Notice is hereby given that an ordinary meeting of the Horowhenua District Council will be held on:

Date:	**Wednesday 20 March 2024**
Time:	**1:00 pm**
Meeting Room:	**Council Chambers**
Venue:	**126-148 Oxford St Levin**

Council

OPEN AGENDA

MEMBERSHIP

Mayor	His Worship The Mayor Bernie Wanden
Deputy Mayor	Councillor David Allan
Councillors	Councillor Mike Barker
	Councillor Rogan Boyle
	Councillor Ross Brannigan
	Councillor Clint Grimstone
	Councillor Nina Hori Te Pa
	Councillor Sam Jennings
	Councillor Paul Olsen
	Councillor Jonathan Procter
	Councillor Justin Tamihana
	Councillor Piri-Hira Tukapua
	Councillor Alan Young

Contact Telephone: 06 366 0999
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Email: enquiries@horowhenua.govt.nz
Website: www.horowhenua.govt.nz

Full Agendas are available on Council's website
www.horowhenua.govt.nz

Full Agendas are also available to be collected from:
Horowhenua District Council Service Centre, 126 Oxford Street, Levin
Te Awahou Nieuwe Stroom, Foxton,
Shannon Service Centre/Library, Plimmer Terrace, Shannon
and Te Takeretanga o Kura-hau-pō, Bath Street, Levin

Note: The reports contained within this agenda are for consideration and should not be construed as Council policy unless and until adopted. Should Members require further information relating to any reports, please contact the Chief Executive Officer or the Chairperson.

ITEM TABLE OF CONTENTS PAGE

Karakia

Whakataka te hau ki te uru	Cease the winds from the west
Whakataka te hau ki te tonga	Cease the winds from the south
Kia mākinakina ki uta	Let the breeze blow over the land
Kia mātaratara ki tai	Let the breeze blow over the ocean
E hī ake ana te atakura	Let the red-tipped dawn come with a sharpened air.
He tio, he huka, he hau hū	A touch of frost, a promise of a glorious day.
Tīhei mauri ora!	

1 Apologies

2 Public Participation

Notification of a request to speak is required by 12 noon on the day before the meeting by phoning 06 366 0999 or emailing public.participation@horowhenua.govt.nz.

3 Late Items

To consider, and if thought fit, to pass a resolution to permit the Council to consider any further items which do not appear on the Agenda of this meeting and/or the meeting to be held with the public excluded.
Such resolution is required to be made pursuant to Section 46A(7) of the Local Government Official Information and Meetings Act 1987, and the Chairperson must advise:
(i) The reason why the item was not on the Agenda, and
(ii) The reason why the discussion of this item cannot be delayed until a subsequent meeting.

A late item will be issued prior to the Council meeting. This late item will be in relation to Waikawa Beach Vehicle and will be published as a late agenda item on the Council's website. The item could not be produced in time for the ordinary agenda as officers still consulting with required parties. The matter cannot wait until the next meeting of Council in May 2024 due to high public interest.

A further late item is expected updating Council on 3 Waters reform.

4 Declarations of Interest

Members are reminded of their obligation to declare any conflicts of interest they might have in respect of the items on this Agenda.

5 Confirmation of Minutes

5.1 Meeting minutes Council, 6 March 2024
5.2 Meeting minutes In Committee Meeting of Council, 6 March 2024

6.1 Mayoral Report - March 2024

File No.: 24/128

1. Purpose

1.1 The purpose of this report is for His Worship the Mayor to report to Council on community events and Council-related meetings attended during February 2024, and provide an update on items of interest.

2. Recommendation

2.1 That Report Mayoral Report - March 2024 be received.

2.2 That this matter or decision be recognised as not significant in terms of s76 of the Local Government Act 2002.

3. February 2024 - Meetings, Functions and Events Attended

3.1 The following meetings, functions and events were attended by Mayor Bernie, during the month of February 2024.

February 2024
Meeting with Amarjit Maxwell (Incoming THINK Hauora CE)
Horowhenua DC/NZTA quarterly regional relationship meeting
Mayor and Chief Executive – weekly catch up (1)
Muaūpoko Community Waitangi Day Event
Council meeting
Cuppa with a Councillor
Meeting with Darlene Rastrick, Regional Commissioner MSD
Medieval Market
Horowhenua Access & Inclusion Network Meeting
Mayor / Deputy Mayor & CE Monthly Meeting
Chief Executive Employment and Performance Committee Meeting
Council workshop and briefing (1)
Education Horowhenua Network Forum Meeting
Horowhenua Older Person's Network
Te Takeretanga o Kura-hau-pō visit with Marion Read, LGNZ
Visit with Te Whanau Care Home manager
Catch-up with Josh Paroli, Tertiary Scholarship Student
Business After 5 meeting
Visit with Maddison Care Facility manager
Shannon and Bike Car Show
Visit with Matt and Gwen, Levin New World
Mayor and Chief Executive – weekly catch up (2)

Visit with Masonic Village manager
Risk & Assurance Committee meeting
Coast Access Radio – interview
Council workshop and briefing (2)
Visit Jason Davy, New World Foxton
Visit to Robert Harris Foxton
Catch-up with Mayor Bernie – Te Takeretanga o Kura-hau-pō
Purple Poppy Observance at the Levin Cenotaph
Making Rail Work for Levin – public meeting
Mayor's Taskforce for Jobs – Governance Meeting
Citizenship Ceremony
Council workshop and briefing (3)
Mayor and Chief Executive – weekly catch up (3)
Meeting with Taxi Drivers – Road Safety Discussion
Waitārere Rise Flood Action Group Hui

Attachments

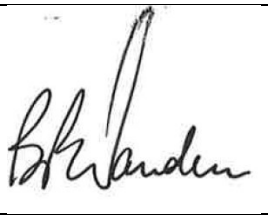
There are no attachments for this report.

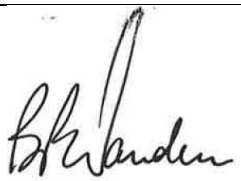
Confirmation of statutory compliance

In accordance with section 76 of the Local Government Act 2002, this report is approved as:

a. containing sufficient information about the options and their benefits and costs, bearing in mind the significance of the decisions; and,
b. is based on adequate knowledge about, and adequate consideration of, the views and preferences of affected and interested parties bearing in mind the significance of the decision.

Signatories

Author(s)	Bernie Wanden **Mayor**	

Approved by	Bernie Wanden **Mayor**	

6.2 Proposed Remit to the 2024 LGNZ AGM

File No.: 24/118

1. Purpose

The purpose of this report is to present to Council a proposed remit for consideration. The remit has been put forward by Crs Tamihana and Hori Te Pa, as part of a wider cohort of Māori Ward Councillors from across the Horizons Region. This paper has been prepared on their behalf.

2. Recommendation

2.1 That Report 24/118 Proposed Remit to the 2024 LGNZ AGM be received.

2.2 That this matter or decision be recognised as not significant in terms of s76 of the Local Government Act 2002.

2.3 That Council support the following remit for consideration at the Zone Three Meeting and if successful, the LGNZ AGM 2024:

> *That LGNZ lobbies Central Government to ensure that Māori Wards and constituencies are treated the same as all other wards in that they should not be subject to a referendum.*

3. Background/Previous Council Decisions

3.1 Māori wards and constituencies serve on district, city and regional Councils in New Zealand and represent local ratepayers and constituents registered on the Māori parliamentary electoral roll.

3.2 The purpose of Māori wards and constituencies is to ensure Māori are represented in local government decision making.

3.3 In February 2021, the Government at the time made legislative changes which would uphold local council decisions to establish Māori wards and abolish the existing law which allowed local referendums to veto decisions by councils to establish Māori wards.

3.4 The Local Electoral (Māori Wards and Māori Constituencies) Amendment Act 2021, eliminated mechanisms for holding referendums on the establishment of Māori wards and constituencies on local bodies.

3.5 Many Councils, including Horowhenua District Council, took the opportunity to make decisions about establishing Māori wards after the law change and as a result, the 2022 local elections saw six of the eleven regional councils (54.5%) have Māori constituencies and 29 of the 67 territorial authorities (43.3%) have a Māori ward/s.

3.6 Horizons Regional Council, and all seven District Councils of this region, have Māori wards.

3.7 Following the legislation changes, there was a significant increase in Māori representation. The 2022 Local Government election saw the highest number of Māori elected members in local government, growing from 5% to 22%. It is evident the introduction of Māori wards and constituencies empowered more Māori to nominate, stand, vote, and participate in local government.

4. Issues for Consideration

4.1 The current Coalition Government has indicated that they will make legislative changes which will only apply to Māori Wards and not general wards. The legislative changes will require Councils who established a Māori Ward without a community referendum, to hold a community referendum.

4.2 The Horizons Region Māori Ward rōpū believe that this shows a prejudice against Māori, a complete lack of fairness and will likely result in further disengagement of Māori in the activities of local government.

4.3 This proposed remit seeks to ensure that the status quo remains, where Councils are empowered to make decisions about the make-up of their representation through the Representation Review process.

4.4 Should legislative changes be made, this will present a number of significant timing and resourcing challenges for Council, ahead of the 2025 election. Guidance from government of the expectation or implementation of this coalition agreement is at this stage unclear. However, this remit seeks to provide an advocacy platform to ensure that the establishment and maintenance of wards not be specific to Māori Wards, but to all Wards.

4.5 Prior to being submitted to LGNZ, remits must have formal support from at least one zone or sector group meeting, or five councils.

4.6 As such the following remit is proposed and should it be endorsed by Council, it will be presented at the March 2024 Zone Three Meeting:

4.7 That LGNZ lobbies Central Government to ensure that Māori Wards and constituencies are treated the same as all other wards in that they should not be subject to a referendum.

4.8 The proposed remit fits within LGNZ's current policy position, which outlines that Māori wards and constituencies should be treated the same as other wards in that they should not be subject to a referendum or if so, all wards should be subjected to the referendum.

4.9 While support for Māori Wards and their fair treatment has been voiced by LGNZ, there is currently not a definitive outcome or change of stance from the government. It therefore appears that the government is proceeding with its proposed legislative changes.

4.10 Support for this remit via a LGNZ AGM process will provide more impetus, and ensure that this is in the LGNZ work plan.

Attachments

There are no attachments for this report.

Confirmation of statutory compliance

In accordance with section 76 of the Local Government Act 2002, this report is approved as:

a. containing sufficient information about the options and their benefits and costs, bearing in mind the significance of the decisions; and,
b. is based on adequate knowledge about, and adequate consideration of, the views and preferences of affected and interested parties bearing in mind the significance of the decision.

