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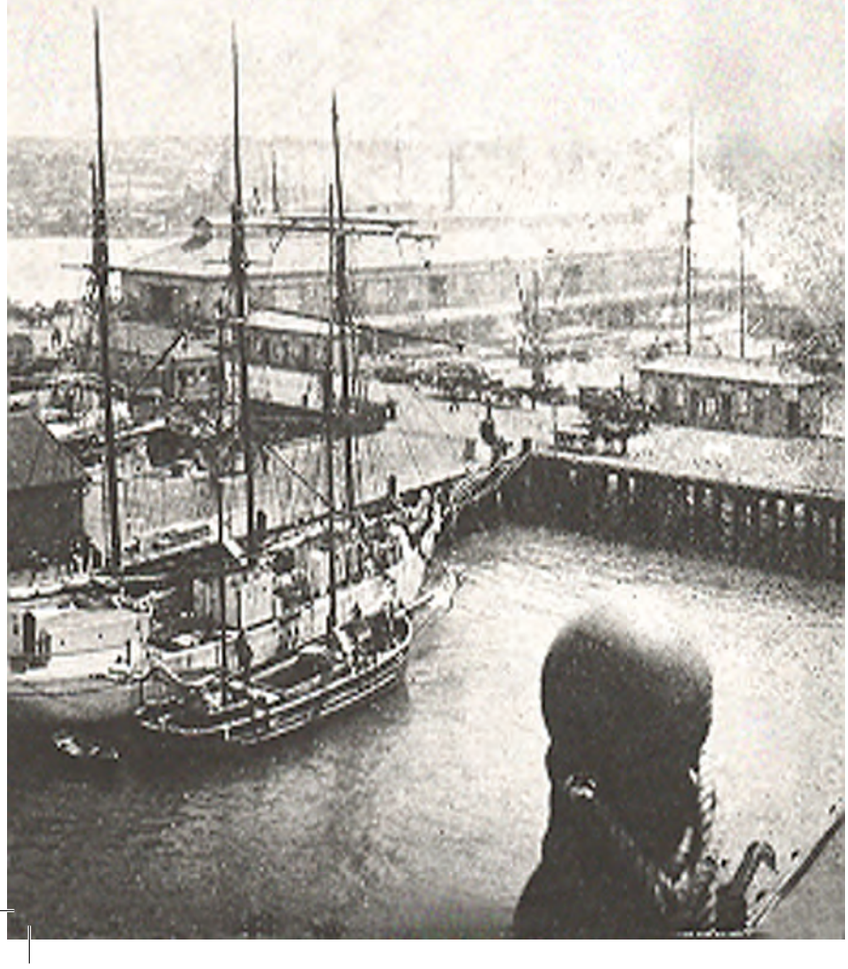
SITE R10/80 WHANGAPARAOA PENINSULA

Final Excavation Report



In Fulfilment of
NZHPT Authority No. 2006/73.
Prepared for
Gulf Harbour Corporation Ltd., 2008.

by

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INTRODUCTION

Project Background

This document is the final report detailing the results of investigations carried out at site R10/80 on the Whangaparaoa Peninsula, Rodney District. The site is located on a property at Gulf Harbour (legal description Lot 1 DP 206832 (Figure 1, Figure 2). The main investigations were carried out towards the end of 2005, with follow-up monitoring and investigation work during earthworks in early 2006.

The property consisted of about 20ha of pasture, which in 2005 was covered with long grass (Figure 2, Figure 3). The property slopes gently to the north, with two small natural streams draining towards the road on the northern boundary. Only a few trees were present, including a mature pine and a cabbage tree growing beside the larger eastern stream, and another pine to the east of the smaller western stream. The property overlooks Hobbs Bay to the west and a small lake, presumably created by the damming of a stream that formerly ran through the gully to the north.

The on-going development of the Gulf Harbour area has significantly altered the archaeological landscape relating to pre-1900 settlement and the subdivision of the property was a continuation of this process. Site R10/80, comprising terraces and midden areas (Figure 3), had been identified and described following archaeological assessments and NZHPT Authority work carried out on both the current and neighbouring properties. This work included Foster's (1984) initial assessment and further work by Bioresearches (1994), both of which had described a number of terrace, pit and midden features scattered across the landscape.

As any development of the property would impact on the site, Gulf Harbour Developments Ltd had applied for and been granted an Authority to modify R10/80 in 2001 (#2001-079). Mitigation in the form of protection of part of the site within a reserve contribution and archaeological excavation of affected areas was proposed. This Authority, however, had lapsed without the development proceeding, and the property is now owned by Gulf Harbour Corporation Ltd. It was therefore necessary to apply for a new authority from the NZHPT.

Consultation with the NZHPT confirmed that provided that there had been no significant change to the development plans (regarding the area to be developed and general density of development), then there should be no obstacles to granting a new authority. However, the new application required additional material such as an investigation strategy and archaeological management plan, together with updated plans of the development locating the known archaeological features. A re-assessment of the site was therefore carried out by Clough & Dodd (2005), which resulted in the new Authority application and the excavations results presented here.

Continued on next page

INTRODUCTION, *CONTINUED*

Figure 1. Location of the site (Google Earth) looking south towards Auckland

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State of the Site prior to Excavation

The site features mostly occurred between the two streams and were clustered according to the topography, on an eastern spur and around a series of natural terraces to the west of this. Some modifications to the property had occurred since the features were mapped by Bioresearches in 1994 (as shown in Figure 3). These included a drainage trench cut between the two streams, and the installation of power lines and poles. The features were still largely as recorded by Bioresearches in 1994, but some features were not relocated and some appeared different in extent.

The eastern spur is located directly to the west of the larger of the two natural streams, and extends midway through the property with the head of the spur occurring to the southwest of the head of the stream (Figure 4). Two terraces were located at the head of the spur, with two additional possible terraces occurring below these, as recorded on Bioresearches' map. The higher southern terrace also had a depression in the centre with slightly more lush grass growth, suggesting a possible infilled pit feature. Midden deposits occurred in three separate isolated patches on the slope to the west and northwest of the terraces. The 'two possible terraces' lower on the spur were both small areas approximately 8m x 10m. A test pit (TP1) in the lower 'possible terrace', however, did not identify any archaeological features or modified deposits. Two midden deposits recorded by Bioresearches to the southwest of this spur further upslope were not relocated.

The archaeological features identified along the eastern spur are summarised in Figure 4 and Table 1.

Feature	Description
Midden A	Extent detected by probing. On slopes below terraces to the north. Covers area approximately 8x10m, at a depth of 5-10cm. Not visible from ground surface.
Midden B	Extent detected by probing. Southwest of midden A. On slopes to north and west of terraces. Covers area approximately 8x8m, at a depth of 5-10cm. Not visible from ground surface.
Midden C	Extent detected by probing. Small midden covering approximately 4x3m to west of upper terrace, at a depth of 5-10cm. Not visible from ground surface.
Terrace 1	Flat area on crest of spur approximately 10 x 15m, just below head of spur. Immediately below (and to the north of) terrace 2.
Terrace 2	Flat area approximately 20 x 10m at head of spur. Depression with lush grass in centre of terrace, suggestive of infilled pit feature.

Table 1. R10/80 features recorded along eastern spur

Continued on next page

Western Section (Either Side of Modern Drainage Trench)

The second cluster of features was largely contained between the smaller western stream and the north-south running power lines (Figure 4). This area was characterised by long broad terraces running laterally across the slope in a roughly east-west direction. The terraces appeared to be natural in origin, formed in stages by the stream that formerly ran across the northern boundary of the section. While there appeared to be little evidence for cultural modification, it was considered a possibility. One large and one slightly smaller midden occurred on the western edge of these terraces, suggesting previous occupation. This section of the site had been more modified than the eastern spur, both by the power poles, and by the drainage trench, in which disturbed midden was observed. An additional terrace with associated midden was observed on the western side of the trench, and material considered likely to be redeposited fill from the lower section of the drainage trench was visible on the exposed ground surface immediately to the east of the trench.

Smaller terraces occurred to the northeast of the naturally formed larger terraces, but did not appear to be associated with midden deposits. Some of these had been modified for power poles. Two additional smaller 'possible terraces' occurred below (to the north of) terrace 5. Another 'possible terrace' was located between terrace 7, and the western stream. This terrace was test pitted, but no evidence of cultural material was observed.

The archaeological features identified along the western section are summarised in Figure 4 and Table 2.

Continued on next page

Feature	Description
Midden D	Extent detected by probing. Large midden running down the western side of several large naturally formed terraces. Probing indicates the midden is thicker in some areas, up to 60cm. Covers an area approximately 30x10m, at a depth of 5-10cm. Not visible from ground surface.
Midden E	Extent detected by probing, and visible in head of drainage trench. Comprises midden covering approximately 10x6m to immediately east of the head of the drainage trench, and to the west of terraces, at a depth of 5-10cm. Not visible from ground surface.
Midden F	Extent detected by probing, and small quantity visible on ground surface. Comprises midden covering approximately 15x20m to immediately southwest of the pine growing near the drainage trench. Mostly 0-10cm from ground surface.
Midden G	Slight scatter of fragmented shells visible on ground surface, but it was not possible to detect any subsurface material by probing. Probably result of re-deposited fill from trench.
Terrace 3	Large broad terrace approximately 50x15m, probably naturally formed but previously utilised, and may have been subject to cultural modification. Midden D occurs below this terrace, in the vicinity of a power pole on the northern edge approximately one-third of the way along from the western end. Eastern end extends beyond north-south running power lines.
Terrace 4	Large broad terrace approximately 35x10m, probably naturally formed but previously utilised, and may have been subject to cultural modification. Midden D occurs on the western end of this terrace, and extends above and below it. Eastern end terminates before north-south running power lines.
Terrace 5	Smaller terrace 10x8m located below (to the north of) the western end of terrace 4. Midden extends across the western end of this terrace.
Terrace 6	Small terrace 3x5m to west of terrace 4, and east of drainage trench. Midden E is located to the north and west of this terrace.
Terrace 7	Small terrace 3x4m to the west of the drainage trench, immediately southwest of pine tree. Midden F covers much of this terrace.

Table 2. R10/80 features recorded in western section

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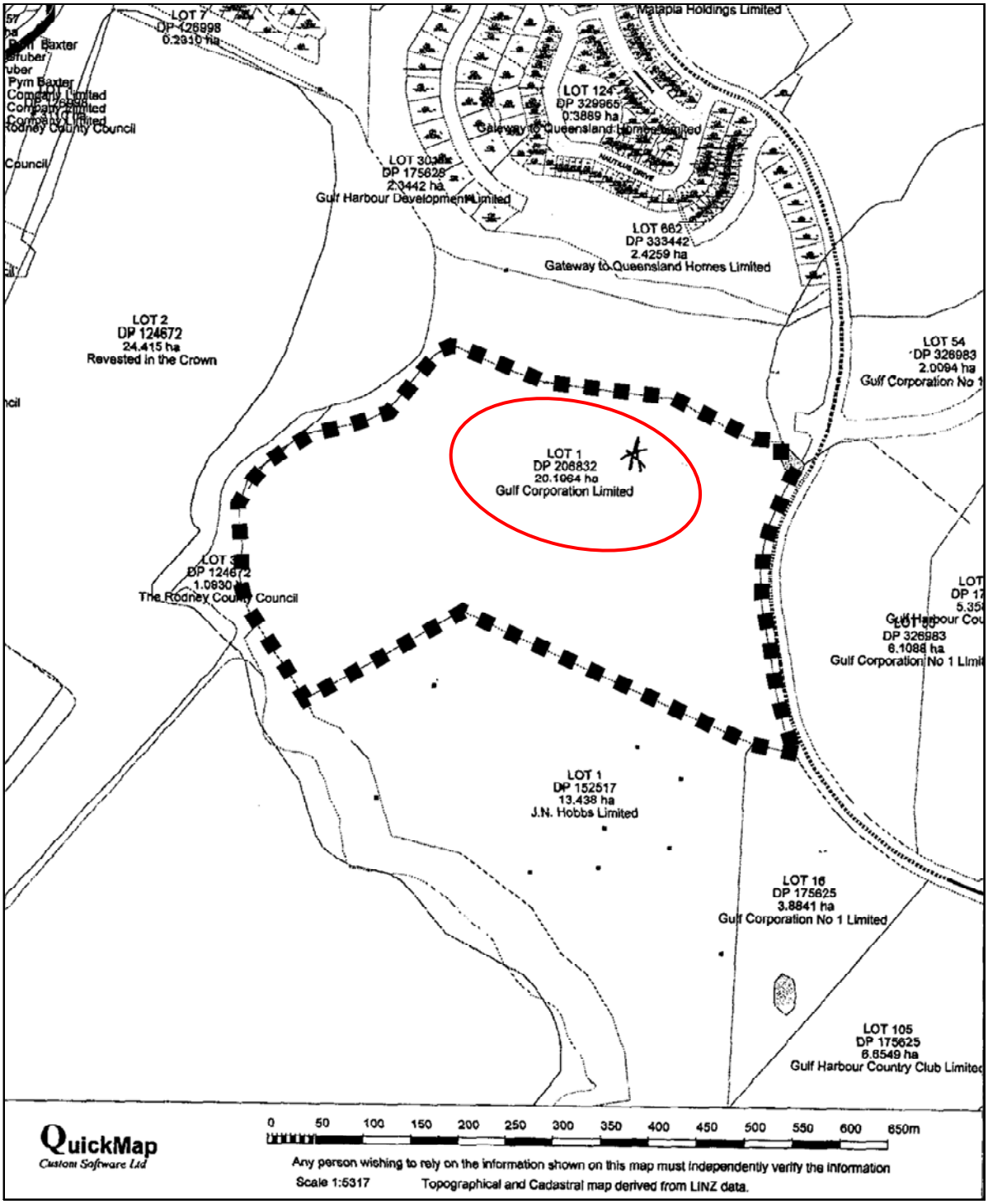

Figure 2. Location of development property and recorded archaeological site R10/80

INTRODUCTION, CONTINUED

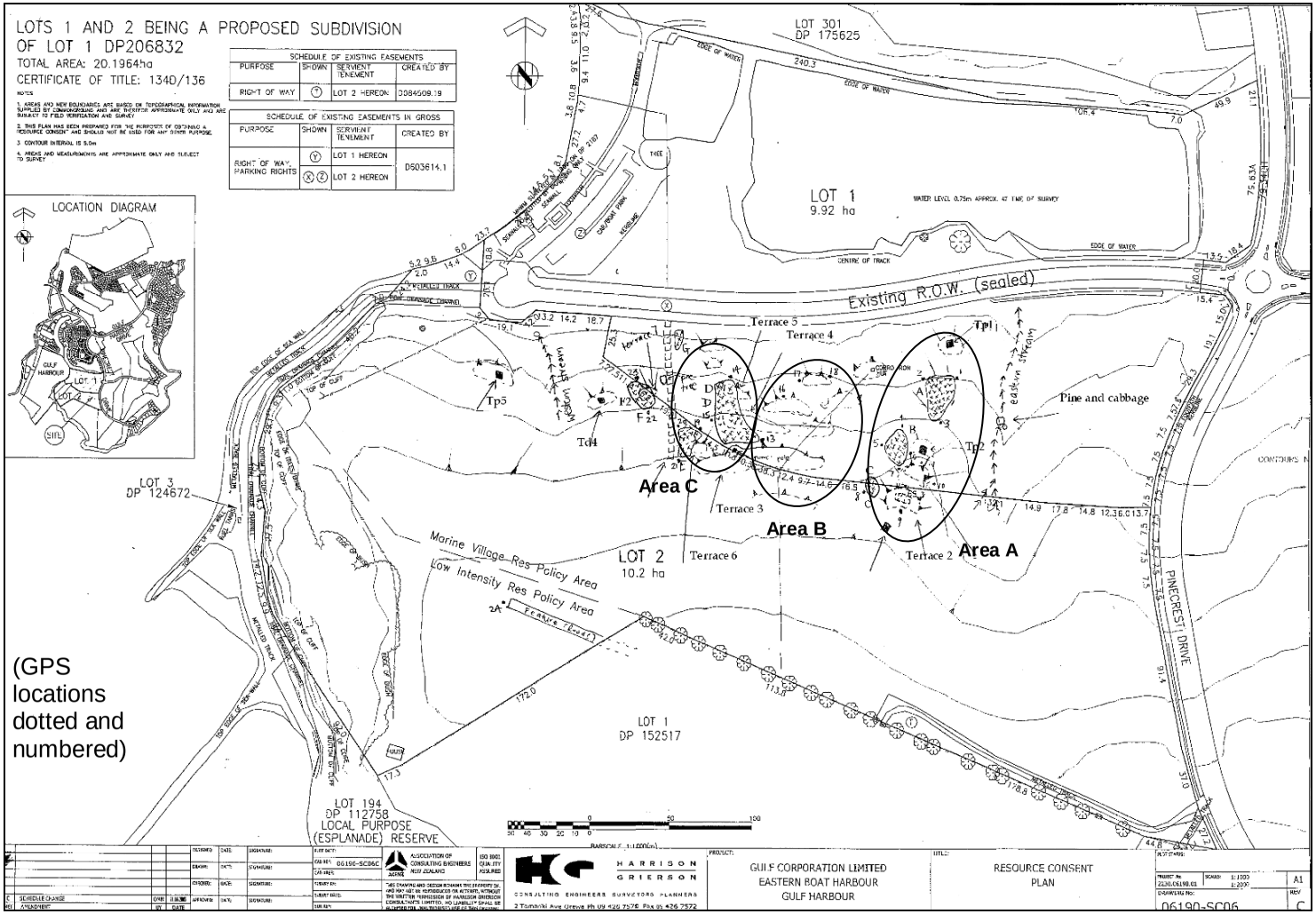

Figure 3. Plan of archaeological features and areas investigated (base map Bioresearches 1994, annotated in Clough & Dodd 2005)

