Greg Lee
New Zealand Transport Agency

Kia ora Greg

Te Apiti Ahu Whenua Trust did not participate in the Notice of Requirement stage of the Te Ahu a Turanga Project and should have, but the Trustees have since been working with New Zealand Transport Agency over the last year to identify the impacts of the proposed road on the mana of the island we are kaitiaki for, Parahaki.

We attach a draft Cultural Impact Assessment that we commissioned last year in relation to the Project. We have continued to work intensively with the Transport Agency to develop a mitgation package to help address and remediate these impacts. This includes work on issues mentioned in the CIA: the final finishes of the bridge design, construction methodology, ecological mitigation and other matters which in combination can also align with and help realise our vision for the island.

We also attach two reports commissioned by the trustees and completed by Dr Hans-Dieter Bader of Archaeology Solutions Ltd. They are a critical in a sense that his findings as detailed in the reports are the basis of the challenges where we together must find mutual acceptable solutions.

We expect to be in a position to update the CIA closer to the start of the consent hearings, to reflect the progress made in our negotiation discusions with NZTA. At that stage we will also confirm our position on the consents.

Ngā mihi

Rob Karaitiana
Chair
Te Apiti Ahu Whenua Trust

PRELIMINARY CULTURAL IMPACT ASSESSMENT

FOR

TE AHU A TURANGA: MANAWATŪ TARARUA HIGHWAY

PARAHAKI ISLAND SECTION

PREPARED FOR

NEW ZEALAND TRANSPORT AGENCY

February 2020

Ref. TAAWT-19001

Te Apiti Ahu Whenua Trust

TE AHU A TURANGA: MANAWATŪ TARARUA HIGHWAY
Ref. TAAWT-19001
Report No. TAAWT-19001a

Prepared by:	Edward Ashby and Jamie Forsman	Consultants	
Approved by:		Te Apiti Ahu Whenua Trustees	
Date of issue:	23/06/2019		
Revision:	~~Draft 2 (final)~~Final Draft of Preliminary CIA		

EXECUTIVE SUMMARY

The Te Apiti Ahu Whenua Trust represent the owners of Parahaki Island which is under Māori title and of huge cultural significance to tangata whenua. It is a place of key cultural significance within the Project corridor. The Trust have undertaken a preliminary CIA to determine the cultural effects of the Te Ahu a Turanga Highway project (on the Island and its immediate cultural landscape setting within a 1 km Study area and to provide recommendations as to how effects can be avoided, remedied or mitigated. The regional and national significance and need for a replacement to the closed Manawatū Gorge SH3 route is acknowledged but must be weighed against significant cultural values. This cultural significance risks being overshadowed and undermined by the physical presence of a new river bridge that will dominate the cultural viewshafts from the Island along the gorge, significantly alter the cultural and natural landscape, and introduce impacts associated with vehicle noise, light, and air discharges into the landscape and within areas of tapu. Maintenance activities could impact to the quiet enjoyment and spiritual qualities of the Island. In total, 23 significant adverse effects to the cultural values of the Trust's beneficiaries' (owners and their whānau and hapū) relationship and their culture and traditions with their ancestral lands, water, sites, wāhi tapu, and other taonga, have been identified. The 23 significant adverse impacts identified in this CIA are post-mitigation assessed, meaning they have not been reduced to less than significant (minor or less) by the remedy and mitigation identified by the NZTA to date. Subsequently, further mitigation and offsetting is required. As the NOR supersedes district plan provisions, and as the cultural effects remain to be addressed fully, the Trust reserves its position (default conditional opposition) on any upcoming regional resource consents related to the Project, pending the adoption of the recommendations in this CIA by the NZTA or otherwise securing by agreement net positive cultural outcomes for the Trust and Parahaki Island. The Trust wishes to develop a positive working relationship with the NZTA that will deliver material enhancements to Parahaki Island and its surrounding environment that are value-add and Māori-outcome components of the Project. The Trust will require a high level of engagement and participation in the next phases (regional consenting, detailed design, construction, and monitoring) of the Project.

CONTENTS

INTRODUCTION

1.1 Project Background

Te Apiti Ahu Whenua Trust (the Trust) have commissioned for the New Zealand Transport Agency (NZTA) a Preliminary Cultural Impact Assessment (CIA) for the proposed construction and operation of 11.5km of new State highway between Ashhurst and Woodville. The proposed new state highway is required to replace the State Highway 3 route through the Manawatū Gorge that has been permanently closed due to geotechnical instability. The proposed highway project is known as Te Ahu a Turanga[1]; Manawatū Tararua Highway (hereafter the Project). This CIA is focused specifically on the section of the Project corridor that is in proximity to Parahaki Island.

Since the closure of the State Highway 3 route through the Manawatū Gorge in 2017 state highway traffic has been diverted onto Saddle Road and the Pahīatua Track. The use of these alternative roads has had significant social, economic and environmental impacts on local communities and the wider region. The scale of impacts of the indefinite closure of state highway through the Manawatū Gorge route resulted in an urgent need to identify a safe, resilient and efficient new route and, as such, the NZTA undertook an extensive two-stage investigation process to identify a replacement route. This included analysis of a long list of 18 different route options, followed by a short list of four options (culminating in the confirmation of a preferred corridor in March 2018), and further development of connections and the proposed designation boundaries.

The NZTA's objectives for the Project are:

- To reconnect the currently closed Manawatū Gorge State Highway 3 with a more resilient connection.
- To reconnect the currently closed Manawatū Gorge State Highway 3 connection with a safer connection than the Saddle Road and Pahīatua Track.
- To reconnect the currently closed Manawatū Gorge State Highway 3 with a more efficient connection than the Saddle Road and Pahīatua Track.

The Project outcomes sought by the NZTA are:

- A safe, efficient, and resilient transport corridor. It is expected that the new road corridor will:
    - significantly reduce traffic-related deaths and serious injuries;
    - increase resilience of the corridor;
    - improve travel times by 12.1 minutes per trip for general traffic, and 13.8 minutes per trip for freight that currently use the Saddle Road (with associated reductions in vehicle operating costs).
- Enabled economic development and regional productivity. A new road corridor is expected to:
    - support regional economic activities and productivity including through reductions in operating costs and travel time;
    - avoid the cost of a delay to realising the benefits of the Gorge replacement, which is estimated to be $22M per annum in additional direct travel costs.

The NZTA lodged notices of requirement (NOR) for the designation of the Project with Palmerston North City Council, Manawatū District Council and Tararua District Council in November 2018. The NOR provides for the designation of the Project corridor within the district plans, and a hearing of submissions on the Project occurred in March 2019. Following issue of a recommendation by the hearings panel on

[1] The Project name has special cultural significance and was gifted by tangata whenua.

24 May 2019, the NZTA confirmed the designation on 10 June 2019. The decision to confirm the designation is now been appealed by the Department of Conservation and the Queen Elizabeth Trust and is subject to Environment Court processes.

This preliminary CIA represents a moment in time, is scoped to inform resource consents and detailed design and is thus preliminary in nature. The Trust reserves the right and anticipates that there will be a need to update the CIA as the Project progresses and intends to provide an update prior to the consent hearings. This will also be informed by any agreements reached between the Trust and NZTA as a result of ongoing discussions and negotiations on the impact of the project

This CIA report has been prepared by the Te Apiti Ahu Whenua Trust as a legal entity representing over 200 whanau members who have Māori freehold interests in the 10.1ha Parahaki Island. The Trust administer and manage Parahaki Island. The purpose of this CIA report is to provide the NZTA and relevant statutory agencies with documentation of the Trust's cultural values, interests, and associations with the Project area and its natural resources, and the potential impacts of the proposed Project activities on these. This CIA also provides recommendations as to how to avoid, remedy or mitigate any potential cultural effects that arise from the Project.

The Trust's engagement in statutory processes including provision of technical advice for impact assessments is guided by our tikanga (customs and protocols) and framed by Te Tiriti o Waitangi and our Trust charter. The Trust responsibilities are:

- The administration and management of Parahaki Island as Māori freehold land on behalf of the beneficiaries (owners).
- To facilitate the retention, occupation, development, and utilisation of Parahaki Island for the benefit of the owners and their whanau and hapū.
- To ensure the protection of wāhi tapu and cultural values associated with Parahaki Island.

1.2 Site Description

The Project is located in the Manawatū within the jurisdiction of the Horizons Regional Council, the Manawatū District Council, the Palmerston North City Council and the Tararua District Council. The Ruahine Range is to the north, and the Tararua Range is to the south. It is to the northeast of Palmerston North, and broadly follows the Manawatū River between the towns of Ashhurst and Woodville, connecting the western and eastern ends of the Manawatū Gorge section of State Highway 3 (fig.1).

The Project corridor crosses the Ruahine Ranges, from the State Highway 3 western entry to the closed Manawatū Gorge, north of the Manawatū Gorge and south of the existing Saddle Road, emerging near Woodville (fig.2). The new road will include roundabout connections with State Highway 57 east of Ashhurst and State Highway 3 west of Woodville, as well as a number of new bridge structures crossing the Manawatū River and unnamed streams, and providing property access underpasses. The road will be a median separated carriageway and includes a second 'crawler' lane over steeper grades).

As this CIA is scoped to the Parahaki Island section of the Project it will focus on the immediate surroundings of the Island (hereafter the Study Area) defined as the Project corridor and works (construction and operational footprint) within a 1 km radius of the centre of Parahaki Island (fig.2). Within the Study Area the Ruahine and Tararua ranges meet at the Manawatū Gorge where the Manawatū Awa is a key feature, running broadly east-west. Parahaki Island sits within the Manawatū River, at its confluence with the Pohangina River, where the Manawatū River bends towards the southwest and the open plains. Significant native (including old growth) forest exists within the gorge immediately to the north east and south east.

For the purposes of this report, the proposed Project footprint (hereafter the Project footprint) includes the western end of the Project corridor where the construction and operational footprint falls within the Study Area, notably where it runs from the Ruahine range (sector 3) south across the Manawatū Awa (sector 2) and reconnects with State Highway 3/Napier Road on the southern side of the river (sector

1)(fig.3 and fig.4). The Project footprint includes the proposed new Manawatū Bridge immediately adjacent to the eastern edge of Parahaki Island (fig.5). Construction of the Project will require large scale earthworks, land disturbance, vegetation clearance, works within the riverbed, foundation construction, the construction of a bridge, and the maintenance and operation of the new section of road that will accommodate state highway traffic.

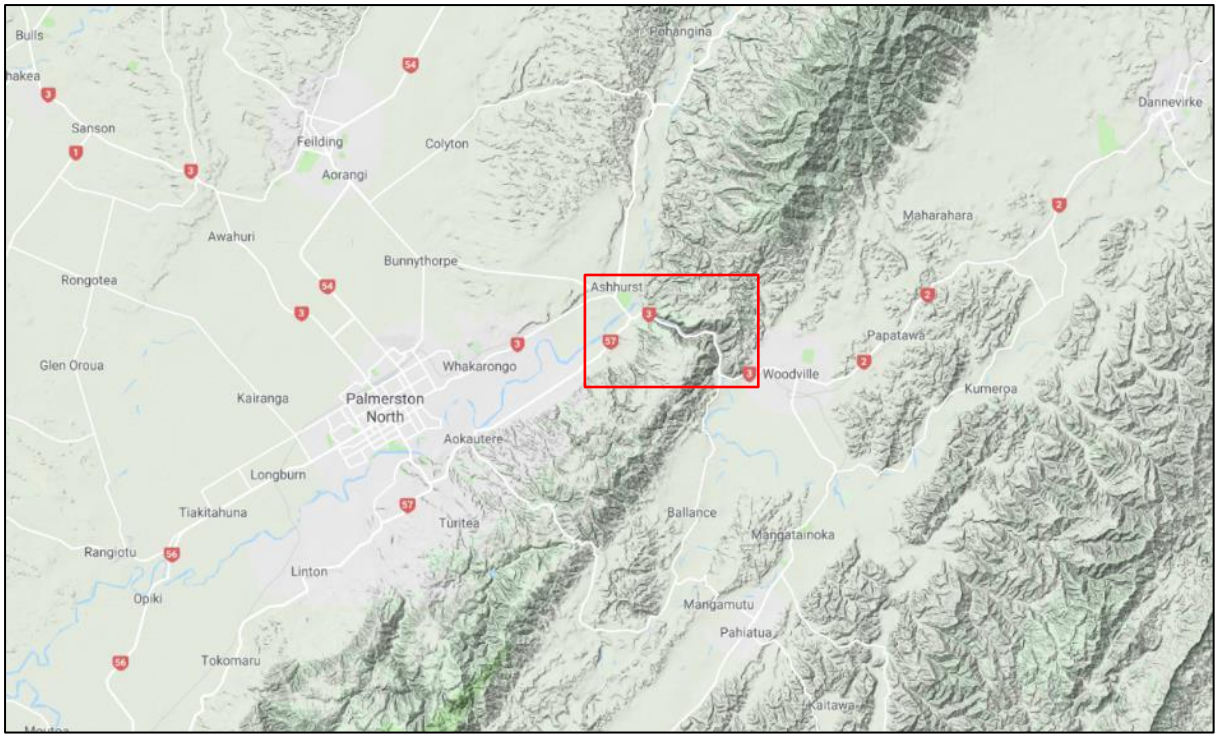


Figure 1: Map showing Project regional context

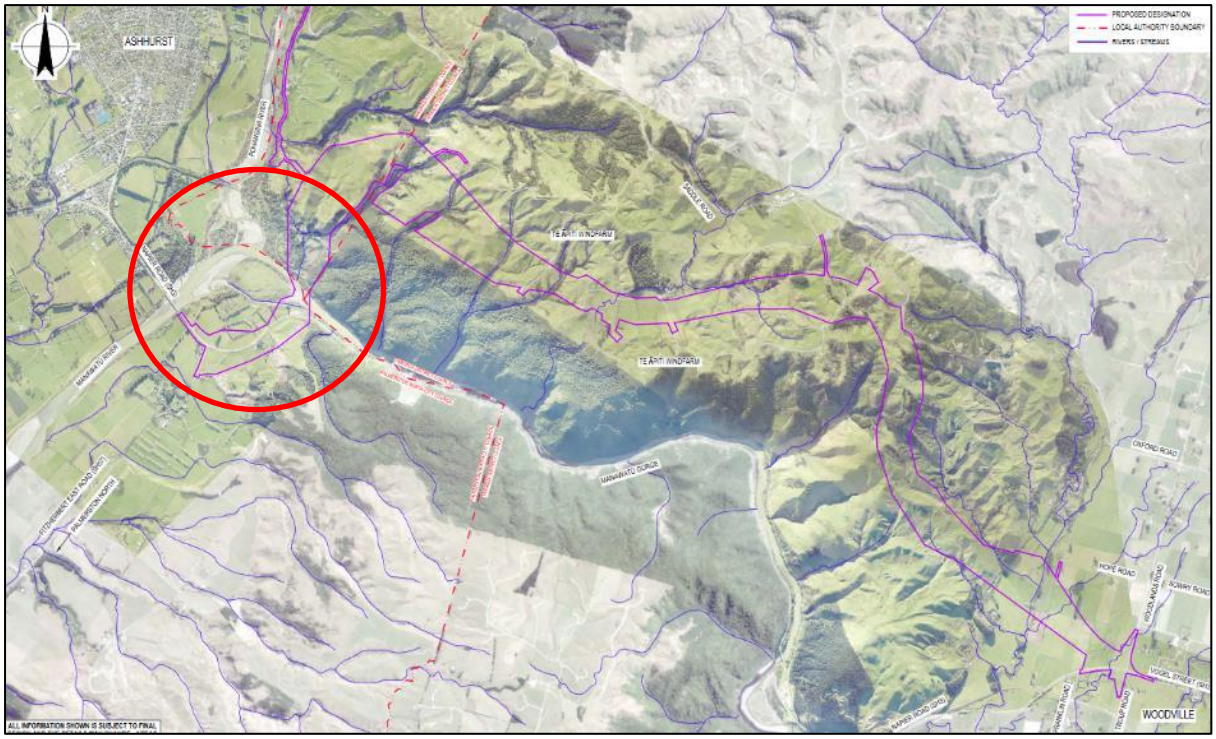


Figure 2: Map showing Study Area (adapted from NZTA)

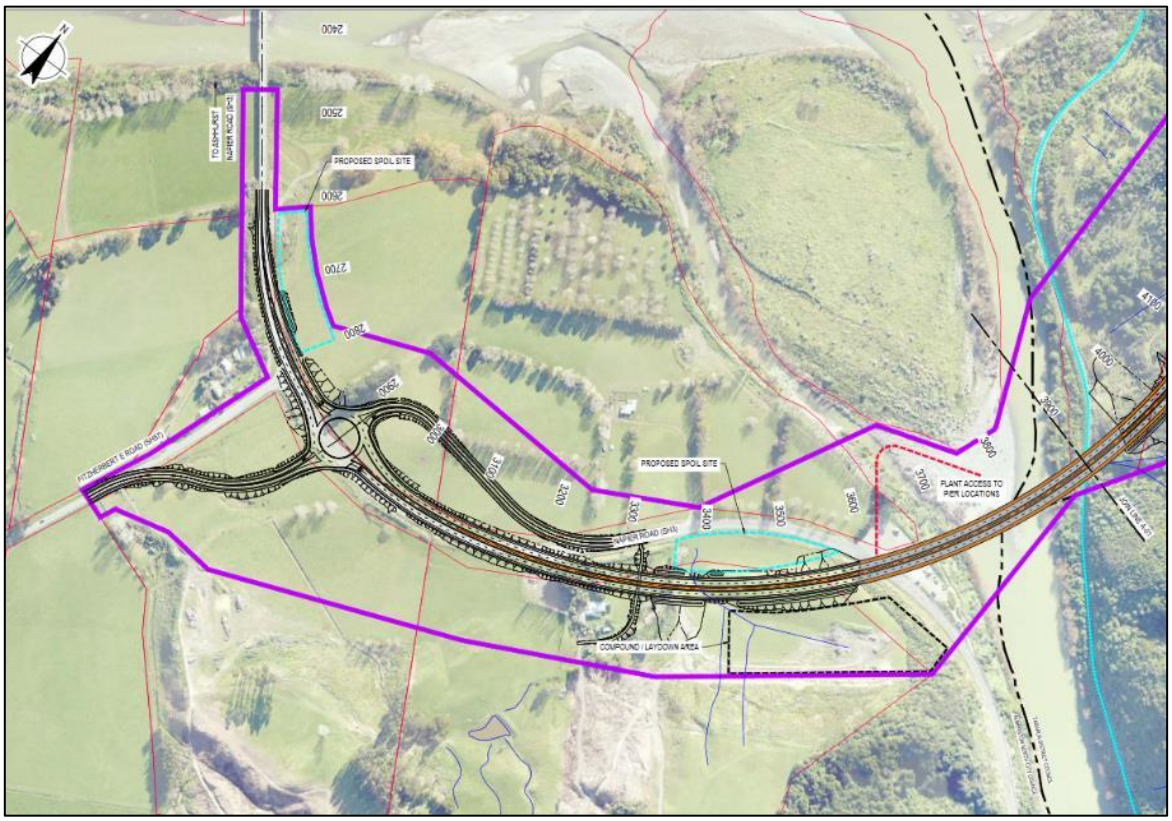


Figure 3: Plan showing southern half of the Project footprint

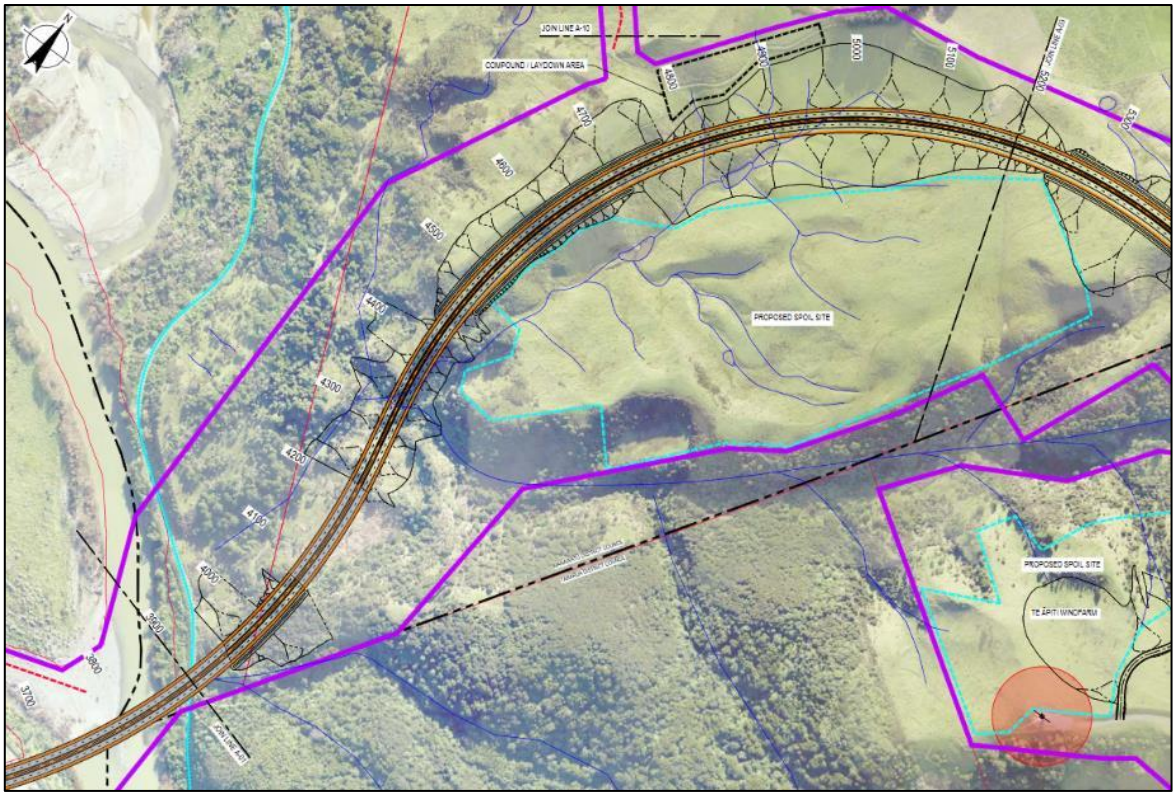


Figure 4: Plan showing northern half of the Project footprint

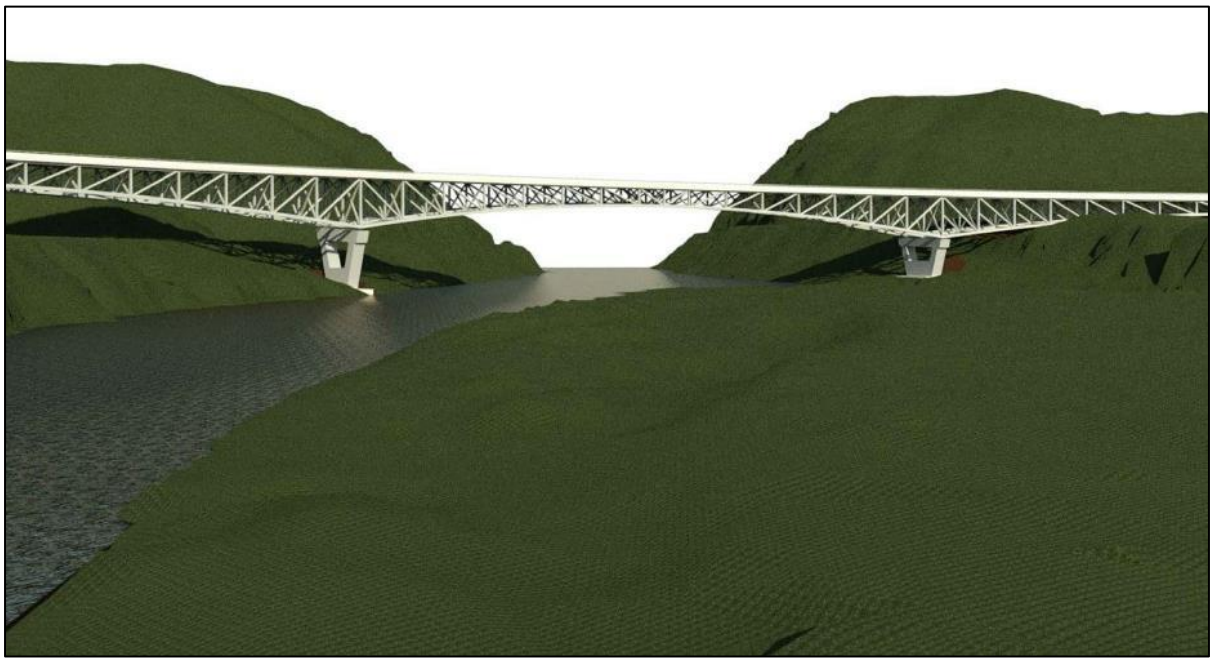


Figure 5: Artist concept of Manawatū River Bridge 2 Option A: No Piers in River (from NOR documentation lodged in November 2018)

1.3 Aims and Objectives

The aim of this preliminary CIA report is to document the Trust's cultural values, interests, and associations with the Project footprint; identify specific cultural sites and resources; assess the values of these sites and resources; identify the potential impacts that arise from Project activities and assess the significance of effect; and provide recommendations as to how to avoid, remedy or mitigate the potential effects to the Trust

This impact assessment will:

- provide a baseline of known environmental or natural features and resources that may hold cultural values;
- provide a statement of cultural association the Trust has with the Study Area;
- identify any known cultural sites and resources within the Study Area;
- describe the value or significance of such sites and resources;
- identify the potential for unrecorded cultural sites (i.e. buried Māori archaeology);
- identify the cultural constraints and risks associated with the Project footprint and Study Area and the potential significance of effects; and
- provide recommendations for further assessment where necessary and/or measures to avoid, remedy or mitigate adverse effects upon the Trust.

METHODOLOGY

1.4 Statutory Process

Te Tiriti o Waitangi

The key guiding document in any consideration of planning or practice that may impact upon the cultural values or wellbeing of Mana Whenua is Te Tiriti o Waitangi. The principles of the Treaty are recognised and provided for in the sustainable management of ancestral lands, water, air, coastal sites, wāhi tapu and other taonga, and natural and physical resources. The Treaty is articulated in law through an evolving set of principles. These include:

a. reciprocity
b. rangatiratanga
c. partnership
d. shared decision-making
e. active protection
f. mutual benefit
g. right of development
h. redress.

While Article 1 of the Treaty enables the Crown to govern and make laws, Article 2 provides for Māori rangatiratanga over their lands and taonga (things of value). Māori values, associations and interests with their taonga applies regardless of property titles or other constructs, and the Treaty requires that the Crown actively protect these associations and interests (including through but not limited to statutes).

Heritage New Zealand Pouhere Taonga Act 2014

Statutory protection of Māori archaeology and wāhi tapu is provided for under the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA), which is administered by Heritage New Zealand Pouhere Taonga (HNZPT), an autonomous Crown Entity. Under the Act all *in situ* materials, sites, and features older than 1900AD are considered archaeological sites whether previously recorded or not and are afforded automatic protection from damage, modification, or destruction without first obtaining an Archaeological Authority from HNZPT. Moveable objects and artefacts that are not in situ but that are from an archaeological context, or are of Māori origin, are controlled under the Protected Objects Act (1975). The HNZ Act S45(2)b stipulates that works on sites of interest to Māori can only occur if (a) the practitioners can demonstrate they have the requisite competencies for recognising and respecting Māori values, and (b) the practitioners undertaking the works have access to appropriate cultural support. Under the Act Mana Whenua are enabled to provide advice or assessment regarding the management or decision taking arising from impacts to their cultural sites, provided these meet the Act's criteria.

Resource Management Act 1991

The Resource Management Act (RMA) 1991 provides statutory recognition of the Treaty of Waitangi and the principles derived from the Treaty. It introduces the Māori resource management system via the recognition of kaitiakitanga and tino rangatiratanga and accords Territorial Local Authorities with the power to delegate authority to iwi over relevant resource management decisions. The Act contains over 30 sections, which require Councils to consider matters of importance to tangata whenua. Some of the most important of these are:

- Take into account principles of the Treaty of Waitangi and their application to the management of resources (Section 8).

- Recognition and provision for, as a matter of national importance, the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu and other taonga (Section 6(e)).
- Having particular regard to the exercise of kaitiakitanga or the iwi's exercise of guardianship over resources (Section 7(a)).
- Requiring the Minister for the Environment to consider input from an iwi/hapū authority when preparing a national policy statement (Section 46).
- The ability for local authorities to transfer their functions, powers or duties under the Act to iwi authorities (Section 33).
- Development of joint management agreements between councils and iwi/hapū authorities (Section 36B to 36E).
- Having regard to any relevant planning document recognised by an iwi/hapū authority (sections 35A(b), 61.2A(a), 66.2A(a), 74.2A).
- The obligation to consult with iwi/hapū over consents, policies and plans. (Combination of all the sections above and Clause 3(1)(d) of Part 1 of the first schedule of the Resource Management Act).

An assessment of impacts on cultural values and interests (CIA) can assist both applicants and the council in meeting statutory obligations in a number of ways, including:

- preparation of an Assessment of Environmental Effects (AEE) in accordance with s88(2)(b) and Schedule 4 of the Resource Management Act 1991 (RMA)
- requests for further information under s92 of the RMA in order to assess the application
- providing information to assist the council in determining notification status under ss95 to 95F of the RMA
- providing information to enable appropriate consideration of the relevant Part II matters when making a decision on an application for resource consent under s104 of the RMA, or when undertaking a plan change
- consideration of appropriate conditions of resource consent under s108 of the RMA.

Reserves Act 1977 and Conservation Act 1987

Section 4 of the Conservation Act, which is invoked by the Reserves Act, states that the Act must be interpreted and administered as to give effect to the principles of the Treaty of Waitangi.

Te Ture Whenua Māori Act 1993

The TTWMA is intended to assist in the retention of Māori land[2] and to provide for the protection and use of the land by the owners, in accordance with certain principles. These principles reaffirm the Treaty of Waitangi relationship between the Māori people and the Crown and recognise that land is taonga tuku iho of special significance to Māori people. To that end, the principles "promote the retention of ... land in the hands of its owners, their whanau, and their hapū, and to protect wāhi tapu". Further, they "facilitate the occupation, development, and utilisation of that land for the benefit of its owners, their whanau, and their hapū".

[2] As a response to previous legislation that promoted the individualization of land titles and led to the alienation of land from Māori.

Land Transport Management Act 2003

The LTMA is the primary legislation under which NZTA operates. The Act established the NZTA and states that the objective of the NZTA is to undertake its functions in a way that contributes to an effective, efficient, and safe land transport system in the public interest. The Act contains operating principles for the NZTA. These specify that in meeting its objective and undertaking its functions, the NZTA must exhibit a sense of social and environmental responsibility.

1.5 Planning Policy Context Relevant to this CIA

National Policy Statement for Freshwater Management 2014

The NPS for freshwater management provides national policy settings that relevant statutory agencies including local authorities must comply with. Policy AA1 provides for the recognition of Te Mana o Te Wai, being the connection between water and the broader environment. Policy D1 provides for the involvement of iwi/hapū in the management of fresh water and freshwater ecosystems; enabling iwi/hapū to identify cultural values and interests in fresh water and freshwater ecosystems; and reflects tangata whenua values and interests in the management of, and decision-making regarding, fresh water and freshwater ecosystems.

ICOMOS New Zealand Charter 2010

The International Council on Monuments and Sites (ICOMOS) is UNESCOs principal advisor in matters concerning the conservation and protection of historic monuments and sites and advises the World Heritage Committee on the administration of the World Heritage Convention (which includes provision of nationally significant heritage). The New Zealand National Committee (ICOMOS NZ) produced a New Zealand Charter in 2010 which has been adopted as a standard reference document by councils. The Charter sets out conservation purposes, principles, processes and practice. The scope covers tangible and intangible heritage, the settings of heritage, and cultural landscapes. Of particular relevance the Charter states that tangata whenua kaitiakitanga over their taonga extends beyond current legal ownership wherever such cultural heritage exists. The Charter also states that the conservation of Māori heritage requires incorporation of mātauranga and therefore is conditional on decisions made in association with tangata whenua and should procced only in this context

Horizons Regional Council One Plan

At a Local Government level, the Horizons Regional Council One Plan provides for the protection and management of matters of importance to tangata whenua including the environment and cultural heritage. The RPS Issues of Significance to hapū and iwi (2.2) identifies degraded water quality, inappropriate land use and management, habitat and biodiversity loss, a need for research, and a need for monitoring and enforcement as the five key take for tangata whenua. The RPS objective for Māori resource management (2.3.2-1) is (a) to have regard to the mauri of natural and physical resources to enable hapū and iwi to provide for their social, economic and cultural wellbeing, and (b) kaitiakitanga must be given particular regard and the relationship of hapū and iwi with their ancestral lands, water, sites, wāhi tapu and other taonga (including wāhi tūpuna) must be recognised and provided for through resource management processes. The RPS policies cover (2-1) enabling kaitiakitanga and increased involvement in resource management processes, (2-2) protecting identified Māori heritage places from inappropriate subdivision, use or development, (2-3) protecting the mauri of water including through suspension, restriction or voluntary rāhui, and (2-4) other issues to be managed in accordance with Table 2.1 of the Plan (itself a comprehensive list of methods by different take).

Specific further relevant sections of the RPS include: (5-4) the management of the beds of rivers and lakes, (6-1) indigenous biodiversity[3], (6-2) scheduled landscapes[4], and (6-3) historic heritage.[5] It is noted that the Manawatū Gorge (including the river) is a scheduled outstanding natural landscape (item m) in the Regional Plan. The Manawatū river is also a scheduled surface water sub-zone.

The Regional Plan section includes further provisions of relevance. These include: (13-1(b)) requiring consents for vegetation clearance adjacent to waterbodies, vegetation clearance or land disturbance in erosion areas, and large scale land disturbance; (13-3) requiring consents for vegetation clearance, land disturbance, discharges, water take or use, and activities in the beds of rivers within rare, threatened or at risk habitats; (14-1) requiring consents for certain discharges to water and land; (15-1) requiring consents for certain discharges to air and (e) preventing any discharge to air (including resulting from roading works) that is likely to adversely affect sensitive areas including surface water bodies, wāhi tapu and sites of significance to hapū/iwi, and rare, threatened or at-risk habitats; (17-1) requiring consents for activities in, on, under or over the beds of rivers (including maintenance work).

