TARARUA WIND POWER LTD
MAHINERANGI WIND FARM (STAGE 2), CLUTHA DISTRICT:
ARCHAEOLOGICAL ASSESSMENT

Prepared for Mercury NZ Ltd

May 2025

By

Kim Tatton, MA (Hons)
Doug Gaylard, MA (Hons)

Clough & Associates Ltd

321 Forest Hill Rd,
Waiatarua, Auckland 0612
Telephone: (09) 8141946
Mobile [redacted]
www.clough.co.nz

1 TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Tararua Wind Power Ltd (TWP) Mahinerangi Wind Farm project is a Schedule 2 of the Fast-track Approvals Act 2024 Listed Project located on the eastern foothills of Lammermoor Range, situated approximately 5km north of Lake Mahinerangi and approximately 50km west of Dunedin.

TWP holds a land use consent for the development of the Mahinerangi Wind Farm of up to 100 wind turbines, with a maximum tip height of 145m. Stage 1 of the wind farm was completed in 2011 and 12 turbines with a maximum tip height of 125m were built.

TWP, a fully owned subsidiary of Mercury NZ Limited, is progressing Stage 2 of the Mahinerangi Wind Farm which is to be known as "Puke Kapo Hau" ("the Project", "Puke Kapo Hau" or "MWF Stage 2"). MWF Stage 2 is proposed to consist of up to 44 additional turbines across 54 consented turbine locations which will have a maximum tip height of 165m. Stage 2 also includes new activities including a 110kV transmission line, substation and Battery Energy Storage System (BESS).

As part of the 2006-2008 resource consent process, an archaeological assessment of the entire Mahinerangi Wind Farm project area was undertaken, which identified 26 sites of archaeological value within the wider wind farm site (Watson Oct 2006). The sites were water races, a hut, mine tailings, a dam, other mine workings, a fence line, a pole track, sluiced areas and a house. All of these sites were associated with historic gold mining activities in the area.

The 2006 assessment concluded that the only archaeological site that would be affected by the construction of the windfarm was part of the Pole Track (Site 91 – H44/1200) that ran from Waipori to Deep Stream during the 19th century, is still used as a farm track, and exists as a paper road north of Eldorado Track.

None of the other identified archaeological sites would be directly affected. As such, the wind farm proposal was assessed as having a very limited impact on the identified archaeological sites. However, it was concluded that it is possible that sites that were not located during the survey may be encountered during earth works associated with the project. In particular, it was considered possible that Māori archaeological sites may be encountered, and if so these are most likely to be findspots or the remains of small camp sites.

This archaeological assessment has involved a review of the 2006 archaeological assessment and the consented layout plan of the proposed Stage 2 of the project, with some additional field survey undertaken..

It can be confirmed that the effects of Stage 2 of the Mahinerangi Wind Farm on archaeological values have not changed from the 2006 assessment. The conclusions of the 2006 assessment remain valid if any of the 54 consented turbine locations and contingency zones are utilised, amended or repositioned (including hardstand and laydown areas) and with respect to the proposed changes to the spoil locations, roading layout (including track widths and cut and fill batters).

It is recommended that a general archaeological Authority to modify site H44/1200 and to cover all earthworks for the project would be required under the HNZPTA and is therefore included in the FTAA approval application so that potential delays can be avoided should sites be exposed. This should include appropriate discovery protocols, including the

training of all staff who work on the project during the earth moving phase(s) in the recognition of archaeological sites.

In addition, the existing conditions 69-71 relating to accidental discovery protocols remain valid and appropriate in managing the discovery of unknown archaeological sites and/or artefacts.

1. INTRODUCTION

1.1 Purpose of Report

This report has been prepared by Clough and Associates at the request of Tararua Wind Power Limited (TWP). This report provides an archaeological assessment for the proposed Mahinerangi Wind Farm project which is a Schedule 2 of the Fast-track Approvals Act 2024 (FTAA) Listed Project.

The wind farm site is approximately 1723 ha and is located on the eastern foothills of Lammermoor Range, situated approximately 5km north of Lake Mahinerangi and approximately 50km west of Dunedin. The west and north-western boundary of the wind farm is bounded by the Te Papanui Conservation Park and Black Rock Scientific Reserve (Figure 1).

1.2 Project Background

TWP holds a land use resource consent for a wind farm at Mahinerangi confirmed by the Environment Court in 2009[1]. The conditions provide for up to 100 wind turbines with a maximum tip height of 145m. The consent conditions identify 100 wind turbine locations, each with a 'Contingency Zone', together with access tracks and spoil areas (Figure 2).

The consent was given effect to by the construction of Stage 1 comprising 12 wind turbines which became operational in 2011. These turbines are located in the western corner of the wind farm site and connect into the local 33 kV transmission line network associated with the Deep Stream Hydro Scheme (Figure 3).

As part of the 2006 - 2008 resource consent process, an archaeological assessment of the original 5000 hectare wind farm "envelope" was undertaken (Watson Oct 2006). The archaeological assessment identified 26 sites of archaeological value within the finalised "wind farm development area"[2]. The sites were water races, a hut, mine tailings, a dam, other mine workings, a fence line, a pole track, sluiced areas and a house. All of these sites were associated with historic gold mining activities in the area.

The assessment concluded that the only archaeological site that would be affected by the construction of the wind farm was part of the Pole Track (Site 91 in Watson Oct 2006) that ran from Waipori to Deep Stream during the 19th century, was still used as a farm track, and exists as a paper road north of Eldorado Track (see Figure 5 in Historical Background). Part of the track was to be used as an access route to the northern section of the wind farm, and some turbines are likely to be sited close to it.

Although this would clearly impact the pole track, the track does not exist as it did in the 19th century (when it would essentially have been a route travelled on foot), and the assessment noted that it is the route, rather than the 'infrastructure', that is an archaeological site. The ongoing use of the route for transport is not inappropriate, and was not considered to be a significant impact (Watson Oct 2006:40).

---

[1] Secured by TrustPower.

[2] The original resource consent documents used a "Wind Farm Envelope" for assessment purposes. This approach was refined through the application of contingency zones and other environmental constraints, with the phase replaced by "Windfarm Development Area" in the Environment Court decision.

