

Carrington Backbone Works project: archaeological assessment

**report to
Beca Ltd
and
Marutūāhu and Waiohua-Tāmaki Rōpū**

Ella Usher

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1 Introduction

The Carrington Residential Development is a large-scale development project which will create up to 4,000 housing units within the Wairaka Precinct on land situated between Carrington Road and Te Auaunga / Oakley Creek. The Carrington Development is located within the Auckland Unitary Plan's Wairaka Precinct alongside existing Unitec Campus facilities, the Mason Clinic and Taylor's Laundry. The Crown currently holds 29ha of the future development land which is right of first refusal land in Treaty settlement (the Ngā Mana Whenua o Tāmaki Makaurau Collective Redress Deed and Act). The Rōpū parties to this Redress Deed, in partnership with Te Tūāpapa Kura Kāinga / the Ministry of Housing Urban Development (HUD) are undertaking this development project. Beca Limited (Beca) have been commissioned by the Marutūāhu Rōpū and Waiohua-Tāmaki Rōpū (the Rōpū) to undertake investigation, engineering design and assessment for major infrastructure (the Backbone works) for the Centre/ North of the land. The Backbone works will be constructed to support this part of the future Carrington Development within Lots 1, 5 and 6 DP 515012, Lot 3 DP 314949, Lots 1 and 2 DP 531496 and Lot 5 DP 515012. Several pre-European Maori and historic archaeological sites are recorded nearby on the banks of Te Auaunga / Oakley Creek and in the grounds of the former Oakley/ Carrington Hospital and current Unitec campus. The main building of Oakley/Carrington Hospital is also a Category A Scheduled Heritage Extent of Place within the Auckland Unitary Plan (Item 1618), excluding the additions made after 1905, and is a Category 1 Historic Place on the Heritage New Zealand Pouhere Taonga (HNZPT) List / Rārangi Korero (Item 96). An archaeological assessment of effects is required in support of resource consent applications to Auckland Council and archaeological authority applications to Heritage New Zealand Pouhere Taonga (HNZPT). Dale Paice of Beca, on behalf of Marutūāhu and Waiohua-Tāmaki Rōpū, commissioned this assessment from CFG Heritage Ltd.

1.1 Statutory requirements

All archaeological sites, whether recorded or not, are protected by the provisions of the Heritage New Zealand Pouhere Taonga Act 2014 and may not be destroyed, damaged or modified without an authority issued by Heritage New Zealand Pouhere Taonga (HNZPT).

An archaeological site is defined in the Heritage New Zealand Pouhere Taonga Act as:

- (a) any place in New Zealand, including any building or structure (or part of a building or structure), that—
 - (i) 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
 - (ii) provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and
- (b) includes a site for which a declaration is made under section 43(1).

The Resource Management Act 1991 (RMA) requires 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 as a matter of national importance (Section 6f).

Historic heritage is defined 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

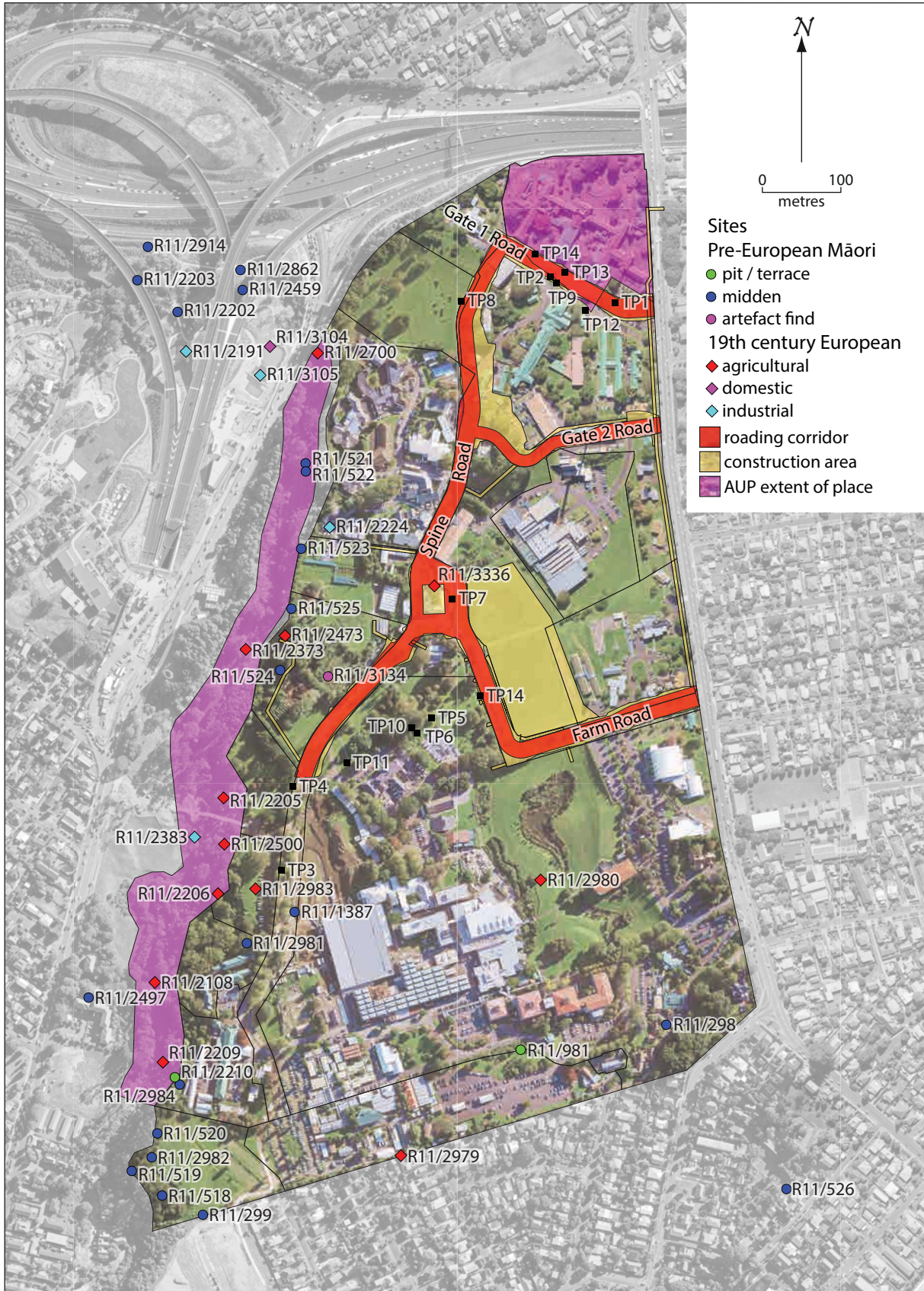


Figure 1. Location of proposed backbone works in relation to recorded archaeological sites and the Te Auaunga / Oakley Creek and Oakley Hospital Main Building Heritage Extents of Place.

- archaeological sites;
- sites of significance to Maori, including wahi tapu;
- 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 or may also 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.

2 Methodology

The New Zealand Archaeological Association (NZAA) Site Recording Scheme (SRS) was searched for records of archaeological sites. The digital library of archaeological reports held by Heritage New Zealand Pouhere Taonga was searched for previous works in Waterview. Old maps and plans held by Land Information New Zealand (LINZ) were reached using Quick Map software. The area was checked on the Auckland Council Geomaps server for areas of recorded heritage and recorded archaeological surveys, and the Cultural Heritage Inventory (CHI) was accessed where necessary for more information on these. The HNZPT New Zealand Heritage List / Rārangī Kōrero was accessed for information on listed heritage sites. A site visit was conducted on foot by Ella Ussher of CFG Heritage Ltd on 29 April, 20 May and 6 August 2021.

