



Kihikihi UFB2 build (HNZPTA authority 2019/446): final report

report to
Heritage New Zealand Pouhere Taonga
and
Ultrafast Fibre

Arden Cruickshank and Jacqueline Craig

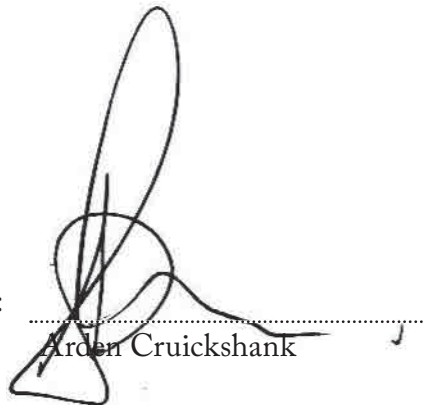


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*Cover image: Kihikihi, 1885, Kihikihi, by Burton
Brothers studio. Purchased 1999 with New Zealand
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Arden Cruickshank and Jacqueline Craig

Ultrafast Fibre Ltd have installed a new fibre optic cable network around Kihikihi as part of the second stage of the National Ultra-Fast Fibre project (UFB2). The installation of the cable mainly involved excavating small pits at regular intervals (usually in line with every second property boundary) within existing service trenches, and directional drilling between these. Other pits were opened to locate services or extend the cable to property boundaries. Two previously recorded archaeological sites, Kihikihi Redoubt S15/235 and the Alpha Hotel S15/394, were identified in the project area with potential to be affected by the works (Cruickshank 2018). Ultrafast Fibre applied to Heritage New Zealand Pouhere Taonga (HNZPTA) for an archaeological authority to modify or destroy these sites under section 44 of the Heritage New Zealand Pouhere Taonga Act (2014). Authority 2019/446 was granted by HNZPT on 29 January 2019.

Work commenced on 8 March 2019 and it was completed in early 2020. Ground disturbance associated with the archaeological sites outlined in the authority were monitored or inspected prior to drilling to ensure that any archaeological features that were encountered were recorded and mapped for future site management.

Background

Relatively little has been published about pre-European Māori occupation of the area, with one of the few accounts from Simmons (2006) mentioning that Kihikihi was previously known as Rata-tu, and there was a pā constructed near the junction of Rolleston and Herbert Streets. No evidence of this pā has ever been noted, and it is not known where this information came from. Rata-tu appears to have been a major settlement, and by the time the first Europeans were arriving in the area (namely missionaries from the Church Missionary Society) in the 1840s, the area was a thriving farming community with fruit trees, potato and wheat growing. The majority of Māori settlement appeared to be along the ridge which Lyon Street (SH3) runs along, from Rata-tu hill which the Kihikihi Redoubt was built on (S15/235) to the current site of St Andrews Presbyterian church where the whare rūnanga was located (Burchell 1964).

Waikato wars

The Waikato Wars reached Kihikihi in 1864, when government troops attacked the pā at Rangiaowhia on 21 February, less than 3 km northwest of the town. Fighting was swift, and in the end 12 Māori were killed, along with five government soldiers. Two days later, on 23 February 1864, government troops marched on Kihikihi which had recently been abandoned by Ngāti Maniapoto who had retreated across the Pūniu River. The town was looted, and buildings including the whare rūnanga were destroyed. The government troops then built a redoubt on the highest point, Rata-tu Hill, and immediately began surveying out the town. It was separated

