Introduction

Zane Grey Resort Ltd intends to establish a new area of effluent disposal in the Otehei Bay catchment on Urupukapuka Island in the south–east Bay of Islands. Northern Archaeological Research was commissioned by the new owner, L Viskovich, of Dewdrop Properties Ltd to undertake an archaeological survey and assessment of the areas proposed for effluent disposal. The survey was undertaken in order to advise the client of any archaeological sites that may exist within the areas affected by the proposed development and outline their obligations under the Historic Places Act, 1993, in respect of any reported sites. Leigh Johnson and Elisabeth Callaghan undertook this evaluation on the 23rd of April 2006. This report outlines the results.

The survey of the affected area of the Otehei Bay catchment was conducted specifically to locate and record archaeological remains. The survey and report do not necessarily include the location or the assessment of wahi-tapu or sites of spiritual and cultural significance to the local Maori community who have been approached independently for any information or concerns they may have.

Location

The proposed effluent disposal areas occur in the Otehei Bay catchment and are associated with the Zane Grey Resort situated on the beach flat in Otehei Bay on Urupukapuka Island (Figures 1 & 2, Plate 1). Proposed effluent disposal Areas 1, 2 and 3 occur within the Zane Grey Resort Lease area in the bay. Areas 1 and 2 occur on the beach flat and Area 3 occurs on the hill slope directly above and to the west of the resort. Area 4 occurs in the upper section of the north-west arm of the catchment and Area 5 occurs on the hill slope directly above and to the north east of the resort. Area 5 encloses the existing, small, operating, effluent irrigation field. With the exception

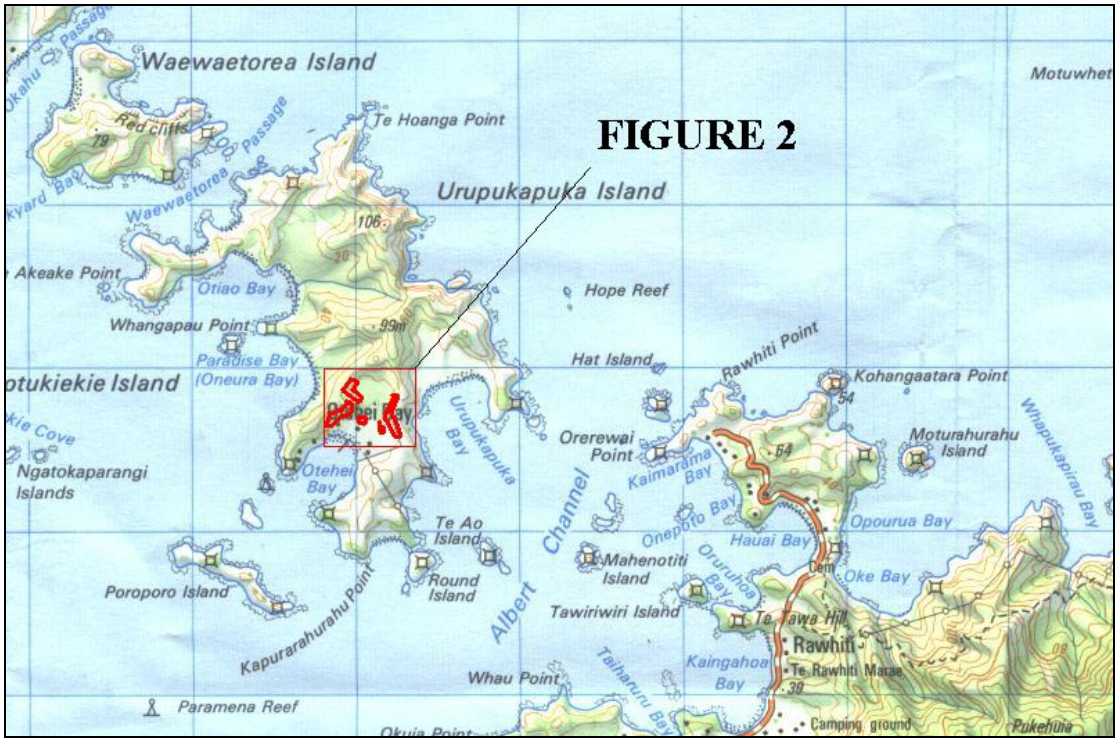

FIGURE 1. THE LOCATION OF THE PROPOSED EFFLUENT DISPOSAL AREAS IN OTEHEI BAY, URUPUKAPUKA IS, BAY OF ISLANDS (Q05).

