

The **KENS Site** was excavated over six months. According to an interview given by Wendy Thorp:

“We excavated the best part of the city block minus the terraces at the southern end of the site,” archaeological director Wendy Thorp explains. “It was an extraordinary site as it had some unusual circumstances that led to the depth of preservation. We were excavating down on an average of 5m and in places up to 12m and all of that was European occupation. It was like city on city on city, so we excavated through 20th century levels right through to the various early years of the settlement.

“One of the most interesting finds was that in one part of the site along Sussex Street which was originally part of Darling Harbour, we found remnants of private dockyards, there was an area for boats to come in, seawalls all around it, steps leading down and part of the beach was intact. Along the rest of that frontage we also found other docks, slips and landing places.

“Higher above that, after the reclamation, we found essentially quite a rural landscape. On the newly formed land they had extended the boundaries of the land property out with fences. The fences had been buried in the fill and were still standing, and that was from about 1839. We found evidence of small wooden, stone and brick cottages and a lot of animal pens and paddocks.”

It wasn’t just pieces of rubble that were uncovered, Thorp says. “We found the foundations, then in places as we got further up the hill the buildings were up to shoulder height - you could walk into them. In Kent Street there were buildings of that height and they were a mixture of 1830s, 1840s and later – you could walk in the back door, you could see where the window ledges were.”

The earliest evidence of European settlement was located on the corner of Kent and Napoleon Streets, according to Thorp. “We found the remains of a building that certainly went back to the very settlement of Sydney around the 1790s and early 1800s, and that lay under another house and that in turn was expanded and became a hotel and the hotel remained up till the 1950s.”

Although the archaeological team had an idea of what they would find, they were surprised by just how much original material remained. Thorp says the reasons for this are twofold. “Firstly, there was the unusual circumstances of the site that allowed preservation: topography – there was a slight slope in places, then it jumped over a rock cliff which we also found had come to Kent Street, so people had built up the slope but instead of knocking things down they simply knocked them to a certain level and then filled over the top to level the slope out. Secondly because the site hasn’t really been touched - all the later 19th century material was demolished in about 1913, so this combination of circumstances led to an extraordinary state of preservation.”

The original profile has changed in that most of Sussex Street up to 1839 was part of the bay, Thorp says. “We found that shoreline, then the bay was reclaimed, then Sussex Street was extended, so we went from the shoreline to a street frontage, then a topographic change from going from a fairly gentle slope with one rock face to what it is now.”

Although none of the remnants have been kept physically on the site, Thorp says the artifacts recovered have been catalogued and will be accommodated in the completed development and the information retrieved from them will become part of a prepared interpretation package that will be incorporated into the development so there is a link between the new and the old. “There are lots of ways to do this,” she says. “It’s not been firmly decided on what shape it will take, but there’s the potential for signage or for some of the objects to be displayed. Some of the public art may reflect some of the older occupation on the site.”

In addition to the wealth of evidence of European occupation, Aboriginal archaeology was also found on the site. “In a couple of places there were tool-making areas where Aboriginal people had sat upon the cove and made tools,” says Thorp. While the exact dates of this pre-European settlement have not been finalised, they go back at least a few thousand years.¹⁰³

¹⁰³ http://www.infolink.com.au/articles/Digging-up-the-past_z159548.htm

The KENS site was also similar to Darling Quarter (Darling Walk) as it was the subject of major reclamation after 1839 when Sussex Street was extended northwards into that area. This reclamation phase is generally later than that undertaken at Darling Walk where major sections of it appear to have been reclaimed by Thomas Barker in the early 1830s. The KENS site indicates that reclamation can be much more extensive than perhaps previously understood. Notably there was up to 1 m of fill within this site and remains of buildings were occasionally up to shoulder height.

The **Darling Quarter (Darling Walk) Site** was an extensive remnant industrial landscape associated with important industrial precincts:

- Barker's Mill – remains of the millpond and early jetty.
- Workers' housing.
- PN Russell Foundry and Carriage Works.
- Small foundries and soap factories.
- Extensive incremental reclamation and pre-reclamation use of the foreshore, including timber fences and environmental archaeology associated with the reclamation fills.
- Aboriginal archaeology – remains of a midden.
- Evidence of the original foreshore, rocky outcrops and sandy beaches with remnant cockle beds beneath the sandy beach.

A preliminary results report can be found at: <http://www.caseyandlowe.com.au/sitedw.htm>.¹⁰⁴

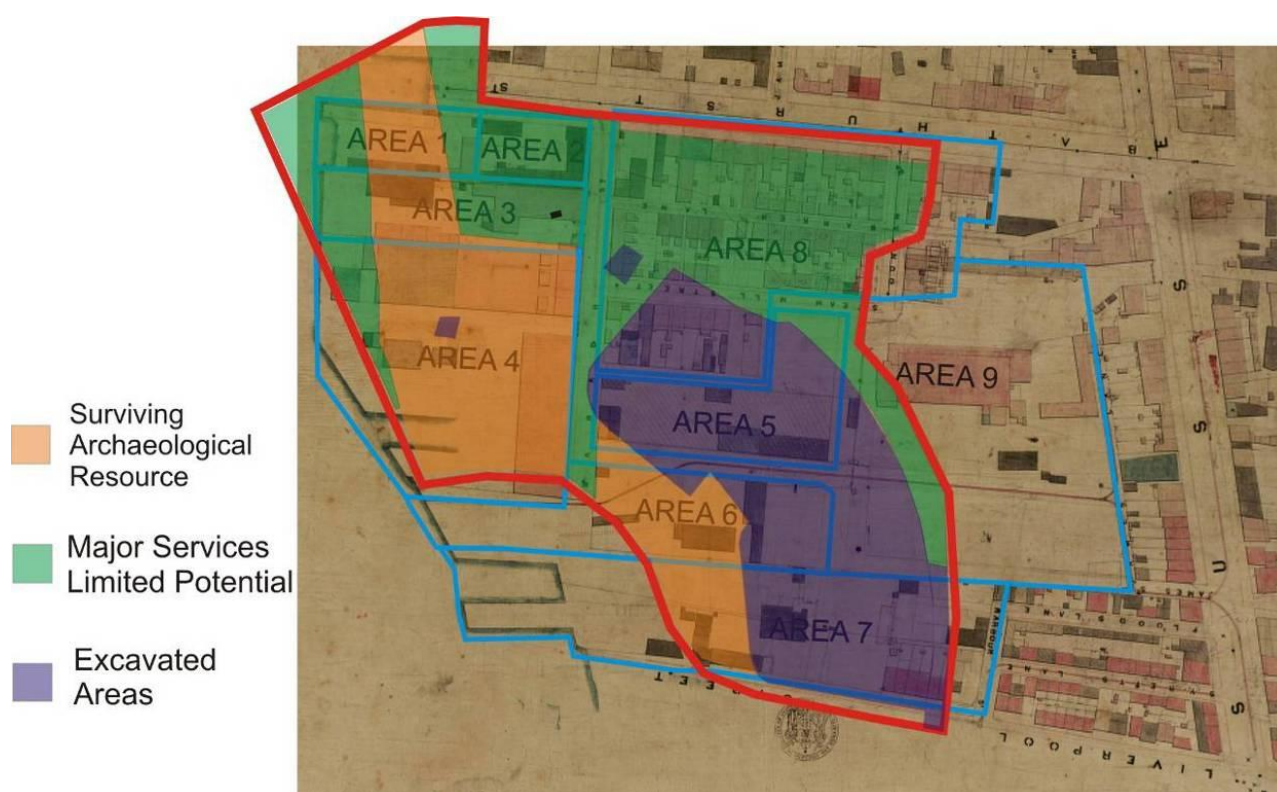


Figure 4.3: Plan of the area assessed for the Darling Quarter (Darling Walk) project. Note that substantial areas of significant archaeology still survive within this area.

¹⁰⁴ Casey & Lowe 2009.

The **Barangaroo South** archaeological program undertaken by Casey & Lowe for Lend Lease recovered considerable information associated with the development of the Darling Harbour foreshore.¹⁰⁵ The main remains found were the result of reclamation where the eastern foreshore of Darling Harbour was extended into the harbour. The reclamation fills mostly consisted of stone rubble and levelling layers. In some cases the reclamation was bulk fills of sandstone rubble followed by clay-rich fills to raise the new ground above the high water mark (Area C4). Initially, bulk rubble fill was deposited into the harbour to create a platform within the tidal zone. In Area K bulk fills were introduced and compacted to create stable and level ground. Roughly-made sandstone walls were built to assist in retaining the fills during this process. The sandstone walls were built on the initial bulk rubble fill and were later sealed by more rubble stone fill and the first surfacing over the new land. The main archaeological features and findings were as follows:

Natural Environment and Aboriginal Archaeology

- Evidence for the original rocky shoreline.
- There was no Aboriginal archaeological evidence

Henry Bass' shipyard 1830s-1850s

- Sandstone seawall and reclaimed land that formed wharf facilities for Henry Bass' shipyard in the 1830s.
- Informal boat ramp and structure made from sandstone pavers, brick piers and timber, which was used during the 1830s but buried by reclamation by the 1840s.
- Cottage built on a rocky outcrop and partially on the reclaimed land and seawall. Likely constructed by the 1840s. Evidence for some period of domestic occupation. Survives until the 1880s.

Francis Girard's reclaimed land 1830s-1840s

- Two phases of reclamation. Reclaimed land using rubble sandstone and layers of crushed sandstone and clays. There was no formal retaining structure on the western edge. Some rough sandstone walling at the northeast and southeast.

Hunter River (later Australasian) Steam Navigation Company 1840s-1880s

- Occupies southern half of Francis Girard's reclaimed land from 1840s.
- Remains of the timber wharf constructed by the 1850s consisting of timber piles and headstocks.
- Remains of a large warehouse structure included sandstone pads to support a timber superstructure, and a substantial sandstone wall on the western harbour frontage that connected the building to the wharf structure.
- Within the warehouse was an extensive *in situ* deposit of charred grains and corn, indicating that there was a fire in the later 19th century.

