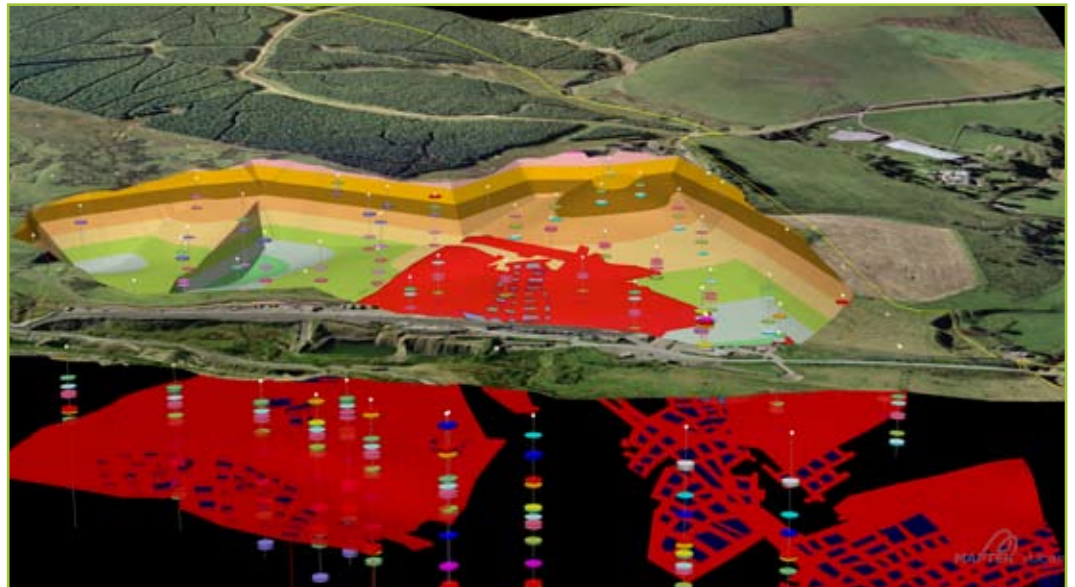


## Bringing Out The Best Models

**The Scottish Coal Company Limited is the largest coal producer in Scotland and the largest opencast coal mining company in the UK.** It produces approximately 4 million tonnes of coal per year from sites throughout Scotland. The low sulphur coal is ideal for energy production by all of the major UK power generators.

### HARP MODELS EXPLAINED

- Horizon Adaptive Rectangular Prism models are designed specifically for stratigraphic deposits
- Creating a HARP model is the last of 5 steps in Integrated Stratigraphic Modelling in Vulcan 8, providing a seamless workflow from raw drillhole database to final model
- HARP models differ from standard block models - blocks are defined by 10 points, automatically registered onto grid or triangulation surfaces used to create the model
- The extent and rotation of the model are digitised to define fault blocks and quality grids
- HARP models can be reserved against complex 3D pit designs as easily as simple plan polygons
- Virtually all the visualisation, grade estimation and manipulation capabilities of Vulcan are available for use with HARP models



Scottish Coal currently operates several opencast coal sites, employing soil stripping and storage, removal and storage of sub-soils and overburden, exposing the coal seams and allowing extraction of coal. Coal is transported to market by road and rail. The coal moving conveyor belt system at Glentagart Colliery in South Lanarkshire stretches for over 6.5 km, making it one of the longest conveyor systems in Europe.

Scottish Coal has been using Maptek™ Vulcan™ since 1991 for geological modelling and reserving applications.

Mining for coal in the UK has become increasingly challenging due to the scarcity of 'easy' coal. Scottish Coal depends on the functionality in Vulcan to help find and extract coal from their deposits in the most economically feasible way.