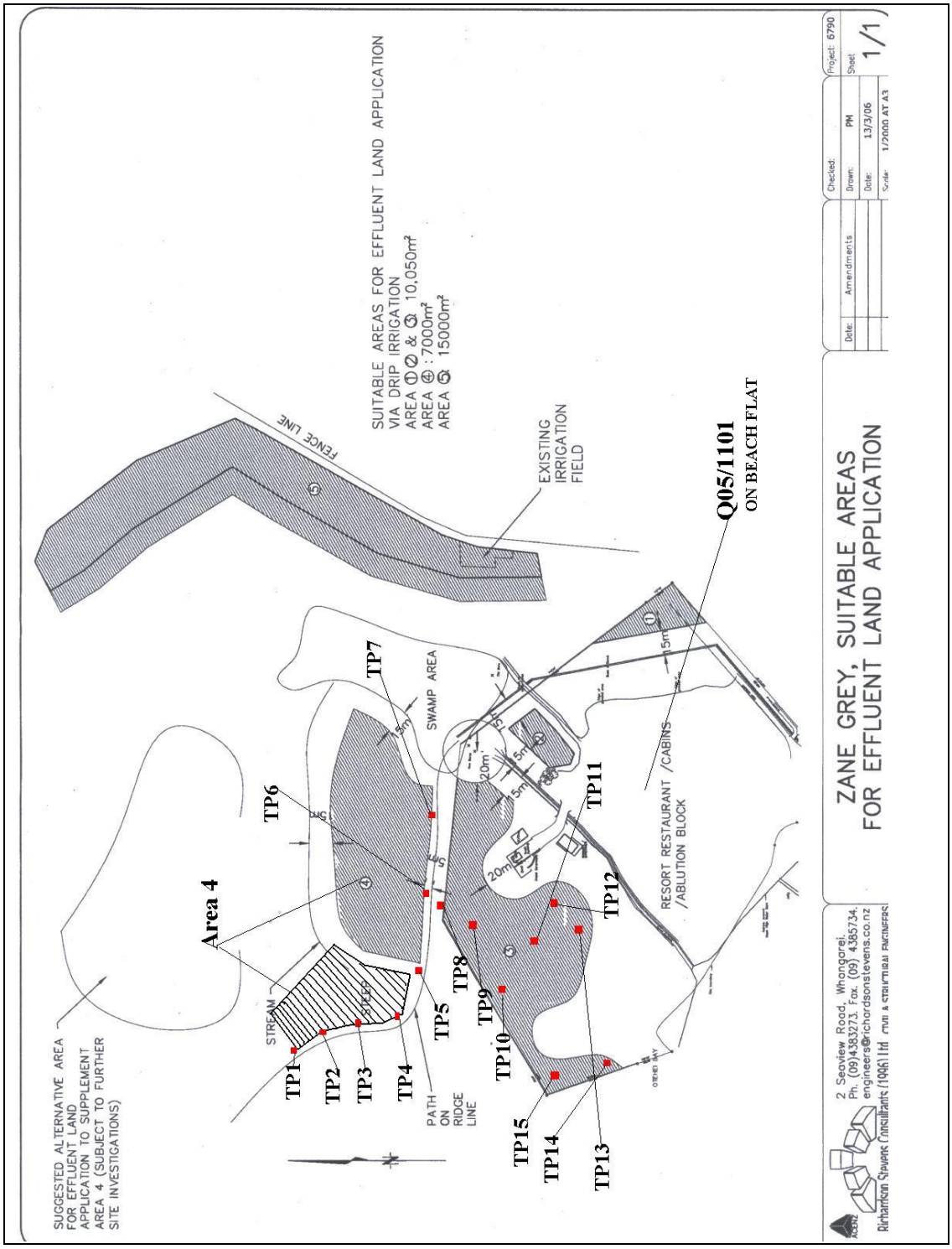

FIGURE 2. THE LOCATIONS OF THE FIVE PROPOSED EFFLUENT DISPOSAL AREAS, TEST PITS AND ARCHAEOLOGICAL SITE Q05/1101.

