157468

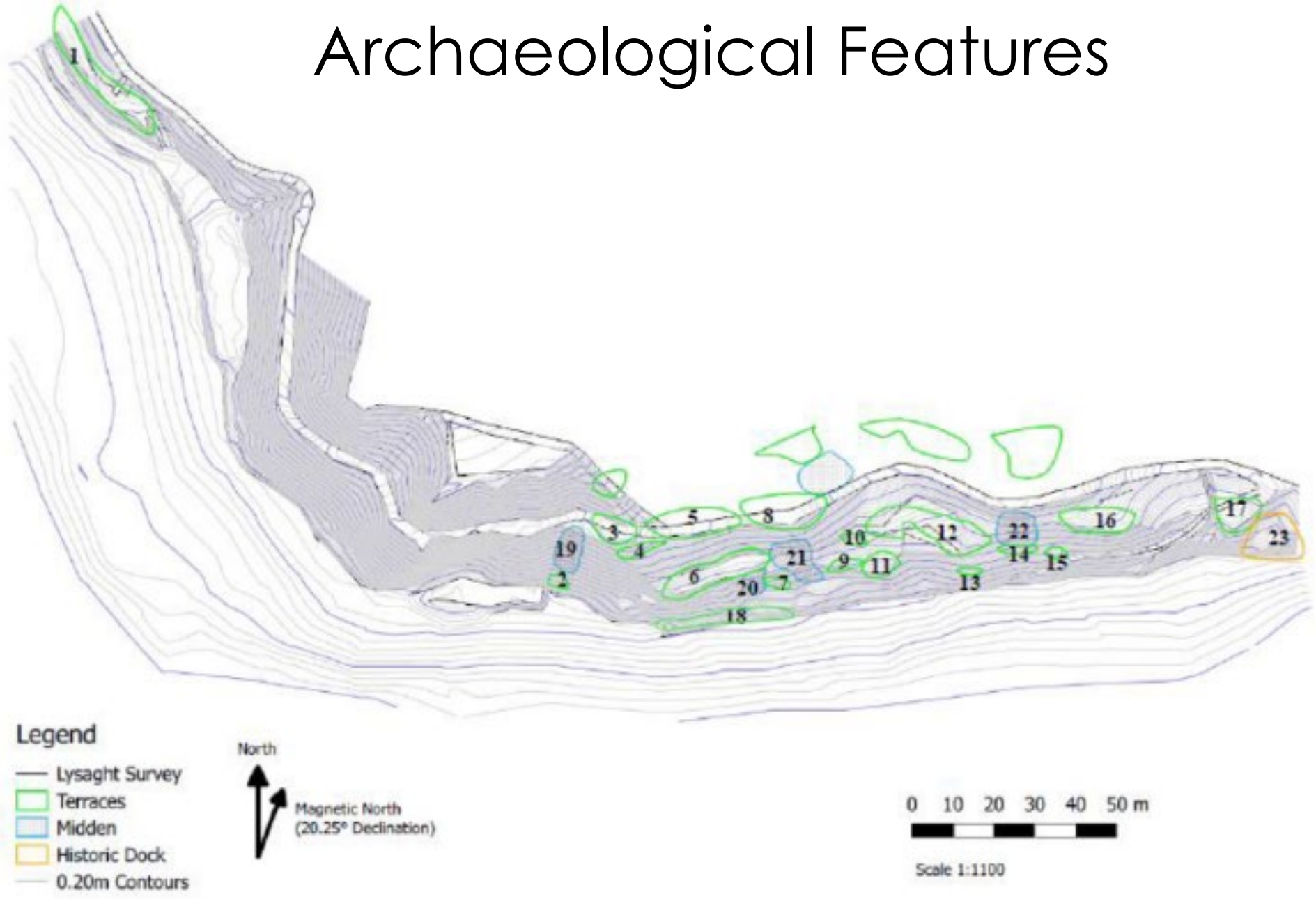
# Mauao Base Track Remediation Project

# Update Includes:

1. Signing the Heritage NZ application by Mauao Trustees
2. The removal of Pōhutukawa trees
   two Pōhutukawa trees at the base of the Te Kawa split site for the new coastal track and one tree from the existing track above the slip site.
3. Update on the quality of the rock from Poplar Land and Oropi Quarries.
4. Te Kawa stormwater system;
5. Progress on the Mauao Base Track resource consent application with Toi Moana (BOPRC);

# Significant slip at Te Kawa Point, Mauao - Cyclone Debbie (April 2017).

# Archaeological Features




ure 1: Archaeological features, Mauao Historic Reserve over laid on recent survey data provided by Tauranga City Council

# Archaeological outcomes

The proposed 110m boardwalk is 2m wide and links the existing eastern base track with the rock revetment along the coastal shoreline to the Te Kawa beach on the south western side of Mauao. The proposed boardwalk provides a more durable material with a longer design life than timber, reduces the long term archaeological impacts and composite material does not result in any leaching of treatment chemical into the ground like timber. It is recommended that the project:

