. C., 2012. Isotopic constraints on stratigraphy in the central and eastern Yilgarn Craton, Western Australia. Australian Journal of Earth Sciences 59, 657-670

6.1 WAMEX Open File Reports - Gimlet Project

Cranley, N. 2009. Annual Report 1 January 2008 to 31 December 2008 Abattoir South Project M26/346*, M26/499*, M26/621, M26/549 P26/3578, 3584-3589, 3582, P26/3579-3581, P24/4235, Black Mountain Gold NL/Intermin Resources Ltd.

O'Sullivan, R., 2005. Annual Technical Report - Exploration Licence 26/58 Horans Dam Project to June 2005. Internal report for De Grey Mining Ltd.

Peebles, P., 2004. Annual Technical Report - Exploration Licence 26/58 Horans Dam Project to June 2004. Internal report prepared by Darlington Geological Services for De Grey Mining Ltd.

Stuart, L., and O'Meara D., 2008. Gimlet Project E26/120 Annual Report for the Period 4 May 2007 to 3 May 2008, Laconia Resources Limited and Pandell Pty Limited.

Stuart, L., 2009. Gimlet Project E26/120 Annual Report for the Period 4 May 2008 to 3 May 2009, Laconia Resources Limited and Pandell Pty Limited.

Stuart, L., 2010. Gimlet Project E26/120 Annual Report for the Period 4 May 2009 to 3 May 2010, Laconia Resources Limited and Pandell Pty Limited.

Stuart, L., 2011. Gimlet Project E26/120 Annual Report for the Period 4 May 2010 to 3 May 2011, Laconia Resources Limited and Pandell Pty Limited.

Stuart, L., 2012. Gimlet Project E26/120 Annual Report for the Period 4 May 2011 to 3 May 2012, Laconia Resources Limited and Pandell Pty Limited.

Stuart, L., 2013. Gimlet Project E26/120 Annual Report for the Period 4 May 2012 to 3 May 2013, Laconia Resources Limited and Pandell Pty Limited (draft).

Watkins, R., 2001. Binduli North Joint Venture Combined Annual Report 1st January 2000 to 31st December 2000 DOME Reference: C202/1995. Delta Gold Ltd.

Watkins, R., and Martin, A., 2002. Binduli North Joint Venture Combined Annual Report 1st January 2001 to 31st December 2001 DOME Reference: C202/1995. Delta Gold Ltd.

6.2 WAMEX Open File Reports - Emu Creek Project

Stewart, L., 2011. Copper Hills Project WAMEX Review. Internal company report dated 27 July 2011.

Fox, K., 1982. Emu Creek Prospect Pilbara Goldfield Western Australia; PLs46/12-16. (A12588)

Ingram, 1997. Coongan Gold and Basemetal Project, Final Surrender Report to January 1997, E46/261-262, 399, 368; E45/1524,1555. Great Southern Mines.

KSGM, 1984. Emu Creek Prospect Geological Report No. 2 by Kalgoorlie Southern Gold Mines N.L.; 3 August 1984. (A14779)



Pitt, J.N., 1993. Coongan Basemetal Gold Project, Corunna Downs East Pilbara, 1992 Annual Report. Bacome Pty Ltd.

Pitt, J.N. and Strong, G.R., 1994. Coongan Basemetal Gold Project, Corunna Downs East Pilbara M7851, 1993 Annual Report. Bacome Pty Ltd.

Strong, G.R., 1999. Surrender Report E46/428 Vuggy Hill East Pilbara Project WA. (A57106)

Vanderplank, A., 1994. Review of the Coongan Project. Consultant Report. *in* Pit and Stong, 1994.

6.3 WAMEX Open File Reports - Talga Project

Baker, A. 2007. Annual Report, Talga Peak Project, E45/2650, for the 12 Month Period Ending 22/12/2006. Mining Projects Group on behalf of Oakover Gold Ltd.

Baker, A. 2010. Annual Report, Talga Peak Project, E45/2650, for the 12 Month Period Ending 22/12/2009. Mining Projects Group on behalf of Oakover Gold Ltd.

