

# REPORT ON THE 3PS (153 MACQUARIE STREET) ARCHAEOLOGICAL SHELL ASSEMBLAGE

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This report provides an description and interpretation of the archaeological shell assemblage recovered from the 3PS site at 153 Macquarie Street, Parramatta.

## Distribution of the shell assemblage

A total of 12 801.55g (12.8Kg) of shell remains, comprising of 2900 NIPS (Number of Individual Specimens) and 677 MNI (Minimum Number of Individuals), was recovered from the 3PS site. This assemblage was identified from 130 different archaeological contexts and was disproportionately distributed across the four main excavation areas, as outlined in Table 1<sup>1</sup>. The three quantitative measures of shell weight, NISPS and MNI<sup>2</sup>, each clearly reveal that the majority of the assemblage was recovered in Area A.

Table 1. Total quantitative shell data for all excavation areas.

Area	Number of contexts	Weight (g)	% weight	NISPS	% NISPS	MNI	% MNI
A (including A south)	81	7486.05	58.5	2540	87.6	506	74.7
B	16	936.4	7.3	88	3	30	4.4
C	27	4134.1	32.3	189	6.5	67	9.9
D	6	245	1.9	83	2.9	74	11
TOTALS	130	12801.55	100	2900	100	677	100

Although a large quantity of the contexts from which shell remains were recovered is defined as fill, a considerable number of shell-bearing contexts were defined as occupation deposits. The smallest quantities of shell remains were recovered from a range of other contexts described as packing, subsoil, historic topsoil, surface, fill/deposit, fill/demo and bottle dump.

## Composition of the shell assemblage

An approximate total number of 38 shell taxa were identified<sup>3</sup>. Sydney rock oyster (*Saccostrea glomerata*) was the most frequently occurring taxa, contributing 70% or greater to the total weight, NISP and MNI quantities for the entire assemblage. Sydney cockle (*Anadara trapezia*) was the second most frequently occurring taxa, comprising 3% of total NISPS and 1.4% of total MNI. The presence of one large *Cassis cornuta* specimen (Horned helmet shell) contributed 24% of the total shell weight for the assemblage, but contributed only 0.1% for both total NISPS (2) and MNI (1). The remains of 35 other shell taxa comprised a total of less than 5% of the total shell weight, less than 10% of the total NISPS and around 25% of the total MNI. Table 2 provides a summary of the species composition of the entire 3PS shell assemblage.

Table 2. Summary of compositional shell data, including identified key species.

Shell Taxa	Total weight (g)	% Weight	Total NISPS	% NISPS	Total MNI	% MNI
SaGl	8840.85	69	2590	89.3	493	73
AnTr	228.5	1.8	88	3	14	2.1
CaCo	3117.6	24.3	2	0.1	1	0.1
All other (n=35)	614.6	4.9	220	7.6	169	24.8
TOTALS	12801.55	100	2900	100	677	100

The complete list of identified shell taxa (including scientific name, common name and habitat) is provided in Table 3. The recovered shell remains comprise species from a diverse range of habitats including rocky subtidal areas, sandy and muddy estuarine environments, reef flats and sandy beaches. The dominant species – Sydney rock oyster – occurs attached to rocks in the subtidal. The second most commonly occurring species – Sydney cockle – occurs in sheltered intertidal areas in shallow mudflats, sand and seagrass<sup>4</sup>.

Shellfish documented to occur in the upper estuarine environments of the Parramatta River include Sydney rock oyster, Sydney cockle and hairy mussel (*Trichomya hirsuta*). These species have been recorded in large numbers in middens throughout Port Jackson (Attenbrow 2002)<sup>5</sup>. The range of habitats of these species includes rock platforms, mudflats with mangroves and sandy beaches, each of which occur along the Parramatta River<sup>6</sup>. The presence of a number of taxa from reef environments, including *Lambis lambis*, *Tridacna* sp. *Cypraea tigris*, *Cassis cornuta*, was also identified in the 3PS shell assemblage. Subtidal rocky reefs occur throughout Sydney Harbour, but do not extend as far inland as the Parramatta River<sup>7</sup>.

Table 3. List of identified shell taxon (in alphabetical order), showing the two most abundant species (shaded).