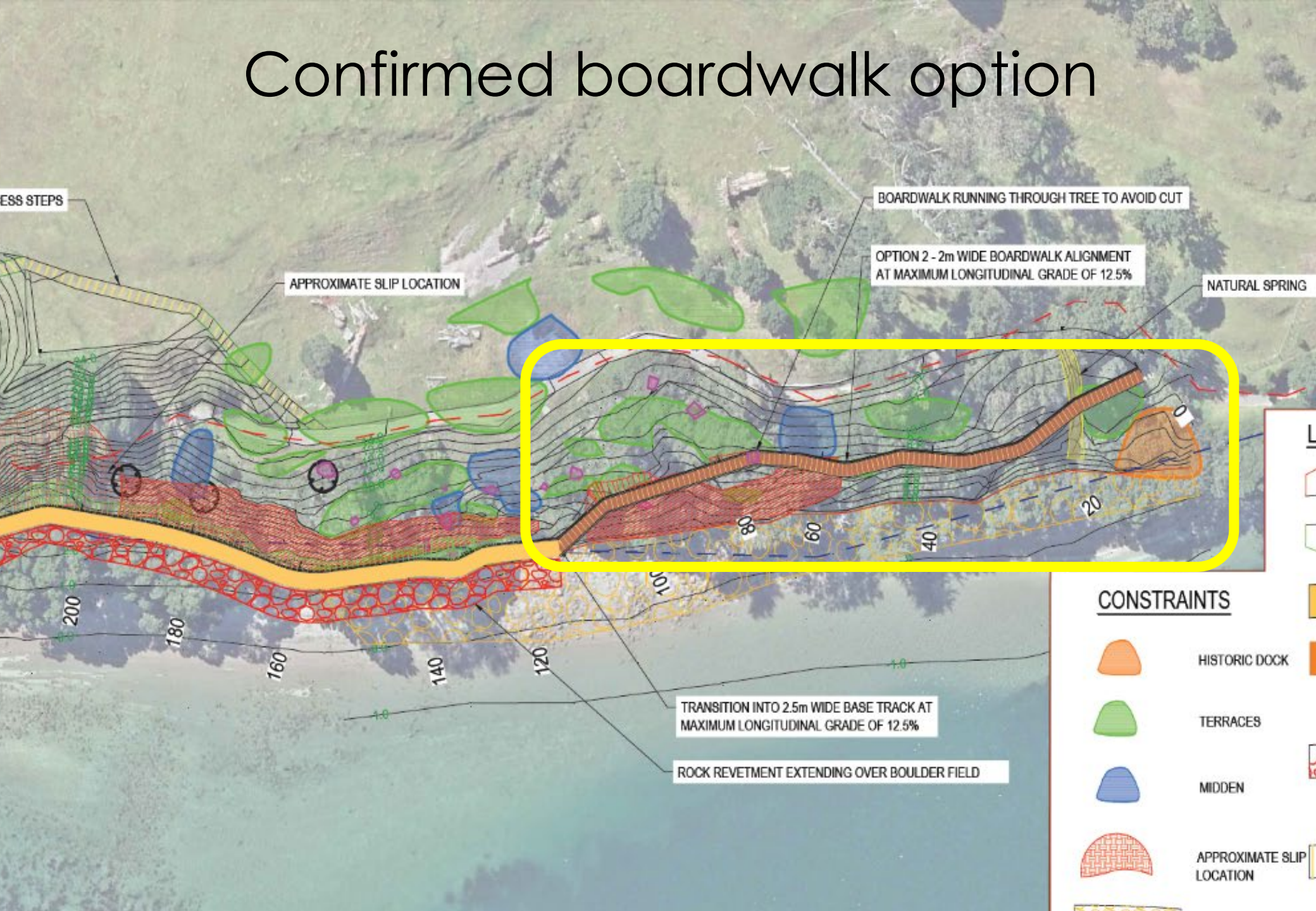
1. Heritage NZ application required for a general authority to modify or damage archaeological sites / features during the construction and use of the new base track; and the closure and remediation of the existing base track following the opening of the new base track sections.
2. All effort should be made to minimise further alteration, modification or damage to intact archaeological features i.e. the boardwalk piles are not placed within the identified terraces.
3. Remediation work on the existing base track sections that will be closed should avoid ground disturbance in areas identified as containing intact archaeological features.
4. The removal of the temporary stairs (installed in 2017 Authority No. 2017/945EM2) must be completed without ground disturbance and the area re-sown in grass as pasture cover.
5. Archaeological investigations and recording should take place prior to any earthworks.
6. Archaeological monitoring, as required and considered appropriate by the project archaeologist with tangata whenua during the earthworks and construction phases.
7. Compliance with any Heritage NZ conditions contained in the archaeological authority granted by will need to be developed and addressed prior to any project earthworks.

# Revised track alignment

The design represents the best balance between all competing values in the attached design. We have kept these concessions as small as we can and are summarised to include but are likely not limited to:

- Mauao Trust, Ngā Poutiriao o Mauao and TCC, the loss in long term resilience through the inclusion of boardwalk section, sections of the alignment are at the maximum grade for accessibility, potentially increases the whole of life (maintenance) cost.
- Archaeology – piling and minor earthworks within the boardwalk section, the potential for small amounts of fill required on upslope of the path at CH 120-160 that may cover the identified terrace in part.
- Landscape – Revetment through the boulder field CH110-160, the removal of at least two low hanging mature Pōhutukawa trees, and the visual effects of the boardwalk with handrails align the escarpment.
- Ecological –report finalised on the potential short and long term adverse effects on penguins, shore skinks, geckos and seals.
- National Coastal Policy – construction of a structure within the coastal marine area.
- The beach access details at CH 300-360 will be provided to show the extent of the repair to the existing rock wall that protects the green open space above Te Kawa beach area for future open space use.  Proposed upgrade of the Te Kawa stormwater stream management.

