

### 3.0 Historical Analysis

#### 3.1 British Settlement at Sydney Cove

During the investigation of Port Jackson on 22 January 1788 the choice of Sydney Cove as a suitable anchorage was based on its fine spring of water as well as the ability to anchor ships close to the shore. It was anticipated that wharves suitable for large vessels would be able to be constructed with little expense.<sup>1</sup> The stream was reputed to be navigable for small craft up to what is now Bridge Street.<sup>2</sup> A coloured sketch titled Sydney Cove Port Jackson 1788 published in William Bradley's *A Voyage to New South Wales* illustrates the general features and character of the cove at this time. The mouth of the stream is depicted at the head of the cove, and a few modest structures are scattered along both banks and the footings of First Government House are visible in the left middle ground (Figure 3.1).



**Figure 3.1: William Bradley's drawing of 'Sydney Cove Port Jackson 1788' illustrating the extent of development around the freshwater stream at this time. Bradley, 1802+, opp p 84, Safe 1/14, ML SLNSW.**

A chart drawn by William Bradley after a survey by Captain Hunter dated March 1788 contributes to an understanding of the nature of the Tank Stream at the time of settlement (Figure 3.2). It documents the extent and configuration of the mouth of the creek, the relative depths of the cove

<sup>1</sup> Arthur Phillip, *The Voyage of Governor Phillip to Botany Bay*, John Stockdale, Piccadilly, London, 1789: Ch VI, <http://gutenberg.net.au/ebooks/e00101.html>, accessed 30 Aug 2013.

<sup>2</sup> T.J. Roseby, *Sydney's Water Supply and Sewerage 1788-1918*, William Applegate Gullick Government Printer, Sydney, 1918: 20.

and the location of buildings and shelters on the east and west banks of the stream. Bradley's chart and drawing are two of a number of valuable records of the settlement and the Tank Stream in the late eighteenth century. Others are listed in the bibliography.

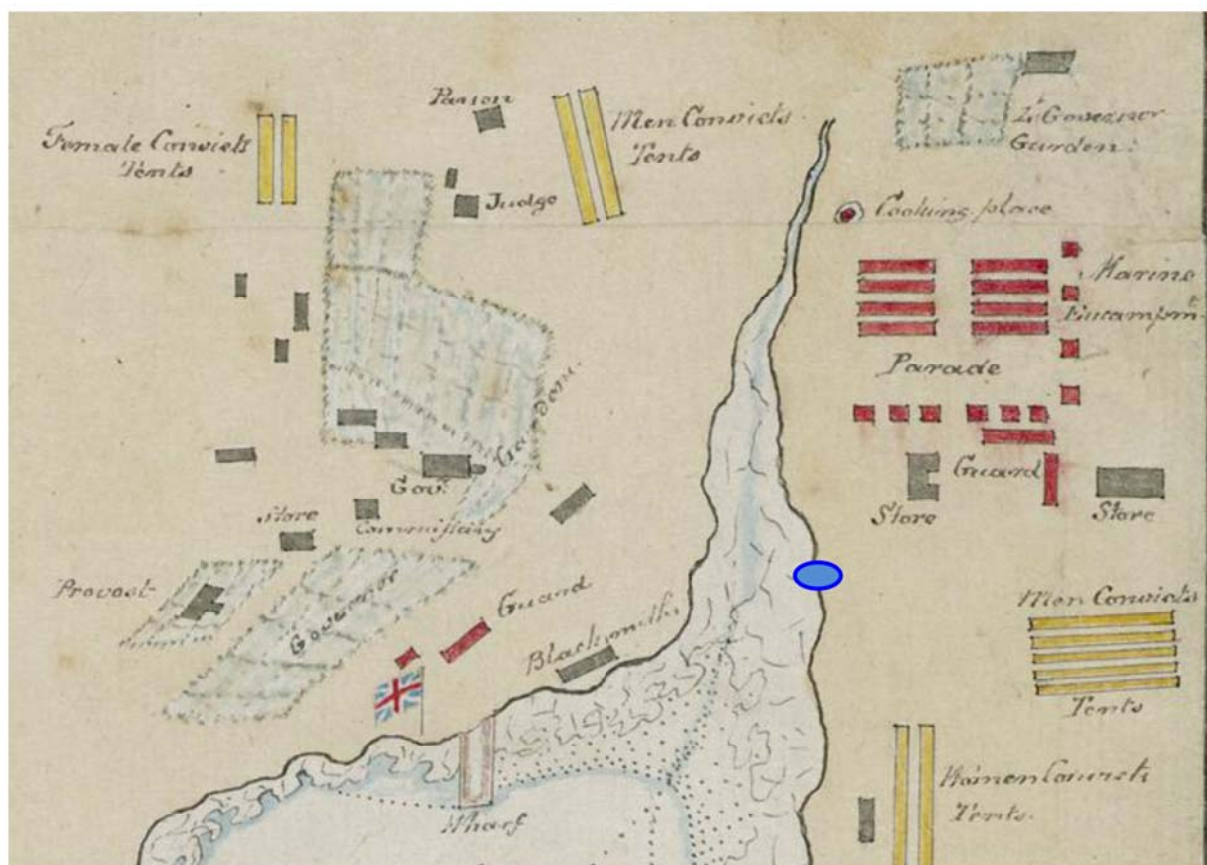


Figure 3.2: The blue dot indicates the approximate location of the study area. 'The position of the encampment & buildings as they stood 1<sup>st</sup> March 1788...'. Part of Bradley's chart titled 'Sydney Cove, Port Jackson' prepared from Captain John Hunter's survey showing the 'position of the encampment and buildings as they stood 1<sup>st</sup> March 1788' in relation to what became known as the Tank Stream. Bradley, 1802+, Safe 1/14, ML SLNSW. South is at the top.

### 3.2 Managing and Modifying the Tank Stream in the Eighteenth Century

A short time after the establishment of settlement at Sydney Cove the stream showed signs of contamination from rubbish, human and animal waste, and run-off from building work carried out along its banks. Governor Phillip ordered palings to be built along its banks between the huts and the stream. Openings were soon made through the fence and paths extended to the water. In wet weather 'filth' washed into the stream from pigsties built nearby. An Order made by Governor Hunter in October 1795 prohibited the making or using of paths from the huts and the keeping of stock nearby, the punishment being demolition of the adjacent hut.

The supply of water from the stream proved variable and, while water was supplemented by nearby springs and the digging of wells, during drought they were quickly depleted.<sup>3</sup> By 1796 a reservoir or water storage tank had been excavated in the rock near the mouth of the stream, creating a central point for water collection. The location of the tanks is recorded on undated maps of the Parish of St

<sup>3</sup> Roseby, Sydney's Water Supply and Sewerage 1788-1918, 1918: 20.



James as east of the Tank Stream, on a site bounded by Bridge, Spring and Hunter Streets.<sup>4</sup> Ditches reputed to have been cut alongside the stream intercepted dirty water from run-off.<sup>5</sup> The strategies aimed to minimise disturbance of the stream banks and reduce contamination from refuse and waste. The fence around the stream continued to be dismantled and Hunter's order prohibiting access was wilfully ignored. By January 1796 there was an accumulation of waste in the tanks due to upstream contamination. Similar public orders were issued in May 1797 and December 1798 accompanied by warnings that a number of people had died from the contaminated water below the tanks.<sup>6</sup>

The initial focus of development in the settlement was around the foreshores of the cove and on the banks of the stream with huts and shelters constructed in close proximity. As building density and land use increased, so did impacts on the stream. Not only was it insufficient in quantity to supply the growing population with drinking water, it became unsuitable for consumption. Silting from runoff from building sites reduced the ability of the stream to wash out during high tide. The management of the watercourse and the harbour anchorage were the subject of ongoing debate, numerous enquiries and management plans from the first years of settlement.

### 3.3 The Tank Stream in the Early Nineteenth Century

The condition of the Tank Stream deteriorated in the nineteenth century and Government Orders continued to be issued in an attempt to regulate activities contributing to contamination. Prohibited activities included the construction of slaughterhouses, tanneries, dying-houses, breweries, or distilleries on or near the stream and there was to be no clothes washing, watering of livestock, or rubbish disposal. In 1810 adjacent landholders were ordered to construct a 4 ft (1.2 m) high masonry wall along the boundary with the stream, replacing the Government's ineffectual paling fence.<sup>7</sup> It is thought that it ceased to be used as a supply of drinking water after 1826 and settlers then had to rely on wells and rainwater.<sup>8</sup>

The Government's strategies to improve or, at least to control, the condition of the Tank Stream were ineffective. In 1833 the condition and management of the Tank Stream was again the topic of discussion, this time in conjunction with a proposal for construction of a 'Semi-circular Quay' in Sydney Cove. Preliminary suggestions included enclosure of a portion of the Tank Stream closest to the shore of the cove. Discussions focussed on the impact of the uncontrolled disposal of sewage in the Tank Stream and on the accumulation of silt in the harbour. The silt reduced the water depth for ships docking in the increasingly busy port. Alterations to the head of the cove incorporating the covering of part of the Tank Stream and the extension of Pitt Street offered considerable economic advantages. It would enable the construction of new warehouses with access to wharfage and attract shopkeepers in the neighbourhood that was fast deteriorating in value.<sup>9</sup> Government Committees were formed to discuss the proposals for the new Circular Quay in the 1830 and 1840s.<sup>10</sup> Money was voted for in the Legislative Council to proceed with the work, however, little action was taken until 1844 when a number of plans were considered.<sup>11</sup>

<sup>4</sup> 'Parish of St James', nd, Id140627 [AO Map 349], LPI.

<sup>5</sup> 'Tank Stream Conservation Management Plan: For Asset Management and Sydney Water Corporation', Sydney Water, Jan 2005: 15. Endorsed Heritage Council, 20 Feb 2005.

<sup>6</sup> *Historical Records of Australia (HRA)*, Series 1, Vol 1, 1914: 680, 713; *HRA*, Ser 1 Vol 2 1914: 78-79, 361-2.

<sup>7</sup> *Sydney Gazette* 22 Sep 1810: 1.

<sup>8</sup> F.J.J. Henry, *The Water Supply and Sewerage of Sydney*, Halstead Press, Sydney, 1939: 43-44.

<sup>9</sup> *Sydney Gazette* 14 Sep 1833: 2; NSW Legislative Council Select Committee 1833/25, in Doust NSW *The Select Committees* 2011: 23-24.

<sup>10</sup> Doust 2011: 26, 37, 53, 72 & 113.

<sup>11</sup> *Sydney Gazette* 8 Jan 1839: 2.



In 1831 the irregularly-sized landholdings west of the Tank Stream were privately owned or leased, or occupied by the Crown. The stream formed the eastern boundary of the Parish of St Phillip from its mouth to at least Bridge Street (Figure 3.3). Changes in the Tank Stream shoreline are apparent on later maps and plans providing evidence of gradual reclamation by landholders (Figure 3.4).

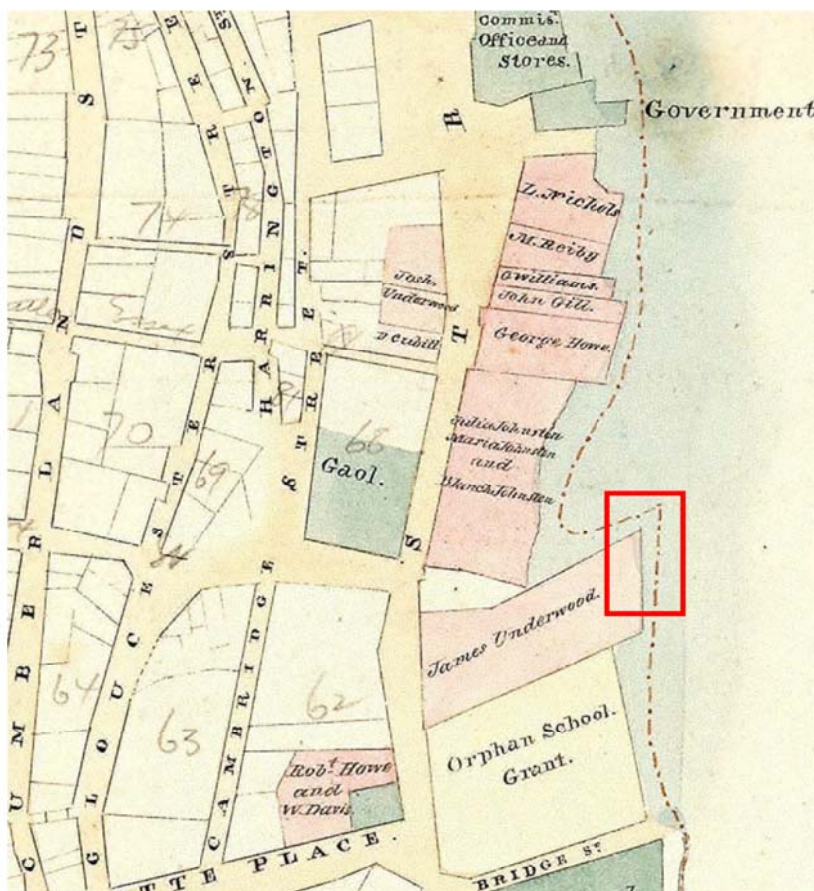


Figure 3.3: Part of a map of the Parish of St Philip showing the names of leaseholders on the west side of the Tank Stream north of Bridge Street. The Tank stream, indicated by a broken red line, is the east boundary of the parish, 27 Mar 1831. The red box indicates the location of the study area. AO 286, Id 140737 LPI.

