# CULLEN RESOURCES LIMITED

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ASX Symbol: CUL

22 January 2014

## Strong EM conductors identified, Mt Eureka greenstone belt

# Highlights

- Cullen has completed a ground EM survey at its Doyles nickel prospect
- Preliminary interpretation indicates two strong EM conductors and one weaker EM conductor within an interpreted ultramafic sequence
- Cullen has clearance to drill two of these EM conductors, and intends to commence as soon as possible, and will seek statutory approvals and heritage clearances for drilling the third conductor in the same programme
- Cullen also intends to re-drill the Silverbark North nickel prospect where two previous RC holes did not reach the target in the same programme

#### Background

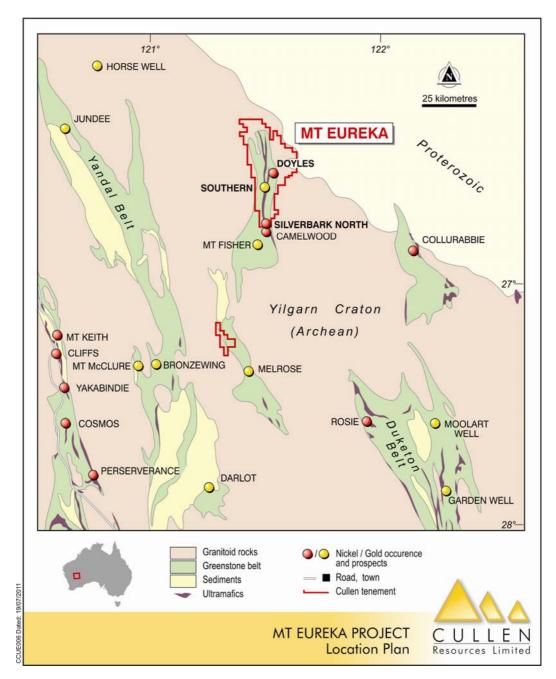
Cullen Resources Limited (Cullen) holds 100% of ~650km<sup>2</sup> of approved tenure\* in the Mt Eureka Greenstone Belt in the North Eastern Goldfields of Western Australia which includes multiple targets for nickel sulphides and gold. The high nickel prospectivity of Cullen's ground is confirmed by the discovery of nickel sulphides by Rox Resources Limited (Rox) at Camelwood and Cannonball – Musket (Fisher East Project), located a few kilometres along strike to the south of Cullen's tenement boundary (Rox ASX release, ASX: RXL of 3/10/2013 describes the maiden mineral resource for Camelwood and ASX release of 10/1/2014 describes discoveries at Cannonball and Musket).

#### 1. GROUND EM COMPLETED AT DOYLES NICKEL PROSPECT

Cullen has completed a ground EM survey at its Doyles nickel prospect, located approximately 25km north and along strike of Camelwood, to optimise drilling positions. This survey covers a cluster of "picks" (anomalies), from a 2007 VTEM survey. These anomalies are broadly coincident with an area of anomalous nickel geochemistry from historical shallow drilling (as reported previously, Cullen ASX: 23/10/2013). Preliminary interpretation of the ground EM data has identified two strong conductors, interpreted by Cullen to be at the base of the oldest ultramafic horizon (UM) within the Mt Eureka greenstone sequence.

This part of the stratigraphy was only lightly examined by previous explorers with no deep drilling (>35m) known to have occurred in the vicinity of the recently-discovered conductors. Cullen also notes that the Doyles prospect is located where the strongly magnetic BIF, which marks the eastern stratigraphic base to the greenstone belt, appears to be demagnetised or thinned – a setting very similar to the stratigraphic situation at the Camelwood discovery. Cullen's consultants (Southern Geoscience Consultants) are now modeling the anomalies to estimate the size, shape and orientation of the conductors, and to design drill holes to test them.

The strong northern EM conductor at Doyles ("C2" – see Figure) is located along a line for which all statutory approvals and heritage clearance have been received so drilling can commence. It is anticipated that such approvals and clearances will also be obtained for the strong southern conductor ("C1"). Cullen is sourcing a drilling rig and intends to recommence its field activities in February, subject to any rain affected access.



