BEFORE THE HEARING COMMISSIONERS AT WAIKATO DISTRICT COUNCIL

IN THE MATTER of the Resource Management Act 1991 (RMA)

AND

IN THE MATTER of submissions and further submissions on the Proposed District Plan

STATEMENT OF EVIDENCE OF ANDREA MARIE SIMPSON FOR HOROTIU PROPERTIES LIMITED 17 February 2021

Harkness Henry

www.harknesshenry.co.nz

Phone	(07) 838 2399
Fax	(07) 839 4043
Address	Level 8, KPMG Centre, 85 Alexandra Street, Hamilton 3204
Mail	Private Bag 3077, Hamilton 3240, New Zealand, DX GP 20015

Submitters Solicitor: Dr J B Forret (joan.forret@harkness.co.nz)

Counsel Acting: P Kaur (pervinder.kaur@harkness.co.nz)

Introduction

- 1 My full name is Andrea Marie Simpson. I am the sole director of Horotiu Properties Limited (**HPL**). HPL has made a submission (#397) on the Proposed Waikato District Plan (**Plan**).
- 2 The submission relates to the land holding owned by HPL at Sullivan Road, Horotiu. The subject site is legally described as Lot 5 DP 513666 (**Site**). The 7.54 hectare property is roughly rectangular in shape.

Faming history of the Site

- 3 In terms of background, as of 2003 the Simpson family held a longstanding portfolio of transport and farming interests with a Huntly based bus business and farms located at Ruawaro, Rangiriri and Waingaro.
- 4 Following the sale of the Simpson bus business in 2003, the family formed a plan to expand their farming operations and purchased the farm which comprised two blocks at 2324 River Road and 2281 River Road which were purchased simultaneously in June 2005 from Barbara, Philip and Pauline Paterson (91.9896 hectare) and Barbara Paterson (25.8170 hectare) respectively. The smaller block of land was divided by Horotiu Bridge Road into two sub-blocks (the northern block/Sullivan Road and southern block/now Piriti Lane). The intention was to grow maize and harvest hay/silage. The northern block is the one we would like to rezone.
- 5 At the time of purchase, the ~92 hectare block was being operated as a dairy farm. Upon purchase, the Simpson family cleared the block of fences and buildings in order to create a large block suitable for growing maize, with only one house on the Barbara Paterson block retained as farm worker accommodation.
- 6 The smaller block (which was owned solely by Barbara Paterson) was only purchased because she had an interest in the ~92 hectare block and would only agree to selling that interest if her smaller block was also purchased. Due to significant drainage and soil conditions, the smaller block was highly unsuitable for the Simpson family farming purposes and was earmarked for eventual sale. Although the Simpson family did trial growing maize on the smaller site, this yielded a paltry six tonnes/hectare in comparison to the 18 tonnes/hectare achieved on the larger parcel

across River Road. We persevered for 2 seasons but had to accept that the land is not suitable for cropping.

History of development and public works over the sites

- 7 The plan to divest ourselves of the smaller block was disrupted by the 2009 announcement that the property would form part of the Waikato Expressway plan and was therefore subject to the compulsory acquisition process under the Public Works Act.
- 8 The Expressway cut diagonally across the ~92-hectare block, with significant setbacks also applying to the smaller block, with the land being acquired by NZTA in 2011.
- 9 The negotiated acquisition of the larger block by NZTA in 2011 left the Simpson family with only the smaller parcel, which had long since proven commercially and agriculturally infeasible for their farming operations. NZTA wanted the entire of the 92 hectare block due to its sand deposits and potential to provide access and construction support for the Expressway, Bypass and Bridge development.
- 10 The northern/Sullivan Road and southern/Piriti Lane sites are both landlocked by busy roads (the former by River Road and Sullivan Road, the latter by River Road and Horotiu Bridge Road) along with the Waikato River boundary. This exposure made farm security extremely difficult, with repeated thefts rendering attempts to raise steers unsuccessful. Historical sand excavation on the northern site (undertaken prior to purchase by the Simpson family) created a spring-fed pond in the centre of the Site which hindered its use, effectively destroying its value as an agricultural block. The pond area covers 0.6 hectares. The steep contour on the northern edge of the pond means that the effective cropping area is reduced by a total of 1.1 hectares.
- 11 Following a request for grazing land from the Jefferies family, the Site was leased in order to cover the outgoings while a new longer-term plan was created. This sees the property generate a gross yield of only 0.77% based on the 2018 capital valuation. As the southern area was already zoned for Country Living, it was decided that the subdivision project would begin there with the aim of recouping the purchase price for this unusable block.

12 Shortly after the subdivision of the southern area we also obtained consent to subdivide three lots of ~1.6ha from the northern site. Those lots are on the southern side of the site, overlooking the Waikato River. The access is off Sullivan Road. We had an entitlement to 2 lots on the Sullivan Road block and then obtained a further lot when Waikato District Council required land for construction of the cycleway that connects Hamilton to Ngaruawahia. That land vested in Council at the time of that lifestyle block subdivision.

Soil/farming issues

- 13 We engaged AgFirst to review the impacts of a proposed subdivision on the Site, specifically with regard to future agricultural or horticultural production. A copy of the AgFirst report is enclosed as Appendix **A**.
- 14 As noted in the report, ~3.5 hectares of the Site has previously been mined as a sandpit. As a result AgFirst predicts there will be a significant difference in performance between the old sandpit area and the 4 hectares of undisturbed land.
- 15 The report further notes that the Site could be cropped for maize but would be considered Tier 3 land due to previous quarry activities and close proximity to multiple lifestyle blocks.
- 16 The Site is no longer suitable for high value horticulture activities due to the history of sand quarrying on the Site.
- 17 The report also notes that the Site is unattractive for a dairy farmer as it will only carry a small number of their replacements (NB – the average Waikato dairy farm of 350 cows would have 77 heifers and the Site could only support 17- 18 heifers for 12 months).
- 18 The report confirms our view that the Site simply cannot be expanded as a rural productive property or activity because there is no potential for amalgamation with a larger block.

Archaeological report/ relevance to the Site

19 A copy of the archaeological report completed by Opus is attached as Appendix **B**. The archaeological assessment was done on the southern block for the purposes of subdivision. The relevance of that assessment is that this northern block is in similar location but has been historically subject to sand mining that happened before the HPL purchase. Thus, any archaeological features that may have been present formerly are likely to be long gone by now. No archaeological features were uncovered as part of the subdivision process for the 3 lifestyle blocks that have been established on the southern part of the block, adjoining the Waikato River.

20 I understand that Council undertook its own further archaeological investigation when undertaking the cycleway project but HPL was not involved in that process.

