Dundee Central Waterfront: Historic Building Recording

Data Structure Report

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Rathmell
Archaeology Ltd

Quality Assurance

This report covers works which have been undertaken in keeping with the issued brief as modified by the agreed programme of works. The report has been prepared in keeping with the guidance of Rathmell Archaeology Limited on the preparation of reports. All works reported on within this document have been undertaken in keeping with the Institute of Field Archaeology's Standards and Policy Statements and Code of Conduct.

Signed …….. Date …….

In keeping with the procedure of Rathmell Archaeology Limited this document and its findings have been reviewed and agreed by an appropriate colleague:

Checked …….. Date …….

Contents

Overview

1. This Data Structure Report presents the results of a programme of archaeological works required by the City Engineer's Division of Dundee City Council who are in the process of constructing a stormwater tank in the Central Waterfront area (NGR: NO 406 299). An enabling element of this redevelopment scheme is the partial demolition of remains associated with Dundee's historic nineteenth century harbour.

2. The works generate a baseline record of the historic structure which will preserve by record the historic remains prior to demolition. In particular these works constitute a Level 1 survey in accordance with *Recording Historic Buildings: A Descriptive Specification* (RCHME Third Edition, 1996).

3. The archaeological works were intended to minimise the impact of the development upon any archaeology present. Rathmell Archaeology Ltd has been appointed to act with regard to the archaeological issue by Dundee City Council. The project works described below have been designed to comply with the identified requirements.

Historical Background

4. The City of Dundee has grown up around a natural harbour, situated on the north bank of the River Tay. Its origins in antiquity are obscure, but evidence of human activity and occupation dating back to the prehistoric period has been attested in the locale, with a fortified settlement having been present on Dundee Law during the Early Iron Age and the Roman periods (Perry, 2005, 7). Documentary sources also suggest that the area currently occupied by modern Dundee was an important focus for high status settlement during the Early Medieval period. The location for this early pre-burgh settlement is as yet unknown, though it is thought that it may have been located in the vicinity of Castle Hill, a defended site located close to the then-shoreline (Perry, 2005, 7)

5. Dundee was granted burgh status prior to AD 1195 by William the Lion (Perry, 2005, 9) and the first references to its use as a port date to around this time. The construction of man-made structures in order to improve its suitability as a harbour come later; the first mention of such structures comes in the form of a charter issued by James II in 1447, granting the burgh's inhabitants the right to build and repair the harbour (Perry, 2005, 21).

6. The earliest mapping available for Dundee is Gordon's map of 1654 (Figure 1a), which clearly shows the presence of man-made structures to the east of the peninsula named 'St Nicholas Craig'. This natural feature was a prominent landmark which formed part of the coastline prior to the intensive programme of land reclamation that transformed the waterfront of Dundee throughout the eighteenth and nineteenth centuries.

7. Land reclamation was already underway by 1644, when the 'New Shore' was constructed in the area now occupied by the western part of Dock Street (Perry, 2005, 21). The late seventeenth century, however, delivered several major setbacks to the thriving port of Dundee. The ravages resulting from General Monck's assault upon the town in 1651 were followed by a violent storm in the autumn of 1688 which damaged the harbour and the ships berthed there (Thomson, 1874, 276). Rebuilding followed: by the time Roy's map was surveyed in the mid-eighteenth century, there is a more formal seawall in place along the length of St Nicholas Craig. The changing shape of the coastline is also evident.

8. By the early eighteenth century, Dundee was emerging as a major Scottish port. Trade links had been forged with England and Holland, and also Norway and the Baltic States. Corn and linen were exported to England, and corn to Holland. Norway and the Baltic States were sources of raw materials, with flax, iron and timber imported for use in the linen and also, presumably, the ship-building industries.