\* Mt Eureka Project – ELs 53/1299, 1300, 1209, 1630, 1635, 1637, 1611 - Cullen 100%

### 2. SILVERBARK NORTH GROUND EM TARGET

Cullen's previous reconnaissance RC drilling testing conductors at its Target Area 1 ("Silverbark North") prospect, failed to reach the target depth and two drill holes were abandoned in silicate facies, Banded Iron Formation (BIF) about 100m above the target EM conductor. Cullen now intends to complete an effective test of one of the modeled conductive plates at Silverbark North using an RC pre-collared diamond drill hole or RC drilling.

This prospect comprises a series of VTEM and ground EM modeled conductors stretching over 1km in Cullen's ground (E1637). The recent results reported by Rox Resources Limited (10/1/2014) from their Camelwood-Cannonball-Musket discoveries, demonstrate that nickel sulphide mineralisation in the region may have significant strike potential. Cullen interprets its Silverbark North conductors as being along strike from the Camelwood-Cannonball-Musket mineralisation.

#### Dr Chris Ringrose, Managing Director

#### 22 January, 2014

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**ABOUT CULLEN**: Cullen is a Perth-based minerals explorer with a multi-commodity portfolio including projects managed through a number of JVs with key partners (FMG, APIJV (Aquila-AMCI), Hannans Reward, Northern Star, Matsa and Thundelarra/Lion One Metals), and a number of projects in its own right. The Company's strategy is to identify and build targets based on: data compilation, field reconnaissance and early-stage exploration (particularly geochemistry). Projects are sought for most commodities mainly in Australia but with selected consideration of overseas opportunities, currently in Namibia, Canada and Scandinavia. A number of Cullen's 100%-owned projects are at the target drill-testing stage.

#### ATTRIBUTION: <u>Competent Person Statement</u>

The information in this report that relates to exploration activities is based on information compiled by Dr Chris Ringrose, Managing Director, Cullen Resources Limited who is a Member of the Australasian Institute of Mining and Metallurgy. Dr. Ringrose is a full-time employee of Cullen Resources Limited. He has sufficient experience which is relevant to the style of mineralisation and types of deposits under consideration, and to the activity which has been undertaken, to qualify as a Competent Person as defined by the 2012 edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Dr. Ringrose consents to the report being issued in the form and context in which it appears. **Cullen Resources Limited** Exploration Update – January 2014

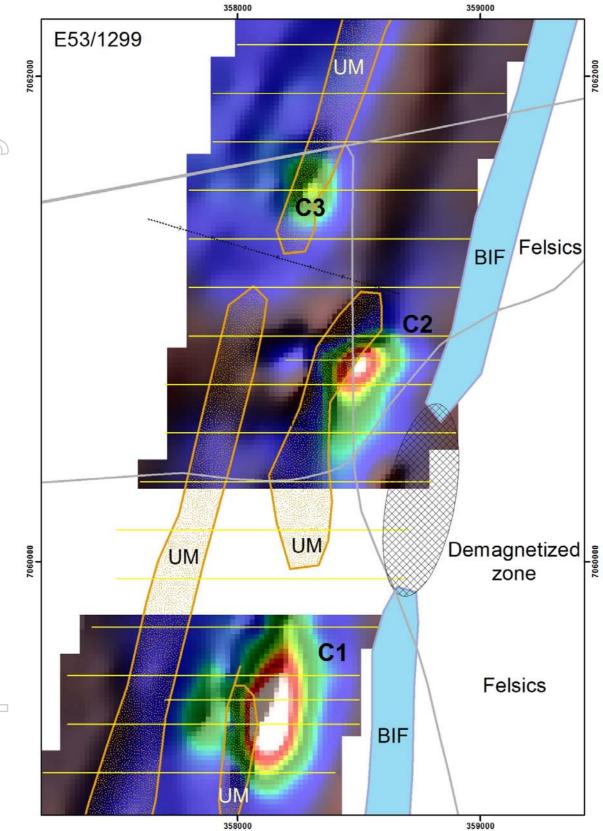


Figure: Doyles nickel prospect - Cullen's interpreted geological setting (from aeromagnetics and limited historical drilling) for the ground EM survey data showing two strong conductors at the interpreted base of ultramafic lenses. Note strata are younging to the west and dipping moderately east (overturned sequence). Ground EM traverse lines are shown (east-west), 200m spaced, 100m infill. Some final ground EM data awaited.

