19 September 2019

Abercorn HPA Project Exploration Update and Drilling Program

Metalsearch Limited ("MSE" or the "Company") is pleased to announce that it is well advanced with planning to undertake an initial drilling program on the Abercorn High Purity Alumina ("HPA") Project ("Project") located in central Queensland, Australia (Figure One).

Highlights

- Technical due diligence highlights prospective nature of Abercorn Project.
- MSE will seek approval from its shareholders at the Annual General Meeting on 4th October to complete the acquisition of the Project.
- A Reverse Circulation ("RC") drilling program of 60-70 RC drill holes, for a planned 2000m of drilling, is planned to commence in mid-October.
- The objective of the RC drilling program is to **define a maiden Inferred Mineral Resource** (JORC 2012) and further define the potential scale of kaolin containing high grade Al_2O_3.
- The kaolin on the Project has already been shown to be capable of producing **99.99% Al_2O_3 (4N HPA)** including high grade **HPA assays up to 33.71% Al_2O_3** (-10 micron fraction[1]) and commercial grade Aluminium Sulphate (ALUM), used in water purification.
- Processing of multi-spectral satellite scanner data (ASTER) suggests that the kaolin intersected by previous drilling **is much more extensive than indicated by the 2007 drilling**.
- ASTER data suggests that the kaolin intersected by the cluster of holes CK007 to CK023 extends 4.5km east-west by 4.5km north-south, significant distances beyond the extent of the 2007 drilling.
- The ASTER data also shows that **drill hole CK003, which intersected the highest grade Al_2O_3**, has a unique spectral signature. **A similar spectral signature anomaly covering an area of 3.5km x 1.1km** occurs in the north-west of the Project area, outside of the previously drilled areas. Drilling will also test this new anomaly.
- Field investigations of the prospective areas identified from the ASTER data will be conducted prior to the commencement of the RC drilling program in October.

[1]See Metalsearch Limited ASX Announcement 13 August 2019. The Company is not aware of any new information or data that materially affects the information included in the referenced ASX announcement and confirms that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

Abercorn HPA Project

On 13 August 2018 MSE announced its intention to acquire the Project, a large-scale kaolin prospect which has the potential to be developed into a world leading HPA project located in central Queensland (Figure One).

The kaolin mineralisation previously drilled in 24 holes at the Cynthia Prospect in 2007 has the potential for the extraction of HPA and marketable volumes of higher-grade feedstock[2].

Assays completed on samples of kaolin from the 2007 drilling program indicate the -10 micron fraction consistently graded at >33% Al_2O_3, representing approximately 20% of the raw ore mass. The ability to cost effectively upgrade bulk raw ore to a higher yield of Al_2O_3 via simple grain size sorting, at considerable scale, indicates the potential for developing the Project in joint venture with global end users seeking to source high grade Al_2O_3[3].

The Project is situated approximately 135km south of the deep-water port of Gladstone and 125km west of the deep-water port of Bundaberg in central Queensland. Both of these major ports are connected to the Project by sealed roads. The Burnett highway bisects the tenements.

Planning for RC Drilling Program

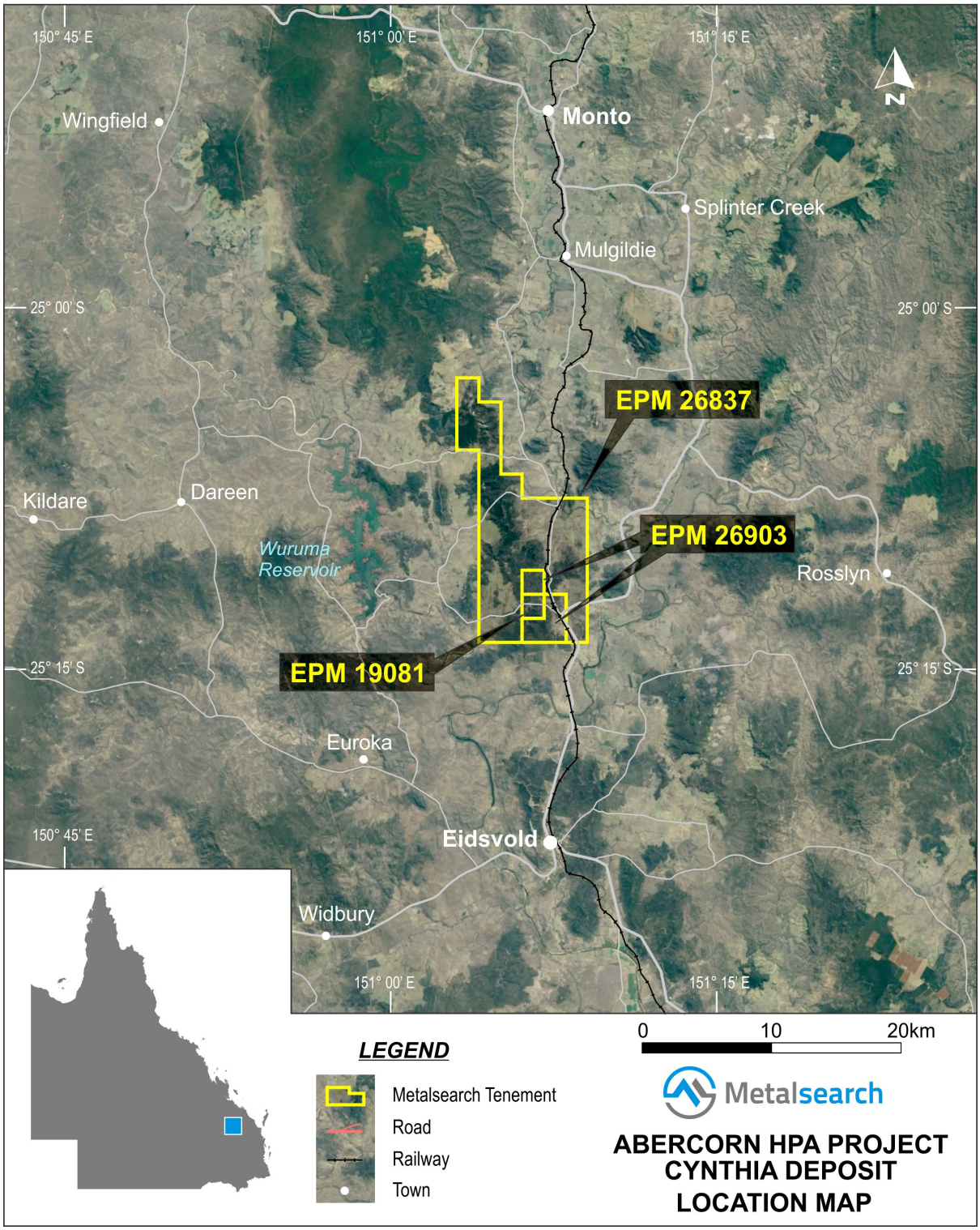
Planning is well advanced for a RC drilling program to commence on the Project. It is anticipated that 60-70 RC drill holes, of average depth 30-40m will be completed for approximately 2000m of drilling. The RC drilling program should take approximately 4 weeks to complete and is planned to commence in mid October. The first geochemical data should be available approximately 6 weeks following submission of the initial samples from the RC drilling program.