Signatories

Author(s)	Monique Davidson **Chief Executive Officer**	

Approved by	Monique Davidson **Chief Executive Officer**	

File No.: 24/127

7.1 Service Delivery - Section 17 A Review prioritised workplans

1. Purpose

1.1 The purpose of this report is to provide Council with an update on the programme of the Local Government Act (2002) Section 17A Reviews.

This report directly aligns with one of Council's top 10 priorities "Get the basics right and support the customer focused delivery of core services" and actively supports out other area of focus "Review and approve Section 17a Reviews, to ensure we are reviewing the way we deliver services"

2. Recommendation

2.1 That Report 24/127 Service Delivery - Section 17 A Review prioritised workplans be received.

2.2 That this matter or decision be recognised as not significant in terms of s76 of the Local Government Act 2002.

2.3 That Council endorse the attached Section 17 A prioritised work program.

3. Background/Previous Council Decisions

3.1 In 2014 changes to legislation were made with the introduction of Section 17A of the Local Government Act ('LGA') which placed an obligation on local authorities to routinely review their services for cost effectiveness.

3.2 Under the act Council is required to review the cost-effectiveness of current arrangements for meeting the needs of communities within its district or region for good-quality local infrastructure, local public services, and performance of regulatory functions.

3.3 The review should consider three elements: how a service is governed, how it is funded, and how it is delivered. The intent of the legislation is to encourage efficiencies as well as collaboration between councils. Reviews provide an opportunity to improve the delivery of services to our residents, ratepayers and visitors.

3.4 The Council must also do this in conjunction with consideration of any significant change to relevant service levels, within two years before the expiry of any contract (that is materially significant to the delivery of the service), but not later than six years following the last review. Exceptions are allowed under this section, provided the Council is convinced that the potential benefits do not warrant the associated review costs.

3.5 The review process is an opportunity to frame the facts, issues and constraints around each activity to councillors.

3.6 In February 2023, the Council adopted its Council Plan on a Page and identified organisation KPI's. Among the designated Other Areas of Focus outlined in the Plan was the

commitment to 'Review and approve Section 17A Reviews, ensuring a thorough assessment of service delivery methods. This work also forms a key organisation KPI.

3.7 This report and attachment marks the next phase of the program dedicated to the objective outlined in the Other Area of Focus.

3.8 Council Officers compiled a current state spreadsheet for Section 17A, drawing insights from internal file storage systems, legislative references, and feedback from activity managers. This was presented to Council at its 13 December 2023 meeting for noting.

3.9 This spreadsheet served as a valuable tool in pinpointing gaps within our required Section 17A reviews, identifying those that are overdue, and highlighting upcoming Section 17A reviews.

3.10 Attached to this paper is workplans that have been developed for the 2024 and 2025 calendar year. Reviews included in these two years have been identified as having the highest priority. Reviews are grouped together for efficiencies.

3.11 The Section 17A Review Workplans will be reviewed at the beginning of each calendar year. The review will consider the following:

- Is it practical and meaningful to conduct the review
- Is there an opportunity to align with other Council processes to conduct Section 17A reviews

3.12 Once a review is completed it will be added to the list to be reviewed and prioritised at the beginning of each calendar year.

3.13 Officers will also continue to be flexible to opportunities where we are undertaking BAU business requirements and will tie in reviews at the same time to ensure that we work smarter through other processes.

4. Issues for Consideration

4.1 Status of Section 17A Reviews:

Currently, a number of Section 17A reviews are overdue, requiring attention to ensure compliance with legislative obligations. Additionally, several reviews are scheduled for the coming years, requiring planning and allocation of resources. Clear identification of the specific reviews that are overdue, those due next year, and in subsequent years is crucial for effective management and timely completion.

4.2 Balancing Benefits and Costs:

The evaluation of Section 17A reviews involves assessing the benefits derived from each review against the associated costs. It is imperative to consider whether the potential improvements in cost-effectiveness and service delivery justify the resources invested in conducting the reviews. This analysis will aid in making informed decisions on prioritising reviews based on their perceived impact on community outcomes and organisational efficiency.

5. Next Steps

5.1 Once Council agrees upon the order of priority, officers will be able to take the necessary steps to commence reviews.

Confirmation of statutory compliance

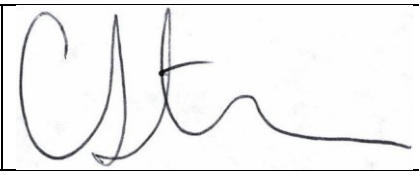
In accordance with section 76 of the Local Government Act 2002, this report is approved as:

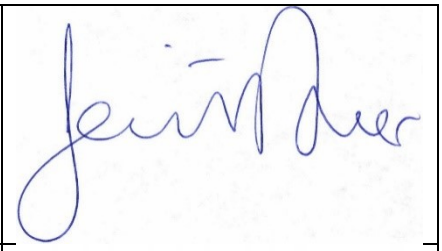
a. containing sufficient information about the options and their advantages and disadvantages, bearing in mind the significance of the decisions; and,

b. is based on adequate knowledge about, and adequate consideration of, the views and preferences of affected and interested parties bearing in mind the significance of the decision.

6. Attachments

No.	Title	Page
A⇩	S17A Review Prioritised Work plan	14

Author(s)	Charlie Strivens **Senior Advisor - Organisation Performance**	

Approved by	Jacinta Straker **Group Manager Organisation Performance**	
	Monique Davidson **Chief Executive Officer**	

S17A Review Prioritised Work Plans

Section 17A Review Objective : To understand the cost-effectiveness of current arrangements for meeting the needs of communities within its district or region for good quality local infrastructure, local public services, and performance of regulatory functions. Other specific objectives to be determined closer to the time of review.

2024 Workplan						
Activity	**Sub activity included in S17A Review**	**Contract**	**Legislated due date**	**Previous review completed by**	**Review to be completed by**	**Resource**
Economic Development						
Community Support	Economic Development	The Horowhenua Company LTD	1/01/2021	Jan 2015	Dec 2024	External consultant
Solid Waste						
Solid Waste	Roadside Refuse Collection	Northland Waste	1/10/2025	Unknown	Dec 2024	External consultant
	Recycling		1/07/2026	Unknown		
	Waste Transfer Stations		1/10/2025	Unknown		
	Refuse Disposal	MidWest	30/03/2027	3/31/2021		
	Waste Minimisation	Internal	First review due	Unknown		
Three Waters						
Stormwater	Stormwater	Alliance	12/12/2024	June 2017	June 2024	Internal
Wastewater	Wastewater					
Water Supply	Water Supply					

2025 Workplan						
Activity	**Sub activity included in S17A Review**	**Contract**	**Legislated due date**	**Previous review completed by**	**Review to be completed by**	**Resource**
Regulatory Services						
Regulatory Services	Building consents	Internal	1/01/2021	Jan 2015	Dec 2025	Internal/External Consultant
	Building Policy					
	Environmental Health					
	Liquor Licensing					
	Animal Control					
	Parking Enforcement					
	Resource Planning – Consenting					
	General Regulatory Services					
	Resource Management Compliance					
Emergency Services						
Community Support	Emergency Management	EM Services Ltd	30/06/2026	Jan 2017	Dec 2025	External consultant
Corporate Services						
	Finance – Debt Collection	Debt Management Central	First review due	Unknown		

Not activity under LTP	Information Services – Information Technology	Internal	1/01/2021	Jan 2015	Dec 2025	Internal/External consultant
	Information Services – Information Management	Internal	22/02/2023	Feb 2017		
	Communications	Internal	First review due	Unknown		

To be reviewed and prioritised Jan 2026						
Activity	**Sub activity included in S17A Review**	**Contract**	**Legislated due date**	**Previous review completed by**	**Review to be completed by**	**Resource**
Community Services						
Community Facilities	Aquatic Centres	Internal	31/03/2022	Mar 2016	Date to be confirmed	External consultant
Community Facilities	Community Centre and Libraries		31/03/2022	Mar 2016		
Community Support	Visitor Information		30/06/2023	Unknown		
Community Support	Community Development		First review due	Unknown		
Public Spaces						
Community Infrastructure	Public Toilets	PPCS	30/06/2027	Jan 2015	Date to be confirmed	External consultant
	Reserves and Beautification	Green by Nature/ Recreational Services	1/12/2028	Jan 2022		
	Cemeteries	Internal	1/12/2028	Jan 2022		

	Sports Grounds	Green by Nature/ Recreational Services	1/12/2028	Jan 2022		

No review to be undertaken			
Activity	**Sub activity included in S17A Review**	**Contract**	**Comment**
Land Transport	Roads and Footpaths	Higgins	Exemption Approved by Council on 19 July 2023 - resolution number CO/2023/222
Property	Commercial and endowment leases	Internal	Not seen as cost effective to complete a review
Property	Properties – Commercial and Residential	Internal	Not seen as cost effective to complete a review
Representation and Community Leadership	Governance	Internal	Not seen as cost effective to complete a review
Not activity under LTP	Customer Services	Internal	Not seen as cost effective to complete a review
Regulatory Services	Building Compliance	Internal	Not seen as cost effective to complete a review
Representation and Community Leadership	District Plan	Internal	Not seen as cost effective to complete a review
Community Infrastructure	Halls	Internal	Not seen as cost effective to complete a review

File No.: 24/147

7.2 Liquefaction: Policy Approach Update

1. Purpose

1.1 This report seeks approval to adopt the updated desktop mapping assessment and resulting proposed changes to the policy approach. The aim is to enhance the customer experience and to improve districtwide outcomes.

2. Executive Summary

2.1 The updating of the liquefaction policy approach is proposed with the view to further simplifying the process through which our community can assess and determine the risk of liquefaction prior to development.

2.2 Each proposed initiative aims to enhance the current policy process and its application in the community, improving visibility, reducing time, cost and effort overall.

3. Recommendation

3.1 That Report 24/147 Liquefaction: Policy Approach Update be received.

3.2 That this matter or decision is recognised as not significant in terms of S76 of the Local Government Act.

3.3 That Council adopts Option 1, Status Quo - Retain current policy approach and do not adopt the Horowhenua District Liquefaction Vulnerability Assessment attached as Appendix A. Noting cost has already been incurred to complete the level A desktop assessment.