Image: Doyle\_MLEM\_Ch20\_SEshadeL: Image of In-loop, vertical component (Z), EM amplitude channel 20, shaded from the southeast, linear colour stretch.

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## Table Data description as required by the 2012 JORC Code

Section 1Sampling techniques and dataCriteriaJORC Code explanationComments re ground EM programme			
	Nature and quality of sampling	Comments re ground EM programme	
Sampling	1 1 1 0	A ground electromagnetic survey was	
technique	(eg cut channels, random chips,	completed using a Moving In-Loop	
	or specific specialised industry	configuration. Transmitter loops were 200n	
	standard measurement tools	x 200m with a three component fluxgate	
)	appropriate to the minerals under	sensor was used as the receiver.	
	investigation, such as down hole		
	gamma sondes, or XRF		
	instruments, etc.). These		
	examples should not be taken as		
	limiting the broad meaning of		
	sampling.		
	Include reference to measures	At least two readings were performed a	
	taken to ensure sample	each station in order to ensure data	
	representivity and the	repeatability.	
	appropriate calibration of any		
	measurement tools or systems		
	used		
	Aspects of the determination of	Not applicable	
	mineralisation that are material		
	to the Public report In cases		
	where 'industry standard' work		
	has been done this would be		
	relatively simple (e.g. 'reverse		
	circulation drilling was used to		
	obtain 1m samples from which		
	3kg was pulverised to produce a		
	30g 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 (e.g.		
	submarine nodules) may warrant		
	disclosure of detailed		
	information.		
Drilling	Drill type (e.g. core, reverse	Not applicable	
technique	circulation, open-hole hammer,		
-	rotary air blast, auger, Bangka,		
	sonic etc.) and details (e.g. 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.).		
	Method of recording and	Not applicable	
Drill Sample	e	not applicable	
recovery	assessing core and chip sample		
	recoveries and results assessed	Not orghospic	
	Measurements taken to maximise sample recovery and	Not applicable	
	mayimice cample recovery and		

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	ensure representative nature of the samples.	
	Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	Not applicable
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.	Not applicable
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel etc.) photography.	Not applicable
	The total length and percentage of the relevant intersections logged	Not applicable
Sub- sampling techniques and sample preparation	If core, whether cut or sawn and whether quarter, half or all core taken.	Not applicable
	If non-core, whether riffles, tube sampled, rotary split, etc. and whether sampled wet or dry.	Not applicable
	For all sample types, quality and appropriateness of the sample preparation technique.	Not applicable
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Not applicable
	Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.	Not applicable

Exploration opdato	sandar j 2011	
	Whether sample sizes are	Not applicable
	appropriate to the grain size of	
	the material being sampled.	
	The nature, quality and	Not applicable
	appropriateness of the assaying	
	and laboratory procedures used	
	and whether the technique is	
	considered partial or total.	
2	For geophysical tools,	EM Receiver: Smartem 24; EM Transmitter:
	spectrometers, handheld XRF	Phoenix TX-50; Sensor: fluxgate
	instruments, etc., the parameters	magnetometer; Current:30 amps; Base
	used in determining the analysis	frequency: 1Hz.
	including instrument make and	
	model, reading times,	
2	calibrations factors applied and	
	their derivation, etc.	
Quality of	Nature of quality control	Not applicable
assay data	procedures adopted (e.g.	**
and	standards, blanks, duplicates,	
laboratory	external laboratory checks) and	
tests	whether acceptable levels of	
5	accuracy (i.e. lack of bias) and	
	precision have been established.	
Verification	The verification of significant	Not applicable
of sampling	intersections by either	11
and assaying	independent or alternative	
	company personnel.	
	The use of twinned holes	Not applicable
	Documentation of primary data,	All primary analytical data were recorded
	data entry procedures, data	digitally and sent in electronic format to
))	verification, data storage	Southern Geoscience for quality control and
/	(physically and electronic)	evaluation.
))	protocols.	
	Discuss any adjustment to assay	Not applicable
	data.	
Location of	Accuracy and quality of surveys	Not applicable
data points	used to locate drill holes (collar	
1	and down-hole surveys),	
))	trenches, mine workings and	
	other locations used in Mineral	
	Resources estimation.	
	Specification of the grid system	The grid system is MGA_GDA94, Zone 51
	used.	
リ	Quality and adequacy of	Topographic data has been obtained from
	topographic control.	the 2007 VTEM survey, which uses a radar
		altimeter and GPS for calculation of the
		digital terrain model. The VTEM survey
		was flown along E-W lines spaced 200m.
Data spacing	Data spacing for reporting of	Not applicable
and	Exploration Results.	
distribution		
	1	1