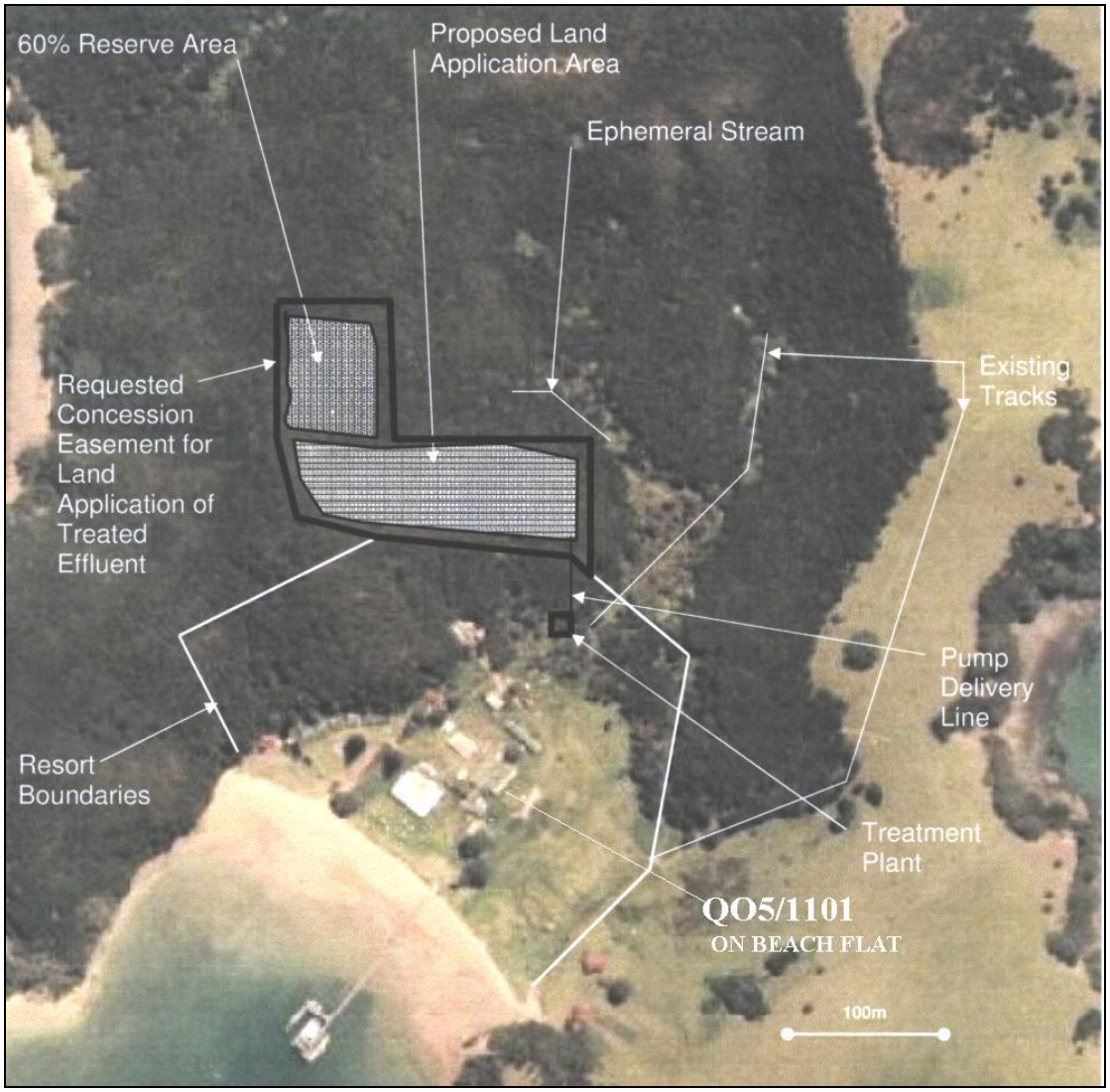

PLATE 1. THE LOCATION OF THE PREFERRED AREA 4 EFFLUENT DISPOSAL AREA.