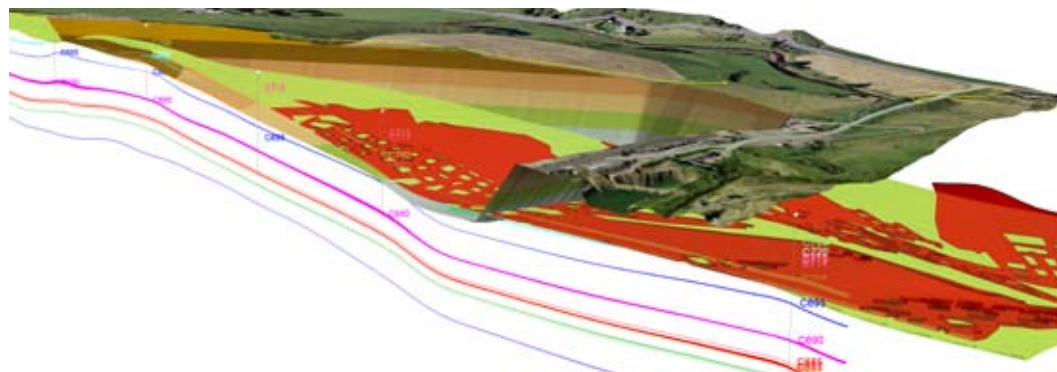
**In 2005 Scottish Coal began using Vulcan for strategic and short term mine planning applications.** Scottish Coal regularly engages Maptek Technical Services for training and consulting.

Vulcan began to be used by Scottish Coal in 1991 for geological modelling and reserving applications. They depend on the functionality of Vulcan to help find and extract coal in the most economically feasible way.

Scottish Coal has recently begun taking advantage of the new stratigraphic modelling enhancements, and HARP modelling technique, to create geological models of their resources more simply and with even greater accuracy than before. ➤

## BENEFITS OF HARP MODELLING

Virtually no structural resolution is lost between the HARP model and the grids, and complex reverse or normal faulting can be integrated into the HARP structure. Literally thousands of grid files, structural and quality, can be replaced by a single HARP model.



**'AN EXCELLENT RELATIONSHIP BETWEEN SCOTTISH COAL AND MAPTEK HAS PROVIDED ACCESS TO THE LATEST MINING SOFTWARE TECHNOLOGY, INCREASED THE CORE SKILL SET OF VULCAN USERS AND ALLOWED US TO IMPLEMENT THE LATEST GEOLOGICAL MODELLING AND MINE DESIGN PRACTICES.'**

*David Booth,  
Technical Services Director*

Applications of Vulcan within the Geology department include drillhole correlation, structure, seam horizon and quality modelling, reserve calculations and exploration / infill drillhole planning.

The Engineering department uses Vulcan for detailed mine design, phase design, and reserves by cut / horizon as well as maximum void calculations.

Vulcan's specialised functionality enables Scottish Coal to develop the most accurate resource models, most efficient pit designs and most cost effective mining schedules. The software allows the users to complete their work with a minimum amount of effort.

Vulcan is extremely robust, enabling Scottish Coal to have confidence in the results that have been determined.

**'I'VE USED OTHER MINE PLANNING PACKAGES AND VULCAN IS BY FAR THE BEST. IT'S FAST, EASY, POWERFUL AND HAS ALL OF THE FUNCTIONALITY I NEED. I ALWAYS RECEIVE EXCELLENT SUPPORT FROM MAPTEK'**

*John Walker, Mining Engineer*

## CURRENT PROJECT

The primary objective was to work alongside Scottish Coal geologists to produce a stratigraphic model of a deposit with steeply dipping seams, complex fault blocks and areas previously worked by underground mining.

A secondary objective was to define an economic mining envelope (based on a target strip ratio and maximum void constraints), and produce a strategic mine plan outlining the preferred mining direction. A final report detailing the forecasted quantities was also required.

The decision to use HARP modelling was based on the ability to handle complex geological scenarios with great accuracy. Being able to quickly and accurately quantify zones of previous underground workings using existing block modelling tools on the HARP model was an added benefit.

**'THE NEW INTEGRATED STRATIGRAPHIC MODELLING OPTIONS ALLOW ME TO GENERATE GEOLOGICAL HORIZONS QUICKLY AND ACCURATELY.'**

*Pete Wilson, Geologist*

## ACCURATE RESULTS

A high quality stratigraphic model has been successfully produced, allowing Scottish Coal to quickly run multiple mining scenarios on the deposit and update remaining reserves during the mining process.

**The HARP model is able to show, with a high degree of certainty, the most economically feasible area for Scottish Coal to undertake coal extraction.**

Vulcan has also been used to design and schedule the rehabilitation landscape and predict the maximum overburden storage limits. This has resulted in a full life-of-mine study generated entirely within Vulcan.

Scottish Coal can now confidently operate within a complex and challenging deposit. The company is also looking to apply this methodology to key operations of strategic importance, as well as defining prospective deposits. *∞*