	Exploration Update	Exploration Opdate – January 2014		
		Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Reserve and Ore Re4serve estimation	Not applicable	
		procedure(s) and classifications		
		applied.	Net enalizable	
	D	Whether sample compositing has been applied.	Not applicable	
	Orientation	Whether the orientation of	Not applicable	
	of data in	sampling achieves unbiased		
	relation to	sampling of possible structures		
)	geological	and the extent to which this is		
	structure	known, considering the deposit		
70		type. If the relationship between the	Not applicable	
ID)		drilling orientation and the		
		orientation of key mineralised		
$\mathcal{D}$		structures is considered to have		
7		introduced a sampling bias, this		
		should be assessed and reported if material.		
	Sample	The measures taken to ensure	Not applicable	
	security	sample security.		
	Audits or	The results of and audits or	All electromagnetic data was quality	
$\bigcirc$	reviews	reviews of sampling techniques	checked by Southern Geoscience	
		and data.	Consultants	
	Section 2 Repo	Type, reference name/number,	The prograat is located on E52/1200 which	
)	tenements	location and ownership including	The prospect is located on E53/1299 which is 100% owned by Cullen Resources	
$\geq$			Limited. Cullen has signed an agreement	
()	tenure status	with third parties such as joint	with Central Desert on behalf of the Wiluna	
		ventures, partnerships,	traditional owners who have native title over	
		overriding royalties, native title interest, historical sites,	the respective area. A heritage survey was	
1D)		interest, historical sites, wilderness or national park and	conducted by Central Desert in late 2013 and approval was given to conduct non-	
		environmental settings.	ground disturbing activities on the survey	
)		6	area. Some areas have also been cleared for	
			ground disturbing activities, such as drilling.	
$\bigcirc$		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 tenure is secure and in good standing at the time of writing.	
	Exploration	Acknowledgement and appraisal	A VTEM survey was carried out by BHP in	
	done by other	of exploration by other parties.	2007 that showed some VTEM anomalies in	
	parties		the survey area. The possible significance	
			of these VTEM anomalies was recently	
			recognised by Cullen and Southern Geoscience as part of a technical review.	
	Geology	Deposit type, geological settings	The targeted deposit style is an Archaean	
	- 01	and style of mineralisation.	komatiite-related nickel mineralisation.	

	Sundary 2014	
Drill hole	A summary of all information	Not applicable
information	material for the understanding of	
	the exploration results including	
	a tabulation of the following	
	information for all Material drill	
	holes:	
	· Easting and northing of the	Not applicable
D		Not applicable
	metres) and the drill hole collar	
	• Dip and azimuth of the hole	Not applicable
	Down hole length and	Not applicable
		Not applicable
	interception depth	
	• Hole length	Not applicable
	If the exclusion of this	Not applicable
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	reporting of Exploration Results.	
intercept		
lengths		
	information information	informationmaterial for the understanding of the exploration results including a tabulation of the following information for all Material drill 

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	If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.	Not applicable
D	If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known')	Not applicable
Diagrams	Appropriate maps and sections (with scales) and tabulations of intercepts would be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views	see attached plans
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.	Not applicable
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 containing substances.	Previous VTEM surveying showed two discrete, late time anomalies which are possibly caused by significant accumulations of massive sulphide mineralization.
Further work	The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling). Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, providing this information	Further work will include RC and possibly diamond drilling of modeled conductive plates to test the nature of the conductors. see attached plans
	Balanced reporting Other substantive exploration data	mineralisation with respect to the drill hole angle is known, its nature should be reported.If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known')DiagramsAppropriate maps and sections (with scales) and tabulations of intercepts would be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.Balanced reportingWhere 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 reported including (but not limited to): geological observations, geophysical survey results, bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or containing substances.Further workThe nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).DiagramsClearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling