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RING'S/KIRIKIRI REDOUBT (R11/956): 935 PAPAURA-CLEVEDON ROAD, PAPAURA, AUCKLAND

Archaeological Investigations

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Report prepared for Cabra Investments Ltd

CABRA
LAND & PROPERTY DEVELOPMENT

and Heritage New Zealand Pouhere Taonga
Under HNZPT Authority Nos.

2016/180, 2016/540 & 2017/482

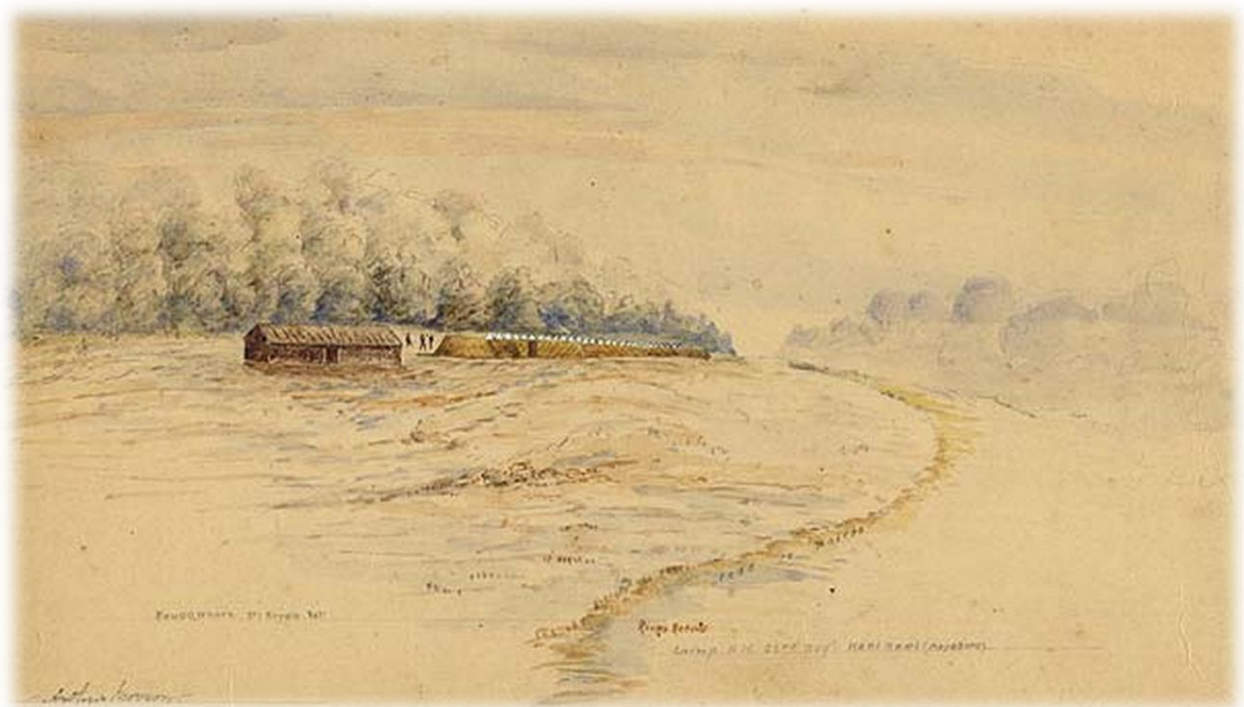


**RING'S/KIRIKIRI REDOUBT (R11/956),
935 PAPAKURA-CLEVEDON ROAD, PAPAKURA,
AUCKLAND: ARCHAEOLOGICAL INVESTIGATIONS**

Under HNZPT Authority Nos. 2016/180, 2016/540 and 2017/482

Report prepared for Cabra Investments Ltd

October 2021



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EXECUTIVE SUMMARY

Cabra Investments Ltd has undertaken the development of a residential subdivision on land that comprised 949 Old Wairoa Road and 935-973 Papakura-Clevedon Road, Papakura, Auckland. The properties included the site of Ring's/Kirikiri Redoubt (R11/956) at 935 Papakura-Clevedon Road. The Redoubt is a Category B scheduled historic heritage place on the Auckland Unitary Plan (Schedule 14.1 ID 00700). Category B means that the place is deemed to have considerable overall heritage significance to the locality or greater geographic area. Redoubts are relatively rare sites across New Zealand and Ring's/Kirikiri Redoubt is significant both as an individual archaeological site and as part of an interrelated group of sites that make up a heritage landscape relating to the Waikato Campaign of the New Zealand Wars. As part of the subdivision development the redoubt and some of its surrounds were set aside as a historic reserve to be vested in Auckland Council.

The earthworks for the development were undertaken in three stages, two of which affected archaeological features and deposits relating to Ring's Redoubt, although the redoubt itself was not impacted. Archaeological monitoring and investigations were carried out under three authorities: No. 2016/180 issued on 14 September 2015 for the Stages 1 and 2 earthworks; No. 2016/540, issued on 9 December 2015, to undertake exploratory investigations within the Stage 3 earthworks area to assess the extent and condition of archaeological remains and assist in determining the extent of the proposed historic reserve; and No. 2017/482 issued on 26 January 2017 to undertake subdivision earthworks within Stage 3.

This document reports on the results of monitoring and investigations of archaeological deposits and features associated with the occupation of Ring's/Kirikiri Redoubt by the British military between July 1863 and July 1865 within both the Stage 2 and Stage 3 earthworks areas. The monitoring and investigations were undertaken in several stages from 22 April 2016 to 26 January 2018 in accordance with HNZPT Authority Nos. 2016/180, 2016/540 and 2017/482.

The use of geophysical survey, s56 trenching, monitoring and investigation, and subsequent artefact analyses have revealed a wealth of information and new data relating to the construction and use of Ring's Redoubt. The artefact assemblage included 385 items of militaria – a high number considering that the main redoubt structure was not investigated. The extent of the original defensive structure of Ring's Redoubt was also able to be estimated from an 1890 plan, geophysical magnetic survey, GPR data and surviving features, which is relevant for future management of the site.

The Stage 1 earthworks area did not reveal any archaeological deposits, which is likely to have been due largely to the swampy and boggy ground, which was not conducive to settlement. In the western Stage 2 earthworks area the land within and adjacent to a 19th century villa (R12/1105) did not reveal any archaeological features, and the house fell victim to arson before it could be relocated to another property.

Archaeological excavation of the wider redoubt encampment and outer works relating to the occupation of Ring's Redoubt was carried out in the eastern Stage 2 and the Stage 3 earthworks areas. Archaeological features and deposits that were exposed during the Stage 2 earthworks were confined to the area at the head of a west-trending gully located to the west of the redoubt defences, while features related to the redoubt camp and associated structures were exposed during the Stage 3 earthworks to the west, north and east of the redoubt proper. The features exposed consisted primarily of ditches, postholes and drains, although elements of structures were also found.

There was no evidence of settlement activity associated with the Scottish settlers who subsequently occupied the site and, with the exception of a single munition and a few postholes, any other later 19th century activity within the investigation areas. As all of the pre-1900 archaeological remains exposed during earthworks related to the 1863-1865 occupation of the redoubt, the results of the excavation are not presented per earthwork phase but reported on in whole.

Despite the relative paucity of archaeological features in relation to the size of the archaeological investigation area, the artefact assemblage recovered was quite substantial, with the number of individual specimens totalling 6,177 pieces, which related to a minimum of 1,483 individual items. Unfortunately, due to the properties of the soil across the excavation areas, animal bone and organic material in general did not survive, and when on the rare occasion some bone was found, it was in a very poor state of preservation. The same applied to the metal artefacts, with the sole exception of lead items which, once oxidised, remain stable in the ground. Copper alloy items, including those with regimental insignia, and ferrous items were in the main corroded and, in the case of iron, often in an advanced state of corrosion. The poor state of metal preservation on the site is most likely due to the location of the site on a ridge top, where during wet weather the soil will be wet but due to the ground sloping away the site will dry out relatively rapidly. This continual wetting and drying over the past 156 years has had an extremely detrimental effect upon both organic and metallic cultural material.

The investigation results indicate that to the east of the defensive ditch of the redoubt a glacis ramp led up to the ditch from the outer eastern side which would have enabled the defenders to keep attacking forces under fire for a longer period of time. A large drainage ditch was recorded (which had been recut at least once) which ran around the north-eastern bastion of the redoubt, taking water away from the main defences. Immediately to the north of the redoubt, two sections of an enclosure ditch that would have served to enclose the camp were recorded, which can most likely be seen on Morrow's 1863 watercolour of the camp of the 43rd Monmouthshire Regiment (cover illustration). The enclosure ditch had a drain issuing from it in its north-eastern corner which also marked the lowest elevation point of the ditch. The enclosure ditch would have served a defensive purpose as the low earthen rampart on the inside of the ditch would have almost certainly been topped with a fence, and also would have drained water, keeping ground in the encampment area dry.

To the west of the redoubt the excavation area was dominated by two large deposits related to an earthen platform, almost certainly that seen supporting the timber barracks building and described as a 'Raupo Whare' on Morrow's 1863 watercolour of the redoubt. There were large volumes of cultural material, a great deal of which related directly to the military, with an even larger volume that related to the consumption of alcohol, and some items that may have been obtained through looting. Numerous postholes likely related to tent structures and tethering posts for horses. The most significant archaeological features to the west of the redoubt were all concerned with cooking and food preparation. These consisted of a cook house, cooking trenches (broad arrow) and a probable bakery. These features are not well recorded in investigations of New Zealand War redoubts and commissariats, which makes them invaluable in understanding the layout of field encampments around redoubts as well as providing a glimpse into the daily routines and lives of the garrison soldiers during the occupation of Ring's Redoubt.

The militaria and numismatic assemblages produced by the archaeological investigation are for the most part what would be expected to be found at a military site of the period – dominated by items relating to munitions, but also with items relating to regimental issue clothing. Less well represented were items attributable to equipment, with the numismatic

assemblage being extremely modest, representing only 2.34% of the total militaria assemblage. The militaria items have undergone conservation and will be deposited at Papakura Museum.

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1 INTRODUCTION

1.1 Project Background

Cabra Investments Ltd has undertaken the development of a residential subdivision on land that comprised 949 Old Wairoa Road and 935-973 Papakura-Clevedon Road, Papakura, Auckland (Figure 1.1 and Figure 1.2). Part of the development area is in close proximity to Ring's Redoubt (R11/956), which was a scheduled site of undefined extent on the former Auckland Council District Plan: Operative Papakura Section (1999) and is now a scheduled historic heritage place on the Auckland Unitary Plan (ID 00700) incorporating the properties at 935 and 931 Papakura-Clevedon Road. The development area consisted of 15.53ha of undulating pasture and comprised the following properties:

- Lot 1 DP 197670 (0.32 ha)
- Lot 2 DP 62570 (5.96 ha)
- Pt Allotment 29 Parish of Hunua (2.6 ha)
- Pt Allotment 28 Parish of Hunua (5.67 ha)
- Allotment 248 Parish of Hunua (0.98 ha)

The earthworks associated with the residential development were undertaken in three stages and consisted of the creation of 153 house lots; 12 new access roads; stormwater reticulation; permanent stormwater pond; the creation of four reserves; and, lastly, utilities consisting of wastewater, water, gas, electricity, and telecommunications services (Figure 1.3 and Figure 1.4).

An archaeological assessment was initially completed in 2012 for Woods Ltd on behalf of Cabra Investments Ltd to establish whether the residential development was likely to impact on archaeological values (Shakles and Clough 2012). The report was prepared as part of the required assessment of effects accompanying a resource consent application under the Resource Management Act 1991 (RMA) and to identify any requirements under the then Historic Places Act 1993 (HPA).

The original scheme plan included provision for establishing a historic reserve incorporating the redoubt site to be vested in Auckland Council. The heritage reserve was to be bounded on its northern and eastern extent by a recreational reserve. Following the lodging of a resource consent application for the proposed subdivision (R/JSL/2013/2461, 41924, 41926, 41927, 41925), Auckland Council requested additional information under Section 92 of the Resource Management Act (RMA) in the form of a geophysical survey (Shakles et al. 2014) and a heritage landscape assessment (Shakles and Clough 2014a). Research undertaken for these additional assessments included a reappraisal of an 1890 historic plan used in the original 2012 archaeological assessment in conjunction with the geophysical survey data, which enabled the location of the footprint of the redoubt defences to be more accurately estimated. Additional documentary evidence was also located that shed further light on the occupation of Ring's Redoubt and the history of the area during the Waikato Wars, including the location of Te Aparangi settlement and Ring's original entrenchment prior to the construction of Ring's/Kirikiri Redoubt.

Following submission of the additional requested assessments, resource consent for the development was granted with a condition that development Stages 1–5 as shown in Figure

1.3 were undertaken first. These development stages equated with the earthwork Stages 1 and 2 as shown in Figure 1.4. Development Stage 6 (earthwork Stage 3) was the area in which the site of Ring's Redoubt is located and was to be undertaken last. Two options for the area of the proposed historic reserve and adjacent lots were put forward (Figure 1.5 and Figure 1.6), with the chosen option to be determined dependent on the results of an archaeological evaluation under Section 56 of the Heritage New Zealand Pouhere Taonga Act 2014 (the option eventually chosen was option 2, shown in Figure 1.6, which included both a historic reserve and a recreation reserve to the north).

Subsequent to gaining resource consent, an updated version of the 2012 assessment incorporating additional information from the geophysical survey, heritage landscape assessment and new and reappraised historic research (Shakles and Clough 2014b) was completed for Cabra Investments (Shakles and Clough 2015a).

The assessment did not identify any archaeological sites relating to Māori occupation anywhere within the Cabra Investments property, but did note that Māori may have made use of the higher ground for the location of camp sites during seasonal visits to exploit wetland resources in the area to the south and east of the property. The assessment noted that the geophysical survey of the Stage 3 earthworks area had identified a number of anomalies, particularly within the area to the north of the redoubt defences, and that it was probable that there would be features present relating to the military occupation phase of the redoubt, and to a lesser extent to the Scottish settlers who occupied the site after the military had abandoned it in July 1865. It was also noted that it was possible some features relating to the military could be present within the Stage 2 earthworks area, particularly in the east where it was closer to the redoubt defences.

The assessment also identified a house of possible 19th century provenance located at 965 Papakura-Clevedon Road, within development Stage 2 (earthworks Stage 2) of the residential development. The house was later assessed by Matthews & Matthews Architects and determined as being of late 19th century date (1880s/1890s). It was subsequently recorded on the NZAA Archsite database as R12/1105.

An authority was granted for the Stage 1 and 2 earthworks areas by Heritage New Zealand Pouhere Taonga (HNZPT) on 14 September 2015 (Authority No. 2016/180). Following completion of monitoring works in September 2016, and subsequent to the approval of an exploratory investigation strategy for the Stage 3 earthworks area (Shakles and Clough 2015c), an authority was granted under Section 56 by HNZPT to undertake the excavation of 11 trial trenches to ascertain the presence and nature of archaeological deposits and features within the Stage 3 earthworks area (Authority No. 2016/540). However, the Auckland Council Heritage Team were opposed to any trial trenching within the proposed historic reserve immediately adjacent to and surrounding the northern and western perimeter of the redoubt structure proper, with the result that only six trenches were agreed to (in the locations shown in Figure 1.7). This meant that testing of a concentration of geophysical anomalies to the north of the redoubt defences could not be undertaken.

Following the completion of the exploratory investigation, which identified a small number of features and an artefact-rich deposit to the west of the redoubt (see Shakles and Phear 2016), and following consultation with HNZPT, an authority for the final Stage 3 earthworks area was granted (Authority no. 2017/482, 26 January 2017).

This document reports on the results of monitoring and archaeological investigations of deposits and features associated with the occupation of Ring's/Kirikiri Redoubt by the British military between July 1863 and July 1865 within both the Stage 2 and Stage 3

1. Introduction

earthworks areas. The monitoring and investigations were undertaken in several stages from 22 April 2016 to 26 January 2018 in accordance with HNZPT Authority Nos. 2016/180, 2016/540 and 2017/482.

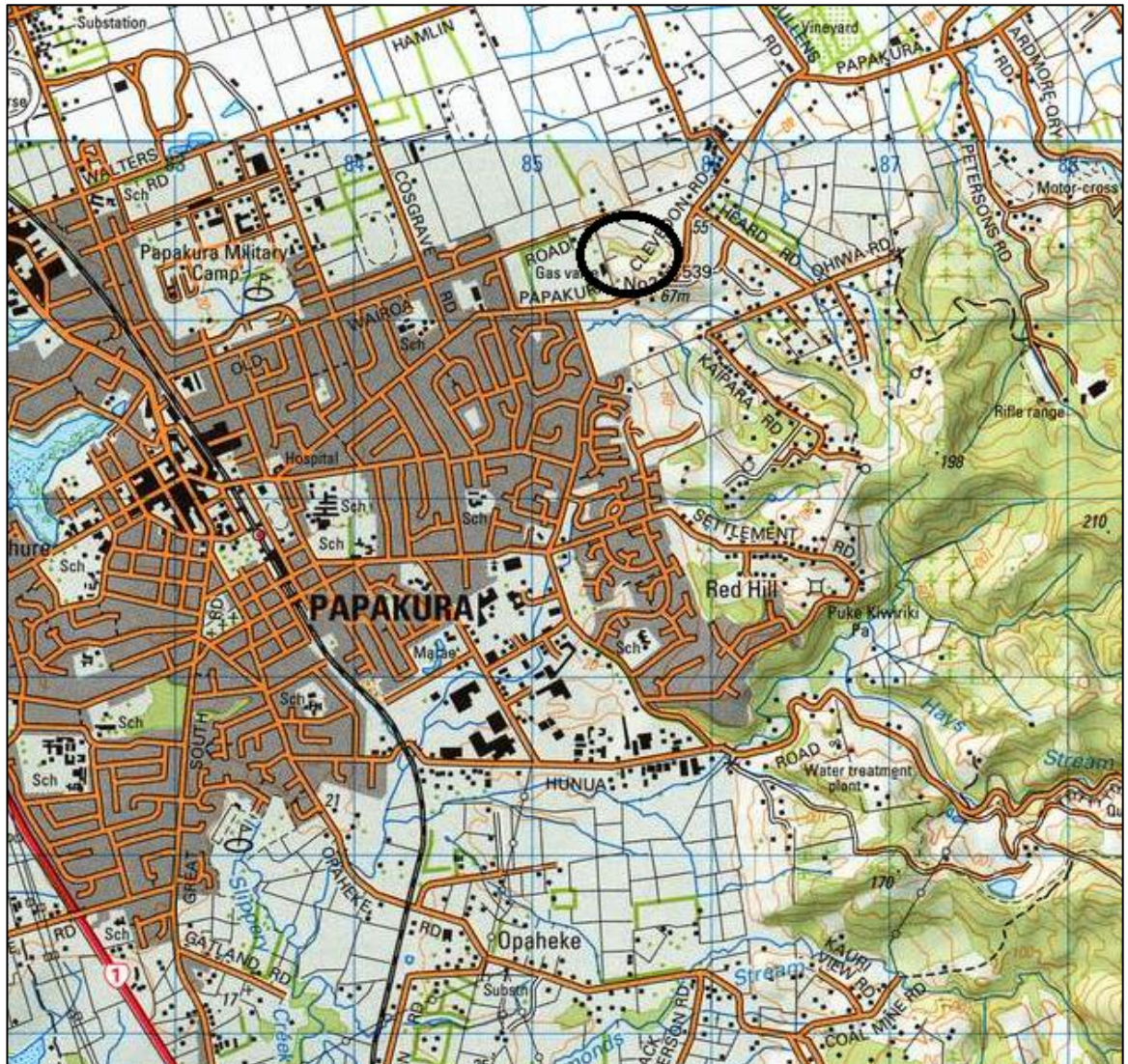


Figure 1.1. General location map showing Papakura with the development area and location of Ring's Redoubt circled

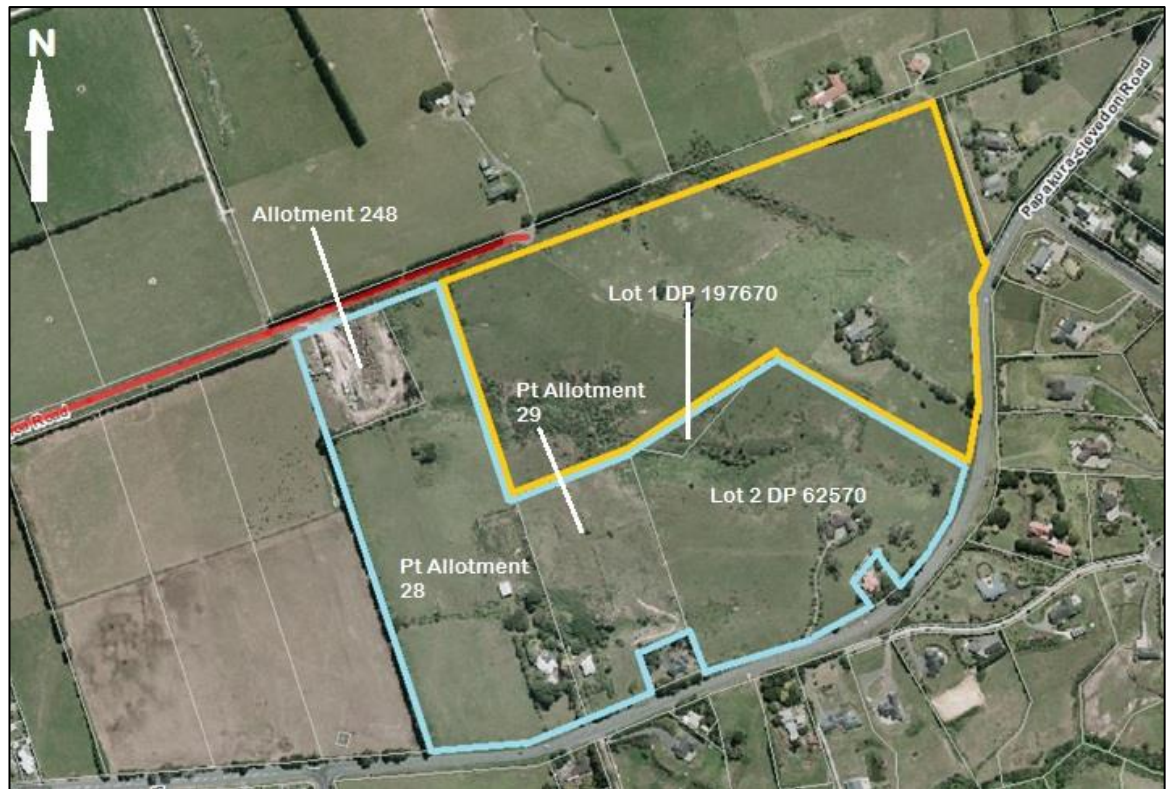


Figure 1.2 Aerial image showing the properties comprising the residential area (blue outline) prior to development

1. Introduction

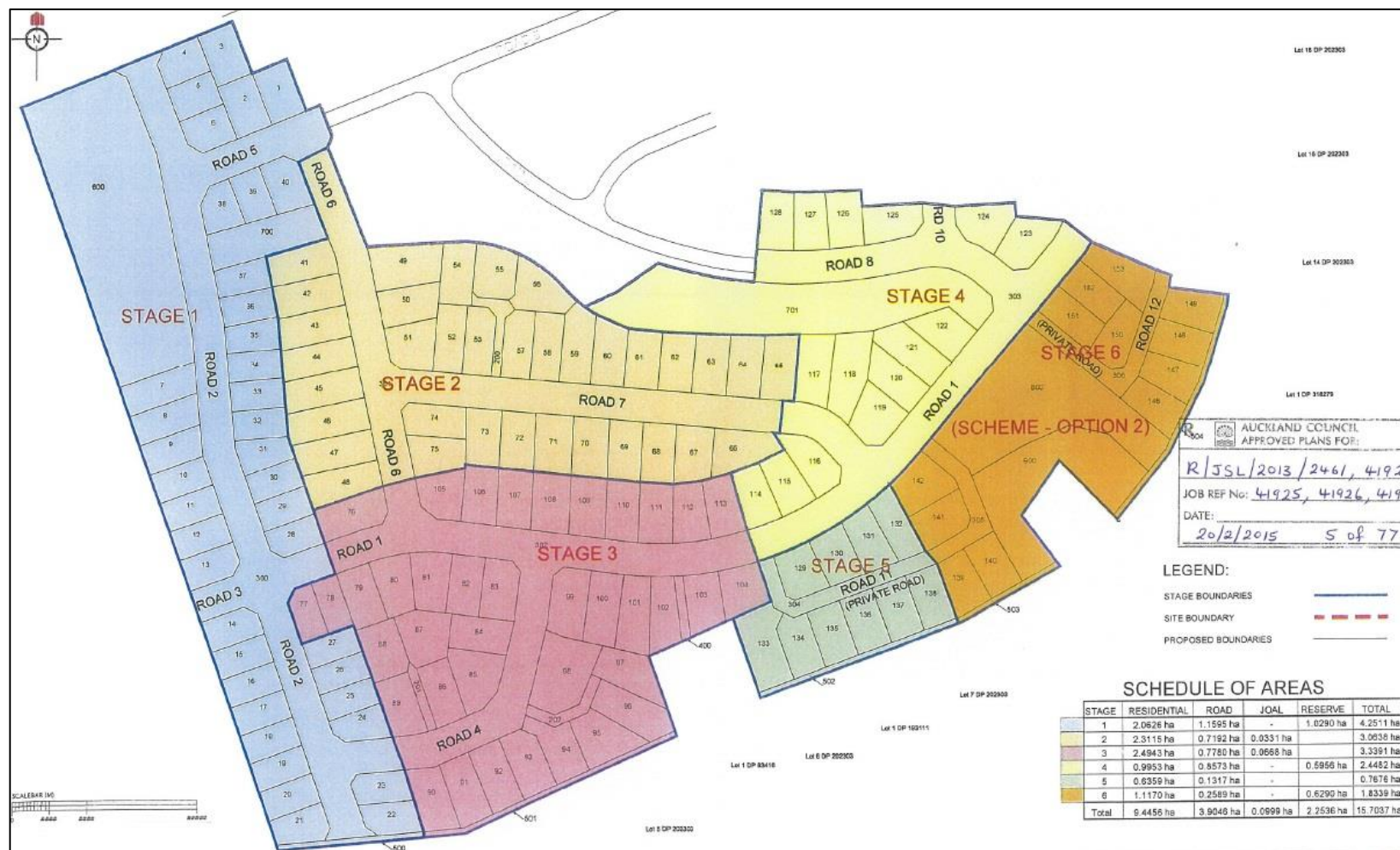


Figure 1.3 Plan of the consented residential subdivision Stages 1–5 at 949 Old Wairoa Road and 935-973 Papakura-Clevedon Road

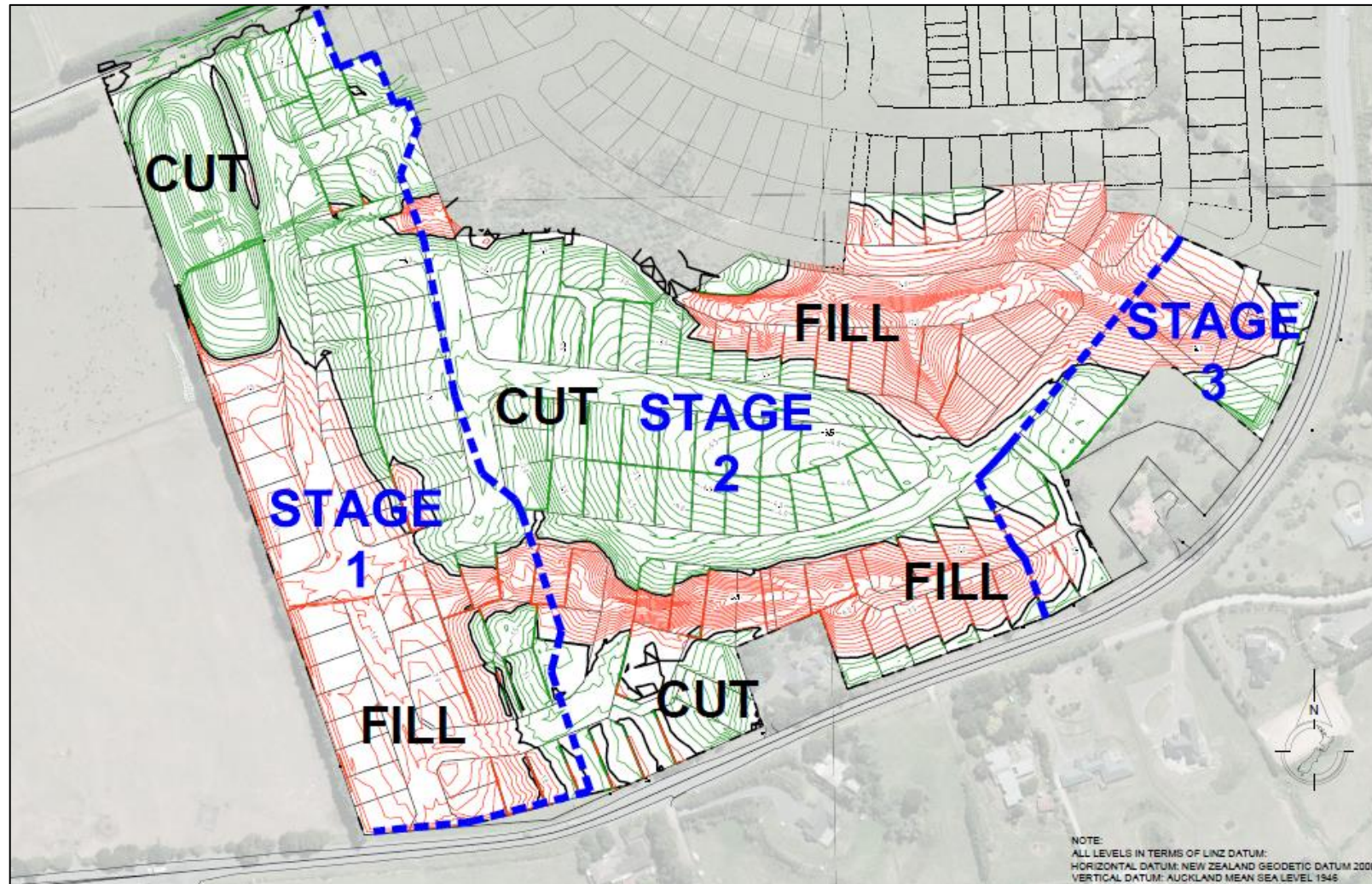


Figure 1.4 Plan of proposed earthwork staging plan at 949 Old Wairoa Road and 935-973 Papakura-Clevedon Road (the green represents cut areas and the red fill areas)

1. Introduction

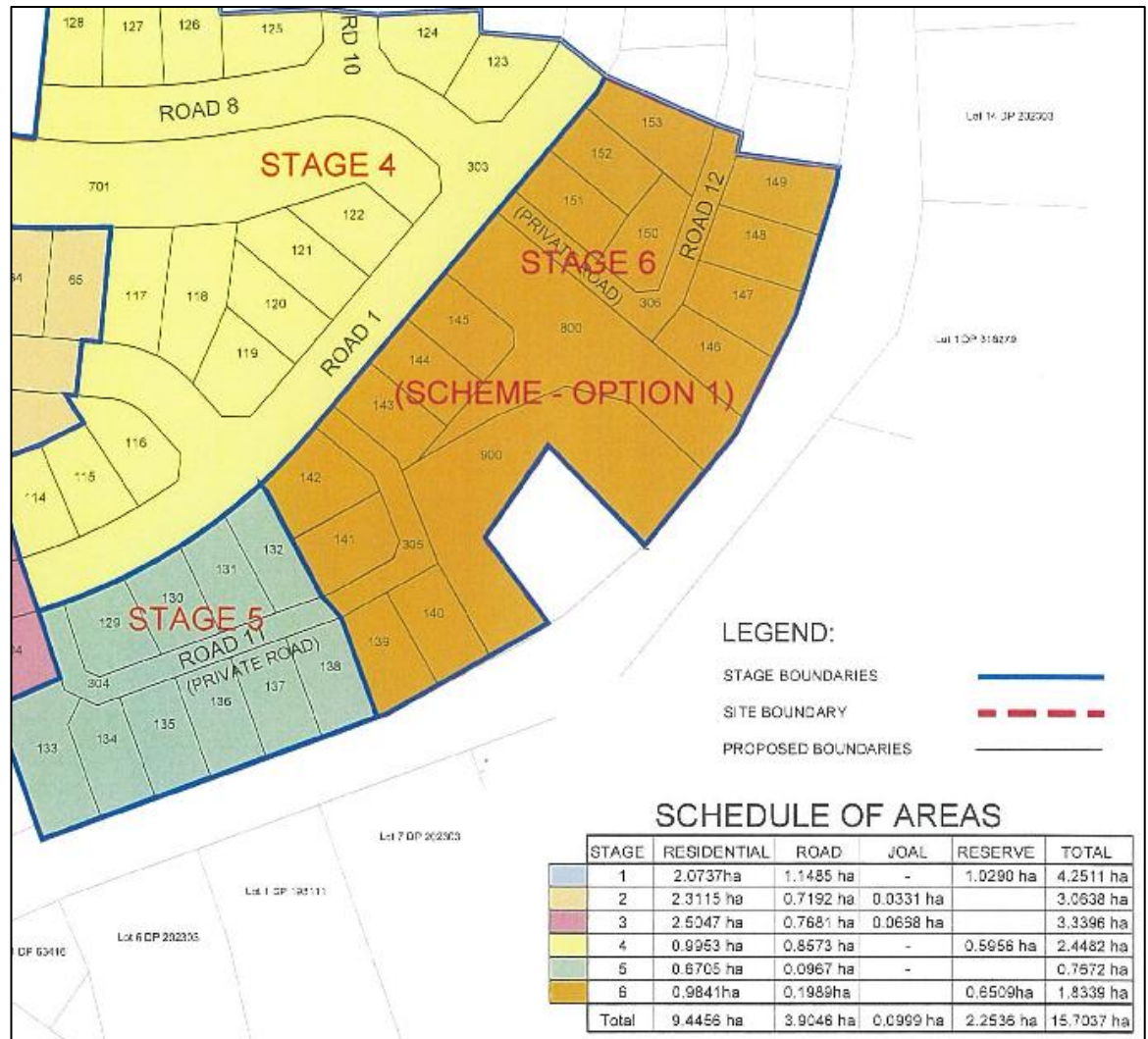


Figure 1.5 Stage 6 Scheme Option 1 for the Cabra development at 949 Old Wairoa Road and 935-973 Papakura-Clevedon Road

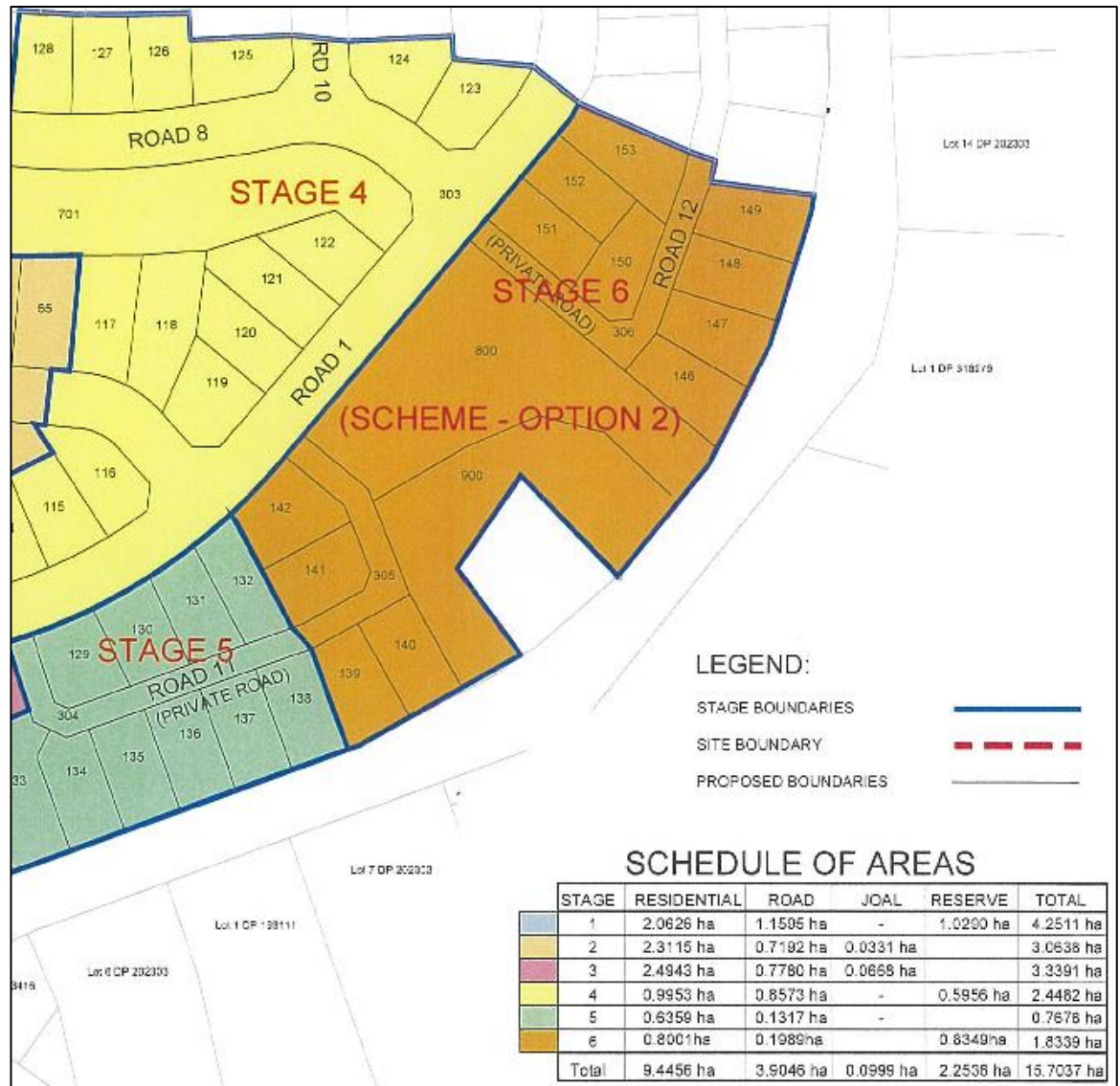


Figure 1.6 Stage 6 Scheme Option 2 for the Cabra development at 949 Old Wairoa Rd and 935-973 Papakura-Clevedon Road. This is the scheme that was adopted



Figure 1.7 Magnetometer survey results and aerial overlay illustrating the location of the six proposed trial trenches excavated for the exploratory investigation. Note that Trench 4 in the back garden of the house at 935 Papakura-Clevedon Road was not excavated as it became clear that the area had been cut and benched over 1.5m at the time the house had been constructed

1.2 Excavation Methodology

The excavations were undertaken over a number of stages from 22 April 2016 to 26 January 2018, and followed the development programme, with the property divided into three earthwork stages (Figure 1.4). The Stage 1 earthworks in the low-lying area in the extreme west of the development area were monitored first. Subsequently, the Stage 2 earthworks adjacent to and to the east of the Stage 1 earthworks area were monitored – this area incorporated the high ground to the west and north of the Stage 3 earthworks area where the enclosed Redoubt itself is situated. Prior to the investigation of the Stage 3 earthworks area, an archaeological evaluation under a Section 56 Authority (no. 2016/540) was undertaken. This was carried out to assess whether anomalies identified by the geophysical

surveys of the Stage 3 area (undertaken in June 2014; Shakles, Watson and Clough 2014), were associated with the occupation phase of the redoubt. The evaluation was also important in being able to assess the state of preservation of artefacts and ecofacts, particularly metal items and organic remains such as wood and bone. Following the completion of the Section 56 evaluation, the final Stage 3 earthworks area around the Redoubt was investigated under HNZPT Authority no. 2017/482.

The S56 exploratory trenches were excavated utilising mechanical excavators to assess the stratigraphy and ascertain the nature of surviving subsurface archaeological deposits and features present within the Stage 3 area. The topsoil and all modern overburdens situated within both the Stage 2 and Stage 3 investigation areas were stripped utilising mechanical excavator until archaeological deposits and features were exposed, which were then investigated manually. For the most part surviving archaeological horizons were present within 0.50m of the surface and in many cases substantially less. The archaeological features and/or deposits present were assessed, investigated, recorded and sampled in accordance with accepted archaeological practice and within the framework of the research strategy and requirements of the HNZPT authority. Excavation by machine proceeded until natural or sterile deposits were reached. More detailed descriptions of the archaeological excavation methodologies for both the Section 56 evaluation and the Stage 2 and Stage 3 excavations areas are presented in Sections 5.1 and 5.4.1.

1.3 Contextual Value and Statement of Archaeological Significance

1.3.1 Contextual Value

The historical importance of the New Zealand Wars of the early 1860s in shaping New Zealand's future and Pakeha-Māori relationships up to this day cannot be overestimated. This conflict is the subject of numerous volumes (e.g. Cowan 1922; Belich 1986; Lennard 1986) and is one of the most significant events in New Zealand's history. As part of the conflict a number of redoubts were established, each for specific reasons – supply, communications, or front-line defence – and so together they form an integrated cultural mosaic of the war in the Waikato, while individually they contribute to local history. Most have associations with people of importance in New Zealand's history (e.g. Sir George Grey, Heaphy, Gore-Browne and General Cameron). The Ring's Redoubt kept communications with the advanced camps in the Wairoa and formed one of a chain of redoubts to protect the country to the north towards Auckland.

Built by Captain Ring and the men of the 18th Regiment of Foot, Ring's Redoubt was a direct response by the Imperial military to the threat of raids by Māori warriors throughout the Papakura area during the early stages of the Waikato War. The redoubt was one link in a chain of fortifications constructed to protect the country north of Wairoa and the eastern flank of the Great South Road supply route.

1.3.2 Significance

Redoubts are relatively rare sites across New Zealand. Many of those built as part of the Taranaki campaigns survive quite well; while in contrast, the majority of those related to

the Waikato campaign survive either in poor condition or in an indeterminate state buried beneath modern development. Therefore, Ring's Redoubt is considered a rare site type within its regional setting.

The redoubt site is significant both as an individual archaeological site and as part of the interrelated group of sites that make up a heritage landscape relating to the Waikato Campaign of the New Zealand Land Wars.

During the archaeological assessment stage of the project, the site was determined to have high information potential based on the likelihood of features associated with the occupation of the redoubt (including latrines, refuse pits, a well, and militaria and domestic artefacts) by soldiers of at least three regiments as well as by later Scottish settlers (Shakles and Clough 2015a). It was identified that if such features and artefacts were present, they would be able to provide information on the period of occupation of the redoubt and on the lives of the soldiers of the regiments who were based there during this significant time in New Zealand's history.

Parts of the development area closest to the redoubt had been modified during the first half of the 20th century with the construction of several outbuildings to the north of the redoubt structure itself. Also, in the late 20th century the construction of a residential dwelling (also to the north) and associated access track may also have impacted archaeological remains. Within the redoubt itself a house had been constructed by the 1920s (recorded in Cowan 1922), and a house and garden immediately adjacent to and southwest of the redoubt had also impacted on the site but was not part of the subdivision development. Overall, though the archaeological values of the redoubt and surrounding area were considered to be of high significance.

The archaeological investigation of the Stage 2 and Stage 3 earthworks areas has confirmed the original conclusions that the area contained intact archaeological deposits associated with the 1863-1865 military occupation of the redoubt. As expected, this was particularly the case in the Stage 3 area of works where a number of features and deposits yielded particularly rich archaeological information on the active military phase of the site.

The archaeological discoveries have helped illuminate the occupation by soldiers of the 18th Royal Irish Regiment of Foot, as well as those of various other regiments, both from the Imperial military as well as militia raised troops from New Zealand and Australia.

Overall, the investigation of the Stage 2 and Stage 3 earthworks areas within the residential development at Papakura-Clevedon Road has provided a large amount of archaeological data related to the 1863-65 military occupation of the redoubt and its encampment. Moreover, the investigation of the area around Ring's Redoubt has made a significant contribution to knowledge of a fortification on the initial frontier of the Waikato Campaign of the New Zealand Wars, and the lives of the soldiers who served there.

1.4 Project Personnel

The archaeological excavations within the Stage 2 and 3 earthworks areas were undertaken over several stages from 22 April 2016 to 26 January 2018, and involved nine Clough & Associates field archaeologists. Several Clough & Associates staff and external specialists were also involved in the post-excavation analysis and reporting stage of the project. Table 1.1 (below) provides a full list of personnel and their roles in the project.

Table 1.1 Clough & Associates staff and external specialists engaged with the project

Clough & Associates Excavation Team	Responsibilities
Rod Clough	Director – overall direction of project
Richard Shakles	Lead archaeologist in field & report authorship
Ellen Cameron	Field archaeologist
Carly Mailhot	Field archaeologist
Dave Carley	Field archaeologist
Jen Low	Field archaeologist & artefact reporting
Simon Bickler	Field archaeologist
Laura Dawson	Field archaeologist
Bernie Larsen	Field archaeologist & drone photography
Barry Baquié	Field archaeologist
Ben Jones	Field archaeologist
Wesley Maguire	Total station & GPS survey
Clough & Associates Post-Excavation Analysis	
Richard Shakles	Historic research, artefact analysis – metals & militaria
Jen Low	Artefact analysis – glass, ceramics, tobacco pipes & miscellaneous
Ellen Cameron	Faunal analysis
Sarah Phear	Illustrations & survey plans
Sarah Macready	Editor
External Specialists	
Matt Watson	Geophysical survey
Peter Charpentier	Geophysical survey
Victoria Landgraf	Geophysical survey
Jack Fry	Metal & militaria conservation
Dr Rod Wallace	Wood identification
Tom MacDiarmid	Illustrations & Harris Matrix reproduction

1.5 Acknowledgements

The authors would like to extend particular gratitude to Duncan Unsworth of Cabra Investments for his assistance throughout the duration of this project, his generosity in bequeathing the artefacts to the Papakura Museum and not least his patience in waiting for the completion of the specialist and final reports. Our thanks are also extended to Lloyd Barker of Cabra for his assistance with the Authority application process for the Stage 3 excavations. For help and assistance with the development plans at the assessment stage and assistance with the application processes for the various authorities required, we are grateful to Rowan Hallam, Stuart Penfold, Chris Walsh, and Franziska Hooper of Woods Consultants.

For help and assistance from the commencement of earthworks, our gratitude and appreciation are extended to the following: Phil Fairgray and Matthew Jones of Aspire

1. Introduction

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For assistance and advice with the various archaeological authorities, the Clough & Associates Team would like to thank Bev Parslow and Greg Walter of the Auckland Heritage NZ office.

Lastly, for both the whakaritenga briefing and blessing that took place prior to the commencement of the earthworks phase in July 2015, and for the cultural support and assistance freely given during the archaeological monitoring works we offer our sincere gratitude to Lucie Rutherford, Hero Potini and Hayden Taka of Ngāti Tamaoho, Karl Flavell and Taikura Flavell of Ngāti Te Ata, Nigel Denny of Te Ākitai Waiohū, Jeff Lee of Ngāi Tai ti Tamaki, and Jamie Forsman of Ngāti Paoa.

2 HISTORICAL BACKGROUND

Archaeological surveys and assessments undertaken previously in the wider area have provided general historical background outlining the major changes in occupation, the expansion of various industries and transportation developments. A history of the Papakura area was undertaken by Architage in 2007 as part of a Cultural Heritage Investigation in the Papakura District Plan Review (Rural Section) (Harlow et al. 2007). A history was also compiled by Clough & Associates in 2004 for an archaeological assessment for the Ross Block Subdivision, situated along the Pahurehure Inlet at Hingaia (Baquié and Clough 2004). The following historical background is derived in part from these reports but with additional research concerned primarily with the history of the redoubt and its role in the initial stages of the Waikato Campaign.

2.1 Māori Settlement

The Papakura/Drury area and surrounds were an important access area for travellers in pre-European times (and later in the early settler and military periods). With Manukau Harbour to the west and the Hunua Ranges to the southeast, it was an area highly utilised as a link between Tāmaki Makaurau (the Auckland Isthmus) and the Waikato. The Manukau Harbour shores were the entrance to the inland route to Wairoa (Clevedon) and the Hauraki Gulf. ‘Te Akitai, Ngai Tai, Ngati Tamaoho and Ngati Pou are iwi who formed part of a wider confederation known as Te Waiohau and have associations with the area’ (Lawlor 1994a:2).

The Hunua Ranges may be considered a tribal ‘buffer zone’ with the bulk of the ranges being the ancestral lands of Ngāti Paoa and Ngāti Whanaunga (Murdoch n.d:57). The ancestral domain of Ngāti Tai included the northern part of the Hunuas and ran westward via the Wairoa Valley to the Mangawheau Stream and on across the high country known as ‘Te Hunua’ to Mataiwaka south of Papakura (Murdoch 1993:2, 3). The name Te Hunua traditionally applies to the hill country between the Hunua Falls and Papakura.

The Slippery Creek or Ōpaheke catchment area, whose waters flow into the Manukau Harbour at Ōpaheke at the southern extremity of Hingaia, was a strategic location. It was occupied by a number of tribal groups who ‘could trace their ancestry back to the earliest occupants of the land, and in particular the crew of the Tainui’ (Murdoch 1990:1). The district has a complex Māori history which involves a number of tribal groups whose mana whenua today is based on the pattern which had emerged by the late 18th century. Documentation of the early land sales provides information on those tribes who had or claimed mana whenua across the district.

The locations of Māori settlement, as throughout the Auckland region, were concentrated along the harbour shores and navigable waterways, on arable land, and on the slopes of the Drury-Papakura Hills (Tatton and Clough 2003). The hinterland was not intensively or extensively used but there would have been at least seasonal occupation in the general area (Murdoch 1990). Where resources were abundant or a location was strategic, the area was protected by a fortified pa. Wetland/swamp areas in the lowlands to the west of Papakura are unlikely to have attracted settlement, but resources abundant in these areas would have been utilised (Tatton and Clough 2003). Wetland areas may also have been utilised to hide tools, weapons and other significant items in times of threat.

2.1.1 Pukekiwiriki Pa

The Ngāti Tamaoho main occupational sites appear to have been on the western slopes of the Drury Hills and the shores of the Manukau Harbour. Their main settlements and cultivations were close to their pa, two of which were near the mouth of Slippery Creek while two others were in the Pukekiwiriki or Red Hill area, about 4km east of Papakura (Murdoch 1990:1). One of these was the well-known pa, Pukekiwiriki, a misspelling of Pukeokoiwiriki, being a more recent name for the same pa known previously as Paritaiuru, an ancient place connected to the great chieftainess, Marama, of the Tainui canoe (Simmons 1987:79).

2.1.2 Te Aparangi Settlement

However, at the beginning of the New Zealand Wars of the 1860s, Pukekiwiriki pa and the neighbouring settlement of Te Aparangi were under the control of the principal chiefs Ihaka Takanini te Tihi, a great grandson of Kiwi Tāmaki, and Mohi te Ahiatengu. The village of Te Aparangi at Red Hill ‘was the village of the old chief Ihaka Takaanini and his people of Te Akitai and Te Uri-a-Tapa, hapus of the Ngati-Tamaoho’, located on the Kirikiri Stream (Cowan 1922:1, 252). From Te Aparangi Māori supplied Papakura and the developing town of Auckland with vegetables and fruit from their gardens and orchards. At times Ihaka resided there with his people of Te Akitai and Te Uri a Tapa, hapū of Ngāti Tamaoho and Mohi with the Whakapaka hapū of Ngāti Tamaoho (Tonson 1966:68), before being captured near Ring’s Redoubt by British troops during the New Zealand Wars, and then being taken to Rakino Island (Murdoch 1988). This historically important kainga has yet to be re-identified archaeologically, but further historical research has been carried out to establish its location (see below).

2.1.3 Location of Kirikiri Kāinga/Moses Encampment and Ring’s Original Entrenchment

Newspaper articles detailing the early incidents and skirmishes in the Papakura area appear to suggest that the Kirikiri kainga and Moses Encampment are one and the same. The *Daily Southern Cross*, in various accounts, referred to the encampment as both Moses Encampment and as Kirikiri settlement. The *Daily Southern Cross* report on the first raid on the encampment by Imperial troops including the 18th Royal Irish, titled ‘The Kirikiri Affair’, likened it to a depot of the Kingites, stating that:

‘One would almost be inclined to look upon the Kirikiri settlement as a kind of head-quarter depot for the kingites; and it does seem strange that some one of the legion of ‘native’ officials, paid by the colony, had not discernment enough to discover that fact before.’ (*Daily Southern Cross* 01/08/1863:7).

A further article dated 1 August that appeared in the *Daily Southern Cross* referred to Moses Encampment as being situated in a crater-like basin near Mount Prospect (location unknown):

‘The 18th were again ordered to advance up the hill towards Mount Prospect where the chief Moses encampment was situate, in a crater-like basin,

2. Historical Background

surrounded by the hills, and not visible unless at a distance. The Colonial Defence Corps advanced as a support to the 18th, by the ridge leading from the Wairoa Road, and coming into the rear of the infantry. The natives were distinctly seen by the advance at an eminence of 300 yard off.’ (*Daily Southern Cross* 01/08/1863:7).

The 1864 ‘Seat of War’ map (Figure 2.9, discussed in section 2.3.2 below) appears to erroneously locate the position of Kirikiri Redoubt (also known as Ring’s Redoubt) some way to the south of the Cabra property, perhaps as a result of confusion with the location of Captain Ring’s original entrenchment.

On 22 July, the alarm was raised that a band of about 40 to 50 Māori had surprised a group of four men cutting timber in the bush, which resulted in the fatal wounding of a settler by the name of James Hunt (Cowan 1922: 258). The settlers escaped to Mr Hay’s home where they awaited further attack. However, the Māori party were diverted by the arrival of a small detachment of militia from Papakura under Captain Clare, who in turn were joined by 100 men of the 18th Royal Irish from the redoubt at Kirikiri under the command of Captain Ring (ibid.:258).

Ring’s original entrenchment had been located on a site ‘well chosen for defence’ on a bald spur of the hill range overlooking Moses Encampment, but had been abandoned due to the site being quite isolated and difficult to resupply (*Daily Southern Cross* 29/07/1863:3). Ring’s original position was described in the *Daily Southern Cross* article dated 1 August 1863, and provocatively titled ‘More Murders By Natives. The Attack On Kirikiri, On The 23rd’ (although the action actually occurred on 22 July), which reported in some detail the sequence of events and provides more detail on the proximity of both Moses Encampment and Ring’s original entrenchment – which is referred to as a redoubt. The report begins with the account of the earlier death of Mr Hunt, and the commencement of the skirmish between Māori warriors and troops of the 65th Regiment from Drury:

‘...The 65th Speedily turned out, commanded by Colonel Wyatt, and accompanied by Mr. Anderson and Ensign Hay of the militia. They skirmished through the flat bush to Pukekiwiriki, without meeting opposition. They found the body of the murdered man, and brought it with them...

...The 65th then skirmished up the hill, and saw the natives enter the bush in advance, but as Colonel Wyatt did not consider it prudent to follow them, having only a force of 100 men at his disposal, he halted his force. After remaining for a considerable time, during a great portion of which they heard heavy firing at the skirt of the bush, the force retired, the firing having altogether ceased. Meanwhile intelligence had reached Papakura of the outrage, and thirteen of the Militia and Volunteers from Auckland and Onehunga turned out and advanced up the road towards the Kerikeri settlement. They saw the natives in force on Pukekiweriki. The natives descended a considerable distance, and halted at a point where their rear was protected by a bush and gully, and there they opened fire on our Militia...’ (*Daily Southern Cross* 01/08/1863:3).

The report continues with an account of the actions of the 18th Royal Irish:

‘...The detachment of the 18th under Captain Ring, hearing the firing, left their earthwork, commanding Moses’s old encampment, and came round the hill to the support of the civilians. The colonial force joined them, and fire was afresh opened on the retreating enemy. The natives in their retreat, occupied the redoubt which the 18th had temporally evacuated, when they received a well-directed fire. The 18th rushed on them to retake their old position, when the enemy delivered a heavy fire on the advancing troops, but the redoubt was almost instantly abandoned by the enemy, and occupied by the 18th, who followed up the pursuit, pressing on the retreating foe. The line of retreat was thence over the ridge and down the slope into the late Maori encampment which is flanked by a gully, and surrounded by bush, affording safe means of retreat. From their cover the enemy kept up a severe fire on the troops, who were exposed, and Captain Ring and the detachment under his command, made a charge to dislodge them... In this charge one man was shot dead, and another severely wounded...’ (*Daily Southern Cross* 01/08/1863:3).

Captain Ring personally recounted the action in a report to his commanding officer at Drury:

‘I have the honour to state, for your information, that at noon, the 22nd instant, I receive information that two settlers had been fired upon by a body of natives, and that one of the settlers was killed, and hearing firing in the vicinity of Pukekewereke, about two miles from my camp, I immediately proceeded with 100 men of the detachment under my command, and close to the above named place I fell in with natives, who were engaged with 16 volunteers, I opened fire and the natives retreated to my former entrenchment above the whare, at Keri Keri, the firing of the skirmishers drove them down the side of the hill into the brushwood,...’ (*Daily Southern Cross* 01/08/1863: 10).

James Cowan in *The New Zealand Wars* also makes mention of the incident:

‘The natives were gradually driven up into the hills, and occupied Captain Ring’s first entrenchment on a knoll in a small clearing. From this place they were forced back by the Militia and the 18th, but they presently threatened the flanks of the British force, which was almost surrounded. One of Ring’s men had been killed at close quarters, and his rifle and bayonet seized by the Maoris. Under cover of the earthworks and logs the troops kept the Maoris back by heavy and accurate firing, and awaited reinforcements. Their position was now one of some anxiety. It was near sunset when Colonel Wyatt, with a force of the 65th and some of Lieutenant Rait’s Mounted Artillery troopers, armed with swords and revolvers, came to the rescue and vigorously engaged the Maoris, whose numbers seemed also to have been reinforced. The troopers dismounted to enter the bush with the 65th, and this diversion compelled the Maoris to draw off from Ring’s force. The united column, after recovering the body of the soldier killed, withdrew from the forest, and Ring returned to his redoubt above Kirikiri.’ (Cowan 1922: 258-259).

2. Historical Background

The contemporary newspaper reports and Cowan's description of the skirmish of 22 July 1863 make it clear that Ring's original entrenchment (or redoubt as it was also referred to) was more than 2km to the south of the redoubt located on the project property. Moreover, the entrenchment was in the vicinity of Pukekiwiriki and most likely on the high ground to the northeast of the pa, where it also would have overlooked Moses Encampment/Kirikiri kāinga and the Kirikiri Stream. Figure 2.1 shows the location of Ring's Redoubt on the Cabra property in relation to Pukekiwiriki Pa and, based on the information presented above, the approximate location of Te Aparangi settlement, the Kirikiri Stream and the likely locations of Ring's original entrenchment (also referred to in contemporary sources as a redoubt at Kirikiri) and Moses' Encampment/Kirikiri kāinga.

It seems clear that the past confusion over the location of Kirikiri Redoubt and the skirmishes that took place around it in 1863 occurred because both Ring's original entrenchment and Ring's Redoubt on the project property were referred to historically as Kirikiri redoubt. However, it is clear from examination of contemporary accounts and maps that the two were located some distance apart, and that the skirmishes occurred in the vicinity of the original entrenchment near Pukekiwiriki Pa, Te Aparangi and Moses Encampment, approximately 2km to the southeast of Ring's Redoubt.

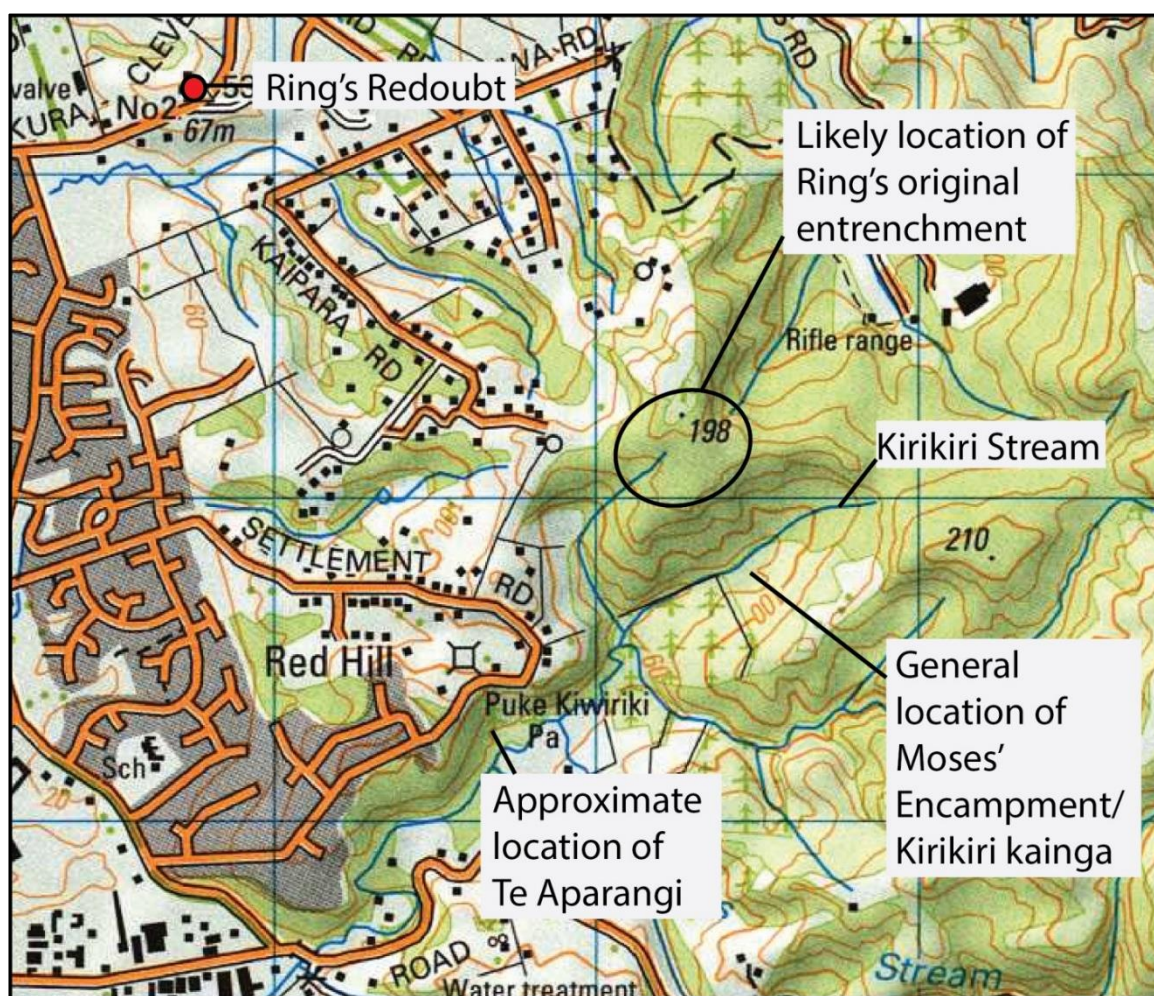


Figure 2.1 Map identifying the locations of the Kirikiri Stream, Te Aparangi, Moses Encampment/Kirikiri kāinga, and the area where Ring's original entrenchment would have been located – in relation to Ring's Redoubt to the northwest

2.1.4 Tracks and Waterways

The Ararimu track passing through Papakura linked the two important areas of Tāmaki Makaurau and Waikato by skirting the Papakura Swamp and passing through the Hunua hills to the headwaters of the Mangatawhiri Creek, which provided one of the main waka routes both to the Waikato and the Hauraki Gulf. The track was guarded particularly by the pa site at old Maketu, 4km east of Drury, a Ngāti Pou settlement dating from the 1700s. In the 1840s it was occupied by Te Ākitai (Ngāti Tamaoho) under their chief Te Tihi (presumably Ihaka Takanini). At much the same time a new pa at Maketu (situated to the south of Kiri Kiri and to the southwest of Drury) had been built, through which the track passed, and was occupied by Ngāti Pou (Clarke 1983:261-266; see Figure 2.2 for exact location of Maketu).

On the Papakura side of the Hingaia peninsula, at Chalky Point, was a canoe landing from where a track led to Waipapa at the head of the Pahurehure Inlet. The track is described as having ‘been used for generations by the Maoris until it was several inches deep’ (Craig 1982:70). The waterways around Hingaia were frequently used to gain access to Pukekiwiriki and the neighbouring settlement of Te Aparangi as well as the pa at Slippery Creek and the Ōpaheke settlement.

2.2 Early European Settlement

Missionaries had been travelling through the Papakura and Drury areas from 1834, staying at the Māori village of Ōpaheke near the mouth of Slippery Creek. The strategic importance of that area was not lost on the Government and the ‘ill defined’ Papakura Block was purchased in 1842 from Te Ākitai and Ngāi Tai and ‘extended from Papatoetoe to just south of present-day Papakura’ (Murdoch 1990:1). Travelling through the area in 1846, a Dr Johnson noted that Papakura was an occasional residence of Te Ākitai and Ngā Iwi hapū of Ngāti Tamaoho, who came to plant potatoes and gather fern root (Clarke 1983:273).

The first European to lay claim to Hingaia was the Scotsman Adam Chisholm, who had a butchery in O’Connell Street in Auckland (Walker n.d.:2). On 27 December 1844 Chisholm exchanged two horses, two bridles, one good saddle, one box, two spades, one double gun, one blanket, one shot belt, one powder flask, and £22.10s in cash for 2,193 acres. The sale was recorded in Pre-emption Certificate No.120 issued by the Colonial Secretary Andrew Sinclair on 3 January 1845, ‘to waive the right of pre-emption over not more than one thousand acres [404 hectares] of Land’.

The sale of the land was negotiated by Chisholm with seven Ngāti Whātua Chiefs, being Whangaroa, Wiremu Houngohe, Te Rou, Paora, Wiremu Brother (Parata), Hemi Te Ngohi, and Taniwha. C.O. Davis, the Official Interpreter, stated it was a ‘True translation’ (OLC, 1163: 40/1321).

Despite Chisholm’s early claim to Hingaia, the Government subsequently sold or auctioned off parts of his claim from 1852. In Hingaia there is a lack of any pre-1900 or turn-of-the-century structures, such as churches, halls or other community buildings, and associated trees, suggesting that there was not an intensive early settlement of the area based around a communal village. This differs from the settlement pattern in nearby Alfriston, where a significant number of early structures remain (Clough and Baquié 2000), even though the township of Papakura was nearby. Early settlers initially resided in whare, often constructed by local Māori, until more substantial housing could be erected (Craig 1982).

2. Historical Background

Timber for construction, often heart kauri, was obtained either from local stands of native bush located throughout the Papakura District area or from swampy areas. In areas such as Ardmore, where the land was largely covered with native bush, the initial settlers were fellers and millers (Tonson 1966). In Takanini a variety of mills were constructed, particularly flax mills along the Papakura Stream. Those out-settlers living in the Hunuwas were linked to the Great South Road by a cart track and Drury was the early centre for provisions and mail collection.

The Māori tracks and portages served as the basis of the early roads. The Great South Road was metalled as far as Papakura by 1855 and was further improved and extended by the military for the movement of troops and their supplies (Horsman 1971:77). The military also created tracks, as did Māori, through the Hunuwas during the New Zealand Wars. It has been recorded that ‘a military track is still to be seen crossing the Hunua Ranges at Pratt’s Hill’ (Hawkins 1990:5).

2.2.1 Waikato Immigration Scheme

European settlement in the Papakura District area had begun during the mid- to late 1850s (Tonson 1966) and increased following the confiscation and subsequent sale of Ihaka Takanini’s lands under the Waikato Immigration Scheme (Clough and Baquie 2000). A joint project of the Auckland and central governments, its aim was to place military settlers on land confiscated from Māori in the hope of consolidating territorial gains and increasing security. In order to retain land in European hands the government marketed the Waikato Immigration Scheme to South African and British tradesmen and agricultural workers, promising free passage and 5 to 40 acres of land as an incentive (digital.natlib.govt.nz).

Approximately 4,000 settlers were enticed to the North Island by this proposition, but much of the promised financial incentives such as allowances for house building and employment did not come to fruition (Morris 1963). In 1865 the land to the east of the present railway was subdivided into 10-acre (c.4 hectare) farming blocks and quarter acre lots for Scottish settlers. They disembarked at the Wairoa River (Clevedon) where they over-landed to the swamps of Takanini (Clough and Baquie 2000:6). Emigrants from the Cape meanwhile settled in Drury.

Some of the settlers under the Waikato Immigration Scheme were housed in the military barracks at Onehunga or, when all else failed, under canvas in camps near to their final destinations or in the numerous redoubts which were a legacy of the New Zealand Wars (Horsman 1971:121). Certainly, the Papakura District had several of these which could have been put to good use (see below).

2.2.2 The New Zealand Wars

The New Zealand Wars of the 1860s saw an influx of military personnel to the Papakura district, with Papakura and Drury becoming military garrisons. The towns served as supply bases and staging posts on the way to the front (Figure 2.2). The Papakura district became a central player in the lead up to the Waikato Campaign (July 1863-April 1864) with improvements to, and the extension of, the Great South Road, ensuring that it became the main land transport route to the Waikato. Drury’s location by a navigable waterway provided for the direct movement of supplies by water from Onehunga and allowed speedier access to the Waikato. Other effects were the construction of several military redoubts including Ring’s Redoubt (or Kirikiri, NZAA site no. R11/956), Campbell’s

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Redoubt (R12/120), Drury Redoubt (R12/123), Commissariat Redoubt (R12/756), as well as the headquarters for General Cameron's 65th Regiment Camp at Drury (R12/755), fortification of the Travellers Rest Inn for the Forest Rangers, and churches being fortified and used for the protection of settlers during skirmishes (Tonson 1966).

The 2nd Battalion of the 18th Regiment of Foot (the Royal Irish¹) began to arrive in New Zealand from 2 July 1863. The 2nd was a new battalion formed from recruits raised at Inniskillen (now Enniskillen), Fermanagh in the late 1850s, in what is now Northern Ireland (Cowan 1922). The regiment had embarked from Portsmouth aboard the ships *Elizabeth Ann Bright* and *Norwood* with the *Elizabeth Ann Bright* arriving in Auckland on 2 July 1863, while the *Norwood* arrived a month later on 2 August (ibid.). The strength of the battalion landed was 700 officers and men (ibid.).

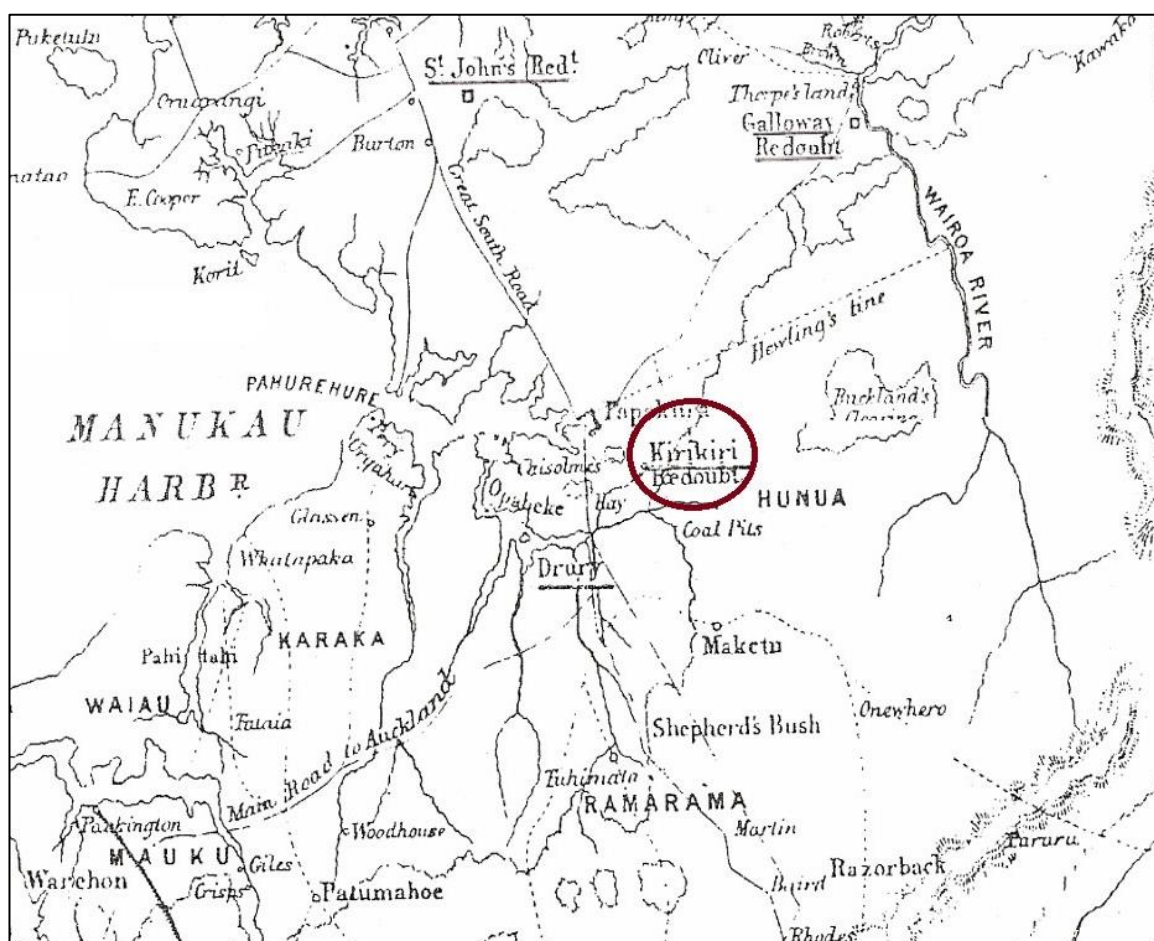


Figure 2.2 ‘The Seat of War, Waikato District’, 1864. New Zealand and Pacific Library Collection ‘Auckland South 1864. Hist 6A’ [Portion]. ‘Kirikiri Redoubt’ is circled and to the left of this Chisholm’s early land purchase is indicated. The Redoubts are underlined. NB. Kirikiri Redoubt is not in the same location as Ring’s Redoubt, as noted above and discussed in more detail below

¹ The 18th Regiment of Foot was an infantry regiment of the British Army, first raised in 1684. Also known as the 18th (Royal Irish) Regiment of Foot and the 18th (The Royal Irish) Regiment of Foot, it was one of eight Irish regiments raised largely in Ireland, its home depot being Clonmel, South Tipperary. Prior to 1881 the unit was simply known as the 18th Regiment of Foot.

2. Historical Background

On 12 July 1863 General Duncan Alexander Cameron gave orders for a force from his army encamped at the Queen's Redoubt at Pokeno to make the first advance into the Waikato (Cowan 1922). This comprised the 2nd battalion of the 14th Regiment, under the command of Lieutenant-Colonel Austen. After crossing the Mangatawhiri Stream at the termination of the military road and taking up position on the site of an old pa on a hill above the river, Austen was reinforced by detachments of the 12th and 70th Regiments, and three field-works were thrown up on the hill.

Following this initial advance, the process of ejecting Māori who had not sworn allegiance to the Queen from their land, was undertaken at Manukau, Papakura, Patumahoe, Tuakau, and other districts between Auckland and the frontier (ibid.). In mid-July Mr Dillon Bell (Native Minister) and Mr Gorst (Bell's private secretary) undertook a mission to the Māori settlement of Te Aparangi, on the Kirikiri stream, some two miles to the east of Papakura (see below for more detailed discussion of the location of the settlement and stream). A significant number of Māori had congregated there, and most were thought to be supporters of the Kingite rebellion (ibid.). As noted above, Te Aparangi was the village of the old chief Ihaka Takaanini and his people Te Ākitai and Te Uri a Tapa (hapū of Ngāti Tamaoho; ibid.). Another rangatira of Te Ākitai present at Te Aparangi was Mohi te Ahiatengu. While the permanent population of the settlement was few in number, it had been swelled by 'scores of young men from the Auckland side who had decided to join the Kingites had made it their rendezvous, and were believed to be fortifying themselves in the bush' (ibid.:252). Mr Bell gave the occupants of Te Aparangi the choice of taking an oath of allegiance to the Crown or safe passage to the Waikato, and Mohi decided upon the latter (ibid.:253). This response was due to the fact that Imperial Forces had already invaded the Waikato.

While returning to Drury that same afternoon, Mr Gorst and the Minister heard reports of the first action of the war (Cowan 1922). This had been the killing of a settler named Michael Meredith and his young son, who had been out fencing when caught by a party of Māori warriors and were found tomahawked on their bush farm near Ramarama, about 4 miles from Drury around the middle of July.

It was thought (mistakenly) that the warriors belonged to Ihaka's people, and so a force, some 30 strong, of the Colonial Defence Force Cavalry (Otahuhu Troop) under the command of Lieutenant-Colonel Nixon² and a 300 strong detachment of the 65th Regiment, invaded Te Aparangi and took Ihaka and a number of others prisoner, chiefly old men, women, and children (Cowan 1922). However, the armed young men who undertook the attack escaped and joined their relatives at Waikato to fight in the wars.

The first action that the 18th Royal Irish participated in was an ambush by a Māori force at Stone Depot, about a mile and a half south from the Shepherd's Bush Redoubt (Ramarama) on 17 July 1863. At this location, situated on the road over the Pokeno Ranges, a settler named Martin had his farm in a small clearing cut out of the dense puriri forest (ibid.). A convoy of six carts, escorted by 50 men of the 18th Royal Irish Regiment, under the command of Captain Ring, were travelling from the Queen's Redoubt³ (Pokeno) to Drury

² Soon after the outbreak of war in Taranaki, Nixon approached the government offering to raise colonial volunteers. Gazetted as a lieutenant colonel in the Auckland Militia and the Royal Volunteer Cavalry in 1860, he was thereafter responsible for guarding the line of communications and supply between Auckland and the South Auckland redoubts and outposts. In May 1863 the Colonial Defence Force Cavalry was formed, with two troops from the Auckland district; Nixon became its commandant in June. At Otāhuhu in July 1863 Nixon recruited nearly 200 volunteers from the young farmers of the area – the nucleus of 'Nixon's Horse'.

³ This redoubt, one of the two largest European campaign forts in New Zealand, was General Cameron's headquarters from July 1863 to the Battle of Rangiriri on 20-21 November the same year.

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when they were ambushed by a party of Māori. While the escort was marching at ease, they came under heavy fire from both sides of the road. The first volley killed and wounded several soldiers, and also hit some of the cart-horses (ibid.; *Daily Southern Cross* 18/07/1863:3). Skirmishing continued between the two sides before finally a detachment of the 18th came doubling up in the rear from the direction of Baird's Hill and other reinforcements presently arrived from Drury, and the attackers retreated (ibid.:257). The British casualties were 5 killed and 11 wounded while Māori casualties were described as slight.

As a result of the ambush at Martin's Farm, measures were implemented to destroy the cover for Māori raiding parties by felling trees and creating clearances a quarter of a mile wide on either side of the road in locations conducive for ambush (ibid.:260). The work was undertaken by contract, and General Cameron ordered that the bush fellers should be protected by a covering party.

2.3 Ring's Redoubt and the 18th Royal Irish Regiment of Foot

The 18th Royal Irish were responsible for the construction and manning of a redoubt located some 2 miles from Papakura in a commanding position above Kirikiri. The redoubt was built in July and came to be known as Ring's Redoubt after the commanding officer of the garrison there, Captain James Tarrant Ring of the 18th Royal Irish (Cowan 1922:247; see Figure 2.3–Figure 2.5). Ring's Redoubt (or Kirikiri Redoubt after the nearby Māori village) was just one of a network of fortified British military posts stretching from the Great South Road in Auckland, southwest down to the rich lowlands between Manukau Harbour and the Waikato River, and south to the troops on the front line.

The 'Special Correspondent' of the *Daily Southern Cross*, reported on the construction of the redoubt during a sightseeing visit in an article titled *The War in Auckland*:

'Proceeding up the Wairoa road for about two miles, we come to the redoubt, built and held by the 18th Regiment, under the command of Captain Ring. When this party first moved out from Drury camp, to take up a position at Kirikiri, tents were pitched on a bald spur of the range, overlooking Moses's encampment, and on a site remarkably well chosen for defence. But soldiers must eat, and the hill camp was all but inaccessible for supplies. The present site was therefore chosen on the left side of the Wairoa road, on an elevated piece of land, in line with the old camp, and commanding a view of the ranges and the surrounding country down to the Manukau. The post is held by 200 men and officers, but, owing to the heavy escort duty, and the detail for guards, not more than a working party of 50 men can well be spared at the redoubt at any given time. Yesterday, the western face of the redoubt was finished. It is 5 feet 3 inches inside, and 4 feet 9 inches outside. The ditch will be deepened. If to-day had been fine I think the breast-work of the remaining sides would have been finished. As I saw it, however, it was tenable against any enemy without artillery.

This post keeps the communication open with, the advanced camps at the Wairoa, and forms a line in the chain of redoubts which will protect the country

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to the North of the Wairoa from being invaded by the enemy. The prospect from this camp is very fine indeed, extending down to the Manukau Head.’
(*Daily Southern Cross* 29/07/1863:3).

The location of the first encampment on the ‘bald spur of the range, overlooking Moses’s encampment’ has not been established, and more detailed research has been undertaken to identify its location (see Figure 2.1, and below).

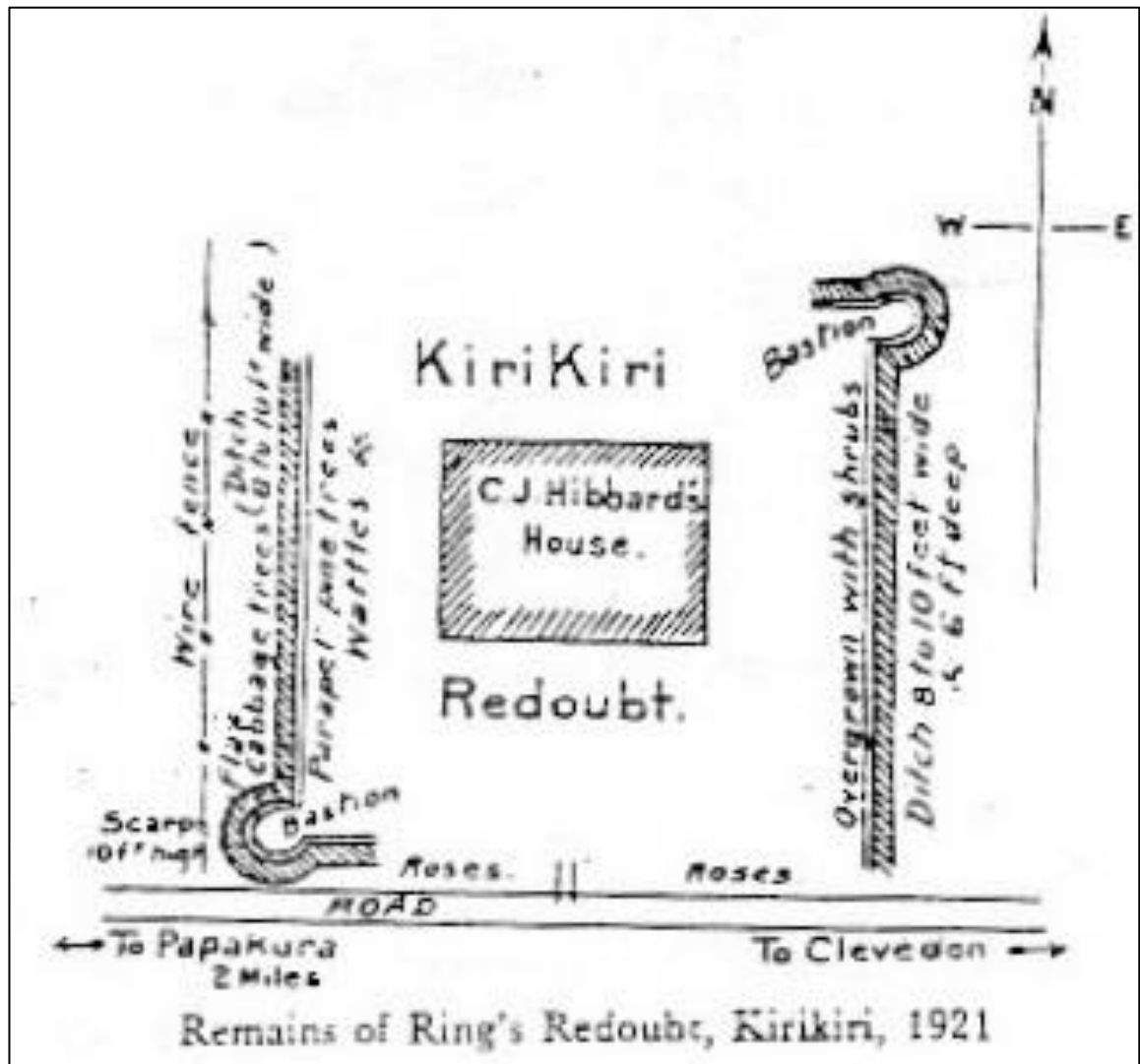


Figure 2.3 A plan of the remaining ditches and bastions of Ring’s/Kirikiri Redoubt as seen by J. Cowan in 1922. Today, only the north-eastern bastion and the eastern ditch are visible as earthworks



Figure 2.4 Watercolour of Ring's/Kirikiri Redoubt painted by Lt Colonel Arthur Morrow (1842-1937) c.1863 and titled 'Camp H.M. 43rd Regt. Keri Keri (Papakura)'. A note on the bottom (not discernible at this scale) states 'Raupo whare, No.1 Royal Vol., Ring's Redoubt, Road to Wairoa'. Source: Auckland War Memorial Museum PD42 (3)

The garrison of Ring's Redoubt saw several actions during and after the redoubt had been constructed. Believing attack from Kingite Māori to be unlikely, some settlers had elected to remain on their land close to the edge of the Hunua Forest, between Papakura and Drury (Cowan 1922:257). One such settler was Mr Hay, whose home was situated close to the Great South Road between Papakura and Drury. As noted above, on 22 July the alarm was raised that a band of about 40 to 50 Māori warriors had surprised a group of four men cutting timber in the bush, which resulted in the fatal wounding of a settler by the name of James Hunt (ibid.:258). The settlers escaped to Mr Hay's home where they awaited further attack. However, the Māori party were diverted by the arrival of a small detachment of militia from Papakura under Captain Clare, who in turn were joined by 100 men of the 18th Royal Irish from the redoubt at Kirikiri under the command of Captain Ring (ibid.:258). A report of this action compiled by Captain Ring (Figure 2.6), presumably at the redoubt, was sent to his commanding officer at Camp Drury and was reported in the *London Gazette* of October 23, 1863, an excerpt of which is presented below:

'I have the honour to state, for your information, that at noon, the 22nd instant, I receive information that two settlers had been fired upon by a body of natives, and that one of the settlers was killed, and hearing firing in the vicinity of Pukekewereke, about two miles from my camp, I immediately proceeded with 100 men of the detachment under my command, and close to the above named place I fell in with natives, who were engaged with 16 volunteers, I opened fire and the natives retreated to my former entrenchment above the whare, at Keri Keri, the firing of the skirmishers drove them down the side of the hill into the brushwood, the leading skirmishers on the right, under Lieutenant Wray, took possession of the hill and kept up fire on them, I, with another body of

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skirmishers, proceeded to take that on the right flank, but found that the natives who mustered a strong force nearly surrounded me, here I lost one man killed, whose rifle and bayonet was taken possession of by the natives, though not without serious loss to them. I then concentrated my men on the entrenchment, and having heard from an Artillery Officer who rode up to my position that the 65th Regiment was in my immediate vicinity, I requested that he would inform the Officer Commanding 65th Regiment that there was a track in the enemy's rear, and if an attack were made in that direction it would be of great service.

As it was quite impossible for me to follow so strong a force of the enemy into the bush with my so small a force, I remained in the entrenched position until close on sunset, keeping a steady fire on the enemy, who were endeavouring to obtain the body⁴ and ammunition of the private who was killed, and who I would not leave. I repeatedly tried to obtain possession of the body by sending out volunteers of the man's company, but desisted, finding that it would entail greater loss. I was about retiring, leaving a rear-guard in the entrenchment, when the Mounted Artillery arrived. Immediately after I saw the 65th appear. The natives then drew off their right flanking movement, and retreating into the bush enabled me to obtain the body of the man of my detachment. This accomplished the whole force withdrew.' (*London Gazette* 23/10/1863:5019-5020; see Figure 2.5).

Only two days after this encounter, the men of the 18th were again called into action when, only a mile beyond the company's redoubt, a group of Māori attacked the home of a settler by the name of Captain Calvert, a retired soldier (Cowan 1922:260). At about 7.30am on 24 July 1863, a party of Māori armed with muskets surrounded Calvert's house and some of them entered the kitchen where shots were exchanged. Captain Calvert's young son, Sylvester, was shot and mortally wounded, before his father chased off the enemy with his sword. The gun shots were heard by the soldiers at the Kirikiri redoubt and a party of them drove off the raiders into the forest. The wounded Sylvester Calvert was carried by the soldiers to the redoubt, where he died.⁵

After these engagements the 2nd Battalion of the 18th Foot took part in a number of further actions during the Waikato Campaign, culminating in the Battle of Ōrākau Pā (March 31-April 2, 1864). It was at the start of this engagement that Captain Ring was mortally wounded while assaulting the pa (Figure 2.7). Captain Ring was conveyed to the main British Military Camp at Te Awamutu where he succumbed to his wounds on 1 April 1864. News of the death of Captain Ring was widely reported in both the New Zealand and British Press. Even General Cameron⁶ himself stated in a despatch at his Headquarters in Pukerimu, to the Secretary of State for War at the War Office in London:

⁴ It is not known where the body of the Private killed in the Kirikiri skirmish (Pte J. Evans) was buried, and it remains a possibility that the soldier was interred in a grave marked by a simple wooden cross in the vicinity of Ring's Redoubt which would be consistent with the treatment of other rank and file soldiers during the NZ wars (David Rudd, pers. comm.).

⁵ Sylvester Calvert is interred in the Papakura Public Cemetery. Known locally as the old cemetery, it is situated at the junction of Great South Road and Settlement Road, Papakura.

⁶ General Duncan Alexander Cameron was the commander of all 14,000 Imperial Troops stationed in New Zealand during the wars.

2. Historical Background

‘Our loss has been severe; and your Lordship will regret to see in the list of killed the name of Captain Ring, 2nd Battalion 18th Regiment, a brave and promising young officer, whose gallant conduct I have brought to your notice on two previous occasions’ (*London Gazette* June 14, 1864).



Figure 2.5 Photograph by R. Poate of Captain Ring taken at Portsmouth before deployment to New Zealand. Museum of Te Papa Tongarewa, Matapihi. Catalogue no. 406410

THE LONDON GAZETTE, OCTOBER 23, 1863.							5021
NOMINAL RETURN of Killed and Wounded at Kiri Kiri, on the 22nd of July, 1863.							
Regimental Number.	Rank and Name.	Corps.	Age, Years.	Service, Years.	Date of Death.	Place of Death.	Nature of Injury.
935	Private J. Evans ...	2-18	24	4	1863. July 22	Kiri Kiri	Shot through the chest ; fatal.
2951	„ Thomas Made	65	31	11	July 22	Kiri Kiri	Shot through the head ; fatal.
805	„ J. Hamilton ...	2-18	23	5	...	...	Severe gunshot wound through upper part of right thigh.
1192	„ W. Conroy ...	„	21	4	...	...	Slight graze of right temple
1014	„ J. Fitzpatrick	„	23	4	...	...	Slight graze of left shoulder
	„ T. Dunbar ...	„	...	...	...	...	Slight contusion.

Figure 2.6 The casualties of the action at Kirikiri as listed in the *London Gazette* of 23 October 1863:5021. The 2nd Battalion of the 18th bore the brunt of the wounded

Prior to his death, Captain Ring had received a field promotion to Brevet Major⁷ one month before his death for his conduct during the Waikato Campaign, which would have been ratified on the completion of the war, had he survived (Figure 2.8). Following his death, he was initially interred at St John's Anglican Church at Te Awamutu (*Daily Southern Cross* – *Summary For April*, 30/04/1864:10). However, on 10 May 1864 it was reported that a lead coffin was in transit to Te Awamutu for the remains of Captain Ring (*Daily Southern Cross* 10/05/1864:3). Captain Ring was exhumed and taken to the Albert Barracks in Auckland prior to a funeral service and re-interment. A description of Captain Ring's funeral was reported in *The Press*:

‘FUNERAL OF CAPTAIN RING – The remains of Captain Ring were removed from the barrack square yesterday morning about eleven o'clock, for the purpose of re-interment in the cemetery. The coffin, having been covered with a Union Jack, was placed upon a gun carriage and drawn by four horses, with drivers of the Military Train. A sergeant, corporal, and six privates, belonging to Captain Ring's own company of the 18th regiment, who had come down from Te Awamutu as an escort; Lieutenants Nichols, Thacker, and Minnett, and Ensign Bicknell of the 18th regiment;

⁷ In the British Army the brevet commission was only by courtesy. Officially both titles were used, as: ‘Captain and Brevet Major Ring.’ Originally the term designated a promotion given on such occasions as a coronation, or the termination of a great war, and had its origin during the reign of James II (1685–88); but it was abused so frequently and used to such an extent by the general award of brevet commissions, that in 1854, during and after the Crimean War, its bestowal was limited strictly to cases of very distinguished service in the field and on the principle of seniority. In the British Army, brevet commissions were confined to grades from captain to lieutenant-colonel (Hunt and Brown 1990).

2. Historical Background

Major Paul, Major of Brigade; Mr. H. de Burgh Adams, Purveyor of Stores; Lieutenants Davis and Leir, of the Military Train; and Colonels Barstow and Williams, Lieutenants Pickard, Robinson, and Dunnithorne, of the Royal Artillery, followed the body to the grave. On reaching the windmill an accident occurred to the gun carriage on which the coffin was borne, and the soldiers of the 18th regiment present then carried the body the remainder of the distance to the cemetery, where it was interred privately and without ceremony, near the grave of Ensign Ducrow, and in a last line with the remains of the officers who found a last resting place there.’ (*The Press* 11/06/1864:3).

As well as having two burials, Captain Ring also has a memorial stone dedicated by the 18th Foot at St Patrick’s Cathedral and Graveyard, Dublin, Ireland.⁸ His memorial headstone at Grafton Cemetery, Symonds Street, reads: ‘James Tarrant Ring (Captain and Bt. Major of the 18th Royal Irish in the war of 1863 and 1864 in New Zealand) who fell mortally wounded while gallantly leading his men against the enemy’s position at Orakau, March 31, 1864’.

The Royal Irish Regiment was the last of the Imperial forces to leave New Zealand, the main body sailing from Auckland on 28 February 1870 (Cowan 1922:264). However, between 300 and 400 men who had taken their discharges from the regiment settled in the country.

⁸ ‘Sacred To the Memory of Brevet Major JAMES TARRANT RING 18th Royal Irish who was mortally wounded when gallantly leading the assault on the enemy’s position at the Orakau Pah, on the 2nd April 1864. He on several occasions distinguished himself during his service in the New Zeland [sic] War and enjoyed the confidence and respect of both the Officers and men of the Regiment by whom this Memorial is erected.’

3040 THE LONDON GAZETTE, JUNE 14, 1864.						
NOMINAL RETURN of Killed and Wounded of the Troops at Orakau, from 31st March to 2nd April, 1864.						
Corps.	Regimental Number.	Rank and Names.	Age.	Service.	Date and Place of Death.	Nature of Injury.
2-18th	...	Captain James T. Ring ...	30	11	April 1, 1864, at Te Awamutu	Penetrating gunshot wound of abdomen; mortally, since dead.
"	...	Serjeant William Lawson ...	...	...	Mar. 31, 1864, at Orakau	Shot through the liver; dead.
"	...	Private John Carroll ...	...	...	"	Upper part of chest; dead.
"	619	" Michael Bellaine ...	24	6	"	Shot through the head; dead.
"	780	" Thomas Traynor ...	23	5	"	Shot through the back; dead.
"	...	" Hugh Cassidy ...	24	6	"	Shot through the head; dead.
"	...	Corporal — Johnson ...	26	5	...	Through the arm and chest; very severely.
"	1093	Drummer James Lyon ...	18	4	...	Left side of chest; severely.
"	1577	Lance-Corp. George Carroll	29	13	...	Right arm; severely.
"	999	Private John Close ...	23	5	...	Right arm; slightly.
"	17	" George Thomas ...	25	9	...	Right thigh and face; severely.
"	240	" Patrick Fay ...	25	6	...	Face, ball lodged; dangerously.
"	180	" John O'Donnell ...	39	5	...	In the neck; dangerously.
"	380	" John Carlyle ...	24	6	...	Left side of the chest; severely.
"	1212	" James Stanton ...	26	5	...	In the back, ball lodged; dangerously.
"	789	" George Gallagher...	27	5	...	Right side of the back, ball lodged; dangerously.
"	...	" Thomas Harman ...	24	6	...	In the chest; severely.
		Jenkins ...	...	...	...	Through the mouth; very severely.

Figure 2.7 The list of killed and wounded soldiers of the 2nd Battalion 18th Foot from the Battle of Orakau published in *The London Gazette*, 14 June 1864

THE LONDON GAZETTE, MARCH 1, 1864. 1257	
BREVET.	
Colonel Richard John Nelson, retired full-pay, Royal Engineers, to be Major-General, the rank being honorary only. Dated 5th February, 1864.	Commissions signed by the Lord Lieutenant of the County of Sussex.
Major and Brevet-Lieutenant-Colonel Robert Carey, C.B., H.P., 40th Foot, Deputy-Adjutant-General, New Zealand, to be Colonel. Dated 1st March, 1864.	1st Administrative Battalion of Sussex Artillery Volunteers.
Captain and Brevet-Major John Carstairs McNeill, 107th Foot, to be Lieutenant-Colonel. Dated 1st March, 1864.	Major G. C. Dalbiac to be Lieutenant-Colonel. Dated 15th February, 1864.
To be Majors.	Major Charles Smith Hannington to be Major, vice Dalbiac, promoted. Dated 15th February, 1864.
Captain John Inman, 18th Foot. Dated 1st March, 1864.	1st Sussex Artillery Volunteer Corps.
Captain James Tarrant Ring, 18th Foot. Dated 1st March, 1864.	Captain Charles Smith Hannington to be Major. Dated 15th February, 1864.
	First Lieutenant Philip Hannington to be Captain, vice C. S. Hannington, promoted. Dated 15th

Figure 2.8 Article in *The London Gazette* illustrating Captain Ring's promotion to the rank of Major which was never realised due to his death at Te Awamutu (*London Gazette* 1/3/1864 pp1257)

2.3.1 Later Military Occupation of Ring's Redoubt and Post-Waikato War Settlement

The redoubt initially constructed and manned by men of the 18th Royal Irish was subsequently occupied by at least two other regiments, though with a smaller garrison. Information on later garrisons is provided by newspaper articles both contemporary and subsequent. A *Daily Southern Cross* report dated 22 October 1863 informs us of the departure for the front of the 18th Royal Irish and their replacement by the 2nd Waikato Regiment of Militia:

‘Captain Ring and the 18th have left Kerikeri Redoubt, and have been succeeded by Captain Manie of the 2nd Waikato Regiment, with a company of 100 men. With Captain Freer’s company of 50 men, there is now a force of about 150 at this redoubt.’ (*Daily Southern Cross* 22/10/1863:3).

The 2nd Waikato Regiment was a permanent force of Militia, one of four militia regiments in 1863 consisting of military settlers recruited primarily in Australia (Victoria and New South Wales), though with some recruits also raised in Otago⁹ (Cowan 1992: 243). Each regiment consisted of 1,000 men (divided into 10 companies of 100 men) and from October 1863 they were relieving Imperial Troops (as well as Auckland Volunteer forces in some cases) of their garrison duties at various posts along the Great South Road and Papakura-Wairoa defensive line, enabling them to be brought up to the front line as the war progressed into the Waikato. It is interesting to note that even though the front line was progressing deeper into the Waikato, the Imperial Forces command felt the threat posed by Māori incursions from the Hunua Ranges was such that it was judged necessary to maintain a large garrison at the redoubt.

