Section 9.3

GLASS REPORT

710–722 GEORGE STREET
SYDNEY CITY

PREPARED BY

E. JEANNE HARRIS

FOR

CASEY & LOWE PTY LTD

2010
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<tr>
<td>4.1</td>
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</tbody>
</table>
1.0 Introduction

Presented here are the results of the analysis for glass artefacts recovered from archaeological excavations at 710–722 George Street, Sydney City conducted for Parkview by Casey & Lowe Pty Ltd.

The discussion that follows includes data on temporal placement, function, origin, technomorphology and reuse when applicable. This discussion facilitates the subsequent analysis of the specific contexts and assists in addressing site-specific research questions set forth in the research design.

1.1 The Glass Assemblage

The glass assemblage consisted of 4555 glass artefacts representing 1689 items or minimum item count (MIC). For the purpose of this study the glass assemblage is detailed by minimum item count (MIC). For any serious archaeological research purposes, artefacts need to be considered as objects rather than rubbish. They must be quantified in such a way as to facilitate functional and temporal analyses. Furthermore it is an essential requirement when comparing data from this study with contemporary archaeological sites.

The initial discussion of the glass assemblage is presented as background for context analysis. This discussion is not intended as an analysis of the glass assemblage from the entire site, for the site is composed of several lots and many occupational episodes, representing numerous individuals over time. The artefacts cannot be lumped together in one mega-assemblage that provides any substantive analysis that will contribute to the reconstruction and understanding of the site’s history.

This discussion begins with discussion of vectors of use. Functional and temporal data are the basic components of any artefact analysis. For the purpose of functional analysis items were grouped in a series of general use and specific use categories. Standard typological methods were applied as a prelude to chronological reconstruction and chronological data were incorporated into functionally grouped artefact discussions.

1.2 Methodology

Artefacts were catalogued according to a system developed by Dr Mary Casey. Information within this catalogue provided data on shape, function, material, completeness, count, minimum item count (MIC), description, dimensions, conjoins, product, manufacturer, reuse, and temporal placement.

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1 Sussman. 2000, pp. 96–103.
2 Casey 2004, pp. 27–43.
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2.0 Glass Chronology

2.1 Introduction
Modern blown glass technology, discovered sometime between 27 BC and AD 14, changed little until the late nineteenth century: a glass blower took a blowpipe, dipped the end into a pot of liquefied glass, turned it around to collect a batch on the blow pipe, put the other end of the blow pipe in his mouth and blew air into the batch while forming the exterior of the batch to the desired shape. In this manner bottles, tableware, lamps, window glass, marbles, etc were formed. Over the centuries specialised tools, such as paddles, moulds, scissors, among others, were developed for each specialised aspect of the industry. Many of these tools provide date-specific information. The basic technologies are discussed separately below.
Manufacturing evidence can appear anywhere on the bottle, although the base and finish are the main areas where changed technology left its mark. These are also the more robust parts and survive best if the bottle is broken. Undifferentiated cylindrical bottle fragments retain seam lines but it is difficult to count whether there are two or more per original bottle.

2.2 Bottles
A typology for glass bottles is not simple. The innumerable combinations of the many technological attributes must be considered during the identification of individual bottles. For the purpose of this study these attributes are grouped into four basic diagnostic categories: mould type, emportilling method, finishing techniques and colour. These attributes represent processes used in bottle manufacture from the mid-eighteenth century.
During the 1800s the pace of technological advancements increased dramatically in many areas of the glass-manufacturing industry. Free-blown bottle technology of the seventeenth century was gradually replaced by hinged metal moulds and by the 1800s mould-blown bottles were ubiquitous. Development of shoulder and full height moulds, new emportilling methods, and improved finishing techniques were primary areas of advancement.

2.2.1 Moulds
The use of shoulder height moulds can be identified by the absence or disappearance of seam lines on bottles, just above the curve of the shoulder. The main types of this mould were the shoulder height multi-piece (1820-1920) and the one-piece dip mould. On full height moulds, vertical seams appear from the base to just below the lip. Above this point, seams were removed during the finishing process. The principal varieties of this mould type include:

- the bottom hinge (1810–1880), with a basal seam running either diagonally or straight across the bottom;
- multi-part leaf mould (1850–1920), with two, three, or four vertical leaf parts and a separate base part; and
- a three-part dip mould (1820–1920), an improved version of the dip mould that allowed variation in bottle shape not possible with the plain dip mould.

Two additional moulding variations used at the time were turn-paste and plate moulds. Turn-paste moulds (1880–1900) were produced by adding a paste to the mould to allow the bottle to slide when the mould was turned over.\(^{5}\) This process produced a symmetrical bottle and removed seam lines, but it also prevented the embossing of bottles. Plate moulding (1821–1920), was an adaptation of the previously mentioned moulds and contained removable or interchangeable plates. Thus, the same main or base mould could be used to manufacture bottles with different embossments (Jones et al 1985:49).

2.2.2 Pontils

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\(^5\) Kendrick 1966:43
Several methods exist for holding bottles during the finishing stage of hand blown glass. All of these methods involved holding the bottle by the base, allowing the craftsman free access to finish the bottle lip. Methods using pontil rods that were:

- Glass-tipped, using either a solid rod bar or blow pipe, was the earliest empontiling method. Each method left a distinctive scar on the base of the bottle.
- Sand empontilling method was common on eighteenth-century and nineteenth-century beer and wine bottles.
- Bare rod empontilling method was popular until the early 1870s when it was replaced by the snap-case method as the primary empontilling method.

The snap-case empontilling device was ‘a four-pronged clip attached to an iron rod, a closely fitting case of wrought iron mounted on a long handle from which only the neck of the bottle is allowed to project.’ This method provides no evidence of its use and is therefore not helpful in dating (Jones et al. 1985:46).

### 2.2.3 Finishes

The finish is everything above the upper terminus of the neck. This is termed the ‘finish’ because it is the last step in bottle production involving the formation of the bottle lip. The shape of the finish is dictated by the intended bottle use, preferred method of closure, and artisan preference. Prior to the mid-1800s, various methods of finishing were used, including lips that were cracked-off, burst-off, everted or flared, flanged, fold-in and foldout, and others demonstrating applied lip techniques.

Two primary production methods employed in the mid- to late nineteenth century were the form-finishing tool and flared or fired lip. A form-finishing tool is a handheld clamp and plug device. The plug is placed in the bore of the reheated bottleneck and the two-pronged clamps around its outer edge. The tool is rotated manually to shape the lip. Evidence of this method consists of the absence of mould seams on the neck, horizontal striations on the glass, and an excess of puddled glass on the neck at the bottom of the tooled finish.

The fired or flared lip is a method by which the neck of a full height mould bottle was reheated by placement in the 'glory hole' of the furnace. This reheating melted and smoothed rough edges left by the mould. Additionally, this process also faded or completely removed seam marks, depending upon the amount of reheating and the distinctiveness of the marks.

During the late nineteenth century, manufacturing of glass containers became progressively more mechanised, beginning with development of semi-automatic machinery (c1880), and culminating with the introduction of a fully automated version (1903). By this method bottles were made in one step and moulds were the full-height of the bottle (including the finish). First developed by Michael Owens, this fully mechanised process quickly gained worldwide acceptance for quick and inexpensive manufacture of glass bottles. By the 1920s his machines had become the primary bottle manufacturing method in North America. During the next decade Owens’s machines (and those of his competitors) began to operate worldwide.