3 Background

The study area is in the Auckland Volcanic Field, a Quaternary basalt field. The Auckland volcanic field is a well-preserved volcanic landform covering about 100 km² of the Auckland urban area (Craig and Cruickshank 2015). It forms a gently rolling surface with numerous volcanic cones rising above it. Lava caves and tunnels are common features within some of the Auckland flows (Edbrooke 2001: 8).

The study area is located within the catchment of Te Auaunga/ Oakley Creek. The highest points in the catchment are Maungawhau / Mt Eden, Ōwairaka / Te Ahi-kā-a-Rakataura/ Mt Albert and Te Tātua-a-Riukiuta / Three Kings, from which water feeds down the valley and creek systems in a north westerly direction and discharges at the Meola reef (Berry 2007: 29). Much of this area was modified through Public Works drainage programmes of the early 20th century, especially areas of Te Auaunga / Oakley Creek during the Depression era of the 1930s.

3.1 Pre-European Māori

Pre-European Maori settlement of the area was primarily around the pa at Ōwairaka / Mt Albert and Te Whau / Blockhouse Bay (Oates 1994). Settlement and land use concentrated on the coastal margins of the Waitematā Harbour, the Whau River and Te Auaunga / Oakley Creek. The Whau River was an important feature for local Māori, and was used as a portage and food source. This portage, linking the Waitematā and Manukau Harbours, worked as part of a larger network of portages in operation around north west Auckland (Hooker 1997). It was also a seasonal hunting ground for the migratory bar-tailed godwit which, heavy with fat for their migration to Siberia, were only able to gain enough altitude to skim over the trees of the portage where they would be ambushed and struck down by hunters hiding in the canopy (Sewell 1984: 3).

Close to the project area, within what is now Te Whare Wananga o Wairaka campus (Unitec Ōwairaka), is the spring fed Wairaka stream which would have been an important natural resource. Early Māori occupants of the Ōwairaka/ Te Ahi-kā-a-Rakataura / Mount Albert area utilised Te Auaunga / Oakley Creek and its catchment to support settlement, and gathered fresh water, crayfish, eels, and shellfish from the wider area. Abundant crops of flax and raupo around the waterway were commonly used to make clothing, roofing and matting, and stands of native timber, particularly karaka, facilitated the construction of whare, storage houses and defensive palisading (Matthews and Matthews 2009).

3.2 Historic period settlement in Ōwairaka (Mt Albert) and the Auckland Lunatic Asylum / Carrington Hospital

European settlement spread outwards from central Auckland from 1840 onwards, with settlement initially focussed on the waterways and coastlines. Farming was undertaken with the rich soils, and various industries including pottery and brick making, flour milling, and tanning took place along the rivers (Farley and Clough 2016).

In 1859 John Thomas, a flour miller from Devon, bought 8 acres of land along Oakley Creek and secured the water rights up to the waterfall (Farley et al. 2017). Thomas established a flour mill on the south side of the Te Auaunga/ Oakley Creek, which traded as the Star Mills although it was generally known as Thomas's Mill. In 1879 the Garrett Brothers purchased the property and established a tannery.

The purpose-built Auckland Lunatic Asylum was constructed in 1866 on the neighbouring property across Te Auaunga / Oakley Creek at Allotments 30, Parish of Titirangi, due to overcrowding at previous facilities at Auckland Hospital (*New Zealand Herald*, 6 September 1866: 3). Later in 1879, the Crown purchased Allotments 31, 32 and 33, Parish of Titirangi, from Joseph Howard for the sum of £4200 (Deeds Index A2/129-131, Archives New Zealand) for the purpose of establishing a farm to feed the patients and provide work for them. These properties and the hospital were recorded in SO 1992 from 1879. Many of the farm buildings can still be seen in aerial photographs from 1940 of the hospital grounds, including the piggery built in the 1880s along with the milking sheds and hay store, and the farm manager's house built around 1882 (Figure 2). An article in the *New Zealand Herald* (9 November 1889) mentions the presence of a substantial orchard, dairy (Figure 3) and piggery, which was said to contain "some 50 to 60 pigs, a cross on the Berkshire".

The Auxiliary Asylum building was established in 1884 due to a need for greater accommodation capacity for patients, but later destroyed by fire in 1894 (*Auckland Star*, 21 December 1894:4). A replacement building, Auxiliary No.1 (current Building 048), was built in 1896 (*Appendices to the Journal of the House of Representatives [AJHR]*, 1897 H7: 2), later becoming known as Oakleigh Hall in the 1920s and was used as a 'parole villa' for 150 men (*AJHR*, 1926 H7: 9). A number of other buildings were constructed on the hospital grounds, including workshops, a boiler room and drying room (1880s). Elsewhere on the property accommodation for the Medical Superintendent was built in 1909 (later used to house female patients) and 1930 (Penman House), as well as Auxiliary No.2 (1913) and Auxiliary No.3 (1915) hospitals.

Water supply for cooking, bathing and cleaning was primarily obtained from two sources; a large number of cisterns within the roof structure of the building, and from a well (*New Zealander*, 1 December 1865: 3). The supply of water appears to have been satisfactory for some years however it was noted that the 5 acres of land near Te Auaunga/ Oakley Creek had a good spring of water, and it would be advantageous to purchase the land (*AJHR*, 1883 H3:6). A reservoir and pumping-station was completed in 1897 (*AJHR*, 1898 H7: 5), however by 1900 it became apparent that the rapidly expanding Auckland region's water supply was causing concern and the Asylum agreed to pump excess water to Western Springs (*New Zealand Herald*, 23 February 1900: 3). Later in 1904, a larger pumping station was built to the southeast of the proposed area of works, to cater for greater demand for water supply. Ultimately in early 1909 the Mount Albert Road Board sought to take over control of the springs from the Public Works Department in exchange for supplying water to the Asylum at no more than £150 (*Auckland Star*, 6 January 1909:9), which was agreed to in 1910.

3.3 Archaeological background

Several archaeological reports have been completed for the wider area around Waterview, several of which have focused on the Te Auaunga/ Oakley Creek surrounds. Several surveys have been conducted along this esplanade previously, with the majority of sites recorded in 2003 and one in 1995.

In 1987 Fredericksen conducted an archaeological survey of the Oakley Psychiatric Hospital Grounds (Fredericksen 1987). This involved the survey of 2 relatively small areas within the Hospital grounds, labelled as Blocks A and B. From this a stone wall was identified as pre-1900, this is now