Code	Scientific Name	Common Name	Environment
AmZe	<i>Amoria zebra</i>	Zebra volute	Intertidal waters in sandy substrate
AnTr	<i>Anadara trapezia</i>	Sydney cockle, Mud Ark	Sheltered intertidal areas and shallow mudflats, sand and seagrass
AuCo	<i>Austrocochlea constricta</i>	Common periwinkle	Exposed rocky shores to sheltered environments
BeNa	<i>Bembicium nanum</i>	Striped-mouthed periwinkle	Semi exposed rocky shores in the upper intertidal
BeHa	<i>Bedevela hanleyi</i>	Oyster drill	Intertidal, under rocks, among mussel and oyster beds, and seagrass beds
CaSp	<i>Cabestana spengleri</i>	Spengler's Trumpet	Intertidal, among rocks and up to 80m
CaFr	<i>Cathalotia fragum</i>	Spotted strawberry top shell	Estuarine seagrass beds
CaCo	<i>Cassis cornuta</i>	Horned helmet shell	Sand and coral rubble, often around reefs

Code	Scientific Name	Common Name	Environment
CeSp	<i>Cerithidae species</i>	Cerith shell	Shallow sandy and coral areas, estuarine areas seaward side of mangroves
ChSp	<i>Chicoreus sp.</i>	Branched murex	Rocky rubble and coral, sandy substrate and seagrass
Coral	Unknown	Unidentified coral	Reef, depths undetermined
CoSp	<i>Conus species</i>	Cone shell	Coral reefs and sandy bottoms
CyAn	<i>Cypraea annulus</i>	Ring cowrie	Intertidal, under stones and among seaweeds
CySp	<i>Cymatium species</i>	Triton	Coral reefs and sandy bottoms
CyTi	<i>Cypraea tigris</i>	Tiger cowry	Coral reefs in shallow water
DoDe	<i>Donax deltoides</i>	Pipi	Littoral sand
GIHe	<i>Glycymeris hedleyi</i>	Hedley's dog cockle	Shallow sea beds, sand to fine gravels
GISp	<i>Glycymeris sp.</i>	Dog cockle	Shallow sea beds, sand to fine gravels
IsSp	<i>Ischnochiton species</i>	Chiton	Attached to rocks on intertidal rocky shores
Lala	<i>Lambis lambis</i>	Spider conch	Littoral sand
LiSp	<i>Littorina sp.</i>	Flat periwinkle	Intertidal zone, some species on rock and mangroves
MiSH	Micro shell (whole shell <1cm)	Undetermined	Undetermined
MiSp	<i>Mitra sp.</i>	True mitre	Intertidal and sublittoral zones
NaSp	<i>Natica sp.</i>	Moon shell	Subtidal to 40m
NeSp	<i>Nerita sp.</i>	Nerite	Rocky shores
OISp	<i>Oliva sp.</i>	Olive shell	Intertidal and subtidal sandy substrates
OsAn	<i>Ostrea angasi</i>	Mud oyster	Silty or sand-bottomed estuaries (depths of 1 to 30m)
PeSp	<i>Pectinidae family</i>	Scallop	Shallow to deep water, among rocks, coral, sand or mud
PoSp	<i>Polinices species</i>	Moon shell	Subtidal to 40m
PyEb	<i>Pyrazus ebeninus</i>	Club mud whelk	Estuarine mudflats and mangrove swamps
SaGl	<i>Saccostrea glomerata</i>	Sydney rock oyster	Attached to rocks in subtidal areas
Snail	Unknown	Unidentified land snail	Terrestrial
StSp	<i>Strombus species</i>	Conch	Sand and coral rubble, often around reefs
TrHi	<i>Trichomya hirsuta</i>	Hairy mussel	Exposed rock platform
TrSp	<i>Tridacna sp.</i>	Giant clam	Reef flats and shallow lagoons to 20m
TuSp	<i>Turbo sp.</i>	Turban shell	Intertidal rock platforms to 10m
UnSh	Unknown	Unidentified shell species	Unknown
VeAu	<i>Velacumantis australis</i>	Australian mud whelk	mud flats and estuaries

### Preliminary Analysis of Areas

The following section provides a brief summary and interpretation of the shell assemblage from each of the four main areas. More detail and discussion on significant aspects of the assemblages (i.e. size of remains, distinctive fracture patterns and evidence for consumption in light of context and historical information) will be provided in the final report. Table 4 provides a summary of the

quantity and diversity of species in each of the four excavation areas, including specific data on the two most dominant species – Sydney rock oyster and Sydney cockle.