OR

3.4 That Council adopts Option 2 - Adopt Horowhenua District Liquefaction Vulnerability Assessment attached as Appendix A and adopt policy approach D for building consents & C for resource consents as outlined in the report Options for Liquefaction Assessment for Resource and Building Consent, attached as Appendix B.

This approach would see the development of Horowhenua-specific guidance for all buildings consents except for commercial or industrial development. These latter developments would have no liquefaction assessment/mitigation guidance provided to engineering practitioners. Resource consents would be treated in a similar manner except for urban residential scale developments, which would adopt the Canterbury guidance.

OR

3.5 That Council adopts Option 3 - Adopt Horowhenua District Liquefaction Vulnerability Assessment attached as Appendix A and adopt policy approach D for building consents & C for resource consents as outlined in the report Options for Liquefaction Assessment for Resource and Building Consent, attached as Appendix B with the modified screening tool attached as Appendix C.

This approach would see the development of Horowhenua-specific guidance for all buildings consents except for commercial or industrial development. These latter developments would have no liquefaction assessment/mitigation guidance provided to engineering

practitioners. Resource consents would be treated in a similar manner except for urban scale residential developments which would adopt the Canterbury guidance.

In addition the modified screening tool would be utilised to further refine and enhance guidance.

OR

3.6 That Council adopts Option 4 - Acknowledge that the improvement process is ongoing and that continued investment in time be employed to enhance the HDC approach to Liquefaction Policy, including meeting with MBIE, MfE and consulting engineers directly to develop further clarity of intent and approach.

4. Background / Previous Council Decisions

4.1 In November 2019, the Ministry of Business, Innovation and Employment (MBIE) made changes to the New Zealand Building Code which limit the application of the B1 Acceptable Solution B1/AS1 so that it may not be used on ground prone to liquefaction or lateral spreading from 29 November 2021 onward. This was implemented by changing the definition of 'Good Ground' to exclude land with the potential for liquefaction and/or lateral spreading.

4.2 In preparation for the changes to the New Zealand Building Code, MBIE advised Councils to undertake hazard mapping and identify liquefaction-prone areas using the Ministry for the Environment (MfE)/MBIE liquefaction mapping guidance

4.3 New liquefaction maps were produced for the Horowhenua District as part of the growth planning work, which have been able to be used to support implementation of the changes to B1/AS1. These maps were based on investigations and a report by Tonkin & Taylor that was undertaken in accordance with the MfE mapping guidance and mapped the growth areas to a low level of precision. The maps did not include the areas of the district that hadn't been identified as potential future growth areas, meaning that there are large areas of the district maps where the liquefaction risk hadn't been assessed or where it had been assessed but the investigations were not sufficient to confirm the level of risk.

4.4 A Liquefaction Policy Approach was adopted by Council at a meeting on 10 August 2022.This policy approach allowed for the use of a simplified screening approach and shallow ground investigations for properties identifying as having an "unlikely", "possible" or "undetermined" liquefaction risk. The policy approach did not apply to the large areas of the district that were unmapped or unassessed.

4.5 At the Council meeting on 10 August 2022, the decision was also made to carry out a Level A desktop assessment exercise to produce further mapping of the district, in order to resolve the areas that had previously been unassessed.

4.6 The new maps have been produced and the additional data provided has enabled the current policy approach to be revised.

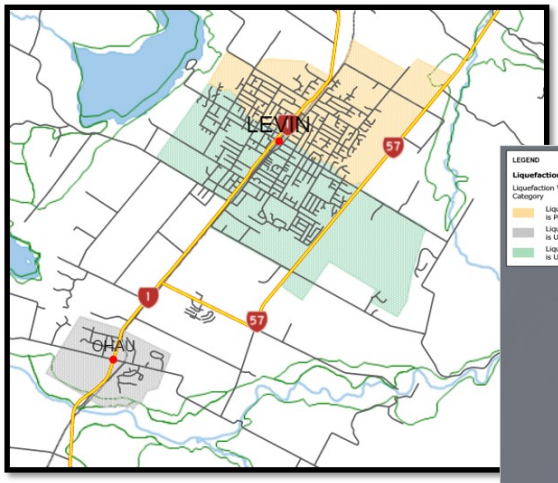
4.7 The desktop assessment utilised data from across the district, combined with natural geographic features to provide a mapped representation covering a greater extent of the district. Prior maps were centered on Levin and some of the other communities across the district, yet provided very limited indication of ground quality district wide.

4.8 The intent of the proposed changes resulting from the Level A assessment were discussed in more detail during council workshops on the 20th of September and the 8th of November 2023.

4.9 At these workshops concerns were raised by councillors around the accuracy of the data and around engagement with government departments to understand and refine the intent of the MBIE guidance. The concern was noted in relation to the data provided, however the proposed changes do not engage the new mapping in isolation, as the MBIE guidance still

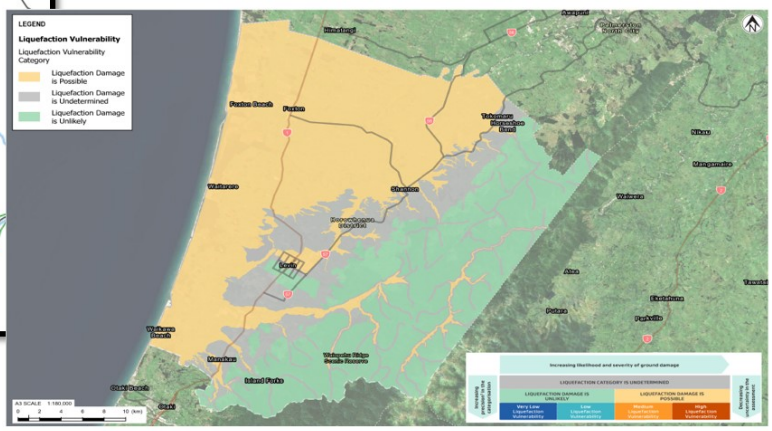
requires testing to be completed at the building site level as the BCA is required to ensure the foundation design is appropriate for the liquefaction risk posed.

4.10 The new mapping provides for a new starting point for all areas of the district and has enabled the opportunity to refine and enhance the current policy approach employed by council during the Liquefaction assessment process.



Prior extent of mapping

New extent of mapping from level A assessment



5. Discussion

5.1 Proposed changes to the current policy approach are listed in the table below, in real terms the impact of these changes on our community are reflected in the points following.

5.2 **Option 1** - No change from the current approach

5.3 **Option 2** - In accordance with the report "Options for Liquefaction Assessment for Resource and Building Consents", attached as Appendix B;

- Adopt Policy C for Subdivisions (SUB or RCs)) – due to higher risk, developers can provide economies of scale while this approach provides more assurances/cost savings to future land owners.

- Adopt Policy D for Building Consents (BCs) – this is higher risk, but this is a short term approach because if Policy C is implemented at SUB stage more detailed data will be available

Changes	Current Approach	Proposed Revised Approach
Policy Approach	• Modified Policy C	• Policy C for RCs • Policy D for BCs
Treatment of Urban Residential	• Use screening tool for BCs	• Use screening tool for BCs • Use MBIE/MfE guidance for RCs
Consent Types	• BCs only	• RCs & BCs (whichever comes 1st)

Benefits of proposed new approach:

5.4 Less onerous on individual property owners when it comes to building a house as more awareness will be provided early where assessments have been completed during subdivision.

5.5 Shifts responsibility to determine liquefaction category status to the first point in the process, which includes the resource consent stage.

5.6 Where assessments are completed prior to subdivision future property owners will have access to more information that will inform the types of foundations required, prior to purchase

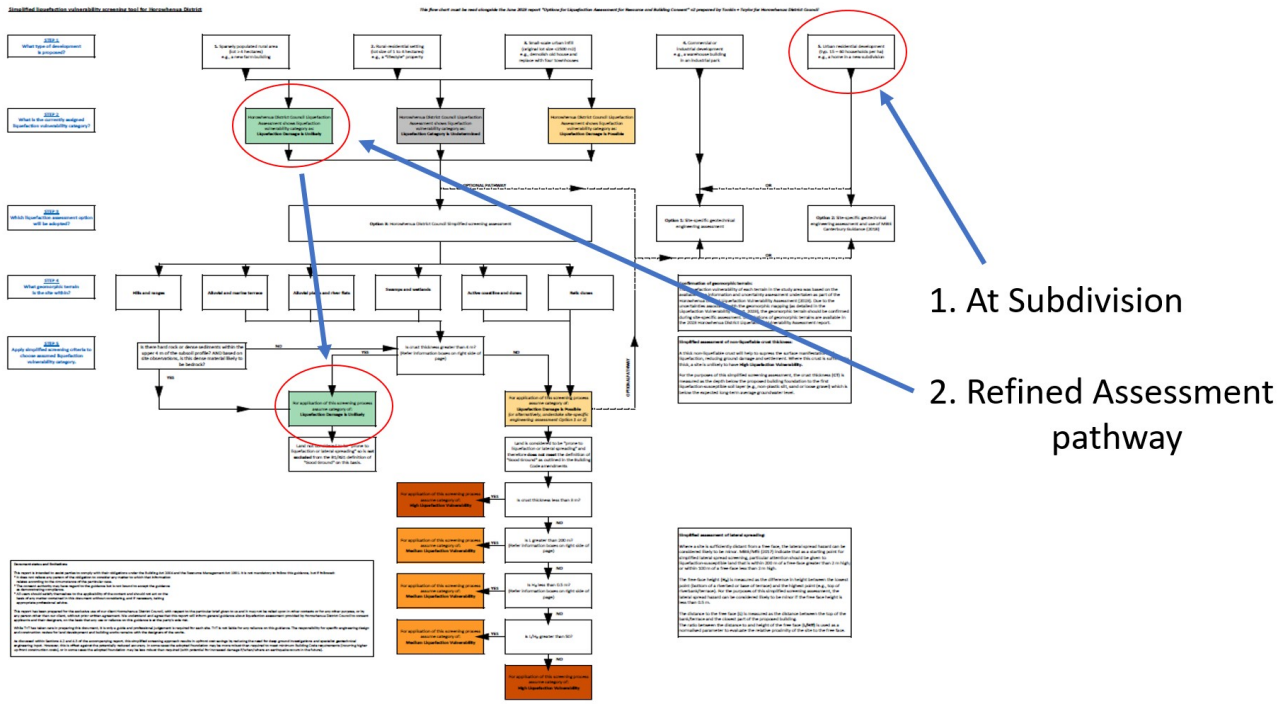
Risks of proposed new approach:

5.7 Adverse developer reaction to testing at subdivision stage

5.8 May impact the some growth areas or developments from a total cost of ownership perspective, including infrastructure considerations

5.9 **Option 3 -** Adopt Option 2 with modifications to the screening tool as outlined in Appendix C, so there is more clarity (fewer steps) and investigations required for consents will be determined more by geomorphic terrain than initial mapping. If the ground is too hard and difficult to get to 4m with bore hole/test pit, engineers can confirm refusal and state likely reasons for refusal

5.10 This shortens & simplifies the screening tool and balances risk and outcomes, resulting in improved customer experience and community outcomes.



