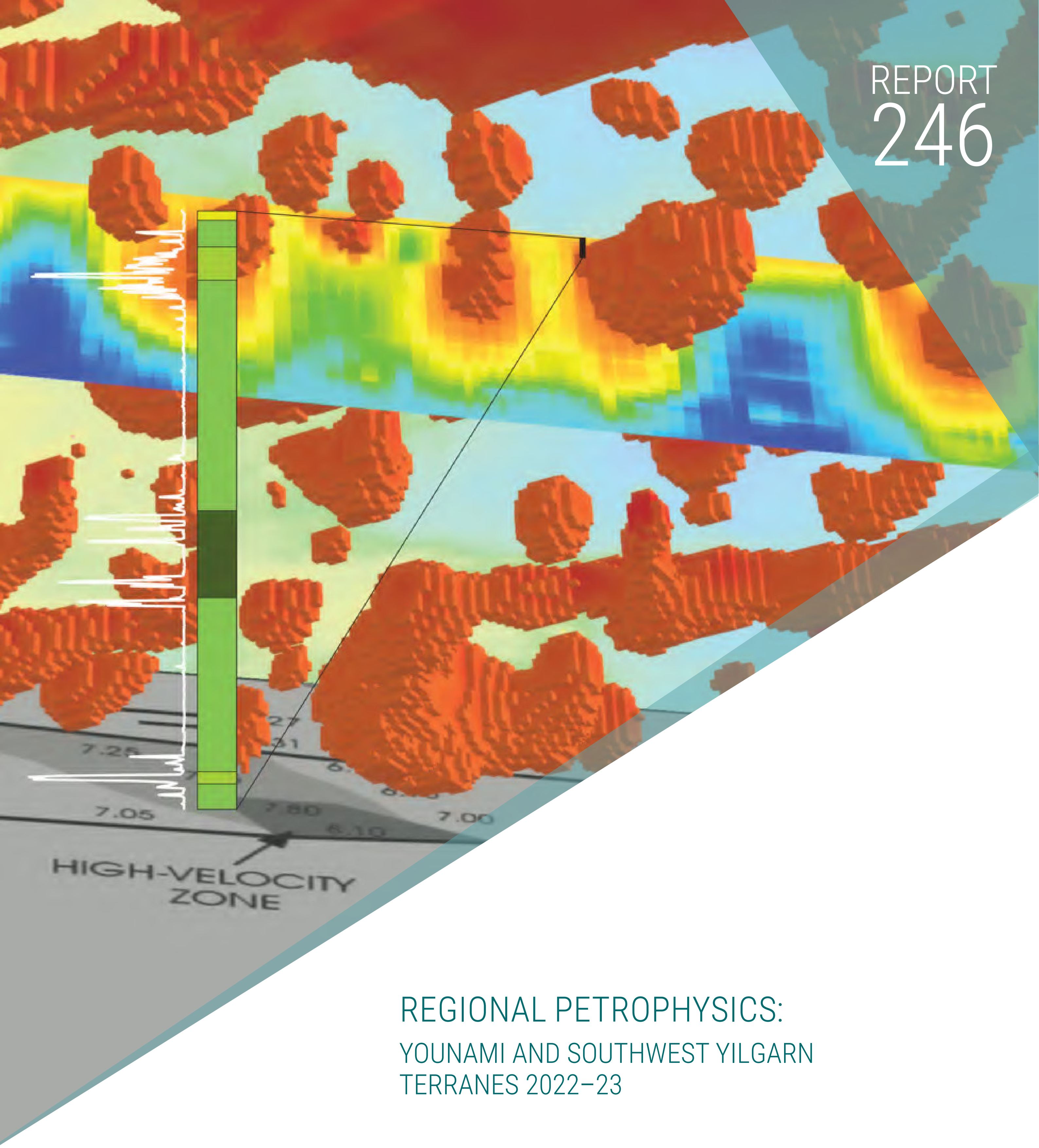

REPORT
246

REGIONAL PETROPHYSICS:
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Government of **Western Australia**
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Geological Survey of Western Australia

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About this publication
Terra Petrophysics Pty Ltd carried out petrophysical measurements under contract to the Geological Survey of Western Australia, funded by the Exploration Incentive Scheme.

Acknowledgement of Country
We respectfully acknowledge Aboriginal peoples as the Traditional Custodians of this land on which we deliver our services to the communities throughout Western Australia. We acknowledge their enduring connection to the lands, waterways and communities and pay our respects to Elders past and present.

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Cover photograph: Down core petrophysical data shown in relation to crustal scale density and velocity models

Introduction

The Geological Survey of Western Australia's (GSWA) regional petrophysics project provides high-quality petrophysical measurements to assist with the interpretation of geophysical data. The project commenced in 2021, in collaboration with Terra Petrophysics, and is funded by the Exploration Incentive Scheme (EIS). Petrophysical data were collected from EIS co-funded drillcore, company drillcore, and GSWA stratigraphic drillcore. All cores sampled for petrophysics have, or will have, HyLogger data and most have open-file company assay data available through the Mineral Exploration reports database (WAMEX).

Terra Petrophysics conducted petrophysical analyses on 415 samples from five diamond drillholes (Fig. 1, Table 1) drilled into the Youanmi Terrane and three drillcores drilled into the Southwest Yilgarn Craton. Samples from the Southwest Yilgarn Craton drillcore include pegmatites, amphibolites, mafic and felsic gneisses and felsic intrusive units from the craton greenstones and granites. Samples from the Youanmi Terrane comprise partially mineralized and unmineralized granites, metasedimentary lithologies, banded iron-formations, and mafic and felsic volcanic lithologies intersected by drillcore to a depth of up to 1400 m below the surface. Where sedimentary rocks samples and samples from the weathering profile were competent enough, they were also submitted for petrophysical analysis.

Physical properties measured include:

- Induced Polarization (Chargeability) and Galvanic Resistivity
- Inductive Conductivity
- Magnetic Susceptibility
- Remanent Magnetization: the ratio of induced- to remanent-magnetization intensity of the sample (known as the Koenigsberger Ratio, Q), as well as an estimate of the total remanent vector (relative to drillhole)
- Dry Bulk Density
- Apparent Porosity
- P-wave Sonic Velocity
- Spectral Radiometrics.

GSWA provides a datasheet (with petrophysical measurements, lithological information, and supplementary material), a photo of each sample, and a description of the methods. Terra also produces a report with an analysis of the petrophysical data for drillholes located within common geological terranes. All of these datasets and reports can be downloaded from **MAGIX** and the **eBookshop**, respectively.

GSWA drillholes and reporting

The drillholes sampled for petrophysics in this Report were either donated to GSWA or formed part of an EIS-funded drilling program. These drillcores are located at Perth Core Library and open-file data and reports for this drilling are available from the department's WAMEX online database under the file names in Table 1.

Table 1. Drillcore identification names/numbers, collar details, MAGIX reference numbers, and WAMEX report numbers for the drillcores sampled for petrophysics in this Report

Drillhole ID	Latitude	Longitude	Elevation (m)	Azimuth (degrees)	Dip (degrees)	Depth (m)	Number of petrophysical samples	Source of core	MAGIX registration number	WAMEX file number
BSDD011	−33.4809	117.8746	300.00	327.90	−59.40	138.60	52	EIS	72494	A36217
BSDD013	−33.4806	117.8743	301.18	340.60	−60.20	122.90	33	EIS	72494	A117571
GWRCD001	−28.6950	116.4082	262.00	310.00	−60.00	417.70	47	EIS	72494	A114482
MSD0056	−28.0533	117.8204	441.91	005.00	−82.00	598.00	43	EIS	72494	A116241
MSD056A	−28.0533	117.8204	441.91	005.00	−82.00	1425.00	59	EIS	72494	A116241, A114631
MVRC042D	−28.1934	116.7648	371.54	090.00	−60.00	390.60	14	Company – donated*	72494	A60315
RMSD20	−33.3088	119.9435	315.00	237.00	−62.80	315.40	56	EIS	72494	A93348, A97454
CLDD016	−33.8593	116.0564	286.57	080.96	−52.35	919.00	111	Company – donated*	72494	A118849

* Stored at the Perth Core Library

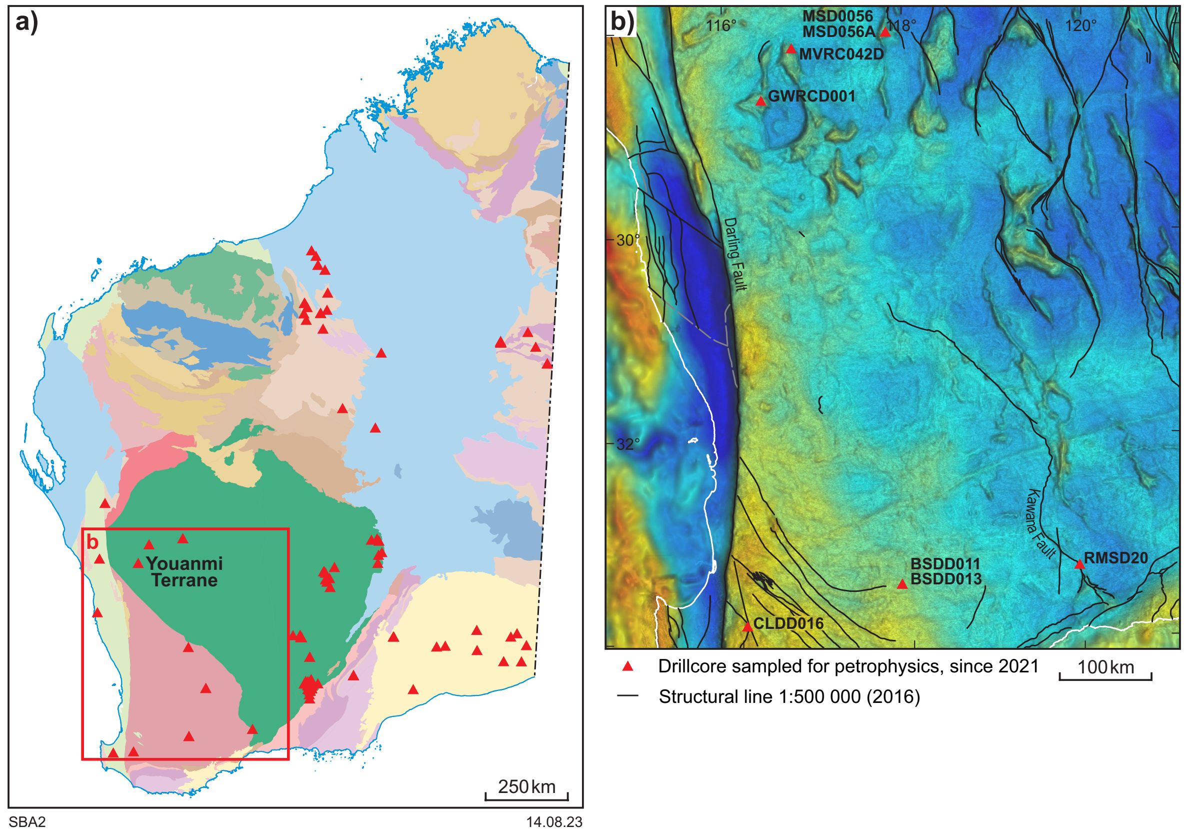

Figure 1. Drillcore locations sampled for petrophysics: a) statewide drillcores sampled since 2021, shown on tectonic units map (2021) with major crustal boundaries; b) location of four drillholes sampled for petrophysics (this Report) shown on a first vertical derivative of the reduced-to-pole total magnetic intensity data (grey scale, 80 m cell size) draped with Bouguer gravity anomaly data (colour, 400 m cell size)

TERRA PETROPHYSICS PTY. LTD.