It was noted that none of the other archaeological sites identified (none of which were assessed as having high archaeological value) would be directly affected. A number of them are located in areas where there are already constraints, i.e. ecological, landscape or geotechnical constraints. As such, the wind farm proposal was found to have a very limited impact on the identified archaeological sites (Watson Oct 2006:41).

However, Watson concluded that it was possible that sites that were not located during the survey could be encountered during earthworks associated with the project. This was due partly to the vegetation cover in some parts of the envelope and partly because some archaeological sites, by their very definition, would have left no trace on the ground surface. In particular, it was considered possible that Māori archaeological sites may be encountered, and if so these were most likely to be findspots or the remains of small camp sites (Watson Oct 2006: 41).

On the basis of the above, it was considered that any adverse archaeological effects associated with the Mahinerangi Wind Farm would be minor or less. Watson recommended that the potential for impacting on archaeological sites could be covered by a Section 12 archaeological Authority from the NZ Historic Places Trust (now Heritage New Zealand Pouhere Taonga)[3] and an accidental discovery protocol. A key component of this protocol was the training of all staff who work on the project during the earth moving phase(s) in the recognition of archaeological sites (Watson 2006:43)

1.3 Stage 2 Proposed Works

TWP seeks to change the conditions to enable Stage 2 of the wind farm to be completed with 44 wind turbines of up to 165m height (i.e. to increase the wind turbine height to blade tip by 20m) and to increase the overall capacity of the wind farm (Stages 1 and 2) to 226MW. The purpose for the condition changes is to enable use of more efficient wind turbines currently available. To retain some flexibility for the detailed design, TWP proposes to distribute the 44 wind turbines amongst 54 potential locations. The remaining 34 of the approved 100 wind turbine locations would effectively be removed from the consent. The application also seeks localised changes to some of the identified wind turbine location contingency zones and the civil works associated with the larger wind turbines (Figure 4).

Most of the regional resource consents for the construction of the Mahinerangi Wind Farm were for a period of 15 years and have now expired. As such, a new suite of consents are required for construction-related activities within the wind farm site – including culverts, works around wetlands and discharges of construction related stormwater.

New consents are also sought for a new transmission line and associated infrastructure to enable a connection to the existing National Grid HWB-ROX-A 110kV line roughly 3km south-east of the wind farm.

In summary, works relevant to the archaeological assessment include the following:

Civil engineering components at each wind turbine location

- Access tracks

[3] Now an archaeological Authority under Section 44(a) of the Heritage New Zealand Pouhere Taonga Act 2014 from Heritage New Zealand

- Hardstand area (a permanently earth-worked and surfaced platform used for construction and crane pad and including the wind turbine and its foundation)
- Laydown areas (flat areas in which components (tower sections, nacelle, and blades) can be stored while the wind turbine is installed.
- Surplus fill disposal areas (SFD)
- Underground cable network trenching typically between 400mm and 1.2m deep generally running parallel to the formed access roads / tracks within the Windfarm Development Area.

There is flexibility to locate the wind turbine hardstand within the wind turbine contingency zone, and all works are to be within the Windfarm Development Area. The wind turbine contingency zone is a up to 100m radius, subject to modification in response to environmental constraints, around the wind turbine location.

Internal Road network

- Roading across the wind farm site involving earth working and cut and fill batters
- Metalled carriageway width of 5.5m, with localised widening on corners (potentially up to 9.5m total width), to allow for the transportation of turbine components as well as general construction traffic [4]
- 200mm average depth pavement.

The main access track will be along the Eldorado ridge line, which runs to the north, off Eldorado Track.

Transmission Line

- A 33kV/110kV substation and a nearby BESS in the middle of the wind farm
- 25 poles structures and temporary hardstands
- 6km of all-weather access tracks 4.5m in width.

The access tracks layout generally follows existing farm tracks or fence lines to minimise landform modification.

[4] The existing consent allows for up to 37km of roading with a carriage width up to 12m during construction, 5.5m of which will be permanently metalled and the remainder to be revegetated following construction. The proposed changes would reduce the formation width by providing for 5.5m carriageway for both construction and operations with localised widening to a 9.5m wide carriageway on bends. The earthworks will therefore be reduced.

1.4 Methodology

For this archaeological assessment the New Zealand Archaeological Association's (NZAA) site record database (ArchSite), District Plan schedules and the Heritage New Zealand Pouhere Taonga (Heritage NZ) New Zealand Heritage List/Rārangi Kōrero were searched for updated information on archaeological sites recorded in the vicinity. Literature and archaeological reports relevant to the area were also consulted for any updated and more recent archaeological work in the area.

The 2006 archaeological assessment for the proposed Mahinerangi Wind Farm was then reviewed against any updated archaeological information and the proposed Stage 2 wind farm requirements (see above).

A visual inspection of relevant areas of the wind farm and the proposed new 110 kV transmission line was conducted on 20 May 2025. The ground surface was examined for evidence of former occupation (in the form of shell midden, depressions, terracing or other unusual formations within the landscape relating to Māori settlement, or indications of 19th century European settlement remains). Exposed and disturbed soils were examined where encountered for evidence of earlier modification, and an understanding of the local stratigraphy. Photographs were taken of the area and its immediate surrounds.