District Councils

The three district councils with jurisdiction in the area have relevant objectives, policies, and rules both in terms of Māori resource management and general environmental controls. However, as the designation is now confirmed, subject to an active appeal in the Environment Court, a summary of the district plan rules is not reproduced here. Focus regarding detailed design and resource consents is instead more relevant to the RPS and Regional Plan which the designation must give effect to and comply with. It is of note that the Palmerston North City Council has listed Parahaki Island as a tangata whenua site of significance.

NZTA Urban Design Policy

The NZTA have developed a policy to guide best practice roading and infrastructure design (in both rural and urban contexts).[6] Notably this includes partnerships with Māori and incorporation of cultural design. The policy notes that 'mātauranga Maori can inform urban design practice to allow Maori aspirations to be fulfilled while complementing and improving NZTA's urban design outcomes. The following steps will help to ensure the successful implementation of mātauranga Maori, including kaitiakitanga (stewardship), in the design of new and existing projects within New Zealand's state highway network':

1. Ensure outcomes informed by Mātauranga Maori are context specific and drawn from local sources of knowledge and interpretation. Early engagement with local mandated iwi representatives at the inception phase of the project is important.
2. Formation of an Iwi working group/key stakeholders that can advise on the implementation of Mātauranga Maori based design solutions, such as environmental management, landscape design, artworks, construction methods, cultural heritage management (wāhi tapu/wāhi taonga).

[3] Protect areas of significant indigenous vegetation and significant habitats of indigenous fauna and maintain indigenous biological diversity, including enhancement where appropriate.
[4] Adverse effects, including cumulative adverse effects, on the natural character of the coastal environment, wetlands, rivers and lakes and their margins, are:
(i) avoided in areas with outstanding natural character, and
(ii) avoided where they would significantly diminish the attributes and qualities of areas that have high natural character
[5] Protect historic heritage from activities that would significantly reduce heritage qualities.
[6] NZTA Urban Design Guidelines: Bridging the Gap, 2013.

3. Adequately assess Maori expectations pertaining to kaitiakitanga (stewardship) such as monitoring requirements, plant species selection, cultural harvest, mahinga kai, bio-diversity, ecological enhancements and protection of mauri (life force).
4. Ensure the group is well resourced to contribute and provide inputs into the design and implementation phases of the project.
5. Design responses should be tailored to addressing specific issues within specific areas. Local iwi, hapū or whanau will provide the guidance on how this can be achieved.

The policy recognises the importance of Māori heritage places and the need to protect and incorporate these into the design. The policy directs NZTA (3.8) to:

- identify cultural heritage values early on in the process.
- locate and design the road to avoid destroying, impacting or severing cultural heritage sites
- locate and design the road to minimise the visual impact on items of cultural heritage significance
- incorporate cultural heritage sites or structures as landmarks and provide suitable access
- locate rest areas to take advantage of cultural heritage sites or structures.

1.6 Scoping and Consultation

The Study Area comprises a 1000m radius from the centre of Parahaki Island which encompasses sectors 1, 2 and 3 of the Project corridor (the Project footprint). This radius is considered appropriate given the large scale of the Project and the Project footprint and the presence of Māori heritage places within the cultural landscape that are likely to have setting or other impacts. Within this area all appropriate and known cultural sites, areas, landscapes and resources have been identified. The Trust however reserve the right to withhold certain information regarding wāhi tapu or sites that are culturally and spiritually sensitive to whanau and hapū.

This report includes all known elements of the natural and cultural environment within the Project footprint and Study Area considered to hold cultural value for the Trust (those it represents). This information forms the baseline of the assessment. This includes native biodiversity and ecology, geological and topographic features, natural resources including water bodies, built heritage such as marae, socio-cultural features such as papakāinga, cultural landscapes, historic or cultural sites, Māori archaeological sites, pou whenua and significant cultural public art.

Mātauranga/cultural knowledge of the Project footprint and Study Area has been obtained, where appropriate, from Trust and whanau kaumatua, kuia and other holders of knowledge within the Trust. Readily available published and unpublished written records, illustrations, maps, archaeological and geological records were reviewed during preparation of this cultural assessment. Spatially referenced heritage asset data was reviewed from the New Zealand Archaeological Association (NZAA) recording scheme database (ArchSite). Other information, reports, and impact assessments available for the Project that have been provided by the Client have been reviewed including: the NOR AEE (technical drawings, preliminary environmental and cultural design framework, transport assessment, noise assessment, social assessment, landscape assessment, historic heritage and archaeology assessment, terrestrial ecology) and various evidence submitted at the NOR hearing. The opinions contained within this document may change and/or develop as new information is available.

This CIA involved a desktop study based on review of technical information, cultural knowledge of the area, and research, as well as a site visit undertaken on the 10th and 11th May 2019 to assess and confirm site conditions.

Previous consultation with the Client resulted in the designation corridor being relocated in a more easterly direction to avoid the designation being located over Parahaki Island and minimise the effect on this land parcel, with the bridge design to take into account changes in river flows that could potentially affect the property.

1.7 Assessment approach

Following standard Environmental Impact Assessment (EIA)/Assessment of Environmental Effects (AEE) methodologies and planning terminology, but adapted for CIA purposes, this report will:

a. **Identify** the cultural sites, areas and resources (defined as both tangible and intangible cultural heritage, natural resources of cultural interest, and socio-cultural features) within a Study Area encompassing the proposed Project footprint and a wider area that may be directly or indirectly impacted. The Study Area is defined as approximately 1000m radius of Parahaki Island to correspond with a likely area of setting impacts (e.g. nose, visual), indirect impacts, and a logical catchment of the cultural landscape.

b. Provide comment on the cultural **value** of the identified cultural sites, areas and resources. Māori cultural value is not derived from national or local policy but is defined and determined by tangata whenua and their particular world view and culture. Māori values are distinct from historic, archaeological or other value-systems, and are recognised by the courts and statute as their own legitimate knowledge-system with tangata whenua being the experts. Māori values are informed by whakapapa and guided by tikanga and kawa, with emphasis placed on the associative and living connection to places and resources which sustain cultural knowledge (mātauranga), practices, and spiritual and physical wellbeing. All cultural sites, areas and resources are of value and significance to the Trust, who hold a holistic view of the environment and the unique relationship of the Trust, and the whanau it represents, to the whenua. It is inappropriate to apply a Western paradigm of value hierarchy or significance ranking hen using a Te Ao Māori lens. For planning purposes, all cultural sites, areas and resources can be considered to hold high value, which is supported by RMA Part II matters noting the relationship of tangata whenua with their lands, waters, and taonga as nationally significant.

c. Identify the potential **impacts** to cultural resources and elements. Only Mana Whenua can define the impact to their cultural values, but guidance is noted below. Cultural impacts can be neutral, negligible, minor, moderate, or major and either adverse or beneficial. Impacts can also be temporary or permanent. Impacts can be:

   i. direct (i.e. physical impacts resulting from a development, impacts to the settings of cultural sites or the character of cultural landscapes, visual, noise, odour, or culturally inappropriate land use activities).
   ii. indirect (i.e. traffic congestion, erosion due to vegetation loss, or other secondary impacts that occur over time or in a secondary location to the original activity).
   iii. cumulative (i.e. impacts which are caused by the combined result of past, current and future activities, or in-combination impacts).

d. Define the **significance of effect** resulting from combining the value of a cultural site, area or resource and the level of potential impact to that site, area or resource. Significance of effect is assessed pre-mitigation but can also be assessed again post-mitigation to ascertain the *residual effect* and effectiveness of any proposed mitigation. Significant effects (within a planning framework) are those with moderate or large effects (either adverse or beneficial). This method is outlined below in Table 1.

Table 1: Significance of effect

		LEVEL OF IMPACT				
		No Change	Negligible	Minor	Moderate	Major
CULTURAL VALUE	High	Neutral	Minor	Moderate	Large	Large

	Medium	N/A	N/A	N/A	N/A	N/A
	Low	N/A	N/A	N/A	N/A	N/A

1.8 Assumptions and limitations

The Trust are the experts of their own culture and tikanga. This expertise and the equal weighting of mātauranga Māori evidence is accepted in the courts and by statute. Through a necessity to work within a Western planning framework we utilise planning language where possible to aid in mutual understanding, however there is difficulty in the translation and application of some core cultural concepts to such a framework. This is particularly an issue when segmenting or demarcating value spatially, when ascribing a type of significance hierarchy, and when limiting value to tangible elements (e.g. archaeology), whereas Māori hold a holistic perspective that operates differently to typical western paradigms. This means that where there is doubt or confusion over a term or point of discussion, readers should contact the Trust directly for clarification.

Due to the sensitive nature of certain cultural knowledge, areas and sites (e.g. burial grounds), the Trust reserves the right not to identify the exact spatial extents or provide full information of such areas to retain and protect this knowledge within the Trust and whanau. In other situations, while a general area may be known to be of cultural significance the exact spatial extent or location of the site may have been lost over successive generations. Where possible and appropriate, sites are described and defined to enable discussion of the impacts while acknowledging these limitations.

The environmental and archaeological data relied upon for elements of this report are derived from secondary sources and it is assumed the data and opinions within these and other secondary sources is reasonably accurate.

The ArchSite database are a record of known archaeological and historic sites. It is not an exhaustive record of all surviving historic or cultural sites and resources and does not preclude the existence of further sites/features which are unknown at present. The database also utilises a site location point co-ordinate system rather than detailing site extents or cultural landscapes.

ENVIRONMENTAL BASELINE

1.9 Topography and Geology

The Project corridor is situated on the southern section of the Ruahine range and the eastern and westerns ends of the Manawatū Gorge which separates the Ruahine and Tararua ranges. The Project corridor traverses from the west a short section on the edge of the Manawatū Plain (and old seabed) then crosses the Manawatū River near the confluence with the Pohangina River before rising up the steep hill slopes to a flattish area along the ridge crest. The corridor then descends through steep hill country on the eastern side and onto the alluvial plain south of Woodville. The Project area has a complex geology and is a seismically active area due to the presence of a number of active and inactive fault lines. Greywacke is the predominant underlying geology along the Manawatū gorge, with older sandstone/siltstone near the plateau or saddle. Dense gravels underlie much of the western end of the gorge, with more recent alluvial gravels along the rivers including Parahaki Island. The alluvial gravels of the river terraces were fertile gardening grounds thanks to periodic flooding and areas of wetlands, while remaining free draining in other areas. Parahaki Island has been subject to continual modification over time which has been dictated by the flow of the river. Cadastral boundaries are in effect arbitrary, as evidenced by aerial photography and land block survey plans which show the shifting course of the river and changes to the Islands variable geomorphology over time.

1.10 Natural Resources and Ecology

The indigenous vegetation in the Project area has been historically extensively cleared and compromised, with the land converted by European settlers into to agricultural and urban land uses. The exception is the Manawatū Gorge Scenic Reserve. Approximately 43ha of indigenous terrestrial ecosystems is located within the Project designation corridor. This includes: old-growth alluvial forests, old-growth hill country forests, secondary broadleaved forests with old-growth signatures, old-growth treelands, advanced secondary broadleaved forests, raupo dominated seepage wetlands, secondary broadleaved forests and scrublands, kanuka forests, indigenous-dominated seepage wetlands, and manuka, kanuka and divaricating shrublands[7]. There is historical evidence that peach groves were planted following initial forest clearance and these provided a source of kai for the kāinga and people using the island as a stopover point.

Indigenous animal species that have been identified or are potentially present in the designation corridor include barking gecko, glossy brown skink, ornate skink, common stick insect, tree weta, falcon, pipit, black-billed gull, Australasian bittern, Caspian tern, banded dotterel, red-billed gull, whitehead, spotless crake, rifleman, pied oystercatcher, marsh crake, dabchick, kaka, pied shag, coot, black shag, little black shag, black-fronted dotterel, and possibly long-tailed bats. Longfin eels/tuna, inanga, lamprey, kokopu, and kākahi (freshwater mussel) are understood to be generally present in the Manawatū River. Oral traditions from the 1940s tell of two tui attacking a huia around Parahaki Island.

[7] Paragraph 11 of statement of Evidence of Adam Forbes, dated 8 March 2019.

CULTURAL BASELINE

1.11 Statement of Association

The Te Apiti Ahu Whenua Trust is the legal and mandated entity representing the whanau owners and beneficiaries of Parahaki Island (fig.6). The trustees descend from notable ancestors and rangatira who were key figures in the area's past (such as Nireha Tamaki). The Trust reside under the korowai of Rangitane o Tamaki Nui a Rua. It is the Trust's responsibility to administer and manage Parahaki Island and to protect its wahi tapu, cultural sites, and associated cultural values. The Trust, on behalf of the beneficiaries, has a role in advocating and advancing cultural values and the relationship of whanau associated with the Island and its landscape surrounds, and also in asserting and protecting their rights and interests both as kaitiaki and legal owners. This dual role elevates the Trust's interests and status above that of the general community or other non-Treaty based stakeholders over Parahaki Island and the cultural landscape in which it sits.

The Trust acknowledges tangata whenua iwi and hapū associations, rights and interests and wishes to support and collaborate with the respective entities while protecting the interests of the Trust beneficiaries and whanau.

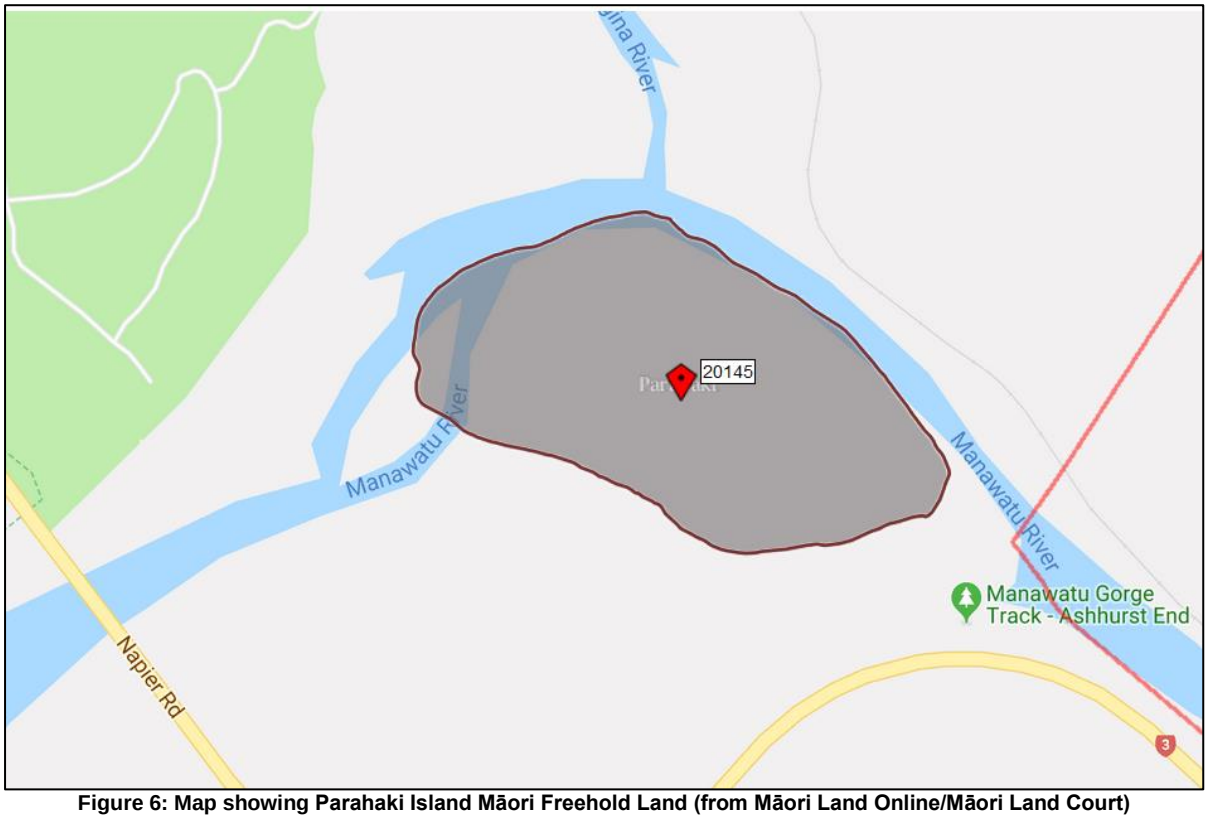


Figure 6: Map showing Parahaki Island Māori Freehold Land (from Māori Land Online/Māori Land Court)

Only a brief summary of cultural association is offered here. It is not the place of a technical CIA report, or any other planning instrument, to provide in-depth detail regarding matters of whakapapa, values or history. These reside within whanau and hapū and are best shared through a kanohi ki te kanohi relationship based on mutual respect and understanding, rather than through the narrow lens of a project. What is offered is what is considered need-to-know for the purposes of informing the Client of our cultural values, interests, issues and methods.

The Manawatū has a rich and enduring Māori history and its people are associated with Rangitāne, Ngāti Kahungunu and Ngāti Raukawa, among others. The Manawatū Gorge is recognised as one of

the main routes connecting the east and west and is named Te Apiti, meaning the narrow passage that is situated between two mountain ranges, Te Hononga Maunga. The rapids of the Manawatū Awa are called Te Au-Rere-a-Te Tonga ('the rushing current of the south'). Rangitāne tradition tells of the spirit Okatia possessing a giant tōtara tree on the Puketoi Ranges and, while uprooting the tree to go exploring, gouged a channel through and divided the Tararua and Ruahine ranges. The Manawatū Gorge has always played a strategic role in the history of the region as a key transport route, and continues to. When the awa ran low waka would be hauled along a walking track through the gorge. Tangata whenua have always lived along the awa, traditionally in a seasonal cycle of resource gathering and use, utilising the swamps and wooded forest for kai and textiles, the river terraces for gardening and kainga, as well as for ceremonies and urupa. Both the Manawatū and Pohangina Awa are considered living entities with their own mana, wairua and mauri which sustains and provides for flora and fauna, tangata whenua, and manuhiri. Pā were strategically located to oversee the entrances to Te Apiti, including near what is now the Ashhurst Domain and the Raukawa pā near Ashhurst which was used when gathering hinau berries. Kainga in the area included Raparuhe, Te Ponga, Te Wharau and Parahaki. Parahaki Island, at the mouth of Te Apiti/Manawatū Gorge and the confluence of the two rivers, held a seasonal kāinga, mahinga kai, and urupa that serviced many of the surrounding kainga clustered around Otangaki and the lower Pohangina valley. The island was traditionally a stopover point within a key ancestral navigation route along the awa. One whare is recorded as having been erected on stilts, due to the seasonal floodwaters that would wash over the site.

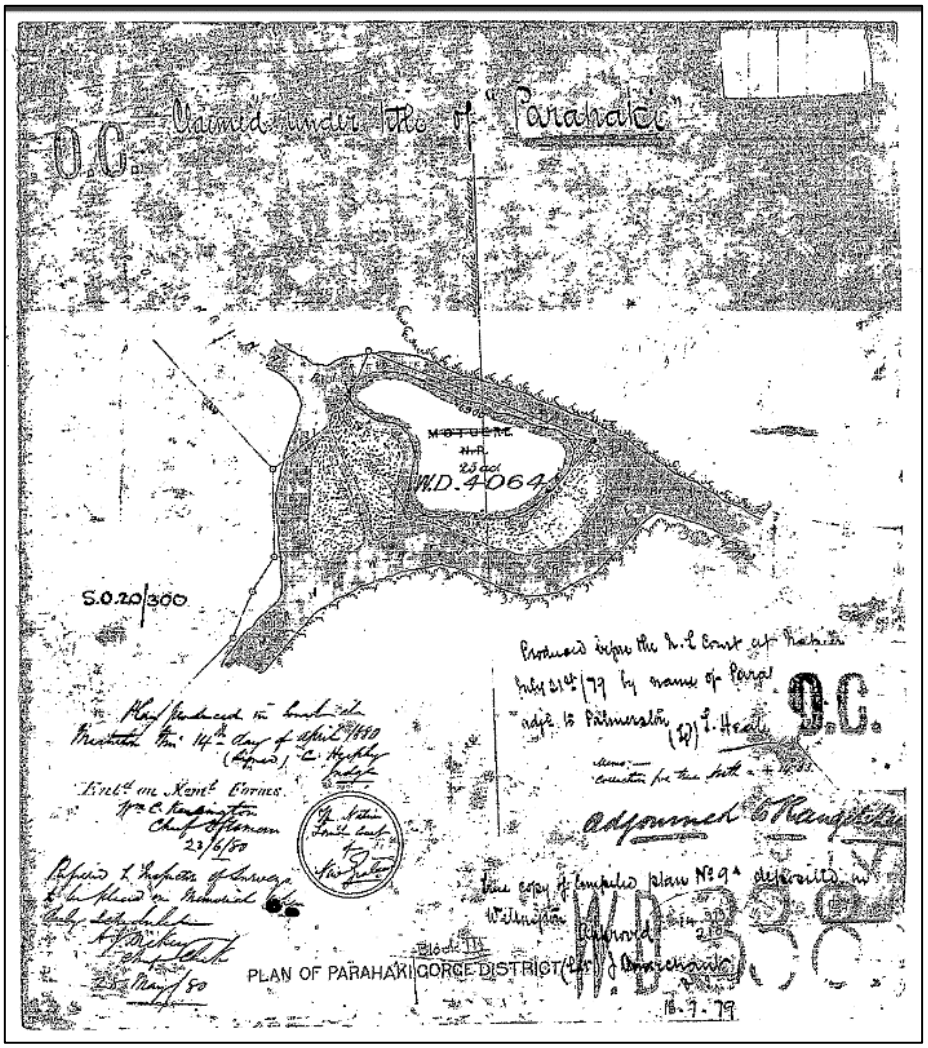


Figure 7: Plan dated circa 1879-1880 showing Parahaki Island and presented during the Māori Land Court hearings to determine the title to the land

Figure 8: Photograph of the Manawatu Gorge and Northern Tararua Range with Parahaki Island in the centre, by Leslie Adkin 19 April 1920.

The Project footprint cannot be examined in isolation of the wider cultural landscape (also known as the ancestral landscape). This wider context is required to better understand the cultural values associated with the lands and resources occupied by and surrounding the Project footprint. Cultural landscapes are the sum of the physical resources and geography, archaeological features, wāhi tapu, place names, histories, places and sites that are interconnected and imbue a spatially defined area with context and meaning for a particular cultural group or groups. Cultural landscapes are what give meaning to and allow interpretation of otherwise spatially discrete sites and resources. They are also integral to the Trust's identity and sense of wellbeing. The Trust's (and its beneficiaries) relationship with their cultural heritage and to their ancestral lands and resources is an integral part of their wellbeing and responsibilities. Cultural heritage sits within and across cultural landscapes and includes history, culture, traditions, tikanga, place names, artefacts, archaeological features, wāhi tapu, natural resources with cultural value, and historic places. It is notable that cultural heritage encompasses both tangible (e.g. physical) and intangible (e.g. spiritual) values. These features help tie whanau and hapū to the whenua and create a web of cultural reference points within the rohe (tribal area).

The key features of the western portion of the Te Apiti cultural landscape are the Manawatū Awa, the Pohangina Awa, the Manawatū Gorge slopes that are the Tararua and Ruahine ranges, Parahaki Island, the nearby historic kainga (Otangaki, Te Wharau and Raukawa), the river gravel deposits, the traditional portage ara/route, the indigenous vegetation and wetlands, and the indigenous animals present in the catchment. These features are not just historic relicts, but living culture, imbued with values associated with the ability for the environment to provide for customary practices. It is a kaitiaki responsibility to maintain and protect wāhi tapu, just as it is to ensure that the environment is healthy enough to provide the species necessary for mahinga kai.

1.12 Māori Archaeology

The Project corridor contains a very low number of recorded archaeological and cultural sites which is unlikely to reflect the actual density or distribution of archaeological evidence or cultural sites within the area (fig.9). Within the Study Area five archaeological sites of Māori origin are recorded: T24/28 is a pā within the Ashhurst Domain; T24/30 records burials within the Ashhurst Domain (also known as Otangaki' and scheduled in the district plan); T24/29 are gardening soils on a river terrace on the western side of the Pohangina River; T24/31 is a large grove of karaka trees along the Manawatū River terrace and slope above the river to the south of Parahaki Island; and T24/32 the Parahaki kāinga and urupa.

Figure 9: Map showing Māori archaeological records in the area (from NZAA ArchSite database)

An archaeological assessment[8] of Parahaki Island was commissioned by the Trust, utilising remote sensing and geophysical methods. This report is attached in Appendix A. The assessment found that although the Island had been subject to significant geomorphological changes over time due to the river, the central portion was geologically stable, with a thicker stratum of topsoil evident (reportedly 1.2-1.5m deep in the 1950's). This area contained one storage pit, probably for kumura or taro, as well as two post-contact saw pits. Geomagnetic survey indicated a further two possible pits or occupation features in this vicinity (fig.10). The gravel terrace edges of the Island have been more subject to change, and have subsequently not accumulated/retained topsoil, although there is still a low likelihood that residual archaeological materials may remain in these gravel areas also at depth.

The nature of archaeology means that the total resource of an area is not known until it is either fully investigated by exploratory means prior to works, or uncovered during project earthworks. However, assessment should be made as to the likelihood of unrecorded archaeological resources within the project footprint, the likely value of such resources, and the possible impacts that might occur should archaeological materials in fact be present. This is a part of archaeological effects assessment best practice. Within the Study Area there is a moderate likelihood of encountering unrecorded archaeology and cultural sites within the river terrace deposits and river banks, and a low likelihood of encountering

[8] Bader, H.D. June 2019. Archaeological Survey and Assessment of Effects Parahaki Island Manawatu. Unpublished report: Archaeological Solutions Ltd.

such materials on the slopes and higher terrain of the Ruahine Range.[9] Potential unrecorded Māori archaeology would likely be associated with seasonal occupation such as midden or features and soils associated with gardening.

It should finally be noted that absence of archaeology does not necessarily equate to absence of cultural activity and cultural value.

Figure 10: Map showing area of higher ground (red area) in the middle of the island with higher archaeological potential, and archaeological features/geomagnetic anomalies (Bader 2019)

1.13 Cultural Sites and Resources

For the Trust the entire Te Apiti/Manawatū Gorge area is a cultural landscape, embedded with identity, meaning, and significance. The character and integrity of the whole is made up of its constituent parts, such as the Manawatū Awa, Pohangina Awa, the Manawatū Gorge slopes that are the Tararua and Ruahine ranges, Parahaki Island, the nearby historic kainga (Otangaki, Te Wharau and Raukawa), the river gravel deposits, the traditional portage ara/route, the indigenous vegetation and wetlands, and the indigenous animals present in the catchment. The land on which the Project is proposed is significant due to its place within this landscape, as well as the proximity/interaction with the Manawatū Awa, Parahaki Island, and significant habitat. Below is an annotated list of specific sites, areas and resources of cultural significance in the Study Area which the Trust consider appropriate to disclose (Table 2).

[9] This is supported by the Clough and Associates Ltd. 2018 archaeological report findings.

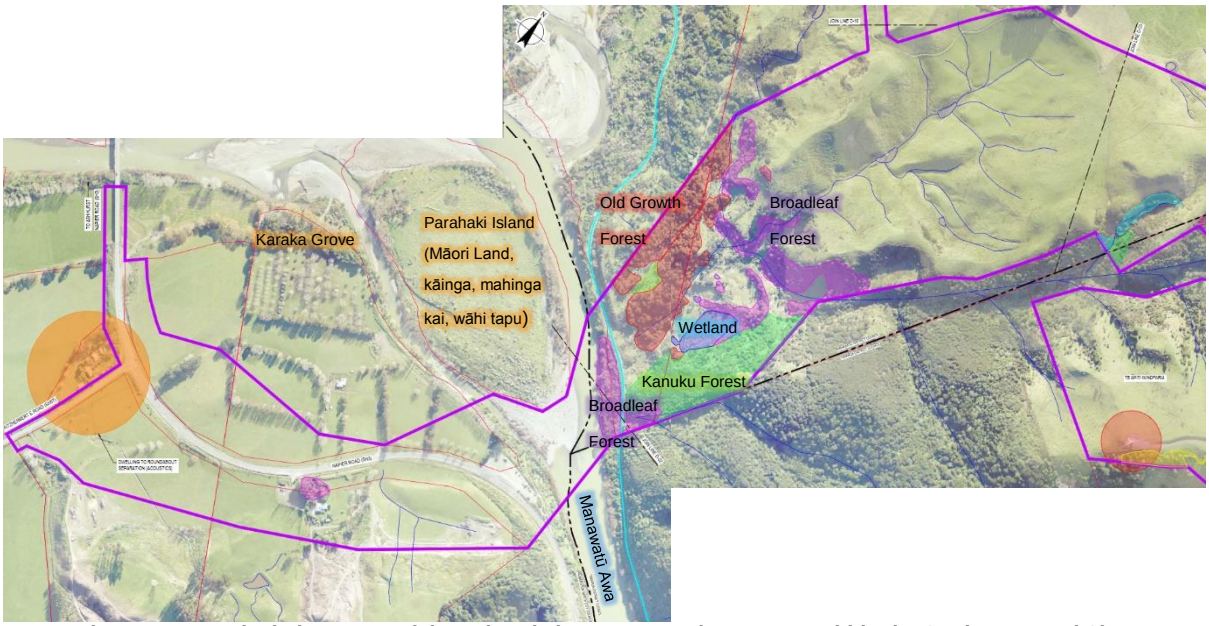


Figure 11: Map depicting some of the cultural sites, areas and resources within the Study Area and Site.

Table 2: Summary of cultural sites, areas and resources within the Study Area.

Name	Description	Cultural Value
Te Apiti/Manawatū Gorge Cultural Landscape	The landscape encompassing the Manuwatū River running along the narrow pass between the Tararua and Ruahine ranges, and in particular the confluence between the Manawatū and Pohangina Awa with Parahaki Island. The landscape is ancestral and gives context and meaning to the cultural sites (tohu whenua) and resources within. The cultural landscape differs from but includes the Outstanding Natural Landscape (ONL).	High
Manawatū Awa	The river is a living entity with its own mauri, wairua and mana. It sustains flora, fauna, and human spiritual and physical wellbeing within the area.	High
Pohangina Awa	The river is a living entity with its own mauri, wairua and mana. It sustains flora, fauna, and human spiritual and physical wellbeing within the area.	High
Parahaki Island	The Island is of central importance to whanau and hapū as Māori freehold land, as the location of an historic kāinga, gardens, mahinga kai processing site, and burials.	High
Manawatū Ara/Portage	A traditional walking route along the gorge and route when the river levels were low and waka had to be portaged on foot.	High
Karaka Grove	A sacred karaka grove associated with nearby kāinga. Karaka played important roles in customs and berries were harvested seasonally.	High
Otangaki historic kāinga	Historic kāinga. Several hundred meters to the west of Parahaki Island and outside of the Project footprint.	High
Te Wharau historic kāinga	Historic kāinga. Several hundred meters to the north of Parahaki Island and likely to be outside of the Project footprint (western haul road comes close) .	High
Raukawa historic kāinga	Historic kāinga. Several hundred meters to the south of Parahaki Island and outside of the Project footprint.	High
River gravel deposits/terraces	River terraces are ideal locations for gardening and were used for this purpose along the Manawatū and Pohangina rivers.	High
Potential archaeological sites	Unrecorded archaeology is likely to be midden or associated with gardening on the river terraces. The likelihood is moderate on riverbanks and low on steeper slopes.	High
Old-growth alluvial forests	Native species of forest cover hold whakapapa to the area, enhance the mauri of the area, provide habitat, and are significant cultural resources.	High
Old-growth hill country foresta	Native species of forest cover hold whakapapa to the area, enhance the mauri of the area, provide habitat, and are significant cultural resources. Identified in NZTA ecological assessment and mapping.	High
Old-growth treelands	Native species of forest cover hold whakapapa to the area, enhance the mauri of the area, provide habitat, and are significant cultural resources. Identified in NZTA ecological assessment and mapping.	High
Advanced secondary broadleaved forests	Native species of forest cover hold whakapapa to the area, enhance the mauri of the area, provide habitat, and are significant cultural resources.	High

Raupo dominated seepage wetlands	Native species of wetland vegetation hold whakapapa to the area, enhance the mauri of the area, provide habitat, and are significant cultural resources including for food, textiles, and customary practices.	High
Secondary broadleaved forests and scrublands	Native species of forest cover hold whakapapa to the area, enhance the mauri of the area, provide habitat, and are significant cultural resources. Identified in NZTA ecological assessment and mapping.	High
Kanuka forests	Native species of forest cover hold whakapapa to the area, enhance the mauri of the area, provide habitat, and are significant cultural resources. Identified in NZTA ecological assessment and mapping.	High
Indigenous-dominated seepage wetlands	Native species of wetland vegetation hold whakapapa to the area, enhance the mauri of the area, provide habitat, and are significant cultural resources including for food, textiles, and customary practices. Identified in NZTA ecological assessment and mapping.	High
Manuka, kanuka and divaricating shrublands	Native species of forest cover hold whakapapa to the area, enhance the mauri of the area, provide habitat, and are significant cultural resources. Identified in NZTA ecological assessment and mapping.	High
Barking gecko	Native lizards hold whakapapa to the area, are cultural indicators or tohu, and contribute to the local ecology.	High
Glossy brown skink	Native lizards hold whakapapa to the area, are cultural indicators or tohu, and contribute to the local ecology.	High
Ornate skink	Native lizards hold whakapapa to the area, are cultural indicators or tohu, and contribute to the local ecology.	High
Common stick insect	Native insects hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Tree weta	Native insects hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Karearea/Falcon	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Pipit	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Black-billed gull	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Australasian bittern	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Caspian tern	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Banded dotterel	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Red-billed gull	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Whitehead	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Spotless crake	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Rifleman	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Pied oystercatcher	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Marsh crake	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Dabchick	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Kaka	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Pied shag	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Coot	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Black shag	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Little black shag	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Black-fronted dotterel	Native birds are significant spiritual tohu, hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Pekapeka/Long-tailed bats	The only native mammal in the area, bats hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Longfin eels/tuna	Longfin eels hold whakapapa to the area, are cultural indicators, contribute to the local ecology, and are a cultural resource for kai.	High

Inanga	Inanga hold whakapapa to the area, are cultural indicators, contribute to the local ecology, and are a cultural resource for kai.	High
Lamprey	Native fish hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Kokopu	Native fish hold whakapapa to the area, are cultural indicators, and contribute to the local ecology.	High
Kākahi (freshwater mussel).	Kākahi hold whakapapa to the area, are cultural indicators, and contribute to the local ecology, and are a cultural resource for kai.	High

IMPACT ASSESSMENT

1.14 Potential Direct Impacts

Direct impacts are likely to occur from construction activities: bulk earthworks, staging areas, vehicle movements, operation of heavy machinery and cranes, works within the riverbed and riverbanks, vegetation clearance, potential discharges, and associated noise and light; and from operational activities: new bridge structures, viewing platforms, road maintenance, and traffic with the associated noise, vehicle emissions, and light pollution. These activities have potential to physically impact cultural sites and resources, as well as directly impact upon spiritual values associated with certain locations or resources, and significantly alter the setting and viewshafts of the cultural landscape including severing or restricting the connection between Parahaki Island and the Manawatū Gorge (fig.5 and fig.12). The Proposed Manawatū River Bridge 2 Option B (Pier in the River) would make the physical and setting impacts of the Project significantly worse than Option A (No Piers in the River).