Breillat's Wharf 1840s-1880s

- A substantial sandstone seawall retained the reclaimed land. It was constructed in the 1840s and was at least 45m in length. The base of the wall was constructed on rubble fills that were located at least 1m below low tide level.
- At the southern end of the wall were the remains of a timber jetty.
- At the northern end of this property were the remains of a structure with timber and sandstone footings. Extensive deposits of slag within the structure indicated that it may have functioned as a blacksmith's workshop.
- Evidence for levelling and wharf redevelopment, including additional courses to the seawall, between the 1860s and 1870s.
- Remains of a warehouse or store building dated to the 1870s with an occupation deposit containing artefacts associated with the men who worked at the wharf.

¹⁰⁵ <http://www.caseyandlowe.com.au/sitebarangaroosouth.htm>

Grafton Wharf and Early 20th Century

- Evidence for wharf and jetty improvements such as dead man anchors.
- Evidence for levelling and resurfacing with roughly made concrete.
- Remains of two brick weighing stations.

Only a very small section of the original foreshore extended into Barangaroo South. Some of this was quarried sandstone. Most of Barangaroo South was land reclaimed by the 1850s, approximately the eastern 40 metres or so. The remaining western area was reclaimed during the 1960s and 1970s.

Surry Hills and Haymarket

Casey & Lowe have excavated remains of the Haymarket brickfield on three separate sites between Elizabeth, Albion and Reservoir Streets in Surry Hills and part of an early pottery manufacturing site, Thomas Ball Pottery (c1801-1823).¹⁰⁶ The remains of the brickfield were quite extensive, with the base of a clamp kiln as well as cart tracks. There was limited evidence for additional activities areas other than the clamp kiln remains. Casey & Lowe have also excavated the remains of houses on the 19-41 Reservoir Street site. There was also an excavation at Cunningham Street, Haymarket by Austral Archaeology in 2009 which found remains of early industrial/commercial enterprises as well as residential housing.

4.2 Research Questions

This section provides a preliminary indication of the type of research questions that might be pursued to investigate the archaeological remains at the site so as to inform the assessment of heritage significance. Additional ones will be developed for the recommended Research Design & Management Strategy.

4.2.1 Landscape Archaeology

The exploration of how the landform of Darling Harbour was altered between c.1810 and 1980s is fascinating as it testifies to the need for more land in specific locations and to provide adequate draughts for shipping. This represents the development of urban pressures as early as the 1830s to concentrate local industry around the main transport network, shipping, so as to aid distribution of their products and the importation of the goods as needed. It reflects the ability of entrepreneurs to transform mud flats into useful land and build wharfage far enough into the harbour to provide safe mooring for ships bringing in cargo and taking away goods. The alteration and manipulation of the landform of Darling Harbour has been part of its story for the last 212 years. The methods and means by which the landform was altered can tell us much about attitudes to waste and rubbish disposal, particularly the deposition of waste from other construction projects, such as the reclamation of nearby areas in the 1920s and of the study area in the 1950s and 1960s with material excavated from elsewhere and dredged from the harbour.

Specific Research Questions

- What was the nature of the original landform?
- Evidence for shells, such as cockles and oysters, and what plant species were found in this area?
- How has this part of Darling Harbour evolved over time?
- How many times was the landform remade within the study area?
- What different materials and means were used, and what was the depth of the reclamation at each stage? How different were these practices compared to Darling Quarter (Darling Walk), Barangaroo South and KENS sites.

¹⁰⁶ Casey & Lowe 2011b see <http://www.caseyandlowe.com.au/site710.htm>

- Were the phases of reclamation successful or not?
- Were the different properties reclaimed at different times?
- Where did the reclamation fill come from?
- How was the new landform used?
- What was the relationship between the reclaimed land and the wharfage?
- Other relevant questions will be addressed as they arise.

5.0 Heritage Significance

5.1 Heritage Significance

This section has been written in accordance with the Heritage Branch 2009 guidelines: *Assessing significance for historical archaeological sites and 'relics'*.

These guidelines provide the following discussion of heritage significance:

Apart from NSW State guidelines, the nationally recognised Australia ICOMOS Charter for the Conservation of Places of Significance (*The Burra Charter*) also defines 'cultural significance' as meaning:

'aesthetic, historic, scientific and social value for past, present and future generations.'

Significance is therefore an expression of the cultural value afforded a place, site or item.

Understanding what is meant by value in a heritage sense is fundamental, since any society will only make an effort to conserve things it values. In terms of built heritage, what we have inherited from the past is usually places that have been continuously cared for. Conversely, many archaeological sites will comprise places which, for whatever reason, have not been cared for until the relatively recent period.

Our society considers that many places and items we have inherited from the past have heritage significance because they embody, demonstrate, represent or are tangible expressions of values society recognises and supports. Our future heritage will be what we keep from our inheritance to pass on to the following generations.¹⁰⁷

5.2 Previous Statement of Significance

The City Plan Archaeological Assessment provided a Statement of Significance for the entire SICEEP site:

The subject site is considered to contain a high level of archaeological potential in some areas of the site that relate to an identified number of different significant development phases. There are certain aspects of the site that meet the State significant criteria, other identified parts meet the local significance criteria with other section of the site that do not meet the significance criteria.

The subject site was originally part of the swampy headwater of Darling Harbour and part of the archaeological potential considered significant is the ability to trace an original shoreline in the western (less intensively developed) part of the site. Historically, John Dickson's sea wall and mill pond were located on the south eastern part of the site and are considered as State significant for the contribution they made historically, associationally and technically.

Later 19th century development within the site area saw the 1853 establishment of the Darling Harbour railways and later goods yard which is historically significant for the site at State level.

From the 1870s, the area became one of the most important goods handling places in the colony and saw the first inwards goods shed as rail transport became used to access country areas. In addition the first Iron wharf was constructed on the subject site in 1874 and this item is also of State significance for the historical and technical associations.

The subject site saw some of the first industry and technology of the new colony including drainage systems, which were not entirely successful and the Hydraulic Pumping Station which was highly successful. There are individual areas within the site that will retain archaeological resources relating to small scale 19th century industrial practices such as blacksmiths, farriers, timber yards, stone cutters, confectionary makers, etc and commercial enterprises, including the Railway Pier and later Central Markets Hotel. In addition, there are at least two different

¹⁰⁷ NSW Heritage Branch 2009: 1-2.

stage of 19th century residential development documented across the southern and eastern sides of the site.

The 20th century development of the site included the resumption of the area for the Sydney Municipal Markets in 1931. This has meant that the site is a time capsule of an earlier, generally 19th century urban precinct, including streets and the streetscapes which have now disappeared. This aspect of the site is considered to have local significance.¹⁰⁸

There are a number of issues with the Discussion of Significance and the Statement of Significance contained in the City Plan report. Notably they do not adequately address archaeological significance or research potential and research questions. While there are some elements that are adequate, others are not sufficient. The result is that in some cases the report has over assessed the significance of the archaeological resource or buried heritage, while in others it has not been able to adequately engage with the archaeological resource due to insufficient historical research.

5.3 Individual Statements of Significance

The following are individual statements of significance from the SHFA s170 register.¹⁰⁹ All heritage items within the ICC Hotel Study area have been included, as are adjacent items which potentially may extend into the study area.

It is noted that the following SHFA s170 register precincts are not mapped and that there is not always a clear understanding of the location of potential items. Also there is no indication on the SHFA register of their level of significance, whether they are of local or State significance. Many of these S170 areas include archaeological remains which are potentially of State significance. We have identified a preliminary level of significance against each item.

5.3.1 Listed Items within the ICC Hotel study area

Water Cooling System and Manifold

STATE?

Statement of Significance

The water cooling system and manifold was an integral component of the operating system of the Power Station. The former Ultimo Power Station (now the Powerhouse Museum) dating from 1899 is historically significant for being the original generating station for the supply of electricity to power the electric tramway network throughout Sydney. It was also one of the largest and most important generating stations in NSW for many years and has associations with the electrification of the suburban railway system and with the general reticulation of electrical power. The station also played a major part in the development of the Ultimo/Pymont area.

Description

Underground conduits possibly built of sandstone taking cool water to the Powerhouse from Darling Harbour water's edge and hot water from the Powerhouse to the water's edge. The remains of the engineering equipment/manifold of this cooling system are located in the carpark of the Novotel accessed from Murray Street.

Address

Powerhouse to Murray Street to waters edge, Darling Harbour.

¹⁰⁸ City Plan February 2013: 103-104.

¹⁰⁹ Available at: http://www.shfa.nsw.gov.au/sydney-About_us-Our_heritage_role-Heritage_and_Conservation_Register.htm [accessed 22/03/2013].

▪ Darling Harbour Rail Corridor

STATE/LOCAL

The Darling Harbour goods line was part of the first railway opened in New South Wales in 1855, the current corridor corresponds with that purchased from the Harris family in 1853 for this purpose. It therefore has a high degree of significance as a place. The Ultimo Road Bridge is believed to be constructed in the 1850s, and is therefore one of the only remaining features of the original railway which joined Darling Harbour and Granville (Parramatta Junction) in 1855. The siting of the railway along what was the edge of Darling Harbour strongly influenced the development of Pyrmont and Ultimo. Because of it, wool stores, engineering works and other industries were built here after the 1870s, giving this part of Ultimo its industrial, rather than residential flavour. The site also contains two railway bridges. The Railway Square road overbridge (outside the curtilage of this listing) built in 1855 is historically significant as the oldest railway bridge to be constructed and still in use in New South Wales. It is a strong connection to the first railway construction and the original Redfern (Sydney) Station. The Ultimo railway underbridge is a mid 19th-century construction with classic revival inspired cast iron columns and mid 19th-century sandstock brick abutments. Both items are assessed individually as historically rare, scientifically rare, archaeologically rare and socially rare.

Description

Rail Link as part of Railway Square to Powerhouse line. This line is one of the oldest active extant railway tracks. It is being restored to take the 3801 train. Part of this system is the Railway Bridge over Ultimo Road.

