AUCKLAND CREEK BRIDGE – GLADSTONE QLD

SUMMARY

Auckland Creek Bridge was constructed in 1980 and is identified as a B-Double truck route to the Port of Gladstone. The bridge has an overall length of 44.7m over three spans and a bridge width of 8.5m. The bridge has been constructed using prestressed concrete piles, prestressed concrete deck and steel reinforced concrete headstocks.

The bridge is managed by Gladstone Regional Council and during routine bridge inspections the piles were observed to have longitudinal cracking as a result of Alkali Silica Reaction (ASR) allowing for chloride ion ingress and corrosion of the steel reinforcement. The bridge was assessed as having a residual design life of 10 years.

OBJECTIVES

James Rose Consulting were engaged as the Senior Structural Engineers and Project Managers for the detailed structural analysis of the bridge together with the documentation and supervision of the repair and strengthening works.

The key objective of the project was to increase the residual design life of the structure and to meet the loading requirements for a T44 loading case.

OUTCOMES

James Rose Consulting undertook a full structural investigation including a dimensional survey of the structure, non-destructive investigation of the structure reinforcement using ground penetrating radar (GPR) and localised destructive testing to confirm GPR results and recovery of concrete cores to allow a structural model to be developed. This structural analysis allowed the structure to be certified for the T44 loading and assessed against SM1600 loading. The analysis guided the structural repairs and strengthening works required. The repair works undertaken included addressing the water ingress into the structure resulting in the instigation of ASR followed by the encasement of the damaged piles to limit further degradation. The repair and strengthening works have been managed by James Rose Consulting and have resulted in an increased serviceable life of 50 years for the structure.