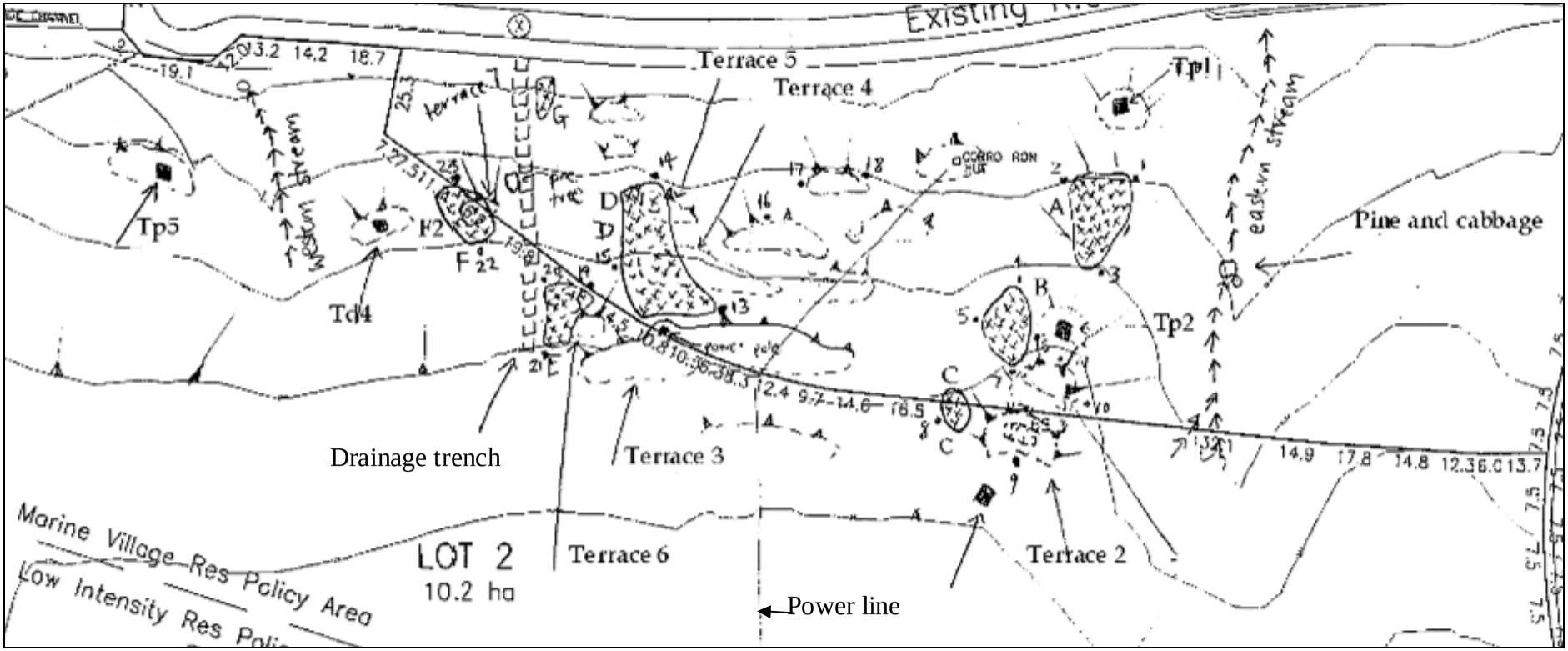

Figure 4. Enlargement of Figure 3 showing archaeological features and test pit locations

Other Observations

Some of the midden deposits recorded by Bioresearches in 1994 were not relocated in 2005. These were suspected to have been deflated surface scatters that had since dispersed. An example of this was the midden recorded to the east of the northern part of the modern drainage trench (midden G on Figure 4). Probing did not reveal any intact midden deposits, but a scattering of fragmented shell was visible on the ground surface. This may have been secondary spoil re-deposited from the trench. However, it was also considered possible that the midden were still present but not locatable by probing, which may not always identify subsurface midden especially if the deposits are patchy or thin.

The spur immediately to the west of Pinecrest Drive was randomly probed, but no further archaeological features were detected. It is possible that this area was previously much more swampy prior to a sump being dug at the base of the slope. This may have been the reason why occupation focussed on the better drained area between the two natural streams. This area was also considered likely to have been modified by the road.

Research Aims

The archaeological investigations aimed to:

- Establish the full extent and nature of surviving archaeological evidence on the development site.
- Establish the nature of occupation of the site on the basis of archival evidence, structural remains and evidence of lifestyle revealed by associated artefacts.
- Consider the archaeological remains as they fit within the broader heritage landscape, in particular relationships within the archaeological/ historical landscape
- Add to existing knowledge of the material remains/artefact assemblages recorded from settlement sites in the Rodney District East Coast area.

Methodology

Bioresearches' report recommended ground penetrating radar survey prior to modification, but as the whole area under investigation was to be modified (and a reserve contribution had already been selected), this was considered to be an unnecessary expense.

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Methodology (continued)

Prior to major earthworks in the archaeologically sensitive areas, the topsoil was stripped by mechanical excavator equipped with a weed bucket under archaeological supervision. The area between the two natural streams where the middens were located was the initial and main focus of the investigations, but the two (apparently unoccupied) spurs on the eastern and western boundaries of the property were also examined.

The investigations were carried out intermittently over a period of a couple of months. The excavation conditions were difficult because of the clay substrate and dry conditions, with the clay cracking up and making features within it difficult to identify.

Terraces were investigated by transverse section to determine whether they were of natural or cultural origin, and whether they exhibited any evidence of modification for dwellings or garden soil development. These were excavated under archaeological supervision by a digger equipped with a weed bucket to establish and record the stratigraphy of the specific areas down to the natural subsoil. Profiles were taken. Terraces exhibiting cultural modification were scraped back and further investigated.

Archaeological features and deposits were excavated and recorded using standard archaeological techniques and in accordance with the requirements of the Authority.

A representative sample of individual middens was collected and analysed, with samples extracted for radiocarbon dating and charcoal analysis.

The locations of individual artefacts were recorded on the site plan. All artefacts were retained for analysis and catalogued in the field note book by context.

HISTORICAL BACKGROUND

Introduction

The earlier reports relating to the development provide some background information regarding the history of the area and this information has been included together with more recent research on the Whangaparaoa-Weiti area to provide a context for the archaeological results. However, most of the information is derived from Murdoch (1991, 1996) and integrated by Dianne Harlow (in Bickler, Clough, Harlow & Low 2006; 2007).

Maori occupation of the Whangaparaoa area, translated as the 'Bay of Whales', spans the last few centuries and is related to the settlement of the eastern coast between the Waitemata in the south and Mahurangi in the north. The Whangaparaoa peninsula was clearly an important node in the migrations, conquests and trading networks of a number of Maori groups. Ngati Kahu held the mana whenua for the area into recent times.

Ngati Kahu

Ngati Kahu are descendents of the Kawerau iwi. Traditional history describes the Tainui waka visiting and naming Whangaparaoa during the 14th century. Several crew members settled and their descendents occupied the area. They identified with two tribal groups, Ngaoho, and the iwi known as Ngati Tai. These people gained an important Arawa connection after Tahuwhakatiki from the Te Arawa canoe also settled at Whangaparaoa.

In the early 1600s, a large group from Ngati Awa migrated north to the Tamaki Isthmus and had a major influence on the Whangaparaoa district. Led by Maki and his brothers Mataahu and Maeaeariki, these people conquered Tamaki. They spread northward. One of numerous battles was at Whangaparaoa Peninsula, where the Ngaoho people were defeated and absorbed by intermarriage.

Maeaeariki eventually made his home at Orewa while his children Te Utu and Kahu remained at Whangaparaoa. It is from Kahu that the tribal group who occupied the Whangaparaoa district until the 19th century took the name Ngati Kahu. Intertribal relationships including peace settlements and marriages with Ngati Whatua, a tribe that had settled in the southern Kaipara, enabled Ngati Kahu to live in peace on their lands at Orewa, Whangaparaoa and Okura for over a century.

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Marutuahu Confederation

However, in the mid 1700s, Ngati Kahu began to be affected by the movements of tribal groups in the surrounding regions. Pressure came particularly from the Hauraki tribes of the powerful Marutuahu Confederation which wanted to control the important shark fishing grounds lying off the Whangaparaoa Peninsula.

Fighting between the Marutuahu tribes and the Kawerau iwi continued sporadically throughout the 18th century. By the 1780s, the Hauraki tribes were in the ascendancy. Ngati Kahu still remained in control of the Whangaparaoa district, although the Ngati Paoa iwi had shown their dominance by constructing a small pa on the adjoining island of Tiritiri Matangi for use while on fishing expeditions. They sought control over the famed tauranga mango, or shark fishing grounds, of the coastline north of Whangaparaoa. From these grounds, thousands of sharks could be caught and dried in summer and then taken home to the Hauraki Gulf to provide a valuable winter food source. Ngati Kahu had their own pa, Rarowhara, and camping area related to the sharking grounds at the northern mouth of Weiti River. Rarowhara pa is shown on an early survey map (SO 892A, Figure 5) located at the heel of the Whangaparaoa Peninsula to the east of the Weiti River.

Warfare continued between the two groups until the 1790s, when a major peace making meeting was held at Mihirau in what is now the Wenderholm Regional Park. This fragile peace was soon broken and the Marutuahu iwi inflicted a major defeat on the Kawerau people at Whangateau near Omaha. Ngati Kahu people assembled at Rarowhara Pa. Mereri, a Kawerau elder living at Awataha village in the early 1900s, told of the events which followed: 'The Ngati Paoa ultimately attacked our people in the pa at Rarowhara, near Matakatia but we surprised and defeated them on the beach in open battle. Thereafter we held those places at Whangaparaoa peninsula and Te Weiti river until Nga Puhi attacked us' [in 1821]. (G. Graham 1918, p.87 in Murdoch 1991:34).

Nga Puhi Attack

Ngati Kahu and Kawerau had defeated Ngapuhi in the 1790s at Waiwhariki. In September 1821 a large Ngapuhi taua (war party) came south to avenge their defeat. Ngati Kahu, along with the surrounding Kawerau iwi, gathered in Rarowhara Pa but were heavily defeated. The survivors fled inland to the Ararimu Valley (adjoining Riverhead Forest) where they lived for a time, only returning periodically to Whangaparaoa. Ngati Kahu lived in exile near Muriwai and then, after Ngapuhi defeated a combined Ngati Whatua force at Te Ika a Ranganui near Kaiwaka, they fled to the Waikato where they lived in exile for nearly a decade (1820-1830).

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HISTORICAL BACKGROUND, CONTINUED

Return of Ngati Kahu

Ngati Kahu gradually returned to the Whangaparaoa district. Through the 19th century Ngati Kahu migrated over their ancestral domain between Orewa and Okura in a seasonal cycle of fishing, hunting, gathering and harvesting. They maintained kainga, or occupation sites, throughout this area although settlement was concentrated around the sheltered bays on the southern coastline of the Whangaparaoa Peninsula, and in particular at Te Haruhi Bay (Figure 5) because of its strategic location and its abundant natural resources. It also provided the best site for cultivation in the Whangaparaoa district.

Historical Landscape

The earliest survey maps of the Whangaparaoa district indicate that the vegetation of the peninsula had been extensively modified in pre-European times (SO 892A, Figure 5). Tea tree predominates on the higher zones with swampland in the low-lying areas. The distribution of archaeological sites confirms the traditional information that Maori occupation of the district was concentrated on the Whangaparaoa Peninsula, particularly its southern coast, and centred on the bay at the eastern end of the peninsula, Te Haruhi. It was the most important and favoured settlement area and continued to be so until the 1870s. Of further importance was the area around the mouth of the Weiti River and the strategically important Waiparaheka, the site of present day Silverdale. It lay at the head of waka river navigation and at the eastern end of an important ara, an overland walkway.

Ranulph Dacre

With the settlement of the area by Europeans, blocks of land were acquired by settlers looking for farmland and other resources. An early map (Figure 6) suggests that by 1860 the property had passed into the ownership of Ranulph Dacre (Figure 7), although McLean is listed as the property owner to the north of the block on the other side of the stream. Jennifer Low and Dianne Harlow (in Bickler, Clough, Harlow & Low 2006*)* have recently summarised information about Dacre and the following account derives from that report, which in turn draws on the Auckland Historical Society Records (n.d).

Born in 1797 in Hampshire, Ranulph Dacre joined the Navy as a midshipman aged just 13. In 1815 he left the Navy and took up command of a trading schooner bound for the West Indies. After several voyages between London and Australia, Dacre called in to Whangaroa Harbour where the presence of kauri led him to enter the timber industry. Kauri had first been procured for use as spars in 1772 at the Bay of Islands by the ill-fated du Fresne expedition (Smith 2001). Dacre's enterprising nature led to his first shipment of spars from the Hokianga in 1827.

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HISTORICAL BACKGROUND, CONTINUED

Figure 5. SO 892A, probably dated 1859

Showing the Whangaparaoa peninsula, Weiti (Wade) River (arrowed), Weiti Station, and location of Rarowhara pa (circled). Te Haruhi Bay is the furthest bay to the east on the south coast of the peninsula

Weiti Station

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HISTORICAL BACKGROUND, CONTINUED

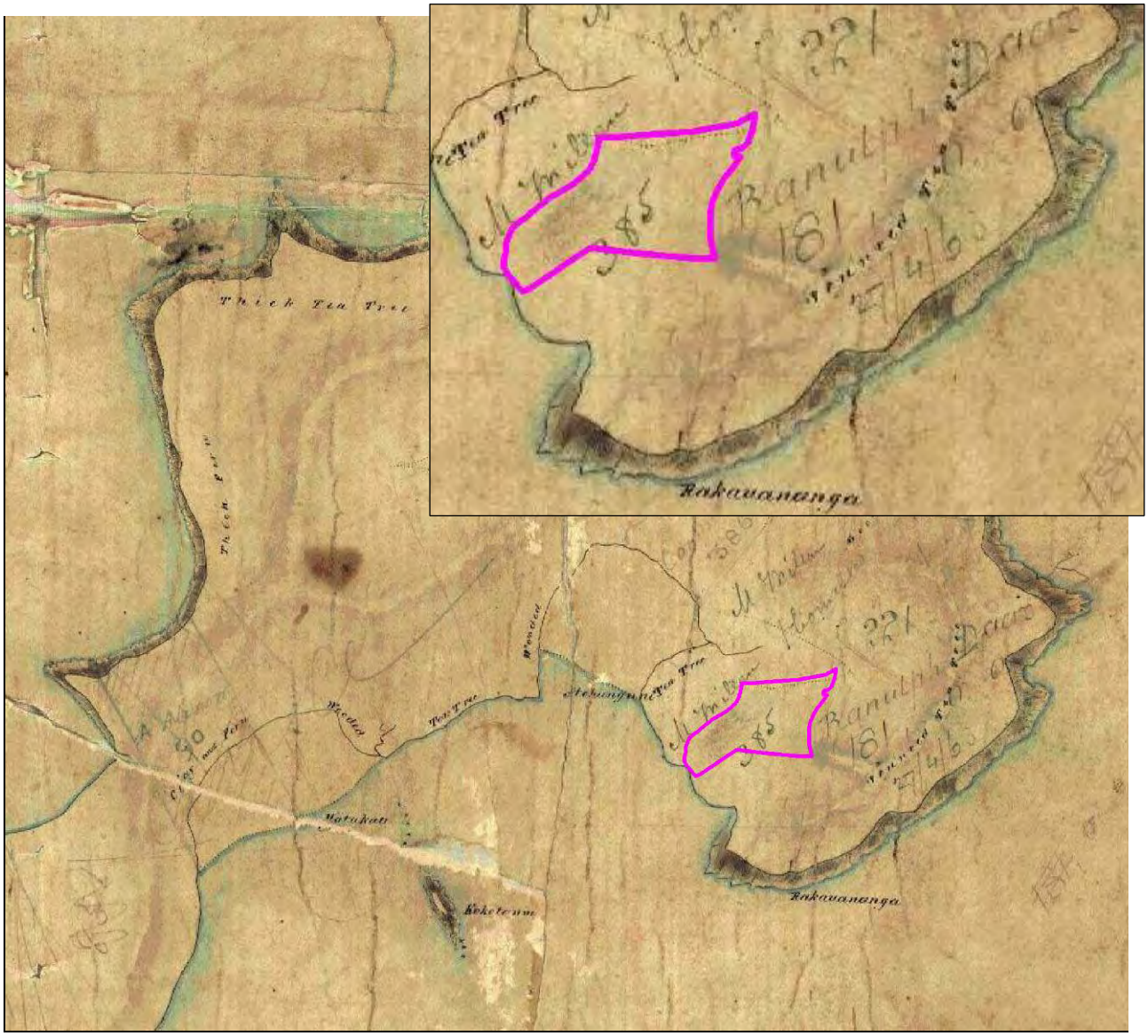

Figure 6. SO 892A, showing close up of the area where the property is located

Landowners' names pencilled in. To the north is a large area of swamp land, while the area around the property is described as wooded and in tea tree

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Captain Ranulph Dacre (continued)

Five years later Dacre had a timber operation at Mahurangi but removed to Mercury Bay in 1836 because the Admiralty had taken 'forcible possession of the standing trees' (Anon n.d: 2). In 1837 Gordon Browne (Dacre's superintendent) arranged the erection of what is believed to have been the first water-powered sawmill in New Zealand.

Dacre appears to have acquired (or possibly leased) the Weiti Station (Figure 5) some time in 1846, as he is recorded to have been concerned about unauthorised removal of timber from the property (Grover 1996: 27). An advertisement was placed in the *The New Zealander* on 4 March 1848 warning that anyone cutting timber on Ranulph Dacre's property would be prosecuted. The notice refers to Spark's grant now being the property of Ranulph Dacre. The sale was not formalised, however, until 1854.

Financial collapse caused Dacre to lose all his estates and ships, whereupon he set out to collect outstanding debts from various locations around the Pacific. In the early 1840s Dacre travelled to New Zealand to pursue his land claims but did not permanently settle in Auckland until 1859. In the interim he entered a business partnership with Thomas Macky of Fort Street. Dacre retired to England about 1878 and died in Surrey in June 1884 aged 87 years. It is unlikely he ever lived at Whangaparaoa although his son, Charles, lived near to the current property and farmed the area.

However, it was not considered likely that any archaeological remains relating to Dacre's involvement with the property would be found and the excavations focussed on the areas identified by the various assessments relating to pre-European occupation.

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Figure 7. Captain Ranulph Dacre

Source: Neg A11667 Auckland Public Library Photograph Collection

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Excavation Results

SUMMARY

Summary

While surface probing and test pits had clearly indicated the presence of widespread midden, stripping by mechanical excavator showed that underneath the shell debris a number of features including post-holes, fire scoops and other structural features were present. It was decided to exposed a total of three areas, numbered here A, B and C. These are shown in Figure 3, Figure 8 and Figure 9.

