

Salvage Excavations on Convict-Built Reclaimed Land, Sarah Island

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Sarah Island, in Tasmania's south-western wilderness, is the site of one of Tasmania's three nineteenth century penal settlements. One of the structures built there by convicts is an area of reclaimed land, which provides one of the earliest examples of land reclamation in Australia. Land reclamation techniques employed in Australia and Britain in the nineteenth century are not well documented. The opportunity to examine the composition of the Sarah Island structure demonstrates the construction technique used there, which consisted of mixed fill consolidated with logs. The author works for the Department of Parks, Wildlife and Heritage, Tasmania.

LAND RECLAMATION IN THE NINETEENTH CENTURY

Reclamation of extensive areas of coastal land for agricultural purposes took place in Europe from the seventeenth century onwards. Formal land reclamation techniques had been pioneered in the Netherlands and the British schemes of this date relied heavily on Dutch expertise. Reclamation was achieved either by draining low-lying swampy areas or by building up new land behind an embankment or dyke. In the latter case an impervious embankment was constructed parallel to the coast and the area between was filled up, usually with river-borne silt if the land were to be used for agriculture. Drainage was often a problem, which in Holland was solved by the use of pumps. In eastern England tidal sluice gates were used.¹ It was not until the twentieth century that engineering manuals included instructions for land reclamation. In the eighteenth and nineteenth centuries there was no equivalent in the realm of land reclamation to McAdam's famous treatise on road building.²

In England reclamation was also taking place on a small scale to obtain building land. In 1770 when Newgate prison in London was built partly over an ancient town ditch a mixture of whole and broken bricks, consolidated with a mortar slurry, was thrown into the ditch to a depth of 12.2 metres to provide a solid foundation.³

In Australia land reclamation on any scale was rare before the advent of large earthmoving equipment as land has simply not been scarce enough to warrant the expense. Most of the modern examples are really methods of rubbish disposal rather than a response to a pressing need for more land.

Such schemes as have occurred have been the creation of highly valued waterfront land, for example the infilling of Sullivans Cove, Hobart, since 1840⁴ and the infilling of Sydney Cove, Sydney, to create Circular Quay which was completed in the 1850s.⁵ In Sydney reclamation of Darling Harbour started in the 1810s. Since then there has been a series of extensions into the Harbour. The earliest infilling was the result of damming for two mills. Most land reclamation around Darling Harbour was undertaken privately and the land sold.⁶

The 1841 proposals for reclamation of part of Masons Cove at Port Arthur (which did not go ahead) provide a detailed description of the proposed method. The fill was to

be retained by a 'breast wall of double piles filled in with stone and faced with planking',⁷ although originally the retaining wall was to have been stone. This plan for a stone wall was dropped when a sufficiently solid footing could not be found. The foundation bed was acknowledged to be imperfect but as the proposed buildings were lightweight it was deemed adequate. The ovens for these buildings were to be built on 'piles crossplanked and flagged on top'.⁸ The fill, which was considered to be of good quality, comprised clay and bluestone compacted to form a consolidated footing. The yards were to be drained and it was thought that the bay would not silt up.⁹ Although not completed, some infilling did take place in the manner described.

In 1854-1855 more reclamation took place in Masons Cove, primarily to protect the foundations of the Penitentiary from erosion by the sea. At this time, the entire parade ground at Port Arthur was reclaimed. No details of the construction are given.¹⁰ Excavation of the Port Arthur Penitentiary Tower Base in 1983 cut a section through the 1854-1855 fill showing it to be a mixture of whole bricks, brick fragments and dolerite rubble in loose sand and clay which had been placed directly on the original foreshore mud.¹¹

At Moore's Wharf, Sydney, Lampert and Truscott¹² found evidence of the harbour infill and resultant extensions to the area of the wharf. The Bond Store itself was not built on reclaimed land but an extension to its western end appeared to have had massive partially cut boulders laid down as support.¹³