Table 4. Quantitative shell data for each excavation areas, including identified key species.

Shell Taxa	Total weight (g)	% Weight	Total NISPS	% NISPS	Total MNI	% MNI
<b>Area A</b>						
SaGl	7007.65	93.6	2331	91.8	399	78.9
AnTr	98.2	1.3	76	3	5	1
All other (n=31)	380.2	5.1	133	5.2	102	20.1
TOTALS	7486.05	100%	2540	100%	506	100%
<b>Area B</b>						
SaGl	851.4	91	81	94	28	97
AnTr	0	0	0	0	0	0
All other (n=5)	84.3	8	5	6	1	3
TOTALS	936.4	100%	88	100%	30	100%
<b>Area C</b>						
SaGl	798.8	19.3	158	83.6	53	79.1
AnTr	105.7	2.6	11	5.9	8	12
CaCo	3117.6	75.4	2	1	1	1.5
All other (n=8)	112	2.7	18	9.5	5	7.4
TOTALS	4134.1	100%	189	100%	67	100%
<b>Area D</b>						
SaGl	183	74.7	20	24.1	13	17.6
AnTr	24.6	10	1	1.2	1	1.3
All other (n=4)	37.4	15.3	62	74.7	60	81.1
TOTALS	245	100%	83	100%	74	100%

#### Area A

Shell remains were identified in a total of 81 contexts in Area A, representing the most widespread shell deposit recovered from the four areas. Sydney rock oyster is the most frequently occurring species, comprising greater than 80% of the assemblage based on all quantitative measures. A total of 33 shell taxa were identified, with the data in Table 4 demonstrating the presence of a wide range of other taxa. These evidently comprise a considerably high number of lightweight shell remains, with 113 NISPS contributing only 5.1% of the weight for the entire Area A shell assemblage.

The contexts outlined in Table 5 contained the largest quantities of shell remains recovered from Area A and the 3PS site generally. The following brief discussion is limited to a description of the shell assemblage from contexts 16120 and 16245. These demonstrate a range of features which provide information for an initial interpretation of the origin, use and discard of the shell remains. A more detailed discussion on the nature of the shell assemblages from the other key contexts in Area A will be provided in the final report.

Table 5. Key shell bearing contexts in Area A. Shaded contexts are discussed here.

Context #	Description	Spatial context	Phase, Date	Phase description
16120 and 16318 (Area A south)	Modified historic topsoil	Lot 30	Phase 4: c.1822-1880s	Early cottage and the White Horse Inn.
16245	Deposit	Lot 30, House 4 (early cottage)	4.1: c.1822-1850s	Construction and early occupation
16248	Deposit	Lot 30, House 4 (early cottage), Room 5	4.1: c.1822-1850s	Construction and early occupation
16282	Deposit	Lot 30, House 4 (early cottage), Room 3	4.2: 1850s-1870s	Later phase additions and occupation
16336	Fill	Lot 30	4.1: c.1822-1850s	Construction and early occupation
16345	Fill	Lot 30	4.2: 1850s-1870s	Later phase additions and occupation
17229	Deposit	Lot 30	4.1: c.1822-1850s	Construction and early occupation

#### Context 16120

Almost 97% of the approximate 2kg of shell recovered from this context comprised Sydney rock oyster remains. This taxon consisted of 739 NISPS and 118 MNI, indicating that the assemblage was highly fragmented, consisting of a disproportionately larger quantity of broken shells rather than whole shells. Of the total of 47 whole shells size classed, 62% (n=28) measured 4-6cm, 24% (n=11) measured 2-4cm and 15% (n=7) measured 6-8cm in size. A number of Sydney rock oyster bases were observed with adhering sandstone, providing evidence of rock attachment as live specimens. Excluding both Sydney rock oyster and Sydney cockle, the remains of five other shell taxa were identified in context 16120, including the small ephemeral species Spotted strawberry top shell (*Calthalotia fragum*), Club mud whelk (*Pyrazus ebeninus*) and *Nerita* sp.