of the grassed Areas 1 and 2 on the beach flat, all other areas occur under regenerating manuka on the steep hill sides in the catchment, formerly open pasture. The relatively ancient local geology is dominated by Waipapa group greywackes and argillites dating to the Paleozoic era (Kear D. and R. F. Hay 1961). The soils are predominantly brown clay loams, or sandy clay loams.

Proposal

The owners intend to continue with an existing proposal to redevelop parts of the Zane Grey Resort that will require a safe, long term and suitable effluent disposal system. It is also understood that the existing small irrigation field to the north-east of the flat is at or beyond capacity. To this end, it is proposed to establish a new effluent disposal field within the overall catchment that encloses the resort and a small part of the island administered by the Department of Conservation. The Zane Grey Resort Ltd preferred option is Area 4, situated in the upper section of the north-west arm of the catchment on the adjacent DoC administered reserve (Plate 1). The other options, Areas 1-3 and 5 are also being considered in an attempt to develop a solution to the disposal problem (Figure 2).

The method of effluent disposal proposed (for preferred Area 4) is surface drip line land application. This will involve the laying of comparatively small diameter black alkathene water line as the pump delivery line from the treatment plant at the back of the beach flat to the disposal field. Within the disposal field, a main line will be laid along elevated upper section with feeder lines extending down hill at relatively close intervals. From this, an intense series of lateral drip lines will extend horizontally across the slopes discharging the treated effluent to ground. All components will either be laid directly on the ground surface, pinned in place, or will be grubbed in immediately below the ground surface. The same system of disposal would be established at any of the other areas if selected.

Survey method

Background research into the areas of the Otehei Bay catchment on Urupukapuka Island in the south-east Bay of Islands, included an assessment of late 19th and 20th century land plans held by Land Information New Zealand, Auckland. A review of regional historical and archaeological publications was also undertaken.

Areas 1, 2 and 5 have previously been assessed as part of the earlier development proposal (Bruce 2003, 2004a, 2004b). Notwithstanding, Areas 1and 2 were re-visited as was part of Area 5. Areas 3 and 4 had not been previously assessed and were covered in detail during this assessment. These areas and exposed profiles were assessed on foot and, where the disposal field approached areas on the ridges where archaeological remains could be anticipated, a series of test pits were dug to review the possibility of subsurface archaeological evidence. Generally, Areas 3 and 4 and 5 were covered in dense, regenerating coastal scrub and understory significantly obscuring the ground surface. Areas 1 and 2 were largely open or under older trees revealing comparatively good survey conditions.

Archaeological background

The archaeological and historical background to the area has been covered in three earlier reports (Bruce 2003, 2004a, 2004b) and is reproduced here from the last report prepared in 2004b for the purposes of context.

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A number of archaeological surveys have been undertaken both on the area of the Zane Grey resort at Otehei Bay in particular and on Urupukapuka Island as a whole since the Department of Lands and Survey acquired the island in 1969. The earliest survey was completed in 1976 by Leahy and Walsh, as part of a wider survey of the Bay of Islands area and again by Roundtree in 1983.