BACKGROUND TO THE PENAL SETTLEMENT ON SARAH ISLAND

Sarah Island is the site of the earliest penal settlement in Tasmania, established during December 1821 to January 1822. Prior to this convicts who committed secondary offences in Van Diemens Land had to be sent to Sydney for trial and punishment. The expense and inconvenience of this procedure led Lieutenant Governor Sorell, in 1818, to propose the establishment of a penal settlement in Van Diemens Land.¹⁴

This penal settlement was eventually established at Macquarie Harbour on the remote west coast of Tasmania (Fig. 1). The objective was to mete out such strict discipline and continual hard labour that it would become a place to be feared by convicts. It was thought that this reputation

would act as a deterrent and that the regimen would somehow cause bad characters to reform.

Macquarie Harbour was chosen for a penal settlement as much for economic reasons as for its punitive or security qualities. In 1815 James Kelly had discovered the Harbour and the Gordon River which flows into it. He reported huge stands of huon pine, a tree which was particularly useful for ship-building and therefore of great commercial significance. Coal was also discovered a few months later. The objective of the government was to exploit this resource using convict labour.

Private enterprise in the area was forbidden for security reasons, which also had the effect of eliminating the competition. Pining along the Gordon River provided an arduous and unpleasant activity for the convicts and the surrounding south-western Tasmanian bush provided an obstacle to escape that only a few managed to surmount.¹⁵

The number of people living on Sarah Island varied from around 100 to over 350.¹⁶ They included male and female convicts, skilled male convicts not under sentence, female assigned servants, military officers and men, civil officers such as doctor and chaplain, a few wives and children, and occasional visitors such as the group of Aboriginals travelling with George Augustus Robinson.¹⁷ The settlement was mostly reserved for male convicts. Except for a very few assigned servants, women convicts were only sent there in the early years. These women worked as servants or labourers and lived on Grummet Island, a small island nearby with a particularly harsh environment as it was washed with sea spray in bad weather. Because of this it was used as a place of further punishment for the men after the women had been removed. Male convicts worked at domestic service, timber getting, farming and gardening, shipbuilding, lime-burning, charcoal-burning, brickmaking or as tradesmen (such as blacksmiths, tanners, shoe-makers and furniture makers).¹⁸

In 1830 the penal settlement at Port Arthur in south-eastern Tasmania was opened and prisoners were gradually transferred there. The Sarah Island penal settlement was finally closed in 1833.

The island was re-occupied in 1846 as a probation station for unemployed pass-holders. About 200 men were sent

there to fell huon pine for the government. The operation was badly planned, badly equipped and badly provisioned. It was supposed to be a commercial enterprise but was an unmitigated financial disaster. It lasted just a year, closing down in 1847 with the government reneging on paying the pass-holders their promised wages and bonuses.¹⁹

DOCUMENTARY EVIDENCE OF THE SETTLEMENT

Government correspondence and records make references to the living and working conditions of the convicts and other inhabitants. Documents relevant to Sarah Island are held by the Archives Office of the State Library of Tasmania, the Tasmanian collection of the State Library, and the Mitchell Library in Sydney, and some are published in the Historical Records of Australia. These references have been collated by Ian Brand.²⁰ For example we know that there were often serious shortages of both accommodation and food, because the authorities in Hobart seemed incapable of co-ordinating the provisioning with the sending of new prisoners. These records also include some references to buildings and other structures. Descriptions and detailed information are scanty, but these references are useful for dating buildings and identifying alternative functions.

There is one contemporary map of the island. This was published by James Ross in 1831 and remains the major source of information about the layout of the settlement and the identification of the structural remains (Fig. 2).²¹ This shows the island cleared of trees and the higher part, i.e. the north and west, given over to gardens. Most of the buildings were located on the south-eastern side of the island as this was the most sheltered, although some buildings were located elsewhere. For example, the hospital was isolated from the rest of the settlement and the gardener's hut was located among the gardens.