Rezoning Proposal

- 21 We received clear buyer feedback regarding the size of the sections during the sale process for the 10-lot subdivision on the southern/Piriti Lane site, with numerous interested parties stating that the 5000m² sites were too large to manage within their existing family and work commitments. Buyers were instead seeking 3000m² blocks which offered the advantages of a rural lifestyle alongside considerably lower property maintenance requirements.
- 22 HPL primarily seeks to rezone the property to Village Zone as this would enable subdivision and development for activities which anticipate predominantly residential activities with a minimum net site area of 3,000m² per site. The provision of reticulated infrastructure could enable development to a net site area density of 1,000m² per site in the Village Zone if available in future. A concept plan that shows the lot arrangement in a qualifying Village Zone subdivision is attached as Appendix **C**.
- 23 The Village Zone would result in approximately 13 lots of varying sizes which will be self-sufficient with regard to water supply, stormwater and wastewater disposal. The proposed Village Zone enables interim development without full urban infrastructure.
- 24 We are also comfortable with a Country Living Zoning over the site if the minimum lot sizes are reduced to 2,500m2 or 3000m2 to allow smaller land parcels. HPL has sought and accepts the advice of its expert planners on this issue and has included that alternative in our submission because of the uncertainty of Council's position on rezoning at the time the Proposed Plan was notified.
- 25 The rezoning of the site will result in a more efficient use of the HPL land which is currently an underutilised rural zoned site with a significantly

restricted ability to expand. The rezoning of the site will provide a significant economic wellbeing to the landowner as well as enabling additional housing in an appropriate location. The economic wellbeing of Council will be enhanced through the provision of additional development contributions and rates. A sustainable addition of housing units will be provided over and above that otherwise anticipated. This will provide much needed demand and variety of product onto the market in an appropriate location. The HPL property is appropriately located in close proximity to the existing Horotiu village.

Date: 17 February 2021

Andrea Marie Simpson

Appendix A – AgFirst Report



15 Oct 2020

Horotiu Properties Limited Andrea Simpson

Dear Andrea

Please find attached my report regarding the impact of your proposed subdivision.

If you have any questions or comments please do not hesitate to contact me.

Yours sincerely

D. mulle

Dave Miller Farm Management Consultant B Ag Sc MNZIPIM



Independent Agriculture & Horticulture Consultant Network

Proposed Subdivision Report - Lot 5 DP 513666

Prepared for: Horotiu Properties Limited

Dave Miller 15 October 2020

TABLE OF CONTENTS

1.0	Purpose
2.0	Executive Summary3
3.0	Background4
4.0	Soil Type4
5.0	Pasture5
6.0	Carrying capacity6
7.0	Productivity of the two proposed sitesError! Bookmark not defined.
8.0	Maize production7
9.0	Horticulture options7

1.0 PURPOSE

The purpose of this report was to review the impacts of a proposed subdivision on the corner of Rover Road and Sullivan road Horotiu specifically with regard to future agricultural or horticultural production.

2.0 EXECUTIVE SUMMARY

The site is 7.536 ha on a heavily modified site. The property is currently used for grazing of yearling animals.

The proposal is to establish 10 lots ranging from 0.551 m2 to 1.1089 ha.

Given the heavily modified nature of much of the site, it's productive capability as it stands has already been significantly compromised.

It is understood that approximately 3.5 ha of the site has previously been mined as a sandpit. The site appearance and soil profile would tend to confirm this.

The remaining 4 ha appears to be in a relatively undisturbed state.

There will be a significant difference in performance between the old sand pit area and the 4 ha of undisturbed land.

Carrying capacity of the undisturbed land is estimated at 16 - 18 SU/ha and for the disturbed land 8 - 10 SU/ha.

Annual DM production averaged across the site is calculated at 7.5tDM/ha when good high performing pastures can be expected to grow 12 - 14 tDM/ha in the area.

Carrying capacity is calculated at 17 R2year animals on an annual basis.

The site could be cropped for maize but would be considered tier 3 land due to previous quarry activities and close proximity to multiple lifestyle blocks.

The site is no longer suitable for high value horticulture activities due to the history of sand quarrying on the site.

The site has limited prospects moving forward. The carrying capacity is low by Waikato standards, it is small in terms if effective ha's and it is increasingly land locked.

Developing this site into a residential subdivision is going to remove grazing for approximately 17 animals.

3.0 BACKGROUND

The property has a history of being utilised for light grazing of y young stock and on occasions for growing maize.

The pond area covers 0.6 ha. The steep contour on the northern edge of the pond means that effective cropping area is reduced by a total of 1.1 ha.

The implement shed and land associated with the yards occupies a further 0.15 ha.

The total effective area is 6.25 ha.

The sand quarry has been reinstated with topsoil but it is apparent the heavily modified soils are a significant impediment to pasture production. The pasture species on the old quarry site are very poor.

4.0 SOIL TYPE

S maps indicates a complex mix of soils. It is unclear if this is pre or post quarry activities.



S map records 5 ha either poorly or imperfectly drained and only 1 ha of well-drained soil across the site.

This would correspond with observations made during my site visit. A soil penetrometer showed a severe compaction layer at a depth of only 150mm on the old quarry site. While topsoil had been replaced it was relatively shallow.

The photo below is on the site of the old sand quarry. The topsoil was approx. 150 mm deep before a very compacted subsoil is reached. The site is prone to waterlogging in winter and drying out quickly in summer. There are no practical cost effective means to restore this area to anything near a productive site



5.0 PASTURE

Photo 2 is typical of the pastures on the old quarry site. Predominantly flat weens and poor in terms of yield potential and quality. Google earth images over time show this area has been regrassed several times but reverts back to this poor-quality pasture.



Photo 2: Pasture on site of old quarry

Photo 3: Google earth image 27 Feb 2019



Photo 3 highlights the impact of the old quarry site. The poor water holding capacity of the disturbed soils are brown and parched, the better soils near Horotui bridge road are hanging on better. The image also highlights recent developments and shows how close neighbours are. Even on good soils this does limit farming intensity.

6.0 CARRYING CAPACITY

The property is currently been farmed with conservative policies given the3 poor drainage and propensity to dry out in summer. Light grazing of cattle is the current regime.

There are 2 distinct land classes involved. 3.8 ha could carry 18 - 20 SU Ha while the remaining 2.45 ha would be limited to 8 - 10 SU.

In total the land can carry 80 - 85 SU. This is equivalent to growing 7.5 tDM/ha/year or 46 tDM/year in total.

In practical terms the land could support 17 – 18 dairy heifers for 12 months.

It is relevant to note that the average Waikato dairy farm of 350 cows would have 77 heifers. It means the block is unattractive for a dairy farmer as it will only carry a small number of their replacements.

In practical terms it is really only a neighbouring dairy farm who may be interested in it for grazing some young stock or alternatively it will be used to graze a few beef animals

7.0 MAIZE PRODUCTION

The property has been used for the growing of maize. Of the 6.25 ha croppable land there is approx. 3.8 ha that would be expected to yield in the order of 16 - 18 tDM/ha. This is on the relatively undisturbed land parallel to Horotui Bridge Road. The remaining 2.4 ha on the old quarry site would be expected to yield 12 - 16 tonne DM at best. In a very dry year yield on this poor land should be as low at 10 - 12 t DM.

Contractors would be treating this block as third tier land given the limitations imposed by the old quarry, the proximity to multiple lifestyle blocks and the relatively small size. This is not a block that would be sort after in terms of maize production.

8.0 HORTICULTURE OPTIONS.

In my opinion the site has been too compromised by sand quarry operations to be considered suitable for the significant investment a diversification into high value horticulture options.

