REPORT ON THE STATE OF THE

NAVIGATION OF THE RIVER MERSEY (2010)

TO THE SECRETARY OF STATE FOR TRANSPORT

by
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INTRODUCTION

1. The Mersey Conservancy as an independent statutory authority on the tidal River Mersey has received a wide range of enquiries throughout 2010, including the feasibility work undertaken by Peel Energy in support of utilising the tidal energy capabilities of the Mersey Estuary, the continued interest and investment towards the regeneration of waterfront communities and businesses, upgrading the supporting infrastructure and communication networks, and the proposed development of new recreational facilities.

2. The Secretary of State for Transport first appointed me in September 2008 to act on his behalf to better preserve the navigation of the River Mersey. The Mersey Conservancy is funded jointly by the Mersey Docks and Harbour Company (MDHC) and the Manchester Ship Canal Company (MSCC) in accordance with their local legislation. In addition to the normal functions of the Mersey Conservancy; the review of the running and management of the Conservancy at its new location in Liverpool has continued during 2010 through liaison between the Conservancy, MDHC and DfT.

3. The regime of the 1842 Act for better preserving the navigation of the River Mersey has since been overlapped the statutory powers of port authority status held by MDHC and MSCC. Both Companies are currently owned by Peel Ports as the majority shareholder. This arrangement puts the Mersey Conservancy in a unique position. Within modern port management practices all other estuaries in England and Wales are the responsibility of one or more harbour authorities that undertake their own statutory duties to conservancy.

4. DfT is considering the transfer the Secretary of State's conservancy duties and functions to MDHC and MSCC. This would require legislation, for which there is no timetable at present; however, DfT is currently considering alternative options for reforming the Mersey Conservancy.

5. The 2008 Memorandum of Understandings between DfT and MDHC, and DfT and MSCC simplified the practical arrangements for payments and administrative support to the ACRM, which is provided by MDHC and MSCC. Since 1 April 2008, the ACRM costs are met directly by MDHC and MSCC, including the funding of my remuneration and activities. MDHC and MSCC also provide office accommodation facilities at the Maritime Centre in Liverpool and other day to day administrative services in support of my post as ACRM.

6. MDHC has provided the ACRM with office accommodation at the Maritime Centre offices in Liverpool. A secure office, desk, telephone, laptop computer, and filing cabinets were provided adjacent to the office of the Harbour Master, Capt. Steve Gallimore. In December 2009 the ACRM was relocated to a secure office elsewhere in the building. The review of staffing levels and restructuring of facilities at the Maritime Centre is ongoing.

7. The regular attendance of the ACRM at the Maritime Centre and at meetings in Liverpool, the Wirral, Merseyside and greater Manchester has allowed the excellent working relationships with all relevant regional parties and stakeholders to be developed further and maintained. The recent increase in the number of enquiries and formal notices received from external stakeholders over the past 12 months suggests that the overall relationship is a positive one and that the presence and role of the Conservancy is becoming better understood amongst an increasing number of stakeholders.

8. The role of Clerk to the ACRM provides administrative support to the DfT on Mersey Conservancy issues. These include, amongst other things, the appointment/ reappointment of the ACRM on behalf of the Secretary of State. The role is based within the Department for Transport, Great Minister House, London and is currently held by Mr Tony McMillan.

9. Of the major marine proposals identified in the 2008 report; i.e. the MDHC Seaforth Container Terminal; and the Mersey Gateway bridge proposal of Halton Borough Council, the detailed design of the container terminal is ongoing. On 20th December 2010 the Government announced that the project had been given planning approval. The approval was signed off by SoS for Transport and SoS for Local Government.

10. The combined port traffic through Liverpool, Garston, Bromborough and Manchester is summarised in Table 1. Trade increased slightly from 37.11×10^6 tonnes in 2009 to 37.69×10^6 tonnes in 2010. A breakdown by commodity for 2010 was only available form ABP Gaston

where traffic was dominated by dry bulk cargoes. DfT port statistics for 2010 are unlikely to be published until September 2011.

Table 1. Traffic (thousand tonnes) through Mersey Ports in 2009 and 2010. Source: Department for Transport.

Port	Year	Inward	Outward	Total
Bromborough	**2009**	101	69	**170**
	2010[p]	128	71	**198**
Liverpool	**2009**	22348	7418	**29766**
	2010[p]	21586	8257	**29843**
Manchester	**2009**	2829	3841	**6670**
	2010[p]	3500	3583	**7084**
Garston	**2009[*]**	378	127	**505**
	2010[*]	522	46	**569**

* Source: ABP Garston, February 2011. p– provisional DfT data, March 2011.

11. My regular attendance in Liverpool has allowed me to meet with the Harbour Master (Captain Steve Gallimore) and other stakeholders on a frequent and regular basis. Excellent working relationships continue with all parties encountered including MDHC, MSCC, ABP Garston, local authority representatives, and developers.

ISSUES CARRIED OVER FROM THE 2009 ANNUAL REPORT

12. Paragraphs 15 and 16 of the 2009 Annual Report identified a number of meetings and items of casework during the year. Of these, the tidal energy proposals of Peel Energy have gained most attention from interested parties including the Conservancy. 2010 proved to be significant year in the project's schedule as a shortlist of three potential technologies was published at the end of the year. The promoters hope to identify a preferred option in early 2011.

13. The Mersey Coastal Park Strategy is another initiative that has carried over. I have attended several working group meetings with particular interest in the potential options for the future of the Tranmere Oil Tanker

Cleaning Jetty, and the restoration of the Rock Park esplanade. It is expected that the maritime aspects of the proposed development will achieve significant progress in 2011.

14. Paragraphs 19 – 23 of the 2009 Annual Report referred to the condition of Walton Lock that once provided a navigable link via the Walton Cut between the Manchester Ship Canal and the old course of the River Mersey before the new river diversion across Arpley Meadows (parallel to Chester Road (A5060)) was constructed. Investigation of the matter during 2010 has not made significant progress as it has not been possible to identify with certainty the owner of the Lock. New enquiries have been made to MDHC and MSCC in order to determine ownership and to obtain an engineers report on the condition of the lock gates. Liaison with the Environment Agency on this matter in regard to determining the potential flood risk continues.

2011 REPRESENTATION OF THE MERSEY CONSERVANCY

i) Power generation from the tidal resource of the river

15. The tidal energy proposals within the Mersey Estuary by Peel Energy have been complemented by additional enquiries from Peel Energy regarding proposals to install a hydro electric power generating device at Howley Lock (adjacent to Howley Weir, Warrington). This represents the upstream extent of ACRM jurisdiction.

ii) Other consultations and casework

16. The casework loading of the Conservancy in terms of numbers of enquiries during the reporting period has increased over previous years. Consultation regarding the Liverpool Bay SPA designation continued until February 2010. Other enquiries relating to renewable energy from the river Mersey, power generation from gas fired power stations (Carrington 1 and 2), and dredging accounted for the majority of effort regarding consultation during the first half of 2010. Those relating to renewable energy from the river Mersey and the wind resource of the Burbo Bank, a new landing stage at the Pier Head, two outfalls, and maintenance dredging accounted for the majority of effort regarding consultation during the second half of 2010.

17. All enquiries received during 2010 are listed below. Twenty six enquiries and three formal notices received during the course of the year:

- Wirral Borough Council. Discussions regarding the Mersey Coastal Park Strategy and the redevelopment of the Tranmere tanker cleaning jetty (1).
- Mersey Wharf. Application for maintenance of water depth at Bromborough Wall by ploughing approved (2).
- Crown Estate. Liaison regarding the aggregate dredging licence renewal at Hilbre Swash (3).
- Peel Energy. Enquiry regarding a potential hydro electric power scheme at Howley Lock, Warrington (4- 5).
- Countryside Council for Wales. Response to consultation regarding the proposed Special Protection Area (pSPA) in Liverpool Bay (6).
- Carlton Power. Enquiries regarding the abstraction of cooling water from the Manchester Ship Canal for its Carrington projects and concerns received from MSCC over maintenance of water levels for safe navigation during periods of drought (7).
- King Street Energy. Several attempts by King Street Energy to arrange a meeting with the ACRM and the Harbour Master have fallen through due to other commitments of the developer (8).
- Mersey Travel. Application for approval of 5 boreholes in support of ground investigations for the new Pier Head ferry terminal. Approved (9).
- Peel Ports. Request to move the Middle Deep deposit ground. Currently under consultation with other stakeholders (10).
- Mersey Wharf. Reached agreement with MDHC during the reporting period (following discussion with the ACRM on 20 April) to provide bathymetric surveys from Eastham Bar to Bromborough Wall twice a year. As a result, the proposed capital dredge was not required this year (11).
- Peel Energy. Liaison re: tidal energy proposals ongoing (12). No further correspondence re: proposed Howley Weir hydro electric power scheme at Howley Lock, Warrington.
- Peel Ports. Request of 10 June to move the Middle Deep deposit ground in accordance with FEPA licence 34403 approved by ACRM on 11 August 2010 (13).
- DONG (Burbo Bank offshore windfarm extension). Scoping response provided on 27 August (14).
- DEFRA. ACRM responded to three consultations re: reform of marine planning on 16 September (15 - 17).

2010 enquiries continued…

- Environment Agency. Consultation re: Warrington Flood Risk Management Scheme. Response to scoping report 17 September (18).
- Mersey Coastal Park Strategy Working Group re: Tranmere oil tanker cleaning jetty and the New Ferry slipway and esplanade (19 - 21).
- Mersey Travel. Application and formal notice received re: approval of construction of a new ferry landing stage at the Pier Head. Notice placed in London Gazette 19 October. Approval by ACRM on 9 December 2010 (22).
- United Utilities. Application and formal notice received re: approval of 5 no. boreholes in support of ground investigations for a new outfall extending into the river from Sandon Dock. Noticed placed in the London Gazette 19 October. Approval by ACRM on 9 November 2010 (23).
- MMO. ACRM responded to MMO consultation re: FEPA application by United Utilities for 5 no. boreholes extending from Sandon dock (24).
- Veolia Environmental Services Ltd. ACRM responded on 9th November to a request for a scoping opinion to Veolia Environmental Services Ltd, re: a proposed combined heat and power plant at its works at Garston (25).
- United Utilities. Application and formal notice received on 14 December to construct a new outfall at Penketh/ Whittle Brook, Fiddlers Ferry. Notice placed in the London Gazette by ACRM on 23 December 2010 (26).

iii) 2010 Meetings

18. Regular meetings took place with key staff from Peel Ports inc: Capt, Steve Gallimore, Harbour Master; Warren Marshall, Head of Port Planning; Russell Bird, Senior Hydrographer, and Derek Hendry, Director of Projects.

Other meetings during 2010 included:

- 18th February. ACRM attended meetings at MMO offices in Newcastle to discuss:
- Capital dredge and disposal re: ground works for the Gwynt y Mor offshore windfarm foundations.
- Aggregate dredging licence application re: Hilbre Swash.
- Strategic Development of the MMO.

Meetings in 2010 continued…

- 25th February. ACRM attended the first meeting of the Mersey Coastal Park Strategy Working Group to meet stakeholders and identify areas of concern.
- 19th March. ACRM attended a meeting of the Liverpool Bay Coastal Group in Rhyl to discuss flood and coastal defence strategies and the European Water Framework Directive with representatives from several local authorities and the Environment Agency.
- 22nd March. ACRM attended the offices of Peel Energy in Manchester to discuss the latest developments regarding tidal energy proposals with Anthony Hatton, Director, Peel Energy.
- 29th March. ACRM met with representatives of Carlton Power at their offices in Stokesley, North Yorkshire to discuss the management of water levels in the Manchester Ship Canal during abstraction of cooling water for the proposed Carrington power stations.
- 30th March. ACRM attended a meeting with the Crown Estate's Agent (Mr John Bingham) and the Harbour Master (Capt Steve Gallimore) in Liverpool to discuss application to extract marine aggregates from Hilbre Swash.
- 20th April. ACRM attended a meeting with representatives of the Victoria Group representing the operators of Mersey Wharf at Bromborough, Wirral. Topics of discussion included maintenance of berthing depths along the Bromborough Wall and the potential for a capital dredge across the sand bar at the entrance to the Eastham channel.
- 10th May. ACRM attended an informal meeting with DfT Ports Division in London to discuss options for a Harbour Revision Order regarding the transfer of Conservancy powers.
- 18th May. ACRM attended a Navigation Stakeholder Group meeting at the invitation of Peel Energy in Liverpool to discuss tidal energy proposals for the Mersey Estuary with several representatives of other commercial and regulatory concerns.
- 15th June. ACRM attended a meeting between MDHC, MMO and CEFAS in Liverpool to discuss environmental monitoring of sediment quality in impounded systems at Liverpool and Birkenhead. Draft sampling strategy agreed in support of MDHC application for maintenance dredging.