Figure 1. The location of the Mahinerangi Wind Farm in Clutha District

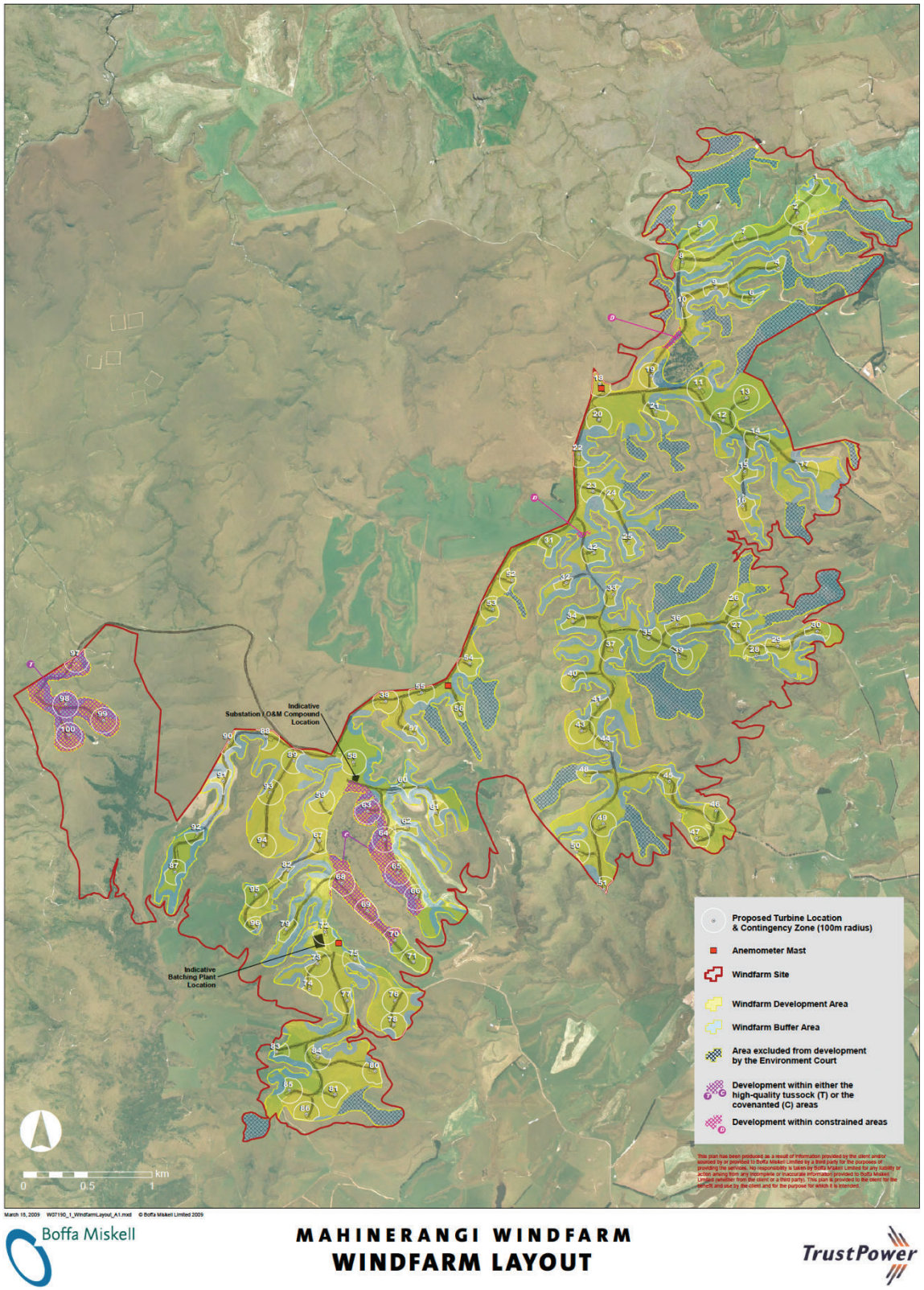

Figure 2. Consented Mahinerangi Wind Farm Layout

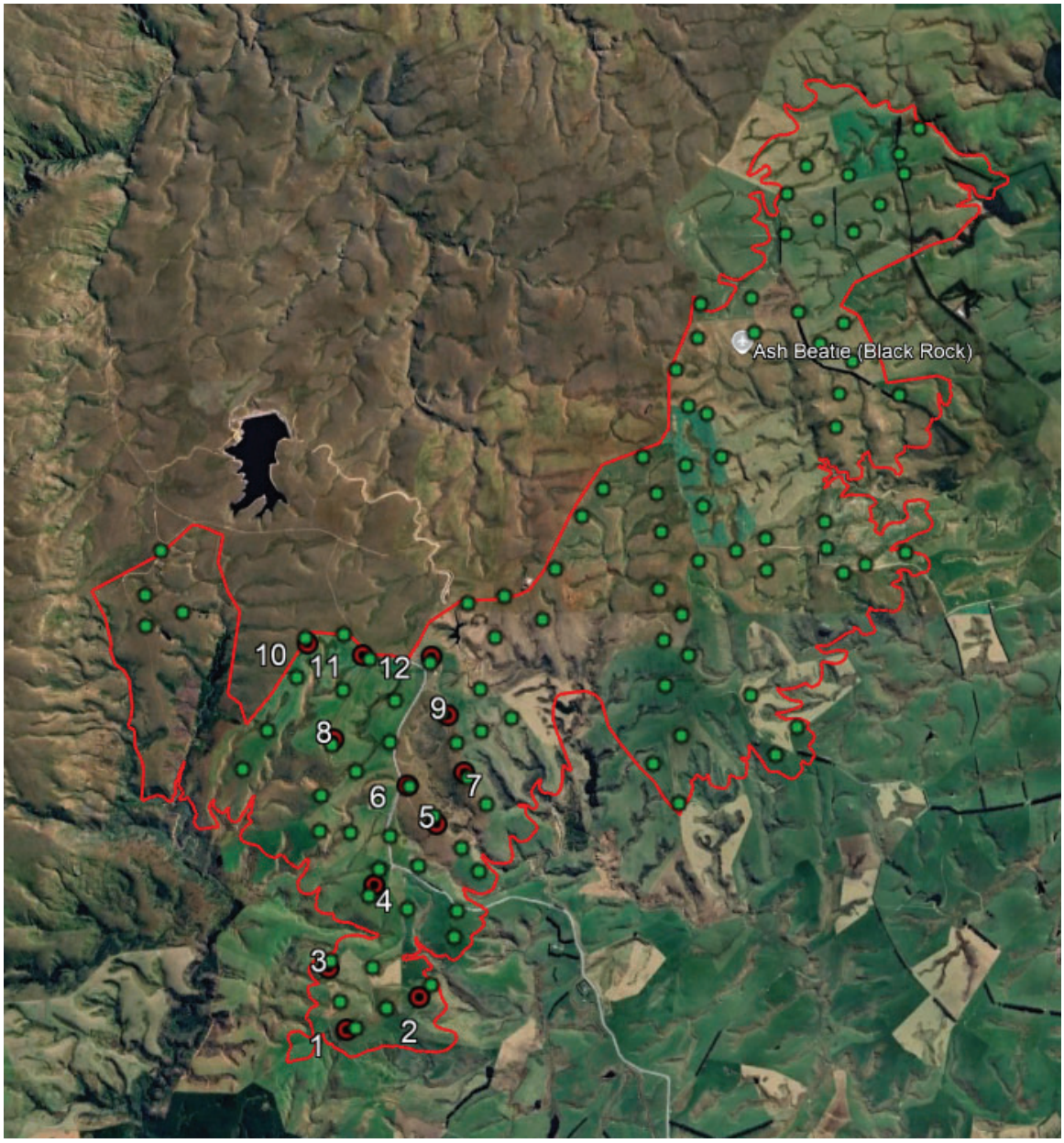

Figure 3. Consented 100-2MW turbine layout with the general location of the 12 existing Stage 1 turbines identified in red

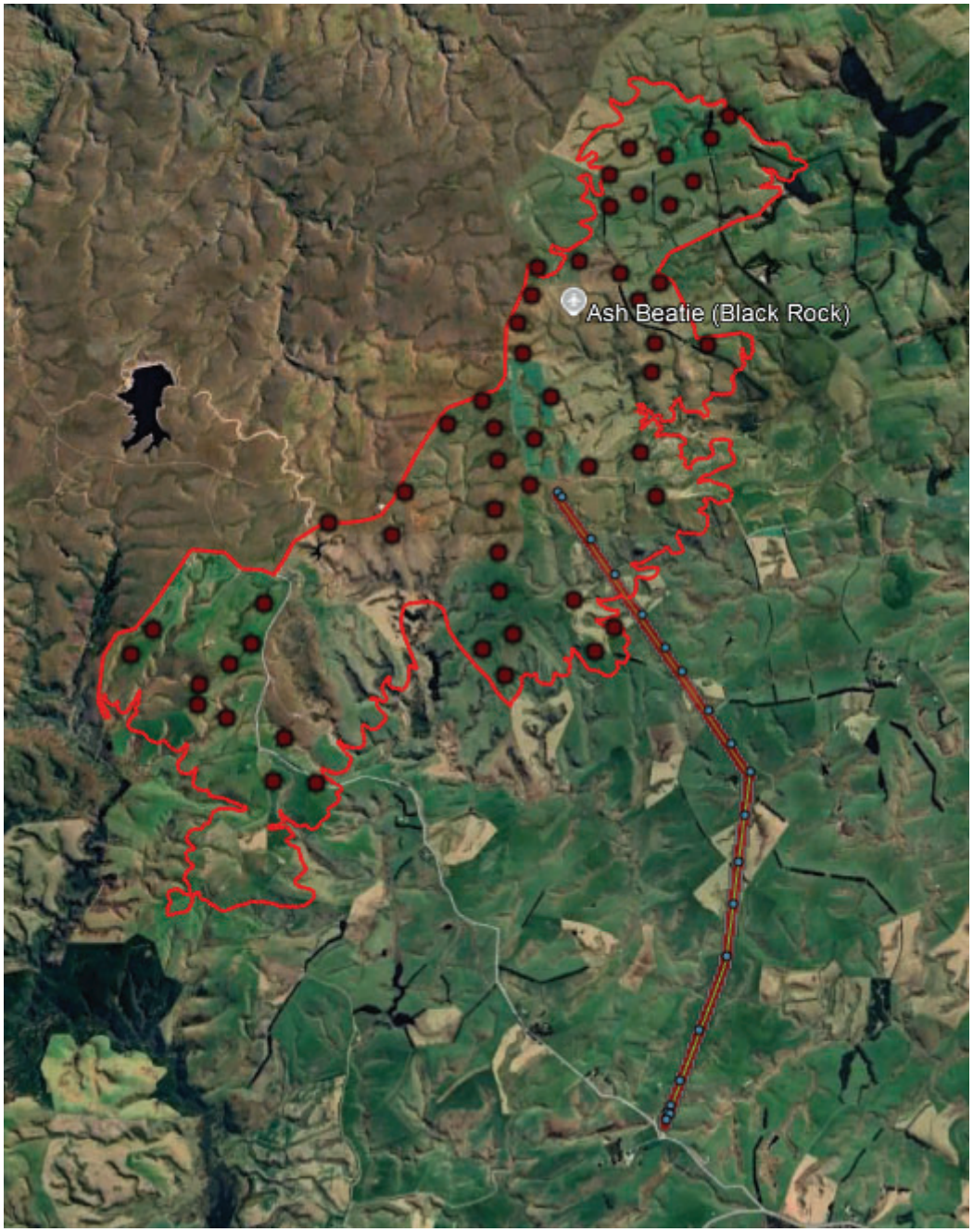

Figure 4. Indicative Stage 2 layout showing 54 potential turbine locations and the 110kV transmission line connecting to National Grid.

2 HISTORICAL BACKGROUND

The 2006 archaeological assessment by Watson provided an in-depth historical background for the project area, which was researched through various secondary sources relating to the Waipori and Tuapeka area. More specific information about the area (and about potential archaeological sites) was sought through maps held at Land Information New Zealand, the Dunedin office of Archives New Zealand, the Hocken Library, and the Otago Settlers Museum. More detailed information about the mining history of the area was researched through the Goldfields Warden's annual reports, published in both the Otago Provincial Council Votes and Proceedings and the Appendices to the Journal of the House of Representatives. Information about gold mining was also contained in Marshall's (1918) geological survey of the Tuapeka district (Watson Oct 2006:8).

In summary, the report acknowledged Kāi Tahu as mana whenua of the Waipori Catchment. The Waipori River was an important mahika kai for Kāi Tahu ki Otago, resources from which were harvested and collected in seasonal migrations inland from permanent coastal settlements as far away as the Otago Peninsula and the harbour area, Purakanui and Puketeraki. Waipori means 'dark water', relating to how the water is often stained by peat swamps at the headwaters of the Waipori River (TrustPower Aug 2019:4).