The early finishes produced opening sizes that varied from bottle to bottle. Finishes were defined by their closures. While corks and wax sealing would allow a reasonably airtight closure for wine and spirits, a more consistent device was needed for aerated beverages and beer that would rapidly go flat. A range of stoppers and built-in closures, including Codd’s patent ‘marble’ stopper, attempted to manage the escape of gas. Many of these were patented and can provide reliable dating evidence. The development of the crown seal in 1892 was widely adopted, providing a very useful dating ‘horizon’.

### 2.2.4 Colour

Generally, colour cannot be used as a functional or temporal indicator. ‘Green’ or natural glass is a crude silicate of lime and soda. It contains high amounts of iron oxides, which result in colours ranging from brown to olive, amber to olive-green, and light green to aquamarine. Black glass, in popular manufacture until the 1870s for beer and wine bottles, is actually dark green glass made by
adding iron slag to the glass recipe. It was only the first attempts to decolourise common glass that provide assistance in assigning temporal placement to glass. While the addition of flint and/or lead to the batch made the glass colourless - used for tableware and pharmaceutical bottles, late nineteenth-century glassmakers attempted to achieve decolourisation by adding manganese (1876 – 1930s) and early twentieth century glassmakers used selenium as a decolourant agent (1914 – 1930s). When exposed to unfiltered ultra-violet rays, bottles manufactured in this manner solarised. For bottles made with manganese the metal turned purple and for those made with selenium the resulting colour is described as like honey or ripened wheat. The use of these decolourants continued until the 1930s when arsenic, a more stable decolourant, was introduced.

2.3 **Table glass**

Until the early nineteenth century manufacturing methods in the glass industry as a whole were predominately mouth-blown processes. During the nineteenth century and early twentieth century the technology slowly progressed until by the 1940s glassware was predominately machine made. Foremost of these advancements was the development of pressed glass tableware that was introduced in the 1820s. This technology opened the market to middle class households by providing inexpensive imitations of prestigious hand-cut wares. Other advancements included the mechanised needle etching for fine design work (1860s), blow-over moulds (1810 – 1830s), enamelling (1880s), and silver bonding (1880 – 1930).

Technology for traditional cut glass was also affected by these advancements. Traditionally, cut-glass tableware was mouth-blown and then decorated by wheel-cut or ‘etched’ designs. By the late nineteenth century vessel blanks were mass produced and then current cut designs were crafted. The fledgling Australian glass industry did not start until the mid-nineteenth century and then primary production was commercial containers (bottles and jars). The importation of undecorated tablewares, called “blanks”, was common practice by local craftsmen. Crown Crystal Glass (1926), a subsidiary of Australian Glass Manufacturers, was of the earliest Australian firms to successfully compete for the glass tableware market.

2.4 **Flat Glass**

During the nineteenth century there were two manufacturing techniques for production of window glass: crown glass and broad glass. Crown window glass was thinner and finer than its contemporary broad glass, which was commonly described as inferior to crown glass.

Plate glass was originally developed by the French in the seventeenth century. English polished plate glass was first processed at Ravenshead in 1773. While use of plate glass was unlimited in both household and commercial settings, one common use during the nineteenth century was that of mirrors.

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6 Kendrick 1966:55
7 Kendrick 1966:59
8 Jones 2000:174
9 Lardner 1832:114-148
2.4.1 Function

Artefacts recovered from the site also were examined on the basis of function or original intended use. For the purpose of functional classification artefacts are clustered into groups so that statistical analysis of these clusters provides interpretive data on the site. As an overview, MIC for artefact by shape and use are shown in Table 2.1. For the purpose of this study any identified reuse patterns were discussed separately. Functional analysis categorised glass artefacts into eight identified groups (Fig. 2.1).

![Relative Frequencies of Functional Groups](image)

Figure 2.1: Relative Frequencies of Glass Artefacts by Function.
Table 2.1: Counts of Glass Artefacts by Shape.

<table>
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<tr>
<th>Shape</th>
<th>Function</th>
<th>Description</th>
<th>MIC</th>
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</thead>
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<td>alcohol</td>
<td>664</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td>unidentified</td>
<td>3</td>
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<tr>
<td></td>
<td>clerical</td>
<td>writing</td>
<td>3</td>
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<td></td>
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<td>condiment</td>
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<td></td>
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<tr>
<td></td>
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<td>decanter</td>
<td>beverage</td>
<td>container</td>
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<td>dish</td>
<td>food</td>
<td>service</td>
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<tr>
<td>stemware</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>tumbler</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>unspecified tableware</td>
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<td></td>
</tr>
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<td>lamp chimney</td>
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<td>light</td>
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<td>lampshade</td>
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<td>light</td>
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<td>mirror</td>
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<td>rod</td>
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<td>flat</td>
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<td>architecture</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>non-structural</td>
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</tr>
<tr>
<td>bottle opener</td>
<td>beverage</td>
<td>aerated water</td>
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<td>stopper</td>
<td>beverage</td>
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<td></td>
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<td>condiment</td>
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<tr>
<td></td>
<td>food</td>
<td>sauce</td>
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</tr>
<tr>
<td></td>
<td>food</td>
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</tr>
<tr>
<td></td>
<td>unspecified</td>
<td>container</td>
<td>4</td>
</tr>
<tr>
<td>lid</td>
<td>household</td>
<td>ornamental</td>
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</tr>
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<td></td>
<td>pharmacy</td>
<td>medicine</td>
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</tr>
<tr>
<td>tube</td>
<td>pharmacy</td>
<td>medicine</td>
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<td></td>
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</tr>
<tr>
<td>unidentified</td>
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<td>ornamental</td>
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### 2.5 Chronological Analysis of the Glass Artefacts

Approximately 58 per cent of the glass artefact assemblage provided temporal information, if only about the possible manufacturing date of the artefact itself. Dating of materials is the primary level of analysis. Establishing defined date ranges for discrete deposits from this excavation is key to any further analysis, as the date of use and deposition can differ significantly from manufacture. Without this base data, many subsequent analyses would have little meaning.

Standard typological methods were applied as a prelude to chronological reconstruction. Artefacts then were assigned dates through comparison of identified artefacts with others having documented use-popularity patterns. These dates were further enhanced by documented temporal information that was available for manufacturers and product manufacturers. All datable artefacts have a terminus post quem (TPQ) or a date when the item was first manufactured or a terminus anti quem (TAQ) or an end date for manufacture. During context analysis TPQs are graphically represented. These tools form the basis of statistical data that aid in calculating chronological placement for contexts.

Glass artefacts were dated primarily by reference to manufacturing attributes. During the mid- to late nineteenth century, advancements in bottle manufacturing technologies developed at such rate that documented diagnostic attributes serve to provide tight chronological data. These attributes are well-documented in records and archives of leading bottle manufacturers. Documented manufacturer’s marks evident on glass bottles further serve to establish date ranges (Table 1.2).10 Finally, trademarks for product manufacturers also aid in establishment of data-specific information for archaeological materials (Table 1.3).11

<table>
<thead>
<tr>
<th>Shape</th>
<th>Function</th>
<th>Description</th>
<th>MIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>vase</td>
<td>household</td>
<td>ornamental</td>
<td>2</td>
</tr>
<tr>
<td>vial</td>
<td>pharmacy</td>
<td>medicine</td>
<td>2</td>
</tr>
<tr>
<td>watch crystal</td>
<td>personal</td>
<td>time-keeping</td>
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</table>

### Table 2.2: Chronological and Locational Data for Manufacturers.

<table>
<thead>
<tr>
<th>Shape</th>
<th>Manufacturer</th>
<th>From</th>
<th>To</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>bottle</td>
<td>Australian Glass Manufacturers</td>
<td>1930</td>
<td></td>
<td>Australia</td>
</tr>
<tr>
<td>Capsule (seal)</td>
<td>Betts patented seal</td>
<td>1849</td>
<td></td>
<td>England</td>
</tr>
<tr>
<td>bottle</td>
<td>Cooper &amp; Wood</td>
<td>1859</td>
<td>1928</td>
<td>England</td>
</tr>
<tr>
<td>bottle</td>
<td>Crosse &amp; Blackwell</td>
<td>1830</td>
<td>1900s</td>
<td>England</td>
</tr>
<tr>
<td>bottle</td>
<td>Manchester Glass Bottle Works</td>
<td></td>
<td></td>
<td>England</td>
</tr>
<tr>
<td>bottle</td>
<td>William Powell &amp; Sons</td>
<td>1830</td>
<td>1909</td>
<td>England</td>
</tr>
<tr>
<td>bottle</td>
<td>York City Glass Co.</td>
<td>1860</td>
<td>1900</td>
<td>England</td>
</tr>
</tbody>
</table>

10 Toulouse 1971, Boow 1991
11 Baldwin 1975, Fike 1986, Deutsher 1999
Table 2.3: Chronological and Locational Data for Product Manufacturers.

