Archaeological Review of

Mill Road Manufacturing Zone, Whanganui,

for Whanganui District Council

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February 2020

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Front figure: Looking north along a Mosston Dune in Area 2.

1.0 Introduction

This report provides an initial review of the potential risk for archaeological sites to be located in the Mill Road Manufacturing Zone greenfield area, Mosston, Whanganui (Fig. 1). The report has been commissioned by the Whanganui District Council (WDC) and contributes to an on-going, wider review of Whanganui Manufacturing Zones (Plan Change 54), which recognizes the need for future land requirements for industrial development in Whanganui District.

Figure 1: Aerial photograph of Mill Road Manufacturing Zone showing the area included in the archaeological review, enclosed within the blue lines. (Image provided by WDC 2019).

The Mill Road Manufacturing Zone (here after referred to as the review or study area) comprises about 110 hectares of land centred around an earlier 14 ha industrial estate established to accommodate industrial, commercial and manufacturing business operations. Greenfield sections within the zone will be developed in a phased process over time to reflect growing interest in the area. Storm water up-grades have been put in place and Mill Road has been up-graded and tar sealed. This will provide improved access to the development area and a more direct route to and from Castlecliff.

The review area lies between Castlecliff and Mosston. Mosston is part of a wider area that was originally named Mosstown. The area is located adjacent to the Titoki and Kokohuia Wetland.

Archaeology North Limited was commissioned by WDC to carry out this review of the area. This report generally follows the Heritage New Zealand Pouhere Taonga (HNZPT) 2019 guidelines and template for an Authority assessment. However, further information concerning any specific development would be needed before any HNZPT Authority application could be lodged.

2.0 Legislative Background

There are two main pieces of legislation in New Zealand that control work affecting archaeological sites. These are the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA) and the Resource Management Act 1991 (RMA).
Heritage New Zealand Pouhere Taonga administers the HNZPTA. The Act contains a consent (Archaeological Authority) process for any work affecting archaeological sites, where an archaeological site is defined as:

Any place in New Zealand, including any building or structure (or part of a building or structure), that –

a/ Was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and
b/ Provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and
c/ Includes a site for which a declaration is made under section 43(1).

Any person who intends to carry out work that may modify or destroy an archaeological site must first obtain an Authority from HNZPT. The process applies to sites on land of all tenure including public, private and designated land. The HNZPTA contains penalties for unauthorized site damage or destruction.

The Archaeological Authority process applies to all archaeological sites, regardless of whether:

• The site is recorded in the NZ Archaeological Association Site Recording Scheme or included in the Heritage New Zealand List,
• The site only becomes known about as a result of ground disturbance, and/ or,
• The activity is permitted under a district or regional plan, or a resource or building consent has been granted.

HNZPT also maintains the New Zealand Heritage List/ Rarangi Korero of Historic Places, Historic Areas, Wahi Tupuna, Wahi Tapu and Wahi Tapu Areas. The List can include archaeological sites. Its purpose is to inform members of the public about such places.

The RMA requires WDC and all City, District and Regional Councils to manage the use, development, and protection of natural and physical resources in a way that provides for the wellbeing of today's communities while safeguarding the options of future generations. The protection of historic heritage from inappropriate subdivision, use, and development is identified in the RMA as a matter of national importance (section 6f).

Historic heritage is defined in the RMA as those natural and physical resources that contribute to an understanding and appreciation of New Zealand's history and cultures, derived from archaeological, architectural, cultural, historic, scientific, or technological qualities. Historic heritage includes:

- historic sites, structures, places, and areas; and
- archaeological sites; and
- sites of significance to Maori, including wahi tapu; and
- surroundings associated with the natural and physical resources (RMA section 2).

These categories are not mutually exclusive and some archaeological sites may include above ground structures and/or may be places that are of significance to Maori. Where resource consent is required for any activity, the assessment of effects is required to address cultural and historic heritage matters (RMA 4th Schedule and the District Plan assessment criteria).

The potential archaeological site types which are most likely to be present in the study area would be places of Maori origin of considerable antiquity.

3.0 Methodology

The work for this report was carried out in 2019. It included a desk-top review, and field inspections of most properties in the proposed Mill Road industrial area (Fig. 1).

Archaeology North commenced its assessment with background research, including a review of published and unpublished historical information and archaeological information. Sources consulted included:

- ArchSite[1] – the on-line New Zealand Archaeological Association (NZAA) site data base was checked for recorded archaeological sites in the Mill Road area.
- Whanganui District Plan maps and heritage listings (WDC District Plan, Appendices A and K).
- Historic maps and plans held at Archives New Zealand, WDC Archives, Alexander Heritage and Research Library and Whanganui Regional Museum.
- Local and regional histories.
- Relevant archaeological reports held at the HNZPT digital library[2].
- The Heritage New Zealand List was checked for listed sites[3].
- Historic newspapers on-line at the National Library of New Zealand Papers Past website [4]. The web site has on-line editions of historic newspapers. These include the Wanganui Herald for 1867 to 1920 and Wanganui Chronicle 1874 to 1919.

[1] www.archsite.org.nz
[2] https://www.heritage.org.nz/protecting-heritage/archaeology/digital-library
[3] https://www.heritage.org.nz/the-list
[4] https://paperspast.natlib.govt.nz/newspapers

The 1942 N. Z. Aerial Mapping series of aerial photographs (Patea-Feilding Survey No. 215, Run number 381/5) were scrutinized.

Previous archaeological studies in the Whanganui District, including A Scoping Report on the Archaeological Sites of Wanganui District (Taylor & Sutton 2001) and Wanganui District Council Historic Place and Archaeological Site Identification Project (Horwood & Taylor 2011) were useful. An archaeological review for the Springvale structure plan area, previously prepared for the WDC provided valuable background information (Taylor & Sutton 2012). This earlier work for the adjacent area, with the addition of further background research, was used to identify potential locations to be ground-checked for archaeological remains during the current work.

At the time of the field survey, most of the study area was predominantly well-grazed grass, with other areas bare and some under hard surfaces. This archaeological review included walk-overs and surface inspection of the most of the review area. Eroding sand faces, ground disturbed by animals and exposed surface features were examined, photographed and their locations were recorded.

Priority was given to natural sand dune ridges as these are the most likely locations for archaeological remains, and are likely to sustain the most significant landscape modification during development. Fully developed lots with business or houses and other amenities on the review area were not included.

No ground disturbance such as test hole digging was undertaken. All unreferenced photographs in this report were taken by Annetta Sutton or Michael Taylor of Archaeology North Ltd., in August and December 2019.

Tangata whenua were not consulted during this assessment. This report is for the purposes of recording and documenting archaeological evidence and is not intended to represent cultural significance an assessment of which should be sought separately.

4.0 Environment or Setting

4.1 Location

Mill Road is located between Castlecliff and Mosston. It is 1.5 - 2.0 km from the Tasman Sea beach and 1.2 km from the Whanganui River directly to the south. Most of the area is farmed with increasing commercial and residential development.

4.2 Geology and Soils

Coastal Whanganui sits on deep ancient uplifted marine and river terraces that are overlain by black iron sand dunes, formed during the Holocene. The uplifting has formed high cliffs along most of the coastline north of the Whanganui River, which limits access to the beach to the larger streams and river valleys. Sand has blown inland from the west coast, where it has drifted south from Taranaki. The dune formations extend across the coastal plain from the coast to the city.

The predominant soil type in the Mosston area is black sand. The ground is described either as imperfectly drained on the low lying areas or excessively dry on the dunes. The sand soils in the area are yellow-brown sands (Gibbs 1980; Neall 1977).

The review area is dominated by Pukepuke black loamy sand flats (Neall 1977: 14-15) (Fig. 2). The Pukepuke soils are shown as peach coloured and marked as "P" on Figure 2. These soils have moderately thick black friable topsoils and occur on the wetter sand plains, where the water-table comes near to the surface for several months of the year. With shallow drainage to remove surface water in winter and spring and fertilization of the soils the soil can be good for dairying and cropping.