There is no known Māori history or traditions associated with the area of the Mahinerangi Windfarm (C. Rosenbrock, Kāi Tahu Ki Otago Ltd, pers. comm to Watson), although the nearby Old Dunstan Road was formed along a Māori walking trail to Otago's interior. As such, Māori may occasionally have travelled through the wind farm area (Watson Oct 2006:10).

European interest in the greater Waipori area began in 1853 with the take-up of pastoral leases, and the associated explorations and surveying. The land on which the wind farm lies was originally part of Pastoral Runs 186 (Figure 5) and 259. Only a few years after these runs were taken up and stocked, gold fever hit the young Province of Otago. The Waipori gold rush initially focused on the Waipori River and its tributaries, including the Lammerlaw Stream. Later developments in the Waipori gold field included quartz mining (which also occurred near the Lammerlaw Stream) and the arrival of Chinese miners. It has been difficult to learn much about the history of the Black Rock area. It seems that it was never a significant part of the Waipori gold field but that gold mining certainly took place in the vicinity.

Gold mining continued in the area, albeit sporadically, into the 20th century. One of the results of the gold mining was the opening up of the country through a network of tracks, a number of which were later formed into roads.

The beginnings of the Waipori Hydro Electric Power Scheme (HEPS) were initially conceived in 1904 to power the gold dredges on the Waipori River, and it first started generating power in 1907. Water was diverted out of the Waipori River by a 3m high timber dam and carried to a power station along a 2.7km flume of native timber. Two 1,000kW generators were driven by pelton wheels, supplying electricity throughout Dunedin (TrustPower Aug 2019).

Gold mining interests proved to be a major constraint on the original development of hydroelectric power, with an attempt to block the application filed in 1913 to build a dam and inundate Waipori Flat, which was still being actively mined. With the demise of mining in 1925, the construction of the HEPS and the formation of Lake Mahinerangi,

many of the gold mining races were effectively re-purposed to supply water for power generation. TrustPower purchased the Waipori HEPS from the Dunedin City Council in 1998 (Tatton and Clough Jan 2020).

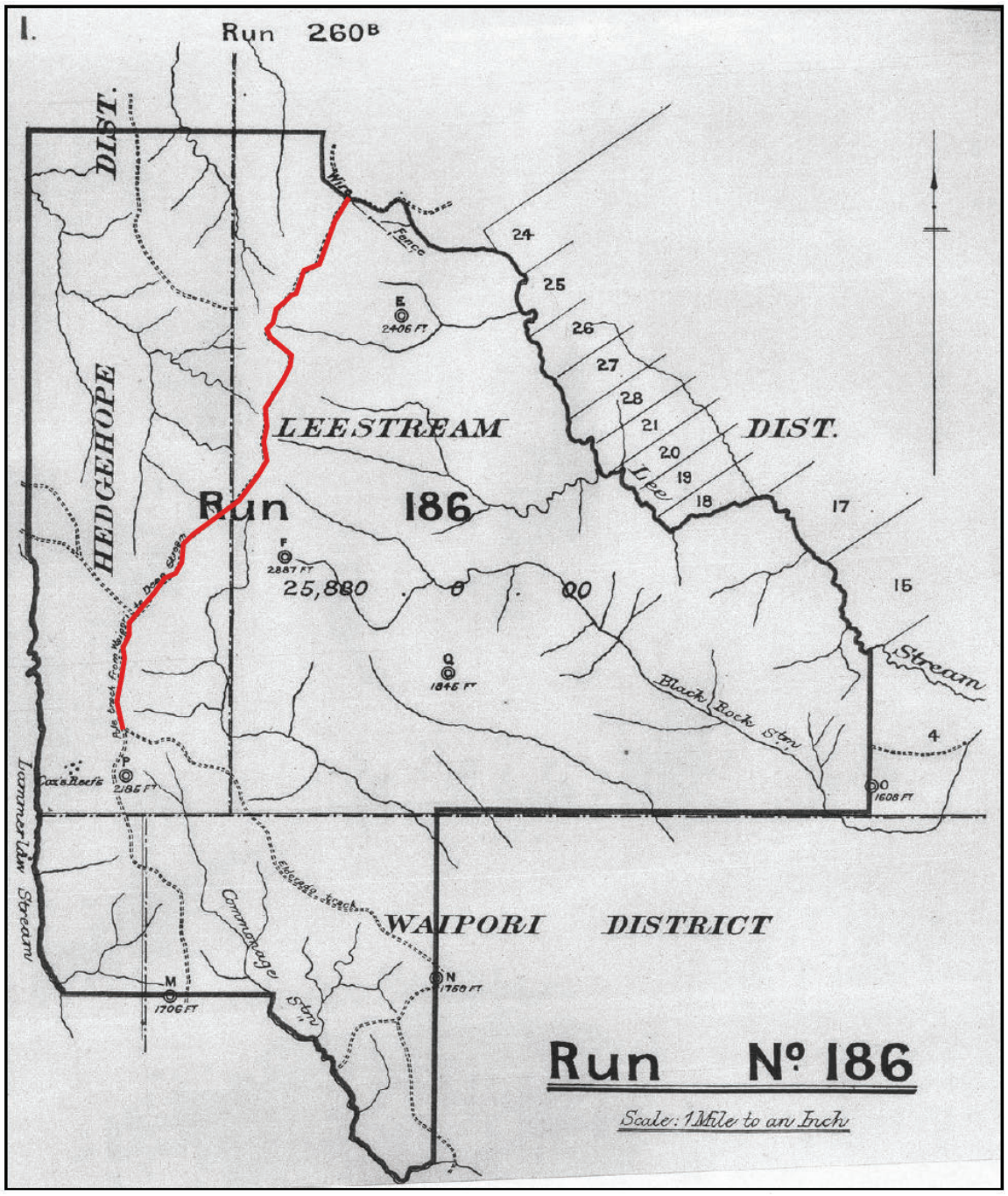

Figure 5. Pastoral Run 186 in 1897, showing the pole track (red line), Eldorado's Track and Cox's Reef (source: Watson Oct 2006:17)