Two further regiments/battalions can be placed with certainty at Ring's Redoubt during the later stages of the Waikato War. The first of these was the 43rd (Monmouthshire) Light Infantry Regiment. Two independent sources corroborate their presence at the redoubt. Firstly, and contemporary with the occupation of the site, is the painting of the redoubt by Arthur Morrow (later to become Lt. Colonel) which is titled ‘Camp H.M. 43rd Regt. Keri Keri (Papakura)’ (Figure 2.4, above). The second source is a *New Zealand Herald* article dated 26 July 1895, some 30 years after the redoubt was last occupied by Imperial Forces. The article includes a summary of the then Major Arthur Morrow's military duties and engagements during the Waikato War:

‘Major A. Morrow, unattached active list New Zealand volunteers. Served with detachments of H.M. 63rd, 18th, 70th, and 43rd Regiments. Was present, under Colonel Lyon, in skirmishes at Wairoa redoubt and stockade, and at attack on native settlement at Otau-Wairoa, 15th and 16th September 1863. Attached to Major Mulock's flying column, consisting of head-quarters battery H.M. 70th Regiment, Pitt's Militia, and Auckland Rifle Volunteers, in the Wairoa and Maraetai districts, and finally served with H.M. 43rd Regiment at Ring's Redoubt, Kerikeri [sic].’ (*New Zealand Herald* 26/07/1895:6).

⁹ A motivating factor for men to volunteer for the Waikato Militia was the entitlement to a farm section, ranging from 400 acres for a field officer to 50 acres for a private. By October 1863, there were about 2,500 military settlers from Victoria, New South Wales and Otago on permanent service in the field (Cowan 1992: 243).

2. Historical Background

The last reference in documentary sources confirming a military presence still at the redoubt is a *New Zealand Herald* article dated 11 July 1865 which refers to a company of the 3rd Waikato Regiment:

‘On Saturday morning, the detachment of the 3rd Waikato regiment, stationed at Lower Wairoa, under command of Ensign McCawe, the portion at Galloway Redoubt, under Ensign Hamlin, the number at Henderson’s Redoubt [Upper Wairoa Redoubt], under Mr. Gregson, and the portion at Keri-keri [sic], commanded by Ensign Bush,¹⁰ all arrived at Papakura on route to join the headquarters of their respective regiments’ (*New Zealand Herald* 11/07/1865:5).

It is conceivable (perhaps, even likely) that the *Herald* article is referring to the departure and therefore abandonment of the redoubt by Colonial Forces. After the abandonment of the redoubt, most likely by soldiers of the 3rd Waikato Regiment, the site was subsequently occupied by Scottish settlers who had arrived in New Zealand on the ship *Viola* (Willis 1932).

The ship arrived in Auckland at the end of 1865 after a seven-month voyage, carrying around 100 Scottish settlers (ibid.). They went first to Wairoa South (Clevedon) by steamer, from where they were taken in bullock drays to Ring’s Redoubt, where they lived in the barracks building for approximately three months (ibid.). The settlers cleared some land upon which they erected a shack of nikau and raupo, later to be replaced by small houses constructed of split palings and pit-sawn timber (ibid.). It is not known how many houses were constructed or where on the property the houses referred to were located and it is possible that some may have been located along the ridge that extends to the west of the redoubt. Each family was granted 10 acres of land at Kirikiri (confiscated land), as well as a quarter acre section in the Papakura Township (ibid.). It is unknown for how long the Scottish settlers resided at the redoubt or what date they abandoned the site, but it would certainly have been many years prior to James Cowan’s visit to the redoubt in 1922, when Hibbard’s house was already well established (Figure 2.3, above).

A summary of the recorded history of the redoubt is presented as a chronological timeline below (Table 2.1).

¹⁰ Robert Bush was born in Jubbulpore, Bengal, India on 24 April 1843, the son of Colonel James Tobin Bush and Rose Cordelia née McQuhae. He arrived in New Zealand in 1863 and became Subaltern in the 3rd Waikato Militia Regiment in September 1863. He was Ensign when he was substituted by James Hume on 28 April 1866 (Cambridge Museum – Biographies 2003).

2. Historical Background

Table 2.1 Chronological timeline of Ring's /Kirikiri Redoubt

Date	Event	Source
24.04.1856	Crown Grant Parish of Hunua Part Allotment 29 to Clarke.	Deeds Index 7A-91 (receipt no.8363)
22.08.1856	Conveyance – Clarke to Rourke (100 acres).	Deeds Index 7A-622 (receipt no. 8874)
06.10.1860	Conveyance – Rourke to Nathan (died 1886), passed to Nathan Family.	Deeds Index 7A-622 (receipt no. 18210)
New Zealand Land Wars – Waikato Campaign		
16.07.1863	A party of 400 men of the 65th, 18th and Colonial Defence Force under the command of Colonel Murray of the 65th arrived at Mohi's Pa on the high ground of Kirikiri at dawn. Following lengthy discussions between Col. Murray and an undisclosed number of Māori Chiefs, Māori Warriors retreated into the bush and the military captured all provisions and weapons which were carted to the 65th Regiment's base at Drury. A detachment of the 18th Regiment remained at Kirikiri for 3 days before proceeding to the site near the Wairoa Road where they began the construction of Ring's Redoubt.	Published letter titled 'Episode of the Māori War' from Joseph Neylon former soldier of the 18 th Royal Irish Regiment who served at Ring's Redoubt to the Editor of the <i>Auckland Star</i> . <i>Auckland Star</i> 07.10.1898: 3
17.07.1863	A detachment of the 2nd Battalion 18th Royal Irish Regiment commanded by Captain James Ring was ambushed on the Great South Road at Stone Depot, a mile and a half south of Shepherd's Bush (Ramarama).	<i>Daily Southern Cross</i> , 18/07/1863: 3
18.07.1863	Reported that 160 men of the 18th Royal Irish Regiment of Foot under Captain Ring establish an entrenchment above Pukekiwiriki Pa and Moses Encampment approximately 2 miles to the south of Ring's Redoubt.	<i>Daily Southern Cross</i> , 18/07/1863: 3
19-20.07.1863	Likely start date for the construction of Ring's/Kirikiri Redoubt by 200 men of the 18th Royal Irish under the command of Captain Ring with five other officers present. The 18th were supplemented with a company of 100 men of an unspecified militia regiment – likely the Colonial Defence Force Cavalry or Auckland Volunteer Rifles.	Gretton, Lieutenant Colonel G. le M. 1911. <i>The Campaigns and History of the Royal Irish Regiment From 1684 to 1902</i> . Edinburgh and London: William Blackwood and Sons Ltd., pp. 201.
22.07.1863	Large skirmish fought in the area of Pukekiwiriki Pa including Ring's original entrenchment which was briefly occupied by Māori before being retaken by the 18th Royal Irish. Private Joseph Neylon stated that 'The fight lasted from about noon till dark' (<i>Auckland Star</i> , Friday 7 October 1898: 3). Private John Ewins of the 18th and Private Thomas Made of the 65th Regiment were killed during the action along with at least 14 Māori warriors.	<i>Daily Southern Cross</i> 01/08/1863:3
24.07.1863	Sylvester Calvert, son of the settler Captain Augustus Bressan Calvert, was shot at his father's house during an attack by Māori 1 mile to the east of Kirikiri redoubt and was conveyed to the redoubt where he later died.	<i>Daily Southern Cross</i> , 22/10/1863: 3
29.07.1863	Construction of Kirikiri Redoubt nearing completion.	<i>Daily Southern Cross</i> , 30/07/1863: 3
21.08.1863	First recorded use of the name Ring's Redoubt.	<i>New Zealander</i> , 21/08/1863: 2

2. Historical Background

Date	Event	Source
13.10.1863	The body of Job Hamlin and the boy accompanying him on a bullock dray who was wounded by a tomahawk, Joseph Coates Wallis, were taken to Ring's Redoubt after being attacked on the Wairoa Road by a party of Māori warriors. The boy was attended to by Dr Thompson, a surgeon attached to the Royal 18th at the redoubt before being taken to the hospital marquee at the Papakura Redoubt. Joseph Coates Wallace survived and died on his farm in Kaipaki, near Cambridge in 1933 at the age of 84.	<i>Daily Southern Cross</i> , 15/10/1863: 3; <i>New Zealander</i> , 17/10/1863: 5
21.10.1863	18th Royal Irish departed the redoubt for the Waikato and were replaced by two companies of the 2nd Waikato Militia, with 100 men commanded by Captain Manie and a force of 50 under the command of Captain Freer.	<i>Daily Southern Cross</i> , 22/10/1863: 3
18-22/12/1863- 05.03 1864	A company of the 43rd (Monmouthshire) Light Infantry served as a garrison during this period. Lt Hatchell of the 43rd Regiment recorded as playing in a cricket match for the Kerikeri redoubt [sic] against a team from the Papakura Redoubt on 29 February 1864.	Morrow watercolour titled 'Camp H.M. 43rd Regt. Keri Keri [sic] (Papakura)' & <i>New Zealand Herald</i> 26/07/1895:6; <i>Daily Southern Cross</i> , 22/12/1863: 3 & 07/03/1864: 4
25.01.1864	Company of 50 men of the 1st Waikato Regiment under command of Lieutenant Dunne arrived at the redoubt from Tuakau to supplement the company of the 43rd Regiment.	<i>New Zealander</i> , 04/02/1864: 5
05.03.1864	50 men of the 4th Waikato Regiment under the command of Lieutenant William Steele proceeded to Kirikiri to garrison the redoubt.	<i>New Zealander</i> , 05/03/1864: 2
01.04.1864	Captain Ring died the day after being shot in the abdomen while taking part in the initial assault on Ōrākau Pa.	<i>New Zealand Herald</i> , 04/04/1864: 3
07.01.1865	Ensign Henry Gairdner of the 4th Waikato Regiment reported to be in command of the redoubt garrison.	<i>New Zealand Herald</i> , 07/01/1865: 5
08.07.1865	Ring's Redoubt was abandoned as the garrison company consisting of men of the 3rd Waikato Regiment departed the redoubt for its Regimental headquarters at Cambridge. At the same time all other redoubts situated along the Papakura-Wairoa Line were also abandoned.	<i>Daily Southern Cross</i> , 13/07/1865: 5
End of Military Phase		
July 1865- November 1865?	Scottish settlers from the <i>Viola</i> occupied the barrack buildings adjacent to the redoubt for three months before constructing some additional buildings. Their date of departure from the site is not recorded in any available sources.	Willis, A. 1932. Early Papakura; Tonson 1966:236
05-07.08.1889	Robert Hutchinson, a Sergeant of the 18th Royal Irish who had served at the Redoubt, arrived from Melbourne and had difficulty in re-locating the 'lines again of Ring's Redoubt' due to 'changes in the face of the country'.	<i>New Zealand Herald</i> , 27/08/1889: 5
27.02.1903	Mr J.H. Mullins, in a letter to the <i>New Zealand Herald</i> , called for the redoubt to be 'preserved for posterity' and stated that at that time the site was intact.	<i>New Zealand Herald</i> , 27/02/1903: 6

2. Historical Background

Date	Event	Source
1906	Conveyance – Nathan family to McCarthy.	Deeds Index 7A-622 (receipt no.179768)
06.08.1906	Conveyance – McCarthy to Keeney.	Deeds Index 7A-622 (receipt no.179770)
20.04.1909	Conveyance – Keeney to Hibbard.	Deeds Index A2/356 (receipt no. 195969)
1921	James Cowan visited the site during research for his book on the New Zealand Wars, in which he states that ‘...its walls and trench, partly demolished, now enclose a farmhouse.’	Cowan, J. 1921. <i>The New Zealand Wars</i> . Wellington: Govt. Printer, pp. 258
1949	Conveyance – Hibbard to Holland.	NA615/95
1969	Subdivision of Lots 1 and 2 DP 62570, allowing construction of house at 931 Papakura-Clevedon Road	NA615/95

2.3.2 Location of Te Aparangi and Kirikiri Stream

As stated above, the village of Te Aparangi was located in the vicinity of Pukekiwiriki Pa in the Red Hill area (southeast of central Papakura) and both the pa and village were under the control of the principal rangatira (chief or noble) Ihaka Takaanini te Tihi, a great grandson of Kiwi Tāmaki, and Mohi te Ahiatengu, who was also known as Moses¹¹ (Cowan 1922:1:252). Prior to being captured near Ring’s Redoubt by British troops, Ihaka had resided in Te Aparangi with his people of Te Ākitai and Te Uri a Tapa, hapū of Ngāti Tamaoho and Mohi (Moses) with the Whakapaka hapū of Ngāti Tamaoho (Tonson 1966:68; Murdoch, 1988). This historically important kāinga has never been re-identified archaeologically.

However, information relating to the location of the Te Aparangi kainga is found in the account of the visit to the settlement by the native minister, Mr Dillon Bell, accompanied by a Mr Gorst in mid-July 1863 and is recorded in James Cowan’s *The New Zealand Wars* (Cowan 1922). Cowan states that the men ‘carried out a rather perilous mission in the forested ranges above Papakura, at a small settlement called Te Aparangi, on the Kirikiri Stream, about two miles east of Papakura’ (Cowan 1922: 252). Cowan also records that ‘Just above Te Aparangi on the foothills of the ranges is a level-topped hill known as Pukekiwi-riki, formerly a strongly trenched fort belonging to the Ngati-Tamaoho Tribe’ (Cowan 1922: 252). Elsdon Craig (Craig 1982:2, 4) also notes that in the wider Papakura area the only Māori settlements in early European times were at Takanini and Kirikiri, the latter encompassing Pukekiwiriki.

It seems, therefore, that the area known as Kirikiri at the time of the outbreak of the Waikato War is situated to the south of the Cabra development property, with the settlement of Te Aparangi and the Kirikiri Stream in the vicinity of Pukekiwiriki pa more than 2km to the south and southeast of Ring’s Redoubt. This is also confirmed by the plan of the confiscated Kiri Kiri Block (SO 282) dated 1865 and titled ‘Plan of Forty Acre Lots in The Kiri Kiri Block’ (Figure 3.6, below) which clearly shows that Ring’s Redoubt was located to the north of the area regarded as Kirikiri.

Further documentary evidence supporting this hypothesis is a map issued with the *Daily Southern Cross* newspaper of 11 August 1863 (Figure 2.9). The map, titled ‘Map of the Seat of War’, clearly shows ‘native cultivations’ to the southeast of the Cabra property and even indicates the location of the Kirikiri kāinga (misspelt Kerikeri) within the hills to the southeast of Papakura and to the east of Pukekiwiriki. The line of the old Wairoa Road forming the northern boundary of the Cabra property is part of the ‘Hewlings Line’¹² marked on the map and is the area to the north of the arrow that marks the location of Ring’s Redoubt (Figure 2.9).

Another map dated 1864, and titled ‘The Seat of War, Waikato District’ illustrates the location of Ring’s Redoubt just to the north of a tributary flowing northeast-southwest into Hay’s Creek (Figure 2.10). It is likely that the tributary of Hay’s Creek is the Kirikiri Stream as it also flows past the likely location of Te Aparangi and Pukekiwiriki, both

¹¹ The *New Zealand Herald* Issue 452, 25 April 1865, p.5, refers to Mohi as Moses in detailing a claim for compensation by members of Te Ākitai for having been dispossessed of lands in the Pukekohe area. The article also includes testimony by Lydia, the widow of Ihaka Takaanini, recalling the visit by Mr Dillon Bell to ‘Kerikeri’ to administer the oath of allegiance to the Crown and that Isaac was not with Mohi (Moses) and the armed party that ‘went over to the rebels’ (*New Zealand Herald* Issue 452, 25 April 1865, p. 5). It would seem probable that this is the Moses for whom Moses Encampment (the base in the bush in the Kirikiri area) is named.

¹² Hewling’s Line marked the southern boundary of the 1836 Fairburn Claim.

2. Historical Background

referred to by Cowan (above) as being on the Kirikiri Stream. Evidence that Kirikiri would have been situated in the hills to the southeast of Papakura is further supported by the writings of Vicesimus Lush¹³ (the Anglican vicar of Howick). In his journal entry for 8 August 1863 he states: ‘when I was ready to start on my journey to the Wairoa, Mr Wheeler came to his outer gate with me to point out on the ranges, Kerikeri [Kirikiri] where the first engagement with the Māoris took place’ (Lush 1863 quoted in Drummond 1971: 244). Lush also recounts how Ben Smith (the proprietor of the Travellers’ Rest Inn on the Wairoa Road) informed him that the Kirikiri kāinga had been abandoned and also of the reason for the attack by Māori upon Captain Calvert’s house:

‘...from what Ben Smith told me it seems that the very day before the natives attacked the Captain’s house [Captain Calvert], his son Sylvester had yoked 4 bullocks into the dray and driven it up to the abandoned native kainga, KeriKeri, in order to pillage whatever the natives had left in their hurried departure..... An old Maori woman was the sole tenant of the village...to get rid of her [Sylvester] showed her his revolver...whereupon she fled into the forest...’ (Lush 1863 quoted in Drummond 1971: 245).

This contemporary account confirms the map evidence that the Kirikiri kāinga was situated in the hills to the southeast of the project area.

Consequently, it is highly likely that the Te Aparangi settlement is located on the slopes above the tributary entering Hay’s Creek to the south of Pukekiwiriki pa, and that the tributary is in fact the Kirikiri Stream (Figure 2.1).

¹³ Vicesimus Lush was an Anglican priest and vicar of Howick during the Waikato War. He wrote journals of his life as a priest and settler in the Auckland area, including observations on the Waikato War, to send to family in England.

2. Historical Background

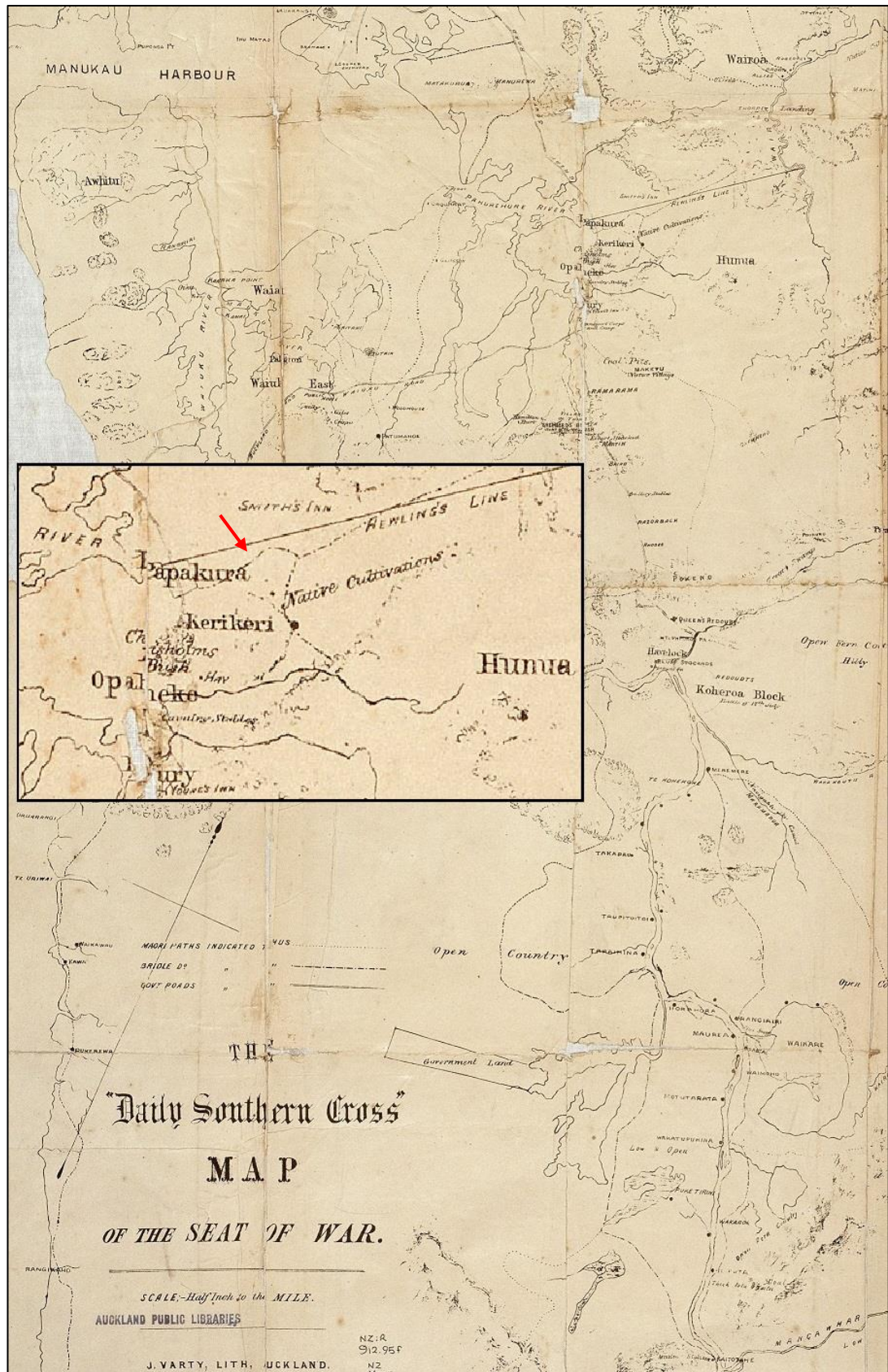


Figure 2.9 Detail from the *Daily Southern Cross* 'Map of the Seat of War', issued with the newspaper of 11 August 1863. NB. The map clearly illustrates that the Kirikiri (Kerikeri) kāinga is approximately 2km to the southeast of Ring's Redoubt (red arrow). The redoubt is not shown but its location in relation to the Hewling's Line and road is known from comparison with other maps. Source: Auckland Libraries Heritage Collections, NZ Map 490

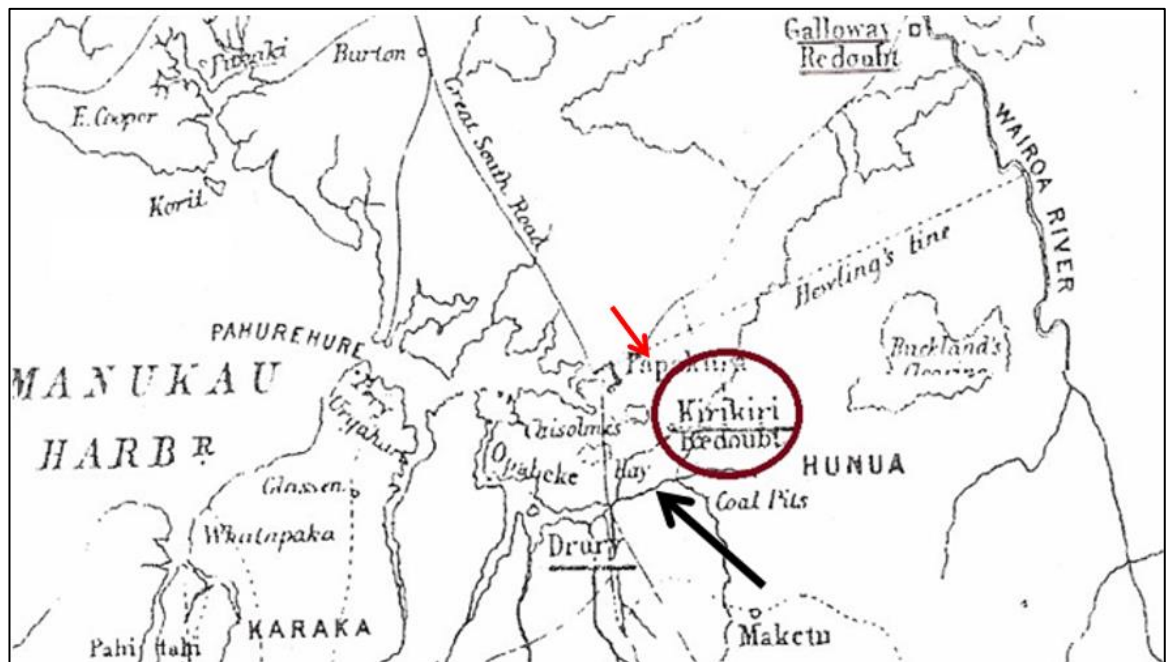


Figure 2.10 Detail from 'The Seat of War, Waikato District', 1864. New Zealand and Pacific Library Collection 'Auckland South 1864. Hist 6A' [Portion]. Kirikiri Redoubt is circled and situated just to the north of a tributary of Hay's Creek (black arrow) and well to the south of the project area (red arrow)

3 ARCHAEOLOGICAL BACKGROUND

3.1 Physical Environment

3.1.1 Location, Topography and Land Use

The project area is located approximately 2.5km to the east-northeast of central Papakura. The property is bounded by the Papakura-Clevedon Road to the south and east and by the recent Cabra subdivision and beyond that the Old Wairoa Road to the north and west. High density suburban development expanding eastwards from Papakura now extends right up to the historic reserve area which contains the redoubt site.

Prior to subdivision earthworks the topography of the project area varied from low-lying land with gentle to flat gradients in the west, while in the east there were two broad ridgelines trending east-west from which gentle to moderate slopes descended to lower lying ground. The project area consisted of several landholdings that were predominantly beneath pasture which was divided into paddocks defined by wire fences and utilised for various agricultural and rural lifestyle purposes. There were three existing residential dwellings in the project area prior to the commencement of earthworks. A residential property at 931 Papakura-Clevedon Road that was not part of the subdivision, is bordered on three sides by the historic reserve in which most of the Ring's Redoubt structure is located.

3.1.2 Geomorphology

The major geomorphological features of the site consisted of the two east-west trending gullies (Figure 3.1). The alignment of the gullies most likely formed along pre-existing structural alignments such as relic faults or within joint sets formed within the original rock mass during periods of tectonic uplift (Coffey Geotechnics 2013). The Drury Fault, oriented on an approximately north-northwest/south-southeast alignment, is located in the eastern reaches of the project area (Figure 3.1).

Active soil creep was present on the steeper flanks of the gullies and there was shallow slope instability movement associated on the moderately steep slopes that descended from the ridgelines (Coffey Geotechnics 2013).

3.1.3 Geology and Soils

The project area is crossed by the approximately north-northwest trending Drury Fault which had down-thrown the western part of the site relative to the higher central and eastern parts of the property. The underlying geology of the low-lying western area is dominated by Pleistocene alluvial deposits, whereas the remaining area is underlain by Waitemata Group Sedimentary lithology of Miocene age. In the project area this consists of alternating graded sandstones and laminated mudstone.

In situ weathering of the bedrock material had created an overburden of mixtures of silts, sands and plastic clays, predominantly orange, brown and grey in colour and frequently containing hard, dark brown iron oxide (limonitic) concentrations (Coffey Geotechnics 2013). The topsoil was typically yellowish light brown and between 0.20 and 0.30m in depth.

3. Archaeological Background

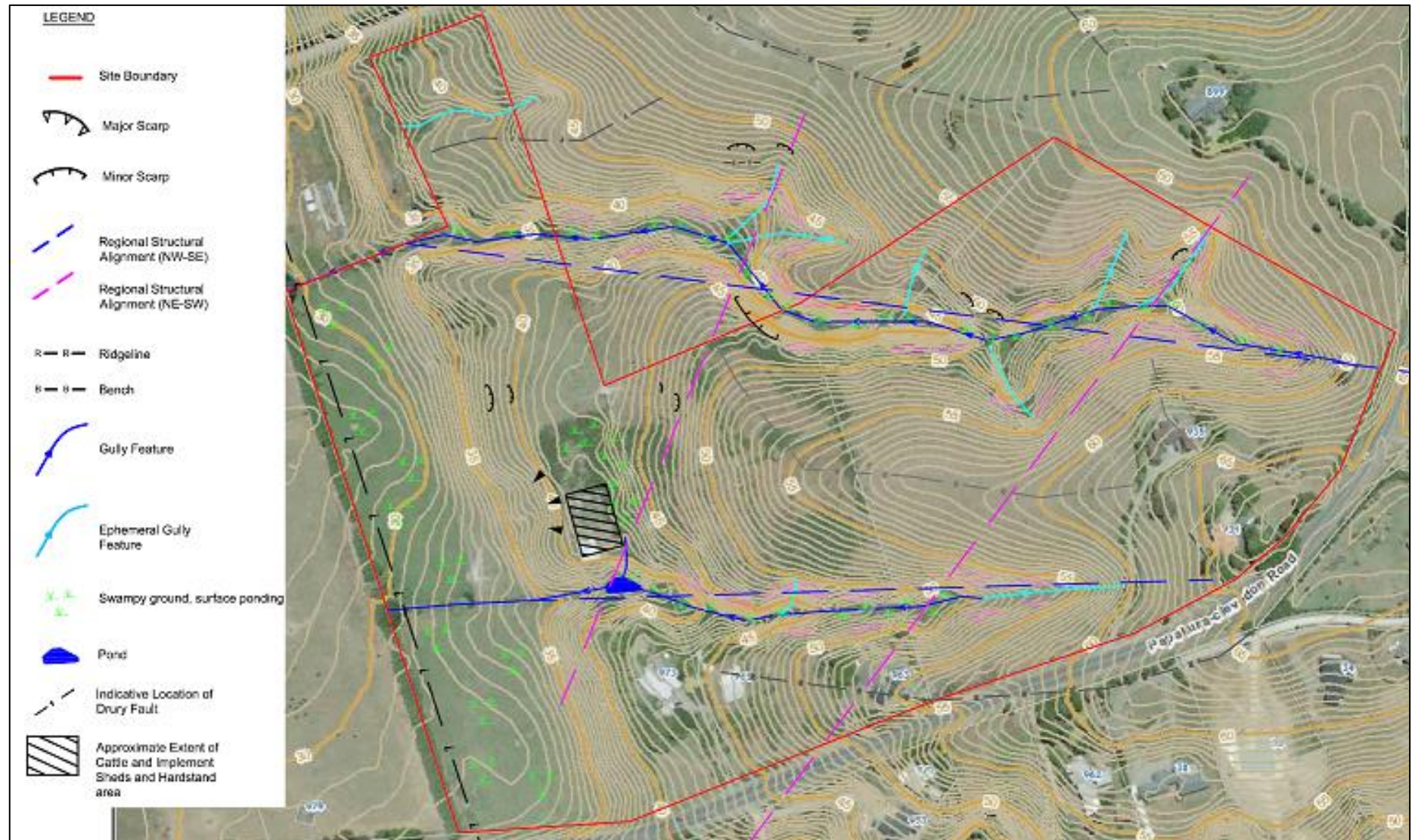


Figure 3.1 Plan of geomorphological features present on project property prior to development works. Source: Coffey Geotechnics

3.2 Recorded Archaeological Sites

Prior to the initial archaeological assessment of the project area, the only recorded archaeological site was that of Ring's/Kirikiri Redoubt (site R11/956). Within a 2km radius of the local area there were only two other recorded archaeological sites present: a shell midden (R12/166) and a pa site (R12/4). Subsequently, a later 19th century villa located within the project area was recorded as site R12/1105.

The Redoubt is located within what is now to be a historic reserve immediately adjacent to 931 Papakura-Clevedon Road, and approximately 3km from the main rail trunk line at Papakura. The Redoubt was situated on a high point providing a wide defensive outlook over the surrounding countryside. It is now trig point 539 No. 2, and is 67m above sea level. The redoubt is scheduled as a Category B historic heritage place in the Auckland Unitary Plan (ID 00700) and is also identified as a 'Place of Māori interest or significance'.

The Māori name for the Redoubt arose from its proximity to the area of Māori settlement and cultivations to the south and east (which borders the Papakura-Clevedon Road in its northern extent) and through which the Kirikiri Stream flows.

In June 1929, Roland Fry, a licensed surveyor, carried out a survey for subdivision of part allotment 29 Hunua Parish (DP 22508). This included the 15 acres (15-1-21.7) owned by Charles John Hibbard, whose house was built in the middle of Ring's Redoubt (Figure 2.3 above; Cowan 1922:258). Today, the only visible remains of the redoubt are the traces of the significantly infilled eastern ditch and the north-eastern bastion.

3.3 Heritage Landscape Context¹⁴

The site of Ring's Redoubt was chosen due to its elevated position on the eastern extent of high ground, to the northeast of Papakura. The site would have commanded views overlooking the Great South Road, back to the Manukau Harbour and southeast toward the Hunua Ranges as well as northeast toward Wairoa (now Clevedon).

The defensive and strategic qualities of the siting of Ring's Redoubt were twofold. Firstly, it formed a link in a chain of redoubts and stockades which stretched from Papakura to Wairoa with at least two sites being intervisible. This defensive line included the Lower Wairoa Redoubt (S11/534) at the mouth of the Wairoa River to the north-northeast; Galloway Redoubt (S11/533) and the Settlers' Stockade (S11/949) at Wairoa, also to the north-northeast; as well as the stockade at the Travellers Rest Inn (Auckland Council Cultural Heritage Inventory no. 15891) located northeast along the Wairoa Road from Ring's Redoubt. A sketch map produced by local history enthusiasts, kindly provided by Dr Michelle Smith of the Papakura Museum, illustrates the Wairoa Road and the approximate position of redoubts, stockades and settlers' homes extant at the end of 1863 (Figure 3.2). As well as showing the location of the Travellers' Rest Inn, an additional redoubt is marked on the map along the Wairoa Road between Ring's and Galloway redoubts. Further research has revealed that this redoubt was known as the Upper Wairoa Redoubt (Shakles and Clough 2014a: 9).

¹⁴ This section summarises the heritage landscape assessment of Ring's Redoubt undertaken in response to a Section 92 request by Auckland Council (Shakles and Clough 2014a).

3. Archaeological Background

The purpose of this chain of redoubts was to prevent Māori incursions north towards Auckland, protecting European settlers and their landholdings north of Wairoa. Secondly, the redoubt also helped prevent Māori forces from raiding out of the Hunua Ranges and outflanking redoubts situated along the Great South Road, thus securing the supply line to the front as it extended deeper into the Waikato. The position of Ring's Redoubt on high ground to the northeast of Papakura meant that it was clearly visible from the town and the Great South Road, and would have served as a constant reminder to European settlers that they and their land were being defended by the Crown.

The heritage landscape values of Ring's Redoubt are those associated with the related military sites of the surrounding area, as well as with the locations of Māori settlement and skirmishes.

Several sites that would have been visible from Ring's Redoubt contributed, with Ring's Redoubt itself, to a system of sightlines essential to defence and communications during the New Zealand Wars. The elevated location of the Redoubt afforded sightlines to other redoubts, stockades and outposts on both the Great South Road and the Papakura-Wairoa chain of redoubts (Figure 3.3). The garrison at Ring's Redoubt would have been able to observe and signal the redoubts at Papakura (R12/120), Drury (R12/123) and the Commissariat (R12/756) on the Great South Road as well as being able to command views south over the road between Papakura and Drury and much of the road north. The sightline did not extend to St John's Redoubt (R11/534) at Manukau; high ground situated to the southeast of Manukau precluded this (Figure 3.4). However, it is likely that there would have been outposts situated along the road that would have enabled messages to be relayed, though it is not possible to ascertain their location today.

None of the contemporary military sites identified as formerly being visible from Ring's Redoubt still exist today (at least not above ground), and the views from Ring's Redoubt to these locations are now obscured by trees and buildings on neighbouring and more distant properties. The only historical landscape elements contemporary with and related to the redoubt and still visible from it are the former Wairoa Road, though this has been formed and widened to become the present Papakura-Clevedon Road; and the view of the Papakura hills to the south and including Pukekiwiriki Pa and its environs, including Te Aparangi settlement, Moses Encampment and Ring's original entrenchment/redoubt.

For a detailed examination of historical and contemporary sightlines from the redoubt, see Shakles and Clough 2014b.

3. Archaeological Background

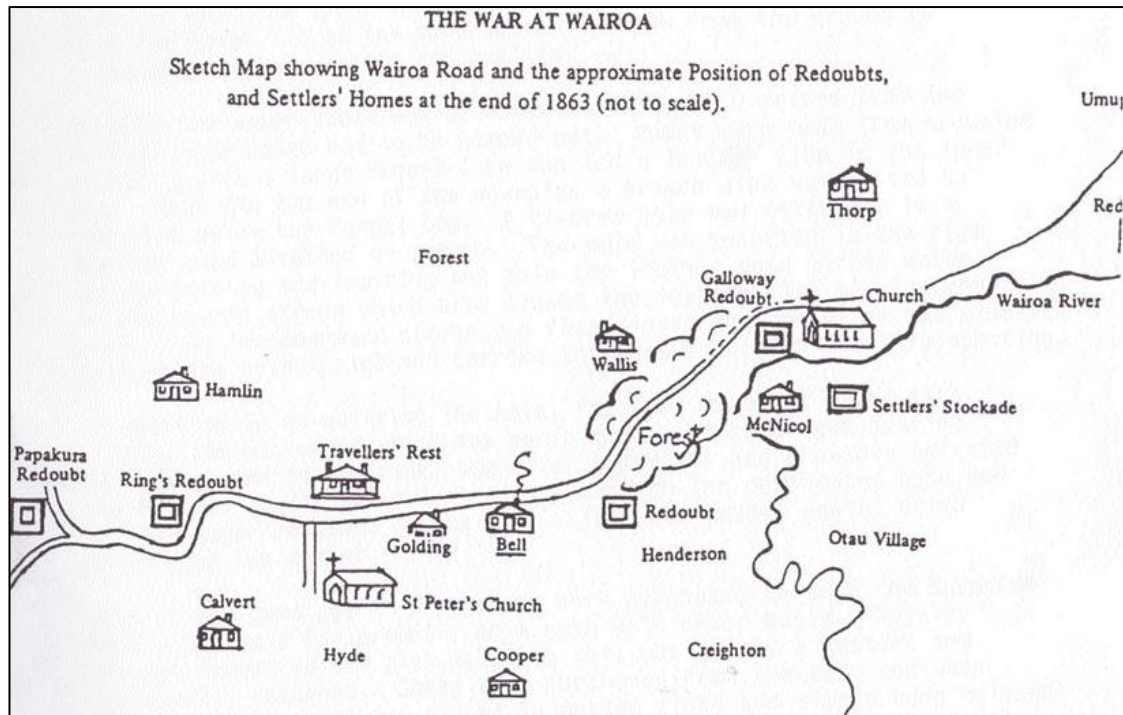


Figure 3.2 Sketch map showing the Wairoa Road and the approximate location of redoubts, stockades and settlers' homes as at the end of 1863. Source: *St James' Anglican Church Ardmere 1861-1986: Celebration of the 125th Anniversary of the First Church in the District*

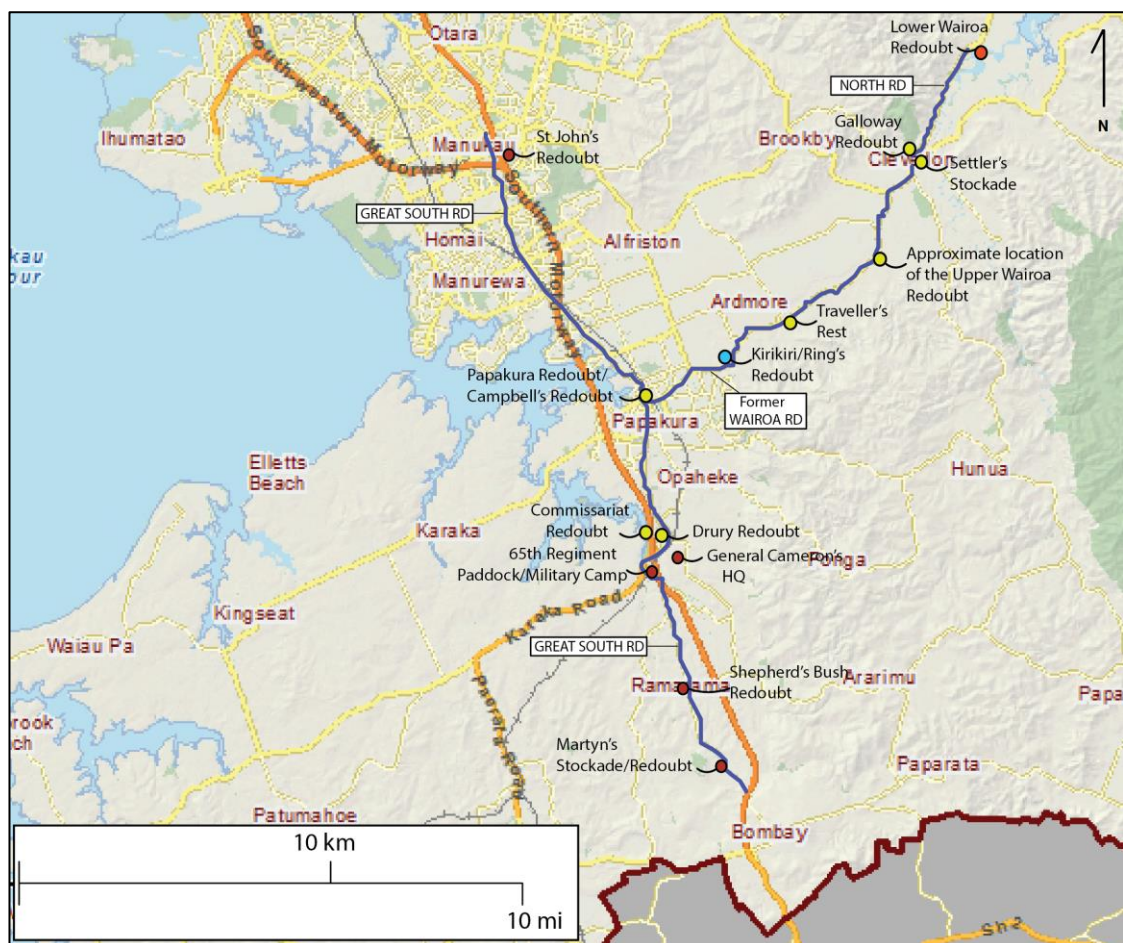


Figure 3.3 Military posts along the Great South and Wairoa Roads, showing those visible from Ring's Redoubt. Blue circle = Ring's Redoubt; yellow circles = sites within sightline from Ring's Redoubt; red circles = not visible from Ring's Redoubt

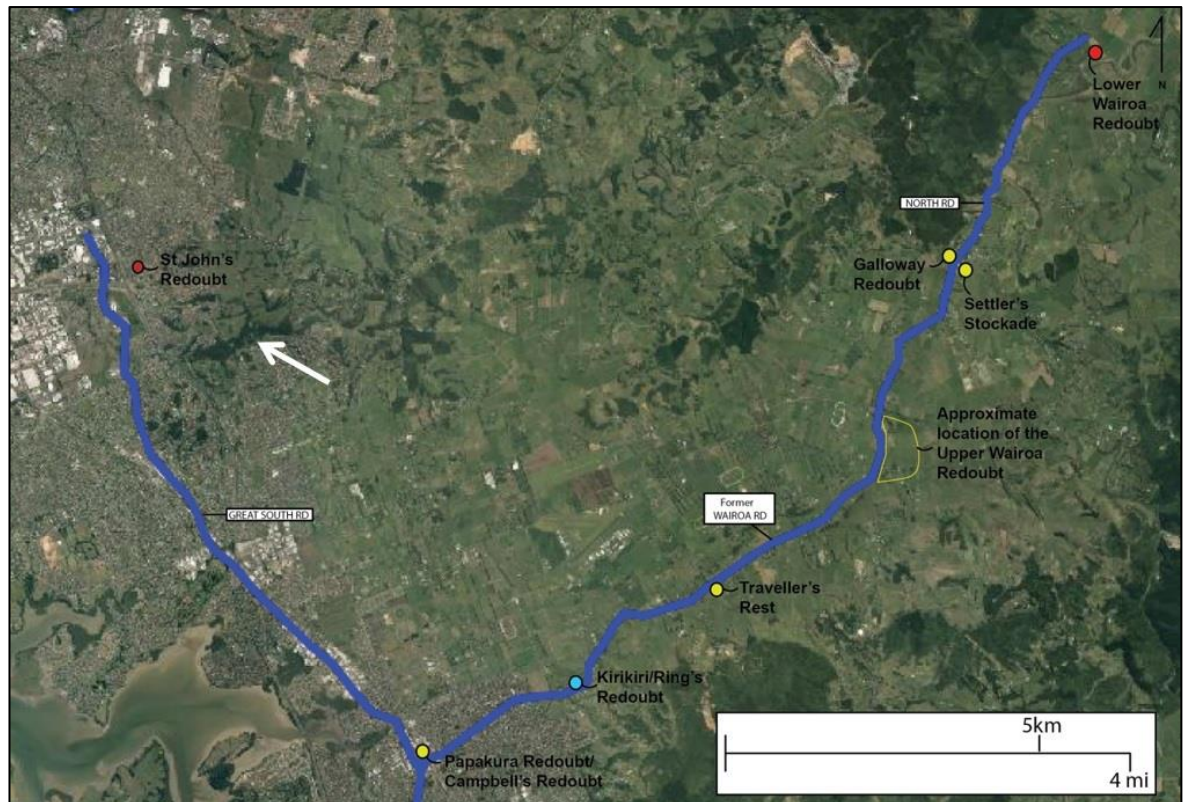


Figure 3.4 Aerial image illustrating the location of military sites and the Great South and Wairoa Roads in the South Auckland area. Blue circle = Ring's Redoubt; yellow circles = redoubts and stockade within sightline of Ring's Redoubt; red circle = no sightline. NB. The high ground to the southeast of Manukau (arrowed) prevents a sightline between Ring's Redoubt and St John's Redoubt

3.4 Information on Ring's Redoubt from Early Maps and Plans

Prior to the investigations, early maps and plans were searched for information on past land use and any indications of archaeological potential. An early map (NZ Map No. 4296) titled 'Map of the Auckland District', and dated to c.1860, illustrates that the project area is located just to the south of 'Hewling's Line', with the Old Wairoa Road appearing to form the northern boundary (Figure 3.5). A track way is also shown crossing the project area, and the land appears to be in the ownership of 'Clarke', although the definition of the map makes the name difficult to discern (Figure 3.5). However, the map does not indicate any structures or denote use of the property.

A plan (SO 282) titled 'Plan of Forty Acre Lots in the Kirikiri Block', and dated 23 August 1865, illustrates Ring's Redoubt in isolation, with the land immediately around it not yet subdivided (Figure 3.6). The Kirikiri block comprising the confiscated land of the Māori chief Ihaka Takaanini, upon which the village of Te Aparangi was situated, and located to the south of the redoubt, is shown as already subdivided and sold (Figure 3.6).

A plan (SO 907) titled 'Plan of Roads from the Great South Road at Papakura to the Wairoa River' that most likely dates to the first half of the 1870s, shows the Papakura-Clevedon Road on its present alignment passing close to the site of the redoubt (Figure 3.7). This indicates that the road was formed on its present alignment at some point after 1865 and prior to the mid-1870s. The plan also illustrates an 'Old Wairoa Lane' extending away from the Papakura-Clevedon Road on a south-easterly alignment (Figure 3.7). This is interesting,

as this road would appear to be travelling in the wrong direction for Wairoa unless it marks the location of an earlier road used as the principal route from the Papakura township to the southwest to Wairoa. It is likely that the ‘Old Wairoa Road’ forming the northern boundary of the project area is so called as it was intended to be the Wairoa Road before first the ‘Old Wairoa Lane’ and then the Papakura-Clevedon Road were utilised instead. It seems likely that in its eastern extent the ‘Old Wairoa Road’ has largely existed as a paper road.

Plan SO 5716 dated March 1890 and titled ‘Plan of Road Through Section 60 Papakura Parish’ illustrates the redoubt, which is referred to as ‘Old Redoubt’, with ‘Kerikeri’ in brackets (Figure 3.8).

A map dated to 1907 and titled ‘Index Map of Manukau County’ (NZ Map 4789) illustrates that the project area is within what was then the north-western portion of Lot 29 as well as part of Lot 28 (Figure 3.9). The map does not indicate any structures or land use within these areas.

Lastly, in June 1929, the plan of the subdivision for part allotment 29, Hunua Parish (DP 22508; Figure 3.10), shows that the land upon which Ring’s Redoubt is situated was owned by Charles Hibbard, whose home once stood in the middle of the redoubt (Figure 2.3). The redoubt is not marked on the plan, but the plan notes that the land to the northeast and west is under grass and undulating, just as much of the land in the development area was prior to subdivision development (Figure 3.10).

3.4.1 Reappraisal of Historic Plans

A reappraisal of historic plans subsequent to the initial 2012 assessment, in particular of SO 282 (Figure 3.6) and SO 907 (Figure 3.7) titled ‘Plan of Roads from the Great South Road at Papakura to the Wairoa River’, has brought to light two significant aspects. Firstly, in contrast to the 1865 plan of the confiscated Kiri Kiri Block (Figure 3.6; SO 282), which clearly shows Ring’s Redoubt set well back from any roads, the c.1870s plan (Figure 3.7) shows the Papakura-Clevedon Road being situated on a different alignment, the same alignment as that depicted (and in greater detail) on the 1890 plan (SO 5716; Figure 3.8). This has implications for the use of the Morrow watercolour in determining the accurate location of structures outside of the redoubt defences (Figure 2.4).

Previously it had been thought that the track in the foreground of the Morrow image had been the Papakura-Clevedon Road, but this is not the case, as the original line of the 19th century road on SO 282 passed well to the south and east (Figure 3.11). It is likely that this road is the same as the one depicted on plan SO 907 and labelled ‘Old Wairoa Lane’, and that the abandoned section of road merged with the present Papakura-Clevedon Road in the area of the present Heard Road junction (Figure 3.7; Figure 3.11 and Figure 3.12). Consequently, it is extremely problematic to determine the angle at which the redoubt was viewed by Morrow in 1863 when he produced his watercolour. It should also be noted that the watercolour does not show features in sharp detail and little can be gained from it without determining the general location from which he observed the redoubt.

Secondly, when the 1890 plan (SO 5716; Figure 3.13) is enlarged, it is clear that a north-western bastion is depicted in addition to the south-eastern bastion. This is significant as the plan predates Cowan’s 1921 plan by 31 years and Cowan himself titled his plan ‘Remains of Ring’s Redoubt, Kirikiri, 1921’; it is entirely plausible that a north-western bastion had been levelled within the intervening time. It is possible therefore that either Cowan erroneously depicted a south-western bastion in his 1921 plan or perhaps more

likely that Ring's Redoubt was constructed with either three or four corner bastions, as at the Alexandra Redoubt in Pirongia, Waikato. It is not problematic that Cowan did not depict a south-eastern or north-western bastion as his plan indicates that those areas had been levelled and infilled, presumably by pushing the parapets back into the ditch from which the material had been originally excavated and upcast.

However, further research undertaken by Ken Phillips for the Auckland Council Heritage Unit has produced an 1890 sketch in a field book (Field Book 797) of the redoubt (Figure 3.14) made by the surveyor of the 1890 dated plan SO 5716 (Figure 3.8, Figure 3.13). The surveyor's sketch depicts a square redoubt with bastions on the north-eastern, north-western and south-eastern corners (Figure 30). Additionally, the Survey Datum point 539 appears to be located practically on top of the western defensive bank (Phillips 2014: 14) (Figure 3.13 and Figure 3.14).

Phillips also noted, however, that the sketch in the field book is not entirely consistent with the depiction on the plan (Phillips 2014: 14; Figure 3.13 and Figure 3.14). Phillips also notes that the underlying faded outline of a redoubt (Figure 3.14) is depicted on a slightly different alignment and minus a south-eastern bastion (Phillips 2014: 14). He concludes that 'It is possible that this earlier outline was later corrected on site. The sketch on the survey plan is similar to the second sketch in the field book albeit on a slightly different orientation but likely representative at a smaller scale and based on the field book sketch' (Phillips 2014: 14).

It is also worth noting that the western edge of the Papakura-Clevedon Road depicted in the 1890 plan and surveyor's field book is virtually alongside the redoubt's south-eastern bastion (Figure 3.13 and Figure 3.14).

This evidence establishes that in 1890 there were three extant bastions, and it is likely that the redoubt was originally constructed with this configuration, with the south-western corner of the square being the only one without a bastion (Figure 3.14). As two diagonally opposed bastions would have provided enfilading fire along all sides of the redoubt, it is conceivable that one of the bastions was constructed as a platform for an artillery piece.

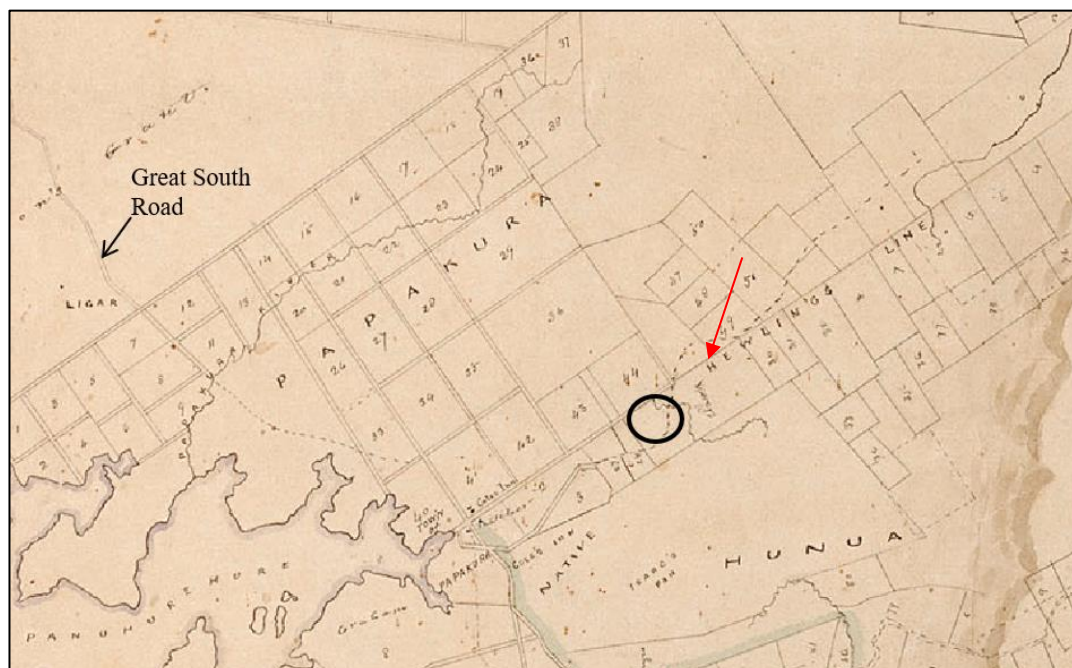


Figure 3.5 Detail from NZ Map No. 4296 'Map of the Auckland District' c.1860 (Auckland Libraries Heritage Collections). The project area (circled) is shown to be just south of Hewling's Line and adjacent to the Old Wairoa Road on its northern border (red arrow); no structures are depicted



Figure 3.6 SO 282 'Plan of Forty Acre Lots in The Kiri Kiri Block', 1865, illustrating Ring's Redoubt (inset). Source: Quickmap

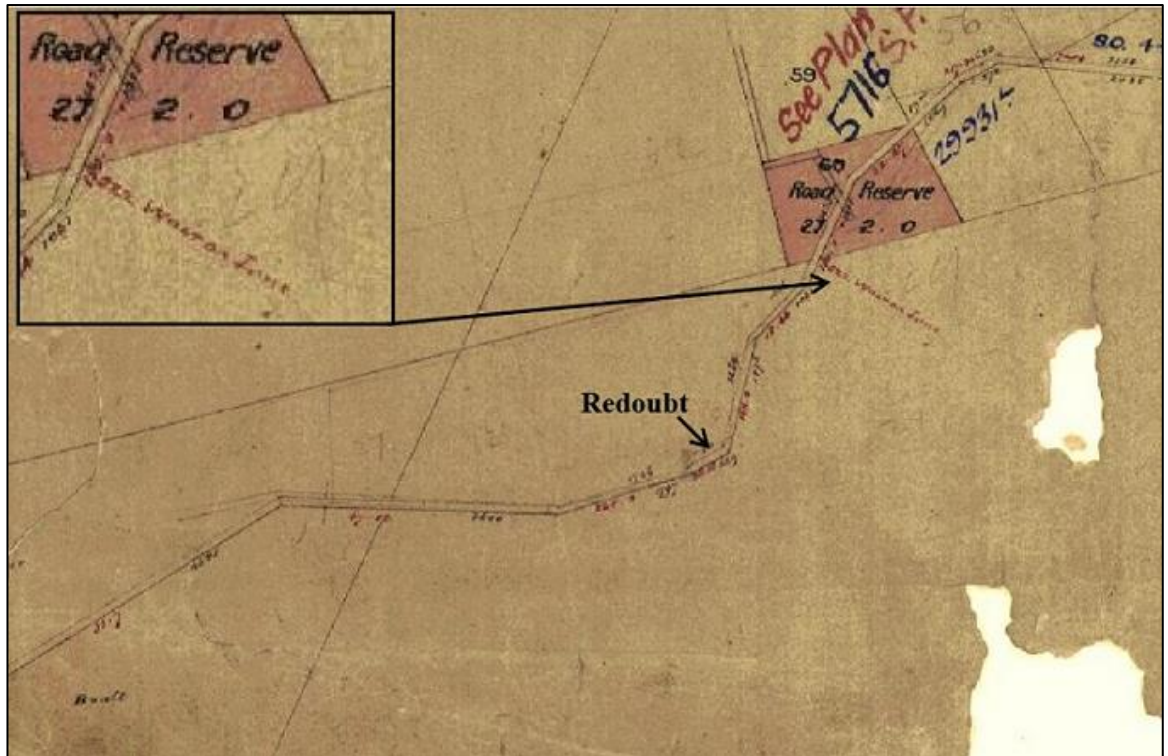


Figure 3.7 Detail of plan SO 907 showing roads from the Great South Road at Papakura to the Wairoa River, probably dating to the first half of the 1870s. The inset details an ‘Old Wairoa Lane’ aligned to the southeast. Source: Quickmap

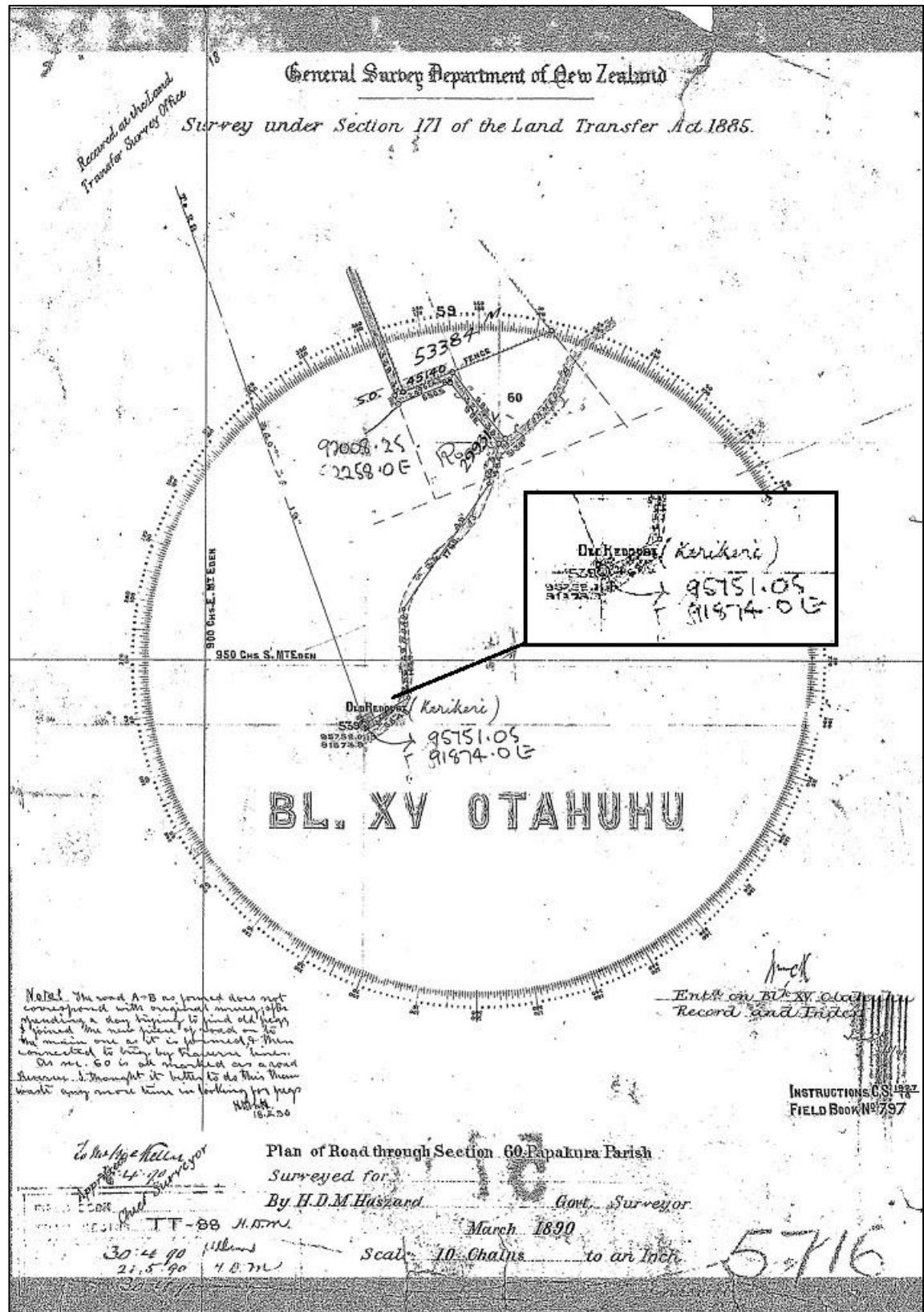


Figure 3.8 SO 5716 'Plan of Road Through Section 60 Papakura Parish', dated 1890, referring to Ring's Redoubt as 'Old Redoubt (Kerikeri)'. Source: Quickmap

3. Archaeological Background



Figure 3.9 Detail from NZ Map 4789 'Index Map of Manukau County' dated 1907 (Auckland Libraries Heritage Collections) illustrating that the project area (circled) is within the north-western portion of Lot 29 and part of Lot 28, but it does not indicate any structures or land use information

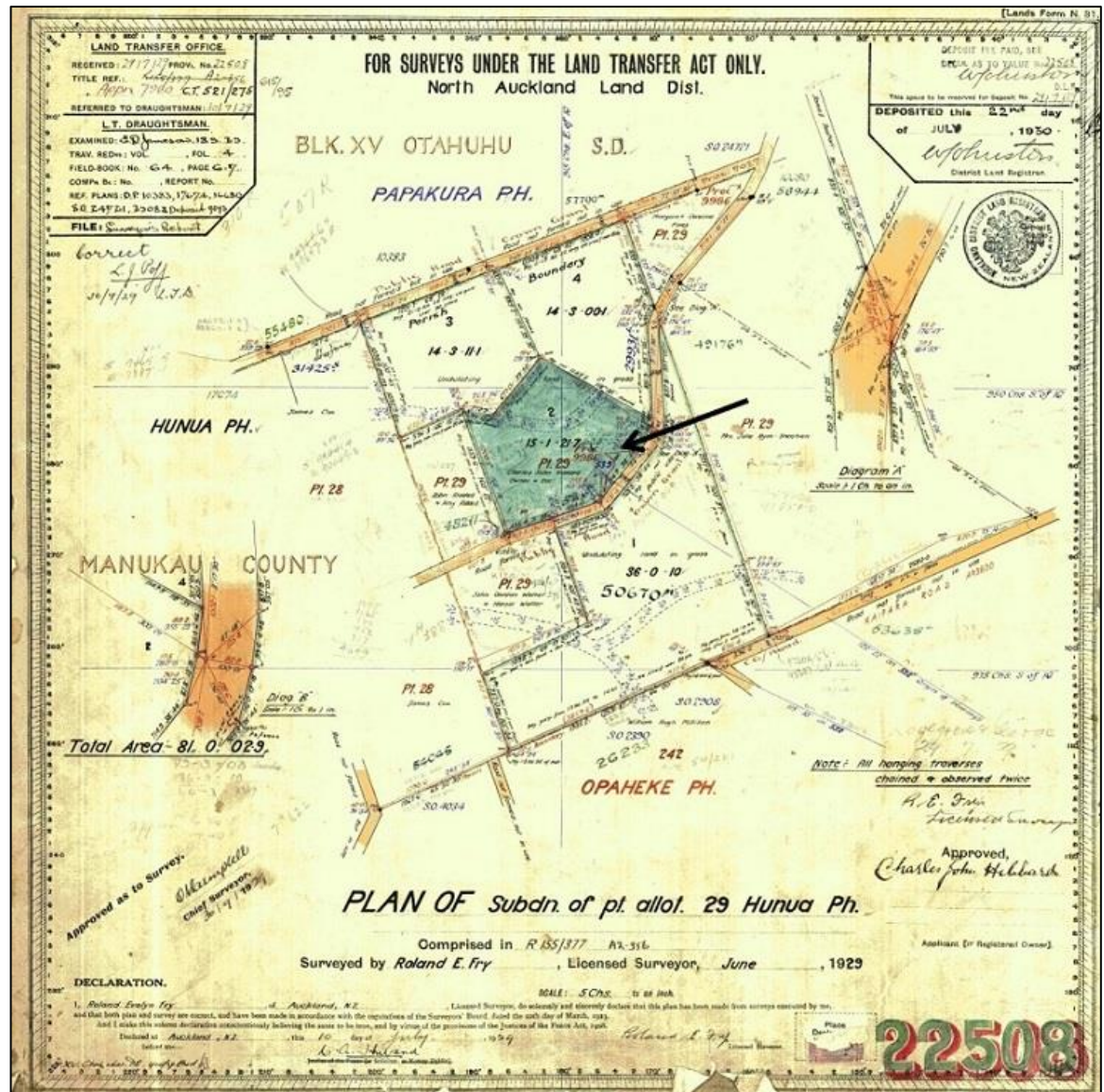


Figure 3.10 Plan DP 22508 of subdivision of part allotment 29 Hunua Parish, 1929, showing that the land upon which the redoubt stands was then owned by Charles Hibbard (arrowed), who built his home in the middle of the redoubt. Ring's Redoubt is not marked on the plan. Source: Quickmap



Figure 3.11 Detail from plans SO 282 dated 1865 (left) and SO 907 c.1870s (right) clearly illustrating that the redoubt was constructed well to the west of the original Papakura-Wairoa Road; and that the line of the present road adjacent to the southern remains of the redoubt was constructed at some point after 1865 and likely before the mid-1870s

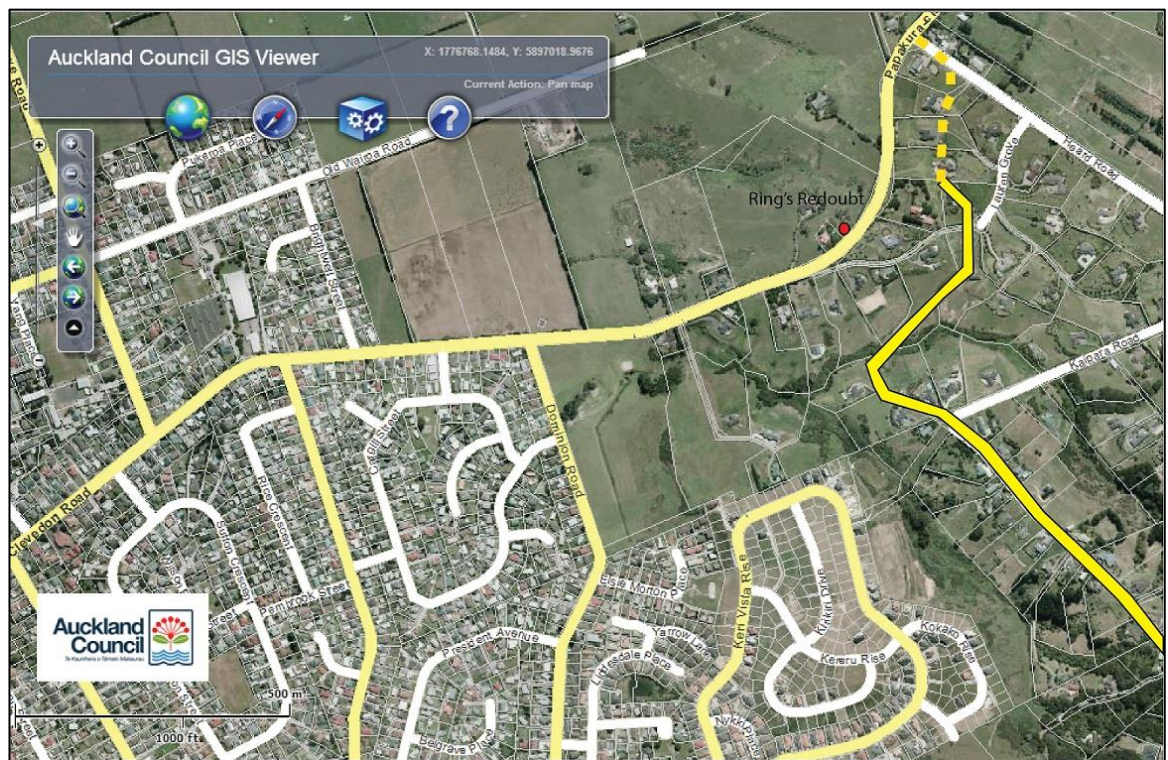


Figure 3.12 Overlay of the route of the old Papakura-Wairoa Road (yellow with black outline) from the 1865 plan (S0 282: Figure 3.11, above) on a modern aerial image. The road is seen following the ridge and the line of today's Kaipara Road to the southeast of the project area with the dashed section indicating the likely route to where it joined the remainder of the still extant route to Clevedon (Wairoa), on the junction of what was known as 'Old Wairoa Lane'



Figure 3.13 Detail from plan SO 5716 (dated 1890, see Figure 3.8) illustrating the north-western and south-eastern bastions (arrowed)

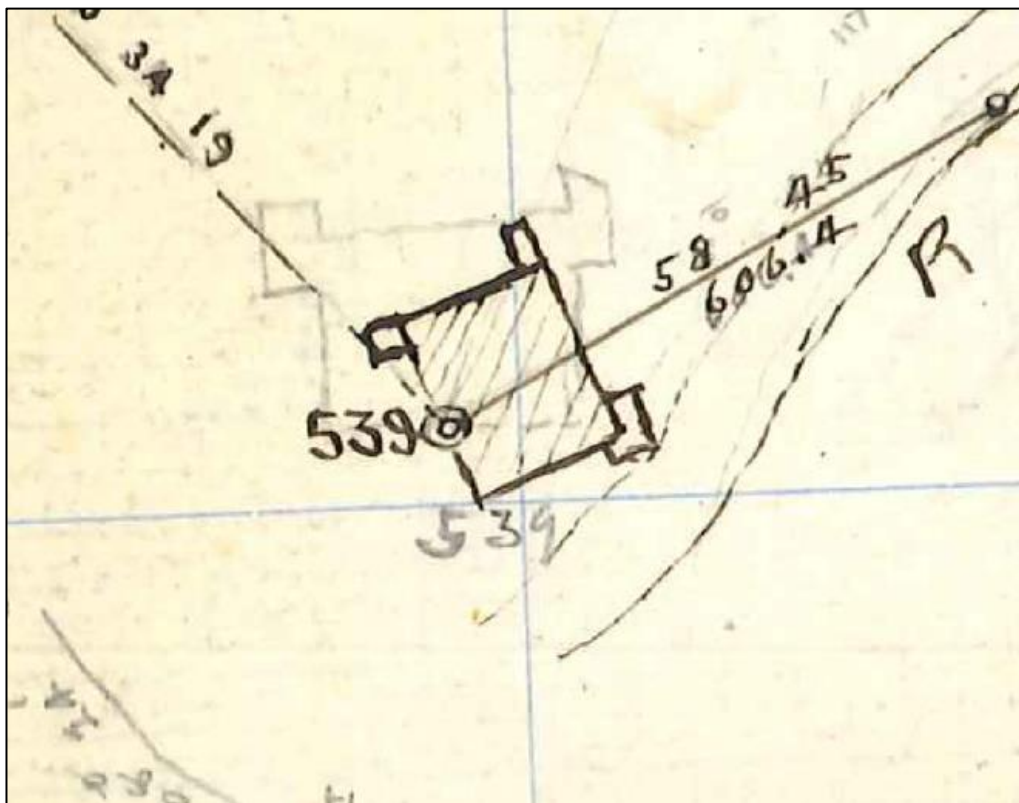


Figure 3.14 1890 Ink outline sketch of the redoubt in Surveyors Field notebook 797 for survey plan SO 5716 illustrating the presence of three bastions (reproduced from Phillips 2014: 15). NB. The western edge of the Papakura-Clevedon Road is depicted as being virtually against the south-eastern bastion

3.5 Information from Historical Aerial Photographs

Research undertaken by Ken Phillips for Auckland Council also provided three aerial images of the site taken in December 1939, May 1950 and c.1960 respectively (Phillips 2014: 22-24).

The earliest image is a vertical aerial photograph taken by NZ Aerial Mapping in December 1939, of poor resolution but still clearly showing the Hibbard house standing in the centre of the redoubt and accessed by a driveway cutting from the Papakura-Clevedon Road, along with associated outbuildings (Figure 3.15). A second driveway accesses a barn-like structure to the rear of the property (Figure 3.15). This access way appears to be in the same position as the current driveway to the present property at 931 Papakura-Clevedon Road.

The second image is an oblique aerial taken by Whites Aviation Ltd on 2 May 1950 and has very good resolution (Figure 3.16). The photo shows that the Hibbard house was still present within the redoubt but that the structure to the rear had been removed (Figure 3.16). A detailed shot of the image seems to show that the outline of the redoubt square was still visible at that time (Figure 3.17), with the western and eastern ditches still clearly visible, as they had been during James Cowan's visit to the site in 1922 (Figure 3.17). There also appear to be linear features to the north but it is not clear what these relate to – they appear to extend too far to the north to be part of the redoubt, which had a square plan (Figure 2.3, Figure 3.13).

Lastly, a second vertical aerial taken c.1960 by New Zealand Aerial Mapping shows the redoubt after the Hibbard house had been either demolished or removed from the site, and the house at 931 Papakura-Clevedon Road had been built (Figure 3.18). In this view only the eastern ditch is still apparent as an earthwork feature, with the western presumably infilled during the construction and associated landscaping works for the house at 931 (Figure 3.18).



Figure 3.15 Vertical aerial photograph taken by NZ Aerial Mapping in December 1939 illustrating the Hibbard house and associated outbuildings and access ways (reproduced from Phillips 2014: 23)



Figure 3.16 Oblique aerial photograph taken by Whites Aviation Ltd 2 May 1950 (reproduced from Phillips 2014: 24)



Figure 3.17 Detail from the May 1950 Whites Aviation oblique aerial showing the outline of the redoubt



Figure 3.18 NZ Aerial Mapping vertical aerial c.1960. NZAM Neg. 1928/1 (reproduced from Phillips 2014: 24)

4 GEOPHYSICAL SURVEY

4.1 Introduction

The geophysical survey of the Ring's Redoubt site consisted of both a detailed magnetometer survey (gradiometer) and a ground penetrating radar (GPR) survey undertaken by ScanTec (Watson 2014; see Appendix 2).

The geophysical survey was undertaken over three days on 4, 5 and 6 June 2014, by Matt Watson of ScanTec Geophysical Consultants, assisted by technicians Peter Charpentier and Victoria Landgraf. The survey results were interpreted by Richard Shakles and are summarised from the information presented in Shakles, Watson and Clough 2014.

4.1.1 Methodology

The geophysical survey consisted of both a detailed magnetometer survey (gradiometer) and a ground penetrating radar survey. Due to the shape and contour of the site, and the changing orientation of the remnant section of the eastern redoubt ditch, the survey grids were set up in a series of blocks.

The magnetometer survey (gradiometer) was undertaken by Matt Watson utilising a GEM systems GSM-19-WG Overhauser-effect magnetometer-gradiometer with quantum sensors. The data was acquired by taking readings at 0.20m intervals (5 readings per metre) along parallel traverses 0.50m apart forming five rectangular blocks of data.

The GSM-19-WG can typically detect anomalies at depths of up to 1.0m beneath the ground surface, though this would be increased if strongly magnetic objects have been buried on a site. Although the changes in the magnetic field resulting from differing features in the soil are usually weak, changes as small as 0.1 nanoTesla (nT) in an overall field strength of 48,000nT can be accurately detected using an appropriate instrument.

The ground penetrating radar survey was undertaken by Matt Watson with an SIR-3000, GPR control system manufactured by Geophysical Survey Systems Inc. (GSSI) with 400MHz frequency antenna. This mid-range frequency offers a good combination of depth of penetration and resolution. The GPR data were acquired with a sample interval of 1cm (100 readings per metre) along parallel traverses 1m apart forming six rectangular blocks of data. The GPR depth of penetration on the site was approximately 1.5-2m.

The survey was georeferenced by Matt Watson utilising a Fugro-Omnistar HP GPS system to tie the sides of the corners of the grids with an accuracy of +/- 10cm. Internal grid traverse measurements were undertaken with survey tapes.

The survey incorporated part of the central area of the known extent of the redoubt, as well as areas to the north and west of the property at 931 Papakura-Clevedon Road. The gradiometer survey consisted of 5 survey blocks, while the GPR survey comprised 6 survey blocks but covered the same area as the magnetic survey.

4.1.2 Gradiometer Survey Interpretation

The gradiometer survey (Figure 4.1) identified a variety of anomalies consistent with potential archaeological features including earthworks, structural components such as postholes and beam slots, as well as potential refuse pits located within both the redoubt and its encampment.

Within survey block 3 (Figure 4.1) a large amount of strongly magnetic responses (perhaps indicating the presence of ferrous material) were present (Figure 4.2). Alignments of strongly positive anomalies (F) form a clearly discernible rectangular outline approximately 12m x 7.5m in size approximately in the centre-east of the survey block (Figure 4.1 and Figure 4.2). The morphology of the anomalies is suggestive of postholes and beam slots relating to a timber structure. The strongly magnetic responses of the anomalies could be indicative of ferrous material such as iron nails being present within any surviving subsurface features.

Within survey block 1, two irregular linear positive anomalies with associated negative linear responses (A) in the southwest of the survey block and situated to the west of the redoubt, suggest that previous earthworking has been undertaken in the area (Figure 4.3).

Survey block 2 occupied relatively flat ground to the rear and northwest of the garden of the present residence at 931 Papakura-Clevedon Road. As with survey block 1, the area was relatively 'quiet' magnetically, although three similarly sized positive anomalies with adjacent negative responses (D) forming a curving arc may relate to postholes of a former boundary related to the military camp associated with the redoubt (Figure 4.1 and Figure 4.4).

In the east of block 2 a curving negative anomaly (E) approximately 10m in length with an associated positive magnetic response to the east, may relate to an excavated earthwork where weakly magnetic upcast subsoil has been thrown around a cut feature (Figure 4.1 and Figure 4.4). It is possible that this indicates part of the collapsed earthwork of the once extant north-western bastion. However, equally the anomaly could also potentially be a magnetic field pattern generated from a point source.

Survey block 4, adjacent and to the east of block 3, was also situated on flat ground to the north of the remains of the redoubt structure. A number of positive magnetic and dipolar responses within the survey block indicate disturbed ground and 'clutter' from ferrous metals within the soil layers. This indicates that the area may have been the focus of previous intensive occupation (Figure 4.1 and Figure 4.5). This intensive spread of strongly magnetic point/areas is indicative of infilled cut features such as refuse pits (although tree bowls and other naturally infilled depressions may also be represented). It is possible that these anomalies could relate to the military camp associated with the redoubt. Another possible source of the strongly magnetic responses could be campfires and/or cooking activities associated with the military camp. However, it should be considered that some combination of the three historically attested occupation phases may also be represented within the results.

Lastly, survey block 5 comprised the interior of the remains of Ring's Redoubt (Figure 4.1). A large, weak, negative anomaly (G) in an approximately circular shape of about 10m diameter can be seen in the centre of the block (Figure 4.1 and Figure 4.6). This may be a magnetic field pattern generated from a point source, rather than an actual feature. There is also an alignment along the northern edge of the survey block of strongly positive anomalies (H) that could represent a line of postholes perhaps relating to military structures within the redoubt or the later house that stood within the remains of the redoubt in the early 20th century (Figure 4.1 and Figure 4.6).

4. Geophysical Survey

An area of negative response to the north of (H) approximately 20m in length by up to 5m wide (I) may indicate upcast subsoil from the original excavation of the northern course of the redoubt's ditch (Figure 4.6). If this is the case, then it is possible that anomaly (H) could suggest a structure adjacent to the bank, and represent supports for the parapet. Immediately to the north of anomaly (H) is a group of three strongly magnetic anomalies (J) aligned roughly east-west for some 5m (Figure 4.1 and Figure 4.6). It is possible that these positive point sources relate to ferrous metal present within the topsoil or buried metal present within refuse pits. However, as an early 20th century house stood on the site, without subsurface testing through excavation it is not possible to ascribe provenance to the anomalies.



Figure 4.1 Image of the processed magnetic data from magnetometer survey of Ring's Redoubt with the curving anomaly that may indicate the site of the north-western bastion (arrowed). NB. The greyscale measures magnetic intensity with white indicating a strongly magnetic response while black is weak; the numbers demarcate the individual survey blocks

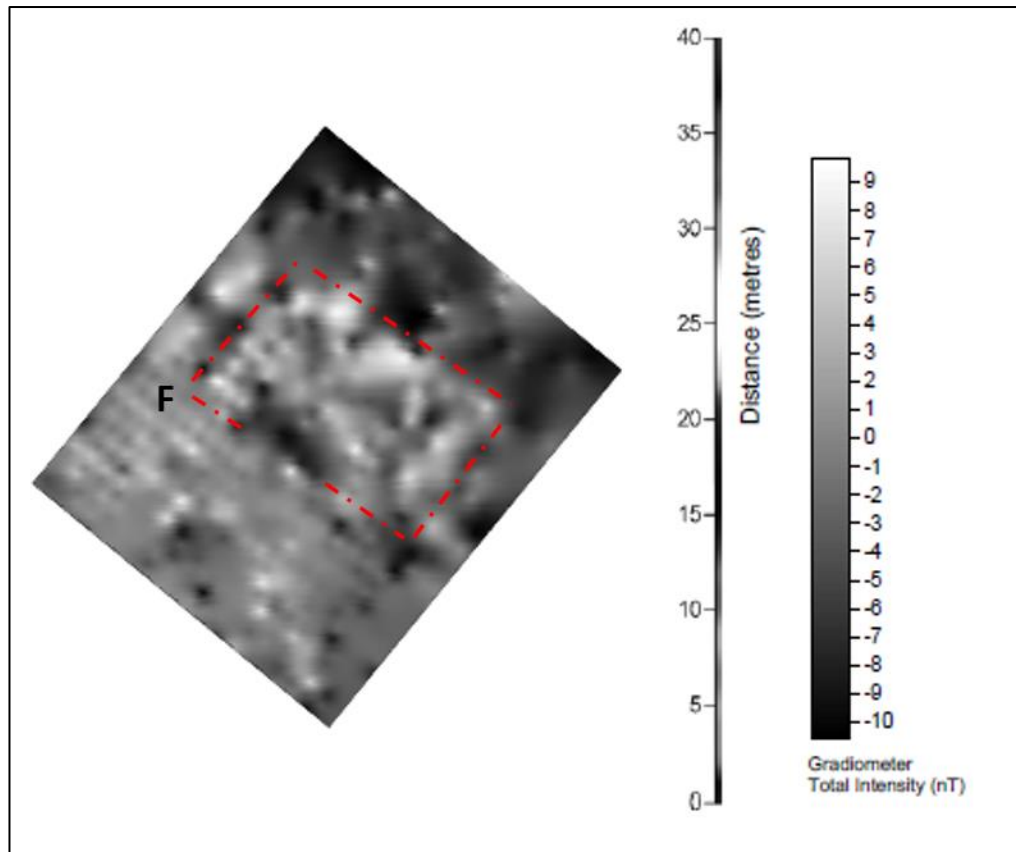


Figure 4.2 Plot of processed magnetic data from survey block 3 illustrating the positive group of magnetic anomalies (F) forming a rectilinear outline that most likely represents a timber structure (just within red outline)

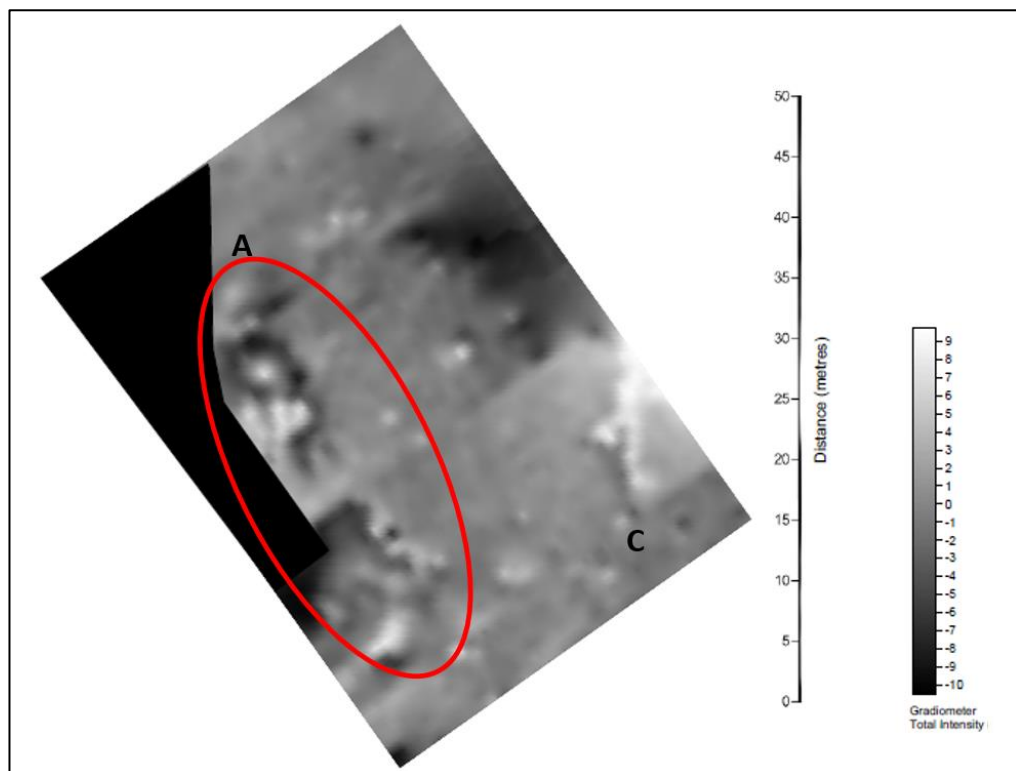


Figure 4.3 Plot of processed magnetic data from survey block 1 illustrating the positive irregular linear anomalies (A) – outlined. NB. The strong positive linear anomaly (C) in the south-eastern corner of the survey area is a modern pipe or pipe segment related to the modern house

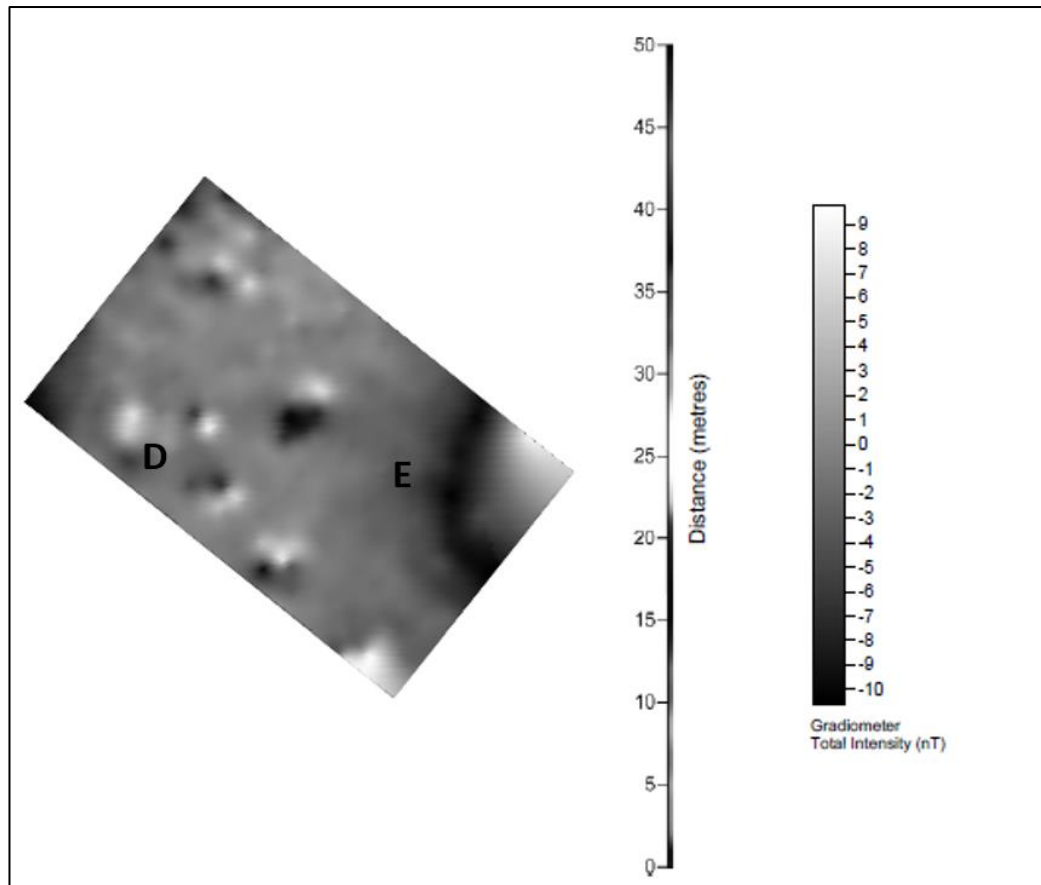


Figure 4.4 Plot of processed magnetic data from survey block 2 illustrating the curving line of similar anomalies (D) and the curving arc of a possible earthwork (E)

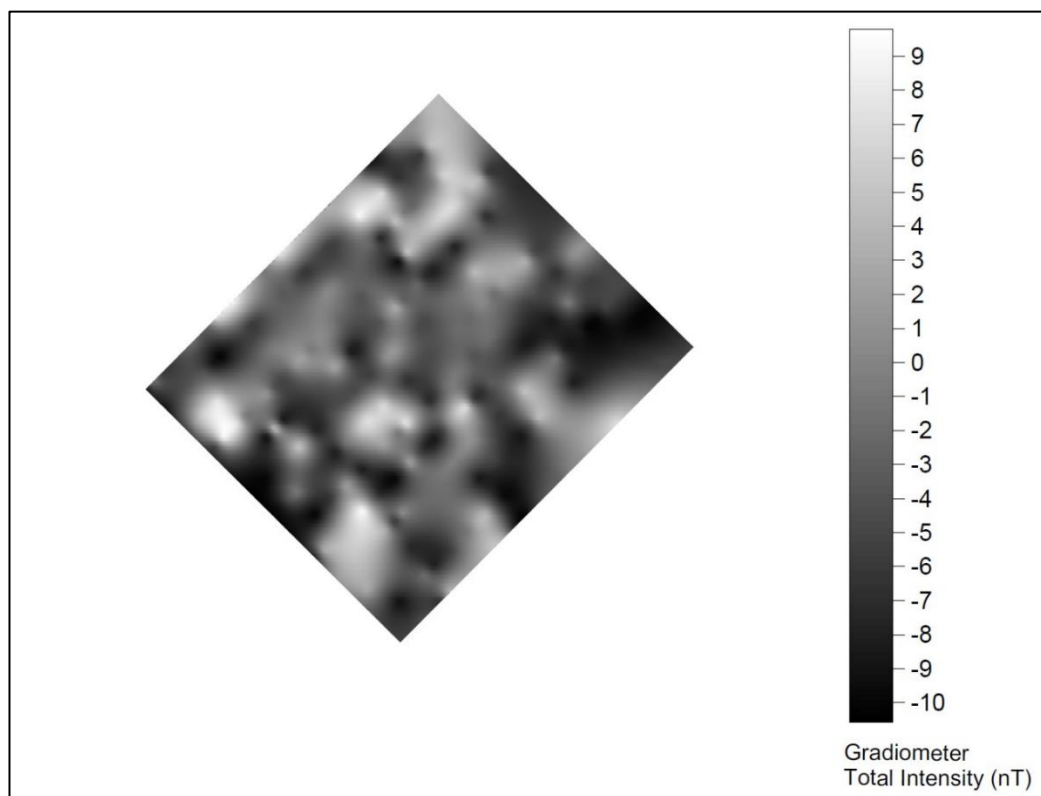


Figure 4.5 Plot of processed magnetic data from survey block 4 illustrating a dense spread of both strongly magnetic and negative anomalies

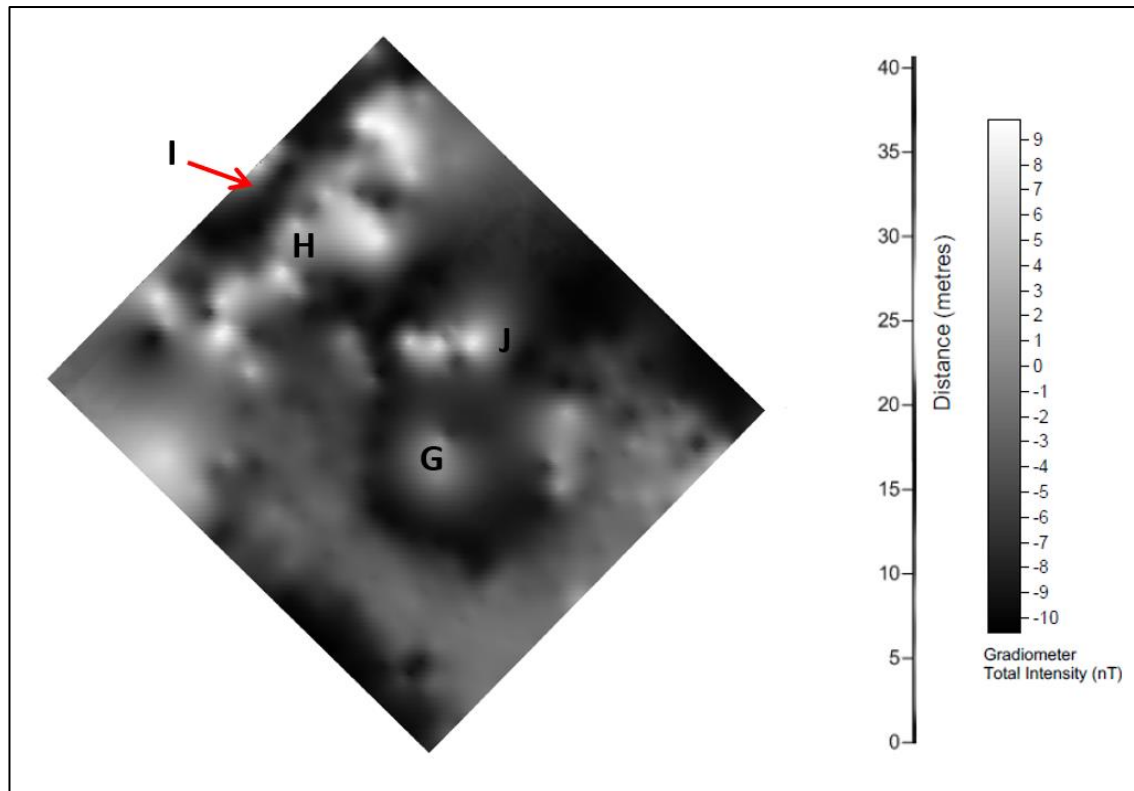


Figure 4.6 Plot of processed magnetic data from survey block 5, illustrating the large, weakly negative anomaly (G), the alignment of positive anomalies (H) and the three positive anomalies that may indicate ferrous metal/refuse pits (J). The arrow denotes the area of negative response (I)

4.1.3 Summary of Gradiometer Survey

The gradiometer survey was particularly successful in identifying a number of geophysical anomalies both in the areas to the north and west of the redoubt and the area within the redoubt's defences. The intense spread of anomalies seen in the gradiometer survey blocks 3 and 4 to the north of the redoubt extended up to the survey boundary and included a number of strongly magnetic anomalies that may relate to a structure (Figure 4.2) as well as cooking and camp activities. The survey indicated that generally the western and southern areas were less disturbed, though an interesting irregular linear feature possibly represented previous earthworking of the area and possible outer defences of the redoubt such as rifle trenches (Figure 4.3). The survey also identified a curved anomaly that may indicate the location of the north-western bastion (Figure 4.4). The area surveyed within the remains of the redoubt (block 5), illustrated remains of material possibly used in the creation of the redoubt parapet, associated structures and possible refuse pits.

However, the nature of the anomalies, and whether they are related to the redoubt period, or to subsequent occupation by Scottish settlers, or later farming activity, could not be securely established without subsurface investigation.

4.1.4 Ground Penetrating Radar Survey Interpretation

Generally, the GPR data does not show much coherent structure. Numerous point sources (possible postholes and/or buried objects) are scattered throughout the site, although for the most part there are no discernible patterns or alignments to these, with the exception of

a couple. The interpretation of the GPR survey results is presented at depth intervals known as time-slices.

Time-slice 0.35m

A rectangular low intensity anomaly (K) with dimensions of 4.5m x 8.5m is present in survey block 5 and possibly indicates building foundations and/or a subsequent backfilling with different or mixed material after the removal of foundations (Figure 4.7 and Figure 4.8). This is situated immediately to the northeast of anomaly (F) identified in the gradiometer survey. There are no other discernible anomalous features.

Time-slice 0.50m

Anomaly K is still visible as a rectangular feature but with an increase in intensity (Figure 4.9 and Figure 4.10). It is possible that the magnetic anomaly (F) relates to anomaly (K). Two other anomalies are visible at this depth. A medium intensity anomaly 8m in diameter is visible in survey block 6 within the redoubt structure (Figure 4.9). This corresponds with the group of three positive magnetic anomalies (J) observed in the magnetic data and is considered to represent the same anomaly. Anomaly (J) could relate to the redoubt, Scottish settlers, the early 20th century house, or later agricultural activity on the site. To the southwest in survey block 1, the pipeline identified in the magnetic data as anomaly (C) is clearly discernible (Figure 4.9).

Time-slice 1.00m

Anomaly J is still visible within the redoubt although weaker in intensity, while (K) is no longer present at this depth (Figure 4.11). The only other anomaly present is an area of low intensity (L) in survey block 4. As this is only visible at this depth it probably reflects physical changes in the subsoil in this area and is likely to be natural in origin.

Time-slice 1.50m

At 1.50m depth a linear anomaly (M), 24m in length and approximately 2m wide, low to medium in intensity and aligned northeast-southwest is visible in survey block 6. This anomaly is situated adjacent to and north of the remaining redoubt interior, and potentially indicates the line of the infilled northern redoubt ditch (Figure 4.12). At the eastern end of the linear anomaly, it curves to the southeast (Figure 4.12). No other anomalies are noted at this depth.

Time-slice 2.00m

At a depth of 2.00m anomaly (M) is still easily discerned but has slightly narrowed to approximately 1.80m though still on the same alignment, and also still turning to the southeast in the area of the extant bastion (Figure 4.13). A width of 1.80m is consistent with the known dimensions of excavated redoubts in the North Island. The anomaly is situated immediately to the north of the redoubt platform, and when the remaining alignment of the extant northwest-southeast ditch course is considered, it is likely that this represents the infilled northern section of redoubt ditch and the western side of the extant bastion. No other anomalies were noted at this depth.