The Mosston sand series consists of excessively drained soils formed on dunes of intermediate age. It is described as:

> *"Mosston sand occurs on rolling to moderately steep dunes showing uneven sub-angular outline, occurring inland from the Castlecliff soils and "overlying river and marine terraces. Characteristic profile features are black or very dark grey very friable sand-textured A horizons, over thin dark greyish or olive brown loose sandy colour B horizons, over dark greyish brown loose structureless sand" (Neall 1977: 14).*

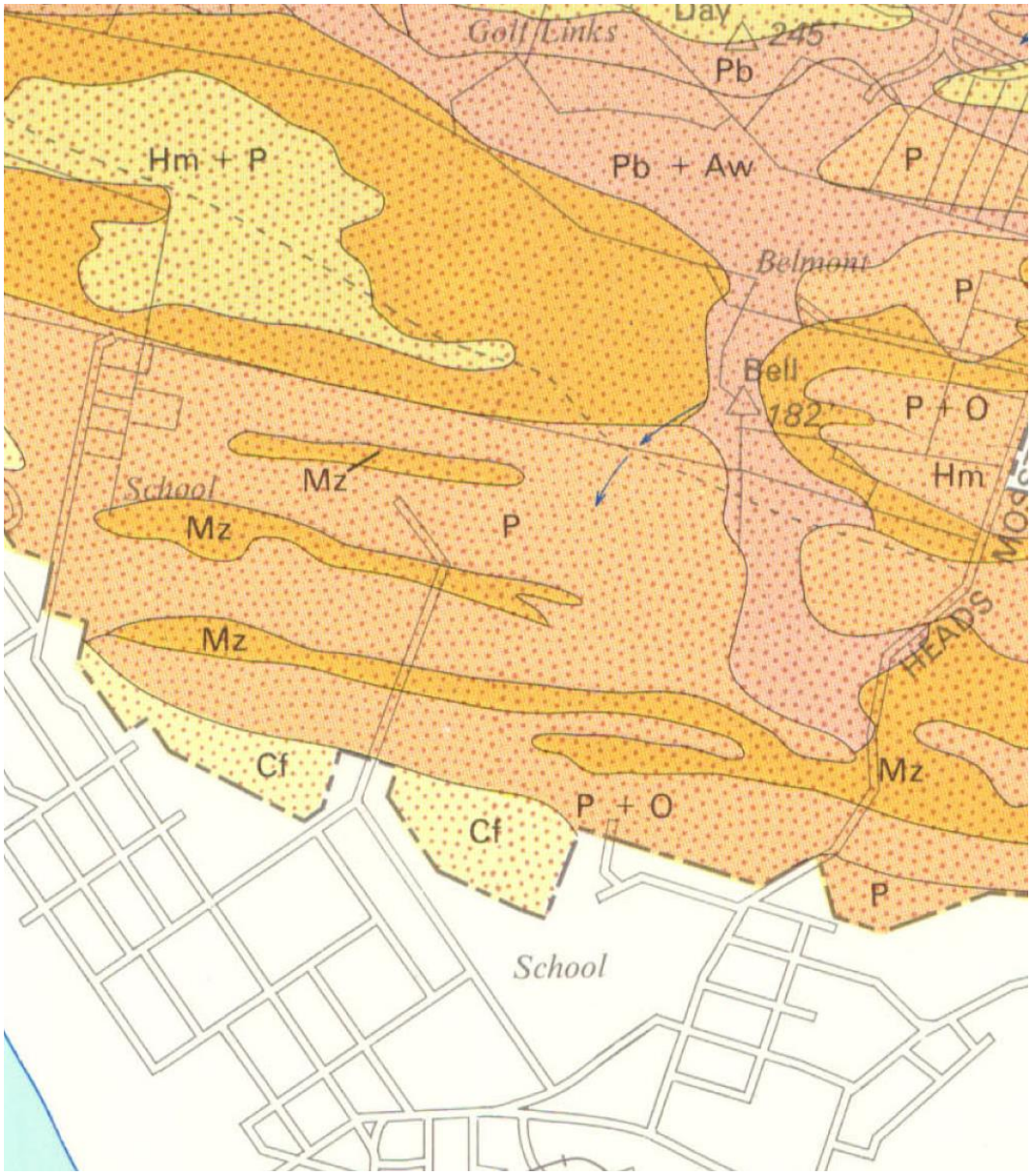

Figure 2: Extract from the soil map for the Mill Road area. The three low dunes marked *"Mz"* for Mosston sand, which run across the image, are crossed by Manuka Street. The dominant soil type on the lower, more level areas is Pukepuke loamy sand shown as "*P*" (Wilde 1975).

As can be seen on Figure 2 the Mosston Sand forms low long dunes that run roughly east-west the length of the review area (Fig. 2). The Mosston soil corresponds to the Motuiti series in the Manawatu (Cowie 1963). This is important as the sequence of sand dune building in Manawatu is better studied and understood than the Whanganui sand. In the Manawatu Cowie defined three sand dune building phases named Foxton, Motuiti and Waitarere when sand advanced inland from the coast (Cowie 1963). The Foxton dunes are the oldest and advanced more than 2000 years ago, well before human settlement. The Motuiti phase (corresponding to the Mosston

series) dunes began advancing over the Foxton dunes about 700 years ago. These dunes may cover early archaeological remains along their inland edge. The Waitarere dunes (corresponding to the Castlecliff series) have been divided into older and younger episodes. The older Waitarere dunes began their inland advance about 450 years ago and also may bury archaeological sites. Younger Waitarere dunes began advancing about 150 years ago. The implication here is that archaeological remains may possibly be buried beneath the Mosston dune series that extend across the Mill Road area.

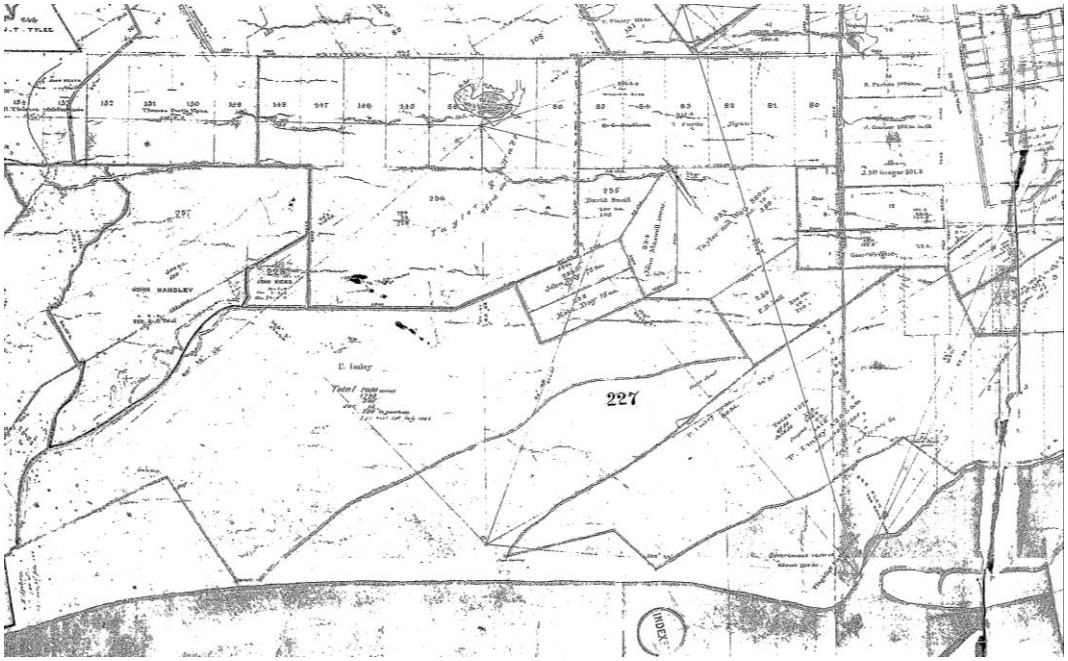

Figure 3: An extract from Charles M. Igglesden's 1856 map of Whanganui district. The Mill Road industrial area is located about the middle of image where the '227' section number is marked. Imlay's estate extends across the entire image.

The dunes in the review area are marked as *"bare sand"* on an 1865 survey plan, the earliest plan located that shows any detail (Fig. 3) (Igglesden 1856). The area would have been mostly in low dry mobile dunes at the time, with wet areas between dunes.

Whanganui surveyor, Henry Field's 1876 description of the geology and soils of the area is also of relevance:

"The coast between the mouths of the Wanganui and Kai Iwi rivers is formed throughout the greater part of its length of cliffs from 120 feet to 150 feet high, against the base of which the sea beats for so great a portion of every tide that it is only for an hour or two at dead low water that anyone can pass below them. This of course necessitated the opening of tracks parallel with the coast line, and at some little distance from it, and such tracks have evidently been used from a very early period. The ground on the top of the cliffs is covered with sand dunes, extending to an average distance of a quarter of a mile inland. These dunes are, however, for the most part disposed in high ridges, extending diagonally inland at an angle of from 30° to 40° from the coast line. The cliffs are of the marine tertiary formation, and wear away very rapidly (at an average rate—so far as I can judge by nearly 26 years knowledge of them—of about six feet per annum), and the sand dunes are continually creeping inland, and covering soil previously occupied by vegetation, fern, flax, toi-toi, and grass. The actual ridges of sand often extend for a distance of half a mile, or more, inland; but between them the vegetation, on the other hand, often extends to within one or two hundred yards of the actual cliff" (Field 1876: 220).

