



SGM Environmental

Creating enduring value

SGME VALUES

Honest



Trust



Innovation



Safety



PROJECT CASE STUDY: Landform Evolution Modelling Standard Operating Procedure

SGM Environmental Pty Limited (SGME) did a standard operating procedure (SOP) for erosion and landscape evolution modelling (LEM) to be used by the company at their Queensland (Qld) and New South Wales (NSW) mines.

Site description: The company owns open-cut and underground coal mines throughout Qld and NSW. Their mission is to create superior value for shareholders as the leading global supplier of coal which enables economic prosperity and a better quality of life. Their mission is delivered through seven values including sustainability. Sustainability, to the company and SGME means taking responsibility for the land and neighbouring communities. The company has rehabilitated a substantial amount of mined land globally.

The problem: Each mine operates under a mine specific environmental approval which provides directives on how the rehabilitated landscape should be built. Each mine then develops a mine schedule based on environmental approval, with progressive rehabilitation done as part of mining. The risk in this approach is that monitoring of the landscape is the only way of determining whether the landscape will be stable, sustainable and limit impacts to the receiving environment.

What SGME did: LEMs offer a way to evaluate landscape stability over short (annual), medium (hundreds of years) and long-term (thousands of years). These models are essential to make sure that designed landforms are sustainable.

SGME prepared a LEM SOP to provide a standard process for documenting environmental approval requirements and designing the landform. The SOP includes a list of model analytical data needs and a method for testing, changing and verifying the model including a process for assessing the impacts at landform and catchment scales. The SOP also provides a decision matrix to assist in deciding whether the landform meets the thresholds described in the environmental approval and confirm enough resources are available. Ultimately, the SOP provides a consistent approach and an efficient path to landform design certification.