Figure 12: View east at mouth of Manawatū Gorge over Parahaki Island with proposed new bridge indicated by red dotted line (adapted from NZTA)

1.15 Potential Indirect Impacts

Indirect impacts are likely to occur during construction activities: potential inappropriate access to Parahaki Island or photographs with wāhi tapu by workers, difficulties accessing the Island due to construction traffic movements, and erosion resulting from vegetation clearance; and from operational activities: potential hydrological changes, potential increased instances of bird-strike, and public viewing of wāhi tapu and cultural practices from viewing platforms.

1.16 Potential Cumulative Impacts

Cumulative impacts are likely to occur from construction activities: habitat removal at multiple locations will have an in-combination contemporaneous effect on native fauna, removal of established ‘old’ habitat

across the Project in sequences of work will have a combined effect (potential adverse unless net benefit is achieved in practice[10]) on native flora and fauna over time while young habitat is still establishing, the potential cumulative loss of Māori archaeology from the cultural landscape; and operational activities: new bridge structures and roads will contribute to the cumulative loss of integrity of the natural and cultural landscape.

1.17 Summary of Effects

Specific potential impacts identified as relating to the proposed project are included in Table 3 below:

Table 3: Summary of potential cultural impacts

Name	Summary of impact	Level of Impact	Significance of effect	Proposed mitigation	Residual effect	Offsetting
Te Apiti/Manawatū Gorge Cultural Landscape	The construction impacts will include staging areas, vehicle, crane, and heavy machinery movements and noise, and the destruction of native vegetation. Operational impacts will include a new bridge, and traffic movements with resulting noise, light pollution, and vehicle emissions/discharges. This will have both temporary and permanent impacts to the setting, viewshafts (particularly from Parahaki Island east along the river) and experience of the landscape.	Temporary Major Direct, Permanent Major Direct and Cumulative	Temporary and Permanent Large Adverse	Bridge Option A (No Piers in River), cultural design of bridge, vegetation replacement and offsdetting.	Temporary and Permanent Moderate Impact, Large Adverse Effect *Bridge Option B will increase adverse effects.	The Bridge and loss of Old Growth vegetation cannot be mitigated to less than significant adverse. The bridge effects are lessened by Option A (instead of B) and cultural design but are still significant. Replacement of Old Growth forest by saplings is not a 'like for like' offset and net gains are questionable when the temporal element of establishing habitat is not considered.
Manawatū Awa	Construction impacts include works within the riverbed and riverbanks, removal of vegetation adjoining the river, and risk of sediment and discharge. Operational impacts include	Temporary Moderate Direct, Permanent Moderate Direct and Indirect	Temporary and Permanent Large Adverse	Bridge Option A (No Piers in River), vegetation replacement and offsetting.	Temporary Moderate Impact, Large Adverse Effect, Permanent Negligible-	Offsetting required as effects unlikely to reduce to minor or less.

[10] We are aware of multiple instances where consent conditions requiring ecological net gains are poorly implemented, monitored, or are not otherwise successfully established following the construction phase and first several years of operations.

Name	Summary of impact	Level of Impact	Significance of effect	Proposed mitigation	Residual effect	Offsetting
	changes to the setting, possible changes to the hydrology of the river and indirect impacts to Parahaki Island.				Minor Impact, Minor-Moderate Effect. *Bridge Option B will increase adverse effects.	
Pohangina Awa	Possible operational impacts from changes to river hydrology.	Permanent Negligible Indirect	Permanent Minor Adverse	Nil	Permanent Negligible Impact, Minor Adverse Effect	N/A
Parahaki Island	Construction impacts include staging areas, vehicle, crane, and heavy machinery movements, lighting, and noise. Operational impacts will include a new bridge, and traffic movements with resulting noise, light pollution, vehicle emissions/discharges, and public viewing platforms of wāhi tapu and cultural use, This will have both temporary and permanent impacts to the setting, viewshafts (particularly from Parahaki Island east along the river) and quiet and private ae enjoyment of the Island.	Temporary Moderate Direct, Permanent Major Direct and Indirect	Temporary Large Adverse, Permanent Large Adverse	Bridge Option A (No Piers in River), cultural design of bridge.	Temporary Moderate Impact, Large Adverse Effect, Permanent Moderate Impact, Large Adverse Effect *Bridge Option B will increase adverse effects.	Cultural design, and Bridge Option A will reduce permanent impacts from major to moderate, but they will still remain significant. Offsetting is therefore required.
Manawatū Ara/Portage	Operational impacts include severance of traditional route by new road corridor.	Permanent Negligible Direct	Permanent Minor Adverse	Nil	Permanent Negligible Impact, Minor Adverse Effect	N/A
Karaka Grove	No construction or operational impacts anticipated.	No change.	Neutral	Nil	Neutral	N/A
Otangaki historic kāinga	No construction or operational impacts anticipated.	No change.	Neutral	Nil	Neutral	N/A

Name	Summary of impact	Level of Impact	Significance of effect	Proposed mitigation	Residual effect	Offsetting
Te Wharau historic kāinga	No construction or operational impacts anticipated.	No change.	Neutral	Nil	Neutral	N/A
Raukawa historic kāinga	No construction or operational impacts anticipated.	No change.	Neutral	Nil	Neutral	N/A
River gravel deposits/terraces	Operational impacts from structures in the riverbed and riverbanks	Permanent Negligible-Minor Direct	Minor-Moderate Adverse	Bridge Option A	Permanent Negligible Impact, Minor Adverse Effect	N/A
Potential archaeological sites	Any materials within construction footprint (including staging) would be destroyed.	Permanent Major Direct and Cumulative	Large Adverse	ADP	Permanent Major Impact, Large Adverse Effect	ADP does not mitigate or lessen cultural harm and is inadequate and inappropriate for loss of taonga or disturbance of wāhi tapu, so avoidance or offsetting is required.
Old growth alluvial forests	Construction impacts will result in removal of vegetation within the construction footprint.	Permanent Major Direct and Cumulative	Large Adverse	Vegetation replanting and offsetting	Permanent Negligible-Minor Impact, Minor to Moderate Effect	It is difficult for biodiversity offsetting to be calculated as trading old growth established habitat for saplings is not equivalence. Therefore the mitigation could fall within acceptable levels or require further offsetting, depending on the detailed vegetation management plan and offsetting calculation and ensuring long-term success of habitat relocation.
Old-growth hill country forests	Construction impacts will result in removal of vegetation within the construction footprint.	Permanent Major Direct and Cumulative	Large Adverse	Vegetation replanting and offsetting	Permanent Negligible-Minor	It is difficult for biodiversity offsetting to be calculated as

Name	Summary of impact	Level of Impact	Significance of effect	Proposed mitigation	Residual effect	Offsetting
					Impact, Minor to Moderate Effect	trading old growth established habitat for saplings is not equivalence. Therefore the mitigation could fall within acceptable levels or require further offsetting, depending on the detailed vegetation management plan and offsetting calculation and ensuring long-term success of habitat relocation.
Old-growth treelands	Construction impacts will result in removal of vegetation within the construction footprint.	Permanent Major Direct and Cumulative	Large Adverse	Vegetation replanting and offsetting	Permanent Negligible-Minor Impact, Minor to Moderate Effect	It is difficult for biodiversity offsetting to be calculated as trading old growth established habitat for saplings is not equivalence. Therefore the mitigation could fall within acceptable levels or require further offsetting, depending on the detailed vegetation management plan and offsetting calculation and ensuring long-term success of habitat relocation.
Advanced secondary broadleaved forests	Construction impacts will result in removal of vegetation within the construction footprint.	Permanent Major Direct and Cumulative	Large Adverse	Vegetation replanting and offsetting	Permanent Negligible-Minor Impact, Minor to Moderate Effect	It is difficult for biodiversity offsetting to be calculated as trading old growth established habitat for

Name	Summary of impact	Level of Impact	Significance of effect	Proposed mitigation	Residual effect	Offsetting
						saplings is not equivalence. Therefore the mitigation could fall within acceptable levels or require further offsetting, depending on the detailed vegetation management plan and offsetting calculation and ensuring long-term success of habitat relocation.
Raupo dominated seepage wetlands	Construction impacts will result in removal of vegetation within the construction footprint.	Permanent Major Direct and Cumulative	Large Adverse	Vegetation replanting and offsetting	Permanent Negligible-Minor Impact, Minor to Moderate Effect	It is difficult for biodiversity offsetting to be calculated as trading old growth established habitat for saplings is not equivalence. Therefore the mitigation could fall within acceptable levels or require further offsetting, depending on the detailed vegetation management plan and offsetting calculation and ensuring long-term success of habitat relocation.
Secondary broadleaved forests and scrublands	Construction impacts will result in removal of vegetation within the construction footprint.	Permanent Major Direct and Cumulative	Large Adverse	Vegetation replanting and offsetting	Permanent Negligible-Minor Impact, Minor to Moderate Effect	It is difficult for biodiversity offsetting to be calculated as trading old growth established habitat for saplings is not equivalence. Therefore the mitigation could

Name	Summary of impact	Level of Impact	Significance of effect	Proposed mitigation	Residual effect	Offsetting
						fall within acceptable levels or require further offsetting, depending on the detailed vegetation management plan and offsetting calculation and ensuring long-term success of habitat relocation.
Kanuka forests	Construction impacts will result in removal of vegetation within the construction footprint.	Permanent Major Direct and Cumulative	Large Adverse	Vegetation replanting and offsetting	Permanent Negligible-Minor Impact, Minor to Moderate Effect	It is difficult for biodiversity offsetting to be calculated as trading old growth established habitat for saplings is not equivalence. Therefore the mitigation could fall within acceptable levels or require further offsetting, depending on the detailed vegetation management plan and offsetting calculation and ensuring long-term success of habitat relocation.
Indigenous-dominated seepage wetlands	Construction impacts will result in removal of vegetation within the construction footprint.	Permanent Major Direct and Cumulative	Large Adverse	Vegetation replanting and offsetting	Permanent Negligible-Minor Impact, Minor to Moderate Effect	It is difficult for biodiversity offsetting to be calculated as trading old growth established habitat for saplings is not equivalence. Therefore the mitigation could fall within acceptable levels or require further

Name	Summary of impact	Level of Impact	Significance of effect	Proposed mitigation	Residual effect	Offsetting
						offsetting, depending on the detailed vegetation management plan and offsetting calculation and ensuring long-term success of habitat relocation.
Manuka, kanuka and divaricating shrublands.	Construction impacts will result in removal of vegetation within the construction footprint.	Permanent Major Direct and Cumulative	Large Adverse	Vegetation replanting and offsetting	Permanent Negligible-Minor Impact, Minor to Moderate Effect	It is difficult for biodiversity offsetting to be calculated as trading old growth established habitat for saplings is not equivalence. Therefore the mitigation could fall within acceptable levels or require further offsetting, depending on the detailed vegetation management plan and offsetting calculation and ensuring long-term success of habitat relocation.
Barking gecko	Construction impacts have potential to kill individuals through works or displace populations through habitat loss, noise and vibration.	Permanent and Temporary Moderate Direct and Cumulative	Large Adverse	Lizard Management Plan, Vegetation replanting and offsetting	Permanent and Temporary Negligible-Minor Impact, Minor to Moderate Effect	Individual deaths cannot be mitigated by a management plan, although the number of deaths may. Relocating Lizards to unestablished new habitat will lesson impacts, but depends on the detailed offsetting calculation and ensuring long-term success of habitat relocation.

Name	Summary of impact	Level of Impact	Significance of effect	Proposed mitigation	Residual effect	Offsetting
Glossy brown skink	Construction impacts have potential to kill individuals through works or displace populations through habitat loss, noise and vibration.	Permanent and Temporary Moderate Direct and Cumulative	Large Adverse	Lizard Management Plan, Vegetation replanting and offsetting	Permanent and Temporary Negligible-Minor Impact, Minor to Moderate Effect	Individual deaths cannot be mitigated by a management plan, although the number of deaths may. Relocating Lizards to unestablished new habitat will lesson impacts, but depends on the detailed offsetting calculation and ensuring long-term success of habitat relocation.
Ornate skink	Construction impacts have potential to kill individuals through works or displace populations through habitat loss, noise and vibration.	Permanent and Temporary Moderate Direct and Cumulative	Large Adverse	Lizard Management Plan, Vegetation replanting and offsetting	Permanent and Temporary Negligible-Minor Impact, Minor to Moderate Effect	Individual deaths cannot be mitigated by a management plan, although the number of deaths may. Relocating Lizards to unestablished new habitat will lesson impacts, but depends on the detailed offsetting calculation and ensuring long-term success of habitat relocation.
Common stick insect	Construction impacts have potential to kill individuals through works or displace populations through habitat loss, noise and vibration.	Permanent and Temporary Moderate Direct and Cumulative	Large Adverse	Vegetation replanting and offsetting	Permanent and Temporary Negligible-Minor Impact, Minor to Moderate Effect	An entomological management plan should be prepared. Relocating insects to unestablished new habitat will lesson impacts, but depends on the detailed offsetting calculation and ensuring long-term success of habitat relocation.

Name	Summary of impact	Level of Impact	Significance of effect	Proposed mitigation	Residual effect	Offsetting
Tree weta	Construction impacts have potential to kill individuals through works or displace populations through habitat loss, noise and vibration.	Permanent and Temporary Moderate Direct and Cumulative	Large Adverse	Vegetation replanting and offsetting	Permanent and Temporary Negligible-Minor Impact, Minor to Moderate Effect	An entomological management plan should be prepared. Relocating insects to unestablished new habitat will lesson impacts, but depends on the detailed offsetting calculation and ensuring long-term success of habitat relocation.
Karearea/Falcon	Construction impacts include disturbance from noise. Operational impacts could increase bird-strike by vehicles.	Permanent and Temporary Negligible Direct and Cumulative	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Avifauna and vegetation management plan including monitoring.
Pipit	Construction impacts include disturbance from noise. Operational impacts could increase bird-strike by vehicles.	Permanent and Temporary Negligible Direct and Cumulative	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Avifauna and vegetation management plan including monitoring.
Black-billed gull	Construction impacts include disturbance from noise. Operational impacts could increase bird-strike by vehicles.	Permanent and Temporary Negligible Direct and Cumulative	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Avifauna and vegetation management plan including monitoring.
Australasian bittern	Construction impacts include disturbance from noise. Operational impacts could increase bird-strike by vehicles.	Permanent and Temporary Negligible Direct and Cumulative	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Avifauna and vegetation management plan including monitoring.
Caspian tern	Construction impacts include disturbance from noise. Operational impacts could increase bird-strike by vehicles.	Permanent and Temporary Negligible Direct and Cumulative	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Avifauna and vegetation management plan including monitoring.
Banded dotterel	Construction impacts include disturbance from noise. Operational impacts	Permanent and Temporary Negligible	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible	N/A subject to detailed Avifauna and vegetation

Name	Summary of impact	Level of Impact	Significance of effect	Proposed mitigation	Residual effect	Offsetting
	could increase bird-strike by vehicles.	Direct and Cumulative			Impact, Minor Effect.	management plan including monitoring.
Red-billed gull	Construction impacts include disturbance from noise. Operational impacts could increase bird-strike by vehicles.	Permanent and Temporary Negligible Direct and Cumulative	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Avifauna and vegetation management plan including monitoring.
Whitehead	Construction impacts include disturbance from noise. Operational impacts could increase bird-strike by vehicles.	Permanent and Temporary Negligible Direct and Cumulative	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Avifauna and vegetation management plan including monitoring.
Spotless crake	Construction impacts include disturbance from noise. Operational impacts could increase bird-strike by vehicles.	Permanent and Temporary Negligible Direct and Cumulative	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Avifauna and vegetation management plan including monitoring.
Rifleman	Construction impacts include disturbance from noise. Operational impacts could increase bird-strike by vehicles.	Permanent and Temporary Negligible Direct and Cumulative	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Avifauna and vegetation management plan including monitoring.
Pied oystercatcher	Construction impacts include disturbance from noise. Operational impacts could increase bird-strike by vehicles.	Permanent and Temporary Negligible Direct and Cumulative	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Avifauna and vegetation management plan including monitoring.
Marsh crake	Construction impacts include disturbance from noise. Operational impacts could increase bird-strike by vehicles.	Permanent and Temporary Negligible Direct and Cumulative	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Avifauna and vegetation management plan including monitoring.
Dabchick	Construction impacts include disturbance from noise. Operational impacts could increase bird-strike by vehicles.	Permanent and Temporary Negligible Direct and Cumulative	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Avifauna and vegetation management plan including monitoring.
Kaka	Construction impacts include disturbance from noise. Operational impacts	Permanent and Temporary Negligible	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible	N/A subject to detailed Avifauna and vegetation

Name	Summary of impact	Level of Impact	Significance of effect	Proposed mitigation	Residual effect	Offsetting
	could increase bird-strike by vehicles.	Direct and Cumulative			Impact, Minor Effect.	management plan including monitoring.
Pied shag	Construction impacts include disturbance from noise. Operational impacts could increase bird-strike by vehicles.	Permanent and Temporary Negligible Direct and Cumulative	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Avifauna and vegetation management plan including monitoring.
Coot	Construction impacts include disturbance from noise. Operational impacts could increase bird-strike by vehicles.	Permanent and Temporary Negligible Direct and Cumulative	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Avifauna and vegetation management plan including monitoring.
Black shag	Construction impacts include disturbance from noise. Operational impacts could increase bird-strike by vehicles.	Permanent and Temporary Negligible Direct and Cumulative	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Avifauna and vegetation management plan including monitoring.
Little black shag	Construction impacts include disturbance from noise. Operational impacts could increase bird-strike by vehicles.	Permanent and Temporary Negligible Direct and Cumulative	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Avifauna and vegetation management plan including monitoring.
Black-fronted dotterel	Construction impacts include disturbance from noise. Operational impacts could increase bird-strike by vehicles.	Permanent and Temporary Negligible Direct and Cumulative	Minor Adverse	Avifauna management plan	Permanent and Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Avifauna and vegetation management plan including monitoring.
Pekapeka/Long tailed bats	Construction impacts include disturbance from noise and individual deaths from tree felling if containing roosts.	Temporary Negligible Direct and Cumulative	Minor Adverse	Bat management plan	Temporary Negligible Impact, Minor Effect.	N/A subject to detailed Bat and vegetation management plan including monitoring.
Longfin eels/tuna	Construction impacts from works within the riverbed and wetlands, and possible sediment and other discharges to water.	Temporary Minor to Moderate Direct and Indirect	Moderate to Large Adverse	Nil	Temporary Minor to Moderate Impact, Moderate to Large Adverse	Freshwater ecology management plan should be prepared and monitored.
Inanga	Construction impacts from works within the riverbed, and possible sediment and other discharges to water.	Temporary Negligible to Minor Direct and Indirect	Minor to Moderate Adverse	Nil	Temporary Negligible to Minor Impact, Minor to	Freshwater ecology management plan should be

Name	Summary of impact	Level of Impact	Significance of effect	Proposed mitigation	Residual effect	Offsetting
					Moderate Adverse	prepared and monitored.
Lamprey	Construction impacts from works within the riverbed, and possible sediment and other discharges to water.	Temporary Negligible to Minor Direct and Indirect	Minor to Moderate Adverse	Nil	Temporary Negligible to Minor Impact, Minor to Moderate Adverse	Freshwater ecology management plan should be prepared and monitored.
Kokopu	Construction impacts from works within the riverbed, and possible sediment and other discharges to water.	Temporary Negligible to Minor Direct and Indirect	Minor to Moderate Adverse	Nil	Temporary Negligible to Minor Impact, Minor to Moderate Adverse	Freshwater ecology management plan should be prepared and monitored.
Kākahi (freshwater mussel).	Construction impacts from works within the riverbed, and possible sediment and other discharges to water.	Temporary Negligible to Minor Direct and Indirect	Minor to Moderate Adverse	Nil	Temporary Negligible to Minor Impact, Minor to Moderate Adverse	Freshwater ecology management plan should be prepared and monitored.

CONCLUSION

The Project to replace the closed Manawatū Gorge SH3 route is a project of regional to national importance. The social, safety and economic rationale for a new route alignment roughly along the proposed designation corridor is agreed in principle by the Trust. However the Trust maintains significant concerns regarding the detailed design and construction stages of the Project, which are matters to be addressed by regional resource consents, detailed design, implementation and monitoring. The Trust will require a higher level of engagement and participation in these next phases of the Project.

The Trust has reviewed the AEE and other material provided through the NOR notification and hearing evidence. The following observations arising out of this review are made:

- The landscape assessment did not take or include views from or to the Parahaki Island and thus failed to take into account the unique relationship of the Trust's association and relationship with the surrounding cultural and natural landscape. This is a fatal flaw in the landscape assessment form the Trust's perspective.
- The ONF requires avoidance of effects, making a regional consent that results in significant adverse effects potentially a non-complying activity.
- Scheduled Māori heritage requires avoidance of significant effects (i.e. where impacts will significantly reduce heritage qualities), and while NZTA moved the proposed bridge to the east to lessen the impacts, setting impacts to Parahaki Island remain significant, making a regional consent potentially a non-complying activity.
- Vegetation clearance of rare, threatened, or at-risk habitat, particularly near rivers, is likely to be non-complying activity in the One Plan.
- There is nothing accidental about uncovering köiwi or archaeology in places where one would expect to find them (i.e. near significant cultural sites). Furthermore a rule that sits within a Regional Plan (ADP rules in the One Plan) or within another regulatory process such as the HNZPT Authority process cannot double as 'mitigation' for significant cultural harm. Emergency engagement is not mitigation as it cannot avoid, remedy or mitigate (reduce) impacts, and Māori decision making is severely limited and is in practice an exercise of monitoring the decision-makers. Suggestions that ADPs are a form of mitigation are inconsistent with legislation, ICOMOS and tikanga and are not supported by evidence or logic. While necessary to have, they are not satisfactory to protect.
- The March 2019 (updated) environmental and cultural design framework notes (2.4.1) that the Project will 'protect' cultural values through bridge design – given the bridge itself will cause a significant permanent adverse effect to the Trust and the Island, the choice of wording here is curious. Similarly, proposed viewpoints of the gorge and the island may on the one hand be positive for interpretation and celebration of cultural narratives, but on the other invites the public to spectate over a sacred site that is in Māori freehold title and may have perverse outcomes against the backdrop of sensitive Māori use and enjoyment of the Island

Parahaki Island is a place of key cultural significance within the Project corridor, including due to its cultural, spiritual and historic associations to Māori, its Māori freehold land title, its association with the Manawatū Awa and Gorge, its wāhi tapu sites, its wāhi tupuna and other cultural sites, and its contribution to the cultural and natural landscape of the Manawatū Gorge. This significance will be overshadowed and undermined by the physical presence of a new river bridge that will dominate the cultural viewshafts from the Island along the gorge, significantly alter the cultural and natural landscape, and introduce impacts associated with vehicle noise, light, and air discharges into the landscape and within areas of tapu. Maintenance will also likely introduce impacts to the quiet enjoyment and spiritual qualities of the Island.

In total, 23 significant adverse effects to the cultural values of the Trust's beneficiaries' (owners and their whanau and hapū) relationship and their culture and traditions with their ancestral lands, water, sites, wāhi tapu, and other taonga, have been identified. The AEE report effects summary identifies two

tangata whenua impacts, one of which (destruction of cultural sites) they propose to remedy by an ADP, which, as noted above, is not even a legitimate form of cultural mitigation due to its inherent inability to avoid, remedy, or mitigate (lessen) impacts. The 23 significant adverse impacts identified in this CIA are post-mitigation assessed, meaning they have not been reduced to less than significant (minor or less) by the remedy and mitigation identified by NZTA to date. Subsequently, further mitigation and offsetting is required. The Trust wishes to develop a positive working relationship with NZTA that will deliver material enhancements to Parahaki Island and its surrounding environment that are value-add and Māori-outcome components of the Project.

RECOMMENDATIONS

Table 4: Recommendations and outcome alignment

No.	Recommendation	Treaty Value alignment	Legislative alignment	Policy alignment
1	The Trust reserves its position (default conditional opposition) on any upcoming resource consents related to the Project, pending the adoption of these recommendations or otherwise securing by agreement **net positive cultural outcomes** for the Trust and Parahaki Island.	Reciprocity, partnership, shared decision-making, active protection, mutual benefit	RMA s6E, 7A, 8 TTWMA s17 LTMA S96(1)(a)	NPSFW D1 One Plan 2.3.2-1
2	The Trust **opposes** Manawatū River **Bridge 2 Option B** (Piers in the River). Option A (No Piers in the River) is the preferred option should the Bridge 2 be built.	Shared decision-making, active protection	RMA s6E, 7A, 8 TTWMA s17 LTMA S96(1)(a)	NPSFW D1 One Plan 2.3.2-1
3	The Trust be provided opportunity to participate and share in decision-making (at the cost of the NZTA regarding the **cultural design and interpretation** of the Manawatū River Bridge 2 and any gateway, viewing platforms, walkways or cycleways in the vicinity of Parahaki Island.	Partnership, shared decision-making, active protection, mutual benefit	RMA s6E, 7A, 8 TTWMA s17 LTMA S96(1)(a)	One Plan 2.3.2-1 ICOMOS NZTA UDP step 2 and 5, policy 3.8
4	The Trust be provided opportunity to participate and share in decision-making (at the cost of the NZTA), including the formulation of cultural indicators, regarding the various environmental/ecological **management plans**, the construction management plan, and the environment and cultural design framework, where these are relevant to Parahaki Island and its immediate surrounds.	Partnership, shared decision-making, active protection, mutual benefit	RMA s6E, 7A, 8 TTWMA s17 LTMA S96(1)(a)	One Plan 2.3.2-1 ICOMOS NZTA UDP step 2 and 5, policy 3.8
5	The NZTA shall undertake to provide and facilitate enhanced and permanent **access** (as far as practicable acknowledging the Island is subject to period flooding) to Parahaki Island from the new section of road for the sole use of the Trust beneficiaries.	Reciprocity, partnership, shared decision-making, active protection, mutual benefit	RMA s6E, 7A, 8 TTWMA s17 LTMA S96(1)(a)	One Plan 2.3.2-1 NZTA UDP step 2, 3 and 5, policy 3.8
6	That the NZTA provide offset mitigation to the Trust for significant cultural impacts to Parahaki Island and surrounds in the form of a Parahaki Island Restoration Fund for the purposes of protecting and enhancing the cultural and environmental values of the island. The offset fund could be administered by a nominated Parahaki Island Restoration Trust with representation from the Trust and the Project.	Reciprocity, partnership, shared decision-making, active protection, mutual benefit	RMA s6E, 7A, 8 TTWMA s17 LTMA S96(1)(a)	One Plan 2.3.2-1 NZTA UDP step 3
7	That the Trust be provided opportunity (at the cost of the NZTA) to develop cultural indicators for relevant management plans and frameworks (see recommendation 4 above) and are provided resourcing to undertake kaitiaki **cultural monitoring** of Parahaki Island and its surrounds during	Shared decision-making, active protection	RMA s6E, 7A, 8 TTWMA s17 LTMA s96(1)(a) HNZPT s45(2)(b)	NPSFW D1 One Plan 2.3.2-1 NZTA UDP step 3 NPSFW D1 ICOMOS

No.	Recommendation	Treaty Value alignment	Legislative alignment	Policy alignment
	the construction phase and the operational phase for a period of 5 years following completion of construction.			
8	That the Trust be provided opportunity to workshop or otherwise input to the formulation of relevant upcoming **resource consent and archaeological authority conditions**.	Partnership, shared decision-making, active protection	RMA s6E, 7A, 8 TTWMA s17 LTMA s96(1)(a) HNZPT s45(2)(b)	NPSFW D1 One Plan 2.3.2-1 NZTA UDP step 3 NPSFW D1 ICOMOS
9	That the Trust be provided opportunity to participate via a representative on any **project governance** working group, along with opportunity to review and participate in project-related **procurement**, where such is relevant to Parahaki Island or its immediate environs.	Reciprocity, partnership, shared decision-making, active protection, mutual benefit	RMA s6E, 7A, 8 TTWMA s17 LTMA S96(1)(a)	One Plan 2.3.2-1 NZTA UDP step 3

REFERENCES

Bader, H.D. June 2019. Archaeological Survey and Assessment of Effects Parahaki Island Manawatu. Unpublished report: Archaeological Solutions Ltd.

Bently, C.R. March 2019. Statement of Evidence regarding environmental and cultural design framework, prepared for Notices of requirement for designations under section 168 of the Act, in relation to Te Ahua Turanga; Manawatū Tararua Highway Project.

Boffa Miskell Ltd. 2018. Te Ahu a Turanga: Manawatū Tararua Highway Project Environmental and Cultural Design Framework (Preliminary). Unpublished.

Clough, R.E. October 2018. Statement of Evidence on Technical Assessment #5 regarding historic heritage and archaeology, prepared for Notices of requirement for designations under section 168 of the Act, in relation to Te Ahua Turanga; Manawatū Tararua Highway Project.

Clough, R.E. March 2019. Statement of Evidence regarding historic heritage and archaeology, prepared for Notices of requirement for designations under section 168 of the Act, in relation to Te Ahua Turanga; Manawatū Tararua Highway Project.

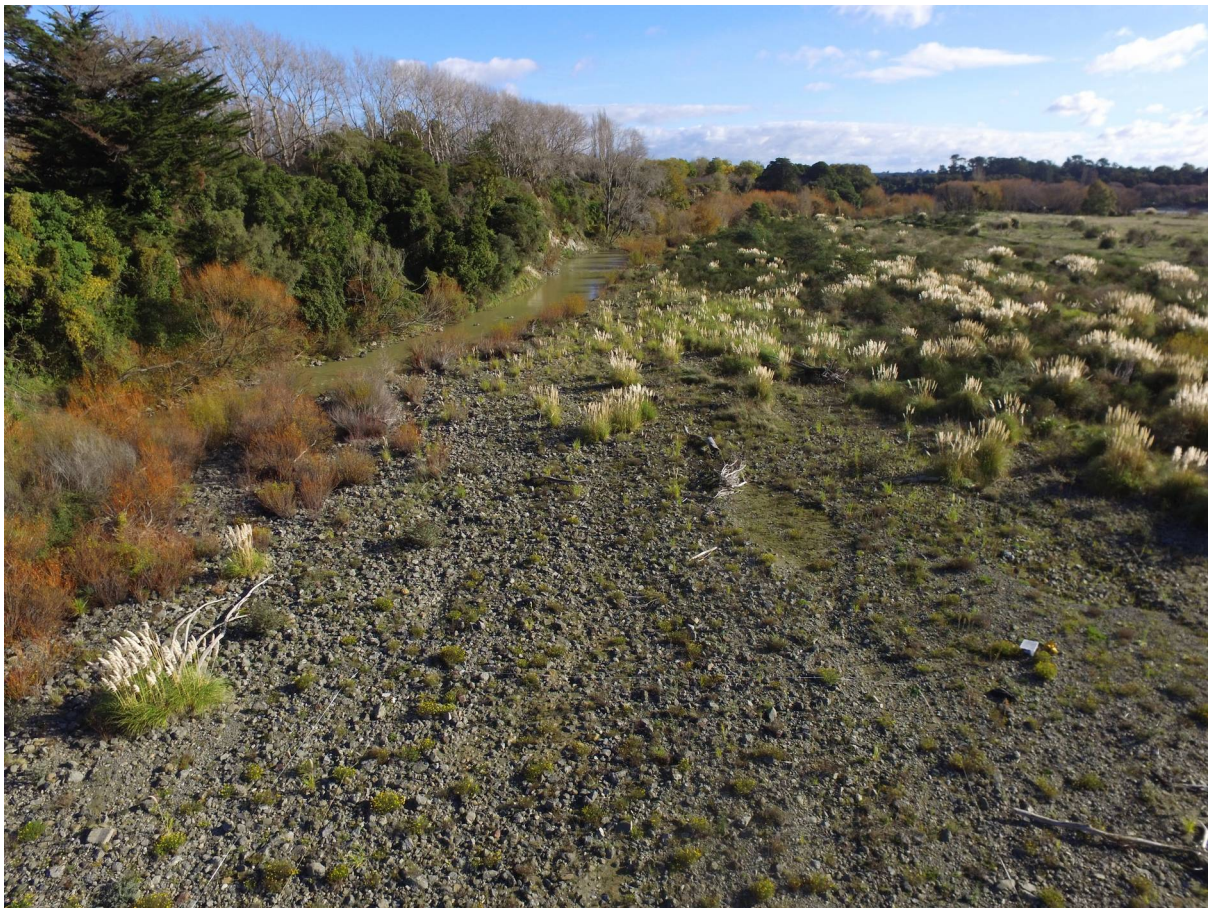
Evans, B.H. October 2018. Statement of Evidence on Technical Assessment #4 regarding landscape, natural character and visual effects, prepared for Notices of requirement for designations under section 168 of the Act, in relation to Te Ahua Turanga; Manawatū Tararua Highway Project.

Evans, B.H. March 2019. Statement of Evidence regarding landscape, natural character and visual effects, prepared for Notices of requirement for designations under section 168 of the Act, in relation to Te Ahua Turanga; Manawatū Tararua Highway Project.

NZTA. October 2018. Te Ahu a Turanga; Manawatū Tararua Highway Project Notices of Requirement for Designations. Volume 2: Assessment of Effects on the Environment and Supporting Material.