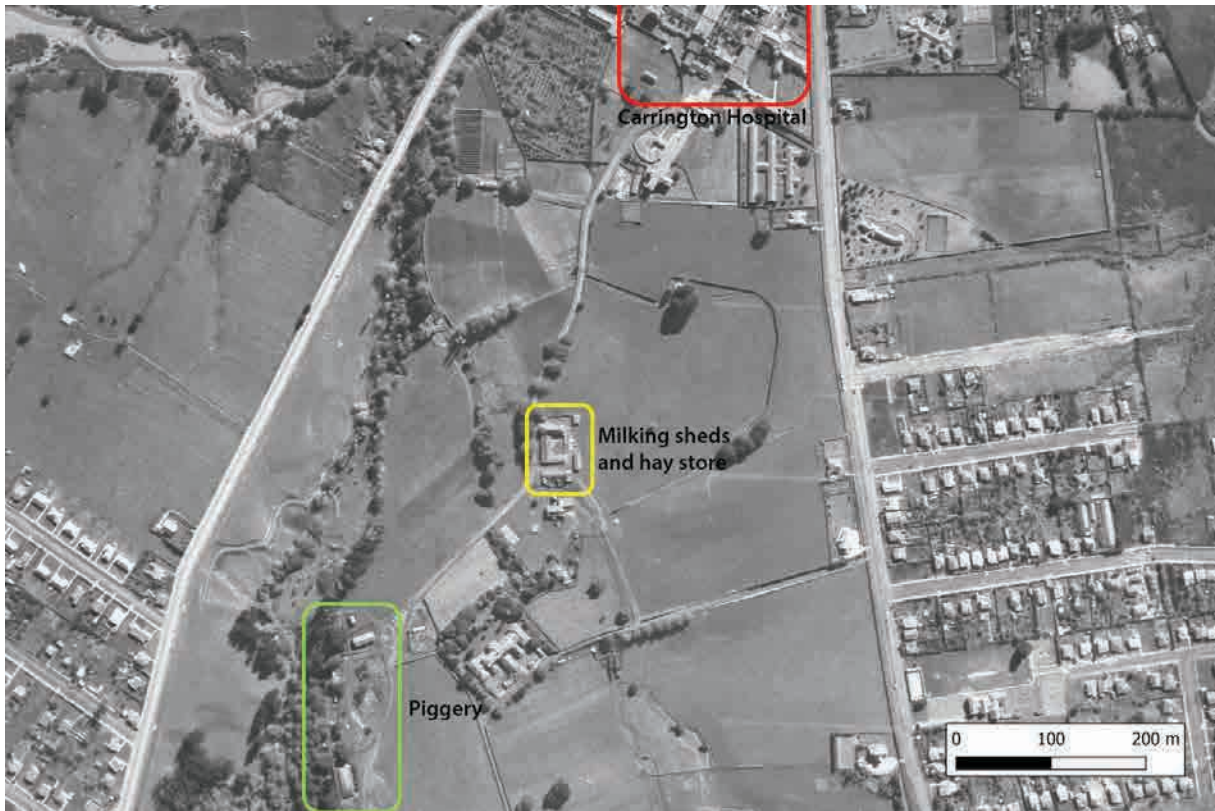


Figure 2. 1940 aerial photograph showing Carrington Hospital and the associated farm buildings.

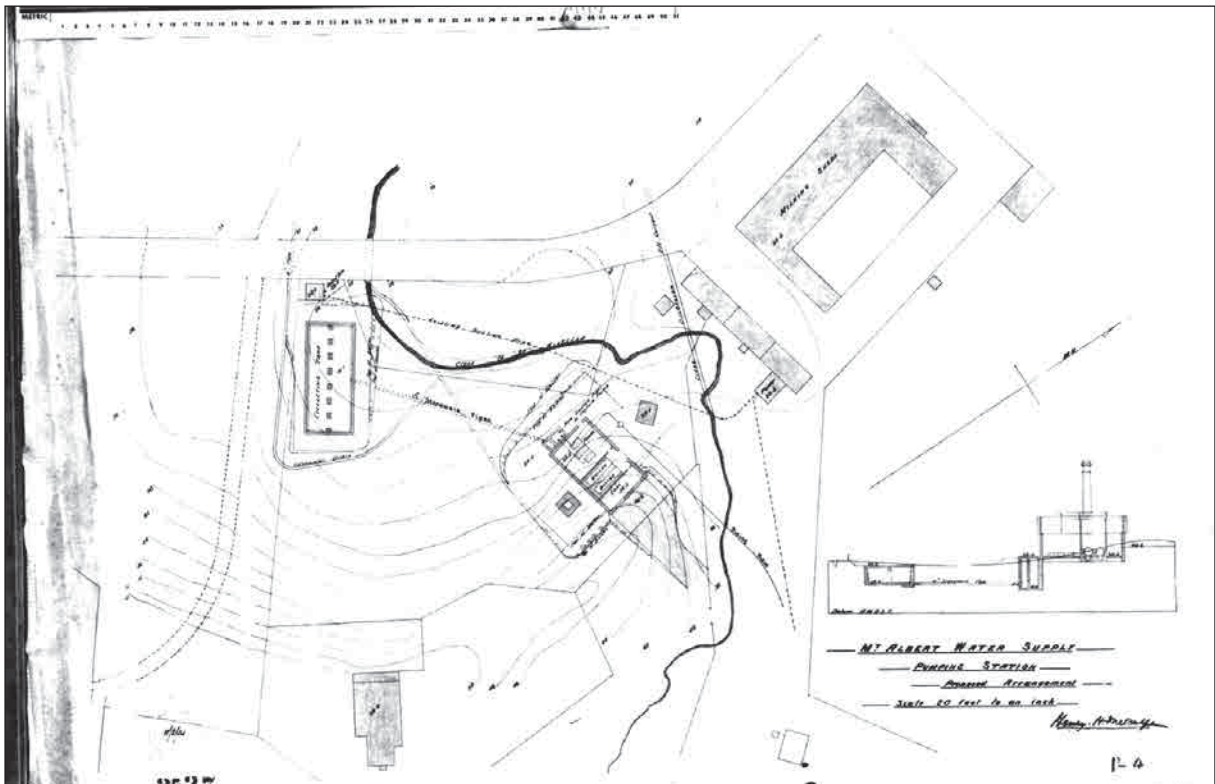


Figure 3. 1903 Plan for the pump house showing milking sheds to the north (Archives New Zealand ABZK 24411 W5433 PWD20686/1)

recorded as R11/2980. Block B was found to have a terrace, 2 depressions, a European stone alignment and a shell scatter. One of the depressions appeared to be natural, the other had concrete chunks in the fill. The stone alignment was aligned with the fence, and he determined that this was probably modern and associated with building the adjacent road. The terrace he determined has mixed soils probably from pre-European Māori gardening. The shell scatter he determined was about 2 x 2m and was archaeological, this is now recorded as R11/1387.

Between 2000 and 2015 Druskovich completed a number of field surveys and monitoring works near Te Auaunga/ Oakley Creek. From 2000 to 2010 several surveys were conducted as part of preliminary investigations for the Waterview Connection project (Druskovich 2010), several bridge replacements were monitored along the Te Auaunga/ Oakley Creek walkway (Druskovich 2009b), works associated with the upgrade of facilities around the Te Auaunga/ Oakley Creek waterfall were monitored (Druskovich 2011), and community planting as part of the Revegetation Programme for the Te Auaunga/ Oakley Creek Walkway was monitored (Druskovich 2015). During these, a number of new sites were recorded within 200 m of the project area, including a possible mill (R11/2205), several drystone retaining walls (R11/2473, R11/2500), a drystone walled race (R11/2205) and several bridges and a drystone wall (R11/2373). In addition, site R11/524 was impacted to a minor extent by the planting, and a midden sample was subsequently taken for analysis and a radiocarbon date collected. This returned a result of cal AD 1454–1651 (Druskovich 2015).

In 2010 Clough et al. completed an assessment of effects report as part of the Waterview Connection project. Later in 2012 Shakles et al. undertook a field survey in the Te Auaunga / Oakley Creek / Waterview area as part of the Central Interceptor project but no new archaeological sites were recorded during the survey. Clough and Burnett completed an archaeological assessment of the Waterview Shared Path proposal in 2015. This identified a stone wall (R11/2979) that was previously unrecorded as an archaeological site despite being subject to a heritage Covenant. The final report for the Waterview Shared Path was completed in 2017 (Farley et al 2017). The affected sites were a drystone wall (R11/2979) and a midden (R11/1387), and these excavations revealed deep deposits connected with the demolition of hospital and farm buildings, as well as rubbish disposal on the banks above Te Auaunga / Oakley Creek, as well as intact pre-European Māori occupation on the flats above. In 2015 Foster carried out an archaeological assessment of the Unitec grounds south of Farm Road. This identified a number of archaeological sites within that area and noted that just one site, R11/1387, was to be affected by the proposed development. Farley, Low and Clough (2017) also drafted a preliminary heritage assessment of the properties included in this current field assessment for the Wairaka Land Company.

