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Interim Report of Excavations at 47 Adler Drive, Ohauiti, Tauranga, Bay of Plenty: HNZPT Authority 2016/421

DRAFT

SITE U14/3505 ATOP TE KAKARIKI

Prepared by MishMish Heritage (Productions Ltd.)

August 2018

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1 Introduction

The Three Creeks sub-division currently in development at 47 Adler Drive is a residential building project located in Ohauiti, Tauranga, Bay of Plenty.

In terms of earthworks, the land has required conversion from kiwifruit orchard with sediment controls, widespread top- and sub-soil stripping and stormwater controls along a tributary of the Kaitemako Stream required. Stages 1 and 2 are complete with regard archaeological obligations. Stage 3 is yet to be completed.

Previously, two archaeological sites had been recorded on the property: terrace and pit site U14/3186, and terrace site U14/3187. Prior to this survey in 2003, the property was also listed on the Tauranga City Council District Plan as an area of cultural significance but subsequently removed. The archived planning maps discovered after earthworks commenced listed a Maori Village named Te Kakariki.

All works complete to date have been conducted under archaeological authority 2016/421, issued on 25th November 2015. The authority included provisions to modify and/or destroy site U14/318 and any unrecorded archaeological sites that may be encountered during the earthworks. Site U14/3186 is located in the setback area next to the Kaitemako Stream and not included in the authority. An attempt to re-locate in 2016-2017 however was not confidently re-identified by B. Gallagher, Section 45 archaeologist.

Archaeological fieldwork took a phased approach due to earthwork requirements and recording archaeology in a systematic and practical way. The first date of archaeological works, a series of 19 evaluation and exploratory trenches, was undertaken from January 7th 2016. The last period of planned archaeological monitoring occurred in 16th April 2018, a sediment pond and stripping at the northern end of Stage 3.

Archaeological findings in summary: Dense, intercutting features, representing multi-phase land use related to Maori settlement cultivation and sustained subsistence over time, was investigated and recorded, primarily on high points and spurs of the property. Archaeology was most dense either side of previously recorded site U14/3187 (Area 1000) though the site described in the NZAA ArchSite database was found to be modern. Archaeological features, mainly relating to food storage was found in small clusters across the rest of the property to date (Area 2000 and 3000), and it is the suggestion of this report at this time, that their spatial arrangement is an indicator of food cultivation layout. The archaeological works conducted may not have a complete record of these features, as previous contouring and kiwifruit planting it likely to have destroyed some pit features. Small clusters have also been recorded on the small spurs protruding into the tributary of the Kaitemako Stream (Area 4000 (west side) and 5000 (east side)), now the Stormwater reserve, supporting the cultural use of this waterway. No archaeology has been identified within Stage 3 of the development to date.

Trenching and investigations of the features were carried out by Section 45 Project Archaeologist, Brigid Gallagher, MishMish Heritage field archaeologists Eleanor Sturrock and Anne O'Hagan, with

archaeological sub-contractors Greg Gedson, Nick Beynon, Lisa McKendry, Evan Morcom, Ben Thorne, Gabriel Vilgalys, and with support from Raysan Al-Kubaisi (director MishMish Heritage).

This report will be sent to HNZPT, Karmon Limited, Generation Homes, Ngai Te Ahi, Ngati Ruahine and Ngati He.

2 Tangata Whenua

In preparation for archaeological authority 2016/421, three hapu-iwi groups were consulted and a condition of the authority was that information be shared with them.

Listed in the authority is:
Des Heke for Ngai Te Ahi
Lance and Stanley Waka for Ngati Ruahine
Maureen Ririnui for Ngati He.
Des Heke acted a cultural adviser across the project and information dispersed through him. He also undertook the role of kaitiaki and monitoring as required during new ground disturbance.

As a result of features being encountered on the highpoints, Des Heke undertook research to ascertain if the property had been previously listed with Tauranga City Council as a site of significance. Appropriate planning maps were then distributed showing the name Te Kakariki being applied to this property.

3 Methodology

Due to the phased approach to earthworks on site, and the discovery of Te Kakariki, a settlement pa and papa kainga, archaeological fieldwork was also broken up into phases:

1. Initial exploratory trenches were excavated between January 7th to 14th 2016 across Stage 1 and 2 of the property.
2. Expansion of four areas, notably the highest points and spurs (Area 1000), and identified feature clusters on the lower areas (Area 2000 and 3000). Hand/machine excavation of features was carried out between January and May 2016.
3. Between 13th and 15th December, 2016 another series of test trenches were excavated to target areas of high archaeological potential on the western side (Area 4000) of the Kaitemako Stream in the proposed Stormwater Reserve (Stage 2 of Works). Two of these trenches contained archaeological features, which were excavated and recorded. All trenches were backfilled immediately after archaeological investigation had occurred.
4. Between January – May 2017 MishMish Heritage were on call should archaeology be suspected as a result of bulk topsoil stripping within Stage 1 of works. Several call outs occurred on the low lying level areas and hill slope.
5. 26th October 2017 a series of trenches were placed within the eastern side of the proposed Stormwater Reserve and Kaitemako Stream tributary (Area 5000).
6. 29th November 2017 monitoring of sediment controls within Stage 2, close to known archaeology.
7. January 2018 monitoring of sediment controls within Stage 3.
8. April 16th 2018 the northern end of Stage 3 was stripped and monitored due to its location at the confluence of the Kaitemako Stream and its tributary in the Stormwater Reserve.

Works outstanding Associated with Authority 2016/21:

Outstanding archaeological requirements of the property: The completion of Stage 3 earthworks with archaeological monitoring and recording as appropriate.

Archaeology and Earthworks Strategy (AES)

Throughout the project consistent process and protocols have been in place, with an agreed Archaeology and Earthworks Strategy agreed should an archaeologist not be on site and archaeology is suspected, Brigid Gallagher is notified and an assessment visit organised.

Evaluation trenching and phased earthworks has allowed for controlled recovery of archaeological material at this property and Te Kakariki.

Sampling and Recording

On the discovery of archaeological features and deposits standard archaeological recording procedures have been in place with all features partially excavated (up to 60%) by hand or machine as appropriate, with written and photographic records taken. Sampling of soils deemed to have information value were taken (c. 10L) and artefacts identified were numbered and catalogued, and retained at the offices of MishMish Heritage. Survey of features has primarily been undertaken by Ben Thorne (Datum Archaeology) at the end of each excavation period with Total Station, and when this was not available, particularly as a result of archaeology identified during a suspected archaeology assessment visit, GPS records taken.

4 Summary of Findings

Adler Drive, Ohauiti, Preliminary Summary

In Summary

Archaeological features and deposits have been identified across the property of 47 Adler Drive, the Three Creeks sub-division, to date. The features have been most dense and complex on the high points and spurs in front of where the Sievewright's house once stood, beneath the cow shed (now gone), and in two cluster groups on the lower area of the property.

During initial trenching on the property by MishMish Heritage, previously recorded archaeological site U14/3187, described as a terrace, was opened and interpreted as a modern feature. Subsequent stripping during development works of this spur under archaeological authority 2016/421 revealed new archaeological features, and resulted in investigation. The site record form for site U14/3187 has been updated to reflect this.

Site U14/3187 has also be used to record the features recorded in the lower areas of the property within Stage 1 and 2 of earthworks, as they undoubtedly relate to the features on the hill and spurs, making this a large multi-phase papa kainga. The two main clusters of pits recorded on the lower area, as well as episodic singular pits, are likely to relate to a large cultivation area with food storage feature. It is probable that living structures may also have been located here, however the often shallow nature of these features, coupled with the effect of past contouring in preparation for kiwifruit planting and then clearance in 2015 has meant that they would not survive in the landscape, if they were present.

Figure 1 shows the layout of features recorded on the property with Stages 1 and 2 by Total Station survey (in Draft). Please note that this this is the preliminary survey plan from Datum Archaeology, it will be finalised for the final report.

Archaeological Works and Areas

Works on site commenced with a series of 21 trenches across the landscape, focused on areas of the topography that had the greatest opportunity to characterise the archaeological content of this property. These resulted in four trenches containing archaeology, particularly pits/rua and postholes. 6 Areas of archaeological recording have been allocated, Areas 1000-6000, seen on Figure 2.

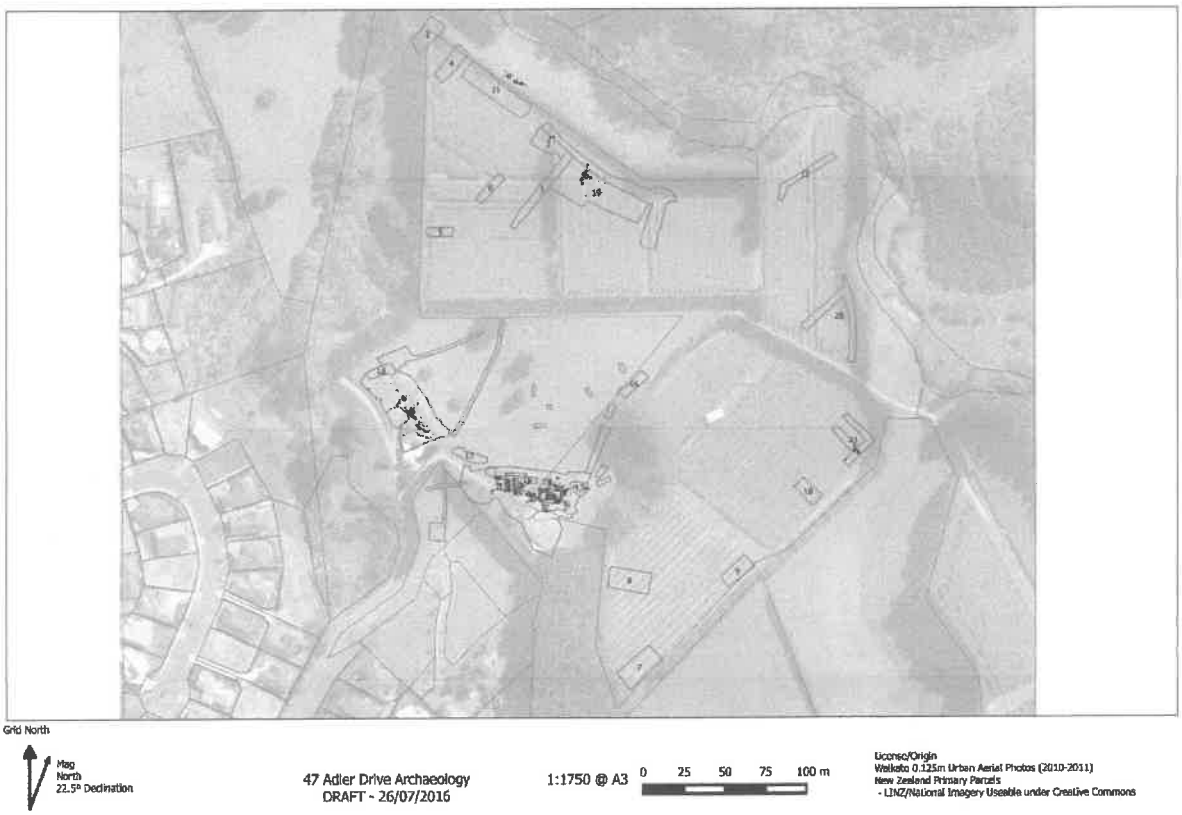

FIGURE 1: AN OVER LAY OF THE SURVEY DATA ON THE LANDSCAPE WITH THE AREAS OF FEATURES VISIBLE IN AREAS 1000-3000. DATUM ARCHAEOLOGY.