(ABN 71 613 484 807)

GEOLOGICAL SURVEY OF WESTERN AUSTRALIA (GSWA)

YILGARN CRATON PROJECT

YOUANMI AND SOUTH WEST TERRANES

TECHNICAL REPORT NO. 23_029

GDA94/ Zone 50

DISTRIBUTION

1. GSWA – Sasha Banaszczyk
2. Terra Petrophysics – Barry Bourne

Claire Mortimore

Geoscientist

July, 2023

TERRA PETROPHYSICS

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1. INTRODUCTION

Terra Petrophysics have performed petrophysical analysis of 415 core samples for GSWA from their Yilgarn Craton project which encompasses samples from the South West and Youanmi Terranes. These samples have been provided by GSWA to develop an understanding of physical properties of rocks in the region and to assist with the interpretation of geophysical field data. Petrophysical analysis includes measurement of the following physical properties:

- Induced Polarisation (Chargeability) and Galvanic Resistivity
- Inductive Conductivity
- Magnetic Susceptibility
- Remanent Magnetisation; the ratio of induced- to remanent-magnetisation intensity of the sample (known as the Koenigsberger Ratio, Q), as well as an estimate of the total remanent vector (relative to drill hole).
- Dry Bulk Density
- Apparent Porosity
- P-wave Sonic Velocity
- Spectral Radiometrics

During analysis, Terra Petrophysics utilises standards and reference samples to ensure precision and accuracy.

2. PETROPHYSICS

2.1 Sample Preparation

Samples for physical property measurements should be carefully selected for quality and representation of geology and/or alteration. Terra recommends samples between the sizes of 10cm to 15cm. In this study all samples were of adequate size and quality. The size and shape of the sample need to be determined for most physical property measurements (e.g., geometric and core size correction factors). All samples and cores are returned to the client.

All samples are photographed and marked with Terra sample numbers. Samples for which magnetic remanence vector measurements are requested should be oriented in space. All samples should be accompanied by a project name, a brief description of each sample, requested physical property procedures and final disposal requirement for the samples.

Physical property determinations are non-destructive procedures; however, sample preparation requires the sample to have flat/square ends and sometimes requires them to be cut with a rock saw. In addition, samples are required to be submerged in water for 24 hours before being measured. Samples containing clays can absorb water and break. Extra caution is taken with these samples.

2.2 Inductive Conductivity

The inductive conductivity measurement is made in the frequency domain at 10,000 Hz via an external magnetic field inducing a small current in the sample. The measurement is most influenced by sample material at the receiver coil and within a 10 cm radius from the centre of the sample.

Inductive conductivity is calculated from the difference in amplitude between the sample and free air measurements. The limits of detectability are 0.1 S/m (maximum 100,000 S/m) and resulting data are presented in S/m. Several inductive conductivity measurements will be made and reported when the sample size permits.

2.3 Induced Polarization and Resistivity

The apparent resistivity and induced polarization (or chargeability) determinations are measured in time domain. The resistivity and chargeability values are measured by passing a constant current through the sample and then switching it on and off at 2 second intervals. While the current is flowing through the sample, the resistivity (ohm-m) is calculated. When the current is switched off, the voltage across the sample drops and a decay curve is measured. The induced polarization (mV/V) is calculated from this decay between 450-1100 milliseconds after turn off (Newmont Standard). Resistivity and induced polarization values are stacked and averaged a minimum of 10 times for one reading. Terra provides the average results for two readings (minimum).

Some samples (for example, silica rich samples) can be so resistive as to act dielectric. Electricity does not flow through the sample as if it were conductive, but charged particles are shifted minutely from their original position. When the current is removed the charged particles slowly (due to the high resistivity of the sample) relax to their original state. Therefore, samples are measured to be more chargeable than would be recognised by a field IP survey.

2.4 Wet/Dry Bulk Density and Porosity

The density determinations are calculated using Archimedes Principle. Dry bulk densities are determined by dry weight divided by the buoyancy determined volume of each sample. Porosities are calculated from water saturated weights, dry weights, and the buoyancy-determined volume. All sample are soaked for at least 24 hours after dry weights are measured.

The accuracy of the buoyancy technique of density measurement is 0.01 grams per cubic centimetre (g/cm^3). The results of the laboratory density determinations are reported in grams per cubic centimetre. Density measurements can be made on grab samples or drill core. Very large or heavy samples (>1 kg) require coring or breaking prior to the density determination.

2.5 Magnetic Susceptibility and Remanence

Magnetic susceptibility is measured by using a magnetic susceptibility meter to apply an external magnetic field to the sample at an operating frequency of 8 kHz. Magnetic susceptibility is calculated from the frequency difference between the sample and free air measurements. The limits of detectability are approximately 1 × 10-7 SI units and resulting data is presented in SI (×10-3) units. The measurement is most influenced by sample material at the receiver coil and within a 10 cm radius from the centre of the sample. Magnetic susceptibility measurements can be made on core, hand and surface samples.

For magnetic samples (>5 × 10^{-3} SI) the magnetic remanence can be measured. The measurement of remanence (Jr) in the field and the ratio of remanence to the induced magnetization (J_{rem}/J_{ind} = Q) has in the past been problematic. The induced magnetization can be estimated using the susceptibility (k, where J_{ind} = kH and typically H = 40-50 Am^{-1}) which can be measured using a handheld meter, but magnetic remanence is more difficult.

A recent development in field instrumentation uses a miniature fluxgate magnetometer and a pendulum arrangement in which a magnetic rock may be swung generating a transient signal at the fluxgate which is converted to a magnetic moment and magnetization.

2.6 Velocity

Terra Petrophysics can acquire P-wave velocity measurements on samples with a minimum length of 15 centimetres. Measurements are taken at 50,000 Hz. The velocity measurement range is between 1500-9999 m/s.

2.7 Spectral Radiometrics

Terra Petrophysics reports on the following radionuclides: Potassium (K-40) %, Uranium (U) ppm and Thorium (Th-232) ppm. The measurements are acquired using a 256 and 1024 channel spectrometer with a 3”x3” (21ci – 0.35L) Sodium-Iodide (NaI) gamma detector which is operated within the confines of a lead laboratory shield.

The minimum detection sensitivities of the instrument are 0.3% K, 0.9 ppm U, and 1.5 ppm Th; and the gamma ray sensitivity is (1MBq Cs-137 1 m) 386 cps.

3. RESULTS

A total of 415 samples have undergone petrophysical analysis, the results table of which is included as APPENDIX 1 – DATA TABLES. Each sample is assigned a Terra ID, and photographs of the samples are included as APPENDIX 2 – SAMPLE PHOTOS. Raw data files for the induced polarization, resistivity and spectral radiometric measurements are included in the datasheet. Cross plots of the various petrophysical data are given in Figure 2 to Figure 14.

The data points are classified by Au content (ppm), using cool to warm colours, Cu content (ppm), using symbol size and lithology, which is represented by shape (Figure 1).

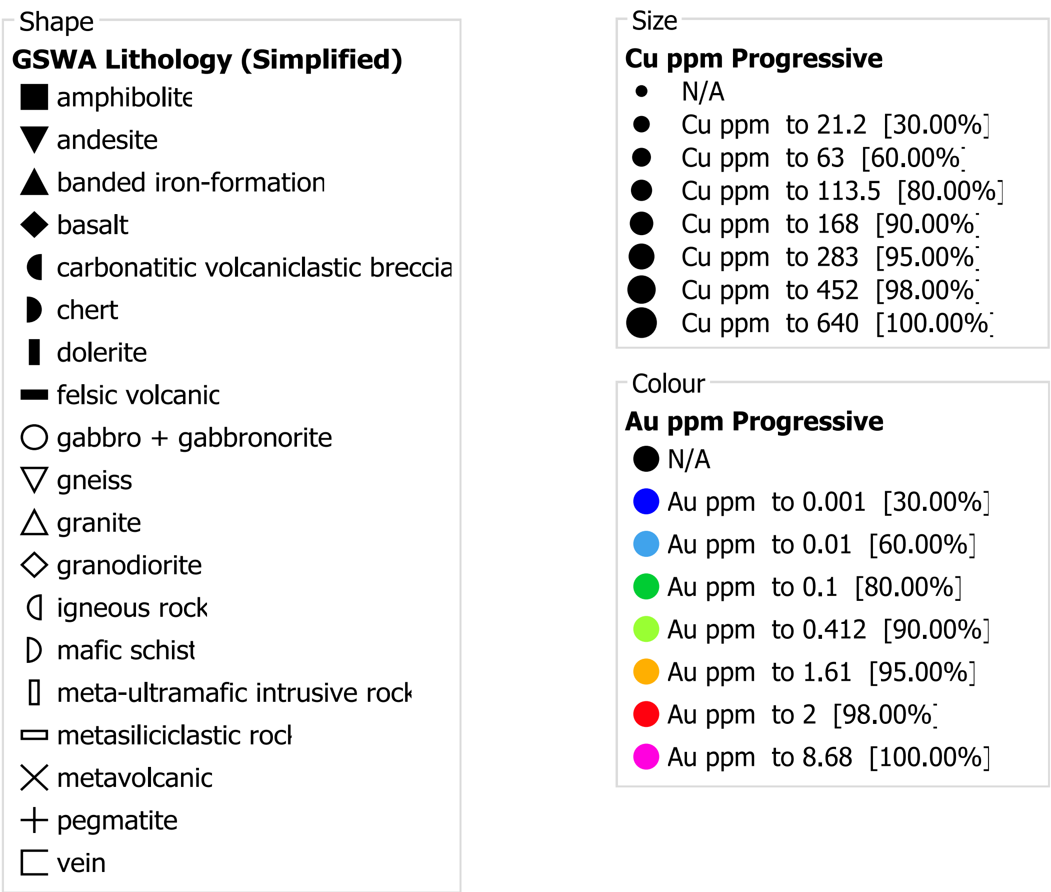


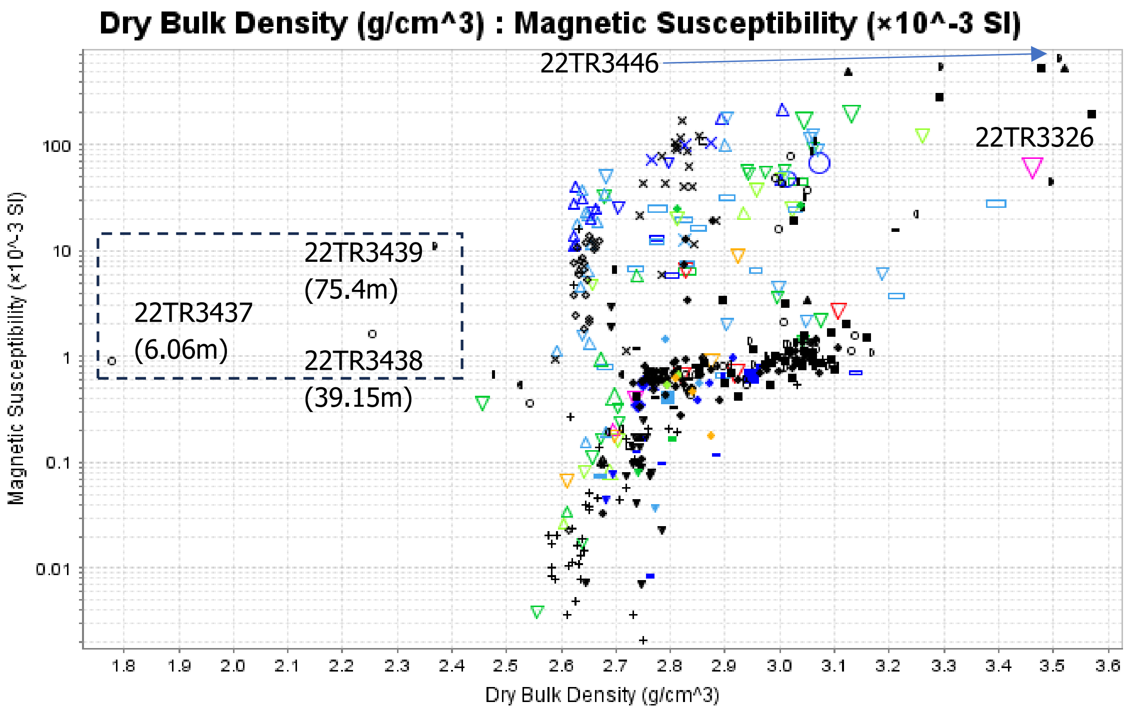
Figure 1. Legend corresponding to Figure 2, and Figure 5 to Figure 12.

