

## Canary Wharf built on Water by Water

Contributor: **United Marine Aggregates Ltd (UMA)**

UMA supplies over four million tonnes of aggregates every year from the company's wharves located in the South East, the South West and South Wales, where it operates as South Wales Sand and Gravel.

**Freight by Water (FbW)** encourages logistics managers to take freight off the highly-congested road network and onto the sustainable modes of short-sea, coastal and inland shipping. Waterborne freight is environmentally-friendly and provides economic benefits for the port and wharf communities around the UK.

As a result, FbW seeks to promote businesses which utilise water transport and exploit its numerous benefits. The construction work around Canary Wharf demonstrates this alternative mode's potential and provides evidence of its reliability.

**Canary Wharf** is built on the site of the old West India Docks on the Isle of Dogs. From 1802 to 1980, the area was one of the busiest docks in the world, at one point employing 50,000 people. The plan to reestablish the 8 square miles of derelict London docks began in 1981. Initially, the redevelopment was focussed on small-scale, light-industrial schemes and Canary Wharf's largest occupier was Limehouse Studios, a TV production company.



## **Phase 1: 1988-1991**

Buildings completed in Phase 1:

- One Canada Square
- Westferry Circus and Cabot Square
- Two additional sides of One Canada Square
- The extension of Jubilee Line had been planned

## **Phase 2: 1997-2002**

Buildings completed in Phase 2:

- HSBC Tower
- Citigroup Centre
- Heron Quays
- Jubilee Line

In 1999 just before the opening of the Jubilee Line, its working population was only 15,000. By 2004, it had risen by more than 300% to 63,000.

### **Canary Wharf tenants include:**

Major banks – Credit Suisse, HSBC, Citigroup, Lehman Brothers, Morgan Stanley, Bank of America, Barclays;

Law firms – Clifford Chance;

Media – The Daily Telegraph, Reuters, Daily Mirror and the Naseba Group

Public sector – Financial Services Authority; the organisers of the Olympic Games LOCOG and the ODA.

### **The future**

Plans are well underway for Canary Wharf to more than double in size again. Planning permission has been granted for the Riverside South development of two towers designed by the Richard Rogers Partnership and early in 2006 the company announced that State Street Corporation, KPMG, and Bear Stearns had either signed deals or were in negotiation to move to new buildings on the development. It is expected that the number of people working in Canary Wharf will rise to 200,000 by 2020.

Along with the development of Wood Wharf to the east, in which Canary Wharf is a partner along with Ballymore and British Waterways, this represents an additional 7 million sq. ft of development.



### The construction work and transport

**Canary Wharf Tower** – was an approximately £62 million construction management contract undertaken by two construction companies. The 20-story, 750,000 sq ft state-of-the-art office building has a ground floor plate of 45,000 sq ft, of which 30,000 sq ft overhang the River Thames. It is founded on 90 caisson piles ranging in diameter from 30" to 42". The piles were driven off a barge into the riverbed reaching a depth of over 65 feet. The caissons were then cleaned out and filled with concrete. The piles were tied together using precast concrete planks and a concrete deck was poured on top.





**UMA** transported annually 150 – 200,000 tonnes of construction aggregates by barge for the construction work of the Canary Wharf complex and the Jubilee Line station from its processing plant located on the Thames at Blackwall Point, starting in 1991 and finishing in 2003.

UMA operates one of the most modern dredger fleets in the UK marine aggregate industry with four state-of-the-art ships providing a total capacity of four million tonnes a year. Each is equipped with the latest dredging and discharge equipment and uses satellite-guided technology, accurate to within 5 metres, to achieve precise location of aggregate resources. Marine aggregates are landed at 17 locations around the UK including three on the Thames and are then processed and distributed onwards for use in the construction industry.

When a single barge moves 300-400 tonnes of aggregates it saves 15-20 lorry journeys (20 tonne capacity). With UMA using some 400 barge operations annually, this means a reduction in lorry movements of 16-20,000 every year, including return journeys. From an economic point of view, the use of water transportation decreased issues surrounding road transport such as pollution, congestion, accidents and noise.

### **Benefits from water transport**

In addition, according to a study by the European Commission, barges use one-sixth of the energy used by lorries and half of that used by rail. The statistics indicate that less carbon emissions are issued from water transport in comparison with other transport modes. Intermodal shift to water reduces carbon emissions.

Million tonnes of carbon emissions

| <i>Mode</i>    | <i>2000</i> | <i>2001</i> | <i>2002</i> | <i>2003</i> |
|----------------|-------------|-------------|-------------|-------------|
| Road Transport | 38.1        | 38.2        | 39.1        | 38.3        |
| Railways       | 1.5         | 1.6         | 1.4         | 1.5         |
| Shipping       | 0.9         | 0.8         | 0.6         | 1.1         |

Source: Department for Transport

### **How did water transport help?**

Water transport was used to take many of the construction materials generated as a result of the development of Canary Wharf as well as the Jubilee Line Extension. Removal of excavated spoil by barge is a common Thames traffic. The development of the Limehouse Tunnel is a case in point.

For the Canary Wharf construction work, two major wharves in Greenwich were used to deliver aggregates and these will also be suitable for the Olympic Games' building work.

Moreover, most construction materials are transported by ship and further movement by barge to the final destination is straightforward.

As for Large Performed Structures (abnormal loads), government grants have already been used to provide specialised craft for these types of loads, particularly for moving electricity-generating equipment.

Water transport provides many opportunities for the sustainable movement of goods.