Address

West side of Darling Harbour to Pyrmont, Darling Harbour

5.4 Basis of Assessment of Heritage Significance

To identify the heritage significance of an archaeological site it is necessary to discuss and assess the significance of the study area. This process allowed for the analysis of the site's manifold values. These criteria are part of the system of assessment which is centred on the *Burra Charter* of Australia ICOMOS. The Burra Charter principles are important to the assessment, conservation and management of sites and relics. The assessment of heritage significance is enshrined through legislation in the NSW *Heritage Act 1977* and implemented through the *NSW Heritage Manual* and the *Archaeological Assessment Guidelines* and *Assessing significance for historical archaeological sites*.¹¹⁰

5.4.1 Significance Criteria

The following criteria have been developed by the NSW Heritage Council. They form the basis for current assessments of heritage significance, including archaeological heritage:¹¹¹

Criterion (a): *Historic Significance - (evolution)*

an item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area);

Criterion (b): *Associative Significance – (association)*

an item has strong or special association with the life or works of a person, or group of persons, or importance in NSW's cultural or natural history (or the cultural or natural history of the local area);

¹¹⁰ NSW Heritage Office 1996:25-27; NSW Heritage Office 2001; NSW Heritage Branch 2009

¹¹¹ NSW Heritage Office 2001, NSW Heritage Branch 2009: 3

Criterion (c): *Aesthetic Significance - (scenic qualities / creative accomplishments)*

an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the cultural or natural history of the local area);

Criterion (d): *Social Significance - (contemporary community esteem)*

an item has a strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons (or the cultural or natural history of the local area);

Criterion (e): *Technical/Research Significance - (archaeological, educational, research potential and scientific values)*

an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);

Criterion (f): *Rarity*

an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);

Criterion (g): *Representativeness*

an item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places of cultural or natural environments (or the cultural or natural history of the local area).

To be assessed as having heritage significance an item must:

- meet at least one of the one of the seven significance criteria
- retain the integrity of its key attributes

If an item is to be considered to be of State significance it should meet more than one criterion, namely in the case of relics, its research potential.¹¹² As the 2009 guide states:

Archaeological Significance may be linked to other significance categories especially where sites were created as a result of a specific historic event or decision, or when sites have been the actual location of particular incidents, events or occupancies.

Other relevant factors may be comparative values related to the intactness and rarity of individual items. The rarity of individual site types is an important factor, which should inform management decisions.¹¹³

Relics must also be ranked according to their heritage significance as having:

- Local Significance
- State Significance

If a potential relic is not considered to reach the local or State significance threshold then it is not a relic under the NSW Heritage Act.

The 2009 guide to assessing archaeological significance defines the two levels of heritage significance as follows:

'State heritage significance', in relation to a place, building, work, relic, moveable object or precinct, means significance to the State in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item.

¹¹² NSW Heritage Branch 2009: 9.

¹¹³ NSW Heritage Branch 2009: 10.

'local heritage significance', in relation to a place, building, work, relic, moveable object or precinct, means significance to an area in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item.¹¹⁴

Research Potential

The heritage significance of archaeological remains most often lies in their research potential (criterion e of the Heritage Council criteria). The assessment of research potential has its own peculiarities compared with the assessment of other heritage items. The 1996 *Archaeological Assessment Guidelines* comment:

Research potential is the most relevant criterion for assessing archaeological sites. However, assessing research potential for archaeological sites can be difficult as the nature or extent of features is sometimes unknown, therefore judgements must be formed on the basis of expected or potential attributes. One benefit of a detailed archaeological assessment is that the element of judgement can be made more rigorous by historical or other research.¹¹⁵

Once the archaeological potential of a site has been determined and research themes and likely research questions identified, through a process of archaeological investigation and analysis, the following inclusion guidelines should be applied:

Does the site:

- (a) *contribute knowledge which no other resource can?*
- (b) *contribute knowledge which no other site can?*
- (c) *is the knowledge relevant to general questions about human history or other substantive problems relating to Australian History, or does it contribute to other major research questions?*¹¹⁶

If the answer to these questions is yes then the site will have archaeological research potential. The new significance guidelines have taken a broader approach

5.4.2 Level of Heritage Significance

New criteria were developed in 2009 to identify whether the archaeological resource is of Local or State significance. The following four criteria were identified in the 2009 guidelines and are considered to be relevant to ICC Hotel site:

- Archaeological Research Potential (current NSW Heritage Criterion E).
- Associations with individuals, events or groups of historical importance (NSW Heritage Criteria A, B & D).
- Aesthetic or technical significance (NSW Heritage Criterion C).
- Ability to demonstrate the past through archaeological remains (NSW Heritage Criteria A, C, F & G).¹¹⁷

The new significance guidelines were designed to assess significance in light of the amendments to the definition of relics needing to be of either local or State significance. The examples provided in these guidelines were fairly obvious, but do not help us work out how a less obvious site has State rather than local significance. This means that it is basically down to the skill and expertise of the archaeologist assessing the site.

¹¹⁴ This section is an extract based on Heritage Branch 2009: 6.

¹¹⁵ NSW Heritage Office 1996: 26.

¹¹⁶ Bickford & Sullivan 1984: 23.

¹¹⁷ NSW Heritage Branch 2009: 11-13.

5.5 Discussion of Heritage Significance

This discussion of heritage significance specifically relates to the potential archaeological remains within the ICC Hotel site. It first considers significance using the NSW Heritage Council criteria and then the questions in the 2009 Heritage Branch guidelines, *Assessing significance for historical archaeological sites*.

5.5.1 Discussion using Heritage Council Significance Criteria

Criterion (a): Historic Significance - (evolution)

an item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area);

The SICEEP study area as a whole illustrates many aspects of the evolution of Darling Harbour's history and archaeology from the 1810s into the early 20th century. The land within the Hotel study area is quite small in comparison with the larger SICEEP area and has archaeological potential to demonstrate some aspects of the development and expansion of Darling Harbour throughout the 19th and early 20th centuries when it was a centre for industry and maritime and railway trade. Remains from the study area have the ability to represent the changing nature of Darling Harbour's occupation throughout the 19th and early 20th centuries. Among the potential important known and potential remains within the ICC Hotel areas are:

- Pre-1850s intertidal zone and quarry.
- Line of c1859 goods line and culvert.
- Reclamation associated with the gradual expansion of the goods line and pre-1865 culvert.
- 1880s seawall or embankment.
- 1920s saltwater inlet conduits associated with Ultimo Powerhouse.

The developments that occurred within the study area are typical of the maritime and industrial development of early Sydney and Darling Harbour. Although the western side of Darling Harbour underwent less development than the eastern side, these developments all involved reclamation to expand the land into the harbour for more secure wharfage and to increase the amount of useable land.

Criterion (b): Associative Significance – (association)

an item has strong or special association with the life or works of a person, or group of persons, or importance in NSW's cultural or natural history (or the cultural or natural history of the local area);

The potential archaeological remains within the study area are not closely associated with any particular person closely involved with the cultural or natural history of NSW or the local area. The site does represent key phases in the expansion of Darling Harbour, particularly its early pre-industrial use and the expansion of the Goods Railway into the area. The 1920s saltwater inlet conduits are associated with Ultimo Powerhouse, which was the first major power station in Sydney, being built to supply the tram network.

Criterion (c): Aesthetic Significance - (scenic qualities / creative accomplishments)

an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the cultural or natural history of the local area);

Although archaeological remains may have aesthetic value, mostly through their novelty and age, they are not 'important in demonstrating aesthetic characteristics'. Their aesthetic values are more by accident than design.

Criterion (d): *Social Significance - (contemporary community esteem)*

an item has a strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons (or the cultural or natural history of the local area);

While no community consultation has been undertaken in relation to the archaeology of this specific site, the maritime and industrial archaeology and heritage of NSW have strong community interest and support. These places not only represent the success of the entrepreneur and owner but also the many workers whose skills and labour supported the achievements of these industrial places. The industrial heritage of Darling Harbour occupies a special position in the industrial heritage of NSW as it was the place where so many 'firsts' happened. The current study area is important in its own right as well as representative of the wider maritime infrastructure and industry of Darling Harbour, the remnants of which disappeared 20 years ago when they were demolished for the Darling Harbour Redevelopment. The Open Day for the Barker's Mill held during the Cross City Tunnel works in 2003 saw 300 people visit the site with relatively limited publicity. There were also articles in the newspapers at that time. The historical report on Barker's mill and the archaeological work of the Cross City Tunnel is lodged on the Casey & Lowe webpage and is a popular link.

One of the surprising elements of the excavation of this type of site is how we, as people, respond to the recovery and exposure of large-scale archaeological landscapes, with their seawalls, edges of reclamation fill, buried slips and jetty piles. These present a complex and surprising response to those visiting such as site. The materiality of such a buried landscape is hard to express.

Criterion (e): *Technical/Research Significance - (archaeological, educational, research potential and scientific values)*

an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);

The sequence of landuse for the ICC Hotel site is simpler than much of Darling Harbour, including the rest of the SICEEP study area. Rather than the layering based on successive phases of occupation and reclamation, as seen on sites such as Darling Quarter, KENS site, Towns Place and Barangaroo South, the ICC Hotel site can be summarised in two or three phases. The site was largely vacant until the 1850s, from which time it was used as part of the Goods Railway until the 1980s.

The potential archaeological remains and known heritage item within the ICC Hotel site are:

- Pre-1850s intertidal zone and quarry.
- Section of c1859 goods line and culvert.
- Reclamation associated with the gradual expansion of the goods line.
- 1880s seawall or embankment.
- 1920s saltwater inlet conduits associated with Ultimo Powerhouse.

These potential archaeological remains are considered to have a moderate to high level of potential survival within the ICC Hotel site. The *in situ* survival and archaeological recording of these remains has the ability to yield information that will contribute to an understanding of NSW's cultural and natural history.

The pre-1850s intertidal zone is potentially a preserved landscape from before the industrial use of this portion of Darling Harbour. As such it has some ability to provide information on the nature of the pre-industrial waterfront of Darling Harbour, and the types of ephemeral activities undertaken within this area. The expected possible landuses, such as the keeping of small watercraft, shell collection and lime burning would have been transitory, but also poorly documented, meaning that

archaeology particularly well suited for discovering and recording such activities. Excavations at Darling Quarter found early waterfront structures such as timber slipways and fences.¹¹⁸ Although early use of the ICC Hotel site is likely to have been less intense than Darling Quarter, due to its different location, there is still a possibility that it was used for some of these foreshore activities and ephemeral evidence of this may survive.