Meetings in 2010 continued…

- 24th June. ACRM attended a meeting between MDHC and Natural England Senior Managers and Directors to discuss recent and potential future developments in the ports industry at Liverpool. Anthony Hatton of Peel Energy also in attendance to brief NE on present hydro electric power proposals on the River Mersey.
- 24th June. ACRM visited the site of Evans' breakers yard at Garston to investigate the status of scrapped vessels on the foreshore, and Liverpool Sailing Club to investigate allegations of dredged spoil from Garston deposit ground affecting safe navigation by members.
- 2nd July. ACRM attended the Mersey Estuary Forum at the Maritime Museum in Liverpool and gave a presentation entitled "Changes to the Estuary and the Mersey Conservancy" to an invited audience of approximately 120 delegates.
- 13th July. ACRM attended a bi-annual appraisal meeting with DfT.
- 28th July. Liaison with Crown Estate and Duchy of Lancaster agents regarding the aggregate dredging licence renewal at Hilbre Swash and the surrender of licences for the Brazil Elbow and New Brighton Shoal.
- 25th August. ACRM meets with Merseytravel re: proposed new ferry landing stage at the Pier Head.
- 6th September, 20th October, 8th December. ACRM attended meetings of the Mersey Coastal Park Strategy Working Group to meet stakeholders and identify / resolve areas of concern.
- 13th September. ACRM visits the Manchester Ship Canal offices at Runcorn, and inspects the Weaver Sluices and Runcorn docks.
- 13th September. Burbo offshore windfarm extension. Meeting with DONG and navigation stakeholders at the Maritime Centre, Liverpool.
- 14th September. Farewell lunch for Lt. Cmdr David Knight attended by ACRM, Harbour Master and Senior Hydrographer.
- 7th October. ACRM discussed Burbo offshore windfarm extension and United Utilities proposed outfall from Sandon Dock with MMO.
- 12th October. Further meeting with Merseytravel and consultants re: new ferry landing stage at the Pier Head.
- 15th October. ACRM due to attend meeting of the Environment Agency/ DEFRA Regional Flood Defence Committee in Warrington. ACRM cancelled due to unforeseen circumstances. Technical papers provided to ACRM on request.

Meetings in 2010 continued…

- 16th November. ACRM meets with Mersey Pilots in order to introduce the Conservancy's role and responsibilities. This was the first time the ACRM had met with the Mersey Pilots in over 20 years.
- 14th December. Peel Energy presents its short list of preferred options for tidal energy from the Mersey estuary to the Navigation Stakeholders Working Group in Liverpool. ACRM in attendance.

THE 2010 INSPECTION

19. My 2010 inspection focused on the Manchester Ship Canal and the middle estuary. I attended a meeting with representatives of the Victoria Group, the owners and operators of Mersey Wharf at Bromborough on the 20th April. On the 24th June I visited the site of Evans' breakers yard and the clubhouse of Liverpool Sailing Club on the north shore of the river between Garston and Speke, and on 13th September I visited the Manchester Ship Canal offices at Runcorn and inspected the Weaver Sluices and Runcorn docks. On 14th September I visited the slipway at Rock Ferry.

20. Topics of discussion with Mr Dave Martin (Director, Victoria Group), Mr Jon Warren (Wharf Manager, Mersey Wharf) and Mr Paul Murray (Shipbroker and Agent, Sanders Stevens) at Mersey Wharf on 20th April included maintenance of berthing depths along the Bromborough Wall and the potential for a capital dredge across the sand bar at the entrance to the Eastham channel. We discussed the concerns expressed by the Liverpool Pilots about the perceived height and position of the Eastham Bar, the lack of safe clearance this was likely to provide vessels coming alongside at Bromborough from the Eastham Channel, and the options that were available to facilitate bathymetric survey. I recommended that a survey of the bar would help to determine the extent to which an approach to the berth would need to be dredged and maintained. This was undertaken on 8th October 2010 and will be repeated every six months. Initial results showed no reason for concern. We also discussed and clarified the respective responsibilities of the Mersey Conservancy, MDHC as the harbour authority, and Mersey Wharf in this regard.

21. The purpose of my visit to Evans' yard on 24th June was to determine whether there had been any significant change since my last visit in 2008 and to investigate the status of scrapped vessels on the foreshore. The present state of the site is shown in Plate 1. It indicates that the yard shows no sign of recent operation and that it currently presents no risk to navigation.

22. Allegations that dredged spoil from Garston deposit ground was affecting safe navigation by members of Liverpool Sailing Club further upstream were investigated through informal discussion with committee members at the clubhouse on 24th June. I arrived at the clubhouse approximately one hour before low water so that I could view the drying banks and the slipway. Although there was clearly some evidence to support observations of local movement in channels and changes to bathymetry, there was nothing to suggest that the cause was the result of the upstream movement of dredged spoil from the Garston deposit site. I discussed potential options including the use of tracers in the dredged spoil and explained how these could be used. No further communication was received from Liverpool Sailing Club on the matter.

23. At my meeting with Captain Alan Feast, Deputy Harbour Master MSCC, and MSCC engineers at Runcorn on 13th September we discussed the requirements of the proposed power stations at Carrington for cooling water and how these might affect the maintenance of levels and safe navigation in that section of the canal. I emphasised the need for MSCC to consider a formal agreement with the developer so that water levels during periods of drought could be maintained to ensure safe navigation; for example, this could be achieved via controls to reduce the volume of water that could be extracted once a threshold level had been reached.

24. A short trip by boat from Runcorn to the Weaver Sluices followed. While steaming down the canal Capt. Feast pointed out a number of interest features concerning the past navigation to Runcorn Docks, the Weaver navigation and Weston Point. Once at the sluices (Plate 2) Capt. Feast proceeded to explain the extensive maintenance works to the sluice gates that have been undertaken (Plates 3 and 4). He also described the newly installed control system on site and how this was linked to the main control room at Eastham.

25. The following morning (Sept. 14) I visited the slipway at Rock Ferry. During my visit I noticed that Royal Mersey Yacht Club (RMYC) had posted a notice advising that the slipway would be closed for repair works part funded by the Crown Estate (Plate 5). I had not received any previous notice of these works and raised the matter with the club at the first opportunity thereafter. This is not the first occasion when the club has undertaken works in the river without notifying the ACRM (see 2004 Annual Report: Plate 4 and paragraph 19).

26. As Grade II listed structures, the Rock Ferry slipway (Plate 6) and the esplanade (Plate 7) have the potential to provide important components for the regeneration of the river frontage between Tranmere and New Ferry.

They form part of the Mersey Coastal Park Strategy, an initiative being led by Wirral Borough Council. This will provide a coastal footpath from Eastham to New Brighton along the Wirral shore together with new and upgraded recreational facilities including a new marina in collaboration with RMYC that has its clubhouse at Rock Ferry.

27. I am taking an active role in attending meetings of the Mersey Coastal Park Strategy Working Group, a group facilitated by Wirral Borough Council and attended by RMYC. The requirements of the 1842 Act with regard to formal notice, period of consultation, and consent have been made clear to the group.

28. In the afternoon of 14th September I attended lunch with Captain Steve Gallimore (Harbour Master) and Mr Russell Bird (Senior Hydrographer, MDHC) and Lt.Cmdr David Knight (retiring Liverpool Officer) at the Boathouse, Parkgate on the Dee estuary in order to thank Lt. Cmdr Knight for his long service to the Mersey Conservancy and to say farewell.

29. My meeting with Captain Nick Truelsen and other Directors of the Mersey Pilots took place at the offices of Liverpool Pilotage Services Ltd in Birkenhead on 16th November. Although this was the first occasion the ACRM had met with the Mersey Pilots in over 20 years I felt that there was much to be gained from an introduction and general discussion around topics of mutual interest regarding navigation on the river. We had the opportunity to discuss the behaviour of Eastham sands and the Eastham bar on the approach to Bromborough. It was interesting to learn that recent surveys of the area to Bromborough had shown more clearance over the bar than had been thought previously and, as such, a capital dredge was not required immediately.

30. Other topics discussed with the Pilots included the proposed extension of the Burbo Bank offshore wind farm in close proximity to the approach channels, and current tidal energy proposals for the estuary. As a result of the meeting I was able to put the pilots in contact with Peel Energy so that they could gain an invitation to attend future meetings and project briefings.

STATE OF NAVIGATION OF THE RIVER MERSEY 2010

LIVERPOOL BAY AND DREDGED CHANNELS

31. During the 2010 period the areas of the outer channel were surveyed at regular intervals by the Mersey Docks and Harbour Company Ltd (MDHC) utilising the Multibeam echo sounder technology aboard the survey launch *'Royal Charter'*. Table 2 shows the number of surveys completed within the outer channel for the period. As in previous years, the area of Queens Channel East was the most heavily surveyed with nineteen surveys undertaken in total, including those performed for the support of dredging operations. Further critical areas of Crosby Shoal and New Brighton shoal were surveyed eight and seven times respectively throughout the period, reflecting the rapid changes seen in the areas during 2009 and the need for continuous monitoring. There were no areas without at least a single survey being performed during 2010.

32. Dredging operations during 2010 were undertaken solely by Westminster Dredging on a campaign lead strategy. This was performed by a variety of vessels available to the contractor, predominantly the *WD Mersey*, *WD Shoalway* and *WD Severn*. Effort in the area below the Rock Lighthouse was based mainly on the areas of the Queens Channel (East of the Formby Lightfloat), the Crosby bend and the Crosby Shoal areas. Minor dredging operations also took place over New Brighton Shoal and Brazil Elbow (see also: Aggregate Dredging). Dredging figures for the 2010 period are presented in Appendix B.

33. Areas surveyed and the frequency of surveys below the Rock Lighthouse during 2010 are shown in Table 2.

Table 2. Summary of MDHC survey effort below Rock Lighthouse during 2010.

Area	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	Sum
Jordans Spit Spoil (Site Z)				•									1
Queens Channel West					•			•			•		3
Queens Channel East	•	••	•• •••	••		••	••	•	•		•	••	19
Askew Spit	•					••			•		•		5
Crosby Shoal		••		•	•	••		•			•		8
Crosby Channel South						•							1
Crosby Channel North		••		•	•	••		•			•		8
Brazil Elbow		•						•					2
New Brighton Shoal	•	•	•		•		•		•		•		7

i) Jordan's Spit and Site Z

34. There was a single survey of Site Z carried out during 2010. When compared to the previous year the results showed the relative stability of the contours especially those across the shoallest area approximately 500 m south east of the Spoil buoy. The shoallest sounding of 4.4 m below chart datum (BCD) compares well with the 4.5 m BCD sounding seen in the same area in 2009. The most notable change across the Site Z survey would be the spread of the 5.0 m contour encompassing the shoallest sounding. This has now spread across the centre of the feature to connect the isolated patched of sub 5.0 m BCD soundings seen in 2009. This can be attributed to the increase of dredging disposal at the site since 2009.

It has been recommended by MDHC that due to the projected increase in dredge disposal in the future at the site, the survey interval will be reduced to six monthly to assess the more immediate effect that high volume, intensive campaign disposal as opposed to more traditional routine dredging disposal may have on soundings and bathymetry of the site throughout a period.

ii) Queens Channel West of Formby Lightfloat

35. Three surveys of the area were carried during 2010. The first survey in May showed that there was no significant change in the critical 5.0 m and 6.9 m contours since 2009. Indeed, the channel showed some signs of improvement with an easterly progression of the 10.0 m contour of 100 – 150 metres in the south of the channel to encompass the Q3 buoy. This small improvement was not mirrored in the critical areas to the East of the channel where the 5.0 m and 6.9 m contours remained relatively static running Southeast from buoys Q2 to Q5, and 200 metres East of the Q2 buoy to a position 700 metres north of Formby respectively.

