GLASS EARTH LIMITED

14 May 2004 Newsletter No 2

PROSPECTING PERMIT 39 241
Work undertaken to April 2004

In newsletter No 1, (24 March 2004), Glass Earth outlined its approach to exploration on its Prospecting Permit 39-241, located in the Coromandel / Central Volcanic Region ("CCVR").

In this newsletter we summarise the philosophy of the Geoinformatics Intervention Project, which has been implemented as a precursor to airborne geophysical surveying, planned for later in the year. We also advise of Glass Earth's progress.

The Geoinformatics Intervention Project Philosophy

The Intervention Project follows the Geoinformatics model of risk managed, process focused methodology in order to generate targets and aid mineral discovery. The application of Geoinformatics proprietal approach:

- Reduces time to discovery
- Reduces the cost of discovery
- Significantly increases the success rate of discovery
- Overall, adds value to the exploration process

The 5 stages of the Intervention Project are, with Glass Earth's progress and comments in *italics*:

1 **Data Sourcing and audit** *(completed)*
The Geoinformatics process commences with the identification of all sources of data and the existing format of that data.

It was recognized that the CCVR project area contained vast amounts of pseudo public domain data. This represented 50 years of top quality scientific endeavor. Glass Earth has collected data from over 20 primary sources.

The data was however, in the main, poorly organized and synthesized. For example, a primary research organization alone had 28 different databases,

supervised by individual custodians in both disparate hardcopy and digital formats.

The Intervention Project unlocks the value in these isolated databases.

2 Data Collection, Validation and Compilation (3D geoscience data base) *(completed)*
Following the accumulation of useful sets of the data identified, they are rigorously validated, digitised if necessary and aggregated into a single multi dimensional 3D data base.

The first part of this stage was a more drawn out process than hoped for, however it has also had its bonuses. For instance, at the start of the Intervention Project, it was thought that regional aeromagnetic coverage was poor. However, by early 2004, around 40 aeromagnetic surveys, at various resolutions had been sourced. These have been stitched together to produce high resolution grids.

Attached as Appendix 1 is a summarised list of the data that has been collected and aggregated into a single multi dimensional database. Attached as Appendix 2 is a diagram of the Data Input List.

3 Interpretation and Modelling *(completed)*
The uniform data base created allows the rapid, iterative manipulation of data sets, the formation and testing of hypotheses and the search for analogous signatures to the desired targets.

Areas of interest became apparent from early on in this process.

4 Targeting – Prioritising Areas *(to be completed mid May)*

The objective is to narrow the search by defining smaller physical areas within which to concentrate efforts and money. This is achieved by ranking the attractiveness of the targets in terms of potential, location and depth to target amongst other parameters.

Objective targeting and target ranking based on all available information. With this process completed, Glass Earth will be in an informed position to target appropriate airborne geophysical surveying over the identified areas of enhanced prospectivity.

5 Reporting *(to be completed by the end of May)*

The accumulation and summarising of key findings.

The overall process can be summarised as the conversion of huge amounts of disparately recorded Data into Information and for that Information to be transformed into Knowledge. The Geoinformatics process of unlocking Knowledge from vast reams of archived information not only decreases the time from Data to Knowledge (by an order of magnitude), but also enhances the understanding of multidimensional geology and mineral deposit processes.

Attached as Appendix 3 is a simplified diagram of the above process ("Synthesis – The Process")

Future Programme

Glass Earth anticipates that the targeting process will lead to:

- Airborne EM/ ultra detailed airborne magnetics / gravity / radiometrics collection over areas of interest and data deficiency;

- Conversion of selected areas from prospecting permit to exploration permit status;

- On ground exploration (mapping, geochemistry and drilling) of specific prospects or targets.

In addition, Glass Earth will have a fully integrated 3D database and visualisation system, which may be capable of providing further insights unassociated with our current targets of gold deposition and geothermal energy.

With the imminent completion of the Intervention Project, Glass Earth plans a series of presentations to stakeholders to demonstrate the future potential for use of the aggregated geoscientific data.

Ian Brown
Director
Glass Earth Ltd
PO Box 24 147
Wellington

Appendix 1

Table of Data

Geophysical data	Magnetics: 38+ airborne and marine surveys
	Radiometric data collected simultaneously with air magnetic surveying
	Gravity ground based surveying both regional and detailed around individual geothermal centres, data from terrestrial and marine surveys
	Resistivity: (large and detailed datasets responsible for the delineation and evaluation of NZ Geothermal fields collected over a 50 year period).
Seismic database*	All seismic survey data held by IGNS, inclusive of lake and hydro dam surveys and marine seismic data
Geochemical data	GERM data + recoverable CM data‘ Whole rock geochemistry
	Stream sediment geochemistry
	Soil trace element geochemistry
	Hard rock analyses
	Water geochemistry
2D map geological data	GIS coverage of existing approximately 25% of the area
	Published geological map sheets 15-20 sheets (1:63,320, 1:50,000, 250,000 etc)
	Unpublished or fact/local mapping sheets from reports Detailed and regional mapping sheets
	NZ stratigraphic lexicon
	NZ fossil lexicon (86,000 records but few in the CCVR)
Cross sections	Published cross sections on geological sheets
	Unpublished detailed engineering geology
	Seismic profiles and interpretations
Drill hole data*	Exploration/mining; Crown Minerals scanned reports
	Geothermal Drilling
	Hydrological/engineering drilling (dam investigations, tunnel mapping and geotechnical investigations)
	Groundwater investigation drilling Geophysical drilling investigations
Existing digital drilling data	Ohakuri, Karangahake, Waihi East, Golden Cross Wairekiriponga (WKP)