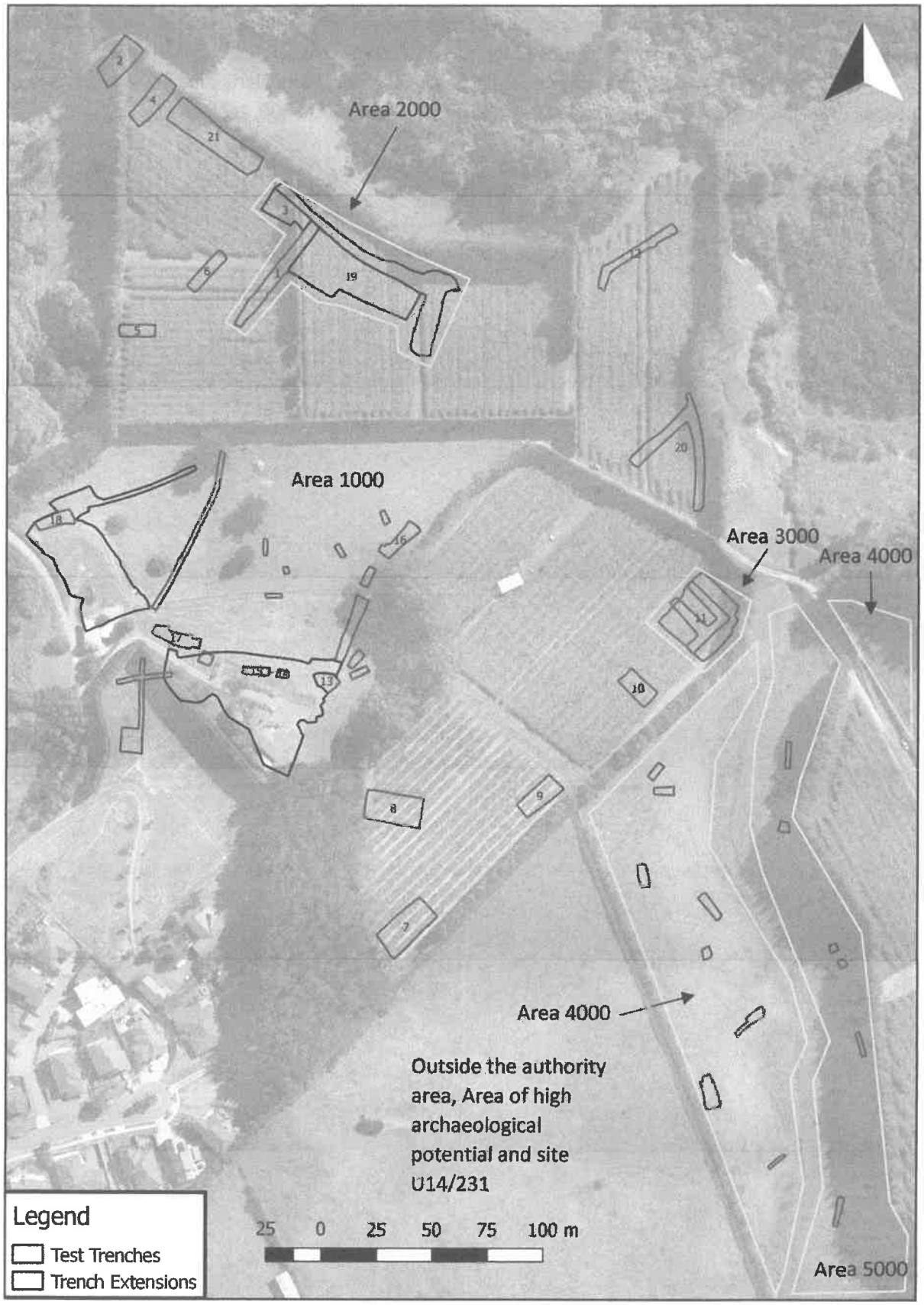

FIGURE 2: SURVEY MAP OF ALL TRENCHES, EXTENSIONS AND INVESTIGATIONS. OUTLINED IN RED: EVALUATION TRENCHES. OUTLINED IN BLACK EXTENSION AND INVESTIGATION AREAS. AREAS 1000-6000 OUTLINED IN YELLOW.

Area 1000 was excavated and recorded during three stages of earthworks, including preliminary trench excavation (Trench 13, 14th to 15th of January, 2016), topsoil stripping on the spur under the old cow shed (2nd to 15th of March, 2016) and topsoil stripping of the hill top below the old house platform (4th March to 6th May, 2016). Area 1000 was assigned a total of 1,138 context numbers

Area 2000 was excavated and recorded during two stages of earthworks, including preliminary trench excavation (evaluation trenches 3 and 19) and topsoil stripping prior to motor scraper stripping (intermittently between the 2nd of March and the 1st of April). Area 2000 was assigned 105 context numbers in total. In total, this included 44 cuts, 59 fills and two deposits.

Area 3000 (evaluation trench 11) was excavated between Tuesday 12th and Friday 15th of January, 2017. The initial trench was extended to determine the extent of the cluster of archaeological features. Area 3000 was assigned 29 context numbers in total, which included 14 cuts, 15 fills and no deposits. No samples or small finds were collected during the excavation of this area.

Area 4000 constitutes a second series of evaluation trenches excavated between 13th to 15th December 2016. The trenches were located on the western side of the Kaitemako Stream tributary, in the proposed stormwater Reserve. A total of 4 archaeological features were seen in 2 (evaluation trenches 7 and 12) of 14 trenches, all were small rectangular pits (bin pits) and located in the same spur. No samples or small finds were collected during the excavation of this area.

Area 5000 constitutes another series of evaluation trenches excavated in October 2017. The trenches were located on the western side of the Kaitemako Stream tributary, in the proposed stormwater Reserve. No cut archaeological features were revealed, however sparse scattered midden was seen on the slopes at the northern end of the area, and considered to be the result of erosion from the land above (in the area of future works in Stage 3).

Area 6000 is located within stage 3 of works where sediment controls and partial stripping has occurred in the first half of 2018. No archaeology has been identified here.

All features were that were assigned archaeological context numbers were excavated – larger features such as bin pits and storage pits were ½ sectioned, with smaller features such as post holes were typically 100% excavated.

Contexts

Archaeological features were assigned contexts numbers and were described as either fills (F), cuts (C), or deposits (D). Not all context numbers are in sequential order in terms of the relationship between cuts and fills – some have been assigned later in the numerical sequence.

If there is a "-", the dash separates two context numbers, the first number is the pit cut and the second number represents the cut of the feature within the pit, i.e. sump, post hole, etc. If there is a "/" between context numbers it means they are a fill and a cut that are part of the same feature with the last number always the cut.

Area 1000 was the only area of excavation that exhibited non-archaeological features that were assigned context numbers (3), possible modern features (5) and historic postholes (2). Deposits were recorded in areas 1000 (1 shell surface deposit, and two burning deposits) and 2000 (2 shell scatters).

The following table, Figure 3, provides a brief summary of the types of archaeological features that were excavated in the four (4) areas that have been shown to contain archaeology.

Cut Description	Area 1000	Area 2000	Area 3000	Area 4000	Total #
Pit	42	9	1		52
Bin Pit	35	14	7	4	58
Post Hole	182	17	5		202
Stake Hole	156	3	-		159
Board Slot	8	-	-		8
Drain	3	-	-		3
Sump	10	2	1		13
Rock cache	3	-	-		3
Firescoop	9	-	-		9
Scoop	7	3	-		10
Terrace	2	-	-		2
Step	2	-	-		2
Archaeological floor	2	-	-		2
2 Intersecting features	9	3	-		12
2+ intersecting features	4	-	-		4
Total	**474**	**51**	**14**	**4**	**543**

FIGURE 3: FEATURE TYPES RECORDED ON SITE TO DATE

Finds

A total of 58 small finds were collected for further analysis across all areas - a summary of these can be seen in the table below. A total of 28 of these finds were not found within a secure archaeological context and are therefore described as unstratified. Although these were not found within a secure archaeological context, they are included in the total count as they were found in the vicinity of archaeological features, and therefore reflective of the archaeological landscape.

Type	Count
Obsidian	50
Special find (taonga tuturu)	1
Lithics	1
Rock	2
Bone	2
Glass	2
Total	**58**

Samples

A total of 60 samples were taken from features across the site. The following table summarises the types of samples taken and why these samples were collected during fieldwork.

Sample Type	Count	Reason
Charcoal	15	Species identification and/or radiocarbon dating
Bone	1	Dog bone for further analysis
Rocks	5	Identification of rock type – local vs. non-local
Wood and seed	6	Species identification
Soil	36	Environmental information and/or identification of crop storage species (19 are appropriate for further analysis)
Midden	17	Species identification for understanding subsistence practises and/or radiocarbon dating
Total	**80**	Some samples have multiple components of shell, soil and charcoal for example, with analytical uses/potential, hence the increase by 20.

5 Evaluation Trenching

A series of test trenches were excavated to target areas of high archaeological potential across Stages 1 and 2 of earthworks at the Three Creeks sub-division and in the Stormwater Reserve.

Areas 1000, 2000 and 3000

Seen in Figure 2, twenty-one (21) trenches were initially excavated in January 2016 with Figure 4 showing the outcome of this exercise. In total 47 archaeological features were investigated by half section or complete excavation, photographed and a written description recorded. The fill, mostly a yellow or grey brown sandy/silty loam was similar in colour to the natural, and became more evident with weathering. Due to the previous use of the property as a kiwifruit orchard all features had sustained root damage, and some features were very shallow due to vertical loss caused by past contouring. Further loss of features may have occur, for which it cannot be accounted. Three pieces of obsidian were found on the surface of trench 13. Animal bone was also found on the property although these pieces were not found within secure contexts and are likely the result of modern events. A daughter of the Sievewright's was known to bury penguins around the property.

Trench 13 will be considered as part of area 1000.

The four trenches containing archaeology (Trench 3, 11, 13 and 19) were later expanded and described in Section 7 of this report. Subsequent monitoring for a sediment control pond next to Trench 6, where no archaeology was discovered revealed further two rectangular pits on an east-west orientation, two possible post holes and two destroyed middens, see in Figure 5.

Trench 20 was also expanded at its northern end due to a distinct linear change in soil type and colour along its western side, seen in Figure 6. This resulted in a deep pit, greater than 1.50m in depth being revealed, with barbed wire at the base. By the thickness of the barbed wire it is likely to be early in date, perhaps late 1800's but further research is required. It is possible that given the form of the pit, a deep vertical sided pit, that it is Maori in construction and backfilled by early European settlers.

Trench No.	Count
Trench 3	
Bin Pit	1
Trench 11	
Post Hole	19
Trench 13	
Pit	1
Bin Pit	7
Sump	1
Post Hole	5
Trench 19	
Pit	4
Bin Pit	2
Sump	1
Post Hole	5
Total	**47**

Trench No.	Count
Trench 6 sediment pond	
Rectangular pits	2
Possible postholes	2
Destroyed middens	**2**
Trench 20 expansion	
Pit	1
Total	**7**

FIGURE 4: ABOVE LEFT, TOTAL FEATURE COUNT IN EVALUATION TRENCHES IN AREA 1000

FIGURE 5: ABOVE RIGHT, EXTRA FEATURES FOUND RUING FIRST SEDIMENT CONTROL POND EARTHWORKS.

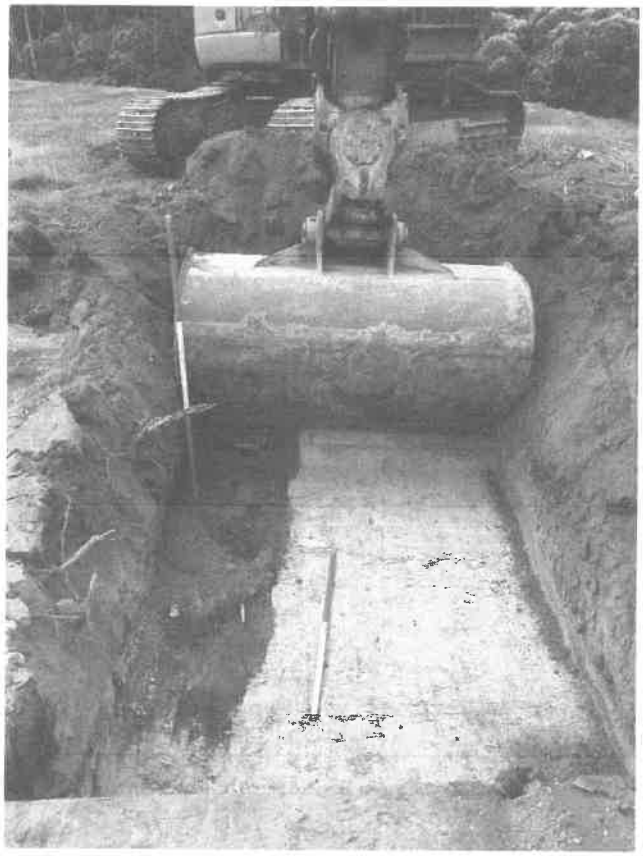

FIGURE 6: LARGE PIT BACKFILLED IN THE HISTORIC PERIOD, PROBABLY MID 1800S.

Areas 4000 and 5000

Fourteen (14) trenches were opened from December 2016 along either side of the Kaitemako Stream tributary (Areas 4000 and 5000) within the Stormwater Reserve.