Drilling will initially be concentrated around holes CK003 and CK007 – CK023 from the 2007 drilling program (Figure 2) in order to further investigate and extend the encouraging kaolin mineralisation intersected in these drill holes. The objective of the RC drilling program around holes CK003 and CK007 – CK023 is to define a maiden Inferred Mineral Resource (JORC 2012) and further define the potential scale of kaolin containing high grade Al_2O_3.

Reconnaissance drilling is also being planned to be undertaken in the far north-west of the Project area to investigate the occurrence of outcropping kaolin which has not been previously drilled, but appears to have similarities to the kaolin intersected in hole CK003, which contained the highest grade Al_2O_3 from the 2007 drilling program (see next section)[4].

[2]See Metalsearch Limited ASX Announcement 13 August 2019. [3]See Metalsearch Limited ASX Announcement 13 August 2019. [4]See Metalsearch Limited ASX Announcement 13 August 2019. The Company is not aware of any new information or data that materially affects the information included in the referenced ASX announcement and confirms that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

Figure 1 – Project Location

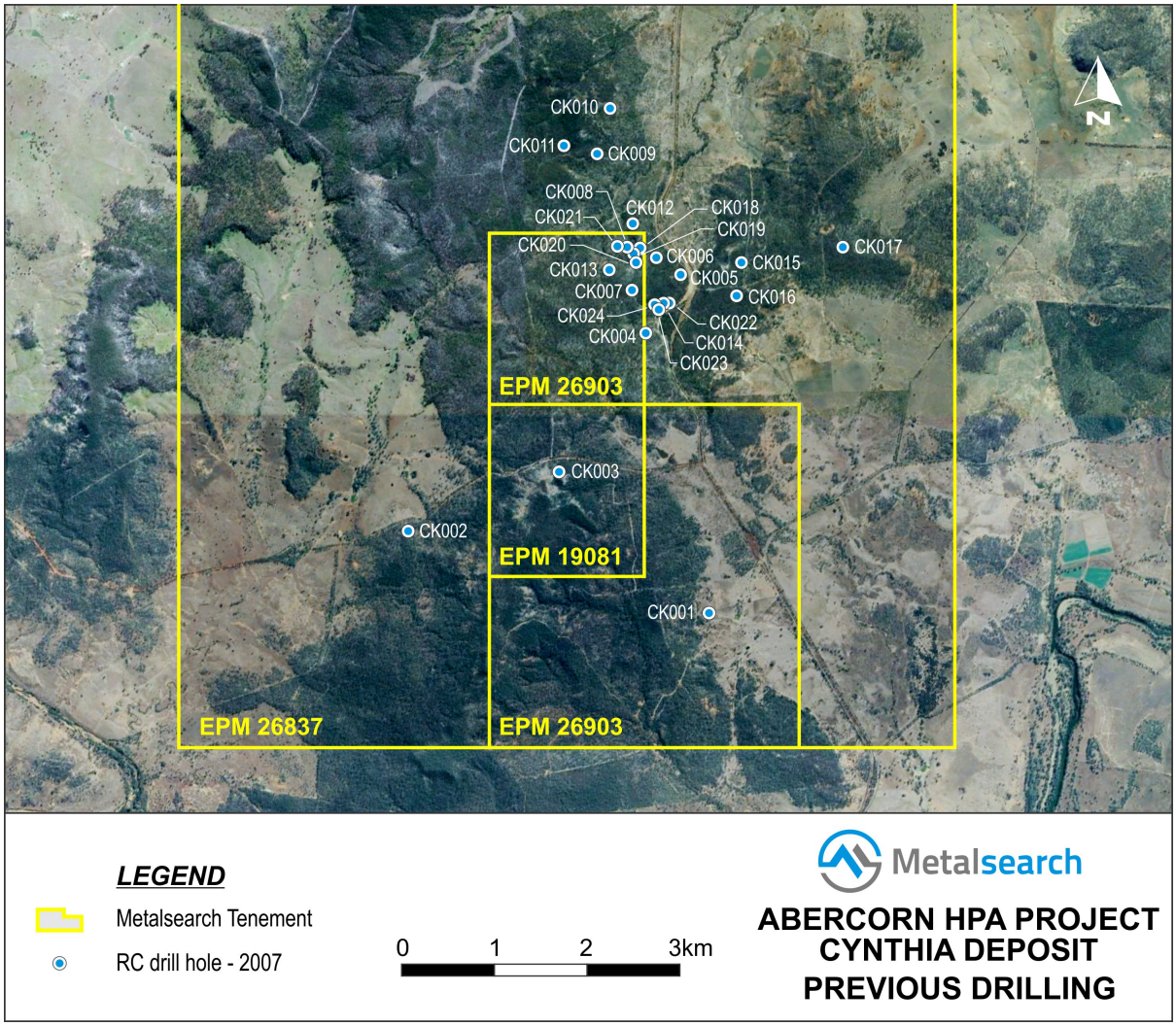


Processing of Multi-Spectral Scanner Data

In order to map the extent of the kaolin mineralisation intersected by the 2007 drill holes, multi-spectral scanner satellite data (ASTER) covering the entire Project area was processed. Where the kaolin outcrops, it exhibits a characteristic spectral signature in the ASTER data. Machine learning techniques can then be used on the ASTER data to locate other areas of the Project which have spectral signatures similar to the known kaolin mineralisation. The details of the processing undertaken on the ASTER data are explained in the attached JORC Table One.