As part of the Carrington Backbone Works Programme so far, Ussher (2021) carried out an assessment of archaeological effects for a proposed stormwater outfall corridor near the banks of Te Auaunga / Oakley Creek. This assessment identified a previously unrecorded shell midden (R11/3313) within the area of the proposed works, as well as several heritage features including a drystone wall that may have been connected to the asylum farm, and noted significant amounts of modern as well as historic cultural material and scattered shell on the slopes above Te Auaunga / Oakley Creek.

4 Field visit

The route of the proposed backbone footprint was walked over by Ella Ussher of CFG Heritage Ltd. This was primarily a visual survey as well as close examination of exposed soil around tree roots and the base of buildings, and a gum spear was used to probe for subsurface archaeological features or deposits. Eleven spade-width test pits were dug to investigate the levels of modern disturbance along the routes. The location of the test pits is shown on Figure 1.

4.1 *Roading*

The new Spine Road alignment runs from the southwest corner of the Oakley / Carrington Hospital building (Building 001) south to meet the existing private road route to the west of the Auxiliary 2 building. Spine Road follows the route of the existing private road to the southern extent

of the proposed works. Gate 1 Road will connect the northern end of Spine Road to Carrington Road. The proposed works runs through the south-western, central and south-eastern wings of the Oakley / Carrington Hospital building, before crossing the existing carpark to Carrington Road. Gate 2 Road runs south of Gate 1 Road connecting Carrington Road to Spine Road. Finally, the existing Farm Road will be upgraded and connect to Spine Road to the north of Building 028.

The proposed Gate 1 Road works follows the general existing alignment of the private Gate 1 Road, however while the current road skirts Building 001, the proposed works will involve some demolition of elements of the building. TP1 dug within one of the grassed berms in the existing carpark at the start of the alignment showed that services run through these areas at least 300 mm below the surface. The proposed alignment then runs through the south-eastern, central and south-western wings of Building 001, and the courtyards between these which are a mixture of landscaped lawn and carparks. This option will involve at least partial demolition of the southern wings of the building that are within the Scheduled Category A Historic Heritage Extent of Place for the Oakley / Carrington Hospital in the AUP (Item 1618). A 1940 aerial photograph also shows several buildings, now demolished, within the extent of the works (Figure 5). An 1890 plan of the hospital shows two of these to the south and southeast of the central wing of the building (Figure 6), and a 1903 plan of the alterations and additions to the main hospital building note that at this time these were a workshop and drying shed (Figure 7). Three test pits (TP2, TP9 and TP13) were dug in this location between the central and south-eastern wings of Building 001. Both TP2 and TP13 (Figure 8) contained a very compacted surface of crumbled scoria at 200 mm and 450 mm below the surface respectively. This layer was below a 200 mm thick charcoal-stained mixed clay subsoil with brick fragments in TP13, but in TP2 there was a mixed clay with gravel and roof slate fragments, above this same compacted surface. TP9 did not contain this compacted surface but appeared to have been recently modified due to the presence of a very mixed silty clay subsoil with yellow clay pockets to 300 mm, with no natural subsoil encountered. Similarly, between the central and south-western wings of Building 001, a building is visible in the 1940 aerial bordering this courtyard on its southern extent. TP14 dug in this location showed a possible small concrete foundation at 230 mm below the surface, surrounded by larger scoria gravel and cut into a layer of very compacted small scoria gravel and charcoal at 380 mm, similar to that seen in TP2 and TP13. It is clear that despite recent landscaping, there are both existing and subsurface features connected with the Oakley/Carrington Hospital building within the proposed footprint of works.

The northern end of Spine Road begins at the southwest corner of the hospital and runs south through the location of the old Asylum Gardens, mostly following the route of the existing private road but having a significantly wider footprint (20 m). A test pit (TP8) dug to the west of the driveway showed a topsoil to 100 mm below the surface, above a mixed friable brown silty clay with pockets of yellow clay to 300 mm (Figure 9). No base of this layer was found, and this indicates that the area has been recently disturbed, which fits with aerial imagery that shows exposed soil in the location over the last 5 years. Gate 2 Road travels east from Spine Road widening the existing private road. The area is already heavily modified and so no test pits were dug in this location.

The proposed Farm Road works include upgrades and widening of the existing private road from Carrington Road to just east of the Auxiliary Hospital (Building 048) carpark, and then north towards Building 028. This building includes several modern elements to the northeast, with a courtyard wing to the south that includes a 1970s 'brutalist' concrete building while the north of the courtyard is defined by the old milking shed / dairy building built in the 1880s–1890s, recorded as site R11/3336 during this assessment (Figure 10). The east, west and southern wings of the building were built in the same footprint as some of the other original dairy buildings (Figure 11) mentioned earlier. Farm Road connects to Spine Road just north of this building, within the footprint of the existing Building 023 and extends east into the neighbouring sports fields. A 1940 aerial photograph shows one building, likely one of the hay sheds associated with the milking shed / dairy complex, extending onto the edge of the sports fields and outside the footprint of the existing private road and parking (Figure 12). TP7 showed that there is a large amount of building material on and just below the surface in this location and extending north towards Building 028, including brick and granite, to a depth of at least 100 mm. The concentration of this material meant that the test pit could not be dug deeper than this. This material may be connected with the old hay sheds or the southern elements of

the dairy enclosure once located in this area, but may also be evidence of more recent building demolition. An open landscaped area is proposed within the Backbone works, surrounding Building 028, at the intersection of Farm and Spine Roads and Wairaka Stream. A 1903 plan showing the planned pumping station designed by H. Metcalfe, indicate that several buildings were already constructed at in the area to be landscaped, including one building housing a previous pump for the Asylum supply. The larger of the buildings appear to be associated with the dairy complex, with the pump building behind. No earthworks plans have been provided for the proposed landscaping in this area, and so these works have not been included in this assessment.

Spine Road upgrades will continue south from the intersection with Farm Road, widening the existing private road on its western side initially, and then the eastern side within a grassed area by the old Pump House (Building 033) built in 1904. The proposed works will not impact on the extent of the Pump House buildings. Further south, Spine Road upgrades will then involve widening the existing road to Unitec to the north of the asylum farm piggery building (R11/2983) and within the vicinity of other farm buildings and enclosures, identified in Ussher (2021), within the greater piggery complex. No surface evidence of these buildings and enclosures remains within the area of proposed works, however there are troughs and drainage set in concrete pads on a lava flow 100 m to the south (Figure 13). These surface features have been included in the SRS for the piggery (R11/2983). The topsoil in an area immediately to the north of these features was removed for earthworks associated with the Waterview Shared Path construction, monitored by Farley et al. (2017). They reported that the topsoil in this area included modern material including concrete and asphalt chunks, fragments of metal, along with pieces of plastic, ceramic, and glass. Three test pits were also excavated as part of these works, in a transect running down towards Te Auaunga / Oakley Creek. These showed various layers of fill used to level the ground surface above the natural basalt flow. The lower layers of fill closer to the creek included mid-20th century material, indicating that the levelling, at least in this location, was likely associated with the demolition of the farm enclosures in the late 1960s.

Two spade-width test pits were dug further south along the existing main Unitec private road near the piggery (TP3 and TP4), spaced 100 m apart. Both pits showed a mixed subsoil containing charcoal, scoria, red chert and compacted clay below 100 mm of topsoil. This is very similar to the subsoil identified in a spade-width test pit within the Stormwater Outfall 06 immediately to the north of the farm buildings. Due to the compaction of the subsoil, it is possibly connected with a building floor or the old farm road from the main hospital building. It is therefore possible that subsurface evidence of the greater piggery complex remains within the areas of proposed works to the east and west of the existing private road.