These were based on the likelihood of archaeology identified on two spurs earlier in the project by B. Gallagher in this area.

Two trenches (Trenches 7 and 12) contained archaeology, with four small rectangular bin pits recorded and surveyed by Total station, discussed in Section 9 of this report. Midden scatter was also seen on the eastern side of the stream gully eroding from the area known as Stage 3, and yet to be disturbed.

Conclusions

The evaluation trenches informed the Project of areas where archaeological risk looked likely to be higher, and allowed for appropriate archaeological monitoring and investigation to be put into place in order to characterise the Papa Kainga, Te Kakariki, before its destruction as a result of sib-division development.

6 Stage 1: Area 1000 Preliminary Results

Area 1000, the east end of which seen in Figure 7, was excavated and recorded during three stages of earthworks, including preliminary trench excavation (Trench 13, 14th to 15th of January, 2016), topsoil stripping on the spur under the old cow shed (2nd to 15th of March, 2016) and topsoil stripping of the hill top below the old house platform (4th March to 6th May, 2016).

A total of 1,138 context numbers, seen in Appendices with context descriptions. Archaeological features were assigned contexts numbers and were described as either fills (F), cuts (C), or deposits (D). Not all contexts given numbers were determined to be archaeological, in retrospect being interpreted as modern or non-archaeological. These included contexts:

Non-archaeological – 1129, 1157, 1305
Modern? – 1004, 1108, 1114, 1126, 1435
Historic – 1189, 1197

Most archaeology found on the property was found in this area which hugs the top of the north facing spur. Recorded site U14/3187 was recorded here initially and discounted as a site based on its recorded information, however Trench 13 during the initial trench evaluation exercise, revealed a cluster of postholes which led to further work on the eastern spur.

The result has been two dense areas of features, focused on two spur ends. The archaeology seen at the eastern end of Area 1000 is seen in Figure *, and the western end of Area 100o is yet to come from the surveyor.

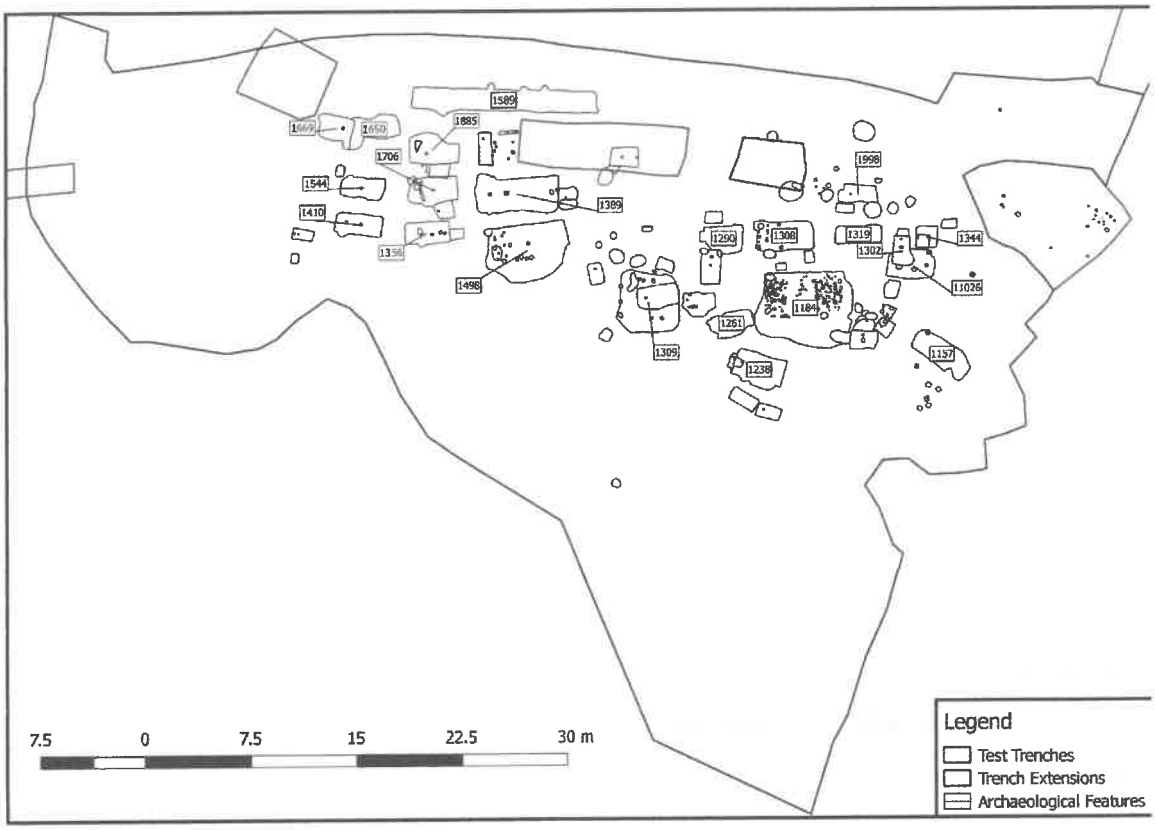

FIGURE 7: THE EAST END OF AREA 1000. AREAS OUTLINED IN RED DENOTE POSITIONS OF ORIGINAL EVALUATION TRENCHES.

Area 1000 East

Area 1000 (east) seen in Figure 7, most significantly contained a large, deep pit like feature [1184] seen in Figure 8, measuring c. 5m x 4m with post hole evidence along its external sides and central alignment. Facing northwards, the floor of the structure was perforated with many stake holes and small posts. Its function enquires further research.

Of interest also, and seen along the back wall other large pits in this area, is evidence of retaining and collapse of the natural ash in these subterranean features. Issues with water, drainage and stability appear prevalent with large posts being used along the up slope side of the West-East orientated pits.

In general all of the larger pits c. 25 were positioned parallel to each other in lines orientated East-west, running with the natural contour. Most had central postholes within and some had internal steps or sumps. Five smaller pits, bin pits were originated at a 90 degree angle to the others, and more research is required to understand this relationship. The smaller pits may relate to a different time period, as some intercut with the larger pits.

Areas of burning, with circular cut features, showing signs of fire and heating. Charcoal was prevalent in this area. There appears to be distinct areas of renovation and long term land use in this area with hard distinct floor tramples, effort made to stabilise pits and the possibility of a drainage pit (sump) along the lowest contour in this cluster, which was at least once enlarged to run along the base of the feature group, and did not have associated internal post holes within.

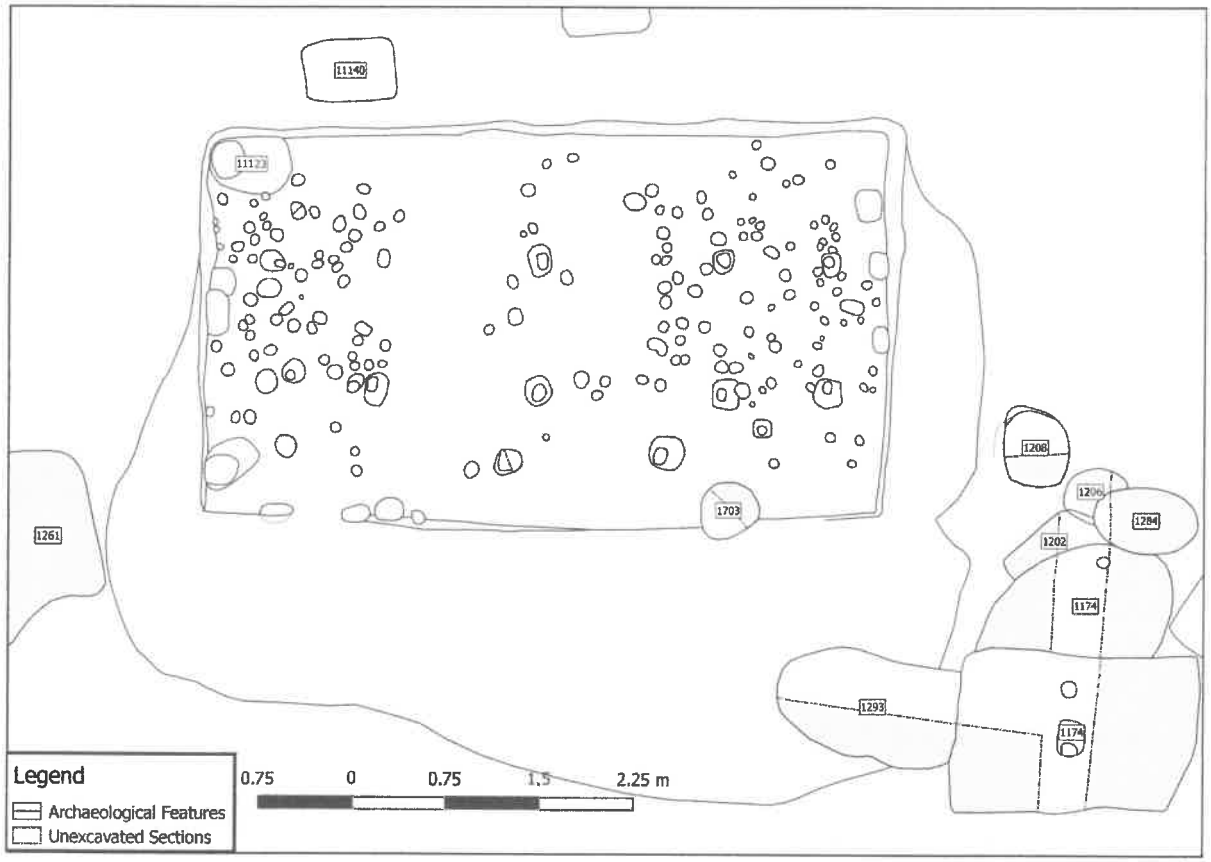

FIGURE 8: CLOSE UP OF PIT 1184 WITH MANY POST HOLES AND STAKE HOLES WITHIN

All of these features were generally well preserved and showed good depth to them revealing little change to the ground surface in the past.

Area 1000 West

Area 1000B (west) was at a lower level but on the same spur as Area 1000A. This cluster of features had been cut down in depth and were very difficult to excavate due to compaction. The cowshed had been located here. The pits found were generally orientated northwest - south east in line with the contour of the land, though four small bin pits were lying at right angles to the general trend. Episodic post holes were excavated in the area too, mainly in pairs.

A sub-circular perforated stone disc with cut marks around a section of the perimeter was found in feature (**). It has been described by Dr. Louise Furey (Curator of Archaeology, Auckland Museums) and registered with the Ministry of Heritage and Culture. At this time is has been identified as a Mauri stone, a physical object that harnesses and contains the life force of a people or place. The shape of the feature on which it was found was unlike the other rectangular shaped pits in this area, with this taonga found in a shallow oval scoop shaped cut with compacted hard floor. The taonga itself had been deliberately placed within a small cut at a later date. Its deposition reasons are to be researched further, particularly with respect to it being a marker of a past burial place, associated with people leaving the land or a map of the landscape as suggested by others.

Historic European Material

Two context numbers were allocated to an area on the western side of the main hillside and spur, next to the entrance to the property/sub-division. The original house driveway wound its way along the

north side of the area in which a series of old post holes evidently related to a past homestead were revealed.

The date of the building has not been ascertained to date, however an almost complete glass bottle was discovered upturned within the back fill to one of the post holes. The bottle, seen in Figure 9, is a molded green bottle with 'Uldopho Wolfes' and 'Schiedam' and 'Aromatic Schnapps' impressed on the sides, and likely to date to the late 1880s through to early 1900s.

