

Protecting Māori rock art and associated freshwater taonga using resource management planning processes



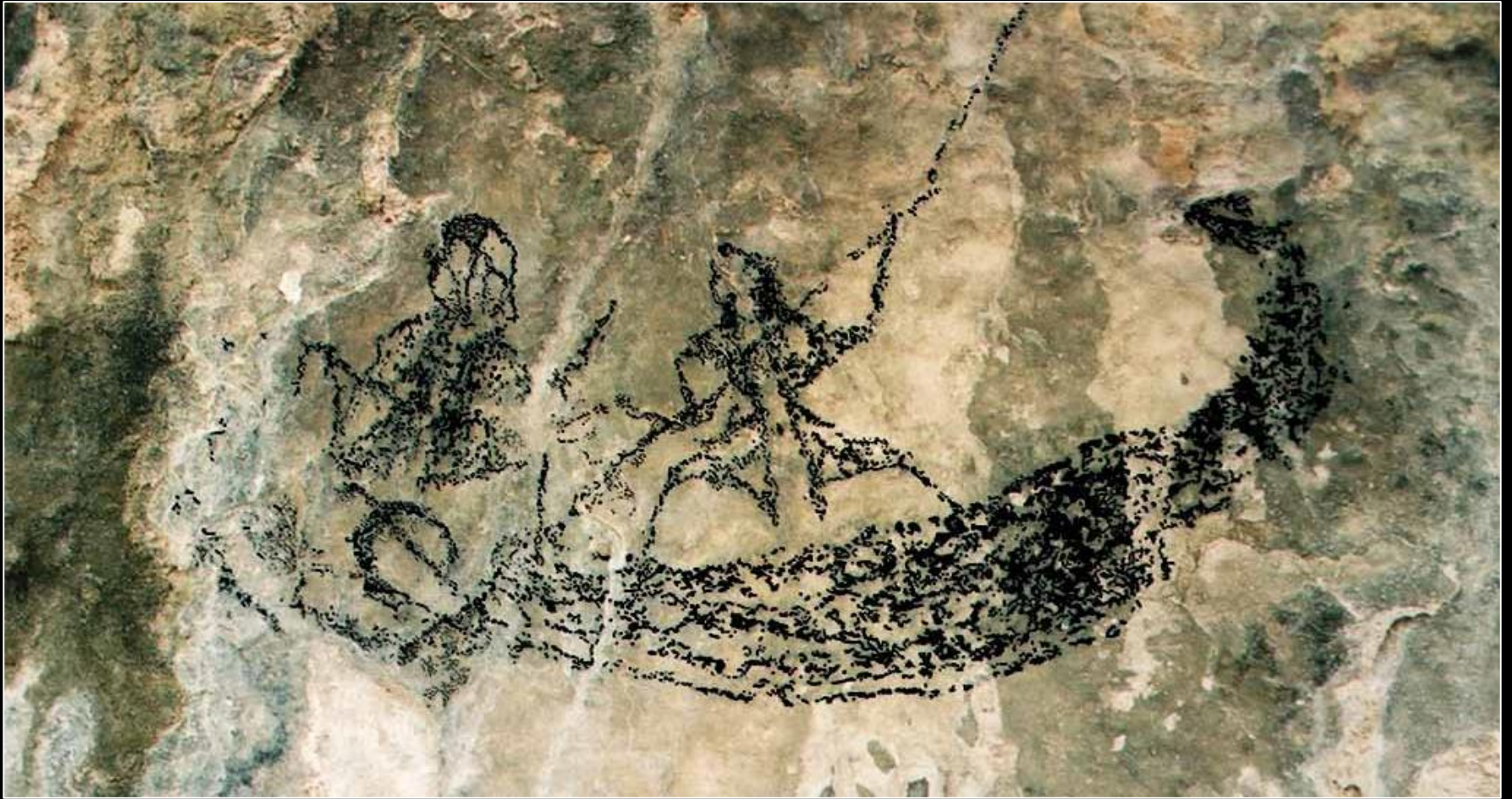
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Ngā Kete o te Wānanga: Mātauranga, Science and Freshwater Management
Project in partnership with the Ngāi Tahu Rock Art Trust (MBIE Funded)