There are several contemporary illustrations, most of which show the view from the south-eastern side of the island, undoubtedly the most interesting from the point of view of the artists. The pictures convey the impression of the crowded settlement, the shipbuilding areas and the gardens criss-crossed with fences (Fig. 3).²²

HISTORICAL EVIDENCE FOR THE RECLAIMED LAND

In 1825 the southern end of Sarah Island was extended on the orders of the Commandant, Captain Butler.²³ The precise extent of the reclaimed land is unknown at present. However, a chart of Macquarie Harbour made by the Deputy Surveyor General in 1819 shows the unmodified Sarah Island with off-shore rocks, denoted by crosses, to the south.²⁴ Although the scale of the chart is too small for its accuracy to be reliable, it does indicate that at least 0.4 hectares have been added to the southern end. Some flat land on the eastern side of the island behind the wharves may also be reclaimed. There is no historical description as such of the reclamation process; however, T.J. Lempriere, the settlement's storekeeper, refers to the use of short or sub-standard huon pine logs in reclamation circa 1829:

'... The best of the logs were shipped to Hobart Town, some were cut up by the sawyers (of whom there were constantly nine or ten pair at work) into boards, also for Hobart Town, the remainder were either reserved for settlement use, or if too short or otherwise objectionable, they were thrown in to full up the quays and other places. Many a log I have seen thus employed which would now be of

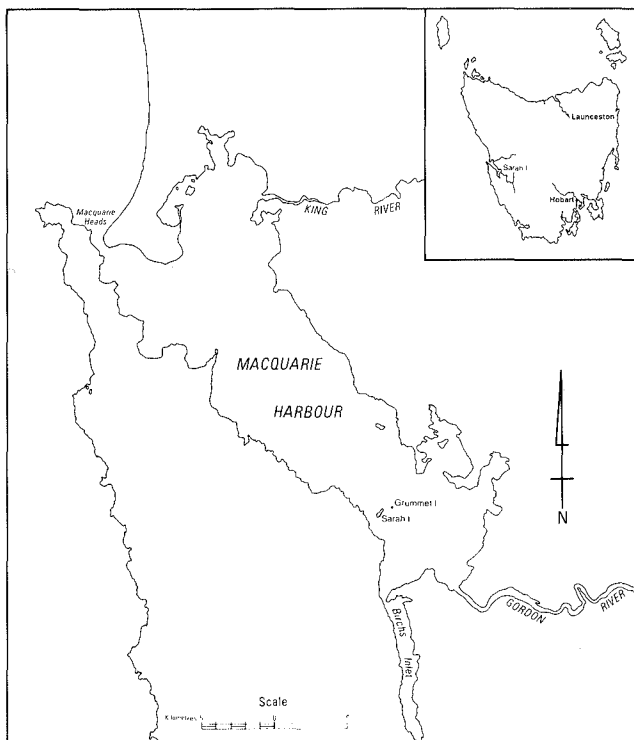


Fig. 1: Location of Sarah Island.

the greatest service in the Government timber yards, but at that time they were considered of little or no value.²⁵

This reclamation created more land suitable for the shipbuilding industry which thereafter achieved major importance in the settlement. Ross' map shows that several structures connected with shipbuilding were sited in this area, viz. sawpits, shipwright's shop or carpenter's shop, boatswain's hut, nailer's shop, blacksmith's shop and two boatslips. The construction of most of these probably took place simultaneously with the land reclamation, except for the blacksmith's shop which was built in 1827.²⁶ The land reclamation itself would have required a large scale operation and it would have been convenient to incorporate the facilities into this construction. The western shore was protected by a tall windbreak built in 1826,²⁷ a feature prominent in contemporary illustrations.²⁸ Additionally, the windbreak may also have functioned as a dyke against which the rocky infill was dumped.

