

Mauao Placemaking – Planning and Structural Review

Prepared for Tauranga City Council

Prepared by Beca Limited

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Appendices

Appendix A – LAW CREATIVE – Mauao – Interpretation and Placemaking (May 2021)

Revision History

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1 Introduction

This report provides a consenting and structural review required to construct and install the proposed placemaking structures around Mauao (Mount Maunganui). The structures included in this report are based on *LAW CREATIVE – Mauao – Interpretation and Placemaking (May 2021)* (the Proposal) design brief which aims to provide cultural recognition to Mauao through the installation of interpretation sites, this includes:

- 17 sites around and on Mauao
- Adding new informational signage.
- Sculptures
- Seating
- Fencing
- Waharoa
- Viewing platform
- Retaining wall
- Earth amphitheatre

This review will identify those structures which are low risk and where they can be built without the need for a resource or building consent or further design.

1.1 Interpretation & Placemaking Design

The *LAW CREATIVE – Mauao – Interpretation and Placemaking (May 2021)* briefing details the design ideas for each of the 17 sites. This project is being done to provide cultural recognition of the area through structures that provide cultural information. The project has been developed with both iwi and Council representatives and aligns with the guiding principles of The Mauao Joint Administration Body and the Mauao Historic Reserve. This project is critical to ensuring that Mauao is protected, conserved, and appropriately enhanced as a taonga of exceptional cultural, spiritual, historic and natural significance while providing for managed public access and use.

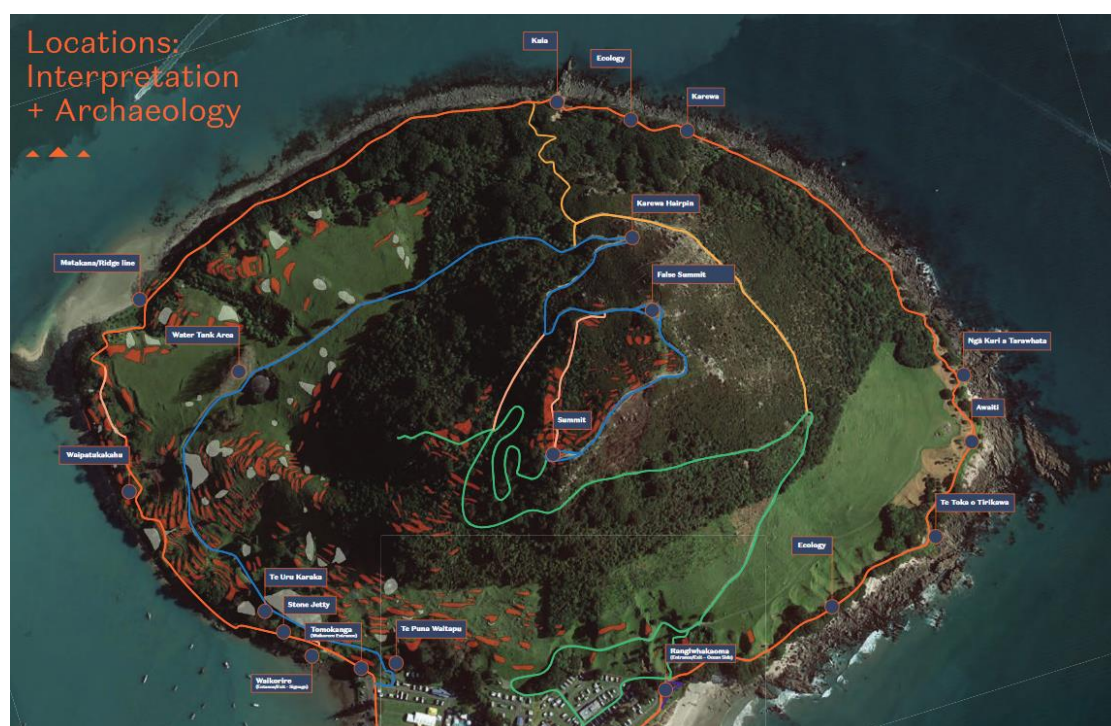


Figure 1: Location of proposed projects around Mauao

2 Zoning

Under the Tauranga City Plan, Mauao is zoned as Open Space - Conservation, Mauao also has a number of overlays and scheduled sites, this project area includes:

- Significant Maori Area - M1 (Mauao)
- Special Ecological Area (SEA) - Category 1 and 2
- Significant Archaeological Area - A6 (Mauao)
- Scheduled Site - Mauao Recreation Reserve (Camp Ground)
- Road Reserve
- Natural Features and Landscapes - Outstanding Natural Features and Landscapes (ONFL) Plan Area
- Natural Hazards - Coastal Hazard Erosion Plan Area (CHEPA) *and* Coastal Protection Plan Area (CPPA)
- Built Heritage Site-18 (Old Stone Steps and Former Military Camp, not affected by this proposal)

