

Tensar® InterAx® saves time and costs for a 4km rail line reconstruction



Queensland Rail Yaamba Subgrade Replacement & Capping Layer Stabilisation

Bruce Highway, Yaamba, Central Queensland, Australia

CLIENT'S CHALLENGE

Queensland Rail had a fixed 96-hour window to replace 4km of subgrade under an ageing track formation. This train line is the primary industry rail route to Rockhampton, so time was of the essence. Subgrade CBR is as low as 1%, with CBR swells up to 9%.

TENSAR SOLUTION

The original design consisted of a three-layer structure with welded geogrids and geocomposites, and the final two-layer Tensar InterAx geogrid configuration was refined using a combination of an allowable bearing capacity approach (AREMA method) using the Rail Sub-ballast Stabilisation module in Tensar+ software and 2D finite element modelling to ensure that predicted deflections were within tolerable limits under axle loads of at least 20t. The designers were able to demonstrate to the Rail Authority that the Tensar InterAx stabilisation geogrid option de-risked the project to enable completion within the required timeframe whilst satisfying project performance goals.

Two layers of Tensar InterAx geogrid were installed as part of the new formation above the highly variable subgrade. The lower subgrade replacement layer consisted of a blend of reclaimed ballast and site-won subgrade clay, which provided a compactable material that satisfied project sustainability outcomes.

BENEFITS

- **33% saving** in material
- **\$1.5 million saving** in time associated costs

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PROJECT DETAILS

Constructed in
May 2025

Project Owner
Queensland Rail

Consultant
Arcos Group

Product
Tensar InterAx



Leveling the soft subgrade prior to laying geogrid.

Rail Formation Stabilisation | No. 551

A high-quality QLD TMR Type 2.3 subbase was used for the capping layer above the second layer of Tensar InterAx. Then, 250mm ballast was installed above the stabilised formation. Queensland Rail completed construction within the 96-hour window, saving an estimated 33% of material and an estimated \$1.5 million of material costs.



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