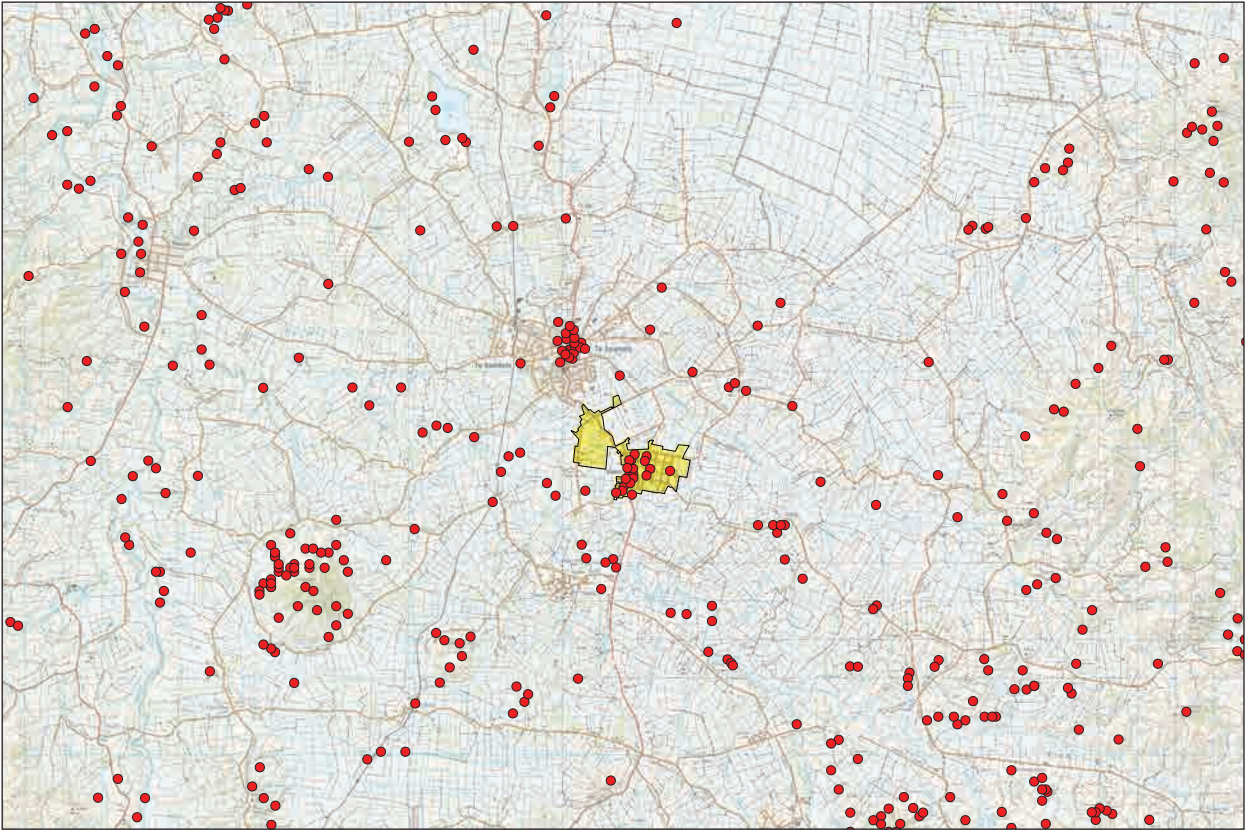


Figure 1. Location of the Kihikihi UFB build area, showing archaeological sites recorded in the area.

into 400 one acre blocks for the resettlement of soldiers. This was the first military town surveyed in the Waikato.

On 31 March 1864, Kihikihi was used as a staging post for the attack on Ōrākau Pā, a partially constructed position 4 km to the east. This battle lasted three days, which ended with a Māori retreat across the Pūniu River. This was the last battle of the Waikato Wars.

Post war

The town remained a military post after hostilities settled down and the redoubt was occupied by the armed constabulary, with the headquarters centred around the stockade reserve in the centre of town. The numbers of troops fluctuated, with up to 33 stationed there at any time undertaking maintenance of the stockade and redoubt. The constabulary were removed and sent to Auckland in 1884 in a response to the probable war with Russia. This war never eventuated, and as tensions had settled down across the country the armed constabulary was disbanded in 1886. The property and structures owned by them in Kihikihi were handed over to the Police Department. By this time, the town consisted of at least two hotels, two blacksmiths, two pit-saw mills, a coach factory and a bakery (Burchell 1964).