A cross-plot of dry bulk density (DBD) and magnetic susceptibility data is given in Figure 2. Dry bulk density values range from 1.77 to 3.57 g/cm^3 and magnetic susceptibility values range from 0.002 to 650 ($\times$ 10^{-3}) SI. However, the median values are 0.920 $\times$ 10^{-3} SI and 2.80 g/cm^3; for magnetic susceptibility and DBD respectively. There is an overall positive correlation between the variables in this plot.

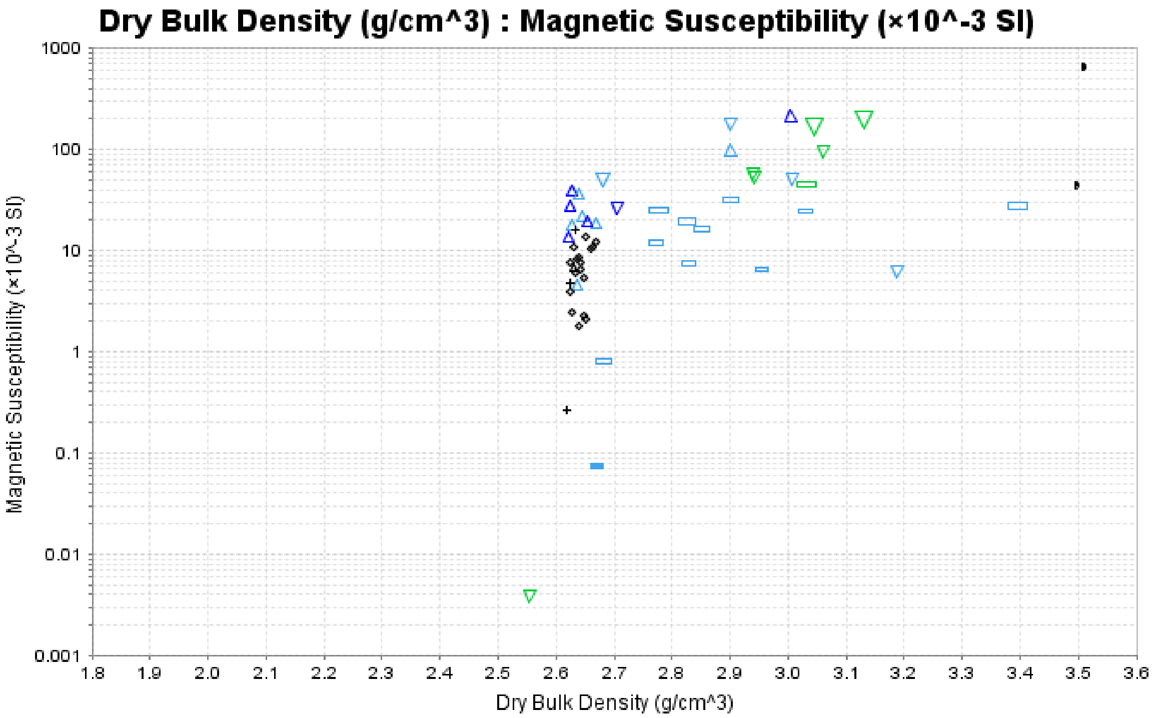
Sample 22TR3326 (gneiss with Au, Ag, Cu, Cd, Zn, Mo mineralisation) shows high DBD and magnetic susceptibility values of 3.46 g/cm^3 and 61.14 $\times$ 10^{-3} SI, respectively and corresponds to high Au and Cu content (6.52 ppm Au and 560 ppm Cu). Sample 22TR3446 (quartz veined basal contact) shows the highest magnetic susceptibility which corresponds to a high DBD of 3.51 g/cm^3 as a function of magnetite mineralisation. It is likely that magnetite and monoclinic pyrrhotite content broadly control the data distribution in this plot. This is shown in Figure 2b which is a plot of only magnetite or pyrrhotite mineralised samples. This figure shows a median magnetic susceptibility increase to 13.67 $\times$ 10^{-3} SI from 0.920 $\times$ 10^{-3} SI (all samples).

All lithium pegmatites show low magnetic susceptibility values <1 $\times$ 10^{-3} SI and average DBD values (2.60 g/cm^3) except for 22TR3554 and 22TR3567 which have a high magnetic susceptibility, due to magnetite mineralisation (Figure 2c). Gneisses tend to host the majority of Au mineralisation and show a positive correlation between the properties in this plot (Figure 2d). However, Au content alone does not appear to control the physical property responses shown in this plot.

Samples 22TR3437, 22TR3438 and 22TR3439 show low DBD and are shown with a box in Figure 2a. Density appears directly related to depth in these samples, suggesting that low DBD here is a function of weathering related to supergene processes.



(a)


Dry Bulk Density (g/cm^3) : Magnetic Susceptibility (×10^-3 SI)
Magnetic Susceptibility (×10^-3 SI)
Dry Bulk Density (g/cm^3)
1000
100
10
1
0.1
0.01
0.001
1.8
1.9
2.0
2.1
2.2
2.3
2.4
2.5
2.6
2.7
2.8
2.9
3.0
3.1
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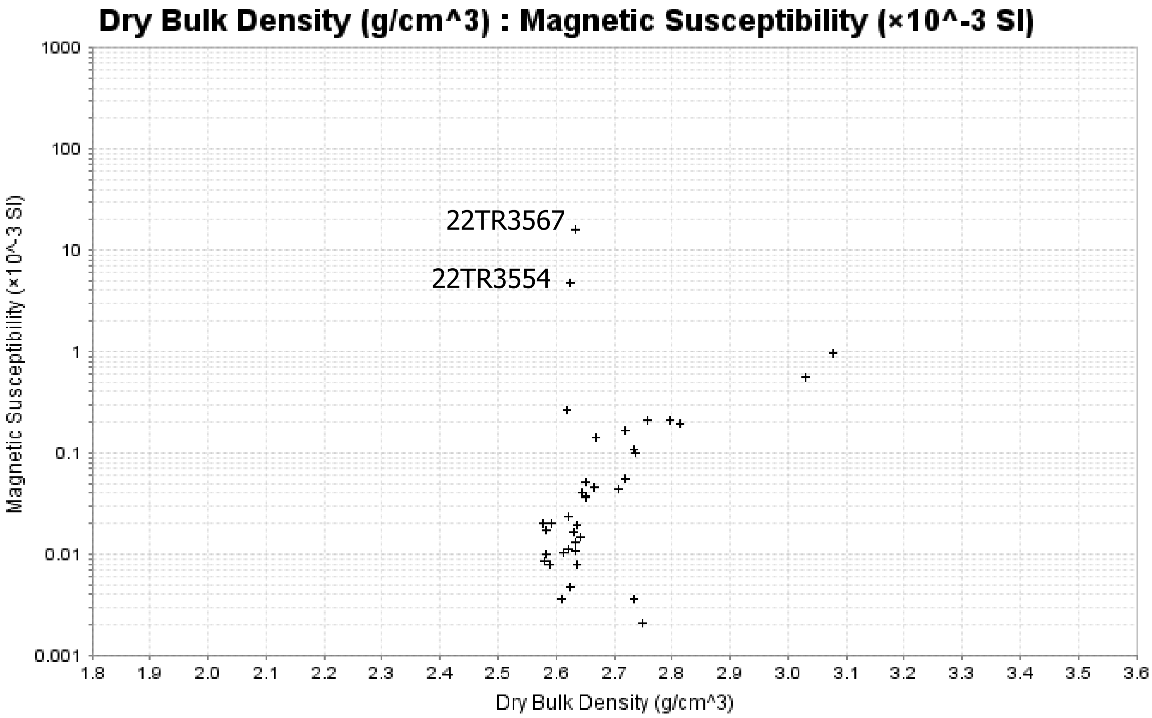
3.3
3.4
3.5
3.6

(b)


Dry Bulk Density (g/cm^3) : Magnetic Susceptibility (×10^-3 SI)
Magnetic Susceptibility (×10^-3 SI)
Dry Bulk Density (g/cm^3)
22TR3567
22TR3554
1000
100
10
1
0.1
0.01
0.001
1.8
1.9
2.0
2.1
2.2
2.3
2.4
2.5
2.6
2.7
2.8
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3.0
3.1
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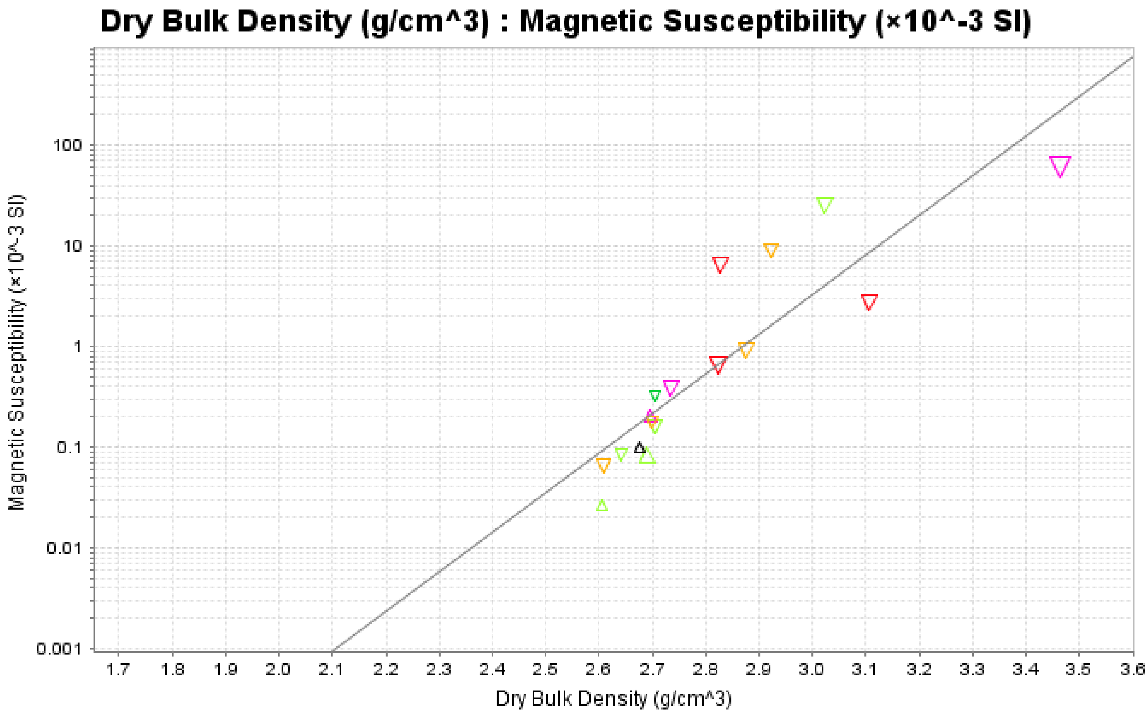
3.4
3.5
3.6

(c)



(d)

Figure 2. Cross-plot of dry bulk density against magnetic susceptibility data; a) shows all samples, b) shows all magnetite or pyrrhotite mineralised samples, c) shows all pegmatites and d) shows all gold mineralised samples.