Summary of Changes Proposed In Option 3

Liquefaction Category	Current Approach*	Proposed Revised Approach*
Unlikely (Revised approach Hills & Ranges only)	Ground bearing (penetrometer) tests & report by builder or structural engineer	Shallow ground investigations (penetrometer) by structural engineer with details of soil profile if bedrock is confirmed likely within 4m, IF NOT, as outlined below
Possible (Revised approach also includes unlikely where not in Hills & Ranges terrain)	Shallow ground investigations (penetrometer) & 3-4m bore hole by structural engineer with liquefaction report including assessments of groundwater levels, crust thickness, lateral spread where crust thickness is less than 3m	Shallow ground investigations (penetrometer) & 3-4m bore hole by structural engineer with liquefaction report including assessments of groundwater levels, crust thickness, lateral spread where crust thickness is less than 3m
Undetermined		
Unassessed	Deep ground investigations (CPT) with liquefaction report by Geotech engineer	Not applicable

*Residential BCs only – does not apply to Commercial or RCs

5.11 Removal of the unassessed aspect of the mapping is expected to reduce the volume of difficult and costly CPT testing requirements

6. Options

6.1 **Option 1 -** Retain current policy approach and do not adopt the Horowhenua District Liquefaction Vulnerability Assessment attached as Attachment B. Noting cost has already been incurred to complete the Level A desktop assessment.

6.2 **Option 2** - Adopt Horowhenua District Liquefaction Vulnerability Assessment attached as Attachment B and adopt policy approach D for building consents & C for resource consents as outlined in the report 'Options for Liquefaction Assessment for Resource and Building Consent', attached as Attachment C.

6.3 **Option 3** - Adopt Option 2 in combination with the modified screening tool attached as Attachment D.

6.4 **Option 4 -** Acknowledge that the improvement process is ongoing and that continued investment in officer time be employed to enhance the HDC approach to Liquefaction Policy, including meeting with MBIE, MfE directly to develop further clarity of intent and approach.

Cost

6.5 Any costs in relation to this proposal have already been incurred when additional desktop assessment approval was provided by council.

Rate Impact

6.6 There will be no rate impacts arising.

Community Wellbeing

6.7 The overall intent of the MBIE led guidance around Liquefaction is to enhance community wellbeing and outcomes when building or developing, this report serves to provide some localised management enhancements for our community.

Consenting Issues

6.8 There are no Consents required or consenting issues arising.

LTP Integration

6.9 There is no LTP programme related to the options or proposals in this report.

7. Consultation

7.1 There was no consultation undertaken. There will be a need to communicate and advice of any changes to the current methodology. This will be completed as required.

8. Legal Considerations

8.1 There are no Legal Requirements or Statutory Obligations affecting options or proposals. All outcomes are intended to remain within the guidance provided by MBIE around Liquefaction handling.

9. Financial Considerations

9.1 There is no financial impact.

10. Iwi Considerations

10.1 There are no Iwi considerations arising.

11. Climate Change Considerations

11.1 There is no Climate Change impact.

12. Environmental Considerations

12.1 There are no Environmental considerations.

13. Health & Safety Considerations

13.1 There is no Health & Safety impact.

14. Other Considerations

14.1 There are no other considerations.

15. Next Steps

15.1 If the proposed recommendations are not adopted then the methodology currently in place will remain and continue to be applied as standard.

16. Supporting Information

Strategic Fit/Strategic Outcome
Decision Making
Consistency with Existing Policy Follows on from prior council Liquefaction Policy Adoption arising from the 10th of August 2022 Council Meeting.
Funding

Confirmation of statutory compliance

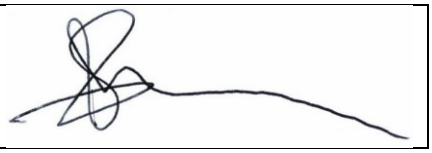
In accordance with section 76 of the Local Government Act 2002, this report is approved as:

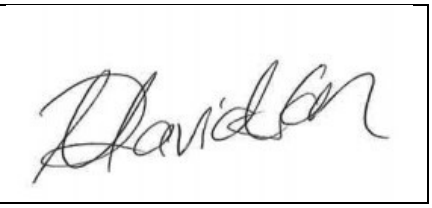
a. containing sufficient information about the options and their advantages and disadvantages, bearing in mind the significance of the decisions; and,

b. is based on adequate knowledge about, and adequate consideration of, the views and preferences of affected and interested parties bearing in mind the significance of the decision.

17. Attachments

No.	Title	Page
A⇩	Current Options for liquefaction assessment in Horowhenua District	26
B⇩	Liquefaction Vulnerability Assessment - 20 February 2023	50
C⇩	Options for liquefaction assessment in Horowhenua District - June 2023	115
D⇩	Proposed revised screening tool	139

Author(s)	Blair Spencer **Group Manager Housing & Business Development**	

Approved by	Monique Davidson **Chief Executive Officer**	

REPORT

Tonkin+Taylor

Options for Liquefaction Assessment for Resource and Building Consent

Prepared for
Horowhenua District Council
Prepared by
Tonkin & Taylor Ltd
Date
May 2022
Job Number
1019568.0000.v1

Exceptional thinking together
www.tonkintaylor.co.nz

Document Control

Title: Options for Liquefaction Assessment for Resource and Building Consent					
Date	**Version**	**Description**	**Prepared by:**	**Reviewed by:**	**Authorised by:**
15/03/2022	Draft 0.1	Draft for consultation	Elyse Armstrong	John Brzeski	Mike Jacka
30/05/2022	1.0	Client issue	Elyse Armstrong	John Brzeski	Mike Jacka

Distribution:

Horowhenua District Council	1 PDF copy
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Table of contents

1 Objective

This report is intended to assist Horowhenua District Council (HDC) as they develop a framework for assessing liquefaction vulnerability for practitioners and council staff, to promote a consistent approach to liquefaction hazard in Building Consent applications in Horowhenua District.

The objectives of this report are to:

- Provide an overview of the existing national-level and district-level guidance related to resource consent and building consent liquefaction assessments.
- Provide a preliminary outline of a potential framework or a pragmatic screening approach that Horowhenua District Council could consider for assessing liquefaction vulnerability assessments accompanying resource consent and building consent applications for typical individual building projects in Horowhenua District. This includes a focus on residential-style buildings, to help find an appropriate balance between the costs involved in detailed liquefaction assessment and the level of precision required for a particular situation.

This report is not intended to be a prescriptive document that captures all possible eventualities. The responsibility for specific engineering design and construction review for land development and building works remains with the designers of those works.

2 Background

In 2020 Horowhenua District Council (HDC) engaged Tonkin & Taylor Ltd (T+T) to undertake liquefaction hazard mapping for potential growth areas within the district (T+T, 2020[1]) and further assessment for a development in Foxton Beach[2] in accordance with the MBIE/MfE (2017)[3] guidance. Ten areas were identified as potential growth areas comprising Foxton Beach, Foxton, Tokomaru, Shannon, Waitarere Beach, Mangaore, Levin, Ohau, Waikawa Beach, and Manakau.

The MBIE/MfE guidance defines a tiered system of liquefaction vulnerability categories, as shown in Figure 2.1. Much of the land in the district's areas of potential future growth areas has been assigned the liquefaction vulnerability category of ***Liquefaction Damage is Possible*** or ***Liquefaction Damage is Undetermined,*** with a small proportion of the Levin assigned a category of ***Liquefaction Damage is Unlikely*** (Figure 2.2). As is typically the case for regional assessments such as this, more precise categorisation (e.g., distinguishing between ***Medium*** and ***High*** liquefaction vulnerability categories) was not possible due to a lack of both subsurface geotechnical investigation and detailed groundwater information.

Recognising that in many cases more detailed assessment of liquefaction will be required to support Building Consent applications, HDC has now engaged T+T to provide technical advice regarding the ways in which Council could assist practitioners and HDC Building Control staff. This report focusses on the scope of liquefaction assessment likely to be appropriate for each liquefaction vulnerability category, taking into account the types of development and ground conditions most common across the district and in particular within the areas identified as potential growth areas.

[1] Tonkin and Taylor, (2020). *HDC Horowhenua District Potential Growth Areas, Liquefaction Assessment* report reference 1009677.v2
[2] Tonkin and Taylor, (2020). *HDC Property, Foxton Beach Liquefaction Assessment* report reference 1009677.0010.v2
[3] MBIE/MfE (2017) Planning and engineering guidance for potentially liquefaction-prone land, Version 0.1, September 2017, Wellington: Ministry of Business Innovation and Employment.

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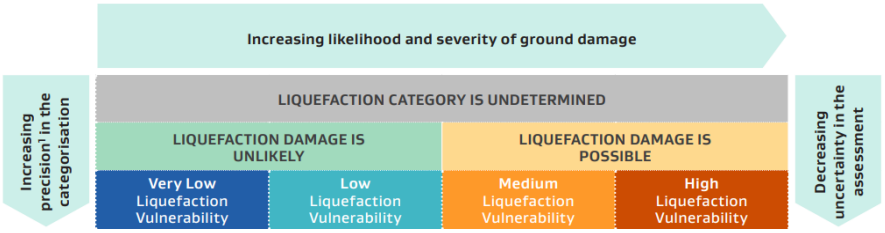


Note:

1 In this context the 'precision' of the categorisation means how explicitly the level of liquefaction vulnerability is described. The precision is different to the accuracy (ie trueness) of the categorisation.