FIELDWORK

In 1985 I had the opportunity of examining archaeologically an area of reclaimed land at the southern end of the island when a walking track and elevated walkway were built as part of the National Parks and Wildlife Service upgrading of tourist facilities. The approximate location of this walkway is shown in Figure 4. The construction of the walkway involved digging 100 post holes about 450 mm in diameter and up to half a metre deep. These were dug by National Parks and Wildlife staff in May, June and July.

Where possible minor amendments to the construction plan were made in order to avoid disturbing archaeological material uncovered during digging. Although it was not possible to reposition any of the walkway posts, some posts were dug to a shallower depth than originally specified in order to conserve archaeological features, where this did not affect the stability of the walkway. For this reason, the most interesting or potentially informative deposits were usually deliberately left unexcavated.

The objective of the archaeological program was to make a record of any features or deposits that would be disturbed or obscured during development. Fieldwork was undertaken on six days between 7 June and 5 July when 62 of the 100 post holes were recorded. Because of the pressures of working under salvage conditions and our fair share of south-western Tasmanian weather, the archaeological recording was of variable quality, with some post holes being recorded in far greater detail than others. Despite this I hope to show how the excavation of a series of small round pits under less than ideal conditions can be used to achieve a worthwhile archaeological result. Details of the excavation are given in the excavation report.²⁹

During the field work the overall construction of the reclaimed land was barely apparent because of the vegetation cover, and it was not clear how visible or excavated individual details related to the whole. The major part of the analysis of the mass of data collected has been the reconstruction of a schematic section across the spit of reclaimed land approximately oriented north-west to south-east (Fig. 5). Information from the excavated post holes was used to form the basis of the section. The schematic section was completed by using a join-the-dots



Fig. 2: Map of Sarah Island from Ross' Almanack, 1831.

approach. The final result, while not an actual section drawing – it does not even follow a straight line! – does illustrate the structural methods used and the overall composition of the reclaimed land.

South and Widmer³⁰ discuss an excavation strategy at a site in South Carolina which had some similarities to that employed here. For their investigation of an area of 30 100 square metres, they augured a series of 80 152mm holes with a manual post hole digger. Thirty holes were located randomly across their study area, 30 were evenly spaced at 30 metre intervals and 20 were located with regard to known buried or visible features. This procedure allowed them to map the distribution of prehistoric Indian and historic artefacts across the study area and identify occupation locations. Comparison of the artefact distributions from the random sample set with the evenly spaced sample set and documentary evidence gave them a high degree of confidence in this method.

ARCHAEOLOGICAL EVIDENCE FOR RECLAIMED LAND AT SARAH ISLAND

The reclaimed land extends over 0.4 hectares at the southern end of the island. It is low, flat and swampy and is not infrequently flooded by high water, as evidenced by quantities of flotsam caught in the bushes. The area is covered with tea-tree and low but thick scrub. Boat slips made of huon pine logs and the remains of wharves built of

blackwood line the eastern and southern shores. The western shore was protected by a tall windbreak, the remains of which are now visible only as a line of stumps. The only above-ground remains of the buildings on the reclaimed land are the stone chimney of the nailer's shop and the foundations of the blacksmith's shop. At the time of the investigation the ground surface was only clearly visible where the scrub had been cleared for the walkway. The soil is black peat with some small white gravel. Isolated large rocks and logs occur on and in the peaty ground surface. These appear to have some structural coherence in the vicinity of post hole 4, where part of the structure of the land reclamation was exposed in June 1985 and south of the nailor's shop which was cleared in October. Originally the area would have consisted of a low gravel bank. The structure of the land reclamation consists of large huon pine and other logs laid horizontally with large rocks placed between as filling. The logs were held in place by smaller stones wedged next to them.

