

**Report on archaeological monitoring at 4 Bryce Street,  
Hamilton: S14/39, Kirikiriroa pa**

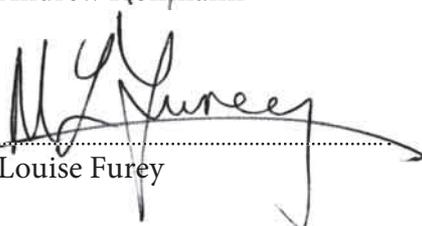
**report to  
Tainui Group Holdings Ltd.**

**Andrew Hoffmann**

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# Report on archaeological monitoring at 4 Bryce Street, Hamilton: S14/39, Kirikiriroa pa

## Introduction

Tainui Group Holdings commenced alterations to an existing storage building at their property at 4 Bryce Street, Hamilton (Pt Lot 11 and Pt Lot 12 DP 11019) on 19 June 2008. The project area location is given in Figure 1. Hamilton City Council approved these alterations with issue of the Land Use Resource Consent 010.2008.00019296.001 (38/1/4207) and Mitchell Construction Ltd. carried out the alterations. The Land Use Consent noted that the alterations would cause ground disturbance to the archaeological site S14/39, Kirikiriroa Pa, and in anticipation of this an authority had previously been applied for and was granted by the New Zealand Historic Places Trust under Section 14 of the Historic Places Act 1993 (Authority 2007/58).



Figure 1. Location of Tainui Holdings development area, Hamilton City.

## Brief background

The Bryce Street property falls within the area of S14/39, Kirikiriroa Pa, which is generally defined as the area between the west bank of the Waikato River to Victoria Street and from Claudelands Road to just north of London Street. Good historical background information relating to Kirikiriroa Pa can be found in Simmons (2002, 2003).

The short document, *Kirikiriroa and its Environs* (Vennel 1979: 3), gives a quote from Dr. von Hochstetter, who visited Kirikiriroa in 1859 and said, “On the upper river terrace are the plantations of the natives.” Ngati-wairere abandoned Kirikiriroa Pa during the Waikato War (Vennel 1979: 3).

The presence of gardens along the banks of the Waikato River and in close association with the pa is not surprising. Gumbley et al (2003: 6) says “The most extensive inland area containing evidence for such gardening, primarily for growing kumara (*Ipomoea batatas*), is in the Waikato region. Here, the archaeological evidence is ... dominated by sites comprising soils modified by early Maori by the addition of coarse volcaniclastic alluvium.”

The alluvium is naturally present on levees on the Hinuera geological formation deposits adjacent to the Waikato River and was extracted from certain locations leaving visible depressions called borrow pits by archaeologists. Modern field ploughing and farming land-use commonly, however, has resulted in the infilling of many borrow pits and loss of this surface evidence of Maori gardening. The sands and gravels were rarely transported more than 100 m from their source, meaning the presence of borrow pits is an excellent indication that modified soils are present in the area, and vice versa.

Gumbley et al (2003: 6) also wrote that “Several writers have suggested that the addition of alluvial materials improved the friability and heat retention of the soil, reduced the likelihood of frost damage, improved fertility, provided a disease-free growing medium, and created a sharp interface between the added materials and buried horizons to encourage larger tuber formation (Best 1925; Singleton 1988). Together these modifications made soils more suitable for growing the subtropical kumara in New Zealand’s temperate environment (Taylor 1958).” These soils are referred to by several terms including ‘Maori soils’, ‘plaggen soils’, ‘anthropic soils’, ‘modified soils’, ‘man-made’, ‘made soils’ or ‘created soils’ (Gumbley 2003). Maori-modified soils are recognised in the Waikato as soil types in their own right: for example, many of these soils in the middle Waikato Basin are classified in the Tamahere series: the two named soil types being ‘Tamahere gravelly sand (on Horotiu soils (Mh))’ or ‘Tamahere gravelly sand (on Waikato soils (Mw))’ (Bruce 1978, 1979).