APPENDIX A – June 2019 Archaeological Assessment

Archaeological Survey and Assessment of Significance and Effects: Parahaki Island, Manawatu



Prepared for:

Kaihautū Consulting
18 Ashcroft Avenue
Auckland 2022

Prepared by:

Archaeology Solutions Ltd
PO Box 48134
Blockhouse Bay
AUCKLAND 0644
phone: (09) 626 7860
e-mail: info@archaeologysolutions.co.nz

Date: June 2019

1. Executive Summary

Parahaki Island is recorded as an urupa and papkainga to its full extent (T24/32). This is based on historical sources and oral traditions.

The shape of the island has changed substantially during the time European maps were made and it could be expected that similar changes had taken place in the past.

Nonetheless there is a mid section of the island that seems to be quite stable. Within this area several archaeological features were discovered.

A walkover was conducted, and due to the high vegetation a 170 metre long corridor was cleared for a geomagnetic survey. The survey indicates a substantial build up of topsoil and not the rather disturbed background picture of a gravel bank with a thin layer of recent topsoil. It supports the model of a relatively undisturbed and unaltered mid section of the island. A ground penetrating radar survey was planned too, but during two visits the river was running too high to get the heavy gear onto the island.

A further geomagnetic survey was conducted over the vegetation free gravel bank on the south.

It seems likely that during the shifts of the shape of the island not all material erodes and therefore there is a small probability that archaeological features survive under the areas that are occasionally flooded today. This model is supported by the geomagnetic survey of the gravel bank, that shows features - despite the strong disturbances from recently accumulated deposits (including ferrous iron) - that could be archaeological in nature.

It is therefore recommended that any earthworks on or close to the island – independent from the modern boundary lines – should be conducted under an authority to modify the site T24/32 under the Heritage New Zealand Pouhere Taonga Act 2014.

Quality Information

Title: Archaeological Survey and Assessment of Effects, Parahaki Island, Manawatu

Reference: ASL19_09

Author(s): Dr. Hans-Dieter Bader

Revision History:

Draft	20/06/2019	Bader
Review		
Revision		
Final		

Cover photo: Southern end of the island in 2019 (photo: Hans-Dieter Bader)

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Contents:

Figures:

2. Glossary

Table 1: Archaeological terms.

C14	Dating method using the deterioration of Carbon 14 in living organisms
Firescoop	Fireplace used for various reasons (cooking, warming, etc.)
Hangi	Subterranean cooking oven using heated stones
Hapu	Maori sub tribe, part of a larger tribal federation
Kai moana	Seafood exploited by Maori including fish, shell fish and crustaceans.
Kainga	Maori undefended open settlement.
Kaumatua	Male elder(s) of a hapu (sub tribe)
Kuia	Female elder(s) of a hapu (sub tribe)
Mana Whenua	People of the land with mana or customary authority
Midden	Refuse from a settlement, mainly shell fish.
Pa	A site fortified with earthworks and palisade defences. Modern meaning differs from archaeological use of the word.
Pit	Rectangular excavated pit used to store crops by Maori
Posthole	Archaeological remains of a post used for various reasons
Prehistory	Period before European arrival
Rohe	Settlement area of a Maori sub tribe (hapu)
Terrace	A platform cut into the hill slope used for habitation or cultivation
Urupa	Burial ground
Wahi tapu	Sites of spiritual significance to Maori
Whare	Traditionally built Maori sleeping house

3. Introduction

Parahaki Island at the mouth of the Manawatū Gorge (Te Apiti) is still in Maori landownership. It is recorded as an archaeological site but the archaeological features are either hard to detect or not visible on the surface. The site record is based on historical information and oral traditions. Proposed development of a new highway linking Palmerston North to the Woodville after the road through Te Apiti has been destroyed will probably impact onto the island.

3.1. Brief

Jamie Forsman of Kaihautū Consulting instructed Archaeology Solutions Ltd to undertake an archaeological survey and values assessment of Parahaki Island to contribute to the Cultural Value Assessment for the island.

4. Statutory Requirements

There are two main pieces of legislation in New Zealand that control work affecting archaeological sites. These are the *Heritage New Zealand Pouhere Taonga* Act 2014 (HNZPTA) and the *Resource Management* Act 1991 (RMA)

This assessment considers only archaeological sites as defined in the HNZPTA as outlined below.

4.1. Heritage New Zealand Pouhere Taonga Act 2014

Heritage New Zealand Pouhere Taonga (HNZ) administers the HNZPTA. The HNZPTA contains a consent (authority) process for any work affecting archaeological sites, where an archaeological site is defined as:

> *"6(a) any place in New Zealand, including any building or structure (or part of a building or structure), that –*
>
> *(i) was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and*
>
> *(ii) provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and*
>
> *6(b) includes a site for which a declaration is made under section 43(1)"*

Any person who intends carrying out work that may damage, modify or destroy an archaeological site, or to investigate a site using invasive archaeological techniques, must first obtain an authority from HNZ. The process applies to sites on land of all tenure including public, private and designated land. The HNZPTA contains penalties for unauthorised site damage or destruction

The archaeological authority process applies to all sites that fit the HPA definition, regardless of whether:

- The site is recorded in the NZ Archaeological Association Site Recording Scheme or registered by HNZ,
- The site only becomes known about as a result of ground disturbance, and/ or
- The activity is permitted under a district or regional plan, or a resource or building consent has been granted

HNZ also maintains the List of Historic Places, Historic Areas, Wahi Tapu and Wahi Tapu Areas. The List can include archaeological sites. The purpose of the List is to inform members of the public about such places and to assist with their protection under the Resource Management Act (1991).

4.2. Resource Management Act 1991

Under Section 6 of the *Resource Management Act* 1991 (RMA) it is stated that the protection of historic heritage is a matter of national importance,

> *"In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following matters of national importance:*
>
> *[…]*
>
> *(e)the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga*
> *(f) the protection of historic heritage from inappropriate subdivision, use, and development."*

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

Historic heritage includes:

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

These categories are not mutually exclusive and some archaeological sites may include above ground structures or may also be places that are of significance to Maori.

Where resource consent is required for any activity the assessment of effects is required to address cultural and historic heritage matters (RMA 4th Schedule and the district plan assessment criteria).

Section 17 of the RMA states "*Every person has a duty to avoid, remedy, or mitigate any adverse effect on the environment arising from an activity carried on by or on behalf of the person"*, and this includes historic heritage.

5. Methodology

5.1. Investigation Procedure

For this report aerial photographs, historic maps, secondary literature dealing with the history of Parahaki and the New Zealand Archaeological Site Recording Scheme have been consulted. Information was recorded using handheld GPS and digital photography. Two areas were investigated using a fluxgate gradiometer after in one of the areas the tigh deep vegetation was cut down with a bladed weed eater.

5.2. Site Investigation

Two site visits were undertaken. A walkover was conducted, hampered by the vegetation. Two geomagnetic surveys were executed after a 170 m long corridor was cut with a bladed weed eater through the vegetation for one of the surveys. A planned ground penetrating radar survey had to be abandoned as the river was running too high to get the heavy gear onto the island. Two low level aerial orthophotos from a series of top down photos were created over the areas of the geophysical surveys.

Figure 1: Overview over the island in 2017 showing the cadastral boundary lines, which are somewhat arbitrary as the shape of the island is in flux.

5.3. Methodology - Geomagnetics

Two survey grid plots were laid out. They were surveyed using a Fluxgate Gradiometer Foerster Ferex 4.032 DLG STD in a two probe configuration. Transects were walked across these plots at 0.5 metre intervals and data taken in 0.2 metre intervals. Recorded data was normalized to reduce errors resulting from walking transects over uneven ground surfaces and Teslaview 1.0 software was used to analyse the data. The data is displayed showing grey shades between -20nT (black) and +20nT (white).

Palaeomagnetism can be recorded by magnetometric methods such as through the use of a fluxgate gradiometer. These are widely employed in archaeological research competing mainly with soil resistivity using electrical resistance and ground penetrating radar using the reflection of radar waves usually in the 200 MHz to 900 MHz range (Goldberg et al 2006, p.313). Magnetometry is the method most commonly used due to its speed and reliability in widely different soil conditions (Goldberg et al 2006, p. 315, Johnson 2006, ch.9 by K. Kvamme).

The fluxgate gradiometer measures small underground magnetic anomalies. Both geomorphological changes and human-induced soil changes can be detected. A geomagnetic survey is influenced by three components (Zickgraf 1999, p.107-9):

- The magnetic field of the earth is constantly changing and influenced by outside changes such as the intensity of the sun. The arrangement of the survey instrument as a gradiometer using a magnetometer close to the soil surface and a second magnetometer in about 1 metre height compensates for those changes.
- Magnetic susceptibility of any material inside a magnetic field changes the magnetic signature of different materials to different degrees. This allows recognition of foreign material in the soil (e.g. shell midden concentrations in the topsoil). Ferromagnetic materials (e.g. iron) can have a magnetic signature on their own (remnant magnetism).
- Le Borgne effect: The susceptibility of the topsoil to about 30 cm depth can be up to 100 times stronger than the susceptibility of the soil at 100 cm depth. This is due to chemical reactions of the soil close to the surface. Therefore any trench or pit back filled with mainly topsoil shows a much stronger magnetic signature than the surrounding soil.

Fireplaces, houses and pits are standard features commonly recognised in archaeological geophysical surveys (Zickgraf, 1999, for examples see Duensberg p.130, Glauberg p.140, Mardorf-3 p.144 and Mardorf-23 p.146. The examples are mainly Neolithic and early Celtic earth built structures and settlements in Central Europe for which the archaeological signature is not dissimilar to pre-European Maori structures and archaeological deposits in New Zealand).

Fire events and shell midden have been recognised by geomagnetic surveys at Long Bay (Bader 2007a and b). The results underwent a rigorous ground testing (Phillips and Geometria 2007) that showed the validity of the geomagnetic data interpretation.

The distribution of small metal artefacts can also indicate patterns of historic settlements (Brooks et al 2009). Kvamme (in: Johnson 2006, p.216ff.) provides categories of detectable human activities using magnetometry:

- Fires including hearth, fireplaces, burn-offs and accidental fires all create thermo-remnant anomalies.
- Fired construction material like bricks can create the same effect.
- Human occupation can enhance the Le Borgne effect (see above) and show the extent of settlements compared to unoccupied areas.
- Accumulation of topsoil such as in the walls of sod houses can create anomalies. Often the natural backfill of a pit increases the amount of topsoil in the pit area and creates the same effect.
- Removal of topsoil for ditch features or by footpaths or animal traffic can result in anomalies. The quick backfill of pits can result in similar anomalies as the topsoil ends up at the bottom of the pit and the subsoil on the top of the backfill.
- Imported stone used as buildings or floor material often shows a difference to the surrounding soil matrix.
- Iron objects will create a dipolar anomaly. Often these anomalies are not part of the archaeological site and can 'hide' weaker anomalies of the archaeological site.

6. Background

6.1. Location & Legal description of land affected

Parahaki lies on the downriver side of Te Apiti. The appellation is 'Parahaki Block' as shown in ML4064. The title is 497568.

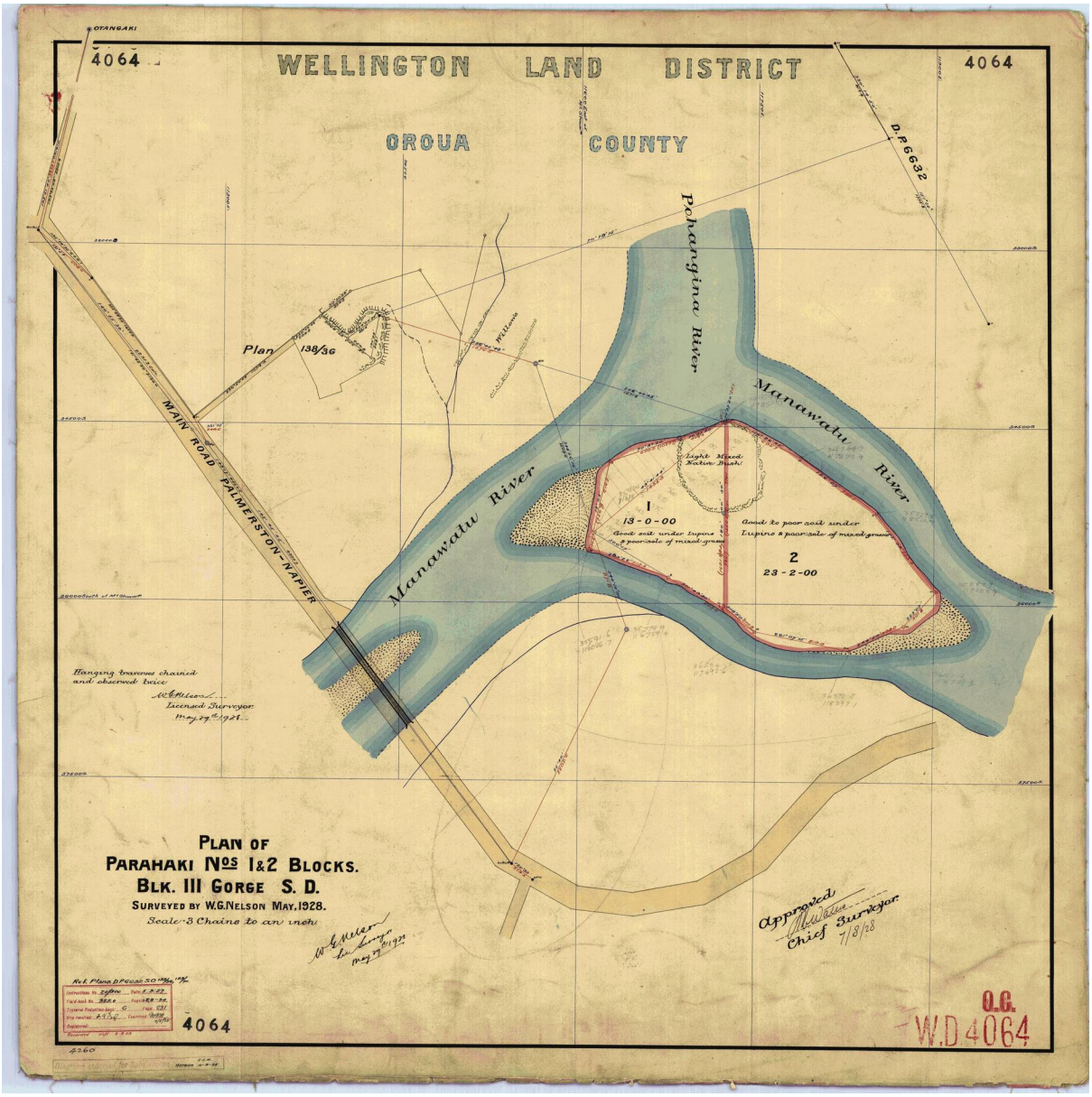

Figure 2: Historic map ML 4064 from 1928.

6.2. Physical Environment

The island seems to change its shape fairly often due to flooding. Even in the relatively short time of European map making this is obvious. Nonetheless a central part of the island seems

to be unaffected by these regular changes. This would allow for a lengthy occupation of this island by Maori in pre contact times. During the post contact times regular visits and stays on the island by Maori are recorded.

Below is a series of historic maps documenting these recent changes.

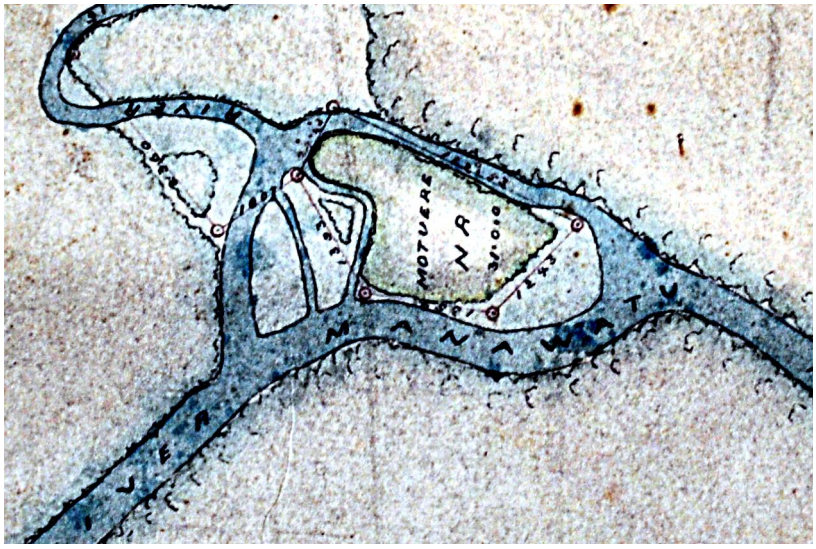

Figure 3: SO10804, 1860s

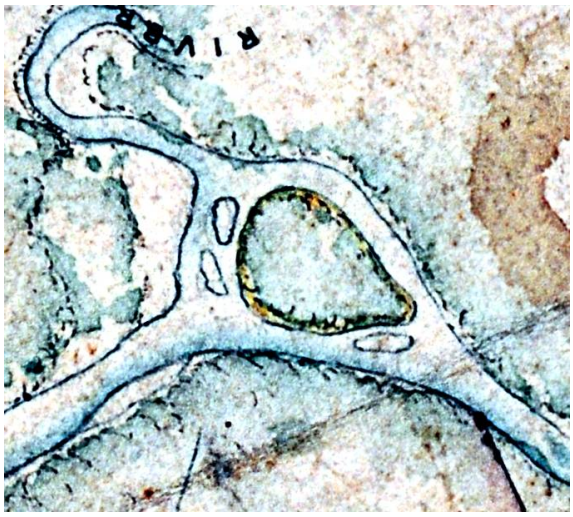

Figure 4: SO10859, 1860s

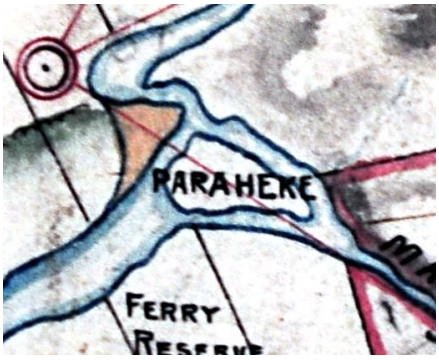

Figure 5: SO11173, 1870s

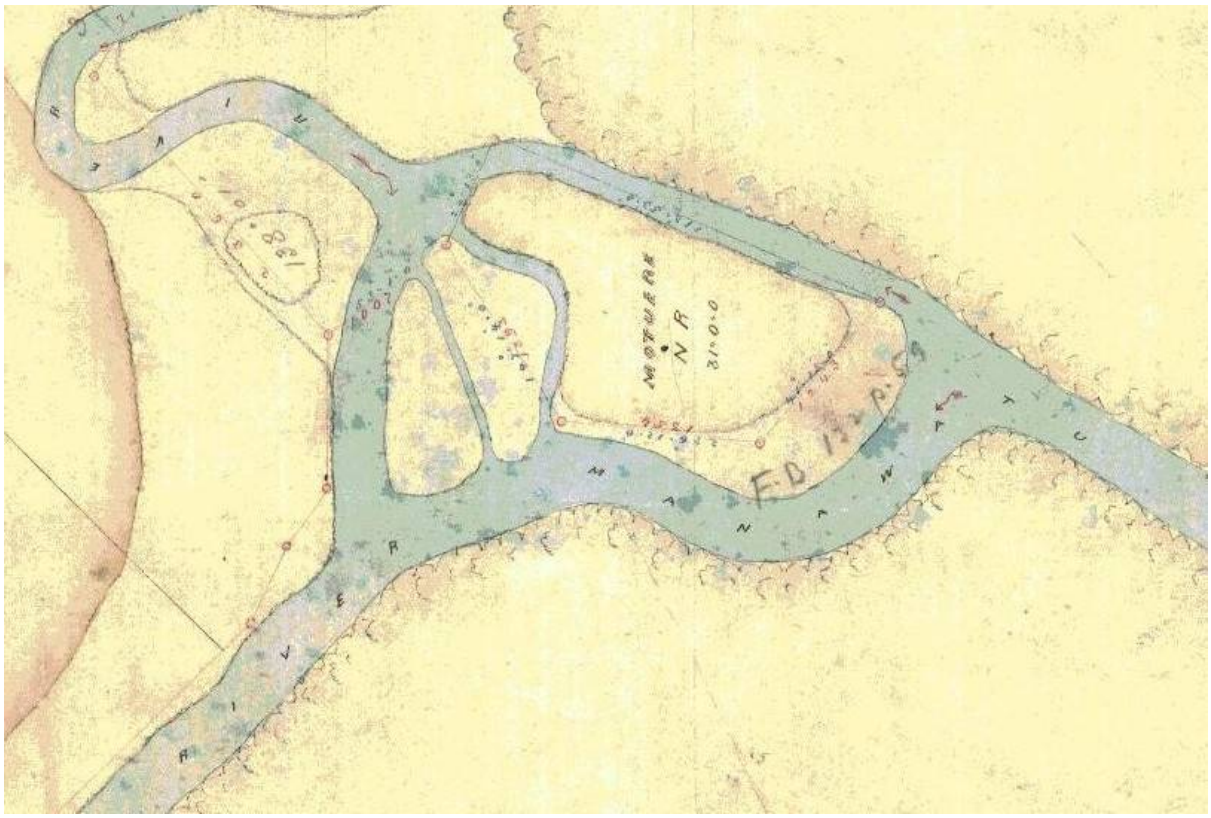

Figure 6: 1879, SO_10811

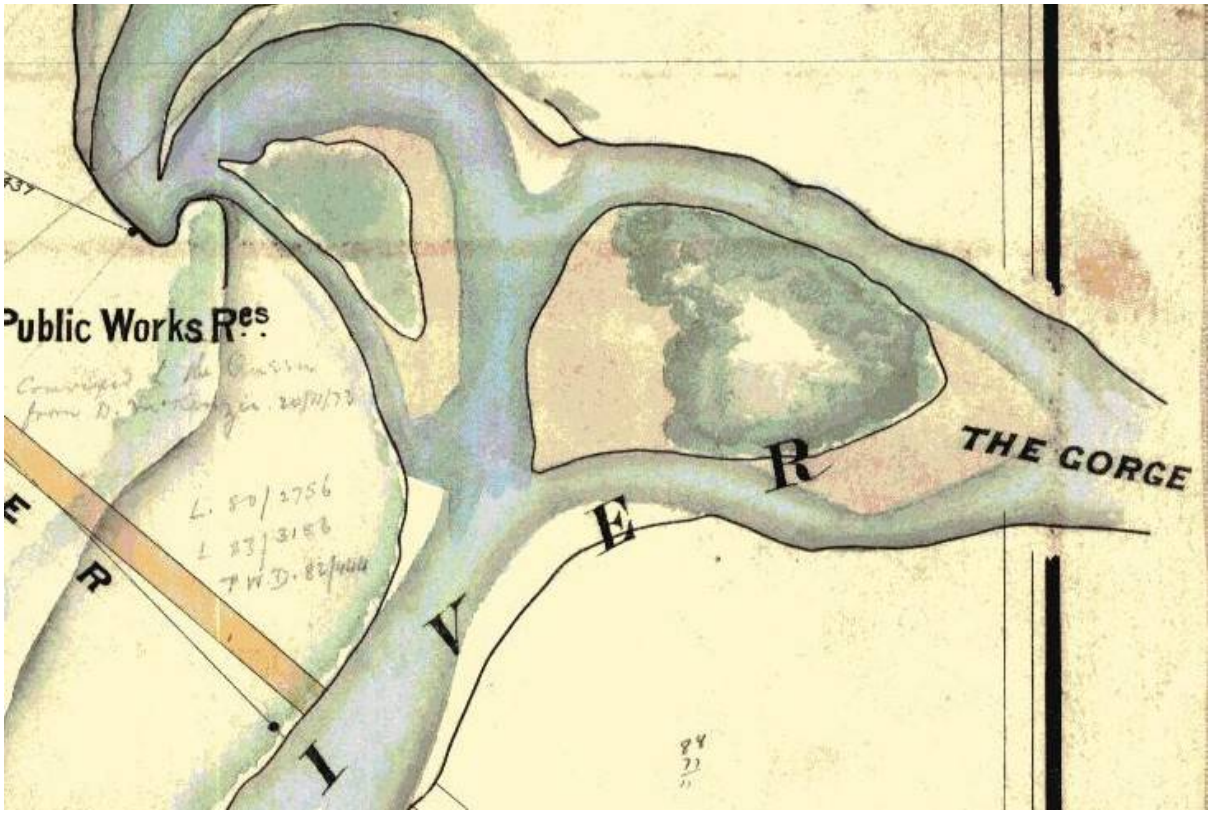

Figure 7: 1879, SO_11530

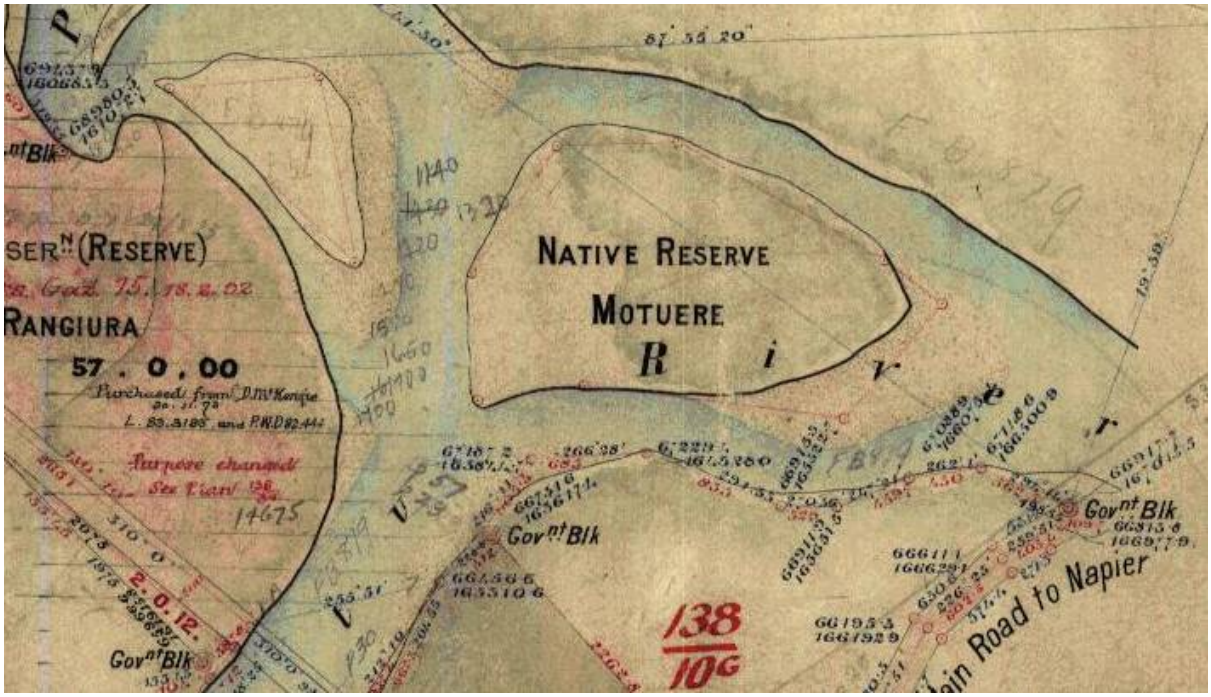

Figure 8: 1881, SO_11321

Figure 9: 1928, ML4064

6.3. Historical Context & Archaeological Context

The pre contact history is best left to mana whenua to tell. Important in this archaeological context is that the gorge was an important route from and to the Wairarapa. Parahaki Island would have been an important and obvious stopping place on travels. Furthermore it is well located for food gathering like fish traps or Karakara berries. Still today a large stand of Karakara trees is found close to the island.

Flooding was a constant companion to the people living along the river, but part of the island seemed to have been rarely flooded (see picture below).

The cultural significance of the island is indicated by the fact that it is still in Maori land ownership. Nonetheless European enterprises and land use changes left an impact on the island. At least two possible saw pits testify processing of mature forest trees on the island, probably in the late 19th or early 20th century. The vegetation cover was lost due to grazing livestock in the second half of the 20th century.

Figure 10: Detail of a photo shot in 1920 that shows the island under tree cover. (Manawatu Gorge and Northern Tararua Range : 19 April 1920-20 April 1920, 19 April 1920-20 April 1920, by Leslie Adkin. Gift of G. L. Adkin family estate, 1964. Te Papa (B.021032)).

6.4. Previous archaeological work within the area affected

One archaeological site has been recorded in the New Zealand Archaeological Association Site Record Scheme (NZAA SRS). After a site visit by Michael Taylor the entire island was recorded as a kainga and urupa. Though no surface features were observed, the oral traditions and the record of the surveyor J.T. Stewart in his Fieldbook 1718, page 11, 1859, of 'graves' marked with an X on a sketch of the island (see below) led to the site record.

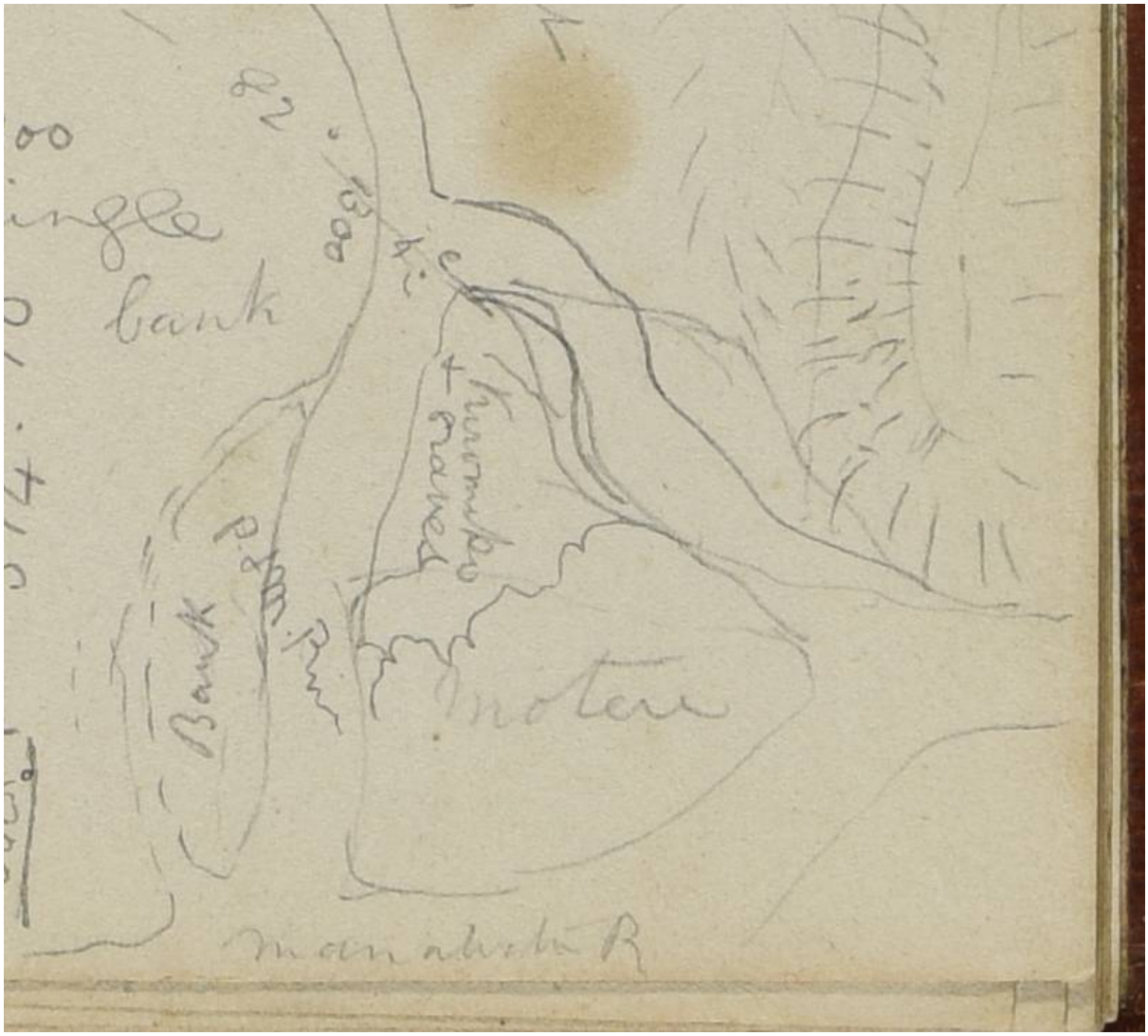

Figure 11: Graves marked with a cross on a surveyors field notebook.

7. Results

During the walkover one storage pit was observed, probably for kumara or taro. Any archaeological surface features were extremely difficult to see due to thigh high vegetation cover on the island.

Nonetheless two further pits were observed. Due to their size and shape it is assumed that they were saw pits, remains of the forest industry in post contact times. This would indicate an occupation and use of the island during the 19th century beyond kainga and urupa.

Two areas were chosen for a geomagnetic survey and on one of them an additional ground penetrating radar survey was planned. This area required cutting of the vegetation before any survey could be conducted. Due to the water level in the river unfortunately it wasn't possible to get the heavy ground penetrating radar onto the island.

A high resolution ortho photo from a UAV survey covers the vicinity of both geomagnetic survey areas.

The geomagnetic survey did show a significant difference of the background signal between the area in the middle of the island and the area on the southern end of the island. The difference is likely caused by a difference in the subsoil. The centre of the island consist likely of a substantial layer of top soil which is not present on the edges of the island. This would mean that despite frequent floods the higher ground in the middle of the island is usually not impacted upon and a layer of topsoil could develop in this area. This is consistent with the observation of storage pits that require dry ground and indicate more than just seasonal occupation of the island by Maori in pre contact times.

Within the geomagnetic survey two further anomalies indicate small pits or similar occupation features in the vicinity of the observed storage pit.

The survey on the southern end shows a more typical boulder/gravel bank background. Parts of the recent slips including bits of tarseal and metal from the road construction can be seen mixed into the gravel. These magnetic signatures of metal are clearly visible in this survey area. But beyond the background of the gravel and the modern dipolar signature of metal a number of anomalies seem to indicate additional features below the surface belonging neither to a boulder/gravel nor a metal anomaly.

It can be contemplated that at some stage the island extended over the area that is now flooded regularly. And that modern flooding took away the top soil layer but left the lower soil layers intact below the gravel layer. There is therefore a small probability that archaeological features within the lower soil layers are still in situ.

Figure 12: Features and indicative features from the walkover and from the geomagnetic survey. The picture also shows the geomagnetic survey areas surrounded by the high resolution ortho photos from the UAV survey.

Figure 13: Area of higher ground in the middle of the island. This area seems to have built up top soil rather than gravel from frequent flooding. It seems that this area has been stable for a long time in stark contrast to the edges of the island.