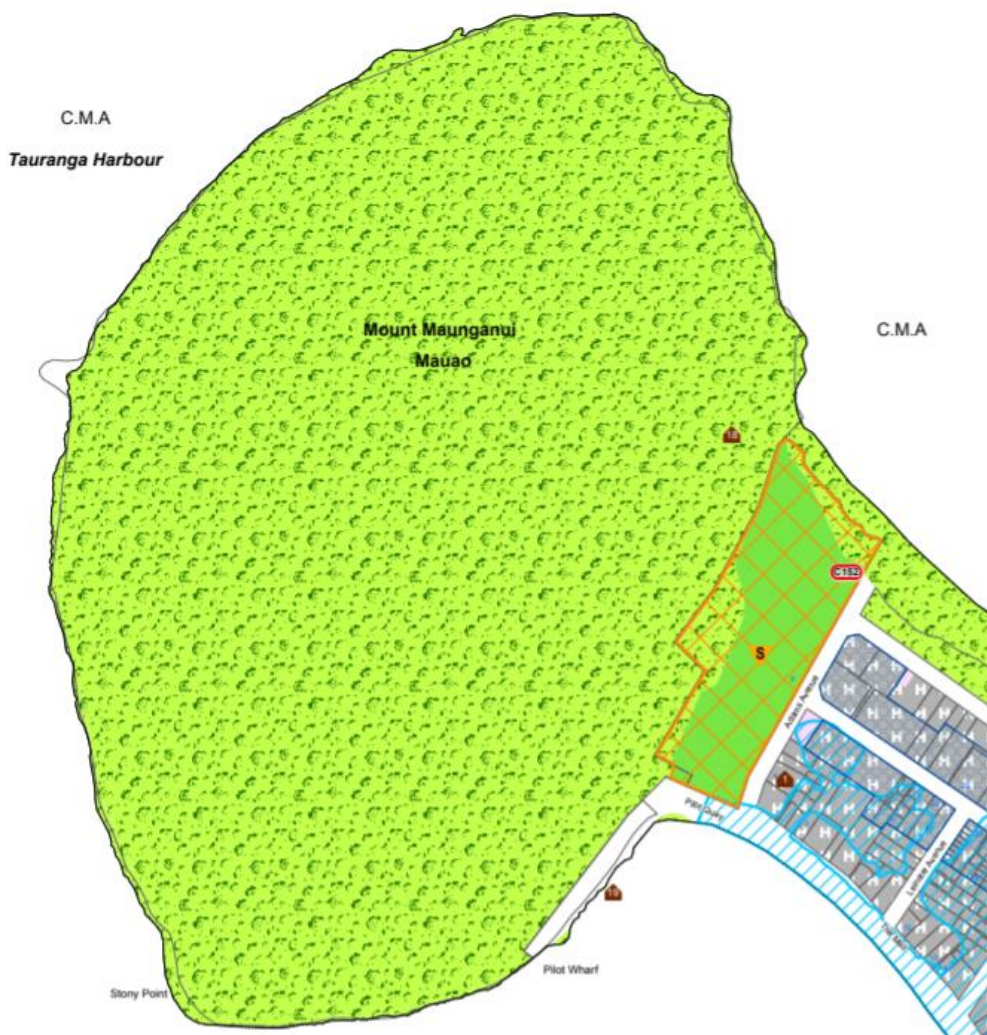


Figure 2: Conservation zoning Left Map 1 from the Tauranga City Plan

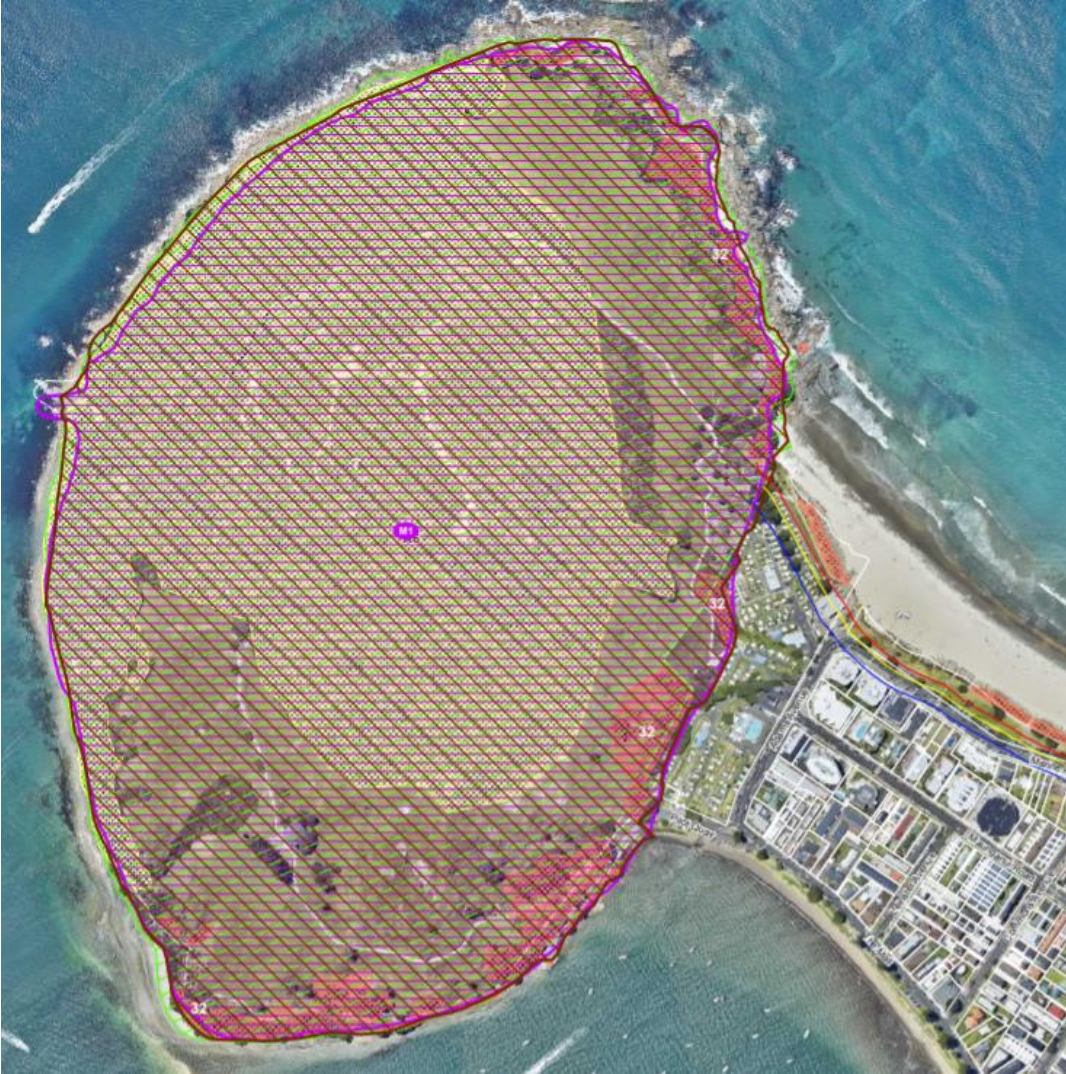


Figure 3: Overlay Right Map 1 showing the various overlays from the Tauranga City Plan

3 Installations

3.1 Proposed Installations

The placemaking proposal aims to capture a number of ideas, features and concepts around Mauao including:

- Waipareira’s Well – Te Puna Waitapu
- Caught by the Dawn
- Waipatukakahu
- All Pa sites
- Tokatapu
- Te Kuia/Te Kuri
- Te Toka a Tirikawa – Awaiti
- Nga Kuri a Tarawhata
- Moturiki, Motuotau, Karewa, Motiti, and Tuhua
