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By email:

Tēnā koe Hilary

**REVIEW OF ARCHAEOLOGICAL ASSESSMENT PREPARED
FOR NUKUHAU STRUCTURE PLAN CHANGE (PC37), TAUPŌ
DISTRICT**

This letter of advice sets out the results of a review of 'Nukuhau Structure Plan Archaeological Assessment for the Nukuhau Structure Plan Change, Taupō'. An unpublished report prepared by WSP New Zealand Ltd (report author Kirsty Sykes, reviewed by Nick Cable), dated 7th September 2021. Additional information was also obtained from WSP on 1st October 2021 and is attached as Appendix A.

The purpose of the review is to provide advice to Taupō District Council staff on the following matters:

- Does the WSP report reflect archaeological best practice?
- Are the conclusions supportable in relevant legislation?
- Does the reviewer support the summary of results and the recommendations?
- Is further archaeological study appropriate and what form would that take?
- Are there archaeological matters that mean that re-zoning is inappropriate?

1. Reviewer qualification/experience

I hold a Master of Arts in Anthropology (Archaeology) from the University of Auckland (1988) and have archaeological work experience in the Taupō region spanning the period from 1990 to 2021 and I am familiar with the study area. I have previously provided archaeological advice to both Heritage New Zealand and Taupō District Council.

2. Executive Summary: Matters requiring resolution prior to Hearing

I have reviewed the Archaeological Assessment and I consider that there are information and analysis deficiencies in the assessment as presented which mean that it is not currently possible to make an accurate determination as to whether PC37 will have an adverse effect on historic heritage, including archaeological sites.

If the following matters are addressed by the WSP report writer, and a revised Archaeological Assessment is prepared prior to the plan change hearing, it will be possible for me to provide greater certainty in advising Taupō District Council.

- Undertake a comprehensive review of the available archaeological literature from the Taupō region, particularly Williams and Walton 2003¹, and include the results of relevant archaeological investigations in the vicinity of the area subject to the plan change.
- Consult with mana whenua to determine if there are any areas of cultural significance within the plan change area as this will inform the probability of the presence or absence of archaeological sites.
- Undertake comprehensive examination of the plan change area using a geo-referenced high resolution aerial photograph taken in 1972. Focus on the areas that were not able to be inspected during the field visit and also search for any depressions similar to those in Area C.
- Document the history of post-1900 land use, particularly focussing on the areas that could not be inspected during the field visit, as this will assist to determine if intact archaeological features are likely to be present.
- Provide a comparative analysis of the soil stratigraphy examined during the field visit with relevant documented examples of culturally modified soils – for example Simmons 2009.² This will assist to determine if buried archaeological features are likely to be present.

¹ A Williams & T Walton 2003 Early Landuse Patterns in the Lake Taupō Area. *Science for Conservation* 222.

² Simmons A 2009 Archaeological Work Undertaken to Investigate and Record U17/66, A Cultivation Area Discovered During Construction. Unpublished report prepared for Taupō District Council.

- Consult current and/or former occupiers of Area C to determine if the depressions identified during the field visit on 6th July 2021 are of recent origin and related to livestock farming activity or some other post-1900 use of the property.
- Discuss with Heritage New Zealand whether the information supplied on 1st October which showed that the depressions in Area C do not appear to have been present in 1972, based on aerial photography examination, introduces sufficient doubt that the features are archaeological to allow for subsurface testing without the need for a prior s.56 authority. If they agree, carry out sufficient subsurface testing to decide the origin and extent of the features, and include the result in the revised Archaeological Assessment.

Only if the 1972 aerial photography evidence **and** the result of discussions with the current and/or former occupants of the land does not establish, to the satisfaction of Heritage New Zealand Pouhere Taonga; that the depressions in Area C are of recent origin, an exploratory archaeological investigation as provided for under section 56 of the Heritage New Zealand Pouhere Taonga Act 2014 should be carried out, focused on the area where the depressions are located and the immediate surrounding land. There is insufficient time available to complete a s.56 investigation before the scheduled plan change hearing date.

3. Review of WPS report

While the format and methodology of the report is generally consistent with Heritage New Zealand Pouhere Taonga (HNZPT) guidance for the preparation of Archaeological Assessments, the content and analysis do not accord with best practice. I have provided examples below of some of the areas where, in my opinion, the information and analysis within the report is deficient.