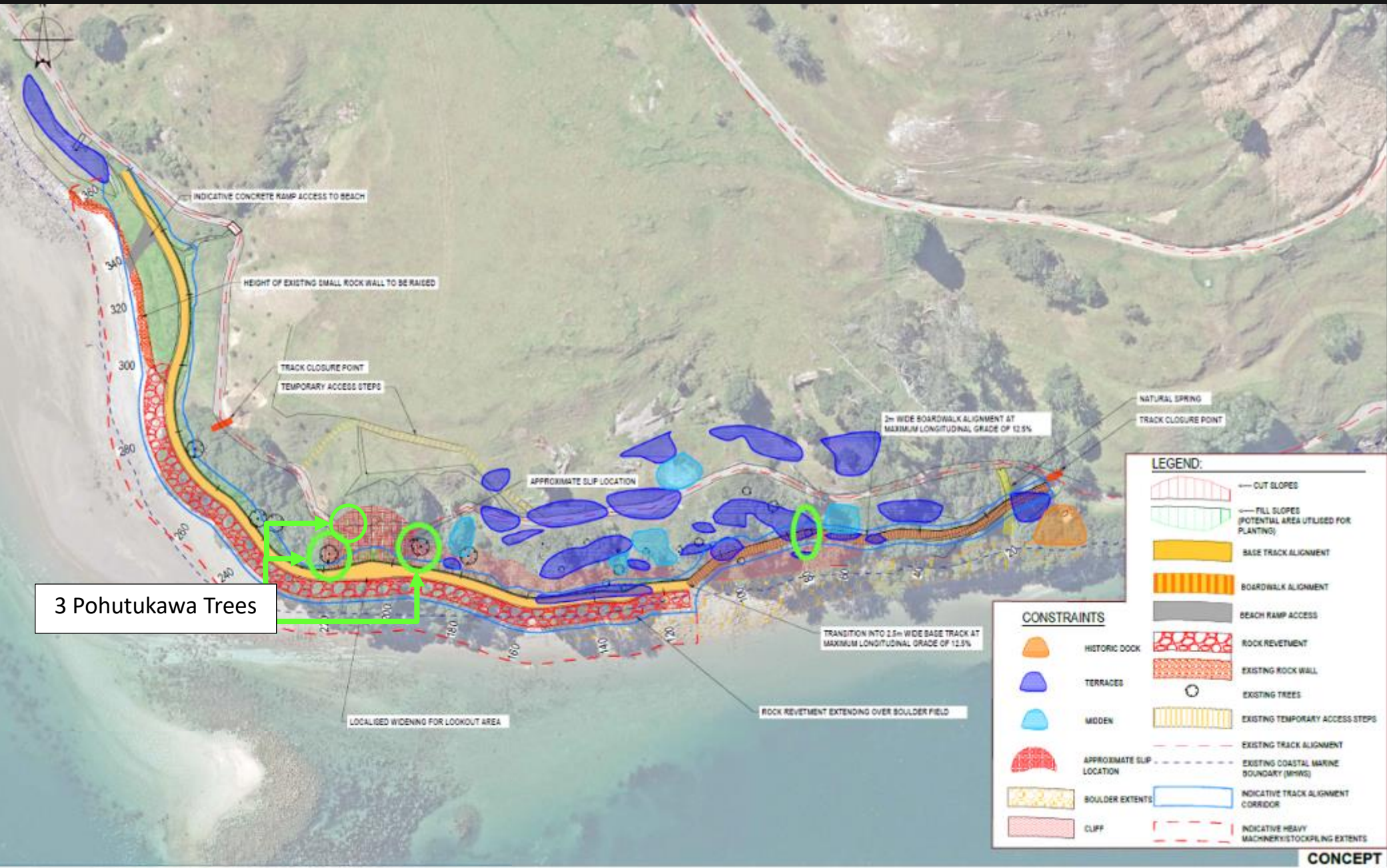
# Confirmed boardwalk option



# Proposed Boardwalk Options

# Rock Revetment Options

# Trees to be removed




1st Pōhutukawa to be removed.


2nd Pōhutukawa to be removed

# 2nd Pōhutukawa to be removed

# Age of the 2 Pōhutukawa trees

Arborist estimated the age of the Pōhutukawa Trees to be approximated 125 to 150 years old.

- Determined by counting the growth rings from the trees.
- The trees were probably sown in 1868 to 1893.

Historical photos of Mauao project site in 1943, 1977 and 2017.