This construction was seen most clearly at post hole 4, where it projects out of the peat. Linear channels in the rocks between post holes 13 and 14, 11 and 12 and 9 and 5 may indicate the position of other logs that have since been removed or rotted away. These channels follow an approximately similar south-east/north-west orientation to the huon pine log at post hole 4, the ground surface is a complex of limestone, sandstone and other rocks. In several places logs and the remains of logs can be seen buried among the rocks. Elsewhere linear channels in the rocks which are probably log slots, give the whole surface an undulating appearance.

During the excavations huon pine and other logs, probably blackwood, which has been identified in other shipyard structures, were noted at various depths and following various orientations (Fig. 5). In addition, a few large peat-filled gaps were found between the rocks in some excavation pits and these may represent log-slots, where a log has been removed or, in the case of blackwood logs, decayed. The gravel bank itself seems to have been stabilised with logs only, as no stonework was located in post holes between 35, 18, 19, 81, 31 and 86.

In contrast, the reclamation to the west of the gravel bank seems to be composed entirely of rocks. Although the linear channel between post holes 49 and 39 and the large peat-filled cavities between rocks (in, for example, post holes 56, 25, 28 and 47) may be log-slots, no extant logs were found west of post hole 40. The rocks used were predominantly limestone with a significant number being sandstone. Occasionally quartzite and brick pieces were

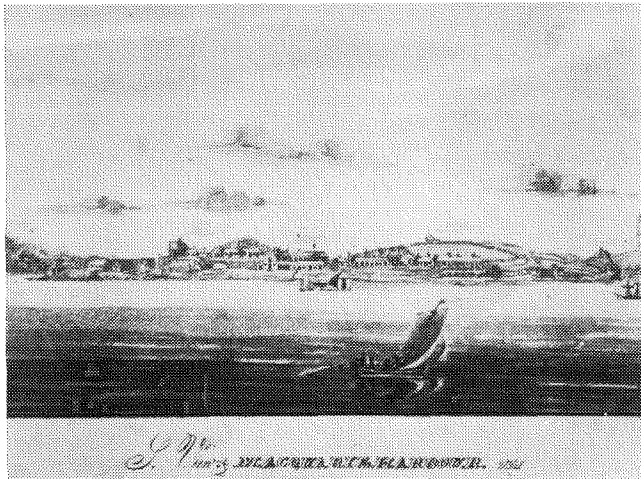


Fig. 3: View of Macquarie Harbour, Van Diemens Land.