In this report Tamahere gravelly sands (defined by McLeod 1984) are described as the modified soils and the archaeological context within which they occur as Maori gardens.

The common element to modified soils is the presence of sand and gravels within the topsoil layer. The depth of the modified topsoil is often deeper than an unmodified topsoil, and reflects the results of digging into the parent soil (B horizon), effectively deepening the topsoil and creating various gardening features. On the Hinuera surface only, the C horizon is typically approximately 750 mm below the ground surface and is a thick layer of gravelly sand grading to coarser gravels and sand with depth. It was this horizon that was excavated by Maori in forming borrow pits.

## **Previous work**

Simmons’ (2002) project area was within Lot 2 DPS 65343 and Lots 1 and 3 DPS 5279, located south and adjacent to London Street. Simmons identified garden soils that contained marine shell and at least one cluster of shallow depressions (averaging 200–250 mm in diameter) and excavated between 50–150 mm into the B horizon soils and were filled with an ‘organic mix’ all of which included a few fresh water and less commonly a few marine shells. Simmons (2002) says the best-preserved ‘garden feature’ was circular, 800 x 740 mm and excavated 520 mm into the B horizon. This feature was filled with charcoal pieces (5–15 mm); coarse grit/sand (less than 2 mm); gravels (2–15 mm), rocks (15–60 mm), fresh water mussel shell, marine shell and a few fish bones and a rodent mandible fragment.

While the coarse sands and gravels are typical of modified soils (Maori garden soils) the remainder of this feature’s contents is not typical of a garden feature and the possibility of European period disturbance to the modified soil deposit must be considered a strong probability.

Simmons also recovered several European pre and post 1900 features and artefacts. Nonetheless, Simmons (2002) indicates at least that the S14/39 site area in the vicinity of London Street was utilised for gardens during Maori occupation of the area.

Simmons (2003) second project area was within the same area as this report refers (Pt Lot 11 and Pt Lot 12 DP 11019). Simmons’ reports that many of the earthworks were located within pre-

viously disturbed areas and no evidence of Maori archaeological features were found. European artefacts from here post-dated 1900 and are not considered archaeological under the definition of the Historic Places Act. Simmons (2003: 12) contains a diagram of where drains were cut for wastewater pipes.

### Alterations to existing building, methodology

The extension of the existing storage building is shown in red in Figure 2 and called Area A. The entry annex on the northern side of the storage building was removed and a concrete pad was to be placed across the area marked in red in Figure 2.

A triangular area of decking was also to be built off the north-eastern side of the existing storage building and is referred to as Area B and shown in blue in Figure 2.

In Area A, a 2-metre wide strip parallel to the storage building was not excavated. The remainder of Area A was excavated by 2-tonne hydraulic digger down to an average depth of 750 mm. The locations of features exposed on the surface was marked on an approximately to scale plan of the area and the features locations are given in Figure 3. At my request, Trench A (shown in Figure 3), was taken down to approximately 1300 mm to reveal in profile the archaeological feature (borrow-pit) present there. The soil profile was photographed and drawn. Samples of charcoal were taken for possible radiocarbon dating from the base of the fill layer within the feature.

Area B required only three 300 mm wide footing trenches to be excavated. Auger tests across Area A were made and a large area of un-compacted fill was identified across that area. Due