- Area A – covered the eastern spur as well as a small apparent ridge further to the east. This was further split into Areas A1 and A2 representing the upper and lower parts of the slope.
- Area B – this was west of Area A extending from the upper terraces (Terrace 3) down the slope to the north. The first three terraces were designated Area B1 while the lower slopes were designated B2.
- Area C – to the west of Area B, next to the new drainage ditch.

The natural clay base in which the features were identified proved difficult to excavate. The clay was generally very hard and repeated episodes of swelling and shrinking in the clay had caused significant cracking (Figure 10). This cracking significantly obscured features making them difficult to identify as well as damaging many of them. Area A was particularly difficult, but conditions in Area C were easier and the features in better condition.

The thick layers of midden overlay fire scoops, both isolated (Figure 11) and cut into each other. The basic stratigraphy of the features is shown in Figure 12 – a depth of between 0-40cm of shell midden, with features up to a further 30cm deep cut into the natural clay base.

Apart from fire scoops, a range of stake holes and post holes were found on the exposed sites. Conditions made it difficult to establish exactly what structures were represented by the pattern of holes found, but they probably included structures ranging from small smoking racks through to small shelters. However, a rectangular pit/house structure in Area A1 with a drain around the edges and another pit in Area C were excavated. Another possible rectangular pit was also identified in Area B1.

Other nearby spurs to the east of Area A were stripped with a digger and examined. However, no other archaeological features were identified here.

Overall, the features appear to represent a small shellfish and fish processing area, possibly a small habitation area.

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SUMMARY, CONTINUED

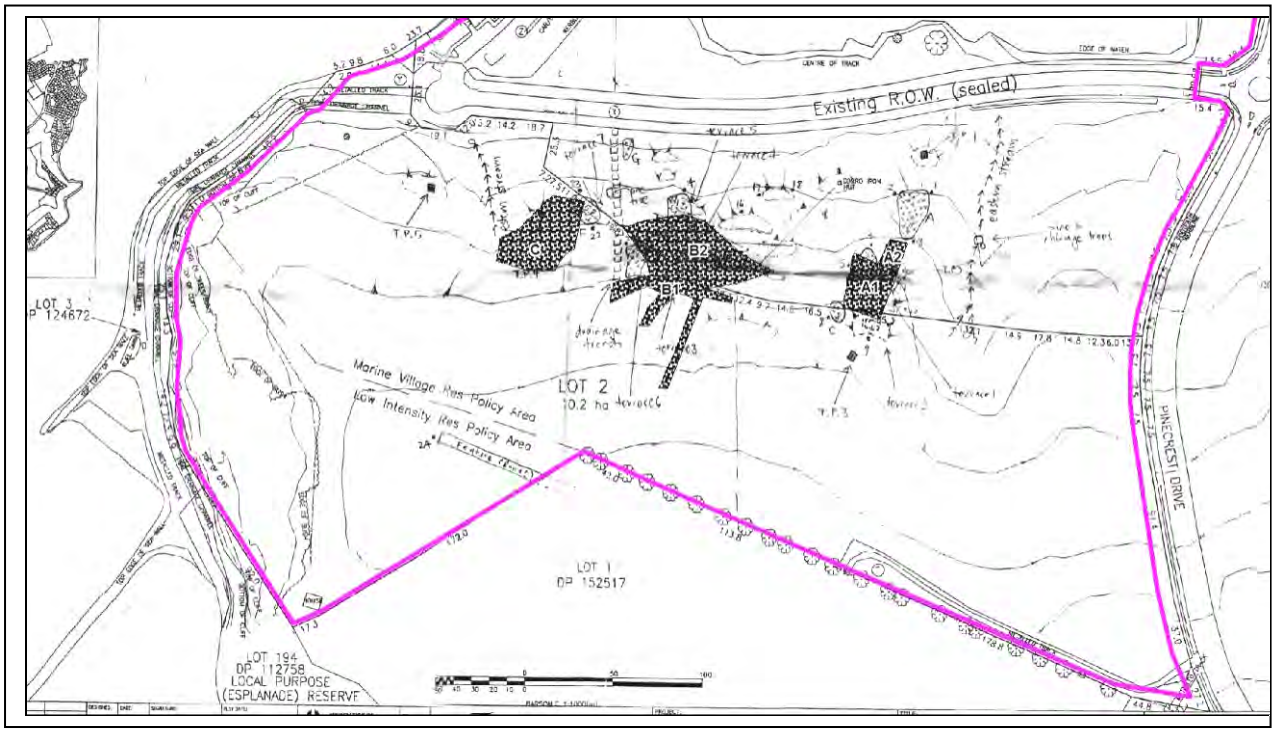

Figure 8. Excavated areas of R10/80

Figure 9. Google view showing excavated areas, looking across Gulf Harbour

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Figure 10. Cracking in the clay

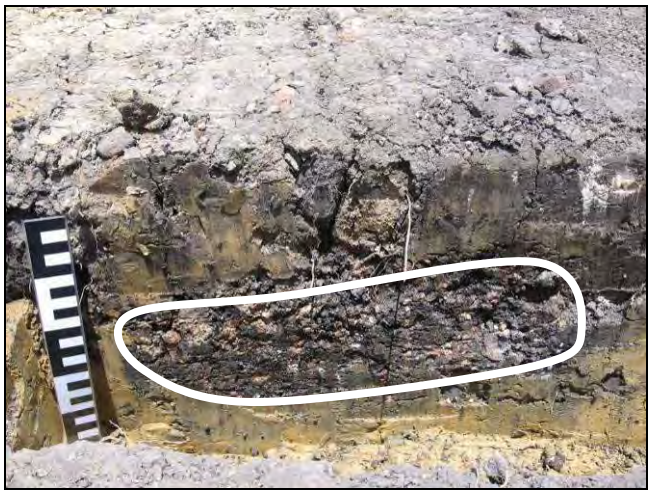

Figure 11. Feature 8, Area A1 in section

Figure 12. Example of stratigraphy (Feature B2-58)

AREA A

Description

This small spur consisted of hard clay soil covered with approximately 30-40cm of crushed midden. The area was cleared by digger and scraped down over the top of the spur (Figure 13). As discussed above, the cracked clay substrate made identifying structural features very difficult and as the digger scraped the surface, chunks of clay and midden would peel away. However, possible features were flagged and then investigated by hand.

Area A1 included a natural flattish terrace and the gentle slope below (Figure 14). This extended down an area of 20m and a number of features were identified. The features continued down towards the road to the marina. An area slightly to the east of Area A1 was also cleared and included more midden and post-holes; this was designated Area A2 (Figure 15).

Features

The features uncovered in Areas A1 and A2 included post-holes, fire scoops and drains. These varied in size and form and were generally below the layer of crushed shell midden that covered much of the upper surface of the zone. Apart from some of the larger fire scoops it was difficult to determine what structures were represented by the features uncovered but it is likely that the area was a small food-processing/cooking zone with small shelters constructed above the fires.

The most significant feature, A1/F29, was a large pit-like feature with both internal and external drainage (Figure 16). The feature was over 3.5m long and 2m wide. The upper layers of the feature had probably had been removed by farming activities but at the base a shallow drain was excavated around the internal boundary of the structure. At the north-western corner this internal drain connected to a wider drain running down the slope. This external drain was in parts stone lined, which is unusual, but probably reflects the importance of draining water from the structure on the clay surface. The bases of at least two post-holes inside the structure suggested a sloping roof opening to the north – probably where a small door would have been located.

The exact function of the structure is not known. It is possible that it was a storage pit or perhaps a small hut. However, the internal drain suggests that storage is perhaps more likely, to avoid spoilage of stored material, rather than habitation where the main drain might have been better put around the back of the structure to prevent water coming into the feature.

AREA B

Excavation

Terrace 3 (Table 2) had been identified as a possible habitation site and below that a natural terrace ran in an east-west direction with midden eroding down the slope. It was decided to establish whether any signs of habitation could be found in this area (designated Area B1). Two large north to south running trenches were excavated from the upper slopes down across Terrace 3 (Table 2) and on to the natural terrace. Nothing was found in these trenches (Figure 8).

However, along the flat natural terrace, in an east-west trench connecting the two other trenches, a number of features were exposed (Figure 17–Figure 19). The clay here was particularly hard and the nature of the features somewhat ambiguous, but parts of two shallow pits were exposed.

The first pit-like feature was not easy to excavate due to the nature of the clay, but a thin layer of flattish stones had been exposed in the upper layer above the natural clay surface. Further excavation suggested that there was a stone drain running to the east turning into a circular drain emptying to a small depression (Figure 22, Figure 23). The drain continued in the small depression but soon disappeared.

The neighbouring pit to the west was only partly excavated as the features appeared to have been damaged by later activities. However, at the base of this pit was a drain running around the internal boundary (Figure 24), similar to Feature 29 in Area A1.

Just off the lip of the terrace a slightly larger depression (F6) was visible and on the surface of that a circular net sinker was recovered. Details of the sinker are provided below.

The second trench was extended down the slope and into a layer of midden (designated Area B2, Figure 20, Figure 21, Figure 25 and Figure 26). A series of fire scoops was uncovered and others were visible in section. The midden area was then more extensively scraped to reveal the extent of the archaeological features. Post-holes, stake-holes and fire scoops were identified and excavated.

As in Area A, it was difficult to determine the nature of the structures represented by the post-holes. The clay matrix was in parts easier to excavate than in Area A. The ground in Area B2 was gently sloping and it is likely that this area was a cooking and food processing zone rather than a habitation zone, which was probably located on Terrace 3, Area B1, indicated by the two pit-like features and drainage identified there.

Samples were taken from the features.

AREA C

Description

This area of midden was identified to the west of Area B, although the material did not appear to be continuous with it. The shell was scattered down the relatively gentle slope below the natural terrace. An excavator was used to scrape down the area and no features were found on the terraced zone. The initial scrape to remove the grass showed a thick layer of charcoal-rich midden much like that in the neighbouring areas. Bulk samples were taken of this material, which was about 30-40cm thick. A small adze was found on this surface as well as a small cow bone. Small patches of fishbone were clearly visible within the midden.

After this scrape, the midden was scraped down to reveal what was now a familiar sight of post-holes, stake-holes, fire scoops and other features cut into the natural clay (Figure 28–Figure 31). A small baulk was left through the centre of the site. This section showed that a series of fire scoops had been dug and had then been raked out. However, the layers of midden were difficult to distinguish in section and these upper layers appeared to have been deposited in relatively quick succession, suggesting a relatively short time frame for use of the area.

Below this layer of midden, the pattern of post-holes and stake-holes suggested a number of small structures (Figure 32). The larger post-holes dug into the clay suggested small shelters, perhaps even a hut, on the site and the strange drain-like feature (C-10, Figure 33) adds weight to this interpretation. Temporary structures such as drying racks might be indicated by the smaller alignments of holes. The succession of holes also showed that the area was being used for relatively short periods at a time, with new structures put up as required. A small number of post-holes suggested multiple building episodes, but probably none of major duration.

At the northern end of the midden, a small pit (Figure 35) was identified and this had been dug to a depth of about 25cm. The fill consisted of mixed clayey material with small amounts of shell. Its function was not established from any contents, although it may have been a small kumara storage pit.

EXCAVATION FIGURES

Figure 13. Panorama view of Area A looking from south (left) to north (right)

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EXCAVATION FIGURES, CONTINUED

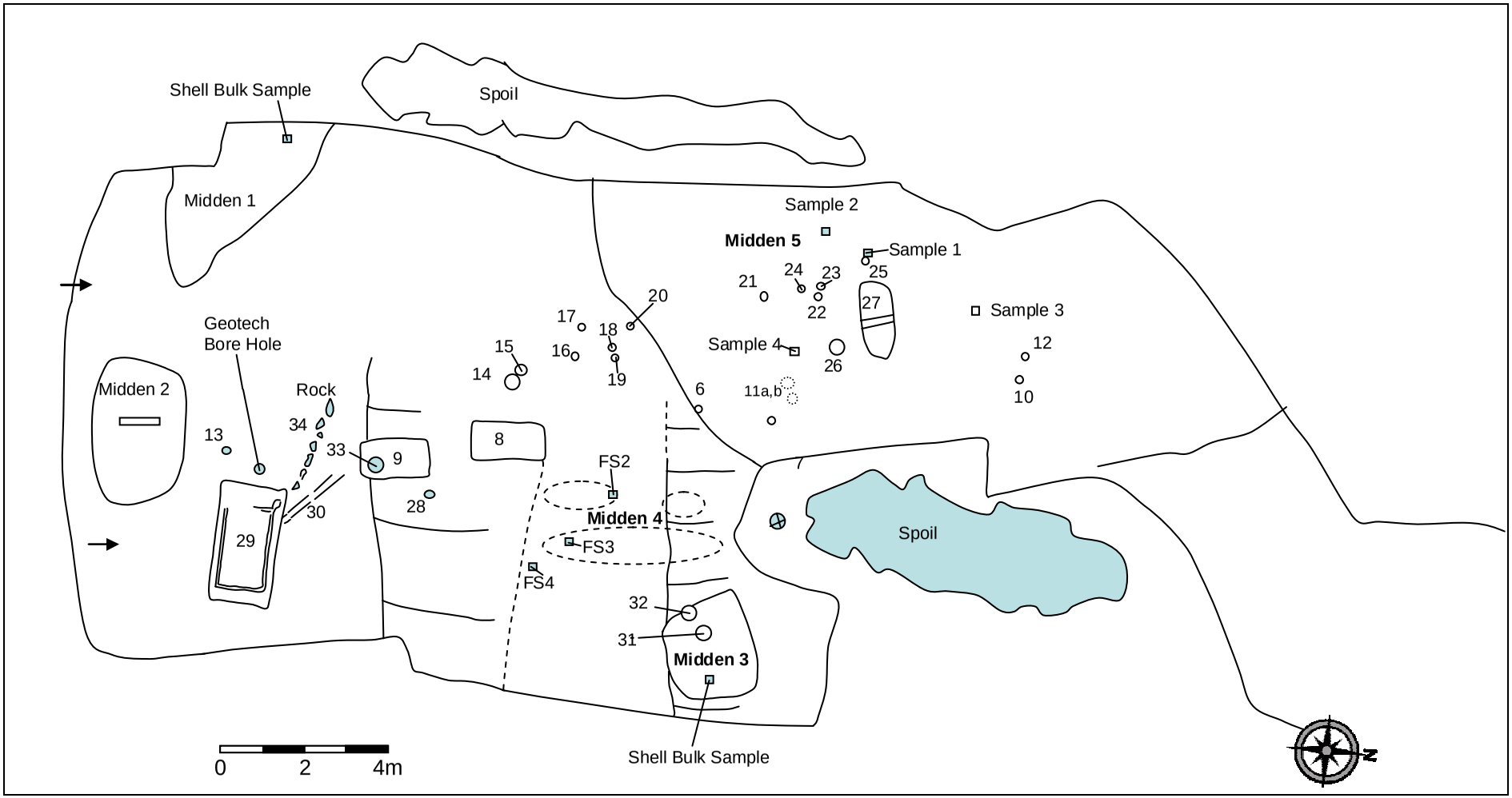

Figure 14. Plan of Area A1 (see Appendix 1 for list of features); FS = artefact findspot

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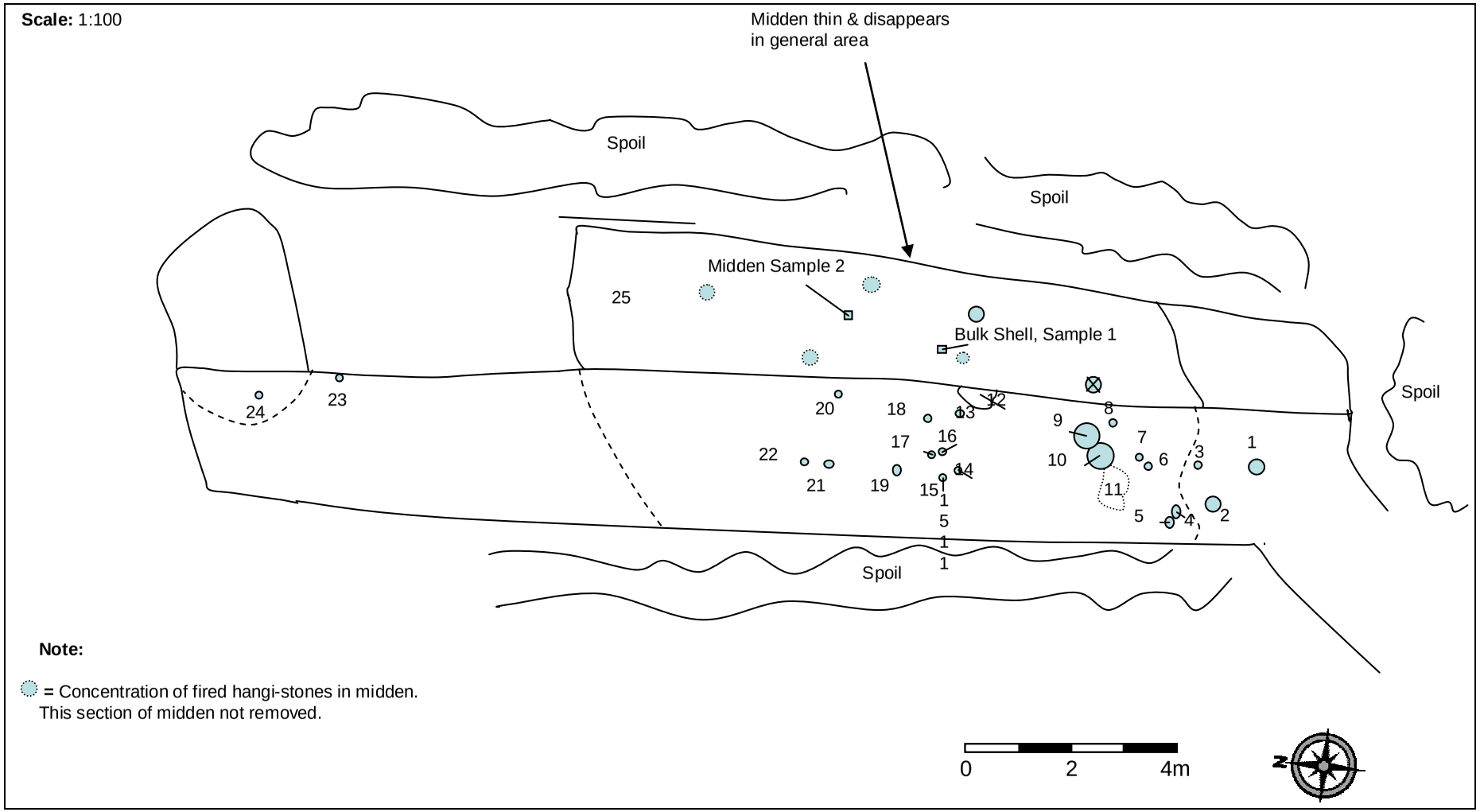

