On the use of Glass Fibre Reinforced Polymer Reinforcement in Civil Structures

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Steel reinforced concrete makes up a significant proportion of the material used in construction of civil structures. Its widespread and long-standing use has led to its performance being well understood by designers, constructors and asset owners.

Whilst over time there have been significant improvements to concrete mix designs, detailing practices and construction methods, the susceptibility of steel reinforced concrete to deterioration from reinforcement corrosion remains an ongoing risk to its long-term performance. With an increased focus on construction of sustainable infrastructure, consideration of use of alternative construction materials is becoming increasingly prevalent.

Glass Fibre Reinforced Polymer Reinforcement (GFRP) is a viable alternative to steel reinforcement for many applications in civil structures, offering several significant benefits compared to steel reinforcement, including:

- Improved durability
- Lower embodied carbon
- Light-weight

This paper discusses the benefits listed above, the background and history of its use, key design considerations, recent examples of use in civil structures and potential future applications.