- The 1943 - there are two clear groves of trees, the first being around the Te Kawa slip site and the second grove further east and extends to Waipatukakahu.
- Differences: size of the tree canopy and the density of the trees.
- The 1977 - shows the maturity of the Pōhutukawa trees at the Te Kawa slip site and the thinning of the canopy of the eastern grove of mixed trees.
- 2017 - shows the dense pōhutukawa canopy prior to the April slip event.

# 3rd Pōhutukawa Tree

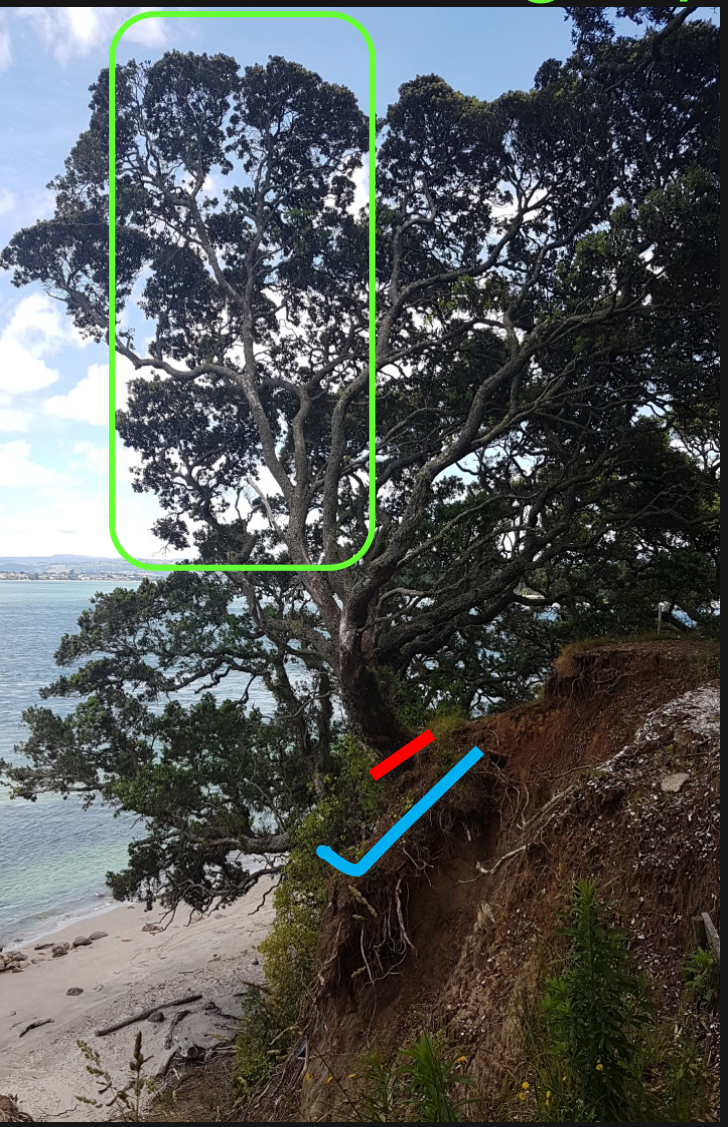
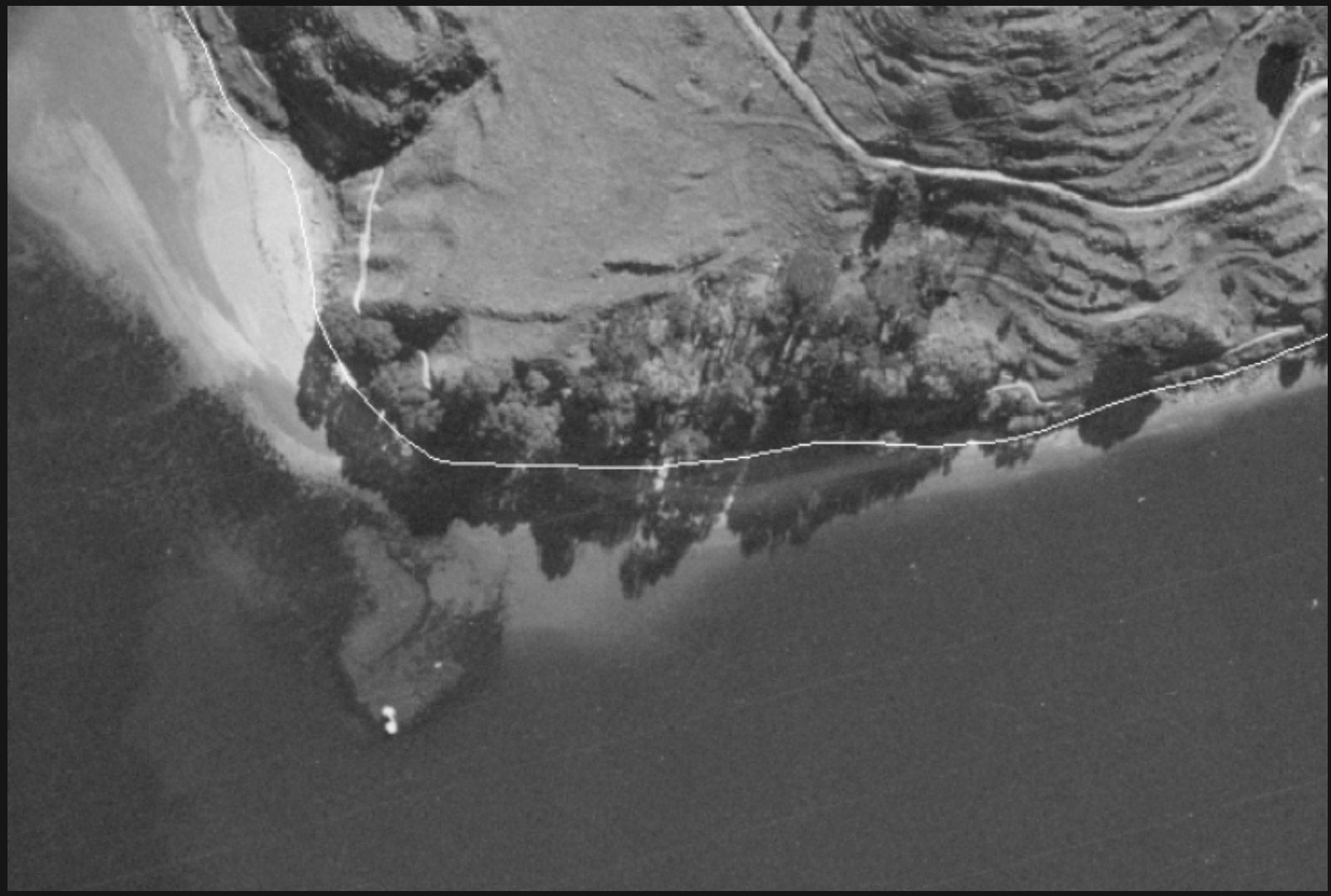