The ASTER data showed that the kaolin in drill hole CK003, containing the highest grade Al_2O_3, exhibited a different spectral signature to the kaolin drilled by holes CK007 to CK023.

Figure 2 – Project Location and Infrastructure



The machine learning processing techniques were then used to process the ASTER data looking for spectral signatures which were similar to the area around drill hole CK003 and the area around holes CK007 – CK023 (Figure 2).

Processing of the ASTER data revealed a large area, approximately 3.5km north-south by 1.1km east-west, in the far north west of the Project, with a spectral signature similar to the kaolin which produced the highest grade Al_2O_3 in hole CK003. Visual imagery suggests this area, in the north west of the Project, contains extensive outcrops of kaolin and hence this is a significant finding from the processing of the ASTER data. Reconnaissance drilling will be planned to investigate this highly prospective area during the drilling program.

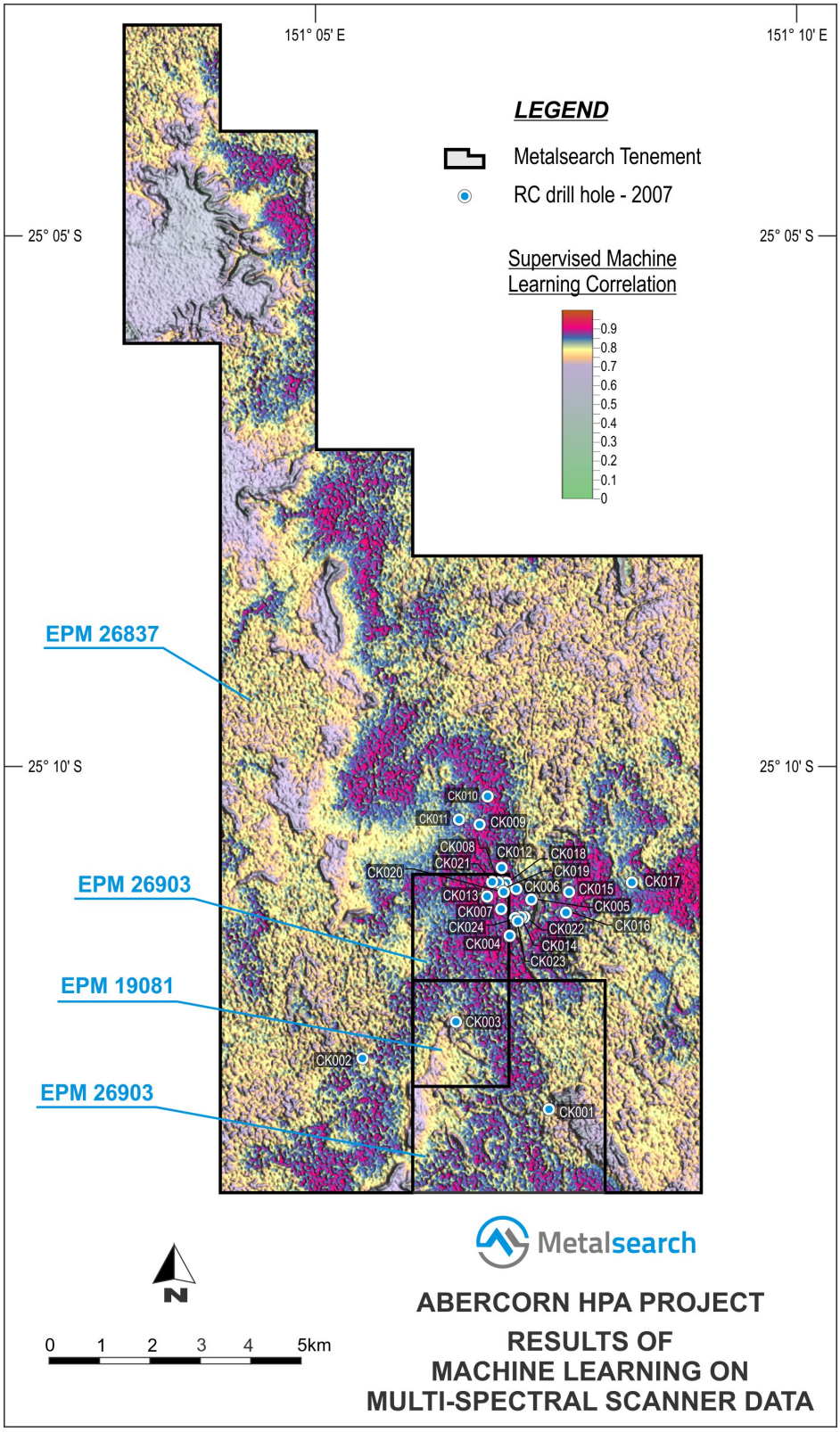
The machine learning processing of the ASTER data also suggested that the kaolin intersected by the cluster of holes CK007 to CK023, drilled in 2007, extends 4.5km east-west by 4.5km north-south (Figure 3), significant distances beyond the extent of the 2007 drilling. This region will be the focus on the majority of the drill holes to be completed during the drilling program to commence in October.