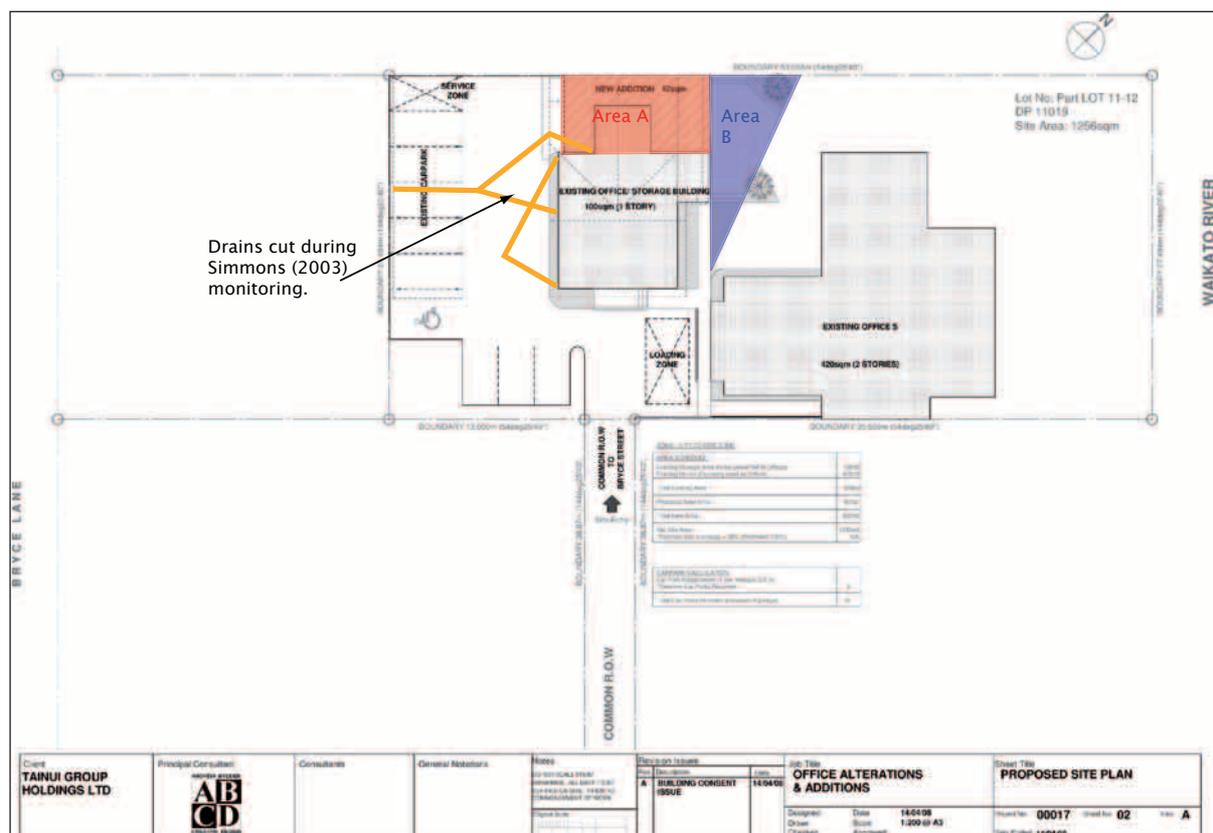


Figure 2. Areas A and B highlighted. Note the approximate location of drains installed during previous works monitored by Simmons (2003).

to time constraints, a 350 mm wide trench was hand excavated across the perceived boundary between the hard and the un-compacted fill areas. A profile of the cut features responsible for the un-compacted area of fill became evident and was photographed.

## Results

The topsoil (A horizon) across both Area A and B contained high concentrations of sand and gravels typical of modified soil deposits. The sand component varied in concentrations from an estimated 10–50%. The gravels present within the A horizon ranged from small (2–10 mm) to larger gravels (up to c.20 mm).

### Area A

Four square side postholes (one measuring 300 x 300 mm, three measuring 180 x 180 mm) were identified and are shown in Figure 3. The postholes were located outside the wall alignments of the demolished entry annex. They were excavated into the subsoil and were filled with mixed topsoil including the gravel and sands. It was not possible to relate the postholes to each other or to a particular structure. The square shape and size of the postholes suggests they relate to the historic period and were dug with an iron spade.

A group of six bricks constructed of sand and concrete were disturbed by the digger. The arrangement was not able to be recorded, and were not clearly associated with any feature. The bricks were cut into, and resting on, the upper B Horizon deposit.