This context is defined as modified historic topsoil containing common historic inclusions and artefacts dated to before 1880. It was identified in the yard areas and below the southern and western verandas of House 4 (early cottage), and was therefore considered to have a high potential of containing a large concentration of occupation related material<sup>8</sup>.

It is concluded that the shell assemblage in 16120 is likely product of marine shellfish remains which were consumed and discarded throughout Phase 4 of the early cottage (c.1822 to 1880s, but with a TAQ of 1884). The dominance of Sydney rock oyster, comprising mostly of large (edible) size shells, suggests an obvious dietary preference for this species. The fragmented nature of the assemblage is the likely result of processing of the shell for the extraction and consumption of the meat. Although the presence of sandstone adhering to some shells suggests they were initially harvested from a rocky intertidal shore habitat, the largely broken nature of the remains indicates they were

processed, consumed and discarded at the cottage. This is demonstrated by a repetitive fragmentation pattern in the oyster lids, whereby the posterior and anterior parts of the oyster valve have become cleanly separated due to an applied force (Figure 1). The presence of a five other taxa possibly represents both incidental inclusions of (*C. fragum*) and some possible deliberate harvesting choices (*P. ebeninus* and *A. trapezia*).

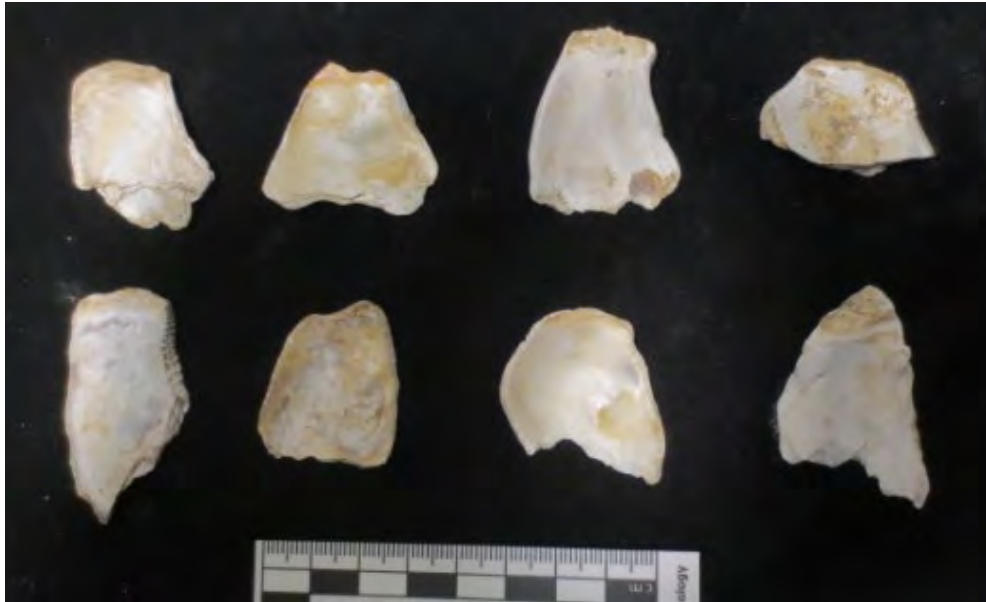


Figure 1. Posterior portion of broken oyster lids, showing intact umbos and distinct lateral break across valve.

#### *Context 16245*

This context is described as deposit associated with Phase 4.1 (c.1822-1850s) of the construction and early occupation of House 4 (early cottage). Just over 70g of shell remains were recovered, comprising 66% of Sydney rock oyster remains. Although 26 NISPS of this species was identified, only 4MNI were present. Sydney cockle was the next most frequently occurring species, but with 8.4g (12%) of remains identified. The remains of 11 other shell taxa, including *Trichomya hirsutata* (Hairy mussel), *Velacumantis australis* (Australian mud whelk) and *C. fragum*, comprised the remaining proportion of the assemblage (16.2g, 22.5%).