<table>
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<th>Product Name</th>
<th>Description</th>
<th>Date</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capsule De Dupre</td>
<td>condiment</td>
<td>1850s</td>
<td>France</td>
</tr>
<tr>
<td>Ayer's compound sarsaparilla</td>
<td>medicine</td>
<td>1848-1941</td>
<td>USA</td>
</tr>
<tr>
<td>Brunswick Pharmacal Company</td>
<td>patent medicine</td>
<td>1894-1896</td>
<td>USA</td>
</tr>
<tr>
<td>Cooper &amp; Aves</td>
<td>food</td>
<td>1854</td>
<td>England</td>
</tr>
<tr>
<td>E Rimmel Perfumer</td>
<td>perfume</td>
<td>1850</td>
<td>France</td>
</tr>
<tr>
<td>George Whybrow</td>
<td>condiment</td>
<td>1825-1899</td>
<td>England</td>
</tr>
<tr>
<td>Hora &amp; Co.</td>
<td>castor oil</td>
<td>1860-1915</td>
<td>England</td>
</tr>
<tr>
<td>Marchant Ltd</td>
<td>cordial</td>
<td>1909-1930</td>
<td>Australia</td>
</tr>
<tr>
<td>Powell, Blackfriar's Road</td>
<td>cough remedy</td>
<td>1837</td>
<td>England</td>
</tr>
<tr>
<td>Rowlands Macassar Oil</td>
<td>hair restorative</td>
<td>1793-1953</td>
<td>England</td>
</tr>
<tr>
<td>Summons &amp; Graham</td>
<td>aerated water</td>
<td>1892-1930</td>
<td>Australia</td>
</tr>
<tr>
<td>W &amp; A Gilbey Ltd</td>
<td>gin</td>
<td>1857+</td>
<td>England</td>
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<tr>
<td>William Goodman Henfrey</td>
<td>aerated water</td>
<td>1848-1879</td>
<td>Australia</td>
</tr>
</tbody>
</table>

2.6 Bottles

Bottles are one of the few commercial containers that survive as artefacts in the archaeological record. In this study there are 1199 bottles. Commercial containers provide insight into consumer choice in foods, beverages, medication, perfumes, cosmetics, etc. Much of the current research in historical archaeology depends on the interpretation of bottles.

For each bottle formal attributes were noted, including size, shape, colour, weight, function and temporal information. In association with other artefacts in a provenance, bottles suggest patterns of use and preservation. The bottle is one of the most common of glass artefact types recovered from archaeological sites. Therefore, it was not unexpected that bottles represent approximately 16 per cent of the entire assemblage and 68 per cent of the glass assemblage.

The term “bottle” was used throughout this discussion to represent commercially manufactured glass storage containers, such as bottles, phials and jars. Bottles contributed to both the temporal placement and the use (function) of the site. Chronological data for bottle glass were based on advancements and/or changes in manufacturing technology over time. Recognised bottle shapes enable identification of products consumed by the occupants of a site, which help answer questions about trade and economics. Patented shapes and documented manufacturer and/or bottler embossments contribute chronological data, as well as helping to answer questions on consumer choice and market access.

2.7 Bottle Typology

A type series is a systematic method of identifying similar items by assigning a ‘series’ number to individual items with a similar attribute or set of attributes that facilitates easy access to the whole collection. To facilitate the cataloguing and analysis of bottles and associated stoppers, Casey & Lowe has developed a type series. The bottle type series was designed as a searchable database with
diagnostic attributes recorded and accompanied by an embedded digital image (Figure 2.3). In this manner the type series provided pre-considered and systematic categories in which bottles fit.12  

The intent of this multi-purpose type series was to 1) expedite the cataloguing process by reducing the entry of redundant descriptive and temporal information; 2), as a comparative reference for future cataloguing of similar whole or fragmented bottles; and 3) most importantly as a tool to assist the analyst in accurate and quick retrieval of data. The database was designed with separate fields for bottle attribute data, including, finish, neck, shoulder, body and base. Measurement fields consisted of the overall height of the bottle and base diameter. General and specific function fields were provided to categorise the bottle’s original or intended use.13 A descriptive field was also included to record any stylistic attributes, such as moulded design, embossments and colour.

| General function | alkoh |  |
| Specific function | beer |  |
| Description |  |
| Bottle Type Series Data Form |  |
| Type | Under sized beer |  |
| Finish | down-tooled lip and string |  |
| Neck | cylindrical |  |
| Shoulder | moulded |  |
| Body | cylindrical |  |
| Base | circular bulged heel, round |  |
| Base dimensions | 99 |  |
| Height | 235 |  |

Figure 2.2: Sample of Bottle Type Series Data Form.

Standardised nomenclature was used in the type series, as it was in the artefact catalogue. The need for standardised bottle nomenclature for archaeological assemblages was first addressed in the 1970s when John White assembled a glossary of terms for use in cataloguing bottles and their closures.14 There are several references used by Australian archaeologists to standardise bottle nomenclature.15 For this type series the nomenclature for fields are defined as:

- **Finish** – The finish is the top most part of the bottle and consists of the lip, rim and bore. Each finish is made to accommodate a particular closure (cap, cork, etc.). Since the top part of the bottle is the last part to be completed, it was called the ‘finish.’

- **Neck** – The neck is the narrow part of the bottle between the finish and the shoulder. Some wide mouthed containers, such as jars, have no neck.

- **Shoulder** – is the widened area of the bottle between neck and body.

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12 Crook et al. 2002, p. 33–34  
13 NB: Bottle reuse and recycling is an issue for the analysis of an individual collection.  
• **Body** – The body is the main part of the container.

• **Base** – The base is the bottom of the bottle or jar and elements within consist of the heel, resting point and push up.

Bottle measurements provide comparative data, as well as potentially assisting in the dating of bottles or fragments. One study in particular, set out to develop a way to use actual measurements of eighteenth and nineteenth century British beer/wine bottles as a tool for dating different types of these bottles.\(^{16}\)

Typically, a type series should not be used to assign function to a bottle form, but rather to record attribute data specific to that bottle. This is not to say that function cannot be identified from bottle forms. For standardised shapes enable quick determination of bottle primary, intended or original use. One of the pitfalls that archaeologists fall into is assuming function by form. There are examples in the archaeological literature where mass-produced generic bottles have classified by archaeologists’ preconceived notion of function.\(^{17}\) In some instances a bottle type is most often associated with one product, but rare use as a container for another product(s) is known. For example, a bottle almost always associated with salad oil is illustrated in Zumwalt’s *Ketchup, Pickles Sauces: 19th Century Food in Glass* showing this same bottle embossed “Try Burnett’s 1D Jell Set,” which is identified as Australia’s Burnett’s Jelly Crystals.\(^{18}\) However, in the absence such embossments bottles in the type series would be placed in the group they most commonly represents.