The overall objective of the drilling program is to define an initial Inferred Mineral Resource for the Abercorn Project compiled in accordance with JORC (2012).

Competent Person Statement

Statements contained in this announcement relating to historical exploration results, and current exploration results are based on, and fairly represents, information and supporting documentation prepared by Mr. Jeremy Read, who is a member of the Australian Institute of Mining & Metallurgy (AusIMM), Member No 224610. Mr Read is a Non-Executive Director and part-time consultant to the Company and has sufficient relevant experience in relation to the mineralisation styles being reported on to qualify as a Competent Person as defined in the *Australian Code for Reporting of Identified Mineral Resources and Ore Reserves (JORC) Code 2012*. Mr Read consents to the use of this information in this announcement in the form and context in which it appears.

Figure 3 – Results of Machine Learning Processing of ASTER Data



JORC TABLE

TABLE 1 – Section 1: Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	*Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as downhole 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 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 1 m samples from which 3 kg was pulverised to produce a 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 (e.g. submarine nodules) may warrant disclosure of detailed information.*	ASTER multi-spectral data was purchased covering the entire Abercorn HPA Project area in central Queensland. ASTER bands VNIR/SWIR and TIR Bands were obtained. The ASTER data was acquired over the project area on 8th August 2004. The approximate resolution is 30m pixel size. AW3D digital elevation model data was also obtained covering the entire project area. The DEM data is of 5m resolution. The digital elevation model data was a compilation of various data sets collected between 2006 and 2011. Data was supplied by Geoimage Pty Ltd (ABN 91 603 077 185). Processing and Automatic Neural Network (ANN) interpretation of the data was completed by Mr. Gavin Daneel, a consultant geologist specialising in the machine learning and neural network processing of satellite and geophysical data sets (www.gdaneel.consulting). Mr Daneel was sub-contracted by Geoimage to undertake the neural network processing and interpretation of the ASTER data.
Drilling techniques	*Drill type (eg core, reverse 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).*	N/A – Geophysical Satellite Data
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.* *Measures taken to maximise sample recovery and 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.*	N/A – Geophysical Satellite Data

Criteria	JORC Code explanation	Commentary
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.* *The total length and percentage of the relevant intersections logged.*	N/A – Geophysical Satellite Data
Sub-sampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all core 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.* *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 duplicate/second-half sampling.* *Whether sample sizes are appropriate to the grain size of the material being sampled*	N/A – Geophysical Satellite Data

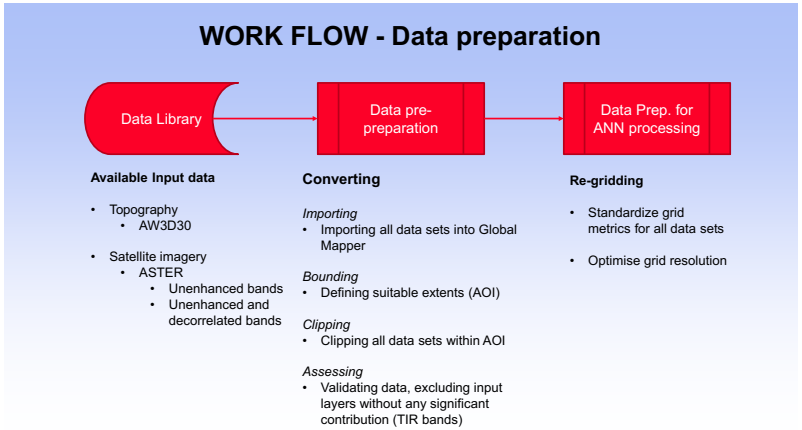
Criteria	JORC Code explanation	Commentary
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* *For geophysical tools, spectrometers, handheld XRF instruments, etc, 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 adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	N/A – Geophysical Satellite Data
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	N/A – Geophysical Satellite Data
	The use of twinned holes.	N/A – Geophysical Satellite Data
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	The primary data was ASTER multi-spectral satellite data supplied by Geoimage Pty Ltd. The ASTER data was downloaded directly from Geoimage via DropBox and stored in the data file archive of MetalSearch Limited (also a DropBox data archive). The products of the neural network processing supplied by Mr Gavin Daneel were also downloaded directly into the MetalSearch DropBox file system.
	Discuss any adjustment to assay data.	N/A – Geophysical Satellite Data
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 Resource estimation.*	The ASTER multi-spectral data has an approximate resolution of 30m per pixel. The Digital Elevation Model data has a resolution of approximately 5m per pixel.
	Specification of the grid system used.	Datum: MGA94 Zone:56J
	Quality and adequacy of topographic control.	5m resolution of the Digital Elevation model data.

