



London 2012 Olympic Stadium Transformation: Part 1: Engineering developments for Legacy

Fergus M^cCormick

Technical Director
Buro Happold
Bath, UK

Fergus.McCormick@BuroHappold.com

Fergus M^cCormick, received his first engineering degree from the Univ. of Cambridge. He is a technical specialist in the design of stadia and in moving, dynamic, cable and long-span structures.



Matthew Birchall

Partner
Buro Happold
Bath, UK

Matthew.Birchall@BuroHappold.com

Matthew Birchall, received his first engineering degree from the Univ. of Cambridge. He is Buro Happold's expert in a wide range of fabric, pneumatic, cable and innovative lightweight structures.



Summary

The London 2012 Olympic Stadium was a popular success. This prompted a reappraisal of Legacy plans which had involved deconstruction to a smaller venue and a brief evolved for exploration of ideas for transforming the venue into a multi-purpose stadium. Key was to extend the roof to provide full rain protection for spectators for winter sports like football as the original partial roof had been designed for wind control at track and field level accepting the high likelihood of dry summer days during the Olympics – which were realised. The engineering challenge was to convert an existing cable net of 24000m² to one of 38000m², approximately 58% increase, and the paper concentrates on this.

The creative solutions proposed form an interesting paper in its own right, but also as a prelude to the second companion paper which describes in more detail the final solution adopted (see Ref 1).

Keywords: stadia, regeneration, refurbishment, tension, cable-nets, Olympics, London,

1. Introduction

The London 2012 Olympic Stadium was a popular success and the authors hope to believe that the venue designs including that of the main stadium played a significant part in that. Visitors were surprised and entranced by the soft park landscaping environment to the venues with meadow land flowers creating a relaxing pleasant surroundings. The main stadium was the centre piece of the games and again, spectators were surprised and attracted to its open light perforate appearance.

The original brief for the main stadium had been for a reduction in size after the games and conversion to a small scale local athletics venue of around 28000 seat capacity. (This is described further in references 2, 3, 4, 5) However the vibrancy of the games and warm appreciation of the style and success of the main stadium prompted a rethink by the Government as to how to preserve the capacity of more of the stadium and indeed increase its potential uses to the country and community.

The Government opened conversations with a number of potential user groups and studies were instigated to move forward ideas for how new users might tender and bid for the stadium's immense opportunities. Various football teams, rugby teams, local schools, cricket teams, music promoters and the local authorities all began their own studies to consider their options.

In parallel, a study was commissioned to begin design considerations of the likely nature of changes and interventions that would be required to the stadium. These studies would form background to help all stakeholders understand better the potential limitations of the existing stadium given its original brief and how design solutions could emerge to unlock and expand the stadium's inherent potential.

After selection processes involving submissions and interviews, a design team was appointed for the studies which was led by Populous, the architects of the original stadium and Buro Happold, the