

# Case Study

# Geofabrics

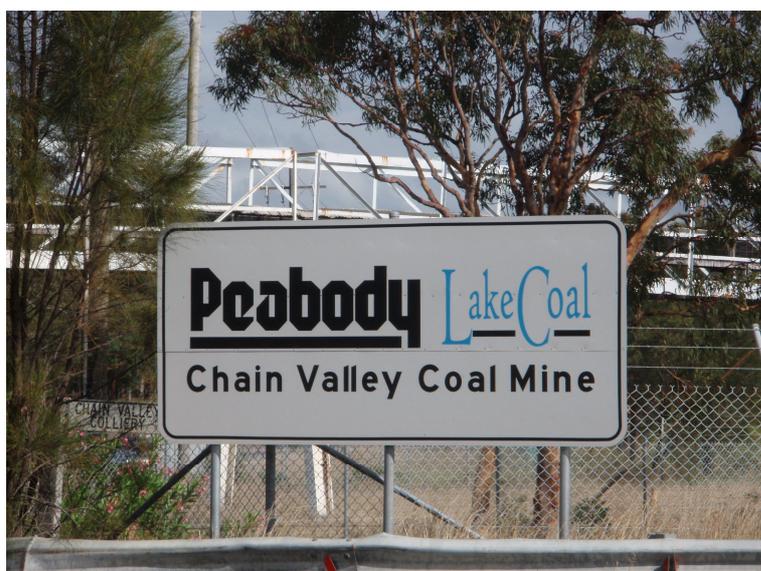
Project: Chain Valley Colliery  
 Date: November 2007  
 Client: Peabody Lake Coal Pty Limited  
 Location: Vales Point, NSW



Chain Valley Coal Mine is located in the Newcastle coalfield on the southern shore of Lake Macquarie, approximately 48km south of Newcastle. The mine is operated by Lake Coal Pty Limited, a wholly owned subsidiary of Peabody Pacific.

Although the floor of underground mines are almost always rock or coal, there are often soft lenses of clay or unstable material formed by groundwater seepage transporting fines into low areas of the floor.

Drift pavements are often constructed with loose ballast however due to the frequency of passes by shuttle cars weighing 25-35 tonnes, the ballast regularly became dislodged laterally in the wheel paths, creating deep ruts that required costly maintenance and down time. A combination of **Geoweb**<sup>®</sup> and **Tensar**<sup>®</sup> Geogrids solves this problem by increasing the shear strength and constraining the aggregate from moving laterally therefore maintaining the shape and integrity of the pavement. Pavement stiffness is increased and differential settlements are significantly reduced.



The **Geoweb**<sup>®</sup> panels are expanded and are held temporarily in place by plastic "pogo-stick" braces between the floor and roof until the ballast material is placed into the cells. An Eimco loader tips the ballast into the **Geoweb**<sup>®</sup> honeycomb structure which then advances over the filled panels to create the pavement. The **Geoweb**<sup>®</sup> cells are slightly overfilled to form a strong stable platform.

In some cases **bidim**<sup>®</sup> geotextile is used as a separation layer under **Tensar**<sup>®</sup> geogrids between the soft deposits and the structural ballast pavement. The geotextile prevents vertical migration of the fine clay particles into the structural ballast and the **Tensar**<sup>®</sup> geogrids reduces differential settlements by creating an interlock mechanism of the overlying aggregate.

Since the initial trial in 2006 **Geoweb**<sup>®</sup> and **Tensar**<sup>®</sup> geogrids have been installed in other high maintenance areas, including intersections and curves. A number of other coal mines including Mannering Colliery, Mandalong, Beltana and Donaldson Coal have incorporated these solutions. Geofabrics has presented these mines with an economical alternative to other methods for pavements such as concrete floors, ballast and precast concrete slabs that are expensive and difficult to construct in underground applications.

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