Figure 2.1: Liquefaction classifications from MBIE/MfE (2017)

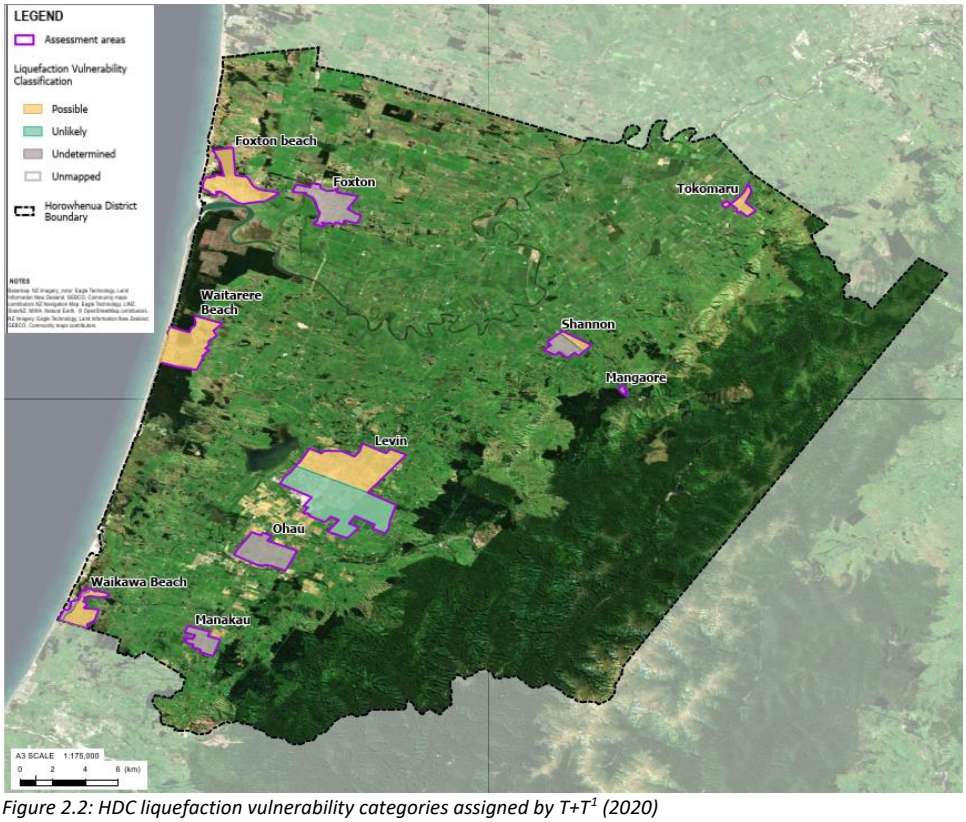


Figure 2.2: HDC liquefaction vulnerability categories assigned by T+T[1] (2020)

3 Liquefaction guidance, resource and building consent compliance

3.1 National-level guidance

In November 2019, the Ministry of Business, Innovation and Employment (MBIE) made changes to the NZ Building Code which limit the application of the B1 Acceptable Solution B1/AS1 so that it may not be used on ground prone to liquefaction or lateral spreading from 29 November 2021 onward[4]. This was implemented by changing the definition of 'Good Ground' to exclude land with the potential for liquefaction and/or lateral spreading.

Figure 3.1 illustrates the Building Code regulatory framework for New Zealand (MBIE, 2022b). The Building Act and Building Code are mandatory legislation that control three different compliance pathways for buildings in New Zealand. These compliance pathways comprise Alternative Solutions, Verification Methods and Acceptable Solutions.

B1/AS1 is the Acceptable Solution that is the most used means of compliance for residential buildings in New Zealand. For other types of buildings (such as commercial and industrial buildings), other compliance pathways may be more appropriate (such as specific engineering design using the MBIE/New Zealand Geotechnical Society (NZGS) modules in conjunction with B1/VM1) so these are less affected by the change to the definition of 'Good Ground'. The advice in this current report is therefore primarily focussed on residential buildings.

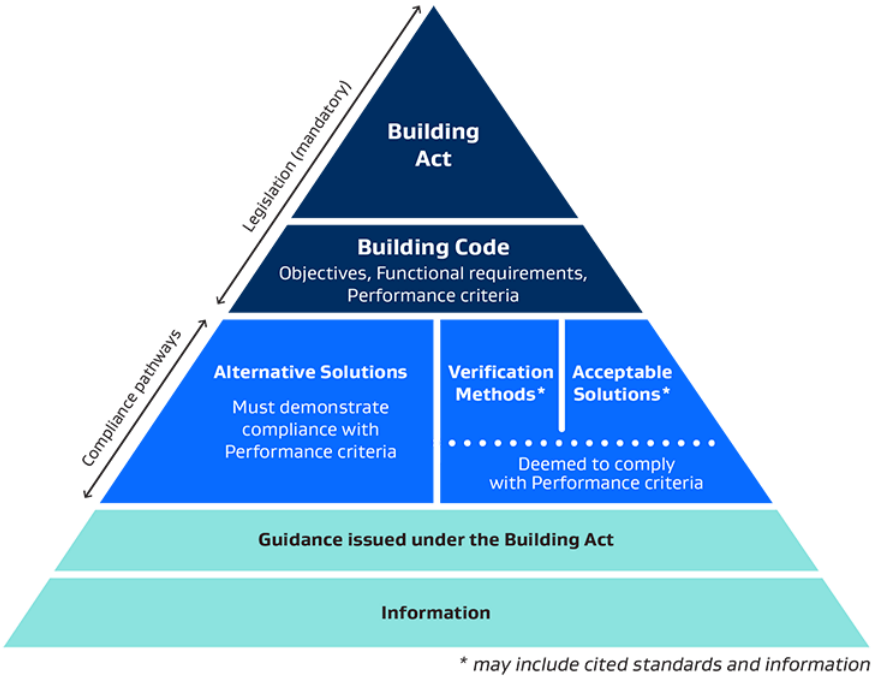


Figure 3.1: Regulation framework figure provided by MBIE – Building Performance (2021)

[4] November 2019 Building Code update | Building Performance, accessed 25 November 2021

MBIE have issued various guidance documents on assessing and addressing liquefaction hazards. The following guidance documents were issued under Section 175 of the Building Act, so while not Acceptable Solutions or Verification Methods, where appropriate they may be used to demonstrate compliance with the Building Code[5] under the Alternative Solution pathway.

- **Ministry of Business, Innovation & Employment – Canterbury Guidance (2018):** The Canterbury Guidance was written to provide a streamlined approach for investigating and selecting foundation solutions for addressing liquefaction prone land in Canterbury to aid in fast-tracking the earthquake recovery. The guidance and processes contained therein are based on the Technical Category (TC) maps, published in 2011 which are only available in Canterbury. While it was initially intended only for use in Canterbury (and this is a stated limitation in the text), at the time of the change to B1/AS1, MBIE added the following note, referring users to the MBIE Canterbury guidance (2018): 'For houses built in areas that have potential for liquefaction, the MBIE guidance document "Repairing and rebuilding houses affected by the Canterbury earthquakes" may be appropriate. This guidance provides a range of potential foundation solutions depending on the expected ground movement and available bearing capacity. These parameters also determine the required degree of involvement of structural and geotechnical engineers and the extent of specific engineering design." MBIE has also published information on their website that relates the TC categories to the liquefaction vulnerability categories in the MBIE/MfE Guidance (2017) (discussed below).
- **Ministry of Business, Innovation & Employment/New Zealand Geotechnical Society Earthquake geotechnical engineering Modules (2021):** MBIE/NZGS module 4 "Earthquake resistant foundation design" discusses compliance and is primarily intended for buildings which typically require specific engineering design. This approach requires defining settlement limits (both total and differential) for buildings to achieve satisfactory performance. Compliance is thereby achieved by defining allowable settlement limits, and specifically designing the foundation and any required earthworks to achieve these limits. This approach is generally not used for routine residential buildings.
- **Ministry of Business, Innovation & Employment/Ministry for the Environment Guidance (2017):** The primary focus of the MBIE/MfE Guidance (2017) is on developing a framework for managing liquefaction hazard by appropriate land use planning under the Resource Management Act, however, Section 3.8 of the document also briefly addresses compliance with the Building Act. It contemplates that most residential houses not requiring specific engineering design would achieve compliance via B1/AS1 but acknowledges that B1/AS1 currently does not address liquefaction.

MBIE also subsequently published information on their website (MBIE, 2022a) on liquefaction in July 2021. This indicates that designers can follow a simplified compliance pathway by considering foundation options outlined in the MBIE Canterbury Guidance (2018). It also provides an indication of how these foundations could relate to the MBIE/MfE Guidance (2017) liquefaction vulnerability categories as shown below (while also noting there is not a direct correlation and other factors and uncertainties should also be considered).

- ***Very Low*** and ***Low*** liquefaction vulnerability = Adopt TC1-type foundations
- ***Medium*** liquefaction vulnerability = Adopt TC2-type foundations
- ***High*** liquefaction vulnerability = Adopt TC3-type foundations

[5] Building Act (2004), Section 19 (2)(b)

3.2 District-level liquefaction guidance

3.2.1 Liquefaction vulnerability categories and 'Good Ground'

T+T (2020[1]) classified land within ten growth areas identified across Horowhenua District into one of three liquefaction vulnerability categories: ***Liquefaction Category is Undetermined***; ***Liquefaction Damage is Unlikely,*** or ***Liquefaction Damage is Possible***. The currently available information does not support further classification of the land into the other (more precise) categories of ***Very Low***, ***Low***, ***Medium*** or ***High*** liquefaction vulnerability. Therefore, translating the currently mapped vulnerability categories to recommendations for TC1/2/3-type foundations is not immediately possible. This outcome is generally expected in a regional-scale study, and it is anticipated that more detailed site-specific assessments to support resource and building consents would follow.

The relevant classifications for the Horowhenua district are explained below:

- Land that has been categorised as ***Liquefaction Damage is Unlikely*** is not considered to be "prone to liquefaction or lateral spreading" so is not excluded from the B1/AS1 definition of 'Good Ground' on this basis (however some locations may still not qualify as 'Good Ground' due to unrelated issues such as such as soft soils).
- Land that has been categorised as ***Liquefaction Damage is Possible*** is considered to be "prone to liquefaction or lateral spreading" and therefore does not meet the definition of 'Good Ground' as outlined in the Building Code amendments.
- For land that has been categorised as ***Liquefaction Category is Undetermined*** there is currently insufficient information to determine whether it is "prone to liquefaction or lateral spreading" within the context of the definition of 'Good Ground' as outlined in the Building Code amendments. If liquefaction vulnerability assessment at a higher level of detail is undertaken in future (e.g., a site-specific assessment) then this may result in reclassification of the land into a different category and whether it meets the definition of 'Good Ground' should be reconsidered based on that new information.
- For land that is ***Unmapped***, no liquefaction assessment has been completed, so this land has not been categorised into one of the three liquefaction vulnerability categories above.