In other instances generic bottle shapes were used for more than one type of product. For example, there were rectangular “panelled” bottles that were used as containers for food condiments, patent medicines, and cosmetics. In this situation, the function was assigned the bottle type based on embossments and labelling when possible. Unlabelled bottles were assigned to the generic category.

For this study 33 bottle types (218 bottles) and two stopper types (18 stoppers) were identified. Partial and fragmented bottles were assigned a type series designation when sufficient attributes were available to identify the type.

### 2.8 Bottle Chronology

From the time of British colonisation until the late-nineteenth century Australia’s primary source of bottles and bottled products was Great Britain. Therefore, the focus of this chronological study of bottle glass was the British glass industry; its technology and factors that affected it. From the mid-eighteenth century to mid-nineteenth century there was a dichotomous development in the technology of bottle glass. For 100 years (1746–1845) British excise duties on common green bottle glass was 1/8 that levied upon flint glass.\(^{19}\) As a result two- and three-piece moulds were developed for bottles made from for higher taxed glass that produced thinner, lighter bottles.\(^{20}\)

#### 2.8.1 Manufacturing Technology

**Alcohol bottles**

Approximately 56 per cent of the bottles in this collection are commercial containers for alcohol. Forty-eight per cent of alcohol bottles (317) were cylindrical British beer/wine bottles that were made from common green bottle glass that range in colour from dark green (black), olive, to medium

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\(^{16}\) Jones 1986, p115 – 123.

\(^{17}\) Baugher-Perlin 1982.

\(^{18}\) Zumwalt 1980, p 64.

\(^{19}\) Lardner 1832, p 151.

\(^{20}\) Boow, p 115.
These all-purpose alcohol bottles were also used for cordial, aerated waters and other household products, but often there use as the latter was in fact a reuse of the bottle. From the mid-eighteenth century to the mid-nineteenth century these bottles were manufactured using the standardised technology of the time, however, during this period cylindrical beer/wine bottles underwent major and minor changes in shape and size of the finish, neck, shoulder, body and base. Studies of these forms provide date ranges that were established through datable seals and from dated archaeological contexts. Based on the results of these studies, characteristics of finishes (lip and rim) and base (heel, pontil, push up), as well as shape and size of neck, shoulder, body and base contribute, alone or in combinations, to the temporal placement of these bottles. Conical push-ups bases (with ridges around the push-up) (1820–1870) were the most common datable characteristics observed for cylindrical beer/wine bottles in this collection. Dates for other beer/wine bottles were established by the type of empointilling method used to hold the bottle during the finishing process and the finish process itself. Chronological data for British beer/wine bottles datable attributes is shown in Table 2.4.

### Table 2.4: Chronological Data for British Beer/Wine Bottles

<table>
<thead>
<tr>
<th>Technomorphology</th>
<th>Date Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conical push-up</td>
<td>1790–1870</td>
</tr>
<tr>
<td>Dome shaped push up with sand pontil</td>
<td>1720–1870</td>
</tr>
<tr>
<td>3 part shoulder height mould with dip mould body (including Rickett’s patent)</td>
<td>1820s–1920</td>
</tr>
<tr>
<td>form tool finish</td>
<td>1850–1920</td>
</tr>
</tbody>
</table>

The abundance of champagne bottle in the collection champagne bottles (88) have a separate technological chronology. Based on manufacturing technology developed in France, these bottles are designed to withstand the pressure produced by the effervescing wine. The deep reinforced push up evolved in three stages from 1760 onward. Early technology until about 1800 involved the use of an empointilling tool, but from the nineteenth century onward a snap case or similar holding devise was used during the finishing process.

Gin/schnapps bottles (224) or “Dutch gin” bottles also have a separate technological and stylistic chronology that began in the seventeenth century. By the time of Australian colonisation the tapering squarish bottle with a 4-point resting base was well established. Changes in from the wide pig snout lip shape (until 1850) to the tapering flat-sided lip shape (1800–1900) were gradual. Also there was a gradual change from a blow pipe pontil to a snap case type holder that was started circa 1800. About 1850 various symbols began to appear on the base of the bottles. To date research is ongoing into these symbols, but it is likely that they are trademarks of a sort. Other chronological tools for dating gin/schnapps bottles involve the irregularity or concavity of walls and the degree of tapering of the body from shoulder to base. These factors need to be considered with the depth of the push up, the presence or absence of symbols and the manner and shape of the finish.

### Other commercial bottles

Throughout the nineteenth-century bottle technology advanced steadily for other bottle forms. By the end of the nineteenth-century glass containers were mass-produced, relatively inexpensive, and consequently readily disposable. Therefore, they became increasingly popular as packaging for all manner of commercial products. The frequency of container glass entering into the archaeological record since the mid-nineteenth century has also increased dramatically as a result.

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21 Colour cannot be used in assigning temporal placement of these bottles, as the composition of the glass was determined by each manufacturer’s preference.
25 McNulty, R. 2004
data for manufacturing techniques were shown in Table 2.5, these techniques form the basis for
dating bottles in the collection from the mid-nineteenth century to early twentieth century.

<table>
<thead>
<tr>
<th>Technomorphology</th>
<th>Date Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finishing tool</td>
<td>1820 – 1920s</td>
</tr>
<tr>
<td>Post bottom mould</td>
<td>1820s+</td>
</tr>
<tr>
<td>Cup bottom mould</td>
<td>1850 +</td>
</tr>
<tr>
<td>3-part moulds (Ricketts type)</td>
<td>1820s–1920s</td>
</tr>
<tr>
<td>Bare iron pontil</td>
<td>1840s–1870s</td>
</tr>
<tr>
<td>2 or 4-part vertical moulds</td>
<td>1850s – 1920s</td>
</tr>
<tr>
<td>Internal ledge finish</td>
<td>1850 – 1910</td>
</tr>
</tbody>
</table>

The basic distinction was made between bottle manufacturers (glassworks) and product manufacturer
(brewer, distiller, etc). Documented manufacturer’s marks for glass containers served to establish
date ranges each company. Primary sources of this information included Toulouse,26 and Boow.27
Chronological and location data for manufacturers are shown in Table 2.2 and data for product
manufacturers is shown in Table 2.3.

3.0 Context Analysis

Select contexts were subject to in depth analyses. For the purpose of this study analysis is divided into the three excavation areas. Contexts in this analysis include cesspits, a well and underfloor deposits. Collectively, these contexts represent approximately 91 per cent of the glass artefacts or 87 per-cent of MIC. Each context or group of contexts (e.g. fill layers in a cesspit) is subject to temporal and functional analyses. Analysis results and/or observations are noted for each context or group of contexts.

3.1 Area A - Lot 2: 720–722 George Street

**Area A**, which was recorded as Lot 2, is the southern end of the site and included footings from late-nineteenth century buildings (720 and 722 George Street), which overlaid the remains of the c.mid-1820s Woolpack Inn and evidence of an even earlier backfilled cut associated with the brickfield era. The study of glass artefacts from Area A (Lot 2) consists of analysis of materials from filled layers related to the brickfield occupational period, fill from two cesspits and the underfloor deposits from the Woolpack Inn.

3.1.1 Brickfields Contexts

The fill (7353) of a cut (7352) contained nine glass artefacts, representing three bottles – a beer/wine, a champagne and a gin/schnapps bottle, as well as one fragment of crown window glass (1850). The bottles do not have datable diagnostic attributes.