- Summit

These sites will be commemorated through signage, seating, sculptures, fencing, platform, landscaping, viewing platforms, earth amphitheatre and retaining walls, some of these structures are shown below.



Figure 4: Wayfinding signage



Figure 5: Wahaoroa

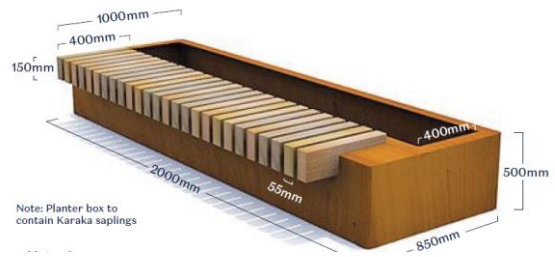


Figure 6: Seating/Planter Box

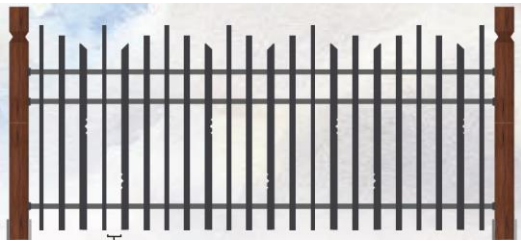


Figure 7: Fencing

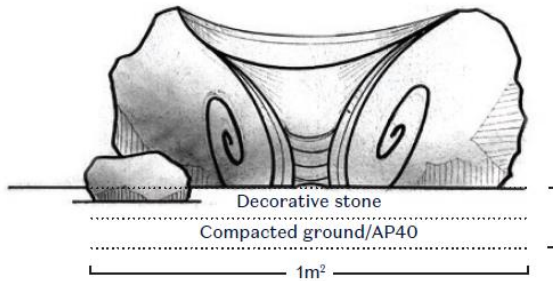


Figure 8: Sculpture



Figure 9: Entry Pou



Figure 10: Viewing Platform



Figure 11: Example site, Waipatukakahu, showing signage, planting, fence and wāharoa