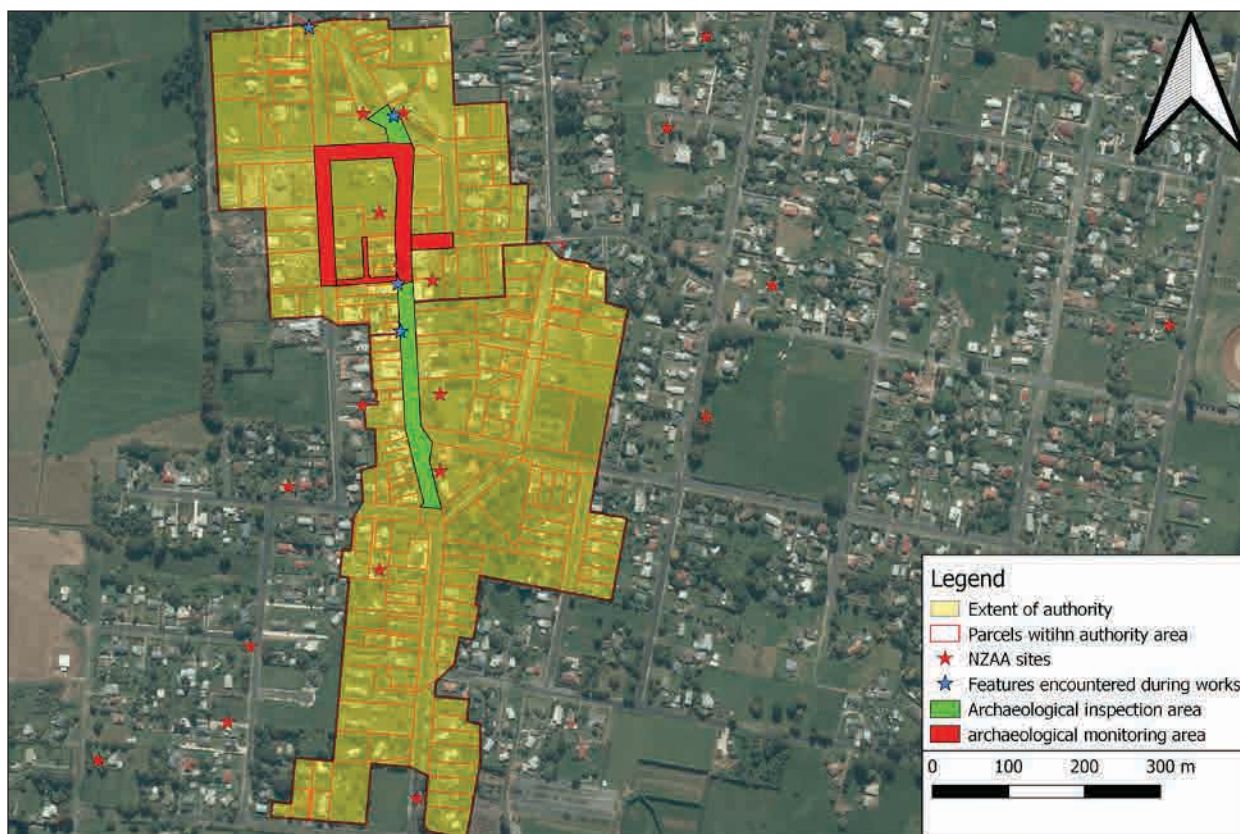


Figure 2. Map of Kihikihi build showing cabinets subject to authority and recorded sites within the build.

Previous archaeological investigation

There have been three previous archaeological investigations in Kihikihi, and what appears to be many illegal excavations by fossickers. The disturbance to the sites throughout Kihikihi by these fossickers is not known, and it can be assumed that they would have a good idea of where areas of archaeological interest would be located.

Brent Druskovich took advantage of this local knowledge and had a fossicker identify likely sites of archaeological interest for monitoring of the installation of wastewater pipes throughout Kihikihi in 2005 and 2006. Multiple historic rubbish pits were identified during this work, but these appeared to mainly be within property boundaries. There was no evidence found of the Māori settlement within the scope of works, but it should be noted that none of the works along the ridge on Lyon Street where the Māori settlement was located were monitored (Druskovich 2007).

Alexy Simmons monitored the installation of a water reservoir within the stockade reserve (S15/236), where the probable location of the Armed Constabulary Blockhouse was located. It was noted when trenching the location for the water reservoir that the area had been extensively modified when the previous reservoir was installed. Several 19th century fragments of ceramics and glass were encountered during the works, which are thought to relate to Major Minnett's residence which was located on the hill during the Armed Constabulary occupation (Simmons 2006).

Andrew Hoffmann monitored the topsoil stripping of two properties on Leslie Street which once made up the back yard of the Star Hotel (S15/398) under NZHPT authority 2008/210. Druskovich (2007) had previously come across rubbish pits in the vicinity of the properties, and the area had been reported by a local fossicker as a location of pre-1900 bottles, presumably related to the hotel. After topsoil stripping it was noted that the area had been heavily modified in the past and no archaeological material was identified (Hoffmann 2010).

Although only a few archaeological investigations have been undertaken within the town, it is clear that there is an abundance of evidence of historic settlement. No archaeological material related to the Māori occupation in Kihikihi has been identified to date, but this is likely a result of archaeological methodology. Much of the archaeological knowledge in Kihikihi has been based on the identification of areas of interest to historic bottle fossickers, so any sub-surface deposits not containing bottles have likely been ignored or not identified.