Criteria	JORC Code explanation	Commentary
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	The resolution of the outcomes of the automatic neural network processing of the ASTER data is approximately 30m.
	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.	N/A – Geophysical Satellite Data
	Whether sample compositing has been applied.	N/A – Geophysical Satellite Data.
Orientation 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.*	As the ASTER data covers the entire project area with the same resolution there is no directional bias in the results of the neural network processing of the ASTER data
	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.	N/A – Geophysical Satellite Data
Sample security	*The measures taken to ensure sample security.*	N/A – Geophysical Satellite Data
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	No audits or reviews of results of the neural network processing of the ASTER data have been undertaken.

TABLE 1 – Section 2: Exploration Results

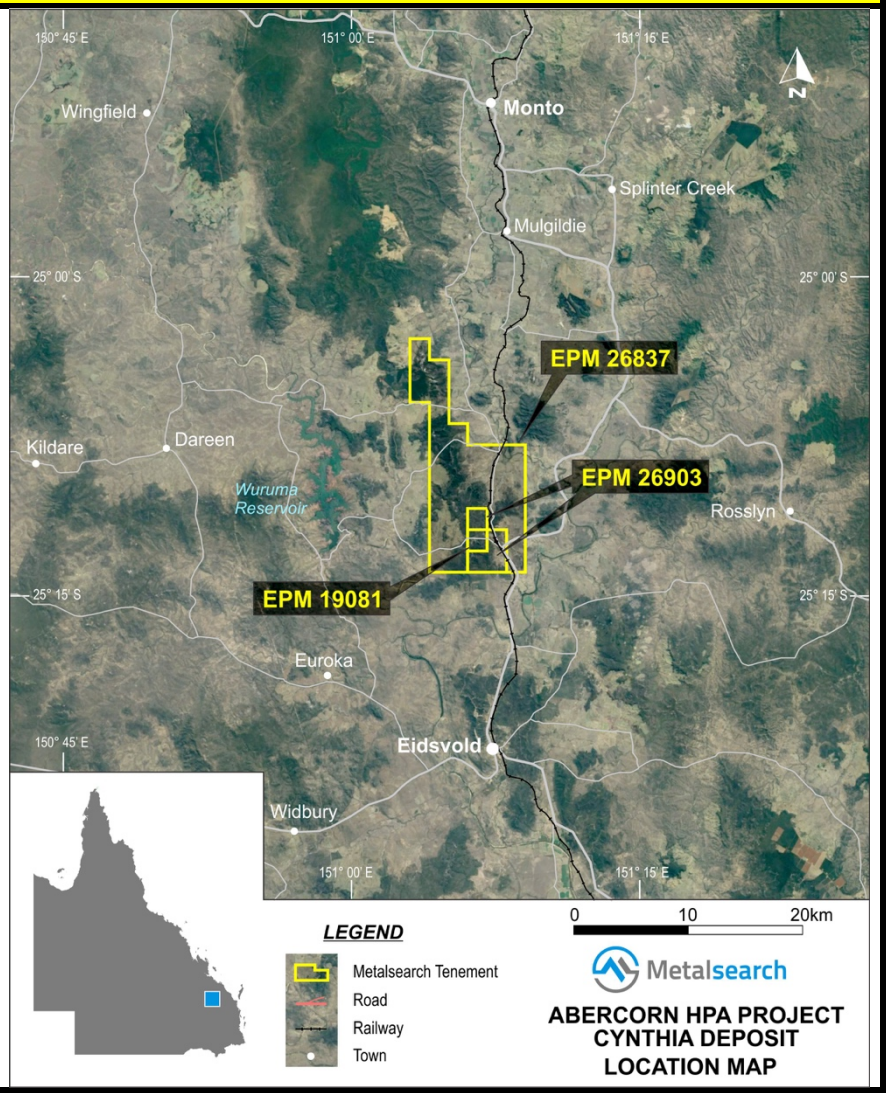
Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	*Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.*	The tenure for the Abercorn HPA Project consists of EPM's 26837, 26903 and 19081 (128 km^2 tenement area), issued by the Queensland Government. The tenements are currently 100% owned by Abercorn Kaolin Pty Ltd.
	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.	EPM 19081 is valid until 29/11/2022 EPM26837 is valid until 12/7/2023 EPM26903 is valid until 13/8/2023 EPM19081 was granted subject to the General Conditions Version 5 of the Mineral Resources Act 1989 and Version 2 of the Native Title Protection Conditions. EPM's 26837 and 26903 were granted subject to the conditions outlined in the Mineral Resources Act 1989 and the Minerals Resources Regulation 2013. Excluded from the area granted under EPM26837 are any current Mining Claim, Mineral Development Licence or Mining Lease, pursuant to Section 132 of the Mineral Resources Act 1989 and land subject to Native Title (i.e. Lot 062/YL1009 & Lot 061/YL495 & Lot 063/YL495 & Lot 080/YL952 & Lot 060/YL495 & Lot 082/YL952 & Lot 81/YL974 & Lot 18/A7662 & 3/A7662 Lot 17/A7662 & Lot 8/A7662 & Lot 58/A777662 & Lot 60/AP22955 & Lot 3/4/6/8/9/10/11/12/13/14/A7666 and Three Moon Creek) Excluded from the area granted under EPM26903 is land subject to Native Title (i.e. Lot 79/YL896 & Lot 57/SP273751). Upon application for renewal EPM's 26837 and 26903 will be required to be reduced by 40%. A variation application can be submitted to the Queensland Department of Natural Resources, Mines and Energy