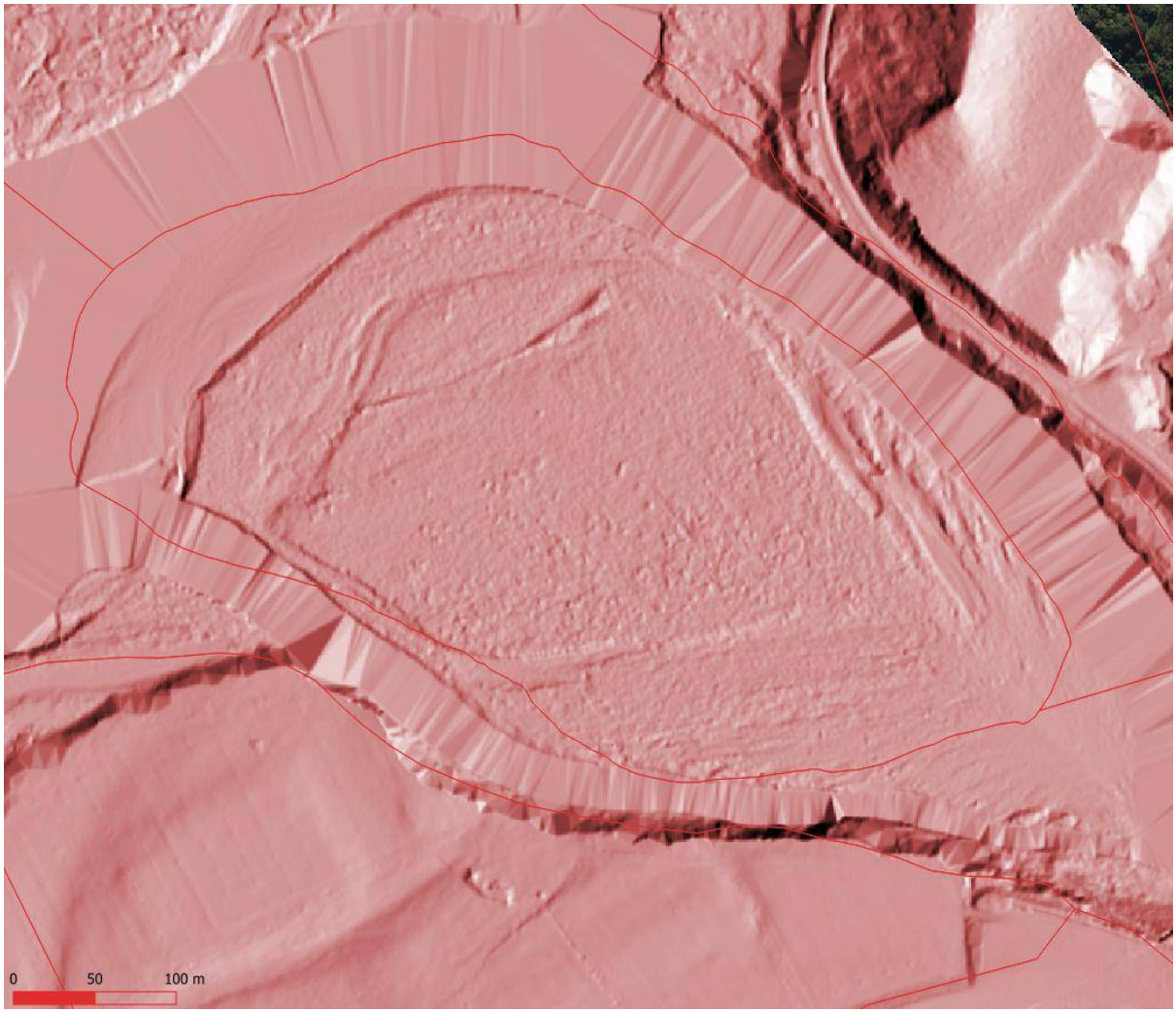

Figure 14: Hillshaded presentation of the digital elevation model based on the LiDAR data held by the regional council. It clearly shows the higher ground in the middle of the island.

Figure 15: Storage pit in the foreground.

Figure 16: Small built up bank on the edge of the higher ground.

Figure 17: One of the overgrown timber saw pits.

Figure 18: Area of the observed pit and possible pits indicated by the geomagnetic survey. Clearly visible is the 'quiet' background of the geomagnetic survey indicating top soil rather than gravel layers.

Figure 19: Geomagnetic survey within the area of the proposed bridge.

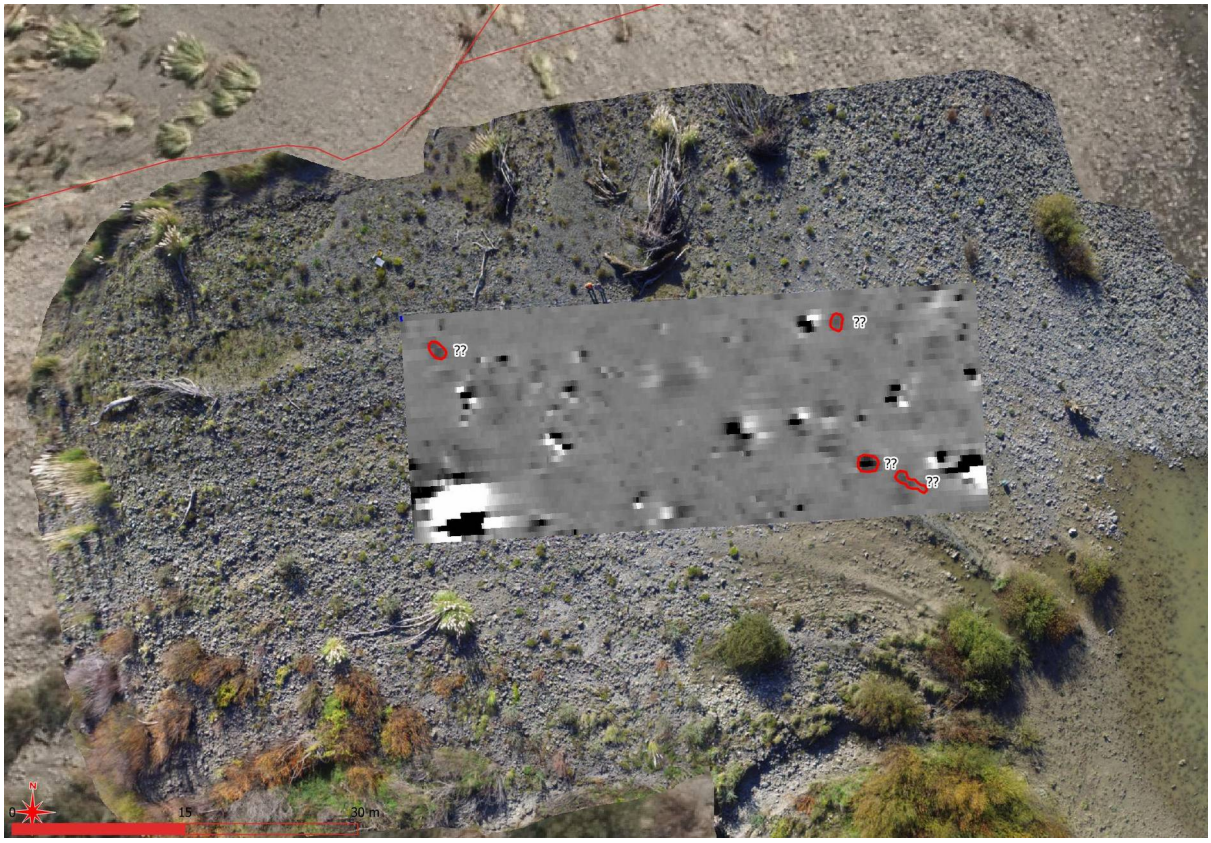

Figure 20: Geomagnetic survey and high resolution aerial at the southeastern end of the island. The variable background 'noise' from the boulders/gravel and the dipolar (black and white anomlies close together forming one anomaly) signatures of metal are clearly visible. In addition a number of anomalies that could indicate a surviving lower soil layer are marked up.

8. Discussion

The observed storage pit and the possible storage pits indicate by the geomagnetic survey in the middle of the island are consistent with the site record as a kainga. The documentation of graves likely within the high ground in the middle of the island would be consistent with the landform and oral traditions.

Nonetheless oral traditions placing further burials on areas of the island that are today either on or close to the gravel banks that are flooded every year. But the historic maps show a rapid change on the edges of the island. This means that many areas that are flooded today from time to time were all year round dry land sometime in the past.

This in turn means that there is still a small probability of lower soil layers having survived the regular flooding. This in turn also means that there is still a small probability of archaeological features like storage or burial pits having survived.

It is therefore recommended to apply for an authority to modify or destroy a possible archaeological site with Heritage New Zealand Pouhere Taonga under the Heritage New Zealand Pouhere Taonga Act 2014, if any earthworks or ancillary earthworks are planned on or close to the island.

9. Constraints and Limitations

The high running river prevented us to get heavier gear onto the island. The vegetation cover makes it difficult to observe any surface features and use any remote sensing methods.

10. Archaeological values assessment

10.1. Assessment Criteria

> "Archaeological values relate to the potential of a place to provide evidence of the history of New Zealand. This potential is framed within the existing body of archaeological knowledge, and current research questions and hypotheses about New Zealand's past. An understanding of the overall archaeological resource is therefore required" (NZHPT 2006).

The following value assessment is based on Gumbley (1995), Walton (2002).

The assessment criteria are split into two sections: Main Archaeological values and Additional values:

The first archaeological values look at an ***intra (within the) site*** *context.*

- **Condition**:
  How complete is the site? Are parts of it already damaged or destroyed?
  Condition varies from undisturbed to destroyed and every variation in between. It is also possible that the condition of various parts of the site varies.

- **Rarity/Uniqueness:**
  Rarity can be described in a local, regional and national context. Rarity can be rare as a site, or rarely examined or today a rare occurrence in the records.

- **Information Potential:**
  How diverse are the features to be expected during an archaeological excavation on the site?
  How complete is the set of features for the type of site?
  Can the site inform about a specific period or specific function?

The second set of archaeological values are ***inter site*** *(between sites) context* criteria:

- **Archaeological landscape / contextual value:**
  What is the context of the site within the surrounding archaeological sites?
  The question here is the part the site plays within the surrounding known archaeological sites. A site might sit amongst similar surrounding sites without any specific features. Or a site might occupy a central position within the surrounding sites. Though a site can be part of a complete or near complete landscape, whereby the value of each individual site is governed by the value of the completeness of the archaeological landscape.

- **Amenity value**:
  What is the context of the site within the physical landscape?
  This question is linked to the one above, but focuses onto the position of the site in the landscape. Is it a dominant site with many features still visible or is the position in the landscape ephemeral with little or no features visible? This question is also concerned with the amenity value of a site today and its potential for onsite education.

- **Cultural Association:**
  What is the context of the site within known historic events or to people?
  This is the question of known cultural association either by tangata whenua or other descendant groups. This question is also concerned with possible commemorative values of the site.

Additional values can include (NZ Historic Places Trust (NZHPT) 2004):

1 Architectural

2 Historic

3 Scientific

4 Technological

5 Aesthetic/Visual impact

6 Cultural

The last value, cultural, acknowledges if there is an impact onto Māori cultural values. This assessment will not evaluate these, but rather state their relevance in relation to the other values.

10.2. Archaeological Values Assessment

Indication of a seasonal settlement have been found and oral traditions alert to an urupa.

Table 4: Summary of archaeological values.

Sites	Value	Assessment
T24/32	Condition	The observed archaeological features are in very good condition.
	Rarity/ Uniqueness	A seasonal forage camp / travel lay over camp is rare. The position at one end of the gorge is a rare position.
	Contextual Value	The context within a travel cross road is important.
	Information Potential	Information potential is substantial, as the entire island is relatively undisturbed.
	Amenity Value	The amenity value of the island is substantial.
	Cultural Associations	See the CVA

10.3. Additional values assessment

There are no additional values.

Table 5: Summary of additional values.

Sites	Value	Assessment
T24/32	Architectural	n/a.
	Historic	n/a.
	Scientific	n/a.
	Technological	n./a.
	Aesthetic/Visual impact	n/a.
	Cultural	n./a.

11. Conclusions & Recommendations

The archaeology on the island is difficult to detect and investigate. Indications are that many features are still in good condition. The location at a crossroad of important travel routes next to an important food source is rare.

The regular flooding on the island might have left features sub surface even in places that today are close to the water. The shape of the island has been in flux since the first European records and likely long before then.

It is therefore recommended that no earthworks take place on the island or close to it without an authority issued by Heritage New Zealand Pouhere Taonga to modify an archaeological site.

12. Acknowledgments

The author would like to thank the board of the owner group, Jamie Forsman and Daniel Parker.

13. References

13.1. Primary Sources

LINZ – cadastral linework
aerial photograph

New Zealand Archaeological Association: Site Records via ArchSite

13.2. Secondary Sources

Bader, H.D., 2007a. *Geophysical survey, Long Bay, North Shore, Auckland*. Report prepared by Geometria Ltd for Landco Okura Ltd, Auckland.

Bader, H.D., 2007b. *Geophysical survey, R1098-10, North Shore, Auckland: Long Bay No. 3*. Report prepared by Geometria Ltd for Landco Okura Ltd, Auckland.

Brooks, A., Bader, H.D., Lawrence, S. and Lennon, J., 2009, Ploughzone Archaeology On An Australian Historic Site: A Case Study from South Gippsland, Victoria. *Australian Archaeology No. 68*: 37 – 44.

Goldberg, P., Macphail, R. I., 2006. *Practical and Theoretical Geoarchaeology*, Blackwell Publishing, Malden.

Gumbley, W. 1995. 'Guidelines for the provision of archaeological information and assessment for authority applications under section 11 or 12 of the Historic Places Act 1993'. *Archaeology in New Zealand* 38(2): 100-105.

Johnson, J. K. (ed.), 2006. *Remote Sensing in Archaeology*, The University of Alabama Press, Tuscaloosa.

Ministry for the Environment (MfE). 1999. *A guide to preparing a basic assessment of environmental effects*. http://www.mfe.govt.nz/publications/rma/basic-aee-prep-guide-mar99.pdf

NZ Historic Places Trust (NZHPT). 2004. *Heritage Management Guidelines for Resource Management Practitioners.* http://www.historic.org.nz/publications/HM_guidelines.html

NZ Historic Places Trust (NZHPT). 2006. Archaeological Guidelines Series No.2: Guidelines for Writing Archaeological Assessments. http://www.historic.org.nz/ProtectingOurHeritage/Archaeology/Arch_Guidelines.aspx#assessment

Phillips, C and Geometria 2007. *Archaeological Assessment of the Long Bay Structure Plan Area at Te Oneroa o Kahu (Long Bay).* Report prepared for Landco Okura Ltd

Walton, T. 2002. 'Assessing archaeological value'. *Archaeology in New Zealand* 45(3): 220-236.

Zickgraf, B., 1999. *Geomagnetische und Geoelektrische Prospektion in der Archaeologie. Systematik – Geschichte –Anwendung*, MA Thesis, Seminar fuer Vor- und Fruehgeschichte, Philipps Universitaet Marburg.

14. Appendices

- Site Record Form
-

Addendum 1

Archaeological Survey and Assessment of Significance and Effects: Parahaki Island, Manawatu

Ground Penetrating Radar Survey

Prepared for:

Kaihautū Consulting
18 Ashcroft Avenue
Auckland 2022

Prepared by:

Archaeology Solutions Ltd
PO Box 48134
Blockhouse Bay
AUCKLAND 0644
phone: (09) 626 7860
e-mail: info@archaeologysolutions.co.nz

Date: February 2020

1. Executive Summary

This addendum should be read in conjunction with:

Bader, H.D. 2019, *Archaeological Survey and Assessment of Significance and Effects: Parahaki Island, Manawatu*, unpublished report to Kaihautū Consulting, Auckland.

Parahaki Island is recorded as an urupa and papkainga to its full extent (T24/32). This is based on historical sources and oral traditions.

The shape of the island has changed substantially during the time European maps were made.

It seems likely that during the shifts of the shape of the island not all material erodes and therefore there is a small probability that archaeological features survive under the areas that are occasionally flooded today. This model is supported by the geomagnetic survey of the gravel bank in 2019, that shows features - despite the strong disturbances from recently accumulated deposits (including ferrous iron) - that could be archaeological in nature.

During the recent Ground Penetrating Radar survey two further anomalies indicate possible back filled pits, that could be archaeological features. Of interest too is that this survey shows a line between what seems layered ground and non layered gravel on the up stream part of the survey. The recent low level of the river allowed us to undertake the survey in an area that is usually covered by water. But it seems that a substantial part of it was at some time part of the island and only recent events, probably related to erosion issues caused by the European forest clearance in the 19th and 20th centuries, washed it away and at the same time deposited loose gravel in front of the old edge of the island. This interpretation model is yet unconfirmed but consistent with the data recorded during both surveys.

It is therefore recommended that any earthworks on or close to the island – independent from the modern boundary lines – should be conducted under a general authority to modify the site T24/32 under the Heritage New Zealand Pouhere Taonga Act 2014.

Alternatively an exploratory authority investigating the nature of these six locations could shed further light on the matter.

Quality Information

Title: Addendum 1
Archaeological Survey and Assessment of Effects, Parahaki Island, Manawatu

Ground Penetrating Radar Survey

Reference: ASL19_09

Author(s): Dr. Hans-Dieter Bader

Revision History:

Draft	19/02/2020	Bader
Review		
Revision		
Final		

Cover photo: Southeaster end of the island in 2020 (photo: Hans-Dieter Bader)

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Contents:

Figures:

2. Introduction

Parahaki Island at the mouth of the Manawatū Gorge (Te Apiti) is still in Maori landownership. It is recorded as an archaeological site but the archaeological features are either hard to detect or not visible on the surface. The site record is based on historical information and oral traditions. Proposed development of a new highway linking Palmerston North to the Woodville after the road through Te Apiti has been destroyed will probably impact onto the island.

In 2019 Kaihautū Consulting instructed Archaeology Solutions Ltd to undertake an archaeological survey and values assessment of Parahaki Island to contribute to the Cultural Value Assessment for the island.

The report is unpublished:
Bader, H.D. 2019, *Archaeological Survey and Assessment of Significance and Effects: Parahaki Island, Manawatu*, unpublished report to Kaihautū Consulting, Auckland.

This report is an addendum to the above and should be read in conjunction with it.

2.1. Brief

The brief was to undertake a ground penetrating radar survey on the southeastern end of the island, close to any planned earthworks. The water level of the river was very low and a large gravel area that is usually under water could be easily accessed, as the island was linked to the steep stream bank on the southern side of the river.

3. Methodology

3.1. Investigation Procedure

For this report information was recorded using handheld GPS and digital photography as well as the data logger linked to the ground penetrating radar.

3.2. Site Investigation

One site visit was undertaken late January 2020. A ground penetrating radar survey was undertaken in the south eastern end of the island.

Figure 1: Overview over the island in 2017 showing the cadastral boundary lines, which are somewhat arbitrary as the shape of the island is in flux.

3.3. Methodology – Ground Penetrating Radar

One survey grid plot was laid out over an area of 26 m x 60 m. It was surveyed using a Leica DS 2000 with a 250 MHz and 700 MHz antenna. The 250 MHz proved more suitable for this survey. A scan was performed every metre on this grid.

Ground penetrating radar in archaeological research is using the reflection of radar waves usually in the 200 MHz to 900 MHz range (Goldberg et al 2006, p.313). It competes with Soil Resistivity and Magnetometry which is the method most commonly used due to its speed and reliability in widely different soil conditions (Goldberg et al 2006, p. 315, Johnson 2006, ch.9 by K. Kvamme).

In this particular area of Parahaki Island gravel and iron bolts on the surface hinder clean results from the geomagnetic survey gear, therefore we used the Ground Penetrating Radar. The surface material ended up on the island recently when the road got destroyed.

Figure 2: GPR survey area in February 2020, showing a very low flowing river. View towards the gorge.

4. Results

The overall survey shows a layered underground, not dissimilar to regular subsoil. It is possible that this ground has been built up and stabilised a long time ago. In the southern quarter of the survey area however these layers dip away and are replaced by a much more mixed background. This hints at a more recent build up of this part of the survey area.

The geomagnetic survey shows a more typical gravel bank background. Parts of the recent slips including bits of tarseal and metal from the road construction can be seen mixed into the gravel. These magnetic signatures of metal are clearly visible in this survey area. But beyond the background of the gravel and the modern dipolar signature of metal a number of anomalies seem to indicate additional features below the surface belonging neither to a boulder/gravel nor a metal anomaly. The survey results look similar to the gravel bank near Blenheim, which is not a recent build up.

It can be contemplated that at some stage the island extended over the area that is now flooded regularly. And that modern flooding took away the top soil layer but left the lower soil layers intact below the gravel layer. There is therefore a small probability that archaeological features within the lower soil layers are still in situ.

In addition to the four anomalies identified during the geomagnetic survey, two further anomalies observed each in two adjacent scans indicate back filled pits.

The geophysical anomalies are consistent with back filled pits of the right size for burials, but without intrusive investigations this is just one probable explanation. It can not counted out that these anomalies could be even natural voids between rocks that have filled up with sand and small gravel over time.

Nonetheless it is recommended to treat them as possible burials as this is the explanation that is consistent with the survey results and supported by the oral traditions.

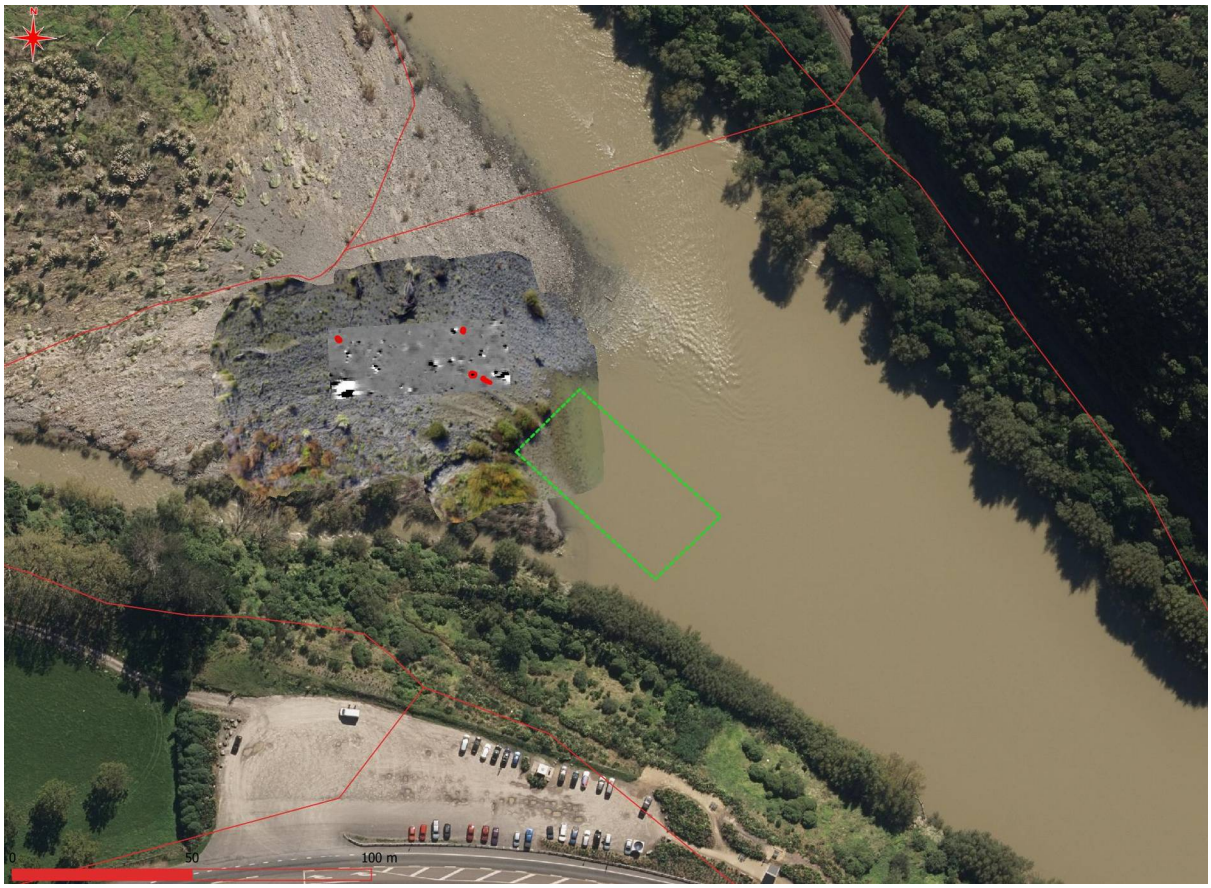


Figure 3: Overview over the two areas of geophysical surveys showing the cadastral boundary lines.

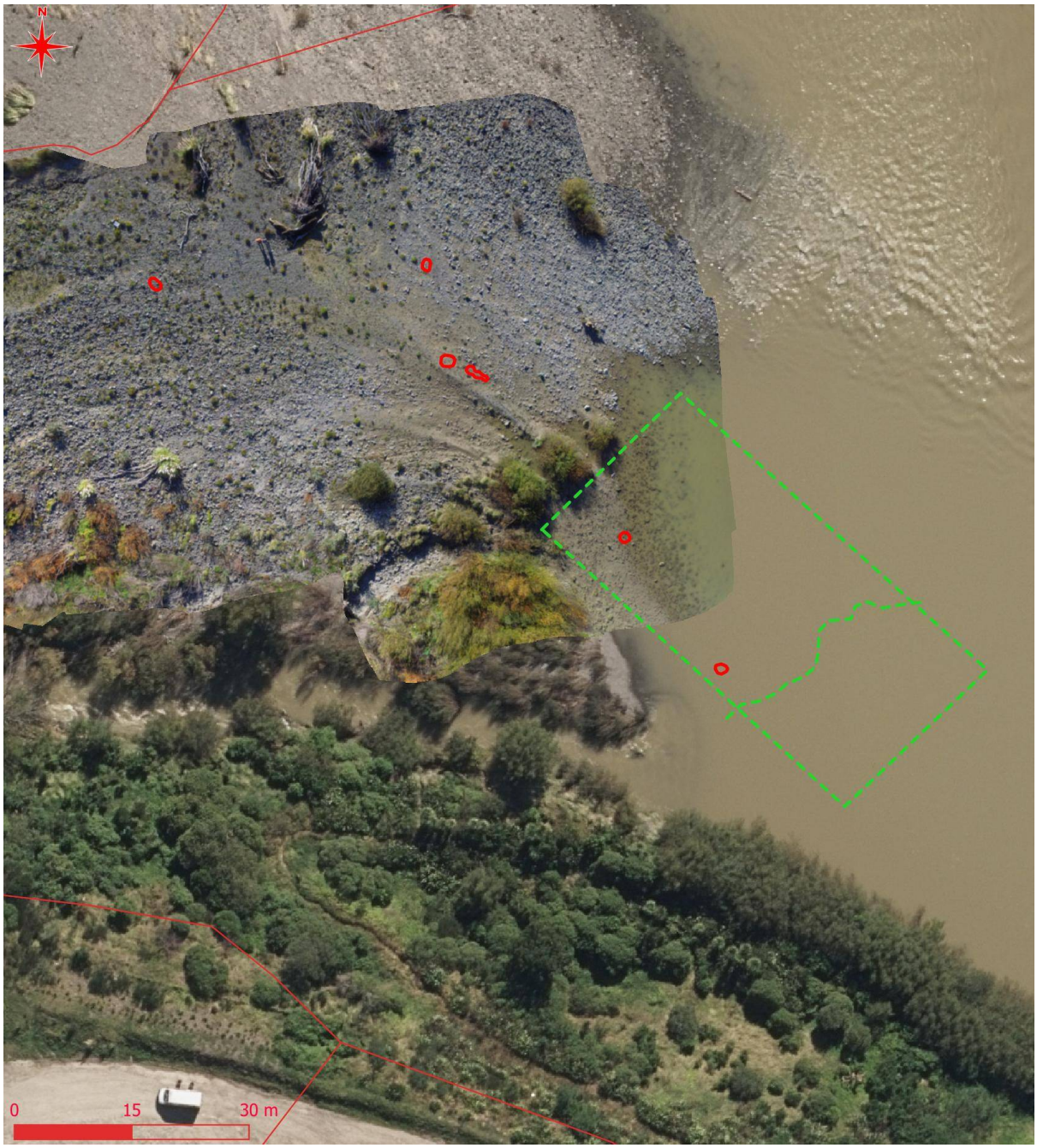


Figure 4: Location of anomalies shown over an aerial that shows the river at a higher level than during the GPR survey. The entire area of the GPR survey (in green) was dry land during the survey.

The above picture shows the locations of the probably pits as well as the boundary between the area of layered subsoil and strongly mixed sub surface layer. This strongly mixed layer is interpreted as a recently laid down erosion material in contrast to the layered subsoil to the west of this line which could be a much older part of the island.

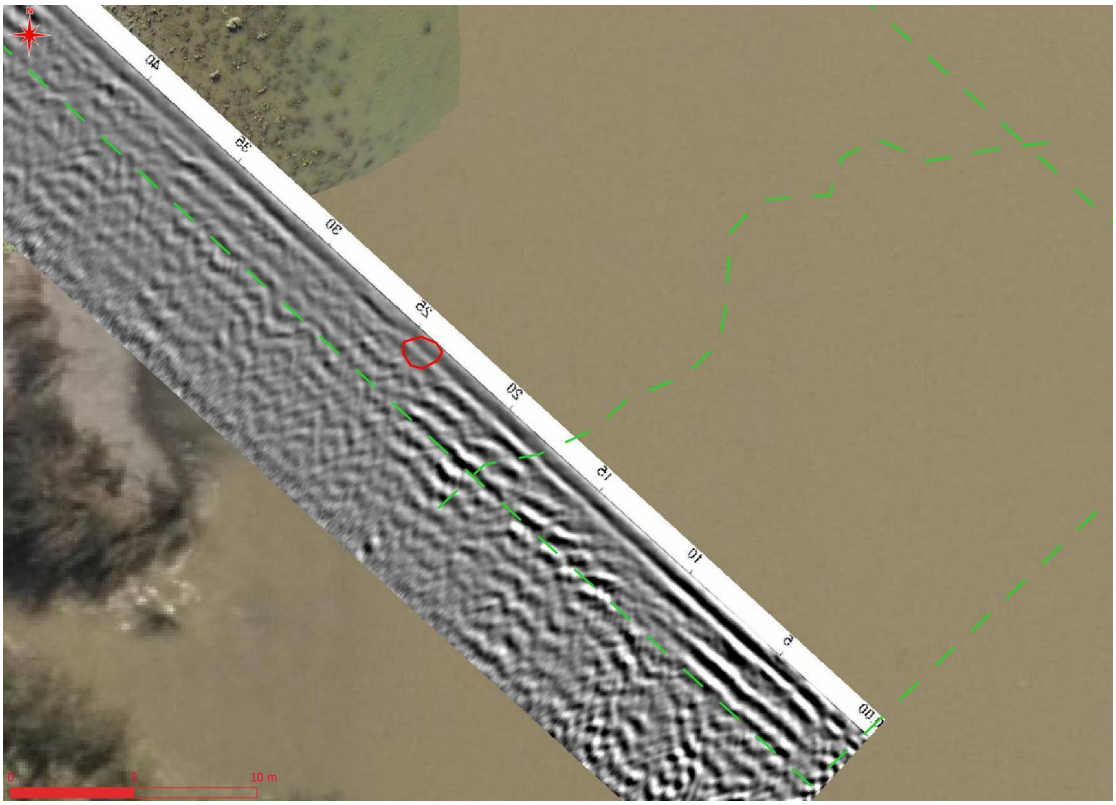


Figure 5: Anomaly showing in Profile 4 just under the unbroken uppermost gravel layer. Also note the change further to the southeast.

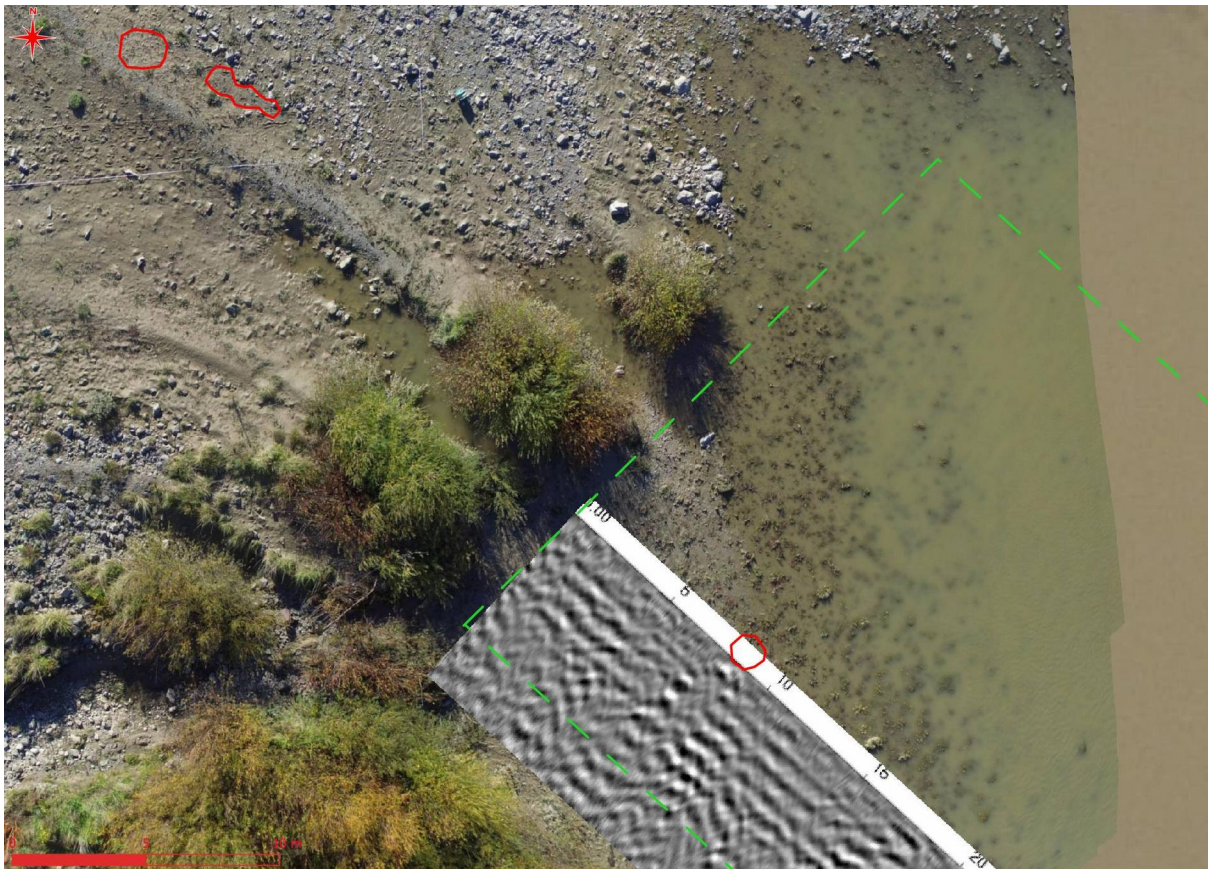


Figure 6: Anomaly 2 along profile 8. Location of some anomalies from the previous survey are also shown

5. Discussion

The observed storage pit and the possible storage pits indicate by the geomagnetic survey in the middle of the island are consistent with the site record as a kainga. The documentation of graves likely within the high ground in the middle of the island would be consistent with the landform and oral traditions.