The study area may contain evidence for a section of the c1859 Darling Harbour goods line and culvert. The culvert may have been originally built in brick with later sandstone facing as found in an example in Mary Anne Street. The remains of the culvert may inform us about the ideas behind the construction of this goods line and its civic importance.

The 1880s seawall or embankment has the ability to yield information about the construction of such structures. It also was built under the auspices of the NSW Government Railway, so information about its construction will complement what is known about privately constructed seawalls at sites such as Barangaroo South.

The construction of the 1920s saltwater inlet conduits was well documented at the time (Section 2.8). Therefore their archaeological research significance lies not so much in discovering how they were constructed, but examining any potential discrepancies between the historical plans and the conduits as they were constructed. The conduits also have heritage significance based on other criteria, particularly historic significance (a), their association with the Ultimo Powerhouse (b), and their probable high level of intact fabric, which makes them a good example of early 20th-century hydraulic engineering (g).

Apart from the 1880s seawall or embankment, the research significance of archaeological remains associated with the Railway Goods Line and Yard is low. This largely stems from the inability of the potential remains to contribute further knowledge through archaeological excavation and recording. Any railway tracks which survive within the study area are likely to have been successively upgraded during their active life, and so would represent rail technology of the mid to late 20th century, rather than the original 1850s goods line. The archaeological recording of these tracks would not be likely to provide new information regarding their construction.

The Outwards Goods Shed, constructed in 1902, also lay within the study area. However it has a low potential of survival beyond its footings, based on available evidence of the 1980s demolition. It is unlikely to be associated with other rubbish deposits from its use, as it was constructed after the introduction of regular, municipal rubbish collection services. Given these factors, the remains of the Outwards Goods Shed do not have archaeological research significance.

Criterion (f): *Rarity*

an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);

Areas of intertidal foreshore, which preserve features of early 19th century landuse, are relatively rare around Darling Harbour. Remnant waterfront has been found at Darling Quarter and the KENS site, but its survival elsewhere is uncertain, as it depends on the intensity of later landuse. Darling Harbour was excluded from the Archaeological Zoning Plan for the City of Sydney and Pyrmont and Ultimo because it was managed by the Darling Harbour Authority when these plans were produced. Therefore there is no means of having certainty about the potential archaeological resource within the extended area. It is noted that Darling Quarter and Barangaroo South have large basements and substantial parts of these sites were subject to bulk excavation and removal of these remains.

¹¹⁸ Casey & Lowe 2009: 7

There is the potential for areas of substantial reclamation beneath the 1980s Darling Harbour redevelopment but only some along the western edges of the SICEEP project. Pre-1850s reclamation has been found at Darling Quarter, KENS Site and Paddy's Market Site and Barangaroo South. It is likely that other areas of substantial reclamation and works survives beneath the 1980s Darling Harbour redevelopment, notably the 1850s/1860s reclamation associated with the construction of the Goods Railway and a culvert. Seawalls may survive in the study area, notably the 1880s seawall or embankment associated with the railway. Seawalls were repeatedly built along many foreshores in Sydney Harbour and Darling Harbour in the 19th century, and so are not particularly rare. This seawall would have been built under government auspices, which distinguishes it from those built on privately controlled land in the same period. This makes the 1880s seawall on the site slightly more uncommon, although large sections of an 1876 seawall associated with the Iron Wharf (another government project) has been assessed as being likely to remain in the SICEEP Central area.¹¹⁹

Criterion (g): Representativeness

an item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places of cultural or natural environments (or the cultural or natural history of the local area).

The potential archaeological remains of the pre-1850s intertidal zone are likely to be highly representative of the kind of foreshore which once was found on the western side of Darling Harbour. As an area simultaneously close to water and yet relatively distant by land to the centre of Sydney, it would also represent the kind of foreshore found at other similar locations around Sydney Harbour, including parts of Pyrmont and Balmain. However as discussed above, with regards to criterion (f), locations which preserve this kind of foreshore from the 19th century are rare around Darling Harbour.

The reclamation deposits themselves are typically sterile material from the construction of railways and other similar sources. In some areas it may include municipal rubbish collection but most of it is likely to be sterile. Extensive strategies and understanding of reclamation has already been identified and recorded in detail at Barangaroo and Darling Quarter. Therefore any further reclamation will have a limited ability to add new information, although being representative of the material used to reclaim land around Darling Harbour.

The 1920s saltwater inlet conduits for the Ultimo Powerhouse are likely to be well-preserved, given that they were originally tunnelled through the sandstone bedrock, and that they were still accessible by Police Rescue divers for training up to around 1991, after the Darling Harbour redevelopment. This makes the pair of conduits a good representative of early 20th century engineering.

Integrity

The northern part of the study area is identified as being quarried bedrock and the intertidal foreshore zone has the possibility of being potential acid sulphate soils (PASS). This may limit the ability to undertake work within this material. There are also substantial services running through the study area (Figure 3.5) which have impacted on the potential archaeological resource.

¹¹⁹ Casey & Lowe 2013b.

5.5.2 Levels of Significance

The Heritage Branch's 2009 significance guidelines identified a series of questions that could address this level of significance for archaeological sites and relics. Many of these have been addressed within the discussion of significance but are further discussed below:

5.5.2.1 Archaeological Research Potential (Criterion E)

- **To which contexts (historical, archaeological and research-based) is it anticipated that the site will yield important information?**

The study area is considered to have a moderate ability to yield archaeological information. This can also be relevant to both historical and research-based contexts.

- **Is the site likely to contain the mixed remains of several occupations and eras, or is it expected that the site has the remains of a single occupation or a short time-period?**

The ICC Hotel site is likely to contain the remains from two broad phases of occupation: pre-industrial intertidal shore (to 1850s) and the earlier stages of the c1859 Darling Harbour goods line and culvert and the later Goods Railway and Yard (1850s to 1980s).

- **Is the site rare or representative in terms of the extent, nature, integrity and preservation of the deposits (if known)?**

The site is likely to contain archaeological deposits which are rare and of relatively high integrity, and other deposits which are not rare, and poorly preserved.

The site has moderate archaeological potential to preserve foreshore and intertidal areas reflecting the pre-industrial use of Darling Harbour, which is prior to the 1850s use of this site. Likely pre-industrial uses include launching and keeping small watercraft, shell collection and lime burning. There may also be some uses associated with the nearby tenants, whose houses are visible on views of the Ultimo Estate from the 1850s and 1860s. Sites which still preserve the pre-industrial foreshore are rare around Darling Harbour, although originally Darling Harbour (and to a lesser extent, other parts of Sydney Harbour) would have had various, low-intensity, pre-industrial uses. Recent excavations at Barangaroo South by Casey & Lowe confirmed that the original foreshore in that area (roughly north of the intersection of the current Shelley and Sussex Streets) was originally rocky, without a large intertidal zone. Heavy development and associated quarrying and excavation for basements around Darling Harbour in both the 19th and 20th centuries is likely to have removed much of the original foreshore on the eastern side of Darling Harbour.¹²⁰ The Pyrmont and Ultimo side of Darling Harbour was also heavily quarried.¹²¹ However pre-industrial foreshore can be preserved beneath later fill, as has been observed at the Darling Quarter (Darling Walk)¹²² and the KENS site.

The study area also has the potential to reveal information regarding reclamation processes and early foreshore development, including the construction of the railway goods line and associated structures, and an 1880s seawall or embankment. Sites where similar archaeology has been found include the KENS site, Towns Place at Walsh Bay, Darling Quarter (Darling Walk) and Barangaroo South. The site is therefore not particularly rare in terms of the extent or nature of these archaeological deposits.

¹²⁰ See for instance Casey & Lowe 2013a, which assesses the foreshore between King and Market Streets. Only a small portion of the original foreshore is likely to remain in that instance.

¹²¹ Fitzgerald & Golder 2006: 32-33.

¹²² Casey & Lowe 2009.

The assessment of the archaeological potential of remains from the Outward Goods Shed (section 3.4) suggests that the integrity and preservation of archaeological remains of this item would be poor. Only the footings of this early 20th-century shed have the potential to remain. On account of their probable poor preservation, the remains of the Outward Goods Shed cannot be considered either rare or a good representative of their type.

Considering all historical phases of the site, the following potential remains are thought to be rare:

- Pre-industrial foreshore, including a probable intertidal zone.
- Remains of the c1859 goods line and culvert.
- 1920s water conduits associated with Ultimo Powerhouse.

The following archaeological remains are considered to be representative:

- c1880s seawall or embankment.

▪ **Are there a large number of similar sites?**

As discussed in the rarity section there are a number of sites containing similar archaeological remains as within Darling Harbour, but these are a diminishing resource.

▪ **Is this type of site already well-documented in the historical record?**

The various phases of this site are documented to different levels. The early, pre-1850s foreshore is not well documented in the historical record. Any use of the site in this period would have been transitory and poorly recorded. No images clearly showing the site prior to the 1850s have been located.

The period of the Goods Railway is better documented, although no images of the 1880s seawall or embankment were located after a limited search. The construction of the Outwards Goods Shed is well-documented, with the original plans still surviving.

Some of the historical resources were investigated for the first time during research for this project and this illustrates that the historical development of the study area had not previously been necessarily well researched. We consider that there is considerable opportunity for further historical research.

▪ **Has this site type already been previously investigated with results available?**

Aspects of this type of site have previously been investigated on sites in Darling Harbour, notably Darling Quarter and Barangaroo South. Remains of a section of contemporary c1859 Darling Harbour Goods Line had previously been found and others are likely to survive elsewhere along the line.

▪ **Is the excavation of this site likely to enhance or duplicate the data set?**

The archaeological recording and excavation of this site would provide some new information regarding the pre-industrial use of Darling Harbour. No other site with a preserved pre-industrial waterfront is known to have been excavated on the western side of Darling Harbour.

The archaeological excavation of the 1880s seawall would also provide duplicate data on the construction of seawalls in Sydney at that time. However as the seawall within the site was constructed under government auspices, this information would complement and enhance the existing data on seawalls built on privately-owned land.

The archaeological recording of reclamation fills would complement the data set already recorded on several sites around Darling Harbour. Useful information could be obtained through appropriate

sampling to provide an overview of reclamation, but this would not necessarily include detailed recording of all stages of reclamation.