The Otehei Bay area became part of further archaeological inquiry as a result of the proposed development for a large scale resort by the Otehei Bay Company Ltd. As a result of a brief assessment of the Otehei Bay area by Leigh Johnson (1988) three further sites were recorded in the Bay in addition to the single set of prehistoric drains originally found by Leahy and Walsh. Due to the number and range of archaeological sites located in Otehei Bay and their importance as part of the wider context of belonging to a more or less intact set of archaeological sites on Urupukapuka Island, the development was opposed by the Department of Conservation who inherited the management of the island from the Department of Lands and Survey in 1987. It was the opinion of the Department of Conservation that the most significant aspect of the islands archaeology was that "the sites themselves occur within a clearly circumscribed island context. The sites do not merely represent a random sample but a complete system and microcosm of New Zealand's prehistory" (Johnson 1988). However, further development on the lease areas was not completely blocked. It was considered acceptable by the Department of Conservation to develop areas within the lease where archaeological features had already been disturbed (Bulmer 1988). It seems that the objection to the original resort planned by the Otehei Bay

Company Ltd was based on the scale of the venture and the resultant number of visitors rather than simply opposition to the situation of a resort on the island.

As a result of these surveys 66 archaeological sites have been recorded on the island including 8 pa sites; 42 terrace and pit clusters; and 5 pit clusters. Coastal midden has been recorded, as were 7 garden systems. The Department of Conservation have inherited and upgraded an archaeological interpretative trail on the island, incorporating 14 of the most significant archaeological sites with the aim of providing information and education about prehistoric Maori behaviour and prehistory in general to the general public. The area of Otehei Bay itself has four archaeological sites. A habitation terrace (Q05/1100) has been recorded in the east south eastern corner of the beach flats, where there is also a field system of Maori drainage ditches (Q05/41). There is reasonable cause to believe that the agricultural field system once extended into the area of the development (Johnson 1988). A midden that was originally recorded eroding out of a drainage channel cut near the jetty (Q05/1101) has since been encountered all along the foreshore and the beach flat (Q05/1102). The swamp behind the resort has been recorded as having a high likelihood of containing wooden artefacts based on similarities with other artefact bearing swamps on the island.

More recently there have been further archaeological investigations undertaken in the vicinity of the Zane Grey resort, as a result of requirements imposed by the Historic Places Trust in relation to building construction and landscaping on the resort. An authority to modify the archaeological midden site Q05/1101 (Authority No. 1995/32) was issued to Fullers Northland and Te Rawhiti 3B2 Trust, authorising the conditional modification of the aforementioned site. The site was investigated by Joan Maingay and James Robinson, who recovered a thin layer of broken cockle midden in a charcoal stained peaty matrix as well as a few flakes of obsidian (Maingay J 2003:Pers Com). A report is pending on this investigation (Bruce 2004b).

More recently again there have been three field and/or desk reviews of proposals to upgrade the Zane Grey Resort by Northern Archaeological Research (see Bruce 2003, 2004a, 2004b). These document the widespread, but diffuse evidence of former pre contact Maori settlement recorded as Q05/1101, across the beach flat at Otehei Bay (Figure 2, Plate 1).

Survey results

Area 1

Archaeological remains associated with site Q05/1101, previously reported by Bruce (2003, 2004a 2004b) as a pre-contact Maori beach flat wide variable scatter of cockle and pipi shell midden, charcoal and fractured cooking stone with more concentrated midden and evidence of settlement including burials along the edge of the foreshore is visible in the sides of a drain cut adjacent to the west side of Area 1. The sparse and somewhat diffuse midden exposed in the drain at the back of the beach flat will extend into and across the area proposed for disposal.

Area 2

As with Area 1, archaeological remains associated with site Q05/1101, previously reported as a beach flat wide variable scatter of cockle and pipi shell midden, charcoal and fractured cooking stone occurs across the site of proposed Area 2. This can be seen in the test pits (TP 13-15) by Bruce (2004). Again this diffuse and variable midden layer will extend across the area proposed for disposal.