Although it is a relatively small assemblage, the shell remains in this context are interpreted as discarded subsistence remains. The disproportionate ratio of NISPS to MNI of the dominant dietary species, as also demonstrated by the Rock oyster shell remains in context 16120, provides further likely evidence of shell processing (breakage) for meat extraction. The distinct fragmentation of oyster lids described above was also demonstrated by the Rock oyster assemblage in context 16245. Both the small size and range of other taxa identified in context 16245 are considered non-dietary, incidental inclusions.

#### *Area B*

In all quantitative measures Sydney rock oyster is demonstrated to comprise over 90% of the shell assemblage in Area B. The remaining assemblage comprised less than 100g of the almost entirely

fragmented remains of five other taxa, including the reef species *C. tigris* (Tiger cowry) and the subtidal *Polinices* sp. (Moon shell).

Of the 16 contexts which contained shell remains in Area B, ten are described as fill. Although the phase information for most of these is unavailable, two contexts (16426 and 16628) are associated with Phase 5.1 (1880s-1960s) and provide evidence for levelling fills related to the construction of houses Cranbrook, Northiam and Harleyville.

Of the total of whole Sydney rock oyster shells size classed, 43% (n=16) measured 4-6cm, 41% (n=15) measured 6-8cm and 16% (n=6) measured 8-10cm. The large size range displayed by this key dietary species and the limited range of other species identified in Area B, suggests that the shell remains were initially discarded as dietary refuse, but were later redeposited as fill deposits.

The presence of a small quantity of Tiger cowry remains and coral fragments in Area B indicate that some of the shell assemblage originated from non-estuarine habitats. Such remains must have originated from reef environments, indicating that some of the Area B shell assemblage was initially sourced from the lower reaches of the Sydney Harbour, where detritus from subtidal rocky reefs may have become incorporated into rocky intertidal habitats.

#### Area C

The presence of one large Helmut shell (*C. cornuta*, weighing a total of over 3kg) skews the weight proportions of species in Area C (Figure 2). The quantitative data produced for MNI and NISPS provide a much more realistic indicator of species proportions in Area C (see Table 4). This data demonstrates the dominance of Sydney rock oyster, similar to the shell deposits in Areas A and B.



Figure 2. Large Helmut shell (*Cassis cornuta*) from context 16754 in Area C.

Similar to Area B, many of the contexts from which shell was recovered in Area C are described as fill deposits. As no chronological information for the shell remains is provided here, this report does not offer any interpretations for the presence or use of the large *C. cassus* shell in context 16754. This information will be sourced and discussed in the final report.

Size analysis of whole Sydney rock oyster shells demonstrated similar size proportions to those revealed in Areas A and B. Of the fifty whole shells size-classed, 2% (n=1) measured 0-2cm, 30% (n=15) measured 2-4cm, 48% (n=24) measured 4-6cm and 20% (n=10) measured 6-8cm.

The small quantity and limited range of other shell taxa in Area C is also similar to that demonstrated in Areas A and B, with some identified species occurring in reef and subtidal sandy substrates, such as *Oliva* sp. (Olive shells), *Cymatium* sp. (Triton shells), and notably, the large Helmut shell. Similar to the shell assemblage from Area B, this suggests the shell remains recovered in Area C did not originate from the upper estuarine reaches of the Parramatta River.

#### Area D

Out of the four excavation areas at the 3PS site, Area D contained the smallest shell assemblage (see Table 2). Although the weight data for Area D shows Sydney rock oyster as the comprising the heaviest proportion of the shell assemblage, both the NISP and MNI counts illustrate the presence of a considerably larger quantity of small, light-weight shells (see Table 4). These comprise the remains of only five other shell taxa, indicating very limited species diversity in Area D.

Each of the five contexts from which shell was recovered in Area D is described as fill deposits. Context 17819 is described as modified historic topsoil or levelling fill which extended over the area occupied by a natural drainage channel running diagonally across Lot 28 and is dated to Phase 4.1 c.1822-1850s.

The remains of three different shell taxa weighing a total of 83.7g and comprising 34NISPS and 31MNI were identified in context 17819. Small, fragmented *Cerithium* sp. were the most frequently occurring taxa, comprising 70% of the MNI. These shells occur in estuarine and mangrove habitats, as do Sydney rock oyster and *Ostrea angasi* (Mud oyster), which are the two other identified taxa in this context. Significantly, the 14g fragment of Mud oyster recovered from context 17819 is the only evidence for the archaeological presence of this species at the 3PS site. Only two other taxa were identified in Area D contexts – Sydney cockle and Club mud whelk – both of which also occur in estuarine and mangrove habitats.