Nonetheless oral traditions placing further burials on areas of the island that are today either on or close to the gravel banks that are flooded every year. But the historic maps show a rapid change on the edges of the island. This means that many areas that are flooded today from time to time were all year round dry land sometime in the past. This interpretation is supported by the GPR survey in the south eastern corner of the island.

This in turn means that there is still a small probability of lower soil layers having survived the regular flooding. This in turn also means that there is still a small probability of archaeological features like storage or burial pits having survived.

Recommendations:

It is therefore recommended to apply for an authority to modify or destroy a possible archaeological site with Heritage New Zealand Pouhere Taonga under the Heritage New Zealand Pouhere Taonga Act 2014, if any earthworks or ancillary earthworks are planned on or close to the island.

The nature of the geophysical anomalies could be further investigated under an exploratory authority issued by Heritage NZ Pouhere Taonga under the Heritage New Zealand Pouhere Taonga Act 2014.

6. Constraints and Limitations

Any geophysical survey is indicative only and based on comparative results from other sites that were ground tested. Without ground tests the explanations presented here are probable but not definitive.

7. Acknowledgments

The author would like to thank the board of the owner group, Jamie Forsman and Daniel Parker.

8. References

8.1. Primary Sources

LINZ – cadastral linework
aerial photograph

New Zealand Archaeological Association: Site Records via ArchSite

8.2. Secondary Sources

Bader, H.D., 2007a. *Geophysical survey, Long Bay, North Shore, Auckland*. Report prepared by Geometria Ltd for Landco Okura Ltd, Auckland.

Bader, H.D., 2007b. *Geophysical survey, R1098-10, North Shore, Auckland: Long Bay No. 3*. Report prepared by Geometria Ltd for Landco Okura Ltd, Auckland.

Brooks, A., Bader, H.D., Lawrence, S. and Lennon, J., 2009, Ploughzone Archaeology On An Australian Historic Site: A Case Study from South Gippsland, Victoria. *Australian Archaeology No. 68*: 37 – 44.

Goldberg, P., Macphail, R. I., 2006. *Practical and Theoretical Geoarchaeology*, Blackwell Publishing, Malden.

Gumbley, W. 1995. 'Guidelines for the provision of archaeological information and assessment for authority applications under section 11 or 12 of the Historic Places Act 1993'. *Archaeology in New Zealand* 38(2): 100-105.

Johnson, J. K. (ed.), 2006. *Remote Sensing in Archaeology*, The University of Alabama Press, Tuscaloosa.

Ministry for the Environment (MfE). 1999. *A guide to preparing a basic assessment of environmental effects*. http://www.mfe.govt.nz/publications/rma/basic-aee-prep-guide-mar99.pdf

NZ Historic Places Trust (NZHPT). 2004. *Heritage Management Guidelines for Resource Management Practitioners.* http://www.historic.org.nz/publications/HM_guidelines.html

NZ Historic Places Trust (NZHPT). 2006. Archaeological Guidelines Series No.2: Guidelines for Writing Archaeological Assessments. http://www.historic.org.nz/ProtectingOurHeritage/Archaeology/Arch_Guidelines.aspx#assessment

Phillips, C and Geometria 2007. *Archaeological Assessment of the Long Bay Structure Plan Area at Te Oneroa o Kahu (Long Bay).* Report prepared for Landco Okura Ltd

Walton, T. 2002. 'Assessing archaeological value'. *Archaeology in New Zealand* 45(3): 220-236.

Zickgraf, B., 1999. *Geomagnetische und Geoelektrische Prospektion in der Archaeologie. Systematik – Geschichte –Anwendung*, MA Thesis, Seminar fuer Vor- und Fruehgeschichte, Philipps Universitaet Marburg.

9. Appendix

- GPR profiles

  Each profile is shown with the top aligned to the survey line and the depth profile "folded up" to the left.

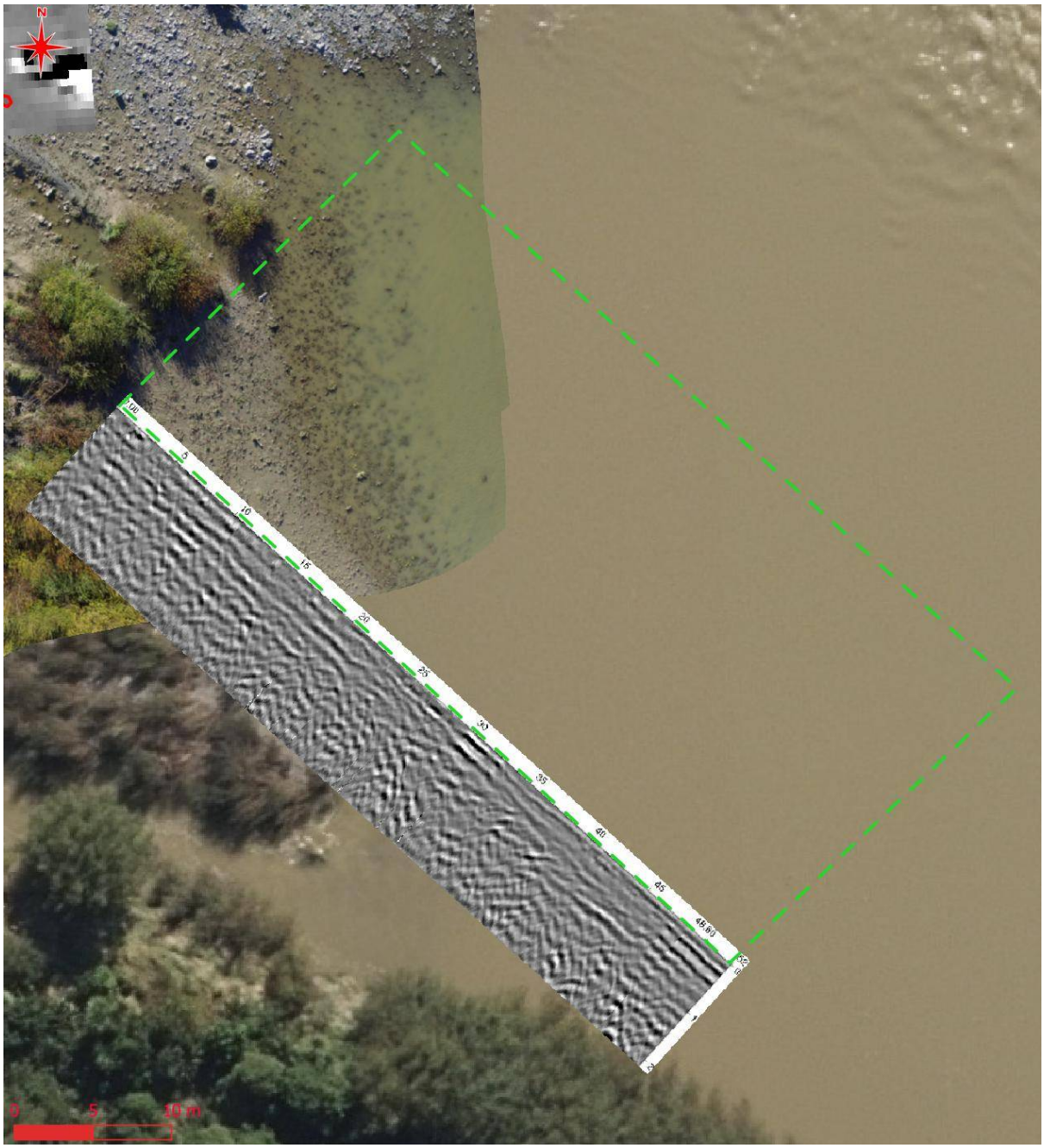


Figure 7: Profile 1

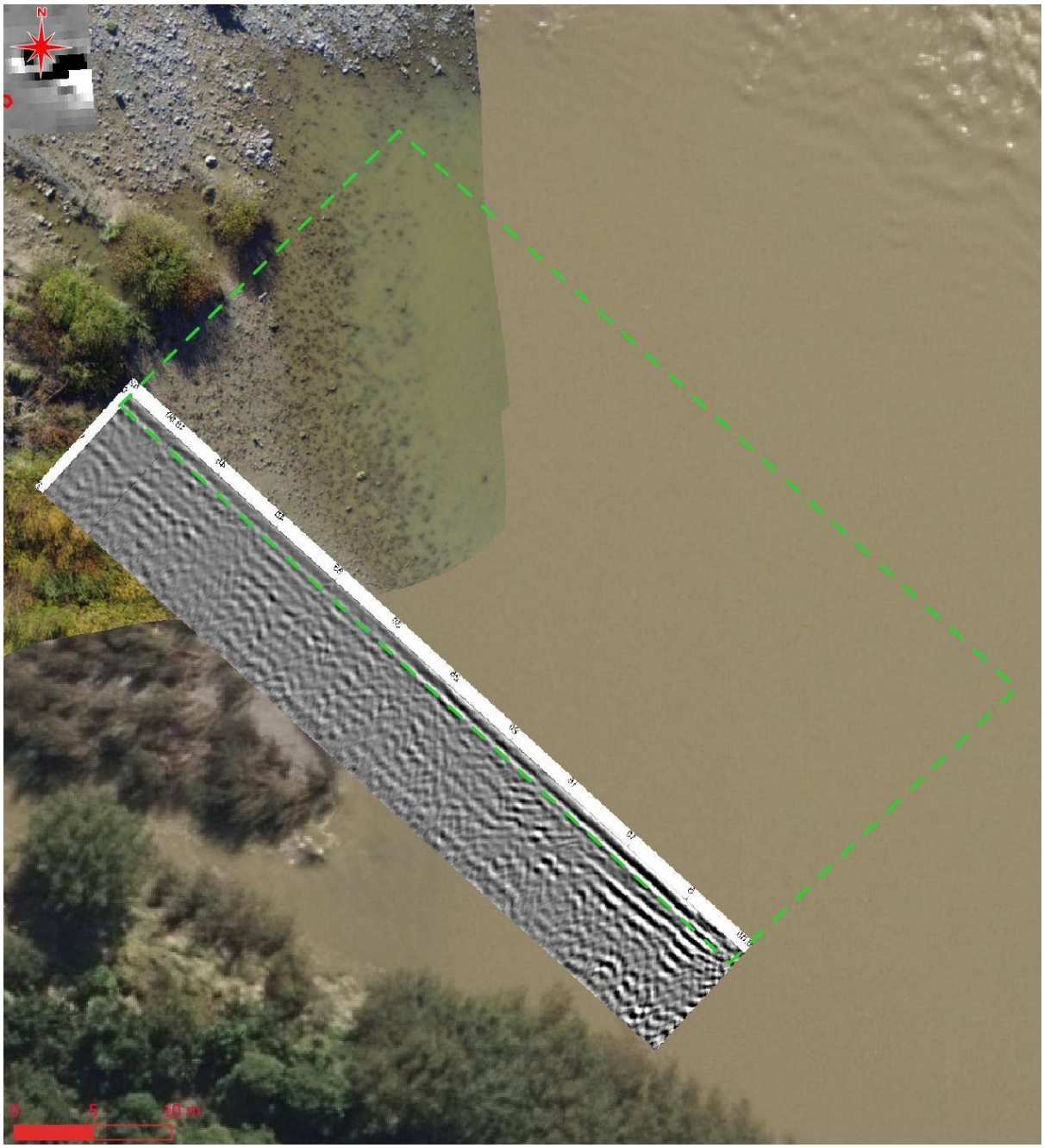


Figure 8: Profile 2

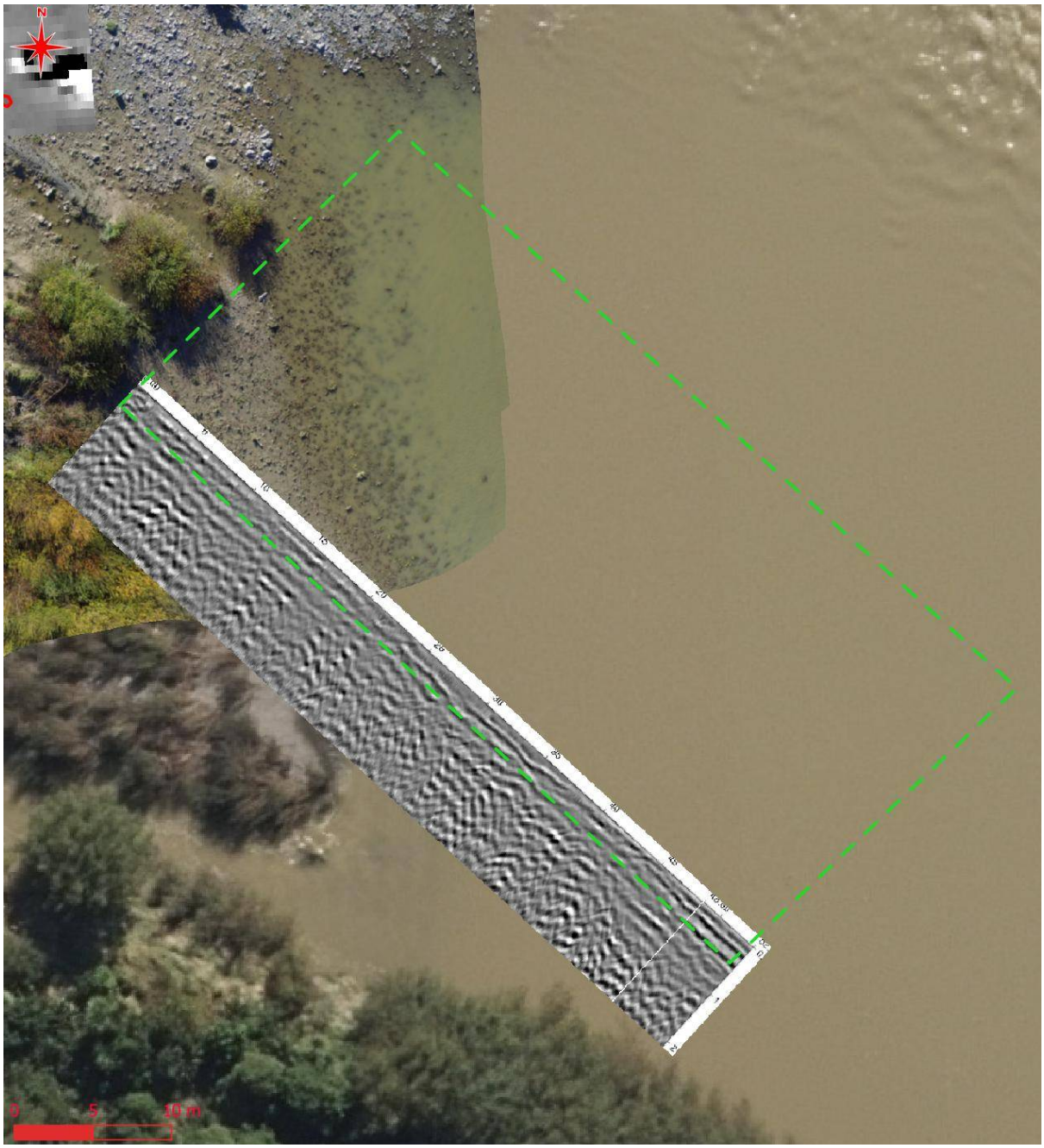


Figure 9: Profile 3

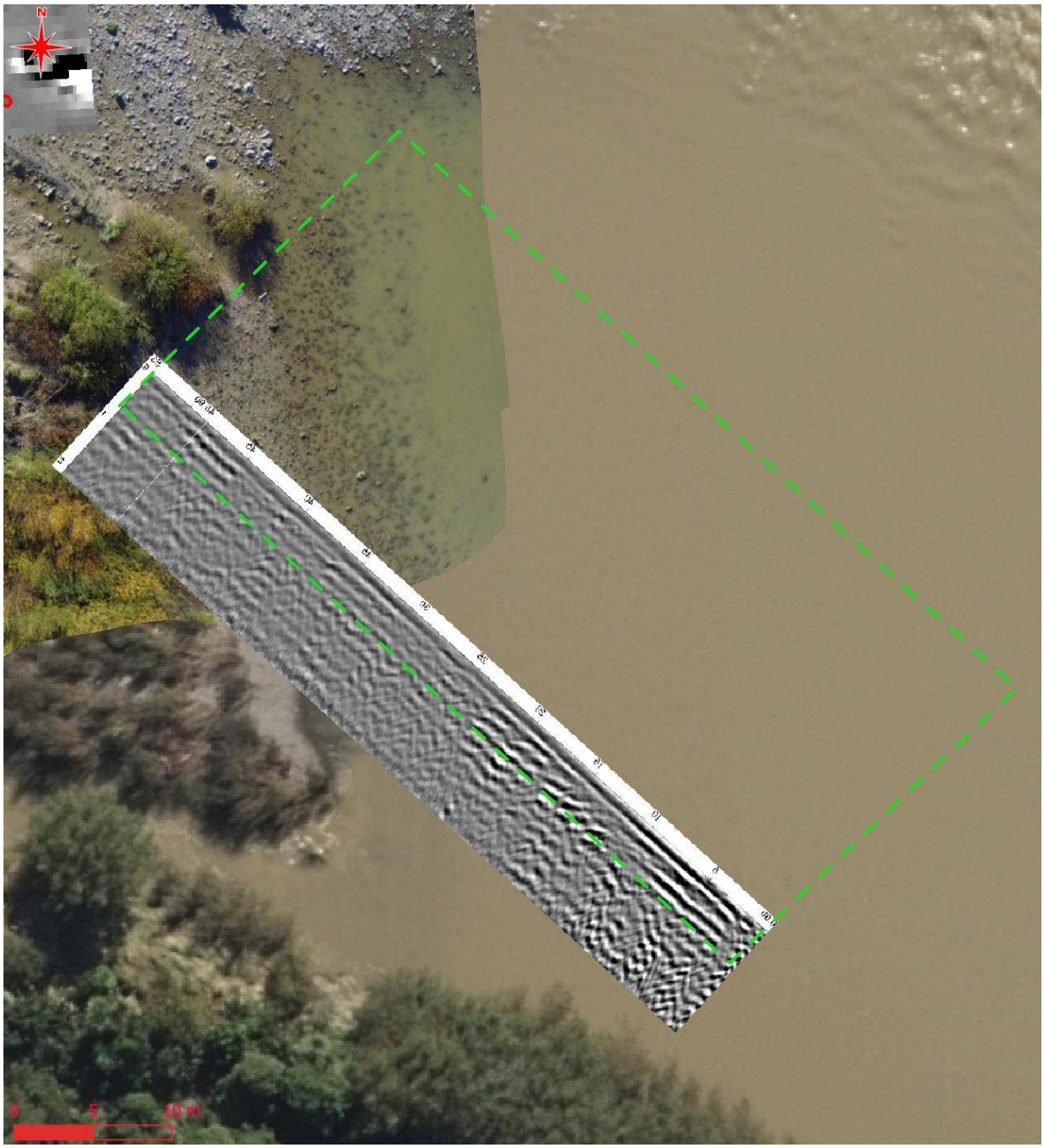


Figure 10: Profile 4

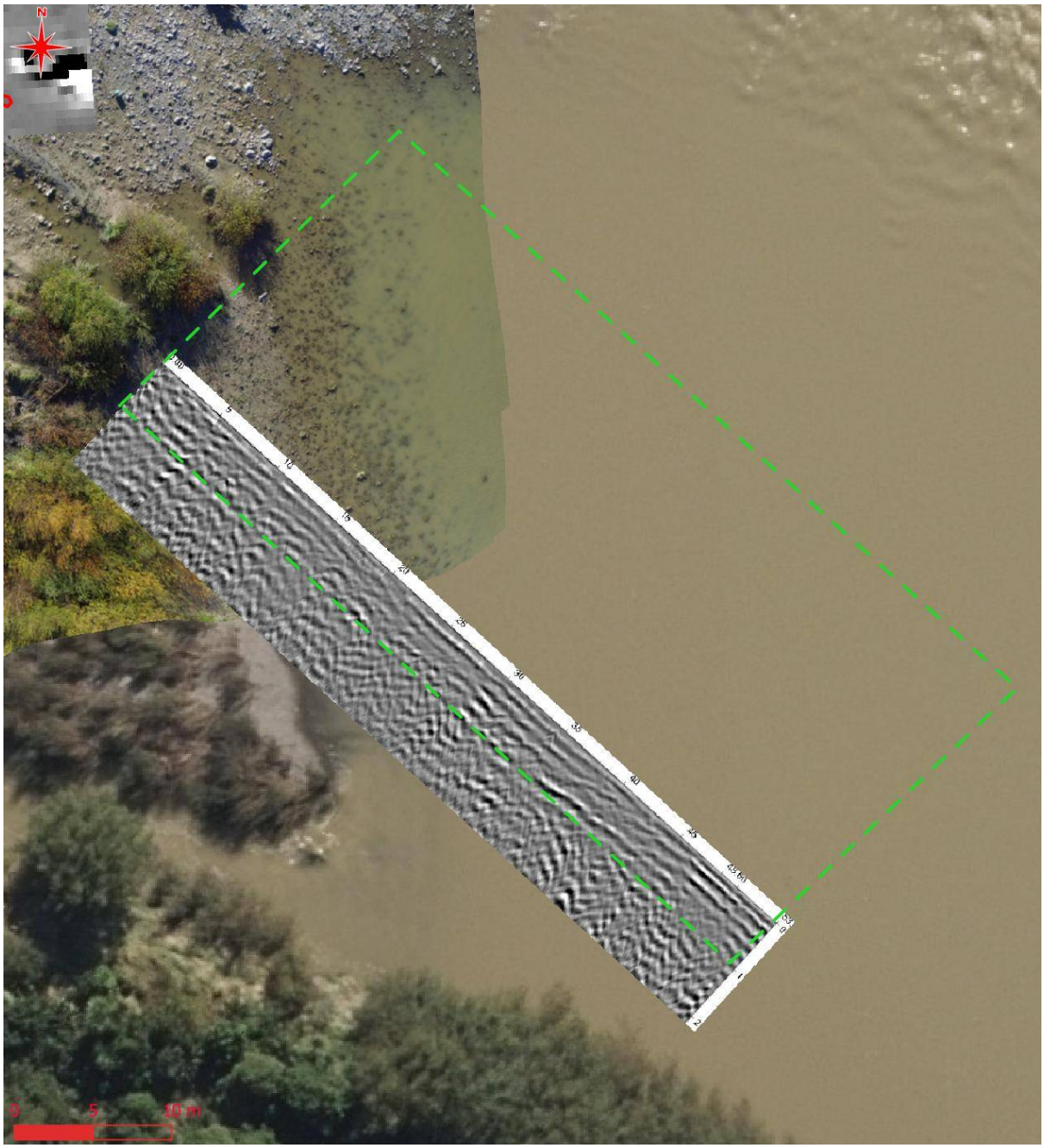
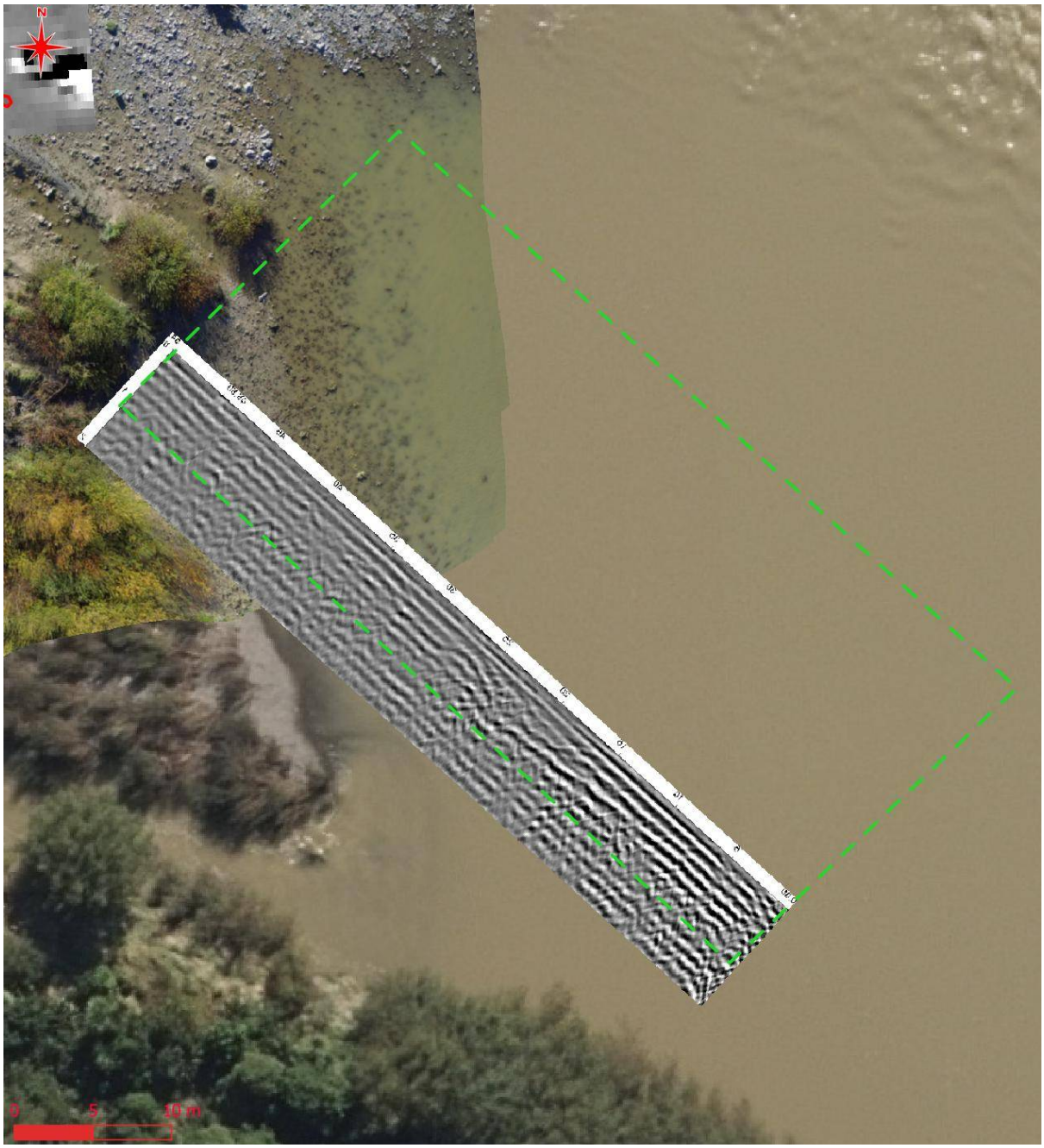


Figure 11: Profile 5



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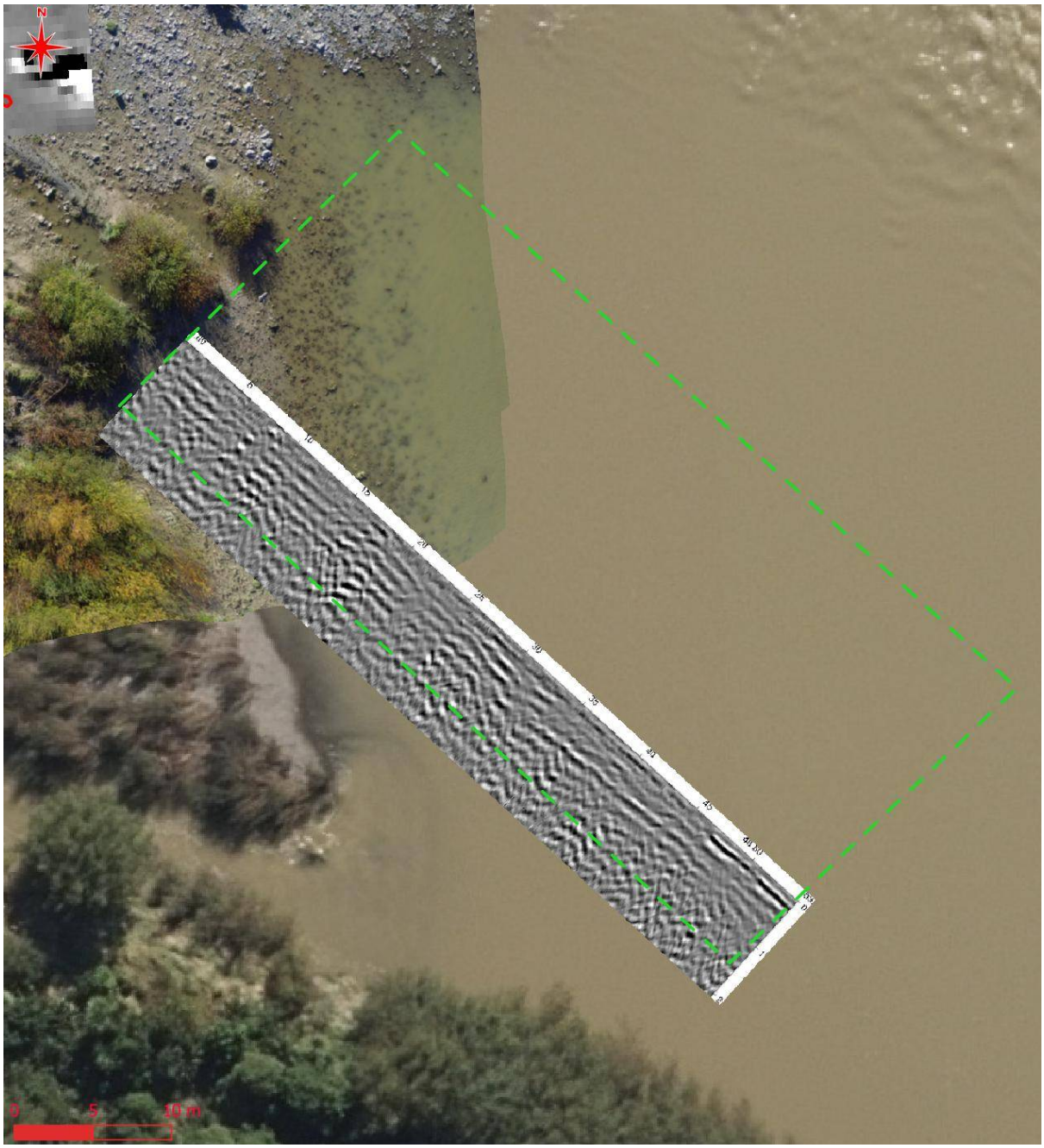