One further comment regarding best practice, the WPS report introduces the phrase ‘the known archaeological risk’ in section 7.3 and reference to ‘risk’ is made in other parts of the report. What is meant by ‘archaeological risk’ is not defined. Is it the probability that unrecorded archaeological sites are present or will be adversely affected the proposal, or the probability that archaeological values will be affected? The assessment process as set out in the HNZPT guidelines is effects-based not risk-based, so the use of this term is not adequately explained.

Quality of evidence cited in Sections 6.1. Pre-European Māori Archaeology

A single source is quoted for the findings of previous archaeological work in the area – Williams 1988 in Mallows 2007:16. This suggests that the report writer has not undertaken

a comprehensive review of the available archaeological literature to describe the nature and extent of pre-European and contact period Māori settlement and hence the likelihood for archaeological sites to be present in the assessment area. This is relevant because the WSP report concludes in section 7.1 (page 10) that ‘It is understood that the area around present day Taupō township, and the mouth of the Waikato River, was strategically important to Māori and likely heavily occupied relative to surrounding interior regions’. No evidence or reference is given to support this understanding.

An important source that has not been referenced in the assessment is Williams and Walton (2003) which provides a synthesis of early landuse patterns in the Lake Taupō area based on extensive analysis of the available archaeological literature, history, ethnography, and natural sciences data. Williams and Walton conclude that: “In late prehistoric (16th to 18th centuries) and early historic (early to mid-19th century) times settlements were located around Lakes Taupō and Rotoaira and on bush-edges.... Bush clearance was under way by the 16th century, and the bush edge gradually retreated over centuries with settlement following it”.³ This report is not referenced by WSP, and, in my opinion, its omission compromises the validity of analysis.

Appropriateness of findings in Section 7.1 Recorded Archaeological Sites

The current recorded archaeological site distribution in the Taupō region is primarily an artefact of survey bias, as there has been very limited systematic archaeological survey carried out. Williams and Walton note that ‘Early European records suggest many settlements and cultivations in the Taupō district were located near or on bush edges, either amongst standing trees on the margins or in clearings (recently supported by Fletcher 1996b)’⁴. The WSP report states in section 7.1 (page 10) that ‘Currently the recorded archaeological sites indicate a focus of activity around the lakes and rivers, in other words, not within the typological landscape in which the Site sits’. This statement is not consistent with Williams and Walton’s analysis of historical sources.

This is important when evaluating the findings of the current assessment because the WSP report identifies the possible archaeological features on the property as being a pre-European pit site (section 9.1. Archaeological Values). Such pits are generally characteristic of middle to late settlement sequence archaeology (i.e. circa 16th century settlement onward). That settlement pattern has been shown by Williams and Walton to extend around Lake Taupō and into the bush edge (as it was at the time). The area of the

³ A Williams & T Walton 2003 Early Landuse Patterns in the Lake Taupō Area. *Science for Conservation* 222. p 5

⁴ Ibid, p.13.

plan change site where the possible archaeological features are located is approximately 1 km from the Waikato River, and less than 2 km from the river source at Lake Taupō. This location is consistent with the parameters described by Williams and Walton as having potential to contain settlements and cultivations.

On this basis, it is my opinion that the statement within the WSP report that 'The topography of the Site is not located in the known high-risk archaeological zone for this area' (section 8.1. Summary of Results, p.19) is incorrect.

Appropriateness of findings in Section 7.3 Historic Survey Plans and Aerial Photography

The report writer includes ML 5271 as Figure 4, and notes that although there are features such as graves, pre-1900 pā and other named places shown on the plan, none are located within the assessment area. This is correct however, in my opinion, the presence of such places in proximity to the property does not support the conclusion that the property is outside the 'known archaeological risk' area. Nukuhau Pā, which has been cropped from the section of ML 5271 used in Figure 4, is located less than 1 km from Area A. Archaeological features associated with cultivation and/or seasonal settlement in the Taupō region are often ephemeral and may have little or no surface expression. A relevant example within reasonable proximity to Area C, is Simmons 2009 excavation and test-pitting of cultivated soils south of Wairakei.⁵ The report includes photography and description of culturally modified soils, which were found during ground disturbance. Proximity to known heritage places increases the probability of archaeological features, including those which may have no surface expression, being present.