**Photo 1** showing the tree to be removed (red line) and the approximate root ball area to be trimmed (blue line).

The tree directly behind the tree to be removed (tree in green circle) will be pruned to reduce the loading on the bank.

# Project site 1943

# Project site 1977



# Project site 2017

# Assessment of Ecological Effects

The ecological values within the proposed base track corridor are identified as significant in the RPS with the following recommendations:

## Ngā rākau:

1. Use experienced arborist to undertake tree felling, and removing tree limbs to minimise risk of disease;
2. Remedial and mitigation planting using appropriate native species in temporary works area and temporary track to be retired from use, where appropriate, given other values e.g. heritage and archaeology;
3. Planting appropriate coastal vegetation along parts of the revetment to replicate the coastal fringe habitat that is lost;

## Ngā manu:

1. Conducting pre-works surveys for little blue penguins, grey-faced petrels, shore skink and the land snail and also bird nests and or burrows along the track route and project corridor.
2. Conducting works during the non-breeding season (April – June) for little blue penguins and grey-faced petrels;
3. Provide clearance under the boardwalk so little blue penguins can access habitat on the upper hillside;
4. The design of the rock revetment should mitigate the loss of the little blue penguin habitat;

## Ngā waahi mahi:

1. Implement best practise erosion and sediment control techniques during this phase;
2. Relocate natural boulders outside of the works disturbance area; and
3. Reduce the permanent project footprint and area of disturbance within the CMA, where possible.

# Ecological Conclusions

1. The terrestrial and marine environments within the indicative track alignment corridor trigger some of the Ecological Significance criteria within the Bay of Plenty Regional Policy Statement.
2. The terrestrial and marine environments (habitat and fauna) within the indicative track alignment corridor have ecological values that range from Low to Very High as assessed using the EIANZ guidelines (EIANZ, 2018).
3. With mitigation, the magnitude of the effects of the proposed works range from Negligible to Low.
4. Combining Ecological Value with Magnitude of Effect gives a range in the Overall Level of Effect from Very Low to Low.
5. Several methods are recommended to avoid, remedy and mitigate these potential effects.

# Little Blue Penguin / Kororā

Appendix 3b. The location of active little blue penguin burrows identified during the 2011-12 and 2012-13 breeding seasons.

- Green dots indicate the location of accessible active burrows
- black/red dots indicate the location of active but inaccessible for monitoring purposes.

The approximate location of the indicative track alignment corridor is indicated by the orange polygon (Sievwright, 2014).

Photo 16. Little blue penguin guano (dung) seen on a rock within the buffer zone (additional area surveyed either side of but outside of the proposed track location footprint).

# Landscape, Natural Character & Visual Effects

1. The potential effects on the existing Mauao landscape features and character and,
2. The visual effects or changes to the view of the Mauao landscape as a result of changes to the base track.
   - Mauao is identified as an Outstanding Natural Feature or Landscape (ONFL) with high Natural character in the RPS.
   - Revetment structure in the Coastal Marine Area (CMA).