A method of estimating magnetic mineral content from magnetic susceptibility via a simple relationship was devised by Emerson (1997) and is shown in Figure 3. Sample 22TR3446 (quartz veined basal contact) has a magnetic susceptibility of 0.650 SI, and correspondingly is estimated to contain approximately 17% magnetite; this is indicated by the blue line on Figure 3.

Figure 4 shows ranges of density values for common rocks and minerals (Emerson, 1990). From this diagram, it can be noted this project shows a "low to very high" range of densities within the samples.

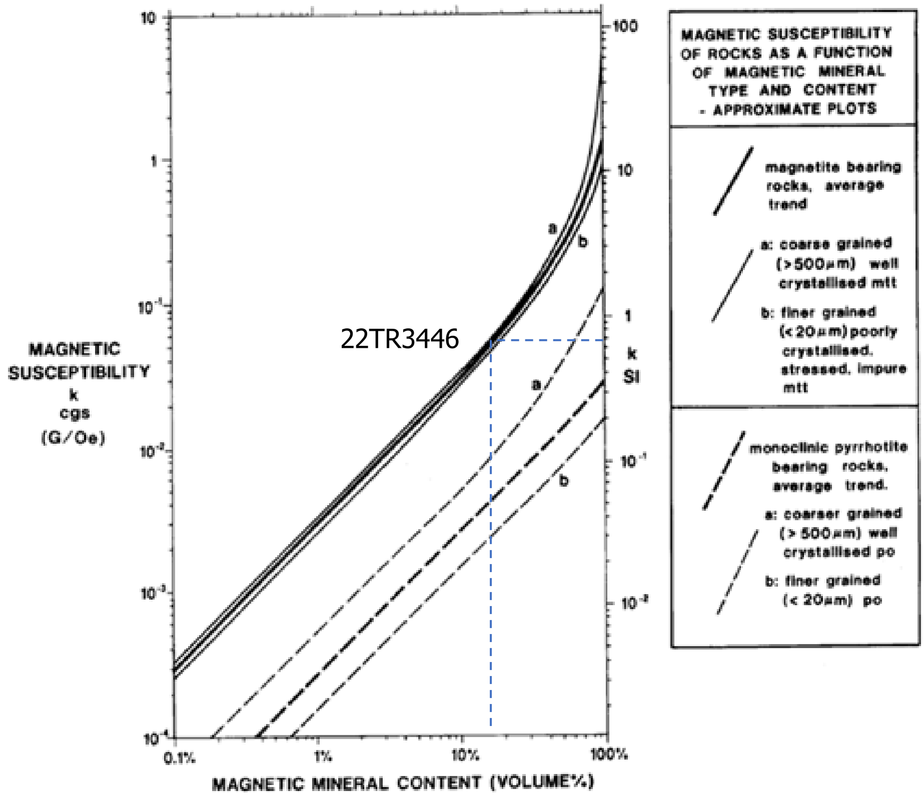


Figure 3. Theoretical magnetic mineral content (magnetite – solid lines; pyrrhotite – dashed lines) as a function of measured magnetic susceptibility (Emerson, 1997).

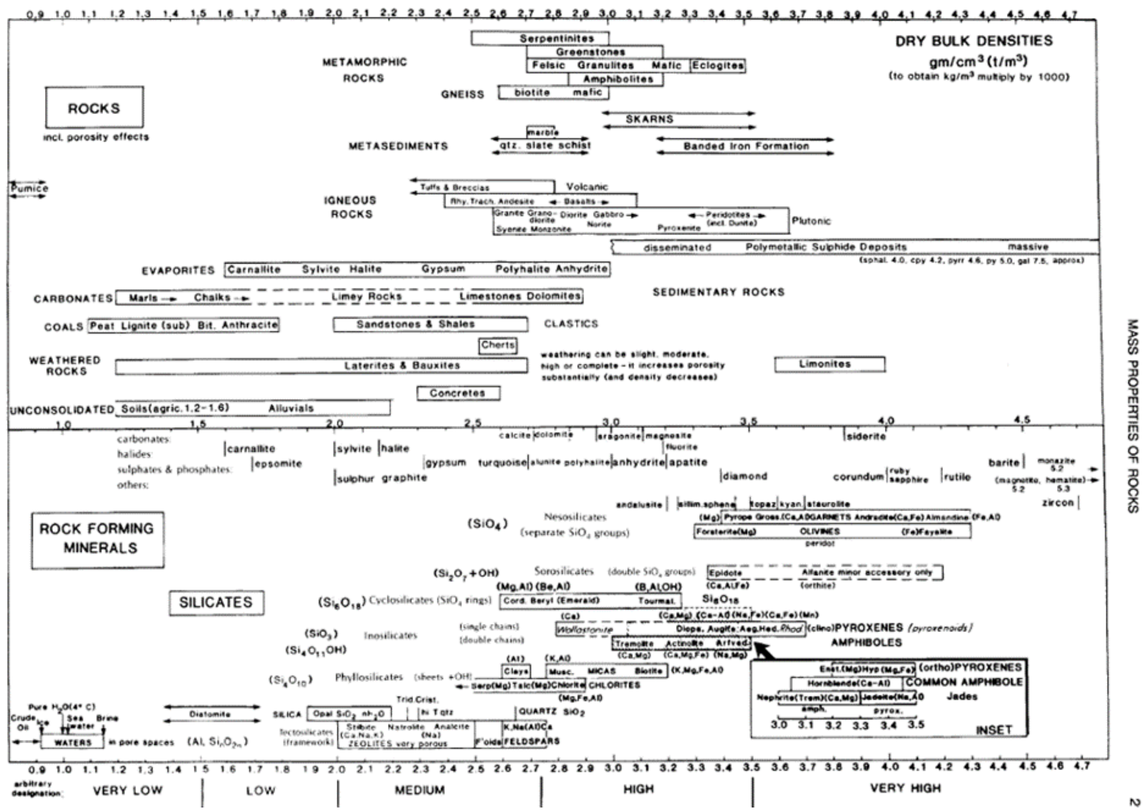
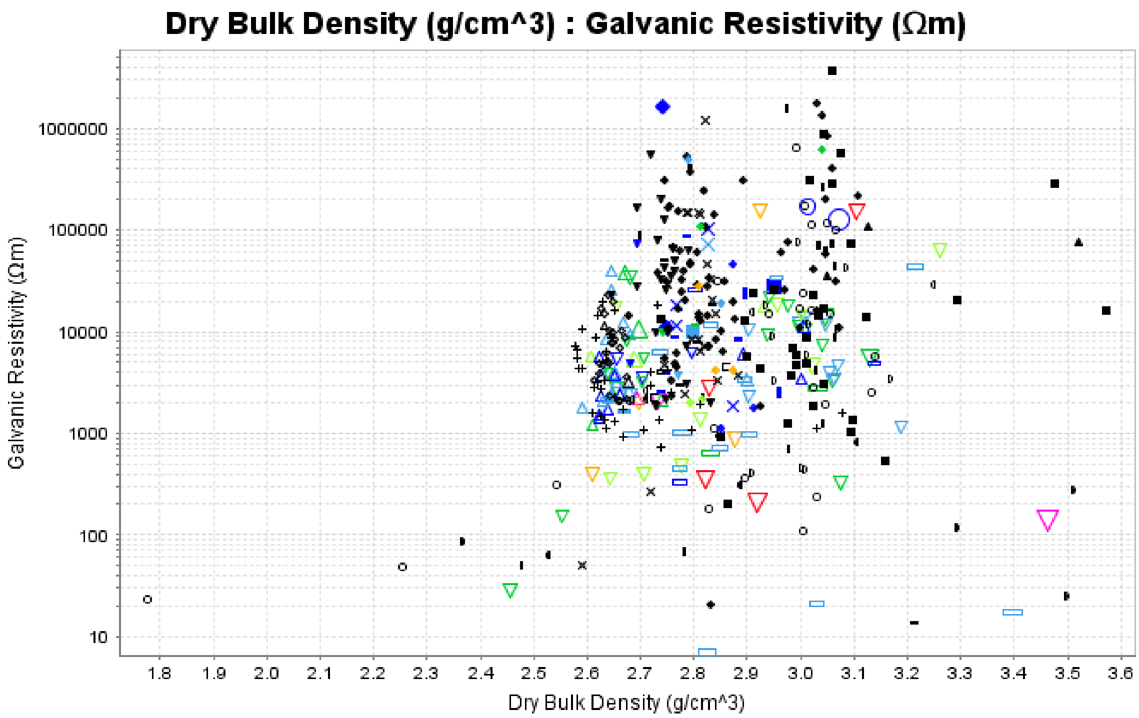


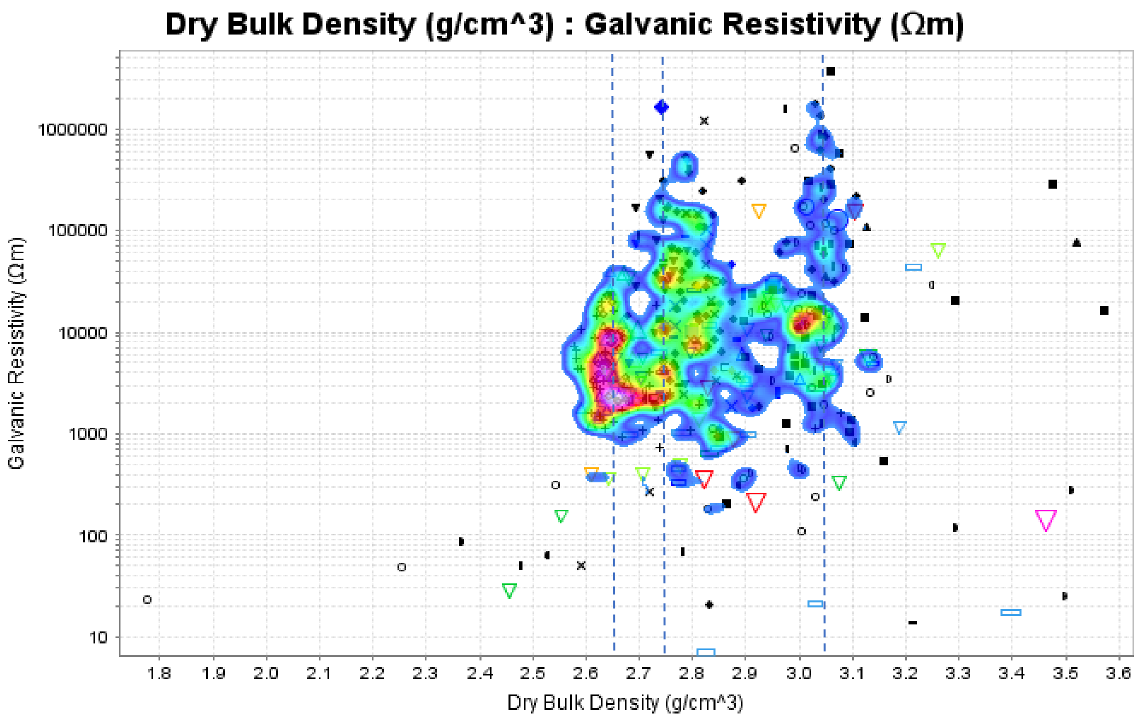
Figure 4. Dry bulk density ranges for common rock types (Emerson, 1990).