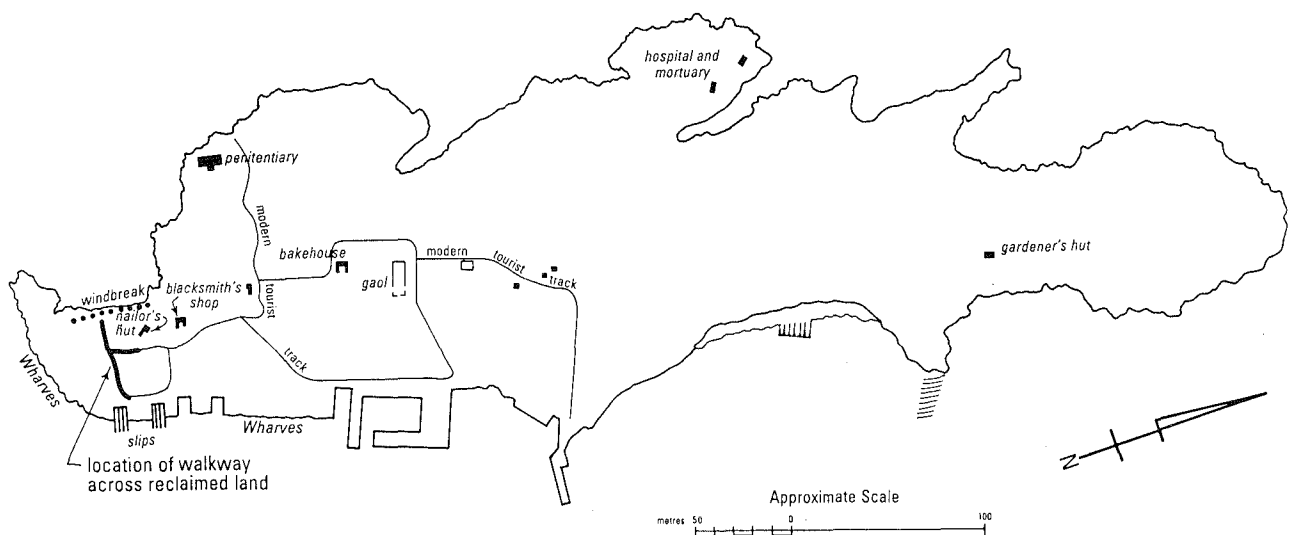


Fig. 4: Sarah Island showing location of walkway.