Methodology

During the initial assessment (Cruickshank 2018), a desktop study was undertaken to identify areas within the build where archaeological sites would potentially be impacted during works. This was not a full assessment of all sites within Kihikihi or its surrounds. The assessment and evaluation for the archaeological sites was based on the current information and supporting documentation in Archsite, the online database of the New Zealand Archaeological Association (NZAA) Site Recording Scheme (SRS) as accessed on 25 August 2018 (Cruickshank 2018).

As a result of the desktop evaluation, two sites, Kihikihi Redoubt S15/235 and the Alpha Hotel S15/394, were identified as having the potential of being affected by works. Because both of these sites were historic sites with relatively well understood extents, monitoring buffers were able to be established for both sites (Figure 2). In addition to these two recorded sites, research indicated that the Māori settlement of Kihikihi which was looted and razed to the ground by government troops in 1864 was along the ridgeline where Lyon Street is currently located. This area was identified as an area requiring archaeological inspection to see if any evidence of this settlement remained.

Construction Methodology

Installation of the ultrafast fibre network consisted primarily of directional drilling to minimise ground disturbance. These consisted of insertion and receiving pits which were generally 1.2 x 1.2 m, with varying depths, generally around 1 m. These pits also housed the underground cabinets which centralised the connections for a neighbourhood. Although drill shots were capable of being in excess of 200 m long, they were generally at distances of 40 m to allow for individual house connections. In addition to the drill pits, a number of 'potholes' were required to physically and visually identify the location and depth of services prior to a drill shot being made. Because of the inherent risk of sub-surface drilling near existing services, the drill shots were often made next to existing service trenches to allow for accepted minimum distances from high voltage cables and other potentially hazardous services. It cannot be assumed that the areas where the fibre is being installed have been previously disturbed. Drill shots were generally run 600–900 mm beneath the ground surface and have the potential to run through sub-surface archaeological features such as pre-European Māori storage pits and fire scoops as well as historic period features.



Figure 3. Leslie Street showing lateral potholes to expose existing services prior to a drill shot.

The level of ground disturbance associated with this project depended on the complexity of services in a particular street and cannot be seen as consistent over the build but is still less than traditional trenching methods for installation of services.

Due to this type of ground disturbance, assessing the archaeological effects and interpreting features and the landscape is not as straight forward as typical archaeological monitoring projects. Trenching would traditionally be used for installation projects of this magnitude which would allow an archaeologist to view soil profiles over a significant length and identify subtle landscape modifications that would indicate human activity. Similarly, large scale topsoil stripping such as with housing developments provide an archaeologist with a complete knowledge of the sub-surface archaeological deposits within the project extent.

The drawback of those methods of extensive earthworks is that any archaeological features that are within it are significantly modified. The purpose of the Heritage New Zealand Pouhere Taonga Act 2014 is "...the identification, protection, preservation and conservation of the historical and cultural heritage of New Zealand", with avoidance and minimisation of damage the preferred approaches for archaeological landscapes. With this in mind, the approach for these projects is to manage the archaeological landscape and the effects on it, rather than to create a robust record of all archaeological sites within a build.

Archaeological monitoring and investigation procedures were developed to ensure disturbance to both archaeological features and council assets was minimised.

1. If archaeological features are discovered during works, the archaeologist will not extend the hole beyond its intended size. This was a two-fold limitation, as this would increase the modification of the feature, and has the potential of destabilisation of the road and

other infrastructure. The only exception to this would be if kōiwi were encountered, which would be dealt with upon discussion with mana whenua, the New Zealand Police, Heritage New Zealand and Waipā District Council.

2. Where archaeological features are discovered, drilling will be done at a depth of 1200 mm, or a suitable depth determined by the archaeologist as likely to avoid archaeological features.

The results of this project should not be seen as an exhaustive list of archaeological sites that exist within the road reserves around Kihikihi, or even a representative sample; but rather an exercise in minimising potential effects on the archaeological landscape of Kihikihi.

Monitoring results

Works within the monitoring buffers identified in Figure 2 were monitored by Arden Cruickshank of CFG Heritage Ltd. On call procedures were triggered on 8 March, 29 March and 8 April which were inspected by Arden Cruickshank of CFG Heritage Ltd. The two monitored archaeological sites and On Call Procedure locations are discussed separately below:

S15/235 Kihikihi Redoubt

The extents along Leslie Street, Havelock Street and Lyon Street around the redoubt were monitored by Arden Cruickshank of CFG Heritage Ltd from 11–13 March 2019. It was noted that within the road cuttings of Lyon and Leslie street the ground surface had been cut down considerably and the visible profile consisted of a sterile allophanic tephric soil, with a built up metaled road surface overlain with a redeposited mix of topsoil and loam. It is likely that this mixed layer on top of the metaled road surface was deposited when the road was sealed in the 1960s.