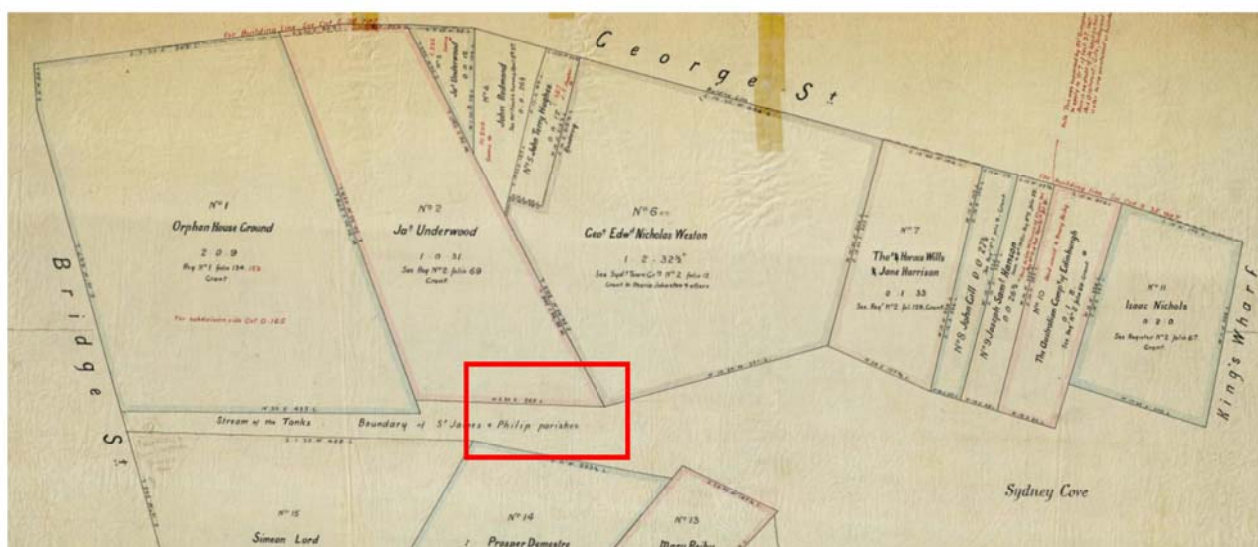
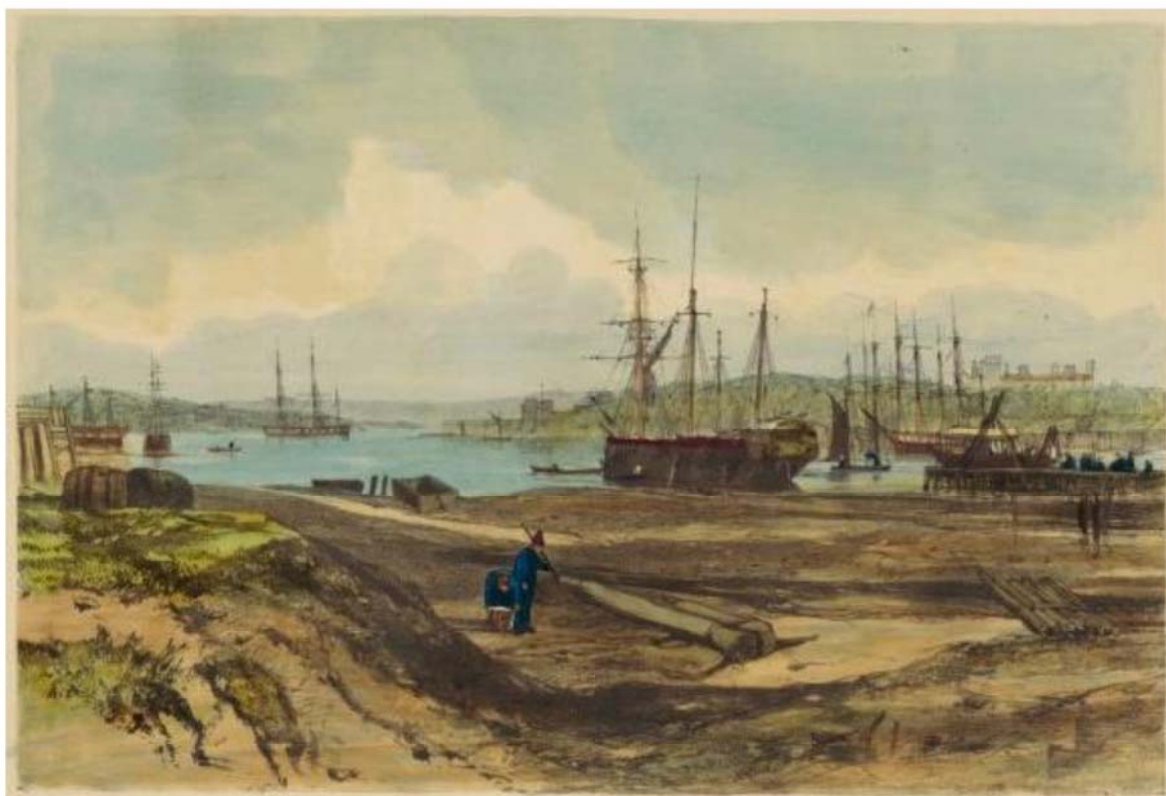


Figure 3.4: Survey of Section 47 of the city illustrating the line of the Tank Stream in 1833 and reclamation on the eastern side of Lot 6 by George E.N. Weston, husband of a descendant of Major George Johnston. The red box indicates the location of the study area. City Section Survey Plan No 47 CCSA.



The Sydney Municipal Council, incorporated on 20 July 1842, took responsibility for administering the city. Among its concerns was the need to provide a reliable and clean water supply, as well as a sewerage and drainage scheme.<sup>12</sup> In 1844 the Colonial Secretary supported a plan for the Tank Stream's conversion to a sewer, the success of which relied on the dredging of silt from Sydney Cove.<sup>13</sup> In the interim, landholders continued to use the Tank Stream as an unofficial sewer with the Dolphin Hotel advertised in a sale notice as having sink waste water and sewerage pipe connections.<sup>14</sup> Although £6000 was voted towards improved sewerage facilities in 1844, the item was struck out in 1845.<sup>15</sup> John Skinner Prout's sketches and watercolours of Sydney Cove made in 1842 illustrate the neglected state of the Tank Stream at its mouth and at Bridge Street at this time, and the erosion of its banks (Figure 3.5, Figure 3.6).



**Figure 3.5: View of Sydney Cove by John Skinner Prout, 1842. The image illustrates the character of the mud flats at the mouth of the Tank Stream in Sydney Cove. Bib ID 2903188, NLA.**

<sup>12</sup> Sydney Corporation abolished on 31 Dec 1853 due to insurmountable financial difficulties. Commissioners were appointed to improve the city's sewerage and drainage. McIlwraith, 'The Tank Stream: City of Sydney NSW', *Sydney Water Board Journal*, Vol 2 No 3, Oct 1952: 77-78.

<sup>13</sup> *Australian* 6 Sep 1844: 3.

<sup>14</sup> *Australian* 29 Sep 1846: 2.

<sup>15</sup> McIlwraith, 'The Tank Stream: City of Sydney NSW', *Sydney Water Board Journal*, Vol 2 No 3, Oct 1952: 77.





**Figure 3.6:** John Skinner Prout's watercolour depicting the unkempt state of the Tank Stream north of Bridge Street in 1842. DG SSV1A/32 ML SLNSW.

A survey for the planned continuation of Pitt Street was prepared in 1847 and presented to the Executive Council on 30 April 1850. The survey of the Tank Stream in the vicinity of the proposed street survives, however, due to the poor quality of the copy it is not reproduced here. The survey dated 14 September 1847 extends from Bridge Street to the proposed 'Semicircular Quay'. Should further research be required, permission to view the original survey will be investigated.<sup>16</sup>

Thought to be roughly contemporary and similar in extent to the 1847 survey referred to above, an undated City Council plan (c1847-c1854) documented the Tank Stream.<sup>17</sup> It records landmarks on the west side of the stream including property boundaries and street alignments including Back Street (Underwood Street) and Queens Place (Dalley Street). What appear to be masonry boundary walls and drain outlets are shown on the plan. Part of Pitt Street is shown on the east side of the Tank Stream and a portion of the plan is reproduced in Figure 3.7.

<sup>16</sup> Crown Plan S32-907, LPI.

<sup>17</sup> Item S6-203/1, Series 521, NSCA.



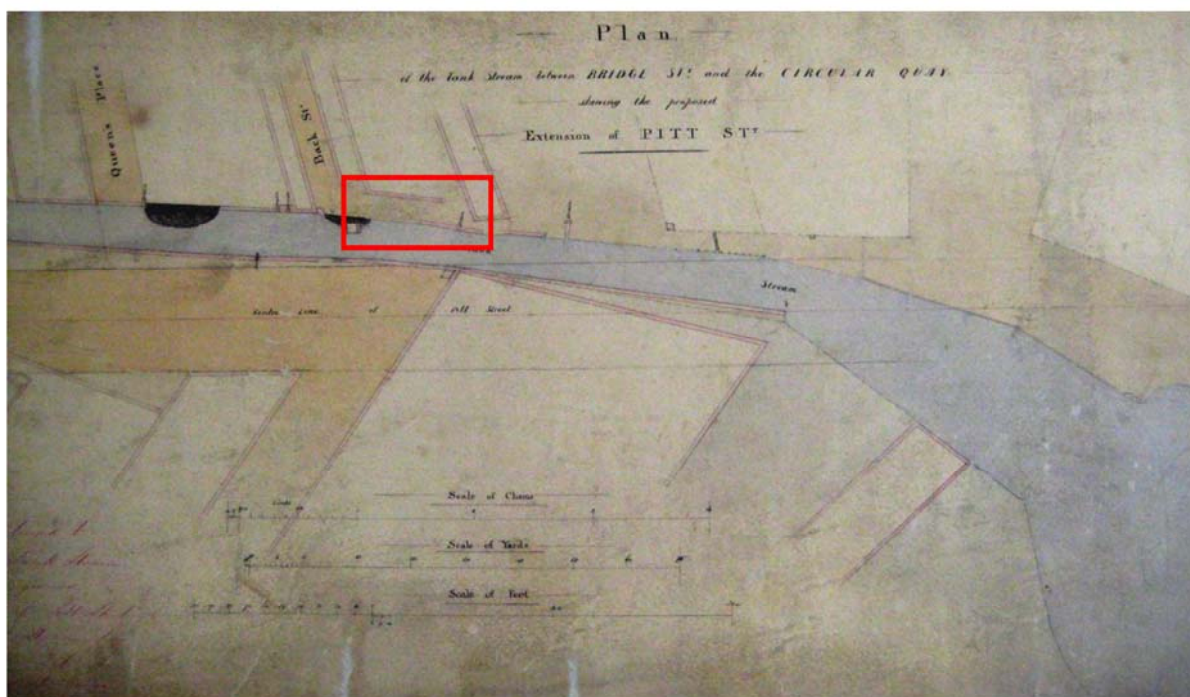


Figure 3.7: Part of an undated plan (c1847-c1854) for the proposed extension of Pitt Street. The unidentified structure near Back Street (Underwood Street) appears to be a small embankment, possibly an embankment for a bridge later built by Mr Underwood. Various drains exit from private properties into the Tank Stream. The red box indicates the location of the study area. Item S6-203/1, NSCA Series 521, CCSA.

In 1854, permission was granted for Mr Donald Larnach, Director and General Manager of the 'Old Bank of NSW', to construct an arch over a portion of the Tank Stream from Bridge Street to the southern boundary of Underwood's grant in 1854 (Figure 3.8).<sup>18</sup> Later plans suggest that the work could have been completed c1855.<sup>19</sup>

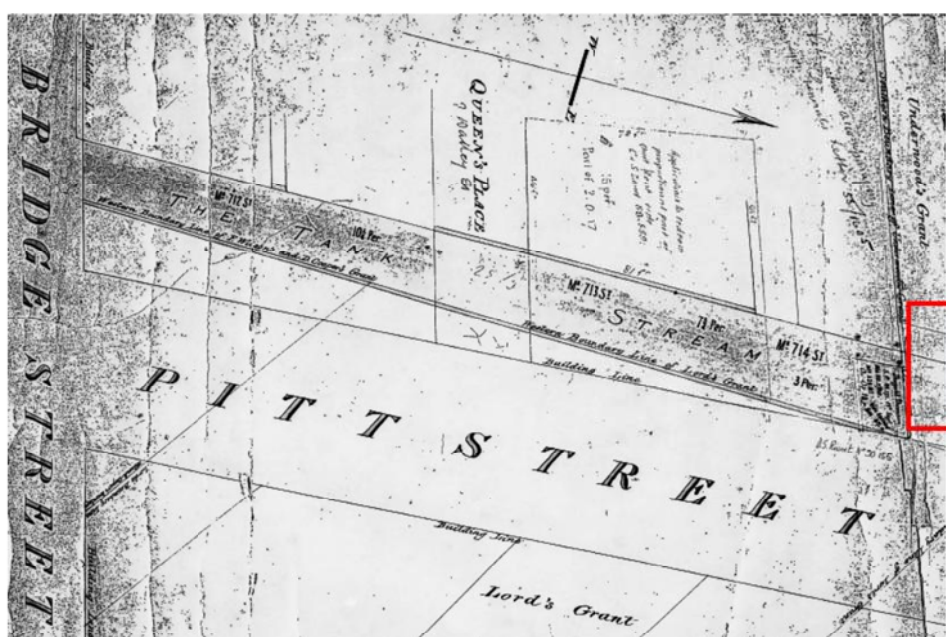


Figure 3.8: Part of a Plan of the Tank Stream to be 'arched over' north of Bridge Street by Donald Larnach. The red box indicates the location of the study area. Crown Plan 203-858, LPI.