36. The final survey of 2010 in November showed the regression of the 10.0 m contour west to its 2009 position west of the Q3 buoy, running in a north westerly direction across the channel. Due to the relative stability of the area the survey period of three months was not altered in favour of more critical areas to navigation.

iii) Queens Channel (East of Formby Lightfloat)

37. Nineteen surveys of the area, including several dredge support surveys were undertaken during 2010. Queens East, as one of the most critical areas of the channel, was heavily surveyed and dredged throughout the year. Queens East showed a general deterioration of depths throughout the middle of the period and a gradual improvement towards the end of the year. This was mainly due to the intensive dredge operations undertaken in August and December.

38. In the January survey, the channel was seen to have good depths with the usual problematic areas of the central channel to the East of the Formby buoy showing large areas of sub 6.9 m BCD soundings, min soundings of 6.7 m BCD in the vicinity of Formby buoy, 4.2 m BCD on the Q9-Q11 buoyline. This distribution continued until February; however, the deeper areas mid-channel could be seen to start to decrease in depth with the sub 6.9 m BCD soundings becoming isolated significant patches. The 5.0 m contour to the south of the channel was also seen to encroach on the buoyline by 30 metres.

39. Further surveys in March and April revealed that the 6.9 m contour became established in a more familiar position; i.e. running from Q6 to a point 70 metres North of Q11 buoy with minimum depths of 6.7 m mid-channel and a deterioration to 3.9 m BCD on the Q9-Q11 buoyline. The encroachment of the 5.0 m contour seen at the beginning of the year continued. After intensive dredging operations in the area during April, soundings mid-channel and along the South buoy line had improved slightly; however, the consolidation of the 6.9 m contour running across the channel was now well established. A minimum sounding of 6.5 m BCD in the vicinity of Formby buoy was published.

40. Towards the end of 2010 further intensive dredging efforts produced results of isolated sub 6.9 m BCD soundings mid-channel. A general, natural improvement of depths indicated was indicated by the progression of the 6.9 m contour south of Formby buoy progressing approximately 100 metres to the East.

41. Although dredging operations continued into November, the final survey of 2010 showed the continued consolidation of the dominant 6.9 m contour running from the Q6 to the Q11 buoy with an isolated 6.4 m sounding showing on the final chart of the year.

iii) Askew Spit

42. Five surveys of the Askew Spit and Crosby Bend were undertaken during 2010. These revealed a period of stability for the spit as a whole; however, most notable were the shifts in the 0.0 m contour South of the C3-C5 buoyline and the resulting dredging efforts to stem its progression. The initial survey of 2010 showed the 2.0 m, 5.0 m and 6.9 m contours remaining stable and running parallel to the starboard buoyline on the inside of the Crosby bend at an average distance of 50 metres, 100 metres and 150 metres respectively. At this point the 0.0 m contour was South of the C3-C5 buoyline (initial minimum sounding = 0.6 m BCD).

43. The survey of the spit performed in June showed how the 0.0 m contour had migrated approximately 300 metres west to encircle the C3 buoy. At that time the C3 buoy was drying at low water. The westerly movement of the 0.0 m contour continued towards the end of the year when the C1-C3 buoyline showed a minimum sounding of 0.4 m dry. Further dredging effort at the end of year was directed at this small area to ensure that wet soundings were found along the buoyline. This resulted in improved soundings along the entire C1-C5 buoyline by the end of 2010. The strategy of removing the sediment behind the buoyline to improve critical soundings is one that will be continued into 2011.

iv) Crosby Shoal (C13 to C19 Buoy)

44. Eight surveys were undertaken in 2010. These were supplemented by a number of unpublished dredge support surveys. The number of surveys relative to other areas in the channel reflects the importance of monitoring Crosby Shoal closely, especially the mid-channel area. During 2010 the channel showed a general degradation throughout. In February the central area of the channel showed relatively good depths with a small isolated patch of sub 6.9 m BCD soundings. This reflected the good depths seen in the Queens East channel during the same period. However, the sub 6.9 m BCD soundings expanded north towards Crosby buoy until November when the 6.9 m contour encircled an area 1.8 km long and 300 m wide in the mid channel. Minimum soundings of 6.6 m BCD were recorded.

45. The degradation of depths within the mid-channel area was also reflected in the northwest of the channel. The emergence of a small 'dog-leg' feature defined by the 6.9 m contour encroached slowly from the C13-C15 buoyline to spread throughout the year towards the Crosby buoy. By November the contour had merged with the mid-channel shoal. Subsequently, dredging operations were directed towards reducing soundings in the mid-channel and reducing the small but potentially significant encroachment of the 6.9 m contour from the C13-C15 buoyline at the end of the year.

v) Crosby Channel South

46. One survey was undertaken in the area in 2010. Depths and contours remained stable with the 6.9 m contour remaining visible approximately 100 metres parallel and East of the port buoyline. Minimum soundings in the channel were 7.0 m BCD to the north. In the mid-channel, the 10.0 m contour showed little if any movement.

vi) Brazil Elbow

47. Two surveys were carried out on the Brazil Elbow area during 2010. As with previous years the majority of Brazil Elbow has shown good

stability of depths and contours throughout the year; however, a spit like feature extending 500 metres northeast of C23 buoy showed significant changes during the year. The August survey showed a minimum sounding of 6.5 m BCD across the feature. This had not increased significantly from the 6.6 m BCD seen from the previous survey. It also showed a slow movement northwards and perpendicular to the dominant flow of current.

In addition a small isolated patch of sub 9.0 m BCD soundings to the north of this feature continued to emerge. Depth is degrading in this area and it has been identified for future monitoring.

vii) New Brighton Shoal

48. Seven surveys were conducted over the New Brighton Shoal in 2010. The initial survey revealed that the critical spit feature (found 1.5 km southeast of Brazil Buoy) had shoaled from the previous survey to 6.0 m BCD. This may be connected to the relinquishment of the aggregate dredging licence for the New Brighton Shoal and Brazil Elbow. The shoaling became the subject of monitoring as a potential hazard; however, the final survey for 2010 revealed depths in excess of 6.0 m BCD.

49. The slight shoaling of the main spit feature was mirrored by the encompassing 10.0 m. This was seen to extend in a north westerly direction. The 5.0 m, 2.0 m and 0.0 m contours in the south of the area were relatively stable. The minimum depth seen along the Brazil-Tower buoyline during 2010 was 3.0 m (August). This depth remained for the rest of the year.

viii) Alterations to buoyage

50. Alteration to Buoyage in the Channel during 2010 consisted of permanently changing Formby Lightfloat with a high focal plane safe water mark (NTM 3 2010), the changing of C12 and C22 (NTM 3 2010) boat beacons to Red Can buoys and the permanent change of Brazil Boat beacon to a Green Conical buoy (NTM 3 2010). Q1 Light Float was also changed permanently to a high focal plane North Cardinal mark buoy (NTM 4 2010) during the year.

RIVER MERSEY ABOVE THE ROCK LIGHTHOUSE

51. Regular surveys were carried out upstream of the Rock Lighthouse by the MDHC within a scheduled survey routine. The regularity of these surveys against the planned schedule can be seen in Tables 3a and 3b representing the Liverpool and Wirral sides of the river respectively. Additional surveys were also carried out along the Cammell Laird's wall and Bromborough Wall, both under third party requests. Notable changes from these and other surveys are identified below.

Table 3a. Periodic MDHC survey effort upstream of Rock Lighthouse in 2010 (Liverpool).

Shore	Area	3 Weeks	5 Weeks	6 Weeks	9 Weeks	10 Weeks	12 Weeks	16 Weeks	6 Months	12 Months
LIVERPOOL	Langton River Entrance	•								
	Alfred River Entrance		•							
	Gladstone River Entrance	•								
	Liverpool Landing Stage				•					
	Liverpool Landing Stage (South Approaches)						•			
	Pluckington Bank									•
	Garston Channel Bar									•
	Garston Channel							•		

Table 3b. Periodic MDHC survey effort upstream of Rock Lighthouse in 2010 (Wirral).

WIRRAL	**Monks Ferry to Woodside**									•
	Twelve Quays		•							
	Seacombe Stage									•
	Tranmere Oil Stages			•						
	Approaches to Eastham	•								
	Eastham Channel Bar	•								
	Eastham Channel					•				

i) Pluckington Bank

52. The annual survey of Pluckington Bank revealed some significant change in certain areas, notably in the south toward the entrance to Garston channel. In the area north of Pluckington Buoy, the contours were seen to have remained stable since the corresponding survey in 2009. The 0.0 m contour emerged from behind the Mersey Ferry Pontoon towards Pluckington Buoy. The 2.0 m and 5.0 m BCD contours ran parallel with this at an average spacing of 25 metres and 50 metres respectively. Approximately 1.5 km north of Pluckington Buoy the contours run uniformly east and improving depths in the vicinity.

53. During 2009 the area west of the Brunswick entrance was an area of particular interest with rapidly shifting contours. This trend continued into 2010 with the survey showing the 0.0 m contour west of the entrance to have retreated some 150 metres west towards the entrance. This improved general depths in the area and, in the opinion of MDHC, may be the result of flushing from increased use of the Brunswick entrance lock.

54. Most significant change can be seen to the south of Pluckington Buoy. Here the 2009 survey showed the 2.0 m contour turning south east at G1 buoy and running up the Garston Channel. In 2010 this contour ran across the entrance to the Garston channel and rapidly degraded depths in the area. In 2009 depths in excess of 4.0 m BCD were seen, these were replaced with minimum depths of 1.4 m BCD in 2010 and the G1 buoy could be seen to be surrounded by an area of dry soundings.

55. The 2.0 m, 5.0 m and 10.0 m contours also follow this trend and it is expected that they will have significant effect on the hydrology and bathymetry of the area during the next period. Due to this rapid change the survey programming was amended to include a regular inspection of the area south of Pluckington Buoy. Analysis of what effect the change may have on the rest of the South River is proposed by MDHC.

ii) Garston Channel

56. MDHC undertook six surveys of the Garston Channel and Bar during 2010 with the ABP Garston Port Authority undertaking a further three surveys. When describing the changes in the Garston Channel it is best practice to split the area into two distinct sections; that of an area southeast, and an area northwest of G5 buoy.

57. To the southeast the Garston channel showed good stability of depths with the main critical area being the approaches to the Garston Docks showing a minimum of 1.4 m dry during the period. The drying contour

defining the shape of the navigable channel to the East remained stable throughout 2010.

58. To the northwest significant change occurred throughout 2010. This was seen from the initial survey of the Garston Bar where good depths were recorded at the entrance to the channel. Depths ranged from 1.4 m around G2 buoy to 2.5 m in the mid-channel near G3 buoy. A drying bank was seen to the west of G5 buoy and soundings in the vicinity of the *Nelson* wreck[1] were also within 1.0 m to 2.0 m BCD.

59. In August 2010 the drying bank had migrated approximately 600 metres northwest to show dry soundings in the area of the Nelson wreck. The 2.0 m contour had retreated from the entrance to the channel to a point 400 metres further south. This reduced the soundings over the Bar to a minimum of 0.8 m BCD. Due to the rapid shift of the drying bank another survey was carried out during September to assess the extent of the change. The bank was seen to have progressed further north to encompass an area in the vicinity of G1 buoy. This reduced navigable depths on the buoyline to a minimum of 0.3 m ACD.

60. A survey in November 2010 showed the area to the northwest of G5 buoy to have stabilised and the drying bank to not have progressed any further. Indeed, the bank was seen to have reduced in width from approximately 600 metres in August to approximately 100 metres in November. The 2.0 m contour was also showing signs of progression north along the channel.