3.2.2 Areas Mapped as *Liquefaction Damage is Unlikely* in Horowhenua District

This applies to the Southern Part of Levin only. This area in Horowhenua District gently slopes northwest across the relatively flat site area. The southern area of Levin's growth area comprises river deposits comprising gravels with minor sand/silt.

3.2.3 Areas Mapped as *Liquefaction Category is Undetermined* in Horowhenua District

This applies to parts of Foxton, Shannon, Mangaore, Ohau, Waikawa Beach (Low elevation West) and Manakau. These areas typically span multiple geological units and there is currently insufficient information to classify the liquefaction hazard. Geological maps and the limited investigation data available indicate that these areas comprise sediments deposited in both high energy and low energy environments, which are likely to have both plastic and non-plastic behaviours.

These areas could also be further divided into areas of relative higher and lower elevation:

Lower elevations

The currently available data indicates that these areas are typically characterised by younger sandy and silty soils, shallower groundwater, and thinner crust thickness. These characteristics are generally indicative of greater liquefaction vulnerability, so if site-specific assessments were undertaken in future we expect that these would often (but not always) indicate a vulnerability category of ***Liquefaction Damage is Possible***.

Higher elevations

The currently available data indicates that these areas are typically characterised by older gravelly soils, deeper groundwater, and thicker crust thickness. These characteristics are generally indicative of lesser liquefaction vulnerability, so if site-specific assessments were undertaken in future we expect that these would often (but not always) indicate a vulnerability category of ***Liquefaction Damage is Unlikely***.

3.2.4 Areas Mapped as *Liquefaction Damage is Possible* in Horowhenua District

This applies to parts of Foxton Beach, Tokomaru, Shannon – northeast area, Waitarere Beach and Levin. Geological maps, topographical information, limited groundwater data and investigation records suggest that these landforms are made up of Alluvial channels and plains and Marine deposits. Both these types of geomorphic terrains commonly include soil deposits that are susceptible to liquefaction. Free faces are associated with this terrain in the form of riverbanks, stop banks, streams, dunes and drainage ditches, all of which are visible on aerial photography and LiDAR imagery. The MBIE/MfE (2017) guidance notes that in the presence of liquefaction-susceptible soils, lateral spreading is more likely to be possible within 200 m of free faces more than 2 m high.

These areas could also be further divided into areas of relative higher and lower elevation:

Lower elevations

Typically, soils found in the lower elevations are in alluvial channels and plains terrain which are geologically young (Holocene-aged) and deposited in low to high energy environments forming a variety of soils, including loose and soft strata. The characteristics of the soils comprising these terrains are highly variable in nature and vary spatially across the landscape. Alluvial sediments typically range from granular gravels, sands and silts to fine grained soil deposits (clay and silt) with plastic-type behaviours. These soils typically contain materials that are susceptible to liquefaction.

The depth to groundwater is also likely to be shallow (< 4 m) within this terrain because it is generally associated with active and historic river and stream systems, as well as water bodies such as lakes. The MBIE/MfE (2017) guidance typically associates these alluvial terrains as being susceptible to liquefaction. Some areas could have variable groundwater levels due to variation in ground elevation, where groundwater typically becomes deeper at higher elevations.

Higher elevations

Typically soils found within the higher elevations are Marine deposits that are geologically older than those in the low-lying areas (Pleistocene-aged) and comprise gravels and sands. It is expected that groundwater levels are typically deeper in these areas with these deposits resulting in a thicker crust however may also have paleo-channels present resulting in variable ground conditions.

3.2.5 Unmapped Areas in Horowhenua District

The T+T liquefaction assessment has assigned liquefaction vulnerability classifications to the potential growth areas as shown in Figure 2.2 . The remaining parts of the District outside of these mapped areas should treated as unmapped and a liquefaction assessment in line with the MBIE 2017 guidelines should be undertaken to the level of detail required by the stage and type of the development.

4 Assessing and mitigating liquefaction vulnerability in Horowhenua District

For consent applications where liquefaction hazard could be relevant if it were present (e.g., almost all subdivision and building consents) the application will either need to:

- Justify why liquefaction isn't a hazard associated with a subject site or proposed activity; or
- Provide mitigation options to appropriately manage the liquefaction hazard.

Consent applications will need to assess soil conditions and ground water conditions on a site-specific basis to assess the liquefaction hazard, particularly for sites that have been categorised as ***Liquefaction Category is Undetermined*** and ***Liquefaction Damage is Possible***.

4.1 Level of detail in resource and building consents

The key difference between resource and building consent applications will lie in the level of detail in the assessment. Resource consent applications are typically lodged when designs are largely conceptual and there are still a number of details to be worked through. The conceptual design may be based on relatively limited investigation information which means that there may be more residual uncertainty about liquefaction vulnerability at the site. As result, there could be a broad number of mitigation options available at this stage. A key focus is demonstrating that there are practical and effective options available to manage hazards, rather than selecting and finalising the details of one single option.

Conversely, at building consent stage the design will be significantly refined as it will have moved through to detailed design stage. If, as part of the resource consent application, liquefaction was identified as a hazard requiring mitigation it may be necessary to collect additional investigation information to further reduce the degree of residual uncertainty. Therefore, a higher level of detail study may be necessary to support the building consent application.

Recognising these differences, the MBIE/MfE Guidance (2017) outlines the minimum level of detail required for liquefaction vulnerability assessments for three different development stages. These development stages relate to resource consents for plan changes, resource consents for subdivision and building consents. For each stage of the development cycle, the guidance relates to five development scenarios which are defined as:

1 Sparsely populated rural area (lot > 4 hectares) e.g., a new farm building.
2 Rural-residential setting (lot size of 1 to 4 hectares) e.g., a "lifestyle" property.
3 Small-scale urban infill (original lot size <2500 m^2) e.g., demolish old house and replace with four townhouses.
4 Commercial or industrial development e.g., a warehouse building in an industrial park.
5 Urban residential development (typically 15 – 60 households per hectare) e.g., a home in a new subdivision.

The guidance outlines a risk-based approach where the recommended minimum level of detail in the liquefaction assessment varies by both the stage of the development and the type of development scenario. Lower levels of detail are recommended for earlier stages of the development cycle (e.g., resource consent for plan change). Similarly, lower levels of detail are recommended for smaller scale developments (e.g., sparsely populated rural area). For more information about these recommendations refer to Section 3.5 (specifically Tables 3.5, 3.6 and 3.7) of the MBIE/MfE Guidance (2017).

8

4.2 Options for assessing and mitigating liquefaction vulnerability

We have identified several different options for approaches that Horowhenua District Council could consider when assessing liquefaction vulnerability during resource consent or building consent applications in the Horowhenua District. These options are:

Option 1: No liquefaction assessment / mitigation guidance provided to practitioners

The default approach (in the absence of guidance from MBIE or Council) would be that site-specific geotechnical engineering assessment would be required to support the resource consent or building consent application in all cases where liquefaction hazard could be relevant if it were present (e.g., almost all subdivision and building consents). This approach would use fundamental geotechnical engineering principles to assess liquefaction vulnerability. Typically this would include site-specific deep ground investigations and recommendations for site development works and foundation solutions to mitigate the effects of liquefaction (if required). Unless the assessment demonstrated that the site was not prone to liquefaction, every building would require specific engineering design, typically with reference to the MBIE/NZGS Earthquake engineering modules – there would be no reference to NZS 3604:2011 foundation options or the MBIE Canterbury Guidance (2018) foundation options.

Option 2: HDC endorse adoption of Canterbury guidance

Alternatively, foundation options provided in the MBIE Canterbury Guidance (2018) could be specified to mitigate the potential effects of liquefaction for land and building developments across the district. This approach would still require site-specific geotechnical assessment (and often deep ground investigations) and as such, constitutes a form of specific engineering design. However, the process used by designers to choose appropriate mitigation options would be streamlined with reference to the MBIE Canterbury Guidance (2018). Selection of the foundation options could be further streamlined by undertaking a site-specific liquefaction vulnerability assessment in accordance with the MBIE/MfE Guidance (2017) and correlating the foundation options to the assigned liquefaction vulnerability category as described in Section 3.1.

Option 3: HDC provide Horowhenua-specific guidance

A third approach could remove the need for extensive site-specific geotechnical investigations for some sites and development scenarios. It would aim to provide a balance between cost and accuracy of liquefaction assessments, taking into account the associated risks. A simplified screening assessment could be developed to strike a pragmatic balance between the cost and accuracy of liquefaction assessments for typical individual building projects in the Horowhenua district. This risk-based approach to managing uncertainty is discussed in more detail in Appendix J1 of the MBIE/MfE Guidance (2017), and similar concepts around also feature in recent MBIE regulatory reform discussion documents (MBIE, 2018 & MBIE, 2019).

This approach would allow users to transition from sites previously categorised as ***Liquefaction Category is Undetermined*** to an assumed category of either ***Liquefaction Damage is Unlikely*** or ***Liquefaction Damage is Possible***.

If application of the screening criteria results in recategorisation of the site as ***Liquefaction Damage is Unlikely*** then it is assumed to be not "prone to liquefaction or lateral spreading" and it is not excluded from the B1/AS1 definition of 'Good Ground' on this basis. If application of the screening criteria results in recategorization of the site as ***Liquefaction Damage is Possible*** then the site can be assessed against two additional screening criteria to assess the non-liquefiable crust thickness, and the potential for lateral spread. The outcome of the assessment against those two criteria will result in an assumption of ***Medium*** or ***High*** liquefaction vulnerability and specification of TC2-type or TC3-type foundations respectively.

Because of the balance adopted between cost and accuracy of Option 3, there remains greater residual uncertainty in the accuracy of the results, which needs to be accepted as part of using this simplified screening assessment. In particular:

- It is expected that in the majority of cases the screening assessment will determine the correct liquefaction vulnerability category.
- In some cases, the screening assessment will over-predict the liquefaction vulnerability. In these cases it is favouring an approach where money is invested in building a more robust foundation which can handle poorer ground conditions (more than only liquefaction), rather than spending an often-similar amount of money on more detailed liquefaction assessment which might (or might not) show that a less robust foundation system would suffice.
- In a smaller number of cases, the screening assessment will under-predict the liquefaction vulnerability. In these cases, it is favouring an approach where a minor increase in damage in localised areas if/when/where an earthquake occurs in the future is balanced against the high up-front cost of more detailed assessment and more robust foundations across the entire district. We note than in most (but not all) circumstances the consequences of under-predicting liquefaction vulnerability relate primarily to matters of amenity, habitability and repair cost, rather than questions of life-safety.
- To issue a Building Consent, Council needs to be "satisfied on reasonable grounds" that the provisions of the Building Code would be met if the building work were properly completed in accordance with the plans and specifications. Similarly, owners, designers and builders must have reasonable grounds to believe that building work complies with the Building Code. It may be useful to seek legal advice and/or a determination from MBIE to confirm that this option for a risk-based approach is appropriate, and that the residual uncertainty in the liquefaction assessment does not undermine these reasonable grounds for Building Code compliance.