Lockhead, A., 2015. Mithril Resources Ltd E45/3457 AND E45/3680 Cattle Well And One Mile Creek Final Surrender Report C279/2011 For the Period E45/3457 30 September 2010 to 24 August 2015; E45/3680 12 April 2011 to 24 August 2015.

Newport, R., 1995. Exploration Licences 45/130, 45/1301, 45/1483, 45/1486 Coongan Project Pilbara WA Annual Report for the Second Year Ended 31 December 1994. Compass Resources NL.

Perring, R.J., 1993. Poseidon Exploration Limited Marble Bar Project Final Report E45/1441 and E45/1412 October 1993 to November 1993.

Richardson, B. 2013. Talga Peak Project E45/3679 Annual Report to the Department of Mines and 17Mt @ 4.4% Zn and 1.3% Cu with Au and Ag credits Petroleum for the period 12/06/2012 to 11/06/2013. Great Sandy Pty Ltd.

Richardson, B. 2014. Talga Peak Project E45/3679 Annual Report to the Department of Mines and Petroleum for the period 12/06/2013 to 11/06/2014. Great Sandy Pty Ltd.

Richardson, B. 2014. Talga Project E45/3857 Annual Report to the Department of Mines and Petroleum for the period 11/02/2013 to 10/02/2014. Great Sandy Pty Ltd.

Richardson, B. 2014. Talga Peak Project E45/4136 Annual Report to the Department of Mines and Petroleum for the period 16/09/2013 to 15/09/2014.

Richardson, B. 2014. Talga Peak Project E45/4137 Annual Report to the Department of Mines and Petroleum for the period 16/09/2013 to 15/09/2014.

Richardson, B. 2015. Talga Peak Project E45/3679 Annual Report to the Department of Mines and Petroleum for the period 12/06/2014 to 11/06/2015. Great Sandy Pty Ltd.

Richardson, B. 2015. Talga Project E45/3857 Annual Report to the Department of Mines and Petroleum for the period 11/02/2014 to 10/02/2015. Great Sandy Pty Ltd.

Richardson, B. & Stone, C., 2015. Eginbah Iron Project, Round 9 EIS Co-funded Drilling Program 2014/2015, Final Report to the DMP, Tenement E45/4137. Great Sandy Pty Ltd.

Richardson, B. and Stone, C., 2015. Talga Project C92/2015 Combined Annual Report to the Department of Mines and Petroleum for the period 16/09/2014 to 15/09/2015. Tenements E45/3679, E45/3857, E45/4136 & E45/4137. Great Sandy Pty Ltd.

Richardson, B. & Stone, C., 2016. Talga C92/2015 Combined Annual Report to the Department of Mines and Petroleum for the period ending 15/09/2016. Great Sandy Pty Ltd.

Robinson, S. H., 1998. Annual Report Pilbara Joint Venture. Exploration Licences 45/130, 45/1301, 45/1483, 45/1486, 45/1603, 45/1710 for the Year Ended 31 December 1997. Compass Resources NL.

Semple, D.G., 1975. ESSO Exploration and Production Aust. Inc. Murphy Well Claims Annual Report for Period Ending March 1975.

Stuart, L., 2010. Talga Peak Project E45/2650-I Annual Report for the Period 23 December 2009 To 22 December 2010. Oakover Gold Limited.

Stuart, L., 2011. Talga Peak Project E45/2650-I Annual Report for the Period 23 December 2009 To 22 December 2010. Oakover Gold Limited.