Figure 15. Plan of Area A2 (see Appendix 1 for list of features)

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EXCAVATION FIGURES, CONTINUED

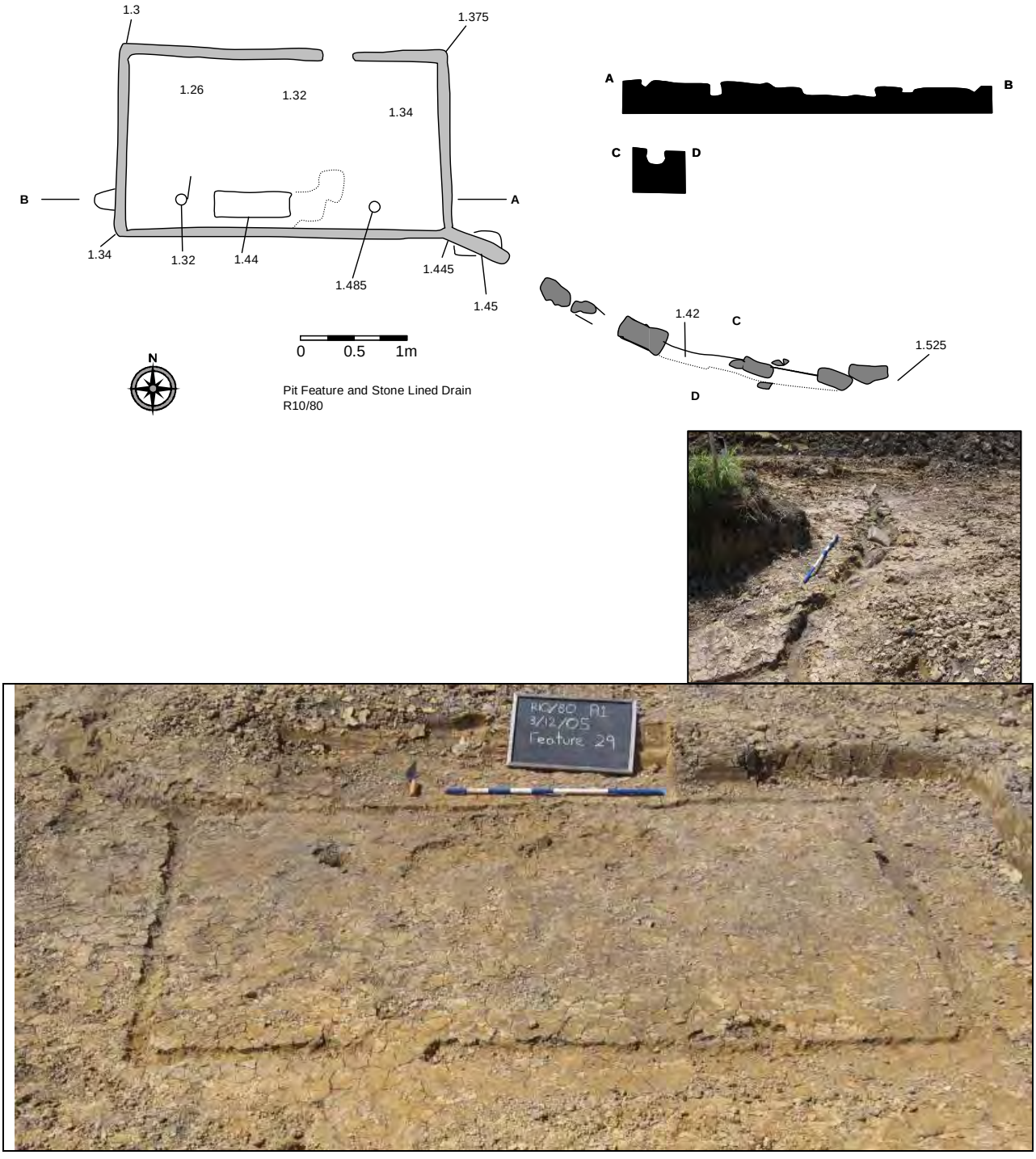

Figure 16. Feature 29, Area A1 – Plan (top), view looking south (bottom), drain (inset)

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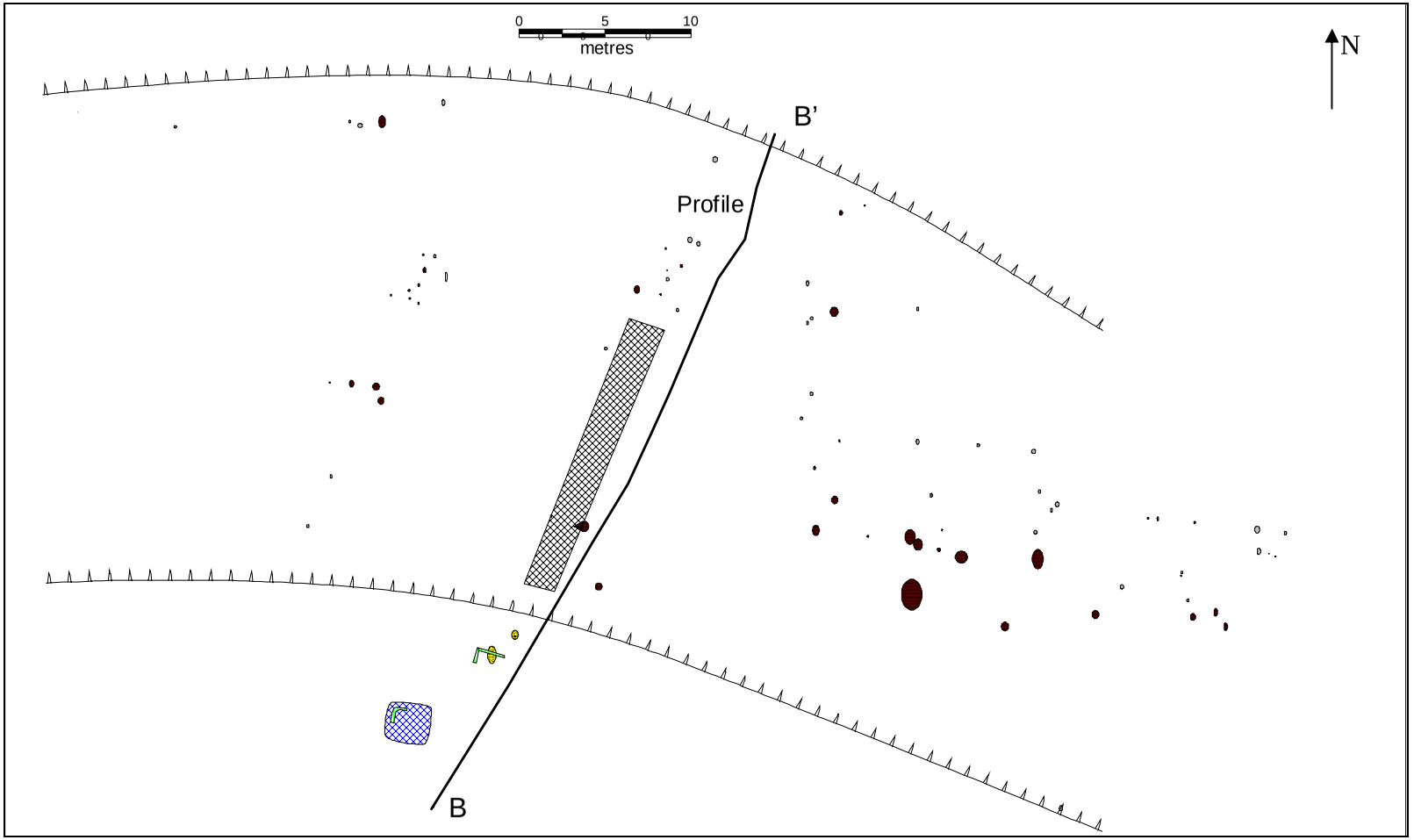

Figure 17. Plan of Areas B1 and B2

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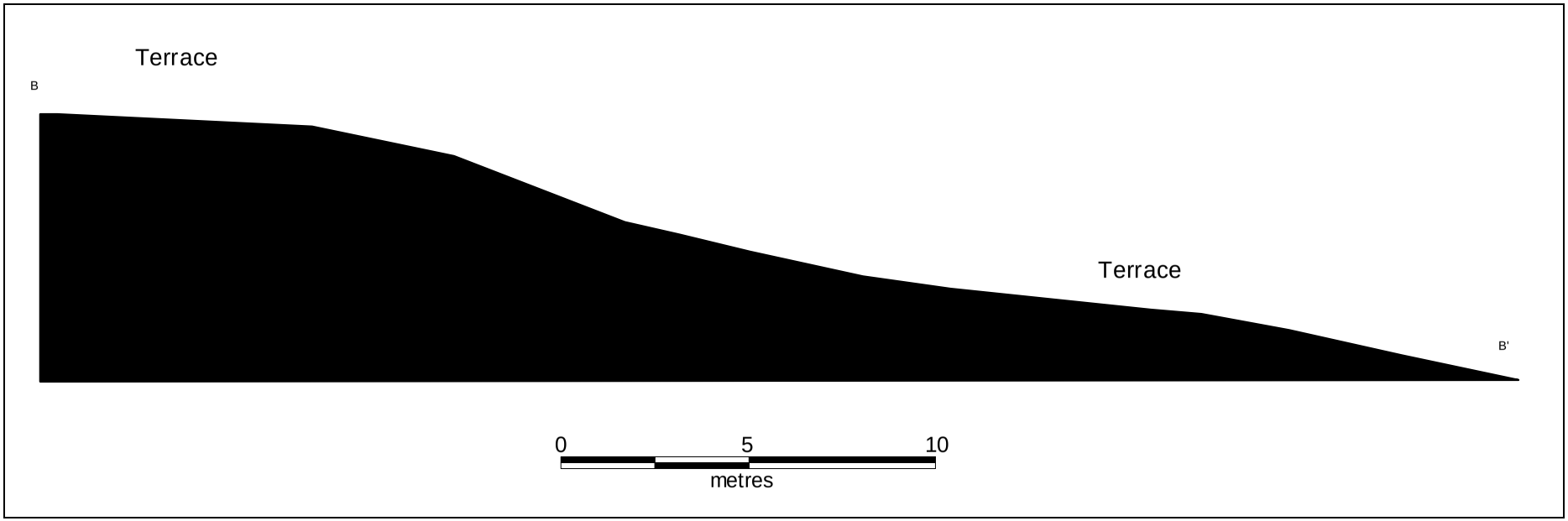

Figure 18. S-N Profile of Area B

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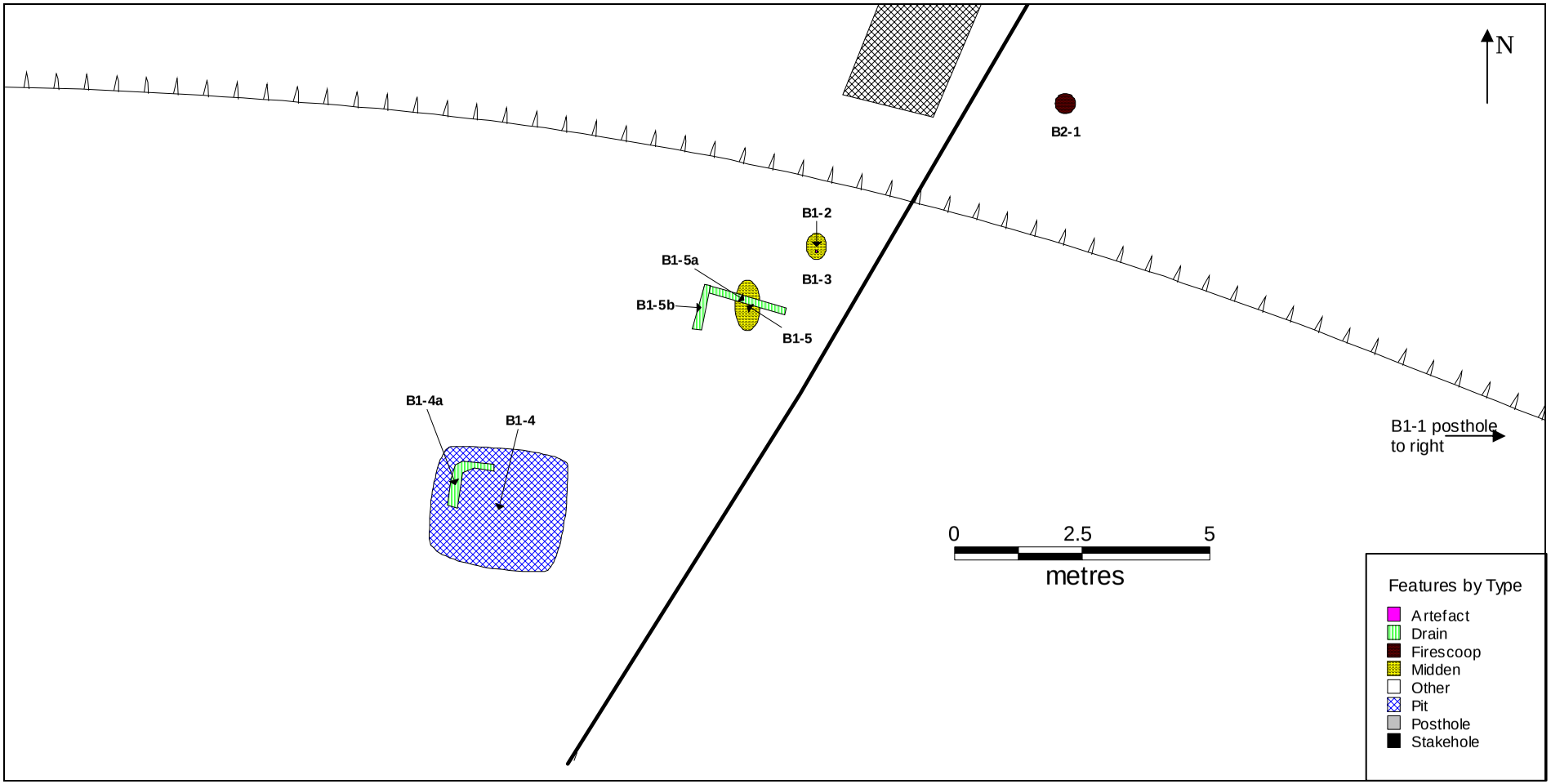

Figure 19. Close-up plan of Area B1 (see Appendix 1 for list of features)

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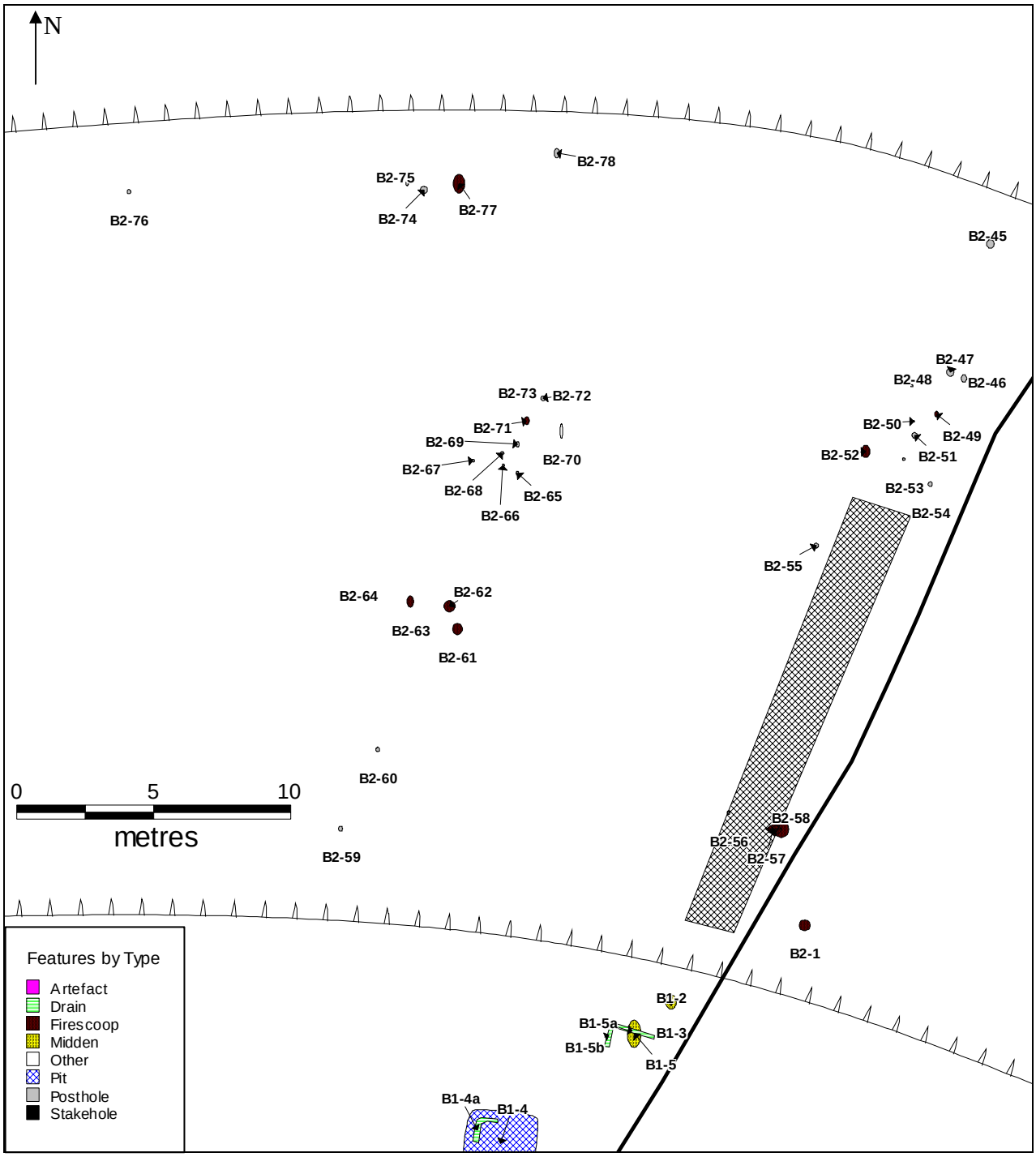

