

REPORTS OF SOCIETY MEETINGS

THE CROSSRAIL PROJECT

BENEFICIAL USE OF EXCAVATED MATERIAL

by Kim Milnes, Marine Interface Manager, Crossrail Project

A report of the LURS meeting at All Souls Club House on 12 December 2012

Kim works for Crossrail and is also an Officer of the Merchant Navy, this presentation is based on one regularly given in regards to the Crossrail Project, but of necessity it must be accepted that any errors are those of the speaker. This talk is primarily concerned with the marine transport element of the Crossrail Project

The idea of a mainline sized rail link beneath London was first discussed in the early 1990s but planning did not start until about 2002 and the first tunnelling works commenced only in March 2012. Works will include: tunnel portals, running tunnels, stations, access shafts, crossovers, track works, ventilation shafts, etc, etc, etc. The tunnels are 7.2metre diameter bore (about 1m wider than the Underground) and trains will be so long that the driver will almost be able to see the next station whilst stationary in the previous platform. In all about 4million tons of spoil is being produced. This will form about a third of the requirements to repair tidal defences and form part of an RSPB protective habitat on the artificial landmass known as Wallasea Island on the River Crouch in Essex. The island will be contoured, both artificially and by the weather, to form a mix of saltmarsh, farm land, tidal marsh and a salt water lagoon with a circumference of about 8 miles.

Congested roads in Central London meant that road transport would have been difficult for such a large amount of material and various options have been investigated by which all of the projects excavated material could be moved by river. Unfortunately, although the stations within central London. For example, Paddington and Bond Street are only a short distance from the River Thames, this short distance is along extremely congested roads and these days suitable loading wharves are relatively few and far between, particularly for relatively large sea going vessels. Many options were investigated, including, for instance, it had been hoped to move the spoil away from site via the disused Kingsway Tram Tunnel, but no efficient method could be found for getting it across the Embankment and on to ships. Therefore, spoil from Westbourne Park is taken on one of 5 trains per day to a wharf at the old Northfleet Cement Works in Kent, whilst eastern portal spoil is loaded directly on to the ships from the tunnelling site at Instone Wharf at the bottom of Bow Creek,. The spoil from all other work sites is transported by road to a wharf at the site of the now demolished Barking Power Station and thence onto the ships. These Norwegian owned ships (with Russian crew and various registries) are about 82 metres (circa 180 feet) long with a 2,500 ton capacity. The aim is for up to 5 ships carrying up to 10,000 tonnes of excavated material per day to dock at a purpose built facility at Wallasea Island.

The Tunnel Boring Machines (TBMs) move themselves forward by pushing against the side of the tunnels. Therefore, it had been decided that the most efficient method of construction would be for the TBMs to bore the tunnels and then be pulled through the platform boxes that would be dug from the surface in advance. However, in order to reduce the amount of material being transported by road, the platform enlargements for the Western Tunnels (bored from Westbourne Park towards Farringdon) will be added afterwards, carried out from within the tunnels that have already been bored by the machine. This has meant that the sprayed concrete which is used to line the enlarged tunnel during construction has to be broken up as the station box is constructed, which causes a release of the steel fibres used to strengthen the concrete and this strengthening means that this material is somewhat more difficult to break down for transportation and disposal than clay alone.

During the question time, Kim explained that his team work closely with the Environment Agency, Natural England, Marine and Coastguard Agency and other parties to give careful consideration and comprehensive investigation to the composition of the spoil both in terms of contaminants from industry and the water content as too much liquid in the material can cause the ships to become unstable with the potential for capsizing.

Kim is uncertain what will happen to the TBMs once their work is finished – does anyone want a second-hand 7.2metre drill?

Amanda Day