5.5.2.2 Associations with individuals, events or groups of historical importance (Criteria A, B & D)

- **Does the archaeological site link to any NSW Historic Themes? Will the site contain 'relics' and remains which may illustrate a significant pattern in State or local history?**

Yes, the key historic themes relating to the study area are listed below:

Australian Theme	NSW Theme	Notes	Possible examples on the site
2. Peopling Australia	Aboriginal cultures and interactions with other cultures	Indigenous/Interaction: What evidence is there about the lives of Aboriginal people and the nature of interaction. The site is located in Cockle Bay, a place important to Indigenous people.	Camp site, midden ¹²³
3. Developing local, regional and national economies	Environment – cultural landscape	Activities associated with the interactions between humans, human societies and the shaping of their physical surroundings	The pre-industrial foreshore / intertidal zone landscape.
3. Developing local, regional and national economies	Industry	Activities associated with the manufacture, production and distribution of goods	c1859 goods line and culvert. Outward Goods Shed (1902)
3. Developing local, regional and national economies	Technology	Activities and processes associated with the knowledge or use of mechanical arts and applied sciences	1920s saltwater inlet conduit, associated with electricity generation.
3. Developing local, regional and national economies	Transport	Activities associated with the moving of people and goods from one place to another, and systems for the provision of such movements	c1859 goods line and culvert. Railway tracks
4. Building settlements, towns and cities	Land tenure	Activities and processes for identifying forms of ownership and occupancy of land and water, both Aboriginal and non-Aboriginal.	1880s seawall or embankment
4. Building settlements, towns and cities	Utilities	Activities associated with the provision of services, especially on a communal basis	1920s saltwater inlet conduit

- **Is the site widely recognised?**

Yes, Darling Harbour is recognised by specialist communities and more generally with the public as a place containing industrial and maritime heritage of the past.

¹²³ Assessment of Aboriginal Archaeology for the SICEEP site is the subject of another report, by Comber Consultants.

- **Does the site have symbolic value?**

Possibly, but not explicitly.

- **Is there a community of interest (past or present) which identifies with, and values the specific site?**

Yes, there is a community of interest in terms of heritage groups, such as heritage engineers, who value the remnants of our industrial past as well as members of the public who are also interested.

- **Is the site likely to provide material expression of a particular event or cultural identity?**

It is unlikely the study area will provide material expression of a particular event or cultural identity.

- **Is the site associated with an important person? (the role of the person in State or local history must be demonstrated/known)**

The archaeology within the study area is not associated with any individual important person.

- **What is the strength of association between the person and the site?**

Not applicable.

- **Did the person live or work at the site? During the phase of their career for which they are most recognised? Is that likely to be evident in the archaeology /physical evidence of the site?**

Not applicable.

- **Did a significant event or discovery take place at the site? Is that evident/or likely to be evident in the archaeology/physical evidence of the site?**

No significant events or discoveries have taken place within the study area.

5.5.2.3 Aesthetic or technical significance (NSW Criterion C):

- **Does the site/is the site likely to have aesthetic value?**

Not particularly. All archaeological sites can have incidental aesthetic values, notably in relation to the process of ruination but this cannot be determined until a site is excavated. Well-preserved aspects of the site may be particularly evocative to some people. Within the study area these may include the c1859 goods line and culvert, the 1880s seawall or embankment, the 1920s saltwater inlet conduit and the pre-1850s intertidal zone. The aesthetic value of these features is incidental, unlike that of some deliberately designed buildings or landscapes.

- **Does the site/is the site likely to embody distinctive characteristics?**

Possibly. The remnant maritime landscape, which would be exposed with the removal of the post-1850s reclamation, can be particularly evocative to some people, as it simultaneously looks familiar and yet different to modern maritime landscapes.

- **Does the site/is the site likely to embody a distinctive architectural or engineering style or pattern/layout?**

Not especially.

- **Does the site demonstrate a technology which is the first or last of its kind?**

No. Although the c1850 goods line was a very early example of steam railways in Australia, it was not initially part of the planned western line, and was opened after that line. Furthermore, as discussed in the archaeological potential (Section 3.4), the physical fabric from the first stage of the railway is unlikely to remain but remains of a culvert may survive.

- **Does the site demonstrate a range of, or change in, technology?**

This site has layers of information and therefore a range of remains from different phases and stages of the development of Darling Harbour. Generally it will demonstrate a range of technology.

5.5.2.4 Ability to demonstrate the past through archaeological remains (NSW Heritage Criteria A, C, F & G).

- **Does the site contain well-preserved or rare examples of technologies or occupations which are typical of particular historic periods or eras of particular significance?**

Yes. The pre-1850s intertidal area has the potential to be reasonably well preserved and is likely to be representative of the pre-industrial waterfront around much of Darling Harbour and elsewhere around Sydney Harbour. May contain a section of the c1859 goods lines. The ICC Hotel site also is likely to contain an 1880s seawall or embankment. This may be 'well-preserved', given the good preservation of seawalls on other sites, notably Barangaroo South. The site is also likely to contain remains of saltwater intake conduits for the Ultimo Powerhouse from the 1920s. These pipes are likely to be well-preserved, as they were tunnelled through bedrock, and also are significant in their association with the Ultimo Powerhouse.

- **Was it a long-term or short-term use?**

The pre-industrial uses of the site would have been typically transitory, although this overall phase of the site's use extended from c1790s to the 1850s. The 1880s seawall or embankment was replaced by 1902, when the Outwards Goods Shed was constructed. The 1920s inlet conduit was used until the closure of the Ultimo Powerhouse in 1963.

- **Does the site demonstrate a short period of occupation and therefore represents only a limited phase of the operations of a site or technology or site? Or does the site reflect occupation over a long period?**

The study area represents a series of both long-term and short-term activities and occupations.

- **Does the site demonstrate continuity or change?**

The study area is expected to demonstrate a mixture of continuity and change.

- **Are the remains at the site highly intact, legible and readily able to be interpreted?**

This is unclear. It is likely that some of the archaeology within the study area will be intact and legible and readily able to be interpreted. The potential remains that are likely to be relatively intact are:

- Pre-1850s intertidal zone and quarry.
- Line of c1859 goods line and culvert.
- Reclamation associated with the gradual expansion of the goods line and pre-1865 culvert.
- 1880s seawall or embankment.
- 1920s saltwater inlet conduits associated with Ultimo Powerhouse.

Many of these elements would be highly interpretable. However the pre-1850s intertidal area would be highly susceptible to fairly rapid degradation after exposure. As alluvial soils, they may even become acid sulfate soils on exposure to oxygen, depending on their actual composition. This would mean that the pre-1850s intertidal area would only be highly intact and readily interpreted for a short period of time.

5.6 Statement of Heritage Significance

The ICC Hotel study area has the potential to contain archaeological remains which demonstrate and illuminate the development, reclamation and expansion of Darling Harbour throughout the 19th century. The potential archaeological remains within the study area are:

- Pre-1850s intertidal zone and quarry.
- Line of c1859 goods line and culvert.
- Reclamation associated with the gradual expansion of the goods line and pre-1865 culvert.
- 1880s seawall or embankment.
- 1920s saltwater inlet conduits associated with Ultimo Powerhouse.

The potential remains have the ability to provide information which will contribute to the broader understanding of the development of the cultural and natural history of NSW. In particular, the possible survival of a pre-industrial shoreline has the potential to cast light on a type of environment once common around Darling Harbour, but whose archaeological preservation is now arguably uncommon. The remnants of the c1859 goods line and culvert are part of the surviving goods line which survives along the western foreshore of Darling Harbour. The reclamation fills and the 1880s seawall or embankment are aspects of the site which are quite representative of features originally found around much of Darling Harbour. These have particular research value in evaluating any difference between work carried out for private concerns (other sites) or the government (this site). The 1920s saltwater inlet conduits are not only potentially well-preserved representatives of early 20th-century hydraulic engineering, but also are associated with the Ultimo Powerhouse, which was the first large electric power station in Sydney.

Potential archaeological remains considered to be of local significance are:

- Pre-1850s intertidal zone and quarry.
- Line of c1859 goods line and culvert.
- Reclamation associated with the gradual expansion of the goods line.
- 1880s seawall or embankment.

Potential work considered to be of State significance are:

- 1920s saltwater inlet conduits associated with Ultimo Powerhouse.

Remains of various features associated with the 1880s and later Darling Harbour Goods Line and Yard within the ICC Hotel study area are assessed as not reaching the criteria for local significance. This is largely because they are not likely to be well preserved enough to answer any meaningful research question or to be good representative examples of their type or provide substantial archaeological remains. The 1980s redevelopment is likely to have removed all the Outwards Good Shed apart from its footings, and continuous use and maintenance is likely to have removed all 19th century fabric from the 1850s goods line.

6.0 Impacts from the Proposed Development

6.1 Description of the Proposed Works

The potential impacts discussed below are based on design information available at the time of writing this report. This information has been drawn from information supplied by the client in July 2013. A general description of the proposed works for the ICC Hotel are noted below and the building uses and scope are also outlined as follows:

USE	SCOPE
Hotel Retail	• Demolition of existing site improvements. • Associated tree removal and replanting. • Construction and use of a single hotel tower providing for up to 656 keys and including guest facilities, restaurant and ballroom. • Public domain improvements including integration with existing / proposed works. • Extension, realignment and augmentation of physical infrastructure / utilities as required. • Excavation of basement with batter. • Piling across the northern part of the site. • New stormwater pipe

The proposed footings for the ICC Hotel include a basement and associated batter, which will be bulk excavated (Figure 6.1). The final hotel basement floor will be at RL 0.6m but there will be a 250mm slab and footing below this floor. The lift pit will extend approximately 1.8m below the general basement floor, subject to final design and lift manufacturer requirements, meaning the lift pit will impact material to at least RL -1.2m.

The current plans also include piles outside of the basement area. These are all intended to be bored piles of diameters ranging between 900mm to 1500mm (Figure 6.1, Table 6.1).

The construction of the ICC Hotel will also require the relocation of some services. The most significant of these is a stormwater conduit which will be relocated on a new alignment which will cross over the 1920s Saltwater Inlet Conduits (Figure 6.2, Figure 6.3). The proposed relocation will pass approximately 1.7m above the easement of the Saltwater Inlet Conduits (Figure 6.3).