The soils over much of the site are no longer suitable for high value crops and the relatively poor natural drainage make it unattractive.

The close proximity of multiple lifestyle blocks would also be a significant disadvantage for development given restrictions of shelter belts and spraying options.

Contact

Dave Miller

Agribusiness Consultant 021 287 7070 dave.miller@agfirst.co.nz

AgFirst Waikato (2016) Ltd

26D Liverpool Street, PO Box 9078 Hamilton 3240, New Zealand waikato@agfirst.co.nz www.agfirst.co.nz

Disclaimer:

The content of this report is based upon current available information and is only intended for the use of the party named. All due care was exercised by AgFirst Waikato (2016) Ltd in the preparation of this report. Any action in reliance on the accuracy of the information contained in this report is the sole commercial decision of the user of the information and is taken at their own risk. Accordingly, AgFirst Waikato (2016) Ltd disclaims any liability whatsoever in respect of any losses or damages arising out of the use of this information or in respect of any actions taken in reliance upon the validity of the information contained within this report.

Appendix B – Archaeological Report



Final Report: S14/242, Authority 2012/297, Horotiu Properties Ltd

Final Report: S14/242 Archaeological Authority 2012/297 River Road, Horotiu



Image of test trenching taken from Lot 4 looking north



Final Report: S14/242, Authority 2012/297, River Road, Horotiu

Final Report Archaeological Authority 2012/297

River Road, Horotiu

S14/246-8, 252-3 and

Archaeological Authority 2015/958

Sian Kill

Prepared By

Sian Keith Consultant Archaeologist Sian Keith Archaeology Ltd.

(and

Reviewed By

Sheelagh Conran Principal Archaeologist Opus International Consultants Ltd Hamilton Environmental Office Opus House, Princes Street

Private Bag 3057, Waikato Mail Centre, Hamilton 3240 New Zealand

Telephone: Facsimile: +64 7 838 9344 +64 7 838 9324

Date: Reference: Status: November 29th 2016 2-31695.00 YDIHE FINAL



Contents

1	Inti	Introduction1			
	1.1	Purpose	1		
	1.2	Background	1		
2	Arc	haeological Background	2		
	2.1	Maori Horticulture	2		
	2.2	Natural Environment	3		
	2.3	Archaeological Environment	4		
3	Met	hodology	5		
4	Inv	estigation Results	6		
	4.1	Stratigraphy	1		
	4.2	Forest Clearance	3		
	4.3	Borrow Pits	4		
	4.4	Other Features	4		
5	Dis	cussion and Conclusions	5		
6	Ref	erences	6		

Figure 1: Site Location Plan. Yellow stars depict NZAA archaeological site records	1
Figure 2: Subdivision Layout Plan. Image shows areas of archaeological investigation in 24	011 and
2016	2
Figure 3: Trench Layout Plan in Lots 1-4.	6
Figure 4: Plan of features and extent of lithic mulch Lots 1-4	8
Figure 5: Feature 3 half-sectioned showing Layers 1-3. Scale is 1m	1
Figure 6: Feature 2 half-sectioned through Layer 2 onto Layer 3. The scale is 1m	2
Figure 7: Feature 8 half-sectioned through Layer 2 onto Layer 3. The scale is 1m.	2
Figure 8: Feature 6. The scale is 1m.	3
Figure 9: Feature 7 half-sectioned. Scale is 1m.	4
Figure 10: Feature 10, possible bin-pit half sectioned. Scale is 1m.	
Figure 11: Feature 12, possible drain. Scale is 1m.	5
	0

ble 1: Features at S14/2426

1 Introduction

1.1 Purpose

This is the final report of archaeological investigation work undertaken at S14/242, 2281 River Road, Horotiu. It has been prepared on behalf of Horotiu Properties Ltd (HPL). This report completes the conditions of Heritage New Zealand Pouhere Taonga (HNZPT) Archaeological Authority 2012/297 issued to HPL (Appendix A).



Figure 1: Site Location Plan. Yellow stars depict NZAA archaeological site records.

1.2 Background

HPL are in the process of subdividing a block of land at 2281 River Road in Horotiu, Waikato. The land is bounded by River Road, the Waikato River, Horotiu Bridge Road, and the Waikato Expressway (SH1) (Figure 1), its current legal description is DPS 54869.

An Archaeological Assessment of Effects (AAE) was prepared of the development land by Christopher Mallows in 2010 and 2011 (Mallows 2010, 2011b). Mallows identified that there was likely to be archaeological evidence on the land associated with Maori horticultural practices prior to European settlement in New Zealand. Mallows undertook initial test trenching of the site under a Section 18¹ Authority (2011/51). The investigations were undertaken in 2011 (Mallows 2011a).

¹ Section 18 of the Historic Places Act 1993 (subsequently replaced by the HNZPT Act 2014)

Final Report: S14/242, Authority 2012/297, River Road, Horotiu

Two investigation trenches were undertaken across Lots 2, 3 and 4 of the project area (Figure 2). According to Mallows the trenches confirmed archaeological material relating to pre-European Maori gardening remained within these lots. Mallows identified that the site was related to horticultural practices by Maori, primarily considered to be for kumara growing. He identified that there was an archaeological risk within Lot 1 - 5. Notably, there were 3 borrow pits identified. Mallows recorded this site with the New Zealand Archaeological Association (NZAA), it was given the unique number of S14/242.

Following this work archaeological authority 2012/297 was obtained from HNZPT for the subdivision works. Archaeological investigations for authority 2012/297 were undertaken by the author in September 2016.²



Figure 2: Subdivision Layout Plan. Image shows areas of archaeological investigation in 2011 and 2016.

2 Archaeological Background

2.1 Maori Horticulture

Early Polynesian settlers brought the kumara plant to New Zealand. The cultigen originated in Ecuador/ Peru and was therefore evolved to grow in a tropical climate. The inland Waikato has a mild and temperate climate with moderate rainfall, low average wind speed and very high sunshine

² The named archaeologist (S45) for authority 2012/297 was changed from Mallows to Keith in August 2016.

hours by world standards.³ Whilst the summers are warm and dry, the frost of the winters would have killed off the tropical kumara seedlings. Maori therefore had to devise a method of growing kumara in a temperate Waikato climate.

In the first instance a suitable site was found. The best sites were sheltered, north-facing or positioned in all day sun, on free draining light soils. The sites then had to be cleared of vegetation including mature podocarp forest. This would have been a laborious task and involved forest clearance by controlled burning, tree felling, and digging out tree roots with wood and stone tools.

Once the land was cleared the soils may have required some degree of modification to improve their growing yield. Course particles of stones, gravels, and sands could be introduced to the soils which created several possible improvements to the soils. The most obvious reason for introducing the courser material to soils was to improve soil friability for better drainage. There is some argument to suggest that this material also had a modest effect on raising the soil temperature.⁴

Exactly how the introduced lithic (sand and gravel) was used within the garden complexes appears to be varied. In some instances the material appears to have been introduced as a layer, or more likely, as mounds which later eroded into layers. Whichever of these was the original method, entire tracks of gardens are now defined by a layer of stone, gravel, and sand. In other instances the sands and gravels were placed into planting hollows, sometimes neat rows of excavated bowls, other times larger planting hollows were excavated, and these bowls and hollows were filled with the sands and gravels.