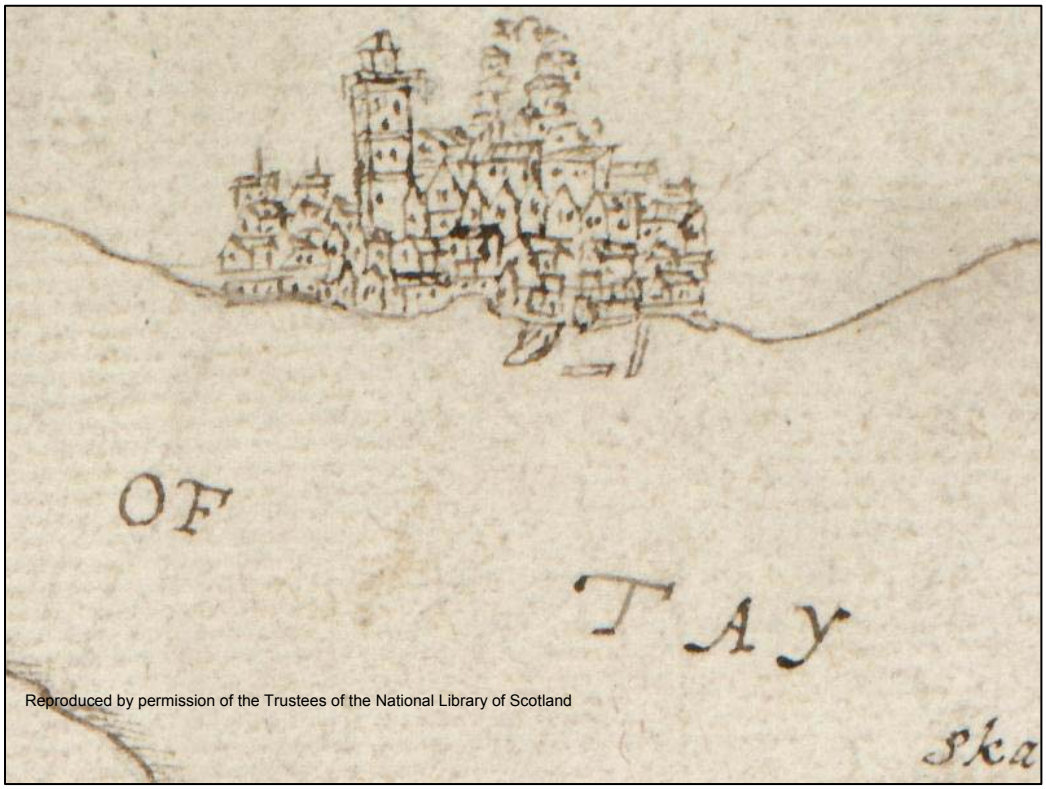

Figure 1a: Extract from Gordon's Map of 1654

Figure 1b: Extract from Roy's Map of 1747-55

9. Throughout the eighteenth century, Dundee's fortunes continued to rise. Perry quotes figures which illustrate this transformation particularly well:

> 'In 1745 Dundee's inward tonnage was 1,280 tons, its outward tonnage was 500 tons and coastal tonnage was 3,000 tons. In 1791 there were 10,520, 1,276 and 20,055 tons respectively' (Perry, 2005 21)

10. This placed ever-increasing demands on Dundee's harbour infrastructure, and the engineer John Smeaton was commissioned to undertake improvements. This proved to be a temporary measure, carried out in advance of a more comprehensive programme of construction which took place in various phases throughout the nineteenth century.

11. In 1814, the engineer Thomas Telford was appointed to come up with suggestions for harbour improvements (McKean and Walker, 1984, 24), and in 1815 the first Harbour Act was introduced in order to raise funds for the forthcoming works. This Act resulted in an agreement that for twenty-one years, the shore-dues gathered at the port would be given not to the Town Council, but to the Harbour Commissioners, with a view to improving the dock and harbour facilities (Thomson, 1874).

12. The proposals were not universally popular. One 1829 report makes vociferous complaint:

> 'The time is not yet come when Docks so extensive are necessary. When the trade shall actually have increased so much as to call for the magnificent Docks which Mr Jardine has proposed, then let them be executed, and then the expense, being spread over a greatly increased trade, will not be felt.' (Thomson, 1874, 277)

13. Two prominent engineers were considered for the works – Robert Stevenson and Thomas Telford – but it was Telford who was chosen to carry the project forward, He was first charged with delivering an 'extensive floating dock' (the 'wet dock') and a 'graving dock' (the 'dry dock'). The wet dock was named the 'King William IV' Dock and was completed by 1825, when it was formally opened. A further phase of building was commissioned around 1830, with Telford asked to provide further facilities. The eastern part of the pre-existing harbour was converted into the Earl Grey Dock, accessed by a pair of massive lock gates.