3 ARCHAEOLOGICAL BACKGROUND

Watson (Oct 2006) describes previous archaeological work carried out in and around the Waipori and Waitahuna gold-fields area in the late 1970s and early 1980s. Over 900 sites have been recorded, mostly concentrated along the rivers and their catchments, and along the shores of Lake Mahinerangi. Sites of particular importance were those following the Lammerlaw Stream, Nardoo Stream, Waipori River, Waitahuna River, Reidy Creek, Burnt Creek, Stoney Creek, Devil Creek, Pioneer Stream and within 1.5km from the present Lake Mahinerangi edge (Schmidt May 2004:2). Site types identified were almost entirely related to gold mining from 1861 onwards and included the old township of Waipori (inundated with the filling of Lake Mahinerangi), cemetery, hut sites, tunnels, tailings, prospecting holes, water races, dams and reservoirs, sluicings, as well as roads, bridges and occupation sites.

Only one Māori archaeological site, an artefact find-spot, had been recorded in the Waipori and Waitahuna gold-mining areas. This is a find of an adze on the shores of Lake Mahinerangi (site H44/896).

3.1 Recorded Sites

Prior to the 2006 archaeological assessment of the Mahinerangi Wind Farm 32 previously recorded archaeological sites were located in the broader area, most of which related to the gold mining history of the area.

For the 2006 field survey, the original 5000 hectare design envelope was broken up into smaller blocks on the basis of modern property boundaries.

The field survey was structured around property boundaries within a large project design envelope and, as such, the sites recorded were discussed in groups relating to these property boundaries. Watson assigned consecutive GPS waypoint (field) numbers to each site as it was recorded. As some sites covered large areas, such as water races, they were assigned multiple waypoints under the same number, some sites crossing landowner boundaries.

Following Watson's 2006 survey 26 archaeological sites (seven previously recorded sites and 19 newly recorded sites) were identified within the then Mahinerangi Wind Farm development area (see Table 1 and Figure 6). Watson did not enter the newly recorded sites into the NZAA site record file (ArchSite), although five of these sites were also possibly previously recorded sites or associated with previously recorded sites, namely Site 23 [H44/917], Site 24 [H44/918], Site 26 [H44/897 and H44/900 destroyed], Site 27 [H44/898?] and Site 32 [H44/902?].

The search for updated information from relevant databases, literature and archaeological reports for this assessment has confirmed that no additional archaeological or other historic heritage sites have been recorded in the Mahinerangi Wind Farm development area since Watson's 2006 survey.

Table 1. Archaeological sites within the Mahinerangi Wind Farm project area. The H44 numbers relate to previously recorded sites in the NZAA site record file (see Appendix 1 for detailed site descriptions)

Watson Site #	Site Type	Property	NZAA #
3	Water Race	Thomas	
4	Hut	Thomas	
5	Tailings	Thomas	
22	Water Race	Thomas	
23	Dam	Thomas	H44/917
24	Water Race	Thomas	H44/918
25	Water Race	Thomas	
26	Workings	Thomas	H44/897 and H44/900 (destroyed)
27	Water Race	Thomas	H44/898?
28	Tailings	Thomas	
29	Tailings	Thomas	
30	Tailings	Thomas	
31	Tailings	Thomas	
32	Tailings	Thomas	H22/902?
33	Tailings	Thomas	
48	Fence Line	TrustPower Ltd	
70	Water Race	Hall	
72	Water Race	Beattie	
91	Pole Track	Landcorp/DCC/Hall	
	Sluiced Area	Thomas	H44/901
	Sluiced Area	Thomas	H44/903
	Sluiced Area	Thomas	H44/904
	Water Race	Thomas	H44/905
	Sluiced Area	Thomas	H44/908
	Sluiced Area	Thomas	H44/909
	House	Thomas	H44/910