Top soil develops rapidly under grass, but there was little evidence of sustained topsoil development on most of the modern surfaces able to be inspected. With some exceptions there was only a weakly developed grey-brown sandy soil on the dunes. Soil profiles in the area, which have become exposed by stock trampling and wind erosion, show a shallow, poorly developed, soil overlying modern loose sands. This indicates that the stabilisation of most of the dunes is recent.

4.3 Climate

Weather in the Whanganui region is described as pleasant, without any really distinguishing characteristics and with small daily variations in temperature, few frosts and adequate rainfall (Anon. 1971; Chappell 2015).

Whanganui has an equitable climate and day-to-day weather conditions are not severe. Temperatures have a relatively small range. Summers are warm and frosts near to the coast are rare. The maximum air temperature usually exceeds 25°C on only 17 days per year with 2 days per year when temperatures fall below 0°C.

The west coast lowland area is one of the driest areas in the North Island. The rainfall of 921 mm is spread fairly evenly throughout the year. Rainfall is usually adequate for pasture growth, except on occasions in the summer.

Sunshine of 2025 hours is recorded near to the coast each year. Snow and hail are rare occurrences except at higher elevations. Fog occurs at times in coastal areas. The prevailing air flow is from the westerly quarter with strong westerly flows at any time of the year, but most frequently in the spring. The passage of the occasional depression, or tropical storm, to the east of the North Island brings winds from other quarters.

4.4 Waterways and Wetlands

The main waterway near to Mosston is the Whanganui River, which with its tributaries dominates much of the district. The Kokohuia Wetland was once the dominant landscape feature between Mill Road and the river.

While the review area appears to have no active waterways, a remnant waterway is situated at the south-eastern end of Mill Road, running roughly parallel to the road (Figs. 13, 14).The waterway feeds into Mosston Park Reserve and the Titoki Wetland, a restored remnant of the wider Kokohuia Wetland. It features an area of open water and regenerating native vegetation typical of coastal dune wetlands.

The Titoki Wetland (recorded as Kokohuia II) was listed as a traditionally important site during the 2010-2011 site identification project undertaken for WDC (Horwood & Taylor 2011). Kokohuia was much more extensive in the past before it was drained and filled. Examination of maps and aerial photographs seem to show that the wetland probably once extended across Mosston Road virtually to the edge of the review area where it was feed by the (now) remnant stream running beside Mill Road. Archaeological midden site R22/583 discovered in Mosston Road would have overlooked the wetland.

Wetlands are regarded by Maori as taonga. They have been food and resource gathering areas that provided habitat and breeding grounds for a range of important fish and birds, as well as culturally important plants including flax, raupo, tii, toe toe

and kuta. The swamps are noted as important for gathering of resources such as eels, koura, birds, raupo pollen, and reeds (McDowall 2011).

Before modern drainage, the level areas between the sand hills were wet and swampy with limited drainage. A large stormwater system has been installed under Mill Road and along Mosston road to increase drainage capacity as part of the development.

5.0 Historical Background

5.1 Early Maori and Historical Background

Whanganui has a long history of residence by Maori. The Whanganui River is the home of the Whanganui River tribes, known as Te Ati Haunui-a-Paparangi, a confederation of three ancestral groups with of Hinengakau of the upper river, Tama Upoko of the middle reaches, and Tupoho of the lower reaches (Downes 1915; Smart & Bates 1972: 17-44; Waitangi Tribunal 2015). The main Maori settlement at Whanganui in pre-and post-European times was Putiki (a contraction of Te Putiki Wharanui a Tamatea Pokai Whenua), home to the Ngati Tupoho and Ngati Tumango hapu.

The Mill Road area is within the area where Nga Rauru Kitahi hapu, Tamareheroto, Ngati Pukeko and Ngati Iti exercised food gathering according to the values of Nga Raurutanga and kawa[5] Their Treaty of Waitangi Settlement states this area extended from the Patea River to the mouth of the Whanganui River[6]. It included Kokohuia, the swampy area at Castlecliff. The Settlement Act states that there are many sites of cultural, historical and spiritual significance to Nga Rauru Kitahi along the coastal area and that there are important kainga situated there.

Historically hapu from up the Whanganui River and along the sea coast congregated annually in villages at the river estuary for fishing when seasonal school fish such as kahawai were plentiful and the weather allowed fishing from canoes. These gatherings were described by a number of early commentators (Power 1849: 49; Wakefield 1845: 242-243; M. Smart 1960: 29-31; Smart & Bates 1972: 28, 33;

[5]www.tkm.govt.nz/iwi/ngaa-rauru-kiitahi/
[6] http://www.legislation.govt.nz/act/public/2005/0084/latest/DLM359213.html

Waitangi Tribunal 2015: 275-290). Similarly the wetlands around Whanganui would also have been a focus for seasonal activities, harvesting resources, although these are not as archaeologically well-known or reported (McDowall 2011).

The study area was not included in the N. Z. Company land at Whanganui, with the review area left blank on early maps and no indication of the landscape or other nearby features. The earliest map identified that shows any details is the 1856 historic plan, SO 10552, based on the map of N. Z. Company surveyor, Robert Park (Fig. 3 in Section 4.2) (Igglesden 1856).

Igglesden's map shows that the land in the review area was then owned by Peter Imlay (who lived near to the Whanganui River). Peter Imlay was a Scottish businessman, who arrived in Whanganui in the 1850's, initially buying 200 acres of land near the Whanganui River. Later he purchased a large tract of sandy land stretching from Castlecliff as far as Mowhanau beach (Melody 1983). The Imlay land, including the study area, is shown as Section 227, (5189 acres), on an 1884 plan of Westmere Survey District (Fig 4). Imlay's property was once described as "... 2,000 acres of drifting sand" (of a total of 5,300 acres) during a hearing on land values and taxes (Whanganui Herald 22 August 1879).

Imlay built a large two-storied house near to the Whanganui River, which he called *"Balgownie"* after an area in Aberdeen. He used the land for raising cattle that were shipped to Auckland from as early as 1861 (Smart & Bates 1972: 155).

After Peter Imlay died in 1881 the land, known as the Imlay Estate, passed to his daughter. A large part of the estate was leased to the Murchison family in the late 19th century. Shortly after 1900 large parts of the estate at Seafield (near Tayforth) and at Castlecliff were purchased by the Rhodes family.

During the 1870's, at least five steam driven flax mills operated in the Mosston (Mosstown) area, however, the mills were largely unsuccessful despite the quantities of flax growing there (Smart 1957; Smart and Bates 1972: 146). No mills are known to have operated in the vicinity of the Mill Road.

Originally Mosstown was part of Wanganui County, but the area administered by the Waitotara County became a separate entity in 1884. It was re-united with Wanganui County in 1988. The county and city were then amalgamated into Whanganui District in 1989.

The name Mosstown is reputed to have come from James Dempsey, who farmed in the area until 1908 and named his farm after his home village of Moss Town in Kent (Melody 1983:8). Dempsey served as a Waitotara County Councillor. Mosston became the more common usage later in the 20th century.

The earliest subdivision and development identified in Mosstown was in 1876, when 20 blocks of land ranging from 3.5 to 5 acres to *"... comprise the TOWNSHIP OF MOSSTON"* for auction were advertised. This was part of the Allengate Estate, owned by Mrs T. B. Taylor (Wanganui Chronicle, 3 April 1876). Advertisements for the sale and lease of land and houses in Mosstown become more common in the newspapers after this, with, for example one advertisement from 1879 selling "Mosstown Gardens" with 5.25 acres, all securely fenced, with a three room cottage, and new cart shed and out-house (Wanganui Herald, 31 May 1879). By the end of 1870's there was an established and growing community in the Mosstown area, where previously, there had been just a small number of land owners who held large estates. Historically, Mosston was a small farming community with market gardens, orchards and dairy farming. One report from 1885 describes how five acres of tobacco had been planted by two Mosstown growers as an experimental crop (Wanganui Chronicle, 20 February 1885, page 2). The first Mosstown School was built in 1878, further north up Mosston Road than the present primary school. By 1900, the population of the Mosstown area was 108 and the school roll had increased from an initial 19 pupils to 51 pupils (Mosston School Centennial Committee 1978).

However, all of this development was focused between Lincoln and Springvale Road and was well removed from the Mill Road review area. Lincoln Road was one of the earliest roads in the area, and was historically the main road leading to Mosstown. It is shown as "*Mosstown Road"* on the 1884 Westmere Survey District map (Fig. 4).