Figure 20. Plan of Area B2 (west side) (see Appendix 1 for list of features)

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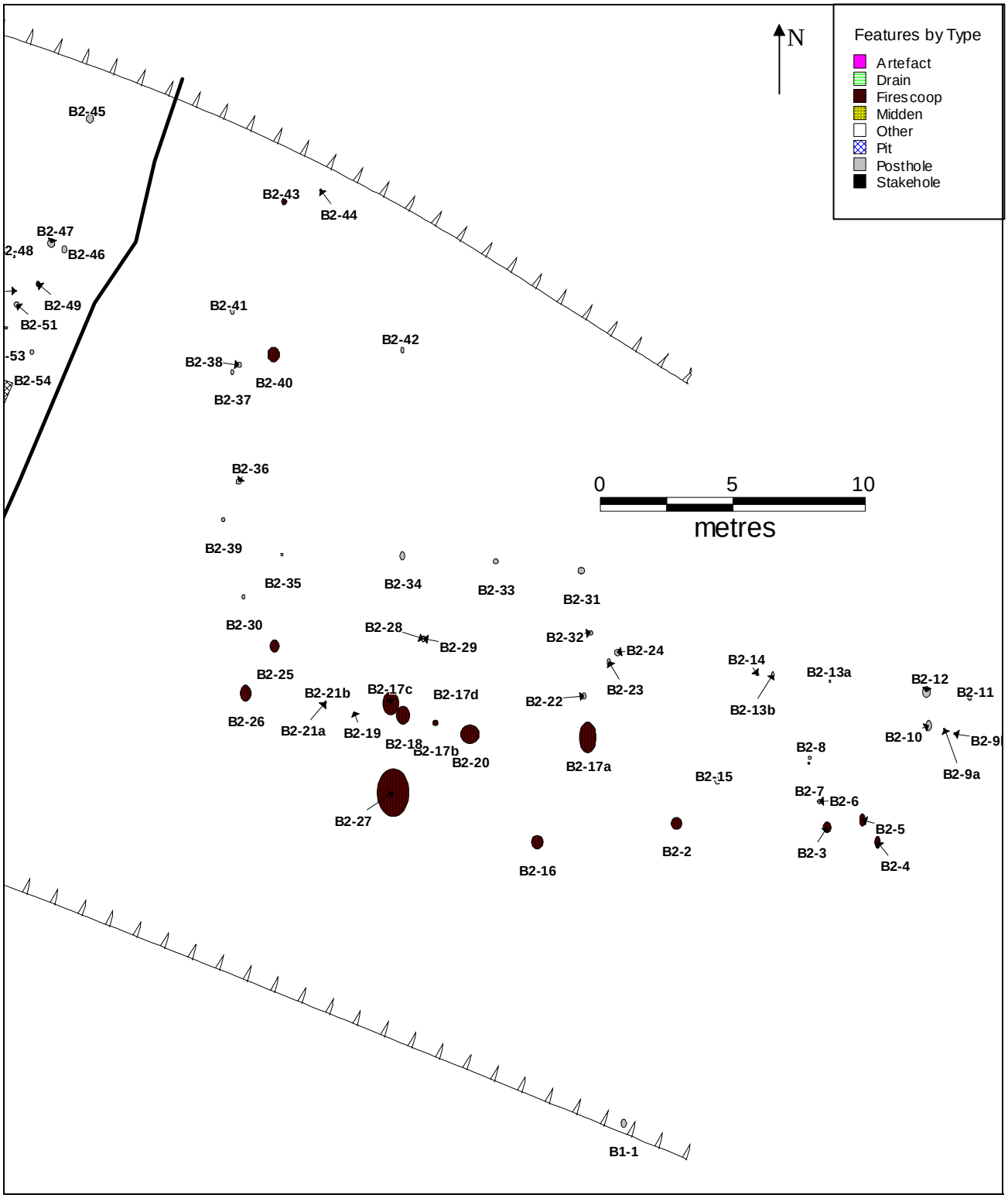

Figure 21. Plan of Area B2 (east side) (see Appendix 1 for list of features)

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Figure 22. Area B1 features with possible drains

Figure 23. Plan view of possible drains in Area B1

Figure 24. View of pit feature with drain, Area B1

Figure 25. Midden in section in Area B2

Figure 26. View of Area B2 looking north

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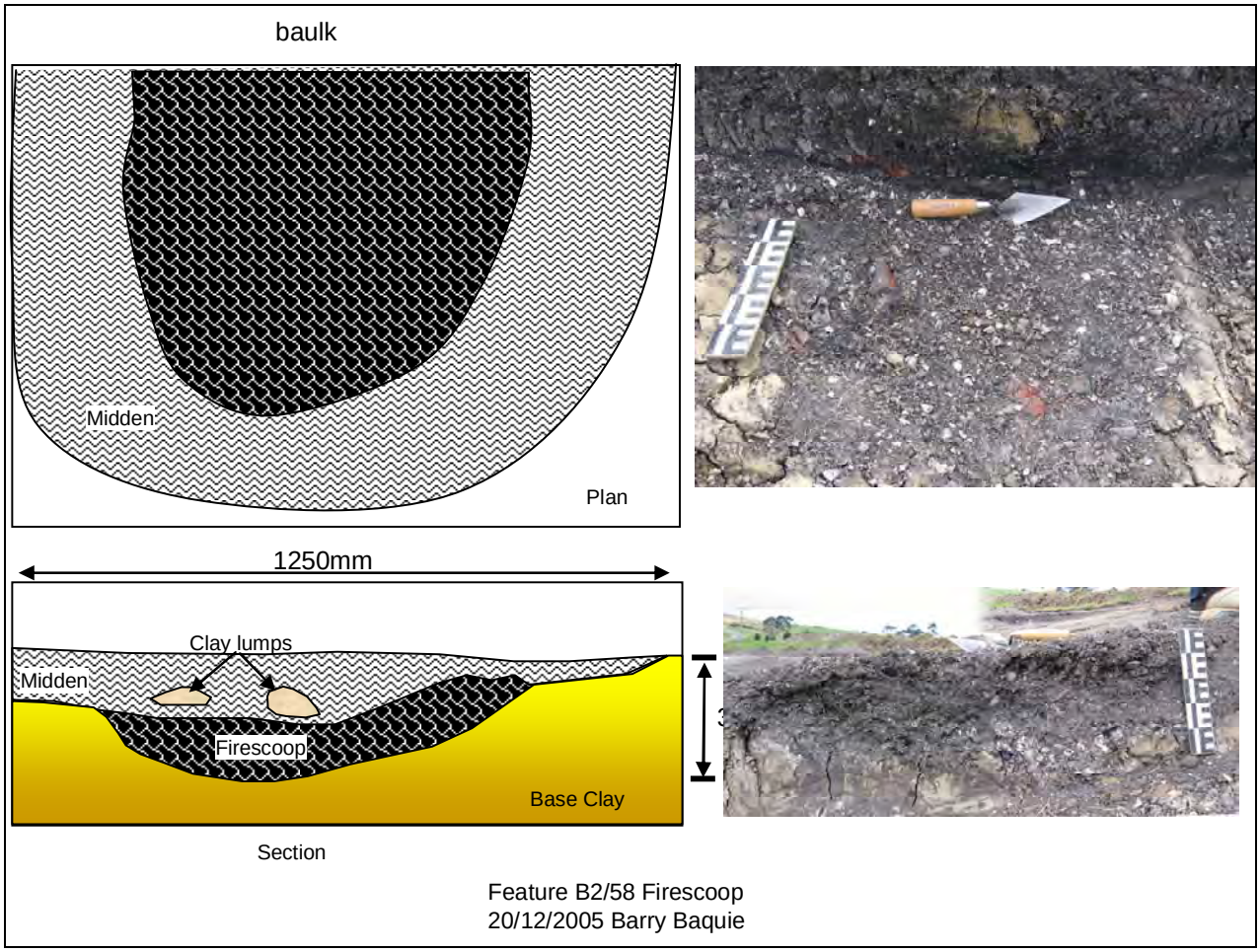

Figure 27. Plan and West Section of Feature B2/58

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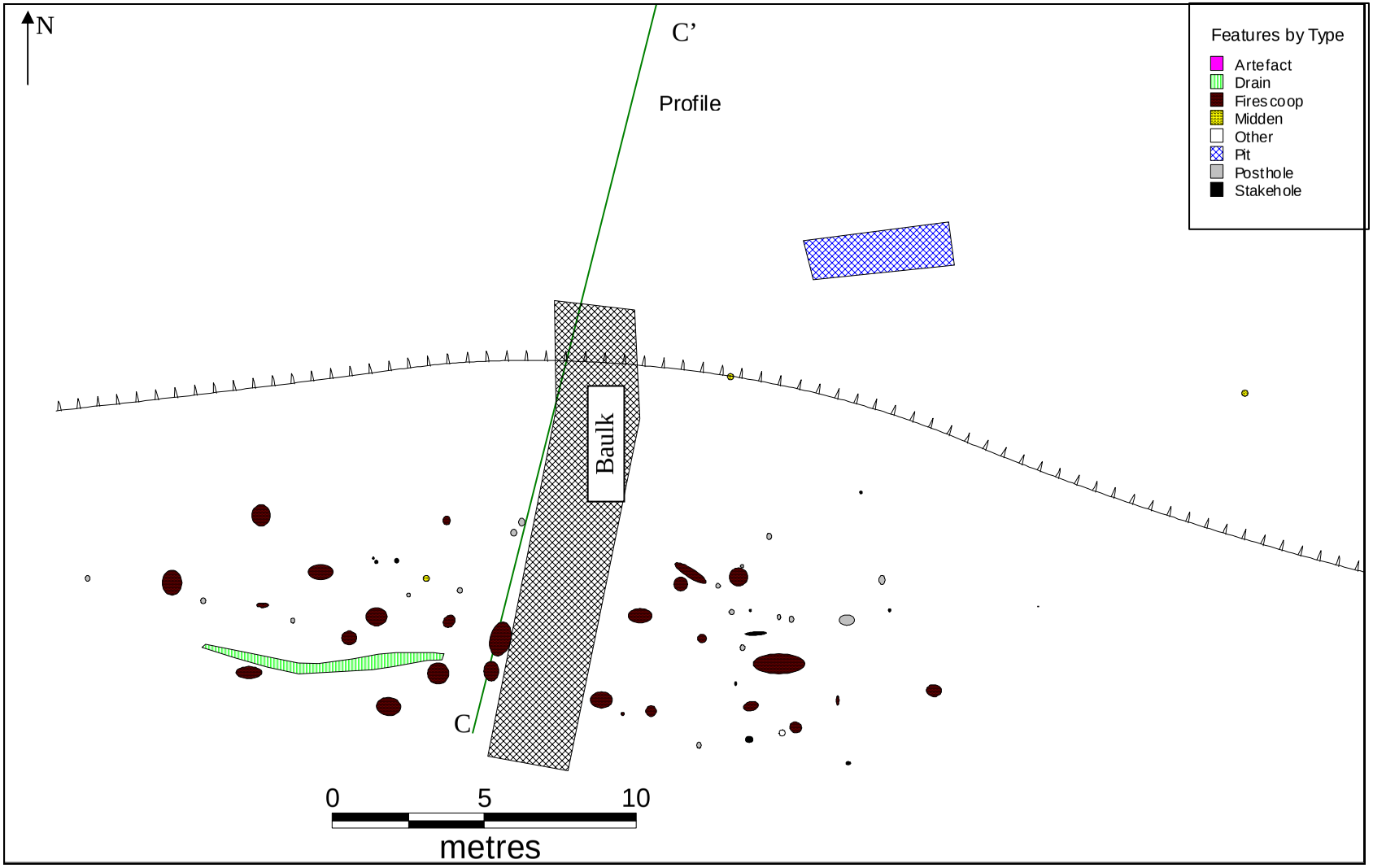

Figure 28. Plan of Area C

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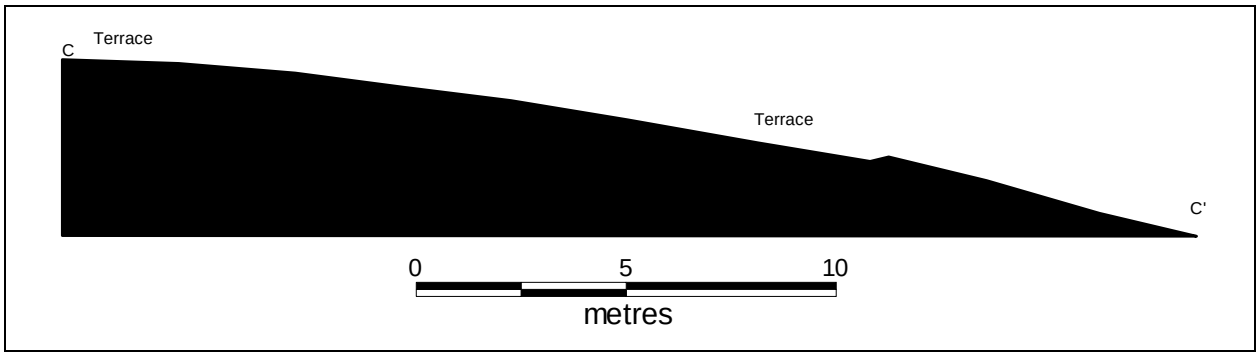

Figure 29. South-north profile of Area C

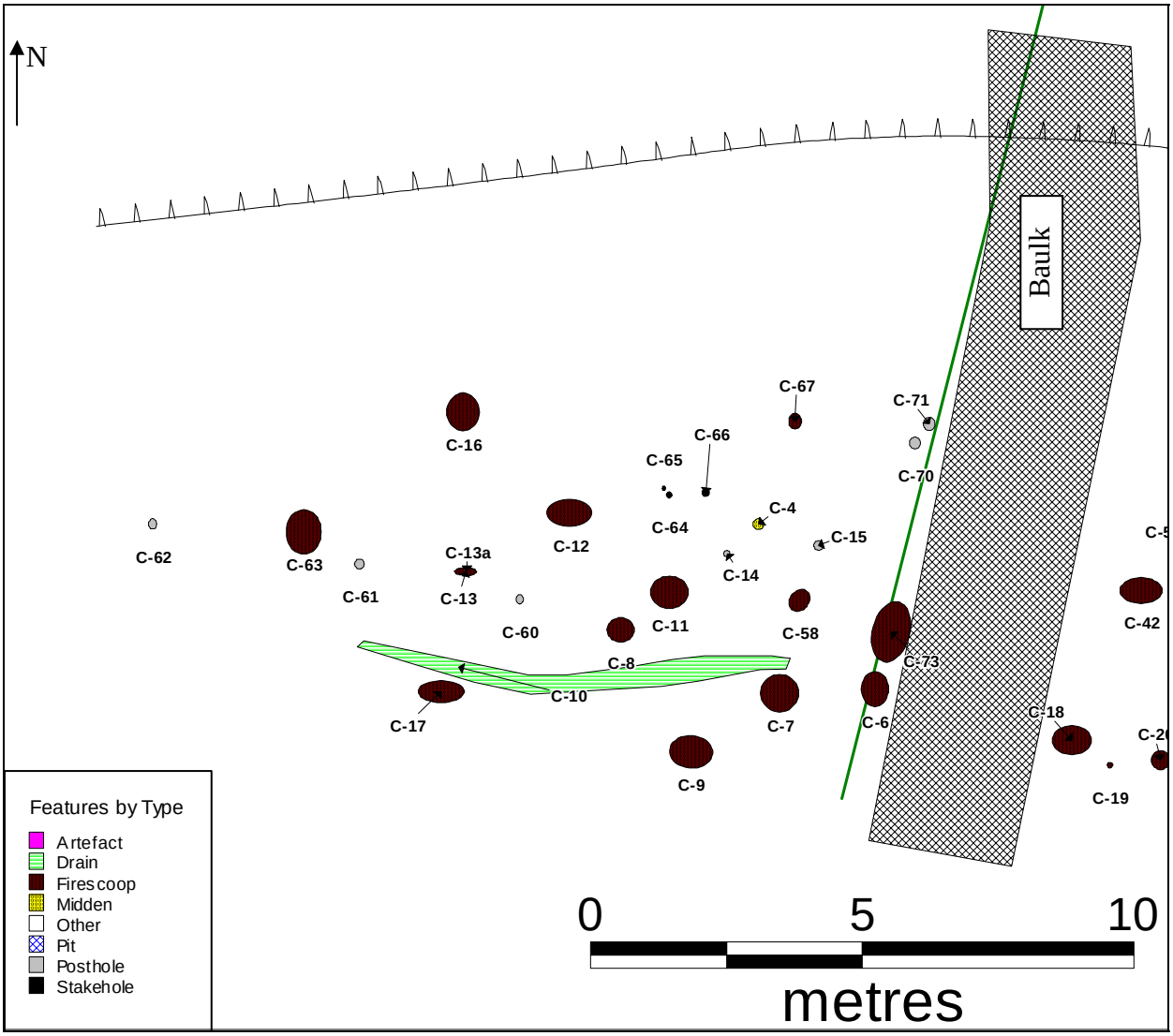

Figure 30. Plan of Area C (west side) (see Appendix 1 for list of features)