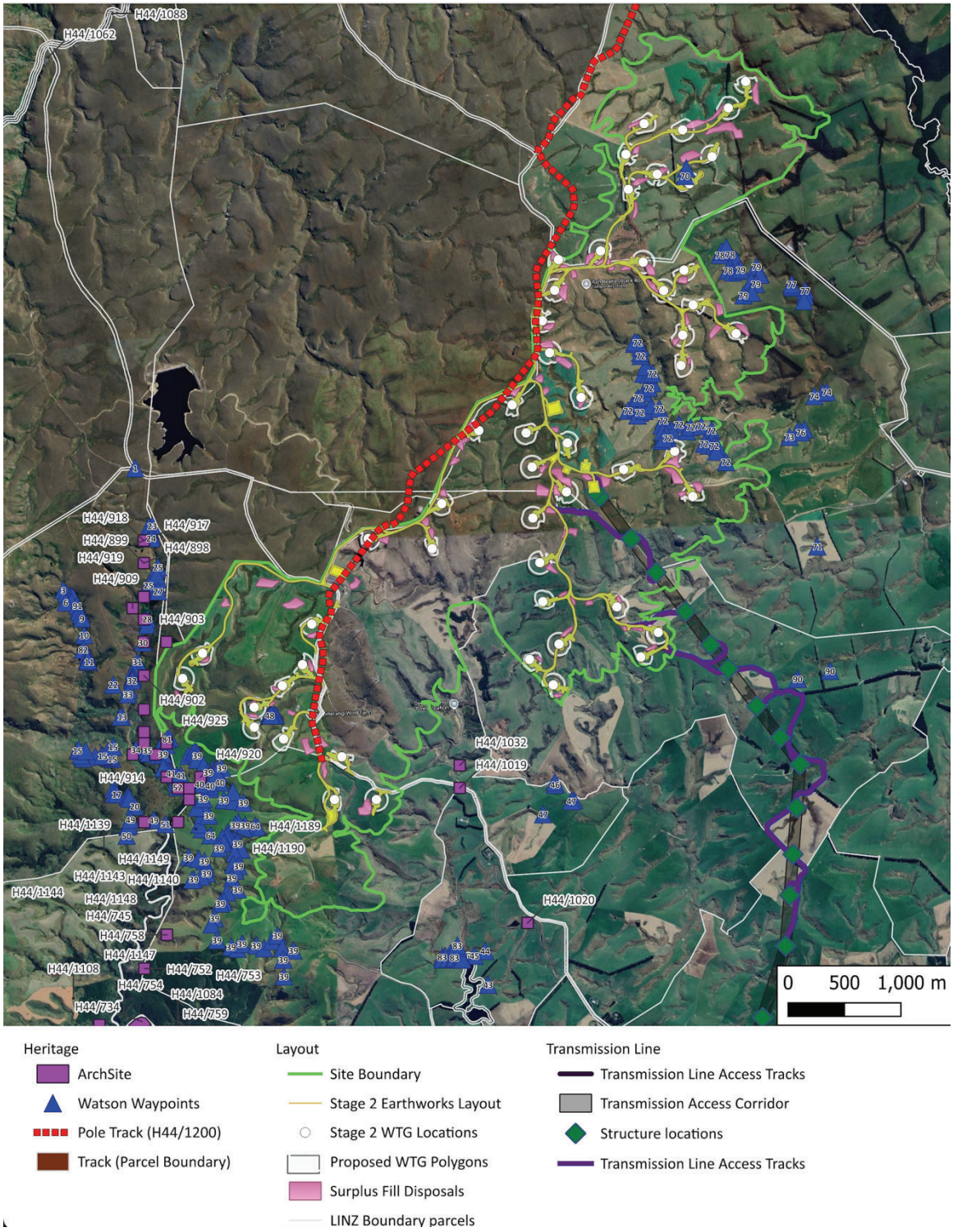

Figure 6. Recorded archaeological sites within the wind farm development area Puke Kapo Hau (outlined in green) and the wider wind farm site.

4 PHYSICAL ENVIRONMENT

The Mahinerangi Wind Farm consists of rolling terrain, typically at or about 600m elevation, ranging to a high point of 730m above sea level. Schist tors and rocky outcrops occur on ridgelines and valley sides across the site, most commonly around gully systems. In total, these gully systems cover approximately 359 ha.

The majority of the wind farm area is in pasture and snow tussock and is grazed. Shrublands are almost absent from the site apart from sparse, scattered fragments in gully systems and around rocky outcrops The consented wind farm development area contains areas that are excluded from development.

The site is dissected by a network of numerous small watercourses and ephemeral stream gullies.

The primary road leading to the wind farm site is the Eldorado Track (gravel) which is accessed off Mahinerangi Road. Mahinerangi Road (part seal, part gravel) can be accessed from SH8 in Lawrence (via Waipori) or via SH87 (Lee Flat Road or Lee Stream-Outram Road) to the east.

5 ASSESSMENT

5.1 Potentially Affected Archaeological Sites within Stage 2

For this assessment a review was carried out of the Mahinerangi Wind Farm Archaeological Assessment (Watson Oct 2006) and the consented layout plan of the wind farm, which was then compared with the changes proposed for Stage 2 of the project. The following matters were specifically considered: any amendments to the retained or repositioned 54 consented turbine location and contingency zones and associated hardstand and laydown areas (maximum area of hard stand areas and maximum depth of fill around hard stand areas), as well as changes to the consented SFDs and roading layout. Effects from new activities was also considered.

Watson (Oct 2006) identified a single site (Site 91 – Pole Track) as being affected by the development of the wind farm, and the desk-top review identified only one additional archaeological site (Site 70 – Water Race) as possibly being affected by the proposed Stage 2 works. However, the field survey (see below) confirmed that Site 70 will not be affected.

Therefore, it can be confirmed that the effects of Stage 2 of the Mahinerangi Wind Farm on archaeological values have not changed from the 2006 assessment. The conclusions of the assessment will remain valid if any of the 54 consented turbine locations and contingency zones are utilised, amended or repositioned (including hardstand and laydown areas) and with respect to the proposed changes to the roading layout (including track widths and cut and fill batters).

As before, the only archaeological site that will be affected by the works associated with the wind farm proposal is the Pole Track (Site 91). The existing resource consent allows part of the Pole Track to be used as an access route within Stage 2 of the project.

As part of this assessment Site 91 has been recorded in NZAA ArchSite as site H44/1200 and it is referred to as such from here on in this report.

5.2 Consent Conditions

Conditions 69, 70 and 71 of the existing consent relate to accidental discovery protocols.

Condition 69 requires that all construction personnel involved in site disturbance activities are suitably trained in the requirements of the accidental discovery protocols, and identification of archaeological sites and/or artefacts.

Condition 70 sets out the requirements and process if koiwi tangata, taonga or archaeological artifacts are discovered.

Condition 71 sets out the requirements for developing an Accidental Discovery Protocol, in consultation with mana whenua and the Historic Places Trust[5] .

The existing conditions 69 -71 relating to accidental discovery protocols remain valid and appropriate in managing the discovery of unknown archaeological sites and/or artefacts. Noting, also that, as the proposed development will affect site H44/1200 Pole Track, a Schedule 8 of the FTAA approval relating to Heritage New Zealand Pouhere Taonga Act

[5] Now Heritage New Zealand Pouhere Taonga

2014 is sought, together with an approval which covers all works undertaken for this project in the event that unidentified subsurface features be exposed by the proposed works.

5.3 Archaeological Value and Significance

Heritage NZ has provided guidelines setting out criteria that are specific to archaeological sites (condition, rarity, contextual value, information potential, amenity value and cultural associations) (Heritage NZ 2019: 9-10).

The archaeological value of sites relates mainly to their information potential, that is, the extent to which they can provide evidence relating to local, regional and national history using archaeological investigation techniques, and the research questions to which the site could contribute. The surviving extent, complexity and condition of sites are the main factors in their ability to provide information through archaeological investigation. For example, generally pa are more complex sites and have higher information potential than small midden (unless of early date). Archaeological value also includes contextual (heritage landscape) value. Archaeological sites may also have other historic heritage values including historical, architectural, technological, cultural, aesthetic, scientific, social, spiritual and traditional values.