Figure 4.7 GPR time-slice at 0.35m depth illustrating the presence of a low intensity anomaly (K) in survey block 5

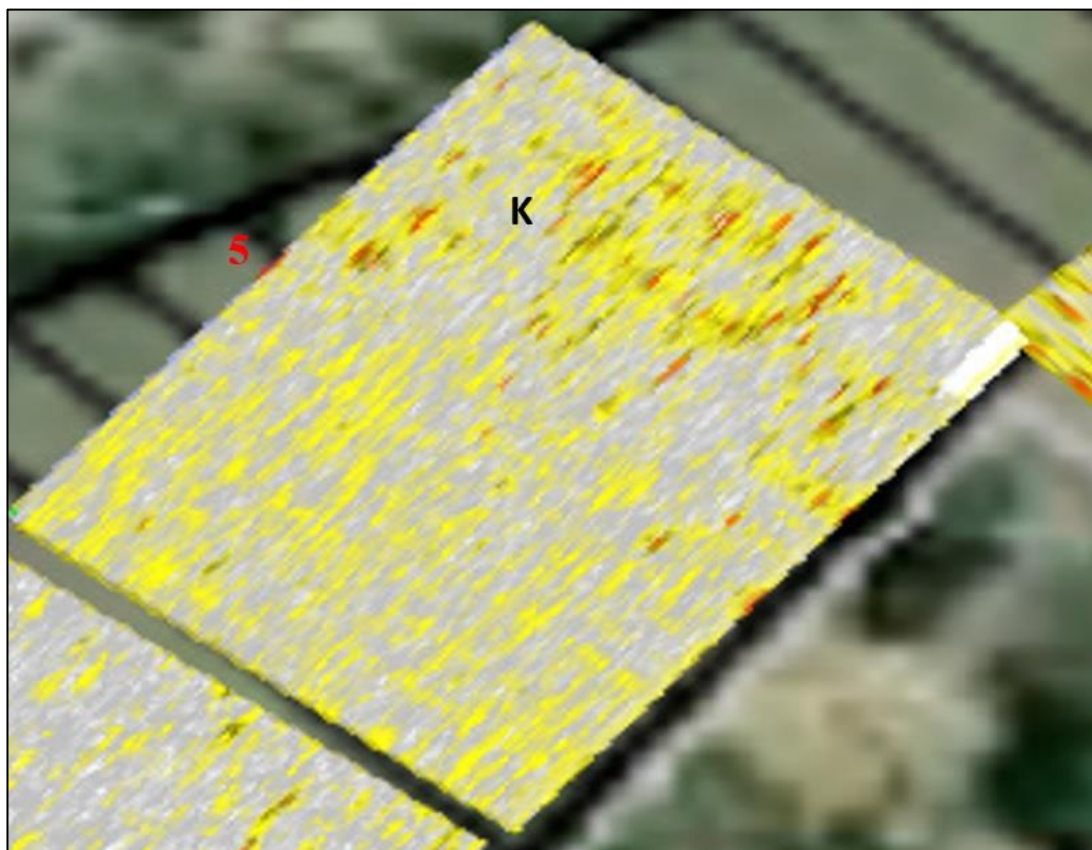


Figure 4.8 Detail of GPR time-slice at depth of 0.35m illustrating the rectangular anomaly K



Figure 4.9 GPR time-slice at 0.50m depth illustrating the continued presence of anomaly (K) and with increasing intensity in survey block 5; anomaly J in survey block 6 and the pipeline to the west and southwest of the house in survey block 1 indicated by the line

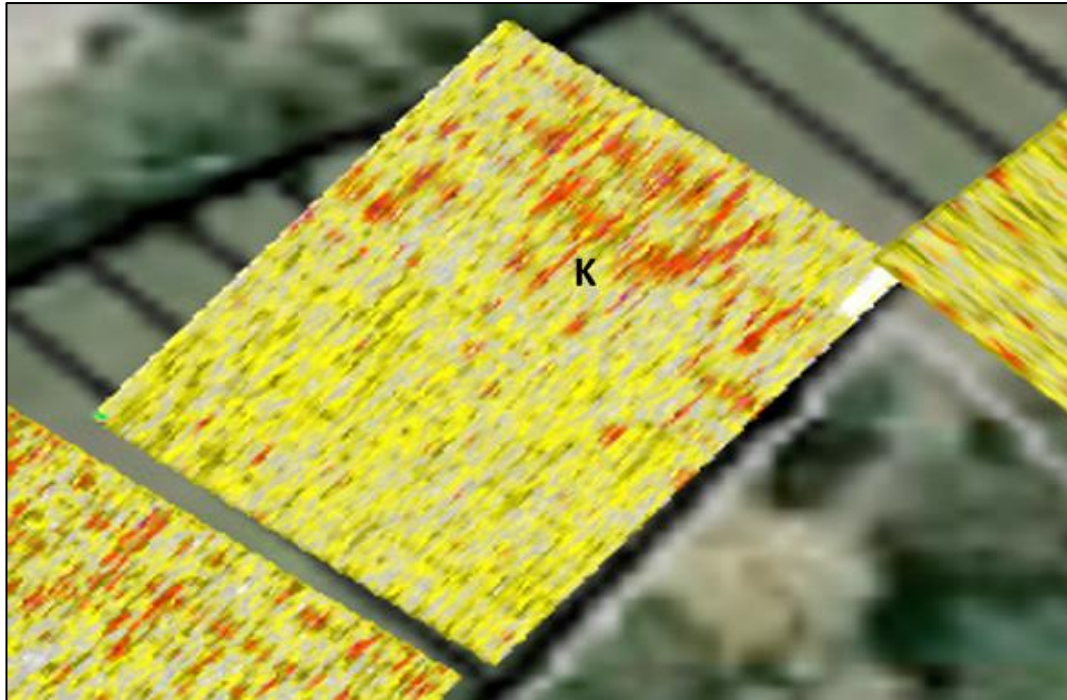


Figure 4.10 Detail of GPR time-slice at depth of 0.75m illustrating the rectangular anomaly K is still present and in increased intensity



Figure 4.11 GPR time-slice at 1.00m depth illustrating that anomaly (J) is still present although at a weaker intensity and the low intensity anomaly (L)



Figure 4.12 GPR time-slice at 1.50m depth illustrating the presence of a linear anomaly (M) in survey block 6 to the north of the remains of the redoubt interior platform which potentially indicates the infilled northern redoubt ditch



Figure 4.13 GPR time-slice at 2.00m depth demonstrating the linear anomaly (M) to the north of the remains of the redoubt interior, possibly indicating that the northern redoubt ditch has been infilled

2D GPR Section Profiles

Recorded in the GPR data are numerous point source anomalies located across the site that potentially indicate postholes (and/or buried objects) but with no discernible patterns. To test these point source anomalies two GPR section profiles were located within survey blocks 4 and 5.

2D GPR Section Profile – Survey Block 4

A 25.5m long 2D GPR line was run through survey block 4 from X4 to Y4, in a SE-NW orientation (Figure 4.14). A single anomaly possibly indicative of a posthole (labelled posthole?) is observed in the data sealed by the topsoil, approximately 0.30m wide and extending 0.25m into the subsoil to a depth of approximately 0.55m (Figure 4.14). There are no other discernible anomalous features.

2D GPR Section Profile – Survey Block 5

A 17m long 2D GPR line was run through block 5 from X3 to Y3 in a SE-NW orientation (Figure 4.15). Four anomalies sealed by the topsoil (each labelled posthole?) are observed commencing at a depth of 0.25m-0.30m and extending to a depth of approximately 0.50m. These anomalies are potentially postholes that have been truncated by agricultural activities. However, without ground testing it is impossible to assign these potential features to an occupation phase.

2D GPR Section Profile – Garden of 931 Papakura-Clevedon Road

A 34m long 2D GPR line was run through the back garden of the property (Figure 4.16). This extends from X to Y, in a NE-SW orientation. The GPR data shows numerous small anomalies. Some may be postholes and have been tentatively labelled as such. These possible postholes are sealed by the topsoil and are approximately 0.35m-0.50m in width and between 0.40m and 0.50m in depth (Figure 4.16). It is impossible to confidently interpret the causes of these anomalies on the GPR data without external information. Other features that have this character of GPR signal are tree roots, buried stumps or underground services.

The data obtained in the garden was much clearer than elsewhere on this site due to the smoother ground surface.

2D GPR Section Profile – Northern Extent of Redoubt

A 21m 2D GPR section was run through survey block 6 encompassing the surviving redoubt interior (Figure 4.17). This extends from X2 to Y2, in a SW-NE orientation located at the rear of the interior redoubt platform. The GPR data illustrate a clear reflection at a depth of approximately 2.00m along the course of the section profile (Figure 4.17). This most likely indicates the base of the infilled northern section of the redoubt ditch. This complements both the linear anomaly (M) observed in the 1.5m and 2m time-slices (Figure 4.12 and Figure 4.13), as well as the negative linear anomaly (I) seen in the magnetic data (Figure 4.6) to the south of the potential ditch and perhaps indicates upcast subsoil from the original ditch excavation.

4. Geophysical Survey

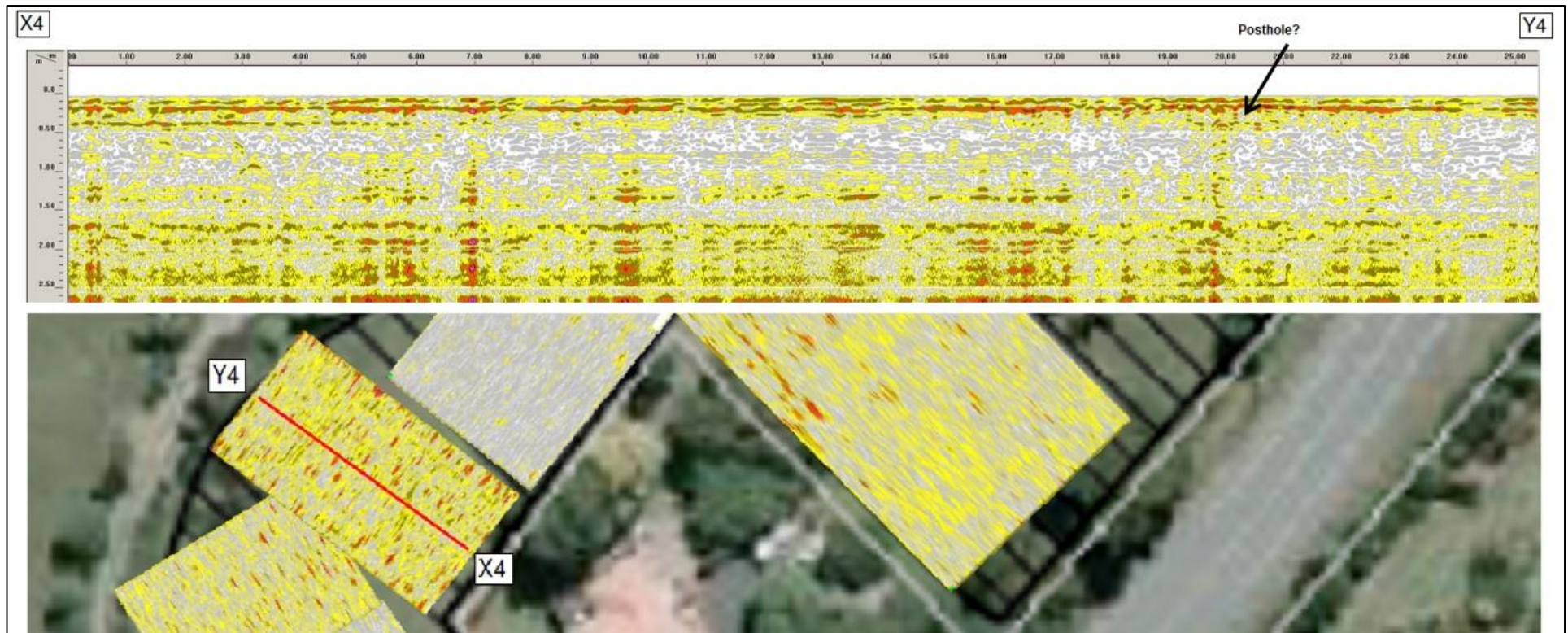


Figure 4.14 Location of 2D GPR profile (bottom) and 2D GPR section (top) in GPR survey block 4, illustrating that one of the point sources observed in the data may indicate a posthole

4. Geophysical Survey

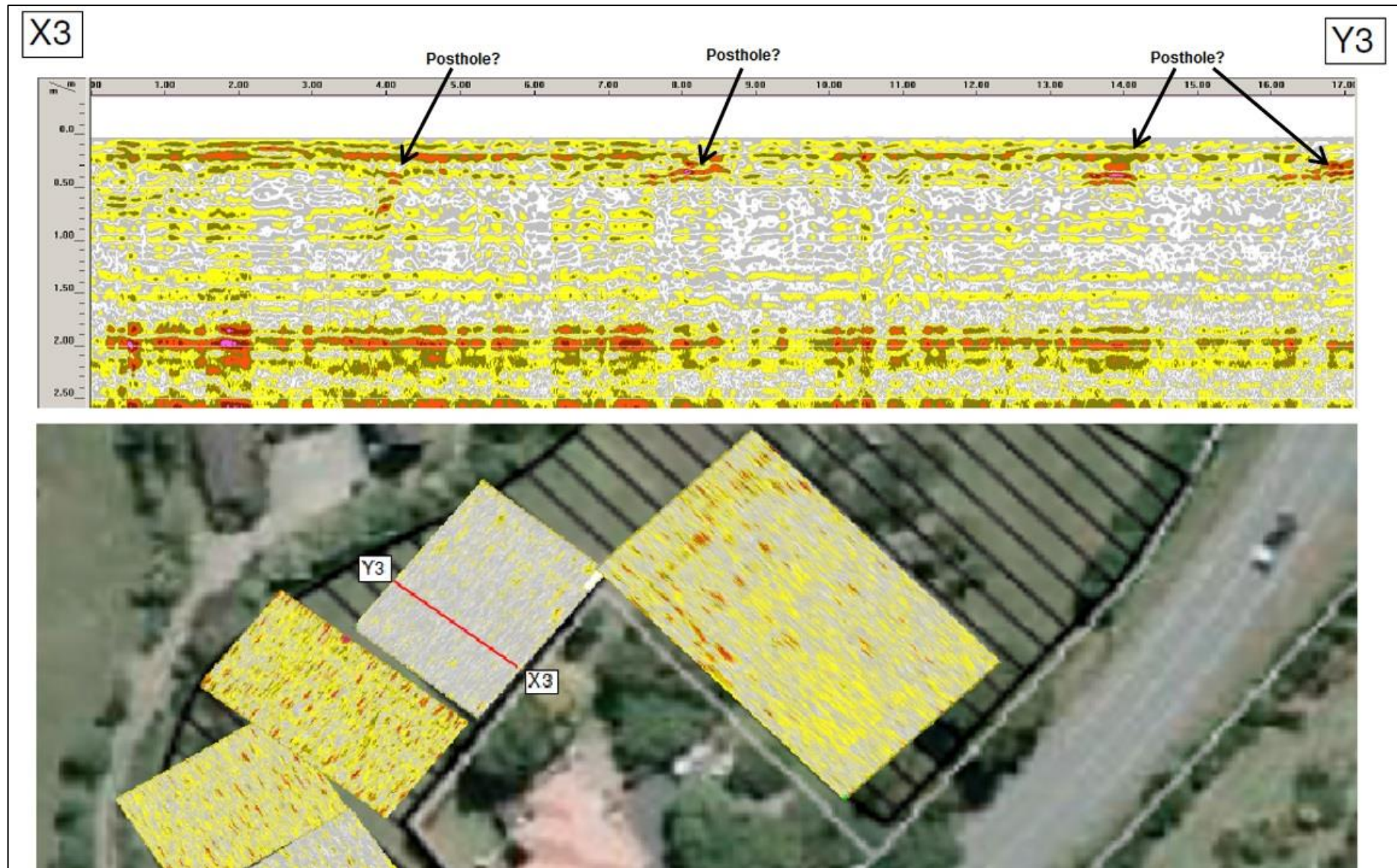


Figure 4.15 Location of 2D GPR profile (bottom) and 2D GPR section (top) in GPR survey block 5, illustrating that some of the point sources observed in the data may indicate postholes

4. Geophysical Survey

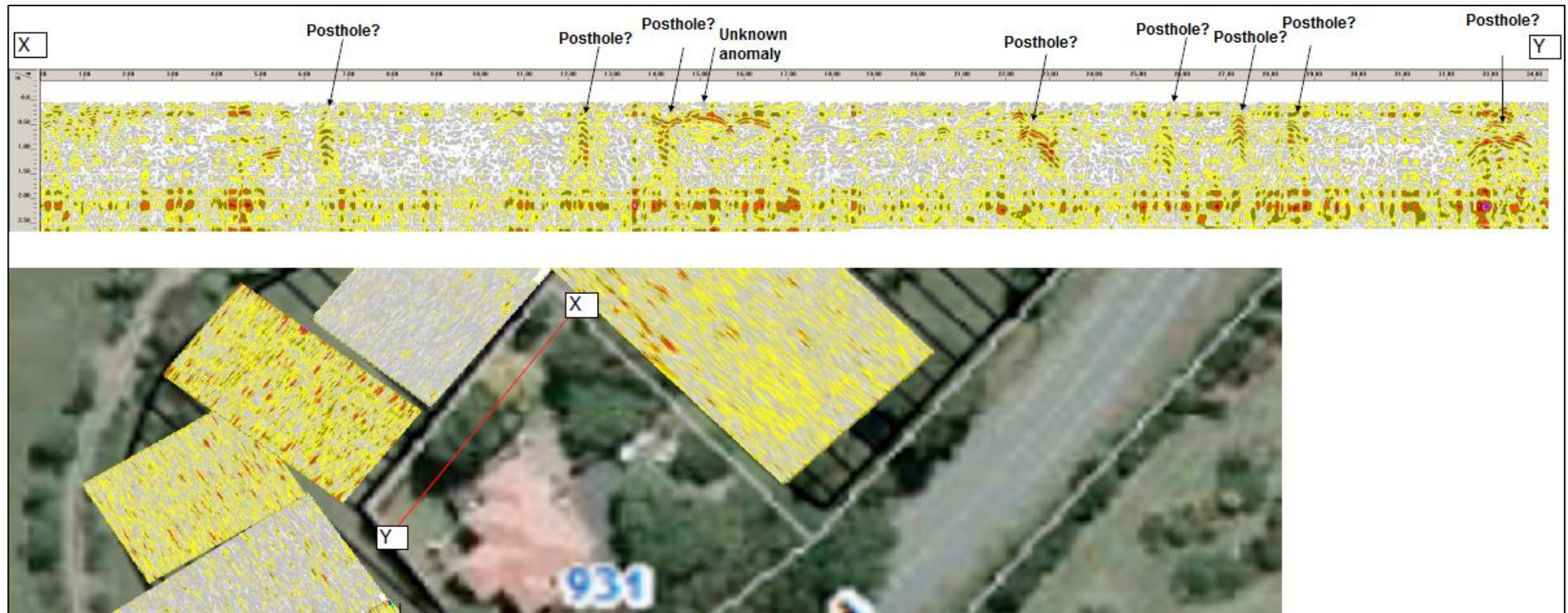


Figure 4.16 Location of 2D GPR profile (bottom) and 2D GPR section (top) in the garden of 931 Papakura-Clevedon Road

4. Geophysical Survey

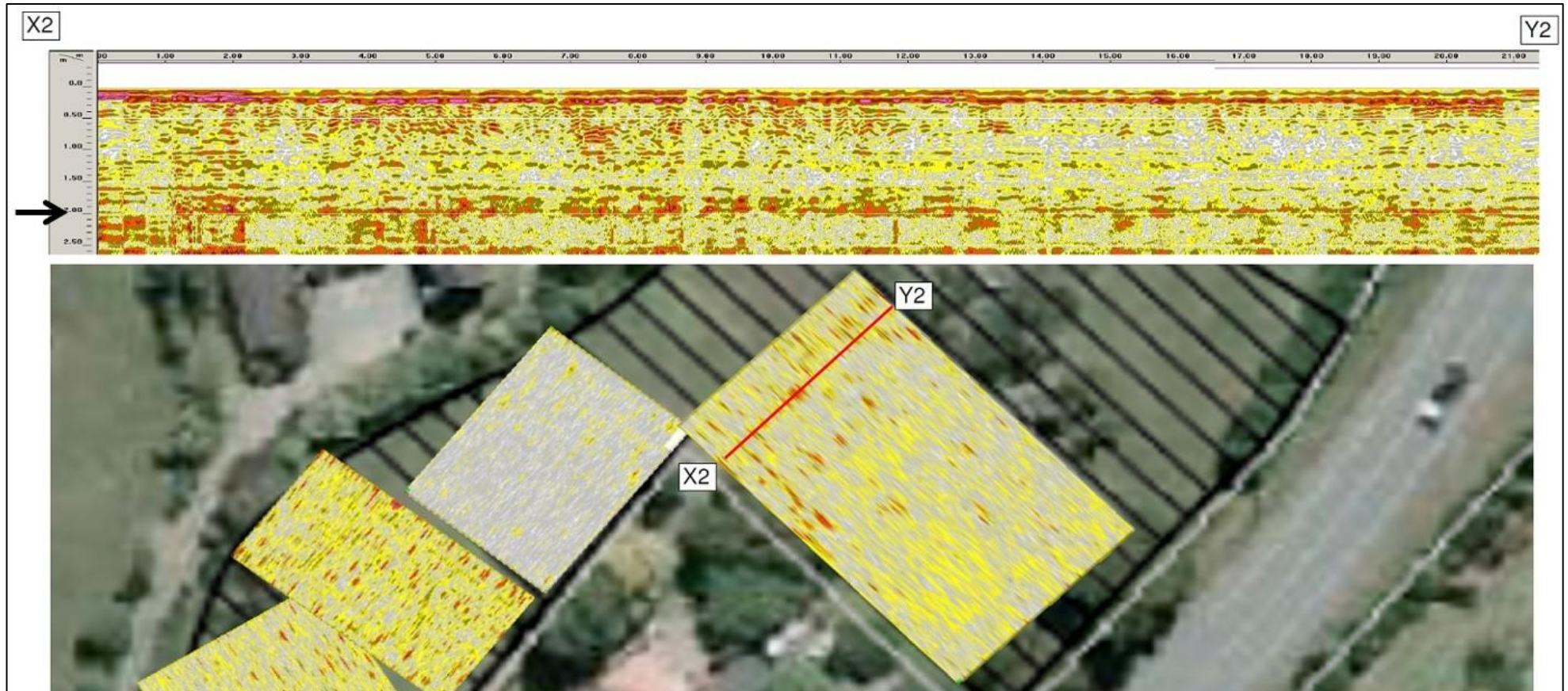


Figure 4.17 Location of 2D GPR profile (bottom) and 2D GPR section (top) in survey block 6 in the northern area of the redoubt along the course of the probable infilled northern ditch at the rear of the extant interior platform. NB. The arrow points to the 2m depth mark where a strong reflection probably illustrates the base of the ditch

4.1.5 Summary of Ground Penetrating Radar Survey

The GPR survey identified fewer anomalies than the gradiometer survey but did likely locate the infilled northern section of the redoubt ditch (Figure 4.12 and Figure 4.13) including its turn to the southeast around the extant north-eastern bastion). The gradiometer survey lends support to this interpretation as a negative linear anomaly seen in the magnetic data runs parallel to the potential ditch and indicates the presence of magnetically weak material such as would be expected from the subsoil upcast from an excavated ditch (Figure 4.6).

The GPR data also complements the magnetic data as 2D section profiles confirm the likely presence of postholes cutting the subsoil across the site. The GPR survey also identified a possible rectangular structure (K) located adjacent to a rectangular anomaly identified in the magnetic data (anomaly F) that may indicate a potential structure.

4.1.6 Discussion of Geophysical Survey Results

The gradiometer survey was particularly successful and identified a variety of potential archaeological features including earthworks, structural components such as postholes and beam-slots and potential refuse pits, both within the redoubt and in the surrounding area. This includes an area of probable intensive activity situated on the flat area to the north of the redoubt.

This intense spread of anomalies extended up to the survey boundary and included a number of strongly magnetic anomalies that may relate to cooking and campfire activity. The survey indicated that in general the western and southern areas of the survey were less disturbed, though an interesting couple of irregular linear anomalies in survey block 1 (Figure 4.3, above) may represent outer defences of the redoubt/military camp such as rifle trenches.

The GPR survey identified fewer anomalies than the gradiometer survey but most likely located the infilled northern section of the redoubt ditch including its turn to the southeast around the extant north-eastern bastion. The gradiometer survey lends support to this interpretation as a negative linear anomaly seen in the magnetic data (Figure 4.6) runs parallel to the potential ditch and indicates the presence of magnetically weak material such as would be expected from the subsoil upcast from an excavated ditch.

The GPR data also complements the magnetic data as 2D section profiles confirm the likely presence of postholes cutting the subsoil across the site. The survey also identified a probable rectangular structure located adjacent to a structure identified in the magnetic data.

The northern ditch and possibly the linear anomaly in the southwest of the survey area (survey block 1) are the only anomalies that can be ascribed to the military occupation of the site with any confidence. In the case of other identified anomalies, it is not possible to ascribe them to a single episode of occupation on the site as they could represent activities related to the military, settlement by Scottish immigrants, the early 20th century house, later agricultural activity, or encompass elements of all four.

4.1.7 Geophysical Survey Implications for the Redoubt Location

The depiction of a north-western bastion on the 1890 plan (Figure 3.13) as well as the surveyors' notebook (Figure 3.14) is significant when the image of the processed magnetometer data from the geophysical survey of Ring's Redoubt is examined (Shakles, Watson and Clough 2014). An anomaly in the form of an arc of weak magnetic response is consistent with the response that a spread of subsoil on or near the surface would produce and may indicate the presence of a former earthwork such as the location of the north-western bastion (Shakles, Watson and Clough 2014: 8, 10 and 12; Figure 4.4). However, nothing is seen on the GPR results in the same area, though this may well be due to the parapet of the bastion being pushed back into the ditch from which the material had originally been excavated (Shakles, Watson and Clough 2014: 14, 15, and 17). This would result in the feature consisting of re-deposited subsoil, homogenous with the surrounding soil matrix, thereby not producing a distinctive enough reflection to appear anomalous.

When considered in conjunction with the extant north-eastern bastion and potential line of the northern ditch (anomaly 'M'), it is possible to estimate the footprint of the redoubt defences with increased confidence (Figure 4.18).

Figure 4.18 illustrates the potential outline of the redoubt defences including a theoretical four bastions plan, based on the geophysical data and extant features, plus the evidence from the 1890 Plan SO 5716 and its surveyor's sketch, as well as the location of the survey datum 539 peg also considered.

The likely outline of the redoubt is remarkably similar in extent to that proposed by Dr David John Robertson in his submission on the Cabra Investments resource consent application to Auckland Council on behalf of the 3rd Auckland (Countess of Ranfurly's Own) and Northland Regimental Association Incorporated (Figure 4.19). Dr Robertson's projected outline was based on the extant north-eastern bastion, Cowan's 1922 description, and the dimensions of St John's Redoubt as recorded by Lennard (1986), located to the north in Manukau. It is considered that the outline projected in Figure 4.18 is as accurate an estimation of the redoubt defences as possible without the intervention of subsurface testing.



Figure 4.18 Extent of the original defensive structure of Ring's Redoubt estimated from the 1890 plan, geophysical survey magnetic and GPR data and surviving features

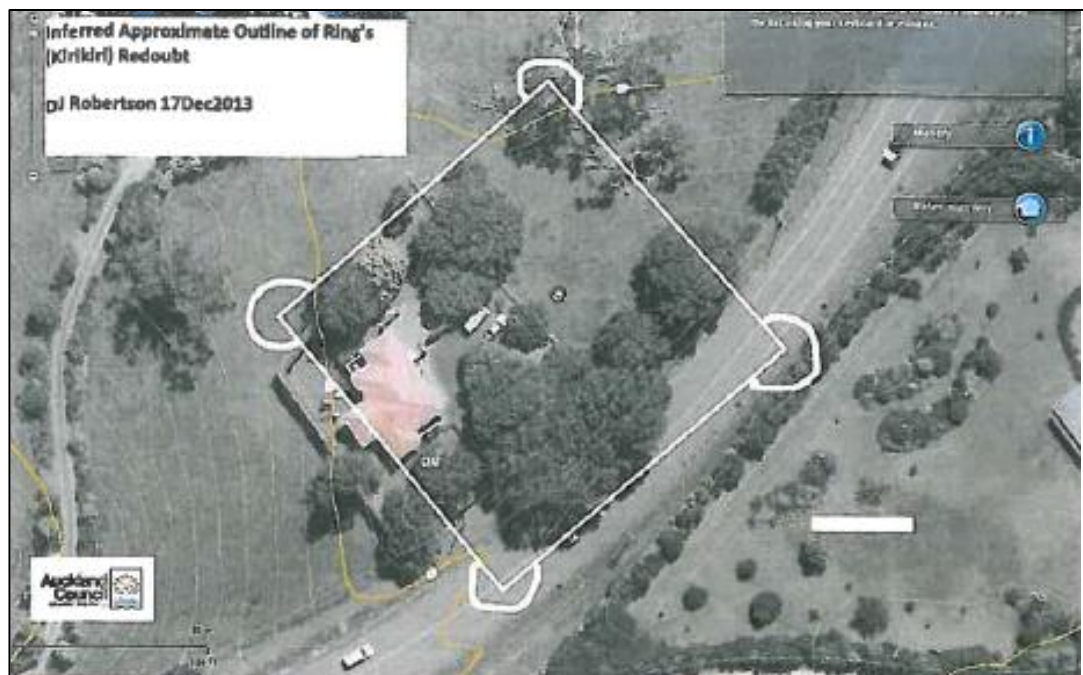


Figure 4.19 Outline of Ring's Redoubt inferred by Dr Robertson in his submission to Auckland Council

5 SITE R11/956 EXCAVATION AND MONITORING RESULTS

5.1 Excavation, Monitoring Areas and Sequence of Works

From the outset the development property was divided into three earthwork areas (Stages 1 to 3) that corresponded to the subdivision works schedule (Figure 5.1). Archaeological monitoring of the Stage 1 earthworks area situated in the west of the property and incorporating the low-lying flat ground that formed the property's western boundary was undertaken first and commenced on 6 October 2015, while monitoring of the Stage 2 earthworks area began soon after on 12 October 2015, with both areas being monitored by archaeologists until the completion of earthworks on 8 September 2016.

The Stage 2 area also contained a recorded archaeological site – a later 19th century square villa (site R12/1105) situated along its southern boundary at 965 Papakura-Clevedon Road. Under the archaeological management plan (Shakles and Clough 2015b) a 50m perimeter surrounding the villa (which also extended into the Stage 1 area) was required to be intensively monitored due to the likelihood of associated features such as refuse pits, wells, etc (see label A on Figure 5.1). Additionally, the part of the Stage 2 earthworks area closest to the redoubt was also to be intensively monitored (see label 'B' on Figure 5.1).

Following the completion of the Stage 1 and 2 earthwork areas, and prior to the topsoil removal in the Stage 3 area, an exploratory investigation under a Section 56 Authority was required by Auckland Council and Heritage NZ in advance of earthworks in the area. This was necessary to determine the extent, nature and condition of any subsurface archaeology in the area that may have been related to the military occupation of the Redoubt, the later occupation of the site by Scottish immigrants, and any other archaeological deposits that may have been present as set out in the research strategy (Shakles and Clough 2015c). The exploratory investigation would also serve to evaluate the anomalies that had been identified by the geophysical surveys (Shakles, Watson and Clough 2014; Watson 2014). The results of the exploratory investigation of the Stage 3 earthworks area are discussed below following the results of the archaeological monitoring.

Lastly, and following the completion of the exploratory investigation, the Stage 3 earthworks area was investigated in three stages – between 22 and 29 April 2016, from 20 February to 9 May 2017 and between 23 and 26 January 2018 – in accordance with an archaeological management plan (Shakles and Phear 2016).

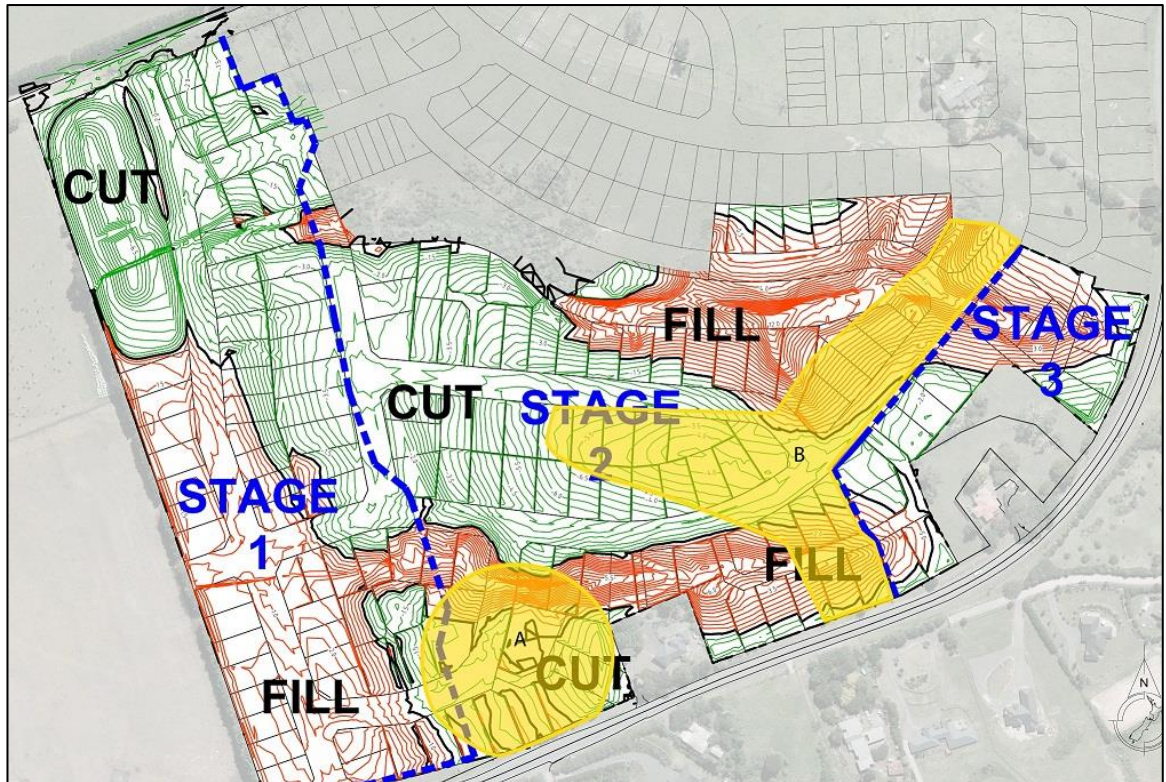


Figure 5.1 Plan of proposed earthwork staging at 949 Old Wairoa Road and 935-973 Papakura-Clevedon Road with areas that were intensively monitored in yellow (A = 50m perimeter around R12/1105, and B = area incorporating high relatively level ground in proximity to the redoubt site R11/956). NB. The green represents cut areas and the red fill

5.2 Archaeological Monitoring Results

5.2.1 Stage 1 Earthworks Area

Archaeological monitoring of the Stage 1 earthworks area situated in the west of the property did not expose any archaeological deposits or features. The area consisted of low-lying and fairly boggy ground comprising a dark brown clayey silt loam topsoil under turf that contained occasional charcoal inclusions most likely derived from modern burn-off of gorse, evidence of which was widespread across both the Stage 1 and Stage 2 monitoring areas. The topsoil sealed a yellowish brown silty clay colluvial subsoil, likely deposited from slopewash from the nearby slope of the ridge (that formed the Stage 2 earthworks area), and in turn sealed a whitish-grey clay that contained red mottles characteristic of a gleyed soil resulting from persistent waterlogging (Figure 5.2). At the base of the sequence at a depth of approximately 1.60m and present across the entire Stage 1 earthworks area, was a blackish, dark brown organic waterlogged peat deposit that would have been deposited in a swamp/marsh-like environment (Figure 5.3). The deposit contained frequent fragments of wood and other fibrous plant material including roots.

No archaeological features or deposits were exposed anywhere within the Stage 1 earthworks area.



Figure 5.2 East facing view demonstrating the stratigraphy present across the Stage 1 earthworks area



Figure 5.3 East facing section of sediment pond close to the western boundary of the Stage 1 earthworks area with the organic waterlogged peat seen at bottom

5.2.2 Stage 2 Earthworks Area

The Stage 2 earthworks area comprised the higher ground immediately east of and adjacent to the Stage 1 earthworks area and was crossed by two watercourses contained within steep-sided gullies. The typical stratigraphy present in the monitored area consisted of the modern mid-brown topsoil under turf (c. 0.20m thick) which overlay a light greyish brown clayey silt subsoil (c.0.16m thick), which in turn sealed a mid-grey silty clay that overlay a light grey sterile natural (Figure 5.4).

Some of the initial earthworks consisted of the topsoil strip of the entire 50m perimeter surrounding the late 19th century villa site (R12/1105). The stripping of the area surrounding the house revealed a complete absence of archaeological features, and not even a single fragment of a 19th or early 20th century artefact was recovered (Figure 5.5). The stratigraphy present in the area surrounding the house consisted of a mid-brown clayey silt loam topsoil under turf, that sealed an orangey brown silt clay sterile natural (Figure 5.6). The lack of a developed subsoil in the area almost certainly suggests that the area had been subject to earthworking at some point during the 20th century. The lack of artefacts was not immediately a cause for concern, as the gully situated immediately to the rear of the property (Figure 5.7) could have been utilised to dump rubbish, a practice common during the 19th century where conditions allowed. However, stripping of the gully showed that the both the topsoil and subsoil were devoid of any artefactual material and, other than the presence of some roots, both were remarkably sterile (Figure 5.8). Once the vegetation immediately adjacent to the house had been removed, it was possible to view the area beneath the house, and it became apparent due to the presence of machine-cut timber bearers and a modern brick chimney base that the house had been relocated from elsewhere to the site.

Had the heritage architects who evaluated and recorded the house at the assessment stage been able to access the underfloor area, then the monitoring and associated costs could have been avoided. The house, while relocated, still retained heritage values as a late 19th century square villa. However, while the villa was awaiting relocation to a site in Wainui (north of Auckland), it was destroyed by an arson attack in the early hours of 28 October 2017. All that remained of the structure was the chimney stack (Figure 5.9). Subsequently, the chimney was demolished and, as such, site R12/1105 was completely destroyed. (Along with the villa, three mechanical excavators belonging to the contractors, and a half built new home on the neighbouring Montgomery Block subdivision were also destroyed by arson at the same time.)

During the archaeological monitoring of the topsoil strip in the south-eastern end of the Stage 2 earthworks area (situated adjacent to the western boundary of the Stage 3 area), a dense, artefact-rich deposit containing a large volume of mid-19th century artefacts related to the military occupation of the redoubt was exposed. Additionally, a number of archaeological features were also exposed in the surrounding area (Figure 5.10) and therefore detailed archaeological investigation of this location was required.

The excavation of the redoubt-related features and deposits within the Stage 2 earthworks area was undertaken between 22 and 29 April 2016 and is reported on in the excavation section, below.



Figure 5.4 West facing section displaying typical stratigraphic sequence observed across the majority of the Stage 2 earthworks area. Scale: 0.5m



Figure 5.5 Northwest facing view of excavations around the late 19th century villa within the south of the Stage 2 earthworks area, showing the sterile nature of the stratigraphy surrounding the structure



Figure 5.6 West-southwest facing section illustrating the artefactually sterile nature of the stratigraphy present around the late 19th century villa. Scale: 0.10m graduations



Figure 5.7 West facing view along the gully at the rear of the late 19th century square villa situated within the Stage 2 earthworks area



Figure 5.8 East facing section through top of gully to rear of the villa. NB. The topsoil and subsoil is devoid of any 19th or early 20th century artefacts. Scale: 2m



Figure 5.9 The remains of the square villa site R12/1105, following the arson attack of 28 October 2017

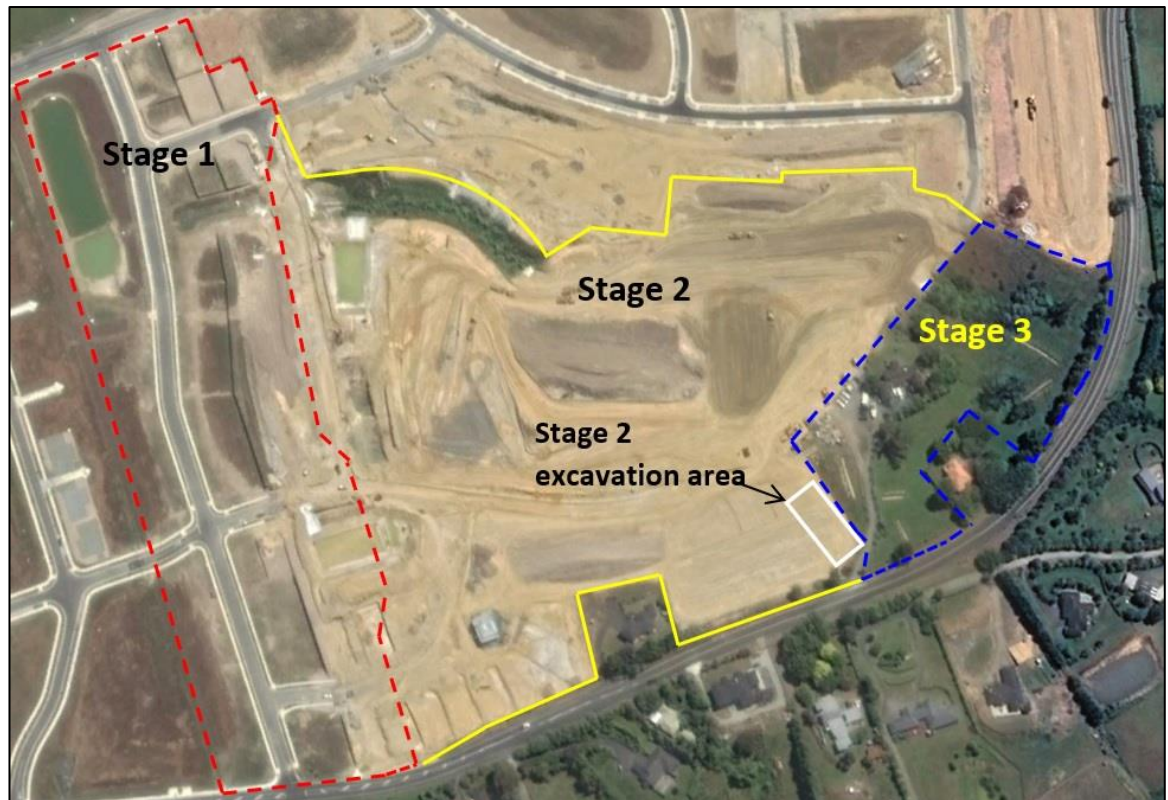


Figure 5.10 Aerial image of the project area showing the Stage 2 earthworks excavation area where features related to the occupation of the redoubt were exposed. Image taken 1 April 2017, after the completion of Stages 1 and 2 monitoring but prior to the commencement of earthworks in Stage 3

5.3 Exploratory Investigation – Stage 3 Earthworks Area

5.3.1 Stage 3 Earthworks Area Constraints

Due to the recognised significance of the redoubt site (both regionally and nationally), the resource consent issued by Auckland Council under section 88 of the RMA contained a specific condition for the Stage 3 earthworks area (consent condition no. 55). The condition stated that prior to the commencement of any works in the Stage 3 area, a Historic Heritage Management Plan (HHMP), was to be prepared and approved by the Team Leader – Cultural Heritage Implementation (Clough and Associates 2016). Once this had been completed it was also necessary to apply for an exploratory investigation authority under Section 56 of the HNZPT Act 2014. This was required to determine the extent, nature and condition of any subsurface archaeology in the area (Shakles and Clough 2015c). Additionally, the exploratory investigation would also serve to evaluate the anomalies that had been identified by both the GPR and magnetometry geophysical surveys (Shakles, Watson and Clough 2014; Watson 2014).

However, as mentioned in the project background (p.2), the exploratory investigation undertaken was much smaller than originally designed, consisting of only 6 of the original 11 planned trenches. This was due to opposition from the Auckland Council Heritage Team, who required that the trenches should be situated outside of the proposed historic reserve boundaries. This meant that only one area of the geophysical anomalies, to the west of the house at 931 Papakura-Clevedon Road, could be investigated. In the end, only five of the six trenches were excavated as Trench 4 (situated in the back garden of the property

at 935 Papakura-Clevedon Road) was not excavated once it became clear following vegetation removal that the area had been significantly cut and benched at the time of the construction of the house.

5.3.2 Archaeological Evaluation of Stage 3 Area

5.3.2.1 Methodology

The evaluation trenches were excavated by a 10-tonne mechanical excavator using a 1.5m wide, smooth-edged ditching bucket, and were excavated until natural or sterile clay was encountered. The location on the ground of all the trenches had to be slightly adapted owing to either the topography, vegetation or ground conditions, or combinations of all three (Figure 5.11). All archaeological features exposed were cleaned using a trowel, recorded using the single context system, and surveyed using a total station. In addition, the features were half sectioned in order to provide information on their provenance and to try to establish what period of settlement they related to, and also to retrieve fragile artefacts such as metal items which were visibly corroding and deteriorating. Any artefacts or ecofacts that were considered at risk of corrosion and decay were retrieved for analysis.



Figure 5.11 Final location plan of Trenches 1-3 and 5-6 in white, with original trench locations shown in yellow

5.3.2.2 Evaluation Results

A total of seven 19th century archaeological features, one 20th century drain, and one possible ditch-like feature were located in Trenches 2, 3, 5 and 6, while Trench 1 did not contain any archaeological features or deposits.

Trench 5 contained a solitary feature (a posthole) while Trench 6 contained two postholes (contexts 603 and 605) and a probable posthole (context 607) that was only seen in part as it extended beyond the trench edge (Figure 5.11, Figure 5.12). As these features were observed in isolation, and as the only artefacts (black beer glass fragments) were recovered from the topsoil sealing the postholes, it was not possible to ascribe either function or provenance to the features (Figure 5.12).

Trenches 2 and 3 (Figure 5.11) were situated to the west of the house at 931 Papakura-Clevedon Road. Trench 3 was located to test the magnetic geophysical anomaly (A) (see Figure 4.3). The general stratigraphy in both trenches consisted of a silty clay medium brown topsoil (context 200) that sealed a light greyish-brown silt colluvium (context 201), that in turn sealed the natural light yellowish brown colluvial clay.

The archaeology observed within Trench 2 consisted of an early 20th century ceramic drain likely connected with Hibbard's house that was situated within the redoubt defences, and an enigmatic curving feature (possibly a shallow ditch) only partially exposed within the far western end of the trench (Figure 5.11 and Figure 5.13). A single fragment of 19th century aerated water bottle glass was recovered from the topsoil (context 200).

In contrast, Trench 3 contained an artefact-rich deposit (context 303) which consisted of a firmly compacted layer of clayey silt that contained frequent charcoal inclusions, patches of burnt clay, with frequent 19th century artefactual material throughout (Figure 5.14 and Figure 5.15). The layer (context 303) had the appearance and characteristics of a surface and extended roughly east-west through the centre of the trench, although it appeared to have been damaged either by later ploughing or by other farming practices, which had spread the layer. A sondage was excavated through context 303 and a section was recorded (Figure 5.14 and Figure 5.15). What were considered at the time to be two drainage features (but later determined to be beam slots (contexts 305 and 307)) were located beneath the surface (Figure 5.15). A layer (context 304) of mid-brown silty clay which measured 1.3m wide and 5cm thick, was partially sealed by context 303 (Figure 5.15). Artefacts recovered from the sondage excavated through the deposit consisted of bottle glass, corroded iron and copper alloy fragments, occasional ceramic sherds, clay tobacco pipe fragments and two Minié bullets.

Descriptions of the contexts identified can be found in Appendix 1.



Figure 5.12 View of Trench 6 facing northwest, with postholes 603 and 605 visible



Figure 5.13 The possible drainage ditch (context 204) within the far western end of Trench 2, facing west. Scale: 1m



Figure 5.14 Southwest facing view of Trench 3, with the surface (context 303) visible in the centre of the trench (between the yellow lines), and the sondage excavated through it seen at centre right

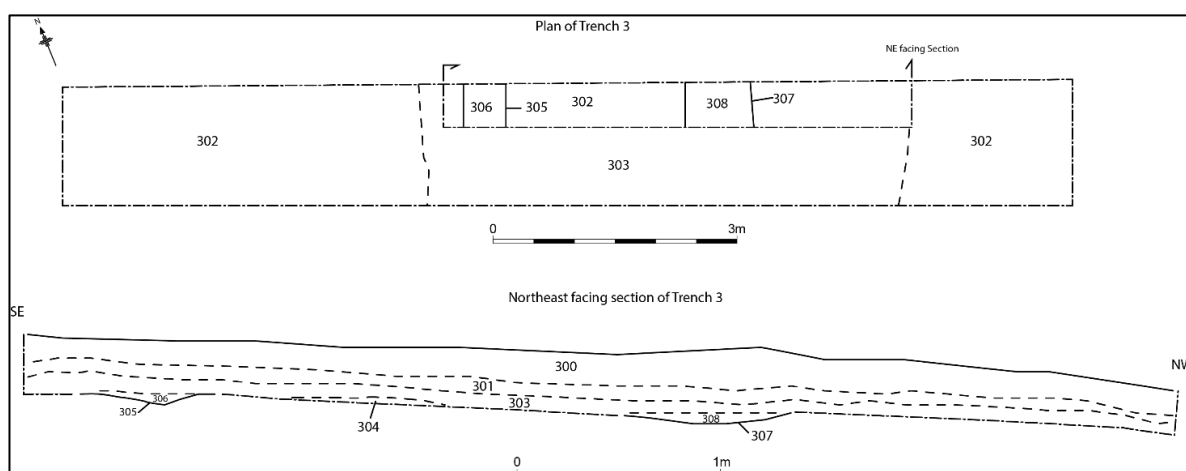


Figure 5.15 Plan view of sondage through surface 303, with the drainage ditches visible (contexts 305 and 307), and section drawing of the sondage. Scales 1:50 and 1:20 respectively

5.4 Excavation of Ring's Redoubt (R11/956) Encampment and Outer Works

5.4.1 Excavation Methodology

The archaeological excavation of the wider redoubt encampment and outer works relating to the occupation of Ring's Redoubt (R11/956) was undertaken in three stages: firstly between 22 and 29 April 2016, secondly from 20 February to 9 May 2017, and lastly between 23 and 26 January 2018. A 20-ton mechanical excavator with a smooth-edged ditching bucket was utilised to remove the turf and modern topsoil overburden across the excavation area until archaeological deposits and features were exposed. All machine work was carried out under continuous archaeological supervision until archaeological levels were reached. Archaeological surfaces and features were then cleaned with hand tools by the archaeologists in advance of archaeological excavation.

The excavation of archaeological features was undertaken with trowel, mattock and spade. The archaeological features and/or deposits were then assessed, investigated, recorded and sampled in accordance with accepted archaeological practice and the requirements of the Heritage NZ Authorities (Authority Nos. 2016/180, 2016/540 and 2017/482).

The single context recording system was used, with each cut, deposit, layer and structure given an individual context number and recorded on a pro-forma context sheet, which enabled the determination of occupation phasing on site (the context records are presented in Appendix 1). Individual features were planned at scales of 1:10; 1:20, and 1:50, while deposits were drawn in section at scales of 1:10 and 1:20. A photographic record was compiled of all deposits and features with a digital SLR camera.

All artefactual and faunal material related to the occupation of the redoubt was collected, sorted, and labelled per context number on site and retained for specialist analysis. In the case of militaria artefacts, these were also retained for conservation by conservators, prior to analysis.

Additionally, a site survey of the excavation areas and archaeological features was undertaken by Wesley Maguire utilising both a robotic Leica Total Station and real time kinematic GPS system.

The excavation was led by Richard Shakles assisted by Ellen Cameron, Carly Mailhot, Dave Carley, Barry Baquié, Simon Bickler, Jen Low, Bernie Larson, Benjamin Jones, and Laura Dawson, and was carried out under the overall direction of Rod Clough.

5.5 Archaeological Investigation

As stated above, the archaeological investigations of the area surrounding the remains of the redoubt defences were undertaken in three stages that occurred during both the Stage 2 and Stage 3 programme of earthworks. Archaeological features and deposits that were exposed during the Stage 2 earthworks were confined to the area at the head of the west-trending gully located to the west of the redoubt defences, while features related to the redoubt camp and associated structures were exposed during the Stage 3 earthworks to the west, north and east of the redoubt proper (Figure 5.18 – Figure 5.20). The features exposed consisted primarily of ditches, postholes and drains, although elements of structures were also found.

There was no evidence of settlement activity associated with the Scottish settlers, or any other later 19th century activity within the investigation areas with the exception of a single munition and possibly a few postholes.

As all of the archaeological remains exposed during earthworks related to the 1863-65 occupation of the redoubt, the results of the excavation are not presented per earthwork phase but reported on in whole. The excavation features and deposits will be presented in order of type and proximity to the redoubt proper, with those features related to the surrounding encampment discussed first and the outer defences and related structures last.

The results of the excavation and recording of the archaeological remains related to the occupation of Ring's Redoubt R11/956 are set out below. Descriptions of the contexts identified in the site plans and sections presented below can be found in Appendix 1.

5.6 Excavation Results

5.6.1 Stratigraphy

The stratigraphy differed across much of the Stage 3 excavation areas, likely as a result of previous earthworking related to farming, track formation and construction of the dwellings and associated structures at both 935 and 931 Papakura-Clevedon Road. Across much of the excavation areas, the stratigraphy consisted of a dark greyish brown clayey silt loam topsoil beneath turf (context 3000) that contained occasional charcoal inclusions, and very occasional rusted iron fragments that likely originated from 20th century farming activities. This varied in depth from as little as 0.08m thick, while in some areas it was as much as 0.22m thick. The topsoil sealed a yellowish light brown silty clay subsoil (context 3001) that was up to 0.12m thick and in turn sealed a whiteish-yellow natural clay that was sterile (context 3002). However, in a couple of areas the stratigraphic sequence was markedly different, in particular to the north of the redoubt in the Stage 3 earthworks area (Figure 5.16), and to the west of the redoubt close to the Papakura-Clevedon Road in the south-eastern corner of the Stage 2 earthworks area (Figure 5.17).

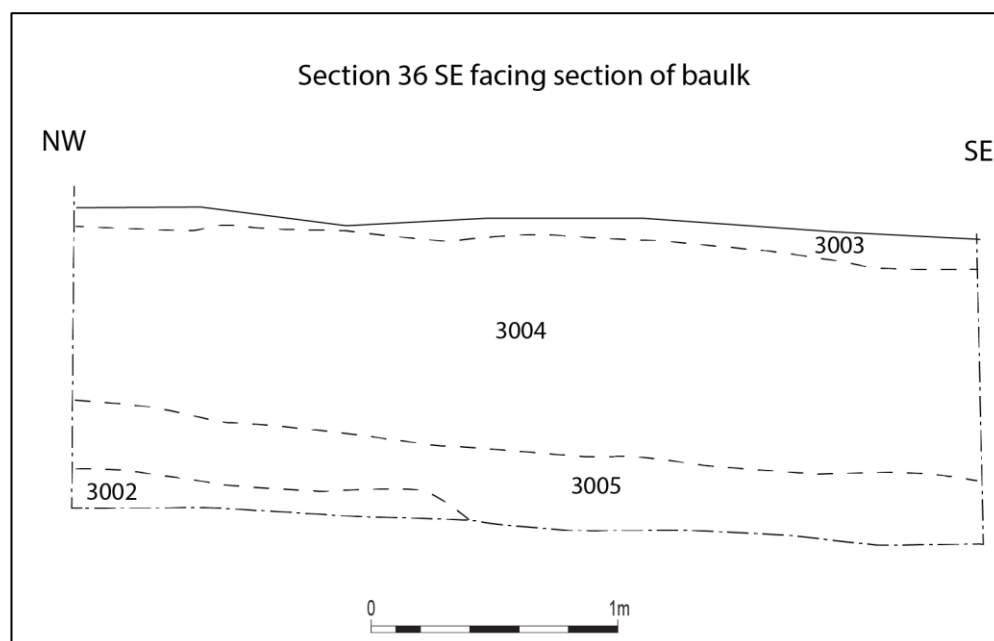


Figure 5.16 Stratigraphy sequence as seen at the north-eastern boundary of the Stage 3 excavation area and formed as a result of construction activities when the house at 935 Papakura-Clevedon Road was built

In the south-eastern corner of the Stage 2 area close to the boundary with the access road to the former house at 935 Papakura-Clevedon Road, the stratigraphy consisted of a dark brown modern topsoil beneath turf up to 0.12m thick (context 1000) that sealed a mottled reddish brown, yellowish brown and greyish brown clayey silt (context 1001) that contained frequent charcoal inclusions and pinkish-orange patches of burnt clay (Figure 5.17). This deposit was up to 0.08m thick but thinned out as it extended to the west and northwest from the access road to the top of the gully head. The deposit contained frequent mid-19th century artefactual material including military ordnance and uniform paraphernalia, as well as bottle glass, ceramics, metal items and animal bone. This layer sealed a yellowish brown silty clay palaeosol (context 1002 – not shown in Figure 5.17) that was up to 8cm thick and represented the pre-redoubt 19th century topsoil, which in turn sealed the subsoil (context 1003) and the natural sterile clay (context 1004) beneath the subsoil. (Figure 5.17). During the Stage 3 investigations the artefact rich layer 1001 was found to continue to the east of the access road, where it was identified as context 3027.

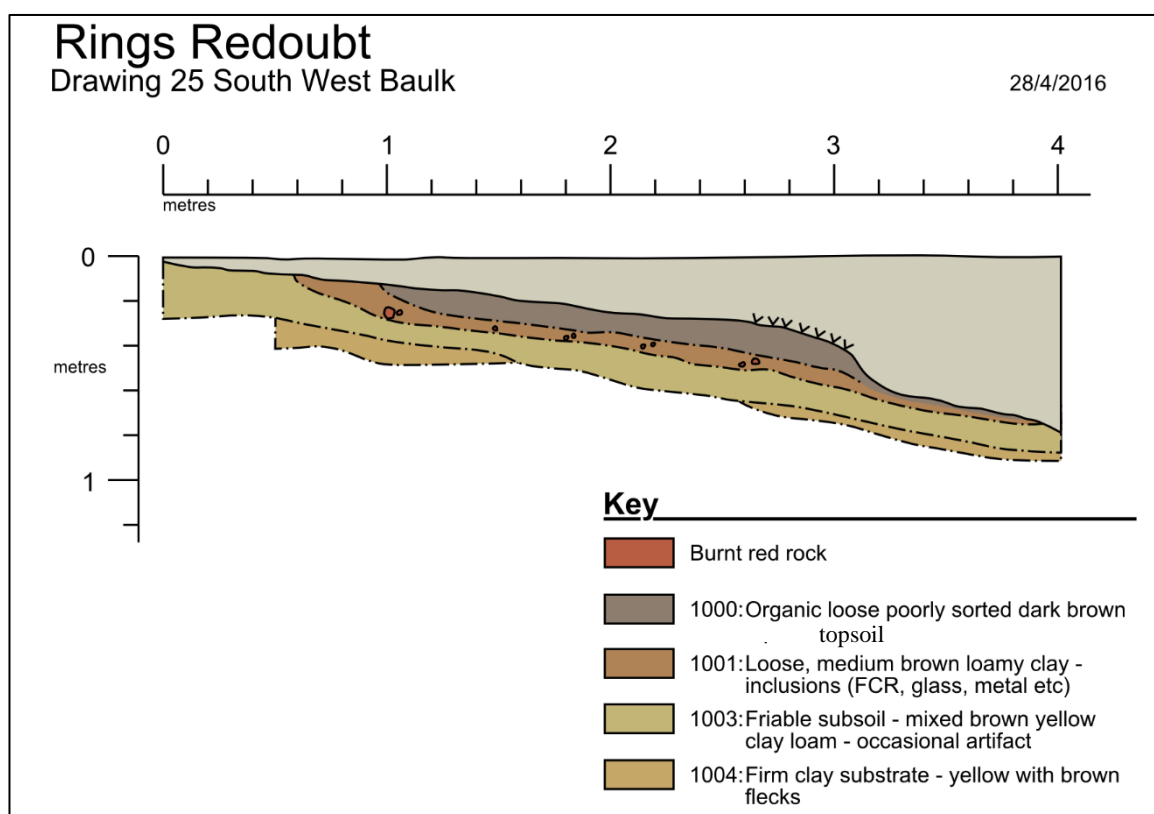


Figure 5.17 Stratigraphic sequence observed in south-eastern corner of the Stage 2 earthworks area close to the head of the large west-trending gully that descended from the high ground upon which the redoubt was constructed



5. Archaeological Excavation & Monitoring Results

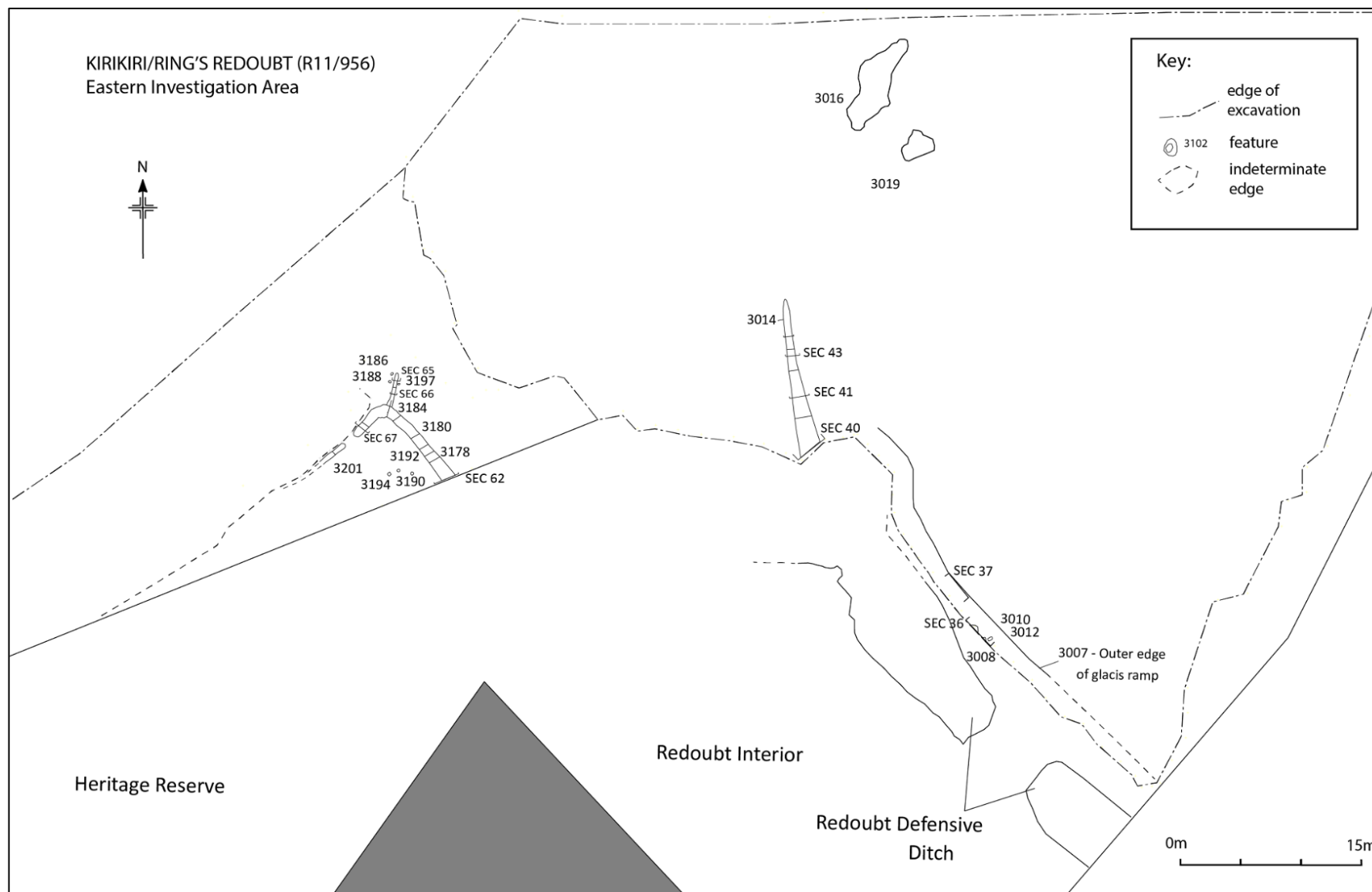


Figure 5.19 Survey plan of archaeological features to the east and north of Ring's Redoubt (R11/956)

5. Archaeological Excavation & Monitoring Results

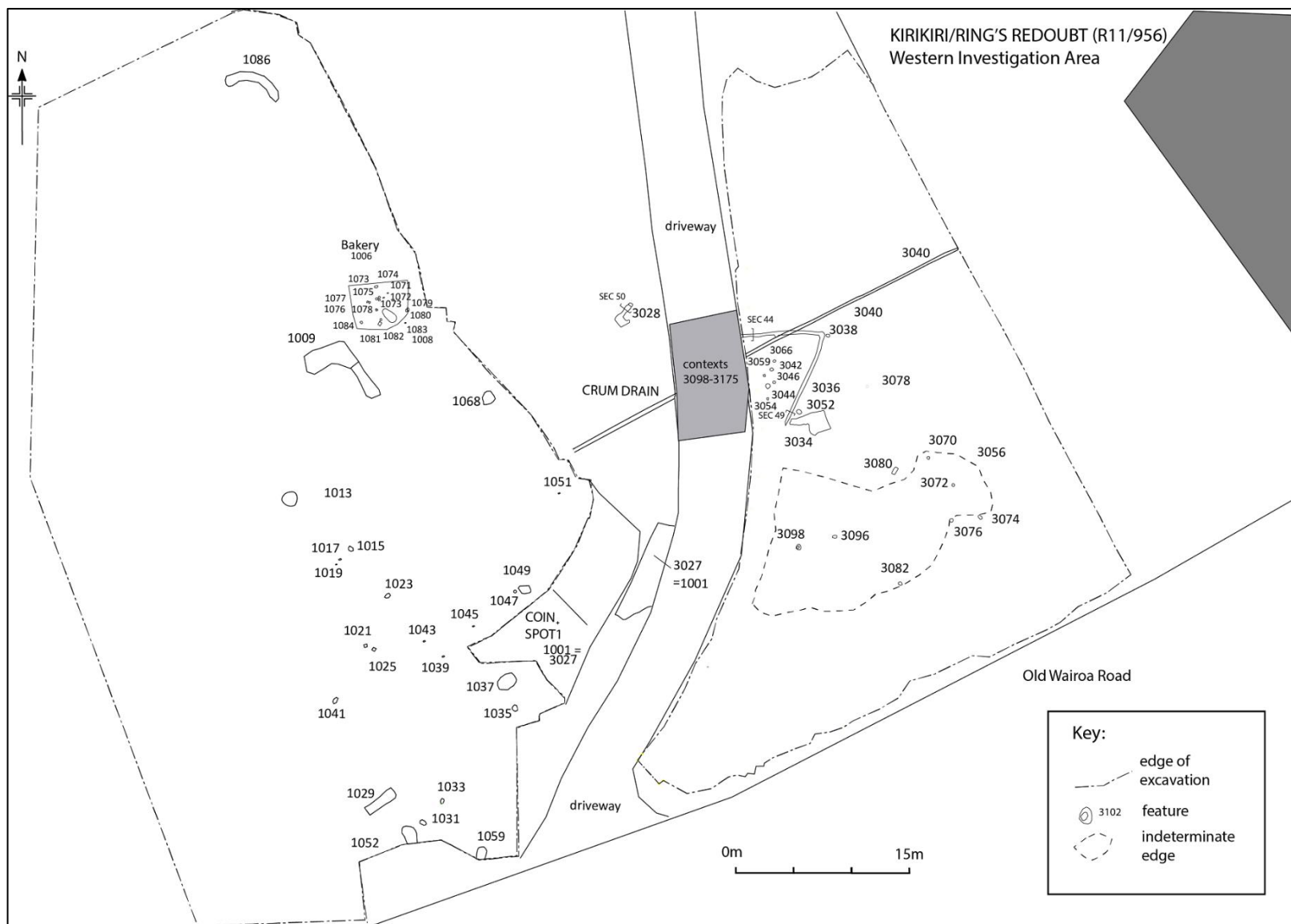


Figure 5.20 Survey plan of archaeological features situated to the west of Ring's Redoubt (R11/956)

5.6.2 Glacis (Defensive Earth Ramp) – Context 3007

Excavation of the area immediately adjacent to and sloping north-eastward away from the extant eastern section of the redoubt ditch exposed evidence of a defensive engineered feature known as a glacis¹⁵ (Figure 5.18 and Figure 5.19). A glacis is a military term for an engineered artificial slope that extends from in front of either stone-built or earthen defences in order to keep any attacking forces under fire from defenders until the last possible moment. The stratigraphy exposed in this area consisted of the modern topsoil (context 3000) which was a dark greyish brown clayey silt loam with occasional charcoal inclusions, which sealed a firmly compacted pinkish-red clay with yellowish brown, whitish grey, and dark greyish-brown mottles (context 3007) (Figure 5.21 and Figure 5.22). This deposit was 0.32m thick at the outer edge of the redoubt ditch and sealed a palaeosol (context 3006). Layer 3007 was observed for approximately 23.5m along the edge of excavation boundary, adjacent to and parallel with the surviving eastern section of the redoubt ditch (which also formed the boundary of the protected historic reserve). The palaeosol (3006) was a dark greyish brown silty loam, 0.11m thick containing occasional charcoal inclusions and represented the original topsoil prior to the construction of the redoubt (Figure 5.22). The pinkish-red clay component of deposit 3007 was derived from a pinkish-red sterile natural clay (context 3025) that was very firmly compacted and observed around the site only at depths greater than 1.3m, and formed the lower natural clay above the Waitemata Series bedrock. The pinkish-red clay layer was always sealed by the sterile natural whiteish-yellow clay (context 3002), itself sealed beneath the subsoil (context 3001). However, the presence of the layer 3025 intermixed with the upper natural clay (3002), subsoil (3001) and the buried topsoil (3006) immediately adjacent to the eastern course of the redoubt ditch clearly indicates that the deposit (3006) was formed by the upcast of material from the excavation of the redoubt ditch, that in keeping with standard military practice had been excavated to a depth of 1.8m. Subsequently, context 3007 had been formed into a slope which descended north-eastward away from the eastern ditch course, and was clearly apparent as where the slope terminated and met the original ground surface, an abrupt break of slope as the ground flattened out was present (Figure 5.23 and Figure 5.24).

The topography surrounding the northern and western sides of the redoubt (including the west side of the garden of the house at 931 Papakura-Clevedon Road, where a pronounced slope is visible) suggests that the glacis, perhaps as expected, would have originally been a feature of the defences on all four sides of the redoubt.

¹⁵ The etymology of this French word suggests a slope made dangerous with ice, hence the relationship with glacier.

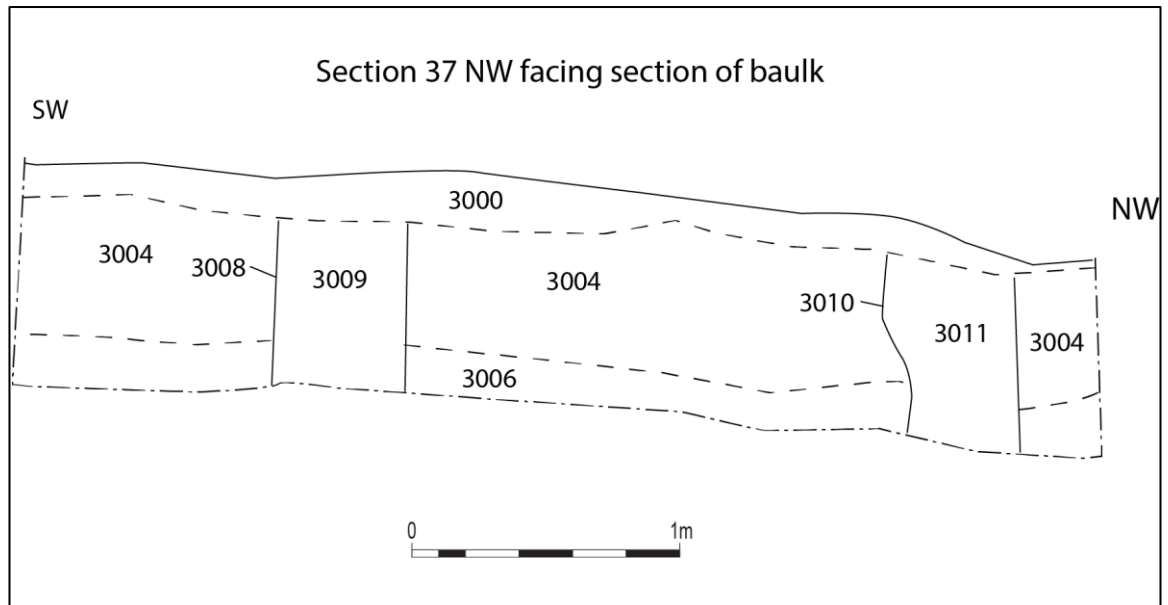


Figure 5.21 Northeast facing section excavated through the glacis ramp adjacent to the surviving eastern redoubt ditch. Contexts 3008 and 3010 are 20th century postholes



Figure 5.22 Northeast facing section through the glacis ramp showing deposit 3006 (the thick red and white mottled upcast material from the extant eastern course of the redoubt ditch). Scale 1 x 2m and 0.5m



Figure 5.23 Photo taken during the topsoil strip on the glacis ramp illustrating the engineered slope descending from the eastern edge of the surviving redoubt ditch, with the break to the natural topography clearly seen at left (indicated by arrow)



Figure 5.24 The redeposited red clay forming the glacis defensive ramp (context 3006) situated adjacent and parallel to the outside of the eastern redoubt ditch is seen sloping away from the edge of excavation (arrowed)

5.6.3 Redoubt Drainage Ditch at Northeast Bastion – Context 3014

A drainage ditch (context 3014) was exposed in plan close to the extant northeast bastion of the main redoubt site (Figure 5.18 and Figure 5.19). The ditch was exposed beneath the root bowl of a large macrocarpa tree that sat above the edge of excavation immediately adjacent to the outer edge of the redoubt's north-eastern bastion ditch (Figure 5.19). The section of the ditch exposed was 13.30m in length and trended north-northwest by south-southeast for some 12m before turning slightly to a north-south alignment for the final 1.90m to its terminus situated on a pronounced slope approximately 20m from the edge of the large gully to the east of the redoubt (Figure 5.19). The ditch had a stepped profile on both sides, that then broke to a 'U' shaped base (Figure 5.25 and Figure 5.26). The ditch was 1.90m wide at the edge of excavation and 0.94m deep, though the base of the ditch was observed to be rapidly deepening as it headed toward the main defensive ditch of the redoubt. Four slots were excavated through the ditch which illustrated that the ditch became shallower and narrower with increasing distance from the bastion ditch (Figure 5.25; Figure 5.26 and Figure 5.27). The fact that the ditch deepened significantly as it neared the bastion ditch, and was also situated at the lowest topographical point on the eastern side of the redoubt, clearly indicated that the purpose of the ditch was to drain water from the main redoubt ditch, and to prevent the accumulation of silt within it. The ditch contained two fills (contexts 3023 and 3024), with the primary fill (context 3023) consisting of a very firmly compacted pinkish-red, whitish-yellow, and mid-grey mottled silty clay that contained occasional charcoal inclusions (Figure 5.25 and Figure 5.26). The lower fill also contained a small quantity of artefacts consisting of black beer glass and ceramic sherds (Willow pattern). The upper fill (context 3024) consisted of a firmly compacted yellowish-brown silty clay with grey mottles and occasional charcoal inclusions, as well as black beer glass, ceramic (stoneware and earthenware sherds) and fragments of rusted iron. The ditch terminus was in the form of a narrow, shallow scoop, located on a pronounced slope that would have allowed water to discharge downslope into the large gully located some 20m to the east.

After sedimentation had accumulated inside the ditch to within some 15cm of the surface, another, narrower ditch (context 3026) had been re-cut within the earlier ditch channel (Figure 5.25 and Figure 5.26). The re-cut ditch truncated both fills (contexts 3023 and 3024) of ditch 3014 but was both narrower and shallower than the original ditch (Figure 5.25 and Figure 5.26). The re-cut ditch had a different profile than the original and was steeply cut before breaking sharply to a narrow pointed base (Figure 5.25). The re-cut ditch was 11.4m in length, and 1.14m wide and up to 0.80m deep (near to the redoubt) and, as with the original ditch, it both narrowed and grew shallower as it headed downslope from the redoubt. The re-cut ditch contained two fills (contexts 3022 and 3021), with the primary fill (3022) consisting of a compacted greyish-brown and pinkish red mottled silty clay with occasional charcoal inclusions as well as a large fragment of a handmade red brick (Figure 5.25). The upper fill (3021) of the re-cut ditch consisted of a moderately compacted grey with mid-brown clay with occasional charcoal inclusions and also contained black beer bottle glass and salad oil bottle glass fragments. These artefacts likely washed into the ditch via deposition within the main redoubt ditch.

It is likely that the original drainage ditch would have been connected to the main defensive ditch around the redoubt via a small diameter culverted channel that would have exited through and beneath the outer bank of the northwest bastion, to prevent assailants finding a way into the main redoubt ditch. The culvert would likely have been constructed of either brick or stone, or a combination of the two. It is plausible that the brick fragment found in re-cut ditch's primary fill may have been broken off during the cleaning out of the silted-

up culvert. The original ditch would almost certainly have silted up quite rapidly as the redoubt ditch dug by troops in mid-winter of 1863, which was some 6 feet (1.80m) deep and 10 feet wide (3.05m), would have resulted in a large area of newly excavated clay open to rainfall and subsequent erosion. The re-cutting of the ditch would have enabled the drainage to continue to work efficiently.

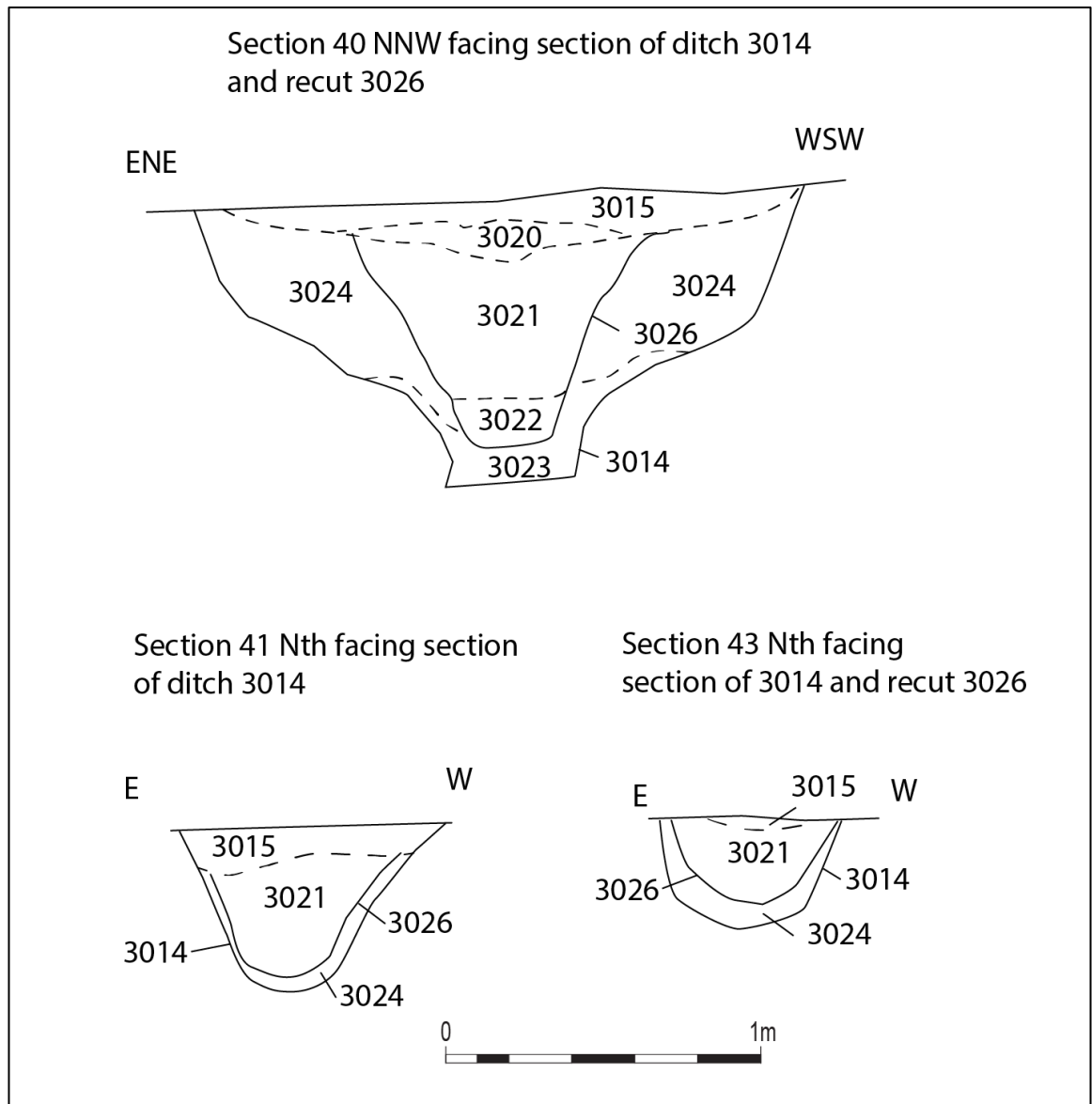


Figure 5.25 Section profiles of slots excavated through drainage ditches 3014 and 3026

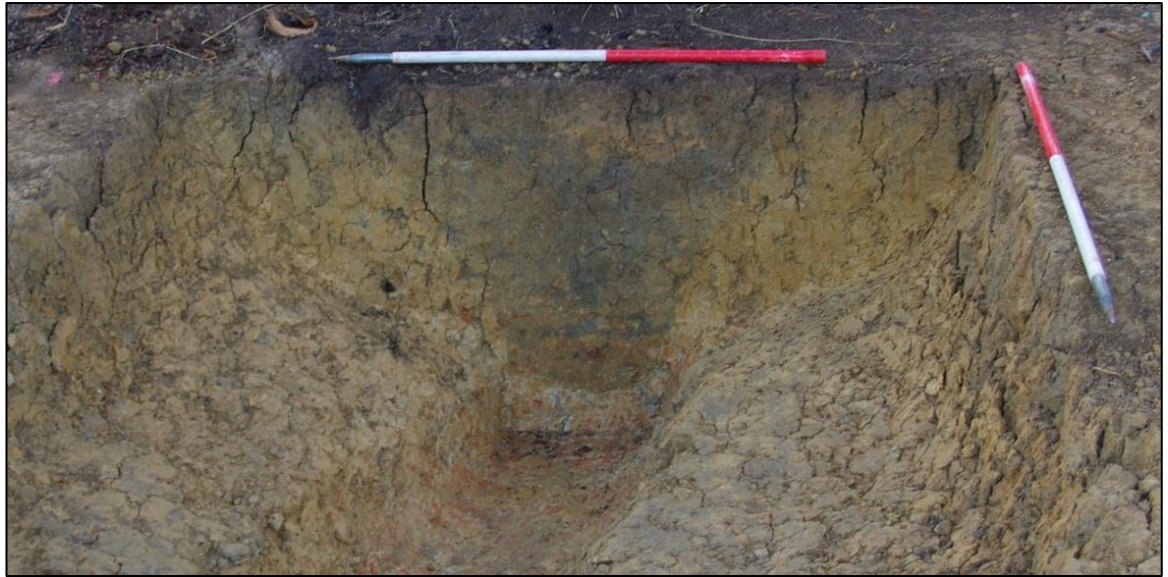


Figure 5.26 North-northeast facing section of 2m slot excavated through the large drainage ditch (context 3014) with re-cut ditch 3026 clearly visible cutting the original ditch. Scale: 2 x 1m



Figure 5.27 Post-excavation photo of drainage ditch 3014 and re-cut drainage ditch 3026. Facing south-southeast. Scale: 4 x 1m

5.6.4 Refuse Deposits Located to East of the Redoubt – Contexts 3016 and 3019

Two artefact-rich deposits (contexts 3016 and 3019) were located downslope and north-northeast of the terminus of the drainage ditches (contexts 3014 and 3026) on the sloping ground above the head of the gully situated to the north of the main redoubt site (Figure 3.19 and Figure 3.28). Context 3016 was a dark brown silt deposit that contained occasional charcoal inclusions and patches of burnt clay. The deposit had accumulated within a hollow likely formed from an old tree throw situated on the slope below the terminus of the drainage ditches 3014 and 3026. The dimensions of the deposit were 7.97m in length, 2.96m wide and up to 0.20m thick and it was of irregular shape (Figure 3.19 and Figure 3.28). The deposit was rich with artefacts derived from occupation of the redoubt, containing material such as black beer and case gin glass shards, ceramic (Willow pattern), and iron fragments.

A second similar, but smaller deposit was situated some 3.35m to the east of the southern end of deposit 3016 (context 3019) (Figure 3.19 and Figure 3.28). As with the larger deposit 3016, context 3019 was situated downslope and to the northeast of the drainage ditch terminus, and had accumulated within a hollow, albeit much smaller than the one in which 3016 had formed (Figure 3.19 and Figure 3.28). The deposit consisted of a friable mid-brown silt that contained occasional charcoal inclusions and was also rich in redoubt-derived artefacts such as black beer bottle glass, and earthenware and stoneware ceramic sherds.

The artefacts present in both deposits would have been washed out of the drainage ditches and deposited downslope within the hollows where they would have become trapped in the deposits as the hollows silted up via the sediment-rich washout from both of the drainage ditches.



Figure 5.28 Pre-excavation view of contexts 3016 and 3019 (two concentrations of artefacts derived from the redoubt occupation) situated downslope and north-northeast of the terminus of drainage ditch 3014. Facing south-southwest. Scale: 2 x 2m

5.6.5 Encampment Enclosure Ditch – Contexts 3178, 3180 and 3201

After the removal of topsoil in the area to the north of the redoubt and adjacent to the historic reserve boundary a ditch (context 3178) was exposed extending from the section face on a southeast to northwest alignment, that then turned to the northeast-southwest, where it was observed to terminate (Figure 5.19 and Figure 5.29 to Figure 5.33). The remains of the ditch were situated on a sloping bank which had been cut at the time of construction of the residential lot at 935 Papakura-Clevedon Road (to the northeast of the redoubt). After the area had been cleaned via trowel, another short section of ditch on the same northeast-southwest alignment was exposed some 1.03m to the southwest of the terminus of the main section of ditch. The ditch had been cut with steeply sloping sides that broke to a flattish, slightly concave base, and contained two fills (contexts 3179 and 3196; Figure 5.30 and Figure 5.31). The primary fill (context 3179) was a yellowish-brown silty clay with mottles of mid-brown topsoil and occasional charcoal inclusions. The second fill (context 3196) consisted of a yellowish light brown clayey silt with occasional charcoal inclusions and small patches of burnt clay present within the matrix.

The longest section of ditch was aligned southeast-northwest and was 7.40m in length and up to 1.12m in width, though it narrowed to as little as 0.77m as it went downslope away from the redoubt due to modern vertical truncation of its upper levels (Figure 5.19 and Figure 5.32). The ditch then turned to a northeast-southeast alignment for a further 3.04m where it terminated (Figure 5.19, Figure 5.33, and Figure 5.34). A linear feature (context 3184) consistent with a narrow drain was observed extending from the corner of ditch 3178, where it turned to the southwest (Figure 5.19). A slot excavated across the corner of the ditch exposed the drain (3184) in section and determined that the drain was contemporary with ditch 3180 (Figure 5.19, Figure 5.31, and Figure 5.33). The drain was aligned south-southwest to north-northeast, and was 2.65m in length, 0.28m, wide and up to 0.11m deep, though it shallowed out toward its terminus, where water would have discharged downslope towards the same gully that the redoubt drainage ditch also discharged into. The drain contained one fill (context 3185) which consisted of a friable mottled yellowish brown and greyish brown silt that contained very occasional charcoal inclusions and frequent lumps of burnt clay (Figure 5.31).

The lower fill (context 3179) of ditch 3178 had been truncated by a recutting (context 3180) of the partially infilled ditch (Figure 5.30 and Figure 5.31). The recut ditch was narrower and slightly shallower than the original and ran on the same alignment within the course of the original ditch's channel (Figure 5.19). The recut ditch contained three fills (contexts 3181, 3182 and 3183). The lower fill (3181) consisted of a silt deposit with occasional charcoal inclusions, while the secondary fill (3182) was a greyish light brown clayey silt that contained occasional charcoal inclusions and occasional lumps of burnt clay similar to those found in the fill of drain 3184. The fill also contained artefacts derived from the redoubt occupation period. The artefacts retrieved from context 3184 consisted of bottle glass (alcohol, pharmaceutical, foodstuffs), ceramics including earthenware and stoneware, clay tobacco pipes, iron nails, and an iron heel plate from a boot. Lastly, the upper fill (context 3183) likely formed after the military had abandoned the redoubt and represents a slow infilling prior to the formation of the modern topsoil.

The ditch would also have had an embankment on the interior, and this is evidenced in the section seen at the edge of the historic reserve (Figure 5.30 and Figure 5.31). The embankment would have been created by the upcast from the original excavation of the ditch and would likely have had a fence running across its top. The embankment was on the interior (western side) of the ditch and was observed in section to be approximately 0.58m wide and survived to a height of 0.18m, although it would have originally been more

substantial. The embankment had partially slipped prior to the recutting (context 3180) of the original ditch and had formed a slump deposit (context 3204) on the western side of ditch 3178 as seen in section (Figure 5.30 and Figure 5.31). It was likely due to this occurrence that the original ditch silted up quickly and necessitated excavating the recut ditch (3180).

Approximately 1.04m to the southwest of the terminus of ditch 3178, another section of ditch (context 3201) present on the same northwest-southeast alignment was exposed (Figure 5.19). The section of ditch 3201 survived for only 2.31m, having been truncated in the late 20th century when the section for the house at 935 Papakura-Clevedon Road had been cut and benched. Ditch 3201 had also been severely vertically truncated and was approximately 0.38m wide and only 0.08m deep and filled with a single fill (context 3202), which represented a primary silt deposit consistent with the primary fill (3179) of ditch 3178. It is extremely likely, therefore, that the two sections of ditch are contemporary and part of a single large feature enclosing an area to the north of the redoubt.

It is interpreted that the two sections of ditch (contexts 3178 and 3201) represent an enclosure ditch that surrounded the encampment of bell tents as seen on the Morrow 1863 watercolour depicting the camp of the 43rd Regiment. The enclosure ditch would have served a defensive purpose as the low earthen rampart on the inside of the ditch would have almost certainly been topped with a fence, and also would have drained water, keeping the encampment ground dry.

A group of six postholes located in close proximity to the enclosure ditch and drain were found after excavation to be either later 19th or 20th century in origin, and likely associated with the early farming phase of the site.



Figure 5.29 Pre-excavation image of ditch 3178 extending from the direction of the redoubt and the Stage 3 earthworks boundary with the historic reserve, facing southeast. Scale: 2 x 2m



Figure 5.30 Northwest facing section of ditch 3178 and recut ditch 3180 seen in the edge of excavation situated at the boundary with the historic reserve. Scale: 1 x 1m and 1 x 0.5m

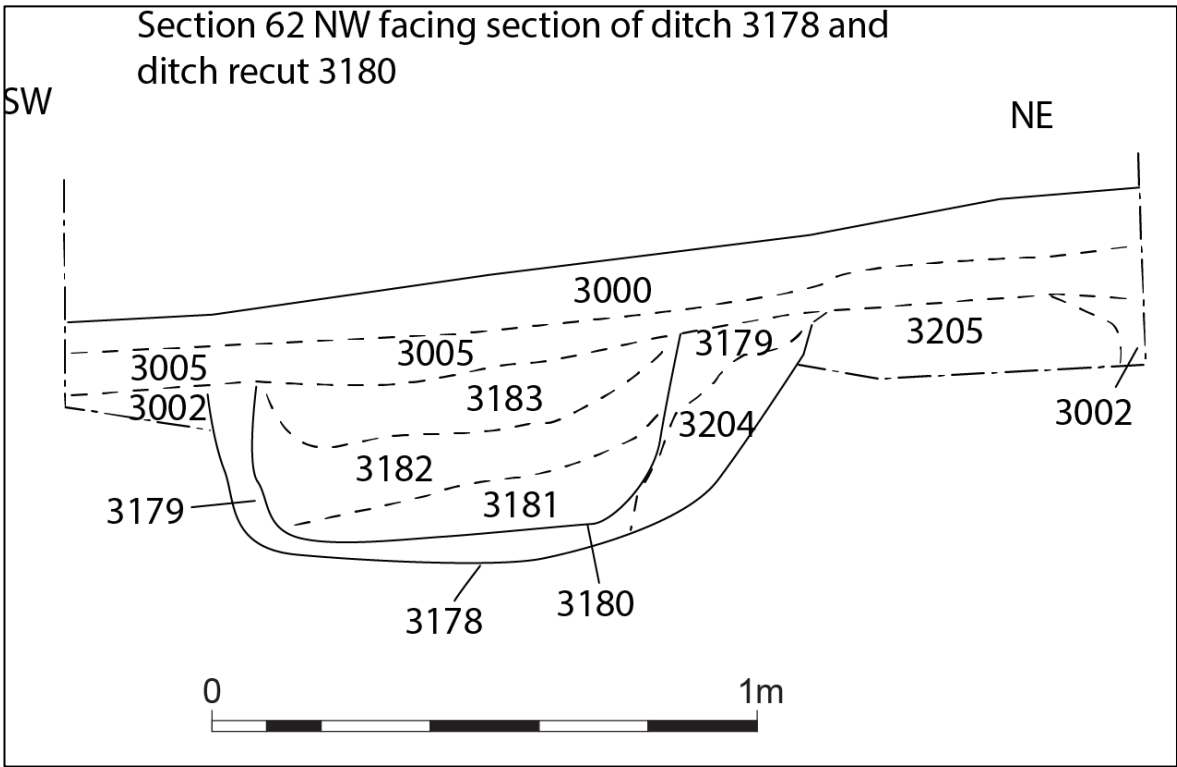


Figure 5.31 Section profiles of ditches 3178 and 3180 and drain 3184



Figure 5.32 View southeast across part of the remains of the enclosure ditch 3178. Scale: 2 x 2m



Figure 5.33 Post-excavation image of ditches 3178 and 3180 and drain 3184, facing south-southwest. Scale: 4 x 1m



Figure 5.34 The ditches and drain after they had been fully excavated. Scale: 4 x 1m

5.6.6 Barracks Building Platform – Contexts 3056 and 1001=3027

The stripping of topsoil in the area to the west of the redoubt and extending to the head of the large east-west trending gully exposed a number of features relating to the occupation of the redoubt and the larger surrounding encampment (Figure 5.18 and Figure 5.20). The most prominent feature exposed was a dark brown layer (context 3056) that was rectangular in plan and contained abundant historic artefacts relating to the occupation of the redoubt and included a large volume of military artefacts (Figure 5.20, Figure 5.35 and Figure 5.36). Due to the presence of fragile items such as copper alloy regimental buttons, the deposit was trowelled by hand in order to avoid damaging the artefacts and also to enable the retrieval of as many artefacts as possible. A metal detector was also utilised to ensure that no small metallic items were missed and on-site sieving of the excavated deposits was also undertaken.

The deposit was a compacted but friable black to dark brown slightly clayey silt which contained frequent patches of burnt clayey silt and occasional to moderate charcoal inclusions. The deposit also contained abundant mid-19th century historic artefacts including military uniform paraphernalia, including regimental buttons from a number of regiments; ordnance such as Minié bullets and musket balls; and associated materials such as ceramic, glass, clay tobacco pipes and miscellaneous metal, of copper alloy, iron, and lead. The deposit also contained small quantities of animal bone but unfortunately, due to the properties of the soil, it was in an extremely degraded condition. The deposit had slumped at its western end, where it was present as a much thinner layer downslope and to the west of the in situ portion of the platform that had been truncated by the access road to the property at 935 Papakura-Clevedon Road (Figure 5.20, Figure 5.36, and Figure 5.37). Nevertheless, the deposit still contained frequent artefacts including military items and

other historic artefacts. Therefore, the redeposited downslope part of the deposit was also trowelled by hand. The deposit's dimensions (including the downslope portion) was some 21.30m in length by 12.50m wide (though the eastern in situ part was only 6.40m wide) and varied between 0.15m and 0.25m in thickness.

A deposit of identical composition (context 1001=3027) was present on the slope on the western side of the access road, where it continued for approximately 9m and, as the slope flattened out slightly immediately above the head of the large east-west trending gully, it flared out to the south to as much as 17.20m wide (Figure 5.20 and Figure 5.38). The deposit varied in thickness from as deep as 0.20m to as little as 2cm where it lensed out at the edge of the gully head (Figure 5.39 and Figure 5.40). This deposit represented the erosion/slumping of a made ground layer upslope that had subsequently redeposited downslope to as much as 35m away (Figure 5.20). As was the case further upslope, the deposit contained a number of copper alloy and lead military artefacts as well as a large volume of historic artefacts in general (glass, ceramics, iron, tobacco pipes etc), and a metal detector and sieve were utilised to ensure that items relating to the military occupation in particular were not missed. The deposit also contained evidence of a fire with moderate to frequent charcoal inclusions and frequent patches of burnt/heat affected clay.

Due to the location of the earthen platform to the west of the redoubt's western ditch, it is interpreted that context 3056 represents the remains of the foundation platform for the large wooden barracks building structure seen depicted on Arthur Morrow's 1863 watercolour of the redoubt. The large volume of artefacts (many of which were small items of regimental uniform paraphernalia and small firearms ordnance) were likely to have been deposited either during the occupation phase of the building, or during the dismantling of it after abandonment, or a combination of both. The charcoal and frequent burnt clay patches indicate that at some point after the barracks structure had been dismantled or partly dismantled, a fire was set as a part of the site clean-up process.