4.2 *Electrical and communications corridor*

Both the electrical and communications corridors will involve trenching in the proposed roading corridors for Gate 2, Spine and Farm Roads and therefore were assessed in conjunction with these.

4.3 *Stormwater*

The Carrington Backbone works involve the construction of several new stormwater reticulation lines and treatment devices. Most of these are within the extent of works for roading and hence are covered in Section 4.1. Six new stormwater lines are proposed outside the extent of proposed roading works, encouraging runoff from Spine Road and Farm Road to Wairaka Stream. The northernmost of these will be constructed west of Spine Road through the current horticultural buildings with another running in a similar direction 100 m south of this. This area is already heavily modified by these existing buildings and it is unlikely that subsurface archaeological deposits remain in this location. Another line will connect the stormwater lines on Spine Road to the Stormwater Outfall 06, in an area already assessed for this section of the Backbone works (Ussher 2021). Additional stormwater lines discharge at regular intervals along Farm Road into the parallel reach of Wairaka Stream (Figure 14). One of these will be on the southern side of the existing culvert under Farm Road. The age of this culvert is unclear, but it is possible that this is the dam constructed in 1900 to harness the

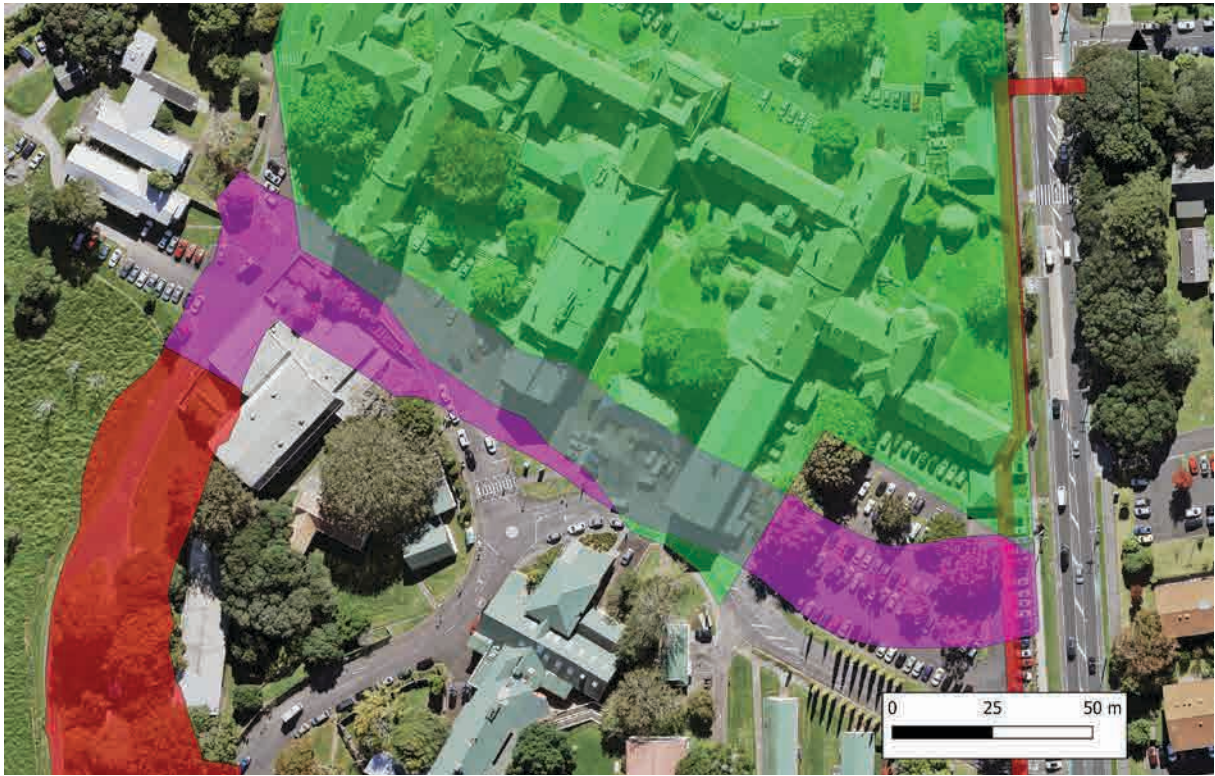


Figure 4. Northern (purple) and southern (red) Gate 1 Road options and Oakley/Carrington Hospital building Historic Heritage Extent of Place in the AUP (Item 1618) (green).

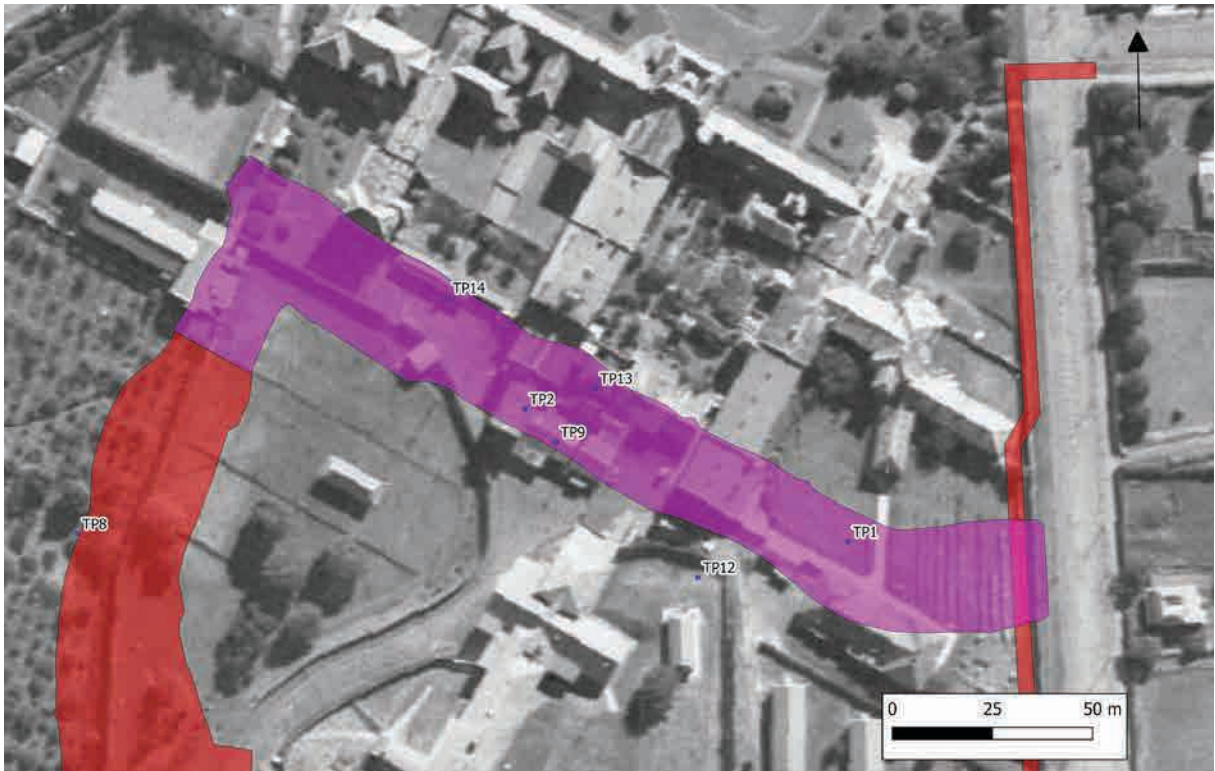


Figure 5. 1940 aerial image showing hospital and associated buildings within proposed northern (purple) and southern (red) Gate 1 Road works, and test pits dug during this assessment.