H44/1200 Pole Track that ran from Waipori to Deep Stream during the 19th century, that will be affected by the project, is considered to have little archaeological value based on the Heritage NZ criteria discussed below.

Table 2. Assessment of the archaeological values of site H44/1200 Pole Track based on Heritage NZ criteria (Heritage NZ 2019: 9-10)

Value	Assessment
Condition	The track does not exist as it did as a foot track in the 19th century; it has been modified for use as a farm track and only its perceived alignment remains. Part of the track lies within a road reserve.
Rarity	It is a common site type locally and regionally
Contextual value	It is part of the historic 19th century European pastoral and gold mining landscape. It is one of a network of many tracks which allowed pastoral expansion and access to the Waipori gold fields, a number of which were later formed into roads
Information potential	There is little or no archaeological information that might be recoverable from this site beyond what is already known and determined by its alignment
Amenity value	This track is indistinguishable from other farm tracks and is only identified on early plans of the district
Cultural associations	The only known cultural associations relate to early European settlement
Other	The Pole Track has minimal historical value as a feature associated with the Waipori pastoral expansion and gold rushes of the 19th century

5.4 Field Survey Results

A field survey of an area on the Hall Property within the consented wind farm development area in the vicinity of proposed turbine WTG7 was carried out on 20 May 2025 by the authors to verify the location and extent of Site 70 Water Race in relation to Stage 2 activities. Secondly, a field survey of the alignment of the proposed new 110 kV transmission line (access road and pole locations within the 100m wide corridor) was conducted. A desk-top review of the location of the transmission line, access road, poles, substation and BESS within the consented MWF footprint was also undertaken to confirm that these areas of disturbance were located away from recorded archaeological sites.

Site 70 – Water Race

Site 70 was described by Watson as a Water Race, most of the length of which had been ploughed out. It apparently fed gold mine workings on the Beattie property, none of which were found, however (Oct 2006:35).

The use of races to move water to the mine faces was a distinctive feature of Central Otago gold-field technology from the 1860s and has left an indelible mark on the landscape. Throughout Central Otago many of the hill slopes are cut by race lines. The water races were channels cut across a hillside bringing water from streams to places where gold was mined. The general function of the races was to supply water to 'wash' the gold out of the 'pay dirt' that the miners dug out of the rocky ground. They were, however, only part of what were often very complex hydraulic systems (Jacomb et al. Aug 2011:3).

As with the rest of the wind farm, all flat and gently sloping land on the Hall property has been ploughed numerous times and was in pasture or crops (Figure 7). The areas of tussock that remain on the property are generally in the stream gullies and on the steeper land. During the field survey no visible sign of a water race was found on the slopes of the stream gully where this race was recorded nor any intake for water within the small stream (Figure 8). The flat land above the stream valley, where a turbine, access road and surplus fill disposal site will be located, has been ploughed out and is in pasture. However, it is considered unlikely that the race crossed within this flat area of land above the stream gully but rather would have cut across the slope of the stream gully.

As Watson previously concluded and was confirmed by this field survey Site 70 will not be affected by the proposed wind farm development.

Transmission Line

As part of Stage 2 it is proposed to establish a new 110 kV transmission line from the wind farm to the National Grid via the 110 kV Halfway Bush - Roxburgh Line (Figure 9– Figure 12). As noted above, the desk top review confirmed that the proposed poles, substation and Bess located are located away from recorded archaeological sites. Therefore the field survey focused on the section of the transmission line, access roads and pole locations within the 100m wide corridor outside the wind farm development area (noting this area was within Watson broader survey of the original design envelope).

The only recorded archaeological site in proximity to the proposed new transmission line is Site 90 – Sluicing Complex, recorded by Watson, which comprised a series of earth tailing mounds, with feeder races, tail races and prospect pits (see Figure 12). The area is approximately 100 x 20m, on the true right of a stream gully. There has been some stock damage. The tailings extend upstream on the true right of the stream. There are water races

on either side of the stream, leading to the workings. Most of the races have been ploughed out. There is a modern dam at the head of the gully (Watson Oct 2006:35).

In the vicinity of Site 90 the proposed transmission line access road between poles P9 and P10 will be along an existing gravel farm road on the ridgeline above and to the south of the stream gully where Site 90 is located. Field survey confirmed that the access road and transmission line corridor is approximately 250m clear of the extent of this site and it will not affected by the proposed establishment of the transmission line.

No other archaeological sites were identified along the proposed transmission line corridor or access tracks as a result of Watson's 2006 survey and the recent field survey.

Survey Limitations

It should be noted that archaeological survey techniques (based on visual inspection and minor sub-surface testing) cannot necessarily identify all sub-surface archaeological features, or detect wāhi tapu and other sites of traditional significance to Māori, especially where these have no physical remains.

Dense vegetation cover in some parts of the windfarm envelope restricted visibility during the 2006 survey, and some archaeological sites, by their very definition, will have left no trace on the ground surface. Other archaeological remains are likely to have been affected by ploughing.

Figure 7. The flat ploughed land and proposed turbine WTG7 location, access road and surplus fill deposit within the Hall property of the Mahinerangi Wind Farm. The stream gully where Site 70 is recorded is located left and outside photo

Figure 8. The stream gully where Site 70 Water Race is recorded. The proposed site of turbine WTG7, access road and surplus fill deposit is on the flat ploughed pasture (right), approximately 50m away.

Figure 9. Looking south from the proposed location of pole P1 of the proposed transmission line towards the existing 110 kV Halfway Bush – Roxburgh Transmission Line at Eldorado Track

Figure 10. Looking south from the proposed location of pole P9 along the new transmission line alignment

Figure 11. Looking northwest from the proposed location of pole P9 to the Mahinerangi Windfarm. The existing turbines of Stage 1 can be seen in the distance

Figure 12. Proposed 110 kV transmission line from the wind farm to the National Grid via the 110 kV Halfway Bush – Roxburgh Line with proposed poles and access tracks. The locations of recorded archaeological sites are shown in the vicinity (NZAA H44# and Watson #)