A cross-plot of dry bulk density and galvanic resistivity data is given in Figure 5. Galvanic resistivity values range from 6.95 to >3,000,000 Ωm.

There are three groups of data clustering about the 2.65, 2.75 and 3.05 g/cm^3 DBD lines which correspond to a range of resistivity values. This is shown by the point density plot (Figure 5b). All samples within the 2- 8.68 ppm Au range (pink symbols), correspond to galvanic resistivity values <2500 Ωm. The is likely as a function of associated sulphide minerals and not of Au content alone.



(a)



(b)

Figure 5. Cross-plot of dry bulk density against galvanic resistivity data; a) shows all data points and b) shows all data points with a point density overlay.

A cross-plot of magnetic susceptibility and galvanic resistivity data is given in Figure 6.

Samples shown within the box have a low galvanic resistivity and a high magnetic susceptibility which might reflect high magnetic sulphide content (magnetite and/or monoclinic pyrrhotite). There are no clear correlations visible in this plot otherwise.

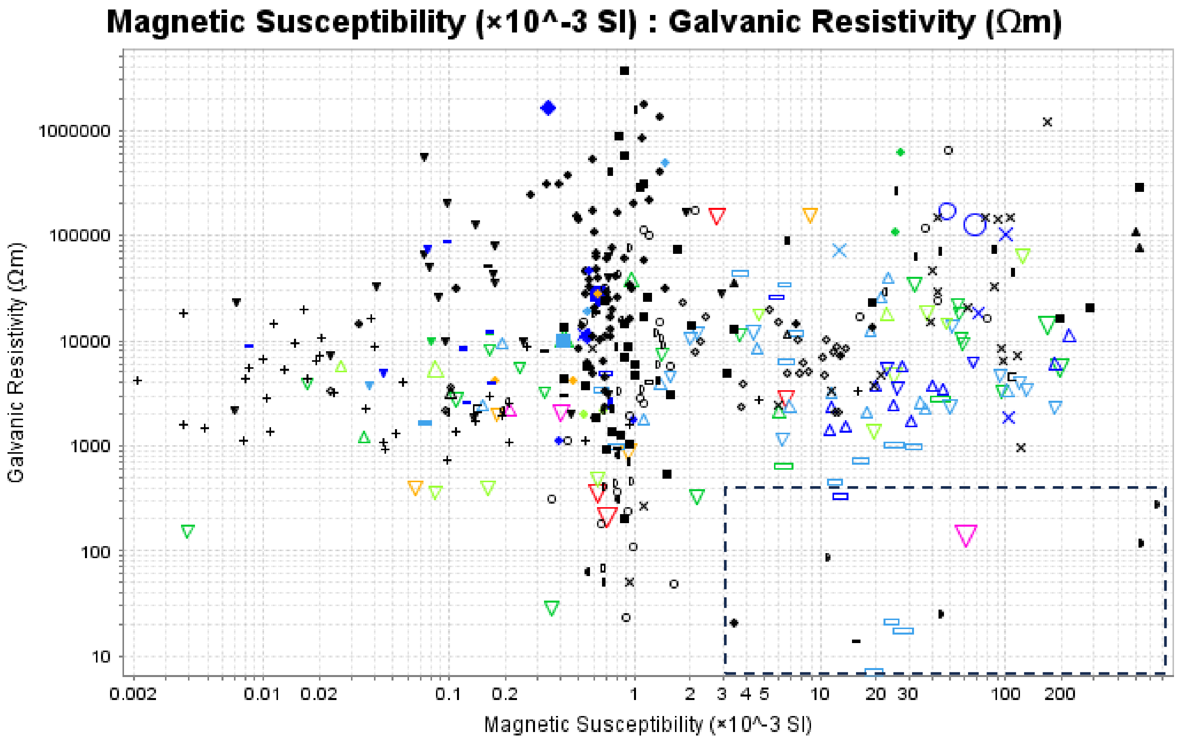


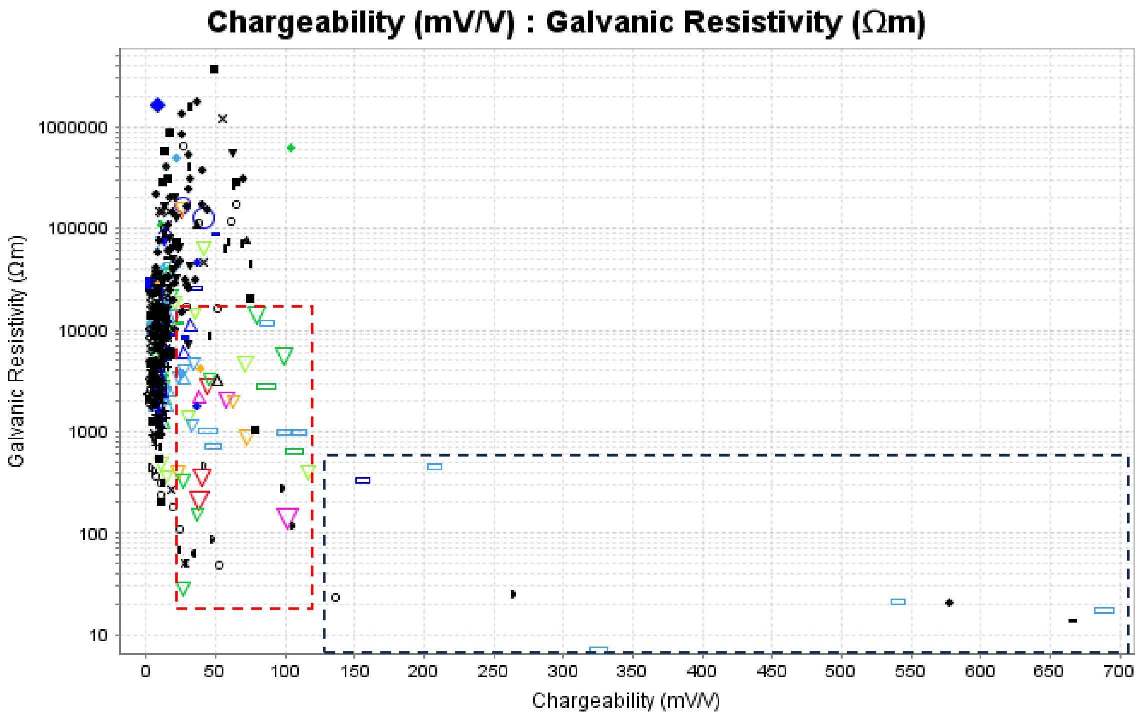
Figure 6. Cross-plot of magnetic susceptibility against resistivity.

A cross-plot of chargeability and galvanic resistivity data is given in Figure 7. Chargeability values range between 1.4 and 689.0 mV/V.

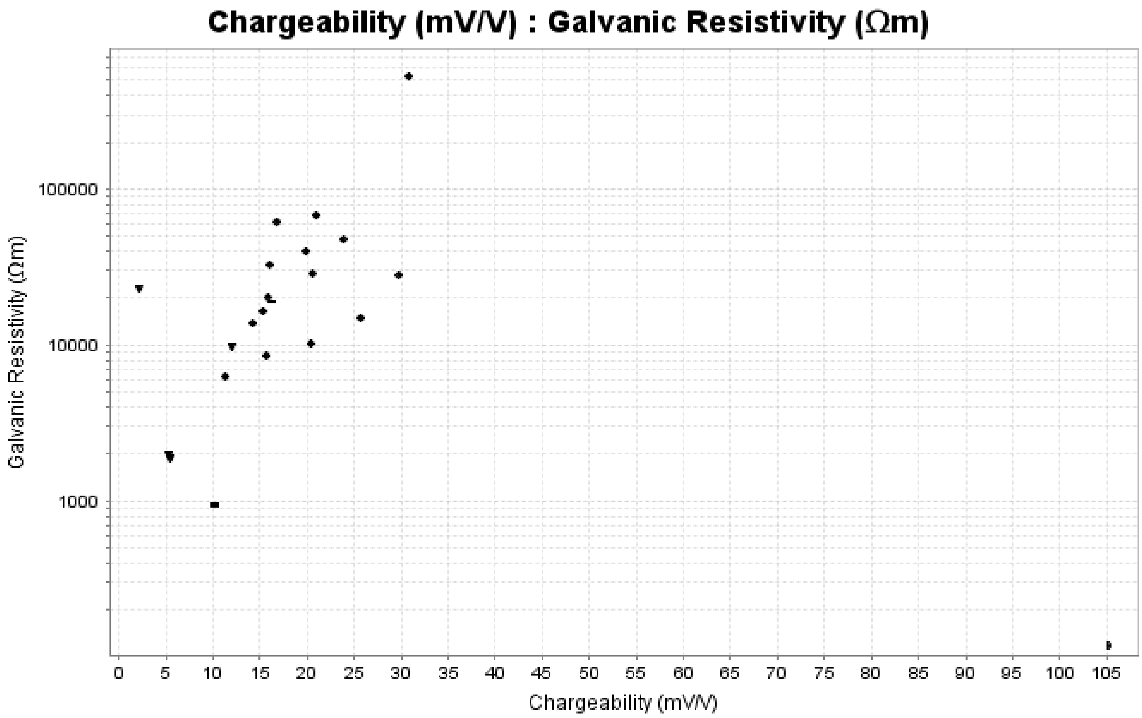
Some samples showing high galvanic resistivity (>1,000,000 Ωm) may have an exaggerated chargeability as a function of the dielectric effect (see Section 2.3).

The majority of samples show low chargeability values with a median average of 12.4 mV/V. A small population of samples (shown with the blue box) show very high chargeability and low resistivity values which is due to pyrite/pyrrhotite mineralisation. Figure 7b shows just sericite altered samples which show moderate and high chargeability values as a function of increased clay content.

Gold mineralised samples shown within a red box, show high chargeability and a range of resistivity values.



(a)



(b)

Figure 7. Cross-plot of chargeability against resistivity; a) shows all samples and b) shows just sericite altered samples.

A cross-plot of chargeability and magnetic susceptibility data is given in Figure 8.

Samples with very high chargeability correspond to moderately high magnetic susceptibility values ~10 × 10^{-3} SI (shown with a box). All samples are logged as containing pyrrhotite/ pyrite and/or magnetite except for 22TR3448 (felsic volcanic).