The section of Havelock Street which cuts over the top of Rata-tu hill has also been cut down but does not appear to have had as much modification to the surface as the surrounding streets. This portion of works showed a 20 mm topsoil straight onto the sterile allophanic tephra.

No evidence of the redoubt was visible or encountered during these works. The main portion of the redoubt is on private land and was not accessed during these works. It is likely that the road cuts for Lyon and Leslie Streets have damaged the redoubt, but it is still likely that some sub-surface evidence is within the paddock south of Havelock Street.

S15/394 Alpha Hotel

Works in the vicinity of the Alpha Hotel were monitored between 27–29 March 2019. A decommissioned drain was encountered in the road reserve along Lyon Road, 700 mm beneath the surface.

The drain consisted of a 540 x 350 mm iron grate consisting of twelve 19 mm square bars bolted to a surrounding frame built into a brick-lined sump. This drain was orientated due north, and not in alignment with the current road (Figure 6). Due to the corroded nature of the grate and the bricks being concreted in, no samples or makers marks were able to be identified, so no indicative date is able to be obtained for the construction of the drain. It is likely that the drain pre-dates the road realignment in the 1930s, where the informal road through the redoubt reserve was formalised, and the reverse curve by the Alpha Hotel was removed (Figure 7).



Figure 4. Pothole on Leslie Street showing metal road beneath current street surface. Photo scale = 0.5 m.



Figure 5. Pothole on top of S15/235 showing thin topsoil onto loam. Photo scales = 0.5 m.



Figure 6. Decommissioned drain outside the Alpha Hotel. Photo scales = 0.5 and 1 m.



Figure 7. Previous route of the road prior to 1930s realignment.

S15/782 (Feature 1)

A rubbish pit was encountered in two potholes on the corner of Lyon and Leslie Streets on 8 March 2019. It was encountered 150 mm beneath the ground surface below topsoil and consisted of a mix of steel, glass and ceramic artefacts, within a clean fill matrix. The insertion holes were not extended to capture the full extent of the rubbish pit but probing indicated that it measures approximately 3 x 2 m, with a depth of 700 mm. This rubbish pit was subsequently recorded as site S15/782 in the SRS, and the artefacts retained from this rubbish pit are discussed below in the analysis section.

S15/783 (Features 3 and 4)

Some bone fragments (Feature 3) and a rubbish pit (feature 4) were identified during works along Lyon Street through the main shopping area. These holes were suspended and covered off as per the archaeological works plan pending archaeological investigation.

Feature 3 represented six cattle bone fragments outside 42 Lyon Street. They were not articulated and appeared to be within an infilled swale. The bones were identified as not being human and were excavated. This portion of the street has been heavily built up and is covered with cobblestones, so it is not possible to identify if any bone or associated artefacts are in the vicinity. Due to the nature of this deposit, it is not possible to determine any estimates on the timing of deposition. This feature has not been recorded in the SRS.



Figure 8. View east of two potholes where Feature 1 was exposed.



Figure 9. Feature 3 where bone was exposed, with cut of swale to the right of scale. Photo scales = 0.5 m.



Figure 10. View south of corner of Feature 4 where it was exposed in the pit. Photo scales = 0.5 m.

Feature 4 represented a rubbish pit, located outside 34 Lyon Street, near the Town Hall. The pit was only partially excavated and had an indicative depth of 400 mm, with the other dimensions not able to be identified. The pit was capped with a 100 mm of clean loam, followed by 200 mm layer of basecourse and sand underneath the cobblestone street. The pit contained a dark clean fill with sparse stoneware and glass artefacts. It was subsequently recorded as site S15/783 in the SRS and the artefacts exposed in the pit were retained for further analysis which is described below.

Analysis

S15/782 (Feature 1)

There were 16 artefacts recovered from this feature. Six of these were ceramics, consisting of fragments of a small plate (Figure 10c), a teacup (Figure 10a), a saucer (Figure 10b), a small bowl (Figure 10d) and an ink bottle. The teacup and saucer featured unidentified green transfer patterns, with the plate and small bowl featuring blue edge banding. These patterns are consistent with late 19th century tableware.