14. An 1854 plan showing further proposed improvements (Figure 2a) illustrates the final version, with a number of proposed alterations which comprise a complex of sea walls and breakwaters shown running in a roughly NW-SE alignment from the outer walls of the tidal harbour and Victoria Dock. These alterations were never completed, and proposed alterations to the entrance arrangements to the King William IV Dock (shown in red on this plan) were also abandoned. What this plan shows quite clearly, however, is how in Telford's final version, both the Earl Grey Dock and the King William IV Dock were entered via a large tidal harbour, surrounded by a seawall and accessed by an entrance in the south.

15. Reference to Thomson's map of 1832 sheds little light on the progress of construction at this time. Dock and harbour structures are clearly visible, but the complexity of the final harbour arrangements is lacking. This may indicate that the harbour structures were still under construction at the time Thomson surveyed the map.

16. The Ordnance Survey 1st edition map of 1865 shows the completed dock arrangements (Figures 3a and b). In the wake of these alterations, the port of Dundee continued to prosper. By 1870, a total of 216 ships and 18 whaling vessels were registered there (McKean and Walker, 1984, 26), and demand for harbour facilities continued to grow even into the twentieth century, with the rise of the jute industry.

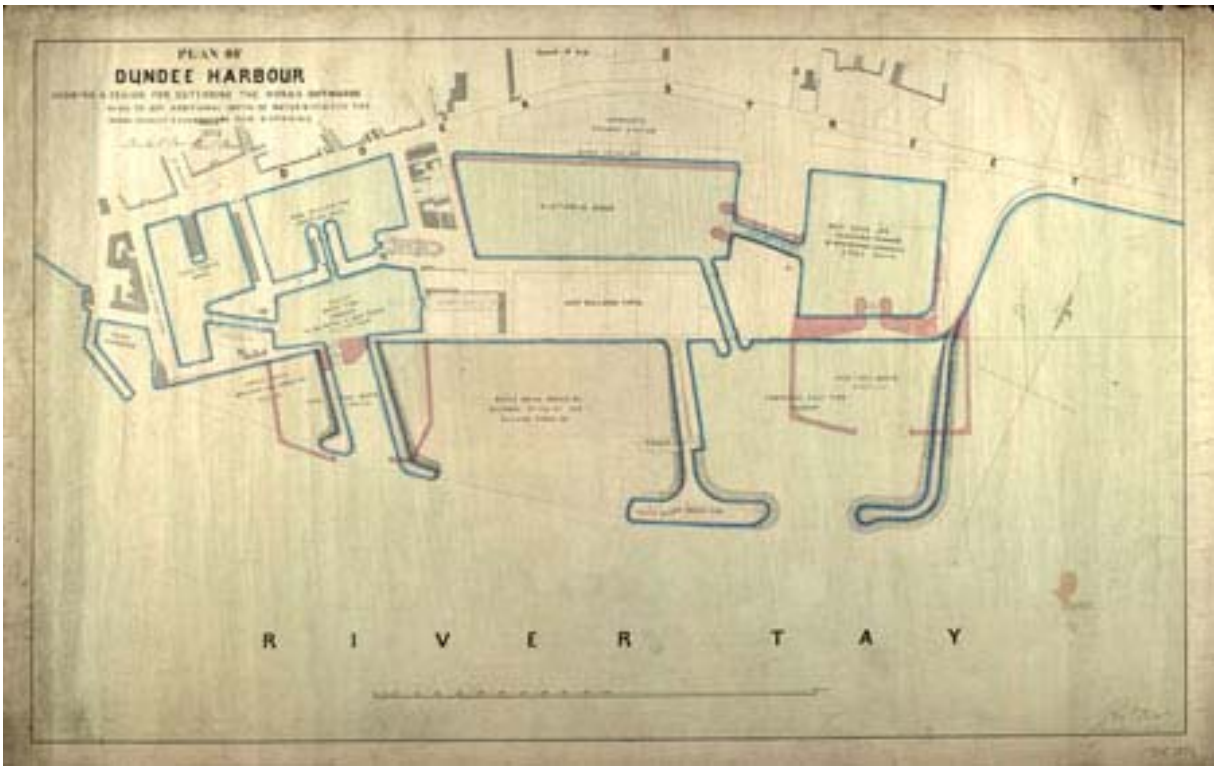

Figure 2a: Plan of Proposed Improvements to Dundee Harbour, c 1850

Figure 2b: Extract from Thomson's Map of 1832

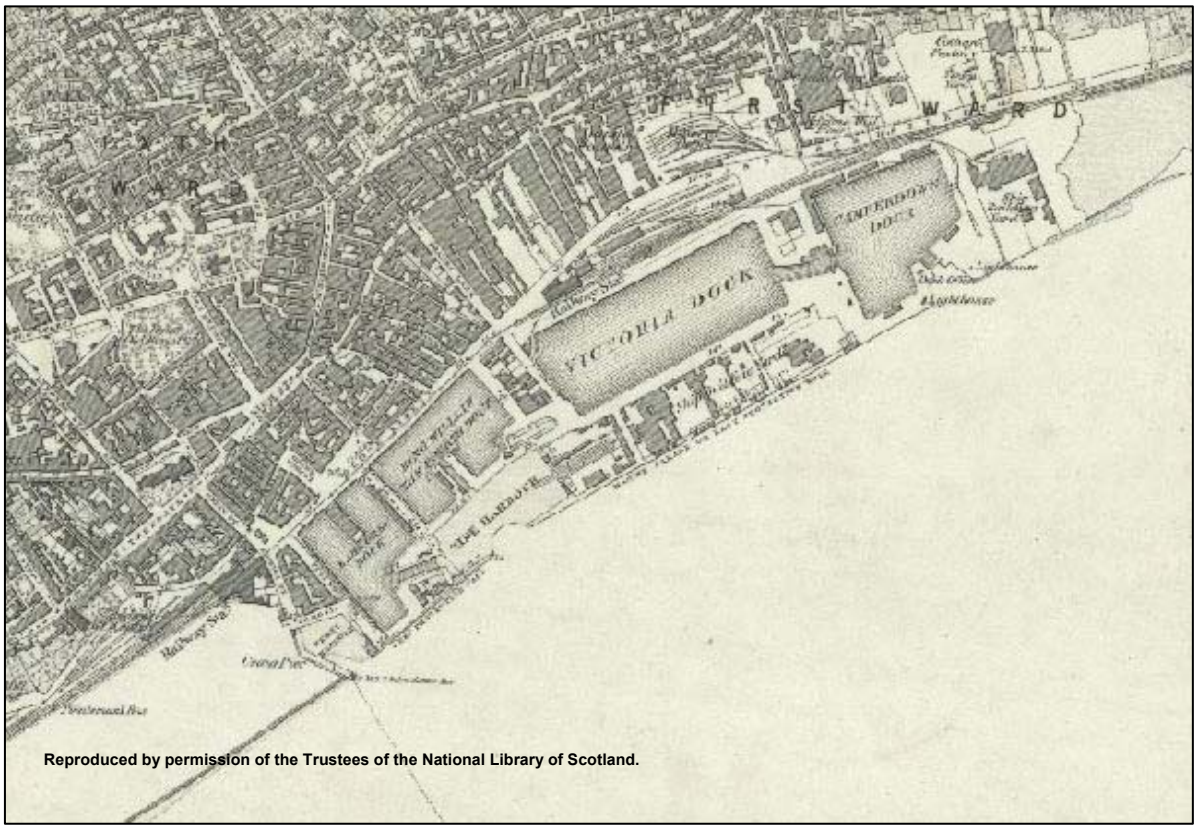

Figure 3a: Extract from Ordnance Survey 1st Edition Map of 1865

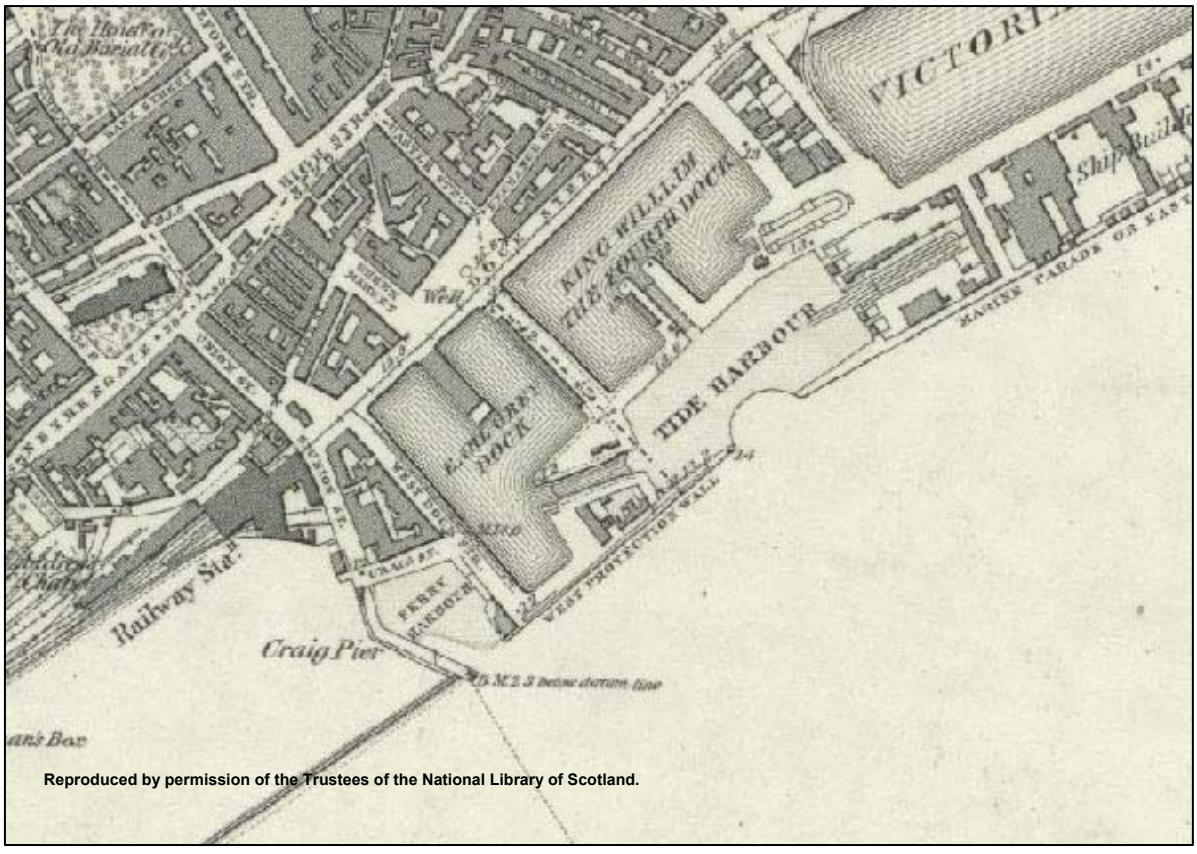

Figure 3b: Detail of above, showing Completed Harbour Improvements

17. Trade had peaked, however, by the mid-twentieth century, with the King William IV Dock partially infilled prior to World War II. Much of the remainder of the harbour complex, including the King William IV Dock, the tidal harbour and the Camperdown Dock, was infilled in the 1960s as part of road improvements which included the construction of the Tay Road Bridge (Perry, 2005, 21).

Project Works

18. The programme of works was undertaken on the 26th of January 2010 and included Level 1 building recording on exposed elements of the Tide Harbour, which once formed part of an extensive dock and harbour complex at Dundee Waterfront.

19. All works were conducted in accordance with the Institute for Archaeologists' Standards and Policy Statements and Code of Conduct and Historic Scotland Policy Statements.

Findings: Building Recording

20. The purpose of the building recording was to investigate and record a section of harbour wall exposed during groundbreaking works associated with the construction of a stormwater tank at Dundee Central Harbour (Figure 4).

21. The exposed section of walling comprised a short section of the outer wall of the former Tide Harbour, the so-called 'West Protection Wall', which formed part of the complex of features designed by Thomas Telford and constructed in the early nineteenth century. A length of walling measuring roughly 6m in length had been uncovered in total, giving a detailed insight into the construction methods used on the structure in its entirety.

22. The harbour wall was composed of two discrete sections of walling, separated by a void roughly 4.4m wide. Originally, this void had been filled with brown clay (Buchanan, *pers. comm*.) as part of the original construction process. This fill had been removed prior to the site visit, revealing the internal faces of both walls.