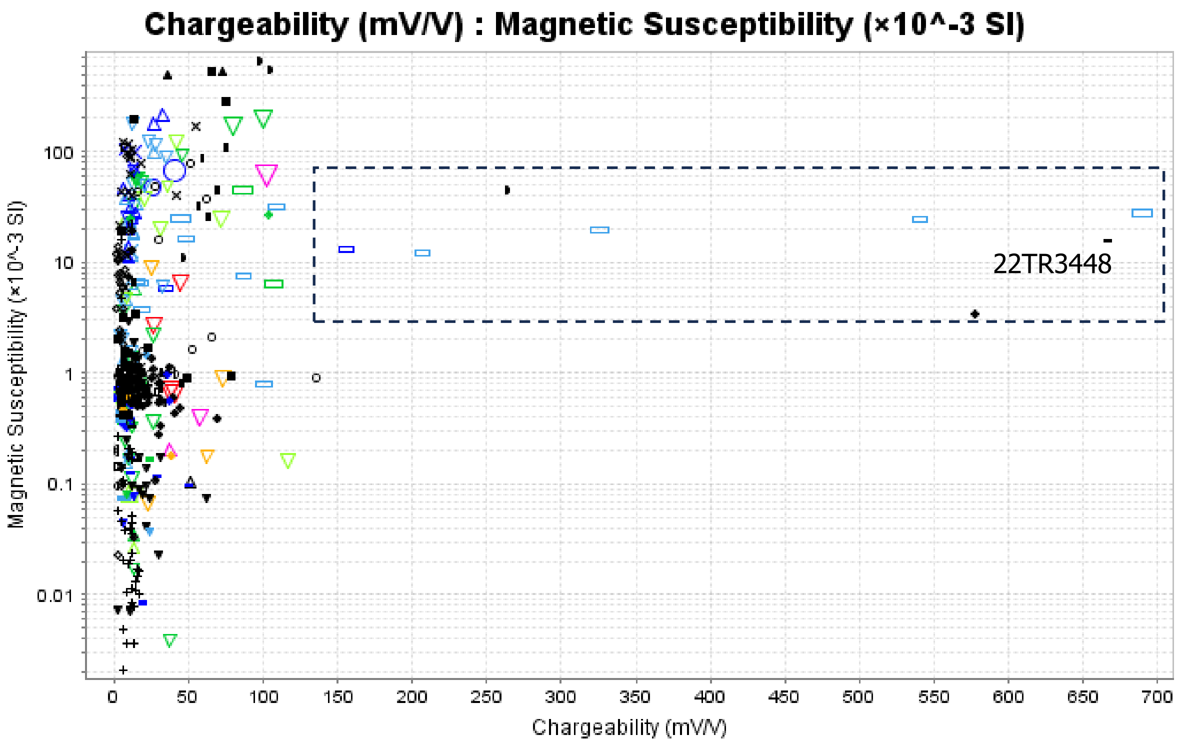
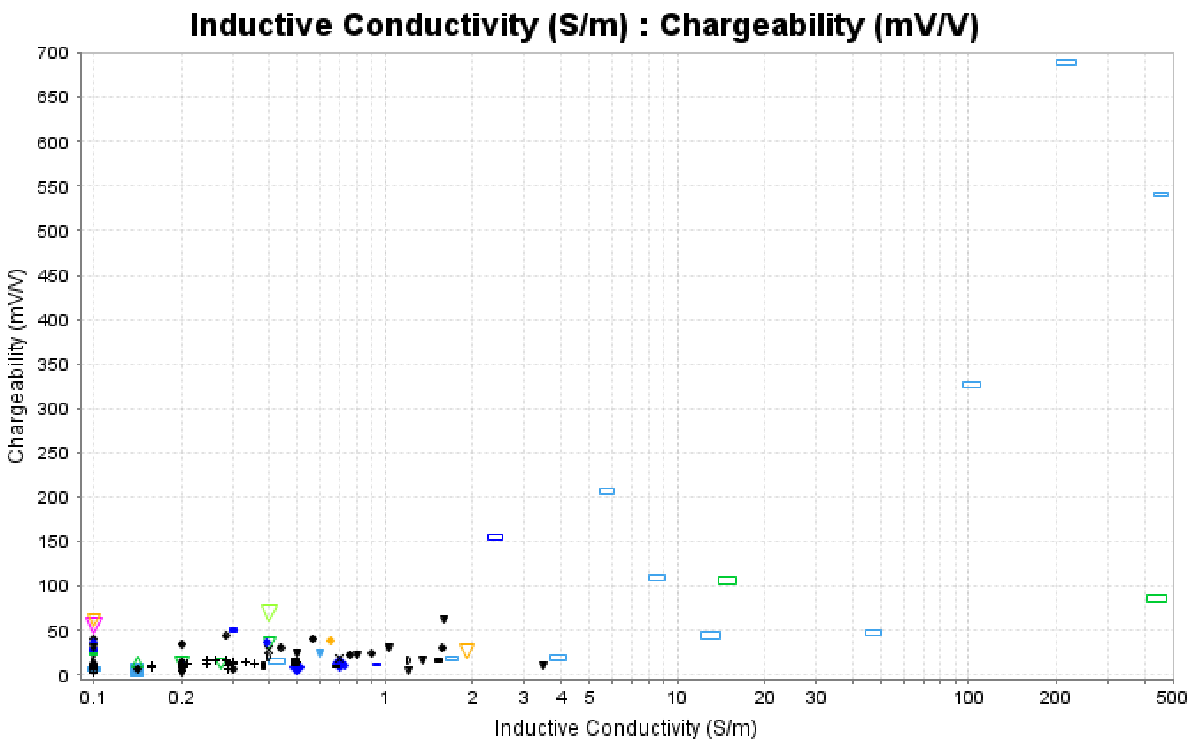


Figure 8. Cross-plot of chargeability against magnetic susceptibility.

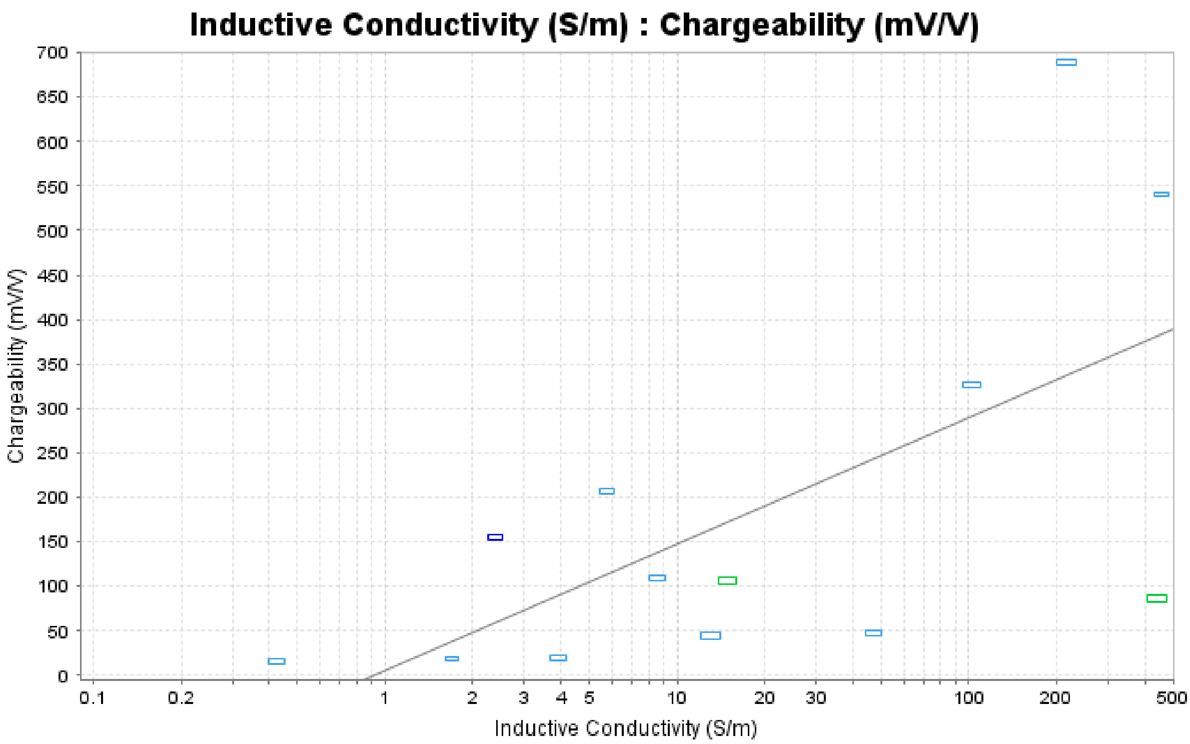
A cross-plot of inductive conductivity and chargeability data is given in Figure 9. Only samples with a non-zero inductive conductivity value are included.

Chargeability of a material is dependent on 4 major factors: the degree of sulphide or metallic mineralisation, presence of clays, the pore-water salinity, and the overall tortuosity of the pore-space network within the rock. Both a high inductive conductivity and a high chargeability may be indicative of the presence of sulphides within the sample, although conductivity tends to better respond to massive (connected) sulphides, while chargeability responds better to disseminated (disconnected) sulphides.

For samples showing non-zero inductive conductivity, values range from 0.1 and up to 453.8 S/m, while chargeability values range from 2.07 and up to 689 mV/V. All samples showing significant inductive conductivity responses are meta-siliciclastic rocks with pyrite/ pyrrhotite +/- sphalerite mineralisation. There is a positive correlation between samples of this lithology which is shown with a trendline in Figure 9b.



(a)

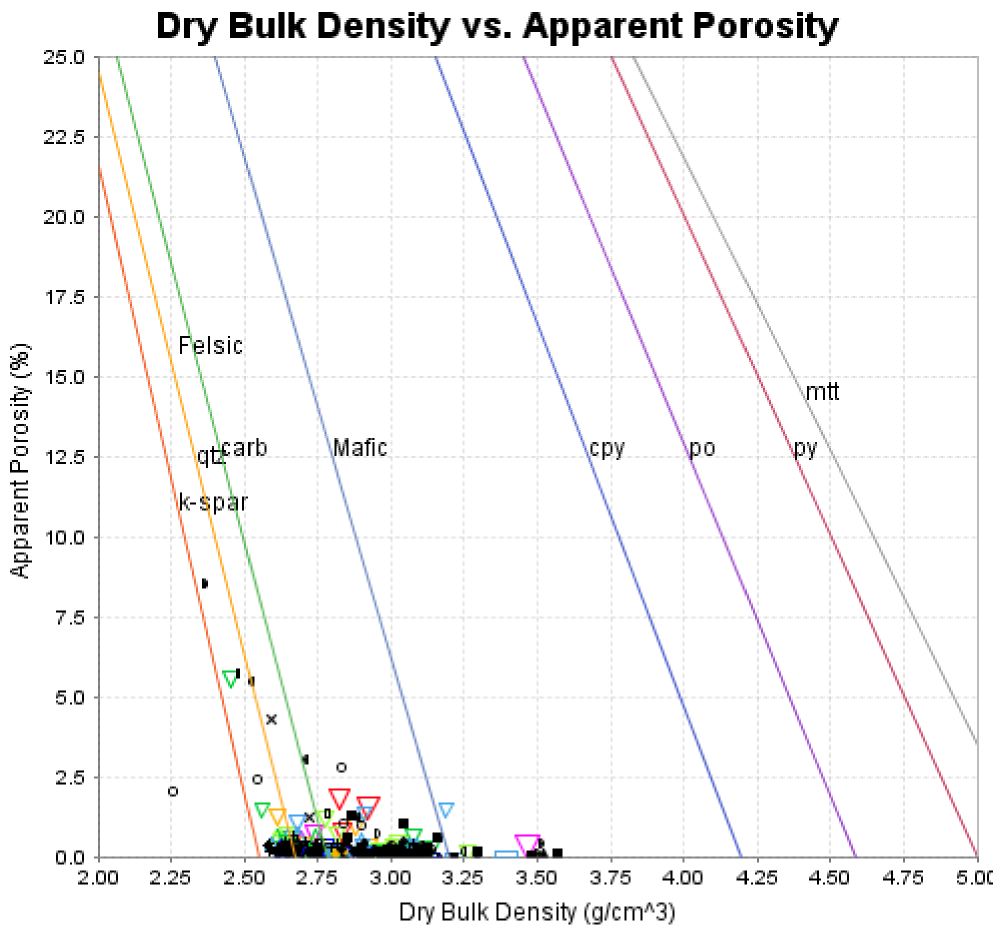


(b)