7. LIST OF ABBREVIATIONS

Ag	Silver
ASIC	Australian Securities and Investment Commission
ASX	Australian Securities Exchange
Au	Gold
bcm	Bank cubic meters
BIF	Banded iron formation
BLEG	Bulk leach extractable gold (analytical technique)
CIL	Carbon-in-leach (metallurgical process)
Си	Copper
D1	First regional deformation, D2 = second regional deformation etc
DMP	Department of Mines and Petroleum (Western Australia)
ЕМ	Electromagnetic geophysical survey
EOH	End of hole
Ga	Giga annum - 1 billion years ago
GPS	Global positioning system
GSWA	Geological Survey of Western Australia
q/t	Grams per tonne
ha	hectare
ICP-OES	Inductively coupled plasma - optical emission spectrometry
IGR	Independent Geologist's Report
IP	Induced polarisation
JORC	Joint Ore Reserves Committee
JORC Code	2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves
JV	Joint Venture
К	Thousand(s)
km	Kilometre(s)
km²	Square kilometre(s)
LAG	A geochemical method based on sampling lag material
т	Metre(s)
М	Million(s)
Ма	Mega annum - 1 million years ago
MAIG	Member of the Australian Institute of Geoscientists
MAusIMM	Member of the Australasian Institute of Mining and Metallurgy
Mt	Million tonnes
Mtpa	Million tonnes per annum
Ni	Nickel
oz	Ounce (Troy ounce - measure of weight)
ppb	Parts per billion; a measure of concentration
ppm	Parts per million; a measure of concentration
pXRF	Portable x-ray fluorescence instrument
RAB	Rotary air blast (drill hole)
RC	Reverse circulation (drill hole)
SEDEX	Sedimentary exhalative (mineral deposit classification)
t	Tonne(s)
t/m³	Tonnes per cubic metre
ТЕМ	Transient electromagnetic geophysical survey
TFMMR	Total Field Magnetometric Resistivity geophysical survey



ТМІ	Total magnetic intensity
VMS	Volcanogenic massive sulphide (mineral deposit classification)
VALMIN Code	Code for the Technical Assessment and Valuation of Mineral and Petroleum Assets and Securities for Independent Expert Reports
WAMEX	Western Australian Mineral Exploration reports database
Zn	Zinc



8. GLOSSARY

aeromagnetic	A survey undertaken by helicopter or fixed-wing aircraft for the purpose of recording magnetic characteristics of rocks by measuring deviations of the Earth's magnetic field.
aircore drilling	A relatively inexpensive drilling technique similar to RC drilling, in which the drill cuttings are returned to surface inside the rods.
amphibolite	A mafic metamorphic rock consisting mainly of amphibole minerals, especially hornblende and actinolite.
anomaly	An area where exploration has revealed results higher than the local background level.
Archaean	The oldest geologic time period, pertaining to rocks older than about 2,500 million years.
assay	The testing and quantification metals of interest within a sample.
Cainozoic	The youngest geologic time period, pertaining to rocks younger than about 66 million years.
carbonate	Rock or mineral dominated by the carbonate ion (CO^{2-}_{3}) , of sedimentary or hydrothermal origin, composed primarily of calcium, magnesium or iron and carbon and oxygen. Essential component of limestones and marbles.
chlorite	A green coloured hydrated aluminium-iron-magnesium silicate mineral common in metamorphic rocks.
complex	An intricate assemblage of geological units, typically in metamorphic or igneous terranes.
Craton	An old and stable part of the continental lithosphere.
diamond drilling	Drilling method employing a (industrial) diamond encrusted drill bit for retrieving a cylindrical core of rock.
Domain	Geological zone of rock with similar geostatistical properties; typically a zone of mineralisation
dykes	A tabular body of intrusive igneous rock, crosscutting the host strata at a high angle.
fault	A wide zone of structural dislocation and faulting.
felsic	Igneous rocks with a large percentage of light-coloured minerals such as quartz, feldspar, and muscovite. It is contrasted with mafic rocks, which are relatively richer in magnesium and iron.
gabbro	A black coarse-grained intrusive igneous rock that is the compositional equivalent of basalt.
geochemical	Pertains to the concentration of an element.
geochronology	The science of determining the absolute age of rocks. Dating methods involve measuring the amount of radioactive decay of a radioactive isotope with a known half-life.
geophysical	Pertains to the physical properties of a rock mass.
gneiss	A common metamorphic rock formed at high temperatures and pressures from igneous or sedimentary rocks, having characteristic foliations (gneissic banding) of alternating dark/light coloured bands.
granite	A coarse-grained igneous rock containing mainly quartz and feldspar minerals and subordinate micas.
granitoid	A broad category of coarse-grained acid igneous rock including granite, quartz monzonite, quartz diorite, syenite and granodiorite.
gravity survey	Measurements of gravitational acceleration and gravitational potential at the Earth's surface searching for mineral