Figure 13: Profile 7

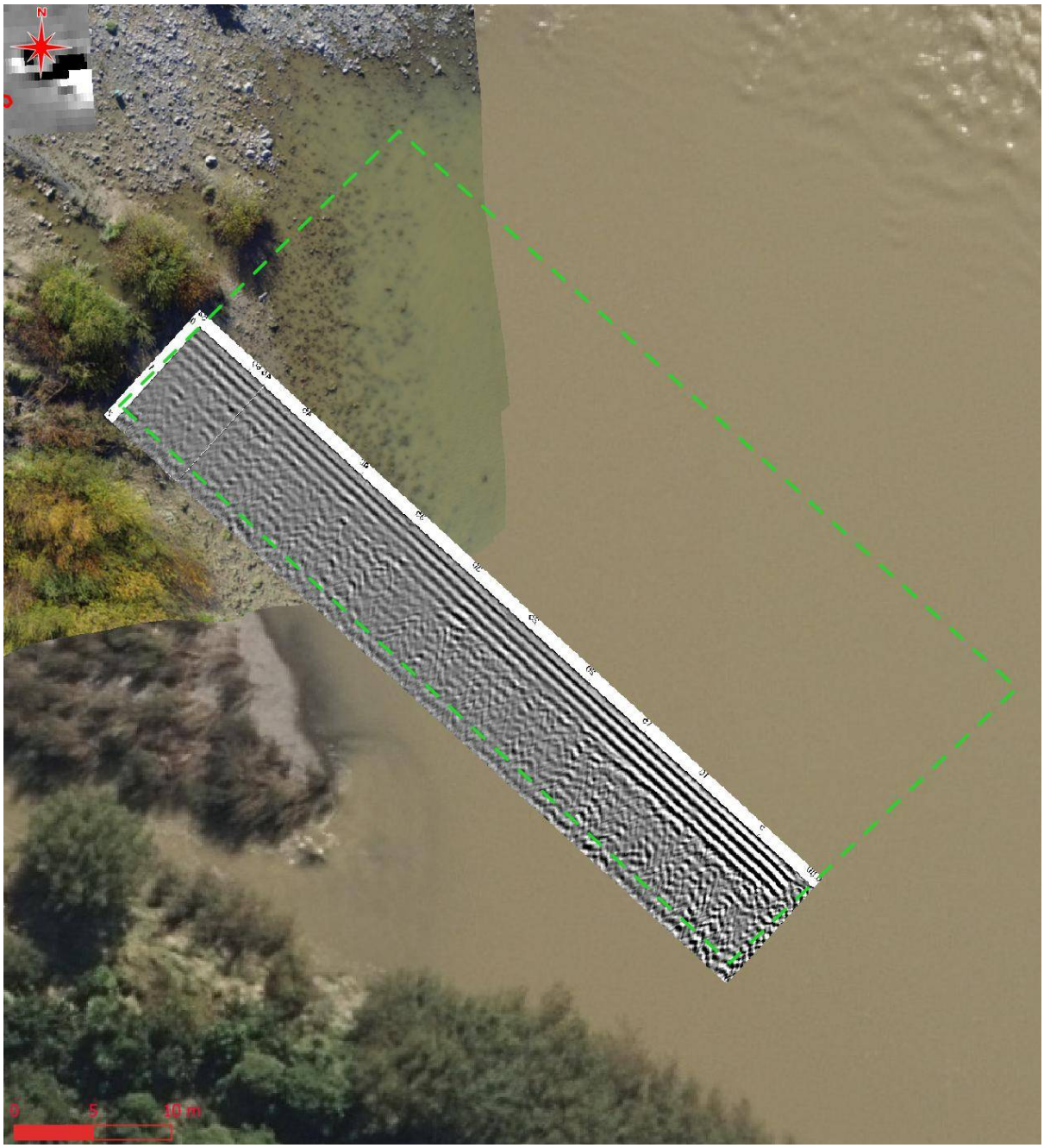
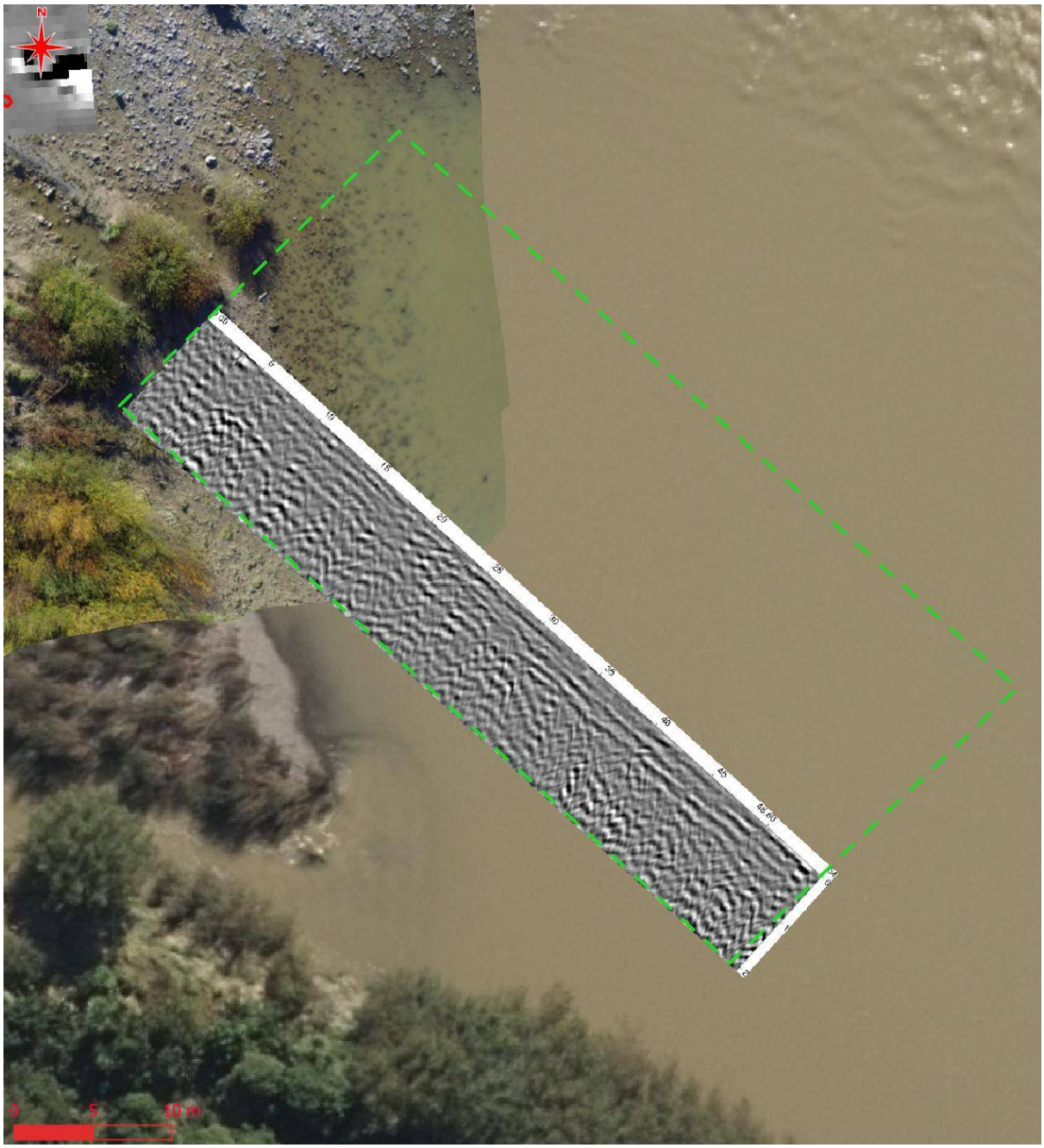


Figure 14: Profile 8



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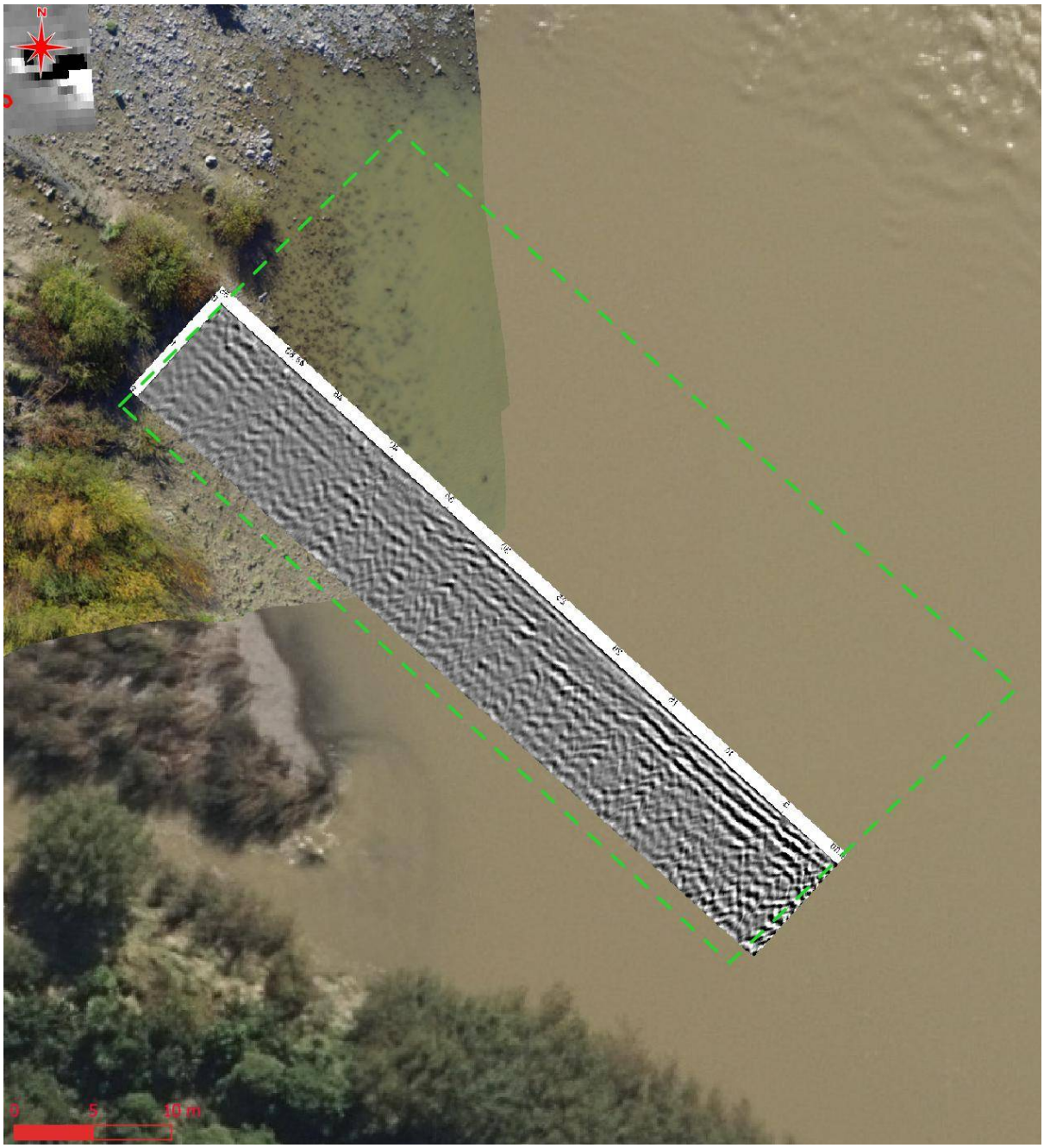

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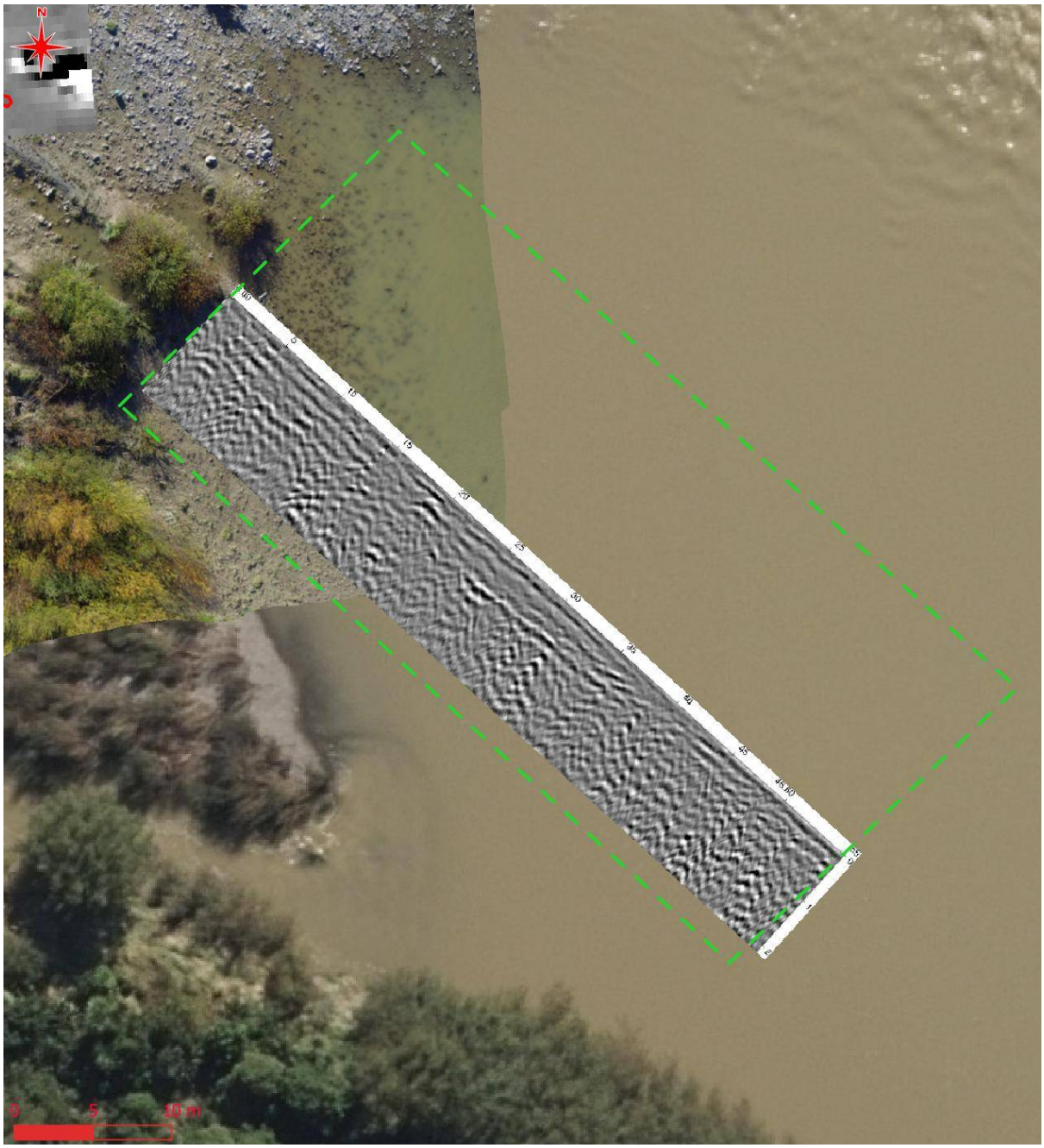
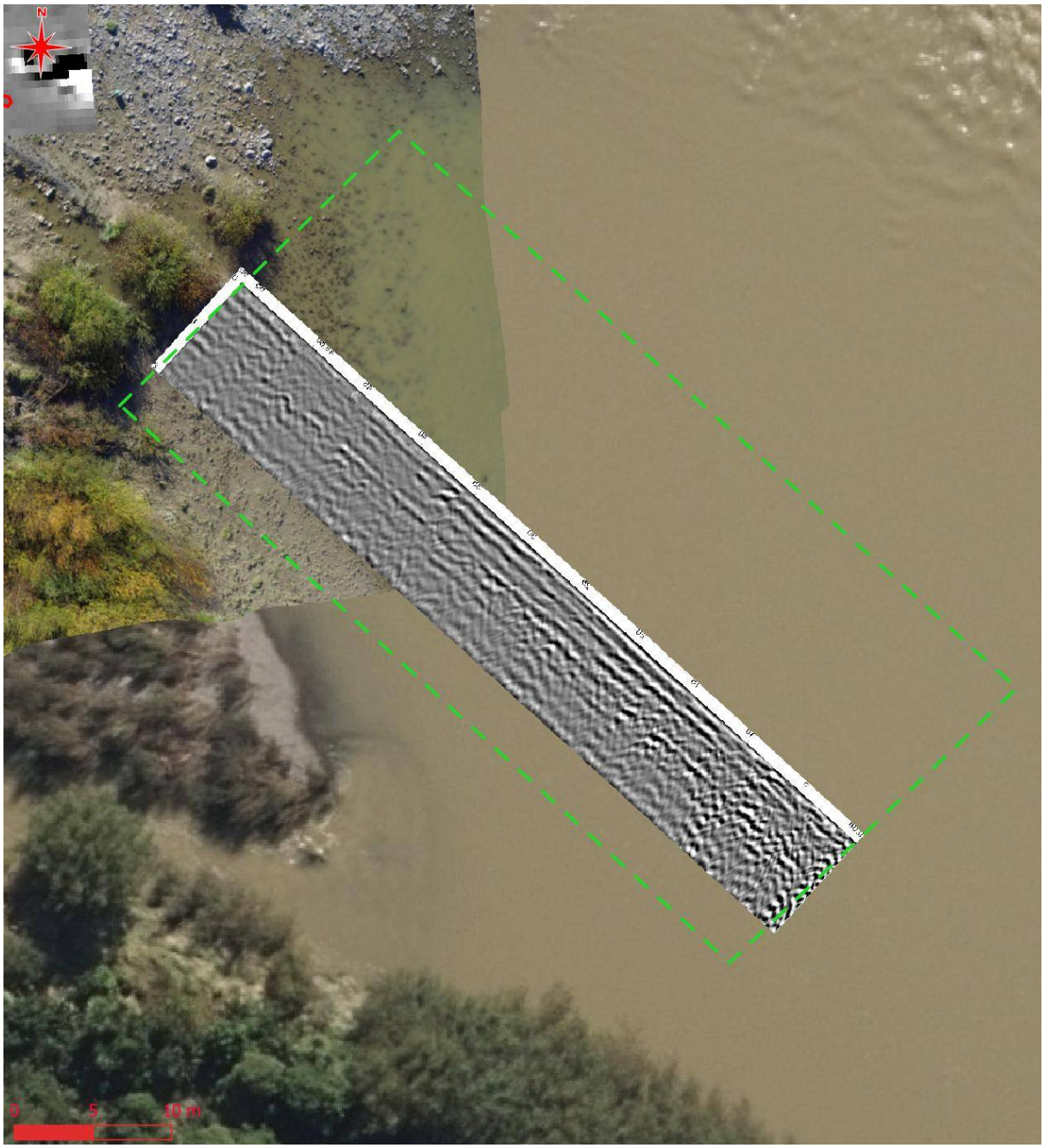


Figure 17: Profile 11



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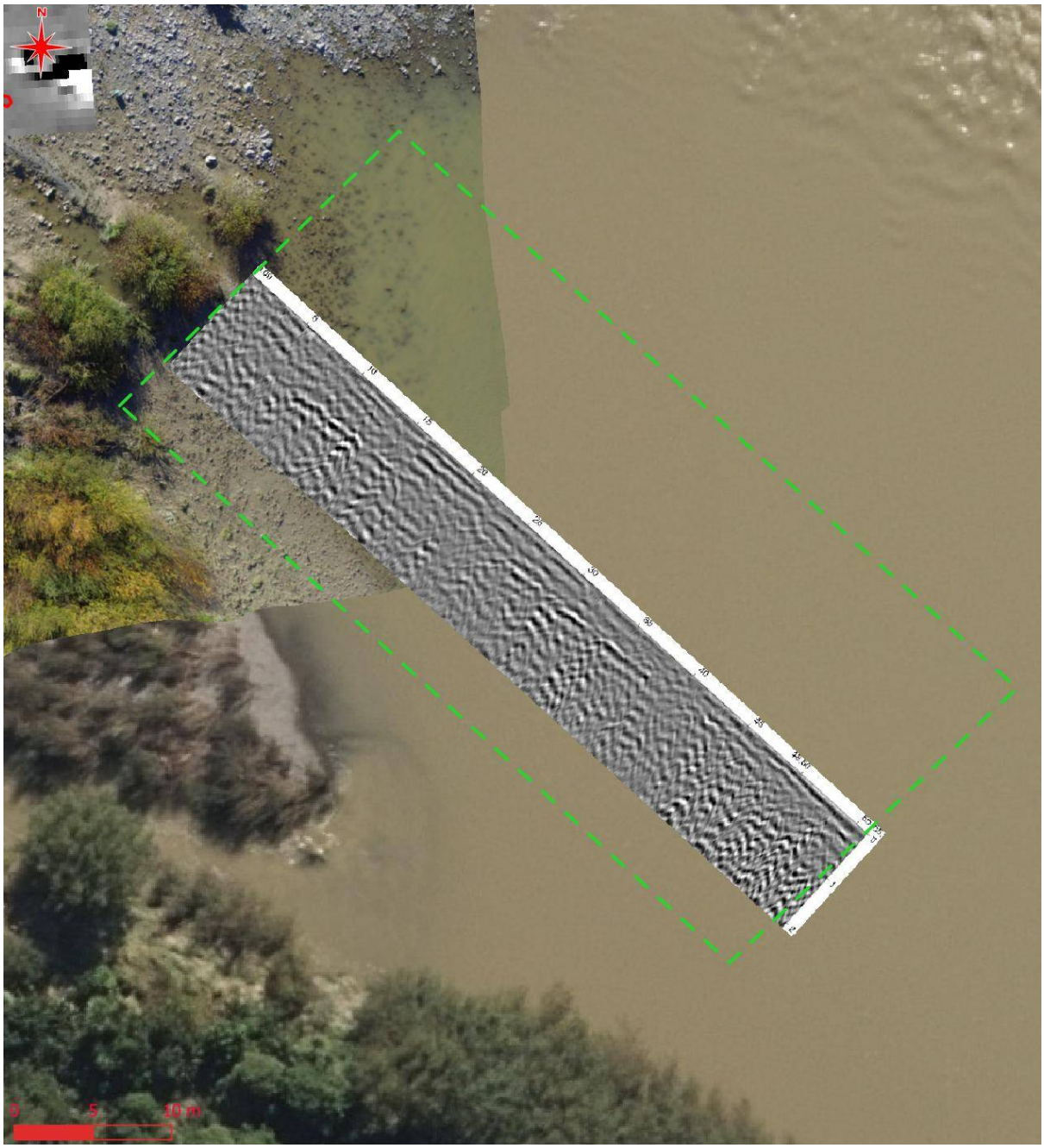

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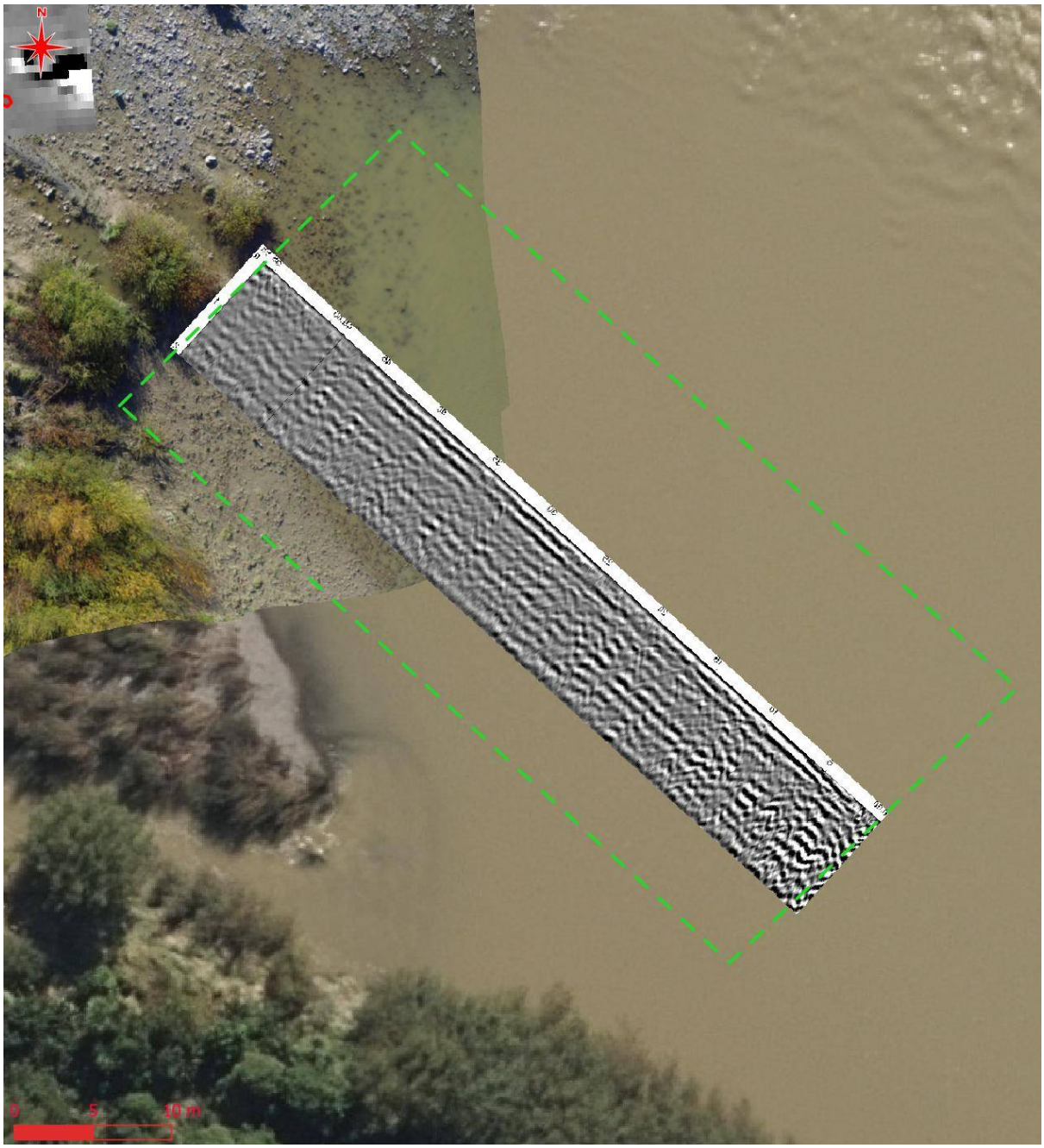

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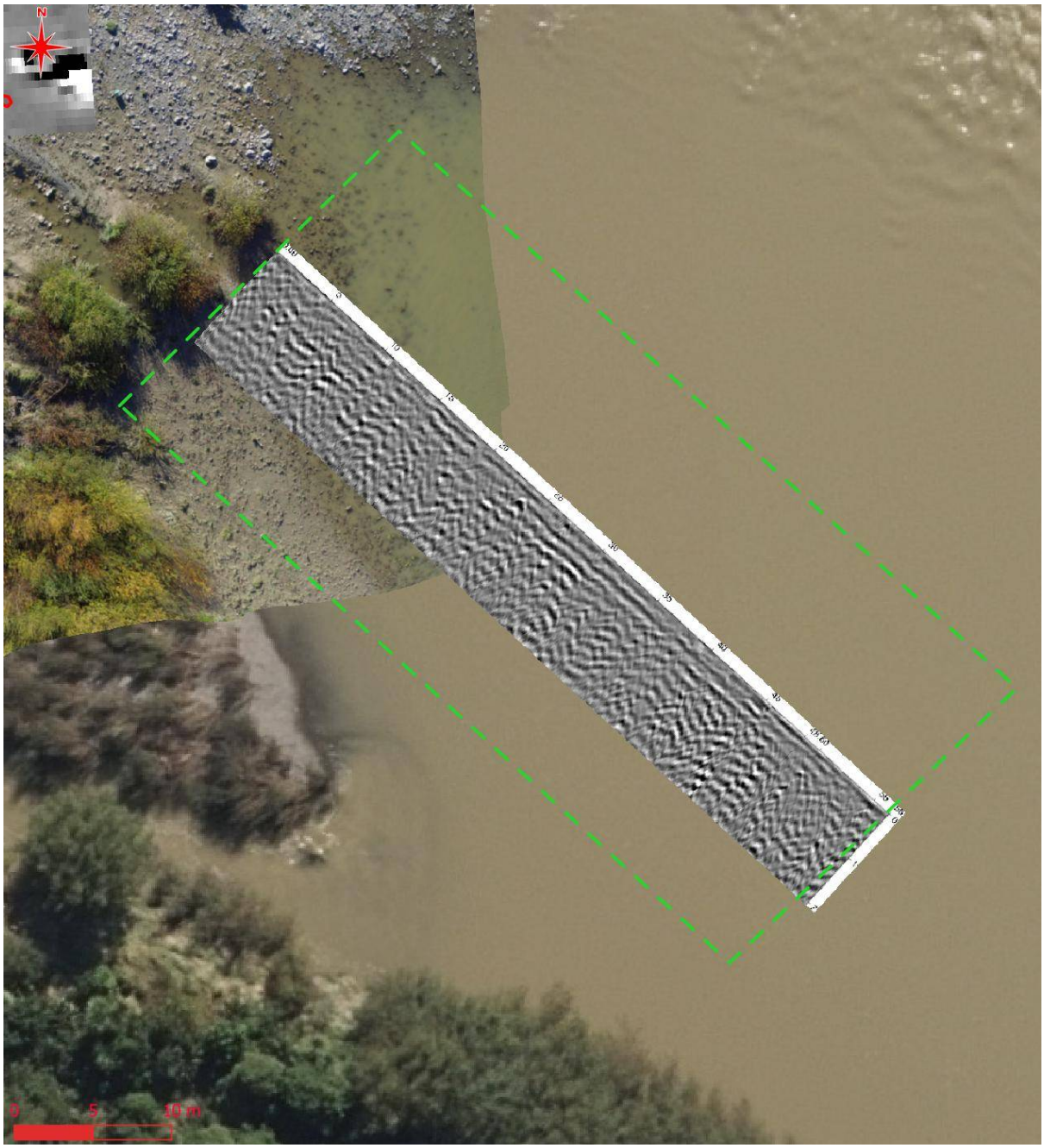

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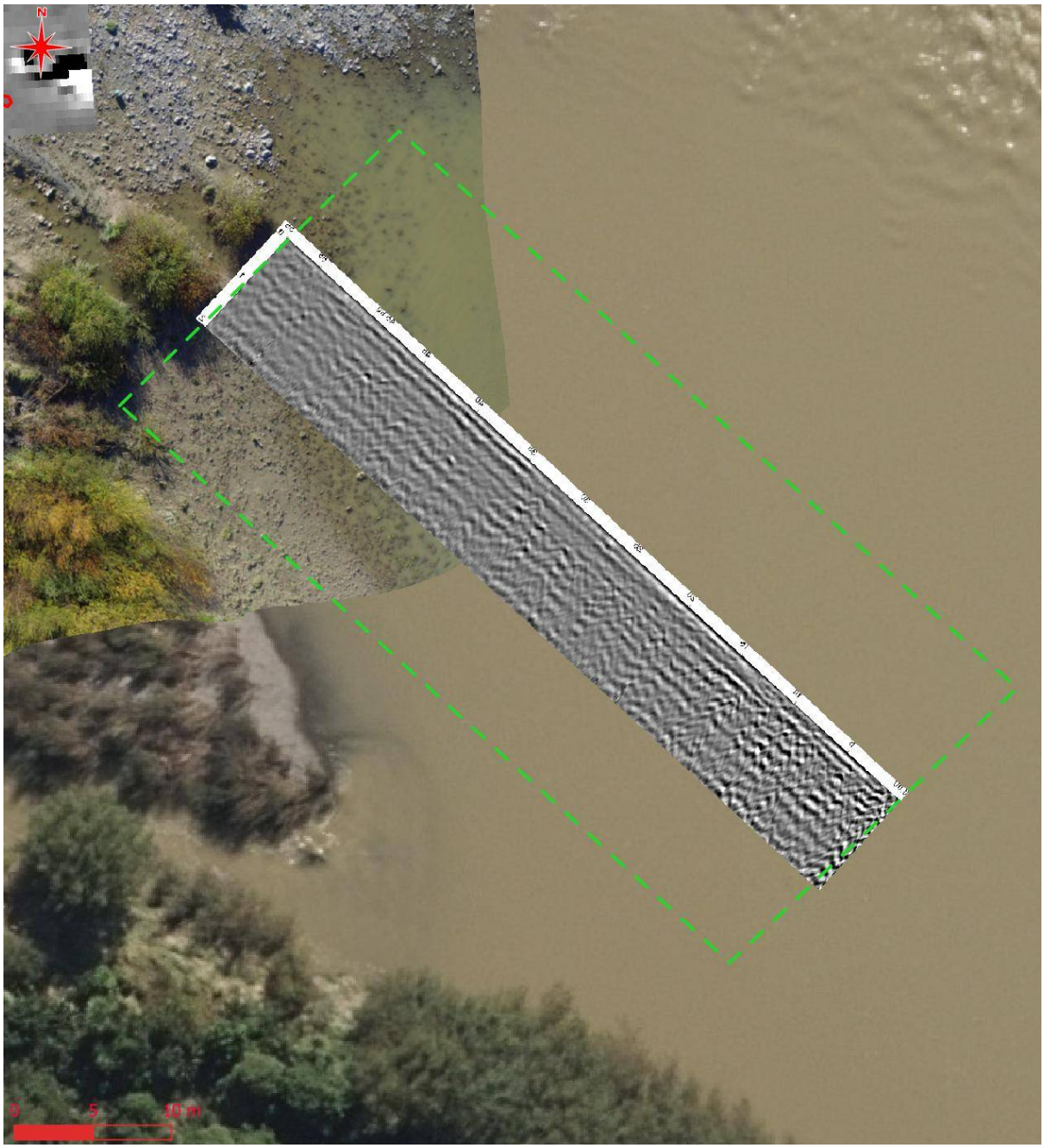

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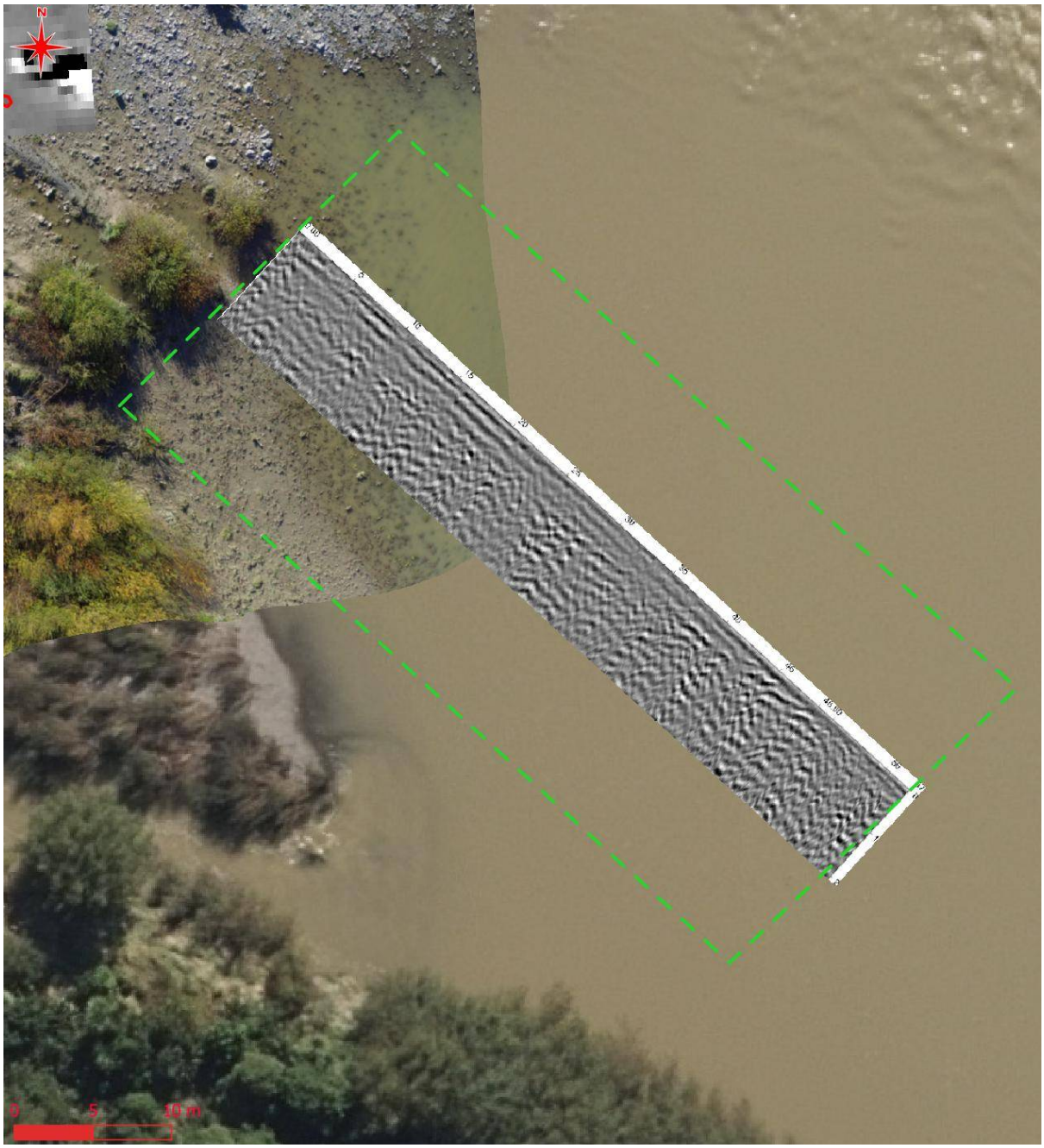

