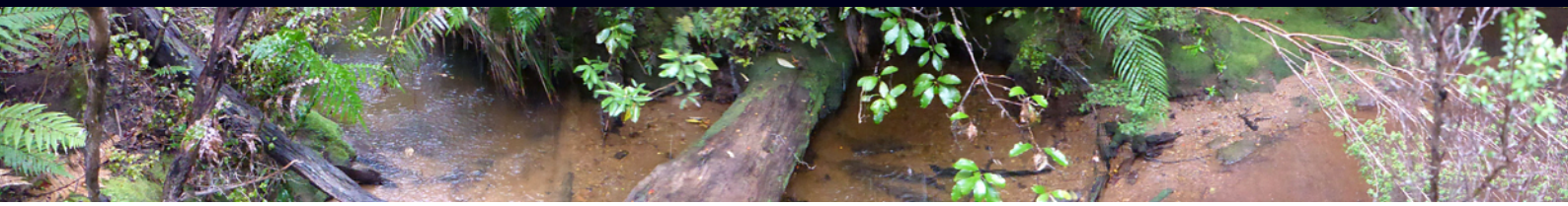
CMER
Centre for Mineral Environmental Reserach
New Zealand

News

The Mine Life Cycle Programme is funded by MBIE



Centre for Mineral Environmental Research News - September 2015

Welcome to the inaugural issue of CMER news – designed to keep you up to date with research and activities of the CMER under the Mine Life Cycle programme.

Governance panels up and running

Under this new programme, we now have two Governance Panels; a North Island and a South Island Panel. Both panels have met and received science updates from the CMER team. The panel members represent Bathurst Resources, Department of Conservation, Environment Southland, Fonterra, Francis Mining, Minerals West Coast, Newmont Waihi, Ngāi Tahu, Ngāti Waewae, Ngātiwai Trust Board, Northland Regional Council, Oceana Gold, Solid Energy, Straterra, Tui Mine Iwi Advisory Group, Waikato Regional Council and West Coast Regional Council.

Bellvue coal mine remediation

Passive treatment trials, terrestrial vegetation assessment and freshwater ecological sampling are still continuing in the Cannel Creek catchment near Greymouth. The CMER team is attempting to facilitate remediation of the abandoned, underground Bellvue coal mine, which should result in marked improvements in water quality and ecology in Cannel Creek. Currently, our plans are to begin installation of passive treatment systems in February 2016 (depending on funding). Numerous local stakeholders have offered in-kind support in undertaking the remediation.

Springvale placer gold mine

Dave Craw (University of Otago) is supervising undergraduate student, Shanna Law, in a study of natural colonisation by native salt-tolerant plants at an abandoned placer gold mine site at Springvale in Central Otago. The plants are rare and endangered, which has prompted the Department of Conservation to purchase the mine site for a Scientific Reserve. This research is part of an on-going study of potential biodiversity enhancement by preservation or development of diverse habitats during mine site rehabilitation. Shanna's research results were presented at the AusIMM Conference in Dunedin in August 2015.

Stockton waste dump performance

In May 2015, a team of geochemists from CMER installed a series of oxygen probes into two waste rock dumps at the Stockton Coal Mine to obtain data on the performance of the structures to reduce oxygen ingress. Probes were installed horizontally at 2, 4, 6, 10, 15, and 25m into the dumps. Subsequent lifts of waste rock will bury these probes deep with the core of the dump to enable understanding of the geochemical trends.

Goldschmidt conference, Prague

Dave Craw has just returned from Goldschmidt, the annual international geochemical meeting, which was held in Prague. He presented an invited paper (co-authored by James Pope and PhD student Gemma Kerr) on arsenic attenuation at Macraes mine, in a special session on contaminant geochemistry. He also attended a field trip to the Erzgebirge, a highly productive historic mining area on the border of Czech Republic and Germany, where records of mining go back at least 800 years. One site visited that is relevant to the above Central Otago study of enhanced biodiversity at old mines is a rocky, rubbly area of collapsed underground mine workings that has been made in to a local reserve because of its higher biodiversity compared to surrounding farmland.

Tui Mine remediation update

The CMER team met with the Iwi advisory group for the Tui Mine remediation project, and representatives from Waikato Regional Council, Department of Conservation and Matamata-Piako District Council. The Iwi Advisory Group, representing Hauraki and Ngāti Haua iwi, was originally established to ensure cultural issues were considered and addressed during the $21 million remediation works, and continue to lead the process to accelerate the healing of Te Aroha maunga. During the korero, the Iwi advisory group outlined the current status of their cultural monitoring plan. The CMER team provided an update of research undertaken to date and immediate future plans. This in turn provided a platform on which to discuss the opportunities to work collaboratively to provide more of an understanding about the status of the Tui and the Tunakoahoia ecosystems and what steps can be taken to further heal Te Aroha maunga.

Ecological research on Tui Mine

Rose Gregersen (MSc student) is working under the supervision of Kevin Simon (University Auckland) on the ecology of the Tui and Tunakohoia streams associated with the remediated Tui mine. Rose is focussing on the response of stream food webs and litter decomposition in order to tell us more about how these streams are damaged ecologically.

Rehabilitating terrestrial vegetation

A common decision made early in mining is how much soil to salvage for rehabilitation, and where to place it. The success of terrestrial revegetation depends on soil quality. For example, the height and width of manuka and kanuka is halved when planted into Waikato coal mine overburden (fire-clay) with little topsoil. This creates larger gaps between plants, which are prone to to invasion by pampas and gorse, and increases required maintenance and slows forest regeneration. We have found, manuka is more competitive on higher-stress sites. The risk of less tolerant plants dying in summer (from drought) or in spring (from water-logging) is also higher in poor soils. Many mines have a topsoil shortage; so this research is also measuring the effectiveness of ways to improve plant establishment and growth under a soil shortfall.