Andrew Waltho Consulting Pty Ltd

# Capabilities
# Geological Modelling and Resource Estimation

**I have access to a comprehensive suite of geological modelling and resource estimation software, suited to a broad range of geological applications.**

Geological modelling is an essential tool for three-dimensional interpretation of mineral occurrences deposits.  It's an essential step in developing a framework for resource estimation and assessment of a project's potential.  Too frequently, however, it's a technique that is poorly applied.

Deposit models need to honour geology rather than being based on grades.  Geological controls on mineralisation distribution and mineralisation continuity under those controls both need to be understood clearly if reliable estimates are to be produced.  This influences the nature of sampling required and how the geological interpretation needs to be developed.

I like to describe mineralisation as being either **structured** or **unstructured** depending on whether the controls on mineralisation occurrence can be viewed in drill core.  When mineralisation is structured, the controlling features are when need to be sampled and modelled.  Understanding and modelling geological controls on mineralisation, for many commodities, simplifies and enhances the reliability of the resource estimation process.  **Unstructured** mineralisation is quite uncommon, but frequently requires the use of more sophisticated geological modelling and resource estimation techniques to deliver robust and defensible results.  Appropriate data collection, especially of structural data, can help to minimise geological variables that need to be considered.

**Productivity in geological model development is essential**.  Any geological model is an interpretation, not facts.  We need to remember that any interpretation is as much a product of what the data tells us as is our previous experience with interpreting the geology of other deposits.  There will always be alternative interpretations and it's just as important to consider the potential impact of these as it is to develop a robust grade and tonnage estimate.

Producing a robust resource estimate and an understanding of the potential for variations from this estimate comes down to effective planning and development of an appropriate data collection and interpretation strategy.  Data collection, interpretation and validation frequently comprises more than 80% of the work involved in geological model and resource estimate development.

Frankly, we're spoilt for choice when it comes to geological modelling software with so many good packages available with excellent, local, support and training offered by the software vendors.  **Micromine** is my geological modelling software of choice due to its ability to readily accept data from a varied range of sources and in a variety of formats, and export models in a form able to be used readily by other specialised engineering and financial analysis packages.  It also provides a range of productive and flexible geological modelling tools.

**Call me regarding your next geological modelling and resource evaluation project.**