Figure 6. 1890 plan of the asylum grounds showing several buildings to the south of the main hospital building (circled in red) (Archives New Zealand ABZK 24411 W5433 PWD16667/1).

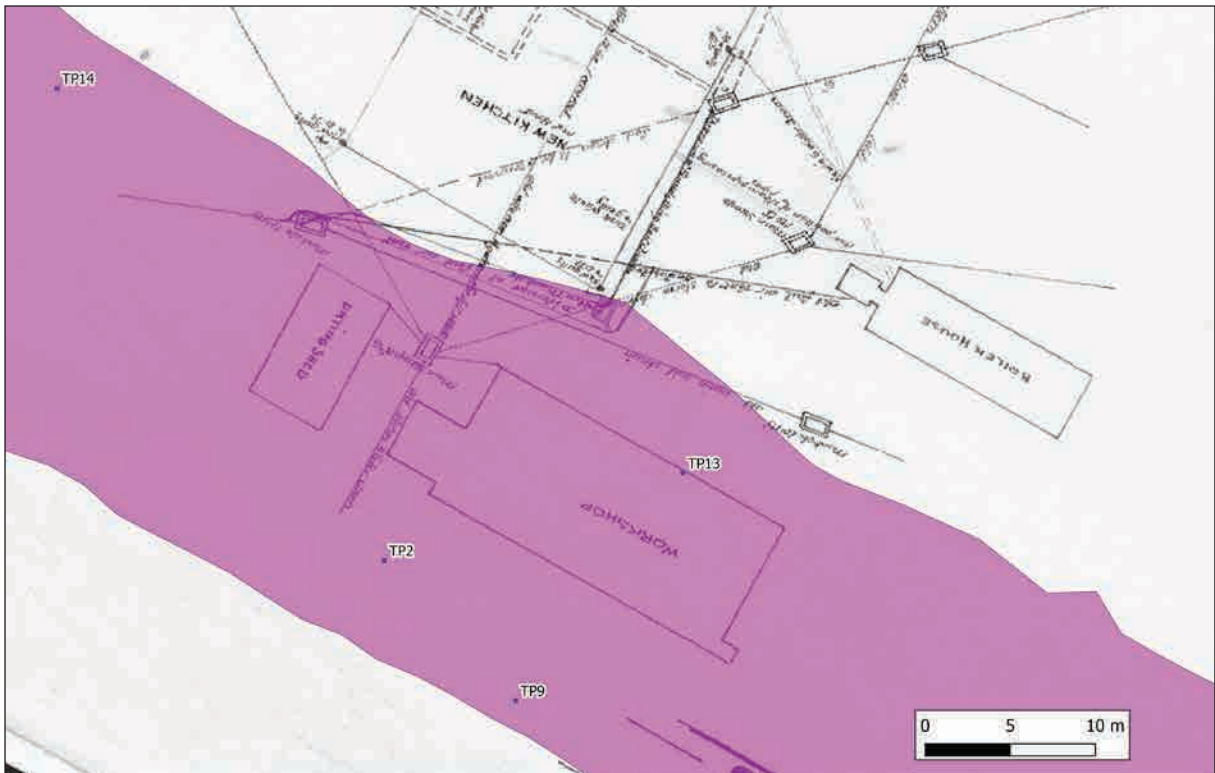


Figure 7. 1903 plan of the alterations and additions to the hospital building showing 'workshop' and 'drying shed' within the area of proposed northern Gate 1 Road works (purple), and test pits dug during this assessment (Archives New Zealand ABZK 24411 W5433 PWD20686/1).



Figure 8. TP13 showing compacted fine scoria surface possibly connected with old workshop buildings.



Figure 9. Location of TP8 in extent of proposed Spine Road within old Asylum Gardens.



Figure 10. Northern wing of Building 028 recorded as the old milking shed/dairy site R11/3336, in relation to proposed extent of works (red).



Figure 11. Old milking sheds/dairy to the right of the photograph, recorded as site R11/3336.

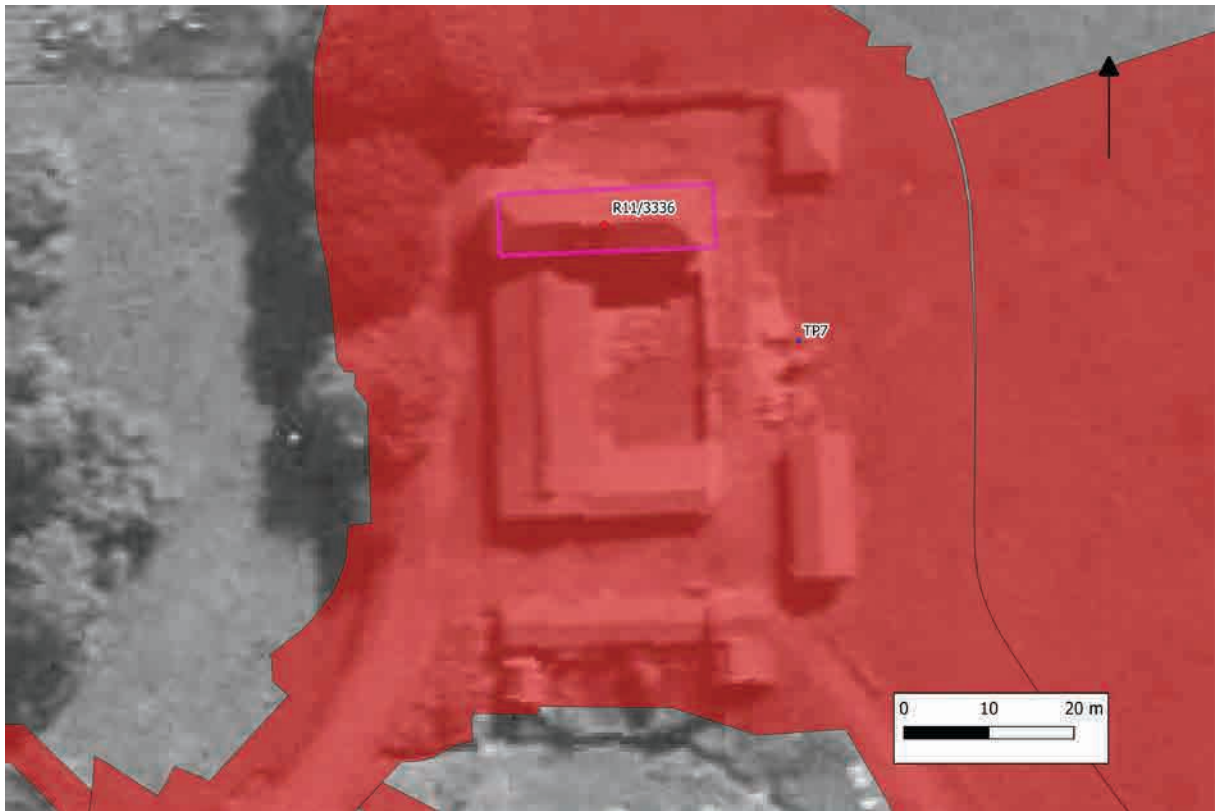


Figure 12. 1940 aerial photograph showing remaining dairy building (pink) and other associated buildings within the complex in relation to the proposed roading earthworks (red) and TP7.



