



MACRAES GOLD MINE

The Macraes Gold Mine is in Central Otago region of New Zealand's South Island. GRD Macraes Ltd started the current mining operations in 1991 which comprises numerous open pits established on the ore-bearing Hyde-Macraes Shear Zone. The Shear Zone is within the extensively deformed and moderately metamorphosed Otago-Haast Schist Belt. The potential for underground mining is currently being assessed by GRD Macraes.

The schist comprises a sequence of gradational psammitic and pelitic lithology derived by metamorphism of Mesozoic aged sandstone and mudstone. The rocks are strongly foliated and depending on the origins are either light grey, quartz rich and laminated (psammite) or dark grey to green, micaceous and finely laminated (< 5mm thick) (pelite).

The structural geology of the area is dominated by two main orthogonal fault sets, striking to the north and east¹. The Shear Zone is the most extensive mineralised low-angle shear known in Otago and has a strike length of at least 25km. The Shear Zone dips at about 15 to 20° to the east and is approximately 100m thick being defined by the relatively continuous Hanging Wall Shear (HWS) and Footwall Fault (FF). Tectonic displacement of the Shear Zone has been inferred to be hundreds of metres.

PSM have been providing geotechnical advice since 1991 at the time open pit mining began. It is an example of our long-term commitment to our client and to providing the best solutions for the project.

¹ All directions quoted are relative to Macraes' mine grid which is 45° west of true north and approximately 67½° west of magnetic.



Photo 1 An example of the dramatic failure headscarps observed adjacent to the open pits.



Photo 2 The presence of continuous structures within the Otago Schist is a certainty. GRD Macraes has, with PSM's assistance, established effective pit slope management guidelines to deal with mining under these adverse geological conditions.