The course material was obtained from the closest source of suitable material to the garden, or gardens were placed in proximity to this material. The stones, gravels, and sands could be obtained from open sources such as river beds or quarried from underlying deposits. Where the material was sourced from a quarry, archaeologists describe the quarries as 'borrow pits'.

2.2 Natural Environment

Maori gardens in the Waikato are invariably located within 2km of the Waikato and Waipa rivers and their main tributaries. Maori usually chose soils best suited to growing kumara, and in proximity to underlying sands and gravels to introduce to these soils. The natural stratigraphy in the Waikato Basin has a soil series which is advantageous for kumara growing in the local climate.

In summary the soils fall into three main bands:

- the 'A' horizon, this is the topsoil either formed naturally by decomposed plant and animal matter combined with the underlying volcanic ash (B horizon) and worked over by bioturbation (i.e. worms and plan roots), or a worked over topsoil modified by modern farming practices including ploughing and fertilisation;
- the 'B' horizon, this is the underlying subsoil. It is volcanic tephra originating from airfall ash. The deposit is generally 70cm deep and has grown overtime from volcanic activity from the Coromandel and Taupo Volcanic Zones. The tephra falls into a number of categories depending in the main on how well drained it is. The best of the soils is named Horotiu siltloams and these were chosen in the main for kumara gardens. To a lesser degree the less

³ <u>http://www.waikatoregion.govt.nz/Environment</u>

⁴ Burtenshaw et al (2001) identified a 0.95°C increase in mean soil temperature under a stone-mulched puke, than one without stones.

well-drained Bruntwood, and poorly drained Te Kowhai soils have also provided some evidence for Maori Gardens;

• the 'C' horizon, this is alluvial deposits of sands and gravels originating from the ancestral Waikato and Waipa rivers, the principal material is named the Hinuera Formation, and the upper layer the Hinuera Surface. Circa 20,000 years ago the river systems were not the confined river valleys they are today, instead a broad and extensive high-energy river system existed across the basin. The sands and gravel deposits are spread throughout the basin in a series of palaeo-levees and palaeo-swales and can appear relatively close to the surface. The deposits were obtainable from the river and stream banks or could be excavated from the surface through the upper tephras (B-horizon).

Gumbley and Hoffman (2013, 6-7) have provided detail into the natural flora which would have populated the Hamilton area before occupation by Maori, in particular in the Horotiu area. The evidence is for a changeable environment dependent on topography and drainage in the immediate environment.

There would have been mixed conifer-broadleaved forest in the well-drained areas including totra, matai, rimu and kahikatea with broadleaved trees such as tioki, tawa and rewarewa, with an understory of mahoe, raurekau, lacebark, mamaku and silver fern. A kahikatea swamp forest would have characterised the poorly drained soils with a mix of rimu, matai, pukatea, tawa and pakata, with an understory of mahoe, turepo, ramarama, and silver fern. In the lower river terraces and gully slopes the vegetation was probably a totara-matai-kowhai forest with kanuka and kamahi and Mahoe, with an understory likely to have been mapou, mingimingi and taurepo shrubs.

2.3 Archaeological Environment

Several archaeological sites have been investigated in the Horotiu/ north Hamilton area over the last 15-20 years. A synthesis of these investigations has been provided by Gumbley and Hoffman (2013, 9-13). In summary the environment is broadly characterised by extensive, almost continuous, tracks of modified garden soils along the river terraces and beside the gully edges of the tributary streams. Five recorded pa sites are found along the river edges from Pukete (in the south) to Puke I Ahua (to the north) and including the Mangaharakeke Pa, a three- pa complex near the Te Rapa Dairy Factory. There have been no investigations reports published for any of these pa sites, and the pa closest to the study area (S14/16) has been destroyed by sand quarrying.

At least seven individual gardening sites have been investigated by archaeological methods in the Horotiu area since c.1999. These include two sites by Alexy Simmons (S14/164 and 165), two sites by Andrew Hoffman (S14/221 and 222), and at least three sites led by Warren Gumbley (S14/203, 194, and 195). The range of features recorded at these sites includes borrow pits and garden soils, both are considered as standard features expected from a garden site in the Waikato. Indeed, these are the two features which together draw attention to the fact that Maori were gardening a given piece of land.

Sites S14/194 and 195 in Horotiu were investigated in relation to the Ngaruawahia Section of the Waikato Expressway and provide the closest sites investigated to the current study area (Figure 1). Site S14/194 was immediately east of the study area. Twenty four trenches were opened up in this area, both on the upper and lower terraces. In the upper terrace, of the nineteen features identified, nine were described as 'basin-shaped depressions', eight were identified as remnant garden soils

which were identifiable as sandy areas, and the remainder were two sections of a drainage channel (Gumbley and Hoffman 2013, 25).

The basin-shaped depressions generally contained two fill levels, an upper lense of sand similar to the remnant garden soils (or lithic mulch – this is discussed below), and a lower layer of mixed topsoil/subsoil with charcoal, and sometimes fire-cracked rock. The species identified included ferns and shrubs through to canopy species (ibid, 155). The authors propose that these features represent activity during the initial deforestation, stating that 'the presence of charred seeds and twig material often along with tree bark, not only describes the species present but also the presence of sort [sic] of slash that can be expected as part of a typical slash and burn or swidden gardening process' (ibid, 148).

Extensive remains of lithic mulch (sand and gravel) were observed to cover c.75% of the 2500m² area investigated. The layer was observed on poorly drained Te Kowhai silt, and on the higher palaeo-levees. The layer was c.120-220mm thick, and sometimes visible as only isolated features filled into deeper depressions (ibid). The authors considered it likely that the lithic mulch had been present as a continuous layer which had since been disturbed by ploughing and erosion.

The evidence collected from the adjacent site S14/194 by Gumbley and Hoffman is directly relevant to the current study area, which is in effect a continuation of the same gardening landscape. Similar archaeological material was identified at the S14/252 site discussed in this report.

3 Methodology

The investigations of site S14/242 were undertaken as per the conditions of the authority (Appendix A). The work was limited to investigations within the building platforms (Figure 2). The investigations involved trenching with a mechanical excavator with a 1.2m wide grading bucket under archaeological supervision. Lots 1 to 4 were investigated in this manner.⁵ Approximately four parallel trenches were excavated through each lot (Figure 3). Ground anomalies and cultural deposits, considered to be archaeological in nature, were investigated using hand excavation techniques. If proven to be archaeological they were recorded and sampled as necessary.

No clear evidence for cut features was recorded, with the exception of one possible 'bin-pit'. The archaeological evidence recorded included similar layers and features to those found at S14/194 by Gumbley and Hoffman (2013). Gumbley and Hoffman extensively analysed the layers they encountered, including environmental analysis, dating, and particle size analysis. Based on the similar findings at the current site, it was not considered necessary to repeat these tests in this instance. For this reason there has been no environmental analysis or radiocarbon dating for this site. This report provides details on the extent of the testing undertaken, and the nature of the evidence encountered.