A fill layer within Test Trench 1 contained four glass artefacts, representing three bottles – a gin/schnapps, a condiment bottle and one for which function could not be determined. None of the bottles have datable diagnostic attributes.

NB: A large irregular pit (7651) contained two layers of fill; the lower fill (7652) contained 20 per cent lead glaze pottery wasters while the upper fill (7646) contained 50 per cent lead glaze pottery wasters. No glass artefacts were recovered from these contexts.

3.1.2 Cesspits

**Fill of Cesspit 7658 (Context 7653 – 7655)**

A brick cesspit was found close to the property boundary between 722 and 724 George Street that has possible association with the occupation of the Woolpack Inn (c.mid-1820s – 1890). The fill of Cesspit 7658 contained 110 glass artefacts representing 41 MIC. The upper fill deposit contained three glass artefacts – a beer/wine bottle (1820-1920), a panelled stemware bowl (1850 TPQ) and an unidentified tableware item. The majority of artefacts were recovered from the middle layer (7654) (104/36 MIC), which will be discussed below. The subsequent basal fill layer (7655) contained only one crown window glass fragment (1870 TAQ) and one dark green beer/wine bottle body fragment.

The middle fill layer (7654) contained a high relative frequency of datable diagnostic glass artefacts (89%). Datable artefacts included bottles (24), tableware (7) and crown window glass (1). All bottles were made after 1820 and before 1920 and one third of bottles (8) have an 1850s TPQ. Beer/wine bottles mostly have an 1820s to 1850s (or 1870) date range. One bottle was embossed with the trademark for York City Glass Co (1860-1900) and another was a bottle for Powell’s Balsam of Aniseed cough remedy (1837 TPQ). Glass tableware (7) is press moulded (1820 TPQ), of which six are panelled tumblers with ground resting places (1835 TPQ). Results of temporal analysis of the glass assemblage from the fill of the cesspit at 722 and 724 George Street indicate that dates are consistent with the occupation of the Woolpack Inn.

Functional analysis classified approximately 92 per cent of the glass from the middle fill layer (7654) into five identified groups (Figure 3.1). Food and beverage items represent over 61 per cent of the
assemblage, which is consistent with a household or an establishment such as the Woolpack Inn. All beverage bottles are alcohol with the majority being beer/wine and most of the tableware is tumblers or stemware.

Medicine and personal bottles also contributed to use interpretation. The relative frequency of medicine bottles (25%) is generally not expected in the assemblage of a public establishment, such as an inn, however, it could be indicative of health concerns of the publican or his/her family. Most of the medicine bottles/vials are generic forms that were used by chemists and patent medicine manufacturers. The content was identified for only two bottles, a castor oil bottle and a cough remedy bottle. The perfume bottle could easily have been from the publicans family or a guest at the inn. The bottle’s shape is much the same as those used by Germany’s Farina perfumery, which was popular throughout the nineteenth century.

Results of analysis for the brick cesspit located between 722 and 724 George Street indicate that the glass from the fill layers is temporally consistent with the occupation of the Woolpack Inn. Functional results suggest this rubbish might be a mix of residential and commercial refuse.

**Fill of Cesspit 7637 (Context 7639)**

A stone cesspit was located in the eastern end of Area A. This feature was only one course deep and had been heavily impacted by the footings for subsequent construction. There are only four glass artefacts in the fill of Cesspit 7637 – two press moulded panelled tumblers (1835 TPQ), a club sauce type bottle stopper (1840s TPQ) and an unidentified bottle.

**3.1.3 Woolpack Inn Underfloor Deposits**

The stone footing remains (7309) of the Inn survived below the later footings 7307 and 7308. Five rooms were identified, each containing underfloor deposits and the glass artefacts from these deposits are discussed below.
Underfloor deposit - Room 1 (7323)

The underfloor deposit in Room 1, yielded 207 glass artefacts representing 115 MIC. Approximately 36 per cent of the artefacts provided temporal information. The majority of bottles were made after 1820 and before 1870. One bottle beer/wine bottle exhibits basal sag, a manufacturing attribute on bottles manufactured before the second quarter of the nineteenth century. Most glass tableware is press moulded (1820) with some items either with panelled sides (1830 TPQ) or ground and polished pontil scars (1835 TPQ). One stemware foot is of earlier fold over manufacture (1840 TAQ). Also contributing to temporal placement is crown window glass (1850 TAQ or 1870 TAQ depending on thickness).

Relative frequencies of functionally identified glass items are shown in Figure 3.2. Food and beverage items comprise the majority of glass items (61.7%) from the Room 1 underfloor deposit. Beverage bottles are all for alcohol, including beer/wine, champagne and gin/schnapps. Food-related items are mostly glass tableware items (26) and also include two oil bottles. Tableware consists of tumblers (6), stemware (11) and tableware items too fragmented for form to be determined. The one household item is a stemmed ornamental vessel. The one personal item is a non-prescription lens from a pair of eye glasses. Among the functionally unidentified glass items are four glass rods.

Underfloor deposit - Room 2 (7324)

The underfloor deposit in Room 2 yielded 208 glass artefacts representing 145 MIC. Approximately 39 per cent of the glass items provided temporal information. All bottles dated were made between 1785 and 1870. There are a variety of datable attributes exhibited on glass tableware, including ground and polished pontil scars (1835 TPQ), gilding and apple green coloured glass (1820 TPQ), press moulded (1820 TPQ) and panelled (1830 TPQ). Also contributing to temporal placement is crown window glass (1850 TAQ or 1870 TAQ depending on thickness).

Relative frequencies of functionally identified glass items are shown in Figure 3.2. Food and beverage items comprise the majority of functionally classified glass items (57.3%) from the Room 2 underfloor deposit. The majority of food-related items are tableware (28), including stemware (18), a tumbler and tableware items too fragmented for form to be determined. A club sauce type bottle stopper and a condiment bottle comprise the remainder of food-related items. With the exception of one decanter, beverage items are alcohol bottles, including beer/wine, champagne and gin/schnapps.

The remaining functionally classified artefact is a generic medicine bottle that could be used by chemists or commercial patent medicine manufacturers. Among the functionally unidentified glass items are two glass rods.
The underfloor deposit in Room 3 yielded 238 glass artefacts representing 99 MIC. Approximately 27 per cent of the glass items provided temporal information. All bottles dated were made between 1780 and 1870. Datable glass tableware consists of press moulded items (1820 $TPQ$) and one plain blown tumbler (1800-1830s). Also contributing to temporal placement is crown window glass (1850 $TAQ$ or 1870 $TAQ$ depending on thickness).

Relative frequencies of functionally identified glass items are shown in Figure 3.2. Food and beverage items comprise the majority of glass items (80.8 %) from the Room 3 underfloor deposit. The majority of food-related items are glass tableware (20), including stemware (6), tumblers (2) and other tableware items too fragmented for form to be determined. The other food-related item is a condiment bottle. Beverage items are alcohol bottles, including beer/wine, champagne and gin/schnapps.

The remaining functionally classified artefact is the cut glass finial that is most likely for a perfume bottle.

The underfloor deposit in Room 4 yielded 132 glass artefacts, representing 82 MIC. Approximately 26 per cent of the glass items provided temporal information. The bottles from this deposit date between 1760 and 1870 and most bottles are manufactured with technologies that were phased out by the 1850s. There is one beer/wine bottle from this deposit that bears the trade mark of the Cooper & Wood Glass works (1859 – 1928) on the base. Glass tableware dates from the late eighteenth to late nineteenth century, including one ribbed dip-moulded vessel that is like eighteenth-century Anglo-Irish decanters. Also contributing to temporal placement is crown window glass (1850 $TAQ$) and one fragment of broad window glass (1850 $TPQ$).