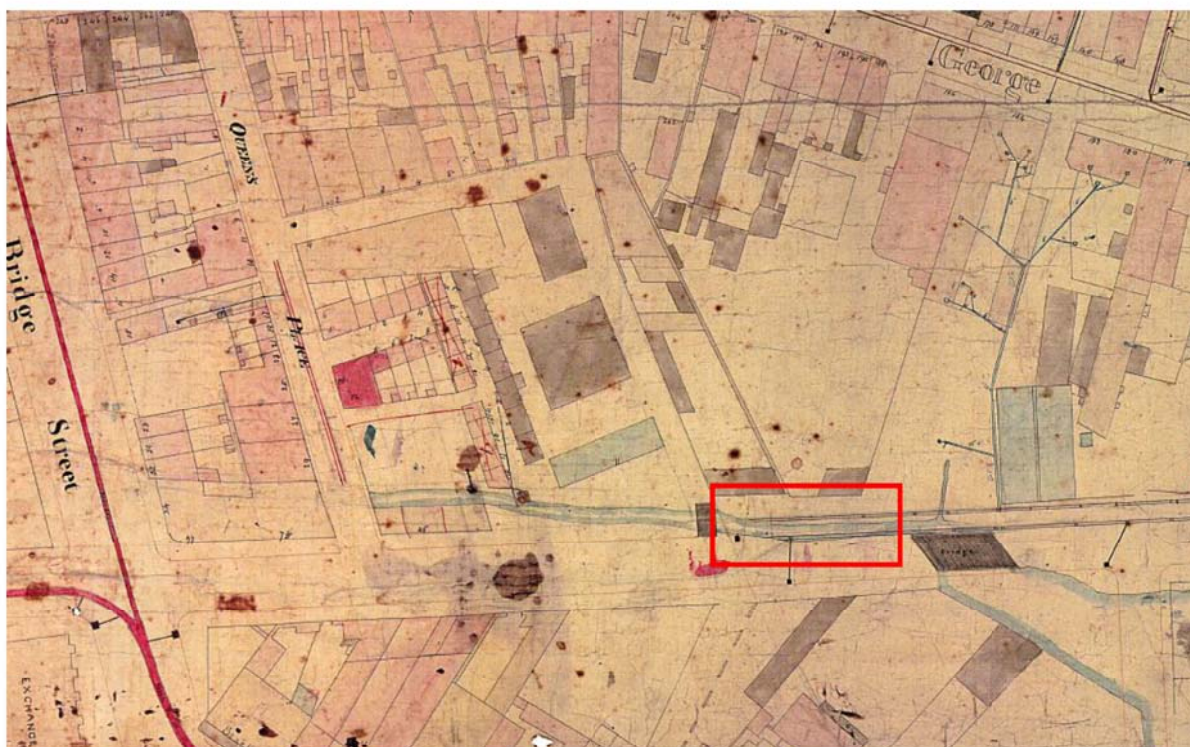
<sup>18</sup> Letter D Larnach Item 26/006/066 CCSA.

<sup>19</sup> Trig Survey Block B2-1 c1855-65 CCSA.



In 1853 the Colonial Secretary again expressed his support for the reclamation of land over the Tank Stream and for the extension of Pitt Street to the Quay. The work corresponded with the preparation for plans for the 'New or Western Portion of the Circular Quay' in 1855. Due to the depth of the mud, it was acknowledged that considerable engineering skill was required to erect buildings on the land.<sup>20</sup> In February 1856 William H Baron, the City Surveyor, presented the City of Sydney Commissioners with specifications for work to cover the Tank Stream between the proposed quay and Bridge Street, at an estimated cost of £714.<sup>21</sup> Landholders like Thomas Underwood had lost confidence that the City Commissioners or the government would enclose the Tank Stream in the near future and in July 1854 he was granted permission to build a bridge from Underwood Street to Pitt Street.<sup>22</sup>

The Sydney City Council's *Trigonometrical Survey* commissioned in 1855 documented the extent of building development at this time, as well as sewerage and drainage. The survey was a working document and as such includes structures post-dating the original survey until 1865 (Figure 3.9).<sup>23</sup> The survey shows Underwood's Bridge connecting Underwood Street to Pitt Street and providing access over the watercourse. The larger bridge to the north marks the location of the Tank Stream outlet, before its replacement by one at Circular Quay. The diversion work on the Tank Stream is shown extending north from Underwood's bridge. A few buildings are shown as having drainage connections into the Tank Stream.



**Figure 3.9:** Part of a trigonometrical survey of Block B-1 in Sydney dated c1855 showing the course of the Tank Stream (blue outline) running along the west side of Pitt Street with a remnant of the former stream mouth evident at the larger of the two bridges corresponding with the alignment of Pitt Street. The red box indicates the location of the study area. Block B2-1 Trig Survey, c1855, CCSA.

<sup>20</sup> SMH 23 Jul 1853: 4; SR Item 5650 SRNSW.

<sup>21</sup> Crown Plan 32-907 LPI; Item No 26/21/0113 NSCA.

<sup>22</sup> Item No 26/11/708 NSCA.

<sup>23</sup> Two versions of the Trig Survey of Block B2 document the study area. The first is dated c1855-7 (Block B2-1) and the second after the enclosure of the Tank Stream (Block B2).



### 3.4 Enclosing the Tank Stream - Underwood's Grant to the mouth of the stream at Sydney Cove, 1856

In early 1856 Mathew Lacey's tender of £620 was accepted to construct sidewalls and cover the Tank Stream, with the work underway by late February of that year. Difficulties were encountered due to the unexpected depth of mud and inadequacies of it as a foundation material for the structure.<sup>24</sup> A plan and specification for work have not been located, however, correspondence in the City of Sydney Council Archives provides a few brief references. Stone quarried from Kent Street was used in the Tank Stream contract although it was also in demand for the guttering in Pitt Street. Lacey purchased rejected timber owned by the City Commissioners lying at Soldiers Point Wharf. Its use is not stated and could have been for shoring, formwork, or other construction. Eight hundred cubic yards of fill was procured from the council for backfilling the masons' work.<sup>25</sup>

By October 1856 the *Sydney Morning Herald* reported the Tank Stream had been walled in and planked over 'to the extent of 3,500 square feet of planking, and 3,000 feet of ironbark girders. The stone used in building the walls amounts to about 6000 cubic feet'. Lacey's work was not without problems and, possibly due to the instability of the foundations, rubble was removed in November 1856 and a wall rebuilt. The paving of Pitt Street North, laid partly over the Tank stream, continued in November.<sup>26</sup> The City Commissioners had completed the Bennelong Sewerage System by the end of 1856 and drained the swamp that fed the Tank Stream, however, it remained in use as a sewer.<sup>27</sup>

### 3.5 Enclosing the Tank Stream Sewer - Contract No 5 - New Pitt Street to Circular Quay, 1856-1857

Work on the Tank Stream outlet into Sydney Cove continued in 1856 with tenders advertised in November for diverting its course and construction of a new outlet in accordance with the City Engineer's plan and specification.<sup>28</sup> A plan for the work, adopted on 19 November 1856, is reproduced in Figure 3.10. The 'New Pitt-street' Contract No 5 undertaken by Mathew Lacey comprised 152.4 metres of stone culvert in elliptical form and was completed on 18 September 1857.<sup>29</sup>

The new system was largely for house drainage and only partially in operation. The silting and accumulated deposits that plagued Sydney Cove was not altered by the enclosure of the Tank Stream and significant problems were experienced in late 1857, especially after heavy rain.<sup>30</sup> Solutions considered included that gullies be constructed to catch run-off and trap refuse and silt. Council had built several gullies and more were planned. By November 1857 a total of £4000 had been spent on the length of the Tank Stream from Circular Quay and over which 'New Pitt St' or 'Pitt St North' was laid. It was claimed that by 1858 sewage would be diverted from the Tank Stream to the Fort Macquarie outlet and that sections of the Tank Stream to the south would be covered.<sup>31</sup>

Warnings in 1857 that an unnamed section of the cover over the Tank Stream was failing were ignored, leading to a partial collapse in January 1859 putting nearby houses at risk.<sup>32</sup> Problems with

<sup>24</sup> Item No 26/22/291 NSCA; *SMH* 1 Mar 1856: 4.

<sup>25</sup> Item Nos 26/22/205, 26/22/372, 26/23/427 NSCA.

<sup>26</sup> *SMH* 10 Oct 1856: 3; Item Nos 26/026/1016 & 26/026/0987 NSCA.

<sup>27</sup> *McIlwraith* Oct 1952: 78.

<sup>28</sup> *Empire* 22 Nov 1856: 1.

<sup>29</sup> *Empire* 31 Mar 1858: 3.

<sup>30</sup> *Empire* 17 Nov 1857: 6.

<sup>31</sup> *Empire* 17 Nov 1857: 6.

<sup>32</sup> Item Nos 26/38/0062 NSCA.



the northern end of the Tank Stream continued as did its use as a sewer, which persisted into the 1870s. The Inspector of Nuisances report to the Mayor on 22 September 1873 described the 'open sewer' connected to the 'old Tank Stream' servicing 53 houses and two large schools. It ran from Gloucester Street to Charlotte Place, east and south of the study area respectively. It then ran northward below the Underwood Estate, passing under premises occupied by 50 Chinese cabinetmakers. Between this point and its connection with the Tank Stream the drain ran under 'closets' where an exposed line caused it to vent at this point.<sup>33</sup>

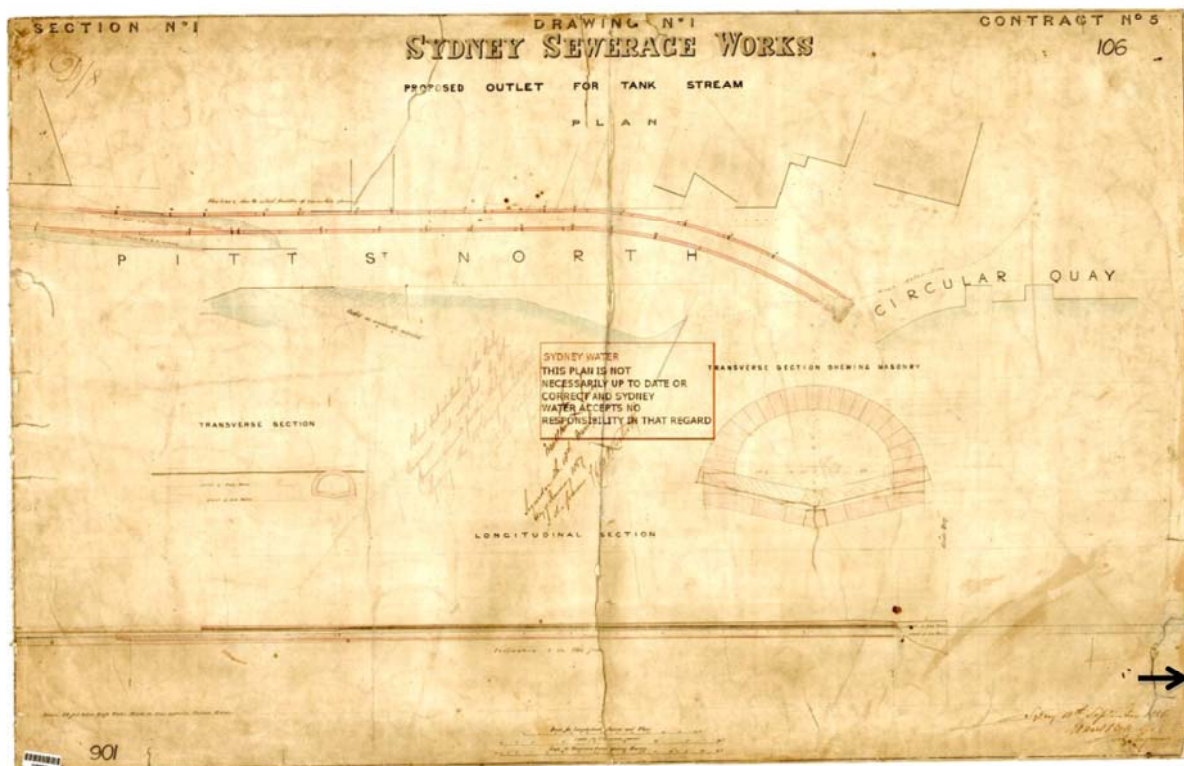


Figure 3.10: 'Drawing No 1' of the Sydney Sewerage Works proposed new outlet for the Tank Stream. The plan and section shows masonry walls with regularly spaced connection points in relation to earlier work that was to be demolished. The original outlet was to be replaced by one at Circular Quay. OCP No 106, 18 Sep 1856, Sydney Water.