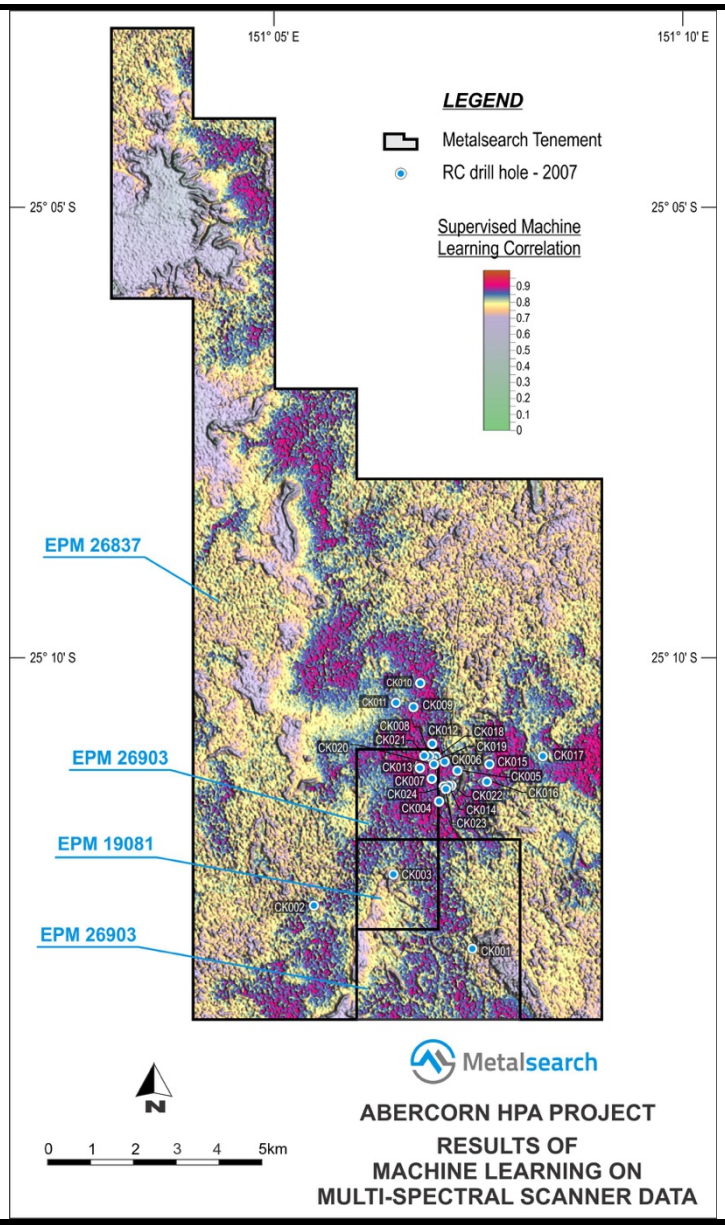
Criteria	**JORC Code explanation**	**Commentary**
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	MetalSearch Limited contracted Geoimage Pty Ltd to supply the ASTER multi-spectral scanner data and to process the data using neural networks. Geoimage sub-contracted the neural network processing to Mr. Gavin Daneel, a consulting geologist specialising in the neural network processing of multi-spectral satellite data.
Geology	*Deposit type, geological setting and style of mineralisation.*	The kaolin mineralisation, being investigated as having potential to be feedstock for a High Purity Alumina operation, occurs within white claystone and clayey sandstone, exposed in a railway cutting 2.5km north of the town of Cynthia in central Queensland. 24 RC drill holes were completed in 2007 investigating the kaolin occurrence. The kaolin occurs within the Bundamba group, of upper Triassic – Lower Jurassic Age and crops out throughout the Abercorn Project area, striking approximately NNW and with a gentle dip to the East. The Bundama Group, within the project area, consists of three recognised formations: The Box Vale Sandstone – A light-coloured clayey sandstone at the top of the group The Evergreen Shale – A light-coloured clay shale which includes the ironstone The Precipice Sandstone – Which forms the Basel sediments of the Bundamba Group in this area. Sedimentation is lenticular and individual shale and sandstone horizons are not laterally persistent. To the east in the valley of the Burnett River, the Bundamba Group is overlain by the Jurassic Mulgildie Coal Measures.