⁵ Lot 5, although included in the authority as an area requiring monitoring, did not require investigating as the house platform was outside the considered risk area.



Figure 3: Trench Layout Plan in Lots 1-4.

4 Investigation Results

The main archaeological evidence identified on the site was for forest clearance and garden soils. Table 1 provides details of the features located, and Figure 4 provides a plan of the recorded features. There was some evidence for ploughing at the site but this was no means extensive and based on the relatively shallow plough lines, the ploughing was considered to be historic.

No.	Lot/ Trench	Туре	L x W x D (cm)	Detail
1	L1 Tr1	Sandy-patch	370 x >60 x 54 (including topsoil)	Remnant garden soil and possible tree clearance feature. Layer 3 not excavated to base.
2	L1 Tr2	Basin-shaped depression	330 x 140 x 3	Remnant garden soil and possible tree clearance feature. Layer 3 not excavated.
3	L1 Tr4	Sandy-patch	200 x >166 x > 50 (including topsoil)	Remnant garden soil and possible tree clearance feature. Layer 3 not excavated to base.

Table 1: Features at S14/242

Final Report: S14/242	, Authority 2012/2	297, River Road,	Horotiu
-----------------------	--------------------	------------------	---------

5	L1 Tr3	Sandy-patch	58 x 45 x 5	Remnant garden soil - lithic mulch in
				depression.
6	L1 Tr3	Basin-shaped depression	180 x 110 x 55 (including topsoil)	Remnant garden soil and tree clearance feature. Excavated to subsoil.
7	L2 Tr2	Basin-shaped depression	60 x >45 x 50 (including topsoil)	Remnant garden soil and tree clearance feature however burnt and includes some fire-cracked rock.
8	L2 Tr3	Sandy-patch	110 x >140 x 29 (including topsoil)	Remnant garden soil and possible tree clearance feature. Layer 3 not excavated.
9	L2 Tr3	Sandy-patch	90 x 58 x 20	Remnant garden soil.
10	L3 Tr2	Bin Pit?	80 x 30 x 28	Oval in plan with undercut edges and sloping base, filled with sand and gravel and some Horotiu mottling.
11	L3 Tr2	Basin-shaped depression	280 x >190 x 10	Remnant garden soil and possible tree clearance feature. Layer 3 not excavated.
12	L3 Tr3	Linear Feature	>190 x 75 x 55 (including topsoil)	Linear in plan with a U-shaped profile. Fill of loose and friable, mid to dark mottled sandy- silt. The cut was not very distinct. The feature did not continue into the adjacent trenches. Possible drain, and could be modern.
13	L4 Tr1	Sandy Patch	160 x 70 x 2	Remnant garden soil and possible tree clearance feature. Layer 3 not excavated.



Figure 4: Plan of features and extent of lithic mulch Lots 1-4

4.1 Stratigraphy

The general stratigraphy across the site was identified to be as follows:

Layer 1: topsoil, often including high % of sands and gravels, c.20-30cm deep.

Layer 2: intermittent / remnant layer of lithic mulch, this was formed mainly of sand and was identified surviving intact mainly in depressions, it was up to 15cm deep.

Layer 3: this was interpreted as the possible former forest floor, and/or forest clearance burn off, it consisted of a purple/mid-brown mixed Horotiu subsoil with organic inclusions and various fractions of charcoal.

Base Layer: Horotiu subsoil (natural).

Figure 5 provides an image of Layers 1-3 in profile. The extent of remnant garden soil (Layer 2) has been illustrated in Figure 4, this includes distinct evidence for sands and gravels within the topsoil as well as patches and lenses of sand. The layer was visible in all of the lots but it was not continuous.

Layer 3 was located below Layer 2, it was formed mainly of Horotiu but appeared as a midbrown/purple layer and was distinct by the inclusions of charcoal. The layer was generally found in association with Layer 2, and in the base of forest clearance features discussed below. The layer was interpreted as the former forest floor and/or affected by the forest clearance activity of Maori in advance of their garden formation.



Figure 5: Feature 3 half-sectioned showing Layers 1-3. Scale is 1m.



Figure 6: Feature 2 half-sectioned through Layer 2 onto Layer 3. The scale is 1m.



Figure 7: Feature 8 half-sectioned through Layer 2 onto Layer 3. The scale is 1m.

4.2 Forest Clearance

Evidence for forest clearance by Maori was interpreted from amorphic features which contained burnt vegetation (Figures 6-9). These basin-shaped depressions identified by Gumbley and Hoffman at S14/194, or a similar type of feature, were identified at the site in all of the lots (F1, 2, 6-8, 11 and 13). They appeared below the sand-rich topsoil, and where present also below the evidence for intact sand lenses (Layer 2). These features were identifiable as sandy patches on the surface, when excavated they were found to be amorphic, with no clear cut edges and had fill profiles similar to those identified by Gumbley and Hoffman (2013 (see Section 2.3 above)), with Layer 2 on the surface and Layer 3 at the base. These were considered to likely represent the removal of tree roots in preparation for establishing gardens.



Figure 8: Feature 6. The scale is 1m.

This feature was originally thought to be a pit, and as a result it has been over-excavated into the natural subsoil. The image shows the halo of Layer 3 below the sand of Layer 2, outlined in white dashed line.



Figure 9: Feature 7 half-sectioned. Scale is 1m. This feature is a basin-shaped depression with evidence of burning. The image shows Layers 1-3.

4.3 Borrow Pits

At the south-east end of Lot 2 there was a large area of mottled fill. This was in an area identified on the historic aerial photographs by Mallows as a probable borrow pit. The feature was tested to a depth of 1.2m with a machine cut trench to the natural base. The fill material was not consistent with that normally identified for a back-filled borrow pit⁶, and it included modern plastics to the base. At the base of the trench there was a grey coloured sterile gley soil.

The evidence suggested that this had been an old gully or paleochannel, which had been backfilled in the 20th century. The extent of the feature was not determined and it was dismissed as archaeological in nature. The feature is illustrated on Figure 4.

Two additional borrow pits have been identified from aerial imagery on the site. One of this is within a preservation area, and the other appears to have been cut by a former gas main easement which has since been relocated. These two borrow pits were not investigated during the current works. No further borrow pits were investigated or located on the site.

4.4 Other Features

One small possible bin-pit was identified (F10, Figure 10). It had a sloping base with undercut edges and was filled with sand and gravel. A linear feature was recorded and investigated (F12, Figure 11). It may have been a drain feature but it was not confirmed if it was related to the gardening activity by Maori, or a result of modern farming practices. The evidence was inconclusive.

⁶ The fill of a borrow pit is often defined by redeposited Horotiu subsoil, sometimes overlain by modern fill.



Figure 10: Feature 10, possible bin-pit half sectioned. Scale is 1m.



Figure 11: Feature 12, possible drain. Scale is 1m.

5 Discussion and Conclusions

The field evidence was similar to that identified by Gumbley and Hoffman (2013) at adjacent site S14/194. This site was clearly a continuation of the same landscape. The evidence included similar basin-shaped depressions filled with Layer 3 and Layer 2, considered to originate from the removal of extensive tracks of native forest and ground-clearance by Maori to form their gardens. Layer 3 was a modified deposit, possibly once the forest floor, with charcoal present indicating vegetation burn-off.