Relative frequencies of functionally identified glass items are shown in Figure 3.2. Beverage items (59), which are all alcohol bottles, comprise the majority of glass items (72%) and consist of beer/wine, champagne and gin/schnapps bottles. Food-related items (6) consist of condiment bottles (3) and glass tableware (3). Other functionally identified items include a watch crystal and a snuff bottle.

Figure 3.2: Relative Frequencies of Functional Groups for Underfloor Deposits in the Woolpack Inn.
Underfloor deposit - Room 5 (7337)

The underfloor deposit in Room 5 yielded 175 glass artefacts representing 102 MIC. Approximately 49 percent of the glass items provided temporal information. All bottles dated were made between 1820 and 1900. Also in the assemblage are club sauce type bottle stoppers (1840s TPQ). Glass tableware dates from the first quarter of the nineteenth century. There are also two French glass bottle openers for Codd type patent bottles (1875 TPQ).28 Also contributing to temporal placement is crown (23) window glass (1850 TAQ) and one fragment of broad window glass (1850 TPQ).

Relative frequencies of functionally identified glass items are shown in Figure 3.2. The underfloor deposit in Room 5 had a high relative frequency of window glass (23.5%). It is probable that given the size of the room and the systematic excavation technique used in this investigation that the fragmented glass represents far fewer panes of glass. Food and beverage items comprise 46.1 percent of the Room 5 underfloor deposit. Food-related items consist of condiment bottles and glass tableware. Condiments include pickle bottles and club sauce type stoppers. Tableware includes stemware (4), tumblers (3) and other tableware items (10) too fragmented for form to be determined. Beverage items consist of beer/wine and champagne bottles, as well as the two Codd bottle openers for aerated waters. Personal items consist of a perfume bottle stopper and a non-prescription eye glass lens similar to the one found in Room 1. The one pharmaceutical item is an Eno’s type stopper, commonly used for medicinal salts bottles. Among the functionally unidentified glass items are eight glass rods.

Observations on the Woolpack Inn Underfloor Deposits

The following are observations made during the analysis of the underfloor deposits from the five rooms of the Woolpack Inn:

- Glass artefacts from Room 3 and Room 4 date earlier than those from other rooms.
- The Codd bottle openers found in the Room 5 deposits have the latest terminus post quem, 1875, of all recovered glass artefacts in the underfloor deposits.
- The majority of bottles from all rooms were alcohol-related
  - There is a high relative frequency of gin/schnapps bottles in most beverage sub-assemblages. This does not accurately reflect the consumption habits of the consumers, because the Woolpack Inn would also have served beer/wine from casks, whereas gin/schnapps were frequently imported in bottles until the 1870s and champagne would have been imported and sold in bottles only.
  - There were no gin/schnapps bottles from Room 5.
- Room 2 had a higher relative frequency of tableware items, which suggests this room’s function differed from the rest, e.g. it was the dining room.
- The glass rods recovered from underfloor deposits from Rooms 1, 2 and 5 all have similar diameter. Where present, the proximal end is a flat disk finial and the distal end is flattened and cross hatched. These characteristics match descriptions for stirring rods used to mix glazes, however, any number of other uses is possible.
- Non-prescription glasses were a fashion item during the nineteenth century and possibly worn to suggest literacy.29

28 These openers consist of a shielded peg which was used to press the glass ball down, and away from the rubber seal. The openers are embossed on top - BREVETE / S.G.D.G. [translation from French - Patented / Without Guarantee Of Government].
3.2 Area B - Lot 3: 712–718 George Street

Area B comprised the central portion of the study area (Lot 3) which included No’s 712–718 George Street. This area contained extensive remains from the Brickfield days along with early residential occupation and many phases of commercial occupation. The study of glass artefacts from Area B (Lot 3) consists of the analysis of fill from four cesspits associated with four study area house lots located on George Street.

3.2.1 Cesspits

Fill of Cesspit 7625 (Contexts 7627 and 7630)

Located in the rear yard of 712 George Street, the sandstock brick lined cesspit (7625) yielded 269 glass artefacts, representing 36 MIC. The main fill of the cesspit (7627) consisted of a mixture of structural debris and household refuse. The lower fill layer (7630) contained artefacts in a highly organic silty matrix – quite possibly the original cesspit material before abandonment.

The upper fill deposit contained 31 glass MIC. Approximately 90 per cent of these items contributed temporal information. Since this deposit potentially represents backfill from yard clean up, it is possible for it to contain artefacts from the early nineteenth century to the turn of the twentieth century. Below is chronologically listed those items that contributed specific date information:

- 1800–1850 two bottle finishes
- 1810–1880 a bottom hinge mould bottle
- 1820 TPQ a lamp chimney for a vertical wick lamp
- 1820–1870 6 beer/wine bottles – conical push-ups and sand pontil scars
- 1830 TPQ 3 panelled press-moulded tableware items
- 1830s–1900s 1 Crosse & Blackwell bottle
- 1835 TPQ a tumbler with a ground resting place
- 1840 TPQ a club sauce type stopper
- 1850 TPQ 2 cup bottom moulded bottles
- 4 gin/schnapps bottles – symbol embossed on base
- 1 champagne bottle with a form tooled finish
- 1859–1870 1 Cooper & Wood beer/wine bottle

Results of temporal analysis for the upper cesspit deposit suggest a 1800s–1870s date range for the glass artefacts.

Relative frequencies of glass are shown in Figure 3.3. Food (7) and beverage (13) comprise the majority of functionally-classified glass items (64.5%). Food-related items are condiment bottles, a stopper and tableware. Condiment bottles include pickles and oil. The stopper is a club sauce type used as a closure for sauce, oil and vinegar bottles. Tableware consists of tumblers, one stemware and an open dish. Beverage items are alcohol bottles – beer/wine, champagne and gin/schnapps – and one aerated-water bottle. Household artefacts are ornamental items – a vase and a lid. Service items are a lamp chimney and shade from a vertical wick lamp. The personal item is a perfume bottle which is a miniature version of a scroll flask. The potentially mixed depositional fill,

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30 Jones, O. 1986, pp 49–71
originating from multiple sources of rubbish residential and commercial occupations precludes functional interpretation. Observations include:

- The high relative frequencies of glass food and beverage items are consistent with a residential setting or a commercial establishment, such as a hotel/inn or restaurant.
- Several items are indicative of a residential origin, including ornamental items, perfume bottle and vertical wick lamps.

![Relative Frequencies of Functional Groups from Cesspit 7620 - Upper Fill Layer](image)

**Figure 3.3: Relative Frequencies of Functional Groups from Cesspit 7620 - Upper Fill Layer**

Glass artefacts from the lower layer (7630) consisted of three beverage bottles, including gin/schnapps bottles, a beer/wine bottle and an aerated water bottle. The gin/schnapps bottles date from the turn of the nineteenth century, the aerated water bottle has an 1820 – 1920 date range and the beer/wine bottle has an 1850 – 1920 date range.

**Fill of Cesspit 7626 (Context 7631-7634)**

In the rear yard of 714 George Streets were the remains of a single trapezoidal shaped sandstone cesspit (7626) that yielded 163 glass artefacts, representing 37 MIC. All glass items were recovered from the upper fill layers (7631, 7632). Two alcohol bottles were recovered from Context 7631 and one had an 1850–1870 date range. The majority of items (35) were recovered just below the top layer in Context 7632. Temporal information for this layer suggests it was deposited between 1850 and 1900. Date-specific information was derived from technological advancements for bottles, technological and use-popularity date ranges for glass tableware and developments in vertical wick lamps.