Presentation outline

1. Rock art sites and their associated freshwater ecosystems
2. Sensitivity of rock art to local water-related activities
3. Protection of rock art and proposed sensitivity zones
4. Implementation of rock art sensitivity zones in regional and district plans

Rock art sites and their associated freshwater ecosystems



Two human figures poling a mokihi or reed raft, Opihi River

Rock art sites and their associated freshwater ecosystems

- Rock art sites are found throughout New Zealand and are some of the earliest records created by this country's first people
- Within the rohe of Ngāi Tahu there are over 700 rock art sites, with tens of thousands of images of rock art recorded
- For Ngāi Tahu, this rock art is a taonga (treasure) left by their ancestors

Rock art sites and their associated freshwater ecosystems

- The largest concentration of rock art sites is located in the limestone rich areas of South Canterbury and North Otago
- The rock art was most frequently applied to limestone, drawn on the stone's surface using paint made from animal or bird fat mixed with vegetable gum and soot or kōkōwai (red ochre)
- Te Rūnanga o Arowhenua, Te Rūnanga o Waihao and Te Rūnanga o Moeraki are the kaitiaki rūnanga for the rock art in this area

Rock art sites are intrinsically associated with nearby freshwater ecosystems



- Freshwater ecosystems were important for mahinga kai, drinking water and transport
- Freshwater is intimately associated with cultural and spiritual practices

Sensitivity of rock art to local water-related activities

- Rock art sites are inherently fragile
- The sites are exposed to the elements, changes in the environment and also to time
- The sites are vulnerable because the materials used to create the art are perishable and because limestone is notoriously unstable and easily eroded

Sensitivity of rock art to local water-related activities

Rock art is particularly vulnerable to land and water use activities which can:

- Affect the rock art pigments
- The integrity of the limestone surfaces
- Threaten the nearby freshwater ecosystems

Sensitivity of rock art to local water-related activities



The impacts of standing water at the foot of a limestone outcrop: seepage and salt bloom. Hazelburn rock art site, South Canterbury

Sensitivity of rock art to local water-related activities

Rock art sites and their related freshwater ecosystems are particularly sensitive to:

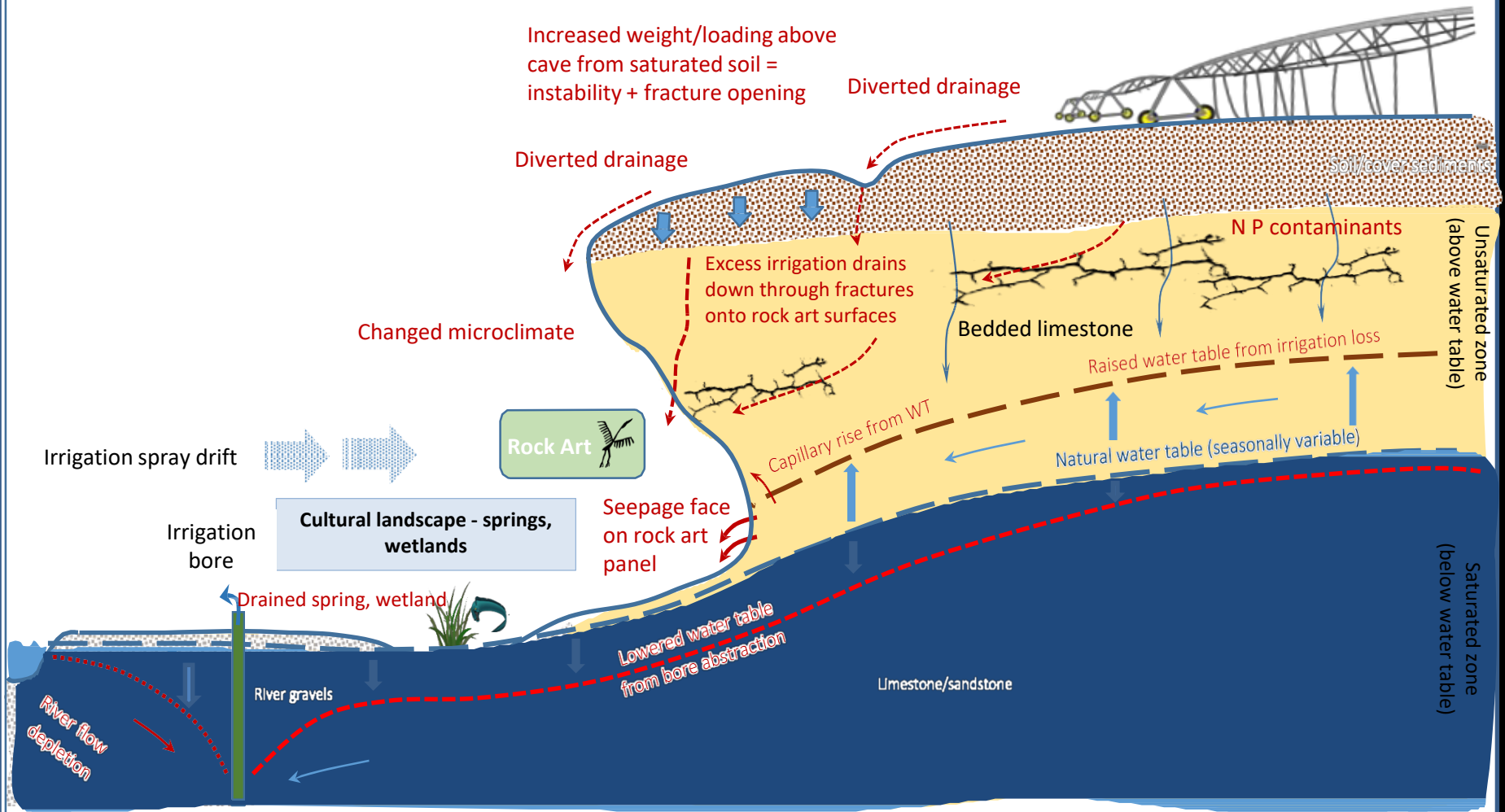
- Small changes in the local groundwater environment
- Changes in the local microclimate (increased air moisture, irrigation spray draft)
- Changes in local drainage systems (diversions, new channels, ponding)
- Increased saturated weight of overburden above an outcrop
- Changes in the water chemistry of natural seepages onto the rock surface and into freshwater ecosystems
- Discharges of contaminants