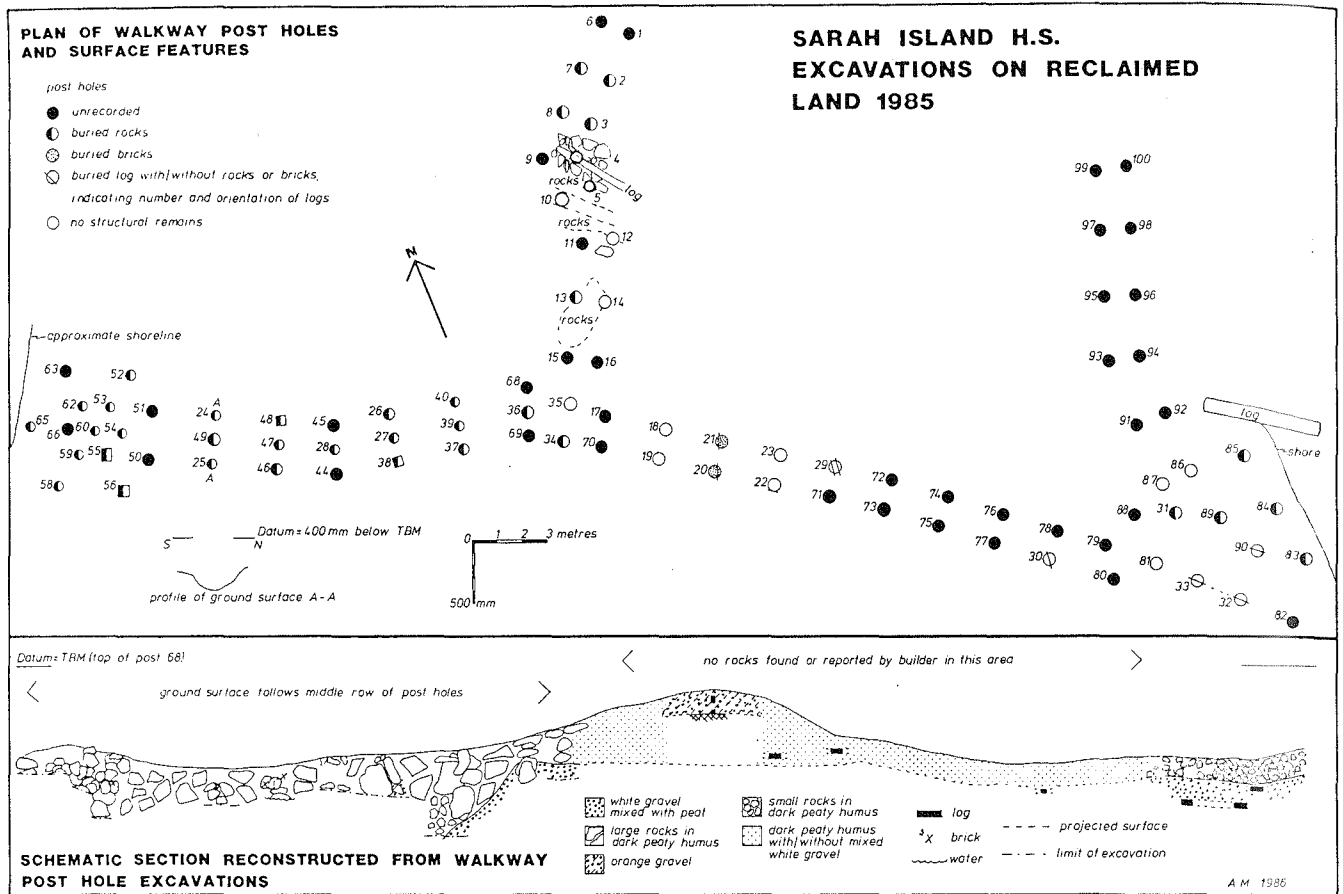


Fig. 5: Drawings from the excavation work on Sarah Island.

also incorporated. The sandstone was most likely obtained from Sarah Island itself, which is a small outcrop of Cambrian sandstone. Sandstone was quarried at various locations around the island, and although of poor quality, was used in a number of structures in the settlement.³¹ Limestone occurs along both the King and Gordon Rivers, the most accessible source to Sarah Island being at Limekiln Reach on the Gordon River. Limestone for use in the land reclamation could have been brought back by parties returning from pining expeditions or from the limekilns where limestone was burnt to produce lime for horticultural and building purposes. The Lime Burners Station was established in 1824 some 20 kilometres upstream from the mouth of the River Gordon and close to the first outcrop of limestone.

A mound of higher ground is situated in the centre of the reclaimed area. Orange gravel, which is not found on Sarah Island and was therefore probably brought in from the mainland, covers this area. Beneath this gravel, the project builder reported finding a layer of brick rubble. This rubble, which consisted mainly of whole and half bricks with three layers of huon pine logs set in it, was noted by him in post holes 20 and 21. No bricks were found in post holes 22 and 23 or 18 and 19. This brick rubble most likely indicates the position of one of the dockyard structures, probably the shipwright's shed (item b on the Ross 1831 map). The shipwright's or rigging shed was built before 1828.³³ It was a two-storey weatherboard building, 21.9 metres long by 7.6–7.9 metres wide.³⁴ Contemporary illustrations show the building supported on posts or piles.³⁵ It was also known as the carpenter's shed because furniture, windows, doors and other joinery were also made there. On Sundays the upper storey was used for church services.³⁶

CONCLUSION

The schematic section shows that the reclaimed land at Sarah Island was built out from a low gravel bank that was stabilised with huon pine and other logs. Although the recording coverage of the eastern part of the reclamation was less complete, where post holes were recorded in almost all cases logs were noted set in either gravel or peat. At the extreme eastern margin, the base of the wharf foundations consisted of a layer of small rocks. Recording coverage of the western part was more complete and indicates that here the reclamation was constructed primarily of large rocks and other rubble held together with large logs. The western shoreline consisted of smaller rocks piled against the base of the windbreak.

As it is a horizontal structure the reclaimed land has not suffered the collapse that all the vertical buildings have and because of this it is by far the best preserved convict structure on Sarah Island. It is one of the earliest surviving structures, being constructed under the command of Captain Butler in 1825. It is also probably the earliest land reclamation in Tasmania, being built some ten years before the arrival of the Royal Engineers and before any substantial expansion from the causeway built in the 1820s to Hunter Island in Sullivans Cove, Hobart.

The reclaimed land was a tremendously important area in the penal settlement at Sarah Island as it was where the shipbuilding and other major activities took place. It is the result of massive human effort and is one of the earliest surviving and best preserved convict structures on the island. Lack of sufficient flat land for workshops on the small rocky island may have prompted Captain Butler's decision to undertake this construction. He was also under instruction to keep the convicts constantly occupied with hard work and this may also have justified the project.