The route we know today as Mosston Road did not exist then. There also was no Mosston Road leading into the area from Castlecliff. There was probably no access or significant improvements to the review area until after 1900, when further roading (the Heads-Mosstown Road) and subdivision and development at the Castlecliff end of Mosston Road commenced. Minutes of the Wanganui-Waitotara District Road Board in 1890 and 1900 show that residents were petitioning in that period for the section of road from Mosstown to Heads Road to be formed and metalled.

5.2 Development in the 20th Century

Early maps and aerial photographs show the review area was developed as farm land. Once drained the soils of the level land can be productive. There were only a small number of houses and farms located there (Figs. 5-8). The current industrial development began in the 1980's when 100 ha of farm land was purchased by WDC and re-zoned for heavy industry, including manufacturing, in response to a perceived lack of industrial land in the city.

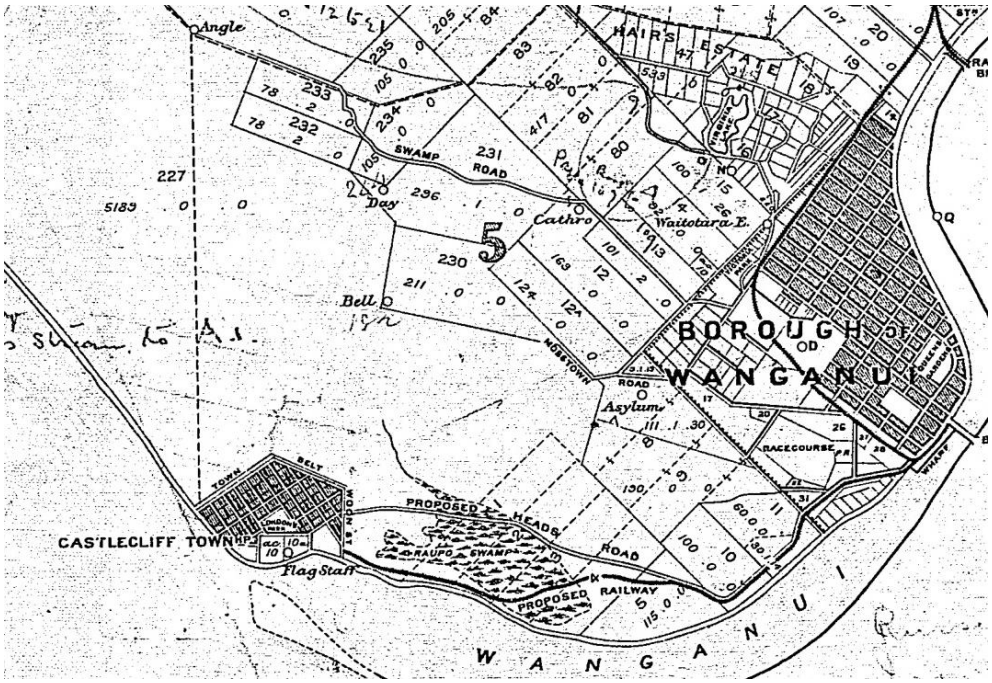

Figure 4: Extract from the 1884 Plan of Westmere District. Note "*Mosston Road*" on this map is called Lincoln Road today. Note also the "*Proposed Heads Road"* and the *"Proposed Railway"*. Tayforth Road is labelled as *"Swamp Road*". The survey trig points are shown as "*Day", "Bell"* and "*Asylum*". (WDC Archive 00168-0-408).

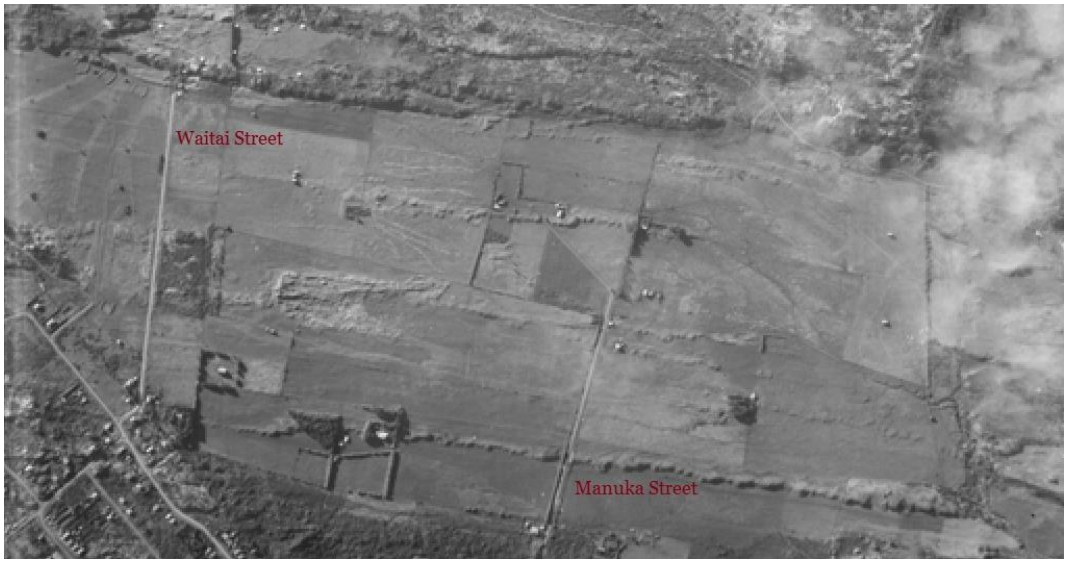

Figure 5: An extract from an aerial photograph taken on 6 October 1942 showing the Mill Road area, developed as farms. The aerial shows that Manuka and Waitai Streets were built by 1942. The whole of the Mill Road review area is farmed and is probably in grass. Structures are visible in at least 12 different places. Four or five of these structures may be houses; the others are most likely farm buildings. No earthworks representing archaeological sites are visible. (N. Z. Aerial Mapping Patea-Feilding Survey No. 215, Run number 381/5).

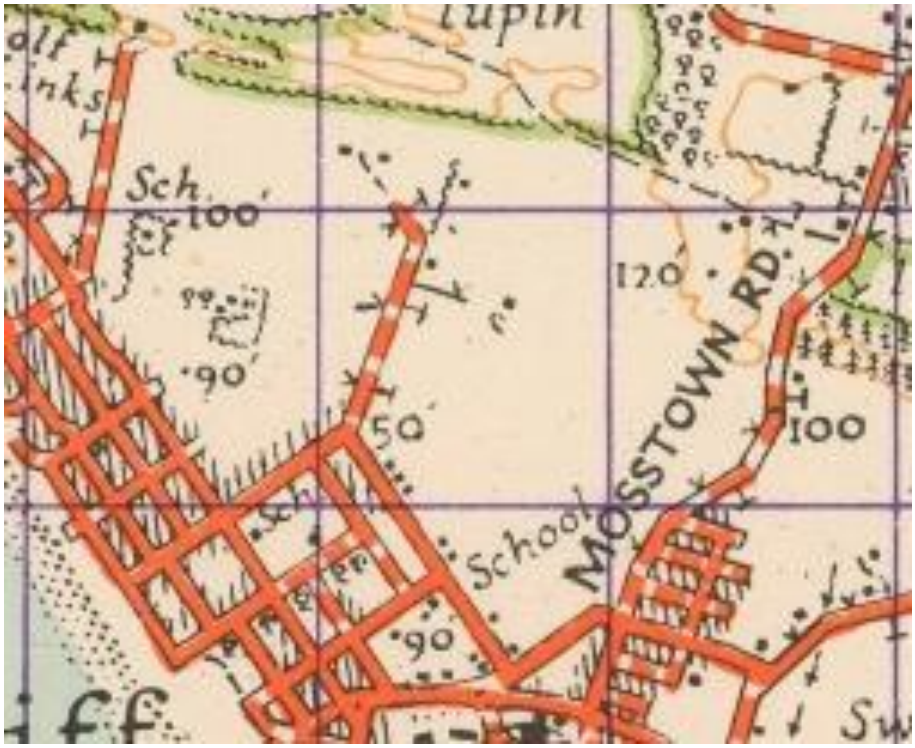

Figure 6: Extract from the 1943 NZMS1 topographic map showing the area where Mill Road is now located. Fewer buildings are shown on the review property than on Figure 5. No further new development is shown there. Note the spelling of Mosstown Road (NZMS Topographical Map, NZMS 1 Sheet N137, Waverley, 1943).