Area 3

This area was accessed both from the subsidiary ridge on the north side and from the walking track in the west corner of Otehei Bay. Much of the area proposed for

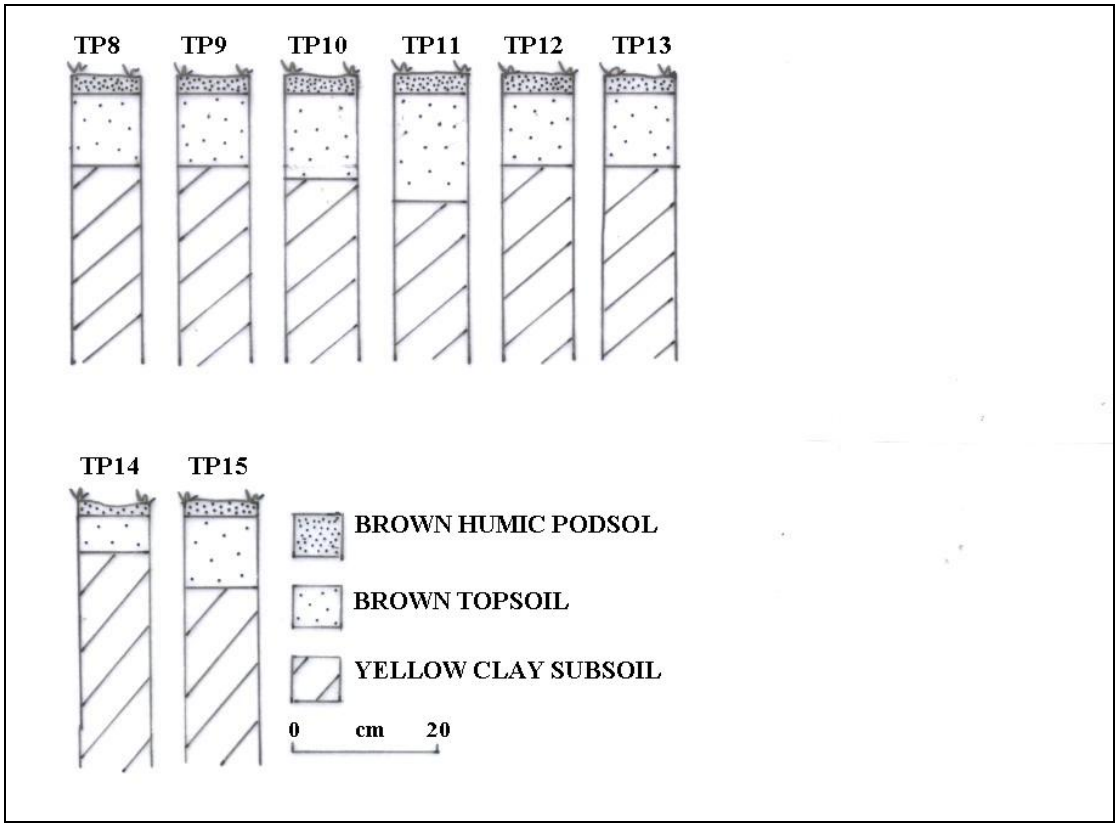

FIGURE 3. THE TEST PIT PROFILES FROM PROPOSED AREA 3.

disposal was traversed and consisted of close and small regenerating tea tree with associated scrub making detailed surface assessment of the entire area almost impossible. All areas in the proposed disposal area where pre or post contact Maori settlement could reasonably be anticipated, such as the slight ridges and edge of the escarpment overlooking the Otehei beach flat were covered in detail. No archaeological remains were identified on the surface in any part of the proposed disposal area. To test for subsurface archaeological remains in the area a series of six test pits, TP 8-13, were dug in select areas (Figure 2). These all revealed a thin, 2-5cm deep layer of tea tree humus overlying a brown topsoil ranging between 10-15 cm in depth in turn overlying a sterile yellow clay subsoil (Figure 3). There were no archaeological remains evident at any point in the six test pits. As a result of the subsurface assessment and the comparatively steep slope of the proposed disposal area, it appears there is only a very low probability for archaeological remains in this area.