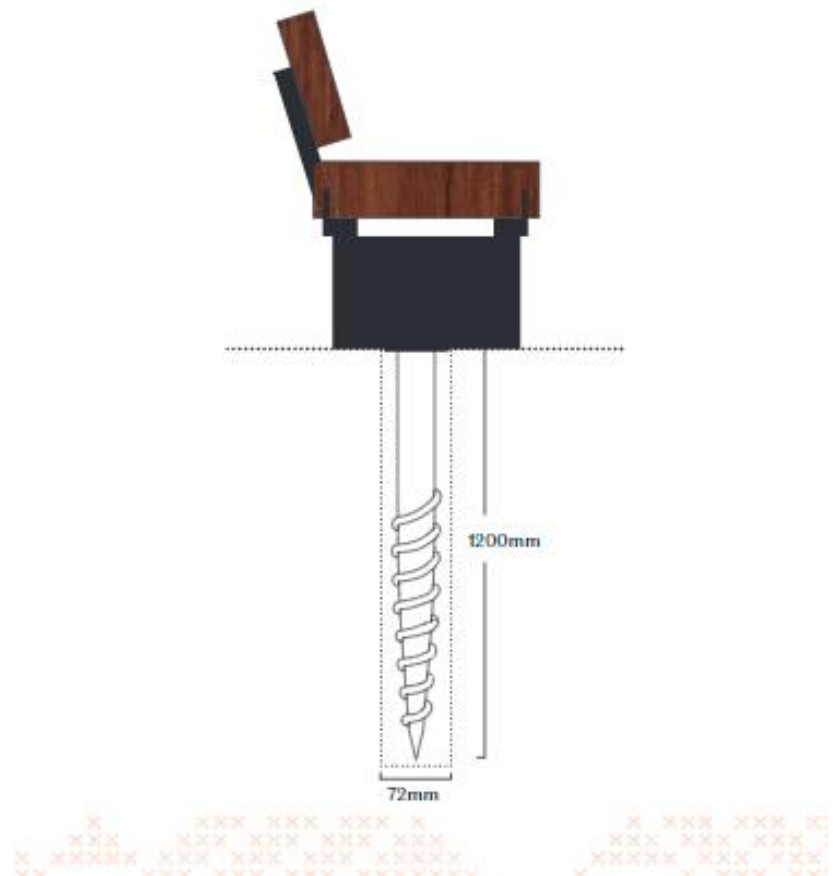
In total there are 17 sites around Mauao which include various structures these include:

- Te Puna Waitapu (Waipareira Well)
- Waikorire (Pilot Bay) Entrance / Exit
- Te Uru Karaka
- Stone Jetty
- Water Tank
- Waipatukakahu
- Tangaroa Sculpture
- Matakana + Visible Ranges
- Te Kuia, Te Kuri & Tokatapu
- Ngā Kuri a Tarawhata
- Awaiti
- Te Toka o Tirikawa
- Karewa View Hairpin
- Rangiwakaoma Entrance / Exit
- False Summit + Exposed Terrace
- Final Corner on Summit Approach
- Summit

Please refer to Appendix A, *LAW CREATIVE – Mauao – Interpretation and Placemaking (May 2021)* for further detail on these structures.

3.2 Ground Screw System

The majority of the structures are designed to use ground screws, this system has been proposed in order to minimize invasive earthworks during construction, see Figures 12 and 13 below. This system will be used to minimise earthworks within the Significant Archaeological and Maori Area and will help to preserve the mana of Mauao. While this system will minimise the earthworks, we recommend that a clear compliance pathway is established and that alternative solutions are planned for where the subsoil profile or structural configuration does not allow this system to be utilised. This is further discussed in Section 0 (Structural Review).



Figures 12 & 13: Screw System with the proposed (by others) implementation of a sign (left) and a bench (right)

4 Tauranga City Council Rule Framework

4.1 Relevant Provisions in the Tauranga City Plan

As discussed in Section 2, there are various overlays which cover Mauao in the TCP these include:

- Chapter 4 (General Rules - Road Reserve)
- Chapter 5 (Natural Environment – Special Ecological Area (SEA) 1 and 2)
- Chapter 6 (Natural Features and Landscapes - Outstanding Natural Features and Landscapes (ONFL) Plan Area)
- Chapter 7 (Heritage – Significant Maori Area (SMA) and Significant Archaeological Area (SAA)
- Chapter 8 (Natural Hazards - Coastal Hazard Erosion Plan Area (CHEPA) and Coastal Protection Plan Area CPPA)
- Chapter 13 (Open Space Zone – Conservation and Mauao Recreation Reserve)

4.2 Definitions

The Proposal has been assessed against the relevant definitions in Chapter 3 of the TCP.