*"11.3 The overall landscape and visual effects of the proposal, on the site's immediate landscape values and its viewing audience, will be moderate to high. At a broader scale the adverse effects will be low to moderate in nature. Management and mitigation of these effects can be achieved through the application of the proposed recommendations in Section 10 to ensure the effects identified are limited to the immediate landscape and visual effects, avoiding adverse effects on the broader Outstanding Natural Features and Landscape of Mauao."*

# Landscape & visual effects rec's

Managing the potential adverse effects of the proposal through the adherence of current design principles / values in the construction, completion and maintenance of the track by:

a) Maintain the current design RL (height & width) of the revetment.

b) Remediation of the sandy shoreline following construction.

c) Alignment of the revetment follows the natural coastal edge and avoids linear patterns (straight lines).

d) Use of local natural stone that visually integrates, in a weathered condition, with existing stone materials present and used on Mauao.

e) Landscape vegetation measures (8):

- Avoid any further removal of native vegetation cover, i.e. Pōhutukawa trees.
- Include dominant native tree cover along the coastal margin / edge.
- Include the planting of Pohuehue, Oi Oi etc along the top 1/3 of the revetment.
- Additional coastal marginal planting along the Te Kawa beach revetment edge.
- Native plants includes Pōhutukawa, Pūriri, Karaka, and other native shrubs that wont effect known archaeological sites.
- Provision of pedestrian access to the Te Kawa beach and inclusion of cultural information / interpretation panels to reflect the cultural and historical associations of the area.

# Landscape Plan


Boffa Miskell
www.boffamiskell.co.nz



Scale: 0 30m
1:1,000 @ A3

Data sources:
GHD
LYSAGHT

Legend:
- Tree to remove
- Existing tree
- Proposed tree
- Riparian planting
- Infill/erosion control planting
- Revetment with planting
- Retired path / temporary steps
- Proposed boardwalk
- Proposed path