Figure 5.35 The topsoil strip in the area to the west of the redoubt as the artefact rich deposit (context 3056) was being exposed (arrow). Facing northeast



Figure 5.36 Overlooking the remains of the barracks building's earthen platform (yellow dashed lines), which was an artefact rich deposit (context 3056) situated to the west of the redoubt. After the site had been abandoned and the building removed, the platform had slumped and eroded (arrowed) westward towards the gully. Facing west. Scale: 2 x 2m



Figure 5.37 Aerial image showing the location and extent of the remains of the earthen platform for the barracks building (black outline) and the extent of the redeposited eroded material that had slipped westward (dashed outline) from the platform after the site had been abandoned. Source: Google Earth Pro. Image dated: 3 April 2014



Figure 5.38 Aerial composite image from drone survey showing the western extent (context 1001=3027) of the slumped and redeposited layer (context 3056) that originated from the earthen platform of the barracks building. View east

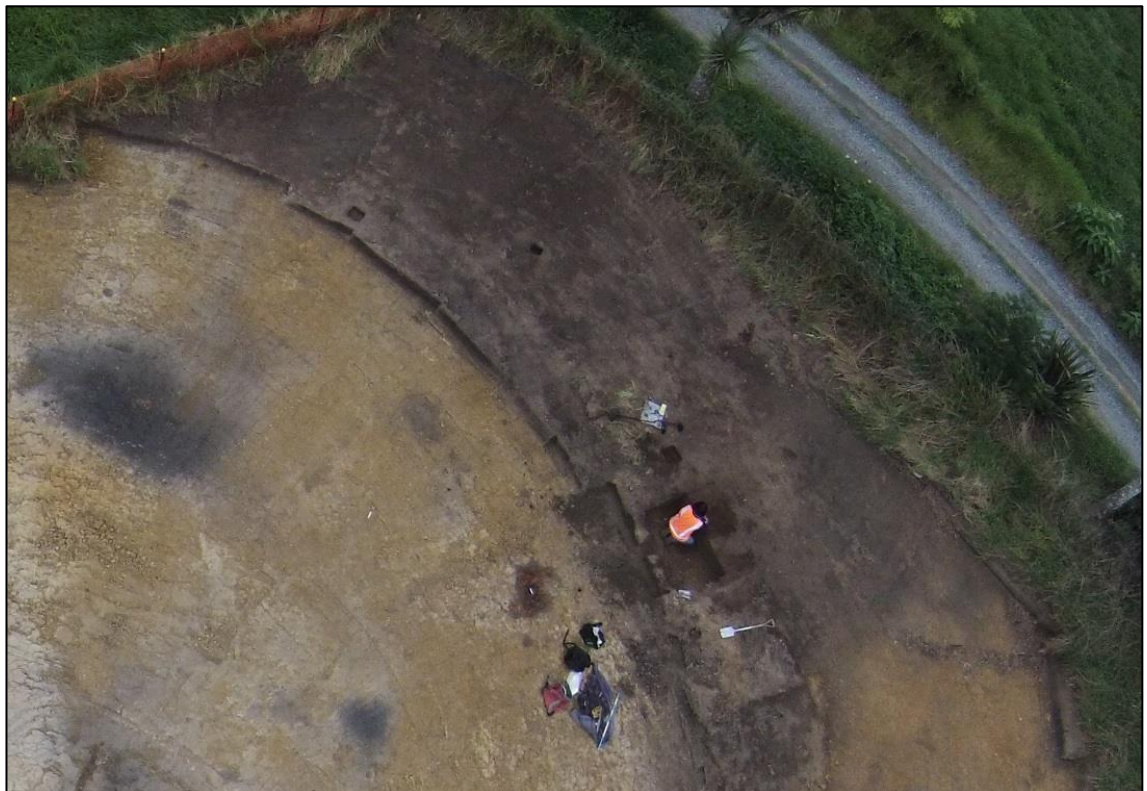


Figure 5.39 Aerial drone image showing the dark historic artefact deposit 1001=3027 situated at the head of the gully and downslope of the barracks building (3056)



Figure 5.40 The eroded and re-deposited barracks platform material (context 1001=3027) that was rich in historic material seen adjacent to the gully head. Facing west-southwest. Scale: 1 x 2m

5.6.7 Cooking Features

A number of features were exposed on gently sloping ground during the topsoil strip to the west of the main redoubt in both the Stage 2 and Stage 3 earthwork areas, above and immediately adjacent to the large east-west trending gully (Figure 5.18 and Figure 5.20). While all of these features related to soldiers' cooking activities, they were also significantly different in form, and are therefore described individually below.

Cooking Trenches – Context 3036

Two linear trenches (context 3036) which were adjoined at their eastern end, from where they diverged at 45° forming a 'wishbone' shape in plan, were exposed on sloping ground approximately 40m due west of the redoubt, and some 20m from the edge of the gully head (Figure 5.20 and Figure 5.41 to Figure 5.45). The trenches diverged downslope towards the head of the gully and had been cut with vertical sides that broke at right angles to a flat, sloping base that steepened as the trenches moved downslope, with a resultant slight increase in trench depth (Figure 5.45). Unfortunately, the terminus of the eastern trench was not present due to modern truncation in the 1980s when the access road to the house at 935 Papakura-Clevedon Road (situated to the north of the redoubt) was constructed (Figure 5.20). The northern section of the trench survived for some 5.54m in length and was approximately 0.28m in width, although it varied slightly along its course from as narrow as 0.24m up to 0.31m wide and an average depth of 0.28m. The southern section of trench, however, survived for some 7.75m and also had an average width of 0.28m and for the most part survived to a depth of 0.28m. The feature is interpreted as cooking trenches, which were commonly excavated temporary features used for cooking food for the men of the regiments on campaign. At the apex of where the two trenches converged a sub-rectangular area 0.64m x 0.41m showed evidence of being heat affected and is

interpreted as the location of a chimney-like structure or vent (Figure 5.43). The trenches had been backfilled with a dark greyish brown very clayey silt, that contained moderate inclusions of charcoal as well as artefacts relating to the military occupation such as Minié balls, Enfield rifled musket bullets, very heavily corroded metal (iron and copper alloy) and black beer and wine/brandy bottle glass fragments, clay tobacco pipes, and ceramics including sherds of Willow ware and sprigged ware.

Cooking Pit – Context 3034

Context 3034 was a rectangular feature, cut with vertical, straight sides and a flat base, and was 2.20m in length by 1.60 wide and was up to 0.32m deep (Figure 5.20 and Figure 5.47 to Figure 5.51). The feature contained four fills (contexts 3035, 3061, 3062 and 3063) (Figure 5.51). The primary fill (context 3061) consisted of a brownish dark grey clayey silt that contained frequent charcoal inclusions and burnt patches of clay (Figure 5.51). This fill, together with a highly burnt deposit (context 3063) that was 5 cm thick and situated on the sides from base to top on the northern and western pit walls, indicates that the inside of the pit was subjected to either intense heat or repeated fires. At the north-western end of the pit a 0.48m wide channel, that was 1.41m long sloped upwards and out of the pit, was the entrance and exit to the pit (Figure 5.20 and Figure 5.48). The pit feature is interpreted as a cooking pit/cookhouse where soldiers would prepare and cook food, often in very large camp kettles (large vessels that could hold enough food to feed eight men) that were heated over wood fires. After the feature had been abandoned it gradually silted up and infilled with its upper fill (context 3035) a mottled yellowish light brown and orangey-brown silt (Figure 5.51).



Figure 5.41 South facing pre-excavation view across the cooking trenches (context 3036), which had unfortunately been truncated by the access road built in the 1980s to the house situated to the north of the redoubt. Scale: 2 x 1m



Figure 5.42 West facing pre-excavation view of cooking trenches (context 3036) situated on a slope to the west of the redoubt. Scale: 2 x 1m

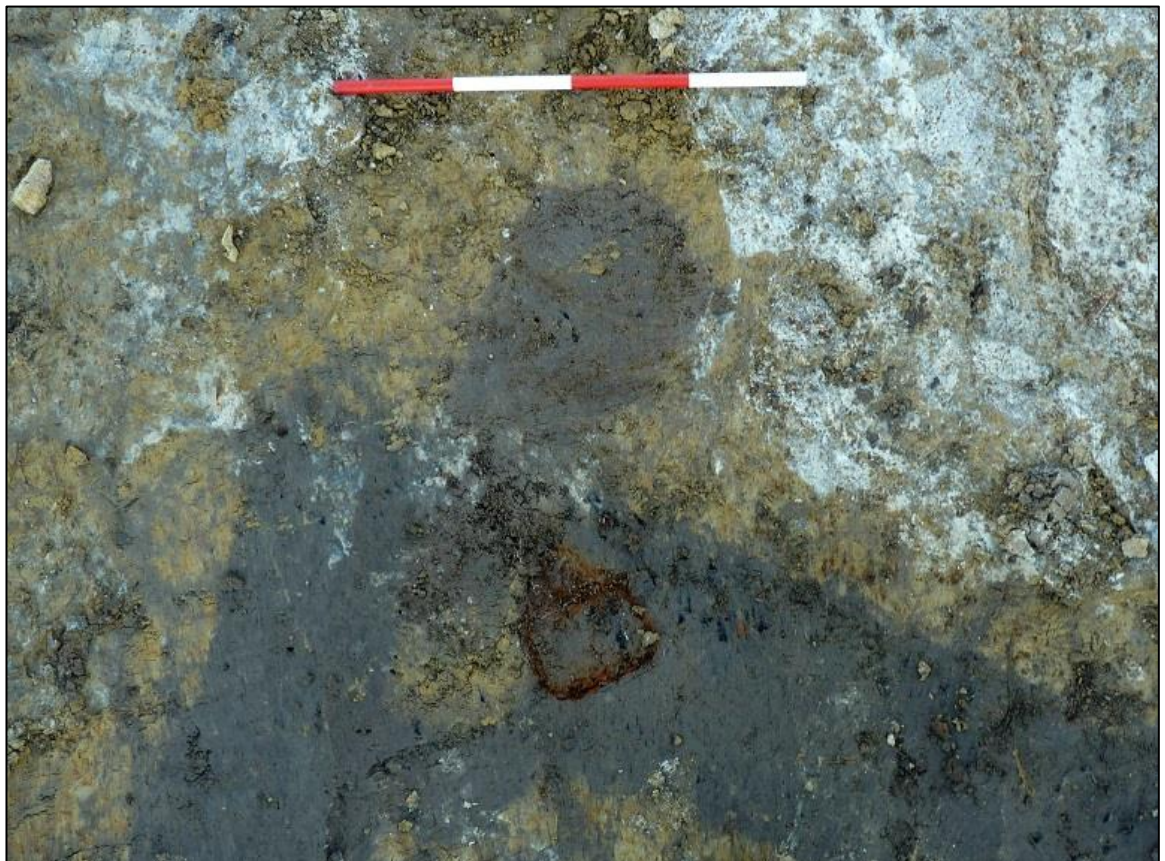


Figure 5.43 The upslope end of the cooking trenches (context 3036) where the chimney structure would have been situated. Scale: 0.40m



Figure 5.44 West facing post-excitation photo of the cooking trenches (context 3036)



Figure 5.45 South facing post-excitation view across the cooking trenches (context 3036). Scale: 2 x 1m



Figure 5.46 The junction of the two courses of trench (context 3036) with a noticeable widening at the apex, and a posthole (context 3038) adjacent to the area where the chimney vent would have stood. Facing southeast. Scale: 1m



Figure 5.47 North facing pre-excavation shot looking over cooking pit (context 3034). Scale: 2 x 1m



Figure 5.48 Post-excavation image looking east over cooking pit/cookhouse 3034 with the sloped entrance visible at front left. Scale: 2 x 1m



Figure 5.49 West facing section through cooking pit/cookhouse 3034. Scale: 1m

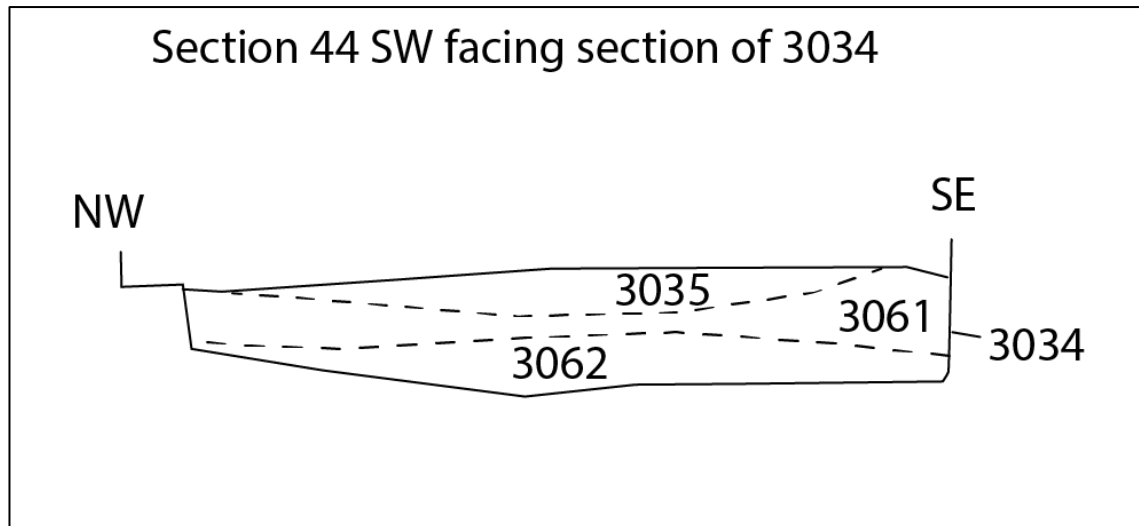


Figure 5.50 Section profile through the cooking pit/cookhouse 3034



Figure 5.51 Looking southeast across the eastern cooking trench with cooking pit/cookhouse 3034 immediately behind (arrowed)

Bakery – Context 1006

A large rectangular feature (context 1006) was exposed in plan on the northern side of the gully head approximately 85m from the western side of the redoubt main fortifications (Figure 5.18, Figure 5.20, Figure 5.52 and Figure 5.53). The feature was 4.69m in length (east-west) by 3.74m wide (north-south) and had been cut with vertical sides, with a flat

base and had a maximum depth of 0.18m (Figure 5.54 and Figure 5.55). The feature contained a floor deposit/trample layer that consisted of a very firm greyish-brown, silty clay that contained occasional charcoal inclusions (context 1007). The deposit contained artefacts such as black beer bottle glass, ceramic sherds including Willow ware, a partial stoneware ink bottle and several heavily corroded iron nails. The feature had been benched northwards into the slope to create a flat, level area, and postholes within the base indicated that a structure had stood here (Figure 5.20, Figure 5.55, and Figure 5.56). Toward the southern boundary of the structure and to the eastern side of its centre, a reddish-orange heavily burnt oval feature (context 1008) was clearly apparent (Figure 5.55, Figure 5.56, and Figure 5.57). The feature was 1.24m in length and 0.61m wide and extended to a depth of 0.24m (Figure 5.55). The feature is interpreted as either a cooking pit, or perhaps the camp bakery, which were always situated away from the redoubt proper, probably due to the fire risk and potential for explosions of stored gun powder. The location of the feature some 85m to the west and downslope of the western redoubt ditch, considered with the intensive nature and depth of scorching to the ground, strongly suggest that the feature was indeed the remains of the Redoubt bakery.



Figure 5.52 Aerial photograph captured by drone showing the large rectangular feature cut into the slope of the northern side of the large gully to the west of the redoubt (arrowed)



Figure 5.53 Vertical aerial photograph captured by drone of the rectangular feature (context 1006) situated to the north of the gully head, with the burnt reddish orange area (1008) clearly visible

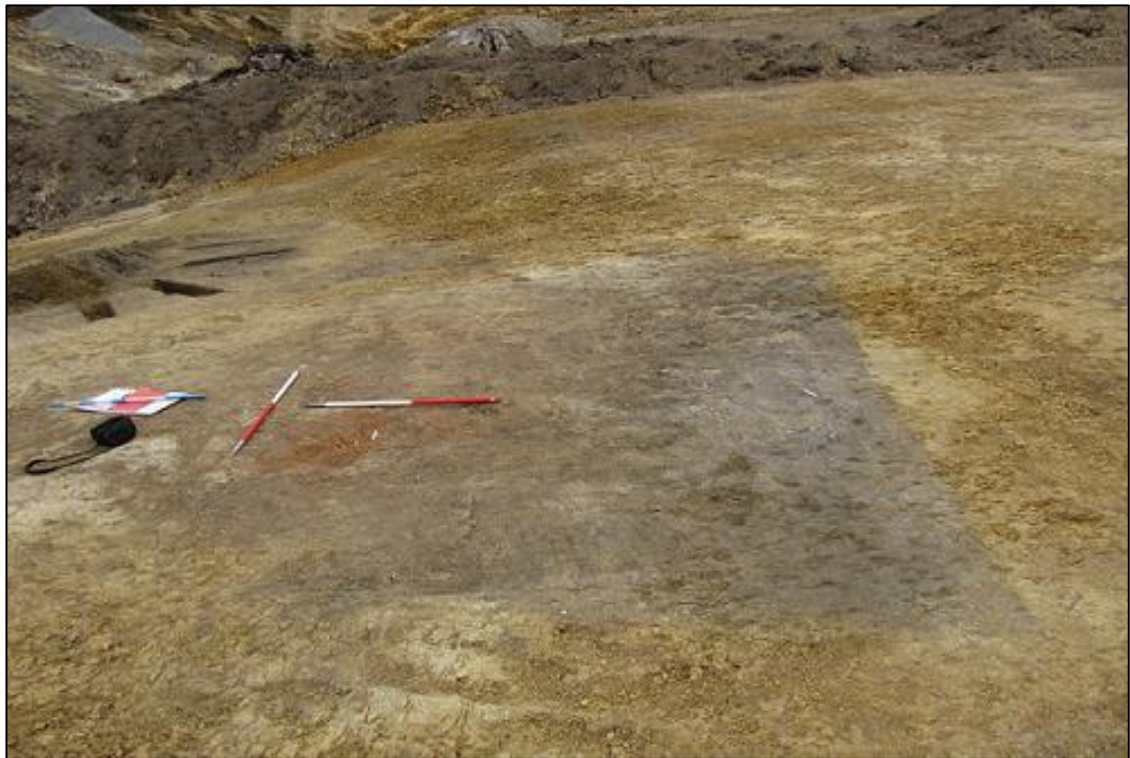


Figure 5.54 West facing pre-excavation view across structure 1006. Scale: 2 x 1m



Figure 5.55 North facing image taken during the excavation of structure 1006, with the heat-affected area very apparent and excavated postholes also visible. Scale: 2 x 1m



Figure 5.56 South facing view across structure 1006 during excavation, with the bearer postholes visible in the east-west aligned excavation trench. Scale: 2 x 1m



Figure 5.57 Aerial drone plan view post-excavation image of context 1006 with the intense heat affected area seen as the oval patch of vivid red clay. Scale: 2 x 1m

5.6.8 Outer Defensive Works – Contexts 1009 and 1086

Following the topsoil strip at the head of the large gully located approximately 70m from where the western rampart and defences of the redoubt structure would have stood, two large curvilinear ‘arc’ shaped features (contexts 1009 and 1086) were observed in plan (Figure 5.20). Both features were situated on the northern side of the gully head, with feature 1009 situated on the slope approximately half way up the slope, while feature 1086 was located on level ground at the top of the slope (Figure 5.20 and Figure 5.58, left). The more substantial of the two features was context 1009, which measured 3.69m on a west-southwest to east-northeast alignment and 3.78m on a northwest to southeast alignment. The feature had been excavated with a gradual sloping side uphill, and a steep cut on the downslope side, forming a narrow ‘U’ shaped curving trench which was up to 1.35m wide and up to 0.79m deep (Figure 5.58, right and Figure 5.59). The feature contained two fills (contexts 1010 (upper) and 1057 (lower)). The lower fill (1057) consisted of redeposited subsoil and represented silting of the feature while it was in use, while the upper fill (1010) consisted of a greyish dark-brown silt loam that contained burnt patches of clay and occasional charcoal inclusions (Figure 5.59). The feature also contained artefacts in the form of clay tobacco pipes (both stem and bowl parts), bottle glass (black beer, pickle, salad, ink bottle), ceramic (blue and white transferware) and iron.

Due to the morphology of the feature, and when considered with its location and aspect, it is interpreted that it represents an outer defensive position of the redoubt. Due to the

topography of the area west of the redoubt, it would not have been possible to command a view down through the gully from the redoubt's western parapets, a situation that would have been a noted weakness and left that side of the redoubt more susceptible to surprise attacks. The siting of a defensive feature such as a firing trench or gun emplacement in the location where feature 1009 was situated, would enable a clear view and line of fire straight down the inside of the gully for some 200-300 yards (c.180-275m). If the material from the original excavation of the curving trench that formed feature 1009 was upcast immediately in front of the trench on the downslope side, then this would have enabled soldiers to train their muskets on the gully from a fairly safe dug-in defensive position. It is considered most probable that feature 1009 represents a firing trench where two or more soldiers could have kept an armed watch on the gully as it approached the western side of the redoubt

Approximately 20m to the north of feature 1009, and on the northern slope top of the gully head, an almost identical looking feature (context 1086) was situated. As with context 1009, feature 1086 was also observed in plan as a curvilinear 'arc' like feature (Figure 5.20 and Figure 5.60). However, this feature was situated in an area that had been significantly vertically truncated at some point during the modern period, and as such it survived to a much shallower depth than feature 1009. The feature was up to 0.70m wide and was 2.19m in length on a west-southwest to east-northeast alignment, and then curving for 2.68m on a northwest to southeast alignment (Figure 5.20). As with context 1009, the feature was also cut with a gradual sloping side uphill, and a steep cut on the downslope side, forming a narrow 'U' shaped curving trench, and if it were not for the significant vertical truncation in the area, there is no reason think that it would not have been just as substantial. The feature contained one fill (context 1087), which consisted of a greyish dark-brown silt loam that contained occasional charcoal inclusions and was very similar to the fill of feature 1009 (context 1010), although without the burnt clay patches or artefacts. Due to the location and nature of feature 1086, and with its strong similarity to feature 1009, it is also interpreted as a dug-in defensive feature, most likely a firing trench, and provided part of the outer defences of the redoubt on its western side.



Figure 5.58 Aerial drone image showing location of both possible firing trenches / gun emplacements (arrowed) on the northern side of the head of the large gully to the west of the redoubt (left), and aerial post-excavation plan view of the firing trench/gun emplacement context 1009 (right). The gully was a potential weakness in the defence of the redoubt and represented a substantial blind spot to the redoubt structure itself, and would therefore have required additional localised defences to ensure against surprise attack

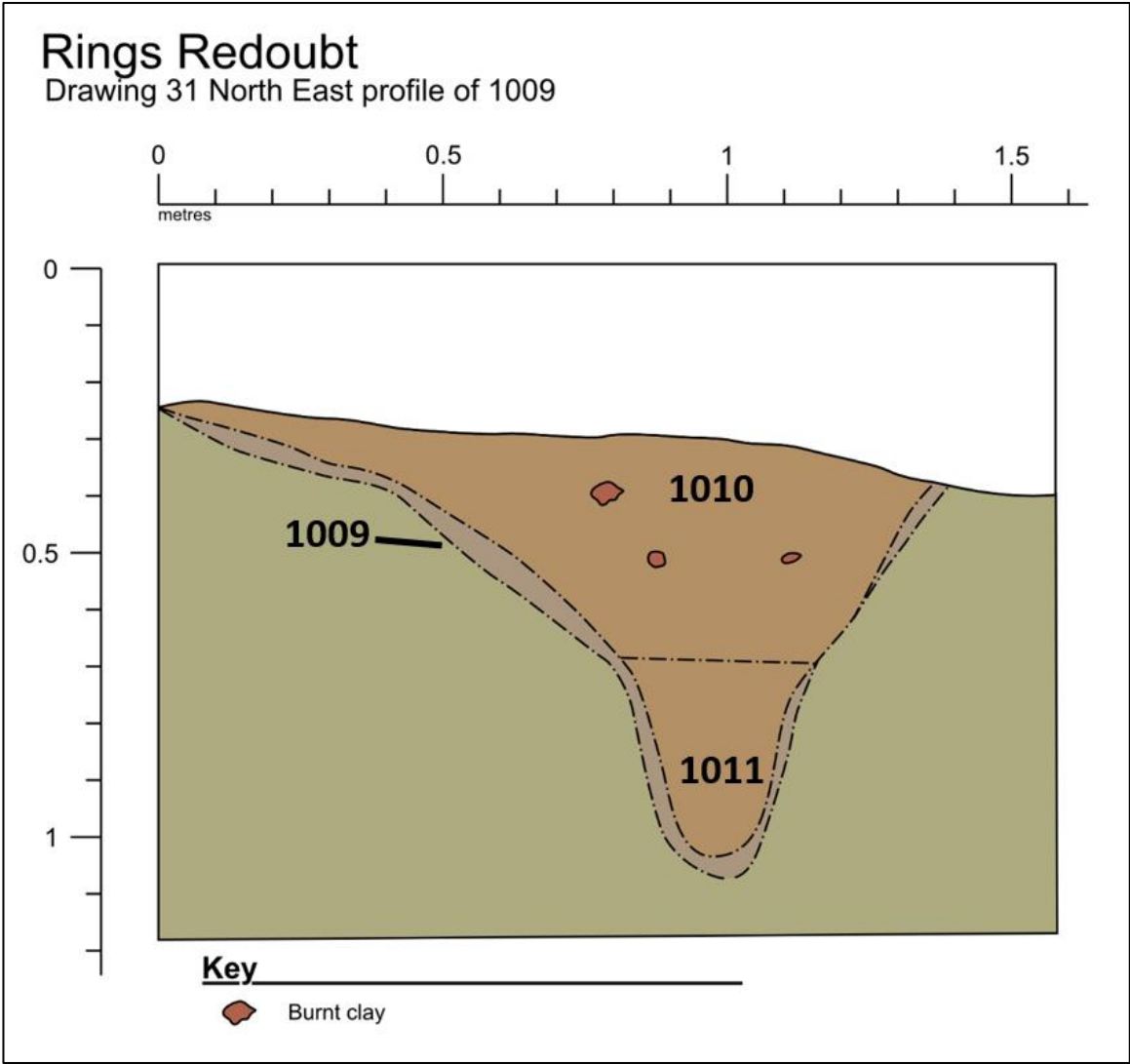


Figure 5.59 Northwest facing section through slot excavated through firing trench/gun emplacement 1009



Figure 5.60 Looking northwest across the truncated possible firing trench / gun emplacement context 1086, situated on top of the slope on the northern side of the large gully, which was a blind spot from the Redoubt itself. Scale: 2 x 1m

5.6.9 Miscellaneous Features

There were a number of features to the west of the redoubt and also west of the access drive to the former residence at 935 Papakura-Clevedon Road, many of which were in isolation and not present in alignments or groupings that were indicative of the remains of timber structures (Figure 5.20). The majority of the features were situated on land just above the head of the large gully and consisted predominantly of postholes, many of which had been vertically truncated and survived in some cases to as little as 5cm depth. It is highly probable that some of the posts related to post and wire fences of the late 19th and 20th centuries once the area had become farmland, and a couple of such features were identified. While the majority of features were postholes that cannot be interpreted beyond their form, therefore only features that can be at least tentatively interpreted will be discussed. These consist of a long drop latrine-like feature (context 1013), a rectangular pit (context 1029), and two potentially similar pit-like features (contexts 1052 and 1059).

Latrine Pit – Context 1013

Following the completion of the topsoil strip in the area of the gully head to the west of the access road to the former dwelling at 935 Papakura-Clevedon Road, a relatively large sub-circular feature (context 1013) was exposed in plan in the base of the gully head (Figure 5.20). The feature was 1.20m in length by 1.13m wide and had been cut through the subsoil and into the natural clay with vertical to undercut sides and had a flattish base (Figure 5.61

and Figure 5.62). The feature contained one fill (context 1014) a blackish dark grey organic rich silt that contained occasional charcoal inclusions (Figure 5.61 and Figure 5.62). The deposit became waterlogged at its base and produced a single artefact that consisted of a clay tobacco pipe fragment. Due to the location and morphology of the feature together with the nature of its fill, the feature is interpreted as a latrine pit, possibly used by the soldiers manning the bakery or gun trenches in the near vicinity, as the main camp up slope would have had a much larger dedicated latrine.



Figure 5.61 Aerial plan view of the latrine pit (context 1013) during excavation. NB. The rich, dark organic nature of the feature's fill apparent as seen in the spoil heap at right. Scale: 2 x 1m



Figure 5.62 West facing section of latrine pit 1013 after excavation in half section by mechanical excavator, facing east. Scale: 1 x 2m and 1 x 1.5m

Pit Features – Contexts 1029, 1052 and 1059

Feature 1029 was a rectangular pit that was cut with near vertical sides and a flat base and was 2.71m in length by 0.70m wide and 0.41m deep (Figure 5.20 and Figure 5.63). The feature contained two fills (contexts 1030 and 1051). The lower, primary fill (1051) consisted of a yellowish and dark brown mottled silty clay which was 0.28m deep, and which in turn was sealed by the upper fill (1030) a friable dark greyish-brown silt loam with frequent charcoal inclusions. Two features of similar morphology (pits 1052 and 1059) were partially exposed in plan, but both extended beyond the southern excavation baulk edge (Figure 5.20). Pit 1052 was situated approximately 2.5m to the south of pit 1029 and was also rectilinear in shape and observed running on a roughly north-south alignment for some 1.46m and was 0.89m wide and 0.40m deep. As with pit 1029 the feature had been cut with vertical to very steep sides and a flattish base. Like pit 1029, the feature also contained two fills (contexts 1053 (upper fill) and 1054 (lower fill)), both of which were consistent with those of pit 1029. Pit 1059 was located approximately 4.7m to the southeast of the eastern side of pit 1052 and was remarkably similar in plan to pit 1052; it was visible for some 1.04m before it extended beyond the edge of excavation. The pit was on a northeast-southwest alignment, was 0.72m wide and, although not excavated, had an identical upper fill to that of pits 1029 and 1052, consisting of a charcoal rich dark greyish-brown silt loam. None of the features produced any artefactual material.

While these features are certainly enigmatic, their shape, coupled with the proximity of postholes (contexts 1031, 1033, 1041 see Figure 5.20), may allow a tentative function to be suggested for the features. The pits are all straight sided, with flat bases and it is considered plausible that wooden or metal troughs could have been placed inside them for watering and feeding of horses, with the postholes perhaps indicating tethering posts or

hitching rails. While this can never be proven, it is nonetheless a plausible interpretation, and the fact that there are three of the features in close proximity to one another, may indicate that this area was used for the watering and feeding of the camp's horses.



Figure 5.63 Post-excavation plan view of pit feature (context 1029) located close to the south-eastern boundary of works. Scale: 2 x 1m

5.6.10 Features Beneath the Access Road to 935 Papakura-Clevedon Road

Some 44 contexts (cut and fill) were recorded within the area of the former driveway to 935 Papakura-Clevedon Road (Figure 5.64). Unfortunately, the survey file has not been provided by the surveyor so the area has been shaded in grey on the site plan (Figure 5.18 and Figure 5.20). The northern arm of the 'V' shaped cooking trench discussed above (context 3036) extended into the area by approximately a further 3m, the depth and width consistent with that in the section further upslope (Figure 5.65). In addition, a line of postholes (structure 3169 = cut 3100, 3114, 3116, 3118, 3122, 3145, 3149) were recorded in this area along a historic fence line, which ran parallel with the western course of the redoubt defensive ditch. One of the postholes (3145) contained a fragment of in situ wood from the post. Of the remaining postholes, three were oval (contexts 3098, 3108 and 3126) while the rest were rectangular (contexts 3120, 3124, 3128, 3139, 3141, 3143, 3147, 3165, 3171 and 3173). Posthole 3108 was quite deep at 0.7m and could have been used to hold a flagpole or perhaps more likely a signal post (Figure 5.66), while the majority of the postholes within the surrounding area were only 0.14-0.25m deep. That feature 3108

potentially represents a signal post is worth considering, as due to its location on the slope above the gully head to the west of the redoubt, it had commanding views of and would easily be seen by the garrison of the Papakura Redoubt. Redoubts and smaller outposts were always supposed to be intervisible with at least two other sites so that signals could be passed along the chain of redoubts if the situation necessitated it. One rubbish pit (context 3132) was recorded, with the fill (context 3133) containing some metal and glass fragments. The pit was quite small, measuring 0.7m by 0.5m (east-west), and shallow at 0.23m deep.



Figure 5.64 Looking south across the freshly stripped excavation area beneath the former access driveway towards the house at 935 Papakura-Clevedon Road. Scale: 2 x 1m



Figure 5.65 Looking east across the exposed extended section of the northern arm of the 'V' shaped cooking trenches. Scale: 2 x 1m; 1 x 0.3m



Figure 5.66 Southeast facing section of posthole 3108 situated beneath the access road – a deep posthole in isolation situated near the gully head overlooking Papakura. Scale: 0.5m

6 ARTEFACT ANALYSIS

6.1 Introduction

The artefact analysis was undertaken by Jen Low, with specialist analysis of military artefacts and metals completed by Richard Shakles. While the assemblage overall comprised a range of materials common to 19th century historic sites in general (bottle glass, ceramics, stoneware, metal objects, wooden items), nearly all of the assemblage could be directly attributed to the military occupation of the redoubt between July 1863 and July 1865. The majority of contexts that produced artefacts were of primary deposition, although it is noted that some of the artefacts had been eroded from their original context and been redeposited downslope, albeit still within a securely 19th century date. Overall, despite a high degree of fragmentation, preservation of materials was generally good, with the exception of metal items (both copper alloy and ferrous) which included artefacts of military/regimental origin. However, as none of the characteristic large rubbish pits/trenches normally associated with military sites were exposed during the archaeological investigation, the number of artefacts (NISP 6177 – MNI 1483), would have been even higher had such features been investigated. However, it is a large assemblage, especially when it is considered that there were relatively few archaeological features exposed in relation to the size of the investigation area.

The results are presented per material type, with a discussion following presentation of the results. An artefact catalogue is provided in Appendix 4.

6.2 Ceramics

Ceramic material was generally highly fragmented with only one near complete vessel recovered. In total, across the three stages, there were 738 sherds of ceramic recovered with analysis indicating a minimum of 126 vessels being represented. Of these vessels 115 were manufactured of Whiteware. Approximately 70.6% of the assemblage was decorated with a transfer print, with a range of colours present. Two vessels contained a partial maker's or origin mark, neither of which provided enough information for identification. Analysis indicates that ceramic material recovered during the excavations is generally consistent with material from assemblages dating to between c.1850 the early 1900s.

6.2.1 Ceramic Analysis

Ceramic material was cleaned using a toothbrush in warm water. Once dry, material was sorted by context with items within those contexts separated by decorative technique, pattern, colour and vessel form. The material recovered from Ring's Redoubt was generally heavily fragmented and where fragmented items could potentially relate between contexts only one item was counted towards overall MNV (minimum number of vessels), except where colour variations clearly indicated the presence of more than one item.

A total of 738 fragments of ceramic were collected from 16 contexts at the Ring's Redoubt excavations (Table 6.1). Context 1001=3027 (relating to the barracks building platform, 3056) produced the largest portion of the assemblage with 448 fragments collected,

followed by context 3056 with 149 fragments and context 1091 (a refuse dump deposit within the gully to the north of the redoubt) with 72 fragments. All remaining contexts contained less than 20 fragments with most containing less than 10.

Table 6.2 details the minimum number of vessels represented, with tableware items accounting for 101 of the 126 items, or 80% of the assemblage. Plates, numbering 38, may consist of saucers, side plates, or dinner plates where the size of the plate could not be determined. Two items remained unidentified. Of the 126 vessels, 115 (91%) were Whiteware vessels, a common fabric for 19th century ceramic items.

No full maker's marks were present with only one partial maker's name and one place of origin recorded.

Table 6.1 Summary of ceramics, Ring's Redoubt

Context	NISP	MNV	Context	NISP	MNI
1001=3027	448	77	3021	10	1
1007	4	0	3035	1	1
1010	9	1	3037	3	1
1090	1	1	3056	149	22
1091	72	10	3062	1	0
3005	18	1	3065	6	1
3006	6	4	3182	6	3
3016	2	1	Unstratified	2	1

Table 6.2 Minimum number of individual vessel forms by fabric, Ring's Redoubt

Vessel Form	Blueware	Earthenware	Greyware	Majolica	Red Body	Semi-Vitreous	Whiteware	Total
Bathroom/Bedroom								(15)
Chamber Pot							4	4
Container							1	1
Ewer							2	2
Ointment							3	3
Ointment Lid							1	1
Pot Lid							1	1
Shaving Mug							1	1
Toilet Box Lid							1	1
Washbowl							1	1

Drainage								(1)
Field Tile		1						1
Household								(4)
Jug Handle							1	1
Jug/Vase				1			2	3
Kitchenware								(3)
Cheese Pot							2	2
Container		1						1
Tableware								(101)
Bowl/Cup							1	1
Jug	1		1					2
Plate							38	38
Saucer							18	18
Side Plate							4	4
Soup Plate							1	1
Tea Pot		1						1
Teacup		1				1	27	29
Teapot					1			1
Teapot Lid		1						1
Tureen Foot							1	1
Tureen Handle							2	2
Unidentified							1	1
Various							1	1
Unidentified								(2)
Unidentified		1					1	2
Total	1	6	1	1	1	1	115	126

6.2.1.1 Decorative Technique

Of the 126 vessels recovered from excavations at Ring's Redoubt, 89 contained some form of decoration, with 17 being undecorated examples. One fragment (excluded from colour analysis) showed evidence of a transfer print having existed but no colour remaining visible. Table 6.3 summarises the decorative techniques used by vessel fabric type and provides an overall percentage for each technique.

The dominant decorative technique within the assemblage was underglaze transfer printed designs, generally in a single colour. Transfer printed wares comprised 89 vessels or 70.6% of the sample.

6. Artefact Analysis

The range of transfer print colours (excluding one vessel where colour remained unknown) is shown in Table 6.4, providing both the MNV for each colour and the percentage of the total sample of transfer printed wares. Analysis indicates that blue print was the most common, with 50% of the total sample; however, this increases to 58% when flow blue is included. Purple printed patterns were the second largest group of colours, at 12.5%.

Seventeen decorative patterns were identified by name (Table 6.5) with a further 59 patterns remaining unidentified and ascribed a pattern number (e.g., RR001). The identified patterns are listed in

Table 6.3 Decorative techniques by vessel fabric and as a percentage of the Ring's Redoubt assemblage

Decorative Technique	Blueware	Earthenware	Greyware	Majolica	Red Body	Semi-Vitreous	Whiteware	Total	Percentage of Total
Handpainted			1				6	7	5.5
Moulded/Handpainted	1							1	0.8
Relief							4	4	3.2
Relief/Handpainted				1			1	2	1.6
Sponged							1	1	0.8
Sponged							1	1	0.8
Sponged/Handpainted							1	1	0.8
Sprigged							3	3	2.4
Transfer						1	88	89	70.6
Undecorated		6			1		10	17	13.5
Total	1	6	1	1	1	1	115	126	100

Table 6.4 Transfer print by colour, MNV and percentage of total transfer printed wares

Transfer Colour	MNV	Percentage of Total Sample
Black	3	3.4
Blue	44	50
Brown	5	5.7
Dark Grey	2	2.3
Flow Blue	7	8

6. Artefact Analysis

Green	8	9.1
Grey	4	4.5
Polychrome	3	3.4
Purple	11	12.5
Red/Green	1	1.1
Total	88	100

Table 6.5 Identified patterns (MNV and vessel type)

Pattern Name	MNV	Vessel Type
Albion	3	plate (3)
Alhambra	6	plate (2), saucer (3), teacup (1)
Asiatic Pheasants	3	plate (1), shaving mug (1), soup plate (1)
Banded	4	bowl/cup (1), ewer (1), side plate (1), washbowl (1)
Cable	1	plate (1)
Chios	1	plate (1)
Chusan	1	saucer (1)
Clyde	1	unidentified (1)
Cornishware	1	teacup (1)
Dover	1	teacup (1)
Fibre	3	saucer (1), teacup (2)
Imitation Jasper	3	plate (2), saucer (1)
Italian Lakes	1	plate (1)
Rhine	3	plate (2), side plate (1)
Shell Edge	1	plate (1)
Willow	8	plate (7), side plate (1)
Windsor	2	saucer (1), teacup (1)
Total	43	

Context 1001=3027

There were 448 individual fragments of ceramic representing a minimum of 77 individual vessels recovered from context 1001 (Table 6.6). Much of the material was highly fragmented, although a number of larger sherds were present. Seventy-two of the items were manufactured of whiteware, comprising 93.5% of the vessel assemblage for this context.

Tableware items (n=63) accounted for 82% of the vessels recovered, with plates (of unknown sizes) calculated at 28 examples, teacups at 14 examples and saucers at 11

examples. Examining the teacups and saucers indicated a potential for only two matching pairs: single pairs of Fibre and RR036 patterns. The Willow pattern, the most common pattern recovered, was present on a minimum of 6 tableware items, all plates of an unknown size. Other identified patterns on decorated wares included Albion, Alhambra, Asiatic Pheasants, Banded, Cable, Chios, Chusan (Figure 6.1, left), Cornishware, Dover, Fibre, Imitation Jasper, Italian Lakes (Figure 6.1, right), Rhine, Shell Edge, and Windsor. Thirty-one patterns were not identified and given individual patterns numbers.

Seven individual items were recorded within the bathroom and bedroom ware category including two ointment pots, and single examples of a container, ewer, shaving mug and toilet box. The container was of a plain undecorated style, as were the ointment pots and lid. Two small fragments of a toilet box were decorated in an unknown blue print (RR012). Five fragments of an unidentified green print (RR044) came from a decorated ewer (Figure 6.2, left) while 12 fragments of a shaving mug were decorated in a brown Asiatic Pheasants print (Figure 6.2, right).

Kitchenware items included at least four jugs or vases, all represented by single fragments. Forty-five pieces of a single brown coloured earthenware container were collected (Figure 6.3, left), along with 15 fragments of an undecorated cheese pot. A single fragment of a vessel decorated with a Clyde pattern remained unidentified (Figure 6.3 right), but may have been associated with either a tableware or bathroom ware item.

Table 6.6 Vessel form and fabric – context 1001=3027

Vessel Form	Blueware	Earthenware	Majolica	Whiteware	Total
Bathroom/Bedroom					(7)
Container				1	1
Ewer				1	1
Ointment				2	2
Ointment Lid				1	1
Shaving Mug				1	1
Toilet Box Lid				1	1
Kitchenware					(6)
Cheese Pot				1	1
Container		1			1
Jug/Vase			1	2	3
Jug Handle				1	1
Tableware					(63)
Jug	1				1
Plate				28	28
Saucer				11	11

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Side Plate				2	2
Soup Plate				1	1
Tea pot		1			1
Teacup				14	14
Teapot Lid		1			1
Tureen Foot				1	1
Tureen Handle				2	2
Unidentified				1	1
Unidentified					(1)
Unidentified				1	1
Total	1	3	1	72	77

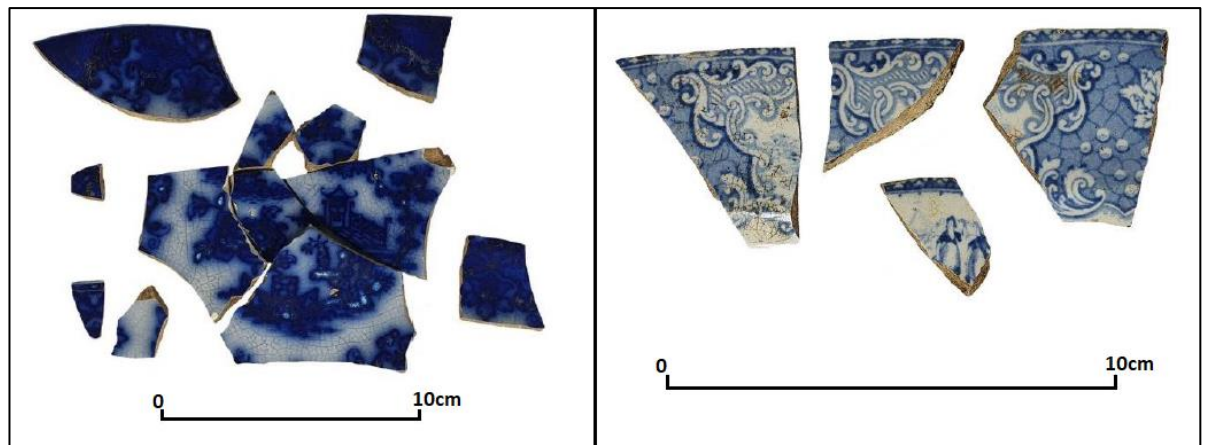


Figure 6.1 Fragments of a saucer decorated with a Chusan pattern (left) and plate fragments decorated with Italian Lakes pattern (right) from context 1001=3027

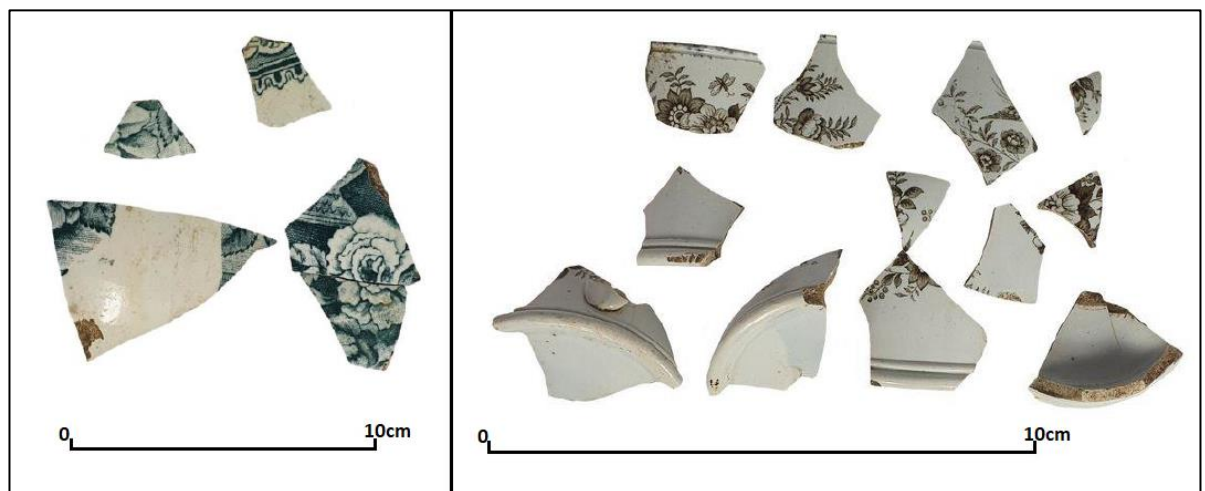


Figure 6.2 Fragments of ewer with green print RR044 (left) and fragments of a brown Asiatic Pheasants shaving mug (right) from context 1001=3027



Figure 6.3 Portion of undecorated kitchen container (left) and fragment of an unidentified vessel with a purple Clyde decoration (right) from context 1001=3027

Context 1010

Nine pieces of ceramic were recovered from this context (the fill of rifle trench 1009). Eight fragments related to a plate of unknown size and were decorated with the Albion pattern in blue print. A single sherd of blue printed plate could not be attributed to the Albion plate as it was too small to discern pattern.

Context 1090

A single fragment of a plate of unknown size was recovered from this context (one of two dumped refuse deposits within the gully to the north of the redoubt) The plate was decorated with a polychrome print, primarily green and red, which had largely decayed. The edge was trimmed with gilt banding.

Context 1091

Seventy-two pieces of ceramic were identified as relating to at least 10 individual vessels from this context (one of two dumped refuse deposits within the gully to the north of the redoubt) (Table 6.7). Five items related to bedroom or bathroom ware including 23 fragments of a potentially matching pair of a red banded washbowl and ewer. Sixteen fragments were related to at least two individual chamber pots decorated with an unidentified blue print (RR002, Figure 6.4, top left), the actual name of which may begin with 'Fi...' or 'Fl...'. Only a single letter of a maker's mark could be ascertained. A third chamber pot was identified from nine fragments decorated with an unidentified red and green print (RR001, Figure 6.4, top right).

Five tableware items were identified. Two saucers were noted, one being a plain white variety with a second having a light relief pattern at the edge (RR006). Two teacups were noted, one bearing an unidentified blue print (RR003, Figure 6.4, bottom left) with the base marked 'England', and the second being a semi-vitreous vessel with evidence of a print having once existed near the edge (RR005). Twelve pieces of a side plate were decorated with a blue print similar to Willow and designated RR004 (Figure 6.4, bottom right).

6. Artefact Analysis

The inclusion of 'England' on the base of the teacup may indicate manufacture at a date later than the Redoubt period, as after 1891 it became a requirement to state the country of origin under the McKinley Tarriff Act 1890 in the United States (Godden1991:11).

Table 6.7 Vessel form and fabric – context 1091

Vessel Form	Semi-Vitreous		Whiteware	Total
Bathroom/Bedroom				(5)
Chamber Pot			3	3
Ewer			1	1
Washbowl			1	1
Tableware				(5)
Saucer			2	2
Side Plate			1	1
Teacup	1		1	2
Total	1		9	10

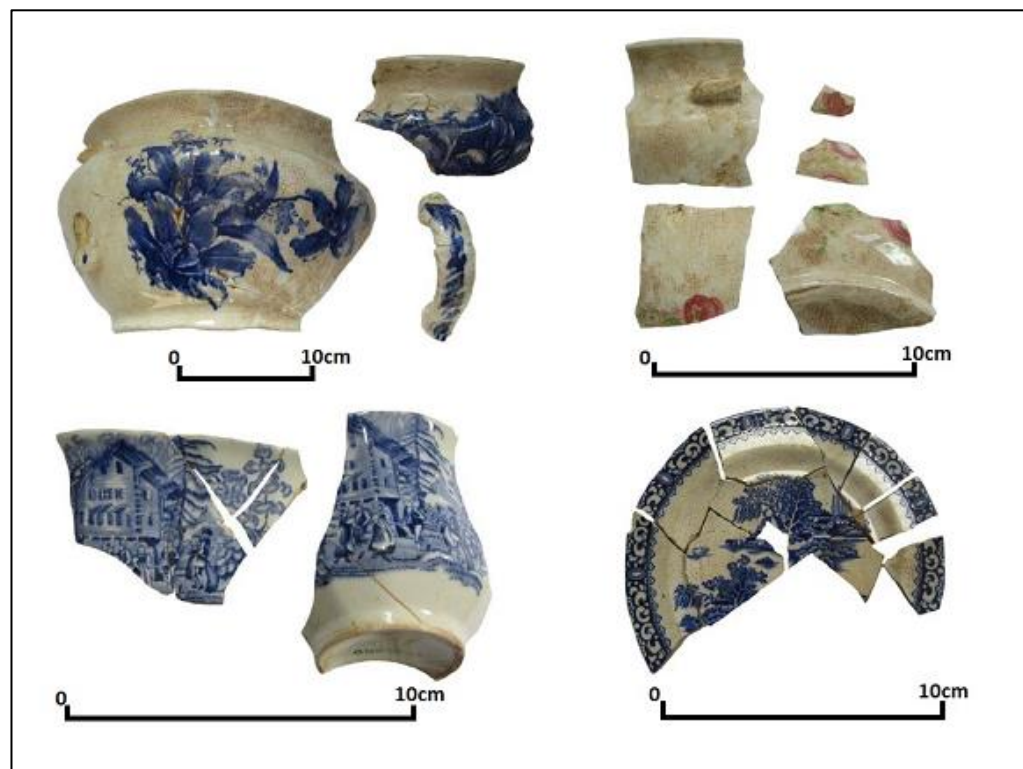


Figure 6.4 Top left: fragments of chamber pot (RR002). Top right: chamber pot (RR001). Bottom left: teacup made in England with unidentified blue print (RR003). Bottom right: side plate similar to Willow (RR004). All from context 1091

Context 3005

Eighteen fragments of ceramic were recovered from this location (an early 20th century deposit that contained both redeposited redoubt period material and early 20th century artefacts). Fifteen of the fragments related to a tea pot having no decoration. Two fragments of blue Willow patterned plate likely related to items calculated elsewhere. Similarly, one fragment of chamber pot decorated with an unidentified purple print (RR011) likely related to a pot of the same pattern calculated in context 3056.

Context 3006

Six pieces of ceramic representing a minimum of four individual vessels were collected from this context (a buried former topsoil that was sealed beneath the upcast material by the construction of the eastern section of the redoubt ditch). Three of these items were identified as tableware items, including three pieces of a side plate decorated with the Willow pattern (Figure 6.5, left), a fragment of a blue banded bowl or cup, and a fragment of teacup with an unidentified purple print (RR007). A portion of a bedroom or bathroom-ware pot lid was decorated in an unidentified polychrome design (RR008) depicting shells (Figure 6.5, right).

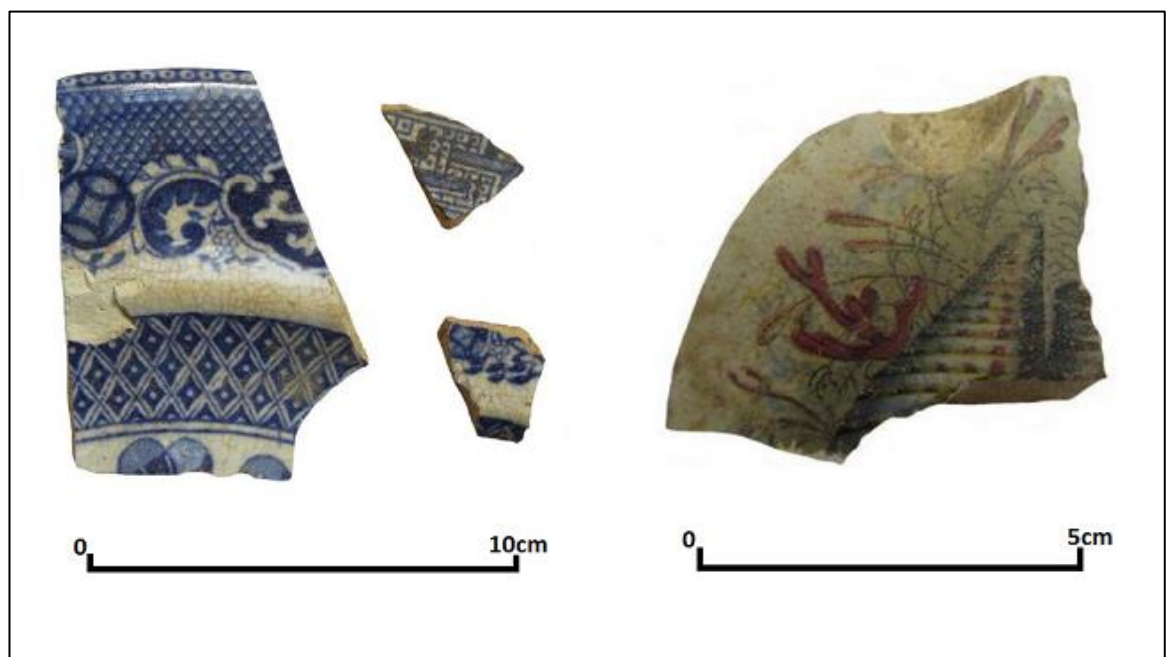


Figure 6.5 Fragments of a Willow pattern side plate (left) and a portion of a pot lid decorated with an unidentified polychrome design (RR008) incorporating shells (right) from context 3006

Context 3016

Two fragments of a blue printed Windsor pattern teacup were collected from this context (one of two artefact-rich deposits situated east of the redoubt's north-eastern bastion, and deposited as washout from drainage ditch 3014).

Context 3021

Ten fragments of a teacup were decorated with the Alhambra pattern in green print were recovered from this context (the upper fill of the re-cut redoubt drainage ditch). An example of the pattern is seen in Figure 6.6.



Figure 6.6 Alhambra pattern identified on fragments of a teacup from context 3021

Context 3035

A single fragment of a teacup was collected from this context (the secondary fill of the recut drainage ditch 3026). The fragment was decorated with an unidentified flow blue design (RR014).

Context 3037

Three fragments of ceramic were recovered from this context (the backfill of the southern arm of the cooking trenches 3036). Two fragments were decorated in a blue Willow pattern and originated from a plate. A single piece of sprigged ware with a purple design is likely to relate to a plate calculated elsewhere (Figure 6.7).

6. Artefact Analysis

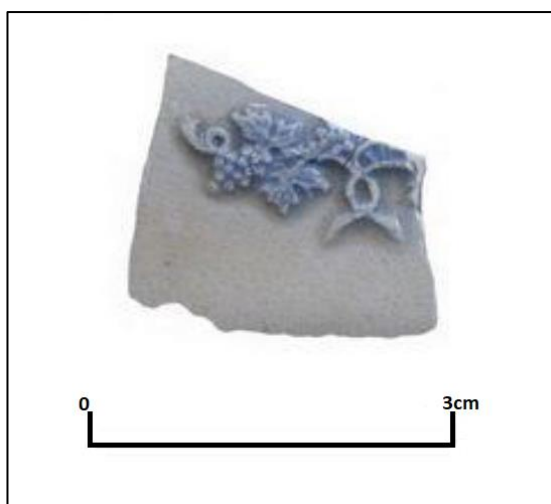


Figure 6.7 Fragment of purple sprigged ware retrieved from context 3037

Context 3056

There were 149 pieces of ceramic from context 3056 (the earthen platform deposit beneath the barracks building), which represented a minimum of 22 individual vessels (Table 6.8). Seventeen of the items were identified within the tableware category from 132 of the fragments collected. Ten fragments were related to a Greyware jug (Figure 6.8), having a moulded body decorated with Handpainted gilt decorations (RR022). There were 101 fragments related to a minimum of 6 plates with the majority of these fragments being exceptionally small in size. Sixty-seven very small fragments of Willow pattern were excluded from MNV as they potentially related to plates recorded elsewhere. Twenty mostly very small fragments were decorated with a blue Albion design; 8 fragments related to a blue Rhine plate; while a single fragment related to a purple Alhambra plate. Four fragments related to 3 individual plates, all with unidentified blue transfer prints (RR016, RR01 and RR018). Seven fragments of saucers were noted with 3 individual vessels identified. These included 4 fragments from a purple Alhambra patterned vessel along with one fragment of a blue version of the same design. One fragment of an unidentified flow blue pattern (RR015) was calculated within MNV and one fragment of another flow blue design (RR013) was calculated elsewhere. Thirteen fragments of teacups were identified to 7 individual vessels including 3 pieces from a plain white cup, 4 pieces from a blue Fibre patterned vessel, 2 pieces from an unidentified black print (RR019), and single fragments from 4 other unidentified patterns (RR020, RR021, RR023 and RR025).

Seven pieces of ceramic related to a minimum of 2 individual items. Four pieces related to a chamber pot decorated with an unidentified purple sheet print (RR011), 2 pieces to a plain white ointment pot, and a single piece decorated with a blue transfer print (RR012) related to a toilet box recorded in context 1001=3027.

Kitchenware items included seven fragments of at least one cheese pot. Two pieces of an extruded field tile were noted, and one fragment of a brown earthenware vessel could not be identified.

Table 6.8 Vessel form and fabric, context 3056

6. Artefact Analysis

Vessel Form	Earthenware	Greyware	Whiteware	Total
Bathroom/Bedroom				(2)
Chamber Pot			1	1
Ointment			1	1
Drainage				(1)
Field Tile	1			1
Kitchenware				(1)
Cheese Pot			1	1
Tableware				(17)
Jug		1		1
Plate			6	6
Saucer			3	3
Teacup	1		6	7
Unidentified				(1)
Unidentified	1			1
Total	3	1	18	22

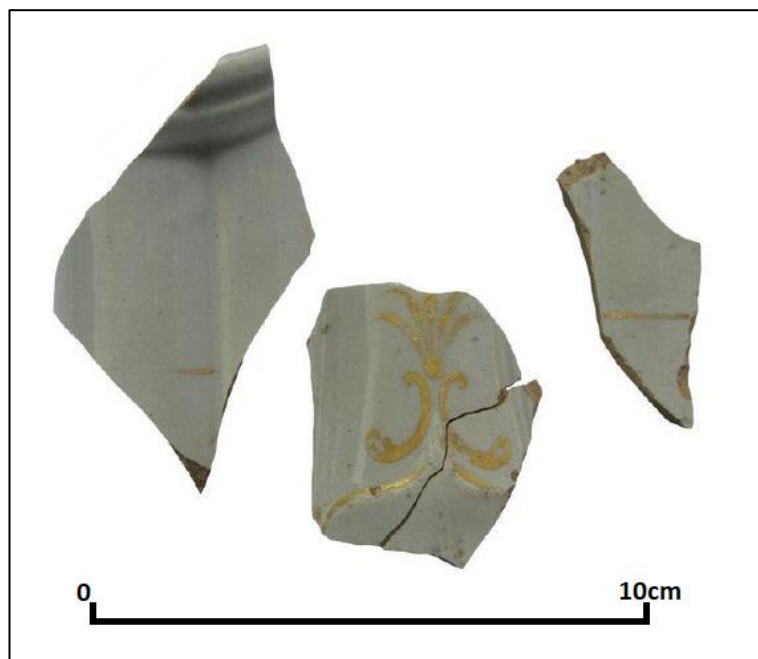


Figure 6.8 Fragments a gilt decorated moulded greyware jug retrieved from context 3056

Context 3065

Context 3065 (the fill of the northern arm of the 'V' shaped cooking trenches 3064) contained 6 pieces of ceramic, one of which was a blue Willow pattern plate fragment, likely calculated elsewhere. The remaining five pieces related to a sprigged ware plate.

Context 3182

Six pieces of ceramic related to a minimum of 4 items from this context (the secondary fill of the recut encampment enclosure ditch 3180), one of which (a blue Willow pattern plate fragment) was calculated elsewhere. Two pieces decorated with an unknown green print (RR009) rejoined to form a large portion of a teacup (Figure 6.9). A single fragment of a teacup and a saucer were decorated with the same unidentified purple print (RR024).



Figure 6.9 Views of the exterior and interior of a teacup with unidentified green transfer print (RR009), retrieved from context 3182

Unstratified

Two fragments were collected from an unstratified location. One fragment of a saucer was decorated in with an unidentified flow blue print (RR034) while the other fragment was a blue Willow pattern plate fragment.

6.2.2 Discussion of Ceramic Assemblage

The collection of ceramic material recovered from Ring's Redoubt excavations was generally of a highly fragmented nature with many patterns (many unidentified) being evidenced by a single or few sherds. The collection of so few specimens of similar patterning suggests the material has been affected by post-depositional processes such as ploughing, cattle stamping and possibly heavy machinery works associated with a nearby house dispersing the remains over an area wider than that which was archaeologically excavated, or in the case of heavy machinery use, removed from site entirely.

None of the fragments collected contained maker's marks which would have allowed manufacturing dates to be determined. All of the identified patterns are consistent with pre-1900 origin and are commonly seen on sites dating c.1850s through to post-1900. One teacup marked as manufactured in England (context 1091) suggests that item may be of a later date than the occupation of the redoubt¹⁶.

None of the items could be determined to relate to particular persons such as women or children and were generally utilitarian items typically found in both military and household assemblages. The items were not of expensive quality.

6.3 Stoneware

Stoneware was generally in fragmented condition although there were a number of complete items recovered. The stoneware assemblage reflected items commonly found on 19th century archaeological sites including blacking jars, preserves or oyster jars, and inks. Several bottles contained manufacturer's marks allowing potential manufacturing dates to be identified. There was indication from a small number of vessels that they may have been reused multiple times over a number of years. The functional use of one item was changed in a deliberate manner.

6.3.1 Stoneware Analysis

Stoneware was cleaned using a toothbrush in warm water. Once dry, material was sorted by context with items within those contexts separated by vessel form and colour to obtain the minimum number of vessels present. Items were compared across the whole assemblage as fragments from one vessel could be present within multiple contexts. Where this had potentially occurred, the vessel was calculated within one context only.

In all, 353 pieces of stoneware were collected from 11 contexts during excavations at Ring's Redoubt, representing a minimum of 63 individual vessels (Table 6.9). The greatest number of vessels were recorded within contexts 1001=3027 and 3056, relating to the barracks building platform. Thirty-seven of the vessels were identified as having contained general household products, predominantly ink and 25 contained food items (Table 6.10).

Twenty vessels contained a manufacturer's mark, with 19 of these representing at least four identified companies: J. Bourne, John Cliff & Co., Doulton & Watts (1815-1858) and Doulton & Co. (1858+), and William Powell & Son (c.1830-1906). The stamp on one bottle was too lightly impressed to read, although the place of manufacture was identified as London.

¹⁶ Inclusion of the word 'England' in marks denotes a date after 1891, as previously noted, although some manufacturers (Thomas Elsmore & Sons for example) added the word slightly before this date (Birks 2004).

Table 6.9 Summary of stoneware from Ring's Redoubt

Context	NISP	MNV	Context	NISP	MNI
1001=3027	194	35	3056	132	18
1007	1	1	3061	1	1
3005	4	2	3062	4	1
3006	3	0	3065	2	1
3019	9	2	3182	2	1
3037	1	1			

Table 6.10 Minimum number of stoneware vessels, Ring's Redoubt

Product	MNV
Alcohol	(1)
Beer	1
Food	(25)
Oyster Jar	1
Preserves/Oyster Jar	23
Storage Container	1
Household	(37)
Blacking	4
Container	1
Ink	30
Ink/Stopper	1
Storage Container	1
Total	63

Context 1001=3027

This context relating to the barracks building platform contained 194 pieces of stoneware representing a minimum of 35 individual vessels (Table 6.11), with 10 vessels being complete examples and one further vessel being almost complete. All of the items could be attributed to either food products or household items with the exception of five small fragments which could not be conclusively identified.

Of the 19 food product bottles identified, all were of the 'oyster jar' shape and may have contained oysters or other forms of preserved foods. One example was considered almost complete, missing only a portion of the rim and neck (Figure 6.10, left). This vessel, standing 84mm high and having a base diameter of 121mm, was impressed with the mark of Doulton & Watts, a Lambeth pottery producing works under this mark in 1815-1858 (Godden 1991:219). It is likely the vessel was manufactured sometime during the latter portion of the 1850s. Six vessels were identified from complete bases with partial bodies,

6. Artefact Analysis

with three of these bearing the mark of Doulton & Watts. Two bore the mark of Doulton & Co. (Figure 6.10, right), the subsequent trading name to Doulton & Watts with manufacture dating no earlier than 1858 (Godden 1991:219). A further 12 partial bases with partial body were calculated from the remaining material with 7 bearing marks: 4 Doulton & Watts and 3 marked Powell Bristol. These vessels were manufactured by William Powell & Sons at the Temple Gate Pottery in Bristol, with Godden (1991:509) providing dates of c.1830-1906 for this company. The vessels were likely to have been manufactured prior to the redoubt occupation with one possibly much older than the other two. This is inferred by the difference in impressed marks observed (Figure 6.11). One mark is a simple bar mark while the other is within an oval, which may be a later mark than the first. There were 107 seven body fragments: 79 cream and tan fragments and 28 cream fragments. Six complete rims were noted, all having the tan finish, and a further 26 pieces of tan rim were also recorded.

Twenty-five pieces of stoneware related to a minimum of 16 vessels that had contained general household products. A complete blacking jar stood 127mm high with a base diameter of 60mm. The shoulder fragment of an unglazed brown-dark brown container was recorded. Nineteen fragments related to at least 12 ink bottles, 10 of penny ink size and 2 of two-penny ink size. The two-penny bottles are distinguishable by the wider base diameter being c.10mm wider than a typical penny ink. Nine of the bottles were complete examples.

Table 6.11 Minimum number of vessels – context 1001=3027

Product	MNV
Food	(19)
Preserves/Oyster Jar	19
Household	(16)
Blacking	3
Container	1
Ink	12
Total	35

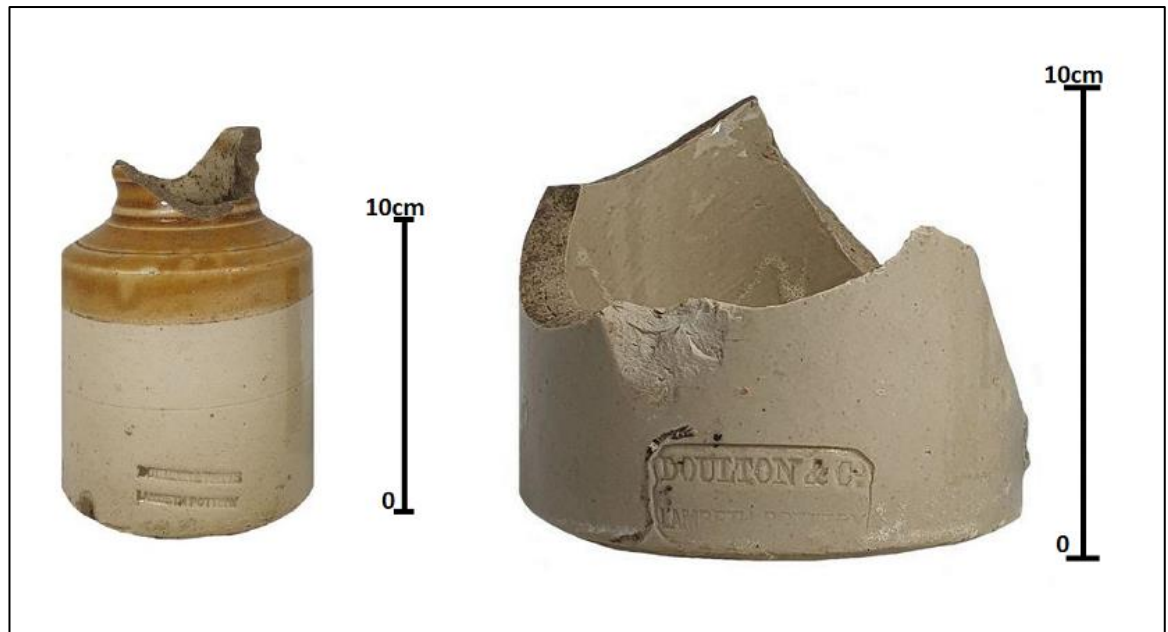


Figure 6.10 Doulton & Watts manufactured preserves/oyster jar 1815-1858 (left) and Doulton & Co. vessel manufactured 1858+ (right), both recovered from context 1001=3027



Figure 6.11 Showing the two marks used by William Powell & Sons on vessels at Ring's Redoubt, both items recovered from context 1001=3027

Context 1007

The base and partial body of an ink bottle was collected from this context (the floor/trample deposit of the bakery structure 1006). The bottle had a base diameter of 53mm and was impressed with the mark of John Cliff & Co. Lambeth (Figure 6.12). Cliff purchased the pottery formerly owned by Green & Co. in Princes Street, Lambeth and renamed the works Imperial Pottery in 1858. Cliff manufactured from this establishment until 1869, then removed to Cheshire (Blacker 1922).



Figure 6.12 John Cliff & Co ink bottle from context 1007

Context 3005

Four stoneware items were collected from this context (an early 20th century deposit that contained both redeposited redoubt period material and early 20th century artefacts). A complete rolled rim ink bottle stood 113mm high with a base diameter of 51mm. The bottle was impressed 'Vitreous Stone Bottle Warranted Not to Absorb J Bourne Patentee Denby & Codnor park potteries....Denby' (Figure 6.13, right). With no reference to '& Son' on the mark, it is possible the vessel was manufactured between 1819 and 1850 when Joseph Bourne ran the business on his own (potteryhistories.com) and this may be evidenced by the rolled rim closure, a finish type not seen on later produced vessels. This would indicate that the bottle had likely been reused over a long period of time.

An almost complete oyster jar was also recovered, having a base diameter of 85mm (Figure 6.13, left). The vessel contained no manufacturer's mark. A fragment of cream and tan stoneware likely also related to an oyster jar; however, given the number of vessels calculated across the assemblage this fragment was excluded from MNV.



Figure 6.13 Oyster jar missing the rim (left) and Joseph Bourne ink bottle (right), both retrieved from context 3005

Context 3006

Three shoulder fragments of an oyster or preserves jar were collected from this context (one of two artefact-rich deposits formed by washout from drainage ditch 3014 and situated east of the redoubt's north-eastern bastion), but do not contribute to overall MNV.

Context 3019

A complete light brown coloured penny ink bottle from this context (one of two artefact-rich deposits formed by washout from drainage ditch 3014 and situated south-southeast of the redoubt's north-eastern bastion) and stood 44mm high with a base diameter of 46mm. Eight fragments of a brown coloured storage container were recorded.

Context 3037

An almost complete penny ink bottle was recovered from context 3037 (the backfill of the southern arm of the cooking trenches 3036) (Figure 6.14). The bottle was shaped in the form of a reel, standing 47mm high and having a base diameter of 47mm.



Figure 6.14 Reel-shaped penny ink bottle from context 3037

Context 3056

Context 3056 (the earthen platform deposit beneath the barracks building), contained 132 pieces of stoneware, representing a minimum of 18 individual vessels (Table 6.12). Five of the vessels related to food products with oyster or preserves jars accounting for four of the vessels. Fifty-seven fragments were associated with body, rim, or part base fragments and excluded from MNV counts. No complete vessels were recovered; however, two had the base and most of the body present. These included a marked Powell jar and a marked Doulton & Watts jar (Figure 6.15). One other partial base was identified as that of Doulton & Watts and the impression on the remaining partial base was too light to interpret the manufacturer, although the location was identified as London. Thirteen fragments of one brown storage container were recorded.

Thirty-five pieces of stoneware were related to 13 individual ink bottles, two reel-type penny inks and 8 ordinary penny inks. Six of these were complete examples with one further example almost complete but in pieces. Two complete ink bottles stood 110mm and 106mm high respectively (Figure 6.16) and the partial base of a cream ink was noted.

The collar band finish of a porter style beer bottle was recorded, but not calculated within MNV as a base was calculated in context 3062. Ten fragments of cream coloured and one fragment of brown coloured stoneware could not be attributed to specific categories.

6. Artefact Analysis

Table 6.12 Minimum number of vessels, context 3056

Product	MNV
Food	(5)
Preserves/Oyster Jar	4
Storage Container	1
Household	(13)
Ink	13
Total	18



Figure 6.15 Examples of Powell (left) and Doulton & Watts (right) preserves or oyster jars. Both retrieved from context 3056

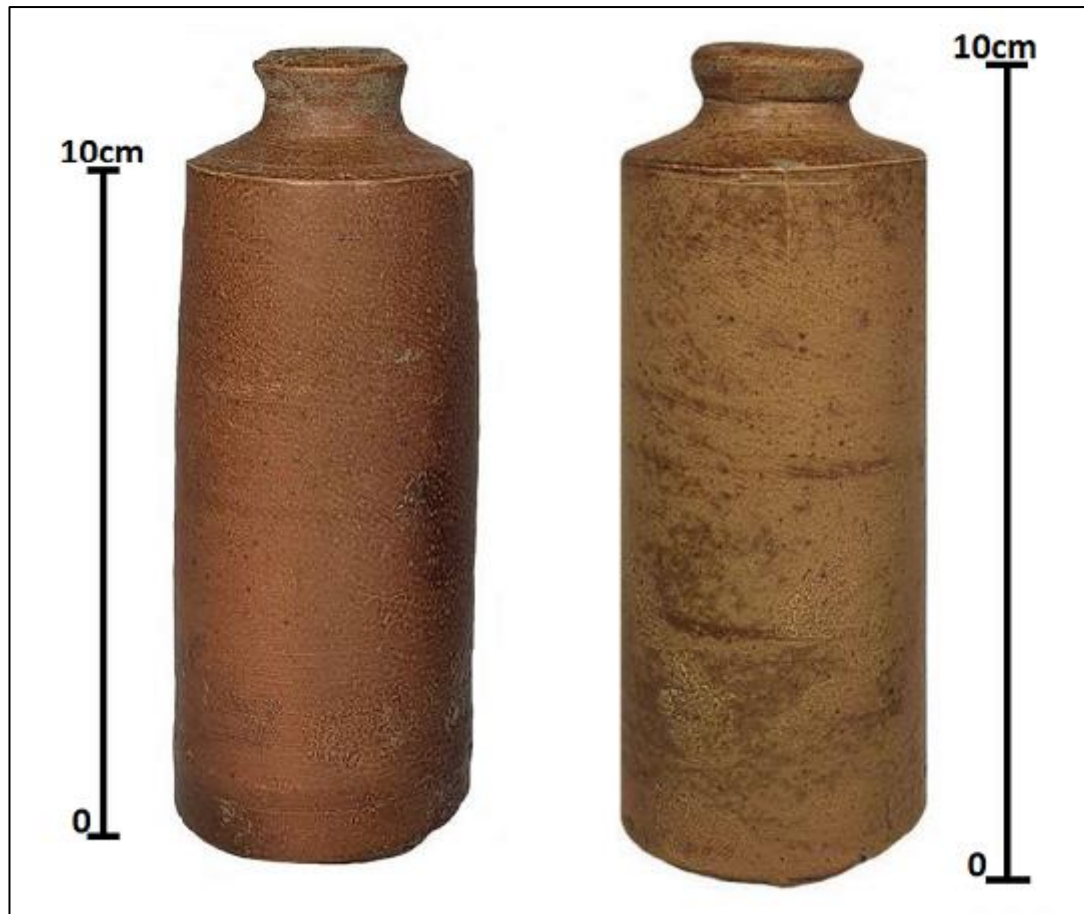


Figure 6.16 Complete ink bottles from context 3056

Context 3061

A single stoneware item was recovered from this context (the secondary fill of cooking pit 3034), which also highlighted the reuse of items that may occur from time to time as necessity requires. The vessel was a near complete penny ink bottle standing 46mm high with a base diameter of 42mm (Figure 6.17). Subsequently the corners of the base had been flaked away to change the function of the vessel from an ink bottle to a storage container stopper, possibly for a food item. There were at least 10 flakes removed from the edge of the base. The stopper was too wide for the mouth of an oyster or preserves jar and may have been used in a storage container that was not recovered.

Context 3062

The partial base and body of a cream coloured beer bottle was collected from context 3062 (the tertiary fill of cooking pit 3034). The bottle may have been related to the collar band porter style finish recovered in context 3056.

Context 3065

A complete blacking jar from context 3065 (the fill of the northern arm of the 'V' shaped cooking trenches 3064) stood 184mm high with a base diameter of 74mm (Figure 6.18). There were no manufacturer's marks impressed on the body.



Figure 6.17 Showing the profile view of the ink bottle from context 3061 (left) and view of the flaked base (right) transforming the function of the vessel from ink bottle to stopper



Figure 6.18 Complete blacking jar from context 3065

Context 3182

A complete penny ink bottle standing 42mm high with a base diameter of 48mm was recovered from context 3182 (the secondary fill of the recut encampment enclosure ditch 3180). One fragment of a cream and tan coloured vessel was collected and likely related to one of the preserves or oyster jars.

6.3.2 Discussion of Stoneware Assemblage

All of the stoneware recovered during excavations at Ring's Redoubt is consistent with material typically recovered during the early 1860s. There was, however, a narrow variety of goods utilised on site. The majority of items related to either occupational endeavours such as ink bottles, which would not be unusual in a military environment with meticulous record keeping and report writing, or to food products.

Several preserves or oyster jars bore manufacturer's marks, with four potteries identified. A company restructure for Doulton & Watts to Doulton & Co. in 1858 saw examples from both sides of the restructure present on the site. The bottles manufactured prior to the restructure had potentially been reused on multiple occasions. The Bourne bottle was likely manufactured prior to 1850, indicating that substantial reuse is likely to have occurred over the years.

Reuse of objects was clearly seen in the transformation of a penny ink bottle into a storage container stopper. The transformation was a deliberate action in response to an immediate problem, which may have been as mundane as a broken cork but gives a rare insight to a much smaller timescale than is usual for archaeological material.

6.4 Glassware

In all 3,783 pieces of glassware were recovered during excavations, representing a minimum of 733 individual vessels or items. The bulk of the material was recovered from contexts 1001–3027 and 3056, relating to the barracks building platform, with analysis of material within these contexts strongly suggesting use and deposition during the military phase of occupation.

Forty-four vessels were recovered intact, with the majority of glassware considered to be of a highly fragmented nature. Fragmentation may have occurred through vessels being thrown into the gully, breaking existing vessels, as well as through ploughing, stock trampling and earthmoving machinery.

Alcoholic beverages were the most common form of vessel identified, principally black beer bottles. Food products were heavily weighted towards pickles and salad oils. Pharmaceuticals were primarily medicines, with few identifiable contents. A large number of ink bottles were collected but this is unsurprising as the military kept meticulous records. While window fragments were not unusual, the presence of plate glass was unexpected; however, this glass may have been chosen for use on some areas vulnerable to gun-shot. All of the water bottles recovered were of the 'torpedo' style.

6.4.1 Glassware Analysis

Glassware was cleaned using a toothbrush in warm water. Once dry, material was sorted by context with items within those contexts separated by vessel form and colour to obtain the minimum number of vessels present. Items were compared across the whole assemblage as fragments from one vessel could be present within multiple contexts. Where this had potentially occurred, the vessel was calculated within one context only. For this reason, three contexts, while containing glassware, did not contribute directly to overall MNV and are not discussed below.

A total of 3,783 pieces of glassware were recovered from 25 separate contexts, with a minimum number of 733 vessels or items present (Table 6.13). The greatest concentration of glassware was within context 1001=3027, which had 426 individual items calculated (58% of the total assemblage), and context 3056, with 168 vessels (23%).

Table 6.14 provides the minimum number of individual vessels for each product type. Of the 733 vessels or items recorded, 436 of these were alcoholic beverage bottles (59% of the assemblage). Food products accounted for 25% of the assemblage while general household items accounted for 7%. Pharmaceutical products and mineral water or soda were represented by smaller numbers, with 5% and 1% respectively. Twelve vessels could not be identified to a particular category.

Table 6.13 Summary of glassware from Ring's Redoubt

Context	NISP	MNV	Context	NISP	MNI
1000	13	1	3023	1	0
1001=3027	2778	426	3035	8	2
1007	109	34	3037	9	3
1010	11	3	3056	512	168
1090	10	8	3057	12	1
1091	23	21	3061	27	3
3005	66	21	3062	74	1
3006	7	5	3065	8	1
3016	11	3	3129	10	0
3019	13	3	3133	1	0
3020	2	2	3182	44	11
3021	14	3	3195	4	1
			Unstratified	16	12

6. Artefact Analysis

Table 6.14 Minimum number of individual glass vessels – Ring's Redoubt

Product	MNV
Alcohol	(436)
Bitters?	1
Black Beer	398
Case Gin	5
Gin/Whisky	1
Unidentified	1
Whisky	6
White Wine/Brandy	10
Wine	13
Wine/Champagne	1
Food	(186)
Chutney	1
Condiment	1
Fruit	1
Mustard	1
Oil	9
Pepper Sauce	1
Pickle	124
Salad Oil	35
Sauce	2
Unidentified	4
Vegetable Oil	1
Vinegar	3
Worcestershire Sauce	3
Household	(50)
Drinking Glass	7
Ink	22
Stemmed Dish	1
Stopper	13
Window	7
Pharmaceutical	(40)
Castor Oil	4
Cologne/Perfume	1
Medicine	32

6. Artefact Analysis

Perfume	2
Unidentified	1
Unidentified	(12)
Bottle	11
Bottle and Stopper	1
Water	9
Mineral Water/Soda	9
Total	733

Context 1000

Ten body fragments and a partial base of a black beer bottle were collected from the topsoil within the Stage 2 earthworks excavation area.

Context 1001=3027

There were 2,778 pieces of glass from context 1001=3027 (associated with the barracks building platform), representing a minimum of 426 individual vessels or items (Table 6.15). Seven vessels were recovered in complete condition with a further 4 items being almost complete, one of which was recovered in 33 fragments. The remaining 2,734 pieces were of partial items representing a minimum of 415 vessels.

Alcoholic beverages accounted for 268 vessels or 63% of the assemblage. Of the alcohol component, 254 or 95% were identified as black beer (1,215 pieces). One black beer was recovered intact standing 290mm high with a base diameter of 75mm (Figure 6.19). The base was embossed 'Dobeson & Warrn Newcastle', which appears to be a miscasting of Dobeson & Warren and may reflect one of the earliest orders manufacturer Dobeson & Warren produced (Figure 6.19, right). Ross (1982) notes that Dobeson & Warren operated out of the Bill Quay Works in Newcastle c.1861-1862 before removing to St Lawrence. The remaining 253 vessels were calculated from complete to partial bases. Of these bases or part bases 18 contained embossing: two with the miscast of 'Dobeson & Warrn', 6 with 'Dobeson & Warren' and 4 where the Warren could not be determined. Three bases were linked to Cooper & Wood Portobello with a further 2 identified as Cooper (but it was unclear if Wood was involved) and one marked 'Portobello' only. The partnership of Richard Cooper and Thomas Wood operated from 1859 to 1868 (Toulouse 1971:1442-143). Eighty-one full rims and a further 71 partial rims were collected. Of these 22 were a collar finish, 20 were a collar-band finish, one was a collar-flared skirt finish, 105 were a collar-skirt finish and 4 were of a cone collar finish.

A minimum of 5 case gin bottles were recorded from 27 pieces of glass associated with the product (Figure 6.20). All of these were calculated from bases or partial bases. Four pig snout finishes were also recorded. Thirty-six pieces of aqua glass were associated with at least 2 whisky bottles, with one base embossed with the letter 'B' which was not identified to source. Fifty-six pieces of white wine or brandy bottle glass were recovered, originating from a minimum of one individual bottle. Portions, such as mamelons, which may indicate a higher count were excluded based on greater portions of bases calculated elsewhere. Fifty-three pieces of glass were associated with at least 3 wine bottles.

A minimum of 114 food product vessels were represented by 1,179 pieces of glass. A single chutney bottle was identified from a rim and neck and a fruit jar was identified from a base and two body fragments. A 'shamrock' mustard bottle was noted from a partial base and body fragments. Six oil bottles were identified from 18 pieces of glass, with at least one 'genie' style and one 'fluted' variety noted. The base of the fluted oil bottle contained a faint registration mark identifying 1870 as a manufacturing date; however, the mark contained inconsistencies with legitimate marks and may have been false. The base and partial body of an unidentified sauce was noted and a single body fragment from a 'dimple' vinegar was recorded. Two body fragments of an aqua bottle contained some embossing identifying the product as a 'Lea & Perrin's Worcestershire Sauce' bottle. One bottle base remained unidentified and was embossed 'Liverpool' along with a bird logo commonly seen on Liverpool products.

Salad oil bottles were calculated at a minimum of 18 examples from 125 pieces of glass. Nine of these vessels were identified as 'half whirly' type bottles, calculated from 80 pieces of glass. One 'fluted' style bottle was identified from 8 body fragments. The base and partial body of a 'cathedral' style salad oil was identified as that used by Anthony Thatcher. Eight other salad oil bottles were recorded from portions where the body type could not be identified.

Eighty-three pickle bottles were calculated from 1,024 pieces of glass with 783 pieces being simply body glass fragments. No complete examples were recovered and of the 83 bottles identified only 3 were a combination of base (or part) and part body. Sixty of the vessels were identified as having had square bodies, with the remaining 23 body shapes unknown. This occurs when only the pickup portion of the base is recovered. Seven base or part bases included embossing: one marked '18', two marked 'A', three marked 'D' and one marked 'E'. Bottles marked with 'D' were possibly manufactured by Davey & Moore of Brimsdown, Middlesex (Toulouse 1971:153). The other letter marks could not be identified.

Household items, which include general goods, provided a minimum of 29 vessels identified from 69 pieces of glass. Six of these items were complete examples, although not necessarily intact. Ten pieces of glass were associated with at least 3 drinking glasses, all tumblers. While shot glass fragments were present, they did not contribute to MNV. Five fragments of at least one pressed glass stemmed dish were noted. Six stoppers were recovered, with 3 being complete examples but none having any form of embossing. Two pieces of ordinary window glass had thicknesses of 1.8mm and 2.91mm while three fragments of plate glass had thicknesses of 6.4mm, 6.9mm and 7.8mm. Twenty-nine pieces of glass were associated with at least 14 individual ink bottles, 3 complete and 2 almost complete examples. One complete hexagonal bottle stood 59mm high and was embossed on the upper body with 'I'; this manufacturer was not identified (Figure 6.21, left). This particular bottle had a series of interesting fills and was likely discarded with some contents remaining. It appears that on more than one occasion, water had leached into the vessel with washed-in silt settling and black ink staining the upper layers at different points in time. Two complete and one near complete (Figure 6.21, centre) round 'Walkden's Ink' bottles were recovered, along with an almost complete square 'Walkden's Ink' (Figure 6.21, right). Eight other 'Walkden's Ink' bottles were calculated from base and body fragments containing embossing.

Nine pharmaceutical bottles were calculated from 32 pieces of glass, none of which was a complete example. At least two castor oil bottles were present. Seven medicines were calculated from 15 pieces of glass, with MNV based on bases and body fragments and variations in colour of glass. Only two fragments were embossed: a clear glass fragment

with ‘E...’ which was unidentified; and an aqua fragment embossed ‘..NA/..GNES../...N & Dubl..’ allowing partial identification to a magnesia product manufactured by a company with offices in London and Dublin.

Fourteen pieces of glass were associated with at least 3 Hamilton’s Patent ‘torpedo’ bottles, one fragment of which may be associated with a Roberto France bottle but not calculated with MNV. A large portion of a plain green aqua bottle was recovered. A fragment embossed ‘...HER...E’s...NU...’ was not identified to a particular manufacturer. Neither was a fragment embossed ‘..b B...’.

Ninety-six pieces of glass remained unidentified, with at least three bottles contributing to MNV. These included partial bases from two aqua bottles (one marked ‘B’) and one clear glass base. Nineteen pieces of glass were molten, indicating they had been deposited in a high heat fire at some point.

Table 6.15 Minimum number of individual vessels – context 1001

Product	MNV
Alcohol	(268)
Black Beer	254
Case Gin	5
Whisky	2
White Wine/Brandy	1
Wine	6
Food	(114)
Chutney	1
Fruit	1
Mustard	1
Oil	6
Pickle	83
Salad Oil	18
Sauce	1
Unidentified	1
Vinegar	1
Worcestershire Sauce	1
Household	(29)
Drinking Glass	3
Ink	14
Stemmed Dish	1
Stopper	6
Window	5
Pharmaceutical	(9)

6. Artefact Analysis

Castor Oil	2
Medicine	7
Unidentified	(3)
Bottle	3
Water	(3)
Mineral Water/Soda	3
Total	426



Figure 6.19 Complete 'Dobeson & Warrn' [Warren] black beer bottle retrieved from context 1001=3027, with base embossing seen at right



Figure 6.20 Pig snout rims and case gin bottle bases recovered from context 1001=3027



Figure 6.21 Intact ink bottle marked 'T' on upper body with layered silt and ink interior (left), round Walkden's Ink (centre) and square Walkden's Ink (right) from context 1001=3027

Context 1007

There were 109 pieces of glass from this context (the floor/trample deposit of the bakery 1006), representing a minimum of 34 individual vessels. All of the vessels contributing to MNV were identified as black beer. No complete examples were recovered and the MNV was calculated based on the number of bases recovered against the number of finishes recovered. Twenty-five of the bases contained no embossing with one example marked '...Co Portobello', possibly relating to Cooper Wood & Co. Four rims were recovered with two examples of collar-skirt and collar-band finishes. A single fragment of a wine bottle, and two fragments that related to round pickle bottle remains were not attributed to MNV. Three rims were also collected, all having a collar skirt finish.

Context 1010

Eleven pieces of glass represented a minimum of three individual vessels were recovered from this context (the upper fill of rifle trench 1009). A square aqua glass ink bottle was missing the rim and neck. The bottle had base dimensions of 37mm x 36mm and was unmarked. A partial base and body of a wine bottle was recorded along with a partial base and body of an oil bottle. Fragments from a pickle and a black beer did not contribute to MNV.

Context 1090

Ten glassware items were collected from this context (one of two refuse dump deposits within the gully to the north of the redoubt), which represented a minimum of 8 individual vessels. Six vessels were complete examples, and all of the material is consistent with a later occupation period of the site, almost certainly related to the Hibberd homestead.

Two alcoholic beverages were identified. A complete Buchanan's Black & White Whisky bottle stood 295mm high with a base diameter of 75mm (Figure 6.22, left). The style of bottle was compared to historical items sold at auction with this particular bottle identical to a bottle dated c.1928, the label being paper, and the bottle sealed with a driven cork and capsule wrapped in a wire cage (www.bonhams.com). A gin or whisky bottle missing a portion of the neck and rim had contained 4/5 quart, the bottle being manufactured by the Owens-Illinois Glass Co. no earlier than 1948 (Toulouse 1971).

6. Artefact Analysis

Two food product bottles were noted. A complete sauce bottle standing 220mm high had a base diameter of 56mm. The bottle was finished with an external thread but contained no embossing. A complete whisky bottle had been repurposed for the storage of vegetable oil, some of which had solidified within the bottle, showing the angle at which the bottle lay in the ground (Figure 6.22, right). The bottle stood 291mm high with a base diameter of 74mm. The contents were sealed in by a cork.

Three pharmaceutical bottles were noted. The base and body fragments from at least one castor oil was present. A complete amber medicine bottle with an external thread finish stood 144mm high with base dimensions of 52mm x 34mm. A complete perfume bottle stood 122mm high having a ribbed body and a flat circular area for a product label (Figure 6.23).

A complete soda bottle in clear glass stood 221mm high with a base diameter of 60mm. The bottle was embossed 'Y-Y' on the shoulder and 'This bottle is the property of Wai Wai Ltd' above the base. The Y-Y mark was also marked on the base. It would have been sealed with a crown cap, dating the bottle to post-1910 (Wilcox 2010).

A rim, neck and partial body of a clear glass ink bottle did not contribute to MNV.

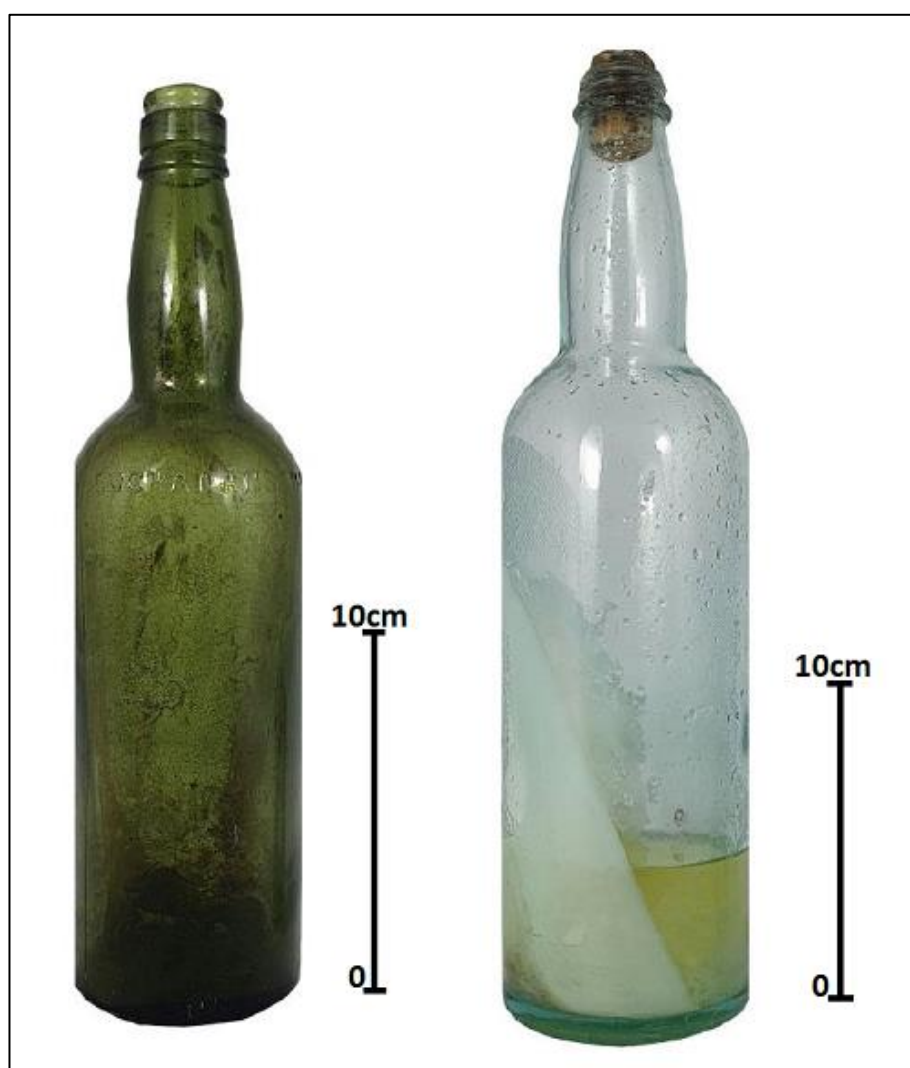


Figure 6.22 Buchanan's Black & White Whisky (left), old whisky bottle repurposed for storage of vegetable oil (right), from context 1090 which related to the occupation of the Hibberd homestead

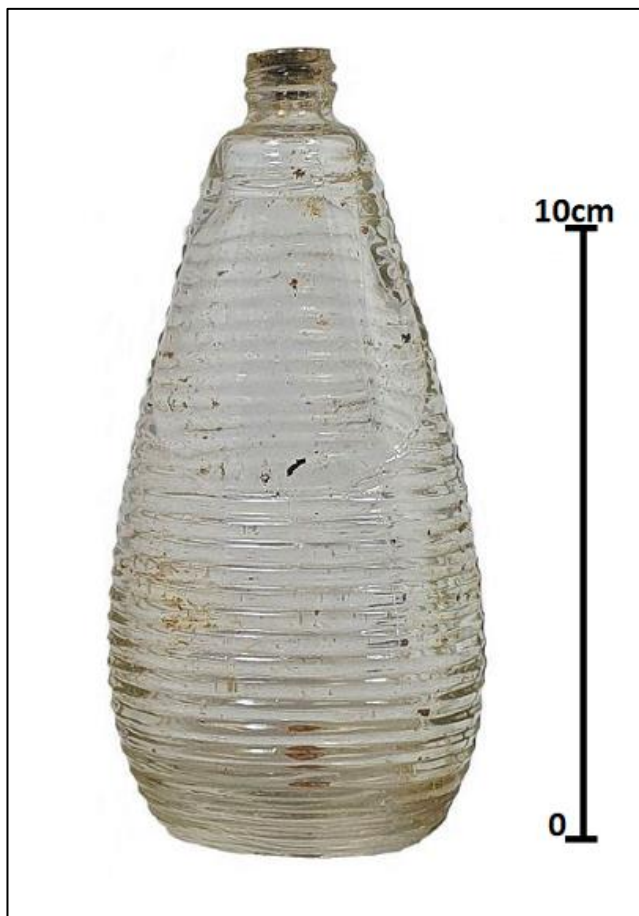


Figure 6.23 Complete perfume bottle with ribbed body retrieved from context 1090

Context 1091

Like context 1090, context 1091 (also from a refuse dump deposit within the gully to the north of the redoubt) contained material consistent with a later occupation phase of the site. Twenty-three items of glassware related to a minimum of 21 individual items with 12 complete and two almost complete vessels recovered. Analysis indicates the deposit likely dates c.1915-c.1940s.

The base and partial body of a black beer had a base diameter of 75mm. A complete half whirly salad oil bottle stood 241mm with a base diameter of 40mm (Figure 6.24, left).

Fourteen pharmaceutical vessels were identified, 8 of which were complete examples and a further 2 being almost complete. An almost complete bottle was embossed 'California Fig Syrup Co/San Francisco, Cal//Califig//Califig//' with an O in square on the base. The bottle maker's mark indicates manufacture by the Owens Bottle Co. from 1919 to 1929 (www.sha.org). A complete California Fig Syrup bottle was marked 'Sterling Products (Inc) Successor'. The California Fig Syrup Co., originally founded in Nevada, produced this constipation remedy in San Francisco from 1885. Sterling took over the California Fig Syrup Company in 1912 using the Sterling Products name from 1917 (www.sha.org). This suggests the bottles were likely manufactured sometime c.1919-1940. The fig syrup bottles are seen in Figure 6.24 (right).

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A complete Bonnington's Irish Moss bottle stood 127mm high. This cough and cold remedy was first produced in the 1870s (NRAM, nd) and although no formula has ever been published in full, Martyr (2002) noted the presence of morphine. A complete external thread Kruschen Salts bottle stood 94mm high. Kruschen Salts were used to treat a number of ailments from rheumatism to gout and for constipation. The earliest advertising located for the product in New Zealand dated to 1914 (*Hawera & Normanby Star*, 18 December 1914:8) and Kruschen Salts are still available today. A complete aqua glass bottle standing 160mm high embossed 'Made in U.S.A.' on the base may also have contained a form of salts.

Three complete pill bottles embossed 'De Witt' were recorded. De Witt pills were primarily for kidney problems but were advertised as effective against a myriad of ailments (*New Zealand Herald*, 5 December 1914:4). The remaining complete bottle standing 172mm high with base dimensions of 48mm x 29mm was embossed 'J' on the base; however, this mark could not be attributed to a specific manufacturer.

The rim and neck and shoulder and the base of a clear bottle was embossed on the base with the AGM tower logo. This mark was used by the Australian Glass Manufacturers from 1934 onwards (www.thebottledepot.com). The partial base of an aqua bottle was embossed with a 'T' inside a diamond but was not attributed to a maker. The bases of two other unmarked aqua medicines were noted.

An almost complete perfume bottle was missing only a portion of the base, and the bottle had a height of 57mm. Three complete clear glass bottles were recorded but the contents could not be certain, these bottles being used for both inks and essences. All three bases contained the AGM tower logo. A base and a partial base, both in clear glass could not be identified.



Figure 6.24 Complete half whirly salad oil (left) and California Fig Syrup bottles (right), recovered from context 1091

Context 3005

Sixty-six pieces of glassware representing a minimum of 21 individual vessels were collected from context 3005 (an early 20th century deposit that contained both redeposited redoubt period material and early 20th century artefacts). Thirty-five pieces did not contribute to overall MNV. Fourteen bases and partial bases of black beer were collected, representing a minimum of 9 individual bottles. None of the bases were embossed. The base of a pale greenish white wine or brandy bottle was noted.