Indirect Impacts of Water Management on Rock Art Sites

Groundwater abstraction

Diverted / new drainage, canals or races

Irrigation



Protection of rock art and proposed sensitivity zones

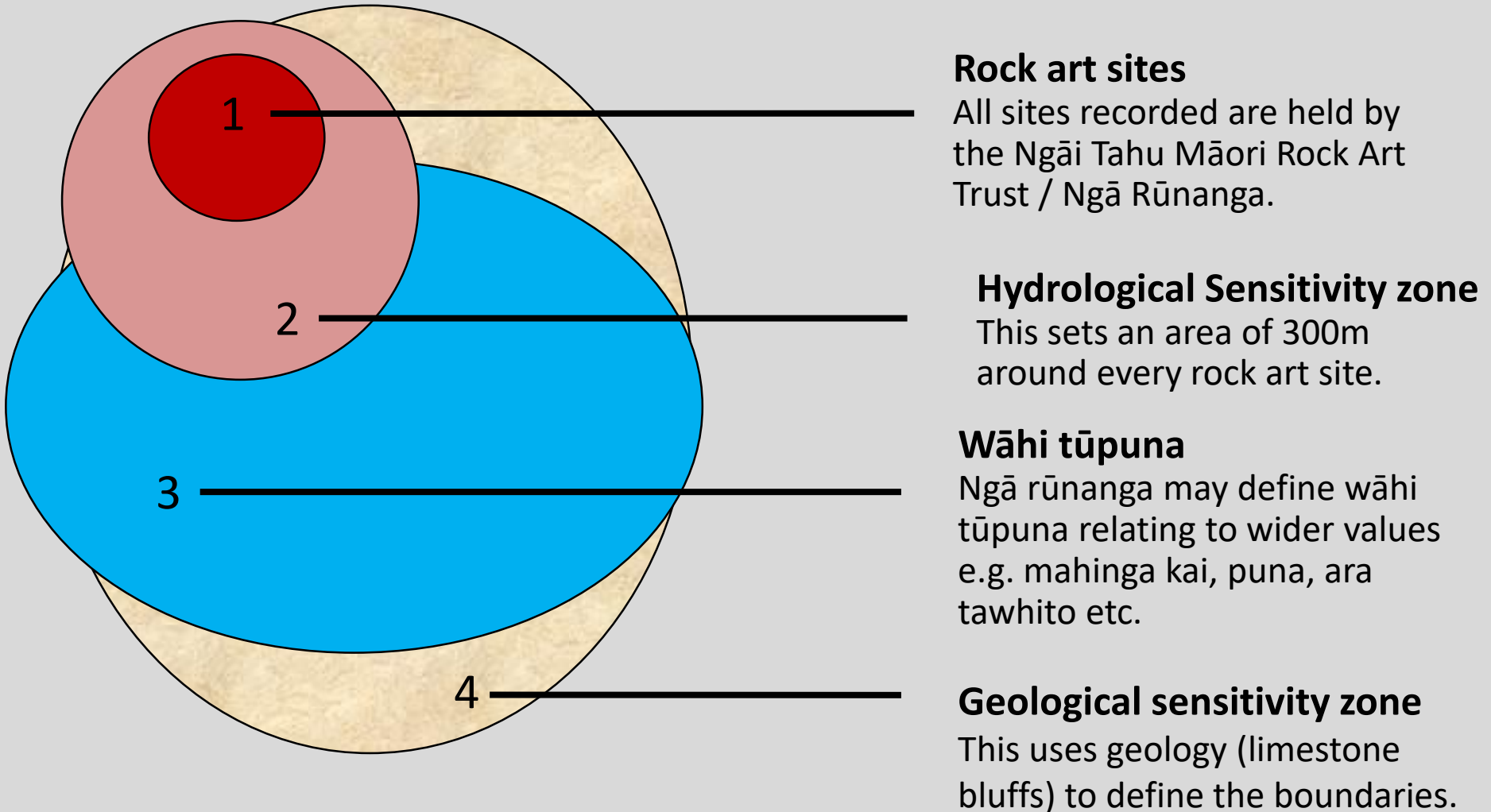
- Our proposed approach and method for protecting rock art and their associated freshwater ecosystems in water management planning processes in South Canterbury and North Otago, is through the delineation of sensitivity zones.
- It is anticipated that the recommended approaches and methodologies presented here could be transferred to other land-based tāngata whenua values (e.g., wāhi tapu, pā, urupā) that can be impacted by freshwater management decision making.

Protection of rock art and proposed sensitivity zones

Three tiers of rock art sensitivity zone are proposed:

1. **Geological sensitivity zone:** based on the mapping of outcropping limestone areas where rock art is exclusively located;
2. **Hydrological effects sensitivity zone:** based upon a calculated distance for avoiding the effects of activities such as irrigation, water abstraction and diversion activities on the rock art sites; and
3. **Wāhi tūpuna zone:** maps which define the extent of the immediate cultural landscape and specific freshwater ecosystems intimately associated with a rock art shelter or group of rock art sites.