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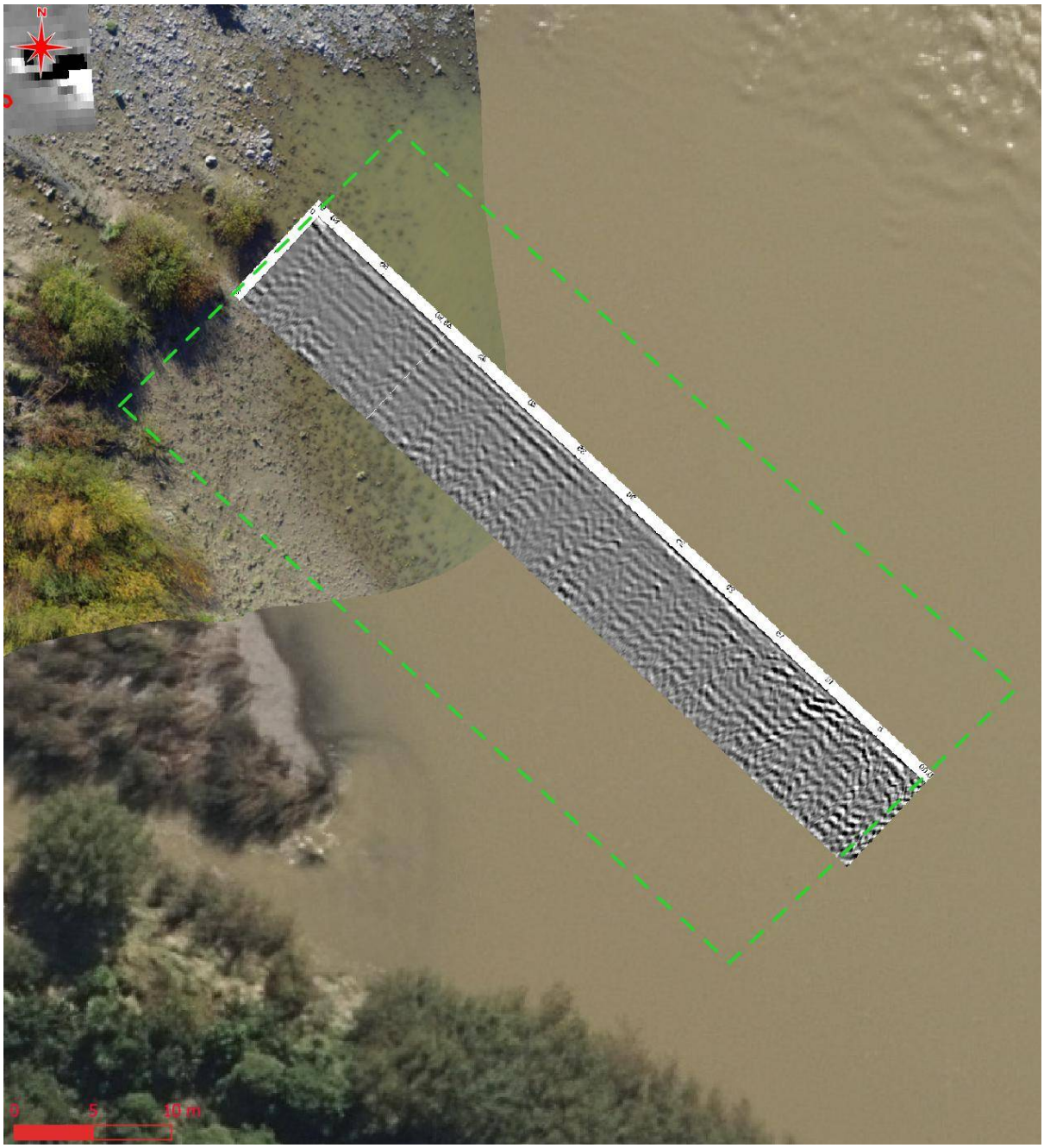

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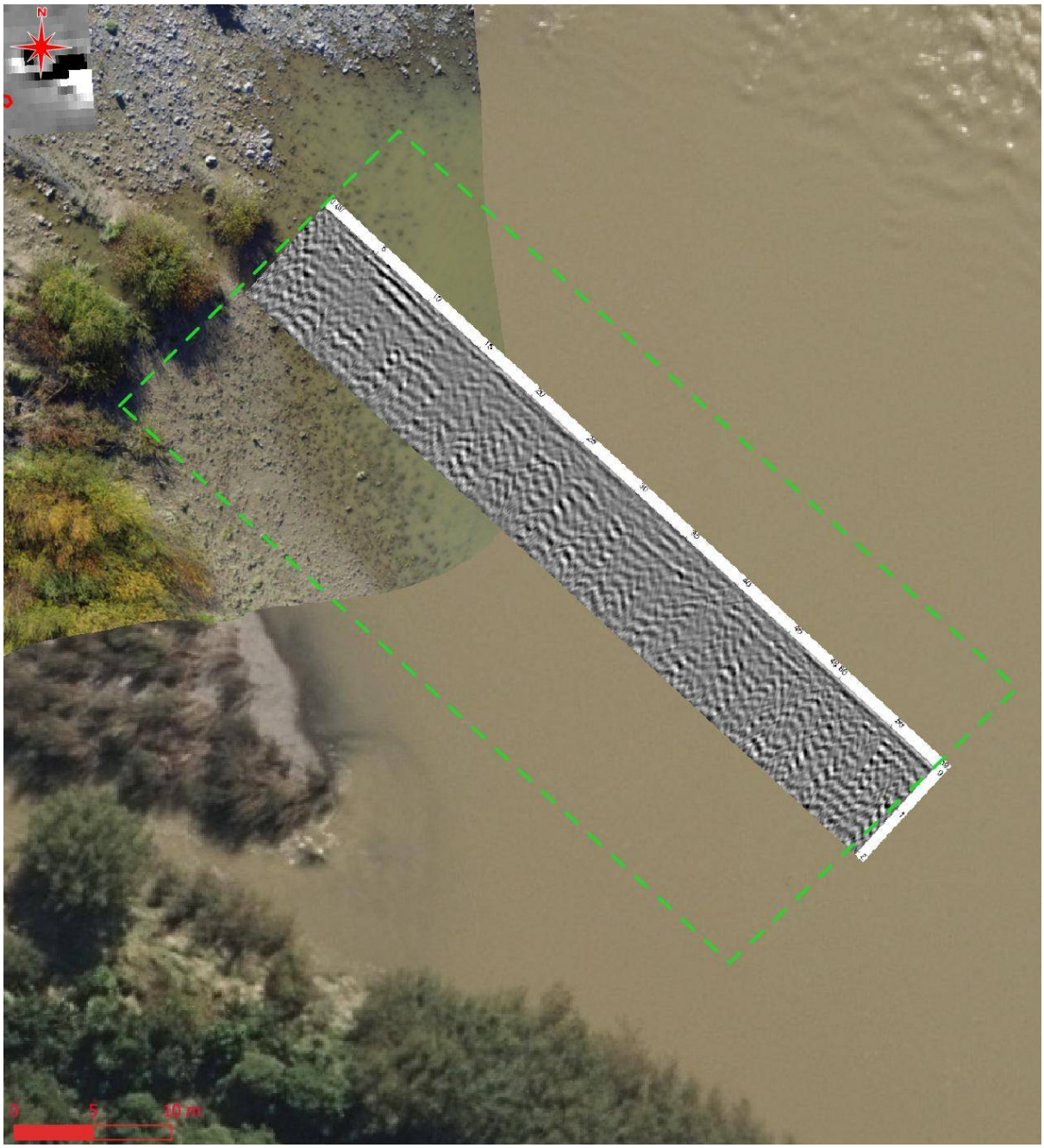

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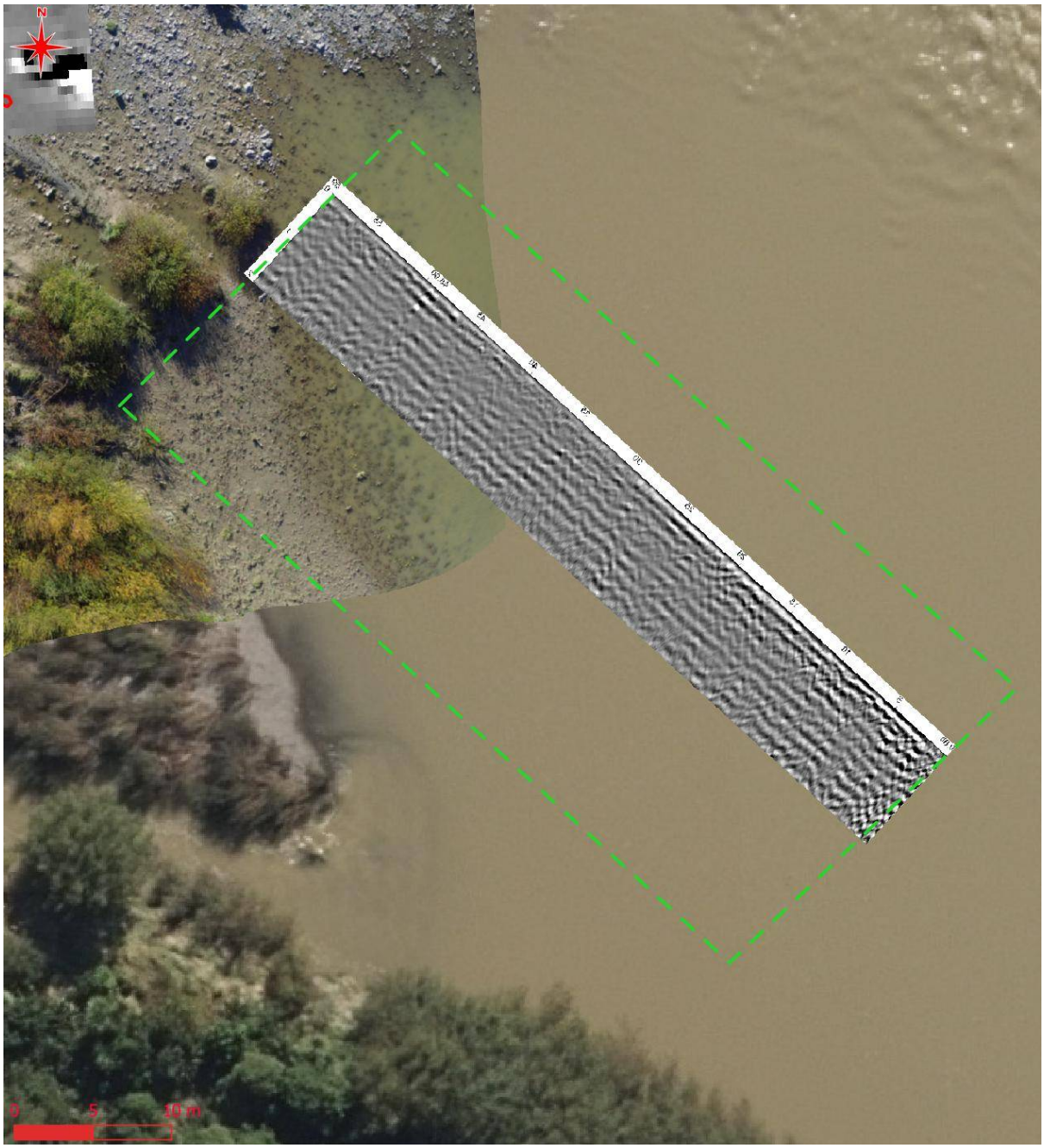

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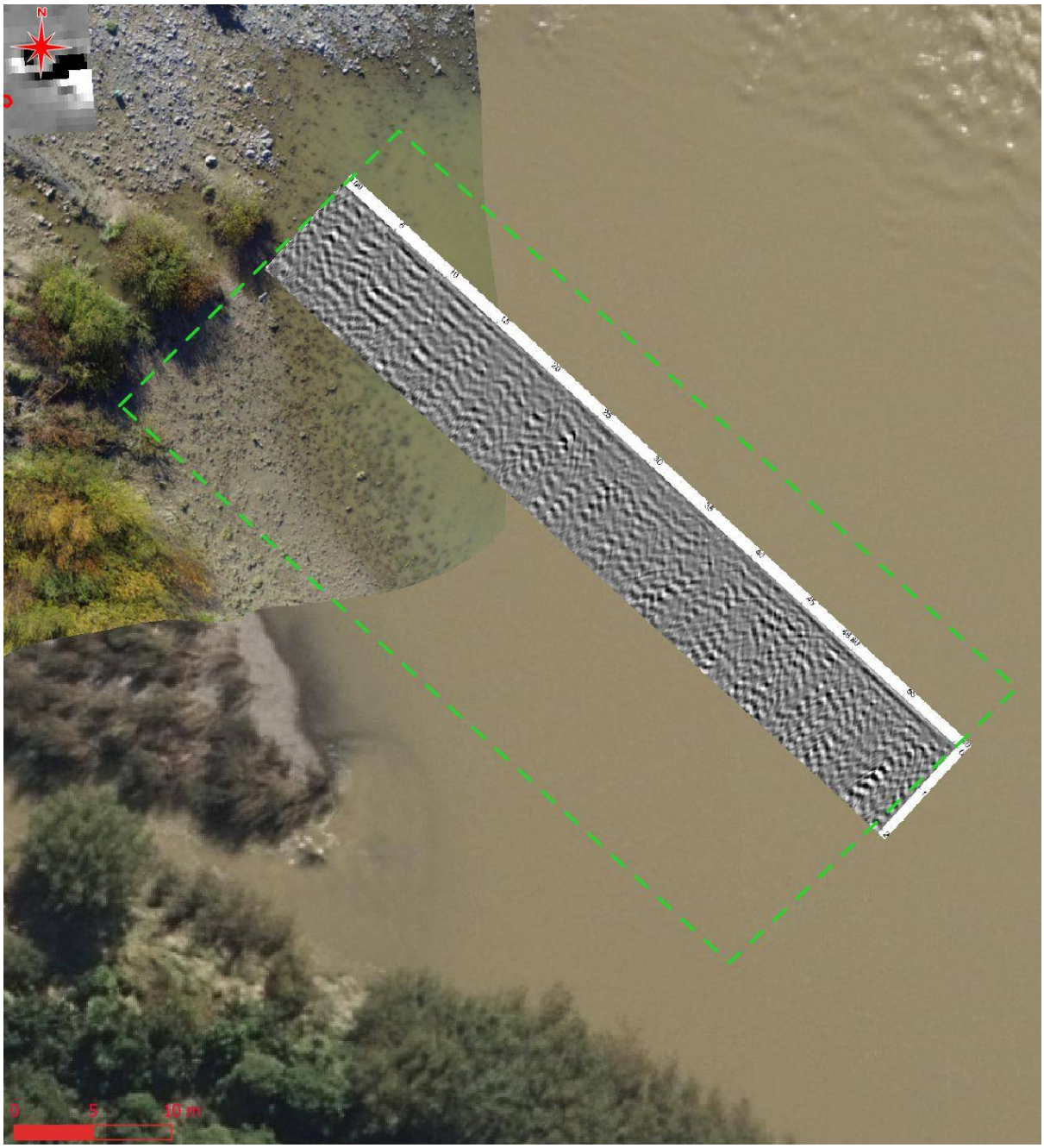

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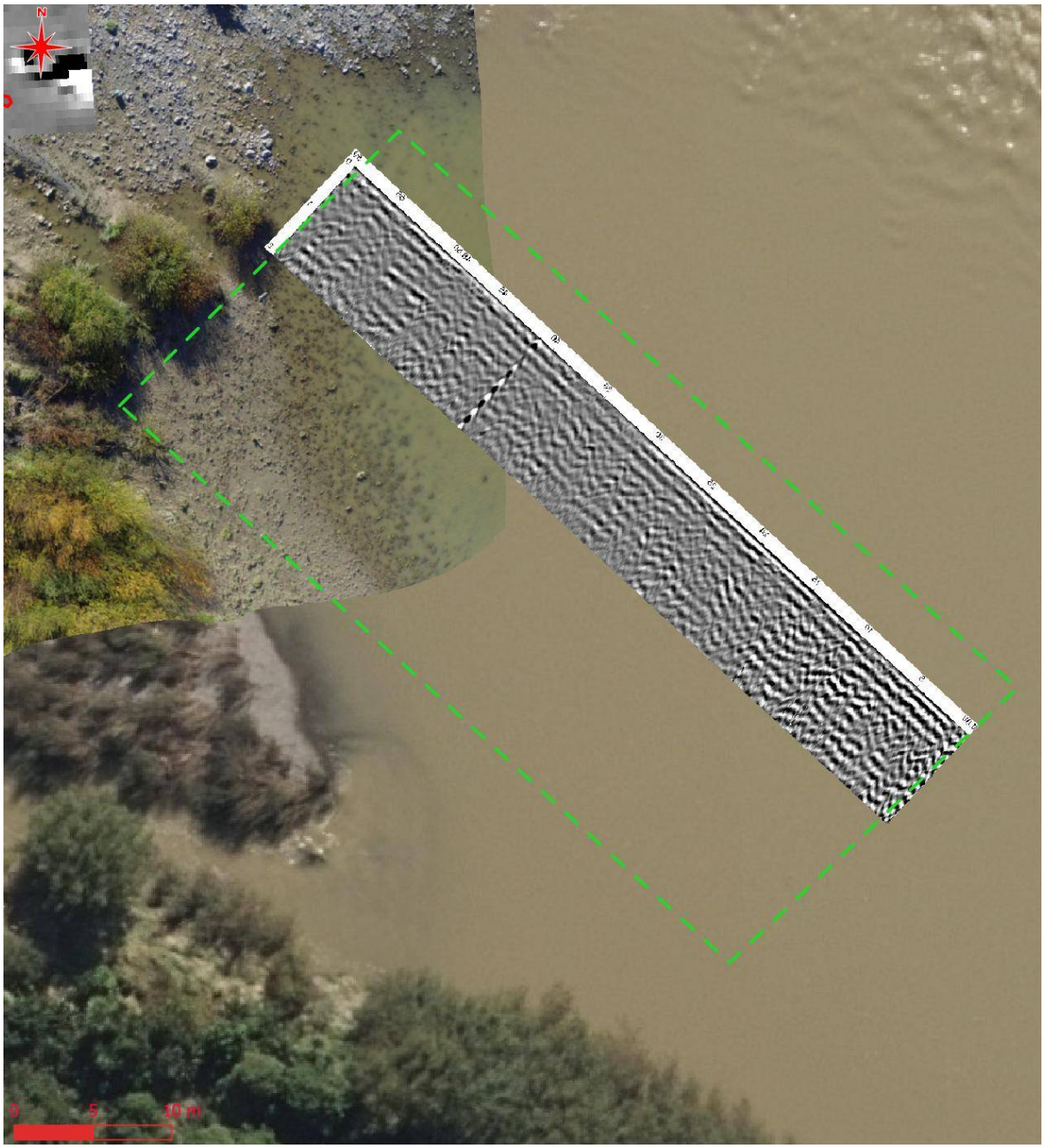

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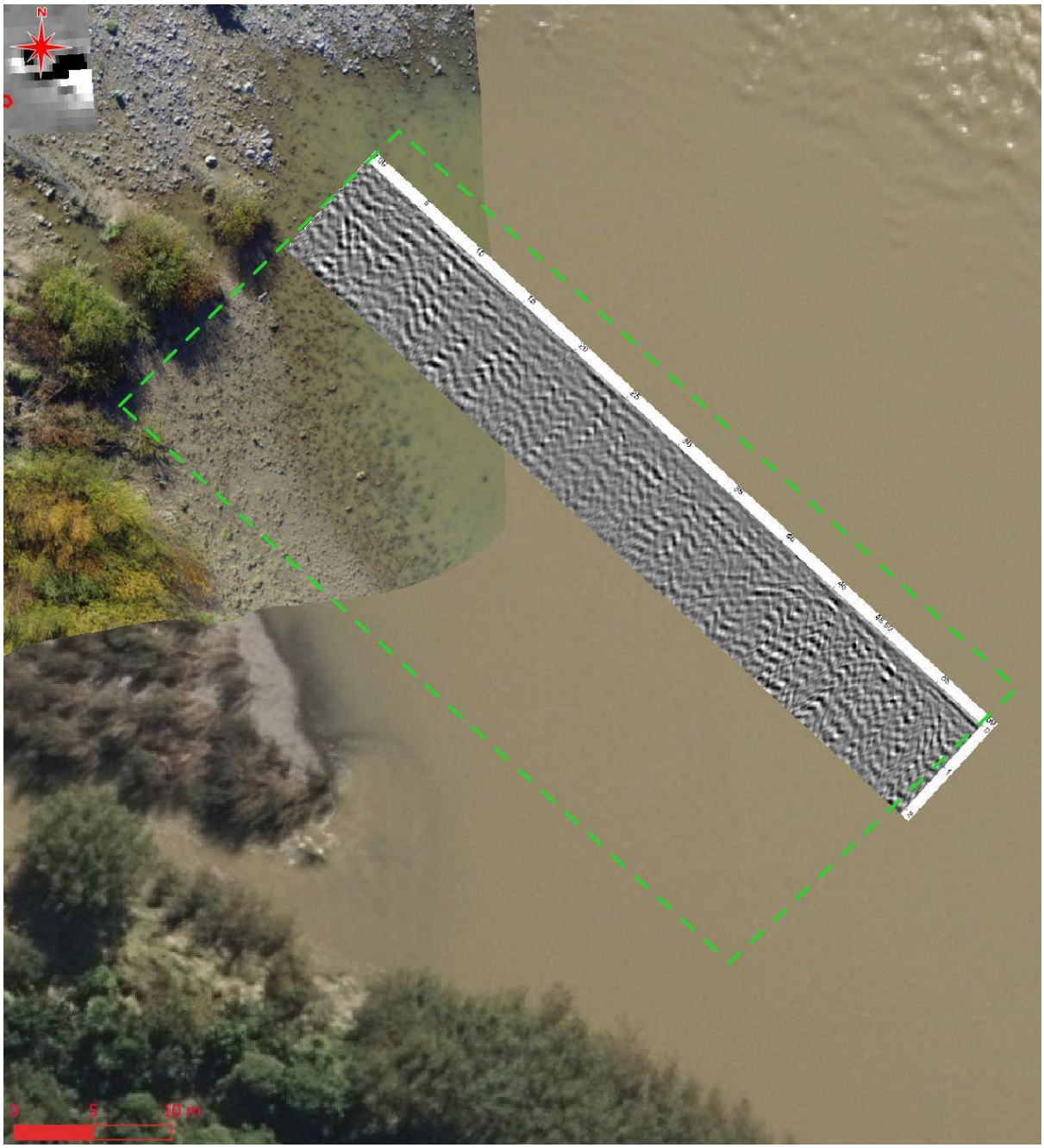

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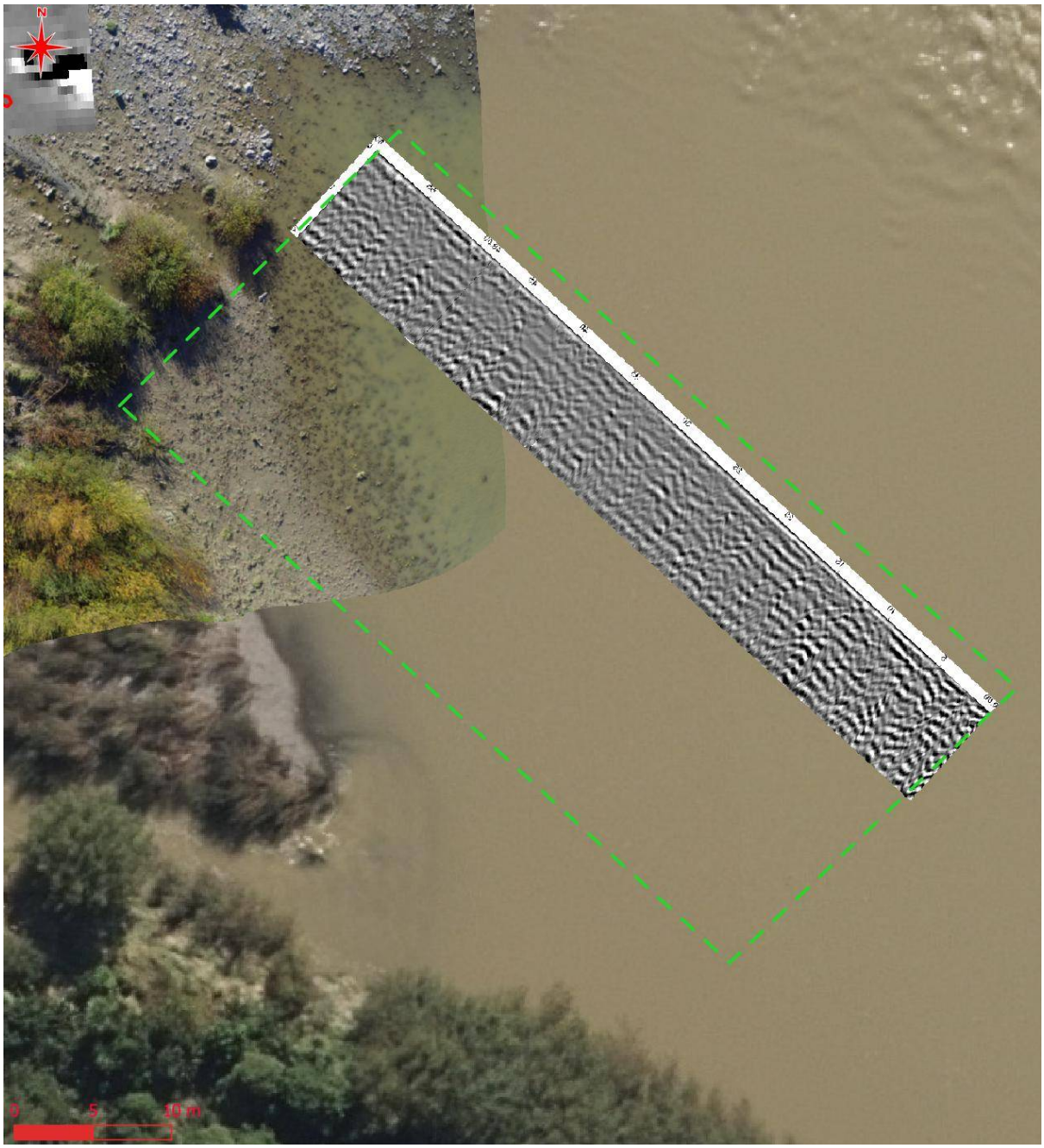

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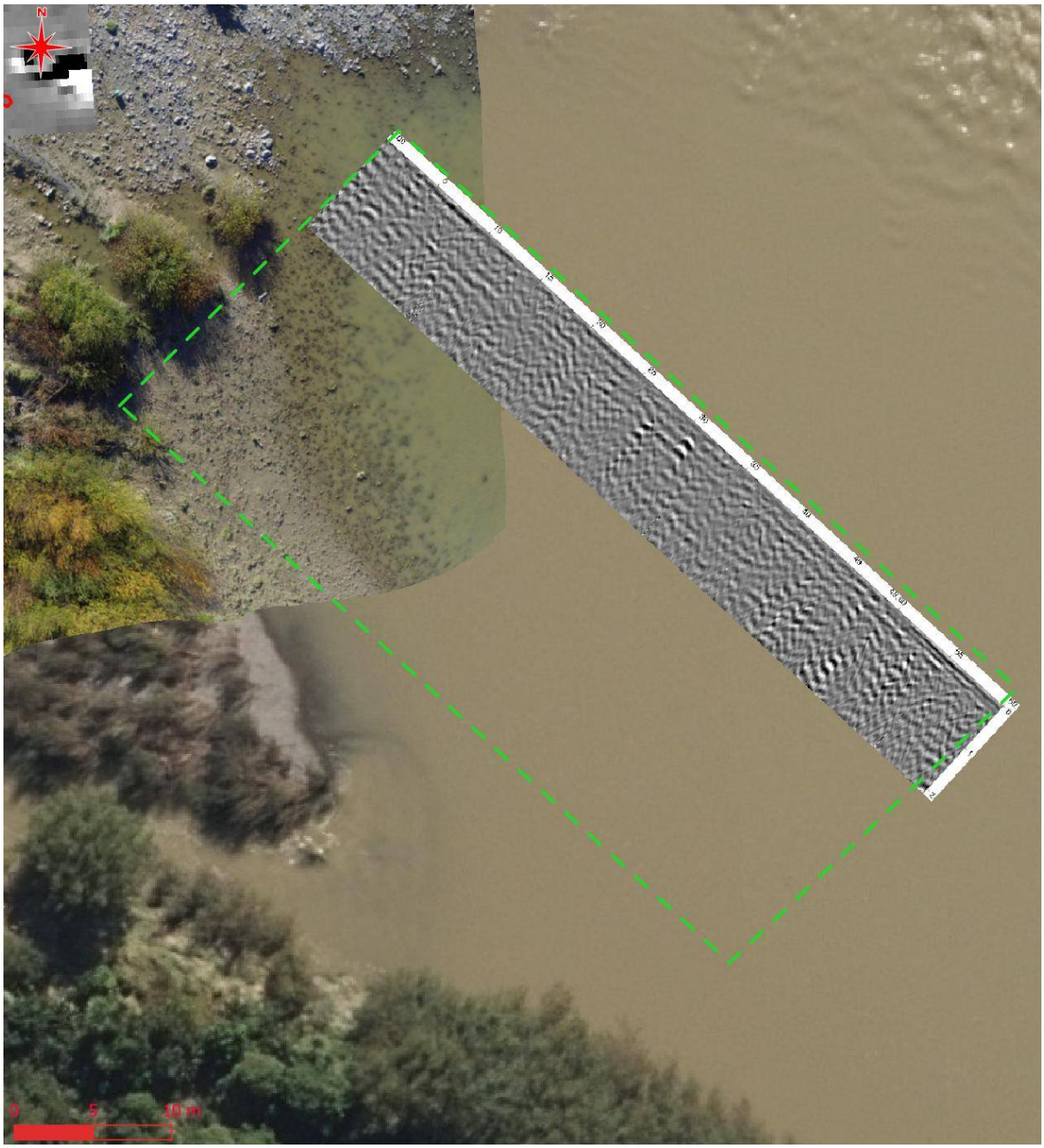

Figure 31: Profile 25

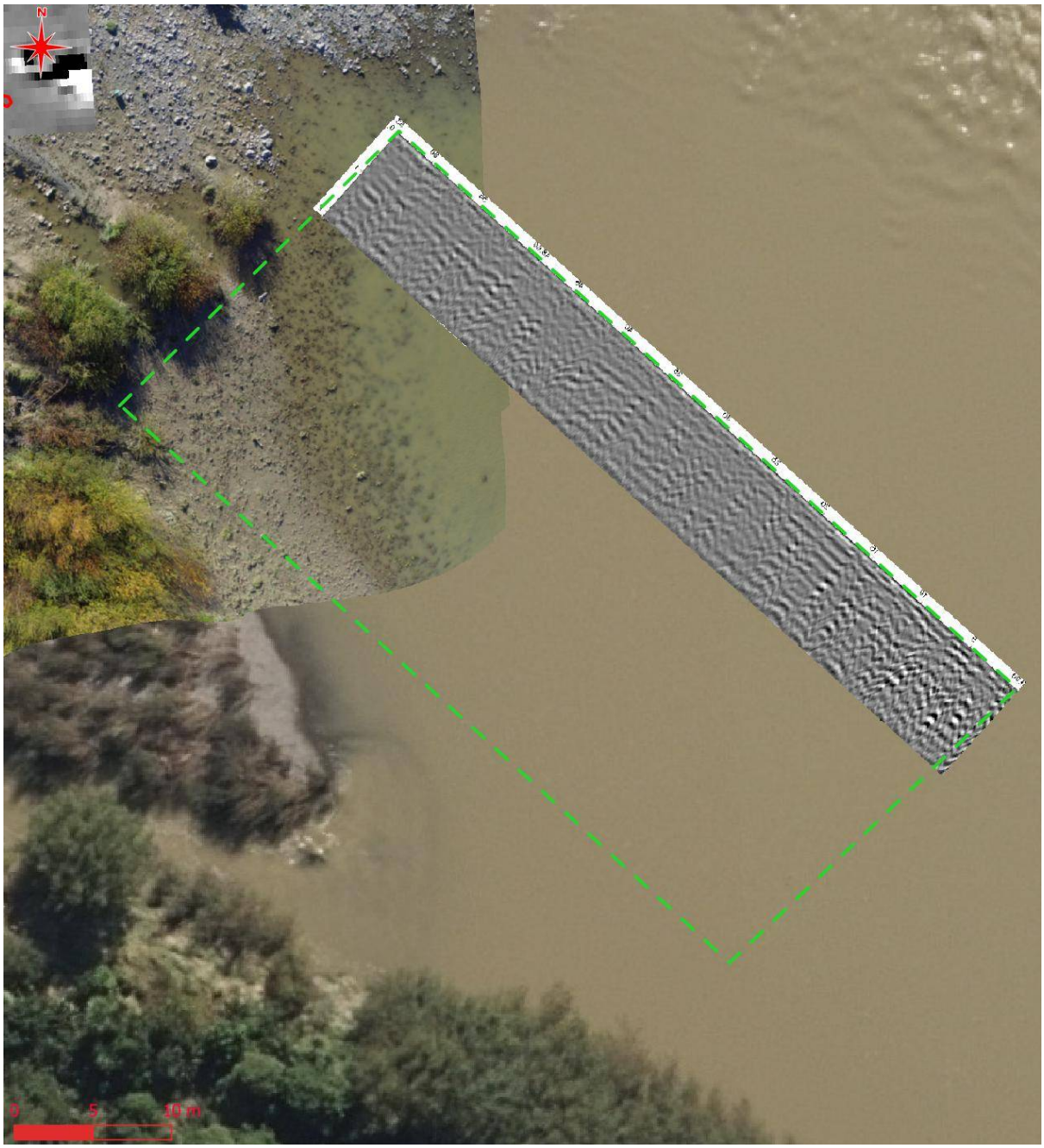

Figure 32: Profile 26