4.3 Possible policy approaches for Horowhenua District Council

Section 4.2 presents three options for assessment and mitigation of liquefaction vulnerability, ranging from providing no guidance to practitioners (Option 1) through to providing district-specific guidance (Option 3). However, there is no need for HDC to select a blanket approach which applies in all cases, and it may be appropriate to adopt different options in different situations. Table 4.1 provides four examples (Policy A through to D) for different combinations of liquefaction assessment/mitigation options that could be adopted in different development scenarios. Each example policy approach is discussed in further detail below.

Deciding on the policy approach that is most appropriate for HDC will involve consideration of a range of factors, such as the need to balance cost and demand for urban development against the risk appetite for accepting a degree of uncertainty in the liquefaction assessment. As noted in Section 5 of the MBIE/MfE Guidance (2017), the risk management process now moves from a technical stage to the beginning of a decision-making stage and so needs to involve the relevant stakeholders and decision-makers.

The level of engineering assessment and mitigation that is optimum for HDC will be strongly influenced by the specific local context, including:

- Availability of existing subsurface geotechnical investigations and groundwater monitoring;
- The spatial extent, density and type of building activity expected in future;
- The skillset of local engineering practitioners;
- The expected range of ground conditions inferred from geomorphic mapping;
- The level of seismic hazard; and
- Integration with other council processes for natural hazard management (e.g., District Plan).

Table 4.1: Example of the range of policy approaches that could be considered for liquefaction assessment/mitigation options adopted in different development scenarios

Decreasing detail & cost for engineering assessment
Increasing residual uncertainty

Increasing new capital investment and total exposure / consequence in a single event

Development scenario	Potential HDC policy settings			
	Policy A	Policy B	Policy C	Policy D
Sparsely populated rural area (lot size >4 ha) e.g., a new farm building	Option 1	Option 2	Option 3	Option 3
Rural-residential setting (lot size of 1 to 4 ha) e.g., a "lifestyle" property	Option 1	Option 2	Option 3	Option 3
Small-scale urban infill (original lot size <2500 m^2) e.g., demolish old house and replace with four townhouses	Option 1	Option 2	Option 3	Option 3
Commercial or industrial development e.g., a warehouse building in an industrial park	Option 1	Option 1	Option 1	Option 1
Urban residential development (typically 15-60 households per ha) e.g. home in a new subdivision	Option 1	Option 2	Option 2	Option 3

Notes:

1. ***Option 1:*** No liquefaction assessment /mitigation guidance provided to practitioners.
   Option 2: HDC endorse adoption of Canterbury guidance.
   Option 3: HDC provide Horowhenua-specific guidance.
2. This table shows the highest option number that would be available for practitioners to use in each development scenario for each policy option. In most cases practitioners would also have the option to choose a lower numbered option (e.g., site-specific liquefaction assessment and engineering design would remain an option if practitioners did not wish to follow the available guidance or it was not applicable for the particular circumstances).

Policy A: This involves application of Option 1 (no guidance) in all cases, which would require site-specific liquefaction assessment and specific engineering design to determine suitable mitigation options (if required) for each of the development scenarios and for 'unmapped' areas. This approach would provide practitioners with a high level of flexibility in how they determine suitable mitigation solutions. The detailed assessment required would likely result in lower residual uncertainty about the liquefaction vulnerability, and provide greater confidence in the efficiency and effectiveness of the adopted mitigation solution. However, it would require a high degree of technical competency from both the practitioners developing the solution and the building control officer evaluating the suitability of those solutions. It may also result in higher costs for both investigation requirements, design and approvals being passed on to the applicant as well as longer lead times to develop and evaluate those solutions.

Policy B: Option 1 (no guidance) would apply to all commercial and industrial development scenarios, and all 'unmapped' areas. This is because for these types of development the geotechnical requirements can vary greatly depending on the specific details of the site, the proposed building and foundation type, and the particular functional requirements. This means that specific engineering input is typically required (even if liquefaction is not an issue) and there is little scope to provide guidance for simplified assessment.

Option 2 (Canterbury guidance) would be available for all residential development scenarios. Alternatively, Option 1 could be adopted by the practitioner if they considered it was more appropriate to undertake site-specific assessment and design. This approach provides the same high level of flexibility to practitioners as Policy A, but also with the option of streamlining the selection of standard mitigation solutions from the MBIE Canterbury Guidance (2018). This guidance is intended for use with one- and two-storey timber framed dwellings and therefore for larger and/or more complex residential builds the practitioner may opt for Option 1. When compared to Policy A, this approach enables streamlining of the selection of mitigation solutions for standard residential buildings although the costs may still be significant, in particular on sites where deep investigations are required. At present this approach is being used frequently across New Zealand for liquefaction prone sites.

Policy C: Option 1 (no guidance) would apply to all commercial and industrial development scenarios and 'unmapped' areas, for the reasons discussed above.

Option 2 (Canterbury guidance) would be available for all residential scenarios, with the option for the practitioner to adopt Option 1 if preferred.

Additionally, Option 3 (Horowhenua-specific guidance) would be available for simpler smaller-scale residential applications. This approach further simplifies the process by adding a screening criteria as a tool for practitioners to select a mitigation solution for lower-risk situations. However, as discussed in Section 4.2, the upfront saving this gives in terms of reduced time and cost for engineering assessment is offset against the potentially reduced accuracy. This means that in some cases the adopted foundation may be more robust than required to meet minimum Building Code requirements (incurring higher up-front construction costs), or in some cases the adopted foundation may be less robust than required (with potential for increased damage if/when/where an earthquake occurs in the future).

Policy D: Option 1 (no guidance) would apply to all commercial and industrial development scenarios and 'unmapped' areas, for the reasons discussed above.

Option 3 (Horowhenua-specific guidance) would be available for all residential scenarios, with the option for the practitioner to adopt Option 1 or 2 if preferred. This approach extends the use of the simplified screening criteria to larger residential developments. Therefore, the benefits in terms of upfront savings in time and costs for engineering assessment are extended to a larger number of properties. However, the associated risks relating to adopted foundations being more or less robust than required are also extended to a larger number of properties.

5 HDC preferred approach

Following discussion between HDC and T+T on 16 and 22 March 2022 regarding the options discussed within this report, HDC selected Policy C (refer Section 4.3) as their preferred risk-based approach for liquefaction assessment.

Further guidance regarding a simplified liquefaction screening assessment (Option 3) to assist in Building Consent applications is provided in Appendix A.

As discussed within Sections 4.2 and 4.3, this simplified screening approach results in upfront cost savings by reducing the need for deep ground investigations and specialist geotechnical engineering input. However, this is offset against the potentially reduced accuracy. In some cases the adopted foundation may be more robust than required to meet minimum Building Code requirements (incurring higher up-front construction costs), or in some cases the adopted foundation may be less robust than required (with potential for increased damage if/when/where an earthquake occurs in the future).

6 Future opportunities to reduce uncertainties

The 2020 liquefaction assessment[1] mapped only the ten identified future growth areas, and because of limited available geotechnical investigations and groundwater information it was only able to achieve a level of detail of ***Level A (Basic Desktop Assessment)***. This means there is substantial residual uncertainty regarding liquefaction-related risk across the mapped areas, which limits the accuracy and applicability of simplified screening criteria. In the unmapped areas, there is no information at all about liquefaction, so it is not possible to provide simplified screening criteria.

To help reduce these uncertainties, HDC may wish to consider the following opportunities:

- For the currently unmapped areas, a region-wide ***Level A (Basic Desktop Assessment)*** could be undertaken to provide initial information about liquefaction vulnerability. Because of the lack of ground investigation and groundwater data, this assessment would need to be primarily based on regional geologic and geomorphic mapping. In some cases, this basic understanding of potential ground conditions might allow simplified screening criteria to be developed, similar to the approach outlined in Appendix A.
- For the identified future growth areas, targeted ground investigations and groundwater monitoring could be undertaken to help better understand the key uncertainties, enabling a ***Level B (Calibrated Desktop Assessment)***. A potential focus of this work could be to identify areas where liquefaction vulnerability was likely to be no more than ***Medium***, providing greater confidence that a TC2-type foundation could be adopted without the need for additional assessment (simplifying the building consent process for both council and applicants).

7 Document status and limitations

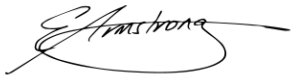
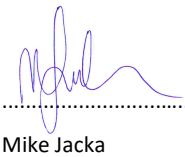
This report is intended to assist parties to comply with their obligations under the Building Act 2004 and the Resource Management Act 1991. It is not mandatory to follow this guidance, but if followed:

- It does not relieve any person of the obligation to consider any matter to which that information relates according to the circumstance of the particular case.
- The consent authority may have regard to the guidance but is not bound to accept the guidance as demonstrating compliance.
- All users should satisfy themselves to the applicability of the content and should not act on the basis of any matter contained in this document without considering, and if necessary, taking appropriate professional advice.

This report has been prepared for the exclusive use of our client Horowhenua District Council, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without prior written agreement. We understand and agree that this report will inform general guidance about liquefaction assessment provided by Horowhenua District Council to consent applicants and their designers, on the basis that any use or reliance on this guidance is at the party's sole risk.

While T+T has taken care in preparing this document, it is only a guide and professional judgement is required for each site. T+T is not liable for any reliance on this guidance. The responsibility for specific engineering design and construction review for land development and building works remains with the designers of the works.

Tonkin & Taylor Ltd

Report prepared by:	Authorised for Tonkin & Taylor Ltd by:
	
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Elyse Armstrong	Mike Jacka
Engineering Geologist	Project Director

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Appendix A: Liquefaction vulnerability guidance for Horowhenua District

Liquefaction vulnerability screening tool / flow diagrams

For each of the broad liquefaction vulnerability categories mapped across Horowhenua District, the attached flow chart provides a framework for liquefaction assessment to enable hazard screening for Building Consent applications for routine individual building projects (primarily residential-style buildings). It is emphasised that these screening criteria have been developed specifically in relation to the local context, so these screening criteria may not be applicable in other locations. Some factors of particular relevance are summarised in Table A.1, to provide an overview of how these considerations have influenced the development of the screening criteria.