Framework for Rock Art Management

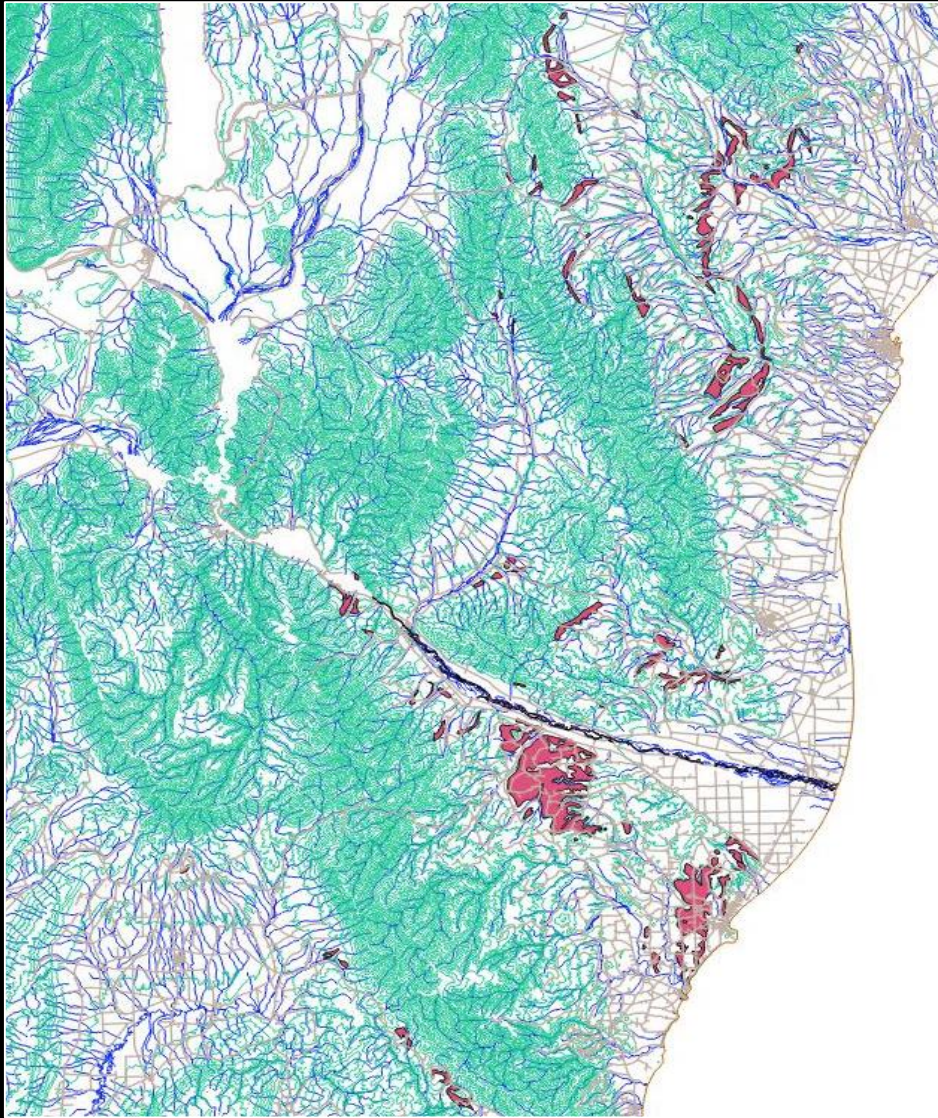


Protection of rock art and proposed sensitivity zones

1. Geological sensitivity zone:

- This zone is based upon scientific evaluation
- Based on the mapping of outcropping limestone areas
- Premised on the recognition that rock art in South Canterbury and North Otago is most frequently associated with outcropping limestone
- Zone proposed as a broad scale indicator that there is a high probability that rock art will be present in the mapped areas
- Zone is too simplistic for resource consenting purposes

Geological sensitivity zone



Map 1: Distribution of limestone in the Opihi and Lower Waitaki catchments (dark red shaded areas) corresponding to the location of Māori rock art. Data source: GNS 1:250,000 geological map (Aoraki).