Chapter 3 – Definitions

1) Minor public recreational facilities and activities

Means:

- a) *Tree husbandry including replacement, removal/control of indigenous, exotic, noxious or nuisance plant species including weed control, tree and vegetation planting (including revegetation);*
- b) *Pedestrian and cycle track construction including pathways, bridging, boardwalks, walkways and steps;*
- c) *Animal control operations;*
- d) *Interpretive and directional signs;*
- e) *Park furniture including bollards, playgrounds and play equipment, gates, stiles, seating, memorials, picnic tables, barbeques, sculptures, artworks and interpretative and directional signs, shade-sails and viewing platforms;*
- f) *Public toilets, changing rooms, shelters and free standing showers;*
- g) *Public carparks and access roads;*
- h) *Gardens, landscaped and grassed areas;*
- i) *Beach grooming and cleaning operations;*
- j) *General maintenance of reserves and public open space areas.*

for the use and enjoyment of the public.

2) Minor structures and activities

In relation to the Coastal Hazard Erosion Plan Area, Special Ecological Areas, Open Space Zones, setbacks from the Coastal Marine Area, permanently flowing river or stream or wetland, and the High Voltage Transmission Plan Area means:

- a) *Gardens, trees, paving areas and landscaped areas;*
- b) *Garden structures (including but not limited to fences, steps, pergolas, shade sails, barbeque areas, clotheslines, letterboxes);*
- c) *Decks less than 1m in height and 30m² in area;*
- d) *Structures and buildings less than 10m² in gross floor area (GFA) and do not require a building consent*

3) Minor structures and activities

In relation to the significant archaeological areas means:

- a) *Gardening activities*
- b) *Garden structures (including fences, steps, pergolas, paved areas, clothes lines or letter boxes);*
- c) *Support poles for decks;*
- d) *Tree planting;*
- e) *Interpretive and directional signage;*
- f) *Pedestrian and cycle tracks including pathways, boardwalks and steps;*
- g) *Park furniture including bollards, lighting poles, rubbish bins, playgrounds and play equipment, gates, stiles, seating, memorials, picnic tables, barbeques, sculptures, artworks or shade-sails.*

4) Minor structures and activities

In relation to Significant Maori Areas means:

- a) *Gardening activities*
- b) *Garden structures (including fences, steps, (cumulatively involving cuts less than 1.5 metres in height), pergolas, paved areas, clothes lines or letter boxes);*
- c) *Tree planting;*
- d) *Interpretive and directional signage*

5) Sign

Any display or device whether or not placed on land or affixed to a building, stationary vehicle or structure, intended to attract attention for the purposes of directing, identifying, informing, or advertising, and which is visible from a public place.

6) Structure

Any building, equipment, device or other human-made facility which is fixed to the land.

4.3 Activity Status under Tauranga City Plan

For the purposes of this planning assessment the structures have been divided into separate categories to align with the definitions and rules throughout the TCP.

Table 1 below reviews the proposed structures against the TCP

Table 1: Activity status under Tauranga City Plan.

Feature	Relevant Chapter, Definition and Rules	Activity Status	Resource Consent Required?
This includes signs and park furniture like sculptures, pou, benches, planter box, waharoa and celestial compass.	4 – (General – Road – Rule 4C.2.1 and Rule 4D.2.3.5) All features proposed in the Road Zone are classed as <i>signs</i>	P	No
	5- (Natural Environment- SEA 1&2 - Rule 5A.5) All features are classed as <i>public recreational facilities and activities</i>	P	No
	6 - (Natural Features and Landscapes-ONFL- Rule 6A.3) All features are classed <i>public recreational facilities and activities</i>	P	No
	7 - (Heritage -SAA- Rule 7E.6.1) <i>Signs are classed as minor structures and activities; and associated earthworks</i>	P	No
	7 - (Heritage -SMA-Rule 7C.7) <i>Park furniture including bollards, seating, memorials, picnic tables, sculptures, artworks.</i>	RD	Yes
	8- (Natural Hazards - CHEPA & CPPPA- Rule 8B.3) All features are classed as <i>minor public recreational facilities and activities</i>	P	No
	13 - (Open Space Zone- Conservation and Reserve- Rule 13A.8, Rule 13A.9.11 and 13A.8.1) All features are classed as <i>minor public recreational facilities and activities</i>	P	No
Earthworks (associated with signs and park furniture)	Earthworks for the structures above are permitted in all zones, if they align with the standards set out in Rule 4C.2.2. However, they are limited to 5m ³ within the CHEPA and the SEA 1 & 2 (within a 6 month period).	P	No