### 3.6 Tank Stream Sewer Diversion - Pitt Street between Bridge Street and Underwood Street, 1878-1880

In August 1878 Council advertised tenders for the reconstruction of the Tank Stream Sewer (a 5' 6" brick oviform structure) along Pitt Street, between Underwood and Bridge Streets. The diversion of the sewer allowed for its realignment away from its original course and under the roadway rather than under houses on the west side of Pitt Street.<sup>34</sup>

Plans were prepared in 1878 for further sewerage work from Bridge Street in the south to a point north of Underwood Street near Crane Place. Old Council Plans relating to the project are reproduced in Figure 3.11 and Figure 3.12 and relate to the 'proposed improvements' and the condition of the existing sewer, while Figure 3.13 and Figure 3.14 include a plan, sections and details for the new sewer deviation.

<sup>33</sup> Item No 26/123/820 NSCA.

<sup>34</sup> SMH 3 Aug 1878: 6.

The poor capacity of the sewer diversion, a 1.7 metre brick oviform structure, was considered to be responsible for later flooding in the system. Work was delayed due to deficiencies in the payment of sewerage rates to Council but was completed by April 1880.<sup>35</sup> As two of few surviving plans, those reproduced below are a valuable documentary record of its enclosure north of Bridge Street, and modifications to that date.

Under the *Crown Lands Act of 1884*, landholders in the study area acquired the newly created land over the former course of the Tank Stream between Underwood and Bridge Streets.<sup>36</sup> The former course of the Tank Stream, as well as new sewers and drains, continued to be documented on Public Works Department sewerage and drainage surveys of the late 19<sup>th</sup> century (Figure 3.15). It is not known if old channel built by Mathew Lacey in the 1850s was removed, or simply filled in and the sewer and drain connections left *in situ*. Buildings were soon built over the abandoned or 'Old Tank Stream Sewer'. It is possible that some of the 1850s channel has survived at its connection with the 1878-1880 Tank Stream Sewer Deviation.



Figure 3.11: Plan for the proposed deviation of the Tank Stream Sewer in relation to landholdings and street alignments. The red box indicates the location of the study area. OCP 138, 10 Jun 1878, Sydney Water.

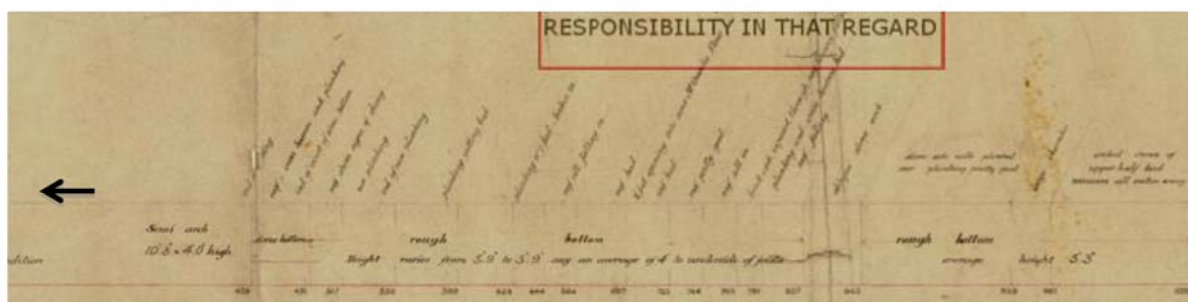


Figure 3.12: Diagram recording the condition of the existing Tank Stream Sewer between Underwood Street and Bridge Street before the deviation. OCP 138, 10 Jun 1878, Sydney Water.

<sup>35</sup> McIlwraith Vol 2 [3] Oct 1952: 80; SMH 3 Apr 1880: 6.

<sup>36</sup> Crown Plan 776-3000, LPI.



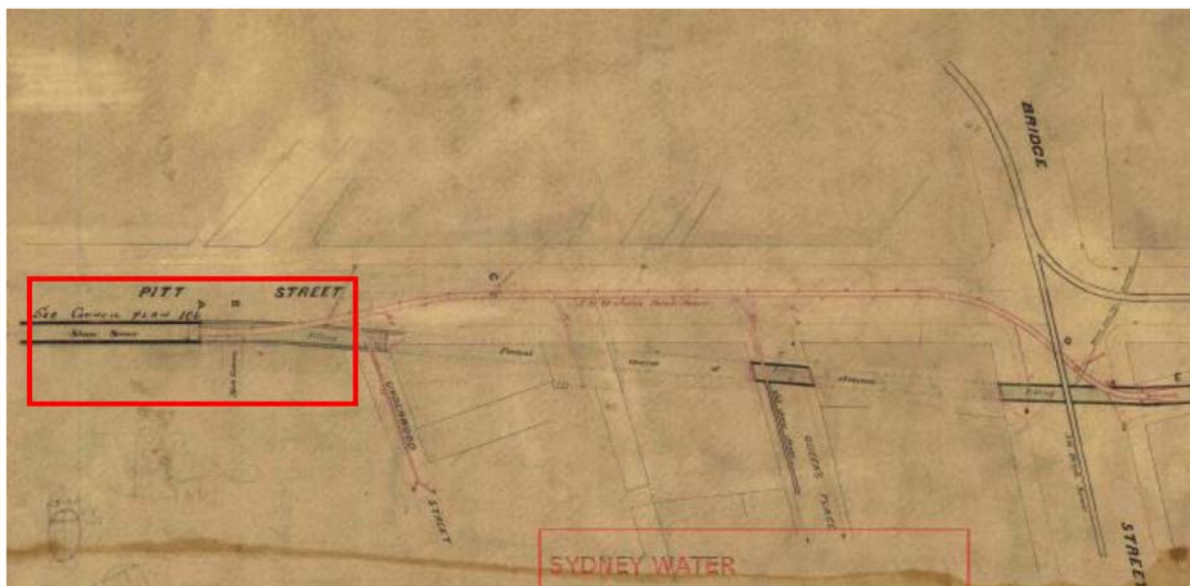


Figure 3.13: Plan of the Deviation of the Tank Stream Sewer incorporating a 5'6" oviform brick sewer between sections of the older stone sewer. The abandoned line is shown as 'filled' under cross-streets. The red box indicates the location of the study area. OCP 267, 18 Jul 1878, Sydney Water.

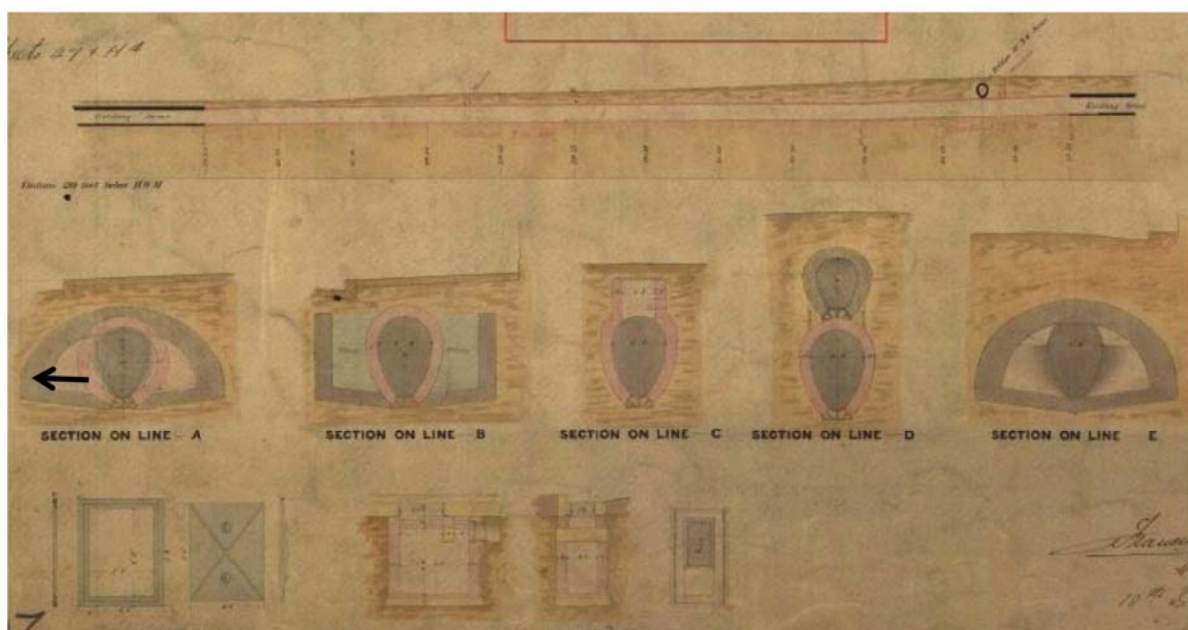


Figure 3.14: Sections and details included on Old Council Plan No 267 for the 'Deviation of the Tank Stream Sewer'. Sections A, B, C, D and E document the channel at a number of points along the line in particular where it intersects with existing lines. The design included gullies and access points for the trapping and removal of rubbish. Colours denote brick (pink), stone (grey) and fill (green). OCP 267, 18 Jul 1878, Sydney Water.

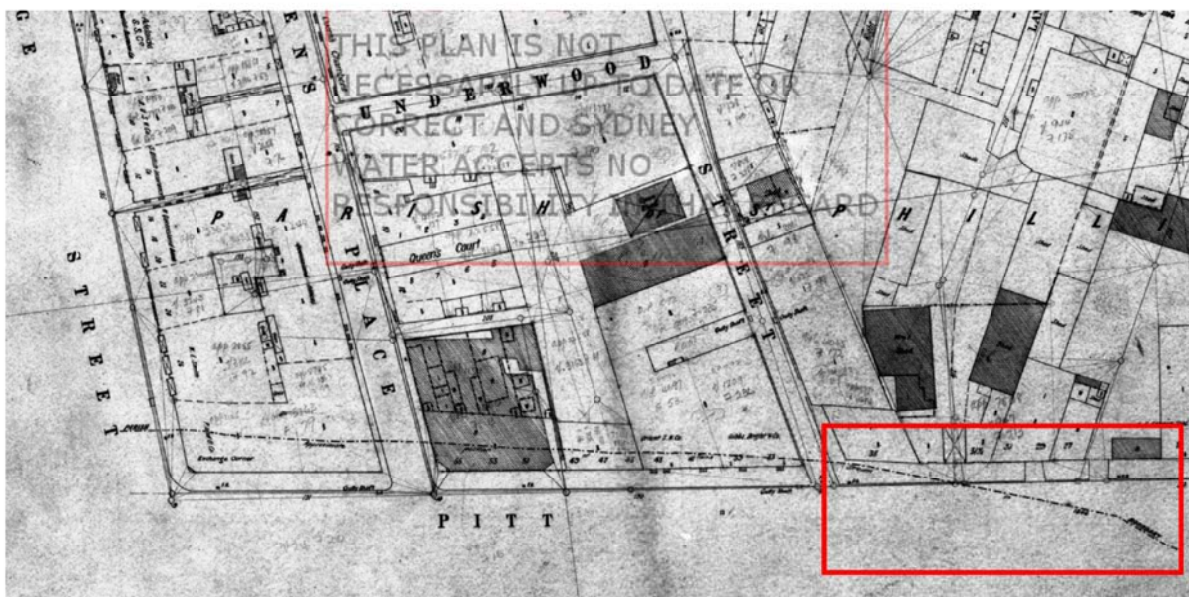


Figure 3.15: Public Works Department Survey of Section 47 of the City of Sydney (dated from 1892) showing the ‘approximate boundary’ of the original Tank Stream in the vicinity of Underwood Street on the west side of Pitt Street. The red box indicates the location of the study area. PWDS1544-S1080, Sydney Water.

### 3.7 The Tank Stream - ‘Combined System Sewer’ to Stormwater Channel

The Sydney City Council maintained control over the sewerage and drainage system until 1890 when the Water Supply and Sewerage Board assumed practical control.<sup>37</sup> The Tank Stream continued to be used as a ‘combined system sewer’ for many years incorporating a number of interception pipes and chambers, one in Pitt Street near Crane Place, in an attempt to stop foul water from discharging into the harbour. A 0.23m interception pipe allowed for sewage to be pumped from lower parts of the drainage area to the Bondi Ocean Outfall Sewer. Although controllable when water was low, when it rose above a certain level it discharged into the cove.<sup>38</sup> JF McIlwraith’s research on the Tank Stream published in 1952 included a detailed explanation of the structure of various sections, capacity and relative flow. McIlwraith’s diagram below is referenced with contract numbers and other documentation. The ‘Flow Schedule’ and cross-sections for the Circular Quay to Bridge Street length included in the article are reproduced in Figure 3.16 and Figure 3.17.

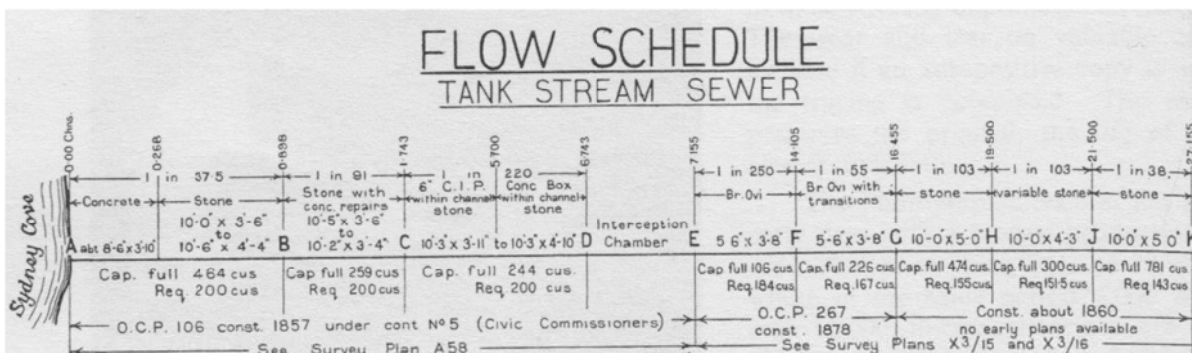


Figure 3.16: Tank Stream Sewer ‘Flow Schedule’ relating to the length from Circular Quay to Bridge Street. McIlwraith Vol 2 [3] Oct 1952: 82.