Area 4

Initially, this area was accessed via a walking track up the ridge from Otehei Bay onto the main ridge separating the Otehei catchment from that to the west. The main ridge immediately above and to the west, just outside the area of proposed effluent disposal, was in places, broad and with the occasional knoll. The ridge and knolls were areas where pre and post contact Maori settlement could reasonably be anticipated. There were no obvious signs of former settlement but the ridge appeared broad so as to provide areas for settlement without leaving obvious trace. To test whether the upper

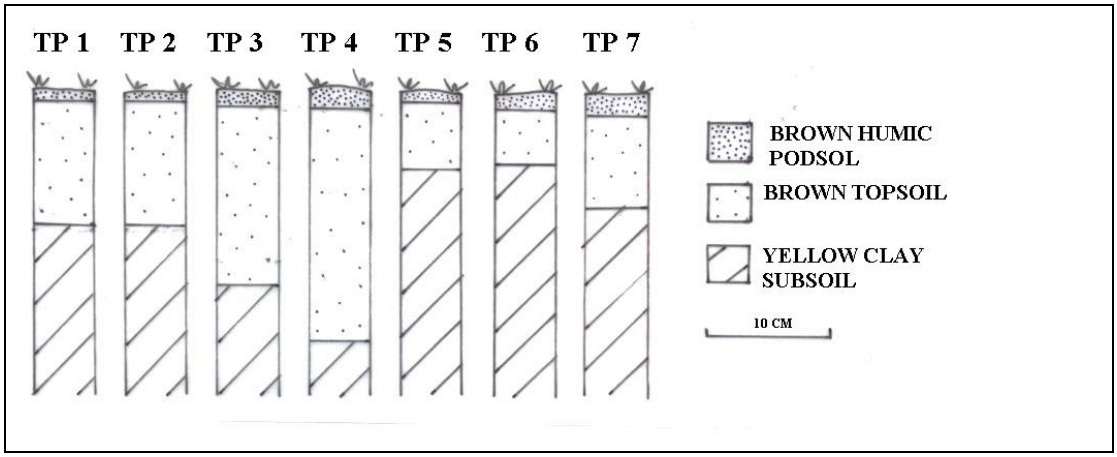

FIGURE 4, THE TEST PIT PROFILES FROM PROPOSED AREA 4.

edge of the disposal area could affect subsurface archaeological remains disposed just off the ridge such as shell midden, a series of 7 test pits, TP 1-7, were dug along the east margin of the ridge and knolls (Figure 2). These all revealed a thin, 2-5cm deep layer of tea tree humus overlying a brown topsoil ranging between 10-40cm in depth in turn overlying a sterile yellow clay subsoil (Figure 4). There were no archaeological remains evident at any point in the seven test pits. As a result of the subsurface assessment and the comparatively steep slope of the proposed disposal area (Plates 2 & 3), it appears there is only a very low probability for archaeological remains in this area.

Area 5

No archaeological remains were identified on the surface of the steep slopes in Area 5 previously by Bruce (2004:14) and no surface remains were seen during this evaluation. As with Areas 3 and 4, in our opinion there is only a very low probability for archaeological remains in this area.

Treatment Plant and pump delivery line

As outlined by NAR in 2004 (Bruce 2204: 13-14), no archaeological remains occur in the area of the proposed new Treatment Plant. No archaeological remains will be affected by the establishment of the pump delivery line to Areas 3 and 4 and 5. However, archaeological remains associated with site, Q05/1101, could be affected by the delivery line to Areas 1 and 2 if grubbed below ground surface.

Archaeological significance

Of the preferred options in descending order, Area 4, Area 3 and Area 5 all occur on the steep slopes of the Otehei catchment, have no recorded archaeological sites, occur in areas where archaeological sites are unlikely and are areas that are likely to have no archaeological value or significance.

Areas 1 and 2 both occur on the beach flat and will cover areas of the diffuse beach flat midden site Q05/1101. This midden is exposed in the drain adjacent to both areas and consists of a 20-40 cm deep layer of sparse pipi and cockle shell mixed with sparse pieces of heat fractured rock and charcoal under a layer of brown sandy topsoil.

PLATE 2. PROPOSED DISPOSAL AREA 4 FROM THE OPPOSITE EAST SIDE OF THE OTEHEI BAY CATCHMENT.