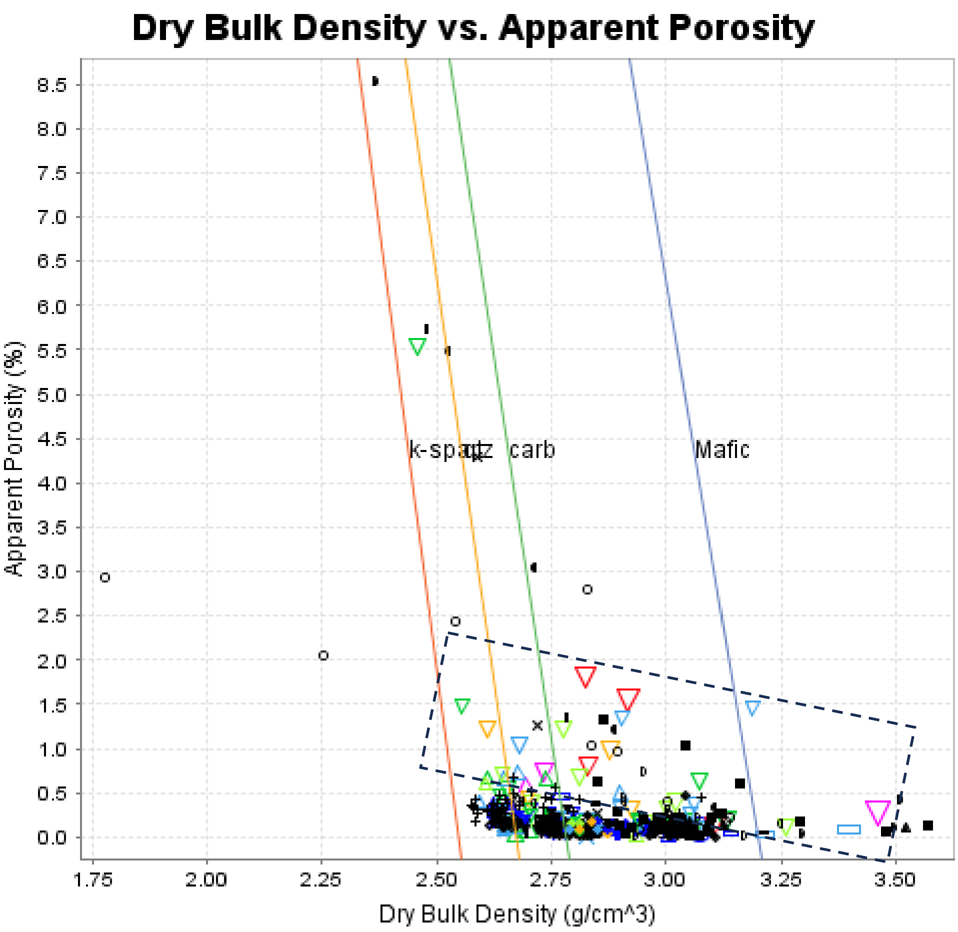
Figure 9. Cross-plot of inductive conductivity against chargeability; a) shows all samples with non-zero inductive conductivity and b) shows only meta-siliciclastic rocks.

A cross-plot of dry bulk density and apparent porosity data against mineral trends (Emerson, 1997) is given in Figure 10.

Apparent porosity values for the project range up to 8.52%. Samples are spread from the 'felsic' line to past the 'mafic' mineral line - though this may be reflective of alteration and weathering, rather than based purely on lithology. Samples with elevated gold (shown with a box) show slightly higher porosity values than other samples but follow the same trend.



a)



b)

Figure 10. Cross-plot of dry bulk density against porosity; a) shows the full extent of the diagram and b) shows the extent of the data.

A cross-plot of dry bulk density and P-wave velocity data, with contours of acoustic impedance, is given in Figure 11. The separation between the contours represents the contrast required to produce a minimum reflection coefficient (R=0.06) detectable by the seismic reflection method. The more contours the data overlaps, the more likely the seismic reflection method is to map geological and/or lithological contrasts. P-wave velocity was unable to be measured on 56 samples due to insufficient sample length (<15 cm).

There is a good distribution of data (overlap of 7 contours) for this project. Seismic reflection would be likely to detect differences between lithological groups.

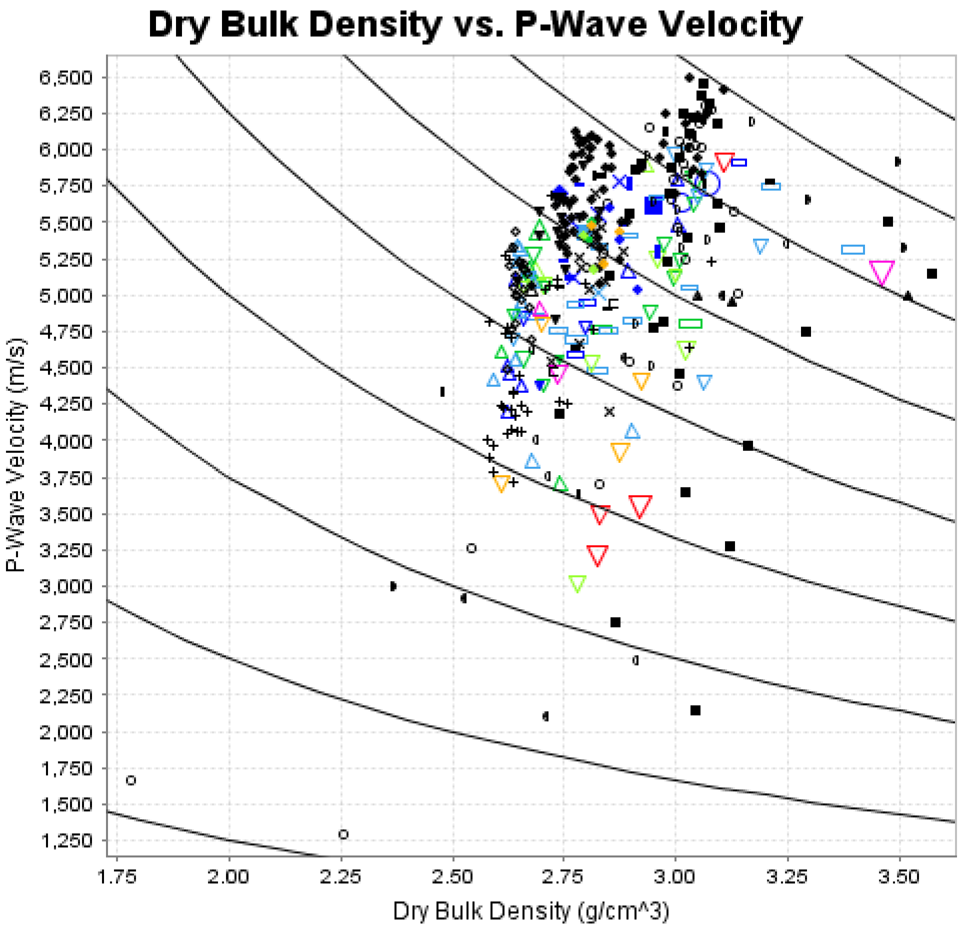


Figure 11. Cross-plot of dry bulk density against sonic (P-wave) velocity.

A ternary diagram of K, U and Th distributions is shown in Figure 12. Radioelement concentrations range from below detection limit and up to 15.8% K, 172.9 ppm U and 510.0 ppm Th. Granites show higher proportions of Th relative to other radioelement concentrations and metavolcanics show higher proportion of K% than other lithology groups.

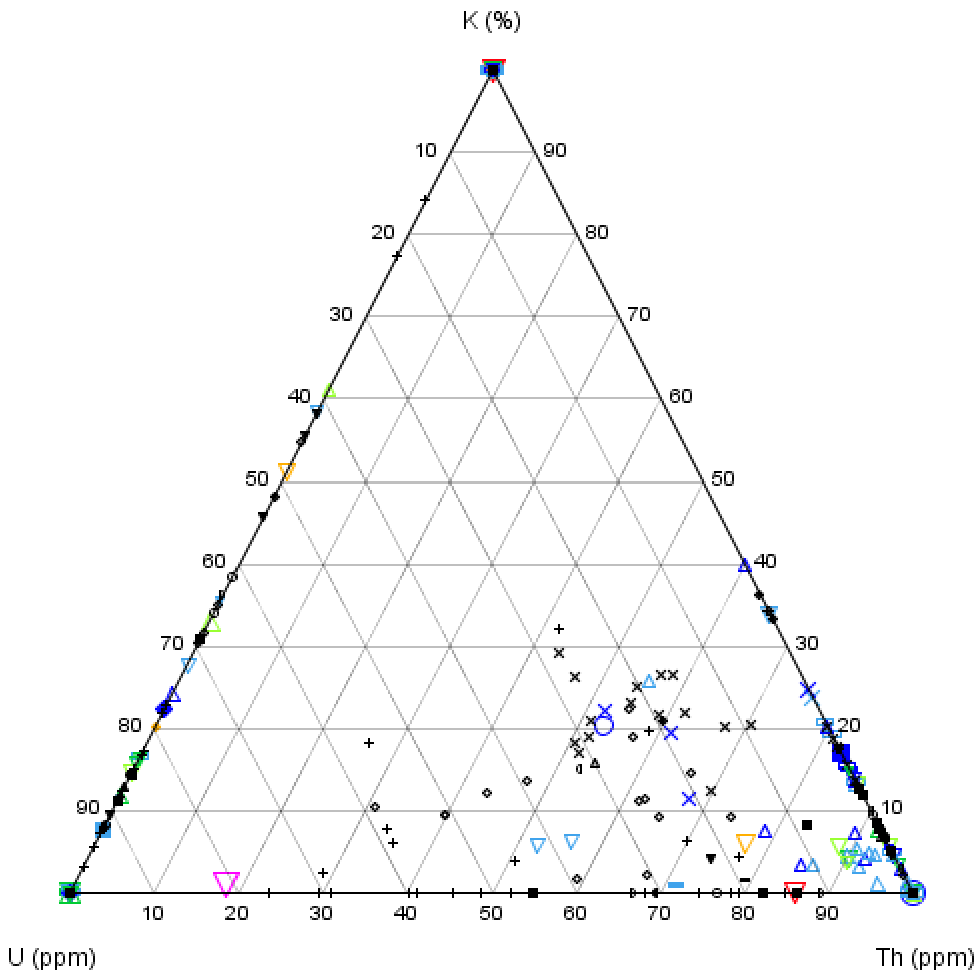


Figure 12. Ternary diagram of K%, U ppm and Th ppm.

