450,000 TONNES OF GRAVEL TRAFFIC ON THE GRAND UNION CANAL, WEST LONDON

The first of 450,000 tonnes of aggregate began moving by barge in 2003 as part of a new initiative to move sand and gravel (so avoiding using already congested roads) from a gravel pit to a canalside concrete making plant owned by Hanson, the international construction materials group at Stockley Park, near West Drayton, West London.

Up to 60,000 tonnes a year was moved by a fleet of four craft. The boats move the cargo about 5 miles and sometimes do two journeys a day, avoiding up to 6,000 lorry movements each year.

Two new barges were built, especially for this trade, to the maximum dimensions of local locks to maximize the freight carrying capacity. About 70 tonnes - over three lorry loads – were taken in each barge. Extensive dredging had been carried out so that the barges could load to over 4ft 3" draft. The barge holds were fitted with an inner "skin" with sloping sides, allowing the grab to unload more effectively the last few tonnes.

Loading a barge at Denham took about only 10 minutes, the material being loaded at approximately a tonne every 10 seconds. Communication with the pit staff was via mobile phone. The barge captain started the conveyor and saw the tonnage being loaded on the wharf electronic display panel while he controlled the loading of his barge. Weighing was achieved dynamically at the start of the conveyor at the pit end. The total is displayed at both pit and wharf, registered by the wharf control unit and automatically printed when the process was complete. The barge captain then took the printed ticket with him to Hanson, leaving a copy for Harleyford Aggregates, the pit owners.

At the destination wharf, the barge captain operated a crawler mounted grab to unload the stone or sand into nearby storage bins. The stone was later picked up from the wharf bin by a four wheeled loader whose bucket took about 6 tonnes at a time and fed into the concrete plant hopper next to the wharf. The sand was taken from the wharf bin by the loader to the B320 "Black Top" plant to make road surfacing material. The plant is in operation 24/7 so the wharf bins could be low when the first barge arrived in the morning.

Two types of aggregate were carried, 5-20mm quartz stone and sharp sand. The as dug material was washed, graded and if necessary crushed after extraction, with the smaller grades of stone being used elsewhere.

The capital investment included the construction of two purpose built barges, a conveyor belt to move the

aggregate 1400ft from Harleyford's Lea Pit near Denham to the canal side, loading and unloading wharves and a long reach grab to unload the barges at Hanson's depot. Help with some of the capital funding came from a Freight Facilities Grant from the Government and British Waterways (now The canal & River Trust) secured other funding to help with the unloading facilities at Stockley Park. Sometimes additional vessels were used to increase the tonnage delivered; tugs and pans, other barge types and narrow boats.

Harleyford Aggregates planned to extend the excavation area to a further 60,000 tonnes of aggregate, extending the life of the canal carrying facility. Once excavated, the area was be backfilled using inert materials be moved by barge too. In the event at the end of the initial contract in 2011 Hanson decided to source 'in house' as spare material was available, and the quarry extension and inert material options were not taken up for various reasons unconnected with use of the canal.

Hanson also supplies a variety of other aggregates from the Stockley Park depot. They regularly receive hundreds of tonnes of other aggregate by rail into their own sidings, off the Great Western line. Other possibilities have been discussed for canal transport ventures to or from their depot in the future.

Although this traffic has now ceased it demonstrates that the smaller waterways can be utilised for successful large scale movement of freight when the circumstances are right.

The advantages of using water transport include:

- Cost effective
- avoiding using congested roads
- regular supply by barge
- satisfies local authority planners who were reluctant to see all the excavated aggregates leave the pit by road
- reduced carbon footprint
- reduced number of lorries in the Hanson yard