23. The SE Wall was built of mortared, random rubble masonry, and measured approximately 1.77m in width. It was faced with coursed squared whinstone rubble blocks on its external surface, which looked out onto the River Tay. The wall face was vertical, with no batter evident. A valve outlet located close to the low water mark was a recent addition. The full extent of this outer face was visible, having been retained as the limits of the modern shoreline.

24. The internal face of the SE Wall was also vertical, with no indication of battering (Figure 5a). There was, however, a buttress evident at the SW end of the trench, the extent of which could not be established on account of modern shoring, and *in situ* fill material.

25. Thanks to the excavations that were underway in the former harbour interior, it was possible to study the details of the NW Wall more closely. It measured approximately 1.77m in width, and again, its inner face was vertical, comprised of mortared random rubble (Figure 5b). There was another buttress, a short feature measuring perhaps 0.5m in length (accurate measurements could not be obtained for reasons of Health and Safety). This was slightly offset from the buttress built into the SE wall, rather than being directly opposing.

26. The outer face of the NW wall, which would once have formed the inner face of the completed West Protection Wall, proved to be most informative, with several features of interest surviving (Figure 6a). The wall had been exposed to a depth of 4.07m below the original ground surface. It had a marked batter, and was composed of coursed squared rubble blocks measuring up to 1.23m x 0.43m in extent. The material used in its construction was whinstone, and some of its surfaces had been stugged.

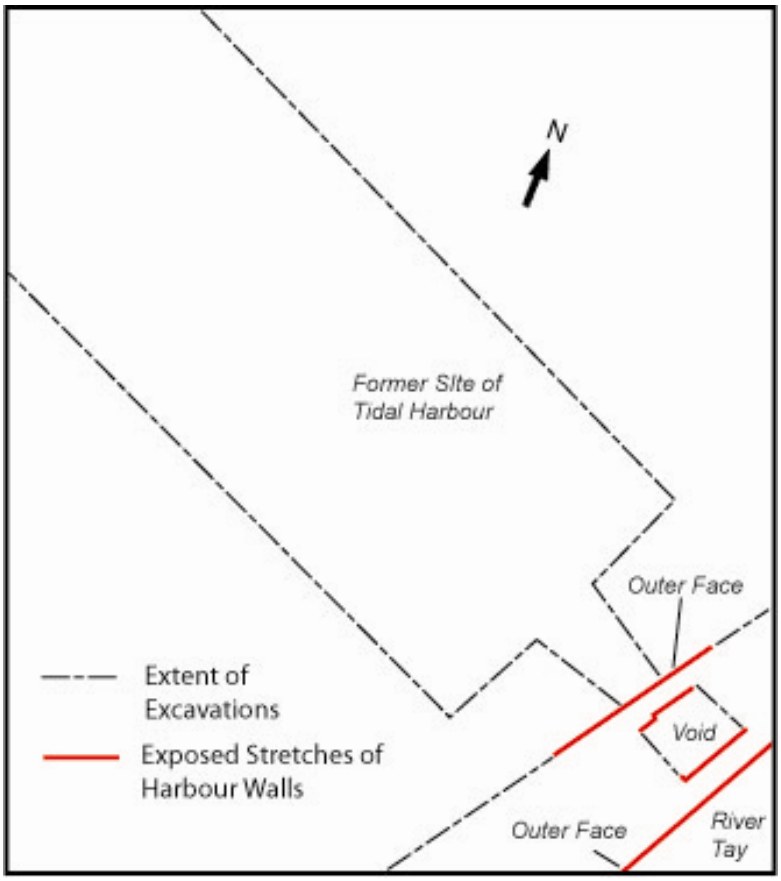

Figure 4a: Site Location Plan

Figure 4b: General view of works ©Dundee City Council

Figure 5a: Inner Face of Outer Harbour Wall, Buttress to Right

Figure 5b: Inner Face of Inner Harbour Wall, Buttress to Left

Figure 6a: Outer Face of Inner Harbour Wall, With *In Situ* Timber to left

Figure 6b: View of *In Situ* Timber and Detail of Masonry

Figure 7a: Detail showing Vertical Slot Cut into Masonry of Outer Face, Inner Wall

Figure 7b: Detail of Cast Iron Mooring Ring

27. Vertical slots had been carved into the masonry to form sockets for massive timber beams (Figures 6b; Figure 7a) measuring approximately 0.27m wide and 0.37m in thickness. The remains of two such slots were visible in the exposed stretch of walling. In one of these, the timber remained *in situ*, while in the other the wood only survived over roughly half of its extent. The complete timber was of particular interest in that it retained a cast iron mooring ring towards the top (Figure 7b).