The components of induced and remanent magnetism were measured for 150 samples. 70 samples are measured to be remanent-magnetisation dominant (Q > 1), with the remaining 80 samples being induced-magnetisation dominant (Q < 1).

A cross-plot of the intensity of the induced vs. remanent vectors (J_{ind} vs. J_{rem}) is given in Figure 13.

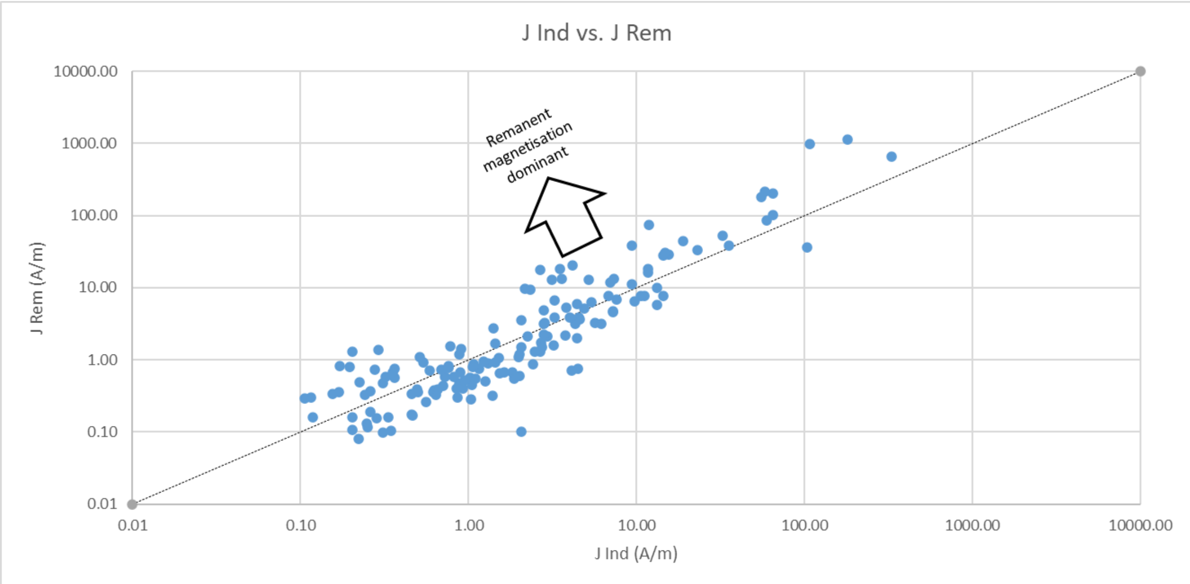


Figure 13. Cross-plot of intensity of J_{ind} versus J_{rem}. Samples above the trend line have Koenigsberger ratio (Q) greater than 1, indicating they are remanent-magnetisation dominant. Conversely, samples below the trend line have a Q value less than one, and are induced-magnetisation dominant.

A theoretical magnetic susceptibility value has been calculated from the J_{ind} vector intensity, and is compared with the measured magnetic susceptibility via a cross-plot (Figure 14).

In this plot, the induced magnetisation dominant samples (grey, Q < 1) samples show near equivalence, especially in more magnetic samples, while the remanent magnetisation dominant samples (orange, Q > 1) tend to show a much higher fluxgate than calculated magnetic susceptibility.

Variation between the two values is expected. Samples with higher orders of magnitude differences between measured magnetic susceptibility and the calculated value may be attributed to remanent dominance and the associated cancellation of induced magnetisation. This is particularly observed in remanent magnetisation dominant samples with high pyrrhotite content.

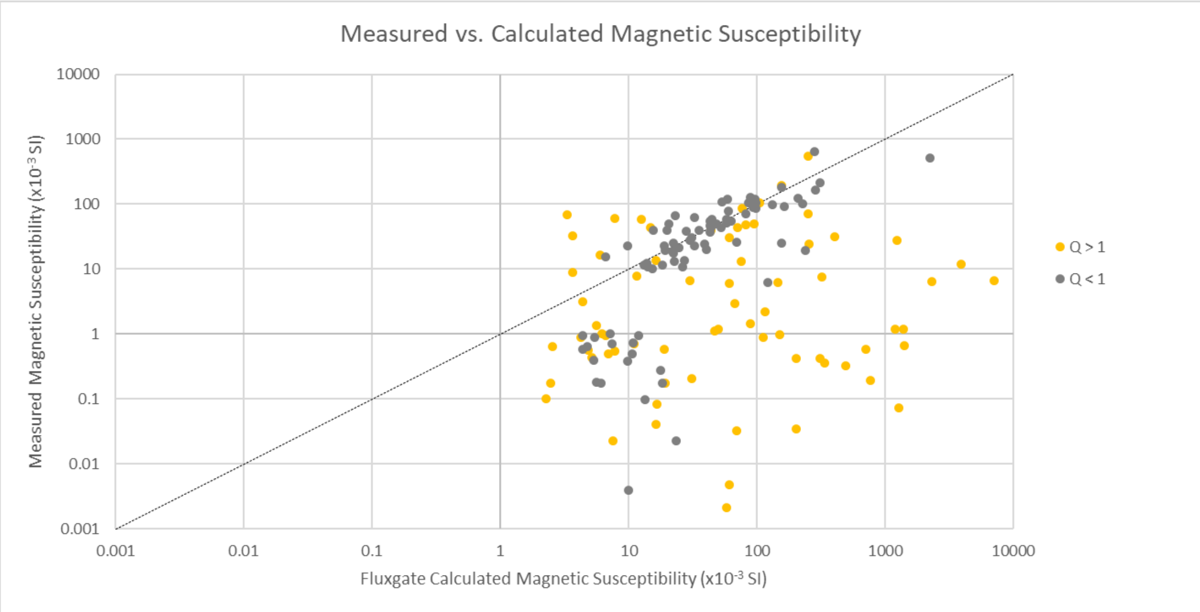


Figure 14. Logarithmic plot of magnetic susceptibility derived from fluxgate against measured magnetic susceptibility.

4. SUMMARY

Terra Petrophysics has performed petrophysical analysis of 415 core samples from the Youanmi and South West terranes in the Yilgarn Craton, Western Australia. Integration of the petrophysical data with geological logging and elemental assays has been performed to aid a better understanding and the potential implications of the physical properties of the data. A summary of the findings is given below.

- Dry bulk density values range from 1.77 to 3.57 g/cm^3 and magnetic susceptibility values range from 0.002 to 650 (× 10^{-3}) SI. However, the median values are 0.920 × 10^{-3} SI and 2.80 g/cm^3; for magnetic susceptibility and DBD respectively.
- Magnetite and monoclinic pyrrhotite content appear to control the magnetic susceptibility distribution. Lithium pegmatites show very low magnetic susceptibility (<1 × 10^{-3} SI) except for those containing trace magnetite.
- Chargeability values range between 1.4 and 689.0 mV/V and a median average of 12.4 mV/V. Au mineralised samples show high chargeability, probably due to associated sulphide minerals, but samples showing very high values (>100mV/V) are pyrite/ pyrrhotite mineralised. Clay alteration in the supergene profile and sulphide mineralisation appear to contribute to the distribution of DBD and chargeability values in the plots.
- Inductive conductivity ranges between 0 and 453.8 S/m. All samples showing significant inductive conductivity responses are pyrite/ pyrrhotite +/- sphalerite mineralised meta-siliciclastic rocks that correspond to very high chargeability values.
- 70 samples are measured to be remanent-magnetisation dominant (Q > 1), with the remaining 80 samples being induced-magnetisation dominant (Q < 1). Induced magnetisation dominant samples show near equivalent fluxgate calculated magnetic susceptibility to measured magnetic susceptibility values, while remanent magnetisation dominant samples tend to show a much higher fluxgate calculated magnetic susceptibility.
- Apparent porosity values for the project range up to 8.52% and there is a negative correlation between DBD and porosity.
- There is a good distribution of data (overlap of 7 contours) for this project suggesting that seismic reflection would be likely to detect differences between lithological groups.
- Radioelement concentrations range from below detection limit and up to 15.8% K, 172.9 ppm U and 510.0 ppm Th.

5. REFERENCES

Emerson, D.W., 1990, Notes on Mass Properties of Rocks – Density, Porosity, Permeability. Exploration Geophysics, 21, 209-216

Emerson, D.W., and Yang, Y.P. 1997, Insights from laboratory mass property Cross-plots. ASEG Preview, 70, 10-14.

APPENDIX 1 – DATA TABLES

See attached document – ‘APPENDIX 1 – DATA TABLES’.

APPENDIX 2 – SAMPLE PHOTOS

See attached document – 'APPENDIX 2 – SAMPLE PHOTOS'.

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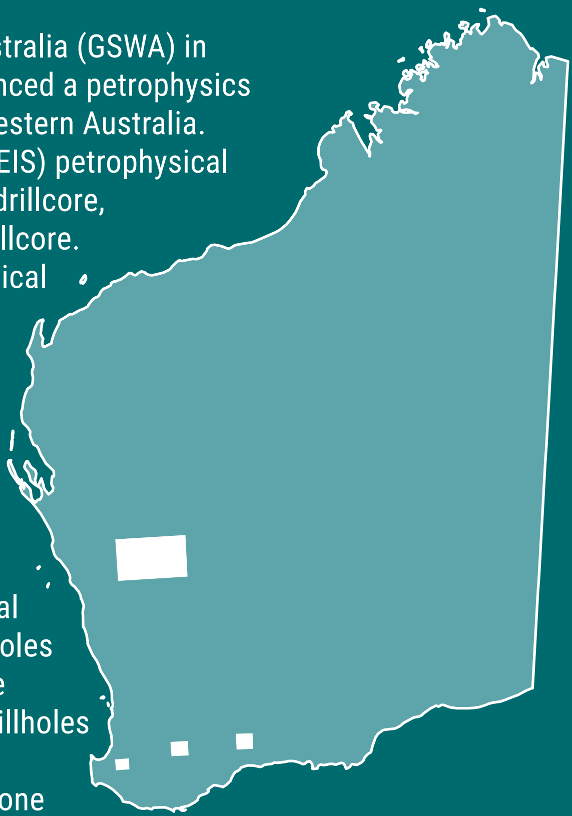
REGIONAL PETROPHYSICS: YOUNAMI AND SOUTHWEST YILGARN TERRANES 2022–23

C Mortimore and B Bourne

In 2020, the Geological Survey of Western Australia (GSWA) in collaboration with Terra Petrophysics commenced a petrophysics project to sample diamond drillcore across Western Australia. Funded by the Exploration Incentive Scheme (EIS) petrophysical data have been collected from EIS co-funded drillcore, company drillcore, and GSWA stratigraphic drillcore. The aim of this project is to provide petrophysical datasets that can be used to assist with the planning and interpretation of geophysical data, including characterizing the physical property response of stratigraphic units, alteration and mineralization styles, and constraining geophysical models of the subsurface.

This Report provides a dataset of petrophysical analyses on 415 samples from five diamond holes located between Mount Magnet, Ravensthorpe and Greenbushes in Western Australia. The drillholes penetrate the Archean igneous, meta-igneous, meta-sedimentary units of the granite-greenstone belts that comprise the South West and Younami Terranes of Western Australia.



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