A surface area of mixed soil, including gravel, was identified as the surrounding natural subsoils were being exposed and stripped. Trench A straddled the mixed soil deposit and was excavated to below the mixed/disturbed zone to a depth of 1300 mm. The soil profile on the

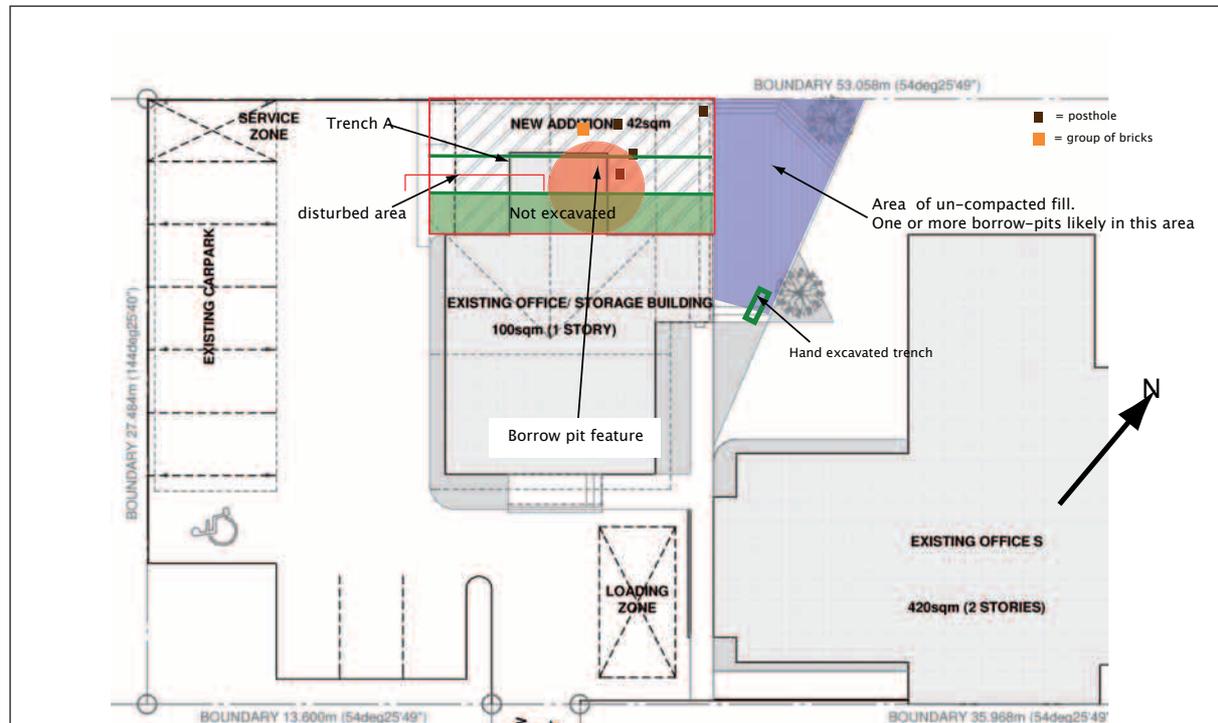


Figure 3. Location of Trench A, Area A, and all identified features as discussed in text.