	deposits.
greenstone	A metamorphosed basic igneous rock which owes its colour and schistosity to abundant chlorite.
greenstone belt	A broad term used to describe an elongate belt of rocks that have undergone regional metamorphism to greenschist facies.
induced polarisation	Geophysical survey technique used to identify the electrical chargeability of subsurface materials.
intrusive	Any igneous rock formed by intrusion and cooling of hot liquid rock below the earth's surface.
lithology	The description of a rock unit's physical characteristics visible in hand or core samples, such as colour texture grain-size and composition.
lode	A deposit of metalliferous ore formed in a fissure or vein.
mafic	Igneous rock composed dominantly of dark coloured minerals such as amphibole pyroxene and olivine, generally rich in magnesium and iron.
magmatic	Derived from or associated with magma. Magma is a complex high-temperature fluid substance present within the earth,
	which on cooling forms igneous rocks.
metamorphic	A rock that has been altered by metamorphism from a pre- existing igneous or sedimentary rock type.
metamorphism	Alteration of the minerals, textures and composition of a rock caused by exposure to severe heat, pressure and chemical actions.
Mineral Resource	Concentration of mineralisation in the earth for which there are reasonable prospects for eventual economic extraction.
outcrop	A visible exposure of bedrock or ancient superficial deposits on the surface of the Earth.
porphyritic	Textural term for igneous rocks in which large crystals (phenocrysts) are set in finer groundmass, which may be crystalline or glass.
porphyry	Igneous rock with a porphyritic texture.
pyroxene	Silicate mineral group common in mafic rocks.
quartz	Common mineral composed of crystalline silica, with chemical formula SiO_2 .
RAB drilling	Rotary Air Blast. A relatively inexpensive but less accurate percussion drilling technique involving the collection of sample returned by compressed air from outside the drill rods.
RC drilling	Reverse Circulation. A percussion drilling method in which the fragmented sample is brought to the surface inside the drill rods, thereby reducing contamination.
resource	In situ mineral occurrence from which valuable or useful minerals may be recovered.
saprock	Weakly weathered rock with weathering restricted to fracture margins
schist	A metamorphic rock dominated by fibrous or platey minerals, with a strongly foliated fabric (schistose cleavage).
sedimentary	A term describing a rock formed from sediment.
shear	A deformation resulting from stresses that cause rock bodies to slide relatively to each other in a direction parallel to their plane of contact.
sill	A concordant sheet of igneous rock lying nearly horizontal.
soil sampling	The collection of soil specimens for mineral analysis.
stratigraphic	Pertaining to the composition, sequence and correlation of



	stratified rocks.
strike	Horizontal direction or trend of a geological strata or structure.
structural	Pertaining to rock deformation or to features that result from it.
succession	Group of rock strata that succeed one another in chronological order.
superterrane	Composite terranes that comprise groups of individual terranes and other assemblages that share a distinctive tectonic history.
terrane	Any rock formation or series of formations or the area in which a particular formation or group of rocks is predominant.
ultramafic	Igneous and meta-igneous rocks composed of greater than 90% mafic minerals with very high magnesium and iron content, very low silica and potassium content.
volcanics	Rocks formed or derived from volcanic activity.



APPENDIX 1

Geochemical Sampling Results - Great Sandy Pty Ltd

Emu Creek and Talga Projects - Rock Chip Sample Assay Results.