PLATE 3. THE GROUND COVER IN PROPOSED DISPOSAL AREA 4.

The sparse midden occurred overlying a light brown sandy clay subsoil. In contrast to the more important component of the site exposed on the foreshore of Otehei Bay (see Bruce 2003. 2004a, 2004b) this part of the site Q05/1101, possibly disturbed by subsequent cultivation and in poor condition, appeared only as the rear section of an extensive settlement on the beach flat.

Assessment of effects

The owners should be aware that Part 1, Section 10a of the Historic Places Act, 1993, states that it is not lawful for any person to destroy, damage or modify, or cause to be destroyed, damaged or modified, the whole or any part of any archaeological site, knowing or having any reasonable cause to suspect it is an archaeological site. These sites can only be modified with the written permission of the New Zealand Historic Places Trust (NZHPT). Specific penalties for damage or destruction of archaeological remains can be imposed.

Of the five suitable areas for effluent land application only Areas 1 and 2 occur where archaeological remains have been recorded. As a result, if any of Areas 3-5 are selected as the final option for effluent disposal, then the disposal apparatus, along with the new Treatment Plant and delivery lines, can be established without further reference to the archaeological provisions of the Historic Places Act. However, in the unlikely event that archaeological remains are uncovered during earthworks of any nature in any of these areas, all work affecting such remains should cease immediately and Northern Archaeological Research and/or the New Zealand Historic Places Trust should be notified so that appropriate action can betaken.

It should be noted that it is possible that subsurface archaeological remains exist at points along the upper main ridge immediately outside the upper west boundary of Area 4. Care should be taken to lay the upper section of the disposal network 5-10m below and to the east of the ridge.

In relation to Areas 1 and 2, if either are selected for effluent disposal, the establishment of any components below ground surface and affecting remains associated with site Q05/1101, will require the written authority of the New Zealand Historic Places Trust to implement both delivery and disposal systems. Given the somewhat scattered and diffuse nature of the archaeological remains themselves and the likely limited nature that the proposal will have on them, we advise the Trust to grant such authority on the condition that earthworks associated with the disposal in either of these areas are monitored by a qualified archaeologist to record any remains exposed.

Conclusion

Northern Archaeological Research were commissioned by Zane Grey Resort Ltd to undertake an archaeological survey of proposed areas for new effluent disposal in the Otehei Bay catchment. As a result of the survey no new archaeological sites were found and only parts of the previously recorded site, Q05/1101, were identified on the beach flat. A New Zealand Archaeological Association Site Record Form is appendicised. The establishment of ground application systems in Areas 3, 4 and 5 will not affect archaeological remains while those in Areas 1 and 2 could if established at depth. Recommendations are made in relation to the owners legal

obligations under the archaeological provisions of the Historic Places Act, 1993 for the specified areas.

References

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Recommendations

1. If either Areas 3-5 are selected as the final option for effluent disposal at Otehei Bay, then the disposal apparatus, along with the new Treatment Plant and delivery lines, can be established without further reference to the archaeological provisions of the Historic Places Act.

2. It should be noted that it is possible that subsurface archaeological remains exist at points along the upper main ridge immediately outside the upper west boundary of Area 4. Care should be taken to lay the upper section of the disposal network 5-10m below and to the east of the ridge to avoid potential archaeological remains in this area.

3. If either Areas 1 and 2 are selected for effluent disposal, the establishment of any components below ground surface and affecting remains associated with site Q05/1101, will require the written authority of the New Zealand Historic Places Trust to implement both delivery and disposal systems. Given the somewhat scattered and diffuse nature of the archaeological remains themselves and the likely limited nature that the proposal will have on them, we advise the Trust to grant such authority on the condition that earthworks associated with the disposal in either of these areas are monitored by a qualified archaeologist to record any remains exposed.

4. In the unlikely event that archaeological remains are uncovered during earthworks of any nature in any of the above areas, all work affecting such remains should cease immediately and Northern Archaeological Research should be notified so that appropriate action can betaken.