Based on this restricted habitat range, the presence of Sydney rock oyster as the key dietary species and the Mud oyster fragment, it is suggested that similar to the shell assemblage recovered from contemporaneous deposits in Area A, the shell remains from context 17819 may have been gathered from the nearby Parramatta River. The presence of 64 sheep bone fragments in this context<sup>9</sup>, also confirms the likelihood that all faunal remains in context 17819 represent re-deposited subsistence remains.



## Summary and Conclusions

Although a more comprehensive review of the results of analyses and interpretation of the 3PS shell assemblage will be presented in the Final report, several preliminary conclusions are provided here:

- The shell assemblages in all four excavation areas demonstrate Sydney rock oyster (*S. glomerata*) as the dominant species. This is consistent with other archaeological evidence<sup>10</sup> and historic documentary evidence<sup>11</sup> which illustrates Sydney rock oyster as the main dietary shellfish species consumed by the colonial occupants of Sydney throughout the 19<sup>th</sup> century,
- The nature of the archaeological contexts demonstrate shell was deposited at 3PS as subsistence discard in occupation deposits, but was also used in secondary depositional contexts such as fill and packing,
- Where shell remains were recovered in contexts described as occupation deposits, the shell is interpreted as discarded subsistence remains. Evidence for this includes the widespread dominance of Sydney rock oysters, the consistent frequency of shells measuring 4-6cm suggesting deliberate selection of large 'edible' sized individuals, and the presence of repetitive breakage patterns of oyster lids indicating deliberate processing,
- The overall consistency and similarity in the nature of shell remains identified in the different types of contexts is demonstrated by the dominance of Sydney rock oyster, the limited species diversity and the presence of processed (fragmented) shell remains. This is interpreted as evidence for the secondary use of discarded subsistence shell in fill and packing deposits, rather than as evidence for the extraction of shell (from possibly nearby habitats) for this primary use,
- The presence of reef shell species indicate some of the 3PS assemblage was not sourced locally from the Parramatta River, but was obtained downstream in Sydney Harbour where the reef shell remains were naturally deposited within rocky intertidal shore habitats as marine detritus, and then incidentally became incorporated into harvested subsistence assemblages and/or were deliberately selected as curios or ornaments,
- It is possible that a large proportion of the 3PS shell assemblage, and more specifically the Sydney rock oyster shells, were harvested in commercial quantities from rocky intertidal shore habitats within Sydney Harbour and transported to Parramatta via the Parramatta River and sold to local residents,
- The commercial nature of the marine shell assemblage is consistent with the interpretation of the domestic vertebrate faunal assemblage from 3PS (comprising large proportions of cattle, sheep and pig) as pre-processed and bought to the site from elsewhere<sup>12</sup>,
- Evidence for the harvesting of shellfish (Sydney rock oyster) from the Parramatta River is possibly restricted to deposits from Area A and Area D, which in both areas is associated with Phase 4.1 c.1822-1850s,
- In Area A the shell assemblage demonstrated a broader range of species diversity (most of which are from estuarine and rocky shore habitats), as the possible result of the incidental inclusion of more ephemeral species through such means as gathering by children and collection of shells as curios, as well as some deliberate targeting of other less popular species for consumption, such as Sydney cockle (*A. trapezia*) and Club mud whelk (*P. ebeninus*), and

- In Area D the significance of shell assemblage from context 17819 lies in the interpretation that it was initially gathered from the nearby Parramatta River as a subsistence resource, and as providing some of the earliest evidence for the secondary use of shell as fill at the 3PS site.

Further considerations of the data for Area A will include identifying similarities and/or differences with later (late 19<sup>th</sup> century and early 20<sup>th</sup> century) shell assemblages associated with occupation of Cranbrook, Northiam and Harleyville (Area A and Area B). This line of investigation will also assist in identifying a temporal framework for any identified changes in the source location of shell during the period of 19<sup>th</sup> century occupation.