Sample ID	mE	mN	Au ppm	Ag	As ppm	Cu %	Pb ppm	Zn ppm
Emu Creek:							PP	
CHR001	806144	7598710	0.201	39	446	12.4	201	37
CHR002	806067	7598767	0.122	39.8	393	4.29	136	130
CHR003	805994	7598812	0.181	30.5	651	11.3	62	43
CHR004	805875	7598923	0.077	6.2	314	5.27	72	469
CHR005	806274	7598584	0.051	8.35	1420	0.0894	114	42
CHR006	806327	7598531	0.207	16.2	1270	0.0409	382	44
CHR007	808260	7604188	0.024	2.8	170	0.906	19	20
CHR008	808412	7604323	0.073	11	982	14.8	96	373
L105553	806889	7600002	0.006	3.4	77.5	0.461	56	60
L105554	806738	7600024	31.8	46.9	519	7.97	1280	399
L105628	806867	7599837	0.039	29.1	171	8.03	103	159
L105629	806898	7599994	0.243	74	851	12.5	1550	716
L108737	806174	7598678	0.359	8.95	1420	0.0325	58	25
L108738	806132	7598710	0.275	29.9	1330	9.16	244	203
L108739	806103	7598731	0.133	17.3	1120	5.7	160	118
L108740	806080	7598758	0.07	9.6	221	0.1	15	10
L108741	806055	7598768	0.087	11.7	564	0.184	50	26
L108742	806021	7598802	0.486	10.9	2420	0.164	148	78
L108743	805943	7598849	0.218	11.7	448	0.374	75	53
L108744	806256	7598598	1.04	14.3	3360	0.0404	683	75
L108745	806292	7598569	0.505	16.8	3750	0.0382	895	57
L108746	806340	7598517	0.715	18.3	2370	0.0088	542	13
L108747	806342	7598511	0.95	19.8	6280	0.0541	682	317
L108748	806407	7598477	1.52	18.1	9920	0.0429	5990	82
L108749	806455	7598451	0.253	21.9	3210	0.0713	4900	251
L108750	807436	7602407	0.012	4.8	153	1.99	218	10
L108751	807435	7602406	0.008	1.7	43	0.0141	24	27
L108753	808200	7604149	0.204	52.5	228	16.7	28	35
L108754	808252	7604208	0.293	30.3	1300	12.7	69	103
L108755	808331	7604263	0.114	8.1	563	11.2	95	56
L108756	808616	7604434	0.098	16.9	326	4.03	39	58
L108758	806868	7599840	0.019	20.8	244	2.37	131	157
L108759	806820	7599842	0.263	37.5	681	12	831	193



Sample ID	mE	mN	Au	Ag	As	Cu %	Pb	Zn
Talga:							PP	
L105549	802535	7684600	3.4	0.25	102	0.0594	14	13
L105550	802536	7684600	0.101	1.25	88	2.67	3	148
L105551	804615	7684660	0.13	0.3	230	0.0153	3	4
L105552	804615	7684660	0.088	0.15	296	0.0104	3	3
L105576	802493	7684596	8.59	0.6	59	0.0112	17	7
L105577	802493	7684598	0.346	0.2	23.5	0.0151	10	23
L105578	802529	7684622	0.149	0.15	4.5	0.0183	2	21
L105579	802435	7684631	0.017	0.15	47	0.0093	2	5
L105580	802436	7684621	0.113	0.15	63.5	0.0856	6	49
L105581	802408	7684622	0.007	0.05	8	0.017	-1	28
L105582	802372	7684624	0.071	0.05	16	0.0534	4	59
L105583	802365	7684609	0.459	0.25	43	0.263	3	11
L105584	802365	7684615	0.011	0.05	8.5	0.0215	2	77
L105585	802304	7684609	0.343	0.2	13	0.0207	2	10
L105586	802307	7684615	0.009	0.1	38.5	0.0023	-1	48
L105587	802095	7684624	0.022	0.15	2.5	0.0239	-1	37
L105588	804570	7684655	2.47	0.35	1220	0.0069	16	5
L105589	804542	7684649	0.069	0.1	193	0.111	3	27
L105590	804543	7684649	0.017	0.05	152	0.0126	2	6
L105591	804608	7684662	0.261	0.3	480	0.0302	7	4
L108760	808949	7680517	2.68	5.95	32	0.176	188	332
L108761	808945	7680518	1.11	0.9	6.5	0.0106	82	1400
L108762	808946	7680520	1.02	2.15	24.5	0.0374	821	823
L108763	808975	7680508	0.108	0.3	20.5	0.0084	13	204
L108764	808979	7680509	0.925	0.3	3.5	0.0058	6	52
L108765	809037	7680497	2.43	0.55	5	0.0201	5	52
L108766	809080	7680486	3.12	0.5	5	0.0094	17	44
L108767	809130	7680479	2.61	0.4	18.5	0.0036	6	30
L108768	809141	7680472	2.83	0.45	11.5	0.0053	7	34
L108769	809224	7680451	5.32	0.6	23.5	0.0078	13	202
L108770	809231	7680452	0.16	0.1	48.5	0.0066	5	183
L108771	808918	7680528	7.89	1.4	8	0.0179	12	96

