British Waterways London

Transport for London

West London Canal Network Study – Phase 1 & 2

Developing Water Borne Freight on the West London Canal Network

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Executive Summary

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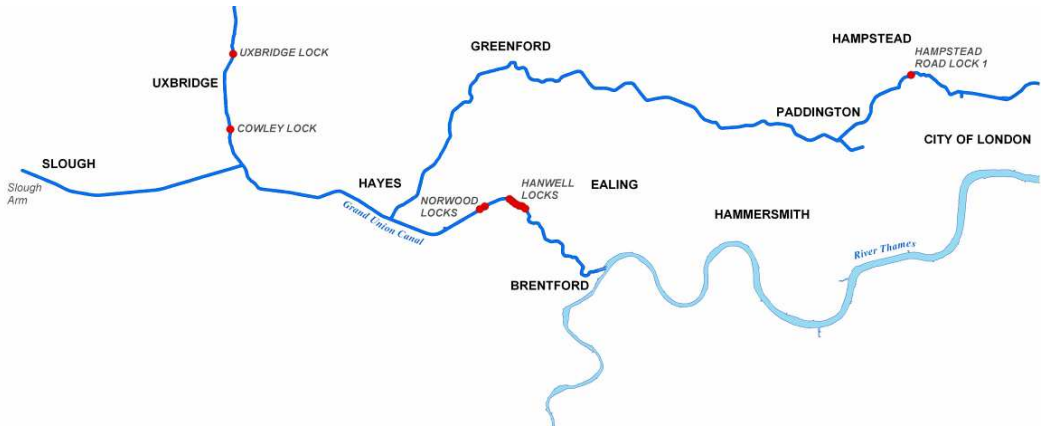
Executive Summary

This Executive Summary sets out the findings of Phases 1 and 2 of a study jointly commissioned by Transport for London (TfL) and British Waterways London to assess the opportunities for the transport of waste, recyclates and construction materials on the West London Canal Network (WLCN).

The Study Area

The WLCN study area comprises a 26 mile ***lock free*** section of the Grand Union Canal, Paddington Branch and Regents Canal. It extends from Camden – Hampstead Road Lock 1 in the East, westwards to the terminus of the Slough Arm, north to Cowley Lock and south to Norwood locks above Brentford. The Terms of Reference required that the study area should encompass industrial and commercial activities within a 2.5 km boundary either side of the canal.

The study area is shown below.



Source: Peter Brett Associates, 2005

Phase 1 Findings

The Phase 1 study primarily focused on mapping the physical status of the network. The main conclusions were:

- There is no shortage of small, simple, loading/unloading points
- There are relatively few locations which are currently suitable for ***significant*** freight transfer
- There are relatively few sites along the network which can process or handle waste and recyclates, but there are opportunities to develop further facilities
- There are several businesses along the canal which provide materials for construction, and a large number of development sites which will need construction materials
- There are other potential opportunities for canal transport, including the movement of paper, food, drink and catering supplies

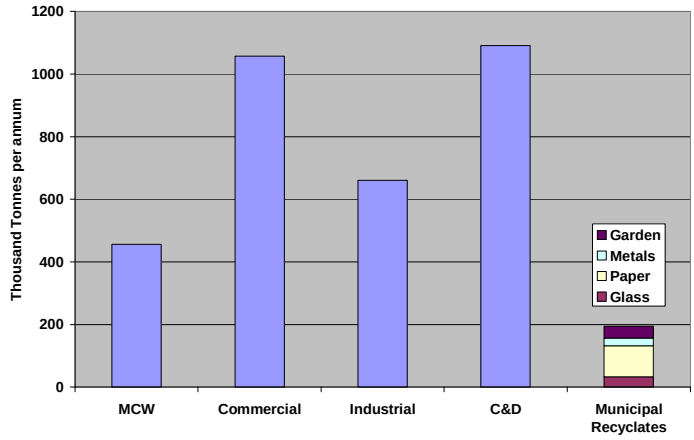
Phase 2 Findings

The Phase 2 work involved the broad quantification of the principal waste and construction commodities being moved in the study area, and subsequent assessment of those showing potential for movement via the WLCN. A cost model was developed and applied to a number of sample business case assessments in order to demonstrate the relative costs and benefits of including canal transport in the supply chain.