Earthquake epicentre database	NZ earthquake epicentres (detailed information on over 160,000 earthquakes
University theses etc*	Complete bibliography of all university theses included in library (4000+records)
	Government publications and reports (NZ MINLIT over 62,000 documents recorded since 1865)
	Geothermal Workshop Publications
Petrologic database	IGNS data (repository of over 62,000 records with a portion of the data in the Glass Earth project area).
Geochronology database	IGNS/Geological Society of NZ joint dataset (4000+ records with a portion of the data in the Glass Earth project area).
Thermal/temperature information	Drillhole temperature data supplied by IGNS Airborne heat sensing(IR) data for individual geothermal areas
Geographic/cadastral data	LINZ/ NZ local distributor NIWA bathymetry Victoria University 50m digital elevation data
Vegetation cover	NZ Land Cover database
Tephra distribution	DSIR/Soil Bureau soil/volcanic tephra publication in International Congress of Volcanology 1985. Soil/vegetation type classifications from Soil Bureau Publications 1970's
Remote sensing	Geoscan data set BOP
	Landsat TM scenes Taupo
	Aster remote sensing data JERS remote sensing data Daedaleus airborne remote sensing
Petrophysical data	IGNS (1500 + records of specific gravity, susceptibility, remnant magnetism, conductivity, resistivity)
Grey data	All you need to know but were afraid to ask….data stored generally in hardcopy files either archived or filed, disused or abandoned by the current scientific world. Petrophysical and geological data , file notes, correspondence, quarry investigation reports, petrology from past era's…seismic hazard studies, volcanic risk assessment, disaster reviews

* These data are accessible in Glass Earth's offices, but may only be partially represented in the integrated 3D database

Appendix 2

Data Input List

Geophysics

- Magnetics
- Radiometric data
- Gravity
- Resistivity datasets
- Earthquake epicentres
- Airborne heat sensing (IR)
- Seismic IGNS tables

Geochemistry

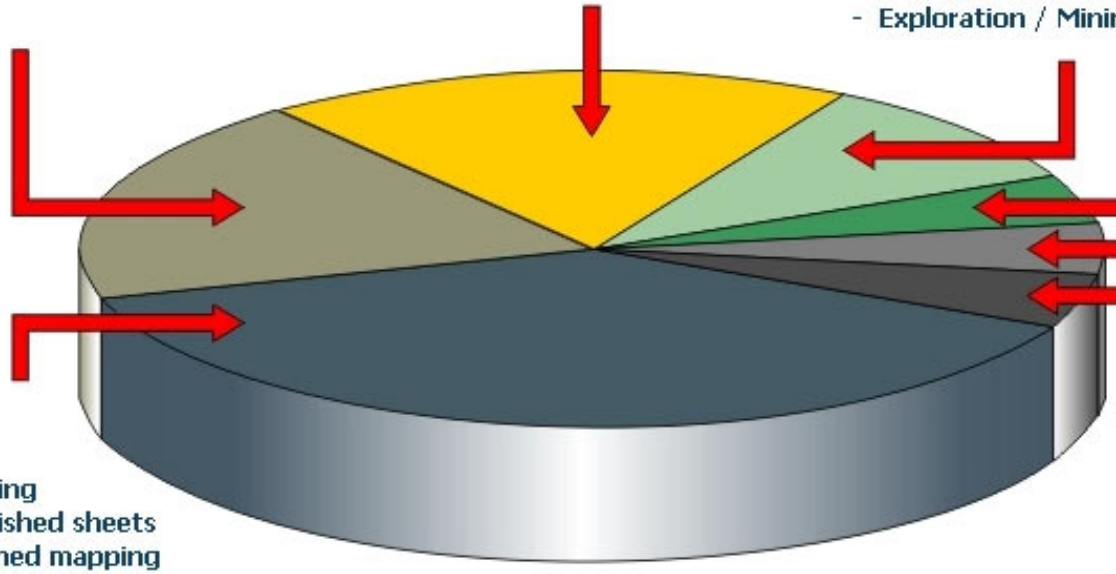
- GERM data, CM data
- Whole rock
- Stream sediment
- Soil trace element
- Hard rock analyses
- Water geochem

Drilling

- Crown Minerals
- Geothermal drilling
- Hydro / Engineering
- Dam data, tunnel mapping
- Geotechnical investigations
- Borehole water data
- Geophysical drilling data
- Exploration / Mining activities