<sup>37</sup> Henry 1939: 156-58.

<sup>38</sup> McIlwraith Vol 2 [3] Oct 1952: 81-2. The Bondi Ocean Outfall Sewer was completed in 1889.



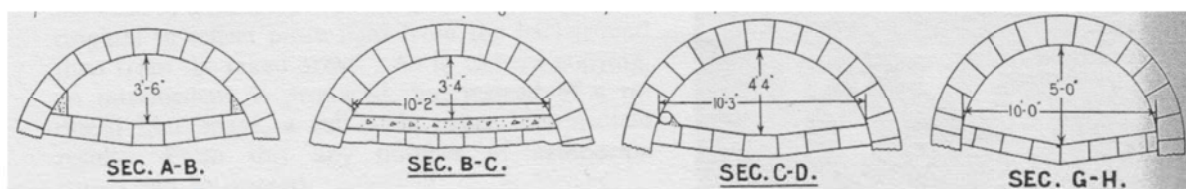


Figure 3.17: Tank Stream Sewer sections through parts of the line from Circular Quay to Bridge Street. McIlwraith Vol 2 [3] Oct 1952: 82.

### 3.8 Conclusion

The Tank Stream has continued in use as a stormwater channel over the last century. Changing sewerage and drainage requirements, as well as building construction and the installation of services have had an impact on its fabric. Parts of the Tank Stream have been replaced or completely removed and in places new materials have been introduced.<sup>39</sup> The section of the Tank Stream between Circular Quay and Bridge Street includes several major phases of construction from 1856-1880, part of which was a deviation from the line of the original channel, cutting off an older section south of Crane Place. The 1856 phase of the Tank Stream channel constructed along the original course of the stream, running from a point just north of Bridge Street to its junction with Sydney Cove, is the oldest part of the structure. It was abandoned after the deviation of the sewer in 1878-1880 and replacement by a channel under Pitt Street. Today the Tank Stream is an operational stormwater channel managed by Sydney Water.

<sup>39</sup> Casey & Lowe Pty Ltd, 'Archaeological Advice: 33-35 Pitt St & 182 George St, Sydney', Dec 2012: 10.

## 4.0 Statutory Context

### 4.1 Overview

Nos 33-35 Pitt Street is located to the immediate west of the curtilage of the Tank Stream, an archaeological feature and works, which runs down this part of Pitt Street, (Figure 4.1). The Tank Stream is listed on the State Heritage Register (SHR), the Sydney City LEP 2012 and the Sydney Water S170 register. The focus of the following discussion is the Tank Stream.

The main statutory document which Sydney Water uses to manage this operational asset is *Tank Stream Conservation Management Plan, For Asset Management and Sydney Water Corporation, 2005 (CMP)*. The CMP acknowledges that the Tank Stream has several meanings:<sup>40</sup>

- The historical stream.
- The existing stormwater drain.
- The tunnel of brick and stone fabric enclosing the current stormwater drain.
- The sections of the former route.
- The idea of the tank stream which has evolved over time and combines fact and fiction and is not necessarily related to reality.

Sydney Water acknowledges that its main statutory role is to protect and manage those elements of the Tank Stream which it controls. It is not responsible for sections outside the working asset.

Under the current approach to definitions of a relic under the *Heritage Act 1977* the Tank Stream drain is not a relic, rather it is a work. This does not matter as it is listed on the SHR. Areas of the Tank Stream outside the drain are likely to contain relics.

The CMP further stated in relation to the curtilage:

This means that the importance of the area surrounding the conduit is largely reduced to its importance as the physical and structural support to the conduit. In analysing this further, different parts of the conduit have different significance levels, and different ground portions have different geological and sensitivity structural potential. In effect, the relevant buffer zone to be protected by the SHR listing will thus vary in accordance with the specific conditions of each location considered.<sup>41</sup>

### 4.2 State Heritage Register (636)

The Tank Stream is listed on the State Heritage Register and consists of a mixture of structures of brick oviform and a stone-arched drain enclosing what was the earliest fresh water source for the colony. The SHR curtilage of the Tank Stream measures 3m from all surfaces of the drain (Figure 4.1).<sup>42</sup> A copy of the SHR listing is included in Appendix 1. This also has the same Statement of Significance as produced below from the Sydney Water CMP.

<sup>40</sup> CMP 2003: i.

<sup>41</sup> VMP 2003: 54

<sup>42</sup> SHR listing, <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5045604>, accessed 29/11/2012.



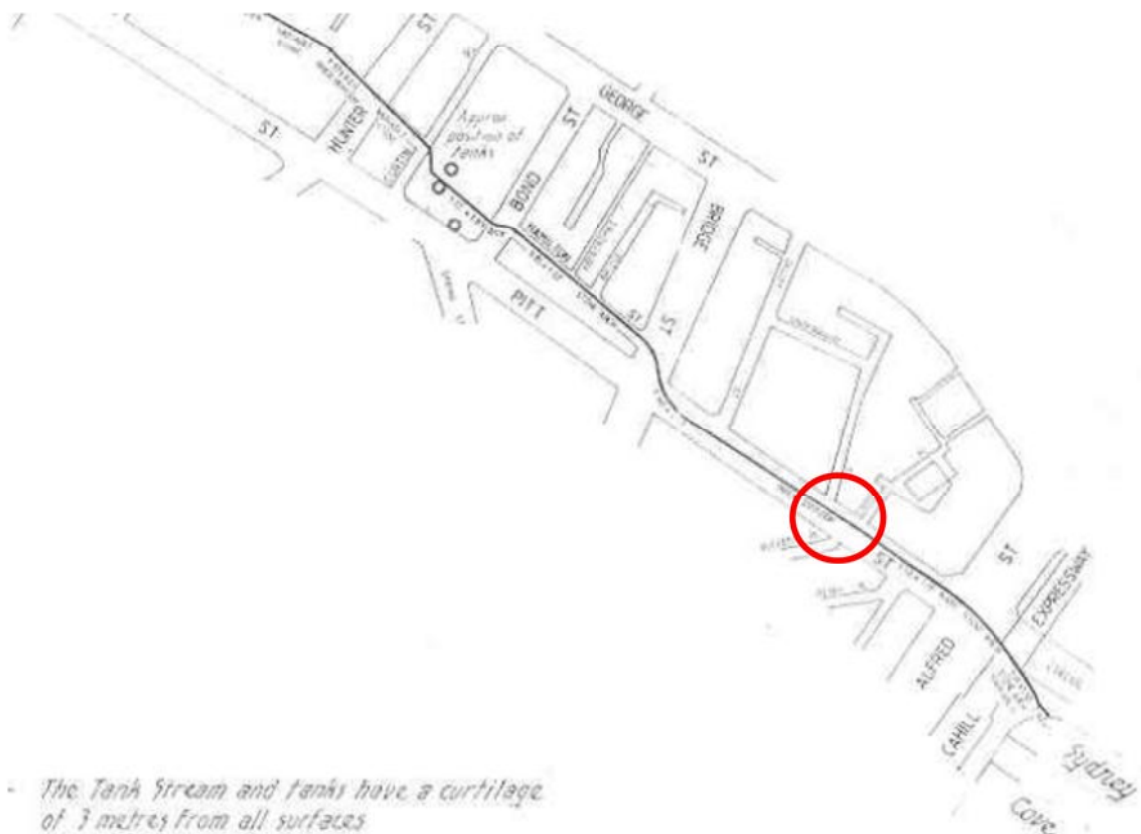


Figure 4.1: Extract from SHR plan listing the Tank Stream.

<http://www.environment.nsw.gov.au/heritageapp/HeritageImage.aspx?ID=5045604#ad-image-4>

### 4.3 Sydney Water S170 Register - Tank Stream Stormwater Channel No.29E

The Tank Stream is an operational Sydney Water asset. It is listed on Sydney Water's Heritage and Conservation Register, through S170 of the *NSW Heritage Act 1977*:

<http://www.sydneywater.com.au/SW/water-the-environment/what-we-re-doing/Heritage-search/heritage-detail/index.htm?heritageid=4573709&FromPage=searchresults#>

This listing identifies the following:

#### 4.3.1 Curtilage/Boundary

The Tank Stream curtilage is defined as the physical limits of the enclosing structures which contain the stream, as shown on the curtilage plan (Figure 4.2). Comprises stone block arches, brick drains, with some sections of concrete construction. The Tank Stream has a curtilage of 3 metres from all surfaces. Refer to curtilage plan.

#### 4.3.2 Statement of Significance

The Tank Stream is a rare surviving tangible link with the historically important nexus between pre-contact Australia and post-contact European settlement. The presence of the stream was one of the most important resources responsible for determining the location of the first permanent European settlement in Australia and ultimately for the location of the City of Sydney. From originally forming the demarcation line between classes of convicts, the route of the stream has continued to be the basis of the broad pattern of the city's drainage and street layout development,

including the development of Circular Quay. The original stream bed has considerable archaeological potential and the fabric enclosing the watercourse demonstrates one of the most comprehensive collections of hydrological technology in Australia. The Tank Stream also has strong associations with the development of environmental management and public utilities in Sydney and particularly with Sydney Water. The Tank Stream itself has retained an identity through functional changes from being a fresh water supply, through subsequent use as a sewer to its current function as a stormwater drain. The concept of the Tank Stream has evolved by association with major events and processes in Australian history, into a remarkably strong idea, that is not necessarily related to the existing fabric. The Tank Stream is widely recognised and fondly regarded as an integral part of Sydney.

It is of State significance and is possibly of National significance.

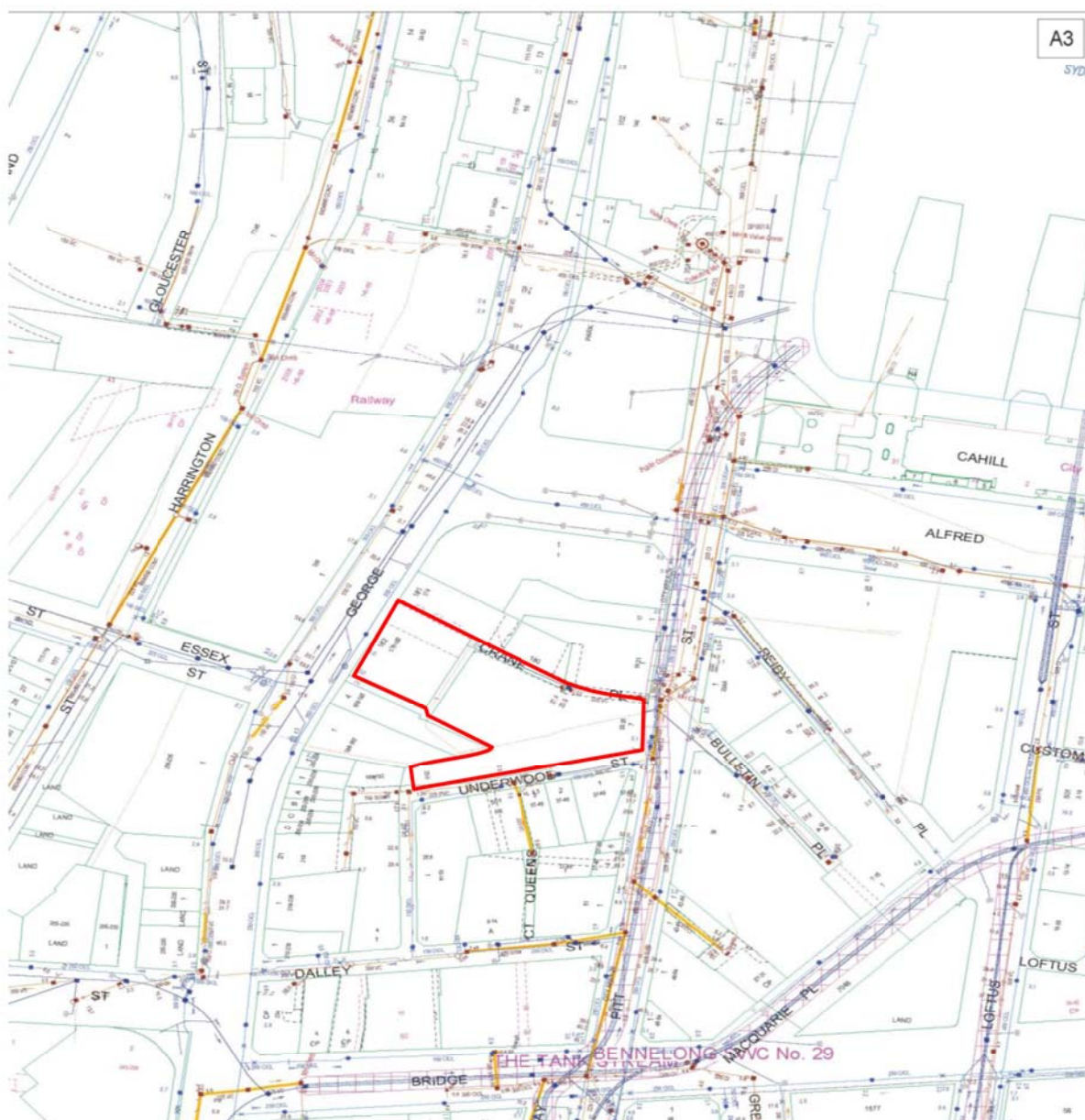


Figure 4.2: Plan showing the location of the Tank Stream in relation to the Pitt Street frontage of the study area. Sydney Water.