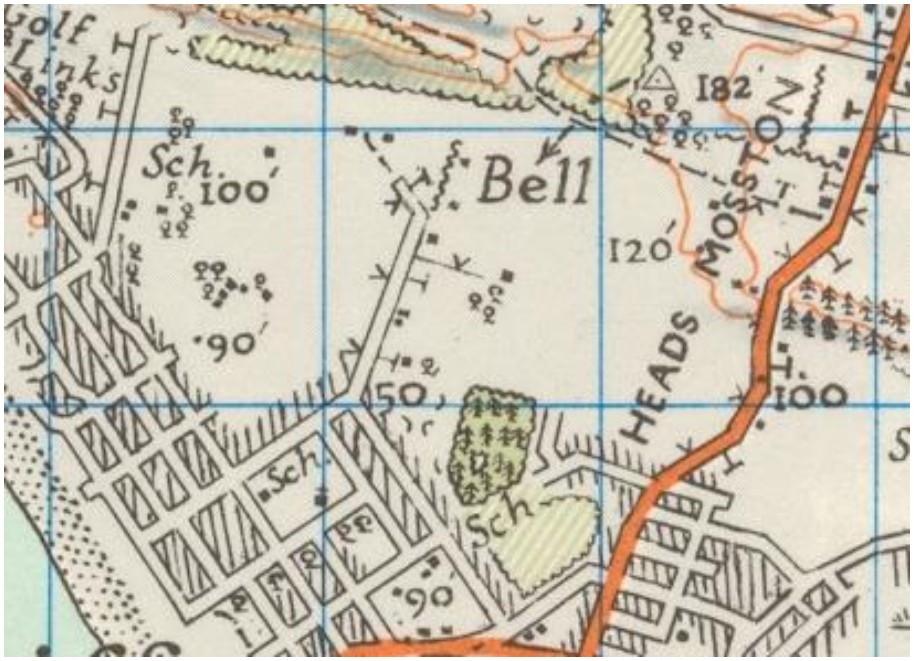

Figure 7: Extract from the 1965 NZMS1 topographic map showing the area where Mill Road is now located. There are more some buildings along Manuka Street. No other relevant development is shown. Note the use of the "Heads Mosston Road" (Topographical Map, NZMS 1 Sheet N137, Waverley, 1965, 2nd edition).

Figure 8: Extract from the 1976 NZMS1 topographic map showing the area where Mill Road is now located. No further development is shown on the Mill Road review area. The modern name of Mosston Road is in use (NZMS Topographical Map, NZMS 1 Sheet 137, Waverley, 1976).

Mill Road was constructed in 1996 to provide access to the initial development area, which covered 14 ha. It was named the Westbourne Industrial Estate. A timber mill was established in 1996 and operated until 2011 when it closed. The mill buildings have been re-purposed and renovated and are now used as a national distribution centre. Roading in the area has been upgraded and the stormwater and sewerage capacity has been increased. A number of businesses have established large warehouses and other facilities on the available 15 industrial sites. There is potential for further expansion.

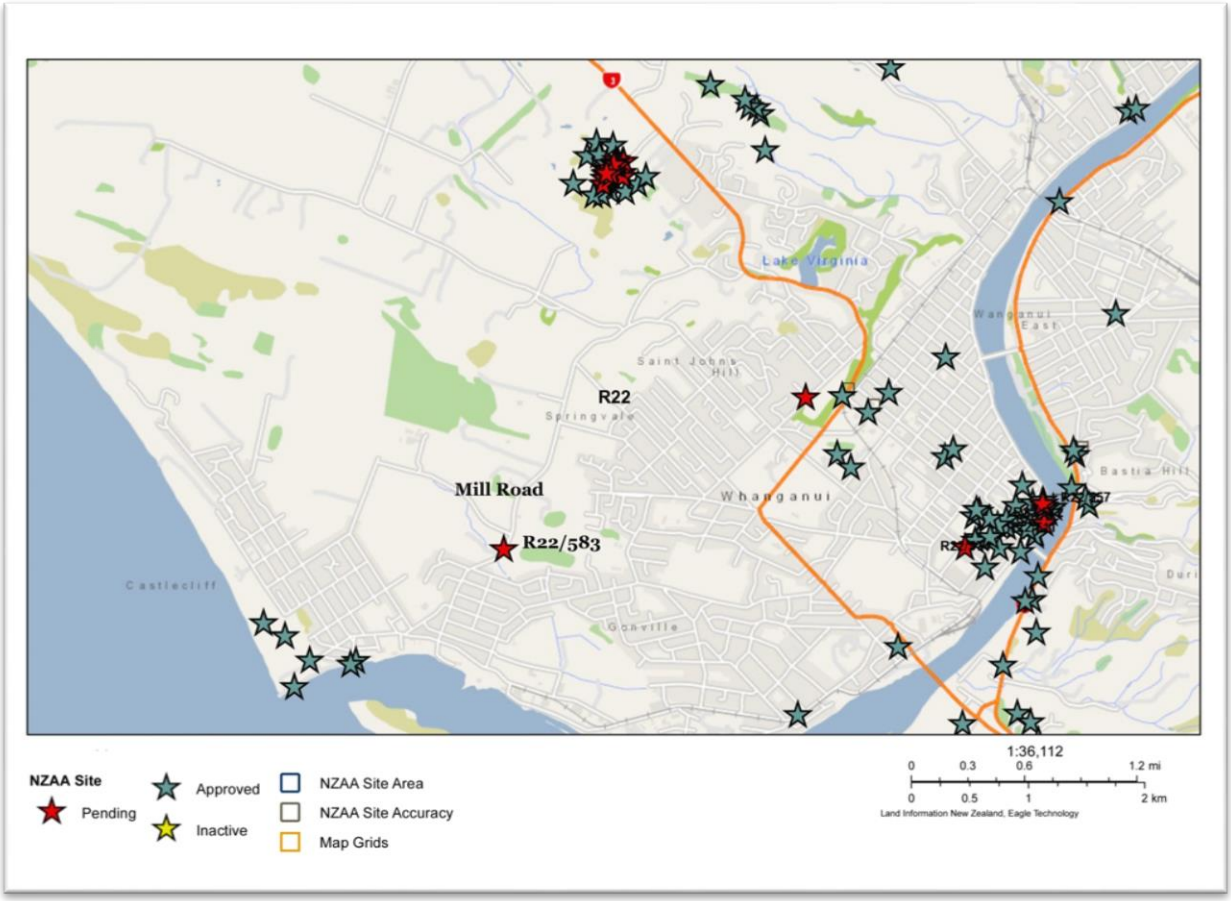

Figure 9: Map from ArchSite showing Mill Road and the location of archaeological site R22/583, a midden recorded in 2019, in Mosston Road. It is shown with a red star, lower centre of figure. Also shown are the NZAA sites recorded in the surrounding area. The concertation of stars to the right of the map is the historic central commercial district of Whanganui. The concentration of sites at the top of the map are middens, fires and storage pits recorded at Otamatea (Whanganui North). The recorded sites shown near to the Whanganui River mouth are World War II concrete pill boxes and the North Mole. (Map from NZAA ArchSite, February 2020).

6.0 Archaeological Background

6.1 Previous Archaeological Work

Whanganui has a well-established tradition of archaeological site survey with systematic recording beginning in the early 1960's, mainly by Colin Smart (Smart 1960, 1962, Smart & Smart 1963), who recorded a large number of sites in Whanganui and South Taranaki. However, Smart did not record any archaeological sites in the Mosstown, Springvale or Castlecliff area.

There has been little if any previous archaeological field work carried out in the Mosston, Castlecliff and neighbouring areas. Until very recently the nearest recorded sites were nearly 2 km south of Mill Road (Fig. 9). The nearest recorded sites of Maori origin to Mill Road are a cluster of middens, fires and kumara pits nearly 3.5 km to the north-east at the recent subdivision of Tirimoana Place (off Great North Road) on St. John's Hill. The next nearest sites are midden and pa located up the Whanganui River towards the centre of town 4-5 km away from Mill Road.

Archaeological remains in the wider vicinity of the review area were described by early historic visitors including the missionary Rev. Richard Taylor who wrote:

> *"I seldom, however, travelled over the sandhills bordering the coast without finding some remains of the Moa, especially on those near the Wanganui Heads. On one occasion I found a large number of fine specimens, and being unable to take them with me on my journey I made a pile of them, carefully covering them up, and marking the spot, intending to remove them on my return, but when I came back I found everyone had disappeared, someone else having found the prize and secured it"* (Taylor 1872: 99).

Similar observations were made by the surveyor Henry Field, who in 1876 published a description of the *"Ancient Aboriginal Caches"* along the cliff tops between Kai Iwi and Whanganui. Field described the large quantities of cooking stones, considerable quantities of charcoal, and a very large number of fragments of bone, mostly moa. Closer inspection revealed numerous stone flakes and knives, adzes, and pieces of adzes and obsidian (Field 1876: 220). Some of the locations were not near to water sources and there was no apparent nearby access to the beach.

The remains described by Taylor and Feld have not been located in modern times by archaeologists and are not recorded with NZAA. Field doubted at the time that the deposits would survive as most had already been disturbed. He also added that the remains would fall into the sea through the wearing away of the cliffs.

