



## Rocklands to Stanwell Rail Duplication Case Study

### E'GRID® Rigid Biaxial Geogrid



#### E'GRID® 3030 & TERRASTOP® GEOTEXTILE USED ON QR NATIONAL'S WIGGINS ISLAND RAIL PROJECT

Leighton Contractors were awarded a \$56million contract by QR National to deliver the Rocklands to Stanwell rail duplication as part of the Wiggins Island Rail Project (Stage One). The works involve 18 kilometres of track duplication between Rocklands and Stanwell on the Blackwater Rail System, earthworks and large diameter drainage infrastructure upgrades, and construction of three rail bridges at the Burnett Highway, Four Mile Creek and Neerkol Creek.

The duplication is designed to carry coal trains that are 1.7 kilometres in length along the Blackwater System to the balloon loop near Gladstone for unloading. This would see a vital link created between the new Wiggins Island Coal Terminal and mines in the Southern Bowen and Surat Basins.

Large quantities of 30kN/m rigid bidirectional geogrid E'GRID® 3030 and robust geotextiles were used with CBR sub grades  $\geq 3$ .

The function of the geotextile was to provide separation and filtration while the geogrid is to reinforce by locking the gravel and increasing its shear resistance. E'GRID® was rolled out and allowed to follow the contours of the ground.

E'GRID® was then tensioned by hand to remove slack and to ensure that any mechanical joints are taught. Small deposits of fill material was placed on top of the geogrid to hold in position until the main fill placement commenced.

To ensure product continuity of E'GRID®, overlap adjacent layers. Roll edges and ends have a minimum overlap of 300mm. Overlaps are shingled in the direction of fill placement. To ensure that the overlaps are maintained during fill placement, plastic zip-lock ties at 0.5-1m spacing can help to hold overlaps in place during fill placement.

Product can be cut to length or width using either snips or a disc cutter.

Fill material is end tipped at either the starting edge of the E'GRID® or on top of already placed fill before being spread to the required depth using a tracked machine. A minimum fill layer thickness over the E'GRID® of 150mm is recommended prior to any trafficking or compaction. During spreading the bulldozer blade was angled back to lift fill rather than push it.

Fill consisted of a 500mm layer of CBR 20 followed by a 300mm layer of CBR 45 to bring it to the formation level. This was followed by ballast, sleepers and track.

