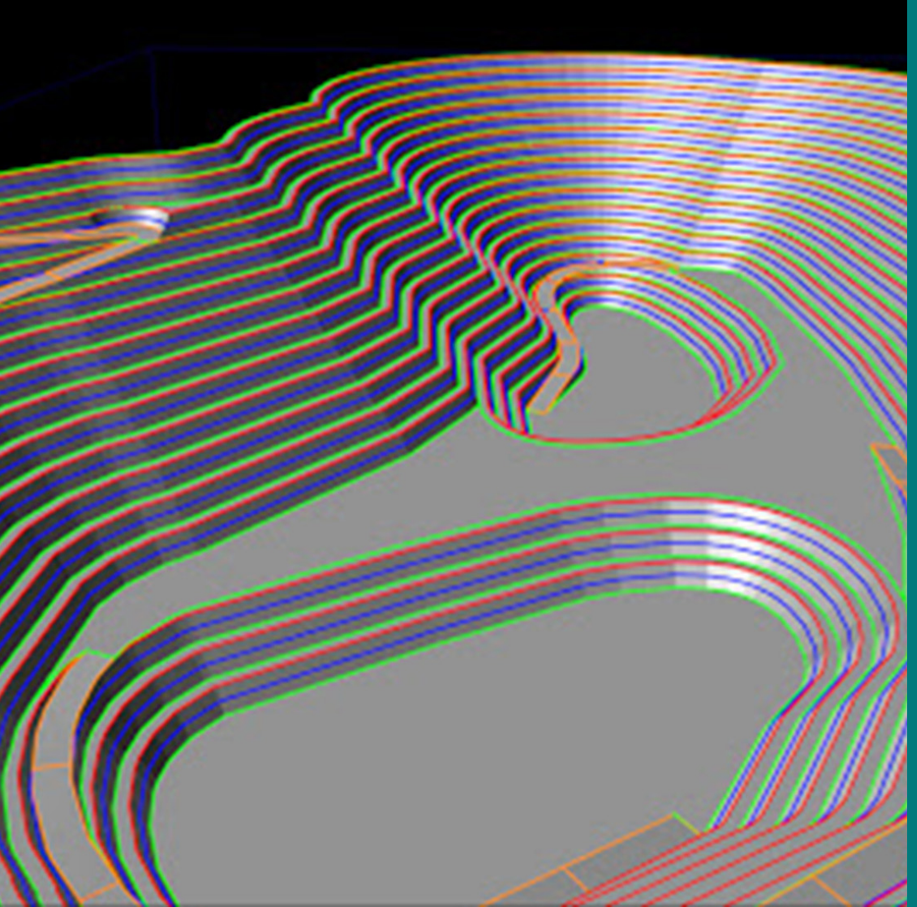

DEPARTMENT OF MINING ENGINEERING **RESEARCH FOCUS AREAS**

Mine design

Pillar design and extraction methodologies have featured in the mining industry for a long time. A huge body of research in the Department has been focused on the establishment of a design methodology with regard to the stability of pillars, especially in the coal mining industry. In recent years, hard rock mines have adopted these methodologies with some adjustments to the input parameters with varying levels of success.

Research into rock mechanics and underground mine design is directed at understanding the complex loading environment of pillars at various depths and dip angles, as well as establishing how mine design layout and rates affect these loading conditions.

Adopting a pillar layout as a means of primary support in a working environment results in lower extraction ratios when pillars are over-designed. As the mineral is “locked up” as a supporting system, potential revenue becomes unrecoverable. Millions of tons of raw material are therefore left in situ as pillars in the coal mining industry alone. If they are not managed, this will be the future scenario in hard rock mines, which reinforces the importance of this research focus area in the Department.