Five food product bottles were recorded. A base and partial body contained embossed letters 'LE...' and these letters combined with the body shape indicated the bottle was that of Lea & Perrins Worcestershire Sauce. A half base of a pickle bottle was recorded along with the partial base of a salad oil. Fragments from two bottles that are likely to have contained food products could not be identified.

The rim, neck and shoulder of a shear lip ink bottle was collected and at least one bottle contributing to MNV could not be identified.

Four pharmaceutical bottles were identified including a complete 'Barry's Tricopherous for the Skin and Hair' (Figure 6.25). Other medicines included a base and partial body of a pill bottle and fragments of a medicine, the bottle containing the AGM tower logo. A complete plain round cologne or perfume bottle stood 61mm high and was embossed on the base 'Colgate & Co Perfumers New York'.



Figure 6.25 Barry's Tricopherous for the Skin and Hair bottle from context 3005

Context 3006

Seven pieces of glass representing a minimum of five individual vessels were recovered from context 3006 (the buried former topsoil sealed beneath the upcast material derived from the excavation of the eastern redoubt). At least two black beer bottles were present based on a complete and half and partial bases. A complete aqua stopper with an overall length of 36mm was noted. An aqua rim and stopper were also identified, and it is possible the bottle related to a whisky and the stopper was used in place of a cork. The base and part body of a blue aqua bottle was noted; the contents could not be conclusively identified, although this shade of blue aqua is commonly associated with pharmaceutical products.

Context 3016

Eleven pieces of glass were recovered from context 3016 (one of two artefact-rich deposits situated east of the redoubt's north-eastern bastion, and deposited as washout from drainage ditch 3014), however only 3 contributed to overall MNV. Four partial bases and 2 body fragments of black beer likely related to parts of bases recorded elsewhere. Similarly, a fragment of a white wine or brandy bottle likely related to a bottle calculated elsewhere.

Three food product vessels were identified from 4 fragments of glass. A pickle bottle was noted from a base, part body and rim. An oil bottle was identified from a base, and a genie style salad oil bottle was identified from a partial base and body.

Context 3019

Thirteen pieces of glass with three items contributing to the MNV were collected from context 3019 (one of two artefact-rich deposits formed by washout from drainage ditch 3014 and situated south-southeast of the redoubt's north-eastern bastion). All three were related to black beer bottles, with one complete base, a partial base and body and a partial base. This partial base was embossed '...wcast...', probably from Newcastle, and likely that of Dobeson & Warren.

Context 3020

Two complete medicine bottles were collected from context 3020 (the uppermost fill of the redoubt drainage ditch that formed after the military abandonment of the site). An unmarked clear glass bottle stood 107mm high with base dimensions of 37mm x 21mm. The second bottle was embossed 'Neil & Mackay Chemists Auckland'. Neil & Mackay operated from a store in Wellesley Street, advertising from 1913 (*Auckland Star*, 17 April 1913:4) to 1930 (*Auckland Star*, 11 April 1930:1), thereafter known solely as Mackay, indicating this deposition relates to a later period of occupation.

Context 3021

Fourteen pieces of glass were recovered from context 3021 (the secondary fill of the recut drainage ditch 3026). Nine fragments related to body glass of black beers and one aqua fragment remained unidentified. Two partial bases were recorded, one being a black beer and the other a white wine or brandy bottle. The base of a salad oil bottle was noted.

Context 3035

Two pieces of glass were collected from context 3035 (the upper fill of cooking pit 3036). The glass consisted of a partial base of an aqua medicine bottle and a fragment of plate window glass having a thickness of 6mm.

Context 3037

Portions of two black beer bottles were collected from context 3037 (the backfill of the southern arm of the cooking trenches 3036). One bottle was almost complete missing only the rim (Figure 6.26). The bottle had a base diameter of 76mm with a conical pickup and no embossing. The second black beer was identified from a base with a diameter of 77mm. The base of an aqua coloured food bottle was noted, but the contents were not identified.



Figure 6.26 Almost complete black beer bottle recovered from context 3037

Context 3056

A minimum of 168 individual glass vessels or items were represented by 512 pieces of glass collected from context 3056, relating to the barracks building platform (Table 6.16). Eleven items were considered complete or near complete examples, with the remaining glass being highly fragmented. All of the material was considered consistent with the military occupation phase of the site.

Ninety-two (55%) of the vessels were alcoholic beverages with the majority identified as black beer bottles. Only one complete example was recorded, standing 300mm high with a base diameter of 75mm and a collar-skirt finish (Figure 6.27, left). Thirty-two bottles were calculated from bases or bases and partial bodies, the majority having conical kickups with a small number of domed kickups. Ten bottles were identified from three-quarter bases, 9 from two-thirds bases and 29 from half bases. One three-quarter base was embossed 'Cooper & Wood Portobello', the partnership of Richard Cooper and Thomas Wood operating from 1859 to 1868 (Toulouse 1971:1442-143). Fragments not contributing to MNV included 57 body fragments, 37 small part bases, and 103 portions of partial or complete rims. Simple collar finishes numbered 10 full rims and 8 partial fragments, collar-band finishes numbered 10 full rims and 1 partial rim, collar-skirt finishes numbered 35

complete rims and 30 partial rim pieces, and one complete flared rim and band finish was noted.

The partial rim of a pig snout case gin bottle was noted but did not contribute to MNV. Two portions of a whisky bottle neck were noted. Five unrelated partial bases of white wine or brandy bottles were calculated, with eight body fragments and four ring seal finishes recorded. Four unrelated partial bases of wine bottles were noted, with two ring seal finishes recorded. A complete bottle with a blob finish stood 175mm high with a base diameter of 64mm (Figure 6.27, centre). The precise contents could not be identified, although they were likely to be alcohol.

A minimum of 50 individual food product vessels were calculated from 113 pieces of glass. A single oil bottle was calculated from a rim, neck, and base. A body fragment of a bottle was identified as being from a pepper sauce bottle. Sixty-two fragments of glass were identified as relating to a minimum of 36 pickle bottles, with one round style pickle noted from a base and 34 square pickles calculated from 20 bases (including 4 with partial body) and 17 part bases from at least 15 individual bottles. Three complete rims and 15 partial rims were noted, along with 6 body fragments. One of the pickle bottles was lightly embossed with a false registration diamond on the base. Forty-five pieces of glass were related to a minimum of 11 individual salad oil bottles, including at least one half whirly bottle, and two genie style bottles with 30 fragments not identifiable to a particular body style. The rim and neck of a sauce bottle of unknown type was noted. A complete Lea & Perrin's Worcestershire Sauce bottle stood 180mm high with a base diameter of 51mm (Figure 6.27, right). The finish was of a style first used in 1850 (Stockton 1981).

Twenty-three pieces of glassware related to 16 individual items within the household category. Seven fragments were identified as originating from drinking glasses, with one shot glass and 3 tumblers recorded. Ten pieces of glass related to 6 ink bottles, 3 of which were complete examples, all being square bottles with shear-lip finishes (e.g., Figure 6.28, left). None of these bottles were embossed. One square ink was missing the rim and neck while another was identified from a base and partial body. The sixth ink bottle was a round 'Walkden's Ink' bottle, identified from partial embossing on the upper portion of the body. Five bottle stoppers were recorded, with four being a plain variety, and one related to the Lea & Perrin's Worcestershire Sauce bottle. One small fragment of window glass was also recorded.

Ten pieces of glass represented a minimum of 5 individual pharmaceutical bottles. The rim and neck of a castor oil bottle was noted. Four medicine bottles were recorded, identified from bases or rim/necks and calculated based on colour variations. Two of these bottles were constructed of blue aqua glass, and one each of blue and clear glass. While some small embossing was noted on one fragment, there was not enough to determine a medicine name.

Five mineral water or soda bottles were recorded, all being Hamilton's Patent 'torpedo' bottles. None were complete with one example being partially complete (Figure 6.28, right). This particular bottle was embossed, allowing the identification of Roberto France. Roberto France was not identified as a manufacturer despite the embossing, with no entries in British newspapers associated with this company. Advertisements for Roberto France celebrated aerated waters were located in Australian papers (*Launceston Examiner*, 5 December 1863:5) and it possible the product was an export only item with Roberto France perhaps being an agent rather than manufacturer. Twenty-eight body fragments were associated with at least 3 other Roberto France bottles. One large fragment of a plain 'torpedo' bottle was also recorded.

6. Artefact Analysis

Table 6.16 Minimum number of individual vessels – context 3056

Product	MNV
Alcohol	(92)
Black Beer	81
Unidentified	1
Whisky	1
White Wine/Brandy	5
Wine	4
Food	(50)
Oil	1
Pepper Sauce	1
Pickle	36
Salad Oil	11
Worcestershire Sauce	1
Household	(16)
Drinking Glass	4
Ink	6
Stopper	5
Window	1
Pharmaceutical	(5)
Castor Oil	1
Medicine	4
Water	(5)
Mineral Water/Soda	5
Total	168



Figure 6.27 Complete black beer (left), unidentified alcohol bottle (centre) and a Lea & Perrins Worcestershire Sauce (right), all recovered from context 3056

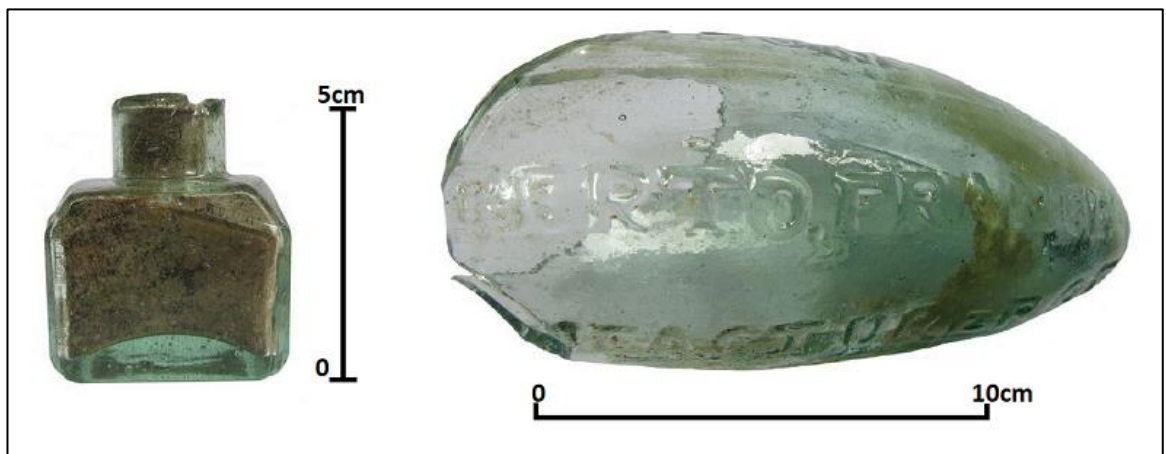


Figure 6.28 Example of a complete square shear-lipped ink bottle (left) and a Roberto France Hamilton's Patent 'torpedo' bottle (right), both recovered from context 3056

Context 3057

Eight pieces of glass related to a single example of a condiment bottle from context 3057 (a deposit containing historic material deposited within a tree throw).

Context 3061

Nine pieces of glass were analysed from context 3061 (the secondary fill of cooking pit 3034). The base of a square pickle was noted, along with the partial base and body of a second pickle bottle. Six pieces of clear glass related to a single vessel which was not identified and not attributed to MNV.

Context 3062

A single stopper was collected from context 3062 (the tertiary fill of cooking pit 3034). A portion of the top of the stopper had been broken away and was not recovered from this context. The remaining portion of the top was not embossed.

Context 3065

A complete black beer bottle (although present in 7 pieces) had a base diameter of 63mm and was retrieved from context 3065 (the backfill of the northern arm of the cooking trenches 3064). The half-pint bottle had a collar skirt finish.

Context 3182

Twenty-eight pieces of glass represented a minimum of 9 individual vessels were recovered from this context (the secondary fill of the recut encampment enclosure ditch 3180). Three partial bases related to at least three black beer bottles, while 13 pieces of aqua glass related to a whisky bottle with a base diameter of 77mm. The third alcoholic beverage bottle was a wine, represented by a two-thirds base portion.

Food bottles included a complete square pickle standing 230mm high with base dimensions of 62mm x 63mm (Figure 6.29, left). An almost complete globe style salad oil stood 260mm high with a base diameter of 48mm (Figure 6.29, right).

Pharmaceutical bottles consisted of an almost complete clear glass medicine with a pressed rim finish, and the base and partial body of a 'Hora & Co' aqua coloured bottle.

Context 3195

The base and partial body of a wine bottle was collected from context 3195 (the backfill of posthole 3194). The bottle had a base diameter of 70mm.

Unstratified

At least 12 vessels were identified from material recovered from an unstratified location and appeared to excavators to be relating to material that had been redeposited during the 1980s. Analysis indicates that the material related to both the military occupation of the site and a later phase of occupation.

Eleven of the vessels were identified as alcoholic beverages, with an almost complete possible bitters bottle made of amber glass, standing 285mm high and having 'W' embossed on the base (Figure 6.30, left). This bottle may have related to a later phase of occupation. Six black beer bottles were calculated, all from bases in varying states of completeness. None of these bases carried any form of embossing. A complete whisky

6. Artefact Analysis

bottle stood 275mm high with a base diameter of 78mm. This particular bottle was embossed on the base with '6' and '9' and was poorly executed, resulting in ghosting. The base also had an Owens Machine scar, suggesting manufacture after 1905 (REF???). Two complete white wine or brandy bottles were recovered. The first stood 298mm high (Figure 6.30, centre) and the second stood 296mm high (Figure 6.30, right). The base and most of the body of a wine or champagne bottle was also recorded.

A complete half whirly salad oil bottle with a shear lip finish stood 285mm high with a base diameter of 55mm (Figure 6.31). The base was embossed with a stunted trident and '10 oz', indicating the fluid amount in the bottle.

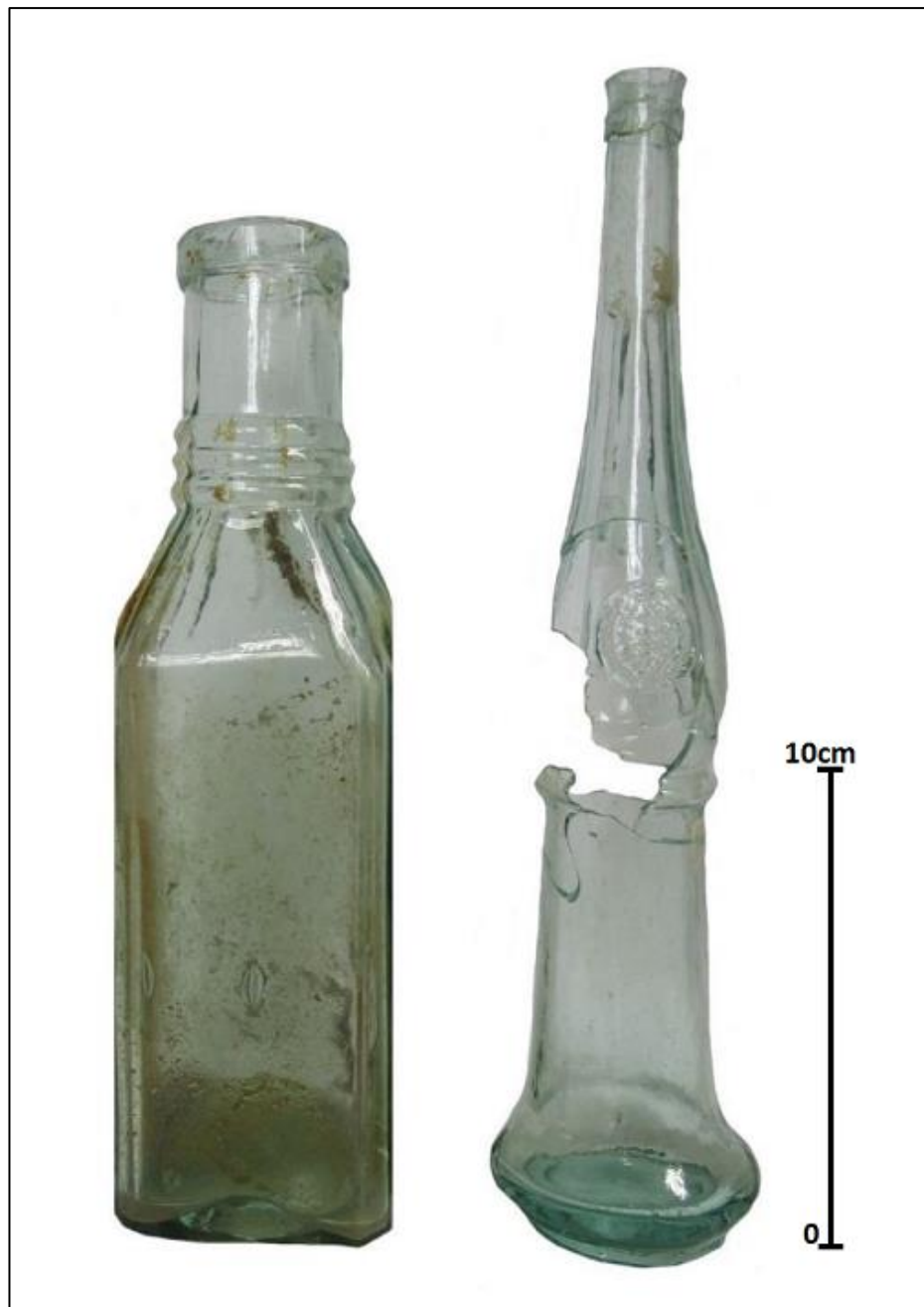


Figure 6.29 Square pickle (left) and globe style salad oil (right), collected from context 3182



Figure 6.30 Possible bitters bottle from a later phase occupation (left), and white wine or brandy bottles (centre and right); all unstratified



Figure 6.31 Complete half whirly salad oil – unstratified

6.4.2 Discussion of Glassware Assemblage

The glassware collection from Ring's Redoubt excavations was a large assemblage with 3,783 pieces of glass representing a minimum of 733 individual vessels and items. Material was collected from 26 contexts with context 1001=3027 and context 3056 accounting for the majority of remains. Both of these contexts were related to the military phase of occupation along with the majority of other contexts. Contexts which were associated with later occupation were contexts 1090 and 1091 (20th century rubbish pits in the gully to the north of the redoubt) and 3020 (the uppermost fill of the redoubt drainage ditch that formed after the military abandonment of the site). Contexts with vessels from both the military phase and later occupation phases were context 3005 and the unstratified material.

Alcoholic beverages accounted for more than half of the assemblage, with black beers dominating. One complete black beer bottle was manufactured by Dobeson & Warren of Newcastle, however the embossing of the company name on the base was misspelled as Dobeson & Warrn. This error was seen on a small number of other black beer bases, with a slightly higher number of bases having the correct spelling. Little information could be located regarding this company, and it is likely there are few examples of the misspelled bottle remaining in existence.

There was a limited variety of food products observed and this may in part be due to a restriction in the variety of food purchased by the military. It is not unusual for there to be a high number of pickles and salad oils present on military sites, along with other condiments to help flavour what was likely to have been fairly bland food.

The majority of glass was highly fragmented with only 44 complete bottles recovered. Although there was much evidence of flaking on black beer bottle bases, these flaked areas could not be conclusively identified as deliberate acts (see comparison with flaked stoneware bottle). Black beer tends to flake very easily, and these flakes can occur when bottles hit each other, are kicked by people or animals, hit by ploughs, or otherwise crushed.

6.5 Clay Tobacco Pipes

6.5.1 Clay Tobacco Pipes Analysis

Clay tobacco pipe fragments were cleaned in warm water using a toothbrush to dislodge soil and left to air dry. Fragments were separated into portions of pipes, i.e., bowls, stems, partial bowls, and partial stems. Stems or part stems were measured (length) and any stamps recorded. Stems measuring less than 40mm did not contribute to MNI unless there were unique identifying stamps allowing for inclusion in the count. Establishing MNI of marked stems was a process of determining presence of letters of specific names, i.e., McDougall, McDou..., ...gall and partial lettering combinations. Bowls were inspected for identifying marks or relief patterns. MNI of these items was recorded under Bowl MNI and Stem MNI. Where both bowl and stems/part stems were present in a single piece, MNI was recorded under Bowl & Stem MNI.

In all 873 pieces of clay tobacco pipe, generally in a highly fragmented condition, were recovered from 10 contexts during the excavations at Ring's Redoubt, representing a minimum of 169 individual pipes. Context 1001(=3027) and context 3056, both associated with the barracks building platform, contained the majority of clay pipes recovered. No complete pipes were recovered, with the assemblage consisting of 85 bowls, 156 stems and

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13 bowl & stem portions (Table 6.17). Five manufacturers were identified (Table 6.18) along with several marked pipes with no maker identified (such as Baltic Yachter). The majority of marked pipes were manufactured by Duncan McDougall of Glasgow, comprising 62.7% of the total clay tobacco pipe assemblage. Of the complete assemblage 78.8% were marked in some way with 21.2% of the assemblage containing no markings. Several bowls marked T.D. were recovered but did not contribute to MNI as stems may have related to these bowls.

Full or partial manufacturer's names were carried on 200 individual fragments of stems (examples shown in Figure 6.32); however, this count was reduced to 133 when partial names were grouped to determine MNI. There were a further 23 stems with no markings that were greater than 40mm in length.

There were 332 whole bowls or fragments of bowls, with 10 contributing to overall MNI and at least 5 of these bowls were identified as McDougall pipes (Figure 6.33, right; Figure 6.34).

All but one of the pipes were manufactured of white ball clay. At least one pipe with fragments found in contexts 1001=3027 and 3056 was manufactured in a brown clay (Figure 6.32, right). One pipe stem was moulded with a skin or scale design (Figure 6.32, right). A number of unmarked bowls were recovered, with examples of bowl style shown in Figure 6.34. At least three pipe bowls were moulded depicting a face, with the two faces shown in Figure 6.35. Other depictions such as a ship, plants and anchors were also noted, with examples shown in Figure 6.36.

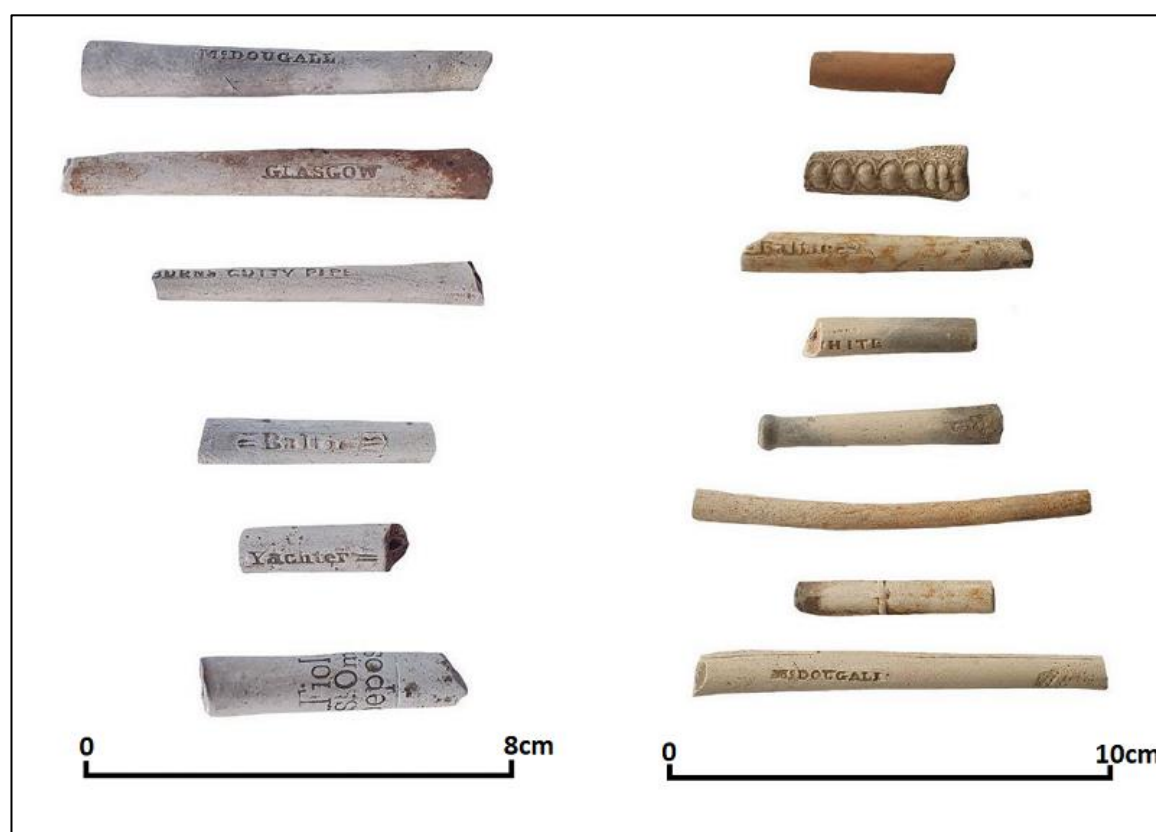
Ninety-seven fragments of both stem portions and bowls had been burned in fires, from light burns to heavily burned examples all of which were recovered from context 1001=3027 and context 3056. These items may have been broken during use and thrown into camp fires before fire ash was deposited in these locations. One partial bowl with a spur and stem was of a composite design; the mouthpiece portion of stem was not recovered and may have been reused on a new pipe by the owner (Figure 6.33, left).

Table 6.17 Summary of clay tobacco pipe fragments from Ring's Redoubt

Context No.	NISP	Bowl MNI	Stem MNI	Bowl & Stem MNI	MNI
1001 = 3027	492	52	88	8	96
1010	2	0	0	0	0
3035	1	0	1	0	1
3037	5	2	1	0	2
3056	354	29	57	5	62
3057	4	1	2	0	2
3061	2	0	1	0	1
3062	8	1	4	0	4
3170	1	0	1	0	1
3182	4	0	1	0	1
Total	873	85	156	13	169

Table 6.18 Summary of marked clay pipes by manufacturer, Ring's Redoubt

Manufacturer	Date Range	Contexts	MNI	% of total Assemblage
Louis Fiolet, St Omer	1765-1921	1001=3027,3056	2	1.2
Duncan McDougall, Glasgow	1846-1871 [thereafter D McDougall & Co.]	1001=3027, 3035, 3037, 3056, 3061, 3062, 3170, 3182	106	62.7
Theophilus Milo, London	1860-1870	1001=3027, 3057	4	2.4
Thomas White & Co., Edinburgh	1823-1876	1001=3027, 3056	2	1.2
William White, Glasgow	1805-1955	3056	1	0.6
Unidentified – Baltic Yachter		1001=3027, 3056	16	9.5
Unidentified		1001=3027, 3056	2	1.2

**Figure 6.32 Examples of McDougall, Baltic Yachter and L. Fiolet pipe stems from context 1001=3027 (left) and examples of pipe stems from context 3056 (right)**

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Figure 6.33 Composite pipe and curved stem of Theophilus Milo pipe from context 1001=3027 (left) and complete bowls marked T.D. and Duncan McDougall from context 3056 (right)

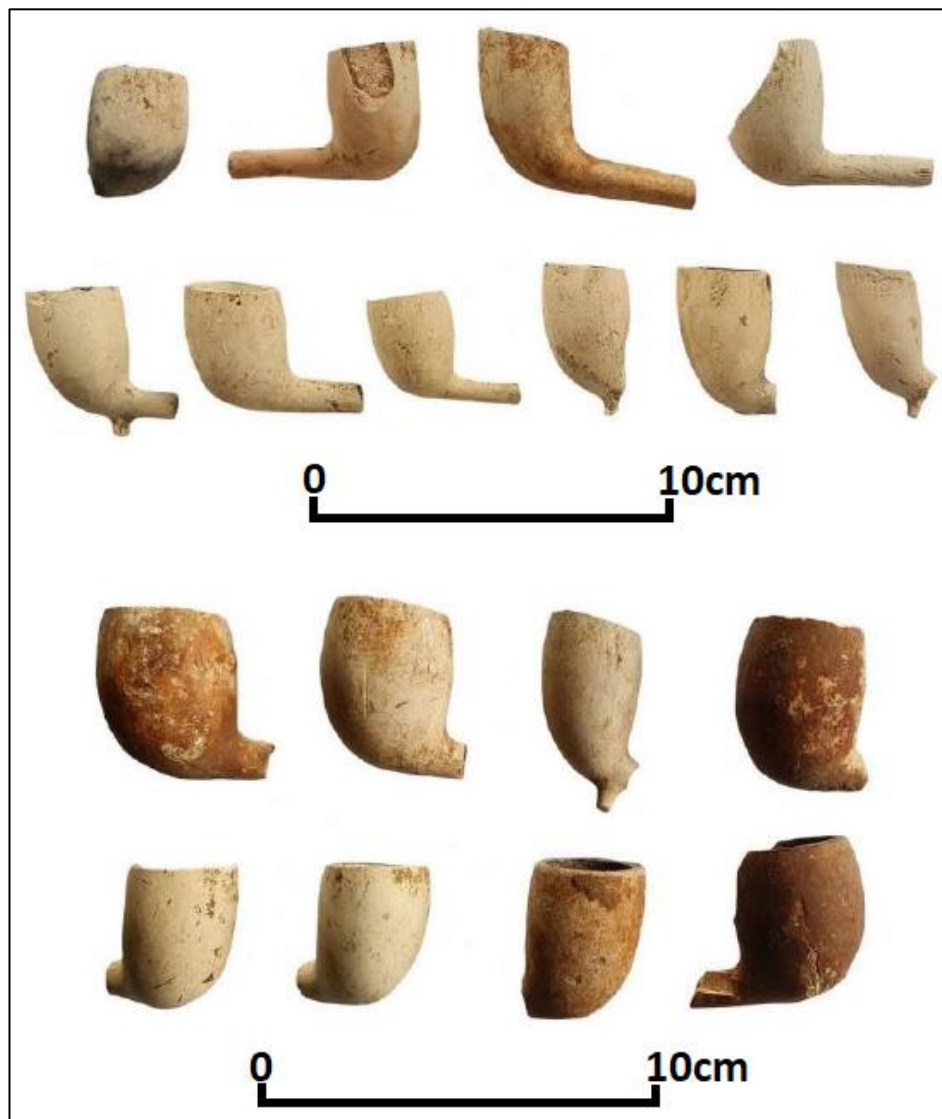


Figure 6.34 Examples of unmarked bowls from context 1001=3027 (top) and context 3056 (bottom)



Figure 6.35 Partial bowl with face of unknown man from context 1001=3027 (left) and face of king wearing crown from context 3056 (right)



Figure 6.36 Fragments of pipe bowl with ship (left) and bowl with spur depicting plant and plain bowl with ridge on underside of bowl (right) recovered from context 1001=3027

6.5.2 Discussion of Clay Tobacco Pipe Assemblage

The clay tobacco pipe assemblage was heavily fragmented, with 873 pieces of pipe being recovered, representing a minimum of 169 individual pipes. The extensive fragmentation suggests the true MNI may be higher than determined. The single greatest identifiable contributor to pipes were those of Duncan McDougall, accounting for 106 of the pipes.

Context 1001=3027 and context 3056, relating to the barracks building platform, contained the majority of clay tobacco pipes with few pieces located elsewhere.

The majority of pipe bowls were undecorated or unmarked. However, there were some notable exceptions including faces, plants, ships, and anchors. A number of pipe fragments had been burned in fires prior to final deposition, suggesting breakage during use.

6.6 Militaria and Numismatics

The militaria assemblage was composed predominantly of metal items, the vast majority of which were either of lead or of copper alloy composition. The assemblage was dominated by munitions, with also significant amounts of regimental uniform and clothing items such as regimental buttons, clothing fixtures and lesser amounts of items related to the everyday equipment used by the soldiers.

Due to environmental and soil conditions the preservation of metallic items was (with the exception of lead) poor, with corrosion of both iron and copper alloy items particularly severe. This led to some regimental and numismatic items not being able to be described beyond their primary function, i.e., 'a button' or 'a coin', with regiment's and maker's marks being impossible to identify.

6.6.1 Militaria and Numismatic Analysis

A relatively large sized assemblage consisting of 421 specimens relating to a minimum of 385 individual items and weighing 5.103kg was collected from 11 contexts during archaeological monitoring works. The contexts that the artefacts were recovered from all related to the occupation of Ring's Redoubt by Imperial forces during the Waikato Campaign of the New Zealand Wars (Table 6.19). The items were identified and categorised by type and function (Table 6.20). Practically all of the assemblage was classified as Militaria, with a clear majority of artefacts relating to the Munitions category, with the Uniform/Clothing category close behind, while the Equipment, Miscellaneous and Numismatic categories were significantly less in quantity. Nearly all of the assemblage was derived from two contexts (1001=3027 and 3056), both relating to the earthen platform on which the timber-built barracks structure had stood to the west of the redoubt proper.

The assemblage, when categorised, comprised: 47.27% Munitions; 37.14% uniform/clothing items; 8.31% Equipment items; 4.94% Miscellaneous items; and 2.34% Numismatic (coins and tokens) (Table 6.20). The items are discussed below under the those headings.

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Table 6.19 Summary of militaria items from Ring's Redoubt

Context	NISP	MNI	% of MNI
1001=3027	142	141	36.62
1006	1	1	0.26
3006	1	1	0.26
3035	2	2	0.52
3037	7	7	1.82
3056	254	220	57.14
3057	1	1	0.26
3062	2	2	0.52
3065	8	7	1.82
3133	1	1	0.26
3170	2	2	0.52
Total	421	385	100

Table 6.20 Summary of militaria items (MNI) by category from Ring's Redoubt

Context	Munitions	Uniform / Clothing	Numismatic	Equipment	Miscellaneous
1006	1	-	-	-	-
3006	1	-	-	-	-
1001=3027	73	37	5	16	10
3035	-	2	-	-	-
3037	6	1	-	-	-
3056	97	99	3	12	9
3057	-	1	-	-	-
3062	1	-	1	-	-
3065	2	3	-	2	-
3133	-	-	-	1	-
3170	1	-	-	1	-
Total	182	143	9	32	19

Munitions

In all, 180 individual items weighing a total of 3.595kg were recovered from eight contexts and identified within this category, with all but 12 of the items recovered from two contexts (1001=3027 and 3056). The munitions assemblage consisted predominantly of Enfield rifled musket projectiles (known as Minié balls despite their conical form), a musket ball and a musket ramrod end, pistol bullets, a pistol ball, percussion caps, a centrefire cartridge case, elements of brass and cork tompons (Figure 6.37) and a single shotgun buckshot/pellet. The earliest type of munitions found consisted of a single 0.615" calibre lead ball projectile, recovered from context 3056, that would have been used with a Baker rifle (Figure 6.37, d and Figure 6.38). The Baker rifle, known by its official name as a Pattern 1800 Infantry Rifle, was a flintlock rifle first produced in 1800 by Ezekiel Baker, a master gunsmith from Whitechapel, London, and became the first rifle pattern adopted by the British army (Edwards 2013). The gun was muzzle-loaded and fired by flintlock ignition a lead ball of 0.615" in diameter, with a proficient rifleman being able to fire three rounds per minute (Edwards 2013). Later ammunition supplied was modified to a ball cartridge and the gun remained in official use by rifle regiments of the British Army

6. Artefact Analysis

between 1801 and 1839, though soldiers serving in regiments in more remote parts of the Empire did not receive the latest issue rifles for some time.



Figure 6.37 Munition types recovered from the excavation and monitoring works at Ring's Redoubt: a) Examples of percussion cap primers; b) examples of .550" Minié style conical bullets for use with 1853 Pattern Enfield Rifle; c) .54" Minié style conical bullets for use with the Calisher and Terry carbine; d) .615" calibre musket ball for use with a Brown Bess style musket, probably with an 1800 Pattern Baker Rifle; e) the brass end of a ramrod for use with an Enfield Rifle; f) .442" calibre conical bullet for use with a 1851-54 Pattern Adams Revolver; g) .36" calibre pistol ball for use with Colt Navy Holster Revolver; h) Examples of brass and cork tompons that were used for plugging the muzzle of an Enfield Rifle when not in use; i) probable steel trigger guard from a pistol; and j) a brass Boxer style cartridge case shell used with a .45 Long Colt Revolver centrefire spent cartridge



Figure 6.38 The Baker Rifle (Pattern 1800 Infantry Rifle), the first rifle to be adopted by the British Army for use by rifle regiments

The remaining lead ball was also retrieved from context 3056; it was 0.36" in diameter and would have been used with a .36 calibre 1851 Pattern issue Colt Navy Holster Revolver (Figure 6.37, g). Lead ball projectiles had been the projectile of choice over the preceding centuries and were only superseded by the conical bullet in the mid-19th century. Muzzle-

loaded pistols firing round balls, ignited by either a flintlock or percussion cap mechanism, were popular sidearms used by officers up until the late 1840s and 1850s, when percussion cap revolvers using conical bullets became increasingly prevalent. The presence of a pistol ball in the assemblage probably indicates the presence of volunteer militias serving at the redoubt, with some among the ranks still using their somewhat outdated firearms. The only other projectile definitively linked with use in a pistol was a .442 calibre conical bullet that would have been used with a 1851-54 Pattern Adams Revolver (Figure 6.37, f). The gun was a cap and ball revolver designed by Samuel Colt between 1847 and 1850. While Colt first referred to this Revolver as the Ranger Size model, and subsequently Revolving Belt, the designation 'Navy' quickly took over and was to remain.

Two relatively heavy 0.54" conical lead bullets were both retrieved from context 1001=3027. The bullets have the appearance of truncated Minié projectiles with each bullet having a lead skirt at its base which would have contained a wooden or ceramic plug that would open up upon firing and engage the rifling in the gun barrel (Figure 6.37, c). Due to their size and calibre, it seems most likely that these bullets would have been in use with a Calisher and Terry carbine. The Calisher and Terry carbine was first patented in 1855 and was a breech-loading, bolt-action carbine (Figure 6.39), that used a nitrate treated combustible paper cartridge with black powder propellant and a conical lead bullet (Osborne 2013). The Terry carbine was adopted by the British military in 1861 and was used by New Zealand Militia forces and British Regiments during the New Zealand Wars, including the Waikato Campaign of 1863-65 (Osborne 2013; Cregeen n.d.). The carbine was most famously used by the Forest Rangers, who had found the Enfield Rifled Musket, too cumbersome for close quarter combat in the bush (only retaining a handful for long range sniping), and subsequently exchanged them en masse for the Terry Carbine (Osborne 2013; Cregeen n.d.).

Six contexts (1001=3027, 3006, 3037, 3056, 3065 and 3170) produced 110 examples of Enfield 'Minié' type bullets. All but nine of the Enfield bullets were recovered from contexts 1001=3027 and 3056, and three of them displayed clear evidence of having been fired (Figure 6.37, b). The Enfield rifled musket (Figure 6.40) was introduced in 1853 and was a standardised rifle for the entire British army, with a naval version being produced in 1858, and a cavalry and artillery carbine in 1861 (Smithurst 2011). All versions used the same mass-produced, factory-made paper cartridges, which went through three variants. The rifle utilised a percussion lock action, where the hammer impacted a percussion cap that would set off the main powder charge in the barrel. The type found here was the final, 1859 pattern projectiles, which were of 0.550" calibre (0.558" allowing for the thickness of the paper wrapped around the bullet), considerably smaller than the bore diameter of the barrel, which was 0.577" (Figure 6.37, b). This windage was designed to facilitate faster loading, and to enable loading even when the barrel was fouled with black powder residue (Browne 1853; Hawes 1859). The thin lead skirt at the back of the bullet, containing a boxwood or ceramic plug, would open up and engage the rifling upon the ignition of the powder charge. The Enfield was the primary weapon of the British and Colonial troops in the New Zealand Wars and continued in civilian use until the 1870s (Roads 1964). Also of note is that three of the bullets had been subjected to heat and had partially melted. As lead melts at the comparatively low temperature of 327 °C (621 °F) and the average temperature of a bonfire exceeds this by some margin (600 °C; 1112 °F), the heat damage likely occurred during the abandonment of the redoubt and the subsequent clear up of the site, as evidenced during the excavation of contexts 3056 and 1001=3027.



Figure 6.39 The Calisher and Terry Carbine (Pattern 1861 BL Carbine) adopted by British Army regiments and New Zealand Colonial Militias during the Waikato Campaign. Source: Osborne Arms Museum

Fifty-six copper alloy (brass) percussion caps were retrieved from contexts 1001=3027 and 3056 (Figure 6.37, a). The percussion cap, or percussion primer, was a type of single-use percussion ignition device for muzzle loaded firearm locks, which enabled them to fire reliably in any weather condition. When the hammer impacted the percussion cap, the small charge of explosive ignited the main powder charge in the barrel and the Minié bullet was fired. While several of the percussion caps survived in relatively good order (Figure 6.37, a), the majority were in a poor and fragmentary state of preservation and were also heavily corroded. As such no marks of manufacture could be discerned.



Figure 6.40 The 1853 Pattern Enfield Rifled Musket that would have been the main firearm of all the British Regiments serving at Ring's Redoubt. Source: National Army Museum, London Online Collection. Image number: 1040588

Additionally, a further four copper alloy items and a single copper alloy and cork item were retrieved that were related to the use of firearms, and in all likelihood, to the 1853 Pattern Enfield Rifled Musket (Figure 6.40). The first of these was the brass ramrod end recovered from context (1001=3027). The item would have been the end part of a musket ramrod and it still retained remnants of the wooden pole that it would once have been affixed to (Figure 6.37, e and Figure 6.40). Also from context 1001=3027, a copper alloy stopper (finds id 29) may relate to the closure of a leather powder flask (Figure 6.37, h). A copper alloy and cork stopper was retrieved from context 3056 (finds id 233), and is interpreted as a stopper/bung enclosure for a leather powder flask (Figure 6.37, h). The stopper could either have been discarded accidentally, or the leather portion may have decayed over the intervening 150 years. A copper alloy and cork item (finds id 112) was recovered from the barracks building platform deposit (context 3056). The item was 4.85cm in length and had a circular, reel-shaped machined brass cap with a milled pattern along one edge that was 1.83cm in diameter and that has a square copper shank still partly encased with the remnants of a piece of cork extending from its centre (Figure 6.37, h). The item is the remains of a brass and cork tompon that was used to plug the muzzle of a firearm when not in use to prevent the ingress of water, mud, dust, or any undesirable foreign material from fouling the inside of the gun barrel (Figure 6.41). In this instance from the diameter of the brass cap it can be determined that the tompon would have been for plugging the muzzle of an 1853 Pattern Enfield Rifled Musket (Figure 6.37, h, Figure 6.40 and Figure 6.41). A further tompon (finds id 28) represented by the brass cap of the end of the item, was retrieved from context 1001=3027 (Figure 6.37, h). The brass cap was the same diameter as the more complete tompon and as such would also have been used in protecting the muzzle of an Enfield rifle.

A steel, handle-shaped object (finds id 60) recovered from context 1001=3027, potentially represents the trigger guard from a pistol (Figure 6.37, i). The item is of robust steel manufacture and is unlikely to be merely a handle as it would seem over-engineered for such a mundane purpose. It is interpreted tentatively as part of a trigger guard from an unidentified type of pistol.

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The base of a copper alloy (brass) boxer cartridge shell case was found on the surface of the bakery (context 1006) on the interface between context 1007 and the topsoil (context 1000). Only the bottom half of the drawn brass centrefire cartridge case was recovered, and unfortunately, due to severe corrosion of the base, no lettering was discernible that could shed light on its manufacturing history. However, from the dimensions of the base of the cartridge it is possible that it was used in a .45 Long Colt revolver (Figure 6.37, j). The .45 Long Colt was a revolver round manufactured from 1872, and as such the cartridge case would have been deposited some years after the abandonment of the redoubt.

Lastly, a single spherical copper plated lead buck shot is from a shotgun shell and is intrusive, almost certainly dating to the 20th century farming period of the site.



Figure 6.41 A complete brass and cork tompon and how the examples recovered from contexts 3056 and 1001=3027 would originally have looked. The tompon was used for plugging the end of the gun barrel (in this case an 1853 Pattern Enfield Rifled Musket) when not in use or being transported to prevent mud, water, dust, or other foreign material from getting inside the barrel

Uniform/Clothing

In all, 143 individual items weighing a total of 0.149 kg, recovered from five contexts (1001=3027, 3035, 3037, 3056 and 3065), were identified within this category (Figure 6.42). The assemblage consisted of regimental buttons decorated with regimental insignia that derived from a minimum of four British Army regiments; hook and eye greatcoat closures; items related to regimental headgear; as well as more everyday utilitarian clothing fixtures.

Regimental Issue Uniform

Twenty-one copper alloy regimental buttons belonging to at least four British regiments were retrieved during the archaeological investigation of the Ring's Redoubt encampment (Figure 6.42). The buttons were predominantly poorly preserved with significant corrosion observed in most examples. Of the 21 buttons, 6 consisted solely of the backplate or were recovered in fragmented form. However, it was possible in many cases to discern the

regimental insignia on the button and identify the regiment that the soldier who had lost the button belonged to.

Tunic, jacket and greatcoat brass buttons were often provided separate to the garments they belonged to, and sewn on by the soldier. A combination of the quality of the soldier's stitching skills (or lack of) with physical activity while bearing equipment, resulted in the frequent loss of buttons, which would have to be replaced at the soldier's own expense. One-inch diameter brass buttons featuring regimental numbering and motifs on the front were used on the red dress tunics and the grey winter greatcoats worn by soldiers. Eighteen examples of this type of button were recovered during the investigations, with 9 examples from context 1001=3027 and 9 from context 3056. Five of these 1-inch brass buttons were from the 18th Royal Irish Regiment of Foot, which feature a harp with a crown above it and the number 18 below (Figure 6.42,a). There were also four examples of 14th Buckinghamshire Regiment of Foot 1-inch brass buttons (Figure 6.42, c). The 2nd Battalion 14th Buckinghamshire Regiment of Foot (nicknamed 'the Old and Bold') were stationed in New Zealand from 1860 until 1867, serving in all the major military campaigns of the 1860s. The button has the regiment number '14' emblazoned on the front with 'INDIA' above, and 'WATERLOO' below in recognition of battle honours the regiment had won during the respective campaigns. Two further 1-inch brass buttons were from the 70th Surrey Regiment of Foot and the 40th (2nd Somerset) Regiment of Foot (Figure 6.42, d and e). The manufacturer's details were stamped on the backplate section of the 2nd Somerset Regiment button. The maker's mark on the reverse says 'Smith, Kemp & Wright Birmingham', and it still retains its shank. Smith, Kemp and Wright were founded in the 1840s and manufactured brass buttons for 'Other Ranks' (i.e., rank and file) of the pre-1871 patterns, and later in the early 20th century became part of Firmin & Sons (Oldcopper.org 2016). Interestingly, there are no records of the 14th, 40th or 70th regiments ever serving at Ring's Redoubt; however, the 70th are known to have served at the Lower Galloway redoubt at the eastern end of the same defensive line. It is probable that soldiers were brought in from other regiments as and when needed to keep the garrison up to strength.

There were seven further examples of 1-inch brass buttons that survived either in fragmentary form or consisted solely of the backplate section of a two-piece button. Unfortunately, due to severe corrosion or the fact that the front piece did not survive, these examples could not be attributed to a regiment, although one of the backplate examples, like the 40th (2nd Somerset) example (Figure 6.42, d), had 'Smith, Kemp & Wright, Birmingham' stamped upon it.

Three-quarter inch diameter brass buttons featuring regimental decoration on the front were used on the navy blue jackets worn by the Royal Navy and all other British military units in the field in New Zealand during the 1860s. The more elaborate red tunics of the army were kept for dress and garrison duty only. Three buttons of this type were found, all from the Royal Irish Regiment of Foot, with two examples retrieved from context 3056, and one from context 1001=3027 (Figure 6.42, b). Tracing of gilding on all three buttons indicate that they would have belonged to an officer's uniform.

A single epaulet stud retrieved from context 1001=3027 has the regimental insignia of the 18th Royal Irish Regiment of Foot and would have come from an officer's dress tunic. A further possible epaulet stud was also retrieved from the same context, but as its surface was corroded no details of any regimental insignia could be discerned.

A circular piece of brass with a rectangular aperture in its centre and a rectangular frame to one side was recovered from context 3056 and represents one part (the ring/the front) of

a two-piece belt buckle (Figure 6.42, g). The buckle retained elements of gilding and is of a type found on other New Zealand Wars sites (e.g., at the Stone Store, Princes Street, Onehunga, used by the Commissariat during the Waikato Campaign: see Shakles et al. 2019:208).

On a normal regular army issue example, the tongue would have had the regimental numerals while the ring (front) would have displayed the name of the regiment. However, the example from context 3056 likely relates to a belt worn by a member of one of the militia regiments that served at the redoubt. The fact that it has gilding probably indicates that it belonged to an officer.



Figure 6.42 Copper alloy items derived from regimental uniforms and displaying regimental insignia, retrieved from the investigation of the Ring's Redoubt encampment: a) front and back view examples of 18th Royal Irish greatcoat buttons; b) front and back view examples of 18th Royal Irish Coatee jacket buttons; c) front and back view examples of 14th Buckinghamshire Regiment greatcoat buttons; d) 40th Somerset Regiment greatcoat button; e) 70th Surrey Regiment greatcoat button; f) fragments of Shako plates (regiments unknown); and g) one half of a regimental belt buckle (regiment unknown)

Three fragments of copper alloy retrieved from context 1001=3027 had ornate relief moulded decoration including a crown, while small areas of gilding also survived (Figure 6.42, f). While clearly of regimental origin, unfortunately neither of the surviving pieces contained any numbering or lettering to enable the identification of a specific regiment. It is probable that the fragments were originally a part of a shako plate or perhaps forage cap badge.

Lastly, a copper alloy shako chinstrap mount in the style of a Tudor Rose was recovered from context 3056 (Figure 6.43). The chinstrap mount was a pressed metal fitting used to attach the chin strap to a Shako hat (Figure 6.43). Unfortunately, the item was recovered in an advanced state of corrosion and did not survive the conservation process intact and fragmented into several pieces. This brass fitting was used on all British regimental shakos of the period, and dates to the period 1844-1865 (Rudd in Shakles, Phear et al. 2017b: 191).



Figure 6.43 Example from a 75th (Stirlingshire) Regiment of Foot Shako illustrating how the Tudor Rose chinstrap was affixed to the cap. NB. The cap example above dates to the 1870s period and therefore is of a different design to the Shakos worn by the Imperial soldiers at Ring's Redoubt, but the chinstrap mount is unchanged. The chin strap shown inset is an example recovered during excavations of the Mount Cook Barracks and is the same type as that discovered at Ring's Redoubt

Clothing Fixtures and Textile

Thirteen pressed brass trouser buttons were recovered (contexts 1001=3027 and 3056) which were used both to fasten trousers and to attach the braces around the waistband (Figure 6.44, d). The buttons all had a diameter of either 16mm or 17mm with four holes, and unfortunately, due to severe corrosion of the button surfaces, no manufacturer's marks (if once present) could be discerned. Prior to 1855, the trouser buttons had been manufactured in pewter but after this date they were made of pressed brass; however, this type of button was very generic, and worn by civilians as well as the military.

Thirteen brass hooks and nine brass eyes were retrieved from contexts 1001=3027, 3037, 3056 and 3065 and represent hook and eye garment closures that would likely have been attached to greatcoats or tunics (Figure 6.44, a and b). The hooks consist of brass wire bent into a J-like shape two wires thick and bent over at the top to form two loops allowing it to be sewn onto a garment. They are of two different sizes, with some examples 1.4 inches (35.56mm) tall and the others 1.2 inches (30.48mm). It is probable that the larger hooks

were for use in the heavy greatcoats, and the smaller for use with tunics (Figure 6.44, a). The 'eye' is formed of brass wire bent into a curved 'U' shape to receive the hook with two further loops formed by bending the wire back against itself either side at the top, for attachment to a garment (Figure 6.44, b). As with the hooks, these also came in two different sizes reflecting that some would have been sewn into greatcoats and others for use with tunics.

Eighty-one ceramic (porcelain) buttons were recovered from four contexts (1001=3027, 3035, 3056 and 3057). The vast majority of the buttons were recovered from context 3056 (the earthen barracks building platform) with 61 specimens relating to 60 individual buttons (Figure 6.45). The porcelain buttons would have been used on both shirts and underwear, with 55 smaller examples being underwear buttons, of which 47 were complete examples with four attachment holes and one broken in two pieces. The remaining pieces were broken buttons which did not refit. Five larger ceramic buttons originated from a shirt, with three complete examples noted – two having four attachment holes and one having two attachment holes. Two buttons were broken but did not refit.

Examples of each type of button recovered can be seen in Figure 6.45. Ceramic buttons have been in use since at least the early 18th century, although porcelain buttons such as those present in the Ring's Redoubt assemblage date from the mid-19th century onward (Marcel 1994: 2). This type of button, also known as Prosser buttons, were produced from the 1840s onward (Sprague 2002). These small buttons could have easily been lost through the strenuous endeavours the soldiers would have undertaken, as well as from more mundane activities such as laundering. As the majority of these buttons were underwear buttons, they probably came loose or were accidentally torn while undressing. These buttons are also easily small enough to fall through any gaps in floorboards such as those that would have been inside the barracks building.

Nineteen porcelain buttons were also collected from context 1001=3027, consisting of 17 underwear examples and 2 two-hole shirt buttons. Lastly, single ceramic four-hole underwear buttons were retrieved from contexts 3035 and 3057.

Lastly, and somewhat unusually, a small fragment of a linen-type textile was recovered from context 3056. The piece of textile was 2.5cm in length by 1.8cm wide and was 1mm thick (Figure 6.44, c). The fabric was yellowed with age and from the 150 years it had been within the clay soil from which it was retrieved. It was likely originally an off-white to white colour.



Figure 6.44 Clothing fixtures, buttons, and the scrap of textile retrieved from the archaeological investigation of the Ring's Redoubt encampment: a and b) examples of brass hook and eyelet clothing closures – the larger hook and eyelets were sewn into the greatcoats, while the smaller ones would have been used with the dress tunics; c) the small scrap of linen textile; and d) examples of pressed brass trouser buttons



Figure 6.45 Examples of the buttons recovered from context 3056. The larger buttons are shirt buttons, while the smaller ones are from underwear

Equipment

Forty-nine specimens relating to 34 individual items were identified within this category, weighing a total of 0.304 kg. The artefacts were recovered from five contexts: 1001=3027, 3056, 3065, 3133 and 3170. The assemblage consisted of four buckles a leather strap with eyelet, utensils or utensil handles, fixtures such as a bolt, a spike, nails, iron hooks, copper alloy wire, a lead ingot and some other items that are somewhat enigmatic (Figure 6.46). A selection of the artefacts within this category are discussed below.

Three rectangular buckles of copper alloy (brass) composition with a prong attached (one buckle was missing its prong) for pinning a pierced strap in place, such as that found on the soldiers' haversacks and knapsacks of the time (Figure 6.46, b), were recovered. Two of the three buckles of this type were recovered from context 1001=3027, while the other came from context 3056; all, however, relate to the barracks building that originally stood on the earthen platform. One of the examples from context 1001=3027 (finds id 5), was substantially larger than the other two, being 2.58 by 2.12cm in size, while the other two were 2.17 by 1.74cm (Figure 6.46, b (left)). It is likely that the larger buckle relates to the more substantial soldier's knapsack, and the two smaller ones to haversacks. A rectangular copper alloy buckle of less substantial composition than the knapsack and haversack buckles had a central dividing bar set with twin prongs (Figure 6.46, a). This item would have been a trouser braces buckle for adjusting the length of the braces. A strip of leather recovered from context 3133 (a rubbish pit) was some 7.45cm long by 2.18cm wide and 4.6mm thick and had a complete eyelet hole approximately in its centre (Figure 6.46, h). The eyelet displayed signs of being well used and had been stretched into a narrow oval shape from where it had been pierced with a buckle prong and been under tension. The leather strap also appeared to have broken at one end on a pierced eyelet also in the centre, with the eyelet being partially persevered in the frayed edge. It is likely that the leather was part of the strapping used to adjust a knapsack.

A number of artefacts were recovered from deposits related to the barracks building (contexts 1001=3027 and 3056) that were either handles of utensils, tools or from unidentified objects (Figure 6.46, e-g). A small copper alloy tap shaped handle with two brass rivets through it (finds id 59) was retrieved from context 1001=3027 and represents a handle of a closure of some sort, possibly attached to a faucet of an unknown vessel (Figure 6.46, f). A 'U' shaped copper item with apertures at either end to allow it to be attached to a wooden item with a fixing, probably represents a suspension bracket for hanging a tool with a wooden handle (finds id 134; Figure 6.46, g). Two pieces of brass (finds id 155) that appear to be from the same item (although missing an intermediate section) were recovered from context 3056 (Figure 6.46, c). The items consist of an oval handle in two parts that sandwich a further flat piece of brass that would have been able to pivot on a brass rod that threads through the three pieces and also fixes them together (Figure 6.46, c). The other piece consists of a shaped brass rod, that is bevelled on either side before a bevelled end splits into two flanged points (Figure 6.46, c). It is likely the remaining parts of a composite tool that may have been connected with the care of firearms, though it is acknowledged that this is only speculation.

There were 12 iron items relating to the Equipment category that were retrieved from contexts 1001=3027, 3065 and 3170, with the majority consisting of handles or fixtures. In terms of fixtures, two bolts, a spike and a nail were recovered from context 1001=3027, all heavily corroded, while part of a broken pick axe was also recovered from the same context. Two iron handle-like objects were retrieved from context 3065, the fill of the large cooking trenches, with one also having a copper rivet present. While both items are heavily corroded

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it is likely that they relate to cooking vessels. Two heavily corroded iron hooks recovered from context 1001=3027 were also likely to relate to food storage or butchery practices. A small heavily corroded iron spoon or perhaps a spatula, was retrieved from context 3170. The spoon was 10cm in length by 1.8cm wide and such was the state of the corrosion, that in places it was up to 1cm thick.

Lastly, a circular, dome shaped piece of lead weighing 124.40g was recovered from context 1001=3027 (Figure 6.46, d). It is likely that this represented a soldier's lead ingot for use as raw material for producing projectiles in the field on campaign if needed. As lead melts at a relatively low temperature this was a fairly straightforward task around a camp fire and merely required a bullet mould for the lead to be poured in.



Figure 6.46 Items from the Equipment category recovered during the excavations of the Ring's Redoubt encampment: a) brass slider buckle from trouser braces; b) brass buckles from knapsack or haversack; c) two machined brass parts of a broken tool – possibly a musket or pistol ball pull tool; d) lead ingot, probably an emergency resource for casting bullets or musket balls in the field; e) brass fixture with machine turned handle – possibly a handle knob from a small wood campaign chest; f) a brass tap handle; g) a 'U' shaped copper handle with apertures at either end for affixing to an unknown item with nails; and h) part of a leather strap with two pierced holes for adjusting with a buckle prong – almost certainly from a knapsack or haversack

Miscellaneous

Nineteen individual items were identified within this category and comprised copper alloy, gold, iron, lead, zinc, glass, and stone weighing a total of 0.981kg, with all being recovered from either context 3056 or 1001=3027 and related to the occupation of the barracks building. With the exception of a garnet gemstone and a milk glass item, the assemblage consisted of metals. The assemblage comprised two items of jewellery, two lock plates, two items connected with clerical work, bottle seals/closures, a possible gaming counter, a pendant, a cricket belt buckle, an enigmatic fixture, and more mundane items such as barrel

hoops, and lead and iron fixtures. A selection of the more distinctive and/or unusual artefacts within this category are discussed below.

A thin strip of yellow gold that was 3.23cm in length by 2.5mm wide and 0.7mm thick, and weighing 0.4g was retrieved from context 1001=3027 (Figure 6.47, left). The gold strip tests as 15 carat purity (a common gold purity of the Victorian era) and had been engraved with a simple geometric motif and would originally have been part of a finger ring band, with the remaining section absent. A large, round, faceted cut melanite garnet gemstone was retrieved from context 3056 (Figure 6.47, right). The garnet was a large gemstone measuring some 12.66mm in diameter and 4.79mm thick. The melanite garnet, as the name suggests, appears black in colour, but it is actually very dark red in transmitted light. Melanite garnet was most popular during Victorian times when, due to the perceived black colour of the stone, it was commonly utilised in pieces of mourning jewellery. Melanite garnet (also known as titanian andradite) was found in Italy, the Ural Mountains of Russia, and in the Ukraine during the 19th century, although today it is also known to be present in many more locations around the globe. The garnet was fractured and broken mainly at the rear and down one edge. The damage is consistent with the gemstone being prised from a jewellery mount (most likely a ring) with the tip of a knife or similar implement. The presence of part of a gold ring and a large garnet gemstone within the two deposits that were derived from the earthen platform that formed the footings for the barracks building, would seem almost certainly to indicate that the items were secreted away by a soldier of one of the regiments who served at the redoubt. It is probable that the items represent a soldier's stash of 'loot' that was probably hidden for safe keeping beneath the floorboards of the barracks building and for reasons unknown, never recovered.

An oval to rectangular pressed decorated brass plate item recovered from context 1001=3027 was the remnant of the front plate of a two-piece cricket belt buckle (Figure 6.48, c). The item featured two cricket bats leaning against one another (handle to handle) with a set of stumps and bails behind, in raised relief, and as the buckle would have originally been polished it would have appeared golden. Further decorative detail surrounding this central imagery features swags below and it is likely they would also have been present at the top of the buckle too. Due to the popularity of cricket as a sport at the time within the British Empire, cricket belt buckles were incredibly popular attire around the mid-19th century, and in particular from around 1860 to the mid-1870s (Studham, pers. comm. 2014). There were literally hundreds of designs registered at the time by a wide range of manufacturers both in Britain, and also in Australia (Studham, pers. comm. 2014). The belt buckles are said to have fallen out of fashion due to the early and perhaps first known cricketering great W.G. Grace, who was controversially given out in a match when his bat handle knocked against his buckle and the accompanying sound was taken as a nick by the umpire. As a result of this he then began wearing a cricket tie in place of a belt as they were soft and thus the incident could not be repeated (Studham, pers. comm. 2014).

The possible gaming counter was collected from context 3056, from what would have been within the footprint of the barracks building. The item is practically square, measuring 1.74cm by 1.61cm by 0.35cm thick and weighed 8.3g (Figure 6.48, g). Three triangular-shaped nicks closely spaced together are present on one side.

The possible rod-shaped lead pendant was recovered from context 3056 and was four sided, being lozenge shaped in cross section, and tapered at the top where a grooved indentation was present that perhaps suggests where a cord was tied in order to aid suspension around a wearer's neck (Figure 6.48, h). The pendant was 3.48cm in length, 0.91cm wide and 0.65cm thick and weighed 9.1g.

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The remains of two brass lock plates, both retaining their keyhole apertures were recovered from context 3056 (Figure 6.48, a and b). The first of these (finds id 185) is shield shaped, with a 'q' keyhole aperture towards the base in the centre, while two circular offset pierced holes close to the top, and three semi-circular pierced cut-outs located along the edge would have been used to affix the lock plate either to a frame within a bag or a wooden trunk (Figure 6.48, a). The lock plate also has been stamped with the word 'PATENT' at centre top, and also to the left and right of the keyhole aperture. There is also the beginning of some more lettering to the right of the keyhole and the word 'PATENT', but due to corrosion this is mainly obscured and cannot be discerned. This would likely have been the company manufacturer's name.

The other lock plate (finds id 191), while in a more corroded and fragmentary condition, actually retains more information relating to function, the manufacturer and place of manufacture. The lock plate retains its keyhole aperture around the outside of which 'J. TERRY & Co' is stamped in serif lettering (Figure 6.48, b). Eli Terry ran the Terryville (named after his father Eli Terry Snr, a clockmaker), Connecticut firm, of Lewis, McKee and Company, which in 1834 had purchased a small lock manufacturing workshop in Watertown, Connecticut, and which was one of the first lock works in the United States (Atwater 1995: 244). Following the death of Eli Terry in 1841, the business was bought by the Lewis and Gaylord company and later consolidated in 1854 with the James Terry Company which was owned and run by James Terry, the son of Eli Jnr and grandson of Eli Snr (ibid.). The James Terry company manufactured carpet bag frames and, following the merger the new company, was named the Eagle Lock Company, which by the 1890s was one of the largest trunk lock manufacturers in the world, employing nearly 500 workers (ibid.). From the formation of the Eagle Lock Company, James Terry was its chief promoter and the company president until his retirement from business life in 1866 (ibid.). The Eagle Lock Company continued to grow in the 20th century and by the end of the Second World War employed nearly 800 people. However, the company declined after the war and was sold in the 1960s to the Delaware firm of Penn-Akron Corporation. After the sale the Eagle Lock Company continued to flounder and, while there were attempts to purchase the manufacturing complex, none succeeded, and the company closed in 1975. The fact that the lock plate recovered from context 3056 is stamped James Terry rather than the Eagle Lock Company indicates that the lock plate was attached to a carpet bag frame rather than a trunk, and that it was also manufactured by the James Terry Company in Terryville, Connecticut no later than 1854, when the company merged with Lewis, McKee, and Company. The presence of two lock plates from perhaps a trunk as well as a carpet bag potentially indicates unlawful activities and cannot simply be explained away as items that would be expected to be found on a redoubt site. Both lock plates would have been very securely affixed to a timber campaign trunk or carpet bag with wooden frame respectively (see Figure 6.49).

An enigmatic brass item recovered from context 1001=3027, appears to be shaped like a cleat, with evidence that it was fixed to another item by rivets, and has the number 18 impressed on one surface (Figure 6.48, f). The item is 45.41mm in length and up to 14.46mm wide and weighs 16.40g, and is similar in appearance to a cleat, having a bevelled area where twine or perhaps cord could have been wound. The item's function has defied interpretation, although the fact that it has the numerals '18' stamped on it strongly suggests that it was issued to the 18th Royal Irish Regiment.

A hollow, brass cylindrical item that had a tapered point at one end and a hollow aperture at the other was recovered from context 1001=3027. The item retained a gilded surface when first examined, although this has not survived the conservation methods employed to

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stabilise the metal. The item is 63.60mm in length and 6.28mm in diameter at the open end, and is consistent with and interpreted as the sheath end of a dip pen to enable the pen to be held between the fingers (Figure 6.48, e). Dip pens were the successors to feather quills and the predecessors of fountain pens, being dipped into an ink pot, blotted, and then used to write. During the excavations, a number of stoneware and glass inkpots were recovered, which would have been used with the dip pen by one of the officers stationed at the redoubt to pen missives, orders, and to undertake the clerical aspects of the bureaucratic tasks demanded of an officer of the British Army at the time.

A small bevelled, circular sky blue milk glass insert or cap that was 10.03mm in diameter and 3.51mm thick was retrieved from context 1001=3027 (Figure 6.48, d). The item could potentially have functioned as a stopper for a small glass tube or vial.

Lastly, two zinc bottle seals, both of which were decorated, were represented from fragments of thin zinc sheet retrieved from context 3056 (Figure 6.50). These almost certainly relate to the closures of beer bottles, with one (finds id 253) having an embossed 'young head' Queen Victoria portrait facing right (Figure 6.50) The other (id 248) consisted of six fragments with 'TRADE MARK' and discontinuous text and the embossed image of a lion- or panther-like cat's head.



Figure 6.47 The cut strip of engraved yellow gold ring band recovered from context 1001=3027, and the large melanite garnet gemstone retrieved from context 3056

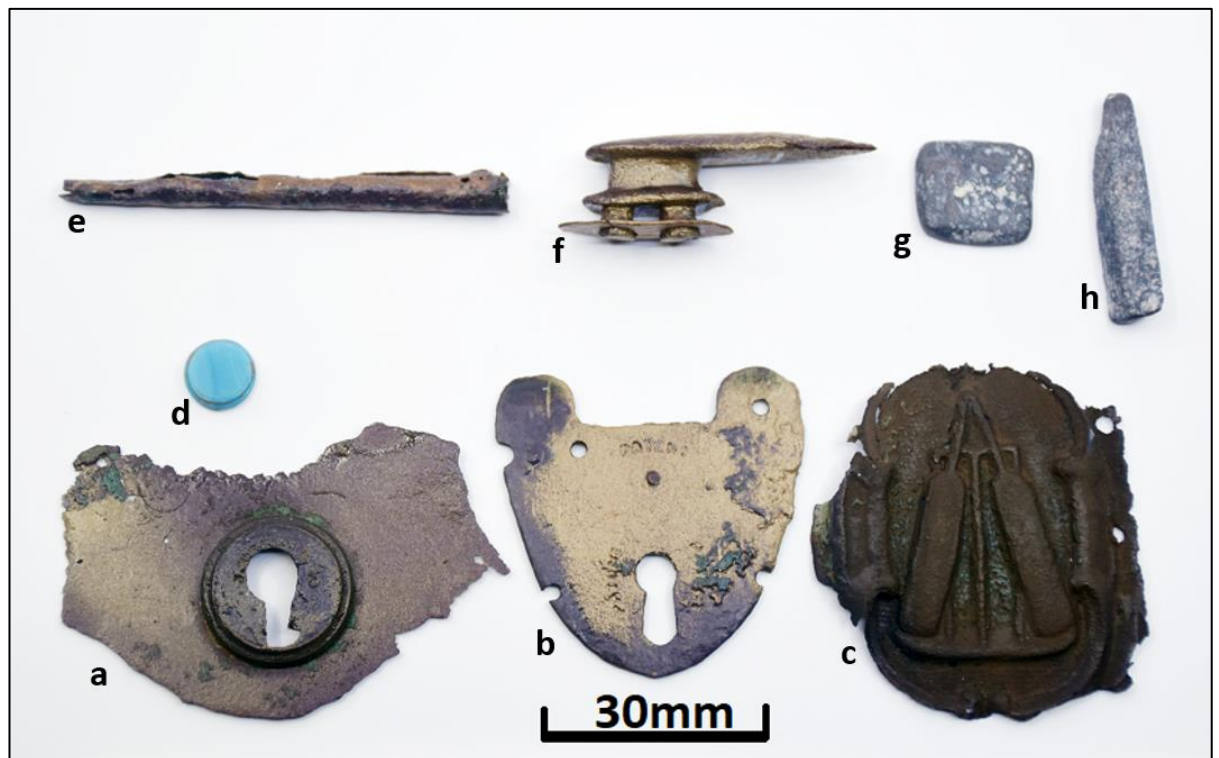


Figure 6.48 A selection of miscellaneous items recovered during the excavations of the Ring's Redoubt encampment: a) a brass J. Terry & Co. carpet bag lock plate; b) a brass lock plate likely from a wooden or leather trunk; c) pressed copper alloy cricket belt buckle; d) a blue milk glass cap/closure for an unknown item; e) the copper alloy grip from a dip pen; f) machined heavy duty brass cleat-like item; g) shaped and inscribed lead tablet (possible gaming counter); and h) a shaped piece of lead that may have been worn as a pendant



Figure 6.49 Examples of a campaign chest top with nail-fixed lock plate similar to that shown in Figure 6.48, a (top); and a James Terry & Co. mid-19th century Victorian carpet bag (bottom left) with the same style lock plate (detail at bottom right) as that shown in Figure 6.48, b (bottom)

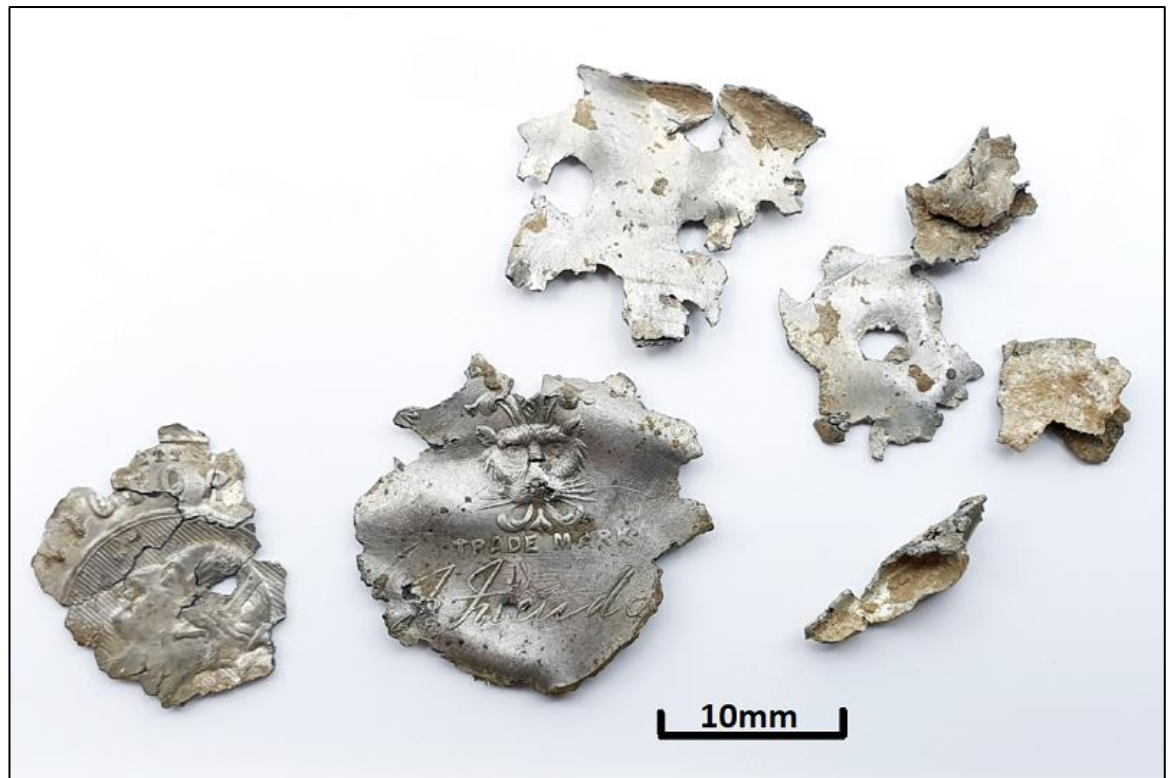


Figure 6.50 Detail of the remains of the two zinc bottle seals recovered from context 3056

Numismatics

An extremely modest assemblage of 9 coins and/or tokens weighing a total of 0.059kg were recovered during the archaeological excavations at Ring's Redoubt, from contexts 1001=3027, 3056 and 3062, with all but one of the coins coming from contexts 1001=3027 and 3056, both of which related to the earthen platform that the barracks building had been situated upon (Table 6.21; Figure 6.51–Figure 6.53). The assemblage consisted of 2 coins, 3 trade tokens, and 4 items that due to an advanced state of corrosion could not be determined to be either definitively a coin or a token (Table 6.21). The 2 coins were both of silver, while the 3 trade tokens and the 4 possible coin or trade tokens were all of copper composition (Table 6.21).

The earliest dateable coin in the assemblage is an 1825 George IV silver shilling that was recovered from context 1001=3027 (Table 6.21 and Figure 6.51, left). The obverse side of the coin features a laureate portrait of King George IV facing left and with the surrounding legend: GEORGIUS IIII D: G: BRITANNIAR: REX F: D: (George the Fourth by the Grace of God King of the Britains Defender of the Faith). However, this inscription is only partly preserved. The reverse of the coin features a Crowned Royal shield of arms within Garter (completely rubbed away on this example) and the lettering HONI·SOIT·QUI MAL·Y·PENSE··· (all missing) and the date ANNO 1825 (which is still present). The only other identifiable and dated coin is an 1844 silver sixpence recovered from the same context (Table 6.21 and Figure 6.51, right). The obverse side of the coin features the young, uncrowned portrait ('Young Head') of Queen Victoria facing left and with the surrounding legend: VICTORIA DEI GRATIA BRITANNIAR: REG: F: D: ('Victoria – By the Grace

of God, Queen of the Britains, Defender of the Faith'). The reverse of the coin features the lettering: 'SIX PENCE 1844'.

In addition to the two coins retrieved from the redoubt site, three penny trade tokens and a single halfpenny trade token were recovered from contexts 1001=3027 and 3056 (Table 6.21 and Figure 6.52). A penny trade token dated 1857 was recovered from context 3056. The obverse of the penny token features the lettering 'M. SOMERVILLE WHOLESALE FAMILY GROCER CITY MART AUCKLAND', while the reverse has a flowering plant above the date 1857 and New Zealand (Table 6.21 and Figure 6.52, a). A further example of a Somerville one penny trade token was also recovered from context 1001=3027, although this example had been for reasons unknown cut in half (Table 6.21 and Figure 6.52, b). The token, while heavily corroded, still had legible lettering of 'GROCER' and '[Auck]LAND' on one side and also the date of 1857 could just be discerned on the other with careful inspection and under x10 magnification. Somerville trade tokens are a relatively common find on archaeological sites within the Auckland region that date from around the mid-19th century. The other penny trade token was retrieved from context 1001=3027 and is for the company of Metcalfe and Lloyd of 478 George Street, Sydney. The obverse features the lettering 'shipping and family grocers. METCALFE & LLOYD 478 GEORGE ST SYDNEY', while the reverse has 'purveyors of the concentrated family coffee, WINE AND SPIRIT MERCHANTS 1863' (Figure 6.52, c). This token may well have been brought to the redoubt by one of the 2,500 Australian men that enlisted for the irregular colonial militia units such as the 1st to 4th Waikato Militia Regiments, with the 1st, 3rd and 4th Waikato Militia recorded as serving at the Ring's Redoubt.

The other trade token is a halfpenny token recovered from context 3056, and while heavily corroded it can be determined to be a trade token by its plain edge and design which are not consistent with a coin (Table 6.21 and Figure 6.52, d).

In addition to the two silver coins and four trade tokens there were also three copper coins present within the assemblage. The first of these was recovered from context 3056 and is an example of either a halfpenny coin or trade token. However, it was so badly corroded that it was not possible to distinguish whether it was a coin or a trade token (Table 6.21 and Figure 6.53, c). The remaining two copper coins were both penny sized and were recovered from contexts 1001=3027 and 3062 and were also both so heavily corroded that again they could not be categorised as either a coin or a trade token (Table 6.21 and Figure 6.53, a and b).

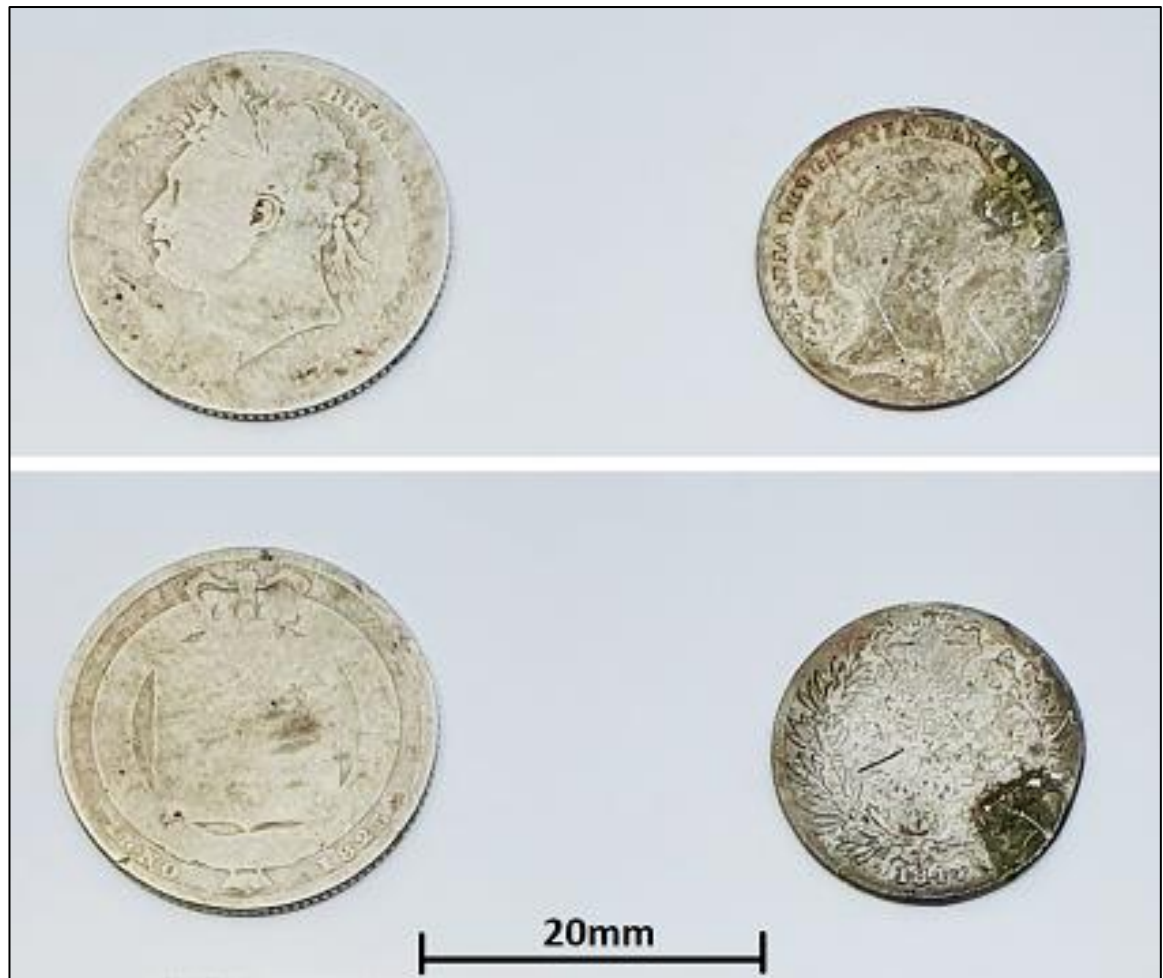


Figure 6.51 The two silver coins retrieved from context 3027: 1825 George IV Shilling (left) and 1844 Queen Victoria Sixpence (right)

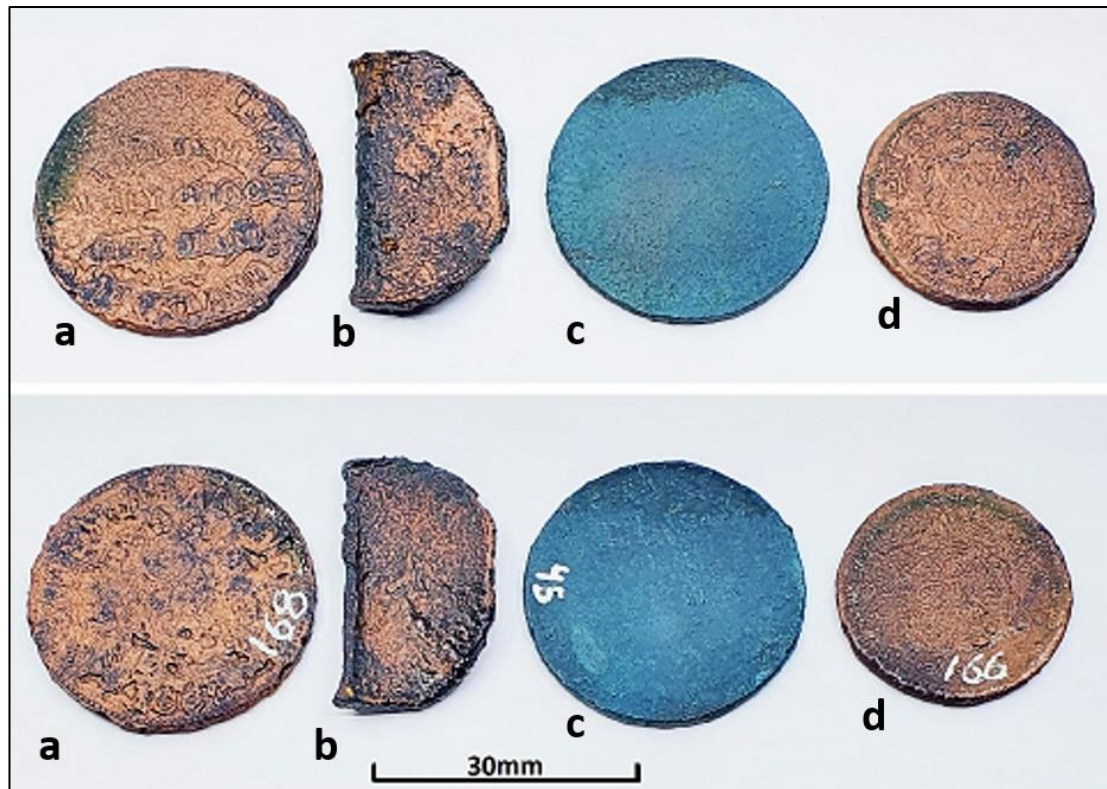


Figure 6.52 The four trade tokens recovered from Ring's Redoubt: a) 1857 M. Somerville, Auckland one penny token from context 3056; b) M. Somerville penny token cut in half from context 1001=3027; c) Metcalfe & Lloyd, Sydney one penny token; and d) unidentified halfpenny token from context 3056

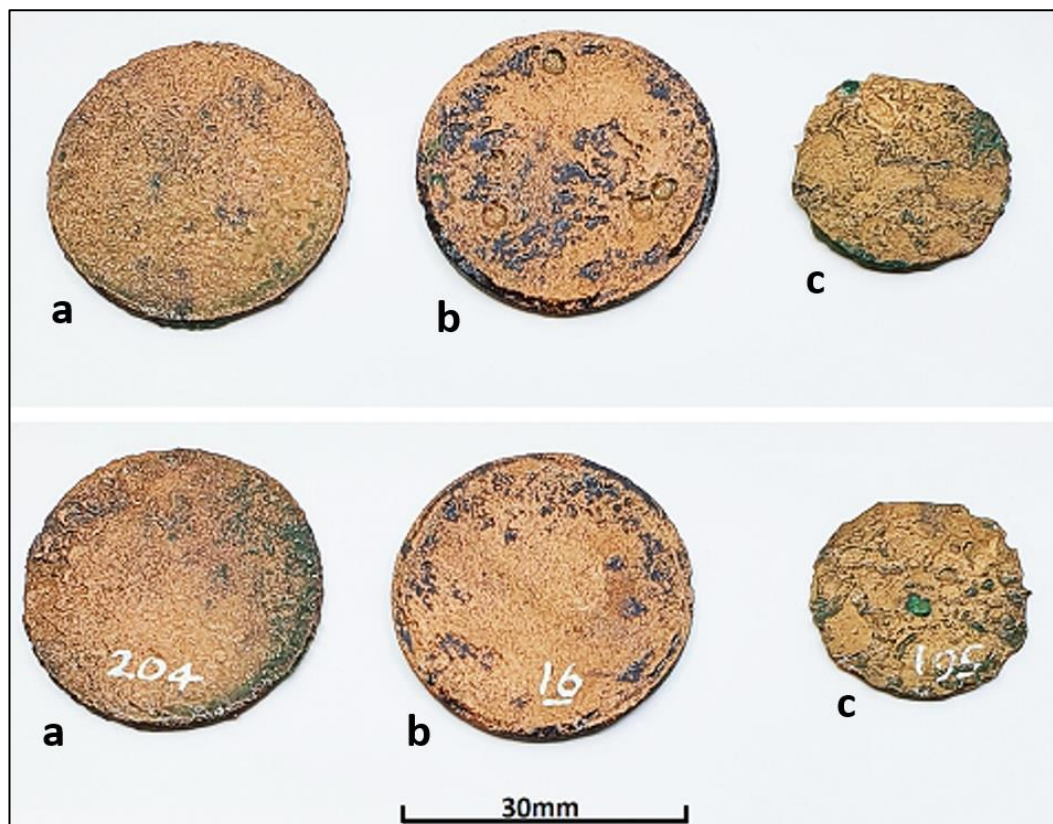


Figure 6.53 The two copper penny and one halfpenny coins or tokens that were heavily corroded and unidentifiable: a) penny coin or token from context 3062; b) penny coin or trade token from context 1001=3027; and c) halfpenny coin or token from context 3056

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Table 6.21 Summary of numismatic items from Ring's Redoubt

Coin / Token Denomination	Composition	Year of Issue	Description	Context	Finds ID #
George IV Shilling	Silver	1825	Obverse: Laureate portrait of King George IV left, legend around. Lettering: [GEORGIUS IIII] D: G: BRITANN[IAR: REX] F: D: / Reverse: Crowned [Royal shield of arms within Garter], date below. Lettering: [HONI·SOIT·QUI MAL·Y·PENSE]...ANNO 1825. Coin orientation: ↑↓	3027	27
Victoria Sixpence	Silver	1844	Obverse: Young uncrowned portrait ('Young Head') of Queen Victoria left, legend around. Lettering: VICTORIA DEI GRATIA BRITANNIAR: [REG: F: D:] / Reverse: Lettering: SIX PENCE 1844. Reeded edge. Coin orientation: ↑↓	3027	91
Penny Token	Copper	1857	Obverse: Inscription, legend - Lettering: M. SOMERVILLE WHOLESALE FAMILY GROCER CITY MART AUCKLAND. / Reverse: Flowered plant above date. Lettering: NEW ZEALAND 1857. Plain edge. Token orientation: ↑↑	3056	168
Penny Token	Copper	1863	Obverse: Lettering: shipping and family grocers. METCALFE & LLOYD 478 GEORGE ST SYDNEY, Reverse: Lettering: purveyors of the concentrated family coffee, WINE AND SPIRIT MERCHANTS 1863. Plain edge. Token orientation: ↑↑	3027	45
Penny Token	Copper	1857	Cut in half & heavily corroded on both sides. Obverse: Inscription, legend - Lettering: [M. SOMERVILLE WHOLESALE FAMILY] GROCER [CITY MART AUCK]LAND. / Reverse: Flowered plant above date. Lettering: [NEW ZEALAND 1857]. Plain edge. Token orientation: ↑↑	104	49
Penny or Penny Token	Copper	?	Penny coin or trade token. No lettering or date discernible due to severe corrosion.	3027	16
Halfpenny Trade Token	Copper	?	Halfpenny trade token. Lettering and date indiscernible due to corrosion.	3056	166
Halfpenny Coin/Token?	Copper	?	Halfpenny coin or trade token. No lettering or date discernible due to severe corrosion.	3056	195
Penny or Penny Token	Copper	?	Penny coin or trade token. Lettering and date indiscernible due to corrosion.	3062	204

6.6.2 Discussion of Militaria and Numismatic Assemblage

The militaria and related numismatic assemblages produced by the archaeological investigation of the area surrounding the remains of Ring's Redoubt are for the most part what would be expected to be found at a military site of the period. The assemblage is dominated by militaria artefacts with the majority consisting of items relating to munitions (47.24%), and items relating to regimental issue clothing not too far behind on 37.14% of the assemblage. The munitions assemblage is what would be expected, as it is dominated by Minié style projectiles of the standard infantry issue Pattern 1853 Enfield Rifle, with 110 of the 116 projectiles recovered being Enfield Rifle bullets. Of interest is the fact that hardly any of the projectiles exhibit signs of having been fired, although this may simply be due to the area in which the firing range would have been situated not forming a part of the investigation area.

Also of note, is the advanced corrosion of nearly all metal artefacts, that clearly show the soil conditions of the site are not conducive to preservation of metallic items (with the sole exception of lead). Many of the iron artefacts were corroded so completely that they were simply not worth sampling, while the majority of the copper alloy regimental buttons and other fittings were also extremely corroded, with the majority not permitting identification of a specific regiment. This is problematic for the future, as it is extremely likely there are a significant quantity of regimental and militia related metal artefacts dating to the occupation of the redoubt in the area enclosed by the Auckland Council's historic reserve. This incorporates the area surrounding the redoubt both to the west and to the north where the large encampment of the 43rd (Monmouthshire) Light Infantry is depicted in Lt. Colonel Arthur Morrow's 1863 watercolour of the redoubt (Figure 2.4). Regrettably, without the intervention of archaeological investigation of the areas in question, this situation will only become far worse in the future and the metal artefacts will eventually simply corrode away beyond recognition.

6.7 Metals

Virtually the entire Ring's Redoubt metals assemblage consisted of either lead or copper alloy items which could almost exclusively be placed within the militaria category. Of these, the vast majority were either lead munition items or copper alloy regimental insignia, and these have already been discussed above. Additionally, non-militaria general ferrous items such as barrel hoops, boot heel plates, containers, etc, had not survived well in the prevalent soil conditions and were unfortunately in an advanced state of corrosion. Due to their condition, these items were noted but were not retained for further analysis. The remaining metal items numbered just four and all were made of lead. These items were discussed in the Equipment and Miscellaneous sections of the Militaria analysis, and therefore, a standalone metals section is not presented or required.

6.8 Miscellaneous

A small number of items that were collected do not fit into broader categories. They were constructed of a variety of materials including metal, wood, slate and stone. These items

can be grouped into different categories such as building and construction, footwear, clerical and packaging.

6.8.1 Miscellaneous Items

All items were cleaned with a toothbrush in warm water and allowed to dry naturally. Each item was analysed and broken pieces checked for refitting to enable a calculation of MNI and placed into the appropriate category (Table 6.22).

Nine items were collected from four contexts. The largest grouping of items was Clothing and Footwear with a minimum of just 3 individual items identified, two of which were boot heel plates and the third a cording lock with a potential link to military accoutrement.

Packaging items were noted in the form of a jar lid insert and a small wooden label likely attached to a box of unknown contents. Fragments of a writing slate were the sole item within the Clerical category while Building and Construction contained a portion of a tile (Table 6.23).

Table 6.22 Summary of miscellaneous items from Ring's Redoubt

Context	NISP	MNI
1001=3027	3	3
1091	2	2
3056	3	1
3182	1	1
Total	9	7

Table 6.23 Minimum number of miscellaneous individual items – Ring's Redoubt

Item	MNI
Building/Construction	(1)
Tile	1
Clothing/Footwear	3
Boot Heel Plate	1
Cording Lock	1
Heel Plate	1
Packaging	(2)
Jar Insert	1
Label	1
Clerical	1
Writing Slate	1
Total	7

Context 1001=3027

Three items were recovered from this context, consisting of a metal cording lock, a small portion of a stone tile and a wooden label. Of note was the cording lock, which would have attached to the end of cord to prevent unravelling of the threads (Figure 6.54). This could possibly be related to military equipment.

A small portion of a stone tile was collected (Figure 6.55, left). The tile was similar to that used on walls as opposed to flooring. A small portion of a wooden packaging label had small holes where the label would have been nailed to a box (Figure 6.55, right).



Figure 6.54 Cording lock to prevent fraying recovered from context 1001=3027



Figure 6.55 Portion of tile (left) and portion of wooden label (right) both recovered from context 1001=3027

Context 1091

Items from this context (one of two refuse dump deposits situated within the gully to the north of the redoubt) gave the initial appearance of tortoiseshell; however, the items are constructed of a nylon type material with some flexibility and have taken on staining resulting in their colourful appearance. The first item was related to footwear, being cut to the shape of a heel plate. Small nail holes are visible and it is possible the plate was an attempt at waterproofing the upper part of the heel area (Figure 6.56, left). The second item is a jar lid insert, designed to provide an extra seal to keep food fresher for longer (Figure 6.56, right). These items are unlikely to relate to the Redoubt period and most likely relate to the occupation of the Hibberd Homestead of the early 20th century.



Figure 6.56 Shoe heel plate with nail holes (left) and jar lid insert (right), both recovered from context 1091

Context 3056

Three pieces of grey coloured writing slate were noted from context 3056, the earthen platform beneath the barracks building.

Context 3182

A heavily corroded boot heel plate was recovered from context 3182, the secondary fill of the recut encampment enclosure ditch 3180.

6.8.2 Discussion of Miscellaneous Assemblage

A very small collection of items within the miscellaneous category were recovered. It is possible the cording lock is associated with military accoutrement, while the pieces of writing slate likely relate to clerical work undertaken at the redoubt. The two nylon type items were likely associated with later occupation of the site by the Hibberd family.

7 DISCUSSION

7.1 Introduction

The residential development works at 935 Papakura-Clevedon Road exposed a number of archaeological features and extensive deposits relating to the military occupation of Ring's/Kirikiri Redoubt between July 1863 and July 1865. The remains of the main redoubt fortifications as well as a relatively sizeable area to the north and west were vested in Auckland Council as a historic reserve. Therefore, the archaeological investigations were focused on the land immediately surrounding and adjacent to the historic reserve. As such, it was not possible to examine the main redoubt structure or immediately adjacent areas where concentrations of geophysical anomalies likely to relate to the redoubt were identified. However, the features exposed and investigated during the residential development still shed light upon the wider redoubt area and activities that took place within the military encampment. These activities centred in the main on subsistence, with a number of features relating to food preparation and cooking activities for the men of the various regiments that garrisoned the redoubt.

Despite the relative paucity of archaeological features in relation to the size of the archaeological investigation area, the artefact assemblage produced was quite substantial, with the number of individual specimens totalling 6,177 pieces, from which a minimum of 1,483 individual items were identified. Unfortunately, due to the properties of the soil across the excavation areas, animal bone and organic material in general did not survive, and when on the rare occasion some bone was found, it was in a very poor state of preservation. The same applied to the metal artefacts, with the sole exception of lead items, which once oxidised remain stable in the ground. Copper alloy items, including those with regimental insignia, and ferrous items were in the main corroded and, in the case of iron, often in an advanced state of corrosion. The poor state of metal preservation on the site is most likely due to the location of the site on a ridge top, where during wet weather the soil will be wet, but due to the ground sloping away the site will dry out relatively rapidly. This continual wetting and drying over the past 156 years has had an extremely detrimental effect upon both organic and metallic cultural material.

7.1.1 The Archaeology of the Wider Ring's Redoubt Encampment

Part of the eastern course of the main redoubt defensive ditch is still visible as earthworks, and when combined with the results of historical research and geophysical survey, the location and extent of the redoubt defences could be verified with a high degree of confidence. The archaeological investigation provided the chance to examine how the land around the redoubt defences proper was utilised, giving a glimpse of the layout of a mid-19th century Imperial British military encampment.

Northeast and Northern Areas

The investigation found evidence that the redoubt defensive ditch (at least on its eastern side) had been made more formidable by the construction of a glacis ramp leading up to the ditch from the outer eastern side. The glacis had been constructed with the firm natural clay that was found at depths of greater than 1.30m, which would have been upcast as the

main sections of the redoubt's defensive ditch were being excavated. The glacis was observed in a section to be sealing the pre-July 1863 topsoil. As the engineered artificial slope (or ramp if attacking) of the glacis extended eastward and downslope from the redoubt ditch it would have enabled the defenders to keep attacking forces under fire for a longer period of time and until the last possible moment.

The single largest earth-cut archaeological feature was the large drainage ditch (context 3014) that was likely connected via a brick or stone culvert from the main defensive ditch where it ran around the north-eastern bastion of the redoubt. The drainage ditch has been situated at the lowest point of the main redoubt ditch on its northern side and would have served to prevent the main defensive ditch from silting up during a wet Auckland winter such as it would most likely have been in the July of 1863, when the redoubt was first constructed. As the ditch would have been 1.80m wide and 1.80m deep a lot of bare clay would have been exposed, in addition to that exposed on the outer face of the parapets. The drainage ditch was large, being some 1.90m wide and 0.94m deep at the closest point to the historic reserve boundary where it was visible, but it was observed to be deepening towards the redoubt ditch. The ditch issued downslope towards the large gully located to the northeast of the redoubt, and some artefactual material such as black beer bottle glass, earthenware and stoneware sherds had collected in hollows downslope of the ditch. Heavy or persistent rain would have produced large volumes of silt and indeed this is most likely what occurred as the large drainage ditch had by some point completely silted up and therefore a re-cut ditch (context 3026) had been excavated within the original ditch channel. Within the fill of the recut ditch a couple of broken bricks may have come from the culvert draining the main ditch into the drain. If so, it is likely that they were broken as attempts were made to clear the silt-clogged culvert with spades or shovels. The re-cut ditch, while still substantial, was smaller than the original, which indicates that the exposed sides and base of the redoubt's defensive ditch must have become more stable and less prone to erosion.