The principal commodities included in the study were:

- Municipal Collected Waste - MCW
- Commercial and Industrial Waste - C&I
- Construction and Demolition Waste - C&D
- Municipal Recyclates
- Construction Materials

The graph below shows by commodity the base estimated volumes (based on 2001 data) arising in the study area, excluding construction materials (where figures have proved difficult to forecast with any reasonable degree of accuracy).



Source: Peter Brett Associates, 2005

Overview

The fact that a commodity is produced or arises within the study area does not mean that it will be moved by canal. The potential and probability of freight moving by canal depends primarily on:

- The supply chain characteristics of the commodity
- The location of commodity sources and destinations
- Barge technology, dwell times and availability and type of transfer equipment
- Infrastructure at transfer points
- The technical ability of the canals to carry the commodity (e.g. locks/capacity)
- The economic viability of moving by canal compared to other modes.

The main sources of potential demand identified during the study fall into two groups:

- Freight flows which will need new freight origins or destinations to be developed alongside the canal, such as transfer stations and waste processing facilities used in connection with Multi-Modal Refuse Collection Vehicle[1]. (MMRCV) technology.
- Freight flows which will require temporary or permanent access to development or demolition sites.
- In addition, it is possible to envisage a future scenario where waste or recyclates are collected from small transfer points along the canal to be taken to canalside waste processing facilities.

Business Cases

The viability of a range of potential traffic flows on the WLCN was tested in the sample business cases.

Municipal Collected Waste

The MCW business cases were predicated on the widespread introduction of MMRCV technology and based around feeding the existing Brentford Waste Transfer Station by canal. This option proved to be economically unviable. However the MCW business case did demonstrate that if waste processing facilities were located alongside the canal it could be cost effective to move collected waste by canal between transfer stations to canalside processing facilities. The actual location of processing plants and transfer stations would need to be considered in relation to the specification of collection rounds and the capacity of the processing plants. Clearly this has implications for the GLA assessment of land requirements for the Mayor's Waste Strategy.

The overall forecast for MCW in the study area suggested that there is scope to locate at least 5 transfer stations along the WLCN each serving 10 wards. These transfer stations would then feed a processing plant located on the Powerday site at Old Oak sidings. Based on each transfer station handling 50,000 tonnes per annum in 2001 this would increase to 300,000 tonnes in 2006 and 360,000 in 2016. Ultimately, the modelling work suggests that for 2006, if all the tonnage from the transfer stations was carried by barge, around 335,000 lorry miles could be saved per annum. Purely from a pragmatic point of view, the likely hood of achieving this target is low and assuming a 30% probability, the lorry miles saved in the 2006 scenario would be in excess of 100,000.

Commercial and Industrial Waste

C&I waste is more than four times the tonnage generated by MCW, but its collection is not unified and controlled. The waste is handled mainly by private companies contracted to individual businesses who have their own disposal routes. We did not believe that a sensible business case could be constructed for this type of flow and concur with others that a separate study should be carried out encompassing the Park Royal Industrial Estate. A large proportion of this waste consists of paper, metals and glass which is transported to processors that are not located on the

[1] MMRCV technology involves the use of refuse collection vehicles that use interchangeable bodies. Once full, these can be deposited at a local transfer station and an empty unit loaded onto the vehicle, so it can resume waste collection. These bodies are potentially transferable to other modes of transport, - for example canal and railway.

canalside. As with other flows, if canal collection is to be made a reality, then processing facilities will be needed canalside within the WLCN.

Construction and Demolition Waste

While the major constraint for the movement of building materials is lack of canalside facilities, this will not be the case for demolition waste once the Powerday facility starts operation. For the first time, builders will have the potential to access a major destination for demolition waste which is served by a modern wharf. Modelling has demonstrated that canal movement of Construction and Demolition waste can be cost effective, particularly where on-costs to move the waste to and from the canal are minimised. Forecasting the potential demand for such an operation was extremely difficult, but based on the number of development sites, we believe there is a potential to handle 186,000 tonnes per annum at 2006 levels. If 50% of this tonnage was attracted to the WLCN then nearly 40,000 lorry miles would be saved each year. It should be noted though; there will be an increasing trend towards treating demolition waste on the development site.