Figure 11. Ceramic artefacts from S15/782: a, b green transferware teacup and saucer; c, blue edgeband plate; d, blue edgeband bowl.

There were six glass artefacts obtained from this feature. This consisted of two cobalt blue bottles (Figure 11a), two champagne bottles (Figure 11b), a vase or bowl fragment (Figure 13a) and a sauce bottle (Figure 13b). The two champagne style bottles were dip moulded with handblown shoulders and necks and hand applied finishes. The two tall long-necked cobalt blue bottles are very similar despite some differences in the finishes and colour of the glass. One of them is basemarked K / 2 / 5127. There are two American manufacturers who used just the letter K followed by numbers, the Kearns Glass Companies and the Knox Glass Bottle Co. The Kearns bottles marked with a K are dated 1860 to 1890 (Lockhart et al 2017). Knox is probably the more likely manufacturer given they are well known for their pharmaceutical bottles with K + number base marks and K / 2 was a common one. They date from 1917 to the 1920s (Lockhart et al. 2017).

The remaining artefacts were a metal matchbox, a food can and two pieces of leather. The pieces of leather were an offcut of soft leather, and a portion of the sole of a shoe. No distinguishing features or makers marks were on the metal or leather items, so no further analysis is possible.

S15/783 (Feature 4)

There were five artefacts obtained from this feature, three of which were ink bottles, and two which were alcohol bottles.

The ink bottles consisted of one, 'penny ink' style stoneware bottle (Figure 14a), and two octagonal glass bottles (Figure 14b). The round 'penny ink' style of the stoneware type were available throughout the 19th century and into the early 20th century and are common in domestic settings. The octagonal ink bottles feature a 'sheared lip', a crude finishing style common in English utilitarian bottle production from the late 19th century into the early 20th century. Similar style bottles were found by Druskovich (2007) in Kihikihi, which were dated to the early 20th century.

The wine/congnac bottle was made in a two-piece mould, as was the black beer bottle (Figure 14c), although that had a clear seam around the domed base indicating a two-piece cup bottom mould was used. This bottle had a hint of text and then a legible "...S & Co" on the kickup. Black beer bottles are thought to date between the 1850s and 1870s (Tasker 1989).

Discussion and conclusion

During the Kihikihi build two in situ rubbish pits were encountered. Works in the vicinity of S15/235 and S15/394 were subject to archaeological monitoring and inspection but failed to turn up any definitive pre-1900 artefacts related to these sites. Although the number of artefacts collected from this build were relatively low compared to those encountered by Druskovich in 2007, the material is similar, and adds to the knowledge of historic settlement in Kihikihi.

The artefacts retrieved from S15/782 and S15/783 did not contain any clear makers marks or stylistic markers to provide an indicative date for when the material was deposited, as generally the artefacts identified in these two assemblages were manufactured both in the 19th and early 20th centuries. Because no exclusively 20th century artefacts could be identified from these features, they were recorded into the NZAA SRS to help guide future works in Kihikihi.

Like Druskovich (2007) and Hoffmann (2010), this project failed to encounter any evidence of the original pre-European Māori settlement of Kihikihi. Archaeological features dating



Figure 12. Glass artefacts from S15/782: a, cobalt blue bottle; b, champagne style bottles.



Figure 13. Glass artefacts from S15/782: a, sauce bottle; b, vase or bowl base.



Figure 14. Artefacts from S15/783: a, stoneware ink bottle; b, two octagonal glass ink bottles; c, base of a black beer bottle with "...S & Co" on the kickup.

to the early European settlement of Kihikihi have been found in situ, so it is unlikely that development in the past 150 years would have completely obliterated any evidence of pre-European Māori settlement. It is probable that some evidence still exists within the ridge extending south from Rata-tu, but the lack of monitoring during the wastewater works (Druskovich 2007) along this ridge may have led to the more subtle pre-European Māori features being missed by the contractors.

The lower number of sites encountered compared to Druskovich (2007) is a result of the significantly lower area of ground disturbance required for directional drilling over open trenching. This has been observed in other towns which have had both fibre and open trenching undertaken in recent years (Cruickshank 2020; Cruickshank and Ussher 2020). As stated in the construction methodology section of this report, the results of this project should not be seen as an exhaustive list of archaeological sites that exist in the road reserves around Kihikihi, or even a representative sample, but rather an exercise in minimising potential effects on the archaeological landscape of Kihikihi.

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