Immediately to the north of the redoubt, topsoil stripping towards the north-eastern boundary of the historic reserve exposed two sections of an enclosure ditch that would have served to enclose the camp most likely seen on Morrow's 1863 watercolour of the camp of the 43rd Monmouthshire regiment. As with the main redoubt ditch, the enclosure ditch also had a drain issuing from it in its north-eastern corner which also marked the lowest elevation point of the enclosure ditch. The enclosure ditch would have served a defensive purpose as the low earthen rampart on the inside of the ditch would have almost certainly been topped with a fence and also would have drained water, keeping ground in the encampment area dry. The enclosure ditch survived in two sections with the largest surviving section clearly extending back towards the location of the northern redoubt ditch, while the other only survived for a short distance, with the majority of the ditch's course completely truncated by the construction of the former dwelling at 935 Papakura-Clevedon Road. A small break between the two sections where each ditch terminated seemed to mark a narrow exit and entry point, just large enough for a single person to go through. It is possible that this was a gateway leading to the latrines. However, as the entire area north of the enclosure ditch had been cut down by over 2m during the construction of the former house, no remains of any archaeological features survived in the area.

Western Area

The area to the west of the redoubt was dominated by two large deposits (context 3056 and context 1001=3027) related to an earthen platform likely to be that seen supporting the wooden barracks building described as a 'Raupo Whare' on Morrow's 1863 watercolour

of the redoubt. Context 1001=3027 represented the portion of the earthen platform that had been eroded, probably by rainfall and slope movement, and that had been deposited downslope immediately at the head of the large gully that trended westward away from the redoubt. Context 3056, however, in the main represented the in situ remains of the earthen platform. There were no postholes or beam-slots associated with the earthen platform, indicating that the structure was likely to have been built on a beamed frame that sat on top of or was pressed into the earthen platform. Both contexts 1001=3027 and 3056 produced large volumes of artefacts, much of which related directly to the military, and an even larger volume that related to the consumption of alcohol. There were so many black beer bottle bases, rims, and body sherds, that it was deemed prudent to subsample them, and it can only be guessed how many may have been present if the redoubt's dedicated refuse trench had been located and exposed within the area investigated.

Apart from the remains relating to the platform of the barracks building, the most significant archaeological features to the west of the redoubt were all concerned with cooking and food preparation. These consisted of a cook house, cooking trenches and a probable bakery.

The cookhouse and cooking trenches were located adjacent to each other, situated on the westward facing slope, and west of the western defensive ditch of the redoubt. In her thesis on the historical archaeology of comestibles in the Waikato Campaign of the New Zealand Wars, Simmons notes that only minimal information is known on kitchen design in the encampment manuals, but they include cooking trenches, ovens and kneading troughs (Simmons 2013:129). The location of the camp kitchen would have been constrained by various requirements such as the size of the force at the camp, with two kitchens constructed if the camp had a force of more than 400 men, one for each half battalion (House Guards 1871:25 cited in Simmons 2013:129). At Ring's, with 500 men originally recorded as being stationed there, only one cookhouse and two cooking trenches were identified, which could indicate that another cookhouse and trenches could be situated within the boundaries of the historic reserve (located outside of the investigation area).

Of the cooking trenches, various plans are on record for the New Zealand Wars campaigns, with the trenches at Ring's consistent with, and a variation of, the broad arrow kitchen (Figure 7.1 and Figure 7.2). Simmons notes: 'the instructions for constructing a broad arrow kitchen noted that a party of five men and one supervising non-commissioned officer could construct the kitchen in three and a half hours' (Simmons 2013:129). At Ring's, the arrow consisted of two trenches, with a chimney at the apex; the fires were lit within the trenches and the kettles (large pots) placed on top, with the spaces between the kettles covered with stones, hoop-iron, or sticks plastered with clay or sods (Horse Guards 1871:27; Figure 7.2).

While a larger kitchen area was not recorded in the area investigated, there was a cookhouse located immediately adjacent to and to the south of the trenches, which consisted of a rectangular pit area, so an open air kitchen as opposed to a building. Within the pit fires were lit, which facilitated the cooking of meat and vegetables in the large kettles (see Figure 7.3 for an example of such a feature being used). It is expected that more permanent cooking facilities would be in place at a redoubt continually garrisoned for two years and, as with further cooking trenches, these could be located within the historic reserve to the north and west of the defensive ditch, with these earlier cooking features to the west relating to the preliminary occupation of the redoubt. Simmons (2013:133) notes that she found no reference to the evolution of temporary camp kitchens into more permanent kitchens, and it is likely that during the New Zealand Wars the needs and nature

of the campaigns dictated adaptable cooking requirements that might not fit the norm or the manual.

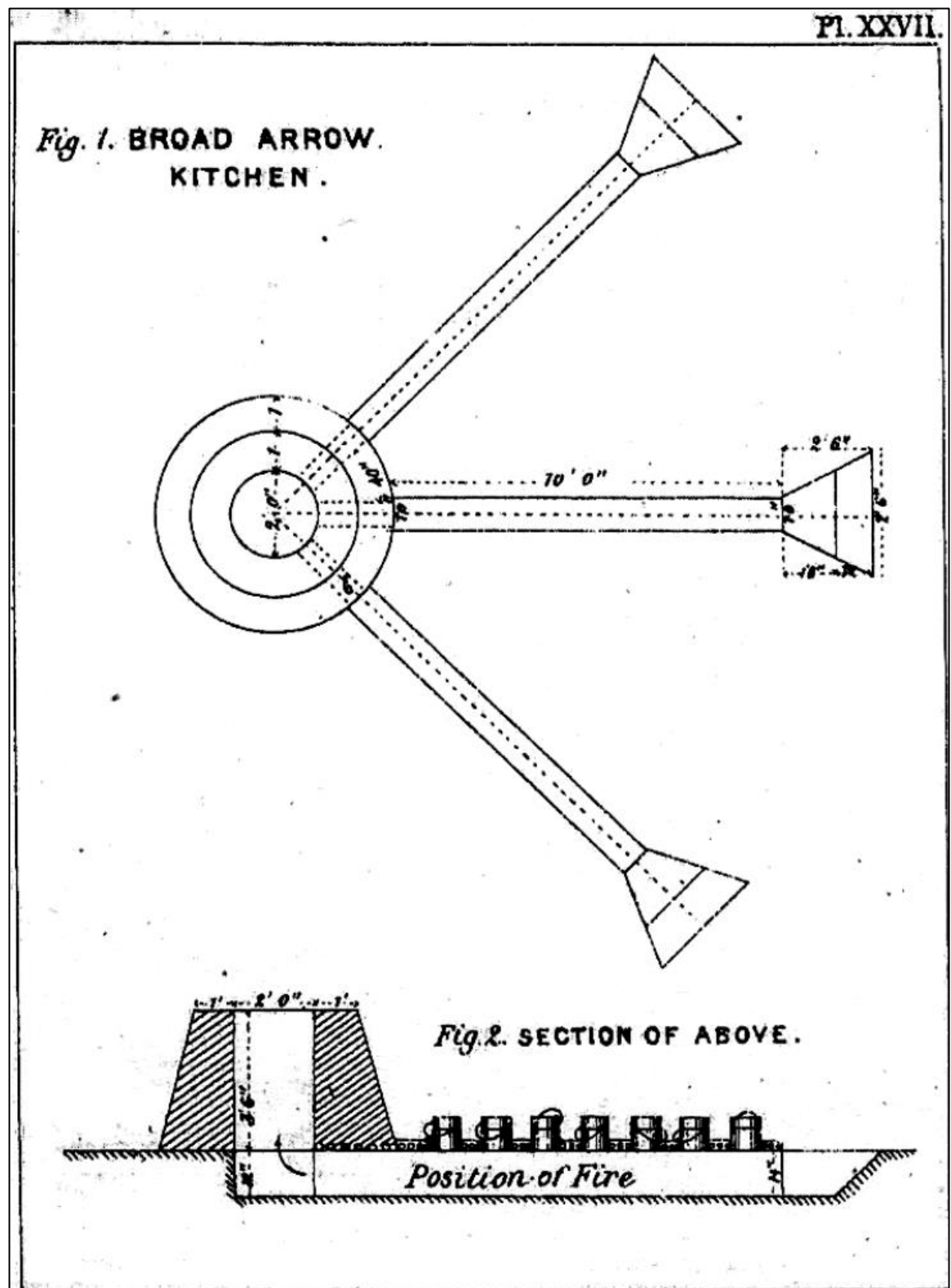


Figure 7.1 Schematic plan and cross section of a Broad Arrow field kitchen (Horse Guards 1871: Plate 22; from Simmons 2013:130)

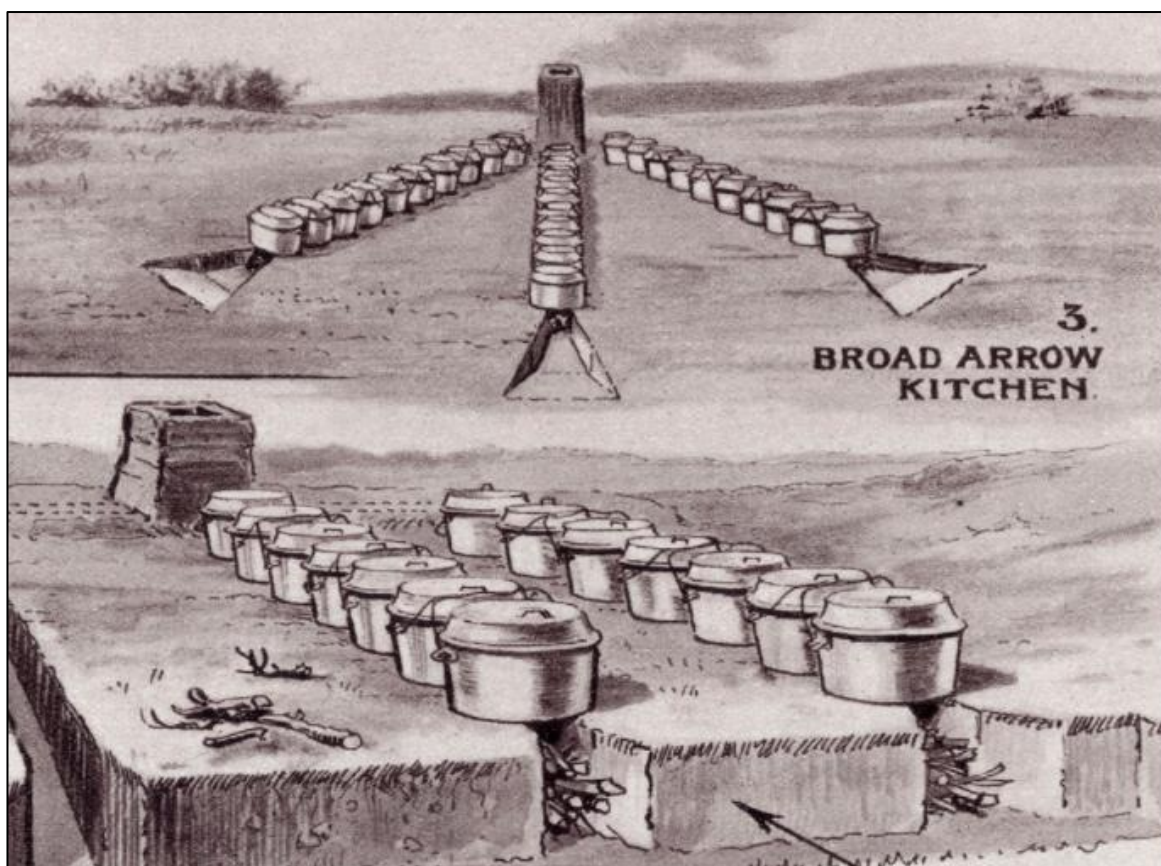


Figure 7.2 Broad Arrow kitchen as depicted in the First World War weekly journal the *Daily Illustrated War*, vol. 2, 1915. NB. The arrow denotes the prevailing wind direction

Further evidence of cooking was the evidence of repeatedly scorched clay within the rectangular structure which is considered the likely location of the encampment bakery (context 1006), located further west and down slope. Bread and biscuits formed an essential part of the soldiers' diet, with advertisements in the *Daily Southern Cross* in 1865, indicating requests for flour, potatoes, hops, malt, salt and yeast (Simmons 2013:169). Larger redoubts, such as the Te Awamutu and Tauranga Commissariats, likely produced bread for camps in the region, with records indicating 55,720lbs of bread was produced alone in the month of June at Te Awamutu (Simmons 2013:169). Of note is that the double-cased field oven for bread making was invented in New Zealand during the Waikato Campaign, with the iron oven manufactured in Auckland at the Albert Iron Foundry by Vickers and Masfield. However, this oven did not replace the prefabricated Aldershot and Curragh's bread ovens, which were assembled in the field and made of thin iron (Simmons 2013:174-75). No remains of an oven were found during excavation, and it was likely to have been removed and taken to the next encampment.

Overall, the discovery of the remains of the cookhouse, cooking trenches and bakery are important as they have not been well recorded in other redoubt excavations, which makes them invaluable in understanding the layout of field encampments around redoubts as well as providing a glimpse into the daily routines and lives of the garrison soldiers during the occupation of Ring's Redoubt.



Figure 7.3 Photograph titled ‘Cooking House of the 8th (The King's Royal Irish) Light Dragoons (Hussars), 1855’ and taken during the Crimean War in 1855 by Roger Fenton, showing the ‘cooking house’ which is actually an excavated open pit feature where food is prepared, wood brought and cut for fuel with the food then cooked in large iron kettles over a fire. Source: Cooking House of the 8th (The King's Royal Irish) Light Dragoons (Hussars), Crimea, 1855’, [Image number: 127775] National Army Museum, London, Online Collection

7.1.2 Material Culture – Militaria

The militaria and related numismatic assemblages produced by the archaeological investigation of the area surrounding the remains of Ring’s Redoubt is for the most part what would be expected to be found at a military site of the period. The assemblage is dominated by militaria artefacts with the majority consisting of items relating to munitions (47.24% of the assemblage), followed by items relating to regimental issue clothing (37.14%). The other components of the assemblage were less well represented, with only 8.31% of items being attributable to equipment, 4.94% categorised as miscellaneous, while the numismatic assemblage was extremely modest, representing only 2.34% of the total militaria assemblage.

Munitions

The munitions assemblage, as would be expected, is dominated by Minié style projectiles of the standard infantry issue Pattern 1853 Enfield Rifle, with 110 of the 116 projectiles recovered being Enfield Rifle bullets. Of interest is the fact that virtually none of the projectiles within the assemblage exhibit signs of having been fired. While the majority of the munitions making up the redoubt encampment munitions assemblage were recovered

from deposits related to the occupation of the barracks building, the lack of fired examples is still conspicuous given the size of the area investigated. All soldiers stationed at redoubts would have been required to take part in shooting practice, and indeed a number of fired Enfield rifled musket projectiles were recovered during the archaeological monitoring and subsequent modest-sized excavations of a gully area on land at 52 North Road, Clevedon, in close proximity to the location of the Lower Galloway Redoubt (Cameron et al. in prep.). The excavations undertaken at the Lower Galloway Redoubt (also a field fortification of the same Papakura-Wairoa defensive line), despite being of a much smaller scale to those at Ring's Redoubt, produced a more varied munitions assemblage (Shakles 2021). While the majority of the Lower Galloway Redoubt munitions assemblage was represented by Enfield rifle projectiles, the bullets of at least four revolvers of varying calibre were also present. A number of the Enfield projectiles, a revolver bullet and pistol balls all clearly demonstrated having been fired and having impact damage (Shakles 2021). It is considered likely that the Galloway munitions assemblage was at least partly a result of the cleaning up of an area where the firing/practice range had been situated (ibid.). Given the paucity of fired projectiles recovered from the far larger excavations of the Ring's Redoubt encampment compared to those undertaken at the Galloway Redoubt, the logical explanation is that in the case of the Ring's encampment, the area of the former firing range was located well beyond the limits of the areas investigated.

Also attesting to the Enfield rifle were the 59 percussion caps that were retrieved from contexts 1001=3027 and 3056. These were used as percussion primers to ignite the main charge that had been rammed into the barrel. Two brass and cork tomponions would have been used to plug the muzzles of Enfield rifles when being transported or not in use to prevent the ingress of water, dust or other foreign material from fouling the barrel. While these would have been common items on any military sites of the period, they are not often recovered as they could easily corrode beyond recognition, while the cork would simply rot away. Likewise, the musket ramrod end would have been in widespread use on the redoubt site, and the presence of the example in the Ring's Redoubt assemblage may highlight a snapshot of time where a ramrod was broken. The two items tentatively suggested as elements of powder flask stoppers could have been used with the loading of Enfield rifles, although they could equally have been used with many other firearms of the period.

The two pistol projectiles reflect the preference and expectation of 'gentleman' officers to equip themselves with their own pistols. Two 0.54" conical Minié type bullets are consistent with those that were used with the Calisher and Terry carbine, and indicate the presence of either mounted soldiers or perhaps Forest Rangers at the Redoubt, who preferred the shorter carbine to the cumbersome and lengthy Enfield. The presence of two different pistols at the redoubt are attested to by proxy, with one .442" calibre conical bullet being that used with an 1851-54 Pattern Adams Revolver, while a .36" calibre pistol ball would have been used with an 1851 Colt Navy Holster Revolver. Additionally, a high grade steel item tentatively interpreted as a trigger guard would, if so, likely have been used with a pistol of unknown manufacture or style.

An earlier outdated weapon is represented within the munitions assemblage by the 0.615" calibre lead ball for a Baker Pattern 1800 infantry rifle. Its presence within the assemblage is not really surprising, when it is considered that many of the soldiers who served at the redoubt were members of militia regiments, often older retired soldiers and bringing their own personal firearms with them.

Lastly, two munition items represent activities on the site some considerable time after the abandonment of the redoubt. Firstly, the spent brass Boxer centrefire cartridge case would

have been used in a .45" Long Colt Revolver manufactured from 1872 onward and postdates the abandonment of the redoubt site. The second item, a copper buckshot ball, is intrusive and represents much later use of the wider redoubt camp area as a farm.

Uniform/Clothing

When considering the uniform and clothing assemblage, it should be noted that the total (more than a third of the assemblage) is somewhat inflated by the 81 shirt and underwear ceramic Prosser buttons that were recovered from context 3056 (the remains of the barracks building earthen platform). It would have been relatively easy to lose these types of buttons when changing, and when the number of men stationed at the redoubt for the two years of its operational existence is considered, together with the extremely small size of the buttons, it would have been easy for them to fall through the cracks between the floorboards of the barracks building. Conversely, the larger regimental buttons of shiny brass would be unlikely to have fallen through all but the largest gaps, and would therefore be easier to spot and recover.

Of the 15 uniform items that exhibit regimental insignia (14 regimental buttons and a single epaulet stud), four regiments can be determined to have been at the redoubt site. The best represented, with nine examples (eight buttons and one epaulet stud), is the 18th Royal Irish Regiment of Foot. This is to be expected as they were the regiment that constructed the redoubt itself, and also the Royal Irish garrison numbered some 500 men, far more men than in any of the subsequent regiments that occupied the redoubt once the front had advanced southward into the Waikato. What is surprising though, is that of the other three regiments represented, none were known to have served at the redoubt. Firstly, the 14th Buckinghamshire Regiment of Foot is represented by four regimental buttons within the assemblage. The other two regiments are the Surrey Regiment of Foot and the 40th (2nd Somerset) Regiment, each represented by a single regimental button. These other regiments were also part of the Waikato Invasion force, and it is likely that regimental buttons derived from soldiers of these regiments merely represent the drafting in of additional troops from other regiments to ensure that the Ring's garrison was at full strength even when soldiers were absent through injury or sickness. The majority of the regimental buttons and other fixtures were too corroded for a regiment to be identified, or only the backplate of two-piece buttons survived. Other regimental paraphernalia present within the assemblage consisted of chin strap mounts from a shako hat, the back plate of a regimental belt buckle and two fragments of what was either a shako plate or a forage cap badge. The presence of all of the regimental uniform items within the Ring's Redoubt assemblage would be expected and such items are common finds on military sites of the New Zealand Wars.

One point of difference to other sites investigated from the period would be the number of garment hook and eyelet closures from greatcoats as well as the smaller dress tunics. These were all recovered from either context 3056 or 1001=3027, both of which were related to the barracks building earthen platform. As with the ceramic Prosser buttons, it is likely that these represent accidental loss, and the difference may be due to the fact that comparable investigations of redoubt sites may not have included the excavation of the location of a barracks building. The 13 pressed brass trouser buttons would also fall into the accidental loss category.

Lastly, the fragment of cloth (possibly linen) should be mentioned as it is certainly a rare survivor, even though it cannot be identified beyond being a scrap of textile.

Equipment

After the munitions and uniform/clothing related assemblages the next highest total number of items were within the Equipment category. Many of these items would be the same or similar to those found on mid-19th century domestic sites relating to European settlement. In particular, fittings and fixtures such as nails, bolts and spikes, copper wire, iron hooks, tap handles and copper strap plate would all be common finds on any 19th century occupation site. However, there were some items that related to soldiers, such as the three copper alloy (probably brass) strap buckles from military issue knapsacks/haversacks to enable the adjustment of straps. The lead ingot recovered from context 1001=3027, probably represents a soldier's personal supply of lead that could be melted down to cast lead projectiles within a mould if necessitated while on campaign. Likewise, the fragment of an iron pick could have been used in the initial redoubt ditch excavations, or some of the excavations required for drainage ditches, enclosure ditches or perhaps the cooking trenches and pits.

Numismatics

The coin and token assemblage is very modest and actually remarkably small when the number of soldiers who must have served at the redoubt over the two years of its existence is considered. The earliest dateable coin in the assemblage is the George IV 1825 silver shilling. It is interesting to note that one side has been worn almost flat, with little lettering, numerals or other details legible, while the other side is in relatively good condition. It is perhaps telling that a soldier was said 'to take the 'King's [or Queens] shilling' when joining the British Army and indeed they were given a shilling as a symbolic payment after signing up. It is tempting to think of this shilling as one that a soldier who served at some point at Ring's Redoubt was given when he joined the army, and that he had subsequently kept it and rubbed it between thumb and forefinger over the years, thus wearing the soft silver down. However, the date of the coin is quite early, being minted some 38 years before the redoubt was constructed, although it could have remained in circulation for some time. Alternatively, it may have been the shilling of a retired soldier who gave it to a son to bring 'luck' as it had to him. Either way, the story behind the presence of the shilling can never be known.

The only other identified coin within the assemblage is a Queen Victoria 'Young Head' silver sixpence, with three others possibly being either pennies or halfpennies, although due to corrosion in the ground in the ground, these may well be trade tokens.

The assemblage contained three items that could be definitively identified as trade tokens. The first, recovered from context 3056, is a penny token of M. Somerville, Wholesale Family Grocer of City Mart, Auckland that is dated 1857. A further M. Somerville example, although somewhat inexplicably cut in half, was recovered from context 1001=3027. These tokens are a relatively common find on mid-19th century European settlement sites in the Auckland region and their presence at the redoubt is not unusual. The other trade token is also a penny token, dated 1863 and issued by Metcalfe and Lloyd of 478 George Street, Sydney, who were shipping and family grocers as well as wine and spirit merchants. This Australian trade token may well have been brought to the redoubt by one of the many Australians who joined one of the four Waikato Militia Regiments in exchange for land after the war. Three different regiments of the Waikato Militia (the 1st, 3rd and 4th) are all recorded as garrisoning the redoubt at one time or another.

Miscellaneous

The miscellaneous assemblage that was produced by the archaeological investigations around the wider Ring's Redoubt site was rather modest, and with most of the items relating to the more mundane activities of military camp life such as clerical work and subsistence. However, while the assemblage was small there were also a number of unusual items present that give some insight into aspects of the lives of some of the soldiers who garrisoned the redoubt.

There were four items of particular interest from the miscellaneous category, three of which were recovered from context 3056 and the other from context 1001=3027, with both contexts relating to the earthen platform upon which the timber barracks building had stood. The cut section of the engraved gold ring from context 1001=3027 and the large black garnet gemstone from context 3056 are very rare and possibly unique finds on a British Army New Zealand Wars site, especially one that was a campaign fortification as opposed to a more permanent fort or regimental barracks. Moreover, these items would be considered very rare finds on any British military site of the period, located anywhere within the sphere of the former British Empire. While it is evident that the items must have been hidden by a soldier, the fact that these high value items were present with serving infantrymen in the first place conjures a number of scenarios, some of which are dubious at best and unsavoury at worst. It is possible that the items represent a soldier's stash of 'loot' that was probably hidden for safe keeping beneath the floorboards of the barracks building. But how were the items acquired in the first place? It is possible that they represent items stolen from the abandoned homes of the very settlers that the soldiers were at least in part, supposed to be defending. There are numerous articles in the newspapers of the day that relate the accounts of settlers returning to their homes to discover some of their possessions had been taken. The military's response to such accusations was to blame the loss of property on local Māori. However, as the area was depopulated during the early engagements of the Waikato War, this seems a disingenuous stance by the military as well as implausible. A far more likely scenario is that certain soldiers simply could not resist temptation and took advantage of the situation that the empty homes afforded them. The other two items (brass lock plates from a trunk and carpet bag), both retrieved from context 3056, also hint at crooked behaviour by an unknown soldier(s).

There is perhaps another explanation for the presence of the gold ring and garnet gemstone at the redoubt, in that it may relate to the earlier Crimean War. The 18th Royal Irish Regiment of Foot, served in the Crimean War of 1853-56, including the siege of Sevastopol (1854-55). At the conclusion of the Crimean War the regiment returned to Britain for a few years before they departed for New Zealand in April of 1863. This is pertinent, as two of the sources for melanite garnet were (and still are) the Ural Mountains of Russia and the Ukraine where the Crimean War was fought against the Russian Empire. Furthermore, the presence of the cut section of gold ring, along with the damage to the garnet may indicate that the ring and stone were taken from fallen Russian soldiers on the battlefield. This is of course only conjecture, but these are extraordinary items to have been discovered during excavations of an area surrounding a redoubt.

It is also significant that the items were never recovered by the soldier who had secreted them away. It is likely that the items were part of an intended collection to accrue wealth on top of the soldier's standard pay, perhaps to help with retirement after finishing his service. It may be that the soldier was killed in action during the campaign or, more prosaically, died of illness.

Another uncommon but not completely rare find was the brass cricket belt buckle recovered from context 1001=3027. As cricket was an extremely popular sport at the time

within the British Empire, the wearing of cricket belt buckles was also very fashionable, particularly from around 1860 to the mid-1870s (Studham, pers. comm. 2014). Moreover, it is interesting to note that cricket was played amongst the military at the time. In fact, the *Daily Southern Cross* newspaper recorded the playing of a cricket match between the Kerikeri [sic] Redoubt against a team from the Papakura Redoubt on the 29 February 1864 (*Daily Southern Cross* 07/03/1864: 4). The newspaper also recorded that the officer Lt Hatchell of the 43rd Monmouthshire Light Infantry played in the match for the Kerikeri [sic] Redoubt (*Daily Southern Cross* 07/03/1864: 4).

Cricket belt buckles, while not common finds, have been found before at a number of mid-19th century sites across the North Island during archaeological excavations or monitoring works. A copper alloy rectangular pressed cricket belt buckle was found in the fill of a late 19th century drainage ditch to the rear of the former Home of Compassion Crèche in Mount Cook, Wellington during the archaeological investigations undertaken for the Pukeahu War Memorial Park (Shakles, Phear et al. 2017b:128). While this was in very close proximity to the Basin Reserve Cricket Ground, it may originally have belonged to a soldier as the area was part of the 65th Regiment's headquarters and barracks from the late 1840s to the 1860s. Closer to home, a very decorative and gilded brass copper alloy cricket buckle was recovered from immediately beneath the lowest levels of the reclamation deposits in Gore Street, Central Auckland, and close to the location of a former shipping wharf (Shakles et al. in prep.; Shakles and Phear 2012). A date of deposition for the buckle would be within the 1850s to early 1860s. Two further cricket belt buckles were recovered from a site associated with a substantial mid-19th century home on land at Deacon Point in Riverhead, northwest of Auckland, with both the belt buckles being found within an artefact-rich deposit that had probably been derived from an underfloor refuse disposal area (Shakles et al. in prep.). However, while not very rare, the cricket belt buckle from Ring's Redoubt is the first such find from a military site and context.

Cricket belt buckles eventually fell out of fashion due to a notorious incident involving the cricketering great W.G. Grace, who was controversially given out in a match when his bat handle knocked against his buckle and the accompanying sound was taken as a nick by the umpire. As a result of this he then began wearing a cricket tie in place of a belt as they were soft and thus the incident could not be repeated (Studham, pers. comm. 2014).

7.1.3 The Daily Lives of Soldiers at the Redoubt

The Ring's Redoubt artefact assemblage and archaeological features can tell us a great deal about the daily lives of soldiers at the redoubt. The remains of the cookhouse, bakery and cooking trenches give us an idea of how the soldiers would have been fed, and indeed where the cooking and eating took place. The lack of refuse material within and around the cooking features clearly indicates that rubbish was disposed of elsewhere and away from the cooking areas. The very large quantity of black beer bottles indicates that soldiers procured beer for consumption during their time at the redoubt, rather than other alcohols such as sherry, 'Champaign' and wine, which Simmons refers to in correspondence of soldiers. Much of the beer would have been served from a store situated within the redoubt defences. It is noteworthy in itself that such a large assemblage of alcohol bottle glass was recovered during the investigations of the encampment, as the large rubbish pits/trenches that would almost certainly have been at the redoubt were not found. Had they been one can only wonder at how large the alcohol-related assemblage would have become. The other relatively large component of the assemblage was clay tobacco pipes. Again, despite

no major refuse disposal features being exposed the assemblage is still significant and it would seem that the soldiers liked to drink beer and smoke in their recreational time, and (unlike the modern day) were no doubt in blissful ignorance of the health risks such pursuits could bring!

Food such as preserved oysters would have formed a part of the soldiers' diets (oyster jars were recovered from the site) as well as other preserved food (meat, in the main poorer cuts that were used in broths, and some fish). Overall, the soldiers are likely to have consumed a much wider range of food than is reflected in the artefact assemblage, with most of the food-related vessels recovered restricted to those that contained condiments. That more remains of comestibles were not found is likely due to large rubbish dumps not being located within the investigation areas, with possible locations being across Old Wairoa Road to the east of the defensive ditch, or even within the historic reserve area. The soil conditions were not conducive to the preservation of organic material and of bone in particular. As no identifiable faunal material was recovered during the investigation it is not possible to make any inferences on the nature and composition of the daily diet of the soldiers stationed at the redoubt. Pharmaceutical bottles indicate that the soldiers used common remedies that were available in the towns and cities.

The regimental paraphernalia retrieved almost exclusively from the two contexts (1001=3027 and 3056) related to the barracks building consist of items derived from both uniform and issued kit. These items were likely to have been lost through activities undertaken within the encampment, and when changing in the wooden barracks building many of the items must have been lost beneath the floorboards. However, the number of regimental artefacts associated with the soldiers' uniforms, such as greatcoat and tunic buttons, is relatively small, and is likely to be a result of the fact that at the time any uniform and kit items lost by a soldier would have to be replaced, with the cost taken directly from soldiers' wages. So, the modest nature of the assemblage is almost certainly a consequence of the soldiers' diligence in not wanting to lose any of their meagre pay. It is also possible that some copper alloy regimental items have been lost due to the poor soil conditions that had corroded all metals other than lead.

Clerical work undertaken at the redoubt is evidenced by the stoneware ink bottles, writing slate fragments, as well as the dip pen. Clerical tasks would have been undertaken by officers, and would have consisted in the main of conveying and responding to orders and requests for the resupply of military equipment and provisions of food, etc. The main clerical work undertaken would be recording the daily goings on of the operations of the redoubt such as strength returns, and also drill work. However, it is also likely that both the senior and junior officers would have written to friends and relatives overseas.

The section of cut gold ring, the melanite garnet gemstone, and the two broken lock plates removed from a trunk and a carpet bag respectively, suggest more unsavoury aspects of the behaviour of at least one of the soldiers who served at the redoubt. These items could have been 'acquired' from the homes of that were abandoned by the early settlers, as war loomed and they retreated to the safety of Auckland.

Overall, the Ring's Redoubt encampment assemblage and archaeology provide glimpses into the daily lives of British Imperial soldiers in the mid-19th century, from aspects of their professional soldiering shown by the regimental artefacts lost from soldiers' uniforms to their sustenance and recreational time evidenced by the cooking features and comestible, alcohol and tobacco related artefacts.

7.1.4 Preservation of Archaeological Deposits and Materials Within the Historic Reserve – Threats and Mitigation

The archaeological investigations of the Ring's Redoubt encampment established that significant archaeological deposits and features had survived below ground in the area surrounding the remains of the redoubt proper. However, as no subsurface testing was undertaken within the boundaries of the historic reserve itself, including the redoubt interior and section of ditch, the extent and condition of any surviving archaeological deposits and features is therefore unknown. The condition of militaria artefacts recovered, specifically those of copper alloy and ferrous composition, was poor with many so corroded as to be unidentifiable and not able to be assigned to a particular regiment. In particular, two-piece regimental buttons with their thin-walled copper alloy construction were frequently so degraded that only their back plates survived. The same situation applied to all militaria items of copper alloy and ferrous composition, as clearly the soil conditions across the site with their 'wet-dry' nature has been extremely detrimental to the preservation of such items.

In addition to the observed detrimental effects on metal artefacts, the soil conditions were also shown to be poor in relation to the preservation of organic ecofacts, in particular those of animal bone and wood. The paucity of faunal remains was conspicuous and the few items of bone that did remain were so degraded as to be practically irrecoverable. Again, the continual wetting and drying of the slopes surrounding the redoubt's fortifications is likely the primary cause, although geochemical properties of the soil cannot be ruled out.

It is likely that the area of the main encampment depicted in Morrow's watercolour with rows of bell tents shown to the rear of the redoubt, would have been a locus of much activity. This area is situated to the north and north-west of the redoubt defences (and is now incorporated within the historic reserve) and has the potential for much greater quantities of militaria artefacts to be present subsurface. It is likely that any artefacts of copper alloy or ferrous composition situated within this area will also be compromised by the soil conditions, and serious consideration should be given to archaeological evaluations within this area to ascertain the nature and information potential of surviving archaeological deposits, artefacts and ecofacts before they are degraded irreparably. This is perhaps more urgent now that the environment surrounding the redoubt and redoubt encampment has changed so fundamentally, with drainage conditions also changing significantly. Consequently, any surviving artefacts and ecofacts will likely undergo more rapid degradation, with the result that archaeological information will be lost.

A further issue that should be taken into account is understanding to what degree the early 20th century Hibbard farming phase, and the construction of the house at 931 Papakura-Clevedon Road, have impacted the archaeology present in the area enclosed within the historic reserve. An aerial photograph taken in 1939 shows (besides the large Hibberd homestead located within the redoubt) a large barn like structure and other outbuildings situated to the north of the redoubt with associated track ways (see Figure 3.15). A further aerial photograph taken in 1950 shows that the large Hibberd homestead was still standing at that time (Figure 3.16 and Figure 3.17), while an aerial photograph taken in 1960 illustrates that the homestead had been demolished and the residential home at 931 Papakura-Clevedon Road had already been built (Figure 3.18). Without archaeological evaluation of these areas the level of impact on archaeological horizons by past land use activities cannot be determined. This is perhaps particularly pertinent within the remains of the area enclosed by the redoubt defences where the flat topography may indicate more stable soil conditions, certainly in terms of soil moisture, in contrast to the more freely drained sloping topography of the wider encampment area. If so, it is possible that both

artefactual and ecofactual material survives in a better state of preservation there. However, this comes with the caveat that the area may have been negatively impacted by the construction and later demolition of the Hibbard homestead and later construction of the house at 931 Papakura-Clevedon Road.

The obvious benefit of archaeological evaluation would be that it would enable a greater understanding of the remaining archaeological site and all the variables affecting its constituent parts. This would then facilitate much more nuanced and appropriate management strategies for the archaeological resource going forward. Despite the somewhat dogmatic view (increasingly prevalent from the early 1990s) of western archaeological heritage management that preservation is the desired outcome in protecting archaeological sites, it is often too problematic to be a broadly applied ethical principle (Willems 2012: 1). It has come to be increasingly recognised within the global archaeological community that preservation in situ is not always the optimal, or even the ethical solution, in the case of many archaeological sites (see Williams 2015; Willems, 2012; Caple 2016). The English Heritage funded *Monuments at Risk Survey* of 1995, undertaken by Bournemouth University, identified that accelerated decay of the integrity of an archaeological site is usually caused by the commencement of an archaeologically damaging hazard such as dewatering, cultivation, road-construction or development (Darvill and Fulton 1998: 44). In terms of the Ring's Redoubt site, dewatering is likely the most relevant factor when considering the onset of potential hazards as a result of the development of the surrounding area modifying the drainage of the encampment site. If dewatering of the site occurs due to increased drainage of the surrounding area and throughflow from the historic reserve to the recreation reserve below, then accelerated decay of both artefactual and ecofactual assemblages would almost certainly occur. It is also pertinent to note that one of the three main reasons that English Heritage commissioned the Monuments at Risk project, was that it recognised there was an absence of evidence of the state of preservation of the extant archaeological resource in comparison to the recorded resource. Moreover, they also recognised that an absence of data was problematic for the future conservation and management initiatives on archaeological sites (Darvill and Fulton 1998: 54).

A follow-up project titled 'Conservation of Scheduled Monuments in Cultivation' (COSMIC), jointly funded by English Heritage and the Department of Food, Farming and Rural Affairs (Defra), was initiated in 2008 with the aim of undertaking a national assessment of all remaining Scheduled Monuments identified on the Heritage at Risk Register as being vulnerable to arable cultivation (Oxford Archaeology South 2014). The COSMIC project is delivering a more detailed assessment of risk and management proposals for archaeological sites under arable cultivation in the region. While this is not directly relatable to Ring's Redoubt, which is within a reserve rather than under cultivation, the necessity of understanding the extant nature of the archaeological resource is extremely pertinent. Just because a site is recorded as an archaeological site on the NZAA Site Record Database, and/or scheduled by a council, it should not necessarily preclude any future archaeological evaluation, especially so if the below ground deposits are at best poorly understood and/or under risk of degradation from natural or human factors. Even high profile protected World Heritage Sites such as Stonehenge have recently witnessed small scale evaluation, when in 2008 for the first time in nearly half a century English Heritage permitted the excavation of a small evaluation trench to further understand sub-surface deposits (Darvill and Wainwright 2009: 5). It is being increasingly recognised that it is essential to understand the nature of the archaeological resource before an appropriate framework of protection can be implemented.

7. Discussion

In the case of the protection of the sub surface archaeological horizons at the Rings' Redoubt site, it is more than likely that blanket protection of the site precluding any archaeological evaluation will at best be counterproductive and at worst perhaps even remiss.

8 CONCLUSION

The archaeological investigations carried out during the residential development at 935 Papakura-Clevedon Road exposed a significant amount of archaeology connected with Ring's/Kirikiri redoubt and its wider encampment. The investigations exposed an additional defensive feature to the eastern section of the redoubt defences in the form of a glacis ramp, and it is likely that this feature would have extended along the circuit of the ditch. The investigation also shed light on the layout of the surrounding encampment, with an enclosure ditch that would have surrounded the bell tents seen on Morrow's 1863 watercolour of the redoubt and camp. The presence of the barracks building seen in Morrow's painting was confirmed by the remains of an artefact-rich earthen platform upon which it had been situated. A large drainage feature was also exposed running from the northeast corner of the redoubt ditch, and its recutting indicates that silt deposition was a problem, at least in the early days of the redoubt. The archaeological excavations also established the presence of a number of rarely found features connected with cooking, such as large scale cooking trenches to enable the feeding of up to 500 men. The open pit cookhouse and the bakery probably represent the quieter period once the front had advanced away from the Hunua Ranges, southwards into the Waikato. It is likely that the garrison was then significantly reduced in number and that large scale cooking features were no longer required.

The artefacts recovered included projectiles and percussion caps that reference the weapons that were part of the daily professional life of the soldiers, and the regimental paraphernalia such as buttons that demonstrate the presence of soldiers from at least three other regiments at the redoubt, in addition to the soldiers of the 18th Royal Irish Regiment of Foot who first built it. The large volume of artefacts relating to alcohol and tobacco attests to the soldiers' recreational habits, while opportunistic looting is perhaps suggested by the presence of part of a gold ring, a large melanite garnet gemstone and two lock plates broken from a trunk and a carpet bag. It is difficult to imagine an honest and plausible explanation for their presence within a deposit that formed beneath the barracks building.

The investigations also established that there is a poor state of metal preservation on the site which is most likely due to location and topographic factors such as the free draining slopes from the ridge top. The continual wetting and drying of the past 156 years has had an extremely detrimental effect upon both organic and metallic cultural material. Unfortunately, these damaging effects are impacting on in-ground regimental artefacts which, along with the remains of the redoubt itself, are what distinguishes this mid-19th century military site from domestic European settlement sites of the same period. Serious consideration, therefore, should be given to future targeted archaeological investigations within the historic reserve, to evaluate the state of preservation of artefacts and recover archaeological material directly related to the military occupation of the site before any information they could provide is lost. Any such evaluations undertaken should also incorporate the area within the redoubt fortifications itself, to provide information on the internal layout, as well as to assess the preservation and archaeological potential of deposits there.

The archaeological investigation of the wider Ring's/Kirikiri Redoubt encampment has shed light on the lives of soldiers who, in obeying orders, had come from one side of the world to another to fight a war, the outcomes of which still reverberate today. Even after the passage of 156 years, the significant impacts and consequences of the Waikato War are

Bibliography

still keenly felt today by Māori of Waikato and South Auckland iwi, and the significance of those events of 1863-65 cannot and should not be underestimated.

BIBLIOGRAPHY

- Atwater, F. 1895. History of the Town of Plymouth, Connecticut, with an Account of the Centennial Celebration May 14 and 15, 1895. Meriden, Connecticut, Journal publishing company. Online. [ebook] Available at: <<https://www.ebooksread.com/authors-eng/francis-atwater/history-of-the-town-of-plymouth-connecticut-with-an-account-of-the-centennial--saw/page-23-history-of-the-town-of-plymouth-connecticut-with-an-account-of-the-centennial--saw.shtml>> [Accessed 8 April 2021].
- Baquié, B. and R. Clough. 2004. Ross Block Subdivision, Pahurehure Inlet, Hingaia, Papakura: Archaeological Assessment. Clough & Associates report prepared for Harrison Grierson Consultants Ltd.
- Belich, J. 1986. *The New Zealand Wars and the Victorian Interpretation of Racial Conflict*. Auckland: Auckland University Press.
- Birks, S., 2004. Ceramic Marks - A simple guide to understanding the basics of the marks and dates on the underside of pottery - General Rules for dating marks. [online] <http://thepotteries.org/>. Available at: <<http://www.thepotteries.org/mark/general.htm>> [Accessed 14 October 2021].
- Blacker, J.F. 1922. *The A B C of English Salt-Glaze Stoneware*. London: Stanley, Paul & Co.
- Browne, S. 1853. *Rifle & Drill: A Companion to the New Rifle Musket – A Practical Guide to Squad and Setting-up Drill*. Leonaure.
- Cameron, E., S. Bickler, J. Low, R. Shakles, and R. Clough. In Preparation. 52 North Road, Clevedon: Site S11/533 - Lower Galloway Redoubt. Final Archaeological Investigation report. Clough & Associates Ltd report prepared for Simon Male.
- Caple, C. (ed.), 2016. *Preservation of Archaeological Remains in Situ*. 1st ed. London: Taylor & Francis Ltd.
- Clarke, A. 1983. The Manukau Lowlands: site distribution pattern, in S. Bulmer, R.G. Law, D.G Sutton (eds), *A Lot of Spadework to be Done*. NZAA Monograph No 14, NZ Archaeological Association.
- Clarke, E.C. 1993. *Town Growing Up: Papakura*. Papakura. Papakura and Districts Historical Society.
- Clough & Associates Ltd. October 2016. Ring's/Kirikiri Redoubt PAUP #700 (R11/956) Papakura-Clevedon Road: Historic Heritage Management and Conservation Plan. Prepared in compliance with RC R/JSL/2013/2461, 41924, 41925, 41926, 41927 (Condition 55). Clough & Associates Ltd report prepared for Cabra Developments Ltd in consultation with Ngāti Tamaoho, Ngāti Te Ata Waiohū, Te Ākitai Waiohū, Ngāi Tai ti Tamaki, Ngāti Paoa.
- Clough, R. 2014. Statement of Evidence of Rodney Edward Clough (Heritage) in the matter of the Resource Management Act 1991 and in the matter of a subdivision consent to Auckland Council District Plan: Papakura Section to Create 153 residential lots at 949 Old Wairoa Road and 935, 965 and 973 Papakura-Clevedon Road, Papakura. Application by Cabra Investments Ltd.
- Clough, R. and B. Baquié. 2000. A Cultural Heritage Investigation for the Takanini Structure Plan. Clough & Associates report for Papakura District Council.
- Clough, R.E., D. Prince and B. Baquié. 2000. A Cultural Heritage Investigation for the Hingaia Structure Plan, Papakura. Clough & Associates report prepared for Papakura District Council.
- Coffey Geotechnics. 2013. Geotechnical Investigation Report on Residential Subdivision at Area 2B (Stage 1), Papakura-Clevedon Road, Takanini. Coffey Geotechnics NZ Ltd report prepared for Cabra Developments Ltd.
- Cowan, J. 1922. *The New Zealand Wars*. Wellington: Govt. Printer.

- Craig, E. 1982. *Breakwater Against the Tide: A History of Papakura City and Districts*. Ray Richards for the Papakura and District Historical Society Inc.
- Cregeen, P. N.d. New Zealand Arms Register, 93, The Terry Rifle in New Zealand Service. [pdf e-book] New Zealand Society of Gunsmiths Incorporated. Available at: <http://www.armsregister.com/articles/articles_documents/nzar_a93_terry_rifle_in_nz.pdf> [Accessed 03 May 2021].
- Cyclopedia Company Limited. 1897. *The Cyclopedia of New Zealand [Wellington Provincial District]* - The Hon. Sir George Maurice O'Rorke. The Cyclopedia Company, Limited, 1897, Wellington. Accessed 24.04.2012 at: <http://www.nzetc.org/tm/scholarly/tei-Cyc01Cycl-t1-body-d3-d13-d3.html#name-208889-mention>.
- Darvill, T. and G. Wainwright. 2009. Stonehenge excavations 2008. *The Antiquaries Journal*, 89: 1-19.
- Darvill, T. and A. Fulton. 1998. *The Monuments at Risk Survey of England 1995*. London: Bournemouth University and English Heritage.
- Don, G.L., R.O. Gardner, E. St G. Sides, T.V. Smith and B.D. Druskovich. 2000. Ecological and Archaeological Features of Proposed Residential Subdivision at Corner Papakura-Clevedon and Dominion Roads, Papakura. Bioresarches report for Wood & Partners Consultants Ltd.
- Drummond, A. (ed). 1971. *The Auckland Journals of Vicesimus Lush 1850-63*. Christchurch: Pegasus Press.
- Edwards, E. 2013. The Baker Rifle. [online] England: The Other Within - Analysing the English Collections at the Pitt Rivers Museum. Available at: <<http://england.prm.ox.ac.uk/englishness-baker-rifle.html>> [Accessed 3 May 2021].
- Felgate, M. 1999a. An Archaeological Inspection of the Ardmore Heights Site; Heard and Papakura-Clevedon Roads, Papakura. Bioresarches report for Wood & Partners Consultants Ltd.
- Felgate, M. 1999b. An Archaeological Inspection of the CDL Land Ltd Site, Dominion and Papakura-Clevedon Road, Papakura. Bioresarches report for Wood & Partners Consultants Ltd.
- Godden, G.A. 1991. *Encyclopaedia of British Pottery and Porcelain Marks*. London: Barrie and Jenkins.
- Harlow, D., J. Low and S. Bickler. 2007. Cultural Heritage Investigation. Unpublished report to URS New Zealand Ltd. Prepared for Papakura District Plan Review – Rural Section. Papakura District Council.
- Hawes, A.B. 1859. *Rifle Ammunition: Being Notes on the Manufactures Connected Therewith as Conducted in the Royal Arsenal, Woolwich*. London: W.O. Mitchell.
- Hawkins, J. (ed). 1990. *Big Hats, Scent Pots and Old Joe*. Papakura.
- Headstones: DUBLIN, St. Patrick's Cathedral & Graveyard, Dublin - Ireland Genealogy Projects Archives No.33. Accessed at: <http://www.igpweb.com/igparchives/ire/dublin/photos/tombstones/1headstones/st-patricks-dub.txt>.
- Horse Guards. 1871. *Regulations for Encampments*. London: Her Majesty's Stationary Office.
- Horsman, J. 1971. *The Coming of the Pakeha to the Auckland Province*. Wellington: Hick, Smith & Sons.
- Hunt, R. and J. Brown. 1990. *Brevet Brigadier Generals in Blue*. Gaithersburg, MD: Olde Soldier Books.
- Lawlor, I.T. 1994a. Statement of Evidence by I.T. Lawlor Submission No. 388. 1 on the proposed Papakura District Plan, Section Two – Urban. Auckland Regional Council, Auckland.
- Lawlor, I.T. 1994b. Statement of Evidence by I.T. Lawlor Submission No. 1249 on the proposed Papakura District Plan Section Two – Urban. Auckland Regional Council.
- Lennard, M. 1986. *The Road to War. The Great South Road 1862-64*. Monograph 16, Whakatane and District

Historical Society, Whakatane.

- Marcel, S., 1994. *Buttoning Down the Past: A Look at Buttons as Indicators of Chronology and Material Culture*. Honours Thesis Project. University of Tennessee.
- Martyr, P. 2002. *Paradise of Quacks: an alternative history of medicine in Australia*. Sydney: Macleay Press.
- Matthews and Matthews Architects Ltd. 2012. 965 Papakura-Clevedon Rd – Assessment of Existing House.
- McClure, M. 2011. 'Auckland places', Te Ara - the Encyclopedia of New Zealand, updated 21-Sep-11. Accessed 24.04.2012. URL: <http://www.TeAra.govt.nz/en/auckland-places/14/4>
- Mogford, J.C. 2010. 'Nathan, David – Biography', from the *Dictionary of New Zealand Biography*. Te Ara - the Encyclopedia of New Zealand, updated 1-Sep-10. Accessed 24.04.2012. URL: <http://www.TeAra.govt.nz/en/biographies/1n1/1>
- Morris, N. 1963. The Journal of William Morgan Pioneer Settler and Māori War Correspondent. Manuscript held on file Papakura and Districts Historical Society.
- Murdoch, G. 1988. Auckland Regional Authority Future Bulk Water Supply Study: Phase 4 Background Report No. 5.4 – Historical Perspectives on the Southern Kaipara, Lower Waikato and Wairoa Valley, Auckland ARA.
- Murdoch, G.J. 1990. A Brief History of the Occupation of the Slippery Creek Catchment. Prepared for the Regional Water Board. Planning Department of the Resource Management Division, Auckland Regional Council, Auckland.
- NRAM (National Records and Manuscripts). Nd. George Bonnington Limited (1860s-1970s). (X344). <http://www.nram.org.nz/e/33/x344.html>. [Accessed March 2014].
- Oxford Archaeology South. 2014. National Implementation of the Conservation of Scheduled Monuments in Cultivation Assessment (COSMIC 3) 6144 – Final Report. For English Heritage.
- Osborne, J. 2013. New Zealand Arms Register, 38, Terry Carbine. 2nd ed. [pdf e-book] New Zealand Society of Gunsmiths Incorporated, pp.1-2. Available at: http://www.armsregister.com/armsregister/arms_register_documents/nzar_38_terry_carbine.pdf [Accessed 3 May 2021].
- Phillips, K. June 2014. Archaeological Assessment – Cabra Developments Ltd Proposed Residential Subdivision Development Papakura Clevedon Road Papakura. Archaeology B.O.P. Heritage Consultants report for Auckland Council Heritage Team.
- Prickett, N. 2002a. The Future of New Zealand War Sites and Landscapes. National Historic Heritage Workshop, Wellington.
- Prickett, N. 2002b. *Landscapes of Conflict: A Field Guide to the New Zealand Wars*. Random House NZ.
- Redcoats. New Zealand & Australia Officers Died - NEW ZEALAND WARS 1845 – 1864 - accessed at <http://www.redcoat.info/nzwar.htm>
- Ritchie, N. N.d. *The Waikato War of 1863-64 – A Guide to the Main Events and Sites*. Department of Conservation Te Papa Atawhai.
- Roads, C. 1964. *The British Soldier's Firearm: From Smoothbore to Smallbore 1850-1864*. Livonia: R. & R. Books.
- Robertson, D.J. 2013. Submission on Resource Consent Application – Cabra Investments Ltd JSL2013/2461 949 Old Wairoa Road – Ring's (Kirikiri) Redoubt. Submission made on behalf of 3rd Auckland (Countess of Ranfurly's Own) and Northland Regimental Association Inc.
- Ross, C. 1982. The Development of the Glass Industry on the Rivers Tyne and Wear, 1700-1900. PhD Thesis. University of Newcastle Upon Tyne.

- Rudd, D. 2003. The Forts of Waikato: A Study of British Fortification in 19th Century New Zealand. Unpublished MA Thesis Auckland University.
- Russell Foster and Associates. 1999a. Waverley Developments Ltd, Dominion Road, Papakura. Archaeological Assessment. Report prepared for Waverley Developments Ltd.
- Russell Foster and Associates. 1999b. 270 Kaipara Road, Papakura. Archaeological Assessment. Report prepared for Mr R. Cumming.
- Shakles, R. 2021. 52 North Road, Clevedon, Auckland: Militaria and Numismatic Analysis. Clough & Associates report prepared for inclusion in Cameron et al. in prep.
- Shakles, R., S. Bickler, J. Low, S. Yoffe and R. Clough. 2019. Archaeological Investigation of Land Adjacent to the Stone Store, 19 Princes Street, Onehunga: Sites R11/2466 and R11/2580. Under HNZPT Authority Nos. 2011/207 & 2012/409. Clough & Associates Monograph Series No. 21. Report prepared for Stone Store Properties Ltd.
- Shakles, R. and R. Clough. 2012. Proposed Residential Development, 949 Old Wairoa Road and 931-973 Papakura-Clevedon Rd, Papakura: Archaeological Assessment. Clough & Associates report prepared for Woods Ltd.
- Shakles, R. and R. Clough. 2014a. Kirikiri/Ring's Redoubt (R11/956) 931/935 Papakura-Clevedon Road, Papakura: Heritage Landscape Assessment. In response to S92 request (Resource Consent Application R/JSL/2013/2461, 41924, 41926, 41927, 41925). Clough & Associates Ltd report prepared for Woods Ltd on behalf of Cabra Developments Ltd.
- Shakles, R. and R. Clough. 2014b. Kirikiri/Ring's Redoubt (R11/956) 931/935 Papakura-Clevedon Road, Papakura and Te Aparangi Village: Historical Research Addendum. Clough & Associates Ltd report prepared for Woods Ltd on behalf of Cabra Developments Ltd.
- Shakles, R. and R. Clough. 2014c. Proposed Takanini Stormwater Conveyance Channel, Areas 2a, 2b4 and Area 2b, Papakura, Auckland: Archaeological Assessment. Clough & Associates report prepared for GHD Ltd on behalf of Auckland Council.
- Shakles, R. and R. Clough. 2015a. Residential Development at 949 Old Wairoa Road and 965-973 Papakura-Clevedon Road, Papakura: Archaeological Assessment. Clough & Associates Ltd report prepared for Cabra Investments Ltd.
- Shakles, R. and R. Clough. 2015b. 949 Old Wairoa Road and 965-973 Papakura-Clevedon Road, Papakura: Archaeological Management Plan (Earthworks Stages 1 and 2). Prepared by Clough & Associates for Cabra Investments Ltd.
- Shakles, R. and R. Clough. 2015c. Kirikiri/Ring's Redoubt (R11/956) 935 Papakura-Clevedon Road, Papakura: Exploratory Investigation Strategy. Prepared by Clough & Associates for Heritage New Zealand.
- Shakles, R., J. Low and R. Clough. In Preparation. Archaeological Monitoring of the Fort Street Area Streetscape Upgrade – Stages 1-3, Auckland (R11/2464): Final Archaeological Monitoring Report. Clough & Associates report prepared in Fulfilment of New Zealand Historic Places Trust Authority No. 2010/435.
- Shakles, R. and S. Phear. 2012. Archaeological Monitoring of the Fort Street Area Streetscape Upgrade Stage 2, Auckland (R11/2464): Interim Report. Clough & Associates report prepared in Fulfilment of New Zealand Historic Places Trust Authority No. 2010/435.
- Shakles, R. and S. Phear. 2016. 949 Old Wairoa Road and 965-973 Papakura-Clevedon Road, Papakura: Archaeological Management Plan – Stage 3 Earthworks. Prepared by Clough & Associates for Cabra Investments Ltd.

- Shakles, R., S. Phear, Z. Burnett, J. Low and R. Clough. 2017a. Archaeological Investigations of the Pukeahu National War Memorial Park, Buckle Street, Wellington. Volume 1: Excavation of Town Acres 226 and 233 (R27/464 & R27/550) – Lower Mount Cook Barracks. Under HNZPT Authority Nos. 2013/92 & 2016/360. Clough & Associates Monograph Series No. 17. Report prepared for the Memorial Park Alliance and Manatū Taonga Ministry for Culture and Heritage.
- Shakles, R., S. Phear, Z. Burnett, J. Harris, J. Low and R. Clough. 2017b. Archaeological Investigations of the Pukeahu National War Memorial Park, Buckle Street, Wellington. Volume 2: Excavation of Town Acres 263 and 256 (R27/463 & R27/462) Home of Compassion Crèche and St Joseph's R.C. Church. Under HNZPT Authority Nos. 2013/92 & 2016/360. Clough & Associates Monograph Series No. 17. Report prepared for the Memorial Park Alliance and Manatū Taonga Ministry for Culture and Heritage.
- Shakles, R., S. Phear, J. Low, and R. Clough. In Preparation. Archaeological Investigations of the Residential Development at Deacon Point, Riverhead, Auckland. Clough & Associates Ltd report prepared for Cabra Investments Ltd.
- Shakles, R., M. Watson, and R. Clough. 2014. Geophysical Survey Report: Ring's Redoubt 931 and 935 Papakura-Clevedon Road, Papakura, Auckland. In response to S92 request (Resource Consent Application R/JSL/2013/2461, 41924, 41926, 41927, 41925). Clough & Associates Ltd unpublished report prepared for Woods Ltd on behalf of Cabra Developments Ltd.
- Simmons, A.L. 2013. Soldiers' Foodways: Historical Archaeology of Military Comestibles in the Waikato Campaign of the New Zealand Wars. Thesis submitted for the degree of Doctor of Philosophy at the University of Otago, Dunedin, New Zealand.
- Simmons, D. 1987. *Māori Auckland*. Auckland: Gordon Ell, The Bush Press.
- Smithurst, P. 2011. *The Pattern 1853 Enfield Rifle*. Oxford: Osprey Publishing.
- Sprague, R. 2002. China or Prosser button identification and dating. *Historical Archaeology*, 36: 111-127. 10.1007/BF03374353.
- Stockton, J. 1981. *Victorian Bottles: A Collector's guide to Yesterday's Empties*. Newton Abbott: David & Charles.
- Tatton, K. 2001. Cultural Heritage in the Auckland Region: Priority Areas for Survey and Assessment. Auckland Regional Council.
- Tatton, K. and R. Clough. 2003. Papakura District Open Space Strategy: Cultural Heritage Sites. Clough & Associates report for Papakura District Council.
- Taylor, R.J. 2004. British Logistics in the New Zealand Wars, 1845-66. Thesis submitted for the degree of Doctor of Philosophy, Massey University, Palmerston North, New Zealand.
- Tonson, A.E. 1966. *Old Manukau*. Auckland: Tonson Publishing House.
- Toulouse, J.H. 1971. *Bottle Makers and Their Marks*. New York: Thomas Nelson, Inc.
- Walker, L. N.d. The Trials of Adam Chisholm. Unpublished Manuscript. Papakura and District Historical Society Inc.
- Watson, M. 2014. Report for GPR survey, Ring's Redoubt 931 Papakura Clevedon Road. Unpublished ScanTec report prepared for Clough & Associates Ltd.
- Wilcox, S. 2010. 'Food and beverage manufacturing - Cold drinks', Te Ara - the Encyclopedia of New Zealand, <http://www.TeAra.govt.nz/en/food-and-beverage-manufacturing/page-7>.

- Williams, T. 2015. Preservation in situ: not an ethical principle, but rather an option amongst many. In Fernweh - Crossing Borders and Connecting People in Archaeological Heritage Management, edited by M.H. van den Dries, J. Sjoerd van der Linde and A. Strecker. *Essays in honour of Prof. Willem J.H. Willems*. Leiden: Sidestone Press, pp.38-41.
- Willems, W. 2012. Problems with preservation in situ. *Analecta Praehistorica Leidensia*, 43-44 / The End of our Fifth Decade, pp.1-8.
- Willis, A. 1932. *Early Papakura*. Papakura.

Booklet

St James' Anglican Church Ardmore 1861-1986: Celebration of the 125th Anniversary of the First Church in the District.

Websites

- 'Invasion plans - war in Waikato', URL: <http://www.nzhistory.net.nz/war/war-in-waikato/invasion-plans>, (Ministry for Culture and Heritage), updated 10-Jul-2013.
- Cambridge Museum – Biographies – B – 'Bush, Robert Smelt'. Available at: <http://cambridgemuseum.org.nz/Biographies/biosB.htm> Accessed 8/07.2015.
- National Army Museum. 2020. Camp Of The 4th Dragoon Guards, Convivial Party French and English, Crimea, 1855. Online Collection. National Army Museum, London. Available at: <https://collection.nam.ac.uk/detail.php?acc=1964-12-151-6-31>. Accessed 26 May 2020.
- National Army Museum. 2020. Camp Of The 4th (The Queen's Own Light) Dragoons, 1855. Online Collection National Army Museum, London. Available at: <https://collection.nam.ac.uk/detail.php?q=searchType%3Dsimple%26simpleText%3D%26themeID%3D44%26resultsDisplay%3Dlist%26page%3D4&pos=15&total=172&page=4&acc=1986-04-46-3>. Accessed 27 May 2020.
- National Army Museum, London. 2020. Cooking House Of The 8th (The King's Royal Irish) Light Dragoons (Hussars), Crimea, 1855 (C) | Online Collection | National Army Museum, London. [online] Available at: <https://collection.nam.ac.uk/detail.php?q=searchType%3Dsimple%26simpleText%3D%26themeID%3D44%26resultsDisplay%3Dlist%26page%3D3&pos=5&total=172&page=3&acc=1964-12-151-6-36>. Accessed 26 May 2020.
- National Army Museum. 2020. 'L'Entente Cordiale', Crimea, 1855 | Online Collection National Army Museum, London. Available at: <https://collection.nam.ac.uk/detail.php?acc=1964-12-151-6-41> Accessed 26.05.2020.
- National Army Museum. 2020. 28th 'Slashers' Private in Full March Order, Crimea, 1855 (c) Online Collection National Army Museum London. Available at: <https://collection.nam.ac.uk/detail.php?q=searchType%3Dsimple%26simpleText%3D%26themeID%3D44%26resultsDisplay%3Dlist%26page%3D2&pos=3&total=172&page=2&acc=1964-12-151-6-15>. Accessed 26.05.2020.
- Aucklandcity.govt.nz. 2018. Heritage Images - Homepage - Auckland Libraries. [online] Available at: <http://www.aucklandcity.govt.nz/dbtw-wpd/heritageimages/> [Accessed 22 September 2020].
- Collection.nam.ac.uk. n.d. Pattern 1853 Enfield .577 inch Percussion Rifle Musket, Windsor Pattern, 1856 |

Online Collection | National Army Museum, London. [online] Available at:
<https://collection.nam.ac.uk/detail.php?acc=1982-03-72-1> > [Accessed 3 May 2021].

<https://www.bonhams.com/auctions/21015/lot/16/> - Buchanan's Black & White Whisky. [Accessed November 2020].

<http://www.potteryhistories.com/Denbyhistory.html> - Joseph Bourne. [Accessed November 2020].

<https://sha.org/bottle/pdffiles/CaliforniaFigSyrup.pdf> - Lockhart and Schriever. California Fig Syrup: The Company and Its Bottles. [Accessed November 2020].

<http://www.thebottledepot.com/web15.htm> - Australian Glass Manufacturers mark. [Accessed November 2020].

Personal Communication

Studham, D. Librarian Melbourne Cricket Ground Museum. Personal Communication – Friday 5th September 2014.

Newspapers

On the Way to The Front. (From our Special Correspondent.) Drury, 18th July. *Daily Southern Cross*, Volume XIX, Issue 1874, 20 July 1863, pp 3.

Camp near Kirikiri, unknown. *Daily Southern Cross*, Volume XIX, Issue 1885, 1 August 1863, pp 10.

More Murders by the Natives. The Attack on Kirikiri, On The 23rd. *Daily Southern Cross*, Volume XIX, Issue 1885, 1 August 1863, pp 6.

The War in Auckland – Drury (from our own correspondent). *Daily Southern Cross*, Volume XIX, Issue 1955, 22 October 1863, pp 3.

The Kirikiri Affair. Drury, July 16. *Daily Southern Cross*, Volume XIX, Issue 1885, 1 August 1863, pp. 7.

Wairoa – From Our Own Correspondent, December 14th. *New Zealand Herald*, Auckland, Wednesday December 16, 1863, pp 3.

Claims of Natives to Compensation. *New Zealand Herald*, Volume II, Issue 452, 25 April 1865, pp 5.

Papakura - From Our Own Correspondent, July 10th, 1865. *New Zealand Herald*, Volume II, Issue 518, 11 July 1865, pp 5.

Volunteer Intelligence. *New Zealand Herald*, Volume XXXII, Issue 9882, 26 July 1895, pp 6.

APPENDICES

APPENDIX 1 – CONTEXT RECORDS

Context	Type	Description
3000	Layer	dark greyish brown clayey silt loam with occasional charcoal inclusions and frequent root action.
3001	Layer	yellowish light brown silty clay.
3002	Layer	whiteish yellow clay sterile natural.
3003	Layer	modern topsoil deposit created by earthworking to the north and northeast of the redoubt associated with both agricultural activities to the northwest and north of the redoubt's extant eastern ditch and bastion. Seals 3004. Up to 0.16m thick.
3004	Layer	a mottled mid-brown, greyish brown and yellowish brown clay and clayey silt deposit formed by the deposition of intermixed topsoil and subsoil excavated during the largescale earthworks associated with the construction of the former house at 935 Papakura-Clevedon Road. Sealed by 3003. Up to 0.68m thick.
3005	Layer	greyish light brown silt with orangey red mottles and occasional charcoal inclusions. contains 19th century (redoubt artefactual material) and early 20th century artefact. 0.10m thick
3006	Layer	firmly compacted dark greyish brown silty loam with occasional charcoal inclusions and moderate root action. buried topsoil. 0.11m thick.
3007	Layer	firmly compacted to indurated red clay with yellowish brown, whitish grey, and dark brown mottles. 0.32m thick. Glacis earthen ramp. 0.32m
3008	Cut	rectangular cut of posthole with vertical sides that break to a flattish base. 0.32m x 0.30m x 0.35m deep.
3009	Fill	loosely compacted red and yellowish brown mottled silty clay. Fill of posthole 3008. 0.32m x 0.30m x 0.35m deep.
3010	Cut	rectangular cut of posthole with vertical sides that break to a flattish base.
3011	Fill	loosely compacted red and yellowish brown mottled silty clay. Fill of posthole 3008.
3012	Cut	rectangular cut of posthole with vertical sides that break to a flattish base. 0.30m x 0.20m
3013	Fill	loosely compacted red and yellowish brown mottled silty clay. Fill of posthole 3008. 0.30m x 0.20m
3014	Cut	rectilinear cut of drainage ditch with initial very steep sides then 45° step before steepening again and breaking abruptly to a flattish base. Filled by 3023 (primary fill) and 3024 upper fill. Cut by re-cut ditch 3026. 13.30m long by 1.90m wide and 0.94m deep.
3015	Fill	firmly compacted mid-greyish clay with yellowish brown speckles and occasional charcoal inclusions. 0.10m thick
3016	Layer	moderately compacted but friable dark brown silt with occasional charcoal inclusions and patches of burnt clay. The deposit was artefact rich with redoubt occupation derived material such as black beer and case gin glass shards, ceramic (willow ware pattern), and iron fragments. 7.97m x 2.96m x 0.20m
3017	Void	
3018	Void	
3019	Layer	friable mid-brown silt with occasional charcoal inclusions. The deposit contained frequent black beer bottle glass and ceramic sherds derived from washout of the drainage ditch upslope and to the south-southeast. 0.60m X 0.55m X 0.10m
3020	Fill	firm orange and yellow clay with occasional brass fixtures. 0.15m thick.
3021	Fill	moderately compacted grey with mid-brown clay with occasional charcoal inclusions as well as black beer bottle glass and salad oil bottle fragments. 0.48m. Upper fill of recut ditch 3026

Context	Type	Description
3022	Fill	moderately compacted greyish-brown and pinkish red mottled silty clay with occasional charcoal inclusions as well as with one brick fragment. 0.16m. Lower fill of recut ditch 3026
3023	Fill	firmly compacted pinkish-red, whitish-yellow and mid-grey silty clay with occasional charcoal inclusions. Primary fill of ditch 3014. 0.17m thick.
3024	Fill	firmly compacted yellowish-brown silty clay with grey mottles and occasional charcoal inclusions. Upper fill of ditch 3014. Truncated by re-cut ditch 3026. 0.52m thick.
3025	Layer	firmly compacted pinkish-red sterile clay. Natural clay at 1.3+ metres beneath surface. Lower natural above Waitemata Series bedrock.
3026	Cut	rectilinear cut of re-cut ditch with steeply sloping sides that break to a slightly 'v' shaped base. 11.40m x 1.15m x 0.80m deep.
3027	Layer	friable mid brown loam with frequent historic material (black beer bottle bases and fragments, glass bottle fragments, metal, ceramics, lead bullets, and fragments of and whole pipes). 0.15m thick.
3028	Cut	oval cut of ditch with short sloping sides that break to a flattish base filled by 3029. 1.20m x 0.40m x 0.30m.
3029	Fill	firmly compacted grey silt with frequent yellow clay clumps, occasional charcoal, and occasional metal. 0.15m.
3030	Void	void
3031	Void	void
3031	Void	void
3032	Void	void
3033	Void	void
3034	Cut	rectangular cut of feature with straight sides that break to a flat base filled by 3035, 3061, and 3063. 2.20m x 1.60m x 0.32m.
3035	Fill	very compacted light yellowish brown/mottle orange silt with silty clay patches. Upper fill of cooking pit 3034. Infilled settled hollow after site abandonment. 1.81m x 1.24m x 0.20m.
3036	Cut	linear cut of one arm of V-shaped trench with straight sides that break to a flat base filled by 3037. 0.50m x 0.24m x 0.28m.
3037	Fill	moderately compacted, dark greyish brown very clayey silt. Contained metal (fe) and glass fragments inclusions. Fill of trenches 3036. 0.50m x 0.24m x 0.28m.
3038	Cut	rectangular/oval cut of posthole with straight sides that break to a flat base filled by 3039. 0.31m x 0.20m 0.10m.
3039	Fill	moderately compacted light greyish brown silt with a small amount of charcoal flecks
3040	Cut	linear cut of modern drain with straight sides that break to a flat base filled by 3041. 0.31m x 0.20m 0.10m.
3041	Fill	loose mid-brown silty clay
3042	Cut	cut of rectangular posthole. Unexcavated. 0.23m x 0.21m.
3043	Fill	fill of posthole 3042. 0.23m x 0.21m.
3044	Cut	square cut of posthole with sloping irregular sides that break to a flattish irregular base filled by 3045. 0.20m x 0.20m x 0.04m (truncated).
3045	Fill	moderate to firmly compacted light greyish brown very slightly clayey silt with charcoal and burnt clay flecks. 0.20m x 0.20m x 0.04m (truncated).
3046	Cut	rounded rectangular cut of posthole with mostly straight/some sloping sides that break to a flat base filled by 3047 and 3068. 0.36m x 0.32m.
3047	Fill	moderate to loose light greyish brown slightly clayey silt with charcoal flecks. 0.36m x 0.32m.
3048	Void	void
3049	Void	void

Context	Type	Description
3050	Cut	rounded rectangular cut of posthole with straight sides that break to a flattish irregular base filled by 3051. 0.23m x 0.22m x 0.32m.
3051	Fill	firm light greyish brown slightly clayey silt with charcoal inclusions. Fill of 3050. 0.23m x 0.22m x 0.32m.
3052	Cut	oval cut of posthole with straight sides that break to an irregular base filled by 3053. 0.38m x 0.34m x 0.28m.
3053	Fill	very firm light greyish brown slightly clayey silt with charcoal inclusions. Fill of posthole 3052. 0.38m x 0.34m x 0.28m.
3054	Cut	square cut of posthole with probably straight sides that break to a flat/sloping base filled by 3055. 0.16m x 0.16m x 0.02 (truncated).
3055	Fill	moderately compacted light yellowish brown silt with charcoal and burnt clay flecks. Fill of posthole 3055. 0.16m x 0.16m x 0.02 (truncated).
3056	Layer	compacted but friable black to dark brown slightly clayey silt with frequent patches of burnt clayey silt and occasional charcoal inclusions. The deposit contained abundant mid-19th century historic artefacts including military uniform paraphernalia and ordnance, glass, ceramics, tobacco pipes, metal such as lead, iron and cu alloy and occasional degraded animal bone. Remains of earthen platform for barracks building. 21.36m long by up to 12.50m wide and 0.15 to 0.25m thick.
3057	Layer	Moderately compacted dark greyish brown silt with charcoal inclusions.
3058	Void	void
3059	Cut	square cut of posthole with straight sides that break to an uneven base filled by 3060. 0.17m x 0.17.
3060	Fill	loosely compacted light greyish brown silt. Fill of posthole 3059. 0.17m x 0.17.
3061	Fill	moderately compacted light greyish brown very slightly clayey silt with charcoal and burnt clay inclusions. Lower fill of cooking pit 3034. 2.20m x 160m x 0.32m.
3062	Fill	moderately compacted dark greyish brown slightly clayey and slightly sandy (very fine grains) silt with charcoal and burnt clay inclusions. Fill of 3034.
3063	Fill	orange clay lining on north and west side of cooking pit 3034. 2.20m x 0.05m x 0.32m
3064	Cut	linear cut of arm of V-shaped feature with straight sides that break to a flat base filled by 3065. 0.28m x 0.20m deep.
3065	Fill	friable greyish brown silt with occasional charcoal inclusions and ceramic, glass, metal, and burnt stone inclusions. 0.28m x 0.20m deep.
3066	Cut	irregular cut of posthole with straight to very slightly slanting sides that break to a concave base filled by 3066. 0.22m x 0.20m x 0.27m deep.
3067	Fill	moderately to loosely compacted yellowish brown slightly clayey silt. Fill of 3066. 0.22m x 0.20m x 0.27m.
3068	Fill	moderate to loose greyish brown silt with charcoal and small fragments of burnt clay. Fill within 3046.
3069	Fill	firmly compacted orange and brown clay with occasional charcoal inclusions. 0.20m thick.
3070	Cut	sub-circular cut of posthole with vertical sides that break to a concave base. Filled by 3071. 0.27m x 0.20m x 0.40m.
3071	Fill	firmly compacted, mottled greyish-brown and orangey-brown clay with remains of wooden post stake. Fill of modern farm post.
3072	Cut	circular cut of unexcavated posthole filled by 3073
3073	Fill	firmly compacted, mottled greyish-brown and orangey-brown clay with remains of wooden post stake. Fill of modern farm post.
3074	Cut	oval cut of posthole with vertical sides that break to a flattish base. Filled by 3075. 0.40m x 0.25m x 0.30m.

Context	Type	Description
3075	Fill	moderately compacted greyish-brown silt with specks of charcoal. Fill of 3074. 0.40m x 0.25m x 0.30m.
3076	Cut	sub-circular cut of unexcavated posthole filled by 3077. 0.33m x 0.33.
3077	Fill	firmly compacted greyish- orange clay with specks of charcoal. Fill of 3076. 0.33m x 0.33.
3078	Cut	sub-circular cut of unexcavated posthole. Filled by 3077.
3079	Fill	firmly compacted greyish- orange clay with occasional charcoal flecks. Fill of 3078.
3080	Cut	oval cut of stakehole with short sloping sides that break to a concave base filled by 3085. 0.20m x 0.12m 0.15m.
3080	Cut	rectangular cut of beam-slot with vertical sides that break to a flat base. Filled by 3081. 0.60m x 0.30m x 0.10m.
3081	Fill	moderately compacted greyish-brown silty clay with occasional charcoal flecks. Fill of beam-slot 3080. 0.60m x 0.30m x 0.10m.
3082	Cut	sub-circular cut of posthole with vertical sides that break to a flat base filled by 3083. 0.30m x 0.30xm 0.03 (vertically truncated).
3083	Fill	moderately compacted greyish brown clay with occasional charcoal inclusions. Also contained historic artefacts - black beer bottle glass, metal, and charcoal. Fill of 3082. 0.30m x 0.30xm 0.03 (vertically truncated).
3084	Void	
3085	Void	
3086	Void	
3087	Void	
3088	Void	
3089	Void	
3090	Void	
3091	Void	
3092	Void	
3093	Void	
3094	Void	
3095	Void	
3096	Cut	square cut of posthole with long sloping sides that break to a flattish base filled by 3097. 0.40m x 0.40m x 0.08m
3097	Fill	moderately compacted greyish-brown silt. Fill of 3096. 0.40m x 0.40m x 0.08m
3098	Cut	circular cut of unexcavated posthole filled by 3099. 0.20m diameter.
3099	Fill	compacted mid brownish-grey silt with infrequent small clumps of charcoal. Fill of 3098.
3100	Cut	rectangular cut of unexcavated posthole filled by 3101. 0.40m x 0.23m.
3101	Fill	firmly compacted grey mid brown silt with frequent small clumps of yellow clay. Fill of 3100.
3102	Void	void
3103	Void	void
3104	Void	void
3105	Void	void
3106	Void	void
3107	Void	void
3108	Cut	sub-circular cut of posthole with vertical to steep sides that break to a concave base filled by 3109 and 3167. 0.54m x 0.48m x 0.70m.
3109	Fill	moderately compacted mottled yellowish brown clay with occasional charcoal. Fill of 3108.
3110	Void	void
3111	Void	void
3112	Void	

Context	Type	Description
3113	Void	
3114	Cut	rectangular cut of posthole with vertical sides that break to a concave base filled by 3115. 0.33m x 0.22m x 0.12m.
3115	Fill	moderately compacted grey mid brown clay with occasional yellow and grey clumps of clay. Fill of 3114.
3116	Cut	rectangular cut of unexcavated posthole filled by 3117. 0.15m x 0.15m.
3117	Fill	loosely compacted brown silt. Fill of 3115.
3118	Cut	circular cut of unexcavated posthole filled by 3119. 0.20m x 0.20m.
3119	Fill	compact mid brownish-grey clay with small clumps of clay. Fill of 3118.
3120	Cut	rectangular cut of unexcavated posthole filled by 3121. 0.16m x 0.16m
3121	Fill	firmly compacted greyish-yellow clay with small clumps of clay
3122	Cut	rectangular cut of unexcavated posthole filled by 3123. 0.25m x 0.23m.
3123	Fill	firmly compacted grey and orange mottled clay with occasional clumps of clay. Fill of 3122.
3124	Cut	rectangular cut of unexcavated posthole filled by 3125. 0.20m x 0.20m.
3125	Fill	loosely compacted brown loam. Fill of 3124.
3126	Cut	oval cut of posthole with vertical sides that break to a concave base filled by 3127. 0.50m x 0.30m x 0.37m.
3127	Fill	firmly compacted greyish mottled yellow clay . Fill of 3126.
3128	Cut	sub-rectangular cut of unexcavated posthole filled by 3129. 0.35m x 0.35m.
3129	Fill	firmly compacted mid brownish-grey mottled clay with occasional small clumps of clay. Fill of 3128.
3130	Void	void
3131	Void	void
3132	Cut	oval cut of rubbish pit with vertical sides that break to a flat base filled by 3133. 0.70m x 0.50m x 0.23m.
3133	Fill	moderately compacted mottled yellow brown clay with occasional metal and glass. Fill of 3132.
3134	Void	void
3135	Void	void
3136	Void	void
3137	Void	void
3138	Void	void
3139	Cut	sub-rectangular cut of unexcavated posthole filled by 3140. 0.20m x 0.16m
3140	Fill	loosely compacted mid brownish-grey silt with small clumps of clay. Fill of 3139.
3141	Cut	rectangular cut of posthole with vertical to short sloping sides that break to a flattish base filled by 3140. 0.33m x 0.25m x 0.22m.
3142	Fill	loosely compacted mid brownish-grey silt with small clumps of clay. Fill of 3141.
3143	Cut	rectangular cut of unexcavated posthole filled by 3144. 0.23m x 0.20m.
3144	Fill	moderately compacted mid brownish-grey clay with small clumps of orange clay. Fill of 3143.
3145	Cut	rectangular cut of posthole with vertical sides that break to a flat base filled by 3146. 0.36m x 0.30m x 0.26m.
3146	Fill	firmly compacted grey mid brown silt with in situ wood. Fill of 3145.
3147	Cut	rectangular cut of posthole with vertical sides that break to a flat base filled by 3148. 0.25m x 0.20m x 0.14m.
3148	Fill	firmly compacted mid brownish-grey silt with small clumps of yellow clay
3149	Void	void
3150	Void	void
3151	Void	void
3152	Void	void

Context	Type	Description
3153	Void	void
3154	Void	void
3155	Void	void
3156	Void	void
3157	Void	void
3158	Void	void
3159	Void	void
3160	Void	void
3161	Void	void
3162	Void	void
3163	Void	void
3164	Void	void
3165	Cut	rectangular cut of unexcavated posthole filled by 3166. 0.20m x 0.17m.
3166	Fill	moderately compacted mid brownish-grey clay with small clumps of clay. Fill of 3165.
3167	Fill	moderately compacted dark greyish brown with orange/ red mottled silty clay with moderate charcoal. Fill of 3108. 0.38m x 0.36m x 0.68m.
3168	Void	void
3169	Structure	postholes 3118, 3116, 3122, 3165, 3114, 3145, 3100, 3149
3170	Void	void
3171	Cut	rectangular cut of posthole with straight sides that break to a flat base filled by 3172. 0.30m x 0.23m x 0.23m
3172	Fill	moderately compacted light greyish brown clayey silt. Fill of 3171.
3173	Cut	rectangular cut of posthole with straight sides that break to a flat base filled by 3174. 0.32m x 0.20m x 0.12m.
3174	Fill	moderately compacted light greyish brown clayey silt
3175	Layer	highly compacted, firm yellow/ orange clay with (?) particles
3176	Void	void
3177	Void	void
3178	Cut	linear cut of enclosure ditch with steep sides and a flat base. 13.05m x 1.12m x 0.40m deep.
3179	Fill	Firmly compacted, yellowish-brown silty clay with mottles of mid-brown topsoil and occasional charcoal inclusions. Primary fill of ditch 3178.
3180	Cut	Linear recut of ditch within original ditch 3178, with steeply sloping smooth sides that break to a slightly concave base. filled by 3181, 3182 and 3183 13.05m x 1.12m x 0.40m deep.
3181	Fill	mottled greyish brown and orange silty clay with occasional charcoal inclusions. Primary fill of recut ditch 3180. 0.18m deep.
3182	Fill	greyish light brown clayey silt with occasional charcoal inclusions and occasional lumps of burnt clay. contained redoubt period artefactual and faunal material. 0.11m thick. Secondary fill of recut ditch 3180.
3183	Fill	mottled yellowish brown and light greyish brown silty clay with occasional charcoal inclusions. 0.14m thick. Upper fill of recut ditch 3180.
3184	Cut	recti-linear cut of drain with steep to vertical sides that break to an offset concave base. filled by 3185. 2.60m x 0.30m x 0.16m.
3185	Fill	mottled yellowish light brown, greyish light brown silt with frequent lumps of burnt clay. Fill of 3184.
3186	Cut	rectangular cut of posthole with straight sides that break to a flat base filled by 3187. 0.24m x 0.17m x 0.14m deep.
3187	Fill	moderately compacted, greyish-brown slightly clayey silt with occasional charcoal inclusions. Moderately compacted, greyish-brown slightly clayey silt with occasional charcoal inclusions. Fill of posthole 3186.
3188	Cut	rectangular cut of posthole with straight sides that break to a flat base filled by 3189. 0.22m x 0.17m x 0.12m.

Context	Type	Description
3189	Fill	moderately compacted, greyish-brown slightly clayey silt with occasional charcoal inclusions. Fill of posthole 3187.
3190	Cut	sub-circular cut of 20th century posthole - pile driven. Filled by 3191. 0.23m in diameter by 0.42m deep.
3191	Fill	moderately compacted, intermixed mid-brown topsoil and yellowish brown natural silty clay with occasional charcoal inclusions. Fill of posthole 3190.
3192	Cut	sub-circular cut of 20th century posthole - pile driven. Filled by 3193. Unexcavated.
3193	Fill	moderately compacted, intermixed mid-brown topsoil and yellowish brown natural silty clay with occasional charcoal inclusions. Fill of posthole 3192. 0.22 in diameter. Unexcavated.
3194	Cut	rectangular cut of posthole with vertical sides that break to a flat base. Filled by 3195. 0.32m x 0.24m x 0.28m. Filled by 3195. 0.32m x 0.24m x 0.28m deep.
3195	Fill	moderately compacted, greyish-brown slightly clayey silt with occasional charcoal inclusions. The fill also contained black beer bottle glass and wine bottle glass and an iron horseshoe. Later 19th or early 20th century origin.
3196	Fill	moderately compacted, yellowish light-brown slightly clayey silt with occasional charcoal inclusions and small patches of burnt clay. Upper fill of enclosure ditch 3178. 0.17m thick. Upper fill of ditch 3178. cut by recut ditch 3180.
3197	Cut	cut of small rectangular posthole, filled by 3198. Unexcavated. 0.17 x 0.9m.
3198	Fill	moderately compacted, greyish-brown slightly clayey silt with occasional charcoal inclusions. Fill of posthole 3197.
3201	Cut	linear cut of western half of northern camp enclosure ditch. Heavily truncated both vertically and laterally. Filled by 3202. 2.21m (surviving) x 0.38m x 0.08m.
3202	Fill	firmly compacted, yellowish-brown silty clay with mottles of mid-brown topsoil and occasional charcoal inclusions. Primary fill of ditch 3201.
3203	Void	
3204	Fill	moderately compacted yellowish-brown and greyish brown mottled silty clay with occasional charcoal inclusions (some large). Slumped deposit formed by erosion of embankment on inside of ditch 3178. Truncated by re-cut ditch 3026. Seen in section, 0.18m x 0.22m.
3205	Layer	firmly compacted yellowish-brown and greyish brown mottled silty clay with pinkish patches of clay. Embankment on inside (western side) of camp enclosure ditch 3178 (seen in section). 0.58m x 0.18m.

Section 56 Evaluation – Context Records

Trench #	Context	Type	Description
1	100	Layer	topsoil, loose very silty clay, light greyish brown, grass roots
1	101	Layer	subsoil, loose-med, very silty clay, light yellowish brown, rootlets
1	102	Layer	natural colluvium, medium, clay, silty, matted brown, orange yellow
2	200	Layer	topsoil, modern, under turf, clay, silty, loam, medium brown, rootlets, loose compaction
2	201	Layer	subsoil, silt, colluvial, light med brown, charcoal burnt clay inclusions, occasional grass roots, med-loose compaction

Trench #	Context	Type	Description
2	202	Layer	natural colluvium, clay, silty, matted light yellowish brown with orange/yellow streaks, medium compaction
2	203	Fill	moderate compaction, medium brown, clayey silt
2	204	Cut	wedge shaped - going into unexcavated area, sloped sides, relatively flat/slightly concaved base, 130cm NW-SE section
2	205	Cut	rectilinear cut of field drain
2	206	Fill	moderate compaction, medium brown, clay fill of drain 205
2	207	Pipe	ceramic field drain pipe
3	300	Layer	topsoil, modern, under turf, clay, silty, loam, medium brown, rootlets, loose compaction
3	301	Layer	subsoil, silt, colluvial, light med brown, charcoal burnt clay inclusions, occasional grass roots, med-loose compaction
3	302	Layer	natural colluvium, clay, silty, matted light yellowish brown with orange/yellow streaks, medium compaction
3	303	Layer	surface including much burnt material. Level - fairly level and firm pretty compact. Frequent charcoal inclusions, burnt clay turned orangey red. Frequent broken bottle glass and rusty metal. Much more occasional pieces of ceramic. Visible because of the burnt material and bottle glass and easily identified with the trowel because of its firmness.
3	304	Layer	deposit of yellow clay mixed with a little mild-brown silty soil, capping layer of burning (303) but occurring as one little patch rather than spread over all of (303). 130cm wide as exposed in the trench, patch of yellow clay on top of (303).
3	305	Cut	cut of drain, shallow ditch at SE side of (303) visible in the section only, shallow and fairly subtle but distinct enough to be real, sloping sides, slightly dished base, concave base 50cm wide x 12cm deep
3	306	Fill	fill of [305] the shallow ditch, greyish-brown silt, no inclusion homogeneous and firmly compacted.
3	307	Cut	cut of drain, shallow ditch at NW side of (303). Much the same as [305](306). A bit wider, slight concave base, gradually sloping sides, more gradual than [305] 8cm wide x 12cm deep
3	308	Fill	fill of [307] greyish-brown silt, clean, artefact free, greyish brown, no inclusions, homogeneous and firm
5	500	Layer	topsoil, loose, silt, slightly clayey, medium brown, grass roots, 0-10cm below surface
5	501	Layer	subsoil, loose, silt, slightly clayey and medium to light yellowish brown in colour, root inclusions, 10-25cm below surface
5	502	Layer	natural Colluvium, med compact, clay, silty, yellow/orange mottled
5	503	Cut	oval cut of posthole with sloping sides, flat base, 18x 30cm, NE - SW
5	504	Fill	moderate compaction, yellowish brown, silt, slightly clayey, charcoal, burnt clay - very friable, stone inclusions. Fill of posthole 503

Trench #	Context	Type	Description
5	505	Fill	clay slightly silty, mottled yellow/orange (dark/medium), there is not a clear topsoil/subsoil division above the fill. S.W end 25cm thick, N.E east end edge of fill thins out to patches. Made ground / bank?
5	506	Layer	layer under the fill (505), medium brown colour.
6	600	Layer	topsoil, silt, medium brown, 0-10cm below surface
6	601	Layer	subsoil, silt, clayey, medium lightly yellowish brown, 10-25cm below surface.
6	602	Layer	natural Colluvium, med compact, clay, silty, yellow/orange mottled
6	603	Cut	irregular shape (rounded rectangle?) S.W edge vertical sides going into deep stakehole, N.E side gently sloping sides. Sloping from N.E to S.W with deeper hole at south west end and concave base. 43 x 24 cm N.E - S., small stakehole 7cm diameter.
6	604	Fill	med/loose compaction, med/light greyish brown, silt, slightly clayey, burnt wood inclusions. Fill of cut 603.
6	605	Cut	irregular shape, almost vertical sides, flat base,
6	606	Fill	med compaction, med-light greyish brown, silt, slightly clayey with charcoal inclusions.
6	607	Cut	irregular shape, only edge visual at side of trench
6	608	Fill	unexcavated, light med compaction, brown soil, silt, slightly clayey, charcoal inclusions, burnt clay ?

APPENDIX 2 – GEOPHYSICAL SURVEY REPORT



Tuesday, 17 June 2014

Rod Clough
Clough & Associates Ltd
321 Forest Hill Rd
Waiatarua,
Auckland 0612

Dear Rod,

Re: Report for GPR survey, Rings Redoubt, 931 Papakura-Clevedon Road

ScanTec present the following letter report for a geophysical survey carried out at the property of 931 Papakura-Clevedon Road.

The work was carried out over three days 4th,5th,6th June, 2014, by Matt Watson and assisted by technicians Peter Charpentier and Victoria Landgraf.

Survey measurements consisted of;

- 1) magnetometer survey using a GEM GSM-19WG gradiometer. Measurements were recorded at 0.5m line intervals.
- 2) ground penetrating radar (GPR) survey using a GSSI SIR-3000 and 400MHz antenna. A combination of digital survey wheel and differential GPS was used for positioning purposes. Measurements were recorded at 1m line intervals.

Analysis and Results

Due to the shape and contour of the site, and the changing orientation of the defensive ditch, the survey grids were set up in series of blocks.

Although the grass has been cut for the survey, the ground surface was generally rough which did not provide optimum scanning conditions for the GPR.

The magnetometer picked up interference from fence lines, gates and underground services at this site.

Magnetometer data interpretation (Figure 1)

A linear anomaly running in an approximate NW-SE orientation is observed in the SW corner of site (marked "A" on Figure 1). Interference was present in this area from the nearby fence line, so this is also a possible cause of this feature on the magnetometer data.

Numerous isolated dipolar magnetic anomalies occur throughout the site. These are likely to be due to scattered ferrous metal debris.

Three similar sized anomalies form a curved pattern (marked "B" on Figure 1).

A weak, negative anomaly in an approximately circular shape of about 10m diameter can be seen in the NE of the site. (marked "C" on Figure 1). This may be a magnetic field pattern generated from a point source, rather than an actual feature.

Generally, more disturbed ground and clutter from ferrous metals within the soil layers is observed in the northern part of the site. ("D" on Figure 1)

In the southern part of the site, the gradiometer response is generally lower and more stable, indicating that this ground is less disturbed with less ferrous metal debris. ("E" on Figure 1)

A pipeline or pipe segment is interpreted in the south part of the site running approx. N-S ("F" on Figure 1).

Ground penetrating radar (GPR) interpretation (Figures 2-5)

The GPR data is divided into a series of depth slices; 0.5m, 1.0m, 1.5m and 2m depths for figures 2 to 5 respectively.

A pipeline or pipe segment is interpreted (marked as "G" on Figure 2).

Generally the GPR does not show much coherent structure. Some small linear anomalies are visible, though nothing that could be confidently interpreted.

Numerous point sources (post holes and/or buried objects) are scattered throughout the site. There is no noticeable pattern or alignments to these.

Ground penetrating radar (GPR) in back garden of property (931 Papakura Clevedon Rd) (Figure 6)

A 34m long 2D GPR line was run through the back garden of the property (Figure 6). This extends from X to Y, in a NE-SW orientation. The GPR data shows numerous small anomalies. Some may be post holes and have been labelled. It is impossible to confidently interpret the causes of these anomalies on the GPR data without external information. Other features that have this character of GPR signal are tree roots, buried stumps or underground services.

The data in the garden was much clearer than elsewhere on this site due mainly to the smoother ground surface. It is also possible that there has been less

modification in the upper 50cm along this profile line, compared to the surrounding land which has been farmed.

General Comments and recommendations

The geophysical data collected at this site did not indicate strong anomalies from a defensive ditch or any features that could clearly interpreted as archaeological features, without subsidiary information.

The partial linear anomaly that can be seen on the magnetometer in the SW corner (Figure 1, "A") is possibly the type of response that we would expect from an in-filled defensive ditch. However, the proximity to the steel wire fence line means that this feature could not be confidently interpreted, as it is in the zone of interference from the fence. It is possible, that this feature (A) could be entirely due to the fence line interference.

It is very likely that there is insufficient contrast in physical properties between the material filling the trench and the background soils for geophysical techniques to be effective at this particular site. It is probable that local soil was used to fill the trenches, and generally landscape the property.

We have previously located defensive ditches (eg Ruapekapeka, Northland) using GPR, but only in areas where ground modification has been relatively low. These were also filled with locally derived soils, however the outline of the trench could still be seen and also poor compaction of the soil meant that there were small air cavities associated with the trench.

It is our recommendation that the anomalies determined by this particular geophysical data set could be used as a guide for any future investigation. However the results of a geophysical survey such as this should not be used for any determination of future land use at this site, without subsidiary information. Where there is no suitable geophysical technique to enable confident interpretation of archaeology, sometimes the only solution is physical examination.

Please let me know if you would like discuss the results in more detail.