61. Additional surveys will be carried out during the early part of 2011 to further analyse the progress of the drying bank in the vicinity of G1 buoy. These will assess how the change in bathymetry of Pluckington Bank at 2.0 m, 5.0 m and 10.0 m depth across the entrance to the Garston channel affects the area in the longer term.

iii) Eastham Channel

62. As in previous years the Eastham Channel showed areas of improvement and degradation along its navigation. From the initial survey of Eastham Bar the shoal area was defined by the 2.0 m BCD contour running southeast from E1 buoy across the entrance to the channel, and north northeast from the South end of the D33 pontoon. Small sand wave features, common in this area, were apparent over the most exposed sections of the Bar creating minimum depths of 0.7 m BCD in the mid channel.

[1] The tugboat *Nelson* was registered in 1966 and operated on the River Mersey until December 1994 when she sank in the Garston Channel.

63. The Bar was seen to migrate 50 metres north during June and then steadily reduce in size during the latter part of the year. By October, the deepening of the Eastham Channel South caused the breakdown of the 2m contour over the Bar. A decrease in size of the Bar occurred during the development of large sand wave features mid channel. These first appeared during the August survey and had consolidated by October to reduce minimum navigable depths to 0.3 m BCD.

64. The Eastham Channel South area saw the largest period of improvement during 2010 with a gradual and sustained deepening throughout. This was seen initially during the February survey where the small area of sub 5.0 m BCD soundings was seen in the vicinity of the E5 buoy. Subsequently, a breakthrough of the bank to the east of the channel created an increased flow and quickly increased these depths in the area. This improvement continued into October where the 5.0 m contour was seen to have spread approximately 600 metres southwards and extending to the E6 buoy.

65. A good example of the rapid change of depths in the Eastham Channel South was observed 300 metres northeast of the E7 buoy. Here, soundings changed from 2.3 m BCD to 7.4 m BCD over the period February to October. In the opinion of MDHC this increased flow could explain the emergence of larger sand waves seen over the Eastham Bar.

66. The deepening of the South Channel may have signalled a degradation of the approaches to Eastham Locks. Here, during the period of improvement to the North, the 2.0 m BCD contour retreated from a position East of the QEII lock to a point 250 metres further North. During the February survey soundings to the approaches of all three locks ranged from 2.3 m BCD to 0.7 m BCD. These were then gradually replaced as the 2.0 m BCD contour retreated throughout the year. By October the QEII entrance was experiencing minimum soundings of up to 0.2m ACD.

67. The rapid change in the bathymetry of the Eastham Channel has been observed historically. In terms of its current management, dredging effort was moved from the Bar to the approaches were relatively large volumes were be removed to enable navigation to continue.

iv) Alteration to Buoyage

68. None.

v) Other Comments

69. The Mersey Ferry Skyline barge was removed from its station at the Pier Head in late 2010. This area will be the subject of future dredging works and the installation of a larger pontoon during early to mid 2011 in order to facilitate the construction of the new Mersey Ferry Landing Stage.

MAINTENANCE DREDGING

i) Mersey Docks and Harbour Company

70. Dredging figures for 2010 relating to maintenance dredging activity on behalf of MDHC are presented in Table A1. Data relating to deposited material are presented in Table A2. Total annual figures for maintenance dredging activity by MDHC in the channel, the river and impounded systems during the period 2005 to 2010 have fluctuated with 1.67, 1.99, 2.24, 1.20, 2.24 and 2.13 x 10^6 tonnes of sediment removed in each year respectively. During this period from 2005 - 2007, the proportion of material dredged from the channel, the river and the impounded systems (docks) remained relatively constant. Approximately 60% of dredged material came from the channel and approximately 30% came from the impounded areas with the remainder being taken from the river.

71. Figure 1 shows a marked change in 2008 with approximately 30% coming from the channel and in excess of 50% coming from the impounded areas. Since that time there has been a steady increase in the proportion of sediment removed from the channel compared to that removed from the other areas. In 2010, almost 75% came from the channel and approximately 21% came from the impounded areas. In 2010, the proportion removed from the river represented just 5% of the total.

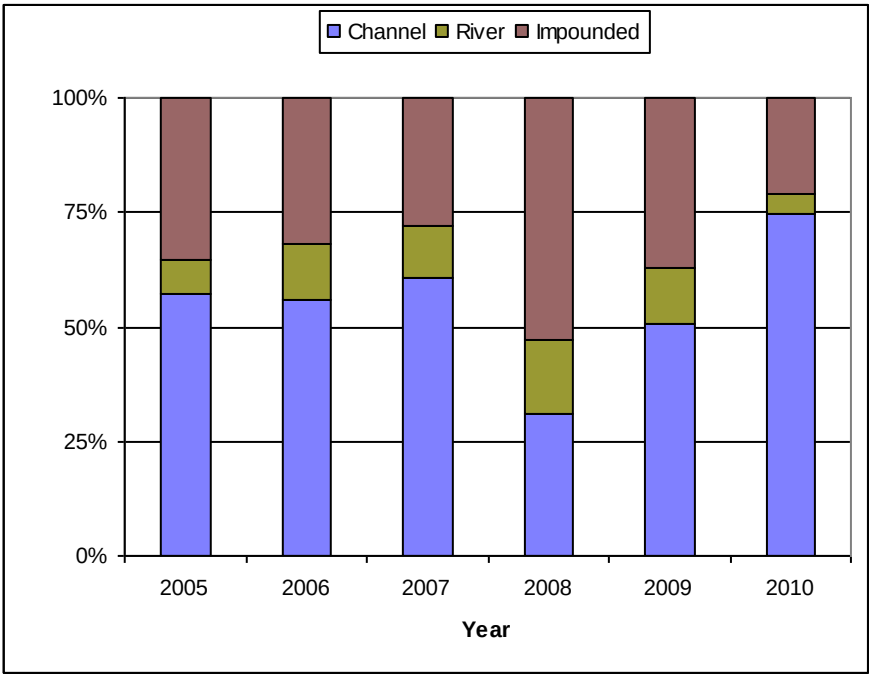

Figure 1. The proportion of material dredged by MDHC during the period 2005 – 2010 by area (refer to Tables A to D for actual tonnages).

72. Dredged arisings deposited at Site Z in Liverpool Bay decreased from 94% in 2005 to 66% in 2008 resulting in more sediment being deposited directly in to the river system. Since then the trend has reversed so that the proportion of spoil being dumped in the river has fallen from 34% in 2008 to 15% in 2010.

73. Figure 2 follows the trend shown in Figure 1. It shows a marked increase in 2008 of the proportion of dredged material dumped in the river; i.e. shadowing the increase in material removed from the impounded systems that year. In 2010 Site 'Z' took 85% of all dredged arisings from the maintenance programme. Deposit Site Y was not used by MDHC during the reporting period and is no longer used as a deposit site (see Appendix B for coordinates). The Middle Deep deposit ground was not used in 2010.

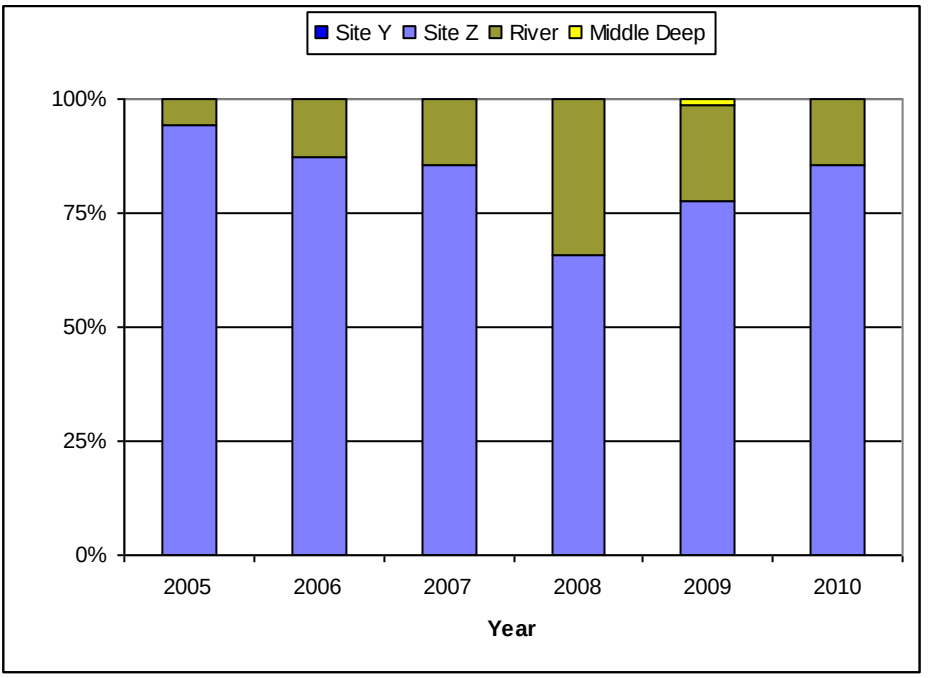

Figure 2. The proportion of dredged material disposed of by MDHC by site during the period 2005 – 2010 (refer to Tables A to D for actual tonnages).

ii) Manchester Ship Canal Company

74. Dredging of the Manchester Ship Canal showed a marked decline over the five year period from 2005 to 2009. 1.93, 1.95, 1.79, 1.13, and 1.30 x 10^6 tonnes were removed form the canal in each year respectively. In 2010, the total amount of dredged material was 0.18 x 10^6 tonnes, a significant decrease by an order of magnitude from the previous year. A detailed breakdown of the amount removed by dredging by month and canal section in 2010 is presented in Table B. Data for 2006 to 2010 are summarised as annual cumulative percentage in Figure 3 which shows a marked year on year reduction in the amount of dredging in the Eastham Channel and Approaches (Sections A1 and A2) to the QEII Dock (Section C) and Eastham Basin (Section D). Sections E (Eastham to Ellesmere Port), H (Ince to Frodsham), and J (Weston Point to Runcorn) were the most dredged sections of the Canal in 2010. Sections above Runcorn were not dredged in 2010.

75. The Manchester Ship Canal continued to investigate methods of reducing its dredging budget during the reporting period. The data indicate that some considerable effort went into reducing the dredging campaign during the year; however, 2010 has been noted for the poor supply of sand to the D33 barge from the Eastham Channel and it is likely that the low level of dredging activity can be attributed to a combination of environmental and economic factors.

76. The limited capacity at the long standing disposal grounds at Woolston and Frodsham continues. Although the total of dredged material 2010 was significantly less than in previous years, Figure 4 shows that Frodsham Ground No.6 took all the dredged material from the Ship Canal in 2010.

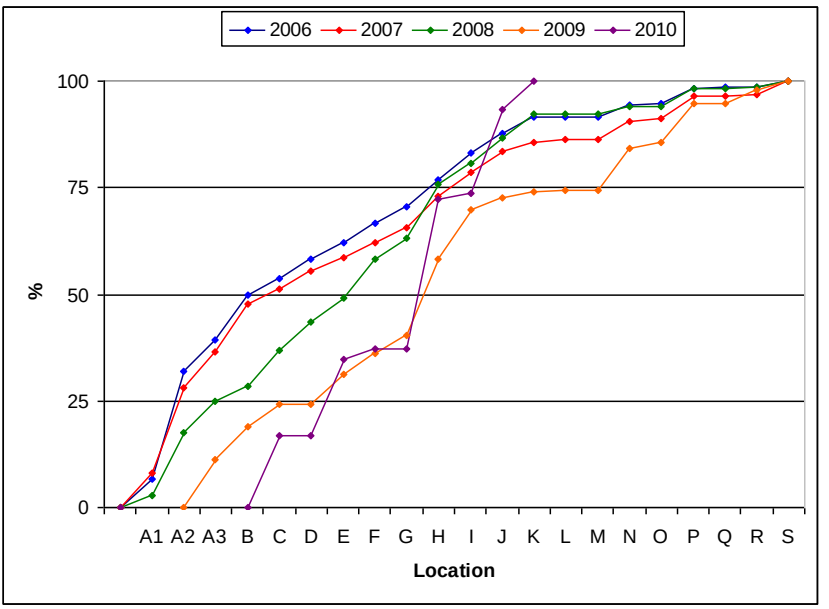

Figure 3. The cumulative percentage of dredged material removed from the length of the Manchester Ship Canal by stage during the period 2006 to 2010.