Analysis of aerial photography is standard practice in the preparation of Archaeological Assessments. This extends to the use of geo-referenced historic aerial photography where the available coverage is of sufficient resolution to enable the identification of possible archaeological features.

The report writer includes a 1945 aerial photograph as Figure 6, stating that the subject property was 'in pasture and scrub in 1945 with no visible features or modifications noted bar the occasional track' (page 12). The report writer does not include other historic aerials, but presumably did examine the available coverage as they note that the 'Site area has remained largely unmodified from the 1945 photograph' (page 12). Modern aerial photograph images sourced from Google Earth are used in the report (Figures 12 & 13) to

⁵ Simmons A 2009 Archaeological Work Undertaken to Investigate and Record U17/66, A Cultivation Area Discovered During Construction. Unpublished report prepared for Taupō District Council.

illustrate the location and visibility of the depressions that are subsequently concluded to possibly represent pits and are **labelled** in section 9.1 as a 'pre-European pit site'.

To inform myself sufficiently to assess the accuracy of the conclusions drawn by the WSP report writer I carried out a basic analysis of available aerial photography which I outline below.

The WSP report utilises a 2021 Google Earth image as Figure 13 in the report to illustrate the location and visibility of the two depressions in Area C that have been identified as possible archaeological features. An image from Google Earth utilising 2019 photography is used below (Figure 1) to illustrate the same features. A high-resolution aerial photograph taken in 1972 does not show any evidence of the depressions (Figure 2). Figure 3 illustrates that the features are visible on a Google Earth image dated 2008.



Figure 1: Depressions in Area C shown by red square (2019)



Figure 2: Location of depressions in Area C shown by red square (1972, Retrolens)



Figure 3: Depressions in Area C indicated by red arrows (2008). Stock water trough yellow arrow.

Examination of aerial photography in the wider area on Google Earth (2008 and 2019) provides numerous examples of depressions with the same shape and resolution as those illustrated in Figure 1 above. In some cases, livestock tracking is clearly visible leading to and from the depressions. Such features are stock-water troughs. When troughs are

removed the ground impression left are characteristically large circular depressions, such as those illustrated on Figure 13 of the WSP report.

I suggest that a possible alternative explanation for the depressions in Area C is that they were formed by stock water trough placement. This could potentially be confirmed or discounted quite quickly as an explanation by consultation with the current or former occupants of the property to determine if stock water has previously been supplied at this location.

I supplied the result of the analysis of aerial photography to the WSP report writer on 1st October 2021 in the interests of potentially resolving the question of whether the depressions are archaeological features.

Quality of evidence in Section 8 Site Visit

The conclusions of the archaeological assessment are primarily informed by the results of a site visit completed on 6th July 2021. Best practice standards require comprehensive foot-based archaeological ground survey in the absence of high-resolution aerial photography and/or LiDAR coverage. Even when these resources are available, ground based survey is often still required to provide a comprehensive archaeological assessment depending on the archaeological sites and the landuse that are subject to assessment.

I obtained additional information from the WSP report writer on 1st October 2021 that illustrates the areas of the plan change site that were subject to archaeological inspection, and the methodology used for the inspection. That information is attached as Appendix A. The site visit carried out for the WSP assessment covered approximately two-thirds of the subject land. Access to 'Area A' was not provided, so therefore it is not possible to draw any accurate conclusions about whether archaeological features are present in this area. Similarly, the 'middle portion' of Area B, the extent of which is defined as B(2) in Appendix A, was also unable to be inspected as it was 'in thick scrub'.

The report states 'Two depressions, both approximately rectangular and measuring up to 6 m were noted in close proximity in the southern portion of Area A at E1866744 N5715213 (Figures 12 – 14)' (page 14). The reference to Area A is clearly a typographical error, as Figures 12 – 14 refer to Area C.

Approximately six exposed soil sections were examined in Area B(1) and B(3) and approximately ten in Area C. The report writer dug four spade test pits, including a single

test pit in one of the depressions to approximately 400mm depth (illustrated in Figure 15) and the 'typical stratigraphy' of Area C is illustrated by Figure 11 and described as topsoil overlying an orange tephra B horizon (page 16).