Discussion

28. The recent groundbreaking works at Dundee Central Waterfront revealed a short stretch of extant harbour wall, measuring perhaps some 6m in length. This yielded, nonetheless, a detailed insight into the constructional details of the structure in its entirety.

29. This particular stretch of harbour wall once formed part of the West Protection wall of the Tide Harbour, designed by Thomas Telford as part of harbour improvements instigated in the early nineteenth century to cope with the increase of maritime trade that the City of Dundee was enjoying at the time. The harbour appears to have been completed by the 1830's.

30. The harbour wall was built as two cement-bonded random rubble walls, running from southwest to northeast and converging slightly towards the northeast, with a void that was once filled with brown clay. Both inner faces were vertical, with no indications of a batter, and they were buttressed along their length for added strength.

31. The outer faces of the walls were much better finished. The masonry employed was squared coursed rubble. The outer face of the S wall, which formed the outer wall of the harbour and abutted the waters of the Tay, still forms the limit of the coastline and is visible throughout its length. Here, the face was vertical, but the outer face of the N wall, which formed the inner wall of the harbour, had a pronounced batter throughout its extent.

32. Of additional interest were the two vertical slots that were revealed in the inner facing wall, the N-Facing elevation. These had been cut into the masonry in order to receive a massive timber beam. This would have functioned as a buffer, allowing ships to be pushed against the harbour walls with the movement of the tide without causing damage to their hulls. Archive photographs show that these timber beams were a recurring feature throughout the harbour, with a particularly complex framework of beams being evident around the entrance to the Earl Grey Dock at the west side of the Tidal Harbour (Figures 8 a and b).

33. In the exposed section of walling revealed during these works, one beam survived in its entirety, while the other survived in fragmentary form. The complete example was of particular interest, in that it still had an *in situ* mooring ring, located towards the top of the beam.

Conclusion

34. A programme of archaeological works was required by the City Engineer's Division of Dundee City Council, following the discovery of a section of nineteenth century harbour walls during groundbreaking works at Dundee Central Waterfront (NGR: NO 406 299).

35. The historic building recording exercise and associated desk-based assessment revealed that the exposed structure formed part of the West Protection wall, part of the former Tide Harbour, which formed one element of Thomas Telford's range of harbour improvements that were built in the 1820s and 30s.

36. Details of its construction were revealed, and an appropriate record of the feature made prior to its disturbance as part of the works associated with the construction of a stormwater tank in the site of the former Tide Harbour.

Figure 8a: View of Dundee Docks, showing *in situ* Timber Buffering (Wilson, 1895a)