#### 4.4 Sydney LEP 2012

The following is an extract from the current LEP which includes the study area. The Tank Stream is listed as I1656 (Figure 4.3). This is identified as 'Tank Stream including tanks and tunnels' and as having State significance.

<http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+628+2012+cd+0+N>

#### 5.10 Heritage conservation

**Note.** Heritage items (if any) are listed and described in Schedule 5. Heritage conservation areas (if any) are shown on the [Heritage Map](#) as well as being described in Schedule 5.

##### 1) Objectives

The objectives of this clause are as follows:

- (a) to conserve the environmental heritage of the City of Sydney,
- (b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,
- (c) to conserve archaeological sites,
- (d) to conserve Aboriginal objects and Aboriginal places of heritage significance.

##### 2) Requirement for consent

Development consent is required for any of the following:

- (a) demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance):
  - (i) a heritage item,
  - (ii) an Aboriginal object,
  - (iii) a building, work, relic or tree within a heritage conservation area,
- (b) altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item,
- (c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,
- (d) disturbing or excavating an Aboriginal place of heritage significance,
- (e) erecting a building on land:
  - (i) on which a heritage item is located or that is within a heritage conservation area, or
  - (ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance,
- (f) subdividing land:
  - (i) on which a heritage item is located or that is within a heritage conservation area, or
  - (ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.

##### (4) Effect of proposed development on heritage significance

The consent authority must, before granting consent under this clause in respect of a heritage item or heritage conservation area, consider the effect of the proposed development on the heritage significance of the item or area concerned. This subclause applies regardless of whether a heritage management document is prepared under subclause (5) or a heritage conservation management plan is submitted under subclause (6).

##### (5) Heritage assessment

The consent authority may, before granting consent to any development:

- (a) on land on which a heritage item is located, or
  - (b) on land that is within a heritage conservation area, or
  - (c) on land that is within the vicinity of land referred to in paragraph (a) or (b),
- require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.

##### (6) Heritage conservation management plans

The consent authority may require, after considering the heritage significance of a heritage item and the extent of change proposed to it, the submission of a heritage conservation management plan before granting consent under this clause.

**(7) Archaeological sites**

The consent authority must, before granting consent under this clause to the carrying out of development on an archaeological site (other than land listed on the State Heritage Register or to which an interim heritage order under the [Heritage Act 1977](#) applies):

- (a) notify the Heritage Council of its intention to grant consent, and
- (b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.

**(8) Aboriginal places of heritage significance**

The consent authority must, before granting consent under this clause to the carrying out of development in an Aboriginal place of heritage significance:

- (a) consider the effect of the proposed development on the heritage significance of the place and any Aboriginal object known or reasonably likely to be located at the place by means of an adequate investigation and assessment (which may involve consideration of a heritage impact statement), and
- (b) notify the local Aboriginal communities, in writing or in such other manner as may be appropriate, about the application and take into consideration any response received within 28 days after the notice is sent.

**(9) Demolition of nominated State heritage items**

The consent authority must, before granting consent under this clause for the demolition of a nominated State heritage item:

- (a) notify the Heritage Council about the application, and
- (b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.

**(10) Conservation incentives**

The consent authority may grant consent to development for any purpose of a building that is a heritage item or of the land on which such a building is erected, or for any purpose on an Aboriginal place of heritage significance, even though development for that purpose would otherwise not be allowed by this Plan, if the consent authority is satisfied that:

- (a) the conservation of the heritage item or Aboriginal place of heritage significance is facilitated by the granting of consent, and
- (b) the proposed development is in accordance with a heritage management document that has been approved by the consent authority, and
- (c) the consent to the proposed development would require that all necessary conservation work identified in the heritage management document is carried out, and
- (d) the proposed development would not adversely affect the heritage significance of the heritage item, including its setting, or the heritage significance of the Aboriginal place of heritage significance, and
- (e) the proposed development would not have any significant adverse effect on the amenity of the surrounding area.



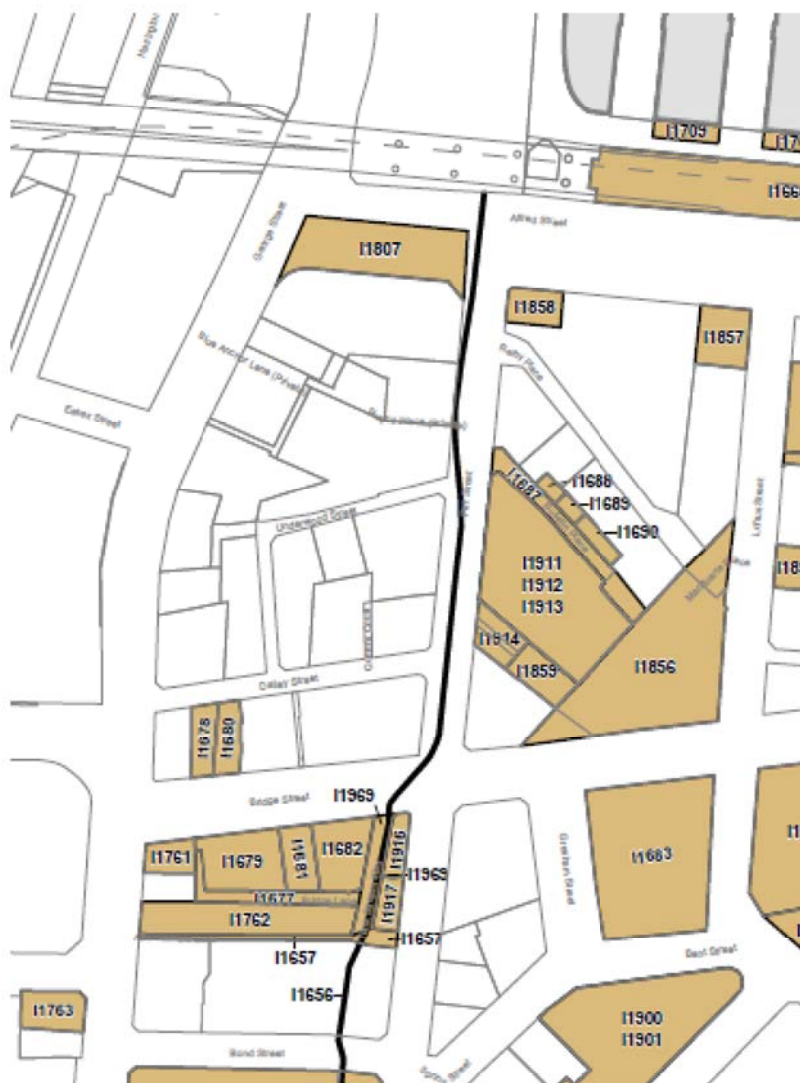


Figure 4.3: Detail from City of Sydney LEP 2012, Map 14. State Legislation website.

#### 4.5 Tank Stream CMP

The main statutory document which Sydney Water uses to manage this operational asset is *Tank Stream Conservation Management Plan, For Asset Management and Sydney Water Corporation, 2003 (CMP)*. The CMP acknowledges that the Tank Stream has several meanings:<sup>43</sup>

- The 'natural' tank stream being the small watercourse draining the catchment south from Sydney Harbour.
- The existing fabric of the stormwater drain.
- The tunnel of brick and stone enclosing the stormwater drain.
- The sections of the former route of the Tank Stream.
- The concept of the 'Tank Stream' as experienced, depicted and taught to generations of Australians.

<sup>43</sup> CMP 2003: i.

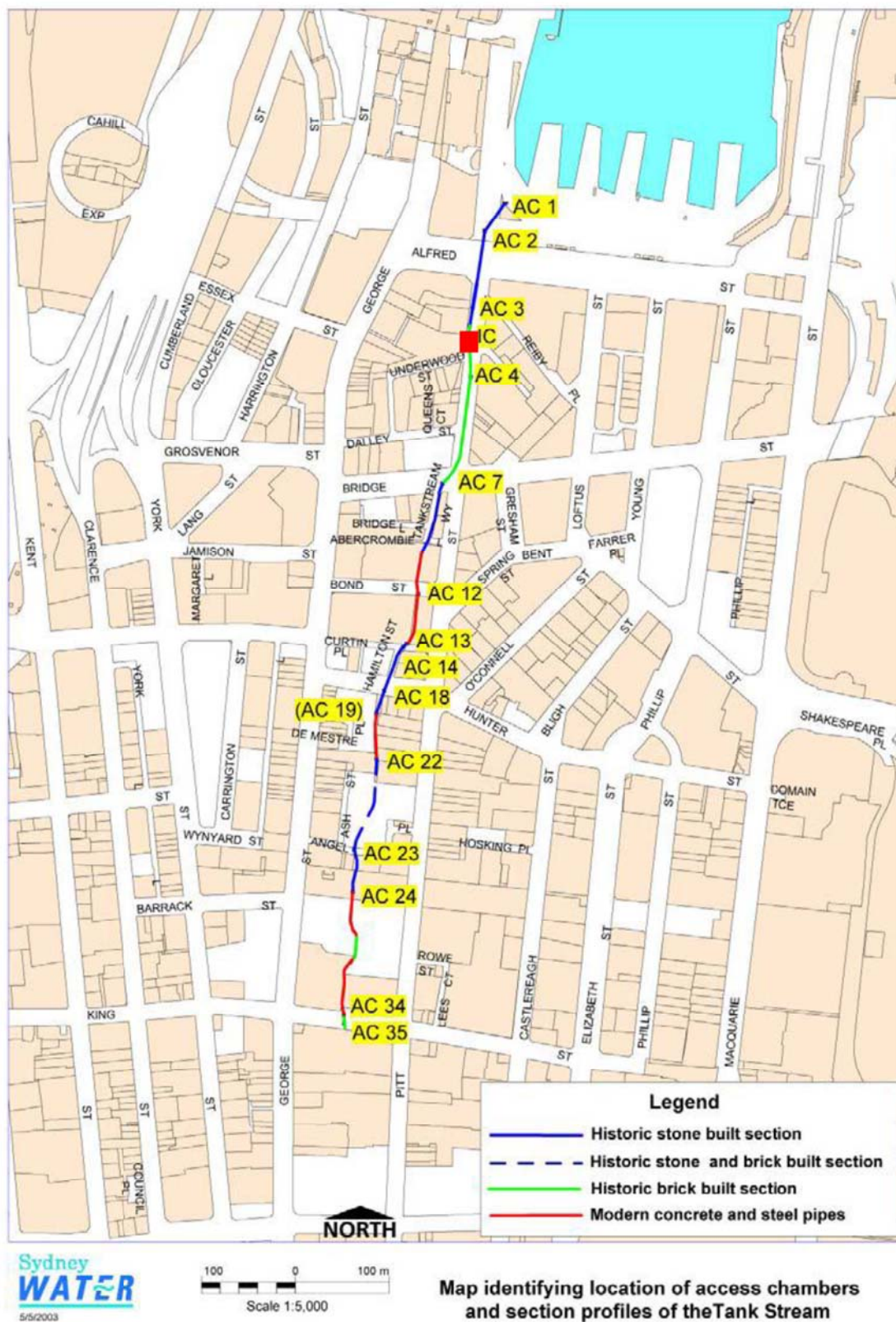


Figure 4.4: Map showing the route of the Tank Stream. Labels indicated areas referred to in the CMP. Tank Stream CMP.