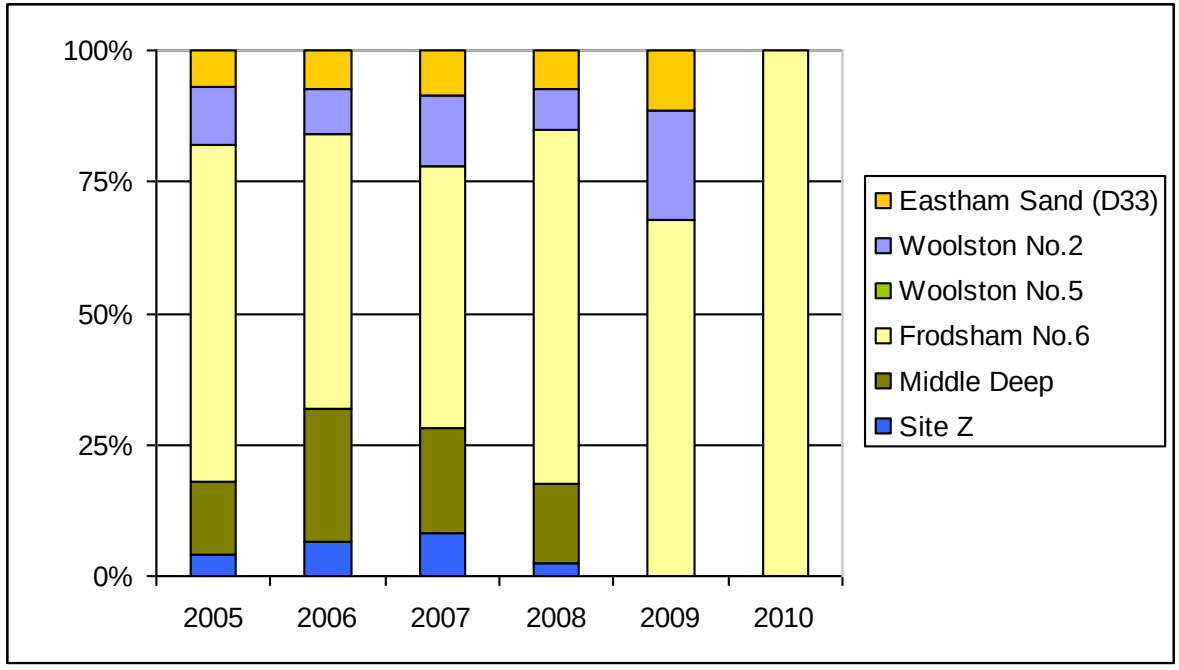

Figure 4. The proportion of dredged material disposed of by MSCC by area during the period 2005 to 2010 (refer to Tables H to K for actual tonnages). Woolston No.5 ground was not used during the 6 year period.

iii) ABP Garston

77. The overall dredging tonnage from ABP Garston shown in Table D decreased from 4.70 x 10^5 tonnes in 2005 to 3.14 x 10^5 tonnes in 2009. There is some evidence in the data to suggest a gradual decrease in the proportion of dredged material taken from the Garston Channel; however, the total dredged in 2010 was 3.39 x 10^5 tonnes, a slight increase on the previous year (Figure 5). The peak of recent dredging activity in the channel occurred in 2005 with 3.76 x 10^5 tonnes removed. This fell to 2.02 x 10^5 tonnes in 2009 and rose again slightly in 2010 to 2.26 x 10^5 tonnes. Correspondingly, the proportion removed from Stalbridge Dock expressed as a percentage of the total has increased year on year from 18% in 2005 to 36% in 2009. The changes seen in 2010 reflect an increase of 2.44 x 10^4 tonnes (11%) in the weight of sediment removed from the channel over the previous year.

78. Disposal of all dredged arisings from the Garston Channel and Stalbridge Dock between 2005 and 2010 took place at Garston Rocks.

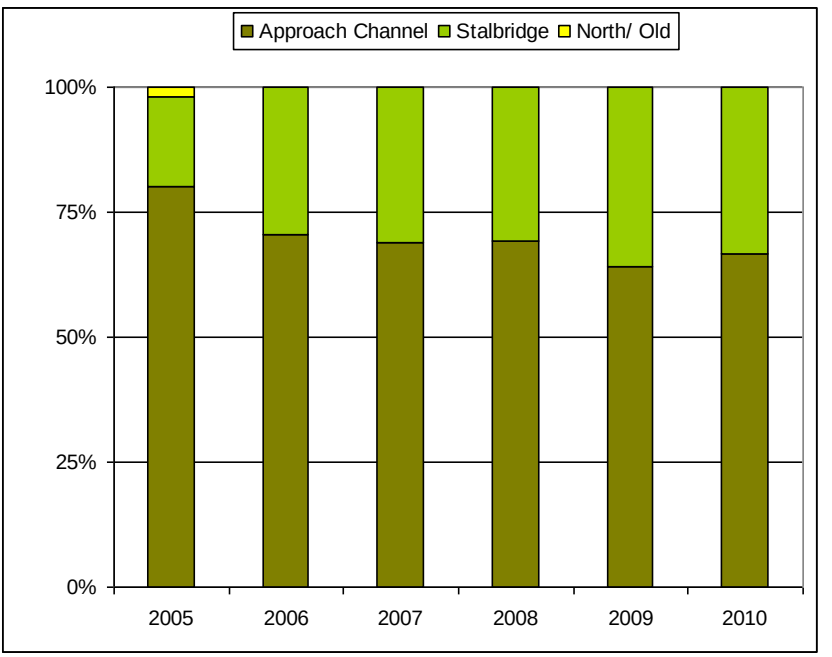

Figure 5. The proportion of material dredged by ABP Garston during the period 2005 – 2010 from the approach channel, Stalbridge Dock, and North/ Old Dock (refer to Table D for actual tonnages).

GENERAL MATTERS

79. The following maintenance works were carried out within the impounded systems of the docks at Liverpool, Wallasey and the Manchester Ship Canal. These were not new capital works and did not alter the footprint of existing installations within navigable waters. Formal consent was not therefore necessary as, if required, this would have been obtained at the time of the original applications.

i) Maintenance works – MDHC

80. The following maintenance works were undertaken on by MDHC in 2010 at the following impounding stations and river entrances:

- **Canada Impounding Station** – Major overhauls on gearboxes and back to standard installation also installed a refurbished motor to now give four pumps at station.
- **Seaforth Impounding Station** – Minor maintenance works and introduction of condition based monitoring.
- **Wallasey Impounding Station** – Minor maintenance works
- **Langton River Entrance** – Full commissioning of new outer caisson[2] completed and all snags rectified, condition appraisals on all hydraulics completed, repair works after vessel impact to inner caisson undertaken.
- **Gladstone River Entrance** – Refurbishment of one middle gate completed and works started on second gate, gates to be installed 2011, 1off paddle refurbishment, ram pit stabilization works started.
- **Alfred River Entrance** - Minor maintenance works and condition appraisal of gates undertaken.

81. In addition to the above MDHC implemented a new maintenance programme for the in river navigation aids.

[2] The Langton Caisson had been in dry dock for a number of years as the refurbishment work had to address changes in regulations which took quite some time to design and plan (this did not impact on the operation of the lock). The installation and commissioning of the caisson was planned during a two week closure of the lock and this was successfully completed within the published closure period.

ii) Maintenance works - MSCC

82. The following maintenance works were undertaken on the Manchester Ship Canal by MSCC in 2010:

- **Weaver Sluice gate No. 3.** A new counter balance was lowered into position and the new sluice gate was installed. All the associated electrics restored along the gantry and the gate was commissioned and put back into service.
- **Weaver Sluice gate No. 9.** The No.9 sluice gate taken out of service and a major overhaul of the gearbox and associated machinery was carried out. A structural examination of the gate was carried out before the gate was put back into service.
- **Weaver Sluice access platform.** Structural repairs to the walkway and crane track system. Structural repairs to the abutments and supports to the rail track system that supports the semi Goliath crane (crane for lifting emergency Dams into position). Work to make access walk way safe is carried over into 2011.
- **Woolston Deposit Grounds**. Raising the walls on the operational area of No. 2 Deposit Grounds to prolong the usable life span of the area to increase the free board to above 1 m. The height of the outer bank along the River Mersey was reduced to lower the head weight on the toe of the embankment and give the bank greater stability. All works were conducted under the advice and supervision of Ramboll Consultancy.

AGGREGATE DREDGING

i) Crown Estate

83. Two features in the Mersey Narrows; the New Brighton Shoal and the Brazil Elbow (Brazil Bank) were licensed for aggregate dredging until 2010 and are shown in Figure C. The licences were relinquished in 2010 and as required by the licence conditions, a report on the condition of the seabed was made available by the licencees in June.

84. The assessment of the condition of the sea bed in marine aggregate extraction Areas 175/1 and 175/2 (Norwest Sand & Ballast Co. Ltd.), 193/1 and 193/2 (Cemex UK Marine Ltd) and 195/1 and 195/2 (Tarmac Marine Dredging Ltd) was made in the form of a report to the Crown Estate. A summary of the report[3] is given below. Changes in the cumulative dredged

[3] Tarmac Marine Dredging Ltd / Norwest Sand and Ballast Co. Ltd / Cemex UK Marine Ltd (2010). Licence relinquishment. Seabed Condition Statement for Aggregate Dredging Licences 175/1&2, 193/1&2 and 195/1&2 Brazil Elbow and New Brighton Shoal in the River Mersey Estuary, 5pp. Report to Crown Estate.

volume (m^3) between 1992 and 2009 at both sites are presented in Table E. Tonnages are not presented in the report.

85. Annual bathymetric surveys were carried out since 1992 to assess the sea bed changes in and around the licence areas 175/193/195 located in the River Mersey. As part of the monitoring process, any changes in the seabed levels and volumes of sand within the licence areas were calculated against the 1992 baseline and presented in comparison to the volumes extracted through dredging.

86. Since the start of monitoring a total of 8.18×10^5 m^3 was dredged from area 193/2, 175/2, 195/2 known as New Brighton Shoal. Over the operational period dredging took place against a net influx of sand into the area. Between 1992 and 2009 the area gained 4.69×10^4 m^3 in sand. The bathymetric difference between 1992 and 2009 is that parts of the southern half of the site have shoaled by up to +1.4 m and deepened in the far north of the area by up to -1.2 m. The rest of the licence area remained relatively stable.

87. In comparison, the Area 193/1, 175/1, 195/1 Brazil Elbow licence has experienced little aggregate dredging since 1992 with only 3.68×10^3 m^3 being removed in total. The site was not dredged from 1995. The monitoring results showed this area to be naturally accreting with sand; however, Figure 6 shows considerable inter-annual variation compared to the New Brighton Shoal which was the subject of significantly more dredging activity. Between 1992 and 2009 the Brazil Elbow gained a total of 2.16×10^5 m^3 although annual losses of up to 1.69×10^5 m^3 occurred in some years (e.g. 1994 to 1995) together with annual gains of similar magnitude by 1997. The precise cause of this fluctuation was not investigated in the licencees 2010 report.

88. The central section of the Brazil Elbow licenced area experienced accretion of up to +2.0 m while, with the exception of the extreme southern licence boundary where depths have increased by -2.0 m, generally in the south of the licence area there was little change. In the north the seabed experienced isolated patches of both deepening (up to -1.6 m) and shoaling (up to +1.0 m).

89. Within the New Brighton Shoal licence area the majority of dredging activity took place in its southern half. This correlates to the region of highest accretion of sand. The Brazil Elbow licence area was dredged to a far lesser extent, with a small amount being extracted primarily from the northwest corner and eastern side of the licence. The last dredging activity by the licence holders took place on the New Brighton Shoal on 13th October 2009.