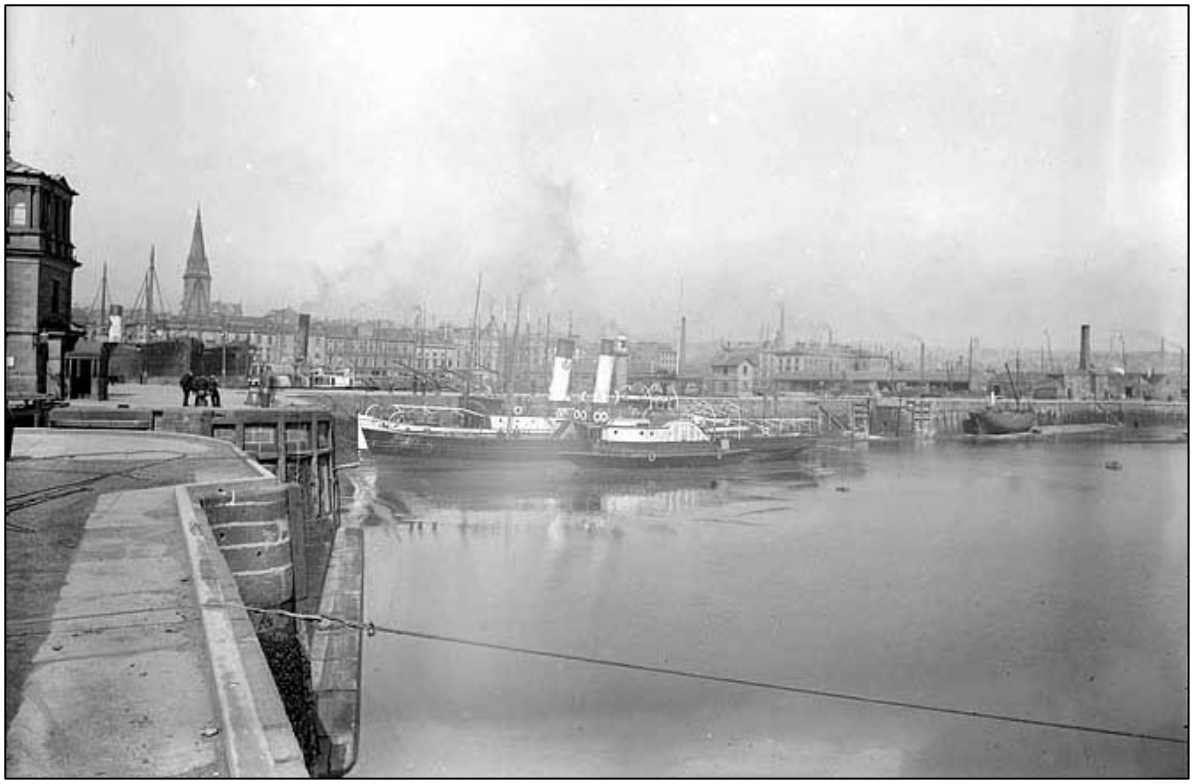

Figure 8b: View of the Tide Harbour, with Timber Buffering at Entrance to Earl Grey Docks (Wilson, 1895b)

References

Documentary

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Perry, D 2005 Dundee Rediscovered: The Archaeology of Dundee Reconsidered (Perth)

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Cartographic

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Thomson, J 1832 Northern Part of Angus Shire, Southern Part

Photographic

Wilson, A 1895a '*Teazer' and 'Esquimaux' in Dundee Harbour*. Dundee City Council Central Library, WC0912

Wilson, A 1895b '*Shamrock' and 'Thistle' in Dundee Harbour*. Dundee City Council Central Library, WCO907

Appendix 1: Discovery & Excavation in Scotland

LOCAL AUTHORITY:	City of Dundee
PROJECT TITLE/SITE NAME:	Dundee Central Waterfront
PROJECT CODE:	RA10003
PARISH:	Dundee
NAME OF CONTRIBUTOR:	Louise Turner
NAME OF ORGANISATION:	Rathmell Archaeology Limited
TYPE(S) OF PROJECT:	Building Recording
NMRS NO(S):	N/a
SITE/MONUMENT TYPE(S):	Harbour Wall
SIGNIFICANT FINDS:	None
NGR (2 letters, 6 figures)	NO 406 299
START DATE (this season)	26th January, 2010
END DATE (this season)	26th January, 2010
PREVIOUS WORK (incl. *DES* ref.)	None
MAIN (NARRATIVE) DESCRIPTION: (may include information from other fields)	Groundbreaking works at Dundee Central Waterfront revealed a portion of the walling associated with the Tidal Harbour, which once formed part of the harbour improvements designed by Thomas Telford and built in the early nineteenth century. The harbour wall comprised two parallel mortared rubble walls, infilled with brown clay. The outer surfaces of each were faced with coursed squared whinstone blocks. A pronounced batter was evident on the N-facing elevation, which once formed the internal wall of the harbour. The N-facing elevation also revealed timber beams which had been set in grooves cut into the masonry to provide buffering for ships moored in the harbour; in one of these timbers, a cast iron mooring ring remained *in situ*.
PROPOSED FUTURE WORK:	None
CAPTION(S) FOR ILLUSTRS:	None
SPONSOR OR FUNDING BODY:	Dundee City Council Engineering Division
ADDRESS OF MAIN CONTRIBUTOR:	Unit 8 Ashgrove Workshops, Kilwinning, Ayrshire KA13 6PU
E MAIL:	contact@rathmell-arch.co.uk
ARCHIVE LOCATION (intended/deposited)	Report to City of Dundee Archaeology Service and archive to National Monuments Record of Scotland.

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