Yours Sincerely
ScanTec Ltd

Matt Watson B.Sc. M.Sc. (hons)
Geophysicist / Director



Magnetic Gradiometer GSM-19WG



Magnetic Gradiometer GSM-19WG



GPR Depth Slice 0.5m



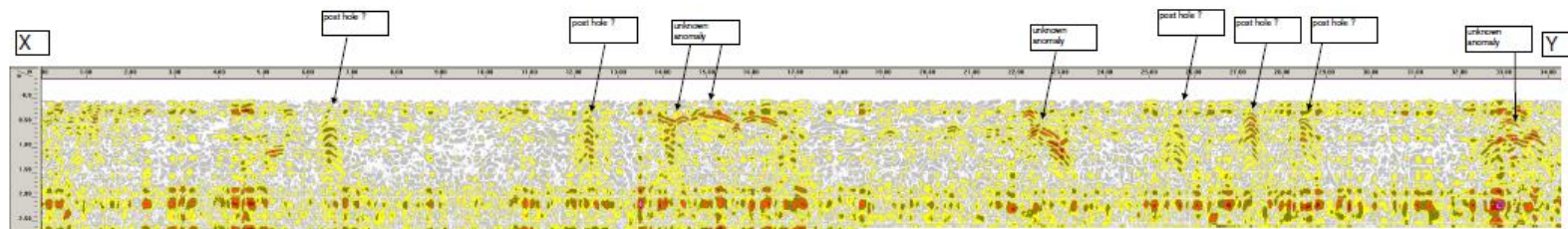
GPR Depth Slice 1m



GPR Depth Slice 1.5m



GPR Depth Slice 2m



GPR profile in back garden of 931 Papakura Clevedon Rd

APPENDIX 3 – ARTEFACT INVENTORY

Militaria and Numismatic Assemblage

ID No.	Context	Category	Sub-Category	Object	Material	Portion	Decoration / Description	Function
1	1001=3027	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Regimental button – 70th Surrey Regiment of Foot. 1" great coat or dress tunic button.	Regimental button
2	1001=3027	Militaria	Uniform/clothing	Button	Copper Alloy	Partial	Regimental button – only part of the outer rim of the backplate survives. 1" button.	Regimental button
3	1001=3027	Militaria	Munitions	Musket ramrod end	Copper Alloy	Complete	Copper alloy Musket ramrod end.	Musket accessory
4	1001=3027	Militaria	Munitions	Percussion cap	Copper Alloy	Partial	Percussion Cap – fragmented.	Projectile primer
5	1001=3027	Militaria	Equipment	Strap buckle	Copper Alloy	Complete	Strap buckle – knapsack/haversack.	strap adjustment
6	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
7	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
8	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
9	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
10	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
11	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
12	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
13	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
14	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
15	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
16	1001=3027	Numismatic	Coin	Penny or penny token	Copper Alloy	Complete	Penny / Trade Token. Coin	Coinage
17	1001=3027	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Regimental Button – 18th Royal Irish Regiment of Foot. 1" great coat or dress tunic button.	Regimental button

ID No.	Context	Category	Sub-Category	Object	Material	Portion	Decoration / Description	Function
18	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
19	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
20	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
21	1001=3027	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Regimental Button – 14th Buckinghamshire Regiment of Foot. 1" great coat or dress tunic button.	Regimental button
22	1001=3027	Militaria	Munitions	Percussion cap	Copper Alloy	Partial	Percussion Cap – fragmented.	Projectile primer
23	1001=3027	Militaria	Uniform/clothing	Button	Copper Alloy	Partial	Regimental Button – Fragment. Regiment indiscernible. 1"	Regimental button
24	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
25	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
26	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
27	1001=3027	Numismatic	Coin	Shilling	Silver	Complete	George IV Shilling 1825 – Laureate Head. Coin	Coinage
28	1001=3027	Militaria	Munitions	Tompion	Copper Alloy	Partial	Brass cap from an Enfield 1853 pattern musket brass and cork tompion for plugging end of muzzle.	tompion for Enfield Musket
29	1001=3027	Militaria	Munitions	Powder flask stopper	Copper Alloy	Complete	Shotgun cap / Powder flask stopper?	cap or stopper
30	1001=3027	Miscellaneous Metal	Other	Rivet	Fe	Complete	Iron rivet	Fixing
31	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
32	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
33	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
34	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
35	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
36	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
37	1001=3027	Militaria	Other	Part of gold ring	Gold	Partial	Thin strip of 15k yellow gold ring shank with incomplete engraved motif.	Jewelry Ring

ID No.	Context	Category	Sub-Category	Object	Material	Portion	Decoration / Description	Function
38	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
39	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
40	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
41	1001=3027	Miscellaneous Metal	Other	Cleat	Copper Alloy	Complete	Cleat for fixing/tying rope up to.	Fixing
42	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
43	1001=3027	Militaria	Equipment	Strap Plate	Copper Alloy	Fragment	Partial piece of copper strap plate from indeterminate object.	Unknown
44	1001=3027	Miscellaneous Metal	Other	Belt Buckle	Copper Alloy	Complete	Front plate of cricket belt buckle with two cricket bats shown in relief.	Belt buckle
45	1001=3027	Numismatic	Coin	Penny trade token	Copper Alloy	Complete	Penny Token Metcalfe & Lloyd Sydney. Dated 1863.	Coinage
46	1001=3027	Militaria	Munitions	Percussion cap	Copper Alloy	Complete	Percussion Cap.	Projectile primer
47	1001=3027	Militaria	Munitions	Pistol Bullet	Lead	Complete	1851 - 1854 Pattern Adams Revolver .442 calibre (54 bore) Bullet.	Projectile
48	1001=3027	Miscellaneous Metal	Other	Seal	Lead	Partial	Perforated circular piece of lead. Likley one half of a lead seal (bale seal).	Seal
49	1001=3027	Numismatic	Coin	Penny trade token	Copper Alloy	Partial	A half (semi-circular) piece of a M Somerville, Auckland penny or trade token. Corroded. Only Grocer and '....LAND' seen.	Coinage
50	1001=3027	Miscellaneous Metal	Other	Seal cap and washer	Copper Alloy	Complete	Seal cap and washer.	Fixing
51	1001=3027	Militaria	Uniform/clothing	Button	Copper Alloy	Partial	Regimental button – only backplate survives. 1"	Regimental button
52	1001=3027	Militaria	Uniform/clothing	Epaulet Stud	Copper Alloy	Complete	18th Royal Irish Regiment of Foot Officers Epaulet stud.	Regimental Insignia
53	1001=3027	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Regimental Button – 18th Royal Irish Regiment of Foot. 1" great coat or dress tunic button.	Regimental button
54	1001=3027	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Regimental Button – 18th Royal Irish Regiment of Foot. 1" great coat or dress tunic button.	Regimental button

ID No.	Context	Category	Sub-Category	Object	Material	Portion	Decoration / Description	Function
55	1001=3027	Miscellaneous Metal	Other	Unidentified	Copper Alloy	Partial	Cylindrical machine turned decorated object. Fragment.	Unknown
56	1001=3027	Militaria	Uniform/clothing	Hook	Copper Alloy	Partial	Partial hook from collar of uniform item.	Garment closure
57	1001=3027	Militaria	Uniform/clothing	Eyelet	Copper Alloy	Complete	Eyelet clothing Fixing from uniform item to attach with hook.	Garment closure
58	1001=3027	Militaria	Munitions	Percussion cap	Copper Alloy	Partial	Fragmented remains of Percussion cap.	Projectile primer
59	1001=3027	Militaria	Equipment	Tap handle	Copper Alloy	Complete	Small brass tap handle with two rivets.	Fawcett
60	1001=3027	Militaria	Munitions	Probable trigger guard	steel	Partial	steel handle like object. Broken. Possibly a trigger guard from a pistol.	Trigger guard for pistol?
61	1001=3027	Militaria	Munitions	Pistol Bullet	Lead	Complete	0.54" calibre conical bullet. Calisher & Terry carbine bullet?	Projectile
62	1001=3027	Militaria	Munitions	Pistol Bullet	Lead	Complete	0.54" calibre conical bullet. Calisher & Terry carbine bullet? Rodent gnawed?	Projectile
63	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
64	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
65	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet + wood plug.	Projectile
66	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
67	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
68	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
69	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet + wood plug.	Projectile
70	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
71	1001=3027	Militaria	Equipment	Handle	Fe	Complete	Iron handle from unknown implement.	Utensils
72	1001=3027	Militaria	Equipment	Bolt	Fe	Complete	Iron bolt for securing something.	Fixing
73	1001=3027	Militaria	Equipment	Hook	Fe	Complete	Large iron hook implement - possibly related with butchery.	Utensils

ID No.	Context	Category	Sub-Category	Object	Material	Portion	Decoration / Description	Function
74	1001=3027	Militaria	Equipment	Hook	Fe	Complete	Small iron hook implement.	Utensils
75	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet + wood plug.	Projectile
76	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
77	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet. Fired?	Projectile
78	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
79	1001=3027	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet + wood plug.	Projectile
80	1001=3027	Militaria	Equipment	Spike	Fe	Complete	Iron Spike.	Fixing
81	1001=3027	Militaria	Equipment	Bolt	Fe	Complete	Iron Bolt.	Fixing
82	1001=3027	Militaria	Equipment	Nail	Fe	Complete	Iron nail.	Fixing
83	1001=3027	Militaria	Equipment	Pick axe	Fe	Partial	Iron pick fragment.	Tools
84	1001=3027	Militaria	Equipment	Handle	Fe	Partial	Iron handle from unknown object.	Utensils
85	1001=3027	Militaria	Equipment	Strap Buckle	Copper Alloy	Complete	Strap Buckle from knapsack/haversack.	Strap adjustment
86	1001=3027	Militaria	Munitions	Minié ball	Lead	Partial	0.550" Enfield Rifled Musket Miniè type Bullet. (Remnants).	Projectile
87	1001=3027	Miscellaneous Metal	Other	Barrel hoop strap	Fe	Partial	Iron barrel hoop strap, photographed in field but not retained.	Barrel strap
88	1001=3027	Glass	Other	Bottle	Glass	Complete	Complete black beer bottle. Newcastle. Dobson & Warner?	Bottle
89	1001=3027	Militaria	Equipment	Strap Plate	Copper Alloy	Fragment	Partial piece of copper strap plate from indeterminate object.	Unknown
90	1001=3027	Militaria	Munitions	Minié ball	Lead	Partial	0.550" Enfield Rifled Musket Miniè type Bullet. Partially melted.	Projectile
91	3027=1001	Numismatic	Coin	Sixpence	Silver	Complete	Queen Victoria 'Young Head'. Dated 1844.	Coinage
92	3027=1001	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
93	3027=1001	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile

ID No.	Context	Category	Sub-Category	Object	Material	Portion	Decoration / Description	Function
94	3027=1001	Militaria	Munitions	Minié ball	Lead	Partial	0.550" Enfield Rifled Musket Miniè type Bullet. Missing base.	Projectile
95	3027=1001	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet. Fired.	Projectile
96	3027=1001	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
97	3027=1001	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
98	3027=1001	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
99	3027=1001	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
100	3027=1001	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
101	3027=1001	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
102	3027=1001	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet + wood plug.	Projectile
103	1006	Militaria	Munitions	Bullet cartridge case	Copper Alloy	Complete	Brass Boxer cartridge case .45 Long Colt Revolver centrefire spent cartridge case shell.	Projectile primer
104	3027=1001	Militaria	Munitions	Minié ball	Lead	Partial	0.550" Enfield Rifled Musket Miniè type Bullet. Melted.	Projectile
105	3027=1001	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
106	3027=1001	Militaria	Equipment	Ingot	Lead	Complete	Circular, dome shaped lead ingot.	Ingot for bullet making
107	3056	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Regimental Button – 14th Buckinghamshire Regiment of Foot. 1" great coat or dress tunic button.	Regimental button
108	3006	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet + wood plug.	Projectile
109	3056	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Regimental Button – 14th Buckinghamshire Regiment of Foot. 1" great coat or dress tunic button.	Regimental button
110	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet + wood plug.	Projectile
111	3056	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Regimental button – 40th (2nd Somerset) Regiment of Foot. 1" great coat or dress tunic button.	Regimental button

ID No.	Context	Category	Sub-Category	Object	Material	Portion	Decoration / Description	Function
112	3056	Militaria	Munitions	Tompion	Cu alloy and cork	Partial	Enfield 1853 pattern musket brass and cork tompion for plugging end of musket barrel.	tompion for Enfield Musket
113	3056	Militaria	Munitions	Percussion cap	Copper Alloy	Complete	7 x Percussion Caps.	Projectile primer
114	3056	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Regimental button – 18th Royal Irish. Cuff/Coatee button.	Regimental button
115	3056	Militaria	Uniform/clothing	Button	Copper Alloy	Partial	Regimental button - Backplate fragment only. 1" button.	Regimental button
116	3056	Militaria	Equipment	Unidentified	Cu Alloy + glass	Partial	Oval cut glass (possibly amber or carnelian) set within copper mount.	Unknown
117	3056	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Regimental button – 18th Royal Irish. Cuff/Coatee button.	Regimental button
118	3056	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Copper alloy trouser buttons x 5	Trouser buttons
119	3056	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Regimental Button – 18th Royal Irish Regiment of Foot. 1" great coat or dress tunic button.	Regimental button
120	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
121	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
122	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
123	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
124	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
125	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
126	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
127	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
128	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
129	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
130	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
131	3056	Militaria	Equipment	Strap Buckle	Copper Alloy	Complete	Strap buckle – knapsack/haversack.	Strap adjustment

ID No.	Context	Category	Sub-Category	Object	Material	Portion	Decoration / Description	Function
132	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
133	3056	Militaria	Uniform/clothing	Eyelet	Copper Alloy	Complete	Clothing eyelet fixture from uniform item.	Garment closure
134	3056	Militaria	Equipment	Unidentified	Copper Alloy	Complete	Small copper 'U' shaped item. Bracket/handle?	Unknown
135	3056	Militaria	Uniform/clothing	Eyelet	Copper Alloy	Complete	Clothing eyelet fixture from uniform item.	Garment closure
136	3056	Militaria	Uniform/clothing	Eyelet	Copper Alloy	Complete	Clothing eyelet fixture (large) from uniform item.	Garment closure
137	3056	Militaria	Munitions	Minié ball	Lead	Partial	0.550" Enfield Rifled Musket Miniè type Bullet. Cut remnant.	Projectile
138	3056	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Regimental Button – 18th Royal Irish Regiment of Foot. 1" great coat or dress tunic button.	Regimental button
139	3056	Militaria	Munitions	Musket ball	Lead	Complete	Musket ball. 0.615" calibre. Baker Pattern 1800 Infantry Rifle lead ball.	Projectile
140	3056	Militaria	Uniform/clothing	Eyelet	Copper Alloy	Complete	Clothing eyelet fixture from uniform item to receive hook.	Garment closure
141	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
142	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
143	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
144	3056	Militaria	Uniform/clothing	Hook	Copper Alloy	Complete	Collar/closure hook from uniform item.	Garment closure
145	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
146	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
147	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
148	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
149	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet. Slightly melted.	Projectile

ID No.	Context	Category	Sub-Category	Object	Material	Portion	Decoration / Description	Function
150	3056	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Regimental Button – 14th Buckinghamshire Regiment of Foot. 1" great coat or dress tunic button.	Regimental button
151	3056	Militaria	Uniform/clothing	Hook	Copper Alloy	Complete	Collar hook from uniform item.	Garment closure
152	3056	Militaria	Uniform/clothing	Hook	Copper Alloy	Partial	3 x Fragments of Collar hook from uniform item.	Garment closure
153	3056	Militaria	Equipment	Wire fixing	Copper Alloy	Partial	3 pcs of Copper wire, one with eyelet and two with hooks.	Wire fixing
154	3056	Militaria	Equipment	Strap Plate	Copper Alloy	Fragment	4 fragments of Copper plate from unknown item/s.	Unknown
155	3056	Militaria	Equipment	Brass implement	Copper Alloy	Partial	2 pcs of Brass implement - Musket/Pistol Accessory Tool?	Firearm tool
156	3056	Miscellaneous Metal	Other	lead melt & fragments	Lead	Partial	Collection of lead melt and plate fragments.	Unknown
157	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
158	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
159	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
160	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
161	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
162	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
163	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
164	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
165	3056	Militaria	Munitions	Percussion cap	Copper Alloy	Complete	11 x Percussion Caps.	Projectile primer
166	3056	Numismatic	Coin	Half penny token	Copper Alloy	Complete	Halfpenny Trade Token. Lettering and date indiscernible due to corrosion.	Coinage
167	3056	Militaria	Uniform/clothing	Hook	Copper Alloy	Complete	Collar hook from uniform item.	Garment closure

ID No.	Context	Category	Sub-Category	Object	Material	Portion	Decoration / Description	Function
168	3056	Numismatic	Coin	Penny token	Copper Alloy	Complete	Penny Trade Token. M Somerville, Auckland. Dated 1857.	Coinage
169	3056	Militaria	Uniform/clothing	belt clasp	Copper Alloy	Partial	Back of regimental belt clasp (2pcs).	Regimental Insignia
170	3056	Militaria	Other	Gemstone	Garnet crystal	Complete	5ct Melanite Garnet gemstone. Likely prised from a ring.	Jewelry gemstone
171	3056	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Copper alloy trouser buttons x 3 (2 complete, 1 half fragment). 1 four hole.	Trouser Button
172	3056	Militaria	Munitions	Percussion cap	Copper Alloy	Complete	6 x Percussion Caps.	Projectile primer
173	3056	Militaria	Equipment	Unidentified	Copper Alloy	Complete	Small oval copper object with two circular holes. Seal?	Unknown
174	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet + wood plug.	Projectile
175	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet. Cut fragment.	Projectile
176	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet + wood plug.	Projectile
177	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet + wood plug.	Projectile
178	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
179	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
180	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet. Incomplete	Projectile
181	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
182	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
183	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet + plug. Fired.	Projectile
184	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile

ID No.	Context	Category	Sub-Category	Object	Material	Portion	Decoration / Description	Function
185	3056	Miscellaneous Metal	Other	Lock plate	Copper Alloy	Complete	Shield/badge shaped lock plate with keyhole.	Lock plate
186	3056	Militaria	Equipment	Strap Buckle	Copper Alloy	Complete	Trouser braces buckle with double pronged bar set attachment in centre.	Strap adjustment
187	3056	Miscellaneous Metal	Other	Possible gaming counter	Lead	Complete	Flat square of lead. Gaming counter?	Possible gaming counter
188	3056	Militaria	Uniform/clothing	Shako chinstrap mount	Copper Alloy	Complete	Tudor Rose Design Shako Chinstrap Mount.	Regimental Insignia
189	3056	Militaria	Uniform/clothing	Button	Copper Alloy	Partial	2 X Fragments of backplate of a Regimental Button. 1" button.	Regimental button
190	3056	Militaria	Equipment	Hook like	Copper Alloy	Complete	Hook like brass object. Machine turned?	Brass hook
191	3056	Miscellaneous Metal	Other	Lock plate	Copper Alloy	Complete	Brass lock plate fragment with keyhole with lettering J. Terry & co. manufactured by James Terry & Co., Terryville, Ct., and Newark, N.J.	Lock plate
192	3056	Militaria	Munitions	Percussion cap	Copper Alloy	Complete	19 x Percussion Caps.	Projectile primer
193	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
194	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
195	3056	Numismatic	Coin	Halfpenny?	Copper Alloy	Partial	Halfpenny? Incomplete and damaged. Corroded. Date indiscernible.	Coinage
196	3056	Militaria	Munitions	Pistol Ball	Lead	Complete	Pistol ball from a .36 caliber Colt Navy Holster Revolver 1851 Pattern issue bullet.	Projectile
197	3056	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile
198	3056	Miscellaneous Metal	Other	Lead pendant	Lead	Complete	4 sided and diamond shaped in cross section. Lead pendant.	Pendant - personal adornment
199	3056	Militaria	Munitions	Percussion cap	Copper Alloy	Complete	2 x Percussion Caps.	Projectile primer
200	3035	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Copper alloy trouser button with four holes for sewing onto fabric.	Trouser Button
201	3037	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet.	Projectile

ID No.	Context	Category	Sub-Category	Object	Material	Portion	Decoration / Description	Function
202	3037	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
203	3037	Militaria	Uniform/clothing	Hook	Copper Alloy	Complete	Collar hook from uniform item.	Garment closure
204	3062	Numismatic	Coin	Penny/Trade Token	Copper Alloy	Complete	Penny / Trade Token. Corroded. Indiscernible.	Coinage
205	3062	Militaria	Munitions	Percussion cap	Copper Alloy	Complete	Percussion cap.	Projectile primer
206	3061	Stoneware	Other	Ink Bottle	stoneware	Complete	Stoneware Penny ink bottle with knapped base. Repurposed as a bung.	Modified ink bottle
207	3027=1001	Militaria	Munitions	Percussion cap	Copper Alloy	Fragment	Percussion cap fragments.	Projectile primer
208	3027=1001	Militaria	Munitions	Percussion cap	Copper Alloy	Complete	Percussion cap.	Projectile primer
209	3027=1001	Militaria	Uniform/clothing	Unidentified	Copper Alloy	Partial	3 x Fragments of either Regimental Forage cap badge /Shako	Regimental Insignia
210	3027=1001	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
211	3027=1001	Miscellaneous Metal	Other	Dip pen sheath	Copper Alloy	Complete	Copper with gold plating/gold wash trace – Dip pen holder sheath?	pen sheath
212	3027=1001	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
213	3027=1001	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Regimental button. Coatee/Cuff. 18th Royal Irish.	Regimental button
214	3027=1001	Militaria	Uniform/clothing	Clothing stud	Cu alloy & card	Complete	Clothing Stud – Possibly Regimental.	Garment closure
215	3027=1001	Militaria	Munitions	Percussion cap	Copper Alloy	Partial	Percussion Cap fragmented.	Projectile primer
216	3027=1001	Militaria	Munitions	Buckshot	Copper Alloy	Complete	Copper Ball / Buckshot?	Projectile
217	3027=1001	Militaria	Munitions	Percussion cap	Copper Alloy	Partial	Percussion Cap fragment.	Projectile primer
218	3027=1001	Militaria	Uniform/clothing	Eyelet	Copper Alloy	Complete	Clothing fixture (large) from uniform item.	Garment closure

ID No.	Context	Category	Sub-Category	Object	Material	Portion	Decoration / Description	Function
219	3027=1001	Miscellaneous Metal	Other	Cap / inset?	Milk glass	Complete	Circular, pale blue Milk glass cap/inset. Unknown function.	Unknown
220	3027=1001	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Regimental button. Unknown regiment. Corroded. 1" button.	Regimental button
221	3027=1001	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet + wood plug.	Projectile
222	3065	Militaria	Uniform/clothing	Hook	Copper Alloy	Complete	Collar hook from uniform item.	Garment closure
223	3065	Militaria	Munitions	Percussion cap	Copper Alloy	Partial	Percussion Cap fragmented.	Projectile primer
224	3065	Militaria	Uniform/clothing	Eyelet	Copper Alloy	Complete	Clothing Fixture from uniform item.	Garment closure
225	3065	Militaria	Equipment	handle?	Fe	Partial	Iron object (handle?) in two adjoining pcs, with copper rivet.	Unknown
226	3065	Militaria	Equipment	Handle?	Fe	Partial	Iron handle like object. Perhaps from a vessel?	Unknown
227	3065	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
228	3065	Militaria	Uniform/clothing	Eyelet	Copper Alloy	Partial	Partial Clothing Fixture from uniform item.	Garment closure
229	3170	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Miniè type Bullet.	Projectile
230	3170	Militaria	Equipment	Spoon / spatula	Fe	Complete	Small Iron Spatula/Spoon.	Utensil
231	1001=3027	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Copper alloy trouser button with four holes for sewing onto fabric.	Trouser Button
232	3056	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Copper alloy trouser button with four holes for sewing onto fabric.	Trouser Button
233	3056	Militaria	Munitions	Powder flask stopper	Cu Alloy & cork	Complete	Powder flask stopper/stopper?	Stopper
234	3056	Militaria	Uniform/clothing	Textile	Fabric-Linen?	Fragment	Fragment of cloth. Linen?	Clothing textile
235	3056	Militaria	Uniform/clothing	Eyelet	Copper Alloy	Complete	Clothing Fixture from uniform item.	Garment closure

ID No.	Context	Category	Sub-Category	Object	Material	Portion	Decoration / Description	Function
236	3056	Militaria	Uniform/clothing	Hook	Copper Alloy	Complete	2 x Collar Hooks from uniform item.	Garment closure
237	3056	Militaria	Munitions	Percussion cap	Copper Alloy	Complete	Percussion Caps x 3	Projectile primer
238	3056	Militaria	Uniform/clothing	Hook	Copper Alloy	Partial	4 x Collar Hooks (3 complete, 1 partial) from uniform item.	Garment closure
239	3056	Miscellaneous Metal	Other	Book clasp	Copper Alloy	Complete	Book clasp / decorative fixture from wooden box?	Clasp
240	3056	Militaria	Uniform/clothing	Button	Copper Alloy	Partial	Regimental Button – Backplate.'SMITH, KEMP & WRIGHT, BIRMINGHAM' on reverse. 1 button.	Regimental button
241	3056	Militaria	Munitions	Percussion cap	Copper Alloy	Complete	Percussion Cap	Projectile primer
242	3037	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet + wood plug.	Projectile
243	3037	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet + wood plug.	Projectile
244	3037	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet + wood plug.	Projectile
245	3037	Militaria	Munitions	Minié ball	Lead	Complete	0.550" Enfield Rifled Musket Minié type Bullet + wood plug.	Projectile
246	3027=1001	Militaria	Uniform/clothing	Button	Copper Alloy	Complete	Copper alloy trouser button with four holes for sewing onto fabric.	Trouser Button
247	3027=1001	Militaria	Equipment	Strap Plate	Copper Alloy	Fragment	Partial piece of copper strap plate from indeterminate object.	Unknown
248	3056	Miscellaneous Metal	Other	Seal/bottle closure/	Zinc	Fragments	6 x pieces of a Zinc bottle seal or cap with text, and image of a lion's head	Bottle closure
249	3133	Militaria	Equipment	Strap	Leather	Partial	Part of leather strapping with eyelet hole to receive securing prong.	Leather strap
250	3056	Militaria	Uniform/clothing	Button	Copper Alloy	Fragments	12 x fragments of copper alloy trouser button	Trouser Button
251	3056	Militaria	Equipment	Wire	Copper Alloy	Fragments	3 sections of copper wiring	Copper wire

ID No.	Context	Category	Sub-Category	Object	Material	Portion	Decoration / Description	Function
252	3056	Militaria	Equipment	Wire	Zinc copper Alloy	Partial	A single coiled piece of thick zinc/copper wire.	Copper wire
253	3056	Miscellaneous Metal	Other	Bottle seal	Zinc	Partial	A thin piece of zinc sheet bottle seal with text 'Victor...' and a young head Queen Victoria portrait looking to her right.	Bottle seal
254	3056	Militaria	Equipment	Copper strap plate	Copper Alloy	Fragments	7 x fragmented sections of copper strap plate.	Copper strap plate

Ceramics Assemblage

Context	Glaze	Base Colour	Body	Technique	Pattern Colour	Pattern Name	Makers Mark	Function	Form	NISP	MNI
1091	Clear	White	Whiteware	Handpainted	Red	Banded		Bathroom/Bedroom	Washbowl	10	1
1091	Clear	White	Whiteware	Handpainted	Red	Banded		Bathroom/Bedroom	Ewer	13	1
1091	Clear	White	Whiteware	Transfer	Red/Green	RR001		Bathroom/Bedroom	Chamber Pot	9	1
1091	Clear	White	Whiteware	Transfer	Blue	RR002	w...	Bathroom/Bedroom	Chamber Pot	16	2
1091	Clear	White	Whiteware	Transfer	Blue	RR003	england	Tableware	Teacup	6	1
1091	Clear	White	Whiteware	Transfer	Blue	RR004		Tableware	Side Plate	12	1
1091	Clear	White	Whiteware	Undecorated				Tableware	Saucer	3	1
1091	Clear	White	Semi-Vitreous	Transfer		RR005		Tableware	Teacup	1	1
1091	Clear	White	Whiteware	Relief		RR006		Tableware	Saucer	2	1
3006	Clear	White	Whiteware	Transfer	Blue	Willow		Tableware	Side Plate	3	1
3006	Clear	White	Whiteware	Transfer	Purple	RR007		Tableware	Teacup	1	1
3006	Clear	White	Whiteware	Handpainted	Blue	Banded		Tableware	Bowl/Cup	1	1
3006	Clear	White	Whiteware	Transfer	Polychrome	RR008		Bathroom/Bedroom	Pot Lid	1	1
3016	Clear	White	Whiteware	Transfer	Blue	Windsor		Tableware	Teacup	2	1
3021	Clear	White	Whiteware	Transfer	Green	Alhambra		Tableware	Teacup	10	1
1001	Clear	White	Whiteware	Transfer	Purple	Alhambra		Tableware	Saucer	1	0
1001	Clear	White	Whiteware	Transfer	Blue	Willow		Tableware	Plate	17	1
1001	Clear	White	Whiteware	Transfer	Purple	RR010		Tableware	Plate	1	1
1001	Clear	White	Whiteware	Transfer	Purple	RR011		Bathroom/Bedroom	Chamber Pot	1	0
1001	Clear	White	Whiteware	Handpainted	Black/Blue	Cornishware		Tableware	Teacup	4	1
1001	Clear	White	Whiteware	Undecorated				Bathroom/Bedroom	Ointment	1	1
1001	Blue	Blue	Earthenware	Undecorated				Tableware	Teacup	1	0

Context	Glaze	Base Colour	Body	Technique	Pattern Colour	Pattern Name	Makers Mark	Function	Form	NISP	MNI
1001	Clear	White	Whiteware	Transfer	Blue	RR012		Bathroom/Bedroom	Toilet Box Lid	2	1
1001	Clear	White	Whiteware	Transfer	Flow Blue	RR013		Tableware	Saucer	1	1
3035	Clear	White	Whiteware	Transfer	Flow Blue	RR014		Tableware	Teacup	1	1
3037	Clear	White	Whiteware	Transfer	Blue	Willow		Tableware	Plate	2	1
3037	Clear	White	Whiteware	Sprigged	Purple	Imitation Jasper		Tableware	Plate	1	0
3056	Clear	White	Whiteware	Transfer	Purple	Alhambra		Tableware	Saucer	4	1
3056	Clear	White	Whiteware	Transfer	Blue	Alhambra		Tableware	Saucer	1	1
3056	Clear	White	Whiteware	Handpainted	Blue	Banded		Tableware	Bowl/Cup	1	0
3056	Clear	White	Whiteware	Transfer	Blue	Albion		Tableware	Plate	20	1
3056	Clear	White	Whiteware	Transfer	Blue	Rhine		Tableware	Plate	8	1
3056	Clear	White	Whiteware	Transfer	Blue	Fibre		Tableware	Teacup	4	1
3056	Clear	White	Whiteware	Transfer	Purple	RR011		Bathroom/Bedroom	Chamber Pot	4	1
3056	Clear	White	Whiteware	Transfer	Blue	Willow		Tableware	Plate	64	0
3056	Clear	White	Whiteware	Transfer	Blue	RR012		Bathroom/Bedroom	Toilet Box Lid	1	0
3056	Blue	Blue	Earthenware	Undecorated				Tableware	Teacup	3	1
3056	Clear	White	Whiteware	Undecorated				Kitchenware	Cheese Pot	5	1
3056	Clear	White	Whiteware	Transfer	Flow Blue	RR013		Tableware	Saucer	1	0
3056	Clear	White	Whiteware	Transfer	Flow Blue	RR015		Tableware	Saucer	1	1
3056	Clear	White	Whiteware	Transfer	Blue	RR016		Tableware	Plate	2	1
3056	Clear	White	Whiteware	Transfer	Blue	RR017		Tableware	Plate	1	1
3056	Clear	White	Whiteware	Transfer	Blue	RR018		Tableware	Plate	1	1
3056	Clear	White	Whiteware	Undecorated				Bathroom/Bedroom	Ointment	2	1
3056	Clear	White	Whiteware	Transfer	Black	RR019		Tableware	Teacup	2	1
3056	Clear	White	Whiteware	Sponged/Handpainted	Purple	RR020		Tableware	Teacup	1	1
3056	Clear	White	Whiteware	Transfer	Green	RR021		Tableware	Teacup	1	1
3056	Brown	Brown	Earthenware	Undecorated				Unidentified	Unidentified	1	1
3056	Grey	Grey	Greyware	Handpainted	Gilt	RR022		Tableware	Jug	10	1
3056	Clear	White	Whiteware	Sponged	Blue	RR023		Tableware	Teacup	1	1
3062	Clear	White	Whiteware	Sponged	Blue	RR023		Tableware	Teacup	1	0
3065	Clear	White	Whiteware	Sprigged	Purple	Imitation Jasper		Tableware	Plate	5	1
3065	Clear	White	Whiteware	Transfer	Blue	Willow		Tableware	Plate	1	0
3005	Brown	Brown	Red Body	Undecorated				Tableware	Tea pot	15	1
3005	Clear	White	Whiteware	Transfer	Blue	Willow		Tableware	Plate	2	0
3005	Clear	White	Whiteware	Transfer	Purple	RR011		Bathroom/Bedroom	Chamber Pot	1	0
3182	Clear	White	Whiteware	Transfer	Green	RR009		Tableware	Teacup	2	1
3182	Clear	White	Whiteware	Transfer	Blue	Willow		Tableware	Plate	1	0
3182	Clear	White	Whiteware	Transfer	Purple	RR024		Tableware	Saucer	1	1
3182	Clear	White	Whiteware	Transfer	Purple	RR024		Tableware	Teacup	2	1

Context	Glaze	Base Colour	Body	Technique	Pattern Colour	Pattern Name	Makers Mark	Function	Form	NISP	MNI
1001	Clear	White	Whiteware	Transfer	Blue	Willow		Tableware	Plate	1	0
1001	Clear	Blue	Whiteware	Undecorated				Tableware	Plate	1	1
3056		Orange	Earthenware	Undecorated				Drainage	Field Tile	2	1
3056	Clear	White	Whiteware	Undecorated				Kitchenware	Cheese Pot	2	0
3056	Clear	White	Whiteware	Transfer	Purple	Alhambra		Tableware	Plate	2	1
3056	Clear	White	Whiteware	Transfer	Blue	Willow		Tableware	Plate	3	0
3056	Clear	White	Whiteware	Transfer	Flow Blue	RR025		Tableware	Teacup	1	1
1001	Manganese	Brown	Earthenware	Undecorated				Tableware	Teapot Lid	1	1
1001	Clear	White	Whiteware	Undecorated				Tableware	Plate	5	0
1001	Clear	White	Whiteware	Undecorated				Kitchenware	Cheese Pot	1	0
1001	Clear	White	Whiteware	Transfer	Brown	RR026		Tableware	Teacup	1	1
1001	Clear	White	Whiteware	Undecorated				Tableware	Plate	1	0
1001	Clear	White	Whiteware	Transfer	Brown	RR027		Tableware	Unidentified	1	1
1001	Clear	White	Whiteware	Undecorated				Bathroom/Bedroom	Container	1	1
1001	Clear	White	Whiteware	Transfer	Blue	RR028		Tableware	Plate	1	1
1001	Clear	White	Whiteware	Transfer	Blue	RR029		Tableware	Plate	1	1
1010	Clear	White	Whiteware	Transfer	Blue	Albion		Tableware	Plate	8	1
1001	Clear	Brown	Earthenware	Undecorated				Kitchenware	Container	45	1
1001	Clear	White	Whiteware	Transfer	Blue	RR030		Tableware	Plate	1	1
1001	Clear	White	Whiteware	Transfer	Dark Grey	RR031		Tableware	Teacup	1	1
1090	Clear	Cream	Whiteware	Transfer	Polychrome	RR032		Tableware	Plate	1	1
1001	Clear	White	Whiteware	Transfer	Blue	RR033		Tableware	Plate	1	0
1010	Clear	White	Whiteware	Transfer	Blue			Tableware	Plate	1	0
Unstratified	Clear	White	Whiteware	Transfer	Blue	Willow		Tableware	Plate	1	0
Unstratified	Clear	White	Whiteware	Transfer	Flow Blue	RR034		Tableware	Saucer	1	1
1007	Clear	White	Whiteware	Transfer	Blue	Willow		Tableware	Plate	3	0
1007	Clear	White	Whiteware	Undecorated				Tableware	Plate	1	0
1001	Clear	White	Whiteware	Transfer	Blue	Fibre		Tableware	Saucer	13	1
1001	Clear	White	Whiteware	Transfer	Blue	Fibre		Tableware	Teacup	5	1
1001	Clear	White	Whiteware	Transfer	Blue	Rhine		Tableware	Side Plate	13	1
1001	Clear	White	Whiteware	Transfer	Blue	Rhine		Tableware	Plate	7	1
1001	Clear	White	Whiteware	Undecorated				Various	Various	60	0
1001	Clear	White	Whiteware	Transfer	Blue	Asiatic Pheasants		Tableware	Plate	2	1
1001	Clear	White	Whiteware	Transfer	Blue	Asiatic Pheasants		Tableware	Soup Plate	4	1
1001	Clear	White	Whiteware	Transfer	Black	Chios		Tableware	Plate	2	1
1001	Clear	White	Whiteware	Transfer	Purple	Alhambra		Tableware	Saucer	10	1
1001	Clear	White	Whiteware	Transfer	Blue	Alhambra		Tableware	Teacup	1	0
1001	Clear	White	Whiteware	Transfer	Blue	Alhambra		Tableware	Plate	1	1

Context	Glaze	Base Colour	Body	Technique	Pattern Colour	Pattern Name	Makers Mark	Function	Form	NISP	MNI
1001	Clear	White	Whiteware	Sprigged	Blue	Imitation Jasper		Tableware	Plate	2	1
1001	Clear	White	Whiteware	Sprigged	Blue	Imitation Jasper		Tableware	Saucer	2	1
1001	Clear	White	Whiteware	Transfer	Blue	Italian Lakes		Tableware	Plate	4	1
1001	Clear	White	Whiteware	Transfer	Blue	Albion		Tableware	Plate	18	1
1001	Clear	White	Whiteware	Transfer	Brown	RR035		Tableware	Teacup	2	1
1001	Clear	White	Whiteware	Transfer	Brown	Asiatic Pheasants		Bathroom/Bedroom	Shaving Mug	12	1
1001	Clear	White	Whiteware	Transfer	Blue	Windsor		Tableware	Saucer	9	1
1001	Clear	White	Whiteware	Transfer	Blue	Willow		Tableware	Plate	45	5
1001	Clear	White	Whiteware	Transfer	Flow Blue	Chusan		Tableware	Saucer	12	1
1001	Clear	White	Whiteware	Undecorated				Kitchenware	Cheese Pot	15	1
1001	Clear	White	Whiteware	Undecorated				Bathroom/Bedroom	Ointment	1	1
1001	Clear	White	Whiteware	Undecorated				Bathroom/Bedroom	Ointment Lid	3	1
1001	Clear	White	Whiteware	Transfer	Purple	Cable		Tableware	Plate	1	1
1001	Clear	White	Whiteware	Relief/Handpainted	Blue	Shell Edge		Tableware	Plate	2	1
1001	Clear	White	Whiteware	Handpainted	Blue	Banded		Tableware	Side Plate	1	1
1001	Clear	White	Whiteware	Transfer	Purple	Clyde		Unidentified	Unidentified	1	1
1001	Clear	White	Whiteware	Transfer	Black	Dover		Tableware	Teacup	1	1
1001	Clear	White	Whiteware	Transfer	Green	RR036		Tableware	Teacup	1	1
1001	Clear	White	Whiteware	Transfer	Green	RR036		Tableware	Saucer	1	1
1001	Clear	White	Whiteware	Transfer	Blue	RR037		Tableware	Plate	4	1
1001	Clear	White	Whiteware	Handpainted	Purple	RR038		Tableware	Teacup	4	1
1001	Clear	White	Whiteware	Transfer	Green	RR039		Tableware	Plate	2	1
1001	Clear	White	Whiteware	Transfer	Brown	RR040		Tableware	Teacup	2	1
1001	Clear	White	Whiteware	Transfer	Flow Blue	RR041		Tableware	Teacup	1	1
1001	Clear	White	Whiteware	Transfer	Green	RR042		Tableware	Saucer	1	1
1001	Clear	White	Whiteware	Transfer	Polychrome	RR043		Tableware	Teacup	1	1
1001	Clear	White	Whiteware	Transfer	Green	RR044		Bathroom/Bedroom	Ewer	5	1
1001	Clear	White	Whiteware	Transfer	Flow Blue	Chusan		Tableware	Saucer	1	0
1001	Clear	White	Whiteware	Transfer	Blue	Willow		Tableware	Plate	1	0
1001	Clear	White	Whiteware	Transfer	Blue	RR045		Tableware	Plate	1	1
1001	Green		Majolica	Relief/Handpainted		RR046		Kitchenware	Jug/Vase	1	1
1001	Clear	White	Whiteware	Sponged	Green	RR047		Kitchenware	Jug Handle	1	1
1001	Clear	White	Whiteware	Transfer	Blue	RR033		Tableware	Saucer	3	1
1001	Clear	White	Whiteware	Transfer	Grey	RR048		Tableware	Teacup	17	1
1001	Clear	White	Whiteware	Transfer	Purple	RR049		Tableware	Teacup	2	1
1001	Clear	White	Whiteware	Transfer	Blue	RR050		Tableware	Saucer	3	1
1001	Clear	White	Whiteware	Transfer	Blue	RR051		Tableware	Plate	2	1

Context	Glaze	Base Colour	Body	Technique	Pattern Colour	Pattern Name	Makers Mark	Function	Form	NISP	MNI
1001	Clear	White	Whiteware	Transfer	Blue	RR052		Tableware	Plate	1	1
1001	Clear	White	Whiteware	Transfer	Blue	RR053		Tableware	Plate	1	1
1001	Clear	White	Whiteware	Transfer	Blue	RR054		Tableware	Teacup	1	1
1001	Clear	White	Whiteware	Transfer	Blue	RR055		Tableware	Various	16	0
1001	Brown	Brown	Earthenware	Undecorated				Tableware	Tea Pot	2	1
1001	Clear	White	Whiteware	Transfer	Dark Grey	RR056		Tableware	Tureen Handle	1	1
1001	Clear	White	Whiteware	Transfer	Grey	RR057		Tableware	Tureen Handle	1	1
1001	Clear	White	Whiteware	Transfer	Grey	RR058		Tableware	Tureen Foot	1	1
1001	Clear	White	Whiteware	Transfer	Grey	RR059		Tableware	Plate	1	1
1001	Clear	White	Whiteware	Relief				Tableware	Plate	1	1
1001	Clear	White	Whiteware	Relief				Kitchenware	Jug/Vase	1	1
1001	Clear	White	Whiteware	Relief	Blue/Pink			Kitchenware	Jug/Vase	1	1
1001	Clear	White	Whiteware	Relief	Brown/Pink			Kitchenware	Jug/Vase	1	0
1001	Clear	Blue	Whiteware	Undecorated				Tableware	Saucer	10	1
1001	Clear	Blue	Blueware	Moulded/Handpainted	Gilt			Tableware	Jug	14	1

Stoneware Assemblage

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NISP	MNI	Colour	Stamp
3005	Household	Ink		rolled	51	113	complete	1	1	fawn	vitreous stone bottle warranted not to absorb J Bourne patentee Denby & Codnor Park potteries....Denby
3005	Food	Oyster Jar			85		base and part body	1	1	cream/tan	
3005	Food	o'					body fragments	2	0	cream/tan	
3182	Household	Ink	Penny		48	42	complete	1	1	beige	
3182	Unidentified	Oyster Jar					body fragments	1	0	cream/tan	
3006	Food	Oyster Jar					shoulder and body fragments	3	0	cream/tan	
3062	Alcohol	Beer					part base and body	4	1	cream	
3065	Household	Blacking	large		74	184	complete	2	1	light fawn	
3056	Household	Ink	Penny		49	45	complete	1	1	light fawn	
3056	Household	Ink	Penny		45	40	complete	1	1	light fawn	
3056	Household	Ink	Penny		46	49	complete	1	1	brown	
3056	Household	Ink	Penny		47	49	complete	1	1	brown	

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NISP	MNI	Colour	Stamp
3056	Food	Preserves/Oyster Jar			79		base and most body	1	1	cream/tan	Powell Bristol
3056	Food	Preserves/Oyster Jar			85		base and most body	1	1	cream/tan	Doulton & Watts/Lambeth Pottery
3056	Food	Preserves/Oyster Jar					part base and body	1	1	cream	Doulton & W...//Lambeth Pot...
3056	Food	Preserves/Oyster Jar					part rim	1	0	tan	
3056	Unidentified	Bottle					shoulder fragment	1	0	brown	
3056	Household	Ink			41	110	complete	1	1	brown	
3056	Household	Ink	Penny		45	48	complete	1	1	fawn	
3056	Household	Ink	Penny		48	48	missing part body	5	1	brown	
3056	Household	Ink	Penny				almost complete in pieces	8	1	grey/fawn	
3056	Household	Ink	Penny	Reel			almost complete in pieces	6	1	light brown	
3056	Food	Preserves					rim	1	0	fawn	
3056	Food	Preserves					part rim	11	0	fawn	
3056	Food	Preserves/Oyster Jar					shoulder fragments	15	0	cream/tan	
3056	Food	Preserves/Oyster Jar					body fragments	7	0	cream/tan	
3056	Household	Ink	Penny	Reel			body fragments	5	1	light brown	
3056	Household	Ink			52		base and part body	1	1	cream	
3056	Food	Preserves/Oyster Jar					part base and body	1	0	cream	...atts//...tery
3056	Alcohol	Beer	Porter	Collar Band			fragments	12	0	cream	
3056	Food	Preserves/Oyster Jar					part base and body	1	1	cream	....pottery/london
3056	Food	Preserves/Oyster Jar					body fragments	10	0	cream	
3056	Unidentified	Bottle					part bases	10	0	cream	
3056	Household	Ink	Penny				body fragments	1	0	light brown	
3056	Household	Ink			42	106	complete	1	1	grey/fawn	
3056	Household	Ink	Penny		51	51	complete	1	1	light brown	
3056	Food	Preserves/Oyster Jar					rim	1	0	tan	
3056	Food	Preserves/Oyster Jar					part rim	4	0	tan	

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NISP	MNI	Colour	Stamp
3056	Food	Preserves/Oyster Jar					part shoulder/body	3	0	cream/tan	
3056	Household	Ink	Penny				body fragments	1	0	brown	
3056	Food	Preserves/Oyster Jar					part base	1	0	cream	
3056	Food	Preserves/Oyster Jar					shoulder fragment	1	0	tan	
3056	Food	Preserves/Oyster Jar					part rim	1	0	tan	
3056	Food	Storage Container					part shoulder and body	13	1	brown	
3037	Household	Ink	Penny	Reel	47	47	almost complete	1	1	light brown	
3061	Household	Ink/Stopper	Penny	Reel	42	46	almost complete, chipped base	1	1	light brown	edge of base has been chipped, possibly to reuse as stopper
3019	Household	Ink	Penny		46	44	complete	1	1	light brown	
3019	Household	Storage Container					part base and body	8	1	brown	
1001	Household	Ink	Penny				rim and part body	1	1	brown	
1001	Food	Preserves/Oyster Jar					part rim	4	0	tan	
1001	Food	Preserves/Oyster Jar					body fragments	14	0	cream/tan	
1001	Household	Blacking			60	127	complete	1	1	brown	
1001	Food	Preserves/Oyster Jar			84	121	almost complete	1	1	cream/tan	Doulton & Watts/Lambeth Pottery
1001	Household	Ink	Penny		45	41	complete	1	1	brown	
1001	Household	Ink	Penny		47	47	complete	1	1	variegated brown	
1001	Household	Ink	Penny		47	51	complete	1	1	variegated brown	
1001	Household	Ink	Penny		49	47	complete	1	1	light brown	
1001	Household	Ink	Penny		41	48	complete	1	1	light brown	
1001	Household	Ink	Penny		50	52	complete	1	1	variegated brown	
1001	Household	Ink	Penny		48	50	complete	1	1	light brown	
1001	Household	Ink	Twopenny		60	53	complete	1	1	light brown	
1001	Household	Ink	Twopenny		56	51	complete	1	1	brown	
1001	Food	Preserves/Oyster Jar			81		part base and body	1	1	cream	

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NISP	MNI	Colour	Stamp
1001	Food	Preserves/Oyster Jar					body fragments	17	0	cream	
1001	Food	Preserves/Oyster Jar					body fragments	34	0	cream/tan	
1001	Food	Preserves/Oyster Jar					rim	1	0	tan	
1001	Food	Preserves/Oyster Jar					rim	1	0	tan	
1001	Food	Preserves/Oyster Jar					rim	1	0	tan	
1001	Food	Preserves/Oyster Jar					rim	1	0	tan	
1001	Food	Preserves/Oyster Jar					part rim	1	0	tan	
1001	Food	Preserves/Oyster Jar					part rim	1	0	tan	
1001	Food	Preserves/Oyster Jar					part rim	9	0	tan	
1001	Food	Preserves/Oyster Jar			85		half base	1	1	cream	
1001	Food	Preserves/Oyster Jar					part base	1	1	cream	
1001	Food	Preserves/Oyster Jar					part base	1	1	cream	
1001	Food	Preserves/Oyster Jar					body fragments	11	0	cream	
1001	Food	Preserves/Oyster Jar					body fragments	29	0	cream/tan	
1001	Food	Preserves/Oyster Jar					rim	1	0	tan	
1001	Food	Preserves/Oyster Jar					part rim	9	0	tan	
1001	Household	Ink	Penny				body fragments	4	1	fawn	
1001	Household	Blacking			57		base and part body	1	1	brown	
1001	Food	Preserves/Oyster Jar			81		base and part body	1	1	cream	Doulton & Watts/Lambeth Pottery
1001	Food	Preserves/Oyster Jar					part base and body	1	1	cream	Doulton & Watts/Lambeth Pottery
1001	Food	Preserves/Oyster Jar					part base and body	2	1	cream	Powell Bristol

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NISP	MNI	Colour	Stamp
1001	Household	Blacking					body fragments	2	0	brown	
1001	Unidentified	Bottle					body fragments	2	0	fawn	
1001	Household	Ink	Penny				body fragments	1	0	brown	
1001	Household	Container					shoulder fragment	1	1	brown/dark brown	
1001	Food	Preserves/Oyster Jar			77		base and part body	1	1	cream	
1001	Food	Preserves/Oyster Jar			83		base and part body	1	1	cream	Doulton & Watts/Lambeth Pottery
1001	Food	Preserves/Oyster Jar			82		base and part body	1	1	cream	Doulton & Co/Lambeth Pottery
1001	Food	Preserves/Oyster Jar			85		base and part body	1	1	cream	Doulton & Watts/Lambeth Pottery
1001	Food	Preserves/Oyster Jar			83		base and part body	1	1	cream	Doulton & Co/Lambeth Pottery
1001	Food	Preserves/Oyster Jar			81		part base and body	2	1	cream	Doulton & Watts/Lambeth Pottery
1001	Food	Preserves/Oyster Jar					part base	2	1	cream	Powell Bristol
1001	Food	Preserves/Oyster Jar					part base	1	1	cream	Powell Bristol
1001	Food	Preserves/Oyster Jar					part base	1	1	cream	Doulton & Watts/Lambeth Pottery
1001	Food	Preserves/Oyster Jar					part base	1	1	cream	Doulton & Watts/Lambeth Pottery
1001	Food	Preserves/Oyster Jar					part base	1	1	cream	
1001	Food	Preserves/Oyster Jar					part base	1	0	cream	
1001	Food	Preserves/Oyster Jar					part base	1	0	cream	
1001	Food	Preserves/Oyster Jar		Wide			rim	1	0	tan	
1001	Food	Preserves/Oyster Jar		Wide			part rim	1	0	tan	
1001	Food	Preserves/Oyster Jar		Wide			part rim	1	0	tan	
1001	Household	Blacking					part base and body	1	1	brown	

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NISP	MNI	Colour	Stamp
1001	Household	Ink	Penny				part base and body	2	1	brown	
1007	Household	Ink			53		base part body	1	1	cream	John Cliff & Co Lambeth
1001	Household	Ink	Penny				body fragments	2	0	brown	
1001	Unidentified	Bottle					body fragments	3	0	cream	
1001	Food	Preserves/Oyster Jar		rolled			body fragments	2	0	cream/tan	
3005	Household	Ink			51	113	complete	1	1	fawn	vitreous stone bottle warranted not to absorb j bourne patentee Denby & Codnor park potteries....Denby

Clay Tobacco Pipe Assemblage

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
1001	no	28.26					part stem	1					0	0	0	
1001	no	26.71					part stem	1					0	0	0	
1001	no	36.32				tooth grip	part stem	1					0	0	0	
1001	no	46.65					part stem	1					0	0	0	
1001	no	57.78					part stem	1					0	1	0	
1001	no	39.8					part stem	1					0	0	0	
1001	no	59.94					part stem	1					0	1	0	
1001	no	61.15					part stem	1					0	1	0	lightly burned in fire
1001	no	53.72					part stem	1					0	1	0	
1001	no	64.32					part stem	1					0	1	0	
1001	no	34.82					part stem	1					0	0	0	
1001	no	46.42					part stem	1					0	0	0	
1001	no	26.4					part stem	1					0	0	0	
1001	no	33.72					part stem	1					0	0	0	
1001	no	16.28					part stem	1					0	0	0	
1001	no	42.8					part stem	1					0	0	0	
1001	no	33.06					part stem	1					0	0	0	
1001	no	24.05				rolled	part stem	1					0	0	0	
1001	no	20.93					part stem	1					0	0	0	
1001	no	21.18					part stem	1					0	0	0	
1001	no	21.12				rolled	part stem	1					0	0	0	tooth grip
1001	no	31.18					part stem	1					0	0	0	
1001	no	23.99					part stem	1					0	0	0	
1001	no	25.23					part stem	1					0	0	0	

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
1001	no	27.75					part stem	1					0	0	0	
1001	no	17.96					part stem	1					0	0	0	
1001	no	24.71					part stem	1					0	0	0	
1001	no	28.71					part stem	1					0	0	0	
1001	no	17.54					part stem	1					0	0	0	
1001	no	28.27					part stem	1					0	0	0	
1001	no	26.45					part stem	1					0	0	0	
1001	no	12.03					part stem	1					0	0	0	
1001	no	31.11					part stem	1					0	0	0	
1001	no	31.82				tooth grip	part stem	1					0	0	0	
1001	no	35.47					part stem	1					0	0	0	lightly burned in fire
1001	no	20.89					part stem	1					0	0	0	
1001	no	17.89					part stem	1					0	0	0	
1001	no	16.39					part stem	1					0	0	0	
1001	no	24.42					part stem	1					0	0	0	
1001	no	44.83					part bowl and part stem	1					1	0	0	
1001	no	24.23					part stem	1					0	0	0	
1001	no	26.19					part stem	1					0	0	0	
1001	no	33.53					part stem	1					0	0	0	
1001	no	23.16					part stem	1					0	0	0	
1001	no	26.2					part stem	1					0	0	0	
1001	no	41.06					part stem	1					0	0	0	
1001	no	28.14					part stem	1					0	0	0	
1001	no	40.77					part stem	1					0	0	0	
1001	no	25.47					part stem	1					0	0	0	
1001	no	18.12					part stem	1					0	0	0	
1001	no	28.7					part stem	1					0	0	0	blackened by fire
1001	no	49.4					part stem	1					0	0	0	
1001	no	34.63					part stem	1					0	0	0	lightly burned by fire
1001	no	18.98					part stem	1					0	0	0	
1001	brown	19.95					part stem	1					0	0	0	
1001	no	30.51					part stem	1					0	0	0	lightly burned by fire
1001	no	37.36					part stem	1					0	0	0	
1001	no	15.03					part stem	1					0	0	0	blackened by fire
1001	brown	31.57					part stem	1					0	0	0	
1001	no	20.04					part stem	1					0	0	0	moderately burned by fire
1001	no	22					part stem	1					0	0	0	
1001	no	34.09					part stem	1					0	0	0	

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
1001	no	26.01					part stem	1					0	0	0	diamond cross-section
1001	no	36.25				rolled	part stem	1					0	0	0	
1001	no	15.31				rolled	part stem	1					0	0	0	
1001	no	23.36				rolled	part stem	1					0	0	0	
1001	no	34.47				rolled	part stem	1					0	0	0	
1001	no	31.48					part stem	1					0	0	0	moderately burned by fire
1001	no	28.07					part bowl and part stem	1					1	0	0	
1001	no	36.11			yes		part bowl and part stem	1					1	0	0	
1001	no	35.22			yes		part bowl and part stem	1					1	0	0	
1001	no	65.34					stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	69.08					stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	25.94					part stem	1	...Dougall	Glasgow		McDougall	0	1	0	
1001	no	39.38					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	52.26					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	52.4					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	63.19					part stem	1	McDougall	Glasgow		McDougall	0	1	0	lightly burned by fire at one end
1001	no	51.13					part stem	1	McDougall	Glasgow		McDougall	0	1	0	heavily burned by fire
1001	no	39.48					part stem	1	McDouga...	...asgow		McDougall	0	1	0	
1001	no	48.04					part bowl and part stem	1	McDouga..	...lasgow			0	0	1	
1001	no	28.32					part stem	1	McDouga..	Glasgow		McDougall	0	1	0	lightly burned at one end
1001	no	33.36					part stem	1	McDoug...	...asgow		McDougall	0	1	0	
1001	no	27.65			yes		part bowl and part stem	1	McD...				1	0	0	
1001	no	36.08					part stem	1	McDoug...	...gow		McDougall	0	1	0	
1001	no	47.02					part stem	1	...gall	Glas...		McDougall	0	1	0	moderately burned at one end
1001	no	54.86					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	32.22					part stem	1	McDoug...	...asgow		McDougall	0	1	0	
1001	no	27.33					part stem	1	...cDougall	Glasg..		McDougall	0	1	0	
1001	no	33.11					part stem	1	McDo...	...ow			0	0	0	
1001	no	36.09					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	39.72					part stem	1	McDoug...	...sgow		McDougall	0	1	0	

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
1001	no	29.47					part stem	1	...all	Gla...			0	0	0	
1001	no	20.86					part stem	1	...gall	Glasg...		McDougall	0	1	0	
1001	no	34.26					part stem	1	...all	Gl...			0	0	0	
1001	no	30.59					part stem	1	McDoug...	Glasgow		McDougall	0	1	0	
1001	no	26.89					part stem	1	...ll				0	0	0	
1001	no	29.75					part stem	1	McDoug...			McDougall	0	1	0	heavily burned by fire
1001	no	20.02					part stem	1	...ll				0	0	0	
1001	no	14.2					part stem	1	...all				0	0	0	
1001	no	40.01					part bowl and part stem	1	McDougall				0	0	1	
1001	no	36.54					part stem	1	McDougall	Glasgow		McDougall	0	1	0	blackened by fire
1001	no	30.71					part stem	1		...lasgow	Bu..		0	1	0	lightly burned by fire
1001	no	47.63					part stem	1	...ll	Glasgow	Burns Cu..	McDougall	0	1	0	
1001	no	32.5					part stem	1	...gall	Glasgow	Burns Cutty..	McDougall	0	1	0	
1001	no	34.25					part stem	1	McDougall		...ns Cutty Pipe	McDougall	0	1	0	
1001	no	53.11					part stem	1	McDougall	Glasgo...	Burns Cutty Pipe	McDougall	0	1	0	
1001	no	38.02					part stem	1	Baltic//Yachter			Unidentified - Baltic Yachter	0	1	0	
1001	no	38.53					part stem	1	...ltic			Unidentified - Baltic Yachter	0	1	0	
1001	no	44.76					part stem	1	Balti../.achter				0	0	0	
1001	no	27.18					part stem	1	Bal../Yachter			Unidentified - Baltic Yachter	0	1	0	
1001	no	25.32					part stem	1	Baltic//Yachter			Unidentified - Baltic Yachter	0	1	0	
1001	no	41.88					part stem	1	L. Fiolet St Omer Depose			Louis Fiolet	0	1	0	
1001	no	34.62					part stem	1					0	0	0	lightly burned by fire
1001	no	22.06					part stem	1					0	0	0	
1001	no	25.28					part stem	1					0	0	0	
1001	no	20.36					part stem	1					0	0	0	
1001	no		31.07	22.5			bowl and part stem	1	McDou..		...tty pipe		1	0	0	
1001	no		38.77	25.91			bowl	1					1	0	0	

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
1001	no		35.74	27.75			bowl	1					1	0	0	
1001	no		34.93	23.23	yes		bowl and part stem	1					1	0	0	
1001	no		35.5	22.72			bowl	1					1	0	0	
1001	no						part bowl	36					0	0	0	
1001	no						part bowl	1					1	0	0	light brown clay
1001	no						part bowl	1			vertical ridges		1	0	0	
1001	no				yes		part bowl	1					0	0	0	
1001	no				yes		part bowl	1					0	0	0	
1001	no						part bowl	1			McDoug..G.. In shield		1	0	0	
1001	no						part bowl	1			139 (words above and below unreadable)		1	0	0	
1001	no						part bowl	1			T (TD)		1	0	0	
1001	no						part bowl	1			D (TD)		0	0	0	
1001	no						part bowl	1			T (TD)		1	0	0	
1001	no	47.04					part stem	1					0	0	0	lightly burned by fire
1001	no	29.86					part stem	1	Bal...//..achter			Unidentified - Baltic Yachter	0	1	0	
1001	no	36.31			yes		part stem	1	McD...	...ow			0	0	0	
1001	no	43.93					part stem	1	...ic				0	0	0	
1001	no	43.47					part stem	1					0	0	0	lightly burned by fire at one end
1001	no	17.59					part stem	1					0	0	0	
1001	no	31.8					part stem	1					0	0	0	lightly burned by fire
1001	no	40.94					part stem	1					0	0	0	lightly burned by fire at one end
1001	no	37.58					part stem	1					0	0	0	lightly burned by fire
1001	no	18.75					part stem	1					0	0	0	
1001	no	15.56					part stem	1					0	0	0	
1001	no	16.5					part stem	1					0	0	0	
1001	no	14.68				rolled	part stem	1					0	0	0	
1001	light yellow	50.03					part stem	1					0	1	0	
1001	no	43.89					part stem	1	...gall			McDougall	0	1	0	
1001	no	49.23					part stem	1	McDougall	Glasgow		McDougall	0	1	0	moderately burned at one end
1001	no	26.33					part stem	1	Mc...				0	0	0	
1001	no	28.95					part stem	1	Do...	...ow		McDougall	0	1	0	probably Doral 1

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
1001	no	34.83					part bowl and part stem	1					1	0	0	
1001	no	24.06			yes		part bowl and part stem	1					1	0	0	
1001	no	23.82					part bowl and part stem	1					1	0	0	moderately burned by fire
1001	no	34.7			yes		part bowl and part stem	1					1	0	0	composite stem
1001	no	28.49					part stem	1	T...	...nd		Theophilus Milo	0	1	0	curved stem
1001	no	26.58					part stem	1	T. Milo	...rand		Theophilus Milo	0	1	0	curved stem
1001	no	33.14					part stem	1	T. Milo	Strand		Theophilus Milo	0	1	0	curved stem
1001	no						part bowl	6					0	0	0	
1001	no						part bowl	1	...gall				1	0	0	
1001	no						part bowl	1	T.D.				1	0	0	
1001	no						part bowl	1					0	0	0	relief - plant
1001	no						part bowl	1					0	0	0	relief - plant
1001	no						part bowl	1					0	0	0	relief - vertical bars
1001	no						part bowl	1					0	0	0	relief - face
1001	no		37.55	24.78			bowl	1	McDougall	Glasgow			1	0	0	
1001	no		44.1	24.34			bowl	1					1	0	0	relief - plant
3061	no						part bowl	1					0	0	0	relief - wreath/crown (see bowl from 3056)
3061	no	48.85					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
3057	no	19.82					part stem	1					0	0	0	
3057	no	53.83					part stem	1					0	1	0	
3057	no	55.92					part stem	1	...lo's English Courier			Theophilus Milo	0	1	0	
3057	no	41.22					part bowl and part stem	1					1	0	0	
3182	brown	19					part stem	1					0	0	0	
3182	no	20.37					part stem	1					0	0	0	
3182	no	36.13					part stem	1					0	0	0	
3182	no	46.63					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
3035	no	28.77					part stem	1	McDoug...	...lasgow		McDougall	0	1	0	
3170	no	43.37					part stem	1	McDougal...	...asgow		McDougall	0	1	0	
3062	no	56.52					part stem	1					0	1	0	

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
3062	no	42.2					part stem	1					0	0	0	
3062	no	69.7					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
3062	no	49.84					part stem	1					0	0	0	
3062	no	57.36					part stem	1					0	1	0	
3062	no	54.15			yes		part stem	1	McDoug...	...gow		McDougall	0	1	0	
3062	no						part bowl	1					0	0	0	
3062	no		39.48	29.76			bowl and part stem	1					1	0	0	
3056	no						part bowl	1					0	0	0	
3056	no	27.39					part stem	1	McDougal...	Glasgow		McDougall	0	1	0	
3056	no	54.26					part bowl and part stem	1	McDougall	Glasg...	...urns Cutty Pipe		1	0	1	
3056	no		43.25	28.43			bowl	3					1	0	0	relief - face/wreath/crown
3056	no	34.89					part stem	1					0	0	0	
3056	no						part bowl	2					0	0	0	
3056	no	23.5				rolled	part stem	1					0	0	0	
3056	no				yes		part bowl and spur	1					1	0	0	
3037	no	46.95					part stem	1					0	0	0	
3037	no	38.44					part bowl and part stem	2					1	0	0	
3037	no	61.37					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
3037	no	65.88	34.59	25.06			bowl and part stem	1					1	0	0	
3056	no	21.3					part stem	1	...l	Glasgow	Burns C...		0	0	0	
3056	no	45.86					part stem	1	Tho. White & Co	E...	Burns's Cutty	Thomas White & Co	0	1	0	
3056	no	76.28					stem	1	McDougall	Glasgow		McDougall	0	1	0	
3056	no	26.97					part bowl and part stem	1	McD...				1	0	0	
3056	no	45.15					part stem	1	...all				0	0	0	
3056	no	41.08					part stem	1	McDouga...	...asgow		McDougall	0	1	0	
3056	no	40.18					part stem	1	McDougall			McDougall	0	1	0	
3056	no	62.41					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
3056	no	46.8					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
3056	no	81.23					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
3056	no	17.61					part stem	1	..Dougal...	Glasgo...		McDougall	0	1	0	
3056	no	39.36			yes		part stem	1	McDouga...	...lasgow		McDougall	0	1	0	
3056	no	56.41					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
3056	no	30.41					part stem	1	McDougall	Glasgow		McDougall	0	1	0	

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
3056	no	55.72					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
3056	no	41.23					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
3056	no	39.73			yes		part stem	1	McDouga...	Glasgow		McDougall	0	1	0	
3056	no	53.7					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
3056	no	33.52					part stem	1	McDoug...			McDougall	0	1	0	heavily burned by fire
3056	no	40.51					part stem	1	McDoug...	...gow		McDougall	0	1	0	
3056	no	35.86					part stem	1	...cDougall	Glasgow		McDougall	0	1	0	
3056	no	37.18					part stem	1	McDou...	...asgow		McDougall	0	1	0	
3056	no	45.34			yes		part stem	1	McDou...	...gow		McDougall	0	1	0	
3056	no	48.76					part stem	1	McDougall			McDougall	0	1	0	
3056	no	33.57			yes		part stem	1	McD...	...w			0	0	0	
3056	no	24.92					part stem	1	McDou...	...gow		McDougall	0	1	0	
3056	no	34.27					part stem	1	...Dougall	Glasgo...		McDougall	0	1	0	
3056	no	31.57					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
3056	no	43.9					part stem	1	McDougall...			McDougall	0	1	0	
3056	no	29.52					part stem	1	McDo.....gow			McDougall	0	1	0	
3056	no	35.45			yes		part stem	1	McDo...	...ow			0	0	0	
3056	no	16.77					part stem	1	...cDougall...	Glasgo...		McDougall	0	1	0	
3056	no	26.2			yes		part stem	1	M...				0	0	0	
3056	no	35.92					part stem	1	McDougall...			McDougall	0	1	0	
3056	no	39.71					part stem	1	McDougall	G...	Cutty Pipe	McDougall	0	1	0	
3056	no	36.71					part stem	1	McDou...	...gow		McDougall	0	1	0	
3056	no	21.31					part stem	1	...Dougall	Glasgo...		McDougall	0	1	0	
3056	no	42.55					part stem	1	McDougall...	...lasgow		McDougall	0	1	0	
3056	no	33.26					part stem	1	...cDougall	Glasgow		McDougall	0	1	0	
3056	no	37.62					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
3056	no	40.64					part stem	1	McDouga...	...asgow		McDougall	0	1	0	
3056	no	22.63					part stem	1	McDou...	...sgow		McDougall	0	1	0	
3056	no	22.95					part stem	1	...ougall	Glasgo...		McDougall	0	1	0	
3056	no	20.23					part stem	1	...ugall	Glas...		McDougall	0	1	0	
3056	no	22.83					part stem	1	McDo...		...pe		0	0	0	
3056	no	27.73					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
3056	no	33.37					part stem	1	...ougall			McDougall	0	1	0	
3056	no	18.94					part stem	1	...ougall	Glasgo...		McDougall	0	1	0	
3056	no	21.96					part stem	1	Mc...				0	0	0	
3056	no	38.23					part stem	1					0	0	0	
3056	no	48.51					part stem	1					0	0	0	
3056	no	47.01				rolled	part stem	1					0	0	0	
3056	no	28.96					part bowl and part stem	1					1	0	0	
3056	no	46.4					part stem	1					0	0	0	heavily burned by fire

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
3056	no	26.29					part stem	1					0	0	0	
3056	no	33.52					part stem	1					0	0	0	
3056	no	26.4					part stem	1					0	0	0	
3056	no	33.31					part stem	1					0	0	0	
3056	no	29.69					part stem	1					0	0	0	
3056	no	26.38					part stem	1					0	0	0	
3056	no	28.12					part stem	1					0	0	0	heavily burned by fire
3056	no	41.48					part stem	1					0	0	0	
3056	no	46.39					part stem	1					0	0	0	
3056	no	30.23					part stem	1					0	0	0	
3056	no	58.61					part stem	1					0	1	0	
3056	no	43.84					part stem	1					0	0	0	
3056	no	49.72					part stem	1					0	0	0	heavily burned by fire
3056	no	31.71				rolled	part stem	1					0	0	0	
3056	no	29.59					part stem	1					0	0	0	
3056	no	18.39					part stem	1					0	0	0	
3056	no	31.43					part stem	1					0	0	0	
3056	no	25.21					part stem	1					0	0	0	
3056	no	28.72					part stem	1					0	0	0	
3056	no	30.18					part stem	1					0	0	0	
3056	no	26.06					part stem	1					0	0	0	heavily burned by fire
3056	no	29.75					part stem	1					0	0	0	
3056	no	35.89					part stem	1					0	0	0	burned by fire at one end
3056	no	27.98					part stem	1					0	0	0	moderately burned by fire
3056	no	41.61					part stem	1					0	0	0	
3056	no	53.06					part stem	1					0	1	0	
3056	no	55.17					part bowl and part stem	1					1	0	1	
3056	no	27.93					part stem	1					0	0	0	
3056	no	38.08					part stem	1					0	0	0	
3056	no	23.4			yes		part stem	1					0	0	0	lightly burned by fire
3056	no	34.71					part stem	1					0	0	0	
3056	no	36.78			yes		part stem	1	M...	...w			0	0	0	
3056	no	24.92				rolled	part stem	1					0	0	0	
3056	no	37.34					part stem	1					0	0	0	
3056	no	46.98					part stem	1					0	0	0	
3056	no	51.73					part stem	1					0	1	0	
3056	no	22.16				rolled	part stem	1					0	0	0	

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
3056	no	50.28				flat	part stem	1					0	1	0	
3056	no	29.89					part stem	1					0	0	0	
3056	no	55.2					part stem	1					0	1	0	heavily burned by fire
3056	no	14.32					part stem	1					0	0	0	
3056	no	39.09					part stem	1					0	0	0	relief - band around and along stem
3056	no	35.1					part stem	1					0	0	0	heavily burned by fire
3056	no	37.65					part stem	1					0	0	0	
3056	no	77.2					part stem	1					0	1	0	slight curved on stem
3056	no	26.72					part stem	1					0	0	0	heavily burned by fire
3056	no	25.5					part stem	1					0	0	0	
3056	no	27.15					part stem	1					0	0	0	burned by fire at one end
3056	no	30.68				rolled	part stem	1					0	0	0	diamond cross-section near end
3056	no	43.49			yes		part stem	1	McD...				0	0	0	
3056	no	27.19					part stem	1					0	0	0	
3056	no	30.88					part stem	1					0	0	0	
3056	no	38.53					part stem	1					0	0	0	
3056	no	38.69					part stem	1					0	0	0	
3056	no	38.33					part stem	1					0	0	0	
3056	no	33.25				flat	part stem	1					0	0	0	
3056	no	39.14				rolled	part stem	1					0	0	0	
3056	no	20.42					part stem	1					0	0	0	
3056	no	33.02					part stem	1					0	0	0	
3056	no	26.96					part stem	1					0	0	0	
3056	no	40.14					part stem	1					0	0	0	heavily burned by fire
3056	no	33.23					part stem	1					0	0	0	
3056	no	27.61					part stem	1					0	0	0	
3056	no	20.13					part stem	1					0	0	0	
3056	no	43.85					part stem	1					0	0	0	
3056	no	40.86					part stem	1					0	0	0	
3056	no	44.75					part stem	1					0	0	0	
3056	no	36.83					part stem	1					0	0	0	
3056	no	31.91					part stem	1					0	0	0	
3056	no	36.38				flat	part stem	1					0	0	0	
3056	no	29.93					part stem	1					0	0	0	
3056	no	38.4					part stem	1					0	0	0	
3056	no	21.85					part stem	1					0	0	0	
3056	no	38.09					part stem	1					0	0	0	

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
3056	no	26.71					part stem	1					0	0	0	
3056	no	26.3					part stem	1					0	0	0	
3056	no	27.07					part stem	1					0	0	0	heavily burned by fire
3056	no	36.63					part stem	1					0	0	0	heavily burned by fire
3056	no	23.02					part stem	1					0	0	0	heavily burned by fire
3056	no	40.83					part stem	1					0	0	0	heavily burned by fire
3056	no	35.03					part stem	1					0	0	0	heavily burned by fire
3056	no	25.61					part stem	1					0	0	0	
3056	no	21.39					part stem	1					0	0	0	heavily burned by fire
3056	no	47.61					part stem	1					0	0	0	
3056	no	28.46					part stem	1					0	0	0	
3056	no	39.86					part stem	1					0	0	0	
3056	no	46.16				flat	part stem	1					0	0	0	
3056	no	23.58					part stem	1					0	0	0	
3056	no	36.06					part stem	1					0	0	0	moderately burned by fire
3056	no	45.08					part stem	1	...all				0	0	0	lightly burned at one end
3056	no	40.48				rolled	part stem	1					0	0	0	
3056	no	37.55					part stem	1					0	0	0	moderately burned by fire
3056	no	30.36					part stem	1					0	0	0	
3056	no	31.69				flat	part stem	1					0	0	0	
3056	no	28.18					part stem	1					0	0	0	lightly burned at one end
3056	no	32.72					part stem	1					0	0	0	
3056	no	31.33					part stem	1					0	0	0	moderately burned by fire
3056	no	25.07				flat	part stem	1					0	0	0	
3056	no	32.69					part stem	1					0	0	0	
3056	no	23.5				flat	part stem	1					0	0	0	
3056	no	12.26					part stem	1					0	0	0	
3056	no	31.94					part stem	1					0	0	0	
3056	no	35.61					part stem	1					0	0	0	
3056	no	26.26				flat	part stem	1					0	0	0	
3056	no	40.57					part stem	1					0	0	0	
3056	no	46.88					part stem	1					0	0	0	
3056	no	21.71					part stem	1					0	0	0	
3056	no	28.72				flat	part stem	1					0	0	0	
3056	no	35.6					part stem	1					0	0	0	
3056	no	29.38					part stem	1					0	0	0	

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
3056	no	42.14					part stem	1					0	0	0	
3056	no	34.61					part stem	1					0	0	0	
3056	no	28.99					part stem	1					0	0	0	
3056	no	26.34					part stem	1					0	0	0	
3056	no	30.4				flat	part stem	1					0	0	0	
3056	no	37.35					part stem	1					0	0	0	
3056	no	32.61				rolled	part stem	1					0	0	0	
3056	no	26.27				flat	part stem	1					0	0	0	
3056	no	28.23					part stem	1					0	0	0	
3056	no	31.73				flat	part stem	1					0	0	0	moderately burned by fire
3056	no	18.4					part stem	1					0	0	0	
3056	no	31.35					part stem	1					0	0	0	lightly burned by fire
3056	no	34.38					part stem	1					0	0	0	
3056	no	21.37				flat	part stem	1					0	0	0	
3056	no	26.53					part stem	1					0	0	0	
3056	no	50.65				flat	part stem	1					0	1	0	
3056	no	20.92					part stem	1					0	0	0	
3056	no	28.5					part stem	1					0	0	0	
3056	no	33.94				flat	part stem	1					0	0	0	
3056	no	19.52				flat	part stem	1					0	0	0	
3056	no	37.3					part stem	1					0	0	0	
3056	no	30.63					part stem	1					0	0	0	
3056	no	25.28					part stem	1					0	0	0	
3056	no	16.85					part stem	1					0	0	0	
3056	no	31.38					part stem	1					0	0	0	
3056	no	26.34					part stem	1					0	0	0	
3056	no	35.09					part stem	1					0	0	0	
3056	no	33.94					part stem	1					0	0	0	
3056	no	36.97					part stem	1					0	0	0	
3056	no	17.09					part stem	1					0	0	0	
3056	no	30.34					part stem	1	...all	Glas...			0	0	0	
3056	no	27.46					part stem	1					0	0	0	
3056	no	24.9					part stem	1					0	0	0	
3056	no	20.12					part stem	1					0	0	0	
3056	no	27.69				flat	part stem	1					0	0	0	
3056	no	17.59					part stem	1					0	0	0	
3056	no	22.93					part stem	1					0	0	0	
3056	no	31.06					part stem	1					0	0	0	
3056	no	32.93					part stem	1					0	0	0	
3056	no	25.15					part stem	1					0	0	0	
3056	no	28.96				flat	part stem	1					0	0	0	
3056	no	23.25				rolled	part stem	1					0	0	0	

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
3056	no	26.33					part stem	1					0	0	0	
3056	no	26.49				flat	part stem	1					0	0	0	
3056	no	16.62					part stem	1					0	0	0	
3056	no	30.96					part stem	1					0	0	0	
3056	no	17.56					part stem	1					0	0	0	
3056	no	19.64					part stem	1					0	0	0	
3056	no	12.52					part stem	1					0	0	0	
3056	no	17.41				flat	part stem	1					0	0	0	
3056	no	21.31				flat	part stem	1					0	0	0	diamond cross-section
3056	no	29				flat	part stem	1					0	0	0	diamond cross-section
3056	no	25.53					part stem	1					0	0	0	
3056	no	20.12					part stem	1					0	0	0	
3056	no	47.92				rolled	part stem	1	G....				0	0	0	
3056	no	38.31					part stem	1	Gi...	T		Unidentified	0	1	0	possibly other way around
3056	no	39.71					part stem	1		City? Road London			0	1	0	Incused mark but faint
3056	no	34.65					part stem	1	..White	Glasg...		William White	0	1	0	
3056	no	56.68					part stem	1	Baltic//Yachter			Unidentified - Baltic Yachter	0	1	0	
3056	no	29.05					part stem	1		City? Road London			0	1	0	
3056	no	25.48					part stem	1	...altic//Yachte..			Unidentified - Baltic Yachter	0	1	0	
3056	no	38.81					part stem	1		City? Road London			0	1	0	
3056	no	39.77					part stem	1	...let	illegible		Louis Fiolet	0	1	0	
3056	no	26.32					part stem	1	illegible				0	0	0	
3056	no	40.65					part stem	1		Glasgow			0	0	0	
3056	no	24.25			yes		part stem	1	illegible				0	0	0	
3056	no	26.01			yes		part stem	1	illegible				0	0	0	
3056	no	18.31					part stem	1		G...			0	0	0	
3056	no	35.16					part stem	1					0	0	0	skin/scale effect
3056	no	30.92					part stem	1					0	0	0	brown clay
3056	no						part bowl	12					0	0	0	heavily burned by fire
3056	no				yes		part bowl and part stem	2					1	0	0	

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
3056	no						part bowl and part stem	7					1	0	0	
3056	no		42				part bowl and part stem	1					1	0	0	
3056	no		42.78		yes		part bowl and part stem	1	T (TD)				1	0	1	
3056	no		47.41				part bowl	1					0	0	0	
3056	no		41.66				part bowl and part stem	1					1	0	1	
3056	no		35				part bowl	1					0	0	0	
3056	no	40.69	37.75				part bowl and part stem	2					1	0	0	
3056	no						part bowl	55					0	0	0	unmarked fragments
3056	no						part bowl	1	T (TD)				1	0	0	
3056	no						part bowl	1	T (TD)				1	0	0	
3056	no						part bowl	1	D (TD)				0	0	0	
3056	no						part bowl	1	D (TD)				0	0	0	
3056	no	33.51	44.06				part bowl and part stem	1	...gall	...sgow			0	0	1	with head
3056	no						part bowl	2					1	0	0	relief - emperor
3056	no						part bowl	5					1	0	0	relief - crown/face
3056	no						part bowl	1	T (TD)				1	0	0	with anchor
3056	no						part bowl	1					1	0	0	relief - plant/ridges
3056	no						part bowl	1					1	0	0	addition under bowl - plant stem?
3056	no	9.79	40.41	29.56			bowl and part stem	1					1	0	0	
3056	no	8.5	39.25	28.97			bowl and part stem	1					1	0	0	
3056	no		36.27	23.79	yes		bowl and spur	1					1	0	0	
3056	no	7.17	39.36	29.25			bowl and part stem	1					1	0	0	
3056	no	7.32	37.02	25.5			bowl and part stem	1					1	0	0	
3056	no	5.32	34.81	24.87			bowl and part stem	1					1	0	0	unsmoked

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
3056	no		38.17	22.11	yes		bowl and spur	1	T D				1	0	0	
3056	no		38.8	27.14			bowl	1					1	0	0	
3056	no		37.78	24.33			bowl	1	McDougall	277 Parliamentary Road Glasgow			1	0	0	
3056	no	16.3	39.44	29.48			bowl and part stem	1					1	0	0	
3056	no						part bowl	1					0	0	0	
1001	no	30.87					part stem	1					0	0	0	
1001	no	38.24					part stem	1					0	0	0	
1001	no	35.79					part stem	1					0	0	0	
1001	no	41.05					part stem	1					0	0	0	
1001	no	23.23					part stem	1					0	0	0	moderately burned by fire
1001	no	37.55					part stem	1					0	0	0	
1001	no	36.72					part stem	1					0	0	0	
1001	no	22.85					part stem	1					0	0	0	
1001	no	40.23				flat	part stem	1					0	0	0	
1001	no	36.1					part stem	1					0	0	0	
1001	no	47.81					part stem	1					0	0	0	lightly burned by fire
1001	no	31.97					part stem	1					0	0	0	lightly burned by fire
1001	no	36.95				rolled	part stem	1					0	0	0	heavily burned by fire
1001	no	37.31					part stem	1					0	0	0	
1001	no	36.23					part stem	1					0	0	0	
1001	no	52.45				rolled	part stem	1					0	1	0	
1001	no	34.15					part stem	1					0	0	0	
1001	no	30.39					part stem	1					0	0	0	
1001	no	44.69					part stem	1					0	0	0	
1001	no	28.27				flat	part stem	1					0	0	0	
1001	no	36.18					part stem	1					0	0	0	
1001	no	38.02				flat	part stem	1					0	0	0	
1001	no	37.97					part stem	1					0	0	0	
1001	no	37.81					part stem	1					0	0	0	
1001	no	30.18					part stem	1					0	0	0	heavily burned by fire
1001	no	24.92					part stem	1					0	0	0	
1001	no	34.26					part stem	1					0	0	0	
1001	no	27.67			yes		part stem	1					0	0	0	
1001	no	19.42					part stem	1					0	0	0	moderately burned by fire
1001	no	18.55					part stem	1					0	0	0	

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
1001	no	37.61				flat	part stem	1					0	0	0	
1001	no	31.19					part stem	1					0	0	0	
1001	no	33.4					part stem	1					0	0	0	
1001	no	15.13					part stem	1					0	0	0	
1001	no	34.06					part stem	1					0	0	0	moderately burned by fire
1001	no	22.02					part stem	1					0	0	0	
1001	no	22.43					part stem	1					0	0	0	
1001	no	44.79				flat	part stem	1					0	0	0	heavily burned by fire
1001	no	30.45					part stem	1					0	0	0	
1001	no	58.92					part bowl and part stem	1					0	0	1	
1001	no	31.53					part stem	1					0	0	0	
1001	no	25.93					part stem	1					0	0	0	
1001	no	29.78					part stem	1					0	0	0	
1001	no	29.95					part stem	1					0	0	0	
1001	no	34.62					part stem	1					0	0	0	
1001	no	27.6					part stem	1					0	0	0	
1001	no	37.75				flat	part stem	1					0	0	0	
1001	no	29.47				flat	part stem	1					0	0	0	
1001	no	28.53				flat	part stem	1					0	0	0	
1001	no	20.18			yes		spur and part stem	1					0	0	0	moderately burned by fire
1001	no	25.92					part stem	1					0	0	0	
1001	no	37.09					part stem	1					0	0	0	
1001	no	25.3					part stem	1					0	0	0	
1001	no	38.21					part stem	1					0	0	0	
1001	no	35.27					part stem	1					0	0	0	
1001	no	28.53				rolled	part stem	1					0	0	0	
1001	no	34.32					part stem	1					0	0	0	
1001	no	27.82					part stem	1					0	0	0	
1001	no	27.15				flat	part stem	1					0	0	0	
1001	no	20.26					part stem	1					0	0	0	
1001	no	41.96					part stem	1					0	0	0	
1001	no	32					part stem	1					0	0	0	
1001	no	22.04					part stem	1					0	0	0	heavily burned by fire
1001	no	40.46				rolled	part stem	1					0	0	0	
1001	no	36.28					part stem	1					0	0	0	
1001	no	25.94					part stem	1					0	0	0	
1001	no	26.13					part stem	1					0	0	0	moderately burned by fire

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
1001	pink	27.07				flat	part stem	1					0	0	0	pink colour may have originally been red
1001	no	28.95				flat	part stem	1					0	0	0	
1001	no	24.53				rolled	part stem	1					0	0	0	
1001	no	24.79				flat	part stem	1					0	0	0	
1001	no	31.77					part stem	1					0	0	0	
1001	no	21.38			yes		spur and part stem	1					0	0	0	
1001	no	18.11					part stem	1					0	0	0	
1001	no	29.56					part stem	1					0	0	0	
1001	no	29.13					part stem	1					0	0	0	
1001	no	26.21				flat	part stem	1					0	0	0	
1001	no	41.14					part stem	1					0	0	0	
1001	no	24.14				rolled	part stem	1					0	0	0	
1001	no	22.06					part stem	1					0	0	0	
1001	no	26.45					part stem	1					0	0	0	
1001	no	22.13			yes		spur and part stem	1					0	0	0	moderately burned by fire
1001	no	25.69				rolled	part stem	1					0	0	0	
1001	no	24.36					part stem	1					0	0	0	
1001	no	24.27					part stem	1					0	0	0	moderately burned by fire
1001	no	23.97					part stem	1					0	0	0	
1001	no	20.37				rolled	part stem	1					0	0	0	
1001	no	24.49					part stem	1					0	0	0	
1001	no	27.55					part stem	1					0	0	0	
1001	no	8.88			yes		spur and part stem	1					0	0	0	
1001	no	22.15					part stem	1					0	0	0	
1001	no	74.52			yes		spur and stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	54.93					part stem	1	...ugall	Gla...		McDougall	0	1	0	
1001	no	58.46					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	54.79					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	37.86					part stem	1	...l	G...			0	0	0	
1001	no	41.42					part stem	1	...Dougall	Glasgo...		McDougall	0	1	0	
1001	no	33.17					part stem	1	McDouga..		... Pipe	McDougall	0	1	0	
1001	no	48.83					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	39.29					part stem	1	...gall	Glas...		McDougall	0	1	0	
1001	no	32.89					part stem	1	McDou...	...gow			0	0	0	
1001	no	49.93					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	28.74					part stem	1	McD...	...ow			0	0	0	
1001	no	34.19					part stem	1	McDougall	Glasgow		McDougall	0	1	0	

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
1001	no	26.51					part stem	1	McDouga...	...lasgow		McDougall	0	1	0	
1001	no	44.53					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	48.61					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	37.74					part stem	1	...gall	Gla...		McDougall	0	1	0	
1001	no	39.94					part stem	1	McDouga...	...asgow		McDougall	0	1	0	
1001	no	29.28					part stem	1	Mc...	...ow			0	0	0	
1001	no	21.96					part stem	1	McDougal...	Glasgow		McDougall	0	1	0	
1001	no	36.35					part stem	1	...all	Gl...			0	0	0	
1001	no	30.85					part stem	1	McD...	...w			0	0	0	
1001	no	18.25					part stem	1	...l	G...			0	0	0	
1001	no	32.14			yes		spur and part stem	1	McD...	...w			0	0	0	
1001	no	45.42			yes		spur, part bowl and part stem	1	McDougall	Glasgow			0	0	1	curved ridge relief on bowl
1001	no	45.18			yes		spur and part stem	1	McDouga...	Glasgow		McDougall	0	1	0	
1001	no	34.86					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	32.16					part stem	1	...ougall	Glasg...		McDougall	0	1	0	
1001	no	39.42					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	35.29					part stem	1	...ll	G...			0	0	0	
1001	no	44.03			yes		spur and part stem	1	McDougal...	...ow		McDougall	0	1	0	heavily burned by fire
1001	no	63.91					part stem	1	McDougall	Glasgow		McDougall	0	1	0	heavily burned by fire
1001	no	76.29					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	31.63					part stem	1	McDou...	...gow		McDougall	0	1	0	
1001	no	59.95					part stem	1	McDougall	Glasgow		McDougall	0	1	0	
1001	no	57.16					part stem	1	McDougall	Glasgow		McDougall	0	1	0	heavily burned by fire
1001	no	41.16					part stem	1	McDo...	Glas...			0	0	0	moderately burned by fire
1001	no	35.51			yes		spur and part stem	1					0	0	0	
1001	no	33.53					part stem	1	...gall	Glas...		McDougall	0	1	0	
1001	no	15.13					part stem	1	...Dougal...	...sgow		McDougall	0	1	0	
1001	no	44.01				rolled	part stem	1	...all	Gla...			0	0	0	heavily burned by fire
1001	no	29.86					part stem	1	McDouga...		...Pipe	McDougall	0	1	0	
1001	no	28.26					part stem	1					0	0	0	
1001	no	25.73					part bowl and part stem	1					1	0	0	

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
1001	no	23.16					part bowl and part stem	1					1	0	0	
1001	no	21.32					part bowl and part stem	1					1	0	0	
1001	no	29.47			yes		spur, part bowl and part stem	1					1	0	0	moderately burned by fire
1001	no	31.3					part bowl and part stem	1			head and glasgow stamped on bowl		1	0	0	moderately burned by fire
1001	no	34.81					part bowl and stem	1			narrowed end for composite mouthpiece		1	0	0	
1001	no	21.97					part stem	1	Mc...				0	0	0	
1001	no	23.13					part stem	1	Mc...		...ipe		0	0	0	
1001	no	44.04					part stem	1	Baltic//...achter			Unidentified - Baltic Yachter	0	1	0	heavily burned by fire
1001	no	57.3					part stem	1	Baltic//Yachter			Unidentified - Baltic Yachter	0	1	0	
1001	no	48.17					part stem	1	Balti...//Yachter			Unidentified - Baltic Yachter	0	1	0	
1001	no	60.02					part stem	1	...ltic//Yac...			Unidentified - Baltic Yachter	0	1	0	
1001	no	44.89					part stem	1	Baltic//...achter			Unidentified - Baltic Yachter	0	1	0	
1001	no	27					part stem	1	Baltic//...achter			Unidentified - Baltic Yachter	0	1	0	
1001	no	21.72					part stem	1	...altic//Yacht...			Unidentified - Baltic Yachter	0	1	0	
1001	no	24.84					part stem	1	Bal...//...hter			Unidentified - Baltic Yachter	0	1	0	
1001	no	67.9				flat	part bowl and stem	1	Baltic//Yachter				0	0	1	

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
1001	no	25.51					part stem	1	Balt...			Unidentified - Baltic Yachter	0	1	0	moderately burned by fire
1001	no	35.08			yes		spur and part stem	1	McD...	...ow			0	0	0	
1001	no	44.77				rolled	part stem	1		...gow	Bur...		0	1	0	
1001	no	30.36					part stem	1	Tho. Whit...	...iner		Thomas White & Co	0	1	0	
1001	no	38.39					part stem	1	Doral 1	Glasgow		Unidentified	0	1	0	
1001	no	27.9					part stem	1		Edinr	Burn...		0	0	0	
1001	no	46.23				rolled	part stem	1		...asgow	Burn...		0	1	0	
1001	no	43.79					part stem	1	illegible				0	0	0	
1001	no	25.92					part stem	1	...ic				0	0	0	
1001	no	33.48					part stem	1					0	0	0	
1001	no	47.05					part stem	1					0	0	0	skin/scale effect, composite mouthpiece
1001	no						part bowl	4					0	0	0	heavily burned by fire
1001	no						part bowl	10					0	0	0	lightly burned by fire
1001	no						part bowl	63					0	0	0	
1001	no				yes		part bowl and spur	1					1	0	0	
1001	no	14.09					part bowl and part stem	1					1	0	0	
1001	no	16.03					part bowl and part stem	1					1	0	0	
1001	no	13.51					part bowl and part stem	1					1	0	0	
1001	no	12.75			yes		part bowl and part stem	1					1	0	0	
1001	no				yes		part bowl and spur	1					1	0	0	
1001	no						part bowl	1					0	0	0	ridge on bowl
1001	no						part bowl	5					0	0	0	relief - plant
1001	no						part bowl	2					0	0	0	relief - ship
1001	no				yes		part bowl and part stem	1					0	0	1	brown clay

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
1001	no	38.57					part bowl and part stem	1	McD...	Glasgow	Street name?		0	0	1	in shield
1001	no						part bowl	1	McDoug...		Ma		0	0	0	
1001	no						part bowl	1			D		0	0	0	
1001	no	9.5					part bowl and part stem	1	...gall	...asgow			0	0	1	with head
1001	no						part bowl	1					0	0	0	eagle claw
1001	no						part bowl	5					0	0	0	relief - plant
1001	no				yes		part bowl	5					0	0	0	relief - plant/scroll
1001	no	17.65	35.7	23.05	yes		bowl and part stem	1					1	0	0	
1001	no	21.54	35.92	24.94			bowl and part stem	1					1	0	0	
1001	no	22.66	30.56	21.6			bowl and part stem	1					1	0	0	
1001	no		37.11	23.4	yes		bowl and spur	1					1	0	0	
1001	no	6.75	38.35	24.31	broken off		bowl and part stem	1					1	0	0	
1001	no		34.74	20.1	yes		bowl and spur	1					1	0	0	
1001	no		34.03	25.47			bowl	1					1	0	0	partially burned by fire
1001	no	31.85	36.35	24.04			part bowl and part stem	1					1	0	0	
1001	no	38.49	37.53	24.55			bowl and part stem	1					1	0	0	
1001	no	35.83	38.4	27.12			part bowl and part stem	1					1	0	0	
1001	no		37.7	24.95			bowl	1	McDougall	Glasgow			1	0	0	with head
1001	no	35.36	37.65	24.26			bowl and part stem	1	McDougall				1	0	0	in shield
1001	no		42.44	25.61	yes		bowl and spur	1					1	0	0	relief - plant
1001	no		39.06	26.49			bowl	1					1	0	0	ridge on underside of bowl
1001	no		42.01		yes		part bowl and spur	1			D		1	0	0	
1001	no	10.56	40.13	24.73	yes		bowl and part stem	1			T D		1	0	0	
1010	no	31.21			partial		part stem	1	illegible				0	0	0	

Context	Glazed?	stem length	Bowl height	Bowl width	Spur?	Mouth-piece?	Piece Type	# Pieces	Mark	Origin	Other stamp	Maker	Bowl MNI	Stem MNI	Bowl & Stem MNI	Remarks
1010	no						part bowl	1					0	0	0	
1001	no	28.26					part bowl	1					0	0	0	

Glass Assemblage

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Alcohol	Black Beer	half pint		65		base part body	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		86		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	quart		88		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		80		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		86		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		78		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		76		base part body	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		78		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		76		base part body	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	quart		92		base part body	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	quart		87		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	quart		90		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		80		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		80		base	1	1	dark olive green	dobeson & warm/newcastle	dome kickup
1001	Alcohol	Black Beer	pint		79		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		79		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		79		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		80		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		77		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		79		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		80		base	1	1	dark olive green		rickett's mould
1001	Alcohol	Black Beer	pint		79		part base	1	1	dark olive green		snap pontil
1001	Alcohol	Black Beer	half pint		66		base part body	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		78		base part body	1	1	dark olive green		slumped conical
1001	Alcohol	Black Beer	pint		79		base	1	1	dark olive green		dome kickup

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Alcohol	Black Beer	pint		79		base	1	1	dark olive green		dome kickup
1001	Alcohol	Black Beer	quart		88		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		77		base	1	1	dark olive green		shallow with central mamelon
1001	Alcohol	Black Beer	half pint		66		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		81		base	1	1	dark olive green		shallow with central mamelon
1001	Alcohol	Black Beer	pint		80		base	1	1	dark olive green		high dome
1001	Alcohol	Black Beer	pint		76		base	1	1	dark olive green		high dome
1001	Alcohol	Black Beer	quart		91		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	quart		91		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		76		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		76		base	1	1	dark olive green		shallow with central mamelon
1001	Alcohol	Black Beer	quart		91		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		76		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		76		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		79		base	1	1	dark olive green	cooper & wood/portobello	high dome with central mamelon
1001	Alcohol	Black Beer	pint		79		base part body	1	1	dark olive green		snap pontil
1001	Alcohol	Black Beer	pint		79		base part body	1	1	dark olive green	dobeson & warren/newcastle	dome kickup
1001	Alcohol	Black Beer	pint		77		part base	1	1	dark olive green		rickett's mould
1001	Alcohol	Black Beer	pint		80		base part body	1	1	dark olive green		shallow dome with central mamelon
1001	Alcohol	Black Beer	quart		92		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	quart		88		part base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	quart		90		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		77		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		77		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		77		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	half pint		63		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	quart		88		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		76		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	quart		88		base	1	1	dark olive green		shallow conical

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Alcohol	Black Beer	pint		78		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		85		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		75		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		78		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		76		base	1	1	dark olive green		dome/conical
1001	Alcohol	Black Beer	quart		88		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		75		base	1	1	dark olive green		shallow dome with central mamelon
1001	Alcohol	Black Beer	quart		88		base	1	1	dark olive green		dome with central mamelon
1001	Alcohol	Black Beer	pint		76		base	1	1	dark olive green		shallow dome with central mamelon
1001	Alcohol	Black Beer	pint		78		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	quart		88		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		77		base	1	1	dark olive green		dome with central mamelon
1001	Alcohol	Black Beer	pint		77		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		78		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		77		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		77		base	1	1	dark olive green		dome with central mamelon
1001	Alcohol	Black Beer	pint		78		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		85		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		86		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		76		base	1	1	dark olive green		shallow with central mamelon
1001	Alcohol	Black Beer	pint		79		base	1	1	dark olive green		rickett's mould
1001	Alcohol	Black Beer	pint		86		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		85		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		78		3/4 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		74		3/4 base	1	1	dark olive green		shallow dome with central mamelon
1001	Alcohol	Black Beer	pint		82		3/4 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	quart		88		3/4 base	1	1	dark olive green		conical kickup

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Alcohol	Black Beer	pint		79		3/4 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		76		3/4 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		78		3/4 base	1	1	dark olive green		dome with central mamelon
1001	Alcohol	Black Beer	pint		77		3/4 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	quart		91		3/4 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		77		2/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	quart		90		1/2 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		79		1/2 base	1	1	dark olive green		dome
1001	Alcohol	Black Beer	quart		89		2/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint				2/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		74		1/2 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		74		1/2 base	1	1	dark olive green		dome with central mamelon
1001	Alcohol	Black Beer	pint		74		1/2 base	1	1	dark olive green		shallow dome with central mamelon
1001	Alcohol	Black Beer	pint				1/2 base	1	1	dark olive green		shallow dome with central mamelon
1001	Alcohol	Black Beer	pint		74		2/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		86		2/3 base	1	1	dark olive green		dome
1001	Alcohol	Black Beer	pint		87		2/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		75		2/3 base	1	1	dark olive green		dome
1001	Alcohol	Black Beer	pint		85		2/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		75		3/4 base	1	1	dark olive green		shallow with central mamelon
1001	Alcohol	Black Beer	pint		77		2/3 base	1	1	dark olive green		dome
1001	Alcohol	Black Beer	pint		85		3/4 base	1	1	dark olive green		dome
1001	Alcohol	Black Beer	pint		76		2/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		76		1/2 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	half pint		63		base	1	1	dark olive green		dome with central mamelon
1001	Alcohol	Black Beer	half pint		65		base part body	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		72		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	half pint		63		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint				2/3 base	1	1	dark olive green		conical kickup

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Alcohol	Black Beer	pint		78		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		75		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		85		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	quart		88		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		77		base	1	1	dark olive green		dome/conical
1001	Alcohol	Black Beer	pint		75		base part body	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		86		1/2 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint				2/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		76		2/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		87		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint				1/2 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		77		3/4 base	1	1	dark olive green		dome with central mamelon
1001	Alcohol	Black Beer	pint		76		1/2 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint				1/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint				1/2 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	pint		75		2/3 base	1	1	dark olive green		shallow with central mamelon
1001	Alcohol	Black Beer	pint		86		1/2 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer	half pint				2/3 base	1	1	dark olive green		heat affected, conical kickup
1001	Alcohol	Black Beer	pint		77		base	1	1	dark olive green	dobeson & warren/newcastle	conical kickup
1001	Alcohol	Black Beer	pint		75		base	1	1	dark olive green	dobeson & warren/newcastle	conical kickup
1001	Alcohol	Black Beer	pint		75		base	1	1	dark olive green	dobeson & warren/newcastle	conical kickup
1001	Alcohol	Black Beer	pint		76		base	1	1	dark olive green	dobeson & warren/newcastle	conical kickup
1001	Alcohol	Black Beer	pint		77		base	1	1	dark olive green	dobeson & warren/newcastle	conical kickup
1001	Alcohol	Black Beer					1/2 base	1	1	dark olive green	cooper & ./manufac..	conical kickup
1001	Alcohol	Black Beer					part base	1	1	dark olive green	portobello	conical kickup