Municipal Recyclates

For paper and glass recyclates, the business case work was based on collecting from locations along the canal network and moving it by canal to the glass recycling facility at Charlton, or the paper facility at Crayford. Both these flows required the use of the River Thames. There are no cost advantages in either of these movements. Further analysis suggested that canal movement would be a viable option if new glass and paper processing facilities were located on the WLCN. A conservative forecast has been made that if two such facilities were developed, there would be the opportunity to process around 100,000 tonnes of recyclates per annum at 2006 levels. Again, not all of this tonnage would convert to canal but if 25% could be attracted to the WLCN this would result in 12,500 lorry miles saved at 2006 levels.

Construction Materials

For building materials the modelling demonstrates that movement by barge can be a cost effective solution to move consignments from canalside sources of material to canalside development sites. Currently the only locations handling building materials with active canal access are at Denham and West Drayton. There are one or two further sites handling building materials to which canal access could be provided. A key opportunity is the Powerday site at Old Oak. This site is ideally located to play a significant part in achieving modal shift.

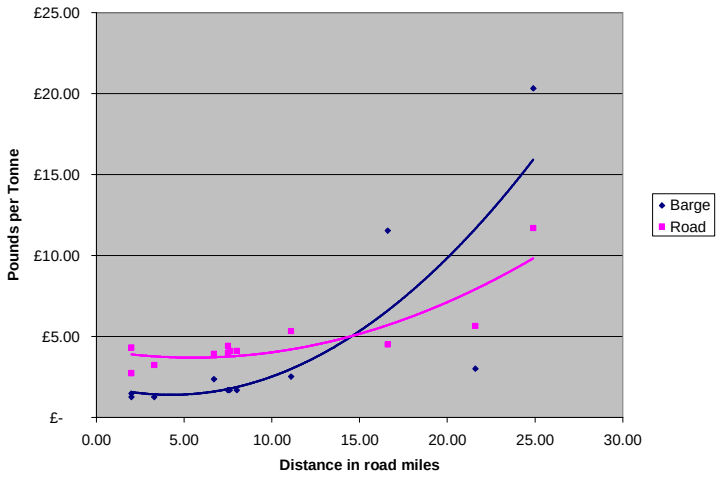
Recently, for large projects, the construction industry has begun to use building materials consolidation centres and this development opens up new opportunities for the supplies of building materials to be located alongside the canal. This in turn should encourage developers to consider the use of the canals, and local authorities to encourage or require canal use.

As part of this study Peter Brett Associates made an assessment of the volume of building materials required for the proposed development of the Southall Gas Works. From this work we made an estimate for the study area that 150,000 tonnes per annum of construction material would be required at 2006 levels. Based on sand and gravel we believe 50% of this material could transfer to canal but a lower figure of 10% was used for cement. On this basis the 2006 lorry miles saved for building materials equates to around 34,500 per annum. Other building materials could be considered such as bricks and tiles.

Key Findings

Distance and Time: Modal Reality

The graph below, compiled from the business case results, clearly illustrates that for short distance flows, movement by barge can be cheaper than movement by road. However, when barges have to pass through numerous locks, or transfer onto the River Thames, journey times become extended and may take several days to complete. By comparison, a road vehicle can complete more than one round trip per day, even for the longest journey modelled (40 miles).



Source: Peter Brett Associates, 2005

Thus road transport may not always be the lowest cost option, ***but it is almost always the easiest to implement.*** Canal transport, by contrast, usually requires a greater degree of management to coordinate the delivery of the commodity to and from the waterside, transferring it to and from the barge; and shipping it.

The work to date clearly demonstrates that movement by barge can be the most cost effective solution for ***certain commodities over short distances*** where both ends of the journey are alongside the canal. This is an ***important conclusion***, because it suggests that transport economics are not the main constraint on canal freight movement, but rather the location of origins and destinations. We believe the policy focus should be on creating new origins and destinations, or supporting the provision of canal transfer facilities at existing origins and destinations.