Note: Co-ordinate Projection MGA94 Zone 50.



APPENDIX 2

JORC Code Table 1 - Geochemical Sampling - Great Sandy Pty Ltd

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	 Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling. Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. Aspects of the determination of mineralisation that are Material to the Dublic Depend. 	65 rock grab samples were collected as part of the ongoing assessment of the Emu Creek and Talga projects to host gold and base metal (Cu, Pb, Zn, Ag) mineralisation. The samples have an irregular spacing reflecting the reconnaissance nature of the assessment. Rock samples were collected as grab samples from in-situ outcropping rock, so as to be representative of the observed mineralised zone. Multiple rock fragments at each sample location were collected so that the sample submitted for assay was as representative as possible of the sample site
	 In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 	The presence or absence of mineralisation was initially determined visually by the field geologist.
	30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.	The rock grab sampling is a standard approach during assessment of exploration projects. The known gold and base metal mineralisation occurs associated with shear zone, quartz veins and gossanous units after sulphides. The rock samples collected are considered representative of the area sampled.
Drilling techniques	• Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face- sampling bit or other type, whether core is oriented and if so, by what method, etc).	 Not applicable, no drilling has been carried out
Drill sample recovery	 Method of recording and assessing core and chip sample recoveries and results assessed. 	 Not applicable, no drilling has been carried out
Logging	 Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies. Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography. 	• Notes relating to each sample were recorded in a field note book and later transcribed to digital form. This information is of insufficient detail to support any Mineral Resource Estimation.



Criteria	JORC Code explanation	Commentary
	 The total length and percentage of the relevant intersections logged. 	
Sub- sampling	• If core, whether cut or sawn and whether quarter, half or all core	Not applicable, no drilling has been carried out.
techniques and sample preparatio n	 taken. If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry. For all sample types, the nature, quality and appropriateness of the sample preparation technique. 	The sample preparation of the rock samples follows industry best practice, involving oven drying, crushing pulverising and chemical analysis, carried out by Bureau Veritas laboratories, Perth.
	 Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples. Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field 	No measures have been taken to ensure sampling is statistically representative of the in situ sampled material. The collection methodology is considered appropriate for this early stage assessment of the project.
	 duplicate/second-half sampling. Whether sample sizes are appropriate to the grain size of the material being sampled. 	The sample size is considered appropriate to the material being sampled and to produce results to indicate the degree of mineralisation in the areas sampled.
Quality of assay data and laboratory tests	• The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.	 Analysis was carried out by Bureau Veritas Laboratories, Perth which is a certified laboratory in compliance with AS/NZS-9001:200. Analytical Methods: The samples were digested with Aqua Regia. This is a partial digest method extremely efficient for the extraction
	 For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc. Nature of quality control procedures 	of gold. Easily digested elements show good recoveries however others (particularly the refractory oxides and silicates) are poorly extracted. Element concentrations were then determined by Inductively Coupled Plasma (ICP) Optical Emission Spectrometry and ICP Mass Spectrometry.
	adopted (eg standards, blanks, duplicates, external laboratory checks)	Not used
	and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.	No additional quality control measures beyond that of the Laboratory QA/QC were implemented.
Verificatio n of sampling and assaying	 The verification of significant intersections by either independent or alternative company personnel. The use of twinned holes. Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. 	• The results are considered acceptable and have been reviewed by multiple geologists. The company conducts internal data verification, data entry and storage protocols which have been followed.
	• Discuss any adjustment to assay data.	No adjustments to assay data has been undertaken
Location of data points	• Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral	• Samples were located during collection by handheld GPS (Garmin GPS63c) with a typical accuracy of +/- 5m.