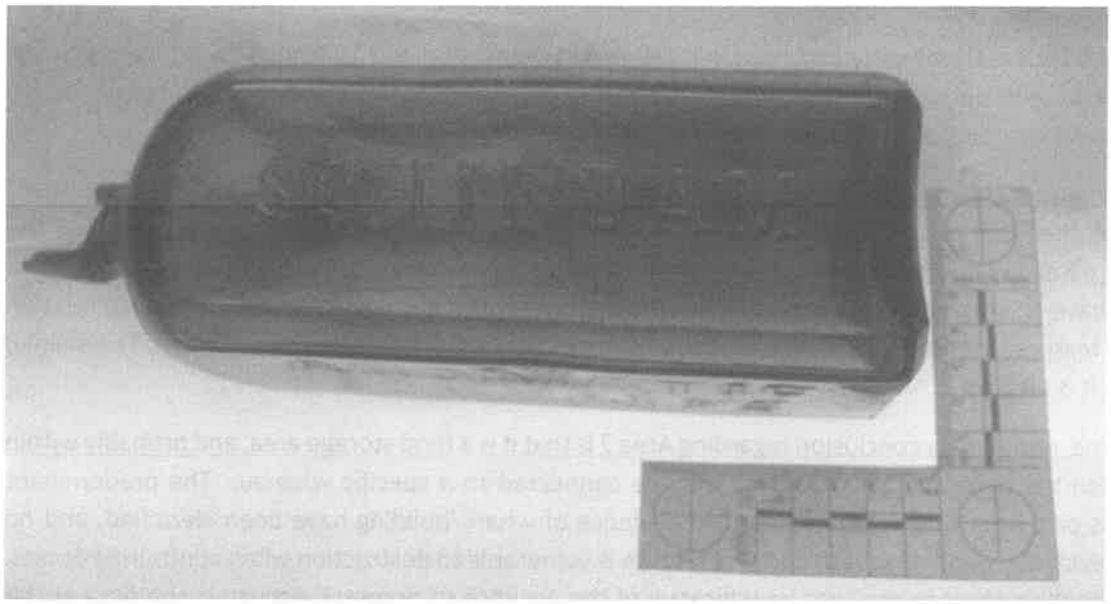

FIGURE 9: HISTORIC BOTTLE.

Deposits

Three deposits were identified as archaeological in nature and sampled accordingly.
1180 – Shell surface deposit, consisting primarily of whole pipi
11000 – Charcoal rich tree disturbed burning deposit
11004 – In situ burning on base of pit 1308

Contexts

For a complete list of context numbers allocated see Appendix *. Please note that, MishMish Heritage allocates context numbers according to events that take place within archaeological sites to aid later site interpretation. One feature may have several context numbers to represent the construction, use and termination or backfilling of a feature, for example.

Refer to Appendix 1 for Context, Deposits and Feature Lists

Director: Brigid Gallagher (BG)
Site Supervisor and Surveyor: Ben Thorne (BT)
Site Supervisor and Digger Operator: Greg Gedson (GTG)
Excavating and Recording Archaeologists:
Nick Beynon NB
Lisa McKendry LM
Evan Morecom EM
Anne O'Hagan AO
Eleanor Sturrock ES

Post Trenching Earthworks

Following archaeological works and recording, all earthworks in this Area were conducted with the suspected discovery protocol on place

7 Stage 1: Area 2000 Preliminary Results

Area 2000 was excavated and recorded during two stages of earthworks, including preliminary trench excavation (11th to 17th of January 2016) and topsoil stripping prior to motor scraper stripping (intermittently between the 2nd of March and the 1st of April).

A total of 59 cut features were recorded, initially within Trenches 3 and 19, and then during open area strip trenching to determine the extent of the feature cluster. Four (4) of the 59 features were also found during stripping associated with the first sediment control pond installed on site.

Seen in Figure 10, Area 2000 is located along the northern side of the property abutting the setback margin at the edge of the Kaitemako Stream. For the purposes of archaeological recording on the ArchSite database it is part of site U14/3187, but represents a distinct cluster of features which are likely to have an intra site relationship hence why interpretation for the area should be seen in relation to other features in this features cluster, but also in the context of the wider papa kainga, Te Kakariki, of which it is also part.

At this time, preliminary conclusion regarding Area 2 is that it is a food storage area, and probably within the garden the papa kainga, and which may be connected to a specific whanau. The predominant feature is pits, both with roofs and not. No evidence of whare/building have been identified, and no cooking evidence was seen but this type of feature is vulnerable to destruction when contouring occurs, and hence their absence may not be indicative of the absence of domestic activity in the Area at the time of land use.

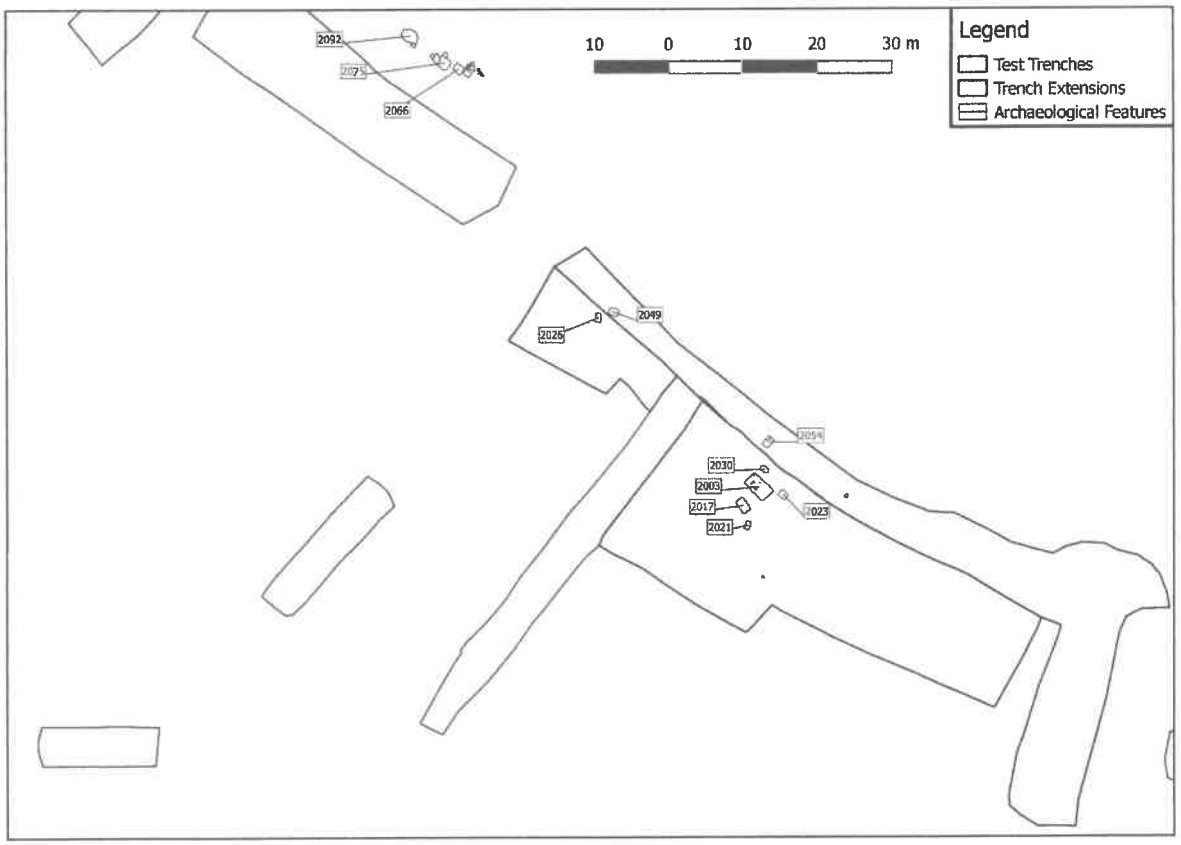

FIGURE 10: FEATURES IN AREA 2000

Contexts

Area 2000 was assigned 105 context numbers in total. In total, this included 59 cuts, 63 fills and 4 deposits. All features that were assigned archaeological context numbers were excavated – larger features such as bin pits and storage pits were ½ sectioned, with smaller features such as post holes and stake holes typically 100% excavated.

For a complete list of context numbers allocated see Appendix *. Please note that, MishMish Heritage allocates context numbers according to events that take place within archaeological sites to aid later site interpretation. One feature may have several context numbers to represent the construction, use and termination or backfilling of a feature, for example.

Deposits

2043 – Shell scatter, consisting of highly fragmented and burnt shell (mainly cockle)
2082 – Shell scatter, continuing under area baulk/property boundary. Consists mainly of highly fragmented shell
Two small shell scatters within root disturbed ground near Trench 6 representative of past archaeology on the site, but essentially destroyed during past land practices and modifications.

Samples and Finds

6 samples, mainly shell were taken and 4 artefacts were collected.

Archaeological Team

MishMish Heritage:
Brigid Gallagher BG
Anne O'Hagan AO
Eleanor Sturrock ES
Raysan Al-Kubaisi RAK

Survey:
Ben Thorne

Post Trenching Earthworks

Following archaeological works and recording, all earthworks in this Area were conducted with the suspected discovery protocol on place

8 Stage 1: Area 3000 Preliminary Results

Area 3000 (exploration trench 11) was excavated between Tuesday 12th and Friday 15th of January, 2016. The initial trench was extended to determine the extent of the cluster of archaeological features. No samples or small finds were collected during the excavation of this area as the area had been heavily cut down in the past through contouring, and there was an abundance of root disturbance.

The area is located next to the southern boundary of the Three Creeks Subdivision, seen in Figure 2, and the cluster of surviving pits is seen in Figure 11.

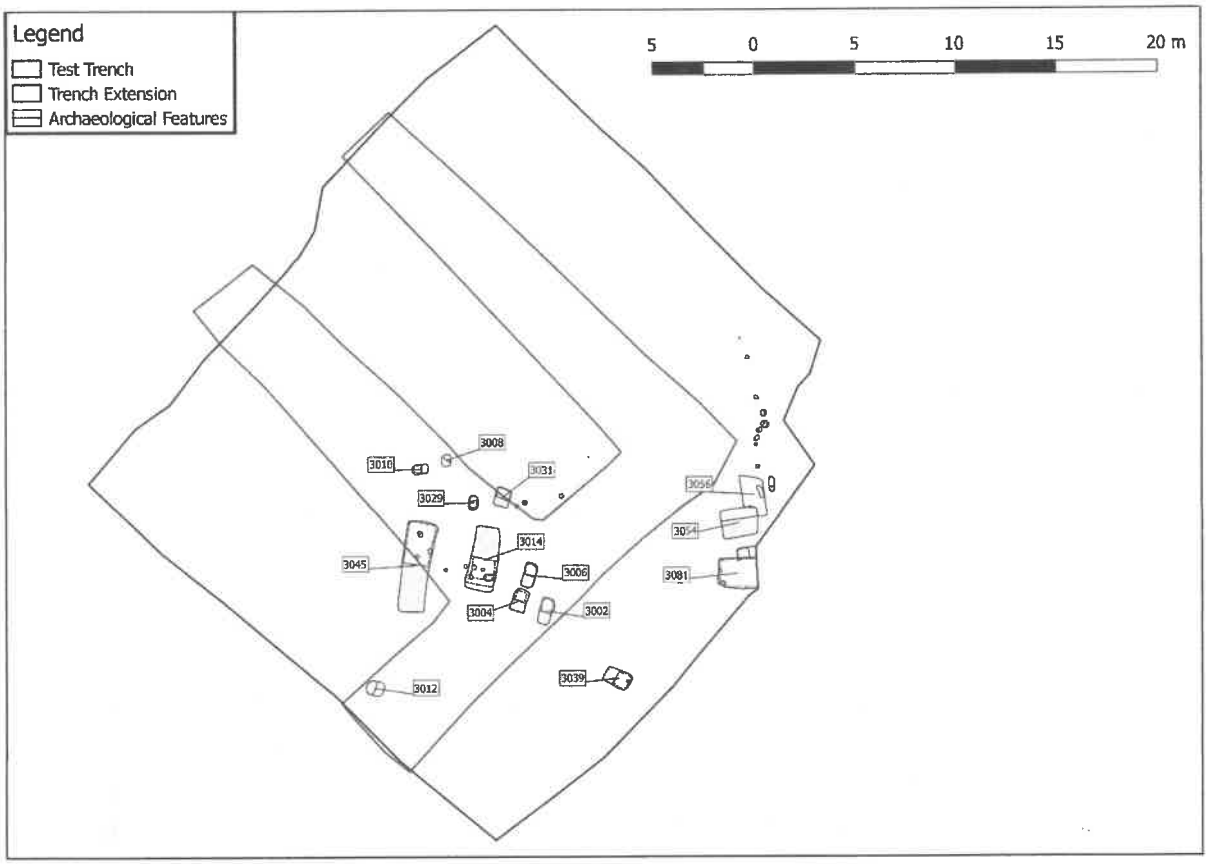

FIGURE 11: FEATURES WITHIN AREA 3000.

At total of 29 context numbers in total, which included 13 cuts, 16 fills and no deposits were assigned to this area. All features were that were assigned archaeological context numbers were excavated – larger features such as bin pits and storage pits were ½ sectioned, with smaller features such as post holes were typically 100% excavated.

Due to the poor state of preservation in this area, the features recorded are not a true representation of past land use, but is an indicator of spatial use of the landscape and site extent.