No borrow pits were excavated at the site, and one feature thought to be a borrow pit was discounted. However, the evidence for sand and gravel throughout the topsoil across the majority of the investigated area, and the two probably borrow pits not investigated, would firmly indicate that the underlying Hinuera Surface (C Horizon) had been quarried at the site for the purposes of forming a kumara garden. This activity was also identified through the presence of Layer 2 - an intermittent layer of sand and gravel interpreted as the gardening soil horizon. In general, this layer was observed in depressions either naturally occurring or depressions left as a result of tree

clearance (the basin-shaped depressions). There was no firm evidence for the bowl-shaped sandfilled hollows located at other excavated garden sites, and there was very little evidence for storage pits identified.

Gumbley and Hoffman radiocarbon dated sites S14/194 and 195. The dates mostly fall within the 1500-1700 AD timeframe (2013, 162-3), site S14/252 is part of the same landscape and will be from this same time period. Microfossil samples were sent for analysis from their investigations which provided kumara, and also to a minor degree taro, starch grains.

Gumbley and Hoffman tested the lower terrace of S14/194 and this lower terrace did provide evidence for archaeological activity, bowl-shaped planting hollows were investigated in this area. The assessment by Mallows (2011b) did not consider the lower terrace area to be an archaeological risk and therefore no archaeological works, or supervision was carried out in the lower terrace. Future archaeological work in the river terrace environments should include investigative trenches into the lower terrace environment.

This report completes the requirements for Authority 2012/297. The authority holder is currently in the process of subdividing the land and on-selling it. An Advice Note has been prepared for future owners of the lots which provides advice should they develop beyond the area investigated and uncover archaeological evidence of Taonga tuturu, koiwi, or storage pits (Appendix B).

6 References

Burtenshaw, M. (2009). *A guide to growing pre-European Māori kūmara in the traditional manner*. Lower Hutt, New Zealand: The Open Polytechnic of New Zealand

Burtenshaw, M., Harris, G., Davidson, J., & Leach, F. (2003). Experimental growing of pre-European cultivars of kūmara (sweet potato, Ipomoea batatus [L.] lam.) at the Southern margins of Māori horticulture. *New Zealand Journal of Archaeology*, 23, 161–188.

Gumbley and Hoffman 2013. *The Archaeology of pre-European Maori horticulture at Horotiu: The investigations of S14/194 and S14/195*. Unpublished report prepared for the NZTA and HNZPT.

Mallows, C. 2010. *Archaeological Assessment of Proposed Sub-Division at 2281 River Road, Horotiu.* Unpublished report for Simpson Farms and CKL.

Mallows, C. 2011a. *S18 Archaeological Investigation at Pt Lots 3 / 4 DPS 25169, River Road, Horotiu. NZHPT Authority 2011/51.* Unpublished report for Simpson Farms and HNZPT.

Mallows, C. 2011b. Archaeological Assessment of Proposed Subdivisions at Pt Lots 3 / 4 DPS 25169 and SO 311489, River Road, Horotiu. Unpublished report for Simpson Farms and CKL

Simmons, A. (2002) Archaeological Report on Part of Borrow Pit Site S14/164: Kernott and Horotiu Bridge Road, unpublished report.

Appendices



heritage of New Zealand (in relation to section 15(1) of the Act). Any works affecting such a site must cease until the NZHPT has given its response (this response will be given within 5 working days).

Such circumstances may include, but are not limited to, the discovery of sites from an early or significant period in New Zealand's history, the discovery of unusual or rare artefacts or other archaeological material or features, or the discovery of large, complex or unusual features not identified in the archaeological assessment provided with the authority application.

4. Any earthworks that may affect archaeological site \$14/242 must be monitored by an archaeologist approved by NZHPT. The NZHPT approved archaeologist must monitor the excavation of all housing platforms, the subdivision road and associated infrastructure within house Lots 1 - 5 within Pt Lot 3 DPS 25169, All other earth works associated with house Lots 6-10 within Pt Lots 3 / 4 DPS 25169 and \$0 311489 must be carried out under the Accidental Discovery Protocol (ADP) as submitted with this application on the 14 September 2011.

5. The Authority Holder must ensure that all contractors working on the project are briefed on the possibility of encountering archaeological evidence, how to identify possible archaeological sites during works, the archaeological work required by the conditions of this authority, and contractors' responsibilities with regret to notification of the discovery of archaeological evidence to ensure that Condition 4 Archaeological evidence to be recorded and any requirements to notify NZHPT are complied with.

6. Any archaeological evidence encountered during the exercise of this authority must be investigated, recorded and analysed in accordance with current archaeological practice. Current archaeological practice may include, but is not limited to, the production of maps/ plans/

Convest architectogetes practice may menue, but is not limited to, the production of maps/ plans/ measured drawings of site location and extent, excavation, section and artefact drawings and sampling, identification and analysis of faunal and floral remains and modified soils and radiocarbon dating of samples.

- Where possible, significant archaeological material encountered during monitoring shall be preserved and protected in situ.
- Any archaeological work must be undertaken in conformity with any tikanga Maori protocols or monitoring requirements agreed to by the Authority Holder and Tainui so long as the legal requirements of the authority are met.
- If any koiwi tangata (human remains) are encountered, all work should cease within 20 metres of the discovery. The NZHPT Area Archaeologist, NZ Police and Tainui must be advised immediately and no further work in the area may take place until they have responded.
- Site Record Forms must be updated or submitted to the NZAA Site Recording Scheme, as appropriate. These forms must be propared by an archaeologist approved by the NZHPT.
- 11. Within 20 working days of the completion of the on-site archaeological work associated with this authority, a written summary outlining the archaeological work undertaken, the preliminary results, and the approximate percentage of archaeological material remaining in-site, must be

ÿ

submitted to the NZHPT Area Archaeologist. This report must be prepared by an archaeologist approved by the NZHPT.

The Authenity Holder must ensure that within 6 months of the completion of the on-site archaeological work a final report, completed to the satisfaction of the NZHPT, must be submitted to the NZHPT Area Archaeologist.

This report shall include, but may not be limited to, site plans, section drawings, photographs, inventory of material recovered, including a catalogue of artifacts; location of where the material is currently held, and analysis of recovered material in accordance with accepted archaeological practice.

This report must be prepared by an archaeologist approved by the NZHPT.

The Authority Holder shall ensure that one hard copy of the final report is sent to the NZHPT Area Archaeologist. A digital copy must also be sent to the NZHPT's National Office for inclusion in the Digital Library.

Hard copies of the final report must also be sent to:

NZAA Central Filekeeper and Tainul

APPROVED ARCHAEOLOGIST

Pursuant to section 17 of the Act, Chris Mallows, with such assistants as may be necessary, is approved by NZRIPT to carry out the archaeological work required as a condition of this authority, and to compile and submit a report on the work done.