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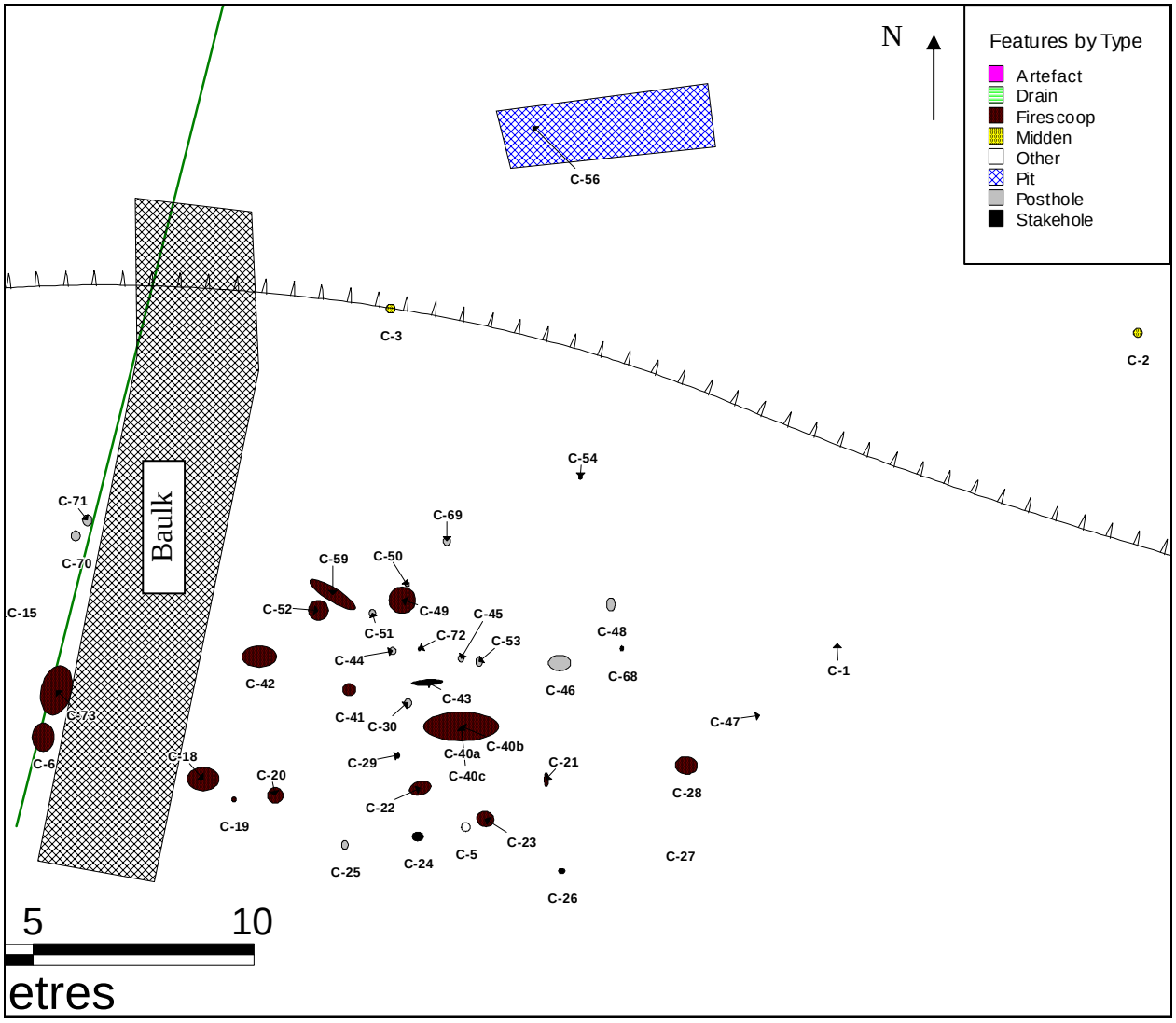

Figure 31. Plan of Area C (east side) (see Appendix 1 for list of features)

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Figure 32. View of Area C looking north

Figure 33. View of possible drain (C-10) and other features in southwest corner of Area C

Continued on next page

Figure 34. Drain C-10

Figure 35. Area C, Feature 56, Pit

ARTEFACTS

Summary

Only a limited number of artefacts were recovered from the excavations, but they included a range of obsidian flakes and stone objects. The obsidian flakes were few in number and found in various locations, usually in the upper midden layers exposed by topsoil stripping. The stone objects included a stone adze, a partial stone adze and an unusual circular stone object that was most likely a sinker stone used for net fishing.

Obsidian Flakes

Six obsidian flakes were recovered from the site – mostly from Area A (Figure 36). All were relatively small and greyish in colour. No cortical material was identified on the surface of the flakes. The source of the obsidian has not yet been determined, but Great Barrier Island is one possible source.

Tools

A broken fragment of an adze was found on the surface of the midden deposit in Area A. The fragment includes the blade end of a small adze (Figure 37). A complete adze was found on the surface of Area C midden during initial topsoil stripping (Figure 38).

Adze Analysis

The whole adze was analysed by Dr Marianne Turner (then of the NZ Historic Places Trust) who provided the following description:

Material: Motutapu Greywacke.

Dimension: Weight = 233gm, length 101mm, blade width 49mm, poll width 22mm, max thickness 29mm.

Manufacture: Well ground with quite extensive hammer dressing to side and butt area – rounded sides in butt area down to bevel and over poll. Only one flake scar visible. Quadrangular rounded cross-section with front wider than back, steep rounded bevel.

Repair: Blade under repair and asymmetry suggests previous episodes of blade damage and repair particularly to the corners – now higher at one corner than the other. Repair in the form of initially squaring off by hammer dressing and slight repair of chips by this method.

Origin: Blank origin probably water rolled small cobble close in size and shape to final form.

Continued on next page

ARTEFACTS, CONTINUED

Adze Analysis (continued)

The nature of the form and technology used suggests that the adze was derived from a late period (post 1500 A.D) context and is not a reworked piece from a larger earlier adze (it is too regular for this). It falls within the general description of Duff's 2B, but with the quirky Motutapu greywacke characteristics relating to the nature of the stone (i.e no well defined chin, and remnants of flake scars). This adze is more regular in finish than most later adzes of Motutapu greywacke. The hardness of the stone makes hammer dressing and grinding very time consuming tasks compared to coarse-grained greywackes. Compared to coarse-grained greywackes, Motutapu greywacke is fine-grained and very hard but not as strong. However, this form is a stubby strong one and the steep rounded bevel carries this through. Functionally it would work best as a small chopping adze for everyday use.

The adze fragment is of similar form made from basalt with a dark grey polished exterior.

Net Sinker

Perhaps the most unusual object recovered from the excavations was a circular disc-like object (Figure 39) with grooving right around the outer edge, identified as a net sinker made from a basaltic rock. Net sinkers have been found in a number of archaeological contexts and have been described ethnographically by Elsdon Best (1977). At Omaha Beach, to the north of Whangaparaoa, a single net sinker was recovered (see Bickler *et al.* 2003), but it was very different in form, being more ball-like with thin grove-marks around it. The Gulf Harbour sinker, on the other hand, appears to have been worked relatively deeply around the whole edge to a depth of about 0.5cm, allowing a rope to be tied tightly around the object.

A sinker has also been found from Whangaparaoa recently (V. Tanner, Auckland Regional Council, pers. comm.), but details are not yet available for comparison.

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ARTEFACTS, CONTINUED

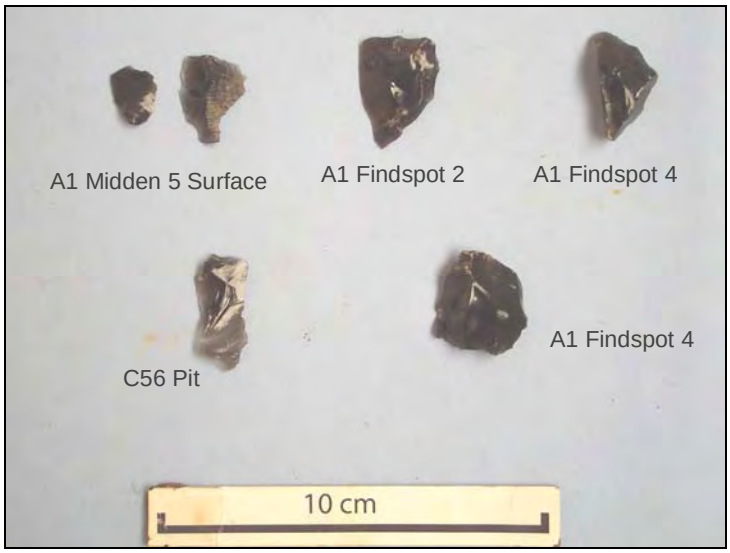

Figure 36. Obsidian flakes recovered from R10/80

Figure 37. Adze fragment from Area A1

Figure 38. Adze found in Area C

Figure 39. Stone net sinker from Area B

MIDDEN ANALYSIS

General Description

Midden samples were collected from a variety of features from all areas excavated. As described earlier, the main concentrations of midden in each of the areas consisted of up to 40cm of dense, charcoal-rich shell debris over the top of most of the identified features. Bulk samples of this material were taken and a portion analysed. Smaller samples were then also taken from the excavated features and a sample of these was submitted for analysis (e.g. Figure 40).

The results from the samples analysed clearly showed a predominance of cockle shell at the site with smaller quantities of pipi and other species. Charcoal samples were also extracted and sent for species identification for both environmental reconstruction and radiocarbon determination.

Table 3. Fishbone analysed from samples

Bag ID	Fish	Diagnostic Element	Side	Number present	Comments
B1 F3					No diagnostic fishbone
	Snapper	Maxilla	L	1	
	Snapper	Articular	R	1	
C F4 Bulk sample	Snapper	Tail spine		1	
	Snapper	Premaxilla	L	1	Bag also contains one flake of grey obsidian
	Snapper	Maxilla	R	1	
A2 Feature 19	Snapper	Quadrate	L	1	

Fishbone

The identifiable fishbone was all snapper, which is often found to be a preferred fish on Maori archaeological sites. The lack of other fish species is a bit unusual, but given the small sample size should not be considered that significant, as it most likely reflects the small number of diagnostic bones analysed. The presence of a net sinker (see above) indicates that other species were also being caught.

Comparison with projects recently carried out nearby is informative. Excavation of a small site, R08/132 at Bream Tail (Bickler *et al*. 2007), also had snapper as a dominant species and overall it was argued that this is typical of a small living site where fish and shellfish would have been collected and eaten on site. In contrast, at Omaha sandspit (Bickler *et al.* 2003), where fishbone was not common, it was the mackerels that dominated the surviving assemblage. This might be explained by the removal of the snapper for eating off site. The lack of structures at Omaha suggests that most occupation was temporary and related to processing of marine resources. The few fishbone remains are more indicative of the targeting of fish that was better for preserving.

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Shellfish

Shellfish has been analysed from 12 contexts (Table 4). The results are uniform with cockle very dominant in all samples and pipi also present in lesser amounts. A range of other species also identified suggests some opportunistic exploitation, but this is usual. Comparison between the different areas (Table 4) suggests that Area B shows evidence of greater diversity. As expected with cockle dominating the contents, the muddy shore habitat off the coast is the most exploited zone (Figure 42).

Name	Species	A1/F1	A1/F3	A1/F5	B2/F27	B2/F58	C/F2	C/F4	C/F10	C/F12	C/F30	C/F59	C/F7	Total
Cat's Eye	*Turbo smaragdus*			17	16						4	1	1	39
Cockle	*Austrovenus stutchburyi*	165	134	450	1787	96	145	172	45	8	163	3	27	3195
Cook's Turban	*Cookia sulcata*				3									3
Horn Shell	*Zeacumantus lutulentus*				4	1								5
Knobbed Whelk	*Austrofusus glans*	1		5					1					7
Mudsnail	*Amphibola crenata*			3	5									8
Pipi	*Paphies australis*	11	46	35	80	2	105	27	2		5		4	317
Ringed Venus	*Dosinia anus*	12	1	21	3	4	1	18	2			3	3	68
Rock Oyster	*Saccostrea glomerata*						0							0
Scallop	*Pecten novaezelandiae*						0							0
Speckled Whelk	*Cominella adspersa*	1		1	2	1	3				1			9
Spotted Top Shell	*Melagraphia aethiops*				2									2
Opercula	Misc.	5	2	26	6	6	15	11						71
Total		195	183	558	1908	110	269	228	50	8	173	7	35	3724

Table 4. Species identified in midden samples (R10/80)

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Figure 40. Midden from Area C Feature 59

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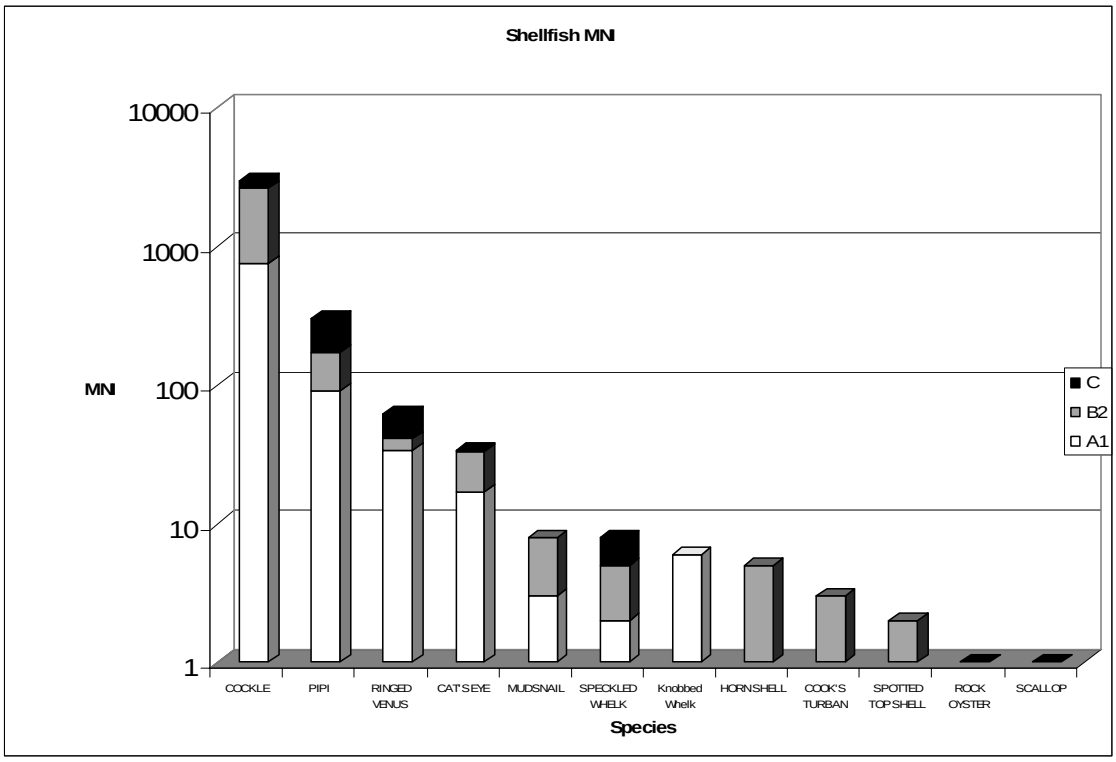

Figure 41. Graph of shellfish species MNI from different areas

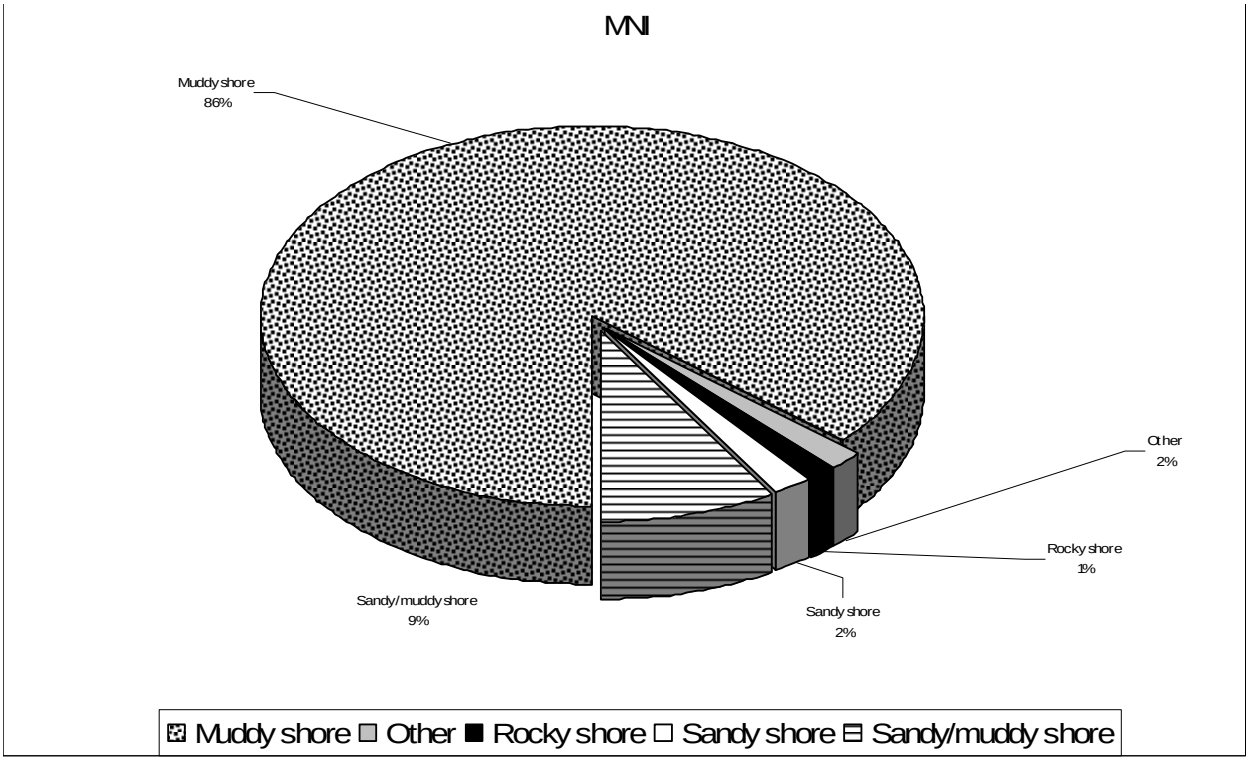

Figure 42. Proportion of shellfish habitats - all samples

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Charcoal Analysis

Charcoal from various contexts was sent for identification to Dr Rod Wallace at the Department of Anthropology, University of Auckland. The samples were used to identify the range of firewood used in cooking and in that way provide information regarding the local environment.

Name	Scientific Name	Habitat	A1	B2	C	Total
Akeake	*Dodonaea viscose*	Shrub	5	6		11
Coprosma	*Coprosma species*	Shrub		1	1	2
Fivefinger	*Pseudopanax arboreus*	Shrub	2			2
Hangehange	*Geniostoma rupestre*	Shrub	2			2
Hebe	*Hebe species*	Shrub	1		1	2
Kanuka	*Kunzea ericoides*	Scrub	6	3	1	10
Kauri	*Agathis australis*	Conifer			1	1
Mahoe	*Melicytus ramiflorus*	Scrub		3		3
Manuka	*Leptospermum scoparium*	Scrub	2	5		7
Pohutukawa	*Metrosideros excelsa*	Broadleaf tree	4	7		11
Puriri	*Vitex lucens*	Broadleaf tree	2	1	1	4
Tutu	*Coriaria arborea*	Shrub		2		2
Total			**24**	**28**	**5**	**57**

Table 5. Summary of species of charcoal from midden samples

The samples were dominated by woody species indicating open environments and re-growth scrub vegetation, or puriri and pohutukawa, which are trees that tend to survive forest clearance and are still abundant in the modern landscape. The kauri might have been obtained from local trees or have come from the very resinous branches and roots that typically survive as sub-fossil wood on landscapes where the living trees have long been absent.