Criteria	JORC Code explanation	Commentary
	Resource estimation.Specification of the grid system used.Quality and adequacy of topographic control.	The grid system used is Australian Geodetic MGA Zone 50 (GDA94). The level of topographic control offered by the handheld GPS is considered sufficient for the work undertaken
Data spacing and distributio n	 Data spacing for reporting of Exploration Results. Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied. Whether sample compositing has been applied. 	 There was no predetermined grid spacing to the program with sample sites being selected as outcrop was located, in order to give a first pass dataset to evaluate the area The data spacing and distribution is not sufficient to establish the degree of geological and grade continuity appropriate for Mineral Resource estimation procedures. Samples have not been composited.
Orientatio n of data in relation to geological structure	 Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material. 	 Sampling was carried out over small areas of outcrop, across and along the strike of the unit where possible, but due to poor outcrop it is not known if they are representative of the entire horizon. Not applicable, no drilling has been carried out
Sample security	• The measures taken to ensure sample security.	• All samples were collected by the field geologist and stored in a secure location until completion of the program when they were delivered to Bureau Veritas laboratories, Perth by commercial courier.
Audits or reviews	• The results of any audits or reviews of sampling techniques and data.	 No audits or reviews of the data have been conducted at this stage



Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	 Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings. The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area. 	 The Emu Creek project comprises granted tenements E46/732 and E46/1066. Great Sandy Pty Ltd has a Farm In agreement with the tenement holders, Atlas Iron. The Talga project comprises 5 granted tenements E45/3679, E45/3857, E45/4136, E45/4137 and E45/4615. PHA has entered into an agreement to acquire 100% of Great Sandy's interest in all tenements. The tenements are all secure granted tenements with no known impediments to continuing exploration.
Exploration done by other parties	 Acknowledgment and appraisal of exploration by other parties. 	• Past exploration in the region, mainly carried out in the search for gold and base metals has provided useful data. Together with government data provided by GSWA the information has allowed recognition of the projects mineral potential
Geology	• Deposit type, geological setting and style of mineralisation.	 The Emu Creek project is prospective for Volcanogenic Massive Sulphide (VMS) base metal mineralisation, shear and vein hosted gold mineralisation and gold mineralisation associated with conglomerates. The Talga project is prospective for VMS base metal mineralisation and shear hosted gold mineralisation.
Drill hole Information	• A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes.	• Drilling has not been carried out. A summary of rock sample locations is tabulated and presented graphically within the above report.
Data aggregation methods	 In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated. 	 No averaging or cut-off grades have been applied assay results.
Relationshi p between mineralisat ion widths and intercept lengths	 These relationships are particularly important in the reporting of Exploration Results. If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported. 	• Exploration is at an early stage and information contains insufficient data points to allow these relationships to be reported
Diagrams	 Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant 	• Sample plans of selected samples are contained within the report.



Criteria	JORC Code explanation	Commentary
	discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	
Balanced reporting	• Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	• Only samples collected by Great Sandy within the previous 12 months are included. These samples were designed to confirm the results returned by previous explorers or to test new targets. Numerous historical assay results occur over the projects but are too numerous to include in this report.
Other substantive exploration data	• Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples - size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.	 The exploration reported herein is still at an early stage but results are consistent with geological and geophysical data and results from previous exploration in the district.
Further work	• The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).	• Further more detailed mapping and follow up sampling is required together with other programs described in the report above.