ADVICE NOTES

Contact details for NZHPT Area Archaeologist

Brooke Jamieson—Lower Northern Area Archaeologist NZHPT Tauranga Office PO Box 13339 TAURANGA 3141

Phone (07) 577 4534 / Fax (07) 578 1141 Email bjamieson@historie.org.nz

Costs The Authority Holder shall meet all costs incurred during the exercise of this authority. This includes all on-site work (monitoring and excavation by the archaeologist or extended field crew), post fieldwork readysis (midden and artefact sorting and identification), radiocarbon dates, specialist analysis (pollen identification, wood identification, artefact conservation), and preparation of interim and final reports.

3



7th November 2016

Via email: rob.simpson@xtra.co.nz

Robert Simpson Horotiu Properties **Opus International Consultants Ltd**

P +64 7 535 9344

Hamilton Environmental Office Opus House, Princes Street Private Bag 3057, Walkato Mall Centre, Hamilton 3240 New Zealand

Dear Robert,

Re: Archaeological advice note to owner/purchaser Horotiu Properties, 2281 River Road.

Purpose

This letter outlines the archaeological work undertaken to date at Horotiu Properties (DPS 54869 – the project area), and provides details on the lots which may have a remaining archaeological risk. Prospective buyers of the lots should be made aware of the archaeological investigations undertaken to date and any future archaeological risk associated with the land (see Figure 1 and the glossary below).

Archaeological Work Completed to-date

An Archaeological Assessment of Effects Report was undertaken in 2011 and identified archaeological risk within Lot 1 – 5. Following this assessment two archaeological authorities have been obtained from Heritage New Zealand Pouhere Taonga (HNZPT - formally the Historic Places Trust) for the project area, authority numbers 2011/51 and 2012/297.

Archaeological investigations for authority 2011/51 were undertaken in 2011 by the Opus Heritage Team. Two investigation trenches were undertaken across Lots 2, 3 and 4 of the project area, which confirmed archaeological material relating to pre-European Maori gardening remained within these lots.

Archaeological investigations for authority 2012/297 were undertaken in 2016 by the Opus Heritage Team. Trenching was undertaken on the building platforms within Lots 1 to 4, which investigated archaeological material relating to pre-European Maori gardening. This work has cleared these house platforms from archaeological risk. Note, Lot 5 did not require investigating as the house platform was outside the considered risk area.

Archaeological Risks Remaining

There remains a risk on any archaeological site not investigated in its entirety of identifying additional archaeological evidence. Such features may include storage pits, Taonga (i.e. stone tools) and koiwi tangata (human remains). No evidence of these kinds was noted from the investigations undertaken to date. While these are typically rare finds, there remains a minor risk of encountering this type of evidence within Lots 1 to 5.

A portion of a single borrow pit likely remains within Lots 3 and 4. Noted in the 2011 investigation, the majority of the borrow pit is within the archaeological preservation area, however, it is also likely to be partially located beyond this exclusion zone within Lots 3 and 4.

Based on the archaeological investigations to date, it is recommended that if purchases of Lots 1-4 undertake earthworks outside of their cleared house platforms that this work be done under the provisions of an Accidental Discovery Protocol (ADP - see attached document). Should evidence for storage pits, koiwi tangata, or Taonga be uncovered the new owners should seek advice from Heritage NZ on how best to proceed.

PAGE 1 OF 4

www.opus.co.nz

Lots 5 - 10 are considered to have no known archaeological risk.

Please don't hesitate to contact me should you have any questions or concerns.

Regards,

Kirsty Potts Archaeologist, <u>kirsty.potts@opus.co.nz</u>

Glossary

Borrow pit -Quarry used by pre-European Maori to extract sand and gravel to use in garden soils.

Garden Soil – Modified soils, often containing gravel, sand and charcoal, used by pre-European Maori for gardening.

Koiwi tangata- Human remains.

Storage pit – Square or circular pit ranging from <0.5 m to 6 m in size used for the storage of various items e.g. kumara.

Taonga - "Treasure", in archaeological terms this usually refers to artefacts such as adzes.

PAGE 2 OF 4

www.opus.co.nz



Figure 1: Archaeological Risk Map for Horotiu Properties.

Accidental Discovery Protocol (ADP):

In the event of any discovery of suspected archaeological remains:

- 1. The Property Owner must cease all physical works immediately within a 10 meter radius of the find.
- The Property Owner shall secure the find area to prevent further damage and report the find to a qualified Archaeologist or Heritage New Zealand Pouhere Taonga (Heritage NZ; +64 7 577 4530).
- The Archaeologist or representative from Heritage NZ shall advise the Property Owner on whether the find is archaeological or not and how best to proceed.
- 4. If the find is confirmed as archaeological, Heritage NZ must be contacted immediately to report the find and an archaeological authority from Heritage NZ be applied for. An archaeological authority gives the Property Owner permission, under certain conditions, for the Property Owner to modify or destroy an archaeological site. Please note, the Heritage NZ archaeological authority application processing time and appeal period can result in a delay to works of up to 40 working days during which time site works must be stood down.
- If human remains (koiwi tangata) are found, the property owner must also contact NZ Police and, in the case of Māori remains, the appropriate iwi group or kaitiaki representative to seek advice for how to proceed. The remains must not be moved or disturbed until a process for repatriation has been agreed upon by all parties.
- Once an archaeological authority has been obtained from Heritage NZ, the Project Archaeologist will attend site and formerly record and investigate the find before any physical works proceed. The Project Archaeologist will advise the Project Manager when physical works can resume in the location of the find.

It is an offence under S.87 of the *Heritage New Zealand Pouhere Taonga Act 2014* to modify or destroy an archaeological site without an Authority from Heritage New Zealand irrespective of whether the works are permitted or consent has been issued under the Resource Management Act.

This protocol does not apply when an Authority issued under the *Heritage New Zealand Pouhere Taonga Act* 2014 is in place.

IF IN DOUBT, STOP AND ASK; TAKE A PHOTO AND SEND IT TO A QUALIFIED ARCHAEOLOGIST OR HERITAGE NZ

PAGE 4 OF 4

16 August 2010

Karyn Hopkins CKL Surveying and Planning PO Box 171 Hamilton 3240



3-38211.00 / 003HR

Dear Karyn

Addendum to Archaeological Assessment of Proposed Sub-Division at 2281 River Road, Horotiu

1. Introduction

The purpose of this addendum is to present the findings of our assessment of the archaeological risk associated with a proposed sub-division at Pt Lot 4 DPS 25169 (corner of Sullivan Road / River Road, Horotiu).

The brief of this commission was limited to identifying any archaeological sites located within the proposed sub-division and to provide recommendations to mitigate for the archaeological risk associated with this proposed project.

This document is designed to be an addendum to an existing report entitled *Archaeological Assessment of Proposed Sub-Division at 2281 River Road, Horotiu* (Mallows 2010) prepared in June 2010, for Pt Lot 3 DPS 25169 and Section SO 311489.

To avoid repetition, readers of this addendum are referred to the report prepared by Mallows for sections providing:

- the statutory requirements protecting archaeological sites;
- the site location, topography and geology of the study area;
- the historical and archaeological background of the study area;
- a statement from the NZAA regarding the interpretation of data from ArchSite; and
- an Accidental Discovery Protocol.