CHRONOLOGY

Dates

A total of four dates was obtained from the excavations. Three dates were taken from shell while a charcoal date was also obtained from Area B. The samples were chosen both to provide a general indication of the date of occupation of each area for comparison, as well as specific information relating to particular structures and/or artefacts:

- A1-29 shell dates came from shell midden within the main pit feature found in that area.
- The sample from B1-3 came from the midden within which the net sinker was found and on the terrace just above Area B2.
- The B2-58 charcoal sample came from the relatively deep fire scoop.
- The C-10 sample was from the drain feature in Area C.

The results are shown in Table 6 and calibration in Figure 43. The raw data is provided in the appendix.

Table 6. Radiocarbon dates from R10/80

Features	Lab Number	Material	CRA	Error	-2σ	-1σ	+1σ	+2σ
A1-29	Wk20584	Shell	746	35	1460	1500	1630	1660
B1-3	Wk22443	Shell	712	44	1470	1520	1650	1690
B2-58	Wk20432	Charcoal	378	36	1460	1480	1630	1640
C-10	Wk22444	Shell	664	37	1490	1550	1690	1810

Interpretation

The dates therefore suggest:

1. The *terminus ante quem* (TAQ or latest possible date) for the pit feature is the early 17th century.
2. The *terminus post quem* (TPQ or earliest possible date) for the net sinker found in B1-3 is represented by the shell date from that feature and that probably relates to the 16th century.
3. TAQ for the drain feature C-10 is represented by that date, which may be as late as the 19th century, but more probably earlier.

The four dates are relatively close together and suggest that the site was generally occupied from the late 15th century through to the mid 17th century. However, the quantity of material, although significant, makes it unlikely that this occupation was 'continuous' and it more probably relates to intermittent occupation by small groups during that time. Areas A and B appear to be contemporary, while Area C may be slightly later. However, a larger number of dates would be required to determine how robust this interpretation is.

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Wider Context

Overall, the dates from R10/80 fit within the period of 'Classic' Maori occupation. Some recent dates from the Whangaparaoa Peninsula suggest that earlier 'Archaic' use of the area is likely (Vanessa Tanner, Auckland Regional Council, pers. comm.), but R10/80 looks more like those sites in the Auckland region occupied at a later period.

Figure 44 shows the results of the radiocarbon dates from R10/80 in relation to a series of 10 dates from Long Bay to the southwest of the Whangaparaoa Peninsula recently published by Phillips and Bader (2007). The dates from areas A and B in R10/80 generally fit the earlier sequence of occupation identified at Long Bay, with Area C perhaps a bit later. Overall, it is probable that the areas were used at much the same time and even possibly by the same groups of people.

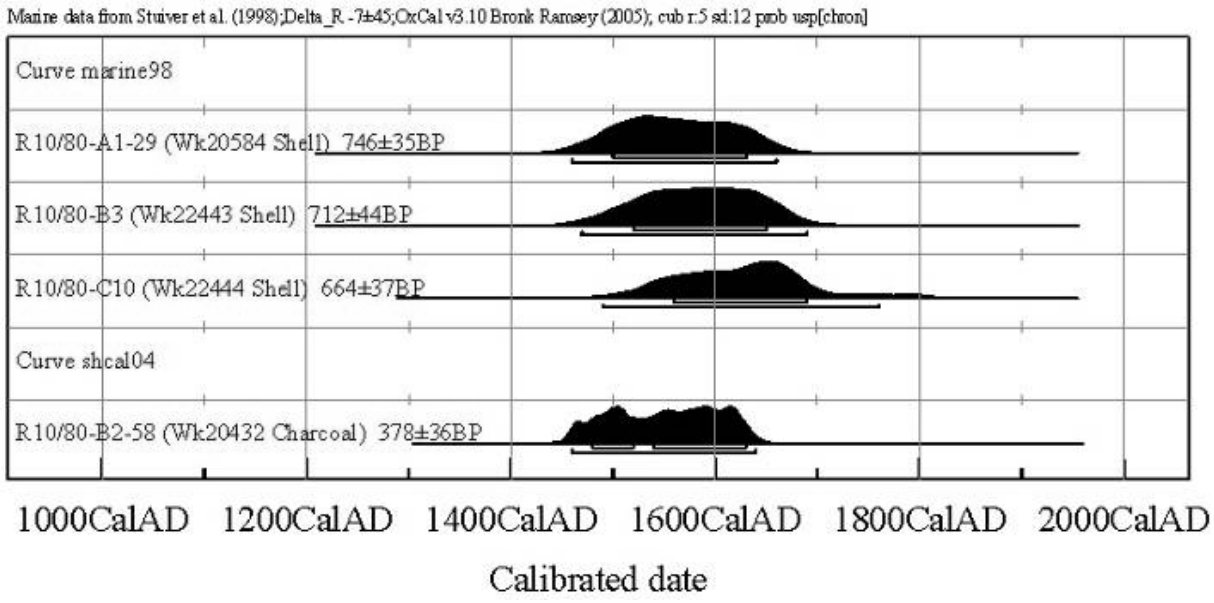

Figure 43. Calibrated dates from R10/80 (Oxcal 3.1)

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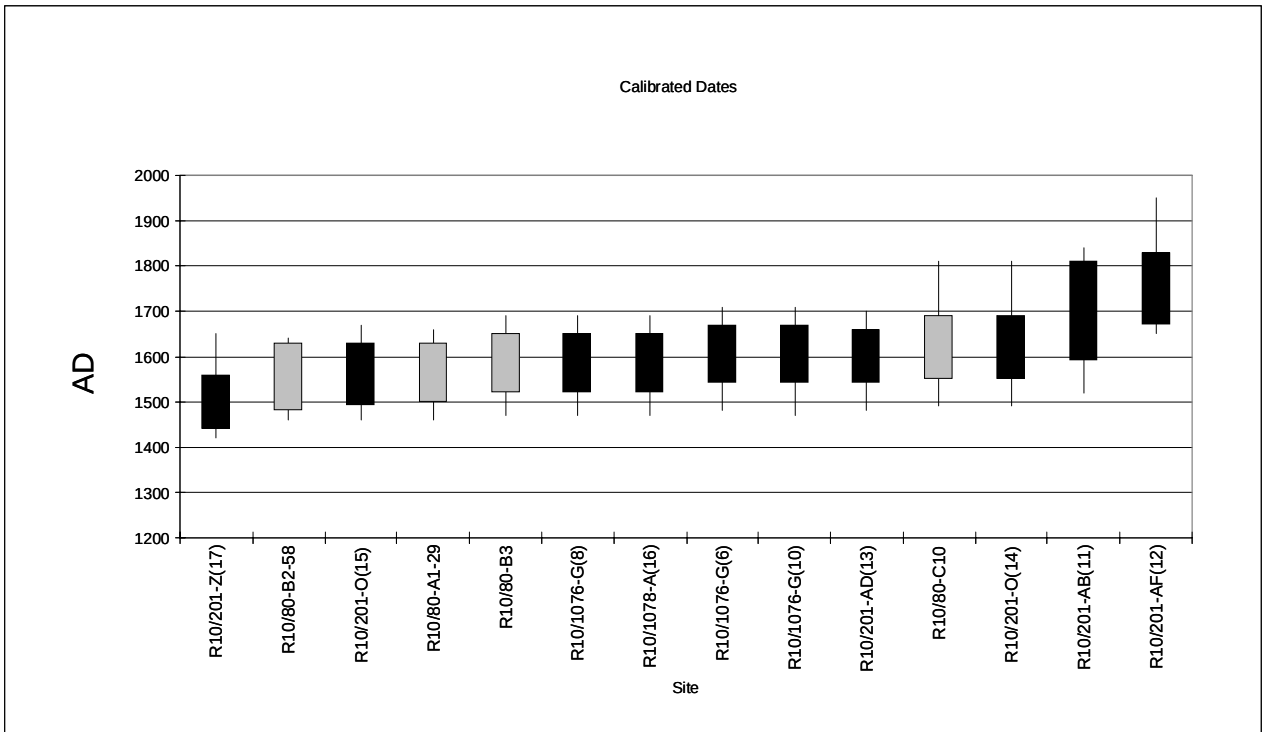

Figure 44. Radiocarbon dates from R10/80 (grey) and from Long Bay[1]

[1] Long Bay data from Phillips and Bader (2007)

DISCUSSION AND CONCLUSIONS

Summary

The features excavated at R10/80 suggest a small fishing hamlet located on the headland dating to the late 15th to mid 17th century. It contained numerous structural features (pits, post- and stake- holes), and differed in this respect from the shellfish processing sites investigated at Omaha Beach (Campbell *et al*. 2004; Bickler *et al*. 2003), which generally lacked these structural features. The site probably differs little from those small fishing villages described by early European explorers during the 19th century (e.g. Figure 45).

Cockle dominated the midden, followed by pipi and smaller numbers of other species, and the majority of the shellfish would have been easily accessible from the muddy shore environment of the coast. Fish would also have been an important element in the diet, and although snapper was the only species identified it is probable that a range of fish species whose remains have not survived were also exploited, as indicated by the presence of a net sinker.

It is likely that the ridge on which R10/80 was located was occupied intermittently over some centuries, and that the areas excavated here represent a sample of that occupation.

One definitive feature, the 'pit' with stone-lined drainage in Area A1, was well defined but the exact function of the structure is not known. A covered food storage pit or a small whare are both possibilities. Similar features were also partly exposed in Area B1, also with stone-lined drainage, and a small drain in Area C. The drains highlight the problems of the relatively impermeable clay under the topsoil, which would have presented difficulties in wet conditions. A more traditional 'bin' pit in Area C is likely to have been used for kumara storage.

The range of post- and stake-holes suggests that a number of activities were carried out on the site. The activities probably included:

- Fish and shellfish processing;
- Small living areas; and
- Possibly some food storage.

The soil in the area would have made gardening difficult and so it is likely that major staples were brought in from areas of better soils found nearby on the Whangaparaoa Peninsula, for example Te Haruhi Bay. Transport around the peninsula was relatively straightforward by both foot and canoe. The charcoal samples from the fire scoops suggested that the area was relatively open with re-growth scrub vegetation. The larger tree specimens such as puriri and pohutukawa are trees that tend to survive forest clearance and remain in landscape until modern times. Kauri might have been obtained from local trees or have come from the very resinous branches and roots that typically survive on landscapes where the living trees have long been absent.

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Artefacts

Three significant artefacts were recovered from the excavation. An adze fragment was found in Area A1 and a more complete adze was found on the surface of Area C. Both were relatively small, one made from greywacke and the other basalt.

The third item recovered from upper layer of Area B was probably a net sinker. The 'yo-yo' shape with groove marks around the object is distinctive. Recent archaeological excavations have recovered some additional examples, including one from Omaha Beach (see Bickler *et al.* 2003; Campbell *et al.* 2001). The net sinker found at Omaha and others from places further away, such as Papamoa (e.g., recently at site U14/2876[2]) are typically round with a small groove across for the rope. E. Best (1977) provides a detailed description of Maori fishing techniques and includes a description of sinkers used; while a more recent general description of Maori fishing techniques based on the archaeological data features in Leach (2006). Witter (2007) has also described net weights from Pegasus Town in Canterbury, but those weights generally lack the characteristic grooving for ropes.

A small number of obsidian flakes were also recovered.

R10/80 in its Regional Context

Recent development pressures throughout the Auckland region have resulted in an increasing amount of archaeological research being carried out in the general region. However, most of the detailed work has been centred on the area to the south of the Whangaparaoa Peninsula, at Long Bay and Weiti (Figure 1).

The sites at Weiti and Long Bay were probably staging areas for Maori on the way up and around the Whangaparaoa Peninsula. Between Long Bay and Weiti, the Okura River catchment would have been important in pre-European times, particularly as a communication route (Clough *et al.* 1999). Foster (1999) surveyed the south bank of the Okura River catchment area and the sites recorded there are predominantly midden. He concluded, based on a comparison with the Robinson (1987) data from Weiti, that there was little evidence of gardening apparent on the south bank of the Okura. The sites suggest a range of small encampments along the river bank with a small number of larger midden sites perhaps representing more substantial occupation.

Continued on next page

[2] Bickler pers.obs.

R10/80 in its Regional Context (continued)

The pre-European archaeological features at both Weiti (Bickler *et al.* 2007) and at Long Bay (Phillips & Bader 2007) appear to be similar to those at R10/80, with a number of midden sites found across natural terraces. The clusters of midden sites appear to represent relatively small, but oft-repeated encampments on natural terraces. However, as yet the excavations at Long Bay and Weiti have not been extensive enough to determine whether there is good evidence for Maori houses.

There is some evidence for gardening activity at Weiti. To date, that evidence is based on an interpretation of types of shell distribution by Robinson (1987), a lack of evidence of structures in the R10/306 excavation (Coates and Rickard 1985), and a reference by Murdoch to gardening activities by Maori there (1991: 35). However, the latter may relate to the 19th century activities marked on an early map, which refers to 'good soils' in one area at Weiti, and also states that the bay was 'formerly occupied by the natives' (SO 892A, shown in Figure 5). This is not yet conclusive as soil conditions over much of Weiti area are generally poor for gardening, but this question should be the focus of future research there.

The recorded pa sites, however, indicate the strategic importance of this area. R10/100 is located just to the south of R10/80 overlooking Hobbs Bay, with another pa, R10/102, at the opposite end of the bay to the west (Figure 46). This general pattern of pa guarding the different harbours and river catchments is clearly seen in Figure 46, although this does not mean that all the sites were occupied at the same time. The radiocarbon dates from R10/80, however, may be at the earlier end of the pa building sequence (which generally intensifies during late prehistory), and therefore may represent an earlier period of occupation. However, no dates from the pa sites have been obtained, so it is not possible to confirm this hypothesis.

Conclusion

The information retrieved from R10/80 provides insights into one facet of Maori settlement on the Whangaparaoa – a fishing village possibly occupied intermittently over a few centuries, from the late 15th century through to the mid 17th century. Other sites in the area perhaps represent larger and more permanent settlement, such as the sites around Okoromai Bay and Te Haruhi Bay, where there is a greater emphasis on gardening and food storage. It is likely that on sites containing evidence of food storage which are closely associated with defended sites, we are seeing more permanent settlement.

Continued on next page

Conclusion (continued)

In the wider context, this site could represent one part of the seasonal cycle of the local hapu within its rohe. It might also represent temporary occupation by other iwi. Historically we know, for example, that the Hauraki tribes established seasonal fishing settlements up the east coast, and no doubt there were similar movements and seasonal occupations by other groups during the period in which R10/80 was occupied.

There are indications on the Peninsula of occupation as early as the 'Archaic' period, and archival information regarding 19th century history, so the data presented here add new knowledge to the history of the region. The small number of artefacts is typical of sites from this time period, but representative of the expected range of activities at a small fishing hamlet on the coast.

Figure 45. A Maori village scene. U.S. Exploring Expedition 1840 (from Best 1941:573)

Continued on next page

Figure 46. Looking towards the north showing previously recorded pa sites near R10/80[3]

[3] **Source for archaeological sites CINZAS; Imagery from Google Earth**

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[4] Available at http://www.nzetc.org/tm/scholarly/tei-Bes02Maor-t1-body-d13.html

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APPENDIX 1: FEATURE LIST

ID	Plan	Feature	Type	Length NS (m)	Width EW (m)	Relative Depth (m)
A1/1	A1	1	Midden			
A1/2	A1	2	Midden			
A1/3	A1	3	Midden			
A1/4	A1	4	Midden			
A1/5	A1	5	Midden			
A1/6	A1	6	Post-hole	0.15	0.15	0.17
A1/7	A1	7	Post-hole	0.15	0.15	0.17
A1/8	A1	8	Pit	2.6	1.4	0.25
A1/9	A1	9	Pit	2.3	1.1	
A1/10	A1	10	Post-hole	0.2	0.1	0.13
A1/12	A1	12	Post-hole	0.13	0.13	0.13
A1/13	A1	13	Post-hole	0.15	0.12	0.15
A1/14	A1	14	Firescoop	0.4	0.4	0.10
A1/15	A1	15	Firescoop	0.3	0.3	0.10
A1/16	A1	16	Post-hole	0.16	0.16	0.16
A1/17	A1	17	Post-hole	0.11	0.11	0.11
A1/18	A1	18	Post-hole	0.1	0.1	0.10
A1/19	A1	19	Post-hole	0.12	0.12	0.10
A1/20	A1	20	Post-hole	0.14	0.14	0.16
A1/21	A1	21	Post-hole	0.14	0.14	0.26
A1/22	A1	22	Post-hole	0.14	0.14	0.10
A1/23	A1	23	Post-hole	0.14	0.14	0.10
A1/24	A1	24	Post-hole	0.14	0.14	0.10
A1/25	A1	25	Post-hole	0.12	0.12	0.10
A1/26	A1	26	Firescoop	0.33	0.33	0.10
A1/27	A1	27	Pit	1.3	2.4	0.18
A1/28	A1	28	Post-hole	0.1	0.1	1.50
A1/29	A1	29	Pit			
A1/30	A1	30	Drain			
A1/31	A1	31	Firescoop	0.3		0.04
A1/32	A1	32	Firescoop			
A1/33	A1	33	Firescoop			
A1/34	A1	34	Other			
A1/11a	A1	11a	Firescoop			
A1/11b	A1	11b	Firescoop			
A2/1	A2	1	Firescoop		0.3	0.05
A2/2	A2	2	Firescoop		0.6	0.10
A2/3	A2	3	Firescoop		1.3	0.80
A2/4	A2	4	Firescoop		3	3.00
A2/5	A2	5	Firescoop		2.5	2.50
A2/6	A2	6	Unknown			
A2/7	A2	7	Unknown			
A2/8	A2	8	Unknown			
A2/9	A2	9	Unknown			
A2/10	A2	10	Unknown			
A2/11	A2	11	Unknown			
A2/12	A2	12	Unknown			
A2/13	A2	13	Post-hole		0.1	0.05
A2/14	A2	14	Post-hole		1.5	1.50
A2/15	A2	15	Unknown		1.2	0.30
A2/16	A2	16	Unknown			
A2/17	A2	17	Unknown			
A2/18	A2	18	Post-hole		0.1	0.05
A2/19	A2	19	Firescoop		4	1.50