Figure 13. Location of recorded enclosure associated with piggery R11/2983 .

stream for Auckland's Auxiliary water supply. If this is the case, it has clearly been recently modified by the placement of a pvc pipe in the centre for stormwater flow from Farm Road (Figure 15)). The section of Wairaka Stream north of the culvert has been modified from the 1950s to create and then subsequently remove a driveway to the Farm Manager's House (site R11/3331), as well as for landscaping. TP14 dug within the proposed works near Wairaka Stream showed a modified clay subsoil with rusted nails, brick fragments, charcoal and yellow clay pockets above bedrock at 400 mm below the surface. There is also a visible layer of demolition material within the eastern side of the stream close to the old dairy location, probably from the demolition of the southern elements of that complex in the 1970s. The stream is stone-lined but again it is difficult to establish the antiquity of this feature, as these changes from the 1950s onwards would undoubtedly have disturbed any earlier work on the stream.

4.4 Wastewater

Works involve the construction of several new wastewater lines and most of these are within the extent of works for roading and hence are covered in Section 4.1, but four are not. A wastewater line will be constructed parallel to Carrington Road and Gate 2 Road and then down the slope between Gate 2 Road and Spine Road, but this area has already been modified by buildings and an existing abandoned sanitary sewer. Another wastewater line will run parallel to the Stormwater 06 Outfall for around 70 m (Figure 17) before turning northeast along the top of the slope above Te Auaunga / Oakley Creek. This area has already been assessed for the 06 Outfall and the proposed works will also impact recorded shell midden R11/3313. The route then follows an existing gravel driveway that heads towards the Te Auaunga / Oakley Creek walkway, most of which is covered in modern building material or a line of established macrocarpa trees. The line then turns west down



Figure 14. Location of stormwater trenching from proposed Farm Road into Wairaka Stream (red area) in relation to existing stone culvert (purple), original driveway to farm manager's house (light blue dashed).



Figure 15. Dam and culvert on southern side of Farm Road in vicinity of new stormwater trenching.



Figure 16. View southeast along Farm Road and stormwater trenching alignments to Wairaka Stream.

the steeper slope above the creek to a new satellite manhole near the existing Orakei Main Sewer. One shell midden (R11/524) and a drystone wall (R11/2473) have been recorded within this area on the banks of Te Auaunga / Oakley Creek and would likely be impacted by this wastewater line. The nature of this impact is assessed in Section 5.5 and proposed mitigation in Section 5.6. The shell midden is subsurface and so could not be relocated, but the wall was photographed and a GPS point taken (Figure 18). A final wastewater will be trenched south from Farm Road to a manhole north of the planted wetland surrounding the spring at the head of the Wairaka Stream (Figure 19).

4.5 Water reticulation

The Carrington Backbone works involve the construction of several new water reticulation lines. Most of these are within the extent of works for the roading and are covered in Section 4.1, but two lines were outside these. One line will run parallel to Carrington Road, being north and south from the Gate 1 Road intersection, and south from Gate 2 Road to Farm Road intersection. The only area within this line that has a likelihood of encountering intact subsurface archaeological deposits would be the section north of Gate 1 Road (Figure 20), as this passes the eastern wing of Oakley / Carrington Hospital and is within the Scheduled Heritage Extent of Place in the AUP for the building (ID 1618) but will not impact the primary features recorded within the AUP. Another line extends south from Gate 2 Road into Taylor's Laundry, an area which has already been heavily modified for that commercial premise. A third line will run from Spine Road towards the Old Pump House building (Building 033) through a currently grassed area and landscaped area. It is possible that there may be subsurface features of the original Wairaka Stream and pump supply for the hospital, as well as the later 1904 Pump House pipework, within this location (Figure 21).



Figure 17. Start of proposed wastewater line near R11/3313.



Figure 18. Stone wall R11/2473 in wastewater alignment above Te Auauanga / Oakley Creek (scale = 1 m).



Figure 19. Location of proposed wastewater line running south from Farm Road to planted wetland.



Figure 20. Route of water line between Carrington Hospital building and Carrington Road, in the Scheduled Historic Heritage Extent of Place for Oakley / Carrington Hospital in the AUP (ID 1618).

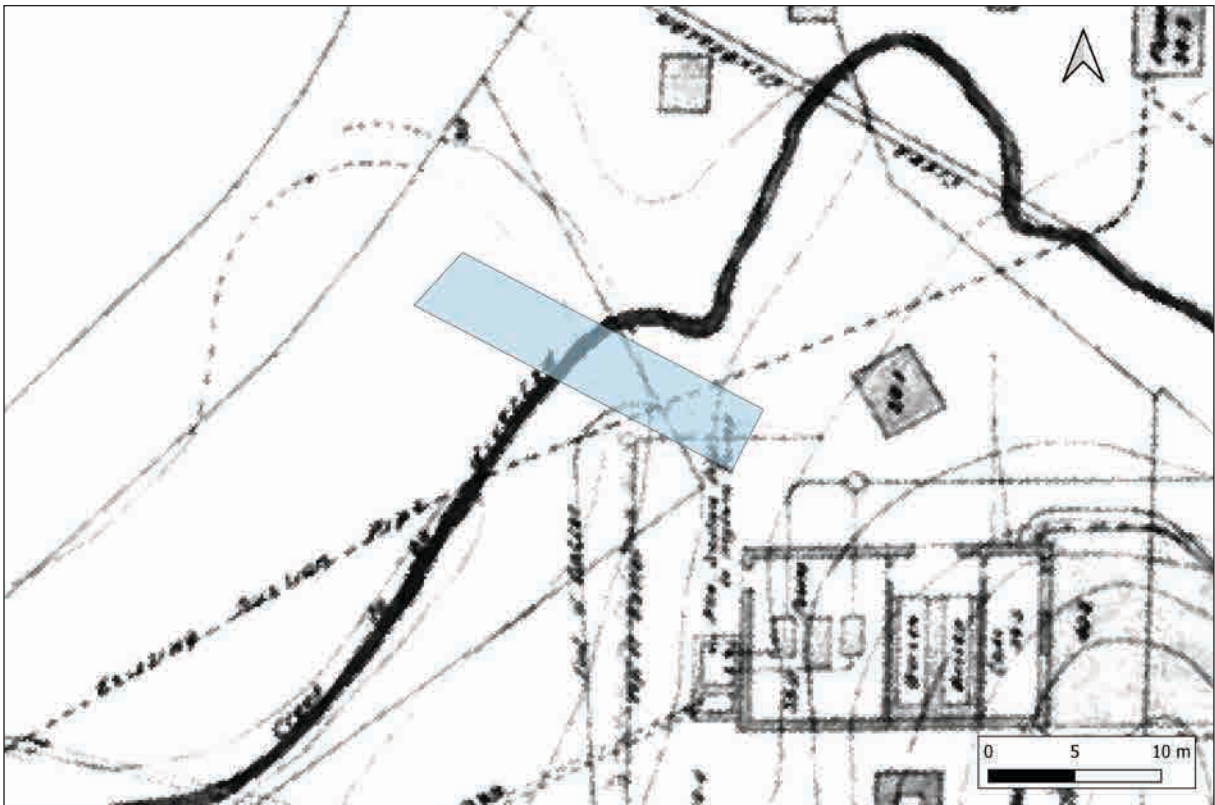


Figure 21. 1903 plan showing Wairaka Stream and pipework in relation to proposed water line (blue).

4.6 Summary

Overall, the extent of the proposed Backbone works including the routes of the new Spine, Gate 1, Farm and Gate 2 Roads as well as the proposed stormwater, wastewater and water reticulation lines have a number of recorded and potential subsurface pre-European Māori and historic archaeological deposits along them, as well as extending into the Scheduled Heritage Extent of Place for Oakley/Carrington Hospital Main Building Scheduled Heritage Extent of Place (ID 0618) in the AUP. The following sections of this report assess the nature and scale of those effects and proposed mitigations.

