

Peabody Metropolitan Coal – Research Program

Background

The Metropolitan Coal Project Research Program is required by conditions 9 and 10 of the Metropolitan Coal Project. Specifically the requirements are as follows:

9. The Proponent shall prepare and implement a Research Program for the project to the satisfaction of the Director-General, and allocate \$320,000 towards the implementation of the program. This program must:

- (a) be prepared in consultation with DWE, SCA, DECC and DPI;*
- (b) be submitted to the Director-General for approval by the end of 2010;*
- (c) be targeted at genuine research, as opposed to implementing the matters required by this approval; and*
- (d) be directed at encouraging research into improving:*
 - the prediction of valley closure and upsidence, and the resultant subsidence impacts;*
 - the assessment of the environmental consequences of subsidence impacts on natural features;*
 - the remediation of subsidence impacts on watercourses;*
 - the understanding of subsidence impacts and their environmental consequences on swamps;*
 - the conservation of the Eastern Ground Parrot on the Woronora Plateau; or*
 - the environmental management of underground mining operations in the Southern Coalfield.*

10. The Proponent shall obtain the Director-General's approval for the allocation of any funding under this program.

Program Approval

The NSW Department of Planning and Infrastructure approved the Metropolitan Coal Research Program on 27 May 2011.

Program Summary

The research program is comprised of three projects that will investigate technical aspects concerning groundwater, subsidence and Eastern Ground Parrot populations on the Woronora Plateau.

The first project is to be undertaken by the Office of Environment and Heritage and will result in the implementation of a targeted regional survey for the Ground Parrot across the Woronora Plateau using bioacoustic monitoring to assess the presence and size of any populations, and establish their relationship to site attributes. The project will establish an experiment using long-term monitoring sites to assess any impact of long-wall mining on the species and concurrently assess the status and distribution of the endangered Eastern Bristlebird. This will enable the establishment of a baseline library of digital recordings from swamps across the Woronora Plateau that could be retrospectively analysed for changes in other bird species in the future.

The second project is being conducted by the University of New South Wales, under the supervision of Professor Bruce Hebblewhite. Professor Hebblewhite is undertaking research in the evaluation of fundamental geotechnical mechanisms contributing to valley closure subsidence effects under irregular topographic conditions. Australia has provided world leadership in identifying the now widely accepted phenomenon of valley closure and related valley floor upsidence when mining beneath or in close proximity to valleys and other forms of irregular surface topography. Despite being a widely accepted phenomenon the mechanisms remain unclear. The objective of this project is to carry out a comprehensive program of numerical investigations and calibration studies for a range of different parameters, in order to clearly understand the underlying or driving geotechnical mechanisms which cause this behaviour and hence improve the prediction capabilities.

In the third project Dr Noel Merrick from Heritage Computing will investigate the role played by chain pillars in isolating groundwater pressure reductions above mined longwall panels, and whether they might limit the outwards propagation of pressure reductions and environmental effects. The outcomes of this project will be an improved understanding of the significance of chain pillars with respect to alteration of the groundwater regime, a quantitative appreciation of critical pillar widths in absolute and relative terms and a methodology for transferring geotechnical model outputs to groundwater model inputs (permeability fields).