Other structures, this includes, fences, retaining wall, amphitheatre and viewing platform.	5- Natural Environment - SEA 1 – Rule 5A.8) Other structures classed as <i>minor structures and activities</i> .	NC	Yes
	5- Natural Environment - SEA 2 – Rule 5A.7) Other structures classed as <i>minor structures and activities</i>	D	Yes
	6 - (Natural Features and Landscapes -ONFL- Rule 6A.6) Other structures classed as <i>buildings and structures</i>	NC	Yes
	7 - (Heritage-SMA & SAA - Rule 7C.8) Other structures classed as <i>buildings or structures and associated earthworks</i>	RD – SAA D – SMA	Yes
	8- (Natural Hazards- Rule- 13A.8) Other structures classed as <i>minor structures and activities</i>	P	No
	13 - (Open Space Zone - Rule 13A.8) Other structures classed as <i>minor structures and activities</i>	P	No
Earthworks associated with other structures	Any earthworks associated with these other structures will be a non-complying activity under Rule 4C.5, as it is associated with the non-complying activity in Chapter 6 – ONFL.	NC	Yes

4.4 Summary

The activity table (Table 1) above shows the following:

- 1) Signs are permitted in all chapters and do not require resource consent.
- 2) Park furniture is permitted in all chapters except within the Heritage Chapter, specifically, within the Significant Maori Area (Mauao), this is a restricted discretionary (RD) activity under Rule 7C.7 and these structures will require resource consent.
- 3) Earthworks associated with the park furniture is permitted if they align with the standards set out in Rule 4C.2.2. However, they are limited to 5m³ within the CHEPA and the SEA 1 & 2 (within a 6 month period).
- 4) Other structures (fences, retaining wall, amphitheatre and viewing platform) and associated earthworks are regarded as Non-Complying activities under Rule 6A.6, as all of Mauao is within an ONFL Plan Area. In this instance a consent authority may grant a resource consent for a non-complying activity only if it is satisfied that either—

(a) the adverse effects of the activity on the environment (other than any effect to which section 104(3)(a)(ii) applies) will be minor; or

(b) the application is for an activity that will not be contrary to the objectives and policies of—

(i) the relevant plan, if there is a plan but no proposed plan in respect of the activity; or

(ii) the relevant proposed plan, if there is a proposed plan but no relevant plan in respect of the activity; or

(iii) both the relevant plan and the relevant proposed plan, if there is both a plan and a proposed plan in respect of the activity.

- 5) The Mauao Recreation Reserve (Camp Ground) is outside many of the overlays which apply to Mauao, it is zoned Open Space, it is also a scheduled site and it is covered by the Erosion Risk overlay. Under these rules and overlays, the proposed entrance structure is permitted and will not require resource consent, if it is less than 6m high.

4.5 The Mauao Historic Reserve Management Plan (2018)

TCC and the Mauao Trust prepared the Mauao Historic Reserve Management Plan in 2018, in accordance with the Reserves Act 1977. This assessment has not included a review of the Reserves Act 1977, a review of this plan and Act should be carried out by Council before any work is initiated

4.6 Bay of Plenty Regional Council - Regional Natural Resources Plan

Activities on and around Mauao are also subject to the Bay of Plenty Regional Council Regional Natural Resources Plan (RNRP). The following section reviews the relevant rules within the RNRP.

Earthworks

Parts of the Proposal are within the Coastal Margin and are subject to earthworks *Rule LM R1 (Rule 1.g) – Permitted Earthworks and Quarry's*. This rule allows an exposed area no greater than 400 m² and volume no greater than 200 m³ within any 12 month period. The proposal will not exceed this volume and area, therefore any earthworks within these volumes are permitted under the RNRP. None of the structures are proposed within the Coastal Marine Area (CMA).

Vegetation Clearance

The Proposal does not include any vegetation clearance which would result in land or soil disturbance, however, if this is required in the future it will need to be reassessed under the RNRP.

At the time of the assessment no consents are required under the RNRP.

5 Structural Review

Beca structural engineers have undertaken a review of the proposed installations outlined in the Proposal which is appended to this report in Appendix A. The review has focussed on identifying installation items which require a Building Consent. Several workshops have been held with TCC, Beca and Law Creative in order to gain an understanding of design intent. No structural design checks have been undertaken.