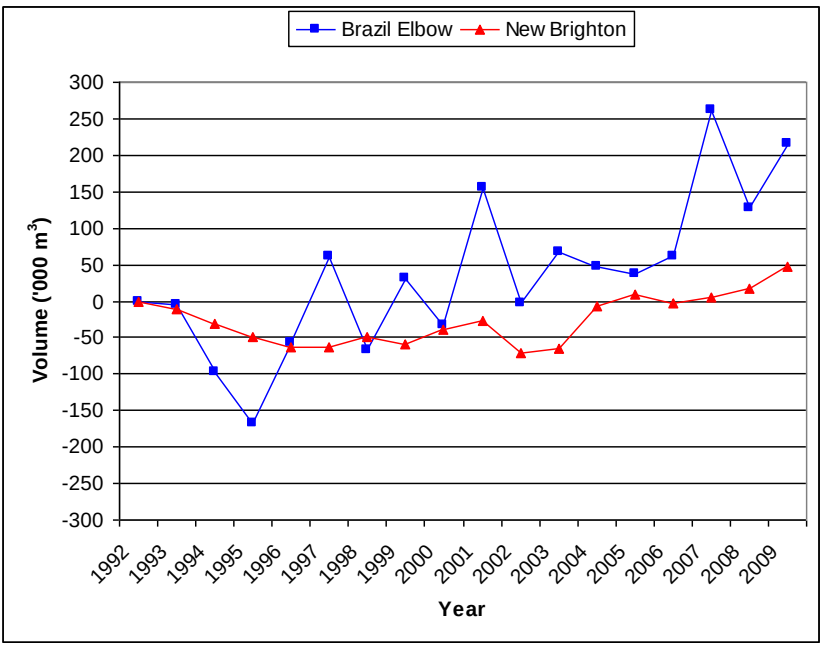

Figure 6. The net annual change in volume of aggregate resource on the New Brighton Shoal and Brazil Elbow licenced areas between 1992 – 2009.

90. Areas 392 and 393 (known collectively as Hilbre Swash) located off the north Wirral coast across the southern port boundary limit and the national border between England and Wales were the subject of increased interest in 2009. The area is currently subject to a renewal application under Welsh Assembly Government legislation and the English part of the site will be surrendered in due course. During 2010 2.82×10^5 tonnes were extracted from the site, a marked increase on the 2.04×10^5 tonnes removed in 2009.

ii) Eastham Sand

91. The amount of sand removed from the Eastham Channel and Eastham Sands from 2005 to 2010 is given in Tables A to C. In summary, the quantity of sand won for resale by Eastham Sand formed only a small component (on average approximately 8%) of the annual maintenance dredging figures for the Manchester Ship Canal from 2005 to 2010. The total in 2010 was 3.95×10^4 tonnes, the lowest annual figure during the 2005 – 2010 period. A maximum of 1.54×10^5 tonnes was recorded in 2007.

SUMMARY OF ACCIDENTS AND INCIDENTS 2010

92. No incidents involving loss of life or loss of vessels in the river occurred in 2010 although the MCA reported sighting of a man in the water/ mud at North Tranmere on 9th January. The person was recovered safely.

93. Inspection of the incident logs for the Port of Liverpool and the Manchester Ship Canal showed a number of minor incidents, the most significant of which are described below. Port of Liverpool recorded 126 incidents in 2010. The Manchester Ship Canal recorded seventeen.

94. On 1st February the C22 buoy was reported adrift in the river. It was picked up by *MV Aestus* in the vicinity of G4 buoy and returned to the Marine Base at Langton. C22 was replaced with a new buoy in March. The fog signal was moved ashore.

95. On 30th May the dredger *WD Mersey* picked up unexploded ordnance in the vicinity of C2 and C4 buoys during dredging operations. The vessel was advised by the MCA to proceed to the Bar anchorage where the ordnance was made safe by the relevant authority.

96. On 11th December an oil spill occurred within the impounded system at Liverpool after the bulk carrier *MV Allison* was in collision with Langton/ Alex passage bridge. A one metre gash occurred in her hull and approximately 280 tonnes of heavy fuel oil was released into dock. This triggered a major clean up operation and an investigation by MAIB and MDHC. A report is due in 2011.

97. On 29th April 2010, *MV Stolt Pelican* whilst shifting between berths on the Ship Canal with the use of a canal tug towing from the stern took a sheer impact and her stern grounded on the estuary side of the canal upstream of Gowy Syphon sustaining damage to her rudder and steering gear.

98. On 8th June 2010 *MV Stolt Kite* had a near miss with *MV Calemax Enterprise* whilst outward bound leaving Manisty on the Ship Canal. *MV Calemax Enterprise* was inward bound. There was possible damage to *MV Calemax Enterprise* starboard azipod and she reportedly touched bottom as *MV Stolt Kite* passed. An inquiry report is due.

99. On 10th October 2010 *MV Niyazi-S* bound for Sheer Legs berth, was approaching Stanlow swinging basin on the Ship Canal. Her helm stuck hard a starboard and struck *MV Stolt Kestrel* who was loading chemicals on Shell Chemical Berth. The collision resulted in damage to both vessels but no pollution or loss of chemicals was reported. An inquiry was held on 2nd November and a report is due.

METEOROLOGICAL DATA 2005 - 2010

100. Information of wind velocities, rain fall and dry periods was obtained from the online database of the Proudman Oceanographic Laboratory (POL). The recording station is based on Hilbre off the north Wirral coast.

101. The recording station at Gladstone Dock is currently damaged and will not be replaced due to problems of access to the location. A selected summary of data for the period 2005 – 2010 is provided in Table 4. Snow data were not available.

102. The consecutive increase in the number of days that wind velocity exceeded 38 mph (Gale force 8 on the Beaufort scale) each year from 2005 (37 days) to 2008 (54 days) fell to 34 days in 2009 and 14 in 2010.

103. The increase from 2005 to 2008 in the number of days per year when wind speed exceeded 38 mph coincides with a general decrease in the number of dry periods of 5 days or more with less than 0.2 mm precipitation. The increase in dry periods from 2008 to 2010 coincides with a decrease in the number of days per year when wind speed exceeded 38 mph over the same period.

104. In 2010 the number of dry periods increased slightly over the previous year to 14 from 11. The number of days with wind speeds in excess of 38 mph (14) was the lowest recorded during the 6 year period. Wind speed in excess of 54 mph occurred on two days in 2010.

Table 4. Summary of Meteorological data (Hilbre) 2005 – 2010. (Source: POL)

Year	# Days wind > 54 mph	# Days wind > 38 mph	Rain > 12.7 mm/day	Max rain/day (mm)	Max rain/day Day number	# Dry periods >5 days
2010	2	14	4	27.8	201	14
2009	0	34	5*	19.2*	198*	11
2008	2	54	3	30.6	178	9
2007	5	48	4	35.3	176	14
2006	2	40	0	10.9	140	12
2005	1	37	3	18.8	297	22

*On day numbers 335 and 337 in 2009, rainfall readings of 3138.7 mm and 214.0 mm respectively were recorded. These are assumed to be erroneous and have been omitted from the analysis.

NOTICES TO MARINERS 2010

i) 2010 – MDHC Notices to Mariners

- No.1 Previous notices still in force
- No.2 Drilling Rig ENSCO 92
- No.3 River Mersey – Changes to Boat Beacons
- No.4 River Mersey – Changes to Q1
- No.5 Pier Head Skyline Barge seabed core drilling
- No.6 Event permit consultation
- No.7 Compulsory pilotage
- No.8 Burbo Bank windfarm
- No.8a Amended Burbo Bank windfarm
- No.9 Burbo Bank Windfarm
- No.10 Pilotage Directions 2008
- No.11 COLREGS rule 9
- No.12 Inland Waterways
- No.13 Diving Operations
- No.14 Pilotage Directions Consultation
- No.15 Ship Survey Guidelines

ii) 2010 – MSCC Notices to Mariners

- No.1 Notices to Mariners
- No.2 Ropes used by vessels on passage through the Ship Canal and Queen Elizabeth II Locks
- No.3 Maximum draughts of vessels in the Manchester Ship Canal
- No.4 Use of the Upper Reach by pleasure craft
- No.5 Barton Road Swingbridge
- No.6 Emergency warning beacons Runcorn Layby berth
- No.7 Lowry Footbridge
- No.8 Changes to booking forms for the Manchester Ship Canal
- No.9 Port Operations – VHF communications
- No.10 Reduction in air draught beneath Runcorn/ Widnes road bridge
- No.11 Movement of vessels in restricted visibility
- No.12 Event Permit
- No.13 Eastham Port Control
- No.14 Inland Waterways' skippers and operators
- No.15 Vessels docking in QEII lock

ACKNOWLEDGEMENTS

105. Several individuals representing their respective Companies or organisations have contributed to this report through the provision of data, the interpretation of analysis by written reports, or the facilitation of access to information. Where applicable, their contributions have been acknowledged within the report. Without their interest and enthusiasm for the work of the Conservancy, this report would not have been possible and I am indebted to them all. Of particular note to whom my specific gratitude is due are Captain Steve Gallimore (Harbour Master, MDHC), Captain Bruce Wilmott (Dock Master, ABP Garston), Mr Russell Bird (Senior Hydrographer, MDHC), Mr Wal Hailoo (Surveyor, MDHC), Mrs Marilyn Wagstaff (Chart and GIS Technician, MDHC), Miss Jayne Johnson (Marine Admin Controller, MDHC), Captain Alan Feast (Deputy Harbour Master, MSCC), Mr Derek Hendry (Group Capital Director, Peel Ports), Mr Simon Luckett (Tarmac Marine Dredging), Dr Andrew Bellamy (Resources Manager, Tarmac Marine Dredging), Mr John Bingham (Minerals Agent to the Crown Estate) and Mr Eddie Tennant (Minerals Agent to the Duchy o Lancaster).

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Mersey Conservancy
c/o The Maritime Centre
Port of Liverpool
Liverpool
L21 1LA.

May 2011.

Dr M.C.Bailey, BSc., PhD.
Acting Conservator of the River Mersey.

APPENDIX A

ACTING CONSERVATORS OF THE RIVER MERSEY

Captain Robert Fitzroy (later Admiral)	1842-1843
Captain George Evans (later Admiral)	1843-1877
Vice Admiral T.A.B. Spratt[4]	1879-1888
Admiral Sir George H. Richards	1888-1896
Vice Admiral Sir George S. Nares	1896-1910
Admiral Sir A. Mostyn Field	1910-1930
Admiral Sir Frederick C. Learmouth	1930-1933
Vice Admiral Sir H. Percy Douglas	1933-1939
T. Shirley Hawkins	1940-1944
Commander D. A. Henderson	1944-1945
Admiral Sir John A. Edgell	1945-1951
Captain E. F. B. Law	1951-1961
Vice Admiral Sir Archibald Day	1961-1970
Rear Admiral K. St. B. Collins	1970-1975
Rear Admiral Sir Edmund Irving	1975-1985
Rear Admiral Sir David Haslam[5]	1985-1987
Mary P. Kendrick MBE	1988-1998
Fraser Clift	1998-2008
Dr Martin C. Bailey	2008-

Annual reports have been published almost continuously from 1842 (this report and the second incorrectly dated as 1843 and 1844 respectively). There were no reports in 1886 and 1887 due to the protracted illness of Vice Admiral T. A. B Spratt; from 1939 to 1948 inclusive due to World War II; and from 2005 to 2007 inclusive due to an absence of funding.

[4] Due to the prolonged illness of the Acting Conservator Vice Admiral T.A.B. Spratt, the Clerk, John A. Spurner signed the report for 1887 and 1888.

[5] Rear Admiral Sir David Haslam resigned to take up the post of Secretary to the International Hydrographic Office in Monaco, and the Liverpool Officer, Lt Cdr David Knight, acted as Acting Conservator and signed the 1987 report.

APPENDIX B

WORKS SANCTIONED AND DEVELOPMENTS APPROVED IN 2010

1. Merseytravel new ferry landing stage at the Pierhead. Approved.
2. United Utilities boreholes Sandon half tide entrance. Approved.
3. United Utilities Whittle Brook outfall. Consent pending.