Contexts

Eight of the cut features have been interpreted as pits, with only one containing post holes [3015]. The other cut features are post holes (5).

Recording

For the purposes of archaeological recording on the ArchSite database it is part of site U14/3187, are represents a distinct cluster of features which are likely to have an intra site relationship hence why interpretation for the area should be seen in relation to other features in this features cluster, but also in the context of the wider papa kainga, Te Kakariki, of which it is also part.

For a complete list of context numbers allocated see Appendix *. Please note that, MishMish Heritage allocates context numbers according to events that take place within archaeological sites to aid later site interpretation. One feature may have several context numbers to represent the construction, use and termination or backfilling of a feature, for example.

Archaeological features were assigned contexts numbers and were described as either fills (F), cuts (C), or deposits (D). Not all context numbers are in sequential order in terms of the relationship between cuts and fills – some have been assigned later in the numerical sequence.

Archaeological Team

MishMish Heritage:
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Survey:
Ben Thorne

Post Trenching Earthworks

Following archaeological works and recording, all earthworks in this Area were conducted with the suspected discovery protocol on place

9 Stage 2: Area 4000 Preliminary Results

During 2017 the water catchment area, a tributary of the Kaitemako Stream was modified in order to act as a stormwater control for the Three Creeks sub division.

Fourteen evaluation trenches, seen in Figure 2, were excavated from December 16th 2016 on the western side of the Stormwater Reserve above the tributary of the Kaitemako Stream in Stage 2 of the development following the assessment of two possible terraces identified by A. Cruikshank (CFG Heritage) in 2015 in the planned Stormwater Reserve in this area. Archaeological authority 2016/421 was granted with the condition that these not be disturbed during the development, though it had not been confirmed if the small flat terraces related to archaeological activity.

B. Gallagher, in consultation with Heritage New Zealand, Des Heke and the project undertook preliminary investigation of these terraces in the form of survey and spade test pits on 27th October 201d and the resultant report distributed for discussion. The terraces were determined to be modern and not suitable for protection under the definition of an archaeological site. This was communicated to Heritage New Zealand Pouhere Taonga (HNZPT) and agreement reached.

Four small pits were located and recorded, see Figure 12, in Trenches 7 and 12. Both trenches were located on the same small spur, which runs down from the pa site U14/231 in the adjacent, undeveloped Lot, and likely to reflect small scale food or seed crop storage near the tributary.

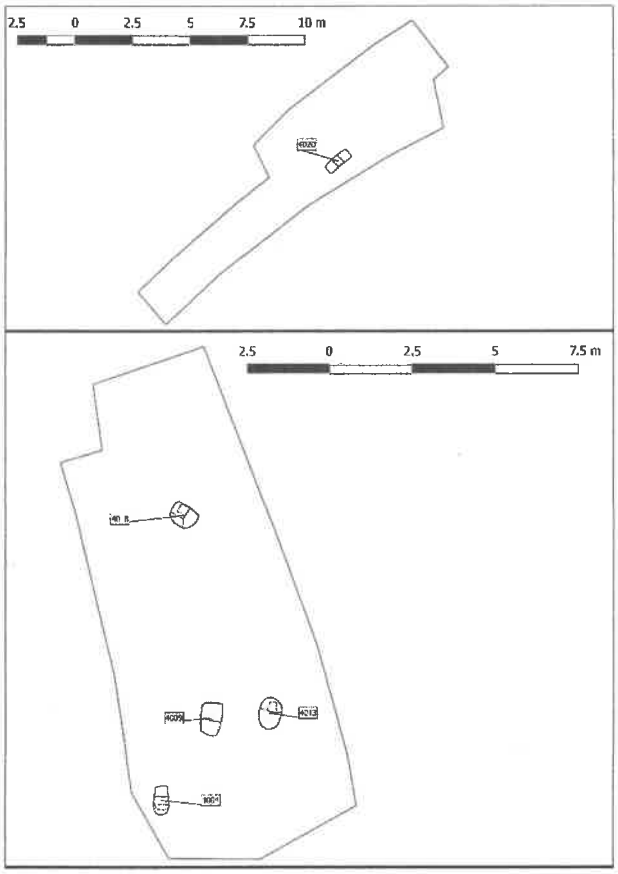

FIGURE 12: FEATURES IN TRENCHES 7 AND 12 WITHIN AREA 4000 ON WEST SIDE OF TRIBUTARY

Contexts

Across the 14 trenches excavated in this Area, all but 2 trenches (Trench 7 and 12) were devoid of archaeology. Area 4000 was assigned 19 context numbers in total, which included 5 pit cuts, and 14 fills, and no deposits. Three samples were taken from these fills for potential for microfossil analysis. It is suggested they are associated with seed crop storage along the banks of the Kaitemako Stream.

The bin pit recorded in Trench 12 exhibited heavy vertical truncation and a feature depth of 70mm. All bin pits present in Trench 7 were in good condition with no evidence of modern truncation. The three pits within Trench 12 were very deep in comparison and considered well preserved.

Trenches 9, 12 &13 exhibited soil profiles that suggested the area has been cut down previously. Trenches 9 and 13 were near the fence line and pine tree wind break along the eastern boundary of this area, which appeared to be flattened. This has most likely occurred during contouring associated with kiwifruit planting. The modern fill observed in the soil profile of Trench 14 is most likely the result of cut material being pushed down the slope from activities such as this.

All remaining soil profiles were most likely intact; suggesting that if any archaeological features were present they would be intact and relatively well preserved.

Recording

All features were that were assigned archaeological context numbers were excavated – larger features such as bin pits and storage pits were ½ sectioned, with smaller features such as post holes were typically 100% excavated.

Archaeological features were assigned contexts numbers and were described as either fills (F), cuts (C), or deposits (D). Not all contexts given numbers were determined to be archaeological, in retrospect being interpreted as modern or non-archaeological.

For a complete list of context numbers allocated see Appendix *. Please note that, MishMish Heritage allocates context numbers according to events that take place within archaeological sites to aid later site interpretation. One feature may have several context numbers to represent the construction, use and termination or backfilling of a feature, for example.

Archaeological Team

MishMish Heritage:
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Survey:
Ben Thorne

Post Trenching Earthworks

Following archaeological works and recording, all earthworks in this Area were conducted with the suspected discovery protocol on place.

10 Stage 2: Area 5000 Preliminary Results

In the latter half of 2017 preparation was made to undertake earthworks along the eastern side of the Kaitemako Stream Tributary, in the Stormwater Reserve.

Six trenches seen in Figure 2, whose location was based on topography and the identification of scattered shell eroding down the west facing slope, were excavated. A flat area immediately south of the trenches that marked a meander in the tributary was also monitored during clearance due to its ideal situation and ease of access to the water way.

Whilst a small quantity of fragmented shell was identified on the slope, it was estimated to originate from the higher land above (within Stage 3 of works), and no other deposits, features or finds were discovered that could be interpreted as archaeological in nature.

Contexts

No archaeology was found and no contexts allocated.

Recording

Trenches were photographed with scales, and surveyed for positions.

Archaeological Team

MishMish Heritage:
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Anne O'Hagan AO
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Survey:
Ben Thorne

Post Trenching Earthworks

Following archaeological works and recording, all earthworks in this Area were conducted with the suspected discovery protocol on place.

11 Stage 3: Area 6000 Preliminary Results

In preparation for future development of Stage 3 of the Three Creeks sub-division earthworks associated with a new sediment pond was monitored and some top soil stripping occurred in early 2018. Kiwi fruit clearance was also required.

Located at the northern point of Stage 3, seen in Figure 2, spade shovel testing occurred prior to general stripping, resulting in a fairly natural strata being exposed, with a small amount of contouring in preparation for conversion to kiwi fruit orchard in the past seen.

Based on the spatial position of this area at the confluence of the Kaitemako Stream and its tributary, modified as part of Stage 2, it was predicted that archaeological features could be present and dense in this area.

Monitoring occurred until it became evident that no archaeological material was either present here, or had been previously destroyed in conversion to kiwi fruit. Features related to settlement, particularly whare, are vulnerable to destruction, so that absence of features may not necessarily mean an absence in use of the land in the past.

Contexts

No archaeology was found and no contexts allocated.

Recording

General photos were taken during works.

Archaeological Team

MishMish Heritage:
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Future Earthworks

It is the opinion of this author that based on the current findings across the property at 47 Adler Drive there remains the potential for archaeology to be preserved sub-surface in Stage 3 of the Three Creeks Sub-division, and these are likely to be revealed through the course of future earthworks.

The archaeological strategy going forward should reflect this advice, with the suspected archaeological discovery protocol in place during the removal of future kiwifruit, followed by, either;

1. Evaluation trenches placed across the area in order to determine risk and archaeology, or,
2. Following topsoil stripping the project archaeologist check the ground in order to identify archaeology. If archaeology is identified the area should be cordoned off, the area expanded to be inclusive of the feature cluster. Sampling and recording would occur.

12 Artefacts

A total of 58 small finds were collected across all areas, with a summary based on material types seen in Figure 13. Most small finds came from Areas 1000 and 2000, and 86% of finds were obsidian.

A total of 28 of these finds were not found within a secure archaeological context or features and are therefore described as unstratified. Although these were not found within a secure archaeological context, they are included in the total count as they were found within the machine or hand excavated soils from above or within archaeological features and relate to original occupation and land usage of the property. A full list of find types and details is in Appendix 5. Complete analysis and photography of the obsidian has yet to be conducted.

Type	Count
Obsidian	50
Special find (taonga tuturu)	1
Lithics (argillite adze flake)	1
Rock	2
Bone	2
Glass	2
Total	**58**

FIGURE 13: ARTEFACT MATERIALS

Of special note is a stone disc (taonga tuturu) found in the backfill of a small, shaped cut feature c. 30cm in depth (to add), which had been cut into the north end of an older shallow, oval shaped cut feature (to add) with hard compacted level floor, which measured approximately 1m x 70cm, suggesting the deposition of the taonga post-dated the back fill of the oval feature. It has not been possible to accurately interpret the function of this feature, however the physical evidence within it shows that something of weight was laid on the bottom of it, and was subsequently removed, most likely in the last 200 years based on the soil type within. The form of the feature is reminiscent of burial cuts in which crouched burials or people laid in the foetal position have been laid.

Seen in Figure 14, the disc has a central perforation, most likely formed by pre-metal stone tools, with no evidence of it being stringed and hung from this point. There is a serrated edge to a short section of the perimeter, but the majority has been filed smooth. It has equally been referred to as a Mauri stone, tohu and pendant, and further research is required into these types of artefacts. Refer to Appendix * to be added* for the report completed by Dr. Louise Furey, Curator of Auckland Museum regarding the find. It has been registered with the Ministry of Culture and Heritage and is archived at the Tauranga City Heritage Collection Archive in the car of Dean Flavell, Maori Heritage Curator.

The taonga was found in close proximity to a rectangular food storage pit cluster that represent different phases in land use, as evidenced by their intercutting nature. The feature to which the taonga was associated however did not have a direct physical relationship with them, and was stylistically different. There was a distance of approximately 15cm with the closest pit. The food storage pits all contained yellow-grey fill material consistent with pre-European Maori features, typical of the Bay of Plenty area.

FIGURE 14: THE PERFORATED DISC TAONGA

13 Samples and Analysis

Samples

A total of 59 samples were taken from features across the site. The following Figure, 15, summarises the types of samples taken and why these samples were collected during fieldwork. The full list is within Appendix 6.

Charcoal from cooking features and midden deposits, as well as some pit backfill events have been sent to Dr. Rod Wallace (Auckland University) for species identification.

Shell midden was analysed by Anne O'Hagan to determine the type of shellfish being consumed on site, and a small report is detailed below.

The bone recovered likely relates to the historic (early farming) period of site usage.

Soil samples were collected for further research into gardening practices and paleoenvironmental conditions on the site. Further decision making about information gain

Sample Type	Count	Reason
Charcoal	15	Species identification and/or radiocarbon dating
Bone	1	Dog bone for further analysis
Rocks	5	Identification of rock type – local vs. non-local
Wood and seed	6	Species identification
Soil	20	Environmental information and/or identification of crop storage species
Midden	12	Species identification for understanding subsistence practises and/or radiocarbon dating
Total	**59**	

FIGURE 15:SAMPLES TAKEN

Dietary

Shell midden samples collected from the property were analysed for species identification in order to establish which species were being eaten as well as where these species were likely captured.