5.1 Foundation systems

There are various proposed foundation systems to be used for the installations. These are as follows:

Screw Anchor Pile system (refer 3.2)

An innovative approach to foundation systems is proposed for the majority of the installations. “Stopdigging!” ground screws are proposed by Law Creative as an alternative to more intrusive excavations and pouring of reinforced concrete. In order for these systems to meet the requirements of the New Zealand Building Code (NZBC) they will need to be tested on site after installation to demonstrate sufficient capacity for site specific environmental loads.

We recommend that the compliance pathway for this foundation system be agreed early on in the next phase of design.

We also recommend that, due to the variability of subsoil and the likelihood of encountering rock or soft soil layers near the ground surface, that test installation be undertaken to verify suitability of the proposed foundation system for placement and to withstand environmental load on low risk items.

Rock Anchor

Law Creative are indicating that where boulders or rocks impede the ability of the screw anchor system to gain adequate founding, a steel anchor is to be epoxied into the rock/ boulder. Again, we recommend that a detailed design is put in place for this contingency, including a clear compliance pathway. Potentially testing of the post fixed anchor insitu will be sufficient to demonstrate compliance with NZBC.

Embedded post

Suggested change to Pou design to embed post within ground will simplify design and construction. Compliance of this foundation solution could be achieved through verification method, B1, VM4.

5.2 Groups of Installations

In reviewing the proposed installations against Building Consent requirements, it is useful to group items by type. We have used the following groups for this process (Table 2):

Table 2: Groups of Installations

Group	Description
Signs	Mixture of wayfinding and interpretation signage, timber and stone construction, not exceeding 3m in height nor 6m ² in area.
Sculpture	Carved Stone elements not exceeding 3m in height, nor 6m ² area in elevation.
Seating	Mixed material seating elements, timber, concrete, stone. Not more than 1.5m in height.

Fencing	Aluminium fencing system, repeating modular design. Not exceeding 2.5m in height
Pou	Carved timber pou elements of varying heights and diameters, some pou exceeding 3m in height.
Bollard	Removable bollarding to roadways, to restrict vehicular access to the Mauao. Not exceeding 3m in height.
Waharoa	Two prominent waharoa of significant size and complexity, height over 3m.
Platforms	Seating and observation platforms constructed on sloping ground. Potential to fall from platform over 1.5m in height.
Retaining	The proposed Te Kuri retaining appears to be located on an existing slip face. This is a retaining and rock deflection system, likely to be in excess of 1.5m in height.
Terracing	Earthworks are proposed to terrace an amphitheatre adjacent to the existing water tank site. Indicative rise:run of this terracing is 600mm:1500mm.

5.3 Building Consent Exemptions

The New Zealand Building Act 2004, Schedule 1 outlines building work for which Building Consent is not required.

Exemptions outlined in this schedule which are relevant to this project are as follows:

Part 1

20. *Retaining walls - Building work in connection with a retaining wall that:*

(a) *retains not more than 1.5 metres depth of ground; and*

(b) *does not support any surcharge or any load additional to the load of that ground (for example, the load of vehicles).*

21. *Fences and hoardings, building work in connection with a fence or hoarding in each case not exceeding 2.5m in height above the supporting ground*

24. *Decks, platforms, bridges, boardwalks, etc. Building work in connection with a deck, platform, bridge, boardwalk, or the like from which it is not possible to fall more than 1.5 metres even if it collapses.*

25. *Signs*

Building work in connection with a sign (whether free-standing or attached to a structure) and any structural support of the sign if—

(a) *no face of the sign exceeds 6 square metres in surface area; and*

(b) *the top of the sign does not exceed 3 metres in height above the supporting ground level.*

Part 3 – Building work for which design is carried out or reviewed by chartered professional engineer

39. *Signs - Building work in connection with any sign (whether freestanding or attached to a structure) and any structural support of the sign.*

Although structures may be exempt from a building consent, they will still need to be constructed to meet the minimum requirements of the NZBC.

5.4 Workshop Outcomes

A workshop was held on 2nd November, attended by our client TCC and Law Creative. The intent of this workshop was to: run through each proposed installation, review design intent, highlight any obvious design risk or client concern. A quick summary of key outcomes, pertaining to Structural aspect of this review is as follows:

- Agreed to alter base design of Pou to a more traditional embedded post design which will simplify the foundation and reduce construction cost.
- Tabled initial findings with client and design team, identified items which are of perceived higher risk from TCC.
- Gained a better understanding of design intent including heights and widths of installations.

