

## The Channel Tunnel Rail Link - Stage 2

### The Backup Systems that kept the TBMs on schedule

The final link between the Channel Tunnel and London is the 7.5 km of tunnel between Stratford and St Pancras (CTRL Stage 2).

The joint venture team of Nishimatsu/Cementation/Skanska was awarded the contract for this vital section, which involved the boring of two 8 metre diameter tunnels.

The joint venture elected to use 8.11 metre diameter, 1100 tonne Earth Pressure Balanced Boring Machines supplied by Kawasaki Heavy Industries.

Bennett Associates designed the back up systems for the Kawasaki machines.

The major challenge was to produce an integrated system between the propriety items and the bespoke segment handling equipment designed by Bennett Associates. This was successfully achieved with advance rates of 31 rings (46.5 metres) in 24 hours.

In fulfilment of their contract Bennett Associates provided:

- Detailed manufacturing drawings.
- Specifications of bought out equipment.
- Design of lifting arrangements.
- Engineering liaison with suppliers.

Bennett Associates (originally founded in 1984) was acquired in 2008 by Atkins; bringing their proven technical expertise to the UK's leading engineering consultancy.