5 Assessment

The following assessments of values and significance relate only to archaeological values. Other interested parties, in particular mana whenua, may hold different values regarding the proposed development.

5.1 Assessment of archaeological values, pre-European Māori shell midden R11/3313 and R11/524

Condition	All shell midden are subsurface. The only form of site damage, if any, is likely to be from landscaping and vegetation planting/removal.
Rarity	Other shell midden have been found nearby on the banks above Te Auaunga / Oakley Creek and further inland on the Unitec grounds (i.e. R11/298, R11/981 and R11/1387), and so this is a common site type in the area.
Context	The midden is connected with pre-European Māori occupation in the vicinity of Te Auaunga / Oakley Creek and inland from this waterway on the slopes below Ōwaikara/ Mt Albert, specifically resource extraction and food processing techniques.
Information	Few in situ shell midden have been recorded within the area, most being modified or redeposited, and little is known about associated occupation and settlement. There is the potential for further scientific information on these aspects of pre-European Māori lifeways to be recovered by archaeological means during the proposed works. If charcoal or other datable material is found within a secure context, it could provide temporal information about the site.
Amenity	The sites are currently on private land and so have low amenity value.
Cultural	The cultural values of the site can only be determined by the mana whenua.

5.2 Assessment of archaeological values, potential historic occupation associated with milking sheds and dairy complex R11/3336 and piggery complex R11/2983

Condition	The milking shed building is in very good condition, however the dairy buildings to the south have been replaced with new buildings in the same footprint. The piggery has been destroyed but some troughs and stone wall foundations remain. There is also reasonable cause to suspect that features relating to these farm buildings may exist subsurface. The most common form of site damage is likely to be from landscaping on the Unitec campus.
Rarity	Potential deposits will share rarity values with sites such R11/2373, R11/2205, R11/3331 and R11/2500 representing early Pākeha industry around Te Auaunga/ Oakley Creek, and the establishment and use of Carrington Hospital.
Context	Any deposits exposed will tie into the wider context of historic occupation of Ōwairaka/ Te Ahi-kā-a-Rakataura/ Mt Albert, specifically around the Te Auaunga/ Oakley Creek waterway and Carrington Hospital.
Information	There is the potential for scientific information to be recovered by archaeological means if archaeological material is uncovered during works.

Amenity	The sites are currently on private land and so the sites have low amenity value
Cultural	Any potential subsurface historic deposits relate to the historic Pākeha occupation of the property.

5.3 Assessment of archaeological values, drystone retaining wall R11/2473

Condition	The drystone wall was only visible in some places along its full extent due to being surrounded by long kikuyu grass and also an overburden from the gravel track above. Sections remain in fair condition but others appear to have stones removed. The most common form of site damage is likely to be from landscaping on the Unitec campus.
Rarity	Potential deposits will share rarity values with sites such R11/3336, R11/3331, R11/2373, R11/2205, R11/3331 and R11/2500 representing early Pākeha industry around Te Auauanga/ Oakley Creek, and the establishment and use of Carrington Hospital.
Context	Any deposits exposed will tie into the wider context of historic occupation of Ōwairaka, specifically around the Oakley Creek waterway and Carrington Hospital.
Information	There is the potential for scientific information to be recovered by archaeological means if archaeological material is uncovered during works.
Amenity	The site is currently on private land and therefore has low amenity value.
Cultural	Any potential subsurface historic deposits relate to the historic Pākeha occupation of the property.

5.4 Assessment of effects

The proposed works will involve some cut and fill to increase the existing and new private road corridors up to 25 m with shared paths, cycle paths, planting and lighting on either side. These works will involve earthworks to a maximum depth of 2.5 m, although often much less than this, across the four proposed road upgrades assessed within the Backbone works for the Carrington Residential Development Program (Gate 1 Road, Gate 2 Road, Farm Road and Spine Road). The route of these roads mostly follow the existing driveways, with some slight modification, in particular where Farm Road proposed to connect with Spine Road. The trenching for stormwater and wastewater will involve earthworks to a maximum depth of 3 m, while water reticulation, electrical and communications trenching will be no deeper than 1.5 m. Where trenching is cut through basalt a rock breaker on a 40 tonne digger may be required. Vibration associated with rock breaking has the potential to adversely affect heritage buildings. These proposed works will likely directly impact on the known site extent of recorded shell midden site R11/3313, and drystone retaining wall R11/2473 and the Scheduled Oakley/ Carrington Hospital building Historic Heritage Extent of Place in the AUP (Item 1618), as well as the possible site extent and occupation associated with the asylum farm milking sheds site R11/3336 and piggery R11/2983, and shell midden site R11/524 (Figure 1).

A separate assessment of built heritage has been commissioned from Dave Pearson Architects and no assessment of the standing buildings is made here, although it should be noted that all pre-1900 buildings are defined as archaeological sites under the Heritage New Zealand Pouhere Taonga Act 2014. Any partial or full demolition of buildings may expose pre-1900 archaeological features associated with the occupation of nearby buildings, such as the Oakley / Carrington Hospital. Such pre-1900 features may be found both inside and outside the Historic Heritage Extent of Place of the buildings.

5.5 Mitigation of effects

All earthworks within unmodified ground at Lots 1, 5 and 6 DP 515012; Lot 3 DP 314949; and Lots 1 and 2 DP 531496 should be monitored by an archaeologist to mitigate the potential loss of heritage to the works. Those works should focus on gaining archaeological material suitable for midden analysis and radiocarbon dating if evidence is found for pre-European Māori occupation on the property to gather information on the chronology of settlement. All works should follow standard

archaeological procedure involved when archaeological contexts are exposed, including plan and stratigraphic profile drawings. The excavation within unmodified ground should be undertaken with only a flat-edged bucket in fine spits under the instruction of an archaeologist to expose stratigraphic layers and potential archaeological features. Where rock breaking is required close to heritage buildings, whether scheduled in the AUP or not, a suitable buffer zone should be established around each building and alternative methods to minimise or eliminate vibration should be used. An assessment by Marshall Day Acoustics (Shanks 2021) has recommended monitoring vibration levels during any rock breaking within 8 m of any building and this particularly applies to pre-1900 buildings.

6 Recommendations

These recommendations are only made based on the archaeological potential that has been outlined above. Any other values associated with special interest groups, including tangata whenua, can only be determined by them. It is recommended that:

- Demolition of the pre-1900 part of Building 28, recorded as site R11/3336, should be avoided;
- an authority to destroy, damage or modify pre-European Māori shell midden R11/3313 and R11/524; drystone retaining wall R11/2473; and possible occupation associated with asylum milking sheds R11/3336 and piggery R11/2983, within Lots 1, 5 and 6 DP 515012; Lot 3 DP 314949; and Lots 1 and 2 DP 531496; and Lot 5 DP 515012 be applied for from Heritage New Zealand Pouhere Taonga (HNZPT) under Section 45 of the Heritage New Zealand Pouhere Taonga Act 2014;
 - note that this is a legal requirement;
 - no authority should be applied for without consultation with the appropriate tangata whenua authorities; evidence of consultation, and views expressed, will be required by HNZPT, and will be considered when deciding about the granting of the authority
 - note that the application process may take 20–40 working days from the date of acceptance, and following issue there is a period of 15 working days during which earthworks cannot commence to allow for appeals to the Environment Court;
- in the event of kōiwi (human remains) being uncovered during any future construction, work should cease immediately and mana whenua should be contacted so that suitable arrangements can be made;
- since archaeological survey cannot always detect sites of traditional significance to Māori, or wahi tapu, the appropriate mana whenua authorities should be consulted regarding the possible existence of such sites, and the recommendations in this report.

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