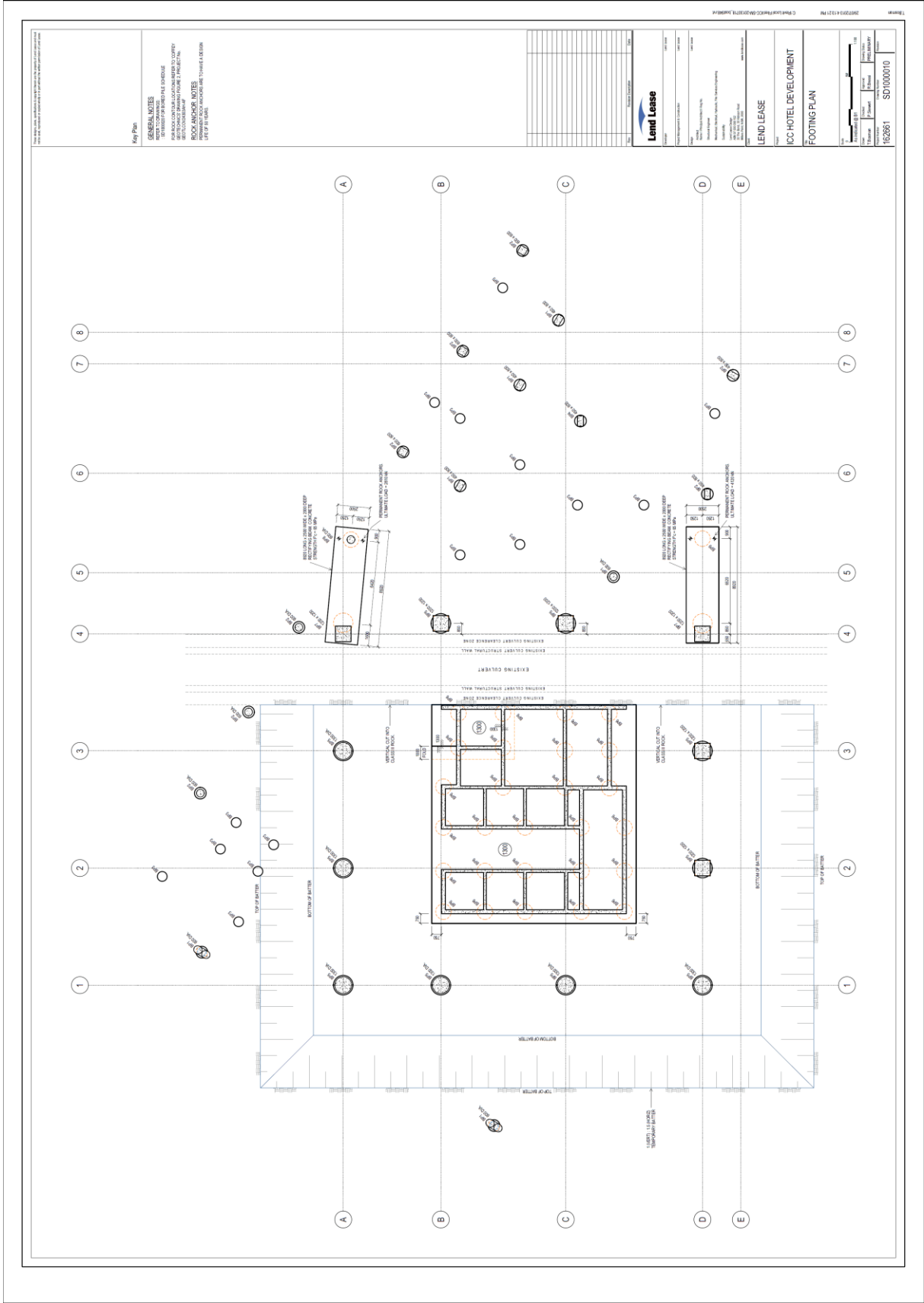


Figure 6.1: Footing plan, ICC Hotel. Note areas of bulk excavation and associated batter. Lend Lease, 29/07/2013.

Table 6.1: Bored Pile Schedule for Figure 6.1. FOOTING DETAILS - SHEET 1, Drawing Number SD1000020, Lend Lease, 29/07/2013.

Pile Mark	Pile Diameter (mm)	Description	Concrete Strength (MPa)	Reinforcement Rate (Kg/m)	WORKING LOAD (kN)		SHORT TERM SERVICE LOAD (kN)		LONG TERM SERVICE LOAD (kN)		ULTIMATE LOAD (kN)		ULTIMATE LATERAL LOAD (kN)
					Compression	Tension	Compression	Tension	Compression	Tension	Compression	Tension	
BP1	900	BORED PILE	40		6000		5700		5400		7500		187.5
BP2	900	BORED PILE	40		4250		3900		3560		5400		135
BP3	750	BORED PILE	40		700		630		570		900		22.5
BP4	900	BORED PILE	40		2600		2380		2170		3350		83.75
BP5	1500	BORED PILE	65		34000		32250		30700		42100		1053
BP6	1200	BORED PILE	50		9970		18370	2300	8820		23130	2550	450
BP7	1500	BORED PILE	65		32890		31960		31030		40400		5040
BP8	1200	BORED PILE	65			0		0		0		5624	4970
BP9	1200	BORED PILE	65			0		0		0		8240	4970
Grand total: 71													

Notes: Pile 'P7' to be designed for ultimate moment of $M^* = 8200 \text{ kNm}$ (including 75mm out of position pile tolerance).
Piles 'P8 & P9' to be designed for an ultimate moment of $M^* = 4545 \text{ kNm}$ (including 75mm out of position pile tolerance).
Piles to be socketed into unit 4b & 4d material (TBA), refer to "Coffey Geotechnics" report
Maximum long term settlement at the pile head = 10mm

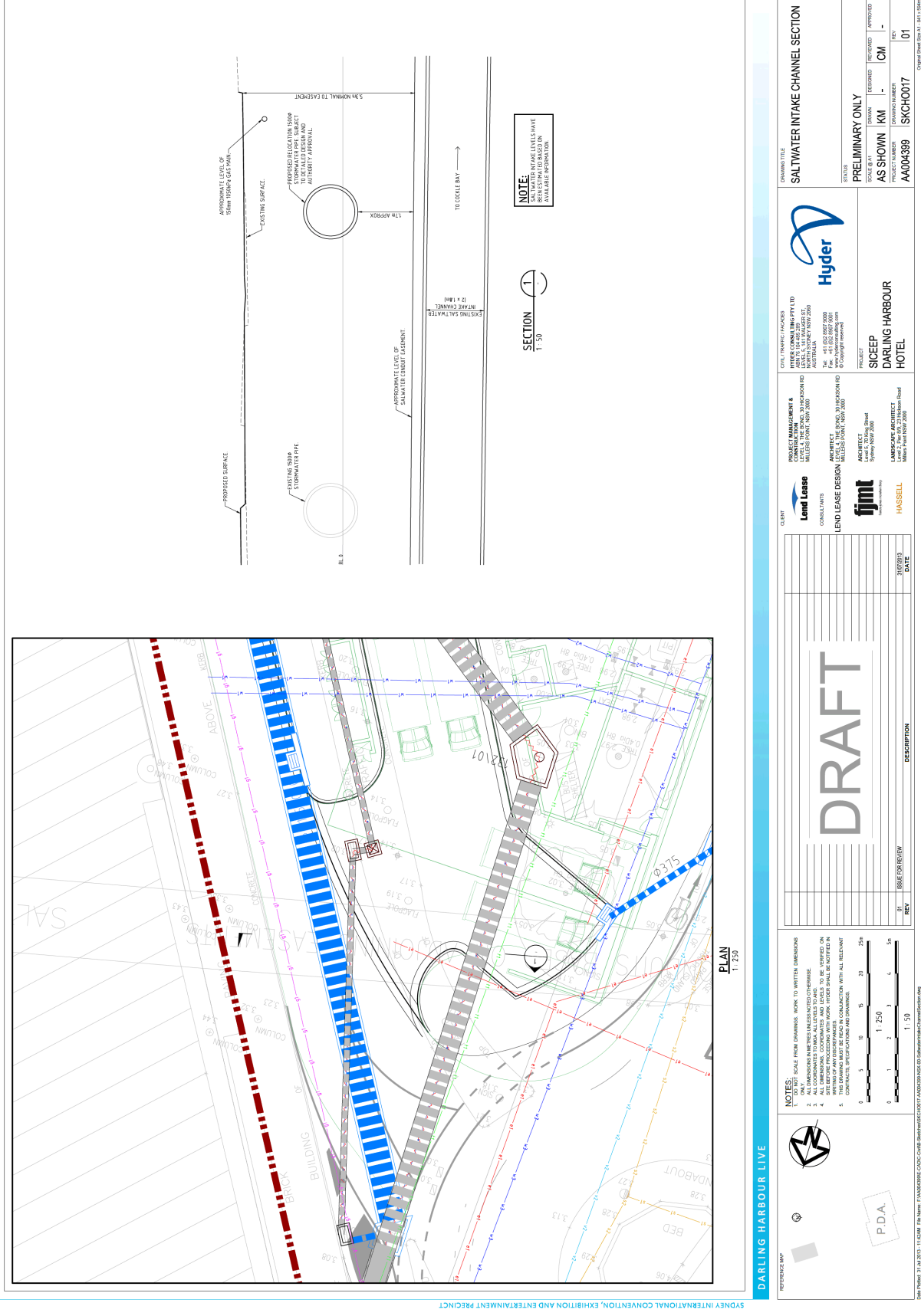


Figure 6.3: Plan and section showing depth of proposed stormwater relocation (blue) relative to the 1920s saltwater inlet conduit. Hyder Consulting, 31/07/2013

6.2 Assessment of Proposed Construction Impacts

6.2.1 Impacts on potential archaeological remains and works

The ICC Hotel site lies on the boundary of the foreshore and former intertidal zones (Figure 6.4). As identified in Section 3.4, the ICC Hotel site contains the following potential archaeological remains and known heritage item:

- Pre-1850s intertidal zone and quarry.
- Section of c1859 goods line and culvert.
- Reclamation associated with the gradual expansion of the goods line.
- 1880s seawall or embankment.
- 1920s saltwater conduits associated with Ultimo Powerhouse.