Table A.1: Local context most relevant to development of liquefaction screening criteria for Horowhenua District

Local context	How this has influenced the screening criteria
A lack of subsurface geotechnical investigations and groundwater monitoring across the district.	A focus on confirming soil types and groundwater levels at each individual site.
There is a relatively small amount of new building activity in the district, and much of this is small-scale/in-fill and spread out over a large geographical area.	This means that there is a lower density of capital/social investment and lower total exposure to a single event, so a lower level of risk (refer risk matrices in Tables 3.5 to 3.7 of MBIE/MfE 2017 guidance).
Much of the site investigation and building design in the district is currently undertaken by general civil/structural practitioners, following B1/AS1 and NZS3604:2011.	Use the same types of shallow soil testing that have traditionally been used to confirm "good ground", but with enhancements to also allow simplified liquefaction screening. Structure the screening criteria around factors which can reasonably be assessed by general practitioners without specialist geotechnical expertise. Clearly flag the types of situations where specialist geotechnical engineering input is required.
If a specialist geotechnical engineer or deep geotechnical testing is required, these often need to be brought in from elsewhere around the country – so this poses some logistical and cost challenges. However, the district is relatively easily accessed so this is unlikely to add excessive expense for medium to larger sized projects.	It is not unreasonable to expect specialist geotechnical input for medium to larger projects, where the risk profile is greater and the project budget is better able to accommodate costs by sharing across multiple buildings. For smaller projects, more careful thought may be required to strike a pragmatic balance between cost and benefit of specialist geotechnical input. Where specialised geotechnical testing and assessment is undertaken, this should be collated by council and the factual data made available on the NZ Geotechnical Database to help inform future developments in the area.

Table A.1 (continued):

Local context	How this has influenced the screening criteria
Areas mapped as ***Liquefaction Category is Undetermined***	In these areas there is insufficient information available to determine the liquefaction vulnerability. Some areas within this category have a higher potential for liquefaction-induced ground damage due to the lower ground elevations and therefore closer proximity to the groundwater table and/or loose soils identified in shallow investigations. Furthermore, there are paleo channels throughout the region expected, which results in variable ground conditions over relatively short distances. This means unfavourable ground conditions are more likely in lower elevation areas while more favourable ground conditions are possible in higher elevation areas.
The district is within an area of relatively high seismic hazard (e.g., a 500-year design ground acceleration of 0.55g)*.	Where susceptible soils are present, consequential liquefaction-induced ground damage could occur at relatively frequent levels of design shaking (e.g. as low as 25-to-100-year return period). This means it is especially important for site-specific subsoil and groundwater assessment to identify where significant thickness of liquefiable soils are present at shallow depth.
The next time the District Plan is reviewed this will provide an opportunity to manage liquefaction-related risk proactively through land use planning. In the meantime, the recent Building Code change regarding "good ground" means this risk will be managed predominantly through the Building Consent process.	This guidance note focusses on managing liquefaction-related risk for individual building projects through the Building Consent process. For larger-scale developments (e.g. larger than 4 lots as outlined in Table 3.6 of the MBIE/MfE 2017 guidance) it is likely a Resource Consent will first be required, providing an opportunity to manage risk through that process (refer Section 6.7.2 of MBIE/MfE 2017 guidance).

* MBIE Module 1 November 2021 Update has provided a revised calculation for design ground acceleration that has resulted in higher PGAs than quoted in the HDC liquefaction vulnerability assessments[1,2].

Site assessment for simplified liquefaction screening

To assess the screening criteria outlined in the attached flowchart, various techniques may be utilised. Examples of potential site assessment and ground investigation options are discussed below. Other investigations may be required to assess other aspects of the site (e.g., the presence of compressible/expansive soils, uncontrolled fill or slope instability) and the person assessing the site and specifying the foundation solution will need to undertake their own assessment for these factors.

Lateral spread assessment: This could be undertaken based on a desktop study (including air photos, and ground elevation contours/LiDAR) but should be calibrated by a site visit and visual assessment of the site and its surrounds, noting any channels or free faces present in the vicinity of the site.

Groundwater assessment: This assessment may be undertaken using either direct investigation methods (such as hand augers, machine augers or testpit excavation to 3 to 4 m depth), or by comparison with known, nearby sources of groundwater data such as nearby waterbodies with known water levels, or nearby investigations such as boreholes or excavations where groundwater was recorded. Seasonal groundwater fluctuations should be considered.

Soil conditions: The investigation of shallow soil conditions should generally follow the procedures outlined in NZS3604:2011 but it is recommended that where practical, hand augers for the

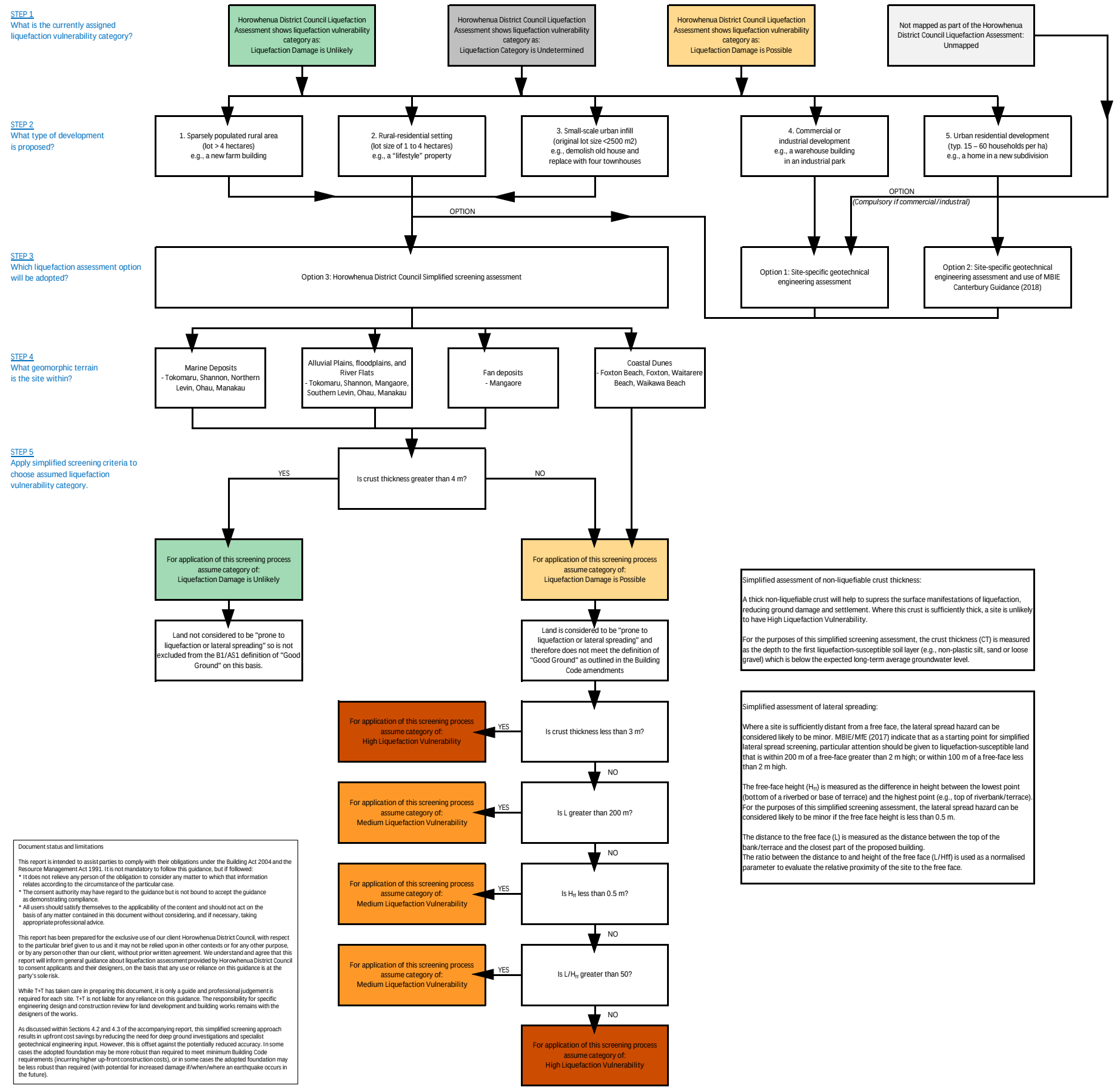
examination of soil materials extend to between 3 and 4 m below ground level. Alternatively, test pits, boreholes or Cone Penetration Tests (CPT) may be used to assess soil conditions. Where sufficient nearby data is available to demonstrate ground conditions, this may also be relied upon, in conjunction with investigations on the site in question. Soils should be logged in accordance with the NZGS field guide for description of soil and rock[6].

We note that very little data exists in the New Zealand Geotechnical Database (NZGD) for the Horowhenua District. Advocating the uploading of geotechnical investigations onto the NZGD as part of the process of evaluating resource and building consent applications would progressively increase the amount of geotechnical data available. This would inform future investigations, allow refinement of existing liquefaction hazard mapping and provide valuable information to support future land-use planning and site assessments.

[6] Field description of soil and rock – field sheet – New Zealand Geotechnical Society (nzgs.org) accessed 29 November 2021

Simplified liquefaction vulnerability screening tool for Horowhenua District

This flow chart must be read alongside the May-2022 report "Options for Liquefaction Assessment for Resource and Building Consent" prepared by Tonkin + Taylor for Horowhenua District Council



Simplified assessment of non-liquefiable crust thickness:

A thick non-liquefiable crust will help to supress the surface manifestations of liquefaction, reducing ground damage and settlement. Where this crust is sufficiently thick, a site is unlikely to have High Liquefaction Vulnerability.

For the purposes of this simplified screening assessment, the crust thickness (CT) is measured as the depth to the first liquefaction-susceptible soil layer (e.g., non-plastic silt, sand or loose gravel) which is below the expected long-term average groundwater level.

Simplified assessment of lateral spreading:

Where a site is sufficiently distant from a free face, the lateral spread hazard can be considered likely to be minor. MBIE/MfE (2017) indicate that as a starting point for simplified lateral spread screening, particular attention should be given to liquefaction-susceptible land that is within 200 m of a free-face greater than 