Geography/Cadastral

- Topography
- Drainage
- Vegetation
- Cultural
- Tenure
- LINZ/NZ local
- NIWA bathymetry
- Victoria Uni 50m DTM
- Tephra Distribution



Remote Sensing

- Geoscan dataset BOP
- Lansat TM scenes
- Aster RSD
- JERS RSD

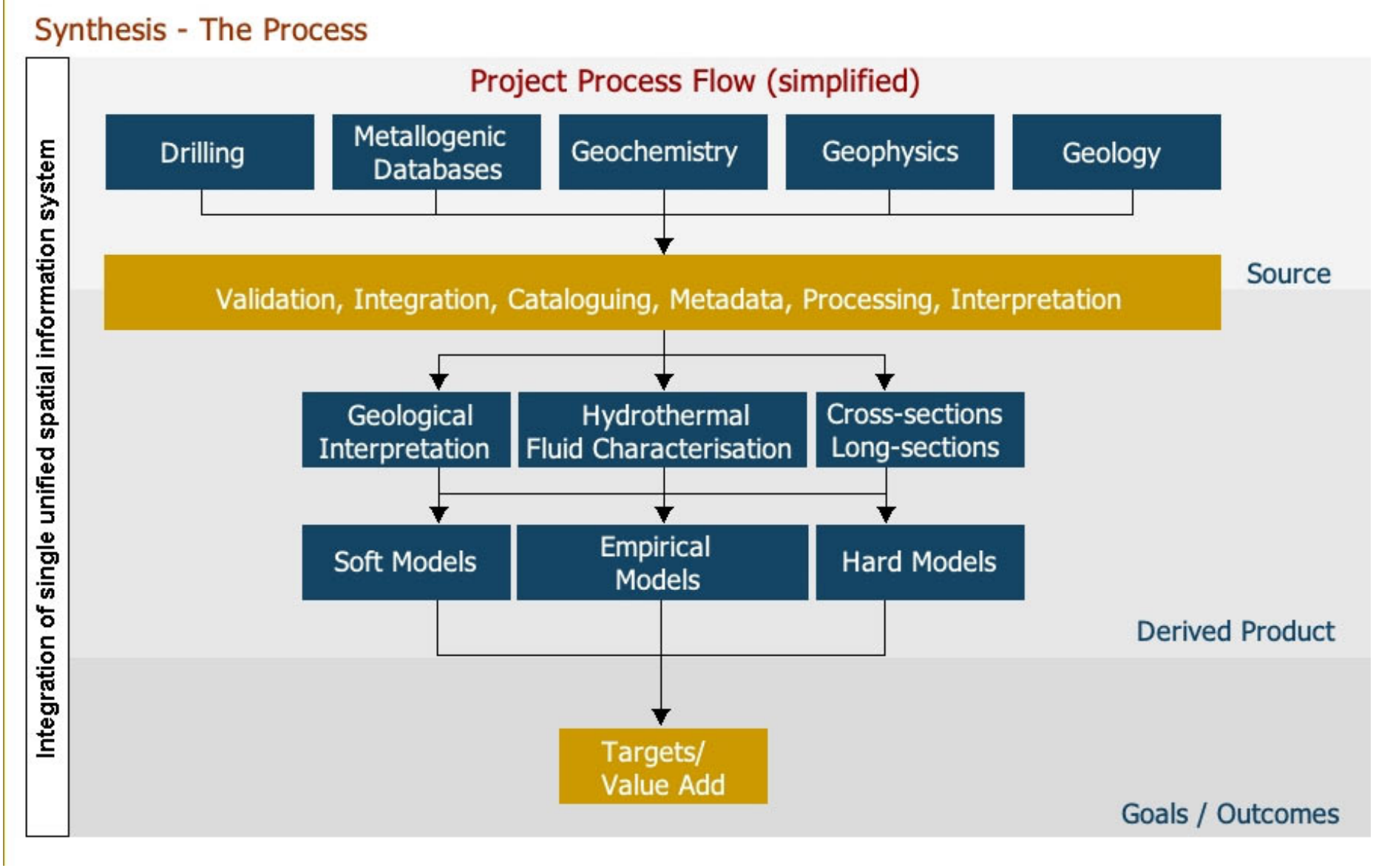
Geology

- GIS existing
- Gov published sheets
- Unpublished mapping
- NZ stratigraphic lexicon
- NZ fossil lexicon
- Published cross-sections
- Unpublished engineering geology
- Seismic profiles and interps

Other

- University theses
- Petrologic database
- Geochronology database
- Thermal Data
- Various institutions

Appendix 3


Synthesis - The Process
Project Process Flow (simplified)
Integration of single unified spatial information system
Drilling
Metallogenic Databases
Geochemistry
Geophysics
Geology
Validation, Integration, Cataloguing, Metadata, Processing, Interpretation
Source
Geological Interpretation
Hydrothermal Fluid Characterisation
Cross-sections Long-sections
Soft Models
Empirical Models
Hard Models
Derived Product
Targets/ Value Add
Goals / Outcomes