More recently archaeologist Tony Walton, who worked for NZHPT and DOC, provided a comprehensive review of the archaeology of Whanganui and South Taranaki. *"...the inland margins of the sand country around the lakes and lagoons, contains a strip of occupation"* that warrant "*a special mention"* (Walton 2000: 23). He outlined how the proximity of seasonal resources played a major role in determining the location and longevity of settlements in these areas. Walton's *"Inland margin"* includes where the study area is located. As outlined above, in pre-European times the review area was probably semi-mobile sand dunes and shallow wetlands. This environment probably offered only limited resources, but opportunities for forays to collect or harvest seasonal resources would have existed. Swamp and wetland areas provided eels, birds, raupo leaves and pollen, and reeds and other produce. The low sand ridges would have allowed access into the swamps and would have provided sheltered locations for cooking, camping and short term occupation.

Walton noted in his review that many areas in the wider Whanganui District have not been archaeologically field surveyed and relatively little is known about the pre-European archaeology. Walton wrote that:

> *"Knowledge of the prehistory of the Wanganui-Taranaki region is limited. Few sites have been investigated scientifically or systematically"* (Walton 2000:44).

In 2001, the WDC commissioned Archaeology North to provide an archaeological scoping report to assist with the development of appropriate management of the district's archaeological sites, recognising there was a lack of current and detailed knowledge of the sites. This resulted in A Report on the Archaeological Sites of Wanganui District (Taylor and Sutton 2001). Subsequently the WDC commissioned

a district-wide desk-top survey, developing a draft inventory that identified a significant number of additional archaeological sites in the historic and archaeological site identification project (Horwood & Taylor 2011). Whanganui District now has 992 archaeological sites and wahi tapu listed in Appendix K of the District Plan. Over 425 of these sites are recorded with NZAA, but, the majority of the newly identified sites have yet to be field checked for their location and current existence. The site distribution shows the intensity of settlement both by Maori and Europeans on the coastal plains and along the Whanganui River before 1900. No sites were identified in the Mill road area during these studies.

An archaeological review of the proposed Springvale structure plan area was undertaken in early 2018 (Taylor & Sutton 2018) as part of the Springvale Structure Plan Review Study (WDC 2018). This provided an initial assessment of the potential for archaeological sites to be located in the Springvale-Mosstown area, near to where the current review is focused. Generally, it was concluded that although archaeological evidence would be expected to be present within the area, there was a relatively low risk for encountering archaeological remains during development. It was unlikely that any large or extensive prehistoric or historic archaeological sites would be present. The report identified on, in and under the sand dune ridges as having the highest potential for discovery of archaeological remains. It also described how the extent and area of earthworks required for a development would determine the likelihood of discovery of buried remains i.e. the more ground disturbance and excavation undertaken, the more likely that archaeological remains will be uncovered. It is recognised that the best predictor for the presence of undetected archaeological sites is the presence of identified archaeological sites.

Figure 10: Part of the shell midden exposed under Mosston Road in 2019. See Figure 13 for the site location. The midden has been recorded as NZAA site R22/583.

6.2 Recent Archaeological Discovery

In October 2019 an archaeological shell midden of Maori origin was discovered under Mosston Road during WDC earthworks for pipe installation (Fig. 10). It was located just over 130 m from the Mosston Road end of Mill Road. The midden

contained a quantity of small pipi shells, most likely collected from the Whanganui River, and also charcoal from the remains of cooking and other domestic fires. The site was recorded with NZAA as archaeological site R22/583 (See the Appendix for NZAA site record form).

The midden is located on a low sand dune on the north side of the old watercourse that runs from Area 2 to the Titoki Wetland. It is about 400 m from the review area and the only archaeological site of Maori origin recorded within several kilometres of the study area.

The portion of the midden that was in the path of the pipe trench was recorded and sampled by archaeologists under HNZPT Authority No. 2010/219 and will undergo

further analysis. The midden had previously been largely destroyed when Mosston Road was first cut through the dune. Only a remnant of the midden remained at the base of the dune.

7.0 Results

The desk top analysis has shown that the study area is part of an area with a sand dune belt that has some relatively modern mobile dune sand that were moving over areas that were seasonally wet. The focus of the archaeological field survey was the greenfield area.

Figure 11: The Mill Road review area showing the ten Area numbers used to describe the results of the archaeological survey of the properties.

The results of the field survey are described below with reference to the ten properties or Areas that are shown in Figure 11. Developed properties (i.e. Areas 3, 9 and 10) were excluded from the archaeological survey and were not inspected.

7. 1 Area 1

Area 1 is located at the eastern end of the review area north of Mill Road (Figs. 11, 12). The area is mainly level, with some low dunes and in grass. The portion furthest north from Mill Road has some potential for archaeological sites as it was part of the wetland system that once fed into the Titoki Wetland. Large drains have been dug

along the boundaries and across the block. Large trees in shelter belts and buildings have, over time, been removed from the block.

Figure 12: Areas 1 (on the right) and 3 (on the left). Google Earth image showing Area 1 after it was ploughed, exposing the sub-surface soil. Area 3 was developed as a sawmill. Image taken on 18 October 2017.

An aerial photograph of Area 1 taken in 2017 shows the area soon after being ploughed (Fig. 12). The wetter areas have been excluded from the area cultivated. Recent ploughing can be a useful tool for detecting archaeological remains, such as midden or cooking areas, as it can bring archaeological evidence to the surface. Visible evidence could include, for example, shell midden, or distinct charcoal staining over large areas, or lines of holes or other patterns that indicate the location where past structures stood.

No evidence of archaeological sites appears in the image (Fig. 12). The most likely location for sites would be adjoining the wet areas towards the back of the block. However, the level of development on Area 1 means that any archaeological sites that may have been present may not have survived intact.

7. 2 Area 2

Area 2 is a large grassed paddock with a series of long slight dunes up to 20 m asl running east-west the length of the paddock. It was fenced into smaller divisions for management of grazing at the time of the survey (Figs. 11, 13, 14, front cover).

Figure 13: Area 2. Google Earth image showing the low dunes and stream bed in Area 2. Note the location of midden R22/583 on Mosston Road. The midden is beside the water course that runs on the south side of Mill Road through Area 2. The high dune running the length of the block on the left is just outside the review area. The image was taken on 26 June 2018.

There is little exposed soil or evidence of past erosion. This and the developing soil profiles across the block suggest it may have been more stable in the past than other parts of the review area.

A now dry or near dry water-course that once fed the Titoki Wetland runs across the north-eastern corner of Area 2 (roughly parallel to Mill Road) (Fig. 14). The midden

R22/583, found in 2019 under Mosston Road, is located on the left bank of this water-way.

Figure 14: Area 2. Looking east along the dry watercourse that runs parallel to Mill Road. The waterway runs across Mosston Road into the Titoki Wetland.

The waterway, the stable soils, the proximity to Titoki Wetland and to midden R22/583, together make this block the highest risk area for the presence of archaeological sites in the review area. However, no new archaeological evidence was located on Area 2 during the field survey.

7. 3 Area 3

Area 3 is the area where the saw mill was located (Figs. 11, 12). The extent of the development there means there is a low potential for archaeological sites.

7. 4 Area 4

Area 4 was mostly level with a small dune on the southern edge of the block. There were areas of exposed soil with modern tracks developed over most of the block (Figs. 11, 15, 16). No evidence of archaeological remains, such as shell midden,

Figure 15: Area 4. Looking east towards the buildings where the saw mill was located.

Figure 16: Area 4. A drain running north-south between Areas 3 and 4 to remove surface water.

Figure 17: Areas 5, 6 and 7. Google Earth image showing the ploughed level areas making use of the Pukepuke soils. No evidence of archaeological remains is visible in the image. He image was taken on 4 March 2018.

concentrations of charcoal or fire cracked rocks (from cooking fires) was observed on Area 4. A modern house and related domestic facilities were located on the low sand dune and it was not examined. There is a low risk of the presence of archaeological sites over most of the area, with a potential risk on or under the dune.

No archaeological remains were identified on Area 4 despite large areas with soil exposed in tracks. Examination of the drain sides revealed no evidence of archaeological remains.

7. 5 Area 5

Area 5 has been developed as industrial yard with large storage sheds. (Figs. 11, 17). Sand from any dunes that were present has been moved into large bunds, which enclose the property on three sides. No evidence of archaeological remains, such as middens was observed. There is a low risk of archaeological remains being present on Area 5.

7. 6 Area 6

Area 6 is a flat paddock with the edge of a low sand dune just intruding into the property along the northern boundary (Figs. 11, 17). There is a greater risk of archaeological sites on the dune and along its edge. The sand in the dune appears to have stabilized relatively recently and has a poorly developed topsoil. The area is visible in the 2018 Google Earth image (Fig. 17). Part of the property has been ploughed and no evidence of archaeological remains, such as midden or blackening of the soil, is visible in the aerial photograph.