Relative frequencies of glass items are shown in Figure 3.4. Functional analysis suggests that the cesspit fill originated from a residential setting. The fill included bottles for personal grooming products, medicine, condiments and alcohol, as well as glass tableware and lamp chimneys and a shade.
Figure 3.4: Relative Frequencies of Functional Groups from Cesspit 7626.

Fill of Cesspit 7635 (Contexts 7638, 7640, 7641, 7642)

Located in the back yard area of 716 George Street was a triangular sandstone cesspit (7635). This cesspit contained four layers of fill, which in total yielded 21 glass artefacts, representing 10 MIC. The upper-most fill layer (7642) contained the most glass items (8), including crown window glass (1870 TPQ), plate mirror glass, unidentified bottle forms and a bottle for one of the many Ayer's famous patent medicines (1838-1939). In the fill layers below there were remnants of schnapps bottles that were manufactured between 1800 and 1850.

Fill of Cesspit 7347 (Contexts 7387, 7342, 7401, 7411)

Cesspit 7347 was located at the rear of 718 George Street. This triangular-shaped sandstone cesspit yielded 570 glass artefacts representing 88 MIC. There were four fill layers within this cesspit. Glass artefacts were recovered from the upper three (7342, 7387, and 7401). Relative frequencies of functional groups for these fill layers is shown in Figure 3.5.

The upper-most fill layer (7342) contained seven glass bottles. Bottles date between 1850 and 1920 and all date-specific information is based on advancements in bottle manufacturing technology. Identified bottle forms include two champagne-type bottles and one generic medicine bottle.

The next fill layer (7387) contained the majority of glass items (63). With the exception of one plate glass item, glass from this fill was again all bottles. The plate glass artefact is a single piece of glass measuring 125 x 63.5 x 6.3mm with all four edges finished. All bottles with identified form are beverage (55), including beer/wine (5), champagne (22) and gin/schnapps (28). The high relative frequencies of gin/schnapps and champagne bottles do not accurately reflect the consumption habits of consumers – residential or commercial, because the beer/wine bottles could be refilled at the pub or hotels from casks, whereas gin/schnapps was most often imported in bottles until the 1870s and champagne would have been imported and sold in bottles only. All gin/schnapps bottles are a form generally referred to as the “Dutch gin bottle” that were in popular use from the second quarter of the eighteenth century. Research subsequent to cataloguing has identified temporally distinguishing...
attributes that serve to divide these bottles into several datable ranges.\textsuperscript{31} Gin/schnapps bottles from this fill layer could be divided into three temporal ranges: 1800–1850 (5), 1820–1870 (11) and 1850–1900 (7). Champagne bottles were of two different manufacture technologies: one method in use until 1870 and the other 1850–1920. Four of the beer/wine bottles were dated by their form-tooled lip finishes (1850–1920) and one was manufactured in a 3-part shoulder height mould with dip mould body (1820–1920).

![Graph showing relative frequencies of functional groups for fill layers from Cesspit (7347) at 718 George Street.](image)

**Figure 3.5:** Relative Frequencies of Functional Groups for Fill Layers from Cesspit (7347) at 718 George Street.

### 3.3 Area C – Lot 4: 710 George Street – Construction, Occupation and Demolition

**Area C** is the northern part of the site at 710-722 George Street. Area C deals specifically with No. 710 George Street from the 1840s to 2008. This study consists of analysis of glass artefacts recovered from the construction, occupation and demolition of the building at 710 George Street, and includes analysis of materials from the brick-lined well (7520) located in back yard of 710 George Street.

#### 3.3.1 Demolition of Building 7441 (Context 7313)

Context 7313 represents the 1891 demolition layer. This layer yielded 78 glass artefacts representing 39 MIC. Approximately 90 per cent of the glass items provided temporal information. Bottles (33), the most abundant artefact type from this layer, have wide ranging dates that are based on manufacturing technologies – most used from the early nineteenth century to the 1920s. There are two identified product manufacturers: one a George Whybrow oil bottle stopper (1825–1899) and a Hora & Co castor oil bottle (1860–1915).

\textsuperscript{31} McNulty, R. 2004
Relative frequencies of functionally identified glass items are shown in Figure 3.6. The demolition layer represents mixed depositional fill from commercial and residential occupations. The only definite evidence of commercial rubbish is the inclusion of three bottles of Benzine Collas, which is a commercial name for benzine or mineral naphtha. This chemical has many uses, including as a spot remover and glove cleaner and was used in taxidermy. The majority of bottles are food and beverage related. Food bottles are for condiments while beverage bottles are alcohol bottles. There are also two ink bottles and two medicine bottles.

NB: There is one apple green bottle for which mendable fragments were found in the demolition layer and the underfloor deposit.

![Relative Frequencies of Functional Groups for Construction, Underfloor and Demolition Layers at 710 George Street.](image)

**Figure 3.6: Relative Frequencies of Functional Groups for Construction, Underfloor and Demolition Layers at 710 George Street.**

### 3.3.2 Underfloor Deposit of Room 1 (Context 7444)

The underfloor deposit in Room 1 is associated with the later occupation of the building, perhaps after the interior changes were made post-1860s. This underfloor deposit yielded 763 artefacts, representing 320 MIC. Approximately 40 per cent of glass items provided temporal information. Over 54 per cent of datable items (69) are crown window glass (1850 \( TAQ \) or 1870 \( TAQ \) depending on thickness). There is also one fragmented broad glass pane (1850 \( TPQ \)). It is probable that given the size of the room and the systematic excavation technique used in this investigation that the fragmented glass represents far fewer panes of glass. All bottles (46) were made after 1800 and before 1900 and most have date ranges that span much of the nineteenth century, but approximately 50 per cent were manufactured after 1850. Among the bottles is one Gilbey’s gin bottle that has an 1857 \( TPQ \). Temporal information was also provided by other glass artefact forms:

- Vertical wick lamp chimney (1820)
- Pressed glass tableware with ground pontil/resting place (1835)
- Vertical wick lamp shade (1840)
- George Whybrow oil/vinegar stopper (1840 – 1899)

Relative frequencies of functionally identified glass items are shown in Figure 3.6. The underfloor deposit in Room 1 had a high relative frequency of window glass (21.9%). As previously noted, it is probable that there are far fewer panes of glass. Food and beverage items comprise 43.1 per cent of
the Room 1 underfloor deposit. Food-related items consist of condiment bottles such as oil, vinegar pickles and chutney, as well as club sauce type stoppers used in sauce, oil and vinegar bottles. Beverage-related items are all alcohol bottles, including beer/wine, champagne, gin and gin/schnapps. There are a variety of pharmacy-related items, including castor oil bottles (5), a vial, a 4mm hexagonal tube and generic patent medicine/chemist bottles (7).

3.3.3 Construction debris (7519),

Below underfloor deposits in Room 1 there was a layer of construction debris in all but the southwest corner. There are 32 glass artefacts from this deposit, representing 13 MIC. Approximately 54 per cent of artefacts (7) provided temporal information. Bottles (4), window glass (2) and stemware (1) contributed to temporal placement for this layer. Two beer wine bottles were manufactured before 1850. Window glass is very thin crown glass (1.0-1.4mm) that was not imported after the mid nineteenth century. The stemware exhibits a central knop that was in fashion between 1780-1840s. Relative frequencies of functionally identified glass items are shown in Figure 3.6. Approximately 54 per cent of glass items are alcohol bottles, including beer/wine (5) and gin/schnapps (1). Food-related items are stemware. Pharmacy-related items are generic bottles used by chemists and patent medicine manufacturers. Apart from indicating beverage consumption, the paucity of glass artefacts from this layer precludes further use interpretation.