Species	NISP	MNI	Weight (g)	Abundance (%)
Cockle (*Austravenus stutchburyi*)	832	429	553	57.5
Pipi (*Paphies australis*)	547	230	533	37.8
Tuatua (*Paphies subtriangulata*)	1	1	4	0.06
Wedge shell (Macomona liliana)	21	12	19	1.4
Battleaxe Clam (Myadora striata)	32	15	16	2.2
Mud snail (*Amphibola crenata*)	1	1	1	0.06
Cooks Turban (*Cookia sulcata*)	1	1	1	0.06
Hairy Trumpet Snail (*Monoplex pathenopeus*)	1	1	1	0.06
Horn Shell (*Zeacumantus subcarinatus*)	2	2	4	0.12
Whelk (*?sp*)	8	8	28	0.5
Unknown	1	1	1	0.06
Shell Fragments	-	-	1400	-
Total	**1447**	**701**	**2561**	**100**

FIGURE 16: SHELL MIDDEN ANALYSIS FROM INVESTIGATION

All fragmented and whole diagnostic portions of shell recovered from the midden sample were assigned to seven different species. The most abundant species present was cockle (*Astrovenus stutchburyi*) which accounted for 57.5% of all diagnostic shell. The second most abundant species present (42.5%) was pipi (*Paphies australis*). The remainder of identified shell is detailed above in Figure 16. The whelks present in the middens were often too small or degraded to identify to specific species, however identifiable species live predominantly in muddy shore environments or shallow marine sands. This indicates that the primary location of shellfish harvesting was most likely a muddy estuarine environment, with a secondary location of a rocky shore coupled with shallow marine sands. The results summarised above indicate a subsistence strategy centred around consumption of shellfish supplemented with garden crops. The majority of the shellfish species are from muddy shore environments, such as the nearby Tauranga harbour.

Dating

Radiocarbon dates will be procured from suitable charcoal material.

14 Preliminary Discussion and Conclusion

The preliminary conclusion of these archaeological works are that the papa kainga, Te Kakariki, has been revealed and systematically destroyed through the use of archaeological methods and earthwork machines, under the conditions of archaeological authority 2016/421, in preparation for the Three Creeks Sub-division.

Ongoing cultural consultation and monitoring has been undertaken by Des Heke with suspected discoveries identified by him, as well as earthworks contractors, namely Waiotahi Contractors. Due to issues related to modification within the stormwater reserve within the sub-division, Heritage New Zealand Pouhere Taonga has been part of consultation, as have other hapu representatives.

At least 50% of all archaeological features identified across the property within Stages 1 and 2 have been sampled in order to interpret stratigraphic relationships and realise information potential, with full excavation occurring should they be identified as rare, unique or atypical, increasing their value and significance. Digital survey by Total Station has occurred where ever possible in order that a complete picture, as preserved below ground surface in 2016-2017, could be mapped and therefore ensure that Te Kakariki be preserved through record. The completeness of this information increases education value of the property, and can be shared with interested groups, and tangata whenua who whakapapa to this area.

Without the benefit of analytical results at this time, the current picture of Te Kakariki is a multiphase complex comprising;

- A tihi (site U14/231) in the neighbouring property immediately south,
- A northern spur extending into the Three Creeks property on which archaeological site U14/3187 was previously recorded, on which two clusters of features have been recorded. These appear to represent people living on, and/or using the high points over time, with evidence of return in the short and possibly the long term. Post and stake hole alignments, large pits with roofs, small pits on two different orientations, complex floors and evidence of retaining walls and erosion issues have been recorded.
- Below the naturally defensive hill and steep slopes is a flat area, that ends at a section of the Kaitemako Stream, with at least three small groups of pit clusters showing different alignments and current interpretation is the relate either to small holdings of food, or seedling storage between seasons, within a garden/food cultivation environment.
- No evidence of settlement in the form of whare/housing has been identified, however post holes associated with these are considered to be fragile in terms of archaeological survival. It is the tentative conclusion of this report that they more than likely once sat episodically on high and low areas, but destroyed as a result of land modification and contouring since European settler/farmer arrival in the mid-1800s.
- The presence of a large pit with barbed wire at the base may be evidence of Maori features still being present in the landscape after European arrival.
- The complex had the benefit of the Kaitemako Stream and two tributaries forming confluences in the stream channel, with a natural water fall at the far west of the property. Traditional resources from the streams, such as tuna (eel) and fresh water mussel, would have supported settlement, the water itself supported gardening and health, and the stream channel provided an access route to the Tauranga Moana, the kai moana beds and fisheries.

The sites use as a defensive pa is questionable given the lack of a ditch and bank system or palisade lines, and its close proximity to the primary defensive pa in the district, still recognised by kaitiaki, which is within viewing distance and short walk, may be the reason for this.

The date of first land use, and settlement is not known however the visibility of Mauao from the property may indicate early migrations from the coastal areas, but this is not substantiated. The end date of use is likely to be immediately following first settler allocation in the mid 1800s.

Undoubted archaeological loss has occurred on this property as a result of earthworks associated with the conversion of the land to farmland, then kiwifruit and construction of the Sievewright's house, but it is not alone. Recent residential development along Adler Drive and Riddington Rise on the western flanks of this large complex, which could be termed a papa kainga or settlement pa, has irreversibly altered the archaeological landscape and once recognised site of cultural significance.

At this time it is estimated that over 50-75% of Te Kakariki has been destroyed as a result of residential subdivision and development. It is recommended that steps should be taken to preserve an aspect of the papa kainga with archaeological site U14/231 being the most obvious option. This tihi and surrounding land (extent not determined at this time) should be exempt from future development, and provisions be put in place for access to the preserved area, with a marker appropriate to the place recognising Te Kakariki should be installed.

It is recommended that to better utilise the information recovered from Three Creeks Sub-division, meet legal conditions of authority 2016/421 and fulfil standard levels of archaeological analysis that environmental processing of samples occur, and where appropriate conduct radiocarbon dating to establish date ranges for site use.

15 Recommendations

This report constitutes an Interim report and update to the project as a result of archaeological sampling and recording in Stage 1 and 2 of the Three Creeks subdivision. The majority of the work to date has focussed on bringing together all the field information and starting the analsyis process.

Yet to be completes:

The finalisation of the survey data and maps from Datum Archaeology

Analysis of the features themselves, their function, spatial arrangement, the phases of site use, patterns in the backfilling and construction of the pits (which predominate), retaining wall/erosion management and the architectural practises employed on site using available data.

A recreation of the landscape and site during the height of use will be attempted based on available information and map data surveyed.

Environmental data from charcoal and other organic remains will be achieve through analysis by Dr Rod Wallace, University of Auckland.

Shall midden will be used to understand diet and sustainability, as well as be used for c14 dating.

Radiocarbon dating of features from primary backfill materials rather than secondary, when a primary backfill sample is not available. Shell from secure contexts only will be utilised and where available wood charcoal species may be used.

Fish bone presence is very small and analysis limited.

16 Appendix 1 Context, Features, Samples and Finds Tables

General Cut Characteristics

Cut	Count	Context No.
Trench 13		
Post hole	19	1002, 1004, 1006, 1008, 1010, 1012, 1014, 1016, 1018, 1020, 1022, 1024, 1026, 1028, 1030, 1032, 1034, 1036, 1038
Spur/Old Cow Shed		
Storage Pit	8	1060, 1074, 1085, 1093, 1099, 1106, 1116, 1139
Post hole	17	1042, 1044, 1046, 1048, 1050, 1056, 1066, 1068, 1081, 1083, 1089, 1095, 1101, 1103, 1118, 1132, 1141
Pit with post hole(s)	6	1060, 1085, 1093, 1099, 1116, 1139
Pits with no post hole	1	1074
Pits with sump(s)	1	1085-1087
Bin Pits	12	1040, 1054, 1063, 1070, 1076, 1079, 1110, 1124, 1130, 1135, 1137, 1144
Fire feature	3	1090, 1091, 1112
Modern	4	1051, 1108, 1114, 1126
2 Intersecting Features	5	1076&1106, 1091&1085, 1090&1085, 1112&1093, 1116&1137
Hill Top		
Storage Pit	42	1174, 1184, 1238, 1240, 1244, 1261, 1264, 1276, 1290, 1298, 1302, 1304, 1308, 1310, 1319, 1332, 1338, 1344, 1351, 1356, 1372, 1386, 1410, 1498, 1500, 1538, 1544, 1589, 1613, 1650, 1666, 1669, 1684, 1706, 1721, 1727, 1747, 1885, 1915, 1921, 1976, 1998
Post hole	146	See Excel spreadsheet
Stake hole	156	See Excel spreadsheet
Board slot	8	1222, 1224, 1382, 1443, 1444, 1446, 1597, 11082
Drain	3	1394, 1396, 1421
Pit with post hole(s)	33	1174, 1184, 1238, 1244, 1261, 1264, 1276, 1298, 1302, 1304, 1308, 1310, 1319, 1332, 1338, 1344, 1356, 1372, 1386, 1410, 1498, 1538, 1544, 1589, 1613, 1684, 1706, 1721, 1727, 1747, 1885, 1921, 1998
Pits with no post hole	10	1240, 1267, 1290, 1351, 1500, 1650, 1666, 1669, 1915, 1976
Pits with sump(s)	7	1255-1253, 1264-1273&1287, 1276-1282, 1356-1358, 1885-1887, 1308-11080, 1184-11123&11134
Bin Pits	23	1162, 1164, 1208, 1255, 1267, 1530, 1532, 1601, 1637, 1663, 1688, 1690, 1714, 1745, 1753, 1917, 1974, 1979, 1992, 1994, 11125, 11127, 11132
Fire feature	6	1152, 1826, 1844, 1902, 1956, 11002
Scoop feature	7	1170, 1206, 1284, 1502, 1504, 1703, 1999
Rock cache	3	1339, 1866, 1868
Modern	1	1435
Historic	2	1189, 1197
Terrace	2	1309, 11026
Step	2	1437, 1324

Archaeological floor	2	1200, 1202
2 Intersecting Features	9	1253&1255, 1302&1304, 1356&1370, 1386&1372, 1650&1669, 1721&1727, 1753&1706, 1974&1956, 1994&1998
2+ Intersecting Features	4	1666&1589&1650, 1688&1690&1332, 1915&1885&1917, 11127&1389&11132

Storage Pits and Post Holes

Context No.	Pit Orientation	Post Hole(s) No.	Central Axis	Off Center Axis
Spur/Old Cow Shed				
1060	NNW-SSE	1066, 1068	-	-
1085	E-W	1089	-	-
1093	E-W	1095	Y	-
1099	E-W	1101	Y	-
1116	NW-SE	1118	Y	-
1139	N-S	1141	Y	-
Hill Top				
1174	E-W	1175, 1177	-	Y
1184	E-W	See Excel Spreadsheet	-	See plan drawing
1238	E-W	1227, 1229, 1249, 1251	Y	-
1244	E-W	1246	Y	-
1261	E-W	1257	Y	-
1264	N-S	1269, 1271	Y	-
1276	E-W	1278, 1280, 1282	-	-
1298	N-S	1300	Y	-
1302	N-S	1461	Y	-
1304	N-S	1463	Y	-
1308	E-W	See Excel Spreadsheet	Y	Y
1310	E-W	1314	Y	-
1319	E-W	1321, 1323	Y	-
1332	E-W	1334, 1336	Y	-
1338	E-W	1337, 1417, 1423, 1425, 1428, 1430, 1432, 1434	Y	-
1344	N-S	1346, 1348	Y	-
1356	E-W	1360, 1362, 1364, 1366, 1368	Y	Y
1372	E-W	See Excel Spreadsheet	Y	Y
1386	N-S	1390, 1384	-	-
1410	E-W	1412, 1414	Y	-
1498	E-W	See Excel Spreadsheet	Y	Small clusters
1538	E-W	1540	Y	-
1544	E-W	1546	Y	-
1589	E-W	1580, 1643, 1655	Y	-
1613	E-W	1615, 1617	Y	-
1684	N-S	1686	-	Southern corner

1706	E-W	1708, 1710, 1712, 1714, 1716, 1753	Y	Western partition
1721	E-W	1723, 1730	Y	-
1727	N-S	1725, 1733	Y	-
1747	E-W	1799	Y	-
1885	E-W	1890, 1919	-	-
1921	E-W	1923	-	-
1998	E-W	1996	Y	-