Figure 18: Areas 6 and 7. The low dune in Area 6 is visible in the background. The level area in the foreground is the western part of Area 7.

7.7 Area 7

Area 7 is mostly level with a low dune running much of the length of property near to the eastern boundary of the area. A lightly cut track for vehicles along the side of the dune has exposed the soil profile for most of the track's length (Figs. 11, 18, 19). The lack of depth or development of a top soil visible in the section indicates that this is a recently stabilised dune.

Figure 19: Area 7. Showing the cut for tracking on the edge of the dune that runs along the boundary of Area 7. No archaeological remains were visible in the cutting. The soil profile was poorly developed indicating that the dune had stabilized relatively recently.

A pond dug along the southern boundary had a pile of spoil placed beside it. This revealed no archaeological remains, but did show a fine sedimentary soil dug from the depth of the pond.

There is a low risk of archaeological sites on Area 7.

7. 8 Area 8

Area 8 has a long low sand dune running east-west along the northern boundary which rises to between 25 m- 35 m asl. It is the highest point at the Mill Road study area (Figs. 11, 20, 21, 22). The rest of Area 8 is in flat paddocks, which are divided by some hedges. It is bounded by Manuka Street. Exposures of sand along the sides of the dune indicate it has stabilised comparatively recently.

Figure 20: Area 8. Looking east, along the low dune, towards Manuka Street (where the dune ends).

At the eastern end of Area 8, adjoining Manuka Street, there is a buried burnt soil in a low dune. The burnt horizon represents landscape burning most likely associated with human activity. Its presence indicates that the sand at this end of the dune was stable for a time before it became less stable and was buried under 70 cm of sand (Fig. 22). The charcoal stained sand shown in the figure extends from the base of the ranging pole in the image for about 30 m to the west along the dune. The overburden is a distinctly brown sand up to 60 cm deep as can be seen in Figures 21 and 22.

The modern top layer is black sand up to 60 cm deep that has mixed-in fragments of concrete, bricks and glass with plastic sheeting (Fig. 21). The origin of this material is not clear but some of the overburden may have been moved in modern times, possibly for fencing or roading. Perhaps there was a brick and concrete structure present at the location, although no structures are visible on early aerial photographs or maps of the area.

Figure 21: Area 8. The charcoal stained buried soil horizon is visible; it runs up from the foot of the ranging pole. It runs to the right across the image to the section visible on the far right. The central part of the charcoal layer is obscured by loose black sand. The modern black topsoil layer overlying the brown sand and charcoal horizon is visible on the left of the image.

Figure 22: Area 8. The old buried charcoal stained soil layer is highlighted by the soil moisture and light conditions at the time the image was taken.

The buried soil in Area 8 does not seem to be an archaeological feature in itself. However, the presence of the charcoal rich buried land surface does suggest a human association and raise the probability of archaeological remains in the vicinity. The risk of archaeological remains being located here is medium to high.

Also there may be potential for archaeological remains to have been buried beneath moving sand by the high dune at the western end of Area 8. There is potential for archaeological remains to be uncovered if earthmoving is undertaken. Extensive earthmoving will increase the risk.

7.9 Area 9

This property is a private household and was excluded from the walkover. It is a small, level property with low or limited archaeological potential.

7.10 Area 10

This property is a private household and was excluded from the walkover. It is a small, level property with low or limited archaeological potential.

7.11 Summary of Results

No physical evidence of prehistoric archaeological sites was located within the study area. During the walkovers, one buried and charcoal blackened soil horizon was observed in a cutting of a low dune on Area 8. Horizons such as this are often found in association with sites occupied by early Maori. Although there was no associated evidence or cultural context identified, the blackened horizon has potential to be part of an archaeological site. Evidence such as shell middens, cooking fires (often containing stones), and the remains of shelters or huts may be present in the vicinity.

The Whanganui Regional Museum holds no artefacts or taonga with specific provenance to the Mosstown area, although there are two stone adze blades with a general provenance to Springvale.

There is no evidence that permanent European settlement or significant development occurred within the review area during the 19th century. Subdivision

that occurred in the Mosstown area from the mid-1870's onwards was located between Lincoln and Tayforth Roads and was well removed from the current assessment area.

No buildings or structures are listed within or several kilometres from the review area in the WDC Heritage Resources List in the Wanganui District Plan. There are no HNZPT listed items on the study area.

8.0 Risk Assessment

There are varying degrees of risk for different properties in the review area. The areas of greatest risk are Areas 2 and 8. Archaeological sites may be near to the surface, buried in or have been covered by past sand dune movement and be under the dunes in the Mill Road area.

Area 2 has a medium to high risk. Area 2 has a greater risk because of its proximity to the waterway, the Titoki Wetland, and to site R22/583. The low sand dunes on Area 2 may have been more stable in the past than some of the other areas.

Area 8 has a medium to high risk as the buried charcoal layer suggests human activity in the area in the past. Archaeological remains may be present in the vicinity of the buried burnt soil. Area 8 also has the most potential for sites to have been buried by past sand movement as it has the highest and most extensive dune in the study area. The Mosston soil series generally has potential to have covered earlier archaeological remains of Maori origin.

There is also a low to perhaps medium risk at the back of Area 1, away from Mill Road, where the wet area once fed into the Titoki Wetland. The remainder of Area 1 has undergone heavy earth moving in modern times, which may have reduced the risk of archaeological sites remaining there. No obvious signs of archaeological remains on the property were identified during the survey.

Area 6 has a low to medium risk of archaeological sites along the base of the dune that comes under the fence on its northern boundary.

Areas 4 and 7 had exposures of soil that allowed the bare ground and stratigraphic sections to be examined. There was no evidence of archaeological remains observed. Areas 4 and 7 are unlikely to contain significant archaeological remains.

Areas 3 and 5 have been extensively developed and there are unlikely to be remains on the properties.

Areas 9 and 10 are small level private properties and have a low risk of archaeological remains. They were not visited.

There is a low over-all risk in the whole of the Mill Road area for the discovery of complex or extensive archaeological sites. However, a potential low overall risk does not necessarily mean a total absence of sites. There is potential for some archaeological sites to be present in the review area. Dry areas on dunes near to waterways or standing water are the most likely locations for archaeological remains to be present. The low dunes in the study area have the most potential for the presence of archaeological sites, particularly on the more stable of the dunes.

The greatest risk for the presence of archaeological sites is on the south side of Mill Road from just west of Manuka Road to the Mosston Road end of the block. The old waterway is the highest risk. The long low sand dunes may also have been used as pathways in the past. The dunes in this area appear to have been more stable in the past. This area is also closest to the Titoki Wetland and standing water. The higher dunes to the north and west of Mill Road appear to be more modern with sand drift possibly continuing there until the 20th century.

Archaeological site types most likely to be located within the study area include shell middens, the remains of cooking fires and hangi, and other features related to temporary use of the area. Sites are most likely to originate from the seasonal harvesting of resources from the streams, wetlands and small lagoons. It is also possible that artefacts, such as stone flakes or adzes, may be discovered.

There is also a limited potential for preservation of water logged archaeological deposits in wetter areas. Wetlands have a capacity to preserve wooden remains, such as wooden tools, canoes, and weapons, in a wet anaerobic environment. Such sites can be of immense scientific and cultural importance. Area 2, near to the water course, and possibly Area 1, would be the most likely places for such wet remains.

Old pathways from the Whanganui River and coast may also cross the review area. In particular old trackways may have followed the low long dunes.

Two historic-era published accounts describe an abundance of archaeological remains, including moa, in the sand dunes extending inland from the coast (Field 1876; Taylor 1872). Such remains could potentially reach inland as far as Mill Road and be buried under the younger dune sand.

It remains possible that isolated human burials may be present in the dunes or the old wetlands. Isolated burials are generally difficult to detect unless they are disturbed by earthmoving.

It is unlikely that early archaeological sites of European origin are present in the study area as the area remained in a single ownership during the 19th century, and was relatively isolated from public access and underwent little development. Ditch and bank fences, drains and other activities related to early farming are the most likely of any historic archaeological remains to be present. These could be revealed during earth moving for new developments. Site types related to flax exploitation and other early industries could be present, but historical evidence suggests these are unlikely.

9.0 Conclusions and Recommendations

9.1 Conclusions

The Mill Road review area has a comparatively low risk for the presence of archaeological remains. However, archaeological remains could potentially be present within the review area. Archaeological remains of Maori origin are most likely to originate from short term seasonal utilisation of swamp and scrub land resources, such as birds, fish, koura and eels, as well as raupo, or other wetland plant resources.