Necessary Conditions

The study work points to a combination of conditions required to enable a viable canal freight operation. These include:

- Canal journeys within the lock free section allow aggregation of barges which achieves economies of operation.
- Journeys outside the lock free section are clearly less economic when compared with road because of the loss of aggregation and the additional time and manpower required to negotiate the locks.
- Journeys through only one or two locks may be only marginally more expensive if aggregation takes place for the majority of the journey. Journeys involving more

than two locks escalate the canal journey costs dramatically making them uneconomic.

- Where the handling systems for loading commodities on/off barges are equivalent to those used by road, there are no further cost penalties for using the canal.
- The synergy of the canal system with the River Thames and well established freight flows on the river suggested that journeys utilising both waterways may be viable. However, none of the business cases tested proved to be cost effective and such operations are generally considered to be unviable under prevailing conditions. This conclusion is only applicable to the WLCN - it is possible that journeys involving the Thames and River Lee in East London would give a different result.
- Where product source or product destination is away from the canalside and requires an additional transport leg, however short, such movements may make the canal option uneconomic when compared to road.

Overall Conclusions

The table below summarise the commodity volumes which it is believed could be processed in the study area if the necessary infrastructure is put in place. The estimates have been derived for 2006 and 2016 horizons and illustrate the potential that could be moved on the WLCN assuming full modal shift.

Commodity	***Volume Forecast 2006***	***Volume Forecast 2016***	***Lorry miles saved 2006***	***Lorry miles saved 2016***
Municipal Collected Waste	297,000	362,000	336,000	409,000
Construction & Demolition Waste	93,000	121,000	77,000	100,000
Municipal Recyclates	100,000	160,000	50,000	80,000
Construction Material	151,000	196,000	65,000	107,000
Total	**641,000**	**839,000**	**528,000**	**696,000**

However, it is highly unlikely that all of this tonnage would transfer to the canal network. An estimate has been made of the likely conversion rate of the tonnage likely to be diverted to the canal together with the resulting number of lorry miles saved. It is clear that this will only happen if the canal side infrastructure recommended in the report is provided.

Commodity	***Volume Forecast 2006***	***Volume Forecast 2016***	***Lorry miles saved 2006***	***Lorry miles saved 2016***
Municipal Collected Waste	89,000	109,000	101,000	123,000
Construction & Demolition Waste	47,000	61,000	39,000	50,000
Municipal Recyclates	25,000	40,000	13,000	20,000
Construction Material	65,000	84,000	35,000	45,000
Total	**226,000**	**294,000**	**188,000**	**238,000**

There is a very low demand for freight movement on the canal. The economics of road to canal transfer are poor, and there are a wide range of locations where freight can be transferred. It is therefore considered that at this stage a case cannot be made for protected canalside locations simply because they could be used to transfer freight between barges and road vehicles. The key exception to this is the need to decide on four or five locations in West London where MMRCV containers can be transferred from road to barge. There is also the need to provide canal freight access to development sites, waste handling sites, and construction depots.

It is further concluded*:*

- Once suitable locations for MMRCV transfer stations have been identified, they should be protected against alternative development. In the interim, proposals for canalside development should be scrutinised to ensure that they do not remove key opportunities for MMRCV based transfer stations.
- There are relatively few locations which meet the criteria for waste or recyclates processing facilities or construction consolidation centres. Once such sites have been identified they should be protected for these uses.
- The Powerday site at Old Oak sidings offers the greatest opportunity to provide both a source and destination for commodities which can be moved by canal. It is a multi modal site and includes part of the Old Oak sidings which are connected into the North London railway line with connections to all major rail destinations. The canal frontage will be developed with a wharf which could be equipped with cranage. It could also be developed to carry out a range of other tasks including an MBT plant, recyclates processing, demolition waste recovery and a consolidation centre. The development of the site will be market driven. It is essential that the development of the site is closely monitored to ensure its canal potential is fully exploited.
- Developers should also be encouraged to plan developments in a way which will allow waste to be transferred to the canal in the future – for instance by providing for canalside bottle banks.
- Developments which restrict the potential of the canal for the movement of freight (where a potential business case has been made) should be resisted.