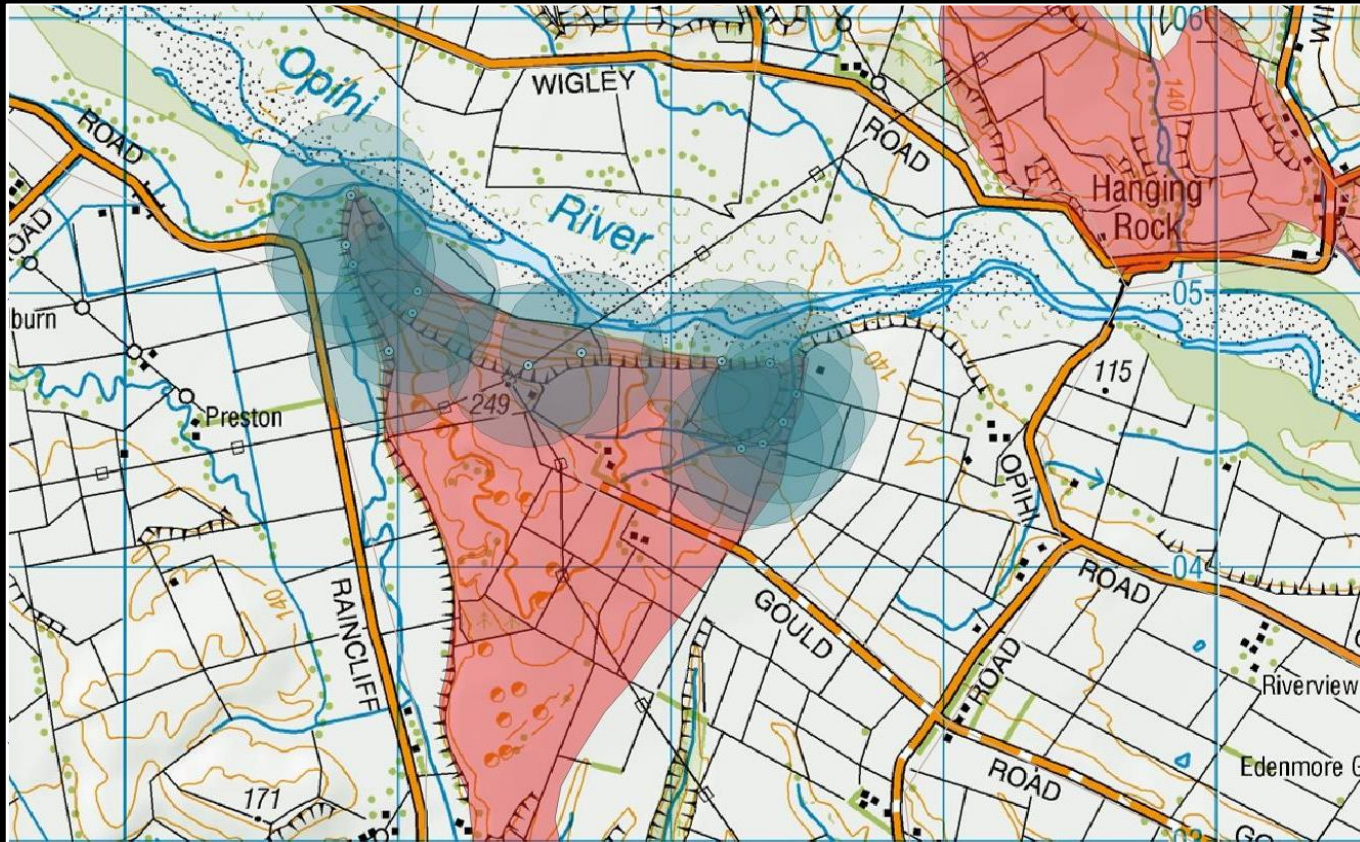
Protection of rock art and proposed sensitivity zones

2. Hydrological effects sensitivity zone:

- This zone is also based upon scientific evaluation
- Zone is a inner zone of fixed radius around each rock art site based upon calculation of the potential impact of hydrological and hydrogeological impacts associated with irrigation and groundwater abstraction
- A fixed inner hydrological sensitivity zone of 300 metres is recommended¹
- There is enough specificity in this zone for incorporation into resource management planning provisions

¹See Gyopari & Tipa 2017 for a detailed description of the rationale behind the zone dimension