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Alcohol	Black Beer					part base	1	1	dark olive green	..son & war...	conical kickup
1001	Alcohol	Black Beer					1/2 base	1	1	dark olive green	...wcastle	conical kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green	coop..porto../ma nuf..	conical kickup
1001	Alcohol	Black Beer					part base	1	1	dark olive green	..n & warren	conical kickup
1001	Alcohol	Black Beer					3/4 base	1	1	dark olive green	dobeson & warr..newcast..	conical kickup
1001	Alcohol	Black Beer					part base	1	1	dark olive green	c...portobello	conical kickup
3062	Alcohol	Black Beer					body fragments	65	0	dark olive green		
3062	Alcohol	Black Beer					part base	3	0	dark olive green		conical kickup
3062	Alcohol	Black Beer		collar band			part rim	3	0	dark olive green		
3062	Alcohol	Black Beer		collar skirt			part rim	2	0	dark olive green		
3062	Household	Stopper					almost complete	1	1	aqua		plain, part top broken
3065	Alcohol	Black Beer	half pint	collar skirt	63		complete in pieces	7	1	dark olive green		conical kickup
3065	Alcohol	Black Beer		collar skirt			rim	1	0	dark olive green		
3023	Alcohol	Black Beer					body fragments	1	0	dark olive green		
3021	Alcohol	Black Beer					body fragments	7	0	dark olive green		
3021	Alcohol	Black Beer					neck	1	0	dark olive green		
3021	Alcohol	Black Beer					neck part shoulder	1	0	dark olive green		
3021	Alcohol	Black Beer	pint		86		part base	2	1	dark olive green		conical kickup
3021	Alcohol	White Wine/Brandy					part base	1	1	pale green		
3021	Unidentified	Bottle					body fragments	1	0	aqua		food or pharma
3021	Food	Salad Oil			58		base	1	1	aqua		
3129	Food	Pickle					rim, part neck	5	0	aqua		
3129	Food	Pickle					body fragments	5	0	aqua		
3019	Alcohol	Black Beer			75		base part body	1	1	dark olive green		conical kickup

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
3019	Alcohol	Black Beer					part base and body	1	1	dark olive green		conical kickup
3019	Alcohol	Black Beer					part base	1	0	dark olive green		conical kickup
3019	Alcohol	Black Beer					part base	1	1	dark olive green	...wcas...	
3019	Alcohol	Black Beer					body fragments	4	0	dark olive green		
3019	Alcohol	Black Beer		collar skirt			rim, neck	1	0	dark olive green		
3019	Food	Pickle					body fragments	3	0	aqua		
3019	Unidentified	Bottle					body fragments	1	0	blue aqua		
3133	Alcohol	Black Beer					body fragments	1	0	dark olive green		
3035	Alcohol	Black Beer					body fragments	3	0	dark olive green		
3035	Alcohol	Black Beer					part base	1	0	dark olive green		conical kickup
3035	Household	Window	Plate				fragment	1	1	aqua		6mm thick
3035	Pharmaceutical	Medicine					part base	3	1	aqua		oval cross-section
3016	Food	Pickle					part base and body	1	1	aqua		
3016	Food	Oil			69		base	1	1	aqua		
3016	Food	Pickle					part rim	1	0	aqua		
3016	Alcohol	Black Beer					part base	1	0	dark olive green		conical kickup
3016	Alcohol	Black Beer					part base	1	0	dark olive green		conical kickup
3016	Alcohol	Black Beer					part base	1	0	dark olive green		conical kickup
3016	Alcohol	Black Beer					part base	1	0	dark olive green		conical kickup
3016	Alcohol	Black Beer					body fragments	2	0	dark olive green		
3016	Alcohol	White Wine/Brandy					body fragments	1	0	pale green		
3016	Food	Salad Oil					part base and body	1	1	aqua		genie style
1001	Alcohol	Black Beer			77		base	1	1	dark olive green		domed kickup
1001	Alcohol	Black Beer			78		base	1	1	dark olive green		domed kickup
1001	Alcohol	Black Beer			78		base	1	1	dark olive green		shallow domed kickup

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Alcohol	Black Beer			78		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			77		base part body	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					part base	1	1	dark olive green		domed with nipple kickup central
1001	Alcohol	Black Beer					part base	1	1	dark olive green		domed with nipple kickup central
1001	Alcohol	Black Beer					part base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					part base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					part base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					part base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					neck	1	0	dark olive green		
1001	Alcohol	Black Beer		collar skirt			part rim and neck	2	0	dark olive green		
1001	Alcohol	Black Beer		collar band			part rim	1	0	dark olive green		
1001	Alcohol	Black Beer		collar band			rim	1	0	dark olive green		
1001	Water	Mineral Water/Soda	Hamiltons				body fragments	1	0	aqua		
1001	Food	Pickle			60x60		base	1	1	aqua		
1001	Food	Pickle			58x62		base	1	1	aqua		
1001	Food	Pickle					part base	1	1	aqua		
1001	Food	Pickle					part base	1	1	aqua		
1001	Food	Pickle					part base	1	1	aqua		
1001	Food	Pickle					part base	1	1	aqua		
1001	Food	Pickle					body fragments	4	0	aqua		
1001	Food	Pickle					part rim and neck	1	0	aqua		
1001	Food	Oil			46		base	1	1	aqua		
3020	Pharmaceutical	Medicine		prescription	49x26	134	complete	1	1	aqua	Neil & Mackay Chemists Auckland	
3020	Pharmaceutical	Medicine		prescription	37x21	107	complete	1	1	aqua		
3006	Alcohol	Black Beer			77		base part body	1	1	dark olive green		conical kickup

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
3006	Alcohol	Black Beer			86		1/2 base	1	1	dark olive green		conical pickup
3006	Alcohol	Black Beer					part base	1	0	dark olive green		
3006	Unidentified	Bottle			55		base part body	1	1	blue aqua		
3006	Household	Stopper					complete	1	1	aqua		36mm
3006	Unidentified	Bottle and Stopper					rim, stopper	2	1	aqua		could be alcohol, food or pharma
3061	Alcohol	Black Beer					part base	1	0	dark olive green		conical pickup
3061	Alcohol	Black Beer					body fragments	3	0	dark olive green		
3061	Alcohol	Black Beer					part rim	1	0	dark olive green		
3061	Food	Pickle			62x61		base	1	1	aqua		
3061	Food	Pickle					part base and body	2	1	aqua		
3061	Food	Pickle					body fragments	12	0	aqua		
3061	Unidentified	Bottle					body fragments	1	0	aqua		round cross-section
3061	Unidentified	Bottle					body fragments	6	1	clear		
1001	Alcohol	Black Beer			75		base	1	1	dark olive green		conical pickup
1001	Alcohol	Black Beer			74		base	1	1	dark olive green		domed pickup
1001	Alcohol	Black Beer					2/3 base	1	1	dark olive green		conical pickup
1001	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical pickup
1001	Alcohol	Black Beer					1/2 base	1	1	dark olive green		mamelon
1001	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical pickup
1001	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical pickup
1001	Alcohol	Black Beer					part base	1	0	dark olive green		
1001	Alcohol	Black Beer					part base	1	0	dark olive green		
1001	Alcohol	Black Beer					part base	1	0	dark olive green		
1001	Alcohol	Black Beer					neck	1	0	dark olive green		
1001	Alcohol	Black Beer					neck	1	0	dark olive green		
1001	Alcohol	Black Beer					neck	1	0	dark olive green		
1001	Alcohol	Black Beer		collar skirt			rim	1	0	dark olive green		
1001	Alcohol	Black Beer		collar band			rim	1	0	dark olive green		

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Alcohol	Black Beer		collar skirt			rim	2	0	dark olive green		
1001	Alcohol	Black Beer		collar skirt			part rim	1	0	dark olive green		
1001	Alcohol	Black Beer		collar skirt			part rim	1	0	dark olive green		
1001	Alcohol	Black Beer					neck fragments	4	0	dark olive green		
1001	Alcohol	White Wine/Brandy		ring seal			rim, neck	1	0	pale green		
1001	Alcohol	White Wine/Brandy		ring seal			rim	1	0	pale green		
1001	Alcohol	White Wine/Brandy					mamelon	1	0	pale green		
1001	Alcohol	White Wine/Brandy					mamelon	1	0	pale green		
3056	Water	Mineral Water/Soda					part body	1	1	aqua	..berto france..facturer of..ass bottles of ...description... n street..ndon ec	roberto france
3056	Alcohol	Black Beer		collar skirt	75	300	complete	1	1	dark olive green		conical kickup
3056	Household	Ink		shear lip	35x37	42	complete	1	1	aqua		square
3056	Food	Pickle			73x58		base	1	1	aqua		false registration diamond on base
3056	Alcohol	Unidentified		blob	64	175	complete	1	1	green aqua		
Unstratified	Alcohol	White Wine/Brandy			75	298	complete	1	1	pale green		
Unstratified	Food	Salad Oil	half whirly	shear lip	55	285	complete	1	1	green aqua		stunted trident mark10 oz on base
3037	Alcohol	Black Beer			76		almost complete	1	1	dark olive green		conical kickup
3037	Alcohol	Black Beer			77		base	1	1	dark olive green		conical kickup
3037	Alcohol	White Wine/Brandy					part rim, neck	1	0	pale green		
3037	Food	Pickle					part rim. Body fragments	4	0	aqua		
3037	Alcohol	Black Beer					body fragments	1	0	dark olive green		

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
3037	Food	Unidentified			70		base	1	1	aqua		
1001	Alcohol	Black Beer		collar flared skirt	75	290	complete	1	1	dark olive green	dobeson & warm/newcastle	
1091	Alcohol	Black Beer			75		base part body	1	1	dark olive green		conical kickup
1001	Unidentified	Unidentified						1	0	aqua		molten
3056	Unidentified	Unidentified						4	0	aqua		molten
3056	Alcohol	Black Beer			80		base part body	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			75		base part body	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			89		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			77		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			85		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			87		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			89		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			64		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			76		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			83		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			75		base	1	1	dark olive green		layered conical kickup
3056	Alcohol	Black Beer			78		base part body	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			76		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			78		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			75		base	1	1	dark olive green		shallow domed kickup with mamelon
3056	Alcohol	Black Beer			83		base	1	1	dark olive green		layered conical kickup
3056	Alcohol	Black Beer			88		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			75		base part body	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			77		base part body	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			85		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			80		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			74		base	1	1	dark olive green		shallow domed kickup with mamelon
3056	Alcohol	Black Beer			74		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			78		base part body	1	1	dark olive green		conical kickup

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
3056	Alcohol	Black Beer			90		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			63		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			85		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			77		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			74		base	1	1	dark olive green		domed kickup with central nipple
3056	Alcohol	Black Beer			78		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			77		base	1	1	dark olive green		layered conical kickup
3056	Alcohol	Black Beer			77		base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			75		3/4 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			77		3/4 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			74		3/4 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			75		3/4 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			76		3/4 base	1	1	dark olive green		shallow kickup with central mamelon
3056	Alcohol	Black Beer			86		3/4 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			90		2/3 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			75		2/3 base	1	1	dark olive green		shallow domed kickup with mamelon
3056	Alcohol	Black Beer			76		2/3 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			89		3/4 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			87		3/4 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			78		2/3 base	1	1	dark olive green		layered conical kickup
3056	Alcohol	Black Beer			78		2/3 base	1	1	dark olive green		layered conical kickup
3056	Alcohol	Black Beer			83		2/3 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			89		2/3 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer			61		3/4 base	1	1	dark olive green		layered conical kickup
3056	Alcohol	Black Beer			85		2/3 base	1	1	dark olive green		domed kickup with central nipple
3056	Alcohol	Black Beer					2/3 base	1	1	dark olive green		conical kickup

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		shallow kickup with central mamelon
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		shallow kickup with central mamelon
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		shallow domed kickup with mamelon
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		shallow domed kickup with mamelon
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		shallow domed kickup with mamelon
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		shallow domed kickup with mamelon
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		shallow domed kickup with mamelon
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
3056	Alcohol	Black Beer					part base	37	0	dark olive green		
3056	Alcohol	Black Beer			77		3/4 base	1	1	dark olive green	cooper & wood portobello	conical kickup
3056	Alcohol	Black Beer					body fragments	57	0	dark olive green		
3056	Alcohol	Black Beer	collar skirt				rim, neck	5	0	dark olive green		
3056	Alcohol	Black Beer	collar skirt				rim	30	0	dark olive green		
3056	Alcohol	Black Beer	collar skirt				part rim	30	0	dark olive green		
3056	Alcohol	Black Beer	collar band				rim, neck	1	0	dark olive green		
3056	Alcohol	Black Beer	collar band				rim	9	0	dark olive green		
3056	Alcohol	Black Beer	collar band				part rim	9	0	dark olive green		
3056	Alcohol	Black Beer	collar				rim	10	0	dark olive green		
3056	Alcohol	Black Beer	collar				part rim	8	0	dark olive green		
3056	Alcohol	Black Beer	flared rim and band				rim	1	0	dark olive green		
3056	Alcohol	Case Gin		pig snout			part rim	1	0	dark olive green		
3056	Alcohol	White Wine/Brandy					part base	5	5	pale green		
3056	Alcohol	White Wine/Brandy		ring seal			rim, neck	3	0	pale green		
3056	Alcohol	White Wine/Brandy		ring seal			rim	1	0	pale green		
3056	Alcohol	White Wine/Brandy					body fragments	8	0	pale green		
3056	Alcohol	Wine					part base	4	4	green		
3056	Alcohol	Wine		ring seal			rim, neck	1	0	green		
3056	Alcohol	Wine		ring seal			rim	1	0	green		
3056	Pharmaceutical	Castor Oil					rim, neck	1	1	blue		
3056	Household	Drinking Glass	Tumbler		52		base part body	2	1	clear		
3056	Household	Drinking Glass	Tumbler				part base and body	1	1	clear		
3056	Household	Drinking Glass	Shot		34		base part body	1	1	clear		

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
3056	Household	Drinking Glass	Tumbler				body fragments	2	0	clear		milkshake
3056	Household	Drinking Glass	Tumbler				part base	1	1	clear		
3056	Household	Window					fragment	1	1	aqua		
3056	Food	Pickle					body fragments	6	0	aqua		
3056	Unidentified	Bottle					fragment	10	0	aqua		
3056	Food	Pickle		salt			rim	3	0	aqua		
3056	Food	Pickle		salt			part rim	12	0	aqua		
3056	Food	Pickle	square				base	16	15	aqua		
3056	Food	Pickle	square				part base	17	15	aqua		
3056	Food	Pickle	round				part base	1	1	aqua		
3056	Food	Pickle	square				base part body	4	4	aqua		
3056	Alcohol	Whisky					neck	2	1	aqua		
3056	Unidentified	bottle					fragment	17	0	aqua		
3056	Food	Pepper Sauce					body fragments	1	1	aqua		
3056	Food	Oil					rim, neck, base	3	1	aqua		
3056	Food	Worcestershire Sauce			51	180	complete	1	1	aqua	Lea & Perrins Worcestershire Sauce	
3056	Household	Stopper					complete	1	1	aqua	Lea & Perrins Worcestershire Sauce	
3056	Household	Stopper					top	1	1	aqua		plain, part top broken
3056	Household	Stopper					complete	3	3	aqua		plain
3056	Household	Ink		shear	37x38	40	complete	1	1	aqua		square
3056	Household	Ink		shear	36x37	41	complete	1	1	aqua		square
3056	Household	Ink			35x38		almost complete	1	1	aqua		square
3056	Household	Ink					part base and body	2	1	aqua		square
3056	Household	Ink		shear			rim, neck	2	0	aqua		
3056	Household	Ink		shear			rim, neck, part body	2	1	aqua	..dens in..	round, Walkdens

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
3056	Water	Mineral Water/Soda	Hamiltons				fragment	28	3	aqua	roberto france	
3056	Water	Mineral Water/Soda	Hamiltons				fragment	1	1	aqua		plain
3056	Pharmaceutical	Medicine			26x42		rim, neck base	2	1	blue aqua		oval cross-section
3056	Pharmaceutical	Medicine					part base and body	2	1	blue	...in/...n	
3056	Pharmaceutical	Medicine			25		base part body	1	1	blue aqua	...ound/...on/...am	
3056	Pharmaceutical	Medicine			25		base part body	3	1	clear		
3056	Food	Salad Oil	half whirly				base part body	6	5	aqua		
3056	Food	Salad Oil					body fragments	19	0	aqua		
3056	Food	Salad Oil					part base	6	4	aqua		
3056	Food	Salad Oil	genie				base part body	1	1	aqua		
3056	Food	Salad Oil	genie				diagnostic	2	1	aqua		
3056	Food	Salad Oil					rim, neck	8	0	aqua		
3056	Food	Salad Oil					part rim	3	0	aqua		
3056	Food	Pickle					part rim	2	0	aqua		
3056	Food	Sauce					rim, neck	1	0	aqua		
3056	Pharmaceutical	Medicine					rim, neck	1	0	aqua		
3005	Alcohol	Black Beer			77		base	1	1	dark olive green		conical kickup
3005	Alcohol	Black Beer			87		base part body	1	1	dark olive green		conical kickup
3005	Alcohol	Black Beer	half pint		61		base	1	1	dark olive green		conical kickup
3005	Alcohol	Black Beer			78		base	2	1	dark olive green		conical kickup
3005	Alcohol	Black Beer			86		base	2	1	dark olive green		layered conical kickup
3005	Alcohol	Black Beer					half base	1	1	dark olive green		conical kickup
3005	Alcohol	Black Beer					base	4	1	dark olive green		conical kickup
3005	Alcohol	Black Beer					half base	1	1	dark olive green		layered conical kickup
3005	Alcohol	Black Beer					half base	1	1	dark olive green		conical kickup
3005	Alcohol	Black Beer					part base	7	0	dark olive green		
3005	Alcohol	Black Beer					body fragments	9	0	dark olive green		

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
3005	Alcohol	Black Beer		collar skirt			rim/neck	1	0	dark olive green		
3005	Alcohol	Black Beer		collar skirt			rim/neck	1	0	dark olive green		
3005	Alcohol	Black Beer		collar skirt			part rim/neck	1	0	dark olive green		
3005	Pharmaceutical	Cologne/Perfume			28	61	complete	1	1	clear	colgate & Co perfumers new york	
3005	Alcohol	White Wine/Brandy			73		base	3	1	pale green		
3005	Alcohol	White Wine/Brandy					body fragments	2	0	pale green		
3005	Household	Ink		shear lip			rim/neck/shoulder	1	1	green	M in circle on shoulder	
3005	Pharmaceutical	Medicine		cone	50x30	156	complete	1	1	aqua	barry's tricopherous new york usa	
3005	Pharmaceutical	Medicine		external thread			rim/neck/part shoulder	2	1	clear		
3005	Pharmaceutical	Medicine					part base	1	0	clear	AGM tower logo on base	prob related to above
3005	Food	Worcestershire Sauce			53		base part body	1	1	aqua	LE../acb co 9651	
3005	Food	Unidentified			95x95		base	1	1	aqua	(ilegible) london	square
3005	Food	Pickle			80		half base	1	1	aqua	59	
3005	Food	Unidentified					body fragments	3	1	aqua	..rto../2	no ledge for closure, possible spout
3005	Food	Salad Oil					part base	1	1	aqua		
3005	Unidentified	Bottle					most base	1	1	ice blue		
3005	Pharmaceutical	Medicine	pill/powder		20		base part body	1	1	clear		
3005	Food	Pickle					part rim/neck	2	0	aqua		
3005	Unidentified	Bottle					body fragments	1	0	pale blue		
3005	Unidentified	Bottle					body fragments	5	0	aqua		
3005	Unidentified	Bottle					body fragments	2	0	blue aqua		

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
3005	Pharmaceutical	Medicine					body fragments	1	0	clear	...G -	
3005	Unidentified	Bottle					part rim/neck	1	0	clear		could be medicine or ink etc
3005	Food	Unidentified					part rim/neck	1	0	aqua		
3195	Alcohol	Wine			70		base part body	1	1	green		
3195	Alcohol	Black Beer					body fragments	3	0	dark olive green		
3182	Food	Pickle		collar	62x63	230	complete	1	1	aqua		applied rim
3182	Food	Salad Oil	Globe		48	260	almost complete	4	1	aqua	globe	applied rim
3182	Alcohol	Wine			70		2/3 base	1	1	green		
3182	Alcohol	Wine					part neck	2	0	green		
3182	Alcohol	Black Beer					body fragments	3	0	dark olive green		
3182	Alcohol	Black Beer	half pint				1/3 base	1	1	dark olive green		conical kickup
3182	Alcohol	Black Beer					part base	1	0	dark olive green		conical kickup
3182	Alcohol	Black Beer			76		2/3 base	1	1	dark olive green		layered domed kickup
3182	Alcohol	Black Beer					part base	1	1	dark olive green		shallow domed kick up
3182	Alcohol	Whisky			77		almost complete	13	1	blue aqua		
3182	Pharmaceutical	Medicine		pressed			almost complete	4	1	clear		could be med or beauty
3182	Food	Pickle		collar			rim/neck	1	0	aqua		
3182	Food	Salad Oil		collar skirt			part rim/ neck	1	0	aqua		
3182	Food	Vinegar	dimple				body fragments	2	2	aqua		
3182	Pharmaceutical	Unidentified	hora & co		60x35		base most body	2	1	aqua	hora & co london	
3182	Unidentified	bottle					part rim	1	0	aqua		
3182	Unidentified	bottle					body fragments	5	0	aqua		
1001	Alcohol	Black Beer			89.54		3/4 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			78.29		base	1	1	dark olive green		conical kickup

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Alcohol	Black Beer			80.14		base	1	1	dark olive green		layered conical kickup
1001	Alcohol	Black Beer			79.13		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			91.83		3/4 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			89.28		base	1	1	dark olive green		shallow layered dome kickup
1001	Alcohol	Black Beer			64.95		base part body	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			87.7		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			64.23		3/4 base	1	1	dark olive green		layered conical kickup
1001	Alcohol	Black Beer			79.75		3/4 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			74.55		base	1	1	dark olive green		layered conical kickup
1001	Alcohol	Black Beer			81.46		base part body	1	1	dark olive green		shallow domed kickup with mamelon
1001	Alcohol	Black Beer			89.67		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			78.98		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			68.26		base part body	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			64.3		base part body	1	1	dark olive green		layered conical kickup with central mamelon
1001	Alcohol	Black Beer			77.4		base part body	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			77.77		base part body	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			76.43		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			78.99		base part body	1	1	dark olive green		layered conical kickup
1001	Alcohol	Black Beer			78.24		base part body	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			86.82		3/4 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			87.53		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			89.39		base	1	1	dark olive green		misshapen conical kickup
1001	Alcohol	Black Beer			90.87		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			79.49		3/4 base	1	1	dark olive green		layered conical kickup
1001	Alcohol	Black Beer			78.67		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			78.66		2/3 base	1	1	dark olive green		conical kickup

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Alcohol	Black Beer			76.35		2/3 base	1	1	dark olive green		shallow domed kickup with mamelon
1001	Alcohol	Black Beer					2/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			79.65		2/3 base	1	1	dark olive green		shallow domed kickup with mamelon
1001	Alcohol	Black Beer			77.56		1/2 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			77.94		1/2 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			88.52		1/2 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			87.37		1/2 base	1	1	dark olive green		layered conical kickup
1001	Alcohol	Black Beer					1/2 base	1	0	dark olive green		molten
1001	Alcohol	Black Beer			89.96		2/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					2/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/2 base	2	1	dark olive green	..er Wood//...bello//...cturers	shallow layered dome kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green	...son & Wa...	shallow domed kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/2 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		shallow domed kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		shallow domed kickup
1001	Alcohol	Black Beer					1/2 base	1	1	dark olive green		shallow domed kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		shallow layered dome kickup
1001	Alcohol	Black Beer					1/2 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/2 base	1	1	dark olive green		shallow domed kickup with mamelon
1001	Alcohol	Black Beer					1/2 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		conical kickup

[illegible]

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Alcohol	Black Beer			75.82		1/3 base	1	1	dark olive green		shallow domed kickup
1001	Alcohol	Black Beer					2/3 base	1	1	dark olive green		shallow domed kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		shallow domed kickup
1001	Alcohol	Black Beer					2/3 base	1	1	dark olive green		shallow domed kickup with mamelon
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		domed kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		domed kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		domed kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		shallow domed kickup with mamelon
1001	Alcohol	Black Beer					1/2 base	1	1	dark olive green		domed kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		shallow layered dome kickup with mamelon
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		shallow layered dome kickup with mamelon
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		domed kickup
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1001	Alcohol	Black Beer					less than 1/3 base	170	0	dark olive green		
1001	Alcohol	Black Beer					body fragments	32	0	dark olive green		
1001	Unidentified	Molten					fragment	2	0	aqua		
Unstratified	Alcohol	Wine/Champagne			89		base and most body	1	1	green		
Unstratified	Alcohol	Whisky			78	275	complete	1	1	clear	6 or 9 on base imaged twice	owens machine scar
1001	Food	Salad Oil	half whirly		46		base and most body	1	1	aqua		
1001	Food	Salad Oil	half whirly		45		base and most body	1	1	aqua		

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1090	Pharmaceutical	Castor Oil			40		base and part body	1	1	blue		
1001	Water	Mineral Water/Soda	Hamiltons				body fragments	1	0	aqua		
1001	Water	Mineral Water/Soda	Hamiltons				base and part body	1	1	green aqua		
1001	Alcohol	Black Beer			89		base part body	1	1	dark olive green		layered conical kickup
1001	Alcohol	Black Beer			61		3/4 base	1	1	dark olive green		layered conical kickup
1001	Unidentified	Molten					fragment	1	0	blue		
3057	Alcohol	Black Beer					body fragments	2	0	dark olive green		
3057	Food	Pickle	Square/Rectangular				body fragments	2	0	aqua		
3057	Food	Condiment			72		base and part body	8	1	aqua		
1010	Household	Ink	Square		37x36		almost complete	1	1	aqua		
1001	Alcohol	Case Gin					body fragments	1	0	dark olive green		
1001	Alcohol	Case Gin					part base	2	1	dark olive green		
1001	Unidentified	Bottle					body fragments	1	0	aqua		
1001	Alcohol	Wine					part base	1	0	green		
1001	Alcohol	Black Beer		Collar Skirt			part rim	2	0	dark olive green		
1001	Alcohol	Black Beer		Collar Skirt			part rim	2	0	dark olive green		
1001	Alcohol	Black Beer		Collar Skirt			part rim	1	0	dark olive green		
1001	Alcohol	Black Beer					body fragments	3	0	dark olive green		
1001	Alcohol	Black Beer					part rim	7	0	dark olive green		
1001	Alcohol	Black Beer		Collar Band			rim	1	0	dark olive green		
1001	Alcohol	Black Beer		Collar Band			part rim	1	0	dark olive green		
1000	Alcohol	Black Beer					part base	3	1	dark olive green		

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1000	Alcohol	Black Beer					body fragments	10	0	dark olive green		
1001	Unidentified	Molten					fragment	1	0	unidentified		
Unstratified	Alcohol	White Wine/Brandy			74	296	complete	1	1	pale green		
Unstratified	Alcohol	Bitters?			80	285	almost complete	1	1	amber	W on base//89 on side above base	
1090	Alcohol	Whisky			75	295	complete	1	1	green	Buchanan's Black & White Whisky	
1090	Food	Sauce		external thread	56	220	complete	1	1	clear		
1090	Pharmaceutical	Medicine		external thread	52x34	144	complete	1	1	amber		
1090	Pharmaceutical	Perfume		external thread	45x38	122	complete	1	1	clear		ribbed around body, circular space for label
1091	Food	Salad Oil	half whirly		40	241	complete	1	1	aqua		
1091	Pharmaceutical	Medicine		prescription	47x25	127	complete	1	1	clear	Bonnington's Irish Moss	
1091	Pharmaceutical	Medicine		prescription	44x26	144	complete	1	1	clear	California Fig Syrup Co/Sterling Products (Inc)/Sucessor//Califig//Califig// O in square on base	
1091	Pharmaceutical	Medicine			45x27		almost complete	1	1	clear	California fig Syrup Co/San Francisco, Cal//Califig//Califig//O in square on base	
1091	Pharmaceutical	Medicine			48x29	172	complete	1	1	aqua	J on base	
1091	Pharmaceutical	Medicine		external thread	64x35	160	complete	1	1	aqua	Made in U.S.A on base	possibly salts
1091	Pharmaceutical	Medicine		external thread	50	94	complete	1	1	amber	Kruschen Salts/24	
1091	Pharmaceutical	Medicine	Pills	prescription	36x21	86	complete	1	1	clear	De Witt	

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1091	Pharmaceutical	Medicine	Pills	prescription	36x21	86	complete	1	1	clear	De Witt	
1091	Pharmaceutical	Medicine	Pills	Collar	36x17	63	complete	1	1	clear	De Witt	
1091	Pharmaceutical	Perfume				57	almost complete	1	1	clear		
1091	Unidentified	Bottle			36	97	complete	1	1	clear	AGM tower logo on base/S532	
1091	Unidentified	Bottle			32	67	complete	1	1	clear	AGM tower logo on base/S303	
1091	Unidentified	Bottle			32	67	complete	1	1	clear	AGM tower logo on base/S303	
1091	Unidentified	Bottle			30x28		base	1	1	clear		
1091	Pharmaceutical	Medicine		prescription	37x21		base, rim, neck shoulder	2	1	clear	AGM tower logo on base/S386	
1091	Unidentified	Bottle					part base	1	1	clear		possibly food
1091	Pharmaceutical	Medicine					part base and body, rim, neck	2	1	aqua		
1091	Pharmaceutical	Medicine			48x29		base and part body	1	1	aqua		
1091	Pharmaceutical	Medicine					part base	1	1	aqua	T in diamond/850/7	
1090	Pharmaceutical	Castor Oil					body fragments	1	0	blue		
1090	Alcohol	Gin/Whisky			75		almost complete	1	1	clear	4/5 quart//duraglas 4 48 9 I in circle and elongated diamond	Owens-Illinois Glass Co - Clarksburg West Virginia 1948
1090	Water	Mineral Water/Soda	Soda		60	221	complete	1	1	clear	Y-Y/This Bottle is the Property of Wai Wai Ltd Auckland// Y-Y	
1090	Food	Vegetable Oil			74	291	complete with cork	1	1	aqua	AGM tower logo on base/51122/M	WITH CONTENTS - reuse of bottle
1090	Household	Ink					rim, neck, part body	1	0	clear		

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Alcohol	Black Beer			83		base part body	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			75		base part body	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			65		base part body	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			77		base	1	1	dark olive green		domed with central mamelon kickup
1001	Alcohol	Black Beer			84		3/4 base	1	1	dark olive green		domed with central mamelon kickup
1001	Alcohol	Black Beer			78		3/4 base	1	1	dark olive green		layered with central mamelon kickup
1001	Alcohol	Black Beer					part bases	8	0	dark olive green		
1001	Alcohol	Black Beer					body fragments	5	0	dark olive green		
1001	Alcohol	Black Beer		collar skirt			rim	1	0	dark olive green		
1001	Alcohol	Black Beer		collar skirt			rim	1	0	dark olive green		
1001	Alcohol	Black Beer		collar skirt			rim	1	0	dark olive green		
1001	Alcohol	Black Beer		collar skirt			part rim	6	0	dark olive green		
1001	Alcohol	Black Beer		collar			part rim	1	0	dark olive green		
1001	Alcohol	Wine		laid on ring			rim, part neck	1	0	green		wrench and stretch marks, cut closure
1001	Pharmaceutical	Castor Oil					part rim	1	1	cobalt		
1001	Unidentified	Molten					body fragments	3	0	aqua		
1001	Household	Stopper					half base	1	0	aqua		plain
1001	Household	Ink	Walkden's				rim, neck, base, body fragments	3	1	aqua	...s Ink Lon...	
1001	Food	Salad Oil	half whirly				neck fragments, rim/neck	7	0	aqua		
1001	Unidentified	Bottle					body fragments	2	0	aqua		
1001	Food	Salad Oil	large				body fragments	5	0	aqua		

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Food	Fruit					body fragments	2	0	aqua		
1001	Food	Pickle	square				body fragments	28	0	aqua		
1001	Food	Pickle					part rim	4	0	aqua		
1001	Food	Pickle					rim, neck shoulder	1	0	aqua		
1001	Food	Pickle	square				part base	1	0	aqua		
1001	Food	Pickle	square				part base	1	0	aqua		
1001	Food	Pickle	square				part base	1	0	aqua		
1001	Food	Pickle	square				part base	1	0	aqua		
1001	Food	Pickle	square				part base	1	0	aqua		
1001	Food	Oil	Genie				base part body	8	1	aqua		
1001	Alcohol	White Wine/Brandy					almost complete but in pieces	33	1	green		
1001	Alcohol	Black Beer					body fragments	1	0	dark olive green		
1001	Alcohol	Case Gin					body fragments	7	0	dark olive green		
1001	Alcohol	Black Beer					body fragments	467	0	dark olive green		
1001	Alcohol	Wine					body fragments	14	0	olive green		
1001	Alcohol	Black Beer		collar band			rim	4	0	dark olive green		
1001	Alcohol	Black Beer		collar band			part rim	6	0	dark olive green		
1001	Alcohol	Black Beer		collar			rim	4	0	dark olive green		missing band/skirt
1001	Alcohol	Black Beer		collar			part rim	16	0	dark olive green		missing band/skirt
1001	Alcohol	Black Beer		collar skirt			rim	32	0	dark olive green		
1001	Alcohol	Black Beer		collar skirt			part rim	29	0	dark olive green		
1001	Alcohol	Black Beer		cone collar-skirt			rim	3	0	dark olive green		

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Alcohol	Black Beer		cone collar-skirt			part rim	1	0	dark olive green		
1001	Alcohol	Case Gin					body fragments	4	0	dark olive green		
1001	Alcohol	Wine					body fragments	21	0	green		
1001	Alcohol	Wine		ring seal			part rim and neck	1	0	green		
1001	Alcohol	White Wine/Brandy					body fragments	13	0	pale green		
1001	Alcohol	Wine					base	4	1	green		
1001	Alcohol	Wine					part base	8	4	green		
1001	Alcohol	Black Beer					body fragments	44	0	dark olive green		
1001	Alcohol	Black Beer					part base	1	0	dark olive green		
1001	Alcohol	Black Beer		collar skirt			part rim	1	0	dark olive green		
1001	Household	Window					fragment	1	1	clear		1.8mm thick
1001	Household	Window					fragment	1	1	aqua		2.91mm thick
1001	Household	Window	Plate				fragment	13	1	clear		6.9mm thick
1001	Food	Pickle	Square				body fragments	724	0	aqua		
1001	Food	Pickle					rim	4	0	aqua		
1001	Food	Pickle					3/4 rim	4	0	aqua		
1001	Food	Pickle					2/3 rim	3	0	aqua		
1001	Food	Pickle					1/2 rim	11	0	aqua		
1001	Food	Pickle					<1/3 rim	39	0	aqua		
1001	Food	Pickle					1/3 rim	27	0	aqua		
1001	Food	Pickle	Square				1/4 base	28	0	aqua		
1001	Food	Pickle	Square				1/2 base	17	10	aqua		
1001	Food	Pickle	Square				1/2 base	1	1	aqua	18	
1001	Food	Pickle	Square				1/2 base	1	0	aqua	D	
1001	Food	Pickle	Square				1/3 base	18	6	aqua		
1001	Food	Pickle					part base	12	12	aqua		kickup only
1001	Food	Pickle	Square				3/4 base	31	31	aqua		
1001	Food	Pickle	Square				3/4 base	1	1	aqua	A	

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Food	Pickle	Square		65x67		base	1	1	aqua		
1001	Food	Pickle	square		58x58		base	1	1	aqua		
1001	Food	Pickle	square		64x65		base	1	1	aqua		
1001	Food	Pickle	square		56x56		base	1	1	aqua		
1001	Food	Pickle	square		58x58		base	1	1	aqua		
1001	Unidentified	Bottle					body fragments	38	0	aqua		
1001	Alcohol	Whisky					body fragments	22	0	aqua		
1001	Alcohol	Whisky		collar skirt			part rim	2	0	aqua		
1001	Alcohol	Whisky		collar band			part rim	2	0	aqua		
1001	Alcohol	Whisky					part neck and shoulder	4	0	aqua		
1001	Alcohol	Whisky					part base	1	1	aqua	B	
1001	Alcohol	Whisky					part base	1	1	aqua		
1001	Unidentified	Bottle					part base	3	1	aqua		
1001	Pharmaceutical	Castor Oil					body fragments	1	0	cobalt		
1001	Pharmaceutical	Castor Oil					molten	4	0	cobalt		
1001	Unidentified	Bottle					molten	10	0	aqua		
1001	Pharmaceutical	Medicine					body fragments	7	0	blue aqua		
1001	Household	Drinking Glass	Tumbler				body fragments	4	0	clear		
1001	Household	Drinking Glass	Shot				body fragments	2	0	clear		
1001	Unidentified	Bottle					body fragments	16	0	aqua		
1001	Unidentified	Bottle					body fragments	4	0	clear		
1001	Water	Mineral Water/Soda	Hamiltons				body fragments	8	1	aqua	...HER...E's... NU...	
1001	Household	Ink					base part body	1	1	clear	INK L...	probably Walkden's
1001	Household	ink					part base	2	2	clear		probably Walkden's

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Household	ink					part base and body	1	0	clear	...ON	Walkden's?
1001	Household	ink					body fragments	1	1	clear	WA...N	probably Walkden's
1001	Household	ink					body fragments	1	0	clear	...LKD...	probably Walkden's
1001	Household	ink		shear lip			rim neck shoulder	1	0	clear		probably Walkden's
1001	Household	ink					shoulder	1	0	clear		probably Walkden's
1001	Pharmaceutical	Medicine					body fragments	1	1	clear	E. ...	
1001	Food	Sauce					part base and body	2	1	aqua		
1001	Food	Vinegar	Dimple				body fragments	1	1	aqua		large bottle
1001	Food	Salad Oil					body fragments	1	0	aqua		scalloped neck to shoulder
1001	Food	Salad Oil	Fluted				body fragments	8	0	aqua		
1001	Food	Salad Oil	half whirly				body fragments	59	0	aqua		
1001	Food	Salad Oil		collar			neck and collar	1	0	aqua		
1001	Food	Salad Oil		collar			part rim and neck	3	0	aqua		
1001	Food	Salad Oil		collar			part rim	1	0	aqua		
1001	Food	Oil					body fragments	1	0	aqua		
1001	Food	Salad Oil	half whirly		47		base	1	1	aqua		
1001	Food	Salad Oil	half whirly		47		base	1	1	aqua		
1001	Food	Salad Oil	half whirly				1/2 base	3	1	aqua		
1001	Food	Salad Oil					part base	1	1	aqua	A C B Co	
1001	Food	Salad Oil					1/4 base	1	0	aqua		
1001	Food	Salad Oil					1/2 base	2	1	aqua		
1001	Food	Salad Oil					1/3 base	3	1	aqua		
1001	Food	Salad Oil					2/3 base	2	1	aqua		
1001	Food	Salad Oil					part base	2	1	aqua		kickup only
1001	Food	Salad Oil	half whirly		40		base part body	1	1	aqua		

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Food	Oil			49		base	1	1	aqua		
1001	Food	Pickle					rim and neck	1	0	aqua		
1001	Alcohol	Wine		ring seal			rim and neck	1	0	green		
1001	Food	Salad Oil	half whirly		47		base	1	1	aqua		
1001	Household	Drinking Glass	Tumbler		53		base	1	1	clear		7-sided body
1001	Food	Oil					part base and body	2	1	aqua		
1001	Food	Pickle	square		62x63		most base and part body	1	1	aqua		
1001	Food	Pickle	square				most base and part body	1	1	aqua		
1001	Food	Mustard	Shamrock				part base and body	2	1	aqua		
1001	Alcohol	Whisky					neck	1	0	aqua		
1001	Food	Pickle					rim	1	0	aqua		
1001	Household	Drinking Glass	Tumbler				part base and body	1	1	clear		
1001	Household	Drinking Glass	Tumbler				part base and body	1	1	clear		
1001	Household	Drinking Glass	Tumbler				body fragments	1	0	clear		not associated to above
1001	Food	Pickle	square				part base	1	0	aqua	A	
1001	Alcohol	Unidentified					molten	1	0	dark olive green		
1001	Household	ink		shear lip			body fragments	7	1	clear	...EN'S INK...NDON..	Walkdens
1001	Water	Mineral Water/Soda	Hamiltons				body fragments	1	0	aqua	...N, E...	roberto france
1001	Food	Oil			44		part base and body	1	1	aqua	...CO/...NDON	
1001	Household	Stemmed Dish	Pressed				body fragments	3	1	clear		
1001	Food	Oil					part rim and neck	1	0	aqua		
1001	Household	ink		shear lip			rim and neck	1	0	clear		
1001	Household	Stopper					half	1	1	aqua		
1001	Household	Stopper					half	1	1	aqua		
1001	Household	ink					part neck and shulder	1	1	aqua		large

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Pharmaceutical	Medicine					part base and body	1	1	aqua		
1001	Pharmaceutical	Medicine					part base and body	1	1	aqua		
1001	Pharmaceutical	Medicine					part base and body	1	1	aqua		
1001	Unidentified	Bottle					part base	1	1	aqua	B	
1001	Unidentified	Bottle					part base	1	1	clear		
1001	Food	Salad Oil					rim	1	0	aqua		
1001	Household	ink		pressed			rim	1	0	clear		
1001	Alcohol	Whisky		collar skirt			rim	1	0	aqua		
1001	Food	Chutney					part rim and neck	1	1	aqua		
1001	Pharmaceutical	Castor Oil					rim, neck, body fragments	11	1	cobalt		
1001	Household	ink	hexagonal	shear lip	42	59	complete	1	1	aqua	I	layered interior
1001	Household	ink	round	shear lip	48	51	complete	1	1	aqua	WALKDEN'S INK LONDON	
1001	Household	ink	round	shear lip	48	54	almost complete	1	1	aqua	WALKDEN'S INK LONDON	neck slumped to one side
1001	Household	Ink	round	shear lip	48	52	complete	1	1	aqua	WALKDEN'S INK LONDON	
1001	Household	Ink	square		45x46		almost complete	1	1	aqua	WALKDEN'S INK LONDON	
1001	Household	Stopper					almost complete	1	1	aqua		end of peg broken
1001	Household	Stopper				41	complete	1	1	aqua		
1001	Household	Stopper				27	complete	1	1	aqua		
1001	Household	Stopper				44	complete	2	1	aqua		
1001	Alcohol	Case Gin		Pig Snout			rim	1	0	dark olive green		
1001	Alcohol	Case Gin		Pig Snout			part rim	1	0	dark olive green		
1001	Household	ink					body fragments	1	1	aqua	...KDEN...	
1001	Pharmaceutical	Medicine					body fragments	1	0	aqua	..NA/..GNES../ ...N & Dubl..	
1001	Food	Worcestershire Sauce	Lea & Perrins				body fragments	2	1	aqua	...C.../...RRI...	

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1010	Alcohol	Black Beer					1/2 base	1	0	dark olive green		conical kickup
1010	Alcohol	Wine					part base and body fragments	4	1	green		
1010	Food	Oil					part base and body	3	1	aqua		
1010	Food	Pickle					part rim and shoulder fragment	2	0	aqua		
1001	Alcohol	Whisky		collar band			rim neck	1	0	aqua		
1001	Food	Pickle					rim neck	1	0	aqua		
1001	Food	Pickle					rim neck	1	0	aqua		
1001	Food	Pickle					rim	1	0	aqua		
1001	Food	Pickle					rim	1	0	aqua		
1001	Food	Pickle					rim part neck	1	0	aqua		
1001	Alcohol	White Wine/Brandy					neck	1	0	pale green		
1001	Food	Salad Oil	half whirly				rim neck	1	0	aqua		
1001	Food	Salad Oil	half whirly				rim neck	1	0	aqua		
1001	Food	Salad Oil	half whirly				rim neck	1	0	aqua		
1001	Food	Salad Oil					rim	1	0	aqua		
1001	Food	Salad Oil					rim part neck	1	0	aqua		
1001	Food	Salad Oil					rim part neck	1	0	aqua		
1001	Food	Salad Oil					rim part neck	1	0	aqua		
1001	Food	Oil					part neck	1	0	aqua		
1001	Alcohol	White Wine/Brandy					part rim	1	0	pale green		
1001	Alcohol	White Wine/Brandy		ring seal			part neck	1	0	pale green		
1001	Water	Mineral Water/Soda	Hamiltons				rim	1	0	aqua		
1001	Food	Salad Oil					part neck	1	0	aqua		large
1001	Pharmaceutical	Medicine		rolled			rim neck part shoulder	1	1	blue aqua		
1001	Unidentified	Bottle					rim neck	1	0	aqua		
1001	Unidentified	Bottle		rolled			rim neck	1	0	clear		

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Unidentified	Bottle					molten	9	0			
1001	Food	Pickle					body fragments	11	0	aqua		
1001	Alcohol	White Wine/Brandy		ring seal			part rim	1	0	pale green		
1001	Food	Salad Oil					part base and body	2	1	aqua		large
1001	Household	ink					body fragments	1	0	aqua	...ON	probably Walkdens
1001	Household	ink			47		base part body	1	1	aqua	...N'S INK LON...	walkdens
1001	Household	Stemmed Dish					body fragments	2	0	clear		
1001	Food	Salad Oil					rim	1	0	aqua		
1001	Food	Salad Oil					part base and body	1	1	aqua		large
1001	Unidentified	Bottle					part rim neck	1	0	aqua		
1001	Food	Pickle	square				3/4 base	1	1	aqua		
1001	Food	Pickle	square				1/2 base	1	0	aqua		
1001	Food	Pickle	square				2/3 base	1	1	aqua		
1001	Food	Pickle	square				1/3 base	1	0	aqua		
1001	Food	Pickle	square				1/3 base	1	0	aqua		
1001	Alcohol	Black Beer		collar skirt			rim neck	15	0	dark olive green		
1001	Alcohol	Black Beer		collar skirt			rim	6	0	dark olive green		
1001	Alcohol	Black Beer		collar band			rim	1	0	dark olive green		
1001	Alcohol	Black Beer		collar band			rim neck	4	0	dark olive green		
1001	Alcohol	Black Beer		collar			rim neck	1	0	dark olive green		
1001	Alcohol	Black Beer					body fragments	1	0	dark olive green		
1001	Alcohol	White Wine/Brandy		ring seal			rim neck	1	0	pale green		
1001	Water	Mineral Water/Soda	Hamiltons				body fragments	1	1	aqua	..b B...	
1001	Alcohol	Wine		laid on ring			rim neck	1	0	green		

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Alcohol	Case Gin					body fragments	3	0	dark olive green		
1001	Alcohol	Case Gin		pig snout			part rim	1	0	dark olive green		
1001	Alcohol	Case Gin			59x58		base	1	1	dark olive green		
1001	Alcohol	Case Gin			61x60		base	1	1	dark olive green		
1001	Alcohol	Case Gin					part base	2	0	dark olive green		
1001	Alcohol	Wine			78		base	1	1	green		
1001	Food	Pickle	square		60x62		base	1	1	aqua	D	
1001	Food	Pickle				57x61	base	1	1	aqua		
1001	Household	Window	Plate				fragment	1	1	aqua		7.8mm thick
1001	Household	Window	plate				fragment	1	1	aqua		6.4mm thick
1001	Food	Pickle					body fragments	2	0	aqua		
1001	Alcohol	White Wine/Brandy		ring seal			rim neck	1	0	pale green		
1001	Food	Salad Oil				39	base part body	1	1	aqua		
1001	Food	Salad Oil					rim	2	0	aqua		
1001	Food	Salad Oil					rim neck	1	0	aqua		
1001	Food	Pickle					3/4 base	1	1	aqua		
1001	Food	Pickle					3/4 base	1	1	aqua		
1001	Alcohol	Whisky					rim neck	1	0	aqua		
1001	Food	Fruit					most base	1	1	aqua		
1001	Food	Pickle					2/3 base	1	1	aqua		
1001	Food	Pickle					2/3 base	1	1	aqua	D	
1001	Food	Oil					part rim neck	1	0	aqua		
1001	Pharmaceutical	Medicine		prescription			rim	1	1	blue aqua		
1001	Pharmaceutical	Medicine					part base and body	1	1	aqua		
1006	Alcohol	Black Beer			82		3/4 base	1	1	dark olive green		layered conical pickup
1006	Alcohol	Black Beer			74		base	1	1	dark olive green		conical pickup
1006	Alcohol	Black Beer			80		2/3 base	1	1	dark olive green		conical pickup
1006	Alcohol	Black Beer			82		1/2 base	1	1	dark olive green		conical pickup
1006	Alcohol	Black Beer			90		2/3 base	1	1	dark olive green		conical pickup
1006	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical pickup

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1006	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
1006	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1006	Alcohol	Black Beer					part base	12	0	dark olive green		
1006	Alcohol	Black Beer			89		3/4 base	1	1	dark olive green		dome with central mamelon
1006	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
1006	Alcohol	Black Beer					1/2 base	1	1	dark olive green		conical kickup
1006	Alcohol	Black Beer					part base	19	0	dark olive green		
1006	Alcohol	Black Beer					body fragments	6	0	dark olive green		
1006	Alcohol	Black Beer					part rim	3	0	dark olive green		
1006	Alcohol	Black Beer					rim	3	0	dark olive green		
1006	Alcohol	Black Beer		collar skirt			rim neck	1	0	dark olive green		
1006	Alcohol	Black Beer		collar skirt			rim	3	0	dark olive green		
1006	Alcohol	Black Beer		collar band			part rim	3	0	dark olive green		
1006	Alcohol	Black Beer		collar band			rim	3	0	dark olive green		
1006	Alcohol	Wine					body fragments	1	0	green		
1006	Alcohol	Black Beer			77		base part body	1	1	dark olive green		layered conical kickup
1006	Alcohol	Black Beer			89		base	1	1	dark olive green		layered conical kickup
1006	Alcohol	Black Beer			90		base part body	1	1	dark olive green		conical kickup
1006	Alcohol	Black Beer			76		base	1	1	dark olive green		shallow dome central mamelon
1006	Alcohol	Black Beer			90		3/4 base	1	1	dark olive green		layered conical kickup
1006	Alcohol	Black Beer					2/3 base	1	1	dark olive green		shallow dome central mamelon
1006	Alcohol	Black Beer			78		2/3 base	1	1	dark olive green		layered conical kickup
1006	Alcohol	Black Beer					part base	4	0	dark olive green		
1006	Alcohol	Black Beer					1/3 base	4	2	dark olive green		
1006	Alcohol	Black Beer					1/2 base	3	3	dark olive green		

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
Unstratified	Alcohol	Black Beer					body fragments	2	0	dark olive green		
Unstratified	Alcohol	Black Beer			79		base	1	1	dark olive green		conical kickup
Unstratified	Alcohol	Black Beer			84x78		base part body	1	1	dark olive green		misshapen, shallow kickup
Unstratified	Alcohol	Black Beer			79		base	1	1	dark olive green		conical kickup
Unstratified	Alcohol	Black Beer			85		3/4 base	1	1	dark olive green		conical kickup
Unstratified	Alcohol	Black Beer					1/2 base	1	0	dark olive green		conical kickup
Unstratified	Alcohol	Black Beer					1/3 base	1	1	dark olive green		conical kickup
Unstratified	Food	Pickle					body fragments	1	0	aqua		
1007	Alcohol	Black Beer					body fragments	4	0	dark olive green		
1007	Alcohol	Black Beer		collar skirt			rim neck	3	0	dark olive green		
1007	Alcohol	Black Beer		collar skirt			part rim	1	0	dark olive green		
1007	Alcohol	Black Beer		collar skirt			rim	1	0	dark olive green		
1007	Alcohol	Black Beer			88		base	1	1	dark olive green		conical kickup
1007	Alcohol	Black Beer			78		base part body	1	1	dark olive green		domed central mamelon
1007	Alcohol	Black Beer			87		base	1	1	dark olive green		conical kickup
1007	Alcohol	Black Beer			79		base	1	1	dark olive green		conical kickup
1007	Alcohol	Black Beer			78		base	1	1	dark olive green		conical kickup
1007	Alcohol	Black Beer					2/3 base	1	1	dark olive green		conical kickup
1007	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1007	Alcohol	Black Beer					1/2 base	1	0	dark olive green		conical kickup
1007	Alcohol	Black Beer					1/3 base	1	0	dark olive green		conical kickup
1007	Food	Pickle	round				part base	1	0	aqua		
1007	Food	Pickle					part rim	1	0	aqua		
1001	Alcohol	Black Beer					body fragments	2	0	dark olive green		
1001	Alcohol	Black Beer			81		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			88		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			90		base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer			91		base	1	1	dark olive green		conical kickup

Context	Category	Type	Subtype	Rim Type	Base Size	Height	Piece Type	NIS P	MN I	Colour	Embossing	Comments
1001	Alcohol	Black Beer			78		base part body	1	1	dark olive green		shallow dome layered rings central mamelon
1001	Alcohol	Black Beer			79		base	1	1	dark olive green		domed
1001	Alcohol	Black Beer					1/3 base	1	1	dark olive green		conical kickup
1001	Alcohol	Black Beer					part base	1	0	dark olive green		shallow dome
1001	Alcohol	Black Beer		collar skirt			rim neck part shoulder	1	0	dark olive green		
1001	Food	Pickle					body fragments	4	0	aqua		
1001	Alcohol	Case Gin			64x65		base and part body	1	1	dark olive green		
1001	Alcohol	Case Gin			55x55		base part body	1	1	dark olive green		
1001	Alcohol	Case Gin		pig snout			rim neck part shoulder	1	0	dark olive green		
Unstratified	Alcohol	Black Beer			78		base part body	1	1	dark olive green		conical kickup
1006	Alcohol	Black Beer					part base	1	1	dark olive green	CO.../PORTOBELLO	
1006	Alcohol	Black Beer			90		base	1	1	dark olive green		domed kickup
1006	Alcohol	Black Beer			90		base	1	1	dark olive green		conical kickup
1006	Alcohol	Black Beer			88		base	1	1	dark olive green		layered dome central mamelon
1007	Alcohol	Black Beer			65		base part body	1	1	dark olive green		conical kickup
1007	Alcohol	Black Beer					part base	1	1	dark olive green	WOOD...OBE LLO/...URING	
1001	Food	Pickle	square		62x62		base part body	1	1	aqua	E	
1001	Food	Salad Oil	Anthony Thatcher/Cathedral		47		base part body	1	1	aqua		
1001	Food	Salad Oil	half whirly		59		base part body	1	1	aqua		
1001	Food	Salad Oil	half whirly		38		base part body	1	1	aqua		
1001	Food	Oil	Fluted		49		base part body	1	1	aqua	registration mark (if legit) April 1870	
1001	Food	Unidentified					part base	1	1	aqua	LIVERPOOL / bird logo	
1001	Food	Pickle	half pint				body fragments	10	0	aqua		conical kickup
1001	Alcohol	Black Beer	pint		65		base part body	1	1	dark olive green		conical kickup

Metal Assemblage (non-militaria)

Context	Metal	Category	Type	Subtype	NISP	MNI	Comments
3195	Iron	Equestrian	Horseshoe	Workhorse	1	1	rear, caulks
3182	Iron	Building/Construction	Nail	Wedge	1	1	
3182	Iron	Building/Construction	Nail	Wedge	2	1	
1082	Iron	Building/Construction	Nail	Wedge	1	1	
1010	Iron	Building/Construction	Unidentified	Bar	1	1	
1007	Iron	Building/Construction	Nail	Wedge?	1	1	
1001	Iron/Lead	Building/Construction	Nail	Roofing	3	3	
1001	Iron	Building/Construction	Nail	Timber - Wire	6	6	
1001	Iron	Building/Construction	Nail	Wedge	1	1	
1001	Iron	Building/Construction	Nail		2	2	
1001	Iron	Building/Construction	Bolt		1	1	
1001	Iron	Building/Construction	Bolt?		1	1	
1001	Iron	Unidentified	Unidentified		4	4	

Miscellaneous Assemblage


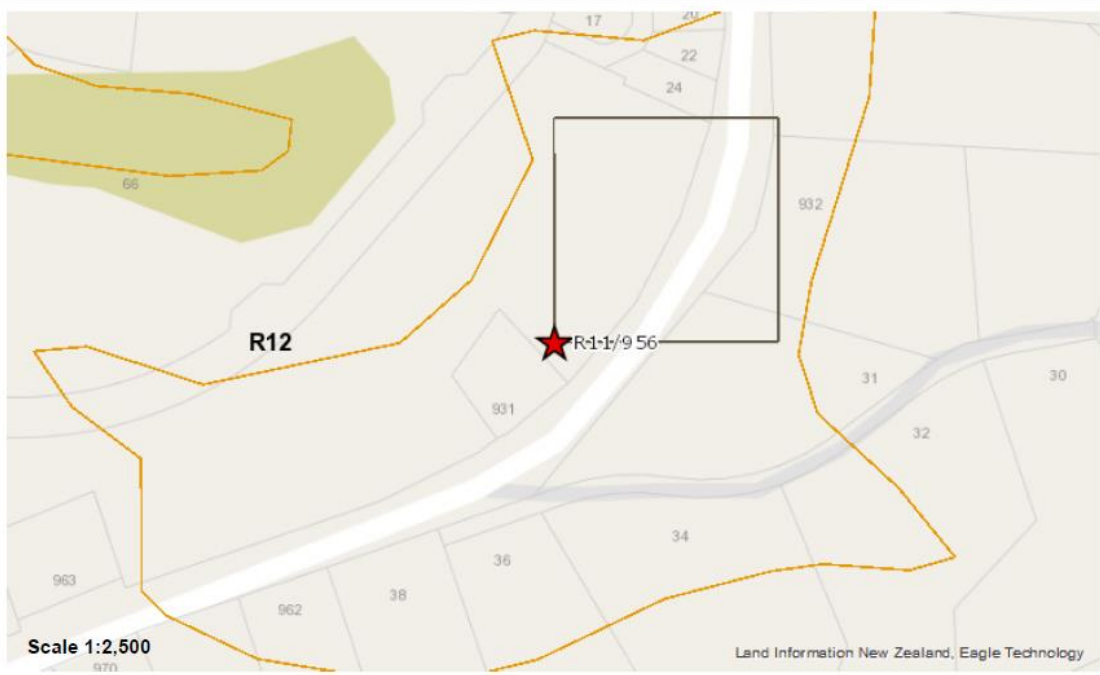
Context	Material	Category	Type	Subtype	NISP	MNI	Size	Comment
1091	Unknown	Clothing/Footwear	Type		1	1		remains of 3 nails/rivets 38mm wide, 37mm on one side 39 on other 35mm at middle
1091	Unknown	Packaging	Heel Plate		1	1		bent, c62mm diameter
3057	Ceramic	Clothing/Footwear	Jar Insert	Underwear	1	1	9.86	4 holes
3035	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.48	4 holes
1001	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.3	4 holes
1001	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.15	4 holes
1001	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.36	4 holes
1001	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.92	4 holes
1001	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.32	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.77	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	9.9	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.87	4 holes

Context	Material	Category	Type	Subtype	NISP	MNI	Size	Comment
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.39	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1		broken
1001	Ceramic	Clothing/Footwear	Button	Underwear	1	1	12.31	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.89	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.88	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.92	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.6	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.59	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	12.5	4 holes
1001	Ceramic	Clothing/Footwear	Button	Shirt	1	1	16.65	2 holes
1001	Ceramic	Clothing/Footwear	Button	Shirt	1	1	16.57	2 holes
1001	Ceramic	Clothing/Footwear	Button	Underwear	1	1	12.31	4 holes
1001	Ceramic	Clothing/Footwear	Button	Underwear	1	1	12.1	4 holes
1001	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.66	4 holes
1001	Ceramic	Clothing/Footwear	Button	Underwear	1	1	12.72	4 holes
1001	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.74	4 holes
1001	Ceramic	Clothing/Footwear	Button	Underwear	1	1	12.27	4 holes
1001	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.83	4 holes
1001	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.89	4 holes
1001	Ceramic	Clothing/Footwear	Button	Underwear	1	1	12.22	4 holes
1001	Ceramic	Clothing/Footwear	Button	Underwear	1	1	12.12	4 holes
1001	Ceramic	Clothing/Footwear	Button	Underwear	1	1	12.15	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.11	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.04	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.83	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.14	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.03	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.42	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.83	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.27	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.35	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.68	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.21	4 holes

Context	Material	Category	Type	Subtype	NISP	MNI	Size	Comment
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.2	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	9.86	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	9.99	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	2	1	10.36	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1		broken
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1		broken
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1		broken
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1		broken
3056	Ceramic	Clothing/Footwear	Button	Shirt	1	1	15.66	4 holes
3056	Ceramic	Clothing/Footwear	Button	Shirt	1	1	15.63	4 holes
3056	Ceramic	Clothing/Footwear	Button	Shirt	1	1	15.32	2 holes
3056	Ceramic	Clothing/Footwear	Button	Shirt	1	1		broken
3056	Ceramic	Clothing/Footwear	Button	Shirt	1	1		broken
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.46	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.71	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	9.76	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.9	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.16	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.06	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.34	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.55	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	9.94	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.77	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.04	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.44	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.4	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.28	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.06	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.04	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.39	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.02	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	9.28	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.51	4 holes

Context	Material	Category	Type	Subtype	NISP	MNI	Size	Comment
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	10.89	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.11	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1	11.27	4 holes
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1		broken
3056	Ceramic	Clothing/Footwear	Button	Underwear	1	1		broken
3056	Slate	Writing	Button		3	1		grey colour
1001	Wood	Packaging	Writing Slate		1	1		small nail holes
1001	Stone	Building/Construction	Label		1	1		
3182	Iron	Clothing/Footwear	Tile		1	1		
1001	unknown	Clothing/Footwear	Boot Heel Plate		1	1		

APPENDIX 4 – NZAA SITE RECORD FORM

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION		
 <p>Site Record Form</p> <p>archaeological site recording scheme</p>		<p>NZAA SITE NUMBER: R11/956</p> <p>SITE TYPE: Military (non-Maori)</p> <p>SITE NAME(s): Ring's / Kirikiri Redoubt</p> <p>DATE RECORDED:</p>
<p>SITE COORDINATES (NZTM) Easting: 1775399 Northing: 5897599 Source: CINZAS</p>		
<p>IMPERIAL SITE NUMBER: N46/154 METRIC SITE NUMBER: R11/956</p>		
 <p>Scale 1:2,500</p> <p>Land Information New Zealand, Eagle Technology</p>		
<p>Finding aids to the location of the site</p> <p>The remains of the redoubt is partly within an Heritage Reserve accessed from Twin Parks Rise and Arawai Terrace, and partly within the residential property at 931 Papakura-Clevedon Road (see Figure 1).</p>		
<p>Brief description</p> <p>REDOUBT</p>		
<p>Recorded features</p> <p>Redoubt</p>		
<p>Other sites associated with this site</p>		
<p>Printed by: richardshakles</p>		<p>21/06/2021</p> <p>1 of 25</p>

SITE RECORD HISTORY	NZAA SITE NUMBER: R11/956
<p>Site description</p> <p>Updated 21/06/2021 (other), submitted by richardshakles Grid reference (E1775399 / N5897599)</p> <p>The main redoubt site consists of the remains of surface earthworks in the form of part of the eastern course of the redoubt's defensive ditch as well as the northeastern bastion. Within the remains of the redoubt interior it is likely there will be a number of features and artefacts.</p> <p>The wider area around the redoubt was investigated during the extensive earthworks related to the largescale medium density residential subdivision of the property at 949 Old Wairoa Road and 965-973 Papakura-Clevedon Road (see Figure 2). Within the area bordering the heritage reserve to the north, east and west a number of archaeological features and extensive deposits relating to the occupation of the redoubt by a number of regiments of the British Imperial Army between July 1863 and July 1865 were found (see Figures 3 - 11).</p> <p>The topsoil strip to the east of the redoubt exposed a small number of archaeological features including a defensive glacis ramp structure adjacent and to the east of the eastern course of the redoubts defensive ditch. Also a large linear feature running on a south-north alignment was exposed in plan extending away from the northeastern bastion (Figure 3). The section of the ditch exposed was 13.30m in length and trended north-northwest by south-southeast for some 12 metres before turning slightly to a north-south alignment for the final 1.90m to its terminus situated on a pronounced slope approximately 20m from the edge of the large gully to the east of the redoubt. The ditch had a stepped profile on both sides, that then broke to a 'U' shaped base (Figure 4). The ditch was 1.90m wide at the edge of excavation and 0.94m deep though the base of the ditch was observed to be rapidly deepening as it headed toward the main defensive ditch of the redoubt. The function of the ditch was to drain water from the main redoubt ditch, and to prevent the accumulation of silt within it. However, the drainage ditch itself had at some point completely silted up and a recut ditch was required and had been excavated within the course of the original (Figure 4).</p> <p>After the removal of topsoil in the area to the north of the redoubt and adjacent to the Heritage Reserve boundary a ditch (context 3178) was exposed extending from the section face on a southeast to northwest alignment, that then turned to the northeast- southwest where it was observed to terminate (Figure 5 and Figure 12). The remains of the ditch was situated on a sloping bank which had been cut at the time of construction of the former residence at 935 Papakura-Clevedon Road. Another short section of ditch on the same northeast- southwest alignment was exposed some 1.03m to the southwest of the terminus of the main section of ditch. The ditch had been cut with steeply sloping sides that broke to a flattish, slightly concave base, and contained two fills.</p> <p>The longest section of ditch was aligned southeast-northwest and was 7.40m in length and up to 1.12m in width, though it narrowed to as little as 0.77m as it went downslope away from the redoubt due to modern vertical truncation of its upper levels). The ditch then turned to a northeast-southeast alignment for a further 3.04m where it terminated (Figure 6). A linear feature consistent with a narrow drain was observed extending from the corner of the main section of ditch where it turned to the southwest (Figure 6). A slot excavated across the corner of the ditch exposed the drain in section and determined that the drain was contemporary with the main ditch. The drain was aligned south-southwest to north-northeast, and was 2.65m in length, 0.28m, wide and up to 0.11m deep, though it shallowed out toward its terminus where water would have discharged downslope toward the same gully that the redoubt drainage ditch also discharged into.</p> <p>The lower fill of the ditch had been truncated by a recutting (context 3180) of the partially infilled ditch (Figure 5). The recut ditch was narrower and slightly shallower than the original, and ran on the same alignment within the course of the original ditches channel (Figure 6). The recut ditch contained three fills. Artefacts retrieved from the fills of the re-cut ditch consisted of bottle glass (alcohol, pharmaceutical, foodstuffs), ceramics including earthenware and stoneware, clay tobacco pipes, iron nails, and an iron heel plate from a boot. Lastly, the upper fill likely formed after the military had abandoned the redoubt and represents a slow infilling prior to the formation of the modern topsoil.</p> <p>The ditch would also have had an embankment on the interior, and this is evidenced in the section seen at the edge of the heritage reserve (Figure 5). The embankment would have been created by the upcast from the original excavation of the ditch and would have likely had a fence running across its top. The embankment was on the interior (western side) of the ditch and was observed in section to be approximately 0.58m wide and survived to a height of 0.18m although it would have originally been more substantial. The embankment had partially slipped prior to the recutting of the original ditch and had formed a slump deposit on the western side of ditch as seen in section (Figure 5). It was likely due to this occurrence that the original silted up quickly and necessitated the recut ditch to be excavated.</p> <p>Approximately 1.04m to the southwest of the terminus of ditch 3178, another course of ditch (context 3201) present on the same northwest-southeast alignment was exposed (Figure 6). The section of ditch 3201 survived for only 2.31m where it had been truncated in the late 20th century when the section for the house at 935, had been cut and benched. The ditch had also been severely vertically truncated and was approximately 0.38m wide and only 0.08m deep and filled with a single fill, which represented a primary silt deposit consistent with the primary fill of ditch the original ditch. It is extremely likely therefore, that the two sections of ditch are contemporary and part of a single large feature enclosing an area to the north of</p>	
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the redoubt.

It is interpreted that the two sections of ditch (contexts 3178 and 3201) represent an enclosure ditch that surrounded the encampment of bell tents as seen on the Morrow 1863 watercolour depicting the camp of the 43rd regiment (Figure 7 and Figure 13). The enclosure ditch would have served a defensive purpose as the low earthen rampart on the inside of the ditch would have almost certainly been topped with a fence, and also would have drained water keeping the encampment ground dry.

To the west of the redoubt site a number of features related to the preparation of and cooking of food to supply the redoubt garrison. Firstly, two linear trenches which were adjoined at their eastern end, from where they diverged at 45° forming a 'wishbone' shape in plan, were exposed on sloping ground approximately 40m due west of the redoubt, and some 20m from the edge of the head of a large east-west trending gully (Figure 8 and Figure 9).

The trenches diverged downslope toward the head of the gully, and had been cut with vertical sides that broke at right angles to a flat, sloping base that steepened as the trenches moved downslope with a resultant slight increase in trench depth. Unfortunately, the terminus of the eastern trench was not present due to modern truncation which occurred in the 1980s when the access road to the house at 935 Papakura-Clevedon Road (situated to the north of the redoubt) was constructed. The northern section of the trench survived for some 5.54m in length and was approximately 0.28m in width although it varies slightly along its course from as narrow as 0.24m up to 0.31m wide and an average depth of 0.28m (Figure 9 and Figure 13). The southern section of trench however, survived for some 7.75m and also had an average width of 0.28m and for the most part survived to a depth of 0.28m. The feature is interpreted as cooking trenches that were commonly excavated temporary features used for cooking food for the men of the regiments on campaign. At the apex of where the two trenches converged a sub rectangular area 0.64m x 0.41m showed evidence of being heat affected and is interpreted as the location of a chimney like structure or vent. The trenches had been backfilled with a dark greyish brown very clayey silt, that contained moderate inclusions of charcoal as well as artefacts relating to the military occupation such as minié balls (Enfield rifled musket bullets very heavily corroded metal (iron and copper alloy) and black beer and wine/brandy bottle glass fragments, clay tobacco pipes, and ceramics including sherds of willow ware and sprigged ware.

Secondly, a large rectangular feature was exposed in plan on the northern side of the gully head approximately 75m from the western side of the redoubt main fortifications (Figure 10). The feature was 4.69m in length (east-west) by 3.74m wide (north-south) and had been cut with vertical sides, with a flat base and had a maximum depth of 0.18m (Figure 10). The feature contained one fill that consisted of a greyish-brown, silty clay that contained occasional charcoal inclusions. The deposit contained artefacts such as black beer bottle glass, ceramic sherds including willowware, a partial stoneware ink bottle and several heavily corroded iron nails. The feature had been benched northward into the slope to create a flat, level area, and postholes within the base indicated that a structure had stood here (Figure 10 and Figure 13). Toward the southern boundary of the structure and to the eastern side of its centre, a reddish-orange heavily burnt oval feature was clearly apparent (Figure 10). The feature was 1.24 metres in length and 0.61m wide and extended to a depth of 0.24 metres. The feature is interpreted as either a cooking pit, or perhaps the camp bakery, which were always situated away from the redoubt proper, probably due to the fire risk and potential for explosions of stored gun powder. The location of the feature some 85 metres to the west and downslope of the western redoubt ditch, considered with the intensive nature and depth of scorching to the ground, strongly suggest that the feature was indeed the remains of the Redoubt bakery.

The most prominent feature exposed in the area to the west of the redoubt was a dark brown deposit that was rectangular in plan and contained abundant historic artefacts relating to the occupation of the redoubt and included a large volume of military artefacts. Due to the presence of fragile items such as copper alloy regimental buttons, the deposit was trowelled by hand in order to avoid damaging the artefacts and also to enable the retrieval of as many artefacts as possible. A metal detector was also utilised to ensure no small metallic items were missed and onsite sieving of the excavated deposits was also undertaken. The deposit was a compacted but friable black to dark brown slightly clayey silt which contained frequent patches of burnt clayey silt and occasional to moderate charcoal inclusions. The deposit also contained abundant mid-19th century historic artefacts including regimental uniform paraphernalia, including regimental buttons from a number of regiments; ordnance such as minié bullets, pistol bullets, pistol and musket balls, and associated materials such as ceramic, glass, clay tobacco pipes and miscellaneous metal, both of copper alloy, iron, and lead. The deposit also contained small quantities of animal bone, but unfortunately due to the properties of the soil, it was in an extremely degraded condition. The deposit had slumped at its western end, where it was present as a much thinner layer downslope and to the west of the in situ portion of the platform that had been truncated by the access road to the property at 935 Papakura-Clevedon. Nevertheless, the deposit still contained frequent artefacts including military items and other historic artefacts. Therefore, the redeposited downslope part of the deposit was also trowelled by hand. The deposits dimensions (including the downslope portion) was some 21.30m in length by 12.50m wide (though the eastern in the in situ part was only 6.40m wide) and varied between 0.15m and 0.25m thick.

A deposit of identical composition (context 1001 = 3027) was present on the slope on the western side of the access road, where it continued for approximately 9m and as the slope flattened out slightly immediately above the head of the large east-west trending gully, it flared out to the south to as much as 17.20m wide (Figure 10 and Figure 11). The deposit varied in thickness from as deep as 0.20m to as little as 2cm where it lensed out at the edge of the gully head. This deposit represented the erosion/slumping of a made ground layer upslope that had subsequently redeposited downslope to as much as 35 metres away (Figure 10 and Figure 11). As was the case further upslope, the deposit contained a number of copper alloy and lead military artefacts as well as a large volume of historic artefacts in general (glass, ceramics, iron, tobacco pipes etc), and a metal detector and sieve were utilised to ensure in particular that items relating to the military

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occupation were not missed. The deposit also contained evidence of a fire with moderate frequent charcoal inclusions and frequent patches of burnt/heat affected clay.

Due to the location of the earthen platform to the west of the redoubts western ditch, it is interpreted that it represents the remains of the foundation platform for the large wooden barracks building structure seen depicted on Arthur Morrow's 1863 watercolour of the redoubt (Figure 7). The large volume of artefacts (many of which were small items of regimental uniform paraphernalia and small firearms ordnance) were likely deposited either during the occupation phase of the building, or during the dismantling of it after abandonment, or a combination of both. The charcoal and frequent burnt clay patches indicate that at some point after the barracks structure had been dismantled or partly dismantled that a fire was set as a part of the site clean-up process.

Other features consisted of outer defences (gun pits overlooking the deep gully, numerous postholes, a cook house pit, a long drop latrine, and a couple of small refuse pits.

The site record form will be updated shortly with the full reference of the final report monograph once editing has been finalised.

Condition of the site

Updated 21/06/2021 (other), submitted by richardshakles

The condition of the remnants of the eastern course of the redoubt defensive ditch and northeastern bastion have not changed over the past 20 years. They are partly infilled, and beneath turf. The interior of the redoubt and wider encampment are subsurface and condition of remains is unknown. The excavations of the wider encampment area have shown that soil conditions are very poor for the preservation of organic materials and also particularly bad for metals with the sole exception of lead.

Statement of condition

Current land use:

Threats:

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY

NZAA SITE NUMBER: R11/956

Supporting documentation held in ArchSite

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION SITE RECORD FORM (NZMS1) NZMS 1 map number M.6-7 NZMS 1 map name Pukekohe NZMS 1 map edition 2nd 1994.		NZAA NZMS 1 SITE NUMBER N46-7/154 DATE VISITED not visited SITE TYPE Redoubt SITE NAME: MAORI OTHER Rings Redoubt																			
Grid Reference Easting <u>2 5 1 2 0 0</u>		Northing <u>6 3 8 4 0 0</u>																			
1. Aids to relocation of site (attach a sketch map) Alongside the main road, two miles from Papakura, on the way to Clevedon. Part Section 29, Hunua Parish, in 1922 on the homestead of C.J. Hibbard, enclosed the farmhouse.																					
2. State of site and possible future damage Walls and trench partly demolished (Cowan 1922) Mostly destroyed (W. Spring-Rice May 1979)																					
3. Description of site (Supply full details, history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here) Cowan 1922 map on Site record form.																					
4. Owner C.J. Hibbard 1922 Address		Tenant/Manager Address																			
5. Nature of information (hearsay, brief or extended visit, etc.) Published account Photographs (reference numbers, and where they are held) List, map ref. W. Spring-Rice 1979 Aerial photographs (reference numbers, and clarity of site)																					
6. Reported by S. Bulmer Address Auckland Museum		Filekeeper S. Bulmer Date 14 July 1978																			
7. Key words																					
8. New Zealand Register of Archaeological Sites (for office use) NZHPT Site Field Code																					
<table border="1"> <tr> <td>D</td> <td>D</td> <td>Type of site</td> </tr> <tr> <td>-</td> <td>-</td> <td>Local environment today</td> </tr> <tr> <td>A</td> <td>E</td> <td>Land classification</td> </tr> </table>		D	D	Type of site	-	-	Local environment today	A	E	Land classification	<table border="1"> <tr> <td>B</td> <td>C</td> <td>Present condition and future danger of destruction</td> </tr> <tr> <td>A</td> <td>A</td> <td>Security code</td> </tr> <tr> <td>H</td> <td>R</td> <td>Local body</td> </tr> </table>		B	C	Present condition and future danger of destruction	A	A	Security code	H	R	Local body
D	D	Type of site																			
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A	A	Security code																			
H	R	Local body																			

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION SITE DESCRIPTION FORM		SITE NUMBER N46-7/154
Map Number N46-7 Map Name Pukekohe Map Edition 2nd 1964 Grid Reference 512 384		SITE NAME: MAORI OTHER Rings redoubt
		SITE TYPE Redoubt

(This form may be used for recording any descriptive information or other supplementary information on the site, or for maps and drawings.)

Cowan 1922

258 New Zealand Wars

Remains of Ring's Redoubt, Kirikiri, 1921

The redoubt at Kirikiri (now locally misspelled Kerikeri) came to be known as Ring's Redoubt, after the captain in command. Like the Queen's Redoubt at Pokeno, its walls and trench, partly demolished, now enclose a farmhouse. The old fort stands alongside the main road two miles from Papakura on the way to Clevedon, Wairoa South. It is on part Section 29, Hunua Parish, and is the homestead of Mr. C. J. Hibbard.

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CHI COMPUTER NUMBER: 9441

SITE RECORD FORM (NZMS260) NZAA METRIC SITE NUMBER: R11/956 NW6154

NZMS 260 map number: R11 DATE VISITED: 1994; 15 May 2002
NZMS 260 map name: Auckland SITE TYPE: REDOUBT (HISTORIC)
NZMS 260 map edition: Edition 1 1981 SITE NAME: Rings Redoubt; Kirikiri Redoubt

Grid References: Easting: 2685791 Northing: 6459268

1. Aids to relocation of site (attach a sketch map):

931 Papakura-Clevedon Road; Papakura; Papakura District

2. State of Site and possible future damage:

NZAA Condition: partly damaged, risk of severe damage Additional information by Vanessa Tanner 2002. Poor condition. A house has existed on the southern side of the site for some time. A relatively new house has now been constructed on the northwest end of the site, bulldozing has adversely affected the northwest portion of the trench, as has a fallen pine tree. Trenches are badly eroded. Several large trees are located on the edge of the trench. The site is subject to continued stock erosion and tree root damage. Additional information by Matt Felgate 2002. Largely built over or destroyed. One ditch remains visible, subsurface remains likely.

3. Description of site (Supply full details, history, local environment, references, sketches, etc. If extra sheets are attached include a summary here)

Located on north side of Clevedon Road, in paddock alongside 931 Clevedon Road, Papakura. The remains consist of an eastern ditch, and a northern bastion. The ditch measures 4-5m wide x 1-2m deep and is very eroded in places. A totara tree grows in the ditch and it is also partly filled with concrete and rubbish. Other trees grow in the ditch and bastion. The northern ditch is not visible and part of the north bastion has been levelled. No evidence of the western ditch exists and no sign of any internal defensive bank is present. Subsurface features probably remain. Wynne Spring-Rice (1979) is referred to on original S.R.F (1978) as having additional information. This mentions a "list" and map reference.

Additional Notes

1. Additional information by Amanda Young (n.d) notes some historical features, present owner, and condition of site in 1992.

2. Additional information by Sewell (22 February 1994): Only eastern ditch now visible. Roots of three large trees continues to damage the site.

3. Additional information by Rod Clough, Don Prince and Ken Phillips (31 May 1996): The significance statement for this site was assessed during the ARC Environment 'Historic Sites Project'.

4. Additional information by Sally Burgess (April 2000): This site (R11_956) is scheduled in the Papakura District Plan 1999. However in the plan the grid reference 881-612 and location Wairoa Road are given. Neither of these fit with the site and this anomaly NEEDS TO BE CHECKED.

5. Additional information May 2002 by Matt Felgate, Greg Walter, Vanessa Tanner. This location was reported to Felgate c.1998 by an elderly man who lived about 200m east of here in a turn-of the century farmhouse, who remembered the redoubt in a more complete state at this location in the past. Details of that visit were supplied to the ARC at the time but have not been entered into the CHI. There is now only one ditch visible NE of the main house at 935 Clevedon road, immediately to the Northeast of the boundary of 931 Clevedon Road. There are a number of low scarps or banks visible in the vicinity which probably relate to more recent bulldozing events; these were recorded as an aid to future interpretation. The interpreted former extents of the redoubt are shown on the PDC GIS coverages. There may be significant archaeological remnants in the vicinity outside of these extents, as latrine areas are likely to have been located outside the defences at some point, and can be expected to yield rich archaeological information. There may also be a well or wells preserved in the vicinity, containing archaeological materials.

4. Owner: Mc Sweeney Tenant/Manager:
Address: 931 Clevedon Road, Papakura Address:

5. Nature of Information (hearsay, brief or extended visit, etc.) Brief visit
Aerial Photographs (reference numbers, and clarity of site)
Photographs (reference numbers, and where they are held) ARC CHI

6. Reported by: Susan Bulmer; 1978 Filekeeper:

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Brenda Sewell; 1994
Vanessa Tanner, Matthew Felgate, 15/05/2002
Greg Walter; 2002
Matt Felgate

Date: 1978

Address:

7. Keywords: HISTORIC; REDOUBT; KIRIKIRI REDOUBT; RINGS REDOUBT; PLAN SCHEDULE; LAND WARS; MILITARY; CAPTAIN RING

8. New Zealand Register of Archaeological Sites (for office use)
NZHPT Site Field Code

Latitude S

DD	Type of site
---	Local environment today
AE	Land classification

Longitude E

BC	Present condition and future danger of destruction
	Security code
MO	Local body

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SITE RECORD FORM (NZMS260)

NZMS 260 map number: R11
NZMS 260 map name: Auckland
NZMS 260 map edition: Edition 1 1981

CHI COMPUTER NUMBER: 9441

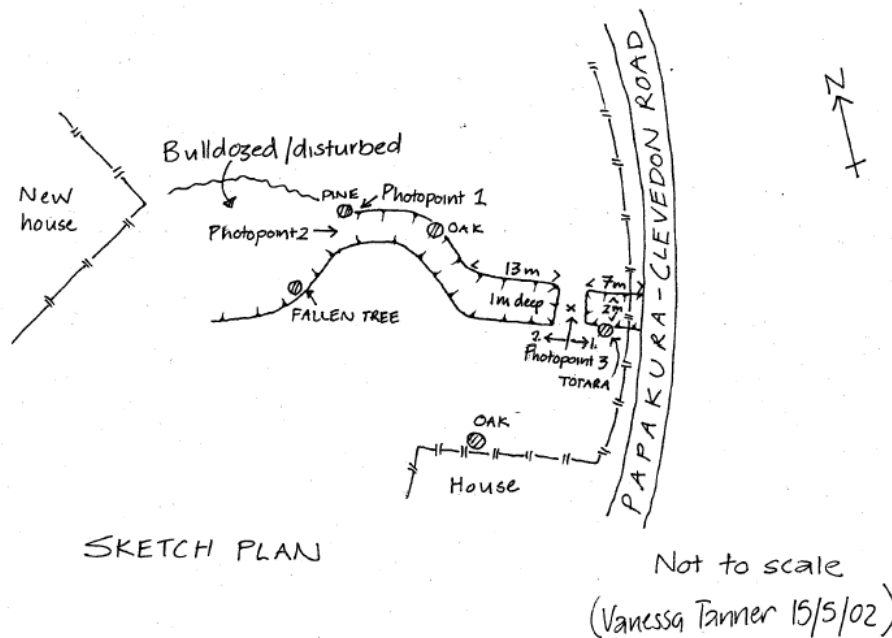
NZAA METRIC SITE NUMBER: R11/956

DATE VISITED: 1994; 15 May 2002
SITE TYPE: REDOUBT (HISTORIC)
SITE NAME: Rings Redoubt; Kirikiri Redoubt

Grid References: Easting: 2685791 Northing: 6459268

Additional Information Sheet

ARC CHI



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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD FORM (NZMS260)

NZMS 260 map number: R11
NZMS 260 map name: Auckland
NZMS 260 map edition: Edition 1 1981

CHI COMPUTER NUMBER:

9441

NZAA METRIC SITE NUMBER:

R11 /956

DATE VISITED: 1994; 15 May 2002

SITE TYPE: REDOUBT (HISTORIC)

SITE NAME: Rings Redoubt; Kirikiri Redoubt

Grid References: Easting: 2685791 Northing: 6459268

Additional Information Sheet

State and Condition

NZAA Condition: partly damaged, risk of severe damage

Additional information by Vanessa Tanner 2002. Poor condition. A house has existed on the southern side of the site for some time. A relatively new house has now been constructed on the northwest end of the site, bulldozing has adversely affected the northwest portion of the trench, as has a fallen pine tree. Trenches are badly eroded. Several large trees are located on the edge of the trench. The site is subject to continued stock erosion and tree root damage.
Additional information by Matt Felgate 2002. Largely built over or destroyed. One ditch remains visible, subsurface remains likely.

Additional Information

Additional information by Amanda Young (n.d) notes some historical features, present owner, and condition of site in 1992. Additional information by Sewell (22 February 1994): Only eastern ditch now visible. Roots of three large trees continues to damage the site.

Additional information by Rod Clough, Don Prince and Ken Phillips (31 May 1996): The significance statement for this site was assessed during the ARC Environment 'Historic Sites Project'.

Additional information by Sally Burgess (April 2000): This site (R11_956) is scheduled in the Papakura District Plan 1999. However in the plan the grid reference 881-612 and location Wairoa Road are given. Neither of these fit with the site and this anomaly NEEDS TO BE CHECKED.

Additional information May 2002 by Matt Felgate, Greg Walter, Vanessa Tanner. This location was reported to Felgate c.1998 by an elderly man who lived about 200m east of here in a turn-of the century farmhouse, who remembered the redoubt in a more complete state at this location in the past. Details of that visit were supplied to the ARC at the time but have not been entered into the CHI. There is now only one ditch visible NE of the main house at 935 Clevedon road, immediately to the Northeast of the boundary of 931 Clevedon Road. There are a number of low scarps or banks visible in the vicinity which probably relate to more recent bulldozing events; these were recorded as an aid to future interpretation. The interpreted former extents of the redoubt are shown on the PDC GIS coverages. There may be significant archaeological remnants in the vicinity outside of these extents, as latrine areas are likely to have been located outside the defences at some point, and can be expected to yield rich archaeological information. There may also be a well or wells preserved in the vicinity, containing archaeological materials.

ARC Monitoring Network:

Yes

Photographs

ARC CHI

FILE

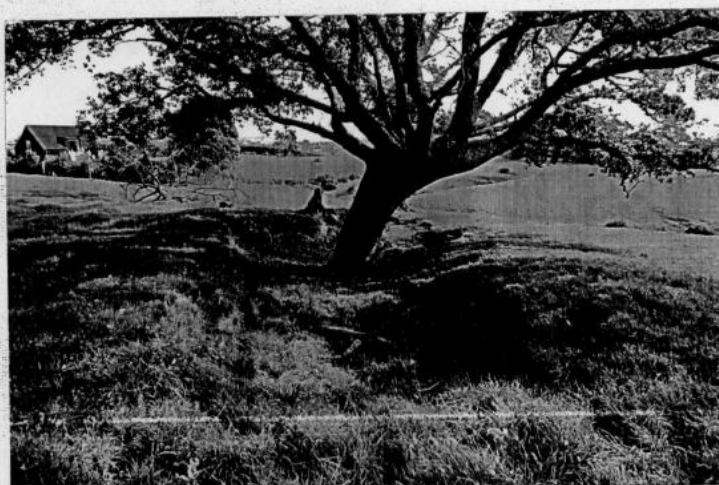
Vanessa Tanner

05 APR 2004

R11/956
15 May 2002



Photopoint 3



Photopoint 4

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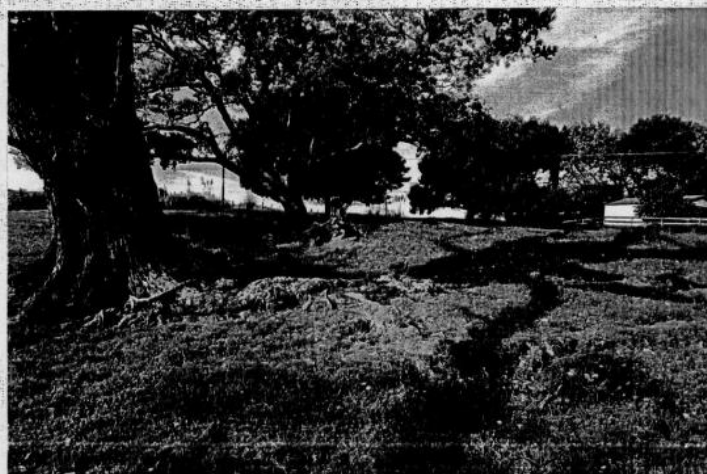
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15 May 2002



Photopoint 1



Photopoint 2

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Figure 1 - Site location aerial



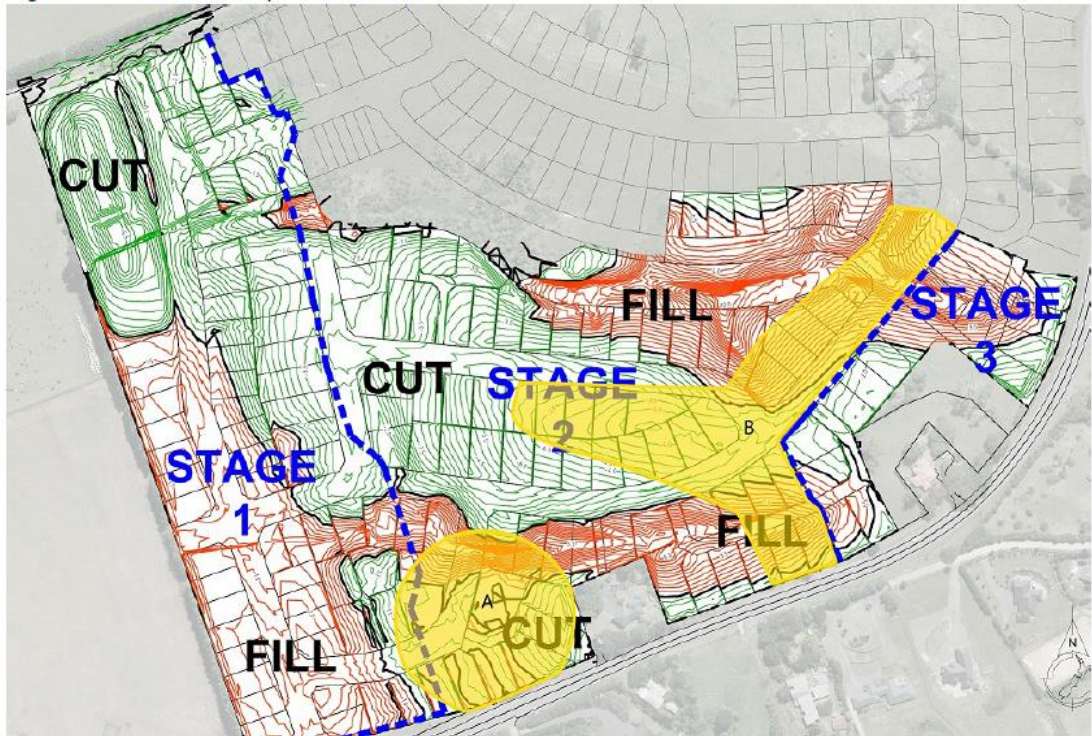
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Figure 2 - Residential Development - Earthworks Plan



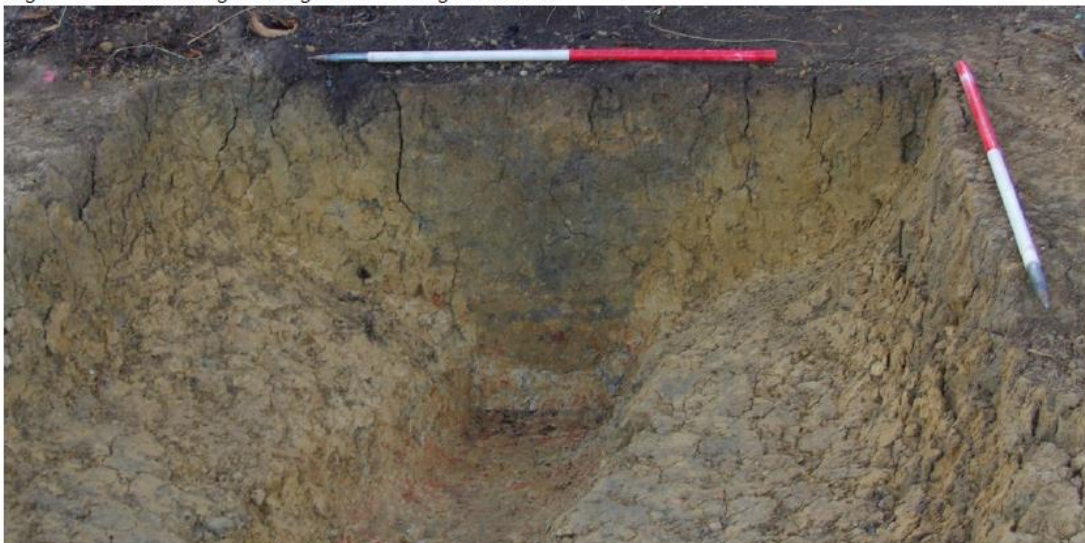
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Figure 4 - Section through drainage ditch showing re-cut ditch



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Figure 5 - North facing section through camp enclosure ditch on edge of Heritage Reserve



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Figure 6 - Looking southeast over part of the enclosure ditch



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Figure 7 - Lt Colonel Arthur Morrow's 1863 watercolour of Ring's Redoubt



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Figure 8 - West facing view across cooking trenches



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Figure 9 - Looking south across the cooking trenches and cook house pit behind (arrowed)



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Figure 10 - Aerial drone shot of the remains of the camp bakery



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Figure 11 - Aerial drone image looking east with the arrow indicating the artefact rich slumped barracks earthen platform deposit



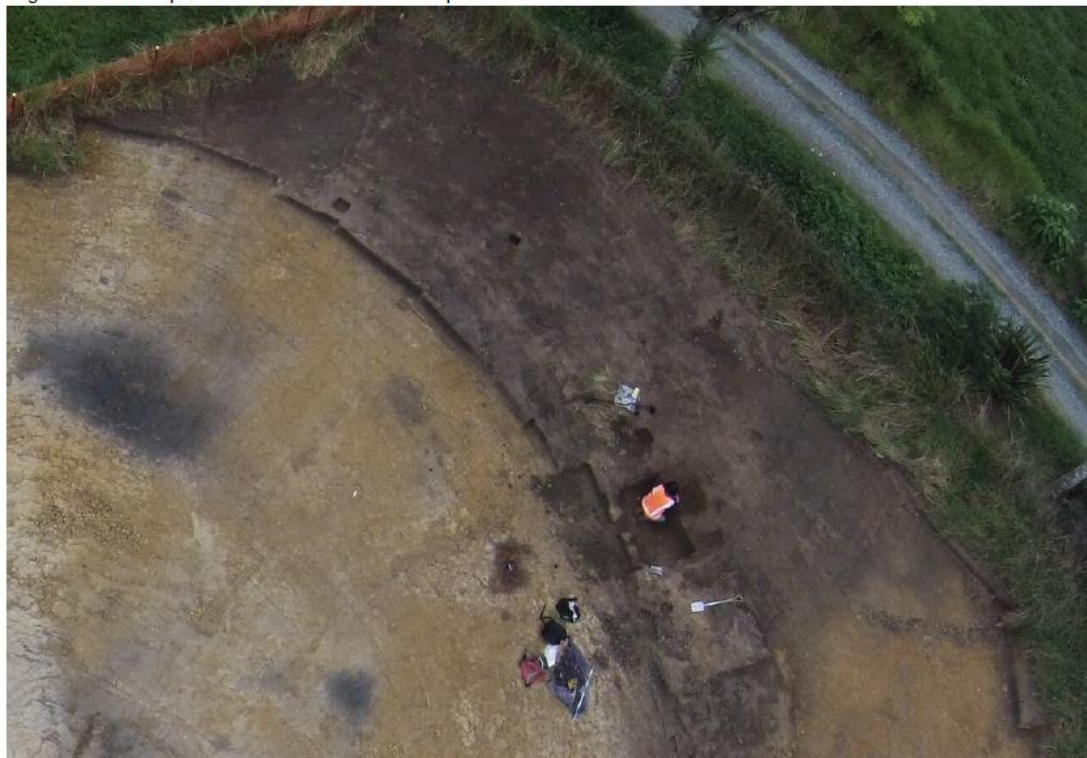
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Figure 12 - Aerial plan view of the artefact rich deposit



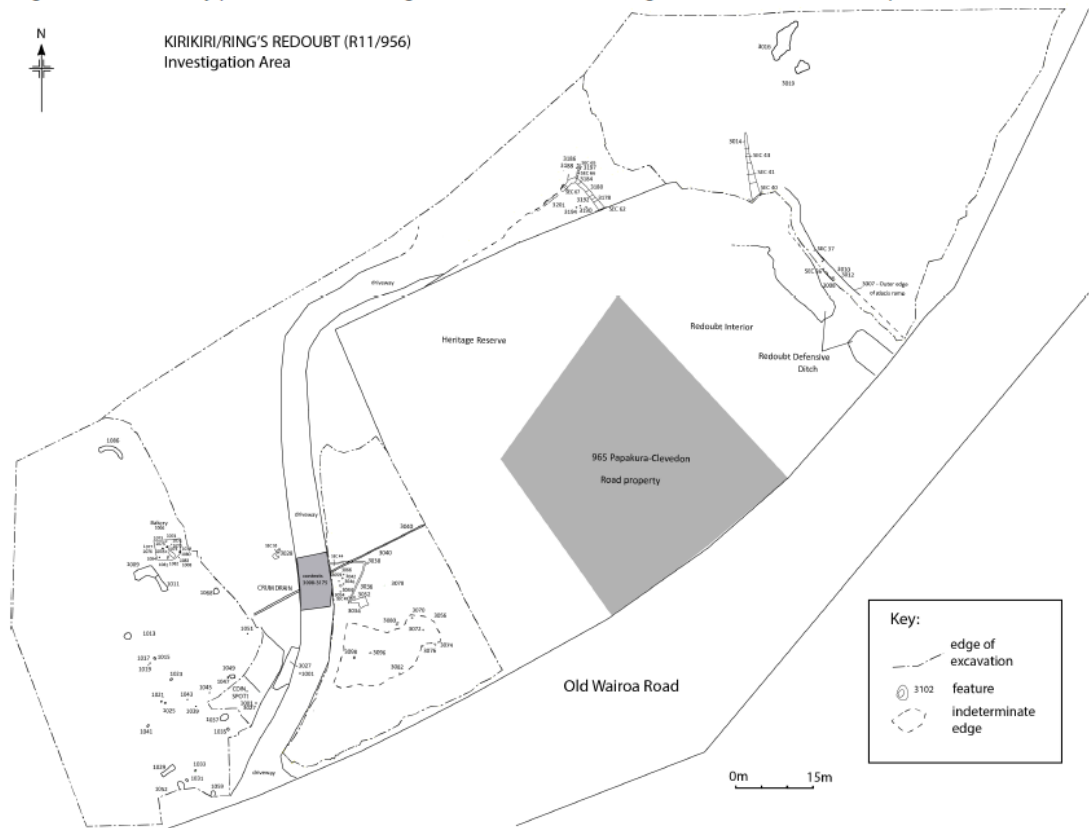
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Figure 13 - Site survey plan of the archaeological excavations of the Ring's - Kirikiri Redoubt Encampment



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Figure 3 - Large Drainage ditch to drain main redoubt defensive ditch