There is also the potential for remains associated with the Darling Harbour Railway and Goods Yard to survive, but these have been judged to not reach the threshold for local significance and are therefore not relics under the *Heritage Act 1977*.

Most of the proposed building footprint lies over land which has moderate archaeological potential associated with these remains (Figure 3.18, Figure 6.4). The proposed building is to be built with a basement excavated to at least RL 0.3m with a surrounding temporary batter. The area of the lift shaft will be deeper, probably to about RL -1.2m, depending on final design and lift manufacturer requirements. There will also be additional piles in the area outside the basement footprint (Figure 6.1, Figure 6.4).

The basement and associated batter will impact on all the archaeological remains within its footprint. These remains include:

- Pre-1850s intertidal zone.
- Section of c1859 goods line and culvert.
- Reclamation associated with the gradual expansion of the goods line.
- 1880s seawall or embankment.

The piling outside of the basement area will have limited impact on archaeological remains, as it is largely in the northern part of the study area which consists of bedrock close to the surface, which was probably quarried down in the nineteenth century (Figure 6.4). A small number of piles are planned for land which is predicted to be pre-1854 foreshore, and for land which was filled in or silted up prior to 1865. These piles do have the potential to impact on archaeological remains, but would not destroy the archaeological resource, based on the experience of Casey & Lowe at other sites which had been previously piled (section 3.2).

The proposed new stormwater will have some impact on the intertidal zone but not the other potential archaeological remains (Figure 6.4).

6.2.2 S170 Register, Water Cooling System & Manifold / Saltwater Intake Conduits

The footprint of the proposed ICC Hotel building lies to the south of the probable route of the 1920s saltwater inlet conduit also listed as the 'Water cooling system and manifold' on SHFA's S170 register (Figure 6.2). It is also overlain by about 6m of sandstone bedrock.¹²⁴ Therefore the potential impact of the building on this heritage item is slight. An engineering assessment by Pells Sullivan Meynink (PSM) modelled the likely impacts on the 1920s saltwater inlet conduits from the construction of the hotel. This report found that the hotel could be constructed in such a way as to

¹²⁴ Pells Sullivan Meynink 2013c: 14

‘achieve acceptable impacts’ on the saltwater inlet conduits.¹²⁵ However the report also made the following recommendations to ensure that this result was achieved:

To control physical impacts from the closest pile on the tunnel, a set-back distance is proposed. A restriction on the pile toe level is also proposed to avoid potential pile toe instability from the adjacent tunnel excavation.

Where piles are proposed to be installed near the proposed set-back distance, the drilling of a small diameter cored pilot hole is recommended to check the location of the tunnel prior to the commencement of pile hole excavation. Additional checks in regards to pile construction tolerances are also proposed.

An assessment of vibration from pile excavation was undertaken, and it was concluded that monitoring be undertaken to check vibration impacts prior to excavating piles close to the tunnel. This may lead to restrictions on the type of piling plant employed and construction methods.¹²⁶

The proposed changes to services includes a diversion of a stormwater drain which crosses the 1920s saltwater inlet conduit at one point (Figure 6.2, Figure 6.3). This stormwater diversion probably will not adversely impact the 1920s saltwater inlet conduit, as the proposed route will pass approximately 1.7m above the saltwater conduit easement at roughly RL -0.5m (Figure 6.3). This is roughly the same level as a stormwater drain which currently crosses above the 1920s saltwater inlet conduit. The PSM report indicated that the excavation for the pipe would involve excavation of about 2m of depth into bedrock. There is the possibility that the excavation into rock may cause damage to the conduits.¹²⁷

6.2.3 Specific impacts on SHFA S170 items

The SHFA S170 register contains two items which are partially within the ICC Hotel study area. It is slightly unclear whether the Darling Harbour Rail Corridor includes the ICC Hotel study area. It is unlikely that it does, as the statement of significance focuses on visible, extant railway fabric, rather than archaeological features associated with the former goods railway and yards. Yet as discussed earlier, the proposed ICC Hotel does impact on potential archaeology associated with the c1859 goods line and culvert.

The 1920s saltwater conduit is also on the SHFA S170 register. The potential impacts on this item has been discussed in section 6.2.2.

¹²⁵ Pells Sullivan Meynink 2013c: 15.

¹²⁶ Pells Sullivan Meynink 2013c: 15.

¹²⁷ Pells Sullivan Meynink 2013c: 9, 13

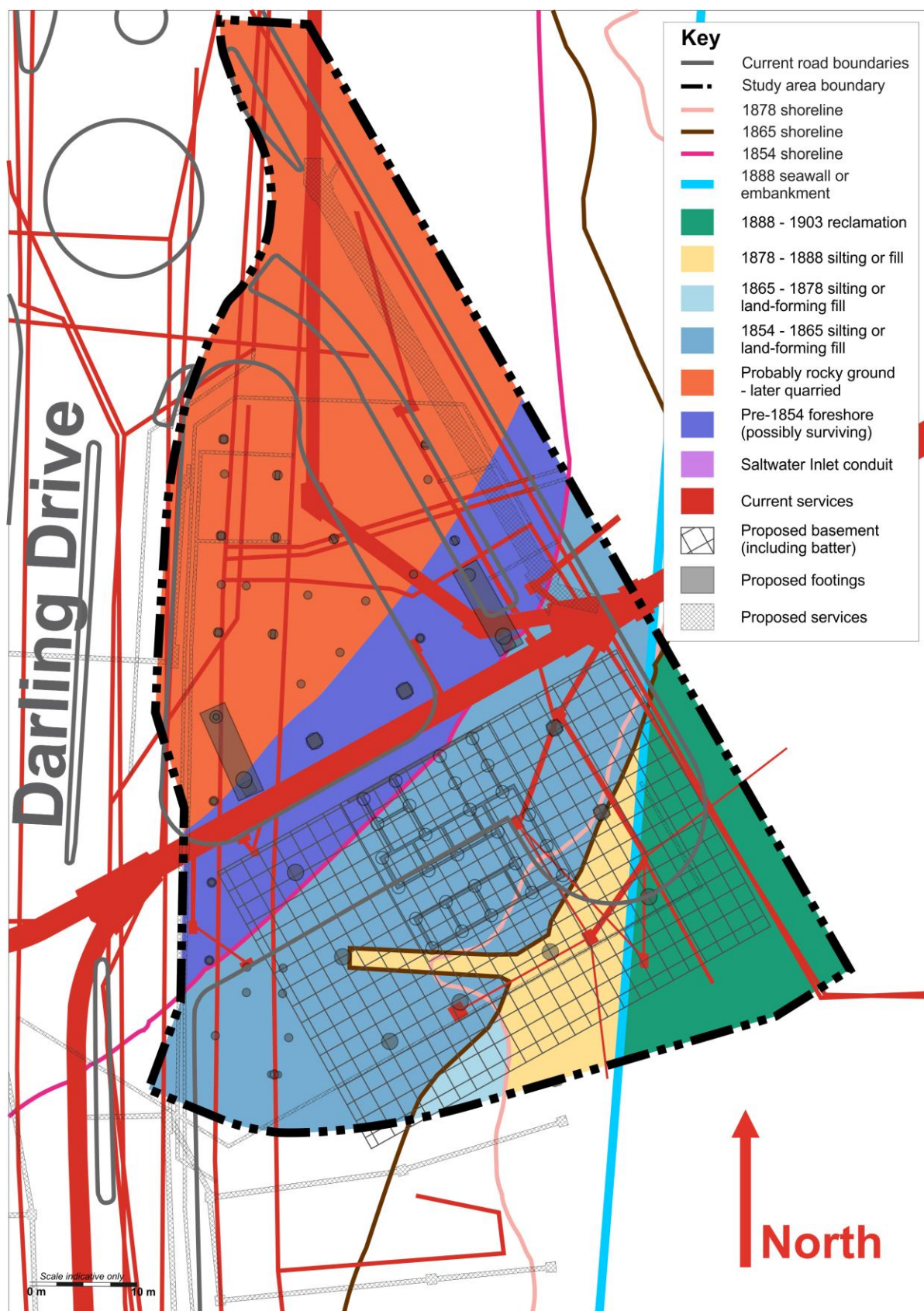


Figure 6.4: Map showing various foreshore phases from historic maps, current impacts and proposed impacts of the ICC Hotel (based on Figure 6.1 and Figure 6.3).

6.3 Mitigation

The proposed building and its basement impacts the potential archaeological remains of the pre-1850s intertidal shore, a section of the c1859 goods line and culvert, the 1880s seawall or embankment and various reclamations fills. If the present plans for a relatively shallow basement are proceeded with, then archaeological sampling should be carried out to achieve the following:

- Recording land-forming evidence, excavation and sampling of sections through the reclamation and natural.
- Recording the evidence for the c1859 goods line and culvert.
- Record evidence for the 1880s seawall and embankment.
- Investigate possible evidence for use of foreshore zone.

The design of this testing for historical archaeological items should be done in conjunction with the design of any Aboriginal archaeological testing, should it be recommended. Also the possibility of potential acid sulfate soil (PASS) should be taken into account when designing archaeological testing for the pre-1850s foreshore and intertidal zone.

If the foreshore is found to be well preserved, and the site of activities such as lime burning or the launching and maintenance of small watercraft, then a larger sample of the Hotel basement should be archaeological investigated and recorded.

The only archaeologically significant remains which could obstruct piling would be the 1880s seawall or embankment, located in the southeast portion of the ICC Hotel site but there is only one proposed pile in this area (Figure 6.4). It is noted that if a solid item like a seawall is hit during piling, the normal process would be to see these areas opened up, in order to remove the item blocking the pile drill.

Currently, the proposed Hotel design has no impact on the 1920s saltwater inlet conduits, as long as the following recommendations from Pells Sullivan Meynick are followed:

To control physical impacts from the closest pile on the tunnel, a set-back distance is proposed. A restriction on the pile toe level is also proposed to avoid potential pile toe instability from the adjacent tunnel excavation.

Where piles are proposed to be installed near the proposed set-back distance, the drilling of a small diameter cored pilot hole is recommended to check the location of the tunnel prior to the commencement of pile hole excavation. Additional checks in regards to pile construction tolerances are also proposed.