ID	Plan	Feature	Type	Length NS (m)	Width EW (m)	Relative Depth (m)
A2/20	A2	20	Post-hole		0.1	0.05
A2/21	A2	21	Post-hole		1.5	0.10
A2/22	A2	22	Post-hole			
A2/23	A2	23	Post-hole		1.2	0.80
A2/24	A2	24	Post-hole			
A2/25	A2	25	Midden			
B1-1	B1	1	Post-hole	0.30	0.20	0.05
B1-2	B1	2	Midden	1.00	0.50	0.30
B1-3	B1	3	Artefact	0.05	0.05	0.01
B1-4	B1	4	Pit	0.00	0.00	0.00
B1-4a	B1	4a	Drain	0.00	0.00	0.00
B1-5	B1	5a	Midden	1.00	0.50	0.30
B1-5a	B1	5b	Drain	0.00	0.00	0.00
B1-5b	B1	5	Drain	0.00	0.00	0.00
B2-1	B2	1	Firescoop	0.40	0.40	0.08
B2-2	B2	2	Firescoop	0.45	0.40	0.07
B2-3	B2	3	Firescoop	0.40	0.30	0.05
B2-4	B2	4	Firescoop	0.45	0.20	0.05
B2-5	B2	5	Firescoop	0.45	0.20	0.02
B2-6	B2	6	Post-hole	0.15	0.15	0.12
B2-7	B2	7	Stakehole	0.07	0.07	0.06
B2-8	B2	8	Post-hole	0.13	0.12	0.11
B2-9a	B2	9a	Post-hole	0.05	0.05	0.11
B2-9b	B2	9b	Post-hole	0.07	0.05	0.04
B2-10	B2	10	Post-hole	0.38	0.20	0.05
B2-11	B2	11	Post-hole	0.20	0.15	0.17
B2-12	B2	12	Post-hole	0.40	0.30	0.14
B2-13a	B2	13	Post-hole	0.10	0.07	0.10
B2-13b	B2	13	Post-hole	0.26	0.09	0.10
B2-14	B2	14	Post-hole	0.11	0.09	0.07
B2-15	B2	15	Post-hole	0.25	0.20	0.06
B2-16	B2	16	Firescoop	0.50	0.45	0.12
B2-17a	B2	17a	Firescoop	1.15	0.63	0.05
B2-17b	B2	17b	Firescoop	0.20	0.20	0.17
B2-17c	B2	17c	Firescoop	0.85	0.60	0.20
B2-17d	B2	17d	Post-hole	0.09	0.07	0.06
B2-18	B2	18	Firescoop	0.67	0.50	0.07
B2-19	B2	19	Firescoop	0.00	0.00	0.00
B2-20	B2	20	Firescoop	0.70	0.70	0.10
B2-21a	B2	21a	Post-hole	0.07	0.05	0.07
B2-21b	B2	21b	Post-hole	0.10	0.07	0.05
B2-22	B2	22	Post-hole	0.22	0.17	0.17
B2-23	B2	23	Post-hole	0.23	0.14	0.15
B2-24	B2	24	Post-hole	0.26	0.23	0.14
B2-25	B2	25	Firescoop	0.45	0.35	0.05
B2-26	B2	26	Firescoop	0.60	0.40	0.09
B2-27	B2	27	Firescoop	1.80	1.20	0.20
B2-28	B2	28	Post-hole	0.19	0.14	0.09
B2-29	B2	29	Post-hole	0.19	0.13	0.09
B2-30	B2	30	Post-hole	0.18	0.11	0.10
B2-31	B2	31	Post-hole	0.25	0.25	0.09
B2-32	B2	32	Post-hole	0.16	0.16	0.07
B2-33	B2	33	Post-hole	0.19	0.17	0.05
B2-34	B2	34	Post-hole	0.30	0.18	0.03
B2-35	B2	35	Post-hole	0.12	0.08	0.05
B2-36	B2	36	Post-hole	0.20	0.19	0.14
B2-37	B2	37	Post-hole	0.19	0.11	0.04

ID	Plan	Feature	Type	Length NS (m)	Width EW (m)	Relative Depth (m)
B2-38	B2	38	Post-hole	0.19	0.18	0.05
B2-39	B2	39	Post-hole	0.16	0.14	0.10
B2-40	B2	40	Firescoop	0.55	0.45	0.14
B2-41	B2	41	Post-hole	0.28	0.17	0.10
B2-42	B2	42	Post-hole	0.21	0.13	0.05
B2-43	B2	43	Firescoop	0.24	0.19	0.02
B2-44	B2	44	Post-hole	0.07	0.07	0.06
B2-45	B2	45	Post-hole	0.31	0.28	0.10
B2-46	B2	46	Post-hole	0.26	0.20	0.13
B2-47	B2	47	Post-hole	0.31	0.27	0.32
B2-48	B2	48	Post-hole	0.08	0.07	0.07
B2-49	B2	49	Firescoop	0.20	0.13	0.04
B2-50	B2	50	Post-hole	0.04	0.04	0.05
B2-51	B2	51	Post-hole	0.20	0.18	0.13
B2-52	B2	52	Firescoop	0.45	0.30	0.02
B2-53	B2	53	Post-hole	0.10	0.10	0.04
B2-54	B2	54	Post-hole	0.18	0.15	0.13
B2-55	B2	55	Post-hole	0.18	0.16	0.08
B2-56	B2	56	Post-hole	0.14	0.09	0.05
B2-57	B2	57	Firescoop	0.00	0.57	0.20
B2-58	B2	58	Firescoop	0.60	0.55	0.10
B2-59	B2	59	Post-hole	0.19	0.15	0.05
B2-60	B2	60	Post-hole	0.17	0.13	0.07
B2-61	B2	61	Firescoop	0.42	0.35	0.05
B2-62	B2	62	Firescoop	0.40	0.40	0.07
B2-63	B2	63	Firescoop	0.40	0.25	0.09
B2-64	B2	64	Post-hole	0.08	0.06	0.04
B2-65	B2	65	Post-hole	0.13	0.09	0.04
B2-66	B2	66	Post-hole	0.09	0.07	0.04
B2-67	B2	67	Post-hole	0.10	0.08	0.03
B2-68	B2	68	Post-hole	0.12	0.12	0.05
B2-69	B2	69	Post-hole	0.19	0.10	0.09
B2-70	B2	70	Unknown	0.55	0.10	0.06
B2-71	B2	71	Firescoop	0.29	0.19	0.03
B2-72	B2	72	Post-hole	0.17	0.16	0.08
B2-73	B2	73	Post-hole	0.09	0.09	0.06
B2-74	B2	74	Post-hole	0.26	0.25	0.12
B2-75	B2	75	Post-hole	0.16	0.10	0.08
B2-76	B2	76	Post-hole	0.16	0.14	0.08
B2-77	B2	77	Firescoop	0.68	0.41	0.09
B2-78	B2	78	Post-hole	0.34	0.19	0.08
C-1	C	1	Artefact	0.01	0.01	0.01
C-2	C	2	Midden	0.20	0.20	0.50
C-3	C	3	Midden	0.20	0.20	0.50
C-4	C	4	Midden	0.20	0.20	0.50
C-5	C	5	Unknown	0.20	0.20	0.20
C-6	C	6	Firescoop	0.65	0.50	0.04
C-7	C	7	Firescoop	0.70	0.70	0.18
C-8	C	8	Firescoop	0.45	0.50	0.08
C-9	C	9	Firescoop	0.80	0.60	0.04
C-10	C	10	Drain	0.20	1.00	0.05
C-11	C	11	Firescoop	0.60	0.70	0.04
C-12	C	12	Firescoop	0.50	0.55	0.04
C-13	C	13	Firescoop	0.45	0.45	0.05
C-13a	C	13a	Stakehole	0.04	0.04	0.07
C-14	C	14	Post-hole	0.12	0.12	0.20
C-15	C	15	Post-hole	0.18	0.18	0.06

ID	Plan	Feature	Type	Length NS (m)	Width EW (m)	Relative Depth (m)
C-16	C	16	Firescoop	0.70	0.60	0.04
C-17	C	17	Firescoop	0.40	0.85	0.08
C-18	C	18	Firescoop	0.53	0.72	9.00
C-19	C	19	Firescoop	0.10	0.10	0.03
C-20	C	20	Firescoop	0.35	0.35	0.05
C-21	C	21	Firescoop	0.30	0.10	0.03
C-22	C	22	Firescoop	0.30	0.50	0.07
C-23	C	23	Firescoop	0.40	0.35	0.05
C-24	C	24	Stakehole	0.20	0.25	0.10
C-25	C	25	Post-hole	0.20	0.15	0.20
C-26	C	26	Stakehole	0.11	0.15	0.02
C-27	C	27	Firescoop	0.00	0.00	0.00
C-28	C	28	Firescoop	0.50	0.40	0.03
C-29	C	29	Stakehole	0.13	0.06	0.10
C-30	C	30	Post-hole	0.20	0.16	0.21
C-40a	C	40a	Post-hole	0.13	0.10	0.08
C-40b	C	40b	Post-hole	0.11	0.09	0.09
C-40c	C	40c	Firescoop	0.65	1.70	0.05
C-41	C	41	Firescoop	0.28	0.30	0.02
C-42	C	42	Firescoop	0.48	0.78	5.00
C-43	C	43	Stakehole	0.12	0.70	0.05
C-44	C	44	Post-hole	0.16	0.17	0.10
C-45	C	45	Post-hole	0.17	0.12	0.15
C-46	C	46	Post-hole	0.22	0.72	0.35
C-47	C	47	Firescoop	0.00	0.00	0.00
C-48	C	48	Post-hole	0.30	0.20	0.08
C-49	C	49	Firescoop	0.60	0.60	0.10
C-50	C	50	Post-hole	0.10	0.10	0.11
C-51	C	51	Post-hole	0.15	0.15	0.07
C-52	C	52	Firescoop	0.45	0.45	0.02
C-53	C	53	Post-hole	0.21	0.15	0.23
C-54	C	54	Stakehole	0.10	0.08	0.03
C-56	C	56	Pit	0.50	1.00	0.40
C-58	C	58	Firescoop	0.44	0.35	0.07
C-59	C	59	Firescoop	1.20	0.30	0.05
C-60	C	60	Post-hole	0.17	0.13	0.10
C-61	C	61	Post-hole	0.19	0.18	0.13
C-62	C	62	Post-hole	0.19	0.15	0.10
C-63	C	63	Firescoop	0.82	0.65	0.10
C-64	C	64	Stakehole	0.11	0.10	0.15
C-65	C	65	Stakehole	0.08	0.06	0.03
C-66	C	66	Stakehole	0.15	0.13	0.09
C-67	C	67	Firescoop	0.29	0.24	0.11
C-68	C	68	Stakehole	0.10	0.08	0.07
C-69	C	69	Post-hole	0.20	0.16	0.11
C-70	C	70	Post-hole	0.22	0.20	0.05
C-71	C	71	Post-hole	0.25	0.21	0.11
C-72	C	72	Stakehole	0.08	0.06	0.05
C-73	C	73	Firescoop	0.50	0.50	0.20

APPENDIX 2: RADIOCARBON DATING RESULTS

The University of Waikato

Radiocarbon Dating Laboratory

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Hamilton,
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email c14@waikato.ac.nz
Head: Dr Alan Hogg

Report on Radiocarbon Age Determination for Wk- 20584

Submitter	S Bickler
Submitter's Code	R10/80 A1/29
Site & Location	R10/80, Whangaparaoa, New Zealand
Sample Material	Cockle
Physical Pretreatment	Surfaces cleaned. Washed in an ultrasonic bath. Tested for recrystallization: aragonite.
Chemical Pretreatment	Sample acid washed using 2 M dil. HCl for 200 seconds, rinsed and dried.

$d^{14}C$	-38.0 ± 4.2	‰
$\delta^{13}C$	1.8 ± 0.2	‰
$D^{14}C$	-88.7 ± 4.0	‰
% Modern	91.1 ± 0.4	%
Result	**746 ± 35 BP**	

Comments

29/3/07

- Result is *Conventional Age or % Modern* as per Stuiver and Polach, 1977, Radiocarbon 19, 355-363. This is based on the Libby half-life of 5568 yr with correction for isotopic fractionation applied. This age is normally quoted in publications and must include the appropriate error term and Wk number.
- Quoted errors are 1 standard deviation due to counting statistics multiplied by an experimentally determined Laboratory Error Multiplier of 1 .
- The isotopic fractionation, $\delta^{13}C$, is expressed as ‰ wrt PDB.
- Results are reported as *% Modern* when the conventional age is younger than 200 yr BP.

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APPENDIX 2: RADIOCARBON DATING RESULTS, CONTINUED

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Report on Radiocarbon Age Determination for Wk- 20432

Submitter	S Bickler
Submitter's Code	R10/80 B2/58
Site & Location	R10/80, Whangaparaoa, New Zealand
Sample Material	Charcoal (id)
Physical Pretreatment	Possible contaminants were removed. Washed in ultrasonic bath.
Chemical Pretreatment	Sample washed in hot 10% HCl, rinsed and treated with hot 1% NaOH. The NaOH insoluble fraction was treated with hot 10% HCl, filtered, rinsed and dried.

$d^{14}C$	-47.9 ± 4.2	‰
$\delta^{13}C$	-26.1 ± 0.2	‰
$D^{14}C$	-46.0 ± 4.3	‰
% Modern	95.5 ± 0.5	%
Result	**378 ± 36 BP**	

Comments

Al Hogg
15/2/07

- Result is *Conventional Age or % Modern* as per Stuiver and Polach, 1977, Radiocarbon 19, 355-363. This is based on the Libby half-life of 5568 yr with correction for isotopic fractionation applied. This age is normally quoted in publications and must include the appropriate error term and Wk number.
- Quoted errors are 1 standard deviation due to counting statistics multiplied by an experimentally determined Laboratory Error Multiplier of 1 .
- The isotopic fractionation, $\delta^{13}C$, is expressed as ‰ wrt PDB.
- Results are reported as *% Modern* when the conventional age is younger than 200 yr BP.

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APPENDIX 2: RADIOCARBON DATING RESULTS, CONTINUED

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Report on Radiocarbon Age Determination for Wk- 22443

Submitter	S Bickler
Submitter's Code	R10/80-B1-3
Site & Location	R10/80, New Zealand
Sample Material	Cockle
Physical Pretreatment	Surfaces cleaned. Washed in an ultrasonic bath. Tested for recrystallization: aragonite.
Chemical Pretreatment	Sample acid washed using 2 M dil. HCl for 250 seconds, rinsed and dried.

$\delta^{13}C$	1.2 ± 0.2	‰
$D^{14}C$	-84.9 ± 5.0	‰
$F^{14}C\%$	91.5 ± 0.5	%
Result	**712 ± 44 BP**	

Comments

AG Hogg

17/12/07

- Result is *Conventional Age or % Modern* as per Stuiver and Polach, 1977, Radiocarbon 19, 355-363. This is based on the Libby half-life of 5568 yr with correction for isotopic fractionation applied. This age is normally quoted in publications and must include the appropriate error term and Wk number.
- Quoted errors are 1 standard deviation due to counting statistics multiplied by an experimentally determined Laboratory Error Multiplier.
- The isotopic fractionation, $\delta^{13}C$, is expressed as ‰ wrt PDB.
- $F^{14}C\%$ is also known as pMC (percent modern carbon).

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APPENDIX 2: RADIOCARBON DATING RESULTS, CONTINUED

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Head: Dr Alan Hogg

Report on Radiocarbon Age Determination for Wk- 22444

Submitter	S Bickler
Submitter's Code	R10/80-C10
Site & Location	R10/80, New Zealand
Sample Material	Cockle
Physical Pretreatment	Surfaces cleaned. Washed in an ultrasonic bath. Tested for recrystallization: aragonite.
Chemical Pretreatment	Sample acid washed using 2 M dil. HCl for 300 seconds, rinsed and dried.

$\delta^{13}C$	2.0 ± 0.2	‰
$D^{14}C$	-79.3 ± 4.2	‰
$F^{14}C\%$	92.1 ± 0.4	%
Result	**664 ± 37 BP**	

Comments

17/12/07

- Result is *Conventional Age or % Modern* as per Stuiver and Polach, 1977, Radiocarbon 19, 355-363. This is based on the Libby half-life of 5568 yr with correction for isotopic fractionation applied. This age is normally quoted in publications and must include the appropriate error term and Wk number.
- Quoted errors are 1 standard deviation due to counting statistics multiplied by an experimentally determined Laboratory Error Multiplier.
- The isotopic fractionation, $\delta^{13}C$, is expressed as ‰ wrt PDB.
- $F^{14}C\%$ is also known as pMC (percent modern carbon).

APPENDIX 3: UPDATED SITE RECORD FORM

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

UPDATE FORM

Metric map number: **R10**

Metric map name: Whangaparoa

Metric map edition: (2nd edition 1999)

NZAA METRIC SITE NUMBER: **R10/80**

SITE TYPE: Terraces/Midden

SITE NAME: MAORI:

OTHER:

GRID REFERENCE: **Easting** 2 6 8 0 8 5 0 **Northing** 6 5 0 7 1 7 0

1. Aids to relocation of site

Gulf Harbour, Whangaparoa. In the section bounded by Pinecrest Drive, The Anchorage, and Hobbs Bay (Lot 1 DP206832). Site is located on a north facing slope immediately to the south of The Anchorage. The majority of features associated with this site occur between two small natural tributary streams, with additional features (not visited) occurring within the reserve contribution to the west.

2. State of site and possible future damage.

3. Description of site (Supply full details: history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here)

Site excavated in main area (see Authority report) except for western end which remains in reserve.

4. Owner Current –Bream Tail Farm Ltd **Tenant/manager:**

Address Address

5. Nature of information (hearsay, brief or extended visit) Archaeological excavation proposed subdivision

Photographs (reference numbers and where held)

Aerial photographs (reference numbers and clarity of site)

6. Reported by **Simon Bickler** **Filekeeper**

Address **Clough & Associates Ltd. Auckland** **Date**

7. New Zealand Historic Places Trust (for office use)

Type of Site **Present condition and future danger of destruction**

Local environment

Land classification **Local Body**