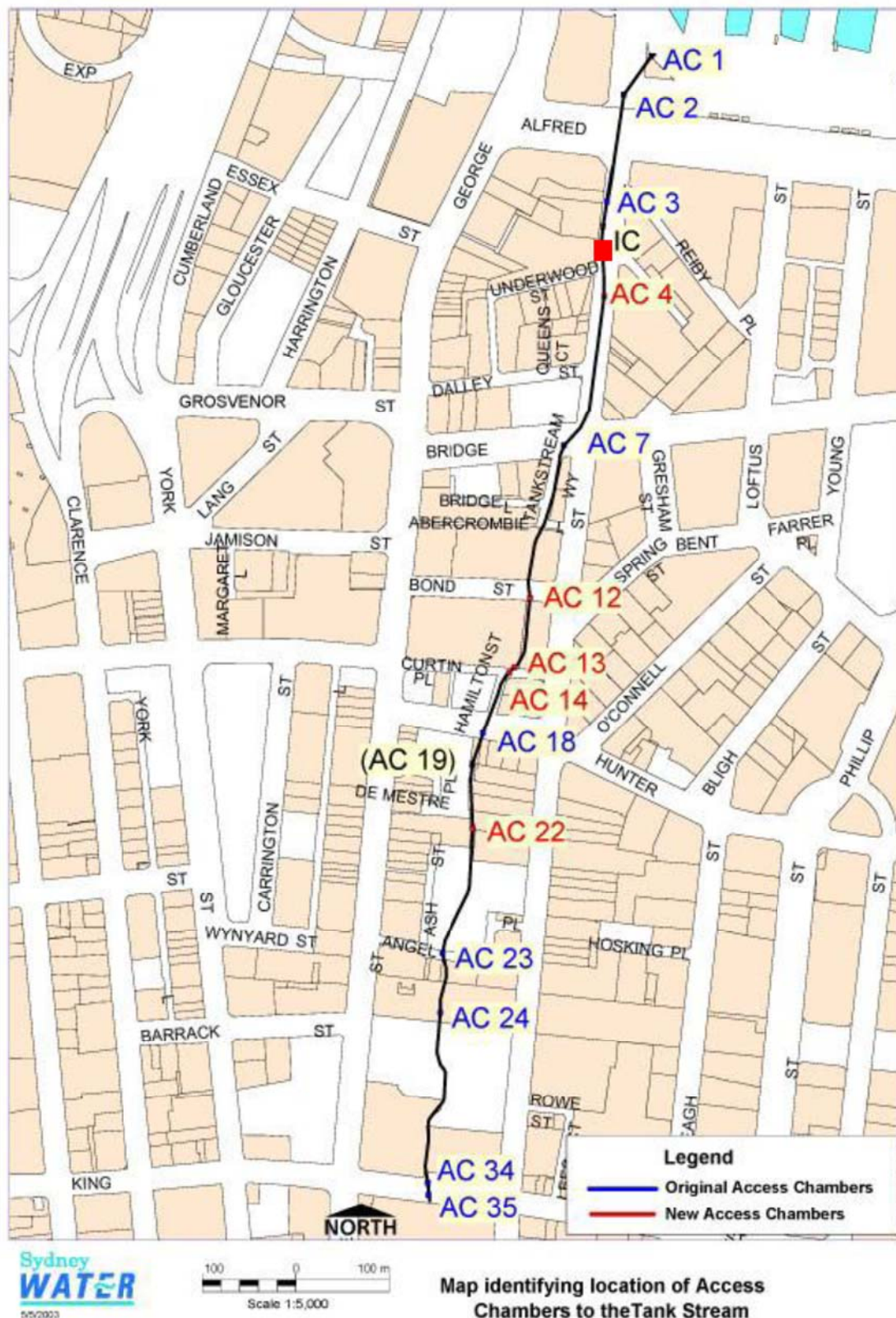


Figure 4.5: Historic and New Access Chambers. The current study area is between AC7 and AC4. CMP 2003: 33.

#### 4.5.1 Bridge Street to Circular Quay

##### ***From Bridge Street to Circular Quay***

The CMP describes this section:

Section between AC 07 and the interception chamber located below corner of Pitt Street and Crane Place, is about 185m long. Constructed c.1878, the section starts with the above-mentioned transition from stone arch to typical brick oviform profile, about 810mm by 1220mm. From AC 07, located on the south side of Bridge Street, it runs northnorthwest about 48m to the access chamber AC 4, before it turns north, and continues [for] another c. 137m below Pitt Street to the interception chamber.

From this point, Tank Stream runs directly north, through access chamber AC 03, to AC 02 located approximately 100m to the north of the interception chamber, on the north side of Alfred Street. In this section, the profile reverts to semi-elliptic stone arch about 3000mm in width, while the height varies between c. 1100 and c. 1400mm. The bottom was formed as shallow V-shape flattened in the central area. [p38]

The CMP indicates that the operational section of the Tank Stream within the study area is the 1878 brick oviform drain. As the historical research shows, the oviform drain was built within an earlier stone channel.

Bridge Street to Circular Quay (Extract from CMP Table 3-1: Profiles of the Tank Stream, p. 40).

Location	Profile	Date
AC 07 to the Interception Chamber, Bridge Street to Crane Place	Brick Oviform Profile, b/h=810 by 1220mm, L=185m	1878
Interception Chamber to AC 02, Crane Place to Alfred Street	Semi-elliptic Stone Arch, b/h=3000 / 1100–1400mm, L=100m	1860
AC 02 to the Outlet, Alfred Street to Circular Quay	Semi-elliptic Stone Arch, b/h=3000 / 1100–1400mm, L=32m	1860

#### 4.5.2 Comments from Sydney Water Asset Manager, Dave Grasby

Tuesday 27 August 2013 (email)

Unfortunately, we have no clear information regarding this section of the Tank Stream other than OCP 267 and the attached OCP 138 Sheet 2, which shows a sketch outline of the open channel that preceded the oviform construction under OCP 267 and notes (on the long section) the condition of the different sections of the open channel (with the notes seeming to indicate that the channel had been lidded in places with planks).

You would have noted that OCP 267 identifies that sections of this open channel were then filled when the brick oviform was constructed and the Tank Stream diverted; however, we have no information other than OCP 267 on this filling (including the apparent walls that contain it laterally). I can certainly understand that the walls (if they exist) and the fill would be of some archaeological interest.

With regard to CCTV, also attached is a screenshot of the upper end of this section of the Tank Stream (at Bridge St, constructed under OCP 267) from our most recent CCTV condition assessment inspection in Feb 2009. This shows the typical oviform section that was constructed along the entire length.



Unfortunately, we don't have CCTV footage for the section directly adjacent to your building, as the 2009 inspection was abandoned 90 metres upstream due to water depth that was backing up from the Crane Place interceptor weir. This weir was removed in 2011, so there should be no inundation issue if you need to get the asset CCTVed. Our next scheduled condition assessment inspection will be in 2014.

#### 4.5.3 Archaeological Evidence

Page 41-42 of the CMP discusses the archaeological evidence predating the current drain:

The Aboriginal and early colonial archaeological resource relating to the Tank Stream's history as an open running stream is likely to be extremely patchy and its survival purely a matter of good fortune. It is not possible to predict on the basis of current historical or archaeological knowledge where such deposits may survive. Where such evidence is present it will be significant both as sources of information that is otherwise very rare in Sydney – evidence of Aboriginal life in Sydney Harbour, and the very earliest periods of colonial Sydney – and for its tangible link with the Tank Stream and its place in Australia's own historical development.

The rarity of the sites and their uncertain occurrence requires that ground disturbance in areas of potential should be done with an aim to minimise the risk of incidental loss, i.e. through open area rather than sondage exposure. Other evidence of occupation of the stream banks before it was channelled are of probable local significance. The likelihood of encountering sites is shown in the table 3-2 below.

#### 4.5.4 Management of Curtilage & Buffer Zones

The general principle, established by the experience in similar cases, indicates that the following buffer zones are required, (measured from all sides of the conduit):

- a zone of 1m should be absolutely prohibited for any new development,
- a zone of 3m should be generally prohibited for new development, and any works within this zone should be overseen by a suitably qualified structural engineer,
- a zone of 10m should be considered structurally highly sensitive, and works within this zone should be approved by a suitably qualified structural engineer.

Within the buffer zones, the elements should retain their previously endorsed level of significance. The zones should end on the ground surface, and repairs of surface elements including roads, pavements and other should not be considered to have an impact on the Tank Stream curtilage, and should be excluded from the requirements of the s.60 of the NSW Heritage Act.<sup>44</sup>

The CMP provides guidelines for

- New Connections – Policy 7.6.2
- On-going Operational Requirements (p114-115)

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<sup>44</sup> CMP 2003: 54.

#### 4.5.5 Guidelines for Archaeology

##### European Archaeology

###### Policy Statement

Any potential archaeological resources on the property should be conserved in accordance with the requirements of the NSW Heritage Act 1977 and their potential for interpretation considered.

###### Interpretation Guidelines

1. An archaeological assessment should be undertaken prior to any works below ground level, in accordance with the relevant provisions of the NSW Heritage Act 1977. This should identify any archaeological evidence relating to the period prior to or concurrent with the construction of the Tank Stream drain and assess the significance of that evidence.
2. Wherever technically feasible, works to this site should avoid areas of high archaeological potential or significance.
3. Should disturbance be required to areas of archaeological potential or significance, an application under section 60 of the *Heritage Act* will be required for this disturbance.
4. Any archaeological resources must be managed in accordance with the recommendations arising from the archaeological assessment and any approval issued by the NSW Heritage Council.
5. In the event archaeological material is unexpectedly discovered during any works to this site, work shall immediately cease in the affected area and the Heritage Office will be contacted for advice.

#### 4.6 Heritage Branch Advice

Discussions with Dr Siobhan Lavelle, Senior Heritage Officer, Heritage Division, Regional Operations and Heritage, Office of Environment & Heritage, Department of Premier and Cabinet indicated that a Statement of Heritage Impact (SOHI) would be required for any works within the curtilage of the Tank Stream. The SOHI should indicate what type of application is appropriate. Dr Lavelle also noted that Sydney City may refer it as an IDA. A consent was issued by the Heritage Division for One Alfred Street Redevelopment where the proposed new building entered the curtilage of the Tank Stream and a S63 consent was issued.



## 5.0 Development Context & the Tank Stream

### 5.1 1 Alfred Street, Circular Quay

The heritage report of this project discussed the Tank Stream, to the north of the current study area. This report noted that:

- The Tank Stream is located immediately adjacent to the site on Pitt Street. Its western extremity is located below the footpath c100-175mm east of the site's legal boundary, with an additional 1m offset to the inside wall of the existing basement car park. Its base is 8' 9" (2.44m) below the footpath. The 3m curtilage extends beyond the existing Gold Fields House basement retaining walls.<sup>45</sup>

The strategy used to minimise impacts on the Tank Stream structures were:

- The retention of the existing reinforced concrete basement retaining wall along the Pitt Street frontage adjacent to the Tank Stream.
- Installation of temporary restraints to the retaining wall prior to the removal of the existing basement floor slabs. These will comprise soldier piles, with post-tensioned ground anchors fixing the soldier piles in place through the existing walls.
- Rock bolting and shotcreting of the face of the exposed rock for the new excavation below the existing basement level, in the event that local areas of weak or jointed rock are encountered during the works.<sup>46</sup>

Appendix B of this report provided a sketch plan by Taylor Thompson Whiting outlining the engineering solution at this site.

### 5.2 Integrated Development Application Approval (10 May 2012) – D/2010/2029

The proponent for this project as received approval under a DA Application. As part of this an approval was also received from the Heritage Council. The Heritage Council approval responded closely to the engineering advice by Taylor Thompson Whiting. As part of an Integrated Development Approval the following approval was made by the Heritage Council in relation to this project and their works within the Tank Stream. This was included in the City of Sydney's DA: [http://meetings.cityofsydney.nsw.gov.au/council/about-council/meetings/documents/meetings/2012/CSPC/10-05-12/120510\\_CSPC\\_ITEM04.pdf](http://meetings.cityofsydney.nsw.gov.au/council/about-council/meetings/documents/meetings/2012/CSPC/10-05-12/120510_CSPC_ITEM04.pdf)

(22)

#### Integrated Development Approvals

The Terms of Approval for Integrated Development as advised by the NSW Heritage Council are as follows:

#### (116) NSW HERITAGE COUNCIL – TERMS OF APPROVAL

- a) The proposed retaining systems devised by Taylor Thomson Whitting (NSW) Pty Ltd are to be implemented.
- b) A suitably qualified engineer is to monitor the installation of the proposed retaining system to ensure the work is carried out in accordance with the Taylor Thomson Whitting methodology.
- c) A suitably qualified engineer is to monitor the rock face during the excavation process.
- d) In the event that substantial intact archaeological deposits or State significant 'relics' are discovered, work must cease immediately in the affected area(s) and the Heritage Council

<sup>45</sup> GML 2010: 45.

<sup>46</sup> GML 2010: 45.

must be contacted for advice. Additional assessment and approval may be required prior to works continuing in the affected area(s) based on the nature of the discovery.

- e) This approval shall be void if the activity to which it refers is not physically commenced within five years after the date of the approval or within the period of consent specified in any relevant development consent granted under the Environmental Planning and Assessment Act, 1979, whichever occurs first.

(25)

The heritage listed Tank Stream runs underground, parallel and adjacent to, the eastern boundary of the site. The location of the tank stream varies between 110mm and 175mm from the boundary and is located approximately 1 metre from the existing basement level wall.

(37)

### **Section 79C(1)(a) Environmental Planning Instruments, DCPs and Draft Instruments**

#### **Heritage Act 1977**

- 27. The application is classified as Integrated Development pursuant to Clause 91A of the Environmental Planning and Assessment Act, 1979. Pursuant to this clause, the proposal requires approval under Section 57 of the Heritage Act, 1977 due to the proposed works being within the curtilage of the Sydney Tank Stream (which is listed as an archaeological feature on the State Heritage Register).
- 28. The NSW Heritage Council has granted its general terms of approval to the proposal, dated 4 February 2011, and these are contained within the recommendation of the report.

For some reason the condition for the project are less onerous than the ones made for 19-31 Pitt Street, which were made 18 August 2011, nine months earlier. The conditions of consent were strongly based on the Heritage Council conditions.

### **5.3 19-31 Pitt Street, Sydney**

Engineering advice by Northrop for this project, included in the Heritage Impact Statement (69-72) for this site observed:

They noted that the engineer developed a system of shear walling to contain the shoring of the existing retaining wall whilst excavating that negates the need to demolish the existing basement retaining wall and any encroachment on the heritage tank stream. The proposed basement is well within the boundary of the site.

The geo-technical report has described the soil type surrounding the tank stream as "saturated marine clays". The structural engineer – with the proposed design method of retaining wall structure will assist in the preservation of the heritage stone section of the Tank Stream indirectly. This is achieved by stabilising the zone by building the proposed retaining wall into bedrock foundations. The wall has a dual use of shoring as well as retaining permanently.