As indicated, a more detailed examination of key shell bearing contexts in all four areas in light of their associated phases and relevant historical activities will be included in the final report. This process may help identify specific occupation periods, construction events and relevant socio-economic circumstances that are pertinent to further interpretation of the marine shell assemblage. As an additional aid for interpreting the origin, distribution and composition of marine subsistence remains at the 3PS site, further consideration of the nature of the vertebrate faunal assemblage will also form a component of the final report.

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<sup>1</sup> For this report the shell data for Area A and Area A South is presented and discussed as one dataset. The data for these two areas will be considered separately in the Final report.

<sup>2</sup> Details of the analytical methods used for the analysis will be provided in the final report. The applied methods are consistent with those previously outlined in other shell analyses undertaken by Carter (i.e. 2013 Report on the analyses of archaeological shell remains from Barangaroo South, Sydney Harbour NSW. Unpublished report prepared for Casey & Lowe Pty Ltd, and 2010 Analyses of marine shell remains excavated from historical contexts at the Darling Walk Site, Darling Harbour, Sydney. Unpublished report prepared for Casey & Lowe Pty Ltd).

<sup>3</sup> Unidentified shells and Micro shells (shells measuring <10mm in size) are both defined as comprising one shell taxa each. Although the Genus or Species of these types of remains were not identified, their relatively low numbers are interpreted as not to affect the overall interpretation of species diversity demonstrated by the assemblage.

Although not a marine shell species, coral is included in all analytical quantities and was counted as shell taxa. As it is present in such small quantities this data is considered not to skew or affect the analytical results.

<sup>4</sup> Lamprell, K. and J. Healy 1998 *Bivalves of Australia, Volume 2*. Leiden: Backhuys Publishers.

<sup>5</sup> Attenbrow, V. 2002 *Sydney's Aboriginal Past. Investigating the archaeological and historical records*. Sydney: University of New South Wales.

<sup>6</sup> Johnson, E.L, M. Mayo-Pinto, P.A. Hutchings, E.M. Marzinelli, S.T. Ahyong, G. Birch, D.J Booth, R.G. Creece, M.A. Doblin, W. Figueira, P.E. Gribben, T. Pritchard, M. Roughan, P.D. Steinberg and L.H. Hedge 2015 Sydney Harbour: What we do and do not know about a highly diverse estuary. *Marine and Freshwater Research*. Volume 66, p. 1077, figure 3.

<sup>7</sup> *ibid*, p. 1080, figure 4.

<sup>8</sup> All Phases and date periods reported here were obtained from a tabulated summary of the 3PS Phases provided by Casey & Lowe (July 2019). Although the Draft Trench Reports and the Area matrices were reviewed as part of production of this report, inconsistencies between the date ranges of phases in these two information sources, as well as contexts missing from the site matrices, were noted. The correct date ranges for all Phases will be confirmed and included in the final report.

<sup>9</sup> Roberts, J. 2019 The Faunal Remains from 153 Macquarie Street, 3 Parramatta Square (3PS). Unpublished report prepared for Casey & Lowe Pty Ltd., pp. 33, 35.

<sup>10</sup> Carter, M. 2018 The catastrophic decline of the Sydney mud oyster (*Ostrea angasi*): Can we detect the effects of human predation and environmental modification within our historic archaeological assemblages? Paper presented at the joint ASHA and AIMA Conference, Parramatta; 2010 Analyses of marine shell remains excavated from the Darling Walk Site, Darling Harbour, Sydney. Unpublished report prepared for Casey & Lowe

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Pty Ltd.; 2012 Report on analyses of the archaeological shell remains from 15 Macquarie St, Parramatta, NSW. Unpublished report prepared for Casey & Lowe Pty Ltd.

<sup>11</sup> Karskens, G. 2009 *The Colony. A History of Early Sydney*. Crows Nest: Allen & Unwin, p.274, and Hoskins, I. 2009 *Sydney Harbour. A History*. Uni NSW: Uni NSW Press, p. 163.

<sup>12</sup> Roberts, J. 2019 The Faunal Remains from 153 Macquarie Street, 3 Parramatta Square (3PS). Unpublished report prepared for Casey & Lowe Pty Ltd., p. 36.