3.3.4 Well Fill 7520 (Contexts 7465, 7466, 7567 - 7569)

A brick lined well was located in the eastern portion of Lot 4. The well contained five fill episodes (Contexts 7465, 7466, 7567 – 7569). Fill from Well 7520 yielded 1171 glass artefacts, representing 343 MIC. The top 1.5m was given two context numbers 7465 and 7466. The upper fill (7465) was 1m deep and consisted of modern demolition material, including concrete and dry-pressed bricks. The next fill (7466), which was 1-1.5m deep, contained artefacts possibly associated with the 1890-1930s occupation of 710 George Street. The three lower fills (7567, 7568 and 7569) contained artefacts possibly associated with the original backfill of the well after the 1860s.

Top fill layer of well 7465

Fill layer 7465 yielded 11 glass artefacts, representing 6 MIC. Approximately 83 per cent of the artefacts provided temporal information. All dated artefacts are bottles with a suggested date range of 1850 – 1920. Relative frequencies of functionally identified glass items are shown in Figure 3.7. All bottles from this layer are bottles. There are four beer/wine bottles and one oil/vinegar bottle.

Second fill layer of well 7466

Fill layer 7466 yielded 242 glass artefacts, representing 114 MIC. Approximately 91 per cent of the artefacts (104) provided temporal information. The majority of datable artefacts are bottles (98). Many bottles were made by technology that spanned the nineteenth century, however a sealed context cannot date any earlier than the artefact with the latest dating *terminus post quem*. In this layer, that date would be for a bottle bearing the British Royal registry mark for a patent registered February 28, 1849. Other bottles from this layer date to about the same time: a William Goodman Henfrey aerated-water bottle (1848–1878) and manufacturing technologies such as bare iron pontil scars (1840–1870), form-tooled lip finishes on beer/wine bottles (1850–1920), cup bottom moulds (1850 *TPQ*) and blow-back moulds (1850 *TPQ*). Other datable artefacts include stemware (1780–1840), a tumbler (1830–1930) and crown window glass (1870 *TAQ*).

Relative frequencies of functionally identified glass items are shown in Figure 3.7. Food and beverage items represent approximately 73 per cent of the assemblage. Food-related items are condiment bottles and glass tableware. Beverage items are bottles for alcohol and aerated waters. There are also six generic medicine bottles and four castor oil bottles (Pharmacy) and a mirror (Household).
Third fill layer of well (7567)

Fill layer 7467 yielded 378 glass artefacts, representing 95 MIC. Approximately 81 per cent of the artefacts (77) provided temporal information. The majority of datable artefacts are bottles (69). As with the subsequent layer (7466), this context cannot date later than the artefact with the latest dating terminus post quem. In this layer, that date would be for a condiment bottle with a Betts patented capsule foil seal (1849). Other bottles from this layer date to about the same time: form-tooled lip finishes on beer/wine bottles (1850–1920), cup-bottom moulds (1850 TPQ) and blow-back moulds (1850 TPQ). Dates for product manufacturers include George Whybrow, an oil, vinegar and pickle merchant (1825–1899) and Rowland’s Macassar Oil (1820 TPQ). Other datable artefacts include panelled press moulded panelled tumblers (1830 TPQ), stemware with ground and polished base (1840 TPQ), and a vertical wick lamp chimney (1820 TPQ).

Relative frequencies of functionally identified glass items are shown in Figure 3.7. Food and beverage items represent approximately 74 per cent of the assemblage. Food-related items are condiment bottles and glass tableware. Beverage items are bottles for alcohol and aerated waters. There are also four generic medicine bottles (Pharmacy) and a lamp chimney and shade (Service).

Fourth fill layer of well (7568)

Fill layer 7468 yielded 257 glass artefacts, representing 71 MIC. Approximately 86 per cent of the artefacts provided temporal information. The majority of datable artefacts are bottles (56). As with the subsequent layer (7567), this context cannot date later than the artefact with the latest dating terminus post quem. In this layer, that date would be a series of bottle manufacturing technologies that date from 1850, including form-tooled lip finishes on beer/wine bottles (1850–1920), cup bottom moulds (1850 TPQ) and blow-back moulds (1850 TPQ). Other datable bottle attributes include bare iron pontil scar (1840s–1870), a partial British Royal registry mark (1842–1868), Rickett’s type...
moulds (1820–1920), and Betts patented capsule foil seal (1849 TPO). Other datable artefacts include press-moulded panelled tumblers (1830 TPO) and crown window glass (1850 TAO or 1870 TAO depending on thickness).

Relative frequencies of functionally identified glass items are shown in Figure 3.7. Food and beverage items represent approximately 82 per cent of the assemblage. Food-related items are condiment bottles and glass tableware. Beverage items are bottles for alcohol and aerated waters. There are also a perfume bottle (Personal) and a lamp chimney and shade (Service).

**Fifth fill layer of well (7569)**

Fill layer 7469 yielded 283 glass artefacts, representing 57 MIC. Approximately 88 per cent of the artefacts provided temporal information. The majority of datable artefacts are bottles (42). As with the subsequent layer (7568), this context cannot date later than the artefact with the latest dating terminus post quem. In this layer, that date would be a machine-made panelled tumbler (1910–1930). Product dates from this layer include a Cooper & Aves (1854 TPO) pickle bottle with a Betts patented capsule foil seal (1849 TPO). There are also two documented bottle manufacturers: Crosse & Blackwell (1830–1900) and William Powell & Sons (1830–1906). Dated manufacturing technologies include, form-tooled lip finishes on beer/wine bottles (1850–1920), cup bottom moulds (1850 TPO) and blow-back moulds (1850 TPO). Other datable artefacts include press moulded panelled tumblers (1830 TPO), stemware with ground and polished base (1840 TPO), and a vertical wick lamp chimney (1820 TPO).

Relative frequencies of functionally identified glass items are shown in Figure 3.7. Food and beverage items represent approximately 74 per cent of the assemblage. Food-related items are condiment bottles and glass tableware. Beverage items are bottles for alcohol and aerated waters. Bottles also comprise the pharmacy and personal groups. A lamp shade is the sole service item.

**Discussion of Fill Layer from Well at 710 George Street**

Often when analysing artefacts it is difficult to readily identify objects that mend across contexts. Nowhere is this more true than with glass, and in particular for glass bottles where there are no distinguishing characteristics for volumes of similar bottle forms. In the well fill there was one bottle that mended across four layers. It was a square pickle/chutney bottle of distinct dark aqua colour with a bare iron pontil scar. This bottle was partially reconstructed from fragments found in Contexts 7466, 7567, 7568 and 7569. This would suggest that the lower four layers represented were likely to have been deposited in the well at the same time.

Dates for glass artefacts from the upper most layer are consistent with observations made in the field. The next three underlying layers all appear to date from the 1850s. However, the machine-tumbler recovered from the lowest level indicates that all subsequent layers were deposited after 1910. All fill layers are functionally similar. Glass from the upper-most layer is limited to a few bottles, but their food and beverage function is consistent with underlying layers. The food and beverage consumption pattern, exhibited by the bottles and tableware is consistent with a household or any establishment that served food and drink. There are a few items that most likely originated from a residential setting, including perfume bottles, a mirror, a bottle of hair restorative and castor oil bottles.

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32 NB: aqua coloured glass and bare iron pontils are both characteristics associated with bottles made in North America. The aqua colour is due to particulates in the silica. Bare iron or graphite empontiling method was used almost exclusively by American glass blowers.
4.0 References

4.1 References


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