APPENDIX C

ABBREVIATIONS

ACRM	Acting Conservator of the River Mersey
ABP	Associated British Ports
AOD	Above Ordnance Datum
ACD	Above Chart Datum
BCD	Below Chart Datum
CD	Chart Datum
COLREGS	International Regulations for Avoiding Collisions at Sea
DfT	Department for Transport
EA	Environment Agency
GRT	Gross Registered Tonnes
HBC	Halton Borough Council
HR	Hydraulics Research Limited
HRO	Harbour Revision Order
IPC	Infrastructure Planning Commission
Lo-Lo	Load on - Load off
LIDAR	Light Detection and Ranging
MAIB	Marine Accident Investigation Branch
MCA	Maritime and Coastguard Agency
MDHC	Mersey Docks and Harbour Company
MEAS	Merseyside Environmental Advisory Service
MMO	Marine Management Organisation
MPTE	Merseyside Public Transport Executive
MSCC	Manchester Ship Canal Company
MSS	Mersey Sand Suppliers
NE/ EN	Natural England/ English Nature
NSB	Norwest Sand and Ballast Company
NtM	Notice to Mariners
PLA	Port of London Authority
POL	Proudman Oceanographic Laboratory, Liverpool
PtOL	Port of Liverpool
Ro-Ro	Roll on – Roll off
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TMD	Tarmac Marine Dredging
UKD	United Kingdom Dredging
UMD	United Marine Dredging
VTS	Vessel Traffic Services
WD	Westminster Dredging.

Table A1. MDHC Dredging Tonnages 2010 (Channel)

Area	Location	WD Severn	WD Medway	WD Mersey	WD Crestway	WD Shoalway	UKD Sospan Dau	UKD Dolphin	UKD Bluefin
Channel	Queens Channel West	0	0	0	0	0	0	0	0
	Queens Channel East	200281	275396	0	0	525536	0	114339	75975
	Askew Spit	0	41068	0	0	114041	0	12088	0
	Crosby Shoal	0	0	0	0	0	0	0	0
	Crosby Channel South	0	0	0	0	0	0	0	0
	Brazil Elbow	0	0	0	0	0	0	0	0
	New Brighton Shoal	0	10232	0	0	0	0	0	0
	Sub-total Channel	**200281**	**326696**	**0**	**0**	**639577**	**0**	**126427**	**75975**

Table A1 cont. MDHC Dredging Tonnages 2010 (River & combined total)

Area	Location	WD Severn	WD Medway	WD Mersey	WD Crestway	WD Shoalway	UKD Sospan Dau	UKD Dolphin	UKD Bluefin
River	Gladstone River Entrance	9691	0	0	0	0	0	0	24633
	Langton River Entrance	11489	39754	0	0	0	0	0	39768
	Alfred River Entrance	2485	12908	0	0	0	0	0	3311
	12 Quays Ro Ro Berth	0	0	0	0	0	0	0	0
	Wallasey Pump Station	0	0	0	0	0	0	0	0
	Liverpool Landing Stages	0	0	0	0	0	0	0	0
	Canning River Entrance	0	0	0	0	0	0	0	0
	Tranmere Oil Stages	0	0	0	0	0	0	0	0
	Cammell Laird's	0	0	0	0	0	0	0	0
	Eastham Channel	0	0	0	0	0	0	0	0
	Bromborough Bar	0	0	4088	0	0	0	0	0
	Garston Channel and Bar	0	0	0	0	0	0	0	0
	Sub-total River	**23665**	**52662**	**4088**	**0**	**0**	**0**	**0**	**67712**
	Total impounded systems	0	51600	105043	0	155968	0	47331	250544
	Total Estuary	223946	379358	4088	0	639577	0	126427	143687
	Total	**223946**	**430958**	**109131**	**0**	**795545**	**0**	**173758**	**394231**

Grand Total Dredged **2127569** **tonnes**

Table A2. MDHC Dredging Tonnages Deposited 2010

Area	Location	Deposit Site		
		Site Z	River	Middle Deep
Channel	Queens Channel West	0	0	0
	Queens Channel East	1191527	0	0
	Askew Spit	167197	0	0
	Crosby Shoal	0	0	0
	Crosby Channel South	0	0	0
	Brazil Elbow	0	0	0
	New Brighton Shoal	10232	0	0
	Sub-total Channel	**1368956**	**0**	**0**
River	Gladstone River Entrance	9691	24633	0
	Langton River Entrance	32442	58569	0
	Alfred River Entrance	18704	0	0
	12 Quays Ro Ro Berth	0	0	0
	Wallasey Pump Station	0	0	0
	Liverpool Landing Stages	0	0	0
	Canning River Entrance	0	0	0
	Tranmere Oil Stages	0	0	0
	Cammell Laird's	0	0	0
	Eastham Channel	0	0	0
	Bromborough Bar	1466	2622	0
	Garston Channel and Bar	0	0	0
	Sub-total River	**62303**	**85824**	**0**
	Total impounded systems	385494	224992	0
	Total Estuary	1431259	85824	0
	Total	**1816753**	**310816**	**0**

Grand Total Deposited **2127569** **tonnes**

Table B. Manchester Ship Canal. Annual dredging figures by month and location 2010.

SECTION	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTAL
A1	0	0	0	0	0	0	0	0	0	0	0	0	
A2	0	0	0	0	0	0	0	0	0	0	0	0	
A3	0	0	0	0	0	0	0	0	0	0	0	0	
B	0	0	0	0	0	0	0	0	0	0	0	0	
C	0	0	12982	17687	0	0	0	0	0	0	0	0	**30669**
D	0	0	0	0	0	0	0	0	0	0	0	0	
E	0	0	28386	0	4182	0	0	0	0	0	0	0	**32568**
F	0	0	2999	0	1505	0	0	0	0	0	0	0	**4503**
G	0	0	0	0	0	0	0	0	0	0	0	0	
H	0	0	33444	30630	0	0	0	0	0	0	0	0	**64074**
I	0	0	0	0	2889	0	0	0	0	0	0	0	**2889**
J	0	0	35340	0	0	0	0	0	0	0	0	0	**35340**
K	0	0	11151	0	1307	0	0	0	0	0	0	0	**12458**
L	0	0	0	0	0	0	0	0	0	0	0	0	
M	0	0	0	0	0	0	0	0	0	0	0	0	
N	0	0	0	0	0	0	0	0	0	0	0	0	
O	0	0	0	0	0	0	0	0	0	0	0	0	
P	0	0	0	0	0	0	0	0	0	0	0	0	
Q	0	0	0	0	0	0	0	0	0	0	0	0	
R	0	0	0	0	0	0	0	0	0	0	0	0	
S	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	**124302**	**48317**	**9882**	0	0	0	0	0	0	0	**182501**

Manchester Ship Canal. Key to Table B. Dredged Sections 2006 - 2010

A1	Eastham Channel North (Site Z)
A2	Eastham Channel Centre (Middle Deep)
A3	Eastham Channel South (Eastham Sand)
B	Approaches
C	QE II Dock & Lock
D	Eastham Basin Sect 10 - 35 (Inc. Lock)
E	Eastham to Ellesmere Port Sect 35 - 145
F	Ellesmere Port Sect 145 - 209
G	Stanlow to Ince (Inc. Oil Docks) Sect 209 - 285
H	Ince to Frodsham Sect 285 - 505
I	Weaver Bend (Inc. Turning Basin) Sect 505 - 535
J	Weston Point to RLB Sect 535 - 610
K	RLB Sect 610 to Old Quay SB (Inc. Runcorn Docks)
L	Old Quay SB to Moore Lane SB
M	Moore Lane SB to Latchford Locks
N	Latchford Locks to Rixton Junction Sect 1245 (Inc. Latchford Locks)
O	Rixton Junction to Cadishead viaduct Sect 1245 - 1400
P	Cadishead viaduct Sect 1400 to Irlam Locks
Q	Irlam Locks to Barton Locks (Inc. Irlam Locks)
R	Barton Locks to Mode Wheel Locks (Inc. Barton Locks)
S	Mode Wheel Locks to Trafford Road Bridge (Inc. Mode Wheel Locks).

Table C. Manchester Ship Canal. Annual disposal tonnes by month and location 2010.

Ground	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTAL
1	0	0	0	0	0	0	0	0	0	0	0	0	**0**
2	0	0	0	0	0	0	0	0	0	0	0	0	**0**
3	0	0	124302	48317	9882	0	0	0	0	0	0	0	**182501**
4	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5	0	0	0	0	0	0	0	0	0	0	0	0	**0**
6	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**0**	**0**	**124302**	**48317**	**9882**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**182501**

Manchester Ship Canal. Key to Deposit Grounds 2010

1 Site Z
2 Middle Deep
3 Frodsham No.6
4 Woolston No.5
5 Woolston No.2
6 Eastham Sand D33

Table D. Annual dredging and disposal tonnes for ABP Garston 2005 – 2010.

Year	Dredging			Disposal	
	Approach Channel	Stalbridge	North/ Old Dock	Garston Rocks	Site Z
2005	376363	84674	8869	461037	8869
2006	298473	124337	0	422810	0
2007	272891	122481	0	395372	0
2008	213656	94833	0	308489	0
2009	201858	112289	0	314147	0
2010	226224	112406	0	338630	0

Table E. The total of marine aggregates (m^3) extracted by area for the period 1992 – 2009 for licensed areas 175, 193 and 195 on the Brazil Elbow and the New Brighton Shoal.

Brazil Elbow				
Year	**Gain**	**Loss**	**Net**	**Cumulative dredged volume m^3**
1992-1993	56149	60984	-4835	0
1992-1994	28854	125737	-96883	1809
1992-1995	25110	193630	-168519	3675
1992-1996	84509	141095	-58586	3675
1992-1997	159550	99112	60437	3675
1992-1998	123296	189841	-66544	3675
1992-1999	164039	133907	30131	3675
1992-2000	140000	174000	-34000	3675
1992-2001	239000	83000	156000	3675
1992-2002	151200	154200	-2900	3675
1992-2003	187700	120800	66900	3675
1992-2004	181000	134000	47000	3675
1992-2005	179200	142100	37100	3675
1992-2006	193000	130800	62200	3675
1992-2007	315400	54400	261000	3675
1992-2008	231100	102800	128000	3675
1992-2009	295100	79600	215500	3675

Source: Tarmac Marine Dredging Ltd / Norwest Sand and Ballast Co. Ltd / Cemex UK Marine Ltd (2010).

Table E continued

New Brighton Shoal				
Year	**Gain**	**Loss**	**Net**	**Cumulative dredged volume m^3**
1992-1993	15790	26966	-11176	63527
1992-1994	21412	52263	-30851	112496
1992-1995	18907	67452	-48544	140910
1992-1996	10340	73556	-63216	189622
1992-1997	10417	73188	-62771	255065
1992-1998	21474	70584	-49109	305819
1992-1999	12660	71384	-58724	355121
1992-2000	24000	63000	-39000	406619
1992-2001	41000	68000	-27000	466479
1992-2002	22200	92700	-70500	499279
1992-2003	18500	83000	-64000	530479
1992-2004	33000	41000	-8000	560079
1992-2005	46700	36800	9900	611577
1992-2006	38500	42300	-3800	663075
1992-2007	47600	41740	5860	714573
1992-2008	48800	31700	17100	766071
1992-2009	73700	26800	46900	817569

Source: Tarmac Marine Dredging Ltd / Norwest Sand and Ballast Co. Ltd / Cemex UK Marine Ltd (2010).