An assessment of vibration from pile excavation was undertaken, and it was concluded that monitoring be undertaken to check vibration impacts prior to excavating piles close to the tunnel. This may lead to restrictions on the type of piling plant employed and construction methods.¹²⁸

A proposed stormwater diversion does cross over the 1920s saltwater conduit, approximately 1.7m above the top of its easement. This diversion probably does not adversely impact the saltwater conduit, as the new diversion crosses the saltwater conduit at roughly the same level as a similar, existing stormwater pipe. The PSM report indicated that the excavation for the pipe would involve excavation of about 2m of depth into bedrock. There is the possibility that the excavation into rock may cause damage to the conduits.

¹²⁸ Pells Sullivan Meynick 2013b: 13.

Therefore PSM recommended:

as per the previous discussion for pile construction, a vibration trial would need to be undertaken to establish a 'site law' for vibrations from the proposed excavation plant, construction method, and separation distance between to the tunnel. This trial would then allow an appropriate construction methodology to be developed.¹²⁹

As it appears that the inlet conduits are still used by the Powerhouse Museum for their sea water cooled air conditioning system,¹³⁰ the Powerhouse would need to be consulted regarding any planned impact on the 1920s conduits.

Most of the piling is within the area of quarried bedrock and the foreshore zone. The piling is unlikely to have substantial impacts on the potential non-indigenous archaeological remains within this area.

¹²⁹ Pells Sullivan Meynink 2013c: 13

¹³⁰ Cock 2012: 4.

7.0 Results and Recommendations

7.1 Results

1. The study area contains potential archaeological remains and heritage of State and local significance.
2. The proposed design of the new ICC Hotel within the subject area includes a basement which will impact on identified potential archaeology of local significance.
3. The typical proposed piling is intermittent and will have some but limited impact on the potential archaeological resource within the subject areas. Most of the piling is within the area of quarried bedrock.
4. The sub-surface impacts of the hotel have been designed to avoid the Power House saltwater intake conduits. The engineering report believes that the hotel and new services can be designed to avoid any impacts on the heritage-listed conduits but subject to recommendations and further works.

7.2 Recommendations

1. The current hotel design proposal potentially impacts on archaeology of local significance. In order to mitigate this impact, archaeological recording/sampling is recommended.
2. Write a Research Design and Management Strategy, including a Piling Mitigation Strategy which draws on the detailed design, works program and identifies detailed archaeological investigation and recording strategies in accordance with best practice archaeological methodologies for the basement footprint. The archaeological program would focus on:
 - Recording land forming evidence, sampling sections through reclamation fills and natural.
 - Recording the evidence for the c1859 goods line and culvert.
 - Record evidence for the 1880s seawall and embankment.
 - Investigate possible evidence for use of foreshore zone.
3. Avoid/reduce impacts where possible on the 1880s seawall or embankment.
4. A public interpretation plan needs to be prepared outlining key themes for interpretation of Darling Harbour and surrounds as part of this redevelopment.
5. SHFA, as the owner of the SICEEP area, will need to provide storage in perpetuity for artefacts recovered from the site. SHFA has an artefact repository.
6. Any archaeological program needs to be reported on in accordance with Heritage Council guidelines. This is to include:
 - catalogue of artefacts and reporting.
 - conservation of important artefacts.
 - detailed trench or area reports.
 - overall excavation report, including a response to research questions.
 - photo archive.
7. Implement the recommendations of the engineers for the management of impacts on the Power House saltwater conduits. Details of these are set out below.

7.2.1 Engineers' recommendations regarding 1920s Saltwater Inlet Conduits

The engineering assessment of impacts on the 1920s saltwater inlet conduits by Pells Sullivan Meynink made the following key recommendations regarding the stormwater diversion:

To control physical impacts from the closest pile on the tunnel, a set-back distance is proposed. A restriction on the pile toe level is also proposed to avoid potential pile toe instability from the adjacent tunnel excavation.

Where piles are proposed to be installed near the proposed set-back distance, the drilling of a small diameter cored pilot hole is recommended to check the location of the tunnel prior to the commencement of pile hole excavation. Additional checks in regards to pile construction tolerances are also proposed.

An assessment of vibration from pile excavation was undertaken, and it was concluded that monitoring be undertaken to check vibration impacts prior to excavating piles close to the tunnel. This may lead to restrictions on the type of piling plant employed and construction methods.

An assessment of the structural capacity of the intake pipes has been performed. This was based on the available historical data, and from consideration of the manufacturing method and estimated design loads. The current condition of the pipes is not known, and hence an arbitrary 50% reduction in capacity has been adopted to account for possible deterioration of the 85 year old pipes. This analysis suggests that cracking of the lining would occur when the compressive stresses exceed 5 MPa, or the tensile stresses exceed 2 MPa. Numerical analysis of the proposed hotel development and the tunnels indicates that the pipe stresses are not significantly affected by the hotel loads, and that the induced stresses are acceptable in comparison to the adopted limits.

The hotel development will also require diversion of an existing 900 mm diameter stormwater pipe. The relocated pipe will pass over the top of the existing tunnels, and is expected to require about 2 m of excavation in sandstone bedrock. To ensure that the trench excavation does not intersect the tunnel, probe drilling is proposed to check the thickness of rock above the crown of the existing tunnels.

Vibration from plant used to excavate the stormwater trench could potentially damage the intake tunnels. Monitoring is recommended to be undertaken to check vibration impacts prior to the trench excavation approaching the tunnel. This may lead to restrictions to the type of excavation plant employed and construction methods.

In summary, subject to the constraints and recommendations presented in this report, PSM is satisfied that the proposed hotel building can be developed adjacent to the existing saltwater intake tunnel without causing adverse structural impacts.¹³¹

¹³¹ Pells Sullivan Meynink 2013c: 15

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APPENDICES

APPENDIX 1: Darling Harbour Goods Yards - Summary of significant events to 1930 (10)

APPENDIX 2: Brief timeline for the Ultimo Power House with emphasis on events related to water supply for cooling (11)

APPENDIX 3: Pells Sullivan Meynick, *proposed hotel development, Darling Drive, Darling Harbour, assessment of impacts on saltwater intake tunnels* (July 2013) UNDER SEPARATE COVER

APPENDICES

APPENDIX 1: Darling Harbour Goods Yards - Summary of significant events to 1930

Public Works Department NSW (Research and preparation: E Higginbotham & T Kass), Darling Harbour Bi-Centennial Development Project: Conservation Study, [Sydney], [1984]: 112-114.

Date	Details
1874	Completion of Iron Wharf
1876	Completion of reclamation and retaining wall behind the Iron Wharf
1876-1888 Phase 1	Construction of timber and galvanised iron buildings and structures: - • Inward goods shed (1876-1883?) • Covered platform[?] • Sandstone pier linked to overhead travelling crane • First wool handled at Darling Harbour (1878) • Siding on embankment (1886) originally used in conjunction with Meat Market, corner of Murray and Pier Sts
1888-1920s Phase 2	Cast iron and steel construction replaces timber in new building stock
1891	• Outwards goods shed and wool shed (C & D) opened (1891) • Wharves at Pyrmont Point opened for coal handling • Alexandria Goods Yard and first part of Clyde marshalling yards open • All outwards goods handled at Darling Harbour
1892-1900	Resumption of Darling Island in 1892 and opening for general goods in 1900
1902	A and B outward goods shed opened. Goods Shed offices (Forwarding Station) completed c1902
1906-1922	Construction of two-tier outwards goods shed Construction and completion of loop line - Wardell Rd - Rozelle Bay - Darling Island
1917-1929	Reclamation of head of Darling Harbour with fill excavated from the city railway construction. One bay of Iron Wharf removed in April 1917

APPENDIX 2: Brief timeline for the Ultimo Power House with emphasis on events related to water supply for cooling

Godden, DM, EAK Higginbotham, E Pinder, W Whittaker, & R Young, *History and Technology of the Ultimo Power House*, Sydney, Government Architects Branch, NSW PWD, nd [1982].

Report of the Public Works Department, Government Printer, Sydney, 1897-1901.

Date	Details
1895, 18 Sep	Proposal to construct an electric tramway referred to PWD Committee.
1896, 8 May	George Street and Harris Street Electric Tramway Act 60 Vic No 10. Assented to 14 Sep 1896.
1898, Jun	Contract No 20 for excavation of power house site completed. Most tenders for other work accepted. Various contractors. Justin McSweeney awarded the contract (No 18) for the conduit from the boiler house to Darling Harbour supplying seawater for condensing purposes.
1898, Jul to 1899, Jun	Contract No 17 for Circulating and feed pumps let to HP Gregory & Co. Contract No 18 completed.
1899, 22 Nov	First electricity supplied to George and Harris Street Tramway. Opened for traffic on 8 Dec 1899.
1899, 29 & 30 Nov	Ultimo Power House completed and opened for inspection. It was built by the Railway Construction Branch of the Public Works Department but handed over to the Railway Commissioners to manage.
1902	Extension of Ultimo Power House - Stage 2.
1905	Completion of Stage 2 of the boiler house.
1907-1908	New conduit and additional pumps installed in anticipation of the installation of new generating units.
1909	Installation of new generating units taking the rated capacity of Ultimo to 19,400 kW.
1924	Ultimo becoming expensive to run than the recently constructed White Bay Power House now supplying 75% of electrical supply. Ultimo to undergo improvements to make it more cost effective.
1927-1932	Remodelling of the Ultimo Power House
1924-26	Construction of new inlet tunnel to take circulating water supply from Darling Harbour to Ultimo. Work by Sydney Harbour Trust.
1928	Screening chambers for the new circulating water conduits completed and now in service.
1932	Work of re-equipping Ultimo with modern boilers and turbo alternators completed. Boilers now burn pulverised coal.
1963	Ultimo Power House finally shut down. Some chimneys demolished 1960.
1965	Tender accepted to demolish and remove Ultimo's equipment. Completed by Sep 1966
1978	Power House reserved for Museum of Applied arts and Sciences
1980	Building Stage 1 Power House Museum and opened 1981
1983	Building Stage 2 Power House Museum

APPENDIX 3: Pells Sullivan Meynick, *proposed hotel development, Darling Drive, Darling Harbour, assessment of impacts on saltwater intake tunnels* (July 2013) UNDER SEPARATE COVER