T17136 MAUAO BASE TRACK REMEDIATION

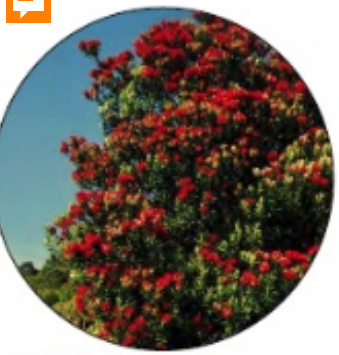
Landscape concept plan

| Date: 09 July 2018 | Revision: A |

Plan prepared by Boffa Miskell Limited

Project Manager: sean.grace@boffamiskell.co.nz | Drawn: TRe | Checked: BSa

Fig. 1



*Metrosideros excelsa*
*(Pohutukawa)*

*Rhopalostylis sapida*
*(Nikau)*

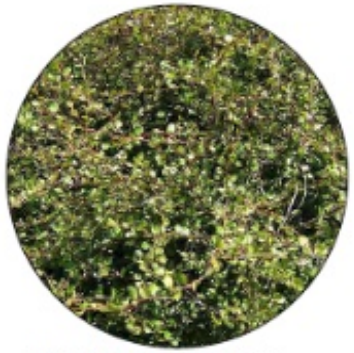
*Corynocarpus laevigatus*
*(Karaka)*

*Myoporum laetum*
*(Ngaio)*

*Vitex lucens*
*(Puriri)*

*Macropiper excelsum*
*(kawakawa)*

*Calystegia soldanella*
*(Shore bindweed)*



*Muehlenbeckia complexa*
*(Creeping wire vine)*

*Pseudopanax lessonii*
*(Five finger)*

*Coprosma robusta*
*(Karamu)*

*Apodasmia similis*
*(Oioi)*

*Ficinia nodosa*
*(knobby club rush)*

*Phormium tenax*
*(Harakeke)*

*Coprosma repens*
*(Taupata)*

*Phormium cookianum*
*(Whaariki)*

# Mauao 2018

# Mauao Simulation – 5 years

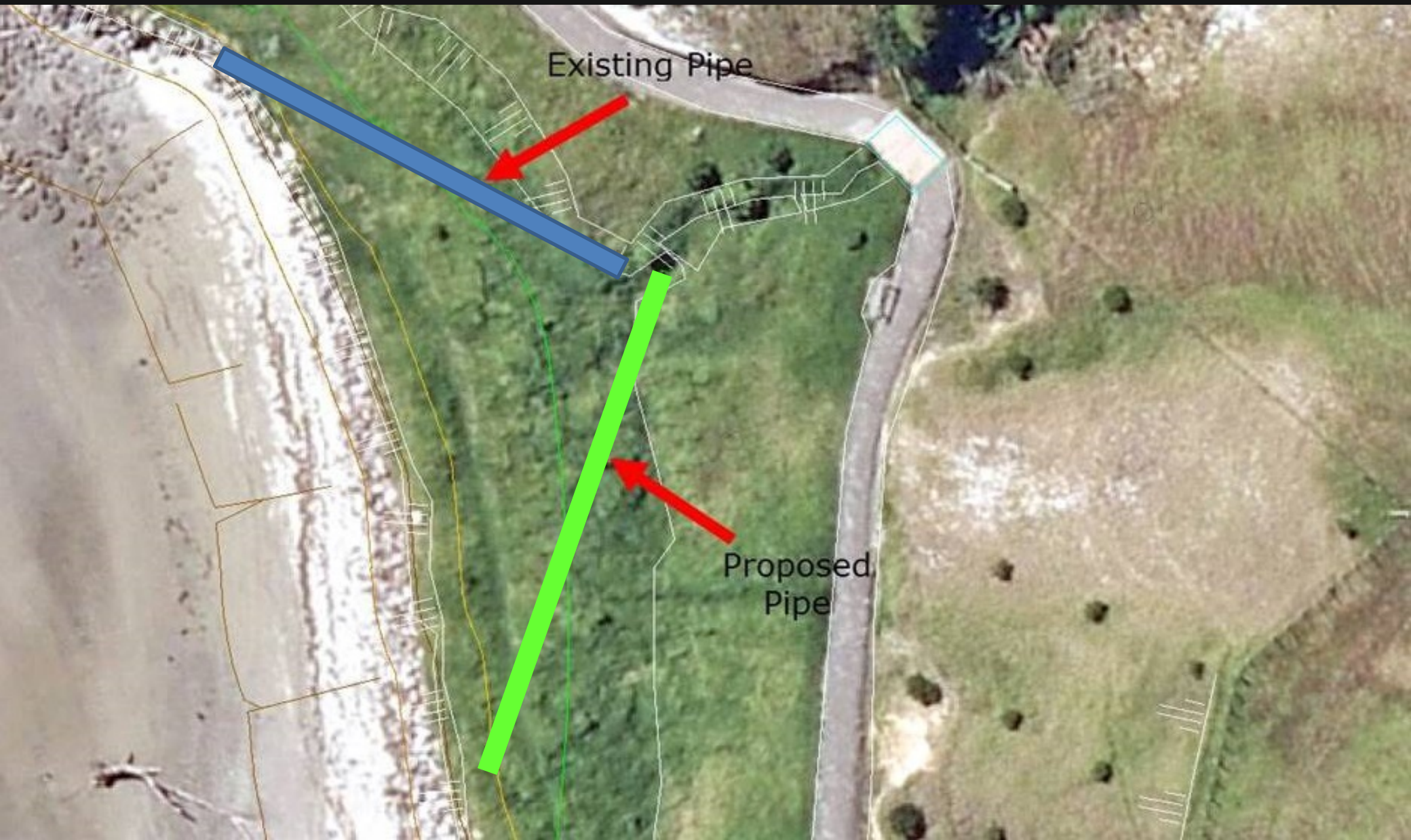
# Mauao Simulation – 20 years

# Current Te Kawa Storm-water pipes

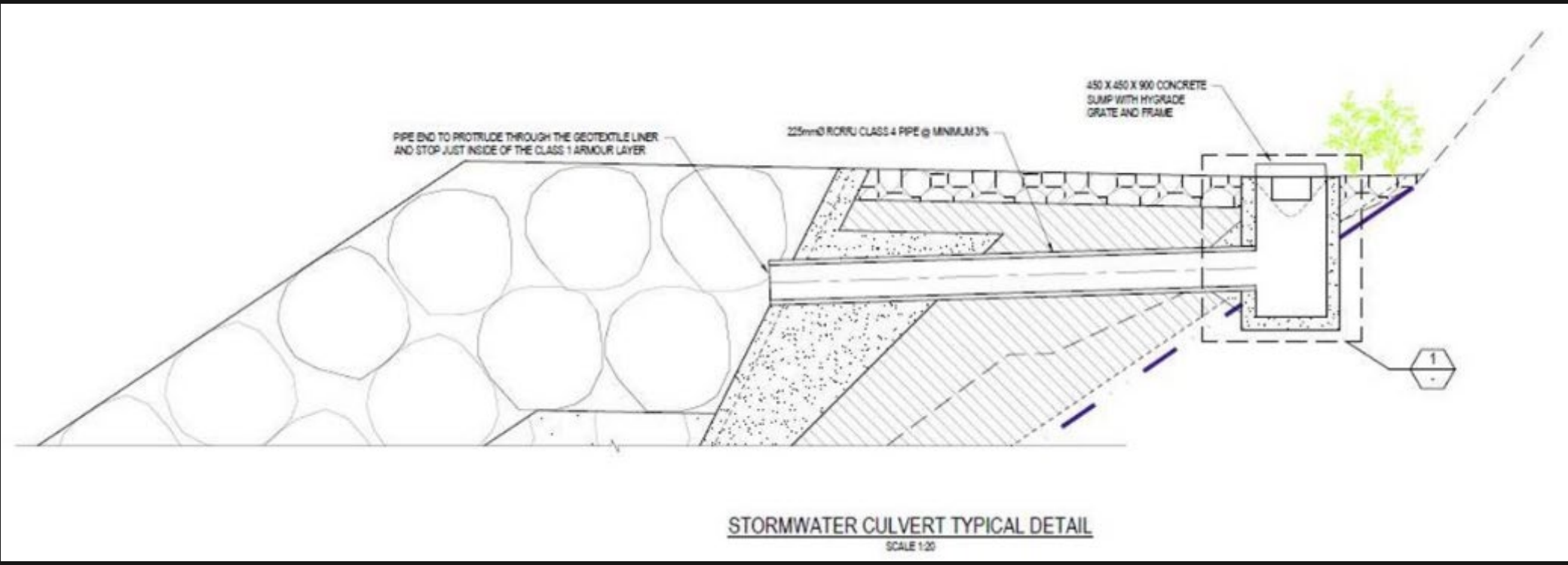
Current Storm-water Inlet

Current Storm-water outlet

# Proposed Te Kawa Storm-water design



# Te Kawa Storm-water detail design

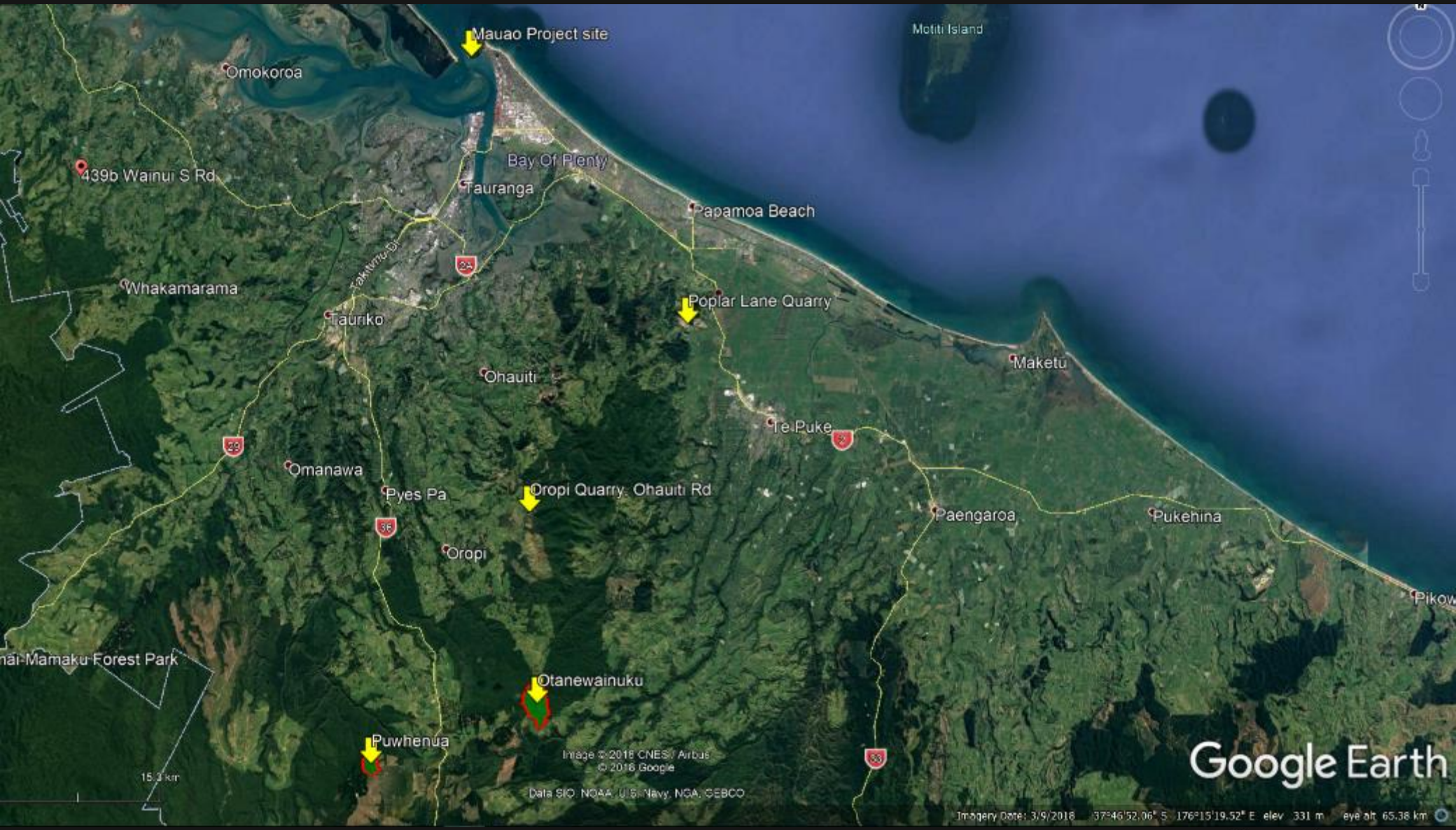



Note: that the stormwater culvert collects the water from the open channel above into a grated inlet and piped under the base track and discharges internally into the rock revetment structure to flow out to the coast.

# Source of Rock for Revetment

- The rock must have at least 3 or more ‘contact points’ and can not be rounded in shape.
- The rocks will weight between 1,300 kg and 1,700 kg.
- Samples of rock from the Poplar Lane and Oropi Quarries are being tested for use in the rock revetment for the Mauao Base Track.

# Poplar Lane & Oropi Quarry



# Project timeframes

1. Start up Phase; 4 Dec 2017: 15 Jan 2018
2. Preliminary concept design and development phase: 22 Jan through to mid April 2018.
3. Pre lodgement consultation with Iwi and key stakeholders from March to July 2018.
4. Resource consent application lodged with BOPRC with design details and refinements on Friday 13 July 2018.
5. Application to Heritage NZ to be lodged Sept 2018.
6. Tender works for construction Sept / Oct 2018.
7. Construction commencing early 2019.

# Other Project Issues:

- Construction materials (i.e. rock) and machinery to be barged into the site and placed on the foreshore.
- Tauranga Moana Iwi monitors to be engaged on site during construction phase of the base track.
- TCC discovery protocols to be confirmed.