The nearest recorded archaeological site, midden R22/ 583, is just over 130m away from the south eastern end of the Mill Road, and about 400 m from the review area. The most likely archaeological remains to be present in the review area would be of comparable middens (including shell and/or bone) and cooking areas (consisting of burnt and fractured stones and charcoal). However, there is also a possibility that other remains may be present. The evidence of stone working and the hunting and cooking of moa described by the 19th century commentators may extend into the Mill Road area. If such sites are present they are likely to be buried under the Mosston series of dunes. Evidence associated with early Maori settlement or moa hunting would be of very significant scientific value.

The low sand dunes at the Mosston Road end of Area 2 and the Area 8 dune adjoining Manuka Street have the highest potential for archaeological remains. Generally, the dunes across the review area have the highest potential for discovery of buried remains. Archaeological remains may be buried deeply under the dunes. Possibly old pathways also crossed the review area and this use may have left archaeological remains.

Historically there is little evidence of the area being developed by Europeans until the 20th century. Possibly the more stable areas were able to be grazed, and associated archaeological evidence could be present.

The future development of the review area at Mill Road will require earthworks. As there are no recorded or known archaeological sites within the development area it

will not be necessary to obtain an archaeological Authority from HNZPT before commencing earthworks on any of the review area. However, if archaeological evidence is encountered after work commences then legally any work in that vicinity would have to stop. Then an archaeological Authority would have to be sought.

An HNZPT Authority application would require a written archaeological assessment, consultation with tangata whenua, and details, including plan drawings, of the works proposed. Once an application is lodged HNZPT can take up to 35 working days before an Authority is issued and activated. Where a development at Mill Road requires a large amount of earthworks, particularly on the sand dunes, it may be useful to obtain an archaeological Authority in advance of the earthworks to help ensure that delays do not occur if buried archaeological remains are encountered.

If archaeological remains are discovered within the Mill Road industrial area in the future the risk that further remains will be present will increase. As noted above if archaeological remains are discovered it raises the probability that further remains will be present.

9.2 Recommendations

An archaeological Authority from HNZPT is not essential to commence earthworks at Mill Road. Generally there is a low risk of encountering archaeological remains, but it is probable that there are some archaeological remains in the area.

A precautionary archaeological Authority may be desirable where large scale earthworks are planned to ensure that significant delays do no occur if buried archaeological remains are encountered.

Tangata whenua should be consulted about the future management and development of the study area. The HNZPT requires such consultation as part of any HNZPTA Authority application process.

All archaeological sites are legally protected and any modification or destruction of a site by earthworks or other development requires an Authority from HNZPT.

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Appendix

NZAA Site Record R22/583

Midden close to Mill Road

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE
archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: R22/583

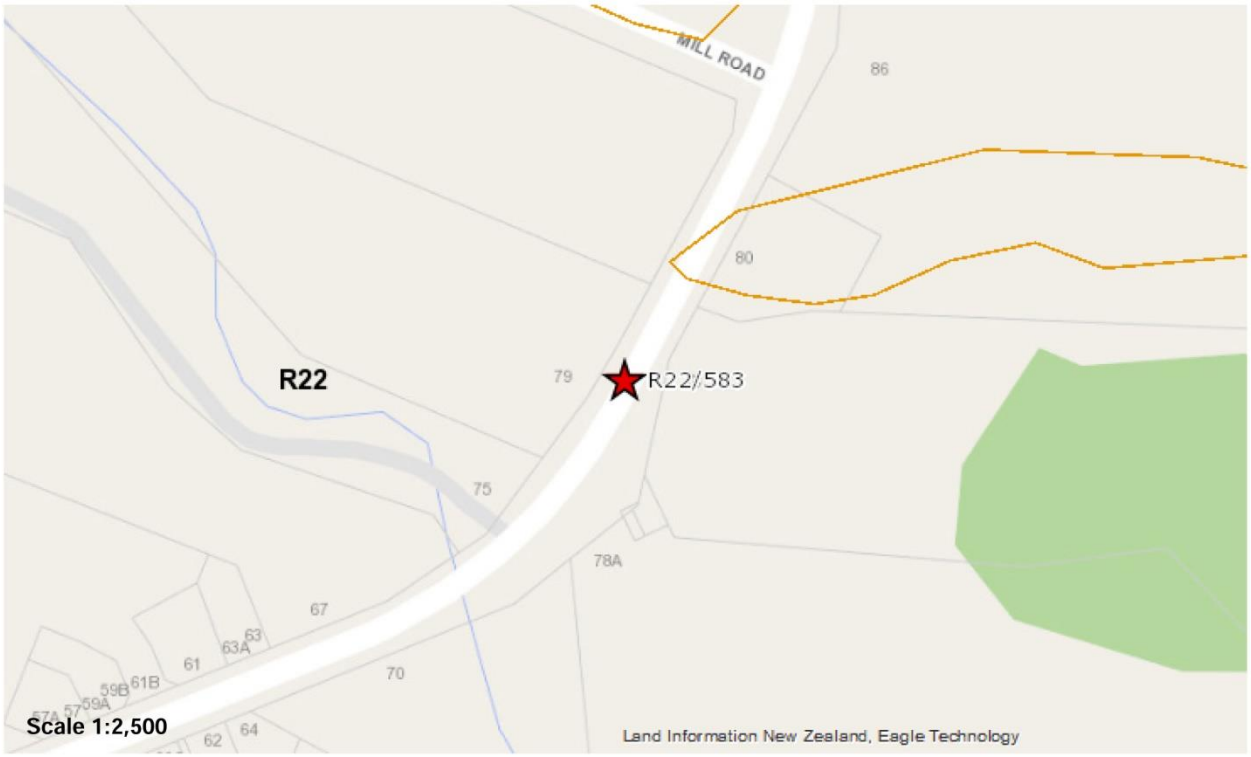
SITE TYPE: Midden/Oven

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1771177 **Northing:** 5577390 **Source:** Handheld GPS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** R22/583



Finding aids to the location of the site

The midden is located under the roadway outside No. 79 Mosston Road (Hillcrest), Whanganui.

Brief description

Recorded features

Midden, Charcoal

Other sites associated with this site

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: R22/583

Site description

Updated 18/10/2019 (Field visit), submitted by michaeltaylor , visited 11/09/2019 by Taylor, Michael
Grid reference (E1771177 / N5577390)

Shell midden exposed under road formation. The shell is in a lens 7-16 cm thick within a matrix of charcoal stained black sand 20-30 cm thick. Most of matrix and midden is consolidated and hard from being under the road, but the matrix is softer and the shell looser beyond the road edges. See photographs attached to srf.

The shellfish are all pipi and very small. A sample was taken for further analysis.

The remnant midden forms a cap on the weathered dune surface at the foot of the old dune. Mosston Road had been cut through the dune to create a level passage. The cutting removed most of the dune and with it the midden, which probably covered more of the dune. This left the limited remnant located at the base of the dune, under the road.

There were some intrusions of clay and gravel from the road formation into the midden strata, some of which may be from rabbit holes.

The midden extended across the full width of the 3.5 m wide trench. It was located 30 cm below the existing road formation.

The midden was uncovered during trenching operations by the Whanganui District Council for the installation of a large storm water pipe under HNZPT Authority No. 2010/219.

Updated 18/10/2019 (Field visit), submitted by michaeltaylor , visited 11/09/2019 by Taylor, Michael
Grid reference (E1771177 / N5577390)

Shell midden exposed under road formation. The shell is in a lens 7-16 cm thick within a matrix of charcoal stained black sand 20-30 cm thick. Most of matrix and midden is consolidated and hard and from being under the road, but the matrix is softer and the shell looser beyond the road edges. See photographs attached to srf.

The shellfish are all pipi and very small. A sample was taken for further analysis.

The remnant midden forms a cap on the weathered dune surface at the foot of the old dune. Mosston Road had been cut through the dune to create a level passage. The cutting removed most of the dune and with it the midden, which probably covered more of the dune. This left the limited remnant located at the base of the dune, under the road.

There were some intrusions of clay and gravel from the road formation into the midden strata, some of which may be from rabbit holes.

The midden extended across the full width of the 3.5 m wide trench. It was located 30 cm below the existing road formation.

The midden was uncovered during trenching operations by the Whanganui District Council for the installation of a large storm water pipe under HNZPT Authority No. 2010/219.

Condition of the site

Updated 18/10/2019 (Field visit), submitted by michaeltaylor , visited 11/09/2019 by Taylor, Michael

The midden located within the pipeline trench was all dug away. Further remnants may occur under the remaining portion of the road. Most of the midden appears to have been dug away when the dune was levelled for the road.

Statement of condition

Current land use:

Threats:

Part of a midden, R22/583, exposed under Mosston Road.

Close-up of a midden, R22.583, exposed under Mosston Road.