Hydrological effects sensitivity zone



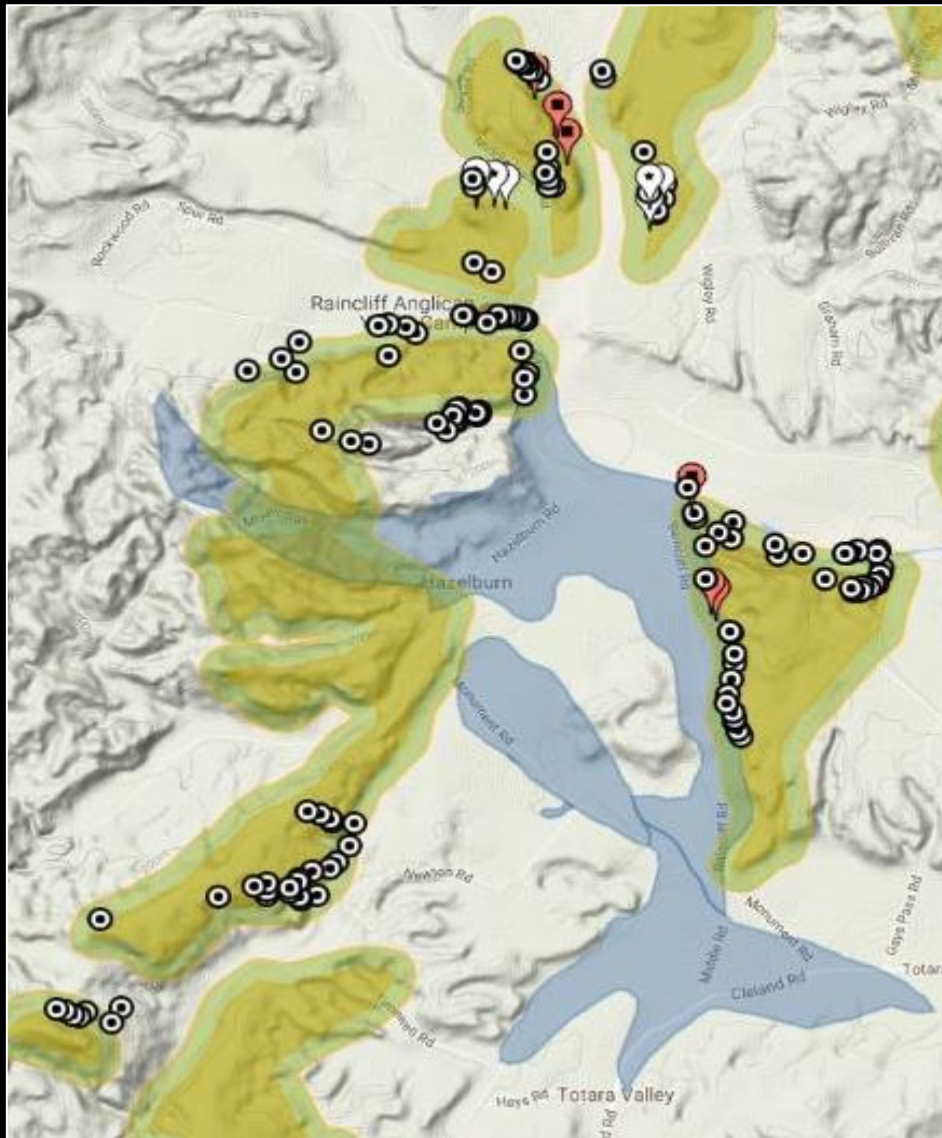
Map 2: Example of hydrological effects sensitivity zone (blue shaded areas) with distribution of limestone (dark red shaded areas) corresponding to the location of Māori rock art.

Protection of rock art and proposed sensitivity zones

3. Wāhi tūpuna zone:

- All rock art sites have been GPS-ed and freshwater taonga may include the associated wetland, spring or stream
- This zone will not be made available to the public or included in resource management plans
- This zone will be mapped by mana whenua using mātauranga Māori
- The zone will be defined taking into account the nature of the site and the type, location and scale of the proposed activities

Wāhi Tūpuna zone



Map 3: Distribution of limestone in the Opihi catchments (green shaded areas) corresponding to the location of Māori rock art and historic wetlands (dark blue).

Implementation of rock art sensitivity zones in regional and district plans

- Usually the management of land based taonga are seen as issues to be addressed in district planning, and water issues are to be addressed in regional planning.
- In the above framework, rock art sites with their intrinsically associated freshwater ecosystems are not protected in a holistic manner.
- Our proposed approach will require the inclusion of planning provisions in relevant regional land and water plans and in district plans which are linked to maps which protect the rock art site and the associated freshwater ecosystem.