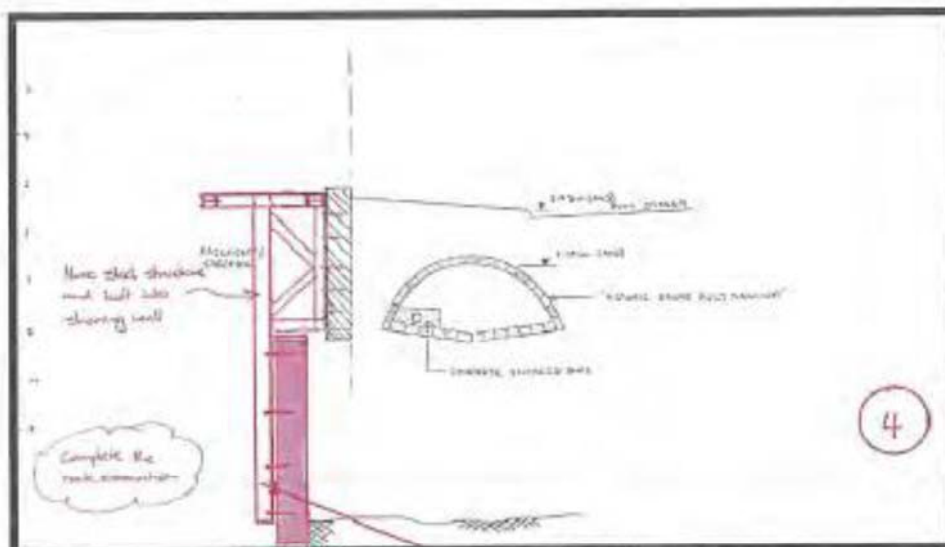


Figure 5.1: Northrop Engineering plan showing the Tank Stream in relation to the site for 19-31 Pitt Street. This will maintain the existing basement boundary. Rappoport 2010: 70.

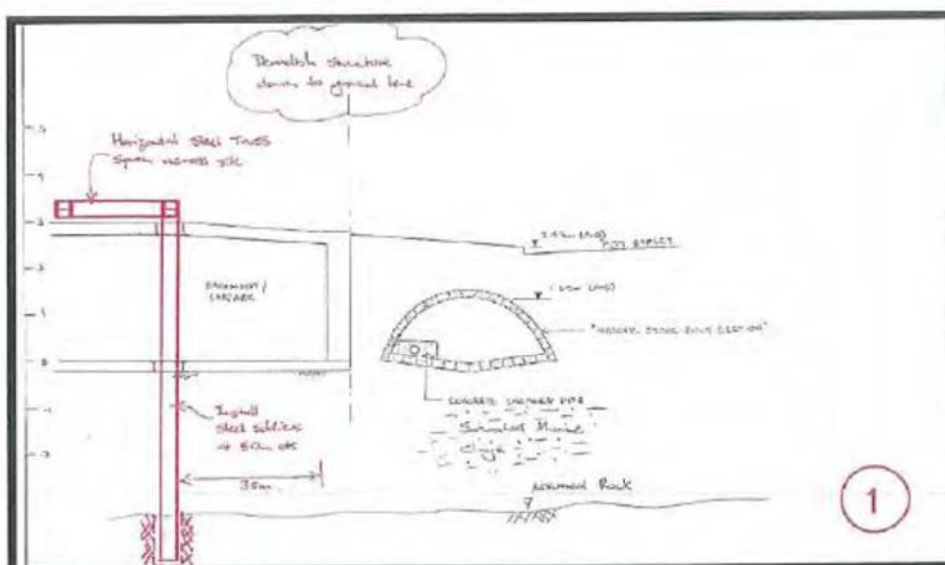


Figure 5.2: Northrop Engineering plan showing the basement with temporary shoring. Rappoport 2010: 71.

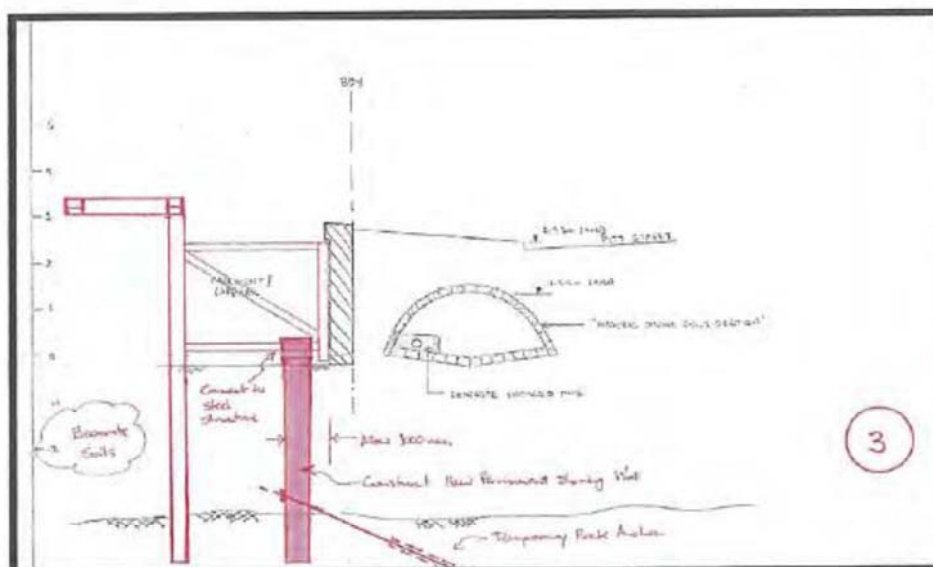
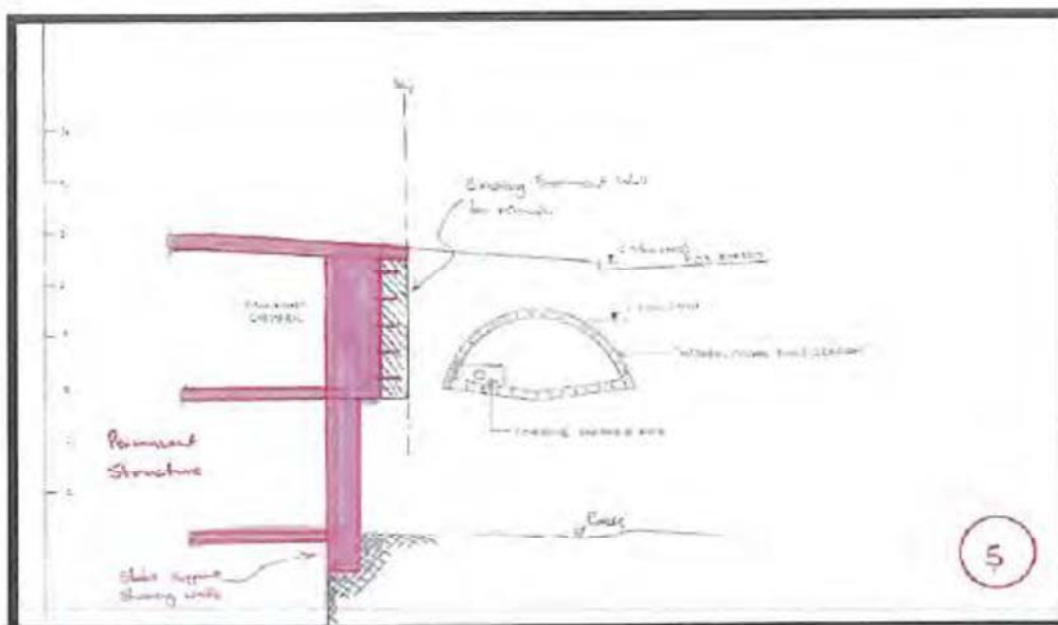


Figure 5.3: Northrop Engineering plan showing the temporary bracing. Shows the permanent part-retaining wall to structurally brace the existing basement wall so that the extended basement (downwards) will not affect the structural integrity of the Tank Stream. Rappoport 2010: 71.



**Figure 5.4:** Sketch of the extended basement along the eastern alignment. It maintains the existing eastwards position and ensures that the extended downwards basement maintains the same alignment.

The proposal for this project noted that:

- It maintains the current vertical alignment of the deeper basement relative to the Tank Stream.
- The structural design by Northrop Consulting Engineers will not intrude further into the Tank Stream curtilage.
- The design devises a method of stabilising the existing Tank Stream by consolidating the saturated marine clay soils that surround the Tank Stream.

### 5.3.1 Integrated DA Approval

This IDA was approved on **18 August 2011**. The approval was deferred until the following were undertaken:

#### Schedule 3:

##### (17) Heritage Council of NSW Terms of Approval

- a) All work shall be carried out in accordance with the following documentation:
  - (i) Statement of Heritage Impact Proposed New Building at 19-31 Pitt Street Sydney prepared by Rappoport Pty Ltd, dated September 2010;
  - (ii) Statement of Environmental Effects prepared by Ingham Planning;
  - (iii) Drawings DA14-DA25 prepared by Mark Hurcum Design Practice, dated March 2011; and
  - (iv) Brief Archaeological Assessment of No. 19-31 Pitt Street, Sydney prepared by AHMS, dated 8th November 2010.

EXCEPT AS AMENDED by the conditions of this consent:

- b) A Research Design with accompanying application for the portions of the site outside of the SHR curtilage will need to be provided prior to works commencing to satisfy the archaeological provisions under Sections 139-146 of the Heritage Act.



Further Information to be submitted with the S60 application:

- c) A condition survey of the areas of the Tank Stream that will potentially be impacted by this development that outlines acceptable limits of movement, and also provides a basis for the assessment of any damage caused to the Tank Stream upon completion of the project;
- d) A monitoring program for the Tank Stream during the construction works;
- e) A series of actions to be undertaken if the observed movement falls within predetermined ranges, as compared to the initial condition survey. This may include, but not be limited to:
  - (i) increasing monitoring, revising support measures, or ceasing excavation; and
  - (ii) A mitigation strategy to be implemented should a worst case scenario, complete structural failure of the Tank Stream occur.

Nominated Heritage Consultant:

- f) All heritage work shall be supervised by a qualified heritage consultant to ensure that the impact of the works on the heritage significance of the building is minimised and all work has been carried out in accordance with the approved documentation and the conditions of this consent.
- g) All work shall be carried out by suitably qualified tradesmen with practical experience in conservation and restoration of similar heritage items. The nominated heritage consultant shall be consulted prior to the selection of appropriate tradesmen.

Site Protection & Works:

- h) Significant built elements are to be adequately protected during the works from potential damage. Protection systems must ensure historic fabric is not damaged or removed.
- i) The Applicant must ensure that if substantial intact archaeological deposits and/or State significant relics are discovered, work must cease in the affected area(s) and the Heritage Council of NSW must be notified. Additional assessment and approval may be required prior to works continuing in the affected area(s) based on the nature of the discovery.
- j) The Applicant must ensure that should any Aboriginal 'objects' be uncovered by the work, excavation or disturbance of the area is to stop immediately and the Environmental Protection and Regulation Group of the Office of Environment and Heritage is to be informed in accordance with Section 89A of the National Parks and Wildlife Act, 1974 (as amended). Aboriginal 'objects' must be managed in accordance with an approved Aboriginal heritage impact permit under Section 90 of the National Parks and Wildlife Act, 1974.

Archival Recording:

- k) Given the proximity of the basement to the Tank Stream, during construction to reveal the existing basement conditions beyond the envelope of the building an archival photographic recording is undertaken in accordance with the Heritage Council document Photographic Recording of Heritage Items using Film or Digital Capture. The original copy of the archival record shall be deposited with the Heritage Branch, an additional copy shall be provided to the City of Sydney.

Compliance:

- l) Following the determination of the development application by the City of Sydney, an application under Section 60 of the NSW Heritage Act 1977 must be submitted to and approved by the NSW Heritage Council prior to the commencement of the works described in this application.

## 6.0 Results & Recommendations

### 6.1 Results

- This report has identified that there were two stages of Tank Stream construction within the section of Pitt Street adjacent to the subject site:
  - The 1850s stone channel drain
  - 1878 brick oviform drain.
- The Tank Stream is listed on the SHR (636) and is of State Heritage Significance. The SHR curtilage is 3m from all surfaces.
- The Tank Stream is a State significant Sydney Water asset listed on its S170 heritage register.
- The Tank Stream is listed on Sydney LEP 2012 as a State significant heritage item.
- The Heritage Branch, Office of Environment and Heritage, has identified the need for a Statement of Heritage Impact (SOHI) and heritage application to be made as part of any works within the 3m curtilage of the Tank Stream.
- At least two recent applications where basements were being extended with the 3m curtilage were approved under an Integrated Development Application (IDA) to the City of Sydney and included an approval from the Heritage Council.
- Current understanding is that there is no basement at the front of 33-35 Pitt Street building.

### 6.2 Recommendations

1. Need to understand the proposed new design and develop a strategy for managing the curtilage of the Tank Stream.
2. Obtain survey advice to refine the location of the Tank Stream curtilage in relation to the proposed development.
3. Obtain engineering advice on suitable engineering approaches.
4. As part of writing a SOHI have a meeting with the Heritage Branch, OEH, to understand their requirements in relation to the Tank Stream and the proposed design.
5. Write a Statement of Heritage Impact (SOHI) outlining impacts within the 3m curtilage. This can be written separately or included within the SOHI for built heritage.
6. Obtain an approval from the Heritage Branch as part of an IDA, S63, or a S57(2) Exemption or S60 application.



## 7.0 Bibliography

### 7.1 Bibliography

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