

Sustainable piling solution at Waterloo

A key element to the Wessex Capacity Alliance works at Waterloo involves reinstating the former Waterloo International Terminal (Platforms 21-24) for passenger services. This requires the realignment of tracks into Waterloo.

The initial design required 65 new piles along the approach to Waterloo Station. However, with innovative design changes across the disciplines, the team was able to provide an alternative solution to piling. The final step was to confirm the capacity of the existing piles to make sure they could take the additional load. The Alliance undertook test piling which showed that the existing piles could take the additional load, thereby eliminating the need for any piling, resulting in a sustainable solution.

An exercise was undertaken to assess the savings in carbon resulting from the changes to design. The assessment looked into the embodied carbon savings from the key elements i.e. the energy to manufacture and deliver materials to site, energy saved in the construction, plus savings in waste creation and removal from site.

In total over **1,480 tonnes of carbon have been saved** through improved design. To put that into perspective, this equates to burning 743 tonnes of natural gas for electricity, or taking 292 cars off the road for a year.

Had piling been necessary, an additional 17 weeks of work would have been undertaken, providing a significant safety benefit by eliminating the need for heavy civil works. The solution is also set to save the project an estimated £4.91 million pounds. Furthermore, the position of the piles were in challenging locations; requiring road closures and with significant height restrictions. The design changes have resulted in far less of our Lineside Neighbours being exposed to the works, both on-site and external stakeholders, who would have been impacted significantly by these works had they been implemented.