Implementation of rock art sensitivity zones in regional and district plans

- The introduction text to the planning provisions would acknowledge the national significance of rock art and the need for the management of activities that may impact on the protection of these sites. The text will also explain how the geological and hydrological zones have converged to create 'Rock Art Management Areas'.
- The 'Issues' will explain how rock art sites and their associated freshwater ecosystems are being affected by some of the activities managed under the plan.
- The 'Objectives' will support rock art sites and their associated freshwater taonga being recognised and protected in an integrated manner.

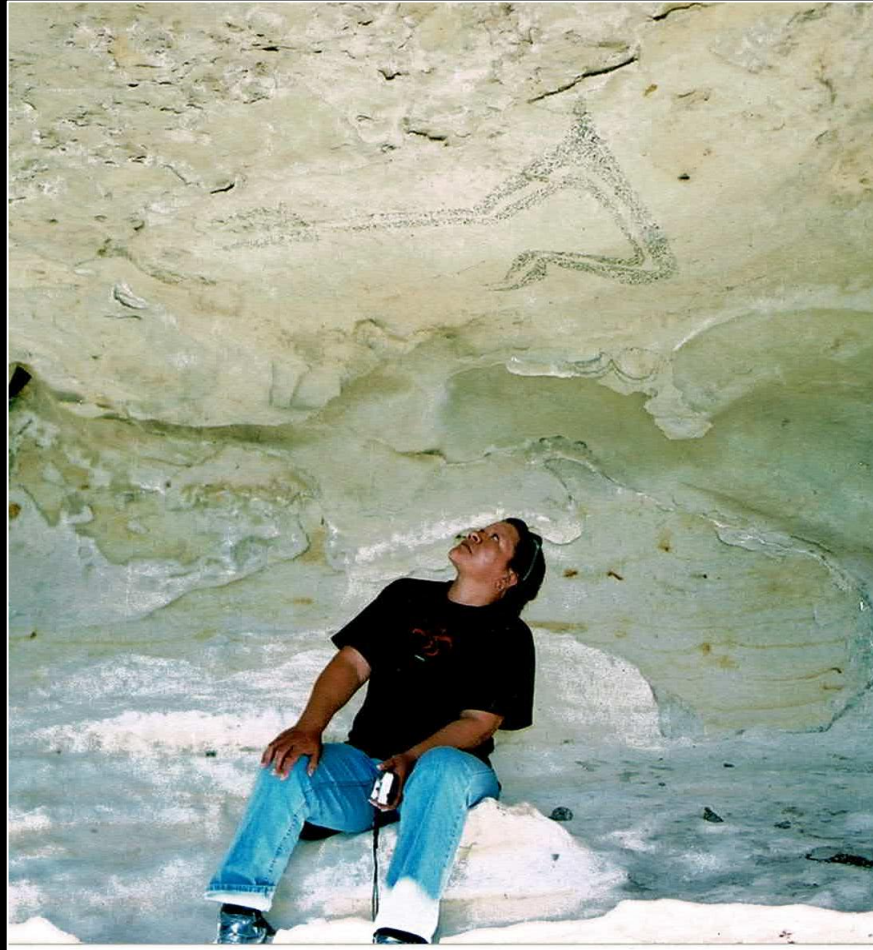
Implementation of rock art sensitivity zones in regional and district plans

- Policies in plans will be required to establish and maintain the mapped Rock Art Management Areas and to advise what the areas will be managed for.
- Rules in plans will trigger resource consents for activities occurring within Rock Art Management Areas if these activities have the potential to cause adverse effects on these sites.
- It is important to note that these Rock Art Management Areas are not intended to exclude activities, but rather they provide a planning support tool to ensure that any land or water-related activities are duly assessed to ensure that they do not compromise culturally important sites of considerable national significance.

Summary of key points

- Rock art sites are intrinsically associated with nearby freshwater ecosystems
- Rock art is vulnerable to land and water use activities
- Our proposed approach for protecting rock art and their associated freshwater ecosystems in planning processes is through the delineation of sensitivity zones
- This approach will require the inclusion of planning provisions in regional land and water plans and in district plans which are linked to maps which protect the rock art site and the associated freshwater ecosystems

Acknowledgement



To the late Mandy Home – our dear friend and colleague

24 February 1957 – 20 April 2018

Te Rūnanga o Arowhenua