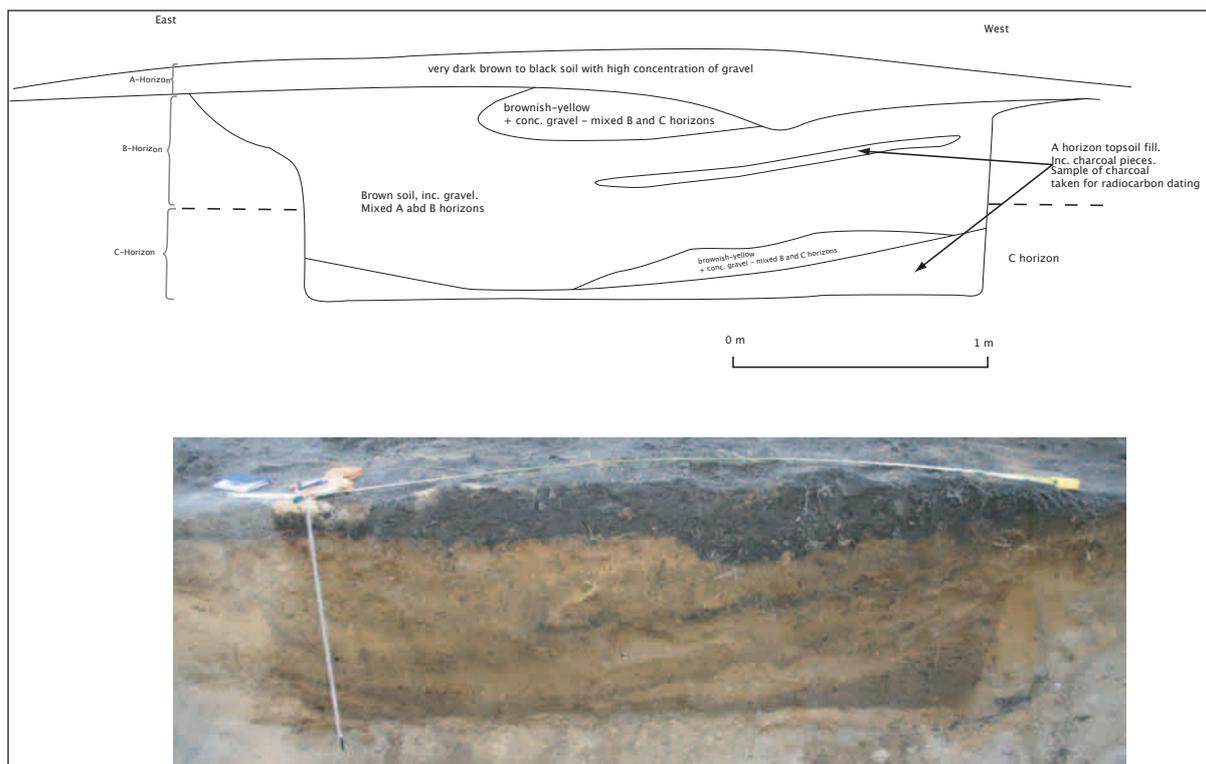


Figure 4. South section profile of borrow pit feature in Trench A, Area A.

southern side of Trench A indicates the mixed deposit was the fill of a borrow pit feature. The borrow pit was 1000 mm deep, 3000 mm from end to end and had a level base and approximately straight sides (see Figure 4). This profile is similar to the cross sections of borrow-pits excavated at other archaeological sites (see Gumbley et al. 2003: 11). The surface profile of the exposed portion of this feature was oval to circular, not rectangular as may be expected for a kumara storage pit. The end component of the borrow pit remained evident in Trench A's northern profile. Trench A was 1200 mm wide. The dimensions of the pit in the northern profile were 1000 mm wide and approximately 1000 mm deep, indicating the straight-sided and circular surface aspect to the feature continued with depth. No European or other material culture indicative of a post 1830's date was present within the fill of the deposit.

The western end of Trench A beyond the borrow pit showed disturbance to two-thirds of the B-horizon and the interface of the topsoil and subsoil looked disturbed. The cause of this disturbance is very likely to be related to the drain forming works monitored by Simmons (2003) (see Figure 1).

### Area B

The 350 mm wide by 1000 mm long spade dug trench in this area revealed a feature with a straight vertical, boundary, 1200 mm deep, cut into the underlying Horotiu soil. The base of the disturbed, un-compacted area was cut approximately 450 mm into the C horizon gravelly sand. The un-compacted fill of the feature contained lenses of mixed soils with gravel. Several lenses of sand were also evident. The un-compacted area covered the majority of Area B. The maximum length of the un-compacted area was approximately 7m, from which it is estimated that at least one and perhaps two borrow pits are present in this area.

## Conclusions

The whole of the project area contained topsoil with characteristics typical of modified soil deposits.

One definite and at least one other probable borrow-pit were identified. In both borrow pits their bases were excavated into the underlying gravels. It is likely the project area was part of the pa's gardens and indeed, may have been part of the 'plantations' mentioned by Dr. von Hochstetter in 1859.

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