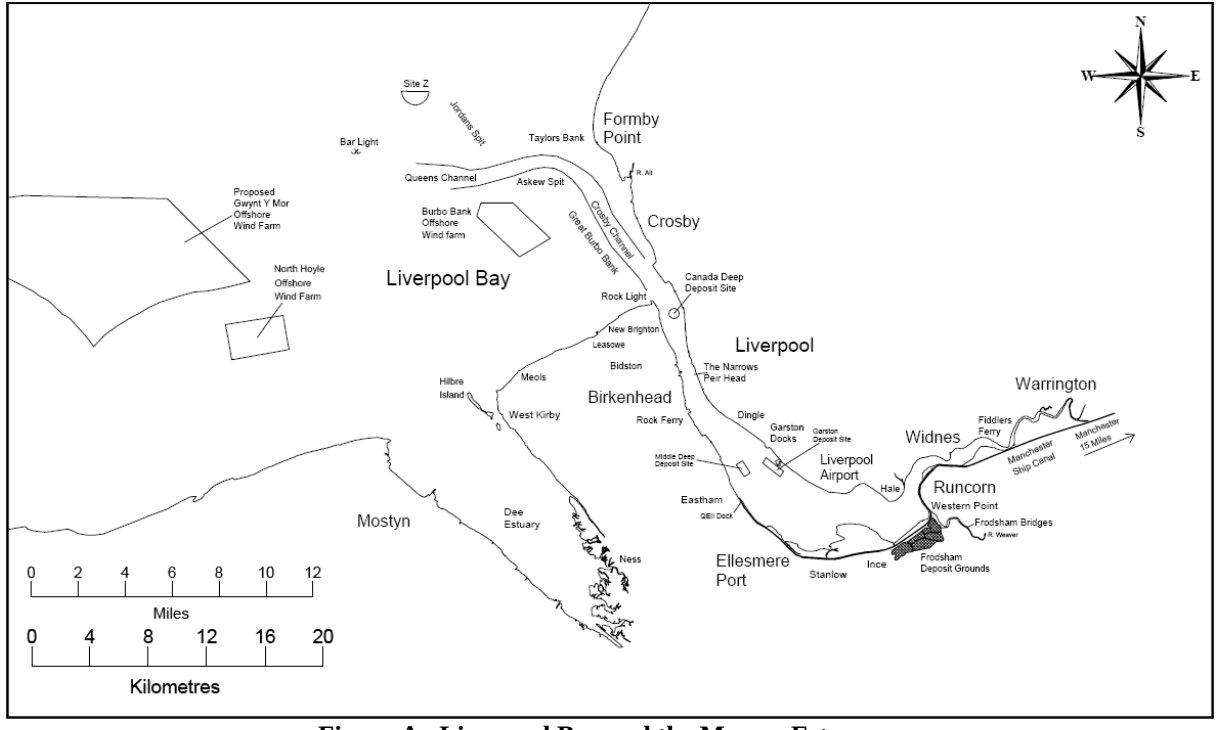

Figure A. Liverpool Bay and the Mersey Estuary.

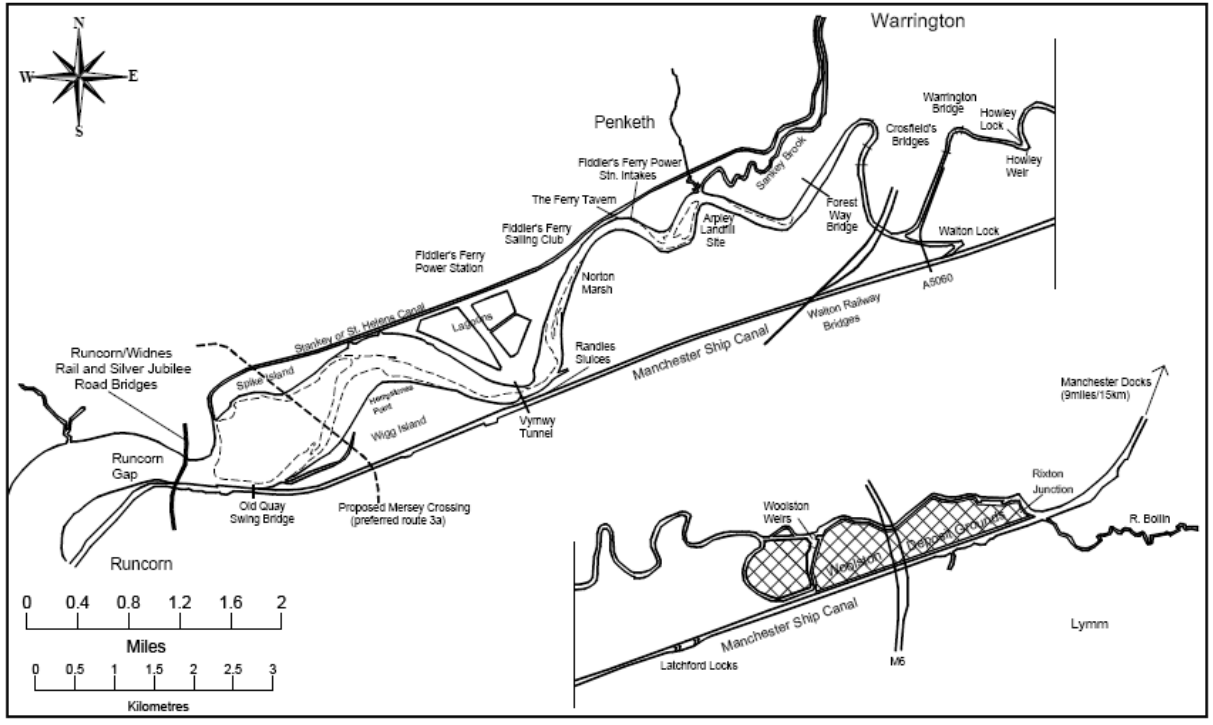

Figure B. Manchester Ship Canal and River Mersey (Runcorn/ Widnes to Rixton Junction).

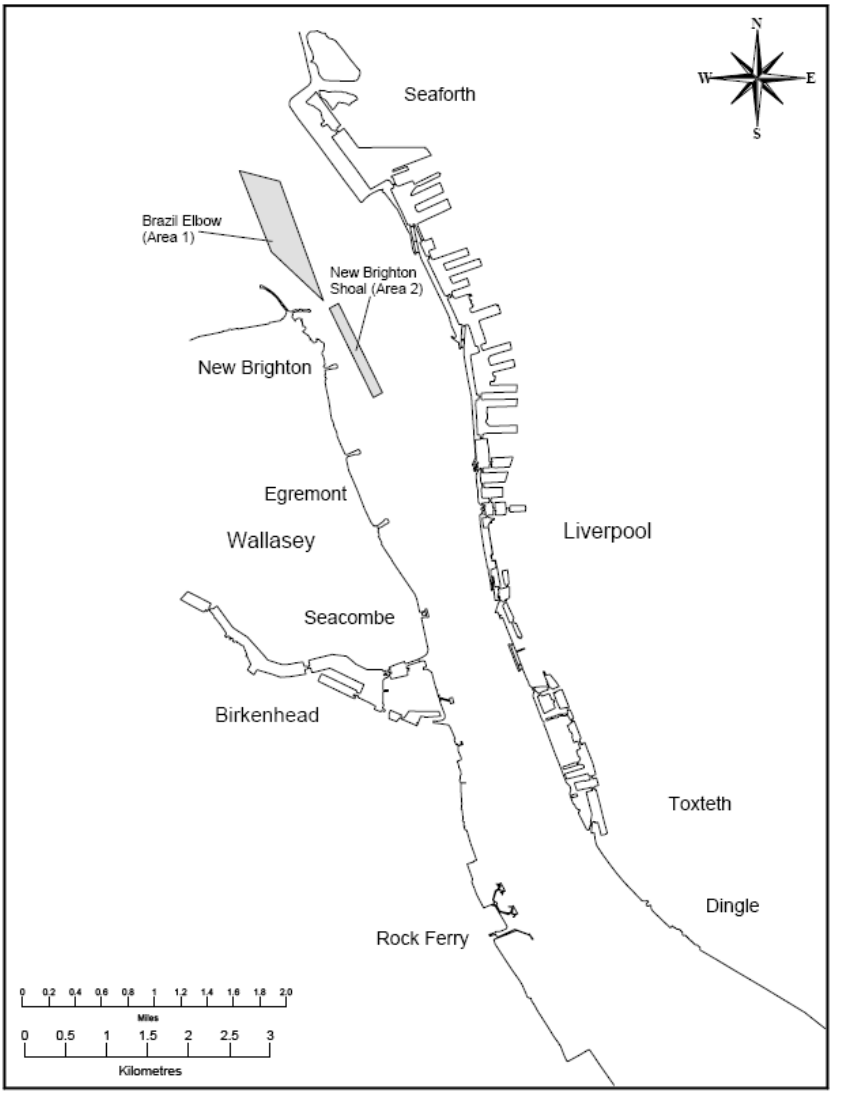

Figure C. Relinquished commercial dredging sites.

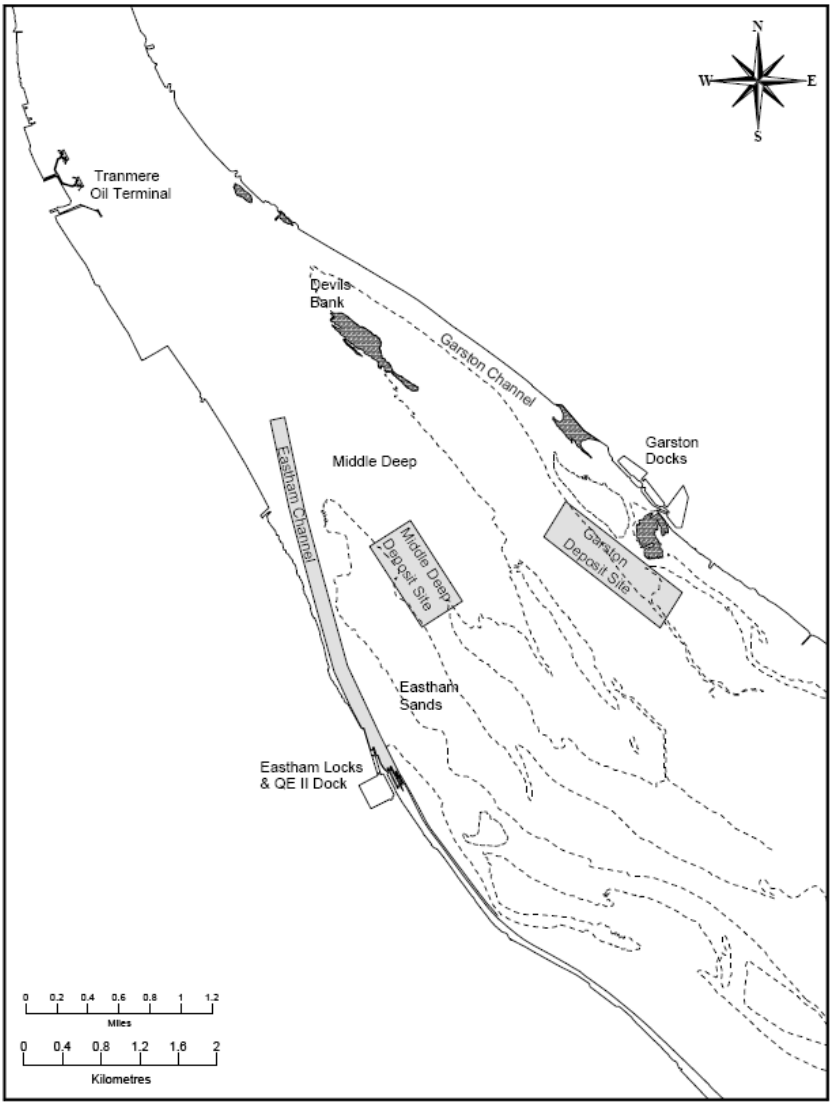

Figure D. Approaches to Manchester Ship Canal and Garston Docks.

Plate 1. Evans ship breaking yard at Garston on 24th June 2010.

Plate 2. The Weaver sluices viewed from the Manchester Ship Canal looking downstream on 12th September 2010.

Plate 3. Maintenance works on the high gantry of the Weaver Sluices looking upstream with the river on the left and the Ship Canal on the right of the embankment (centre distance) on 12th September 2010. Completed restoration of the winding gear to one of the sluice gates and replacement of timber decking with galvanised steel grills is shown.

Plate 4. Maintenance works from the low gantry of the Weaver Sluices looking downstream with the river on the right on 12th September 2010. Completed restoration of the counter weight to one of the sluice gates and replacement of the high gantry framework is shown.

Plate 5. Notice of repair works to Rock Ferry Slipway on 13th September 2010 placed by Royal Mersey Yacht Club at the top of the slipway.

Plate 6. Rock Ferry slipway on 13th September 2010 showing previous concrete repair work and the derelict tanker cleaning jetty to the left.

Plate 7. Rock Ferry esplanade viewed from the slipway. The buildings, esplanade and slipway are Grade II listed for their architectural quality and historical significance.