This addendum discusses the

- · projects' background and the brief of this commission;
- fieldwork undertaken; and
- the potential effects of the proposed works and recommended mitigation of effects.

Appendix 1 provides the project drawings that the archaeological risk was assessed against

Project Background

Simpson Farms are proposing to create four rural-residential allotments from Pt Lot 4 DPS 25169. It is likely that these four rural-residential allotments will then be on-sold prior to development. CKL have been contracted by Simpson Farms to manage the consenting process. As part of the consultation process with tangata whenua, a request was made for an assessment of the archaeological values for the proposed sub-division. This was partially as a result of a 1966 historic aerial photograph in the report prepared by Mallows Illustrating that borrow pit-like features are visible within the study area. *Figure 1* shows the location of the borrow-pit like features on the historic aerial photograph. In response, Simpson Farms and CKL commissioned the Opus Heritage Team to assess the archaeological risk associated with a proposed residential sub-division at Pt Lot 4 DPS 25169.



Plate 1: Part of 1966 historic aerial photograph showing the location of the borrow-pit like features within the study area.

Limitations

ののの

Every effort has been made in the preparation of this document to provide as complete an assessment as possible, within the terms and scope of the commission and information provided. Any changes to the design of the project or the scope of commission will require a review of the recommendations provided in this document to be made.

All statements and opinions in this document are offered in accordance with accepted best practice. We cannot accept responsibility for errors of fact or opinion resulting from data supplied by a third party.

Our addendum does not represent the views of iwi regarding the significance of the area to them. An assessment of cultural significance might not necessarily correlate with our assessment of the archaeological significance of this area.

2. Results of Archaeological Fieldwork

To assess the archaeological risk associated with this project a field survey of the proposed sub-division was undertaken. The aim of the field survey was to:

- confirm the presence or absence of unrecorded archaeological sites;
- assess the level of modification to the original ground surface; and
- examine the potential for unrecorded archaeological sites to be present.

Method Statement and Condition of the Land

Surveying was undertaken by Christopher Mallows on the 6th July 2010, with a further visit by the archaeologist on the 16th August 2010. In attendance with the archaeologist were Robert Simpson (Simpson Farms), Karyn Hopkins (CKL) and Denis Ngataki (Turangawaewae Board of Trustees). The weather was overcast with low lying cloud levels. As with light levels; ground surface conditions can reduce the visibility of archaeological sites. A low agricultural seed crop inhibited the visibility of the ground surface. *Plates* 1 - 2 (*overleaf*) show the general ground surface cover within the study area.



Plate 1: South-east facing shot of ground cover within study area. Photograph taken by archaeologist on 16/8/10.



Plate 2: South-east facing shot of ground cover within study area. Photograph taken by archaeologist on 16/8/10

The strategy employed during the archaeological field survey included the following:

- the targeting of areas where no known archaeological sites were recorded, but where local topographic conditions suggested probable locations of archaeological features; i.e.; streams, places of prominence or with a good view; and
- a random survey of other areas to review the level of modification to the original ground surface and examine the potential for unrecorded archaeological sites to be present.

Results

It is the nature of the archaeological sites that the majority of the scientific and cultural deposits are sub-surface. Indications of a site are sometimes visible as physical features, such as pits, living terraces, defensive ditches and banks. Sub-surface or stratigraphic deposits are often not visible during a walkover of an area unless there has been some ground disturbance and an open or eroded face is apparent.

Opus International Consultants Limited Environmental Opus House, Princes Street Private Bag 3057, Waikato Mail Centre, Hamilton 3240, New Zealand Telephone: +64 7 838 9344 Facsimile: +64 7 838 9324 Website: www.opus.co.nz During the archaeological survey attention was paid to open areas of ground where minimal ground disturbance had taken place. The focus during the survey was to identify visual evidence of cultural deposits or features.

No surface archaeological features were observed during the field survey. In the period between 1966 (the date the historical aerial photograph was taken) through to the present day, extensive modification to the original ground surface has occurred. A pond has been created through quarrying towards the middle of Pt Lot 4 DPS 25169. The pond is *c*.6m below the current ground surface level.

Extensive contouring of the land has taken place around the vicinity of the pond. The borrow pits shown on historic aerial photographs were not visible on the ground and have been destroyed during the re-contouring of the land around the pond. *Figure 2 (overleaf)* is part of the 1966 historic aerial photograph. Contours have been added to the historic aerial photograph to illustrate that the borrow pits (original locations highlighted) have been destroyed.

Due to the level of modification of the original ground surface a systematic hand augur survey was not undertaken to identify garden soils.

Page - 5



Figure 2: Plan of contours overlaying 1966 historic aerial photograph. The contours illustrate that the borrow pits in Pt Lot 4 DPS 25169 have been destroyed. The borrow pits are highlighted.

Telephone: +64 7 838 9344 Facsimile: +64 7 838 9324 Website: www.opus.co.nz

Opus House, Princes Street Private Bag 3057, Waikato Mail Centre, Hamilton 3240, New Zealand

Opus International Consultants Limited Envronmental

3. Discussion

Effects of Proposed Works and Mitigation of Effects

It is important to recognise that archaeological sites are not isolated, individual entities, but are often part of a much wider historic landscape. Archaeological sites are finite and once destroyed, modified or investigated cannot be replaced. Therefore, preservation of archaeological sites is always the preferred option. By nature, archaeological sites are predominantly sub-surface features and, are therefore, not always visible. Caution needs to be exercised when working within the vicinity of a recorded or unrecorded archaeological site.

There is a legal requirement to seek an archaeological authority from the NZHPT to damage, destroy or modify an archaeological site prior to any earthworks within the vicinity of a known archaeological site, or in an area where there is reasonable cause to suspect that there may be an archaeological site.

Simpson Farms are proposing to create four rural-residential allotments from Pt Lot 4 DPS 25169. It is likely that these four rural-residential allotments will then be on-sold prior to development. No surface archaeological features were observed during the field survey. In the period between 1966 (the date the historical aerial photograph was taken) through to the present day, extensive modification to the original ground surface has occurred. The borrow pits shown on historic aerial photographs have been destroyed during the recontouring of the land around the pond.

The archaeological risk for the proposed sub-division is low. As such it is recommended that all construction works occur with an *Accidental Discovery Protocol* in place. The *Accidental Discovery Protocol* outlines the steps to be taken should potential archaeological deposits be identified during construction works whilst an archaeologist is not present.

Recommendations

 that all earthworks in the proposed sub-division be carried out under the guidelines of an Accidental Discovery Protocol.

Kind regards,

Challes

Chris Mallows. Archaeologist.

Opus International Consultants Limited Environmental Opus House, Princes Street Private Bag 3057, Walkato Mail Centre, Hamilton 3240, New Zealand Telephone: +64 7 838 9344 Facsimile: +64 7 838 9324 Website: www.opus.co.nz

Appendix 1

Project Drawings

Page - 8



,ii

Telephone: +64 7 838 9344 Facsimile: +64 7 838 9324 Website: www.opus.co.nz

Opus International Consultants Limited Environmental