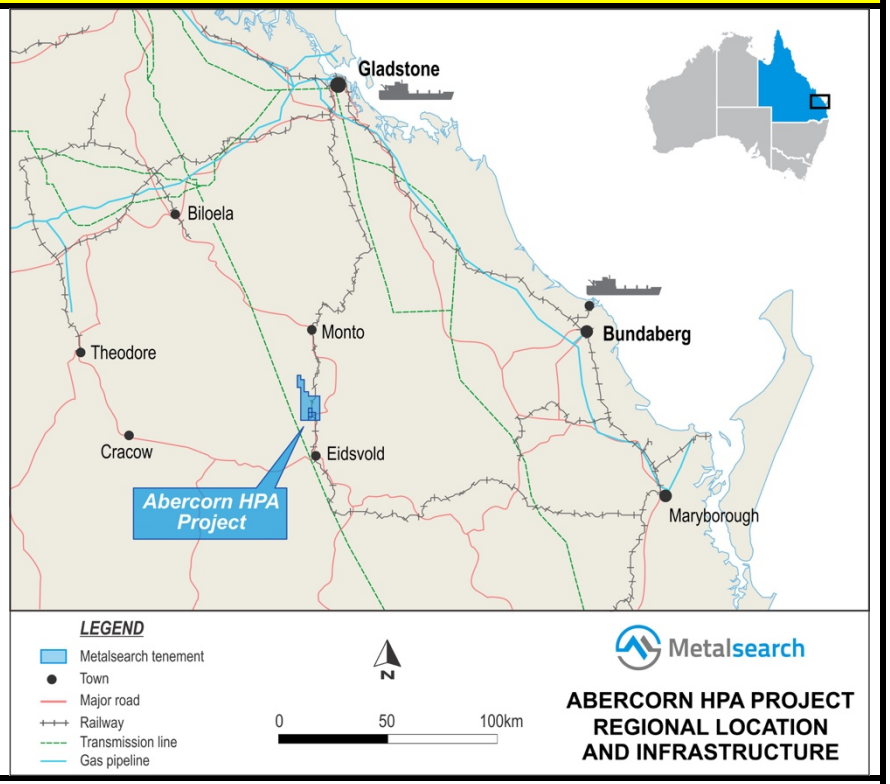
Criteria	JORC Code explanation	Commentary
Drill hole Information	*A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* *easting and northing of the drill hole collar* *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* *dip and azimuth of the hole* *down hole length and interception depth* *hole length.*	The workflow and data preparation for the neural network processing of the ASTER data is summarised in the diagram below:  **Automatic Neutral Network (ANN) Processing Employed on Abercorn HPA Project ASTER Data** An unsupervised neural analysis search results in a map of anomalies highlighting instances where the data do not fit the range of values of common patterns (or data clusters). After identifying the anomalies, the search defines areas of commonly recurring patterns and groups these into clusters. Essentially the group of anomalous points (defined by the anomaly map) are those points that fall outside the set of common patterns (or clusters) recognized by the unsupervised automated neural network (ANN). **ANN Fuzzy Search and Correlation Analysis** Fuzzy searching uses supervised neural models to recognise a specified fuzzy pattern. The supervised neural model which has extracted the inter-relationships from the selected data can then be

Criteria	JORC Code explanation	Commentary
		used to identify other geographic regions where the relationships in the specified fuzzy pattern are similar. The correlation analysis provides a means of searching for signatures of the relationship between layers of the ASTER data at different wavelengths, independent of the amplitude values of the layers. The subtle relationship between elements can be of more importance than the observed rank outlier values that are easily observed. **Objectives of ANN Processing of Abercorn HOA Project ASTER Data** The processing techniques described above were used for the following two purposes: (1) To identify areas which exhibit spectral signatures similar to the kaolin intersected in drill hole CK003, which intersected the highest values of Al2O3 in the drilling completed in 2007 (2) To identify areas which exhibit spectral signatures similar to the area surrounding the cluster of drill holes CK007 to CK023, which had confirmed Al2O3 bearing kaolin from the drilling completed in 2007 The results from the ANN processing of the ASTER data were then presented as "heat maps" with the areas of highest correlation to (1) or (2) described above showing as magenta on the heat maps. The ANN processing was able to successfully generate similarity maps calibrated to known area(s) of interest (1 and 2 above) using the ASTER and DEM data. Field checking of the areas of interest is now required.
	If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.	This information has not been excluded.

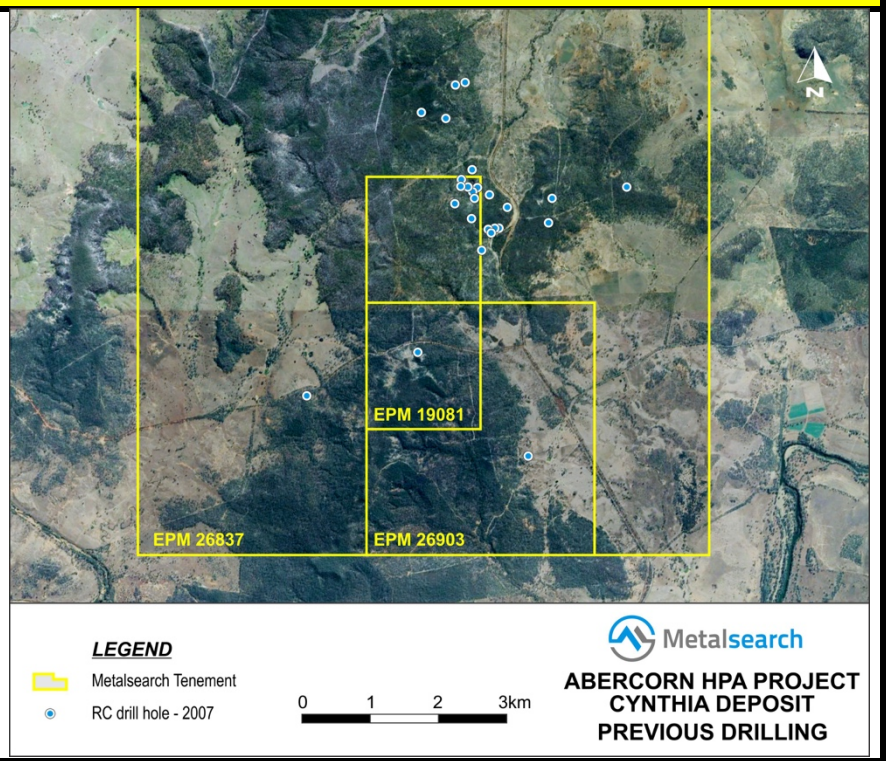
Criteria	**JORC Code explanation**	**Commentary**
Data aggregation methods	*In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.*	N/A – Geophysical Satellite Data
	Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.	N/A – Geophysical Satellite Data
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	N/A – Geophysical Satellite Data
Relationship between mineralisation widths and intercept lengths	*If the geometry of the mineralisation with respect to the drill-hole angle is known, its nature should be reported.*	The geological strata is flat lying to shallow dipping and therefore the vertical RC drill holes from 2007 intersected the kaolin mineralisation at a high angle.
	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').	N/A – Geophysical Satellite Data
Diagrams	*Appropriate maps and sections (with scales) and tabulations of intercepts should 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.*	