Certainly he would have preferred to keep as many convicts as possible working on the island rather than around Macquarie Harbour in order to minimise the opportunities for escape. Almost all the information on its construction comes from archaeological evidence.

ACKNOWLEDGEMENTS

I wish to thank National Parks and Wildlife Service staff who helped with the field work: Kelvin Barrett, Alan Board, Clive Cook, Greg French, Jack Gibson, Mike Garner, Jodi Mennitz, Stephanie van der Shans and Trevor Westren. I would also like to thank Tony Blanks, Margaret Collins, Ted Higginbotham, Richard Morrison, Marilyn Truscott and Andrew Wilson for their helpful discussions of land reclamation in Australia. Most of the archival references were located via Brand [n.d. (a) and n.d. (b)]. Steve Brown, Greg Middleton and Richard Morrison made useful criticisms of an earlier draft of this paper. Lynne Cullen typed it and Michael Harding drafted Figures 1 and 4.

NOTES

1. Bradshaw and Chadwick 1980:248.
2. Spratt personal communication.
3. Innocent 1971:277.
4. Solomon 1976:80.
5. Higginbotham 1987:17.
6. Wilson personal communication.
7. Commandant to Commanding Royal Engineer 26.11.1841, TSA CSO 22/57/501.
8. Commandant to Commanding Royal Engineer 26.11.1841, TSA CSO 22/57/501.
9. Commandant to Commanding Royal Engineer 26.11.1841, TSA CSO 22/57/501.
10. Commandant to Comptroller-General, 4.1.1855, TSA GO 33/82/754; Crown Solicitor in Visitor's Book, 29.1.1856, TSA CO 280/741; Commandant to Comptroller-General, 15.7.1856, TSA CO 280/740.
11. Morrison personal communication. and Port Arthur Project File Note.
12. Lampert and Truscott 1984:7.
13. Truscott personal communication.
14. Brand 1984:13, 18.
15. Brand 1984:18, 19; Robson 1983; 119-120.
16. Brand 1984:20, 22.
17. Brand 1984:34, 39, 41, 42; Plomley 1966:771-777.
18. Brand 1984:35, 36, 42.
19. Brand 1984:74-77.
20. Brand n.d. (a).
21. Ross 1831:269-270.
22. S. View of Macquarie Harbour, VDL probably by Lempriere, Allport Library and Museum of Fine Arts, Hobart.
23. Lempriere 1954:28.
24. Plane Chart of Macquarie Harbour on the Western Coast of Van Diemens Land by GW Evans Deputy Surveyor General 1819, Mitchell Library.
25. Lempriere 1954:39-40.
26. Return of work, 31.12.1827, TSA CSO 1/233/5648.
27. Commandant to Lieut. Governor 30.4.1826, TSA CSO 1/29/514.
28. SW View of Macquarie Harbour by Theodore Constantini (Sprod 1977); the misnamed North-eastern view of Sarah Island by W B Gould (Julen 1976) which actually shows a south-eastern view; Sarah Island Macquarie Harbour in 1830. Sketch by a Convict photographed by J W Beattie. Tasmanian State Archives, MB 3/58/2 756/190; South View of Macquarie Harbour VDL possibly by Lempriere (Allport Library and Museum of Fine Arts, Tasmania). Other illustrations are less clear.
29. McGowan 1988.
30. South and Widmer 1977.
31. Sharples 1988.
32. Commandant to Lieut. Governor 16.2.1824, TSA CSO 1/134/3236; Commandant to Private Secretary 20.10.1829, TSA CSO 1/396/8975.
33. Commandant to Colonial Secretary 24.1.1828, TSA CSO 1/238/5753.

34. List of ships built by David Hoy 20.11.1830 and 30.4.1832, TSA CSO 1/119/2982.
35. Constantini's SW view of Macquarie Harbour in Sprod (1977); Lempriere's South View of Macquarie Harbour, VDL, Allport Library and Museum of Fine Arts, Tasmania.
36. Lempriere 1954:28.

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