In my opinion, the description and analysis of soil stratigraphy would benefit considerably from comparative analysis with available archaeological literature and soil data from the Taupō region. Simmons 2009 provides an appropriate nearby example⁶. Such comparison would provide greater clarity around the possibility of buried archaeological features that have no surface expression, such as culturally modified soils, being present within the plan change site.

The WSP report writer states that a review of historic aerial photography did not identify any potential recent explanations for the depressions, such as trees etc (page 14) and concludes 'There is a risk these depressions may represent archaeology features such as pits, however, further investigations would be required to determine the actual nature of the depressions.'

In the summary of results, the report writer reiterates that the two depressions in Area C require further investigation to determine if they are archaeological in nature. Therefore, the following sections 9, 9.1 and 9.2 are, in my opinion, speculative and do not provide any meaningful conclusion in relation to archaeological value, as it is yet to be established if the features do represent archaeology.

Appropriateness of assessment presented in Section 9.1 Archaeological Values

The report writer concludes that most of the site is of 'low archaeological risk', I assume this relates to the probability of archaeological sites and or values being present. However, as explained above, this conclusion in my opinion is based on an inadequate analysis and understanding of the settlement pattern and archaeological site distribution information, and incomplete field survey of the subject land.

The report writer then concludes that if the depressions do represent pits, they are of low or local archaeological significance. It is my opinion, based on the information presented, that this conclusion is speculative.

⁶ Ibid.

Williams and Walton state: “At least some of the many storage pits found within the Tongariro/Taupō Conservancy are likely to have been used to store kūmara tubers, both for eating and for seed”.⁷

It is notable, however, that most recorded storage pits in the Taupō region are characteristically of bin or rua form – that is they tend to be cut vertically into pumice faces or have a small circular entrance. Open rectangular pits rarely occur in this region. Few have been subject to archaeological investigation in the Taupō region. Extensive investigation of a late pre-European/early historic period Māori site at Parawera encountered no open rectangular storage pits, although several sunken house floors and numerous bin, cave and rua pit forms were found.⁸

Therefore, it is reasonable to conclude that if the possible archaeological features identified in Area C do in fact represent up to 6-metre-long open rectangular storage pits; such a finding would have at least regional archaeological significance. Such large storage pits are highly unlikely to occur in isolation from other evidence of Māori occupation and it would therefore be reasonable to expect that there could be further buried archaeological features in the vicinity of the pits. The report writer has concluded that the overall significance of such evidence would be low. This statement is incorrect, because it has already been established through archaeological investigations completed elsewhere that such evidence is rare in the Taupō region.

If the depressions are shown not to be archaeological features, either by evidence proving they are the result of recent landuse activity, or by appropriate subsurface testing; and comparative analysis of soil stratigraphy demonstrates that there are no culturally modified soils or buried archaeological features in Area C; then it could be appropriately concluded that Area C does not have any archaeological value.

Appropriateness of Section 11 Conclusions and Recommendations

I consider that the report writer bases their conclusions on a deficient analysis of both the probability of archaeological features being present within the area proposed for PC37 and the potential archaeological value of possible archaeological features identified in Area C, if they are in fact proven to be archaeological features. The conclusion that ‘Development under the existing residential zoning designation has the same material effects so there is no difference between the proposed designations’ (page 21) is, in my

⁷ A Williams & T Walton 2003 Early Landuse Patterns in the Lake Taupō Area. *Science for Conservation* 222. p 19

⁸ D Prince et al 2011 Report on Archaeological Investigations of the Parawera Development, Acacia Bay, Taupō. Unpublished report prepared for Hiruharama Ponui Inc and Symphony Holdings Ltd.

opinion, incorrect. PC37 proposes to rezone rural environment land to general residential and medium density residential land.

Re-zoning of land can have a significant effect on archaeological sites if there has been insufficient prior investigation to determine the extent and significance of the archaeological sites in the area. Such features are subsequently subject to cumulative loss and piecemeal study, even if mitigation measures such as archaeological investigation and recording provided for under the Heritage New Zealand Pouhere Taonga Act 2014 are used.