5.5 Structural Risks

We provide a non-exhaustive list of high-level risk items which we have identified during our review:

- Foundations - The proposed screw anchor foundation system is innovative however it creates elevated risk over more traditional mass concrete footings, we recommend that a clear compliance pathway for this proprietary system is established and agreed upon during the next phase of design.
- Screw anchor pile distributor are reliant on client engaged engineer to take responsibility for design compliance with the New Zealand Building Code (NZBC), this may make it difficult for TCC to procure engineering design services.
- Unknown subsoil build-up at each proposed foundation location. There is a risk that soil near the ground surface will not be sufficiently stiff to resist overturning loads applied by fences/ signage etc. There is also a significant risk of encountering obstructions such as rocks/boulders during installation, we recommend this risk is minimised through site investigation, trial installation of screw anchor pile system, or a mixture of both.
- Safety in Design/ operational Health & Safety.

5.6 Summary of Findings

A summary of findings and recommendations are listed in below Table :

Table 3: Summary of Findings

Installation	Building Consent Required	Level of Risk	Recommended Minimum Level of Professional Involvement
Signs	No	Low	-
Sculpture	No	Low	-
Seating	No	Low	Licensed Building Practitioner (LBP)
Fencing	No	Medium	LBP
Pou	No (Involvement of CPEng required)	Low	Structural Engineer and Geotechnical Engineer

Bollard	No	Low	-
Waharoa	No (Involvement of CPEng required)	Medium	Structural Engineer and Geotechnical Engineer
Platforms	Yes	Medium	Structural Engineer and Geotechnical Engineer
Retaining	Yes	Medium	Civil/Structural Engineer and Geotechnical Engineer
Terracing	No	Low	Civil Engineer

5.7 Overall Structural Summary

The proposed screw anchor foundation system is innovative however it creates elevated risk over more traditional mass concrete footings, we recommend that a clear compliance pathway for this proprietary system is established and agreed upon during the next phase of design.

No building consent is required for the proposed signs, seating and bollards where the risk is low, with no professional review required (other than testing of foundation system sufficient to satisfy TCC that compliance with New Zealand Building Code is achieved). No building consent is required for seating and fencing, and the risk is low and medium respectively, we recommend that a Licenced Building Practitioner, or suitably qualified and experienced contractor, is involved in the design and construction of these structures. For all other structures which require building consent we recommend that Structural Engineer and Geotechnical Engineer services are involved in the design.

6 Conclusion

The resource consent assessment above shows the following:

- 1) Signs are permitted in all chapters and do not require resource consent.
- 2) Park furniture is permitted in all chapters except within the Heritage Chapter, specifically, within the Significant Maori Area (Mauao), this is a restricted discretionary (RD) activity under Rule 7C.7 and these structures will require resource consent.
- 3) Earthworks associated with the park furniture is permitted if they align with the standards set out in Rule 4C.2.2. However, they are limited to 5m³ within the CHEPA and the SEA 1 & 2 (within a 6 month period).
- 4) Other structures (fences, retaining wall, amphitheatre and viewing platform) and associated earthworks are regarded as Non-Complying activity under Rule 6A.6, as all of Mauao is within an Outstanding Natural Feature and Landscapes (ONFL) Plan Area. In this instance a consent authority may grant a resource consent for a non-complying activity only if it is satisfied that either—
 - a. *the adverse effects of the activity on the environment (other than any effect to which section 104(3)(a)(ii) applies) will be minor; or*
 - b. *the application is for an activity that will not be contrary to the objectives and policies of—*
 - i. *the relevant plan, if there is a plan but no proposed plan in respect of the activity; or*
 - ii. *the relevant proposed plan, if there is a proposed plan but no relevant plan in respect of the activity; or*
 - iii. *both the relevant plan and the relevant proposed plan, if there is both a plan and a proposed plan in respect of the activity.*
- 5) The Mauao Recreation Reserve (Camp Ground) is outside many of the overlays which apply to Mauao, it is zoned Open Space, it is also a scheduled site and it is covered by the Erosion Risk overlay. Under these rules and overlays, the proposed entrance structure is permitted and will not require resource consent, if it is less than 6m high
- 6) No consents are required under the BOPRC RNRP.

The structural assessment shows that no building consent is required for the proposed signs, seating and bollards, the risk of design non-compliance with NZBC is low, with no professional review required. Other structures will require further design and professional review.

7 Recommendation

Council can progress with installing signage under this Proposal without requiring resource consent under the TCP or the BOPRC RNRP. All other structures will require resource consent.

We recommend the risks presented by the innovative proprietary foundation system are minimized through the next phase of design, this will include the requirement for some test installation and proof loading.

While building consent is not required for signs, seating and bollards and the risk is low, with no professional review required we recommend that for all other structures a detailed design phase is undertaken. The detailed design should produce documentation suitable to provide a basis for the application for Building Consent for those items requiring consent as listed in Table 3.

We recommend that a Safety in Design (SID) workshop is held and that a SID register is established and maintained to encompass all proposed installations, not only those items requiring consent.

A

Appendix A – LAW CREATIVE – Mauao – Interpretation and Placemaking