General Fill Characteristics

Fill	***Count***	***Context No.***
Spur/Old Cow Shed		
Shell inclusions >10%	2	1047, 1049
Charcoal flecks	30	1039, 1047, 1049, 1052, 1053, 1059, 1061, 1062, 1069, 1072, 1075, 1077, 1084, 1086, 1088, 1092, 1096, 1097, 1098, 1104, 1105, 1107, 1109, 1111, 1123, 1127, 1134, 1136, 1138, 1140
Trample	2	1092, 1105
Collapse (Wall collapsed)	1	1058
Animal bone	1	1064
Burning	5	1057, 1071, 1073, 1096, 1097
Wood	1	1143
Hill Top		
Shell ≤10%	3	1148, 1163, 1165
Shell >10%	3	1145, 1989, 1294
Charcoal flecks	309	See Excel Spreadsheet
Trample	32	1161, 1173, 1199, 1237, 1243, 1260, 1263, 1266, 1275, 1289, 1297, 1318, 1350, 1385, 1415, 1439, 1451, 1456, 1457, 1458, 1497, 1649, 1654, 1665, 1668, 1701, 1705, 1713, 1728, 1884, 11006, 11138
Collapse	9	1236, 1259, 1285, 1438, 1447, 11024, 11129, 11131, 11137
Silt infill	4	1450, 1454, 1496,1607
Burning	17	1151, 1307, 1330, 1542, 1587, 1648, 1656, 1658, 1825, 1843, 1901, 1955, 1959, 1964, 1977, 1999, 11001
Wood fragments	2	1729, 1952

Storage Pit Fills

No. Fills	Count	Context No.
Spur/Old Cow Shed		
1 Fill	5	1085, 1093, 1099, 1116, 1139
2 Fills	1	1106
3 Fills	2	1060, 1074
Total	8	
Hill Top		
1 Fill	14	1240, 1310, 1385, 1410, 1500, 1613, 1684, 1721, 1727, 1747, 1915, 1921, 1976, 1998
2 Fills	12	1264, 1319, 1338, 1351, 1356, 1538, 1544, 1589, 1666, 1669, 1706, 1885
3 Fills	8	1174, 1244, 1261, 1276, 1290, 1298, 1332, 1372
4 Fills	1	1650
5 Fills	3	1184, 1238, 1344
6 Fills	3	1302, 1304, 1308
9 Fills	1	1498
Total	42	

Bin Pit Fills

No. Fills	Count	Context No.
Spur/Old Cow Shed		
1 Fill	10	1040, 1051 (modern), 1070, 1076, 1108 (modern), 1110, 1124, 1130, 1135, 1137
2 Fills	4	1054, 1063, 1079, 1144
Total	14	
Hill Top		
1 Fill	21	1164, 1208, 1254, 1370, 1530, 1532, 1601, 1637, 1663, 1688, 1690, 1714, 1745, 1753, 1917, 1974, 1979, 1992, 1994, 11125, 11127
2 Fills	1	1267
3 Fills	1	1162
4 Fills	1	11132
Total	25	

Samples

Sample No.	*Context No.*	*Description*	*Why*	*Analysis (Y/N)*
				Spur/Old Cow Shed
2	1047	Shell fill	Midden analysis	Y
6	1072	Pit fill	Soil analysis	
7	1092	Pit fill	Soil analysis	
8	1098	Pit fill	Soil analysis	
9	1143	Fibre	Species ID	
30	1049	Shell fill	Midden analysis	
31	1096	Charcoal/soil fill	Species ID	
32	1064	Soil and bone fragment fill	Species ID	

33	1051	Fragile dog bone	Species ID	
35	1073	Charcoal	Species ID	
				Hill Top
12	1148	Shell fill	Midden analysis	Y
13	1147	Shell fill	Midden analysis	Y
14	1180	Shell deposit	Midden analysis	N
15	1197	Wood fragments	Species ID	
16	1180	Shell deposit	Midden analysis	Y
17	1264	Charcoal	Species ID	
18	1192	Primary fill	Soil analysis	
19	1294	Shell fill	Midden analysis	Y
20	1294	Bulk charcoal	Species ID	
21	1307	Bulk charcoal	Species ID	
22	1340	Rocks	ID	
23	1340	Bulk charcoal	Species ID	
24	1352	Wood fragments	Species ID	
25	1330	Bulk charcoal	Species ID	
26	Unstrat	Rocks	ID	
27	1343	Charcoal rich soil	Species ID/Soil analysis	
28	1456	Trample layer	Soil analysis	
29	1451	Trample layer	Soil analysis	
37	1656	Charcoal/soil	Species ID/soil analysis	
38	1729	Soil/wood fragments	Species ID/soil analysis	
39	1825	Soil/charcoal	Soil analysis	
40	1866	Rocks	ID	
41	1867	Rocks	ID	
42	1844	Rocks	ID	
43	1844	Soil/charcoal	Species ID/soil analysis	
44	1955	Soil/charcoal	Species ID/soil analysis	
45	1952	Soil/bark fragments	Species ID	
46	1389	Pit fill	Soil analysis	
47	1534	Pit fill	Soil analysis	
48	1665	Pit fill	Soil analysis	
49	1701	Pit fill	Soil analysis	
50	1705	Pit fill	Soil analysis	
51	1914	Pit fill	Soil analysis	
52	1989	Shell fill	Midden analysis	Y
53	11004	Bulk charcoal	Species ID	
54	11004	Bulk charcoal	Species ID	
55	11001	Charcoal/soil	Species ID/soil analysis	
56	1590	Soil/trample	Soil analysis	

Small Finds

Small Find No.	Context No.	Material	Artefact Type	Analysis (Y/N)
				Trench 13
1	Unstrat	Obsidian	Fragments	
				Spur/Old Cow Shed
3	1039	Argillite	Adze flake	
4	Unstrat	Obsidian	Flake	
5	1041	Obsidian	Flake	
6	Unstrat	Obsidian	Flake fragments	
7	Unstrat	Obsidian	Flake	
8	Unstrat	Obsidian	Flake	
9	Unstrat	Obsidian	Flake fragment	
10	Unstrat	Obsidian	Flake	
11	Unstrat	Obsidian	Flake fragment	
12	Unstrat	Obsidian	Flake	
13	Unstrat	Obsidian	Flake	
14	Unstrat	Obsidian	Flake	
15	1062	Obsidian	Flake fragments	
16	1051	Obsidian	Flake	
17	1077	Obsidian	Flake fragments	
18	1096	Unknown	Artefact	
19	1109		Disc pendant	
20	1113	Glass	Glass bottle	
21	1096	Glass	Flake	
42	Unstrat	Obsidian	Flake	
43	Unstrat	Obsidian	Flake	
44	Unstrat	Obsidian	Flake	
45	Unstrat	Obsidian	Flake	
46	Unstrat	Obsidian	Flake	
47	Unstrat	Obsidian	Flake	
48	Unstrat	Obsidian	Flake	
49	Unstrat	Bone	Flake	
Hill Top				
25	Unstrat	Obsidian	Flake	
26	Unstrat	Obsidian	Fragment	
27	Unstrat	Obsidian	Fragment	
28	1305	Obsidian	Flake	
29	Unstrat	Obsidian	Flake	
30	1309	Obsidian	Flake	
31	1309	Obsidian	Flake	
32	1309	Obsidian	Flake	
33	Unstrat	Obsidian	Fragment	
34	Unstrat	Obsidian	Flake	
35	1501	Rock	Bulk collection	
36	1530	Obsidian	Fragment	

37	1530	Obsidian	Fragment
38	Unstrat	Bone	Unknown species
39	1844	Obsidian	Fragment
40	11001	Obsidian	Flake

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17 Appendix 2 Area 2000 Context, Features, Samples and Finds Tables

General Cut Characteristics

A total of 44 cuts were recorded in Area 2000, including storage pits, bin pits, post- and stake-holes. The following table provides a brief summary of the type and number of 'cuts' present in Area 2000.

Cut	Count	Context No.
Storage Pit	9	2003, 2017, 2030, 2038, 2047, 2049, 2054, 2075, 2092
Post hole	15	2005, 2009, 2011, 2013, 2019, 2028, 2040, 2051, 2058, 2062, 2072, 2081, 2095, 2099, 2105
Pit with post hole(s)	3	2003-(2005, 2009, 2011, 2013), 2017-2019, 2049-2051
Pits with no internal features	5	2030, 2038, 2047, 2075, 2092
Pits with sump(s)	2	2003-2015, 2054-2056
Bin Pits	12	2007, 2021, 2023, 2026, 2034, 2060, 2064, 2066, 2068, 2070, 2077, 2086
Scoop Pit	3	2042, 2084, 2097
Stake hole	3	2079, 2101, 2103
2 Intersecting Features	3	2003&2007, 2075&2068, 2092&2086

Storage Pits and Post Holes

Three of the storage pits excavated in Area 2000 exhibited internal post holes, most likely for roof support. The following table summarises the key features of these pits, such as the alignment axis of the post holes.

Context No.	Pit Orientation	Post Hole(s) No.	Central Axis	Off Center Axis
2003	N-S	2005, 2009, 2011, 2013	-	-
2017	NNW-SSE	2019	Y	-
2049		2051	Y	-

General Fill Characteristics

A total of 59 context numbers were assigned to fills recorded during excavation. A total of 39 fills consisted of sandy loam, 18 of silty loam and the remaining consisted of ash (1) and redeposited natural (1). The following table summarises general fill inclusion characteristics.

Fill	Count	Context No.
Shell inclusions ≤10%	14	2039, 2057, 2059, 2061, 2063, 2071, 2078, 2080, 2083, 2094, 2096, 2098, 2102, 2104
Charcoal flecks	28	2001, 2002, 2020, 2032, 2035, 2036, 2037, 2039, 2041, 2044, 2046, 2052, 2053, 2059, 2061, 2063, 2065, 2067, 2071, 2073, 2078, 2080, 2083, 2085, 2087, 2090, 2091, 2096
Trample	3	2016, 2053, 2091
Burning	1	2045
Fire cracked rock	4	2052, 2063, 2083

Storage Pit Fills

The following table summarises the different number of fills present in the storage pits excavated in Area 2000.

No. Fills	Count	Context No.
1 Fill	2	2029, 2048
2 Fills	4	2003, 2017, 2054, 2075
3 Fills	2	2038, 2047
4 Fills	0	
5 Fills	1	2092
Total	9	

Bin Pits

The following table summarises the different number of fills present in the bin pits excavated in Area 2000.

No. Fills	Count	Context No.
1 Fill	9	2007, 2021, 2023, 2059, 2064, 2066, 2068, 2070, 2086
2 Fills	2	2026, 2077
3 Fills	1	2034
Total		

Samples

A total of six samples were taken from features within Area 2000. Five of these were midden samples, which can be further analysed to understand subsistence practises and radiocarbon dating. The remaining sample was a burnt seed which is ideal for radiocarbon dating.

Sample No.	Context No.	Description	Why	Analysis (Y/N)
4	2061	Shell Fill	Midden analysis	Y
5	2063	Burnt seed from fill	Species ID	
10	2071	Shell fill	Midden Analysis	Y
11	2083	Shell fill	Midden Analysis	Y
34	2057	Shell and soil fill	Midden analysis	Y
57	2096	Shell and soil fill	Midden analysis	Y

Small Finds

The table below summarises the number and types of small finds recovered during excavation. One artefact was found in the spoil during topsoil stripping. The remaining two artefacts found in Area 2000 were from secure archaeological contexts.

Small Find No.	Context No.	Material	Artefact Type	Analysis (Y/N)
2	Unstrat	Obsidian	Flake	
22	2076	Obsidian	Flake	
23	2090	Obsidian	Flakes	
24	Unstrat	Obsidian	Flake	

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18 Appendix 3 Area 3000 Context, Features, Samples and Finds Tables

General Cut Characteristics

The 14 cuts that were recorded in Area 3000 included

Cut	Count	Context No.
Storage Pit	1	3015
Post hole	5	3017, 3019, 3021, 3025, 3027
Pit with post hole(s)	1	3015
Pits with sump(s)	1	3015
Bin Pits	7	3002, 3004, 3006, 3008, 3010, 3012, 3029

Storage Pit and Post Holes

The only storage pit excavated in Area 3000 exhibited both internal and external postholes and a sump. The main features are outlined in the table below

Context No.	Pit Orientation	Post Hole(s) No.	Central Axis	Off Center Axis
3015	N-S	3017, 3019, 3021	-	Y

General Fill Characteristics

A total of 15 context numbers were assigned to fills recorded during excavation. A total of 10 fills consisted primarily of silty loam, with the remaining five consisting of sandy loam. The following table summarises general fill inclusions.