In situations where archaeological features and sites are proven to be present a comprehensive programme of archaeological investigation in combination with protection of a representative sample of the sites should precede any intensification of landuse.

The Resource Management Act 1991 section 6(f) requires as a matter of national importance the protection of historic heritage, including archaeological sites, from inappropriate subdivision, use and development. This includes ensuring that historic heritage is not subject to cumulative loss resulting from development as an outcome of the intensification of landuse, where the adverse effect of that intensification can be defined.

It is my opinion that for Taupō District Council to be appropriately informed about the effects to historic heritage, including archaeological sites, resulting from PC37 further investigation should be carried out to resolve if archaeological features are present before a decision on the plan change is made. The report writer's recommendation that archaeological investigation should be undertaken as part of any future development of the part of Area C containing the two depressions does not adequately address the potential threat to historic heritage values.

3. Summary of review findings

Does the WSP report reflect archaeological best practice?

The report format and methodology reflect best practice but, in my view, there are significant deficiencies in content and analysis. In my opinion, which is based on 35 years of archaeological fieldwork and assessment experience, these deficiencies mean that it is not possible to draw reliable conclusions from the WSP assessment as currently presented.

Are the conclusions supportable in relevant legislation?

In my opinion, not as the assessment currently stands. It has not been established if the depressions identified in Area C are archaeological features, and the archaeological field inspection did not include all the area subject to re-zoning therefore, in my opinion, the conclusions of the report are deficient so are not supportable in relevant legislation.

Does the reviewer support the summary of results and the recommendations?

In my opinion, the summary of results is deficient, and the recommendations do not adequately address the potential effects of increased development on historic heritage. A methodology to address the information deficiencies is set out below.

Is further archaeological study appropriate and what form would that take?

Yes. I recommend the following course of action:

a) The current and/or former occupiers of the land identified as Area C within the WSP report should be consulted to determine if the depressions identified during the field visit on 6th July 2021 are of recent origin and related to livestock farming activity or some other post-1900 use of the property.

b) At the same time further archaeological assessment of Area A and B(2), shown on Appendix A, should be completed. This should be informed by appropriate consultation with mana whenua to identify potential areas of cultural significance that may be indicative of the presence of archaeological sites. Conversely mana whenua may be able to provide information that could support a conclusion that there are no archaeological sites on the land. If ground surface visibility and access to these areas precludes field examination, the high resolution 1972 aerial photography should be georeferenced and examined for possible archaeological features. Comparative analysis of soil stratigraphy should be completed to determine the possibility of buried archaeological features being present. A review of post-1900 landuse should also be included to determine the degree of land disturbance that has occurred as this will also influence the probability of intact archaeological features being present.

c) If the result of discussions with the current and/or former occupants of the land does not establish, to the satisfaction of Heritage New Zealand Pouhere Taonga; that the depressions in Area C are of recent origin, an exploratory archaeological investigation as provided for under section 56 of the Heritage New Zealand Pouhere Taonga Act 2014 should be carried out, focused on the area where the depressions are located and the immediate surrounding land. This investigation should be done by an appropriately qualified archaeologist familiar with the archaeological resource of the Taupō region. The results of that investigation should then be used to inform Taupō District Council in further consultation with Heritage New Zealand regarding the potential effect of PC37 on this portion of Area C.

Are there archaeological matters that mean that re-zoning is inappropriate?


It is my opinion that further investigation is required in Area C to determine if archaeological features are present and the areas that have not been subject to archaeological field survey - Areas A and B(2) – should be further examined so that a fully informed Archaeological Assessment for PC37 can be prepared.

If it is demonstrated through more comprehensive archaeological assessment that there are either no archaeological features present on the subject land, or a low probability; then re-zoning would be appropriate.

If it is determined that there are areas of high archaeological value further archaeological investigation and/or protective measures to reserve the relevant area(s) should be considered in conjunction with PC37. Provided such measures are in place re-zoning would then be appropriate.

Please contact me if you have any questions about the advice provided.

Nāku noa nā

A handwritten signature in black ink, appearing to read 'Lynda Walter', is positioned above the printed name. The signature is written in a cursive style.

Lynda Walter
Director