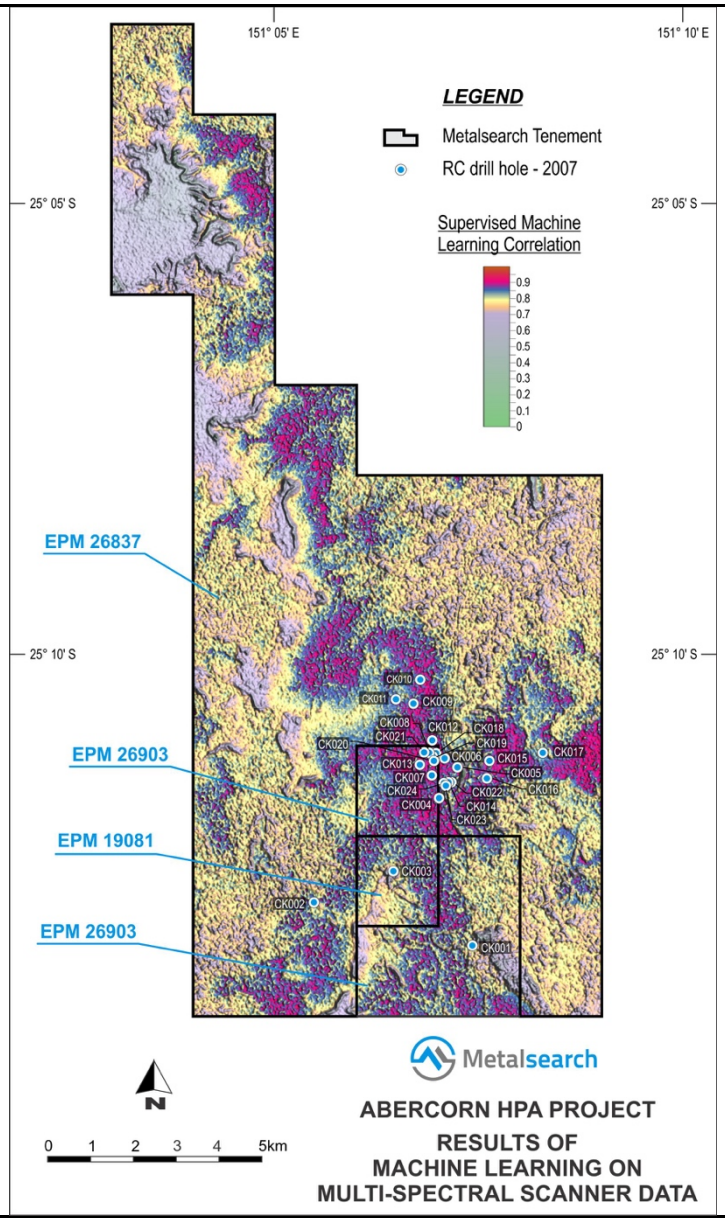
Criteria	JORC Code explanation	Commentary
		


151° 05' E
151° 10' E
25° 05' S
25° 10' S
LEGEND
Metalsearch Tenement
RC drill hole - 2007
Supervised Machine Learning Correlation
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
EPM 26837
EPM 26903
EPM 19081
EPM 26903
CK010
CK011
CK009
CK008
CK021
CK012
CK018
CK019
CK020
CK006
CK015
CK017
CK013
CK005
CK007
CK022
CK016
CK024
CK014
CK004
CK023
CK003
CK002
CK001
N
0 1 2 3 4 5km
Metalsearch
ABERCORN HPA PROJECT
RESULTS OF
MACHINE LEARNING ON
MULTI-SPECTRAL SCANNER DATA

Criteria	**JORC Code explanation**	**Commentary**
		
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.*	N/A – Geophysical Satellite Data
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*	No other meaningful exploration data exists to the knowledge of the competent person completing this JORC Table 1.

Criteria	**JORC Code explanation**	**Commentary**
	characteristics; potential deleterious or contaminating substances.	
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).*	Follow up work from the results of the ANN processing of the ASTER data will be in two stages: (1) Field checking of anomalous areas will be undertaken to verify the source of the multi-spectral anomalies (2) Following field verification a drilling program will be undertaken with the objective of defining Inferred Mineral Resources around drill hole CK003 and the cluster of drill holes CK007 to CK023. The location of the drill holes for the drilling program are currently being determined.

Criteria	**JORC Code explanation**	**Commentary**
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	


151° 05' E
151° 10' E
25° 05' S
25° 10' S
LEGEND
Metalsearch Tenement
RC drill hole - 2007
Supervised Machine Learning Correlation
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
EPM 26837
EPM 26903
EPM 19081
EPM 26903
CK010
CK011
CK009
CK008
CK021
CK012
CK018
CK019
CK020
CK006
CK015
CK017
CK013
CK007
CK005
CK024
CK022
CK016
CK004
CK014
CK023
CK003
CK002
CK001
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0 1 2 3 4 5km
Metalsearch
ABERCORN HPA PROJECT
RESULTS OF
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