Fill	Count	Context No.
Charcoal Flecks	4	3001, 3003, 3005, 3013
Trample	1	3014

Storage Pit Fills

The only storage pit excavated in Area 3000 exhibited 2 fill layers summarised in the table below. One of these fills was a trample and was found to overlay one of the internal postholes (3017), suggesting this pit had multiple phases of use.

No. Fills	Count	Context No.
2 Fills	1	3015
Total	1	

Bin Pit Fills

All of the bin pits excavated in Area 3000 exhibited a single backfilling event, as seen in the table below.

No. Fills	Count	Context No.
1 Fill	7	3002, 3004, 3006, 3008, 3010, 3012, 3029
Total	7	

Excavators

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19 Appendix 4 Area 4000

A Table of Trench's excavated with dimensions and interpretation. Trenches 7 and 12 contained archaeology, and both trenches were located on the same small spur, which runs down from the pa site U14/231 in the adjacent, undeveloped Lot.

Trench #	Dimensions	Profile intact?	Archaeological features?
1	15x4.1x0.7m	Yes – large amounts of silt built up from stream action.	No
2	5.8x4.8x0.1m	Yes – minimum soil build up due to slope.	No
3	9.5x4.1x0.6m	Yes – poor subsoil development due to slope	No
4	4.2x3.9x0.06m	Yes – poor subsoil development due to slope. Modern drain/track visible at eastern extent.	No
5	4.1x3.8x0.08m	Yes – poor subsoil development due to slope.	No
6	8.1x3.2x0.34m	Yes – tree root disturbance throughout.	No
7	10x4.1x0.4m prior to extension	Yes – tree root disturbance present from boundary tree line.	Yes
8	8x2x0.4m	Yes – root disturbance throughout, good subsoil development.	No
9	9x2x0.1m	Possibly cut down – very poor subsoil development and thin (less than 10cm) of topsoil present.	No
10	5x3x0.35m	Yes – good subsoil development and root disturbance throughout.	No
11	6x5x0.4m	Yes – good subsoil development due to location at bottom of slope. Modern water pipe to old trough present in trench.	No
12	10x3x0.2m	No – no subsoil present and bin pit exhibited heavy vertical truncation.	Yes
13	5x4x0.1m	Possibly cut down – very poor subsoil development and thin (less than 10cm) of topsoil present.	No
14	12x5x0.5-0.2m	Yes – good subsoil development, with large amounts of silt build up due to stream action, as well as root	No

	disturbance. Modern fill was present at the northern end of the trench, burying the original topsoil.

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20 Appendix 5: Small Finds Catalogue

Small Finds No.	Context No.	Material	Description
1	Unstrat	Obsidian	Obsidian surface find in area 1000, trench 13. N=3
2	Unstrat	Obsidian	Unstrat obsidian find on spoil heap, area 2000 trench 3. N=1
3	1039	Argillite?	Adze flake on base of feature within backfill. N=1
4	Unstrat	Obsidian	Obsidian flake found on ground surface during cleaning near old cow shed. N=1
5	1041	Obsidian	Obsidian flake from fill of possible posthole. N=1
6	Unstrat	Obsidian	Obsidian flakes in tree bowl on spur below old cow shed. N=2
7	Unstrat	Obsidian	Obsidian surface find on spur near old shed - found while cleaning down. N=1
8	Unstrat	Obsidian	Obsidian surface find on spur near old shed - found while cleaning down. N=1
9	Unstrat	Obsidian	Obsidian flake frag in spoil on spur. N=1
10	Unstrat	Obsidian	Obsidian surface find on spur. N=1
11	Unstrat	Obsidian	Obsidian flake frag from spoil on spur. N=1
12	Unstrat	Obsidian	Obsidian flake in tree root mess on spur near old shed. N=1
13	Unstrat	Obsidian	Obsidian flake surface find in tree smudge on spur near old shed. N=1
14	Unstrat	Obsidian	Obsidian flakes from tree root on spur below old shed. N=3

15	1062	Obsidian	Obsidian flake frags in pit fill. N=2
16	1051	Obsidian	Obsidian flake from pit. N=1
17	1077	Obsidian	Obsidian flake fragments from pit fill. N=2
18	1096		Artefact from within fire feature. N=1
19	1109	?	Possible disc pendant from fill
20	1113	Glass bottle	"Udolpho Wolfe's schiedam aromatic schnapps" from posthole fill. N=1
21	1096	Glass or obsidian	Glass or obsidian flake from fire feature fill. N=1
22	2076	Obsidian	Obsidian from surface of feature. N=1
23	2090	Obsidian	Two obsidian frags from within primary backfill of pit. N=1
24	Unstrat	Obsidian	Unstrat surface find near silt fence, North of 2077. N=1
25	Unstrat	Obsidian	Unstrat top of hill
26	Unstrat	Obsidian	Area 1000 top of hill, unstrat surface find . N=1
27	Unstrat	Obsidian	Area 1000 top of the hill. N=1
28	1305	Obsidian	Obsidian flake found in top layer of fill in tree bowl
29	Unstrat	Obsidian	Grey obsidian flake found on surface below fire scoops
30	1309	Obsidian	Obsidian flake found in top layer of fill, NE corner of terrace
31	1309	Obsidian	Obsidian flake found in the NE corner of terrace. Possibly associated with separate feature - found 1m south of find 30

32	1309	Obsidian	Obsidian flake found in small feature in NW corner of 1309 located about 2m west of 30 and 31
33	Unstrat	Obsidian	Obsidian surface find on lower terrace area, Area 1000. N=1
34		Obsidian	Flake fragment from pit fill near base in E excavated portion. N=1
35	1501	Rock	Large rock from unexcavated portion of scoop feature. N=1
36	1530	Obsidian	Obsidian piece found in fill. N=1
37	1530	Obsidian	Obsidian piece found in fill. N=1
38	Unstrat	Bone	Possible human baone? Found near spoil heap area 1000
39	1844	Obsidian	Obsidian piece found in fill of firescoop. N=1
40	11001	Obsidian	Obsidian piece found in top of firescoop. N=1
41	Unstrat	Obsidian	Unstrat obsidian flake , area 1000 near old cow shed
42	Unstrat	Obsidian	Unstrat obsidian piece, near new haul road below cow shed spur
43	Unstrat	Obsidian	Unstrat obsidian piece, near new haul road below cow shed spur
44	Unstrat	Obsidian	Unstrat obsidian piece, near new haul road below cow shed spur
45	Unstrat	Obsidian	Unstrat obsidian piece, near new haul road below cow shed spur
46	Unstrat	Obsidian	Unstrat obsidian piece, near new haul road below cow shed spur
47	Unstrat	Obsidian	Unstrat obsidian piece, near new haul road below cow shed spur

48	Unstrat	Obsidian	Unstrat obsidian piece, near new haul road below cow shed spur
49	Unstrat	Bone	Unstrat bone surface find in area up from smoko shed
50	3080	Obsidian	Obsidian found in top of pit fill
51	3080	FCR	FCR in pit fill, approx 5-0cm below surface
52	Unstrat	Obsidian	In tree mess on ground surface
53	Unstrat	Obsidian	In tree mess on ground surface
54	1062	Obsidian	From pit fill
55	1077	Obsidian	In pit fill
56	2090	Obsidian	

21 Appendix 6 Sample Catalogue

Sample No.	Context No.	Material	Description	Size
Numbered twice - see 34	2057	Soil	Bulk sample of posthole fill	1 large bag
2	1047	Soil and shell	100% sample of posthole fill	1 small bag
Numbered twice - see 30	1049	Soil and shell	100% sample of posthole fill	1 small bag
4	2061	Shell and charcoal	100% sample of posthole fill	1 large bag
5	2063	Burnt seed	Burnt seed from pit fill	1 small bag

6	1072	Soil	Pit fill sample	1 small bag
7	1092	Soil	Pit fill sample	1 large bag
8	1098	Soil	Pit fill sample	1 small bag
9	1143	Fibre	Sample of wood/fibre from void in layer	1 small bag
10	2071	Soil and shell	1/2 section sample of posthole fill - shell and soil	1 large bag
11	2083	Soil, shell and charcoal	Scoop fill sample	1 large bag
12	1148	Soil, shell and charcoal	Posthole fill sample	1 large bag
13	1147	Soil and shell	Posthole fill sample	1 large bag
14	1180	Shell	Random sample of shell scatter on slope north of top spur	1 small bag
15	1197	Wood	Remains of wood from post cast found in situ	1 large bag

16	1180	Shell	Sample of midden - replacement sample for 14 - from one context	1 large bag
17	1264	Charcoal	Charcoal sample from trample in SE corner of pit	1 large bag
18	1192	Soil and charcoal	Primary backfill layer of pit 1184	1 small bag
19	1294	Shell	Bulk shell sample from layer	1 large bag
20	1294	Charcoal	Bulk charcoal sample from layer	1 medium bag
21	1307	Burnt punga	Bulk sample of burnt punga in pit fill	1 medium bag
22	1340	Rocks	100% sample of rocks excavated from rock cache	1 large (heavy bag)

23		1340	Charcoal	Charcoal sample from base of rock cache	1 small bag
24		1352	Wood	Wood sample from bottom of large posthole	1 medium bag
25		1330	Charcoal	Charcoal sample from burning lens within pit fill	1 small bag
26	Unstrat		Rocks	Bulk 'grab' sample of hangi stones on surface North of big pit (1184)	1 large bag
27		1343	Soil	Charcoal rich soil sample from pit layer	1 small bag
28		1456	Soil	Sample of trample on top of step - charcoal rich	1 small bag
29		1451	Soil	Trample sample of initial pit use layer	1 small bag

30		1049	Soil and shell	100% sample of posthole fill	1 medium bag
31		1096	Soil	Bulk sample of fire feature 1090	1 large bag
32		1064	Soil	Bulk soil sample with degraded and fragmented dog bone	1 large bag
33		1051	Dog bone	Dog bone from feature fill - very fragile	1 large bag
34		2057	Soil	Bulk sample of posthole fill	1 large bag
35		1073	Charcoal	Charcoal sample from burning layer on base of pit	1 large bag
36	Unstrat		Soil	Bulk sample of unknown fire pit - no context number	1 large bag

37	1656	Charcoal	Charcoal sampletaken from W end of pit 1290	1 large bag
38	1729	Soil and wood	Sample of posthole fill with wood (possibly totara) fragments from end ofpit 1721	1 small bag
39	1825	Soil	Sample of charcoal rich soil	
40	1866	Rocks	100% rock sample from rock cache. 1 shows evidence of flaking	3 large bags
41	1867	Rocks	100% rock sample from rock cache	3 large bags
42	1844	Rocks	100% sample of FCR in firescoop	1 large bag

43	1844	Soil	Sample of charcoal rich soil from firescoop	1 large bag
44	1955	Soil	Sample of charcoal rich soil from fire feature	
45	1952	Soil and bark	Sample of soil and bark from posthole	1 small bag
46	1389	Soil	Soil sample from base of pit	1 small bag
47	1534	Soil	Soil sample from trample on base of pit	1 small bag
48	1665	Soil	Soil sample from base of pit	1 small bag
49	1701	Soil	Soil sample from base of pit	1 small bag
50	1705	Soil	Soil sample from base of pit	1 small bag

51		1914	Soil	Soil sample from base of pit	1 small bag
52	1989/1990		Shell	100% sample of shell filled posthole	
53		11004	Burnt punga	Bulk sample of burnt punga on base of pit	1 large bag
54		11004	Burnt wood	Bulk sample of burnt wood on base of pit	1 large bag
55		11001	Soil	Charcoal rich soil sample from top layer of fire scoop	1 large bag
56		1590	Soil	Soil sample of compacted sandy layer in pit 1184, W end	1 small bag
57		2096	Soil	1/2 section sample of possible scoop	1 large bag

58	3034	Shell/soil	100% sample of posthole fill	1 large bag
59	3078	Shell	Posthole shell backfill	1 bag
60	3057	Shell	Shell deposit on top of pit 3056	1 bag
61	3071	Soil	Sample of trample of base of pit	1 bag
62	3044	Soil	Sample of trample on base of pit	1 bag
63	4003	Charcoal rich soil	Bulk sample (5L) of charcoal rich soil	1 large bag
64	4008	Soil	Sample of pit primary use phase, under wash in layer	1 small bag
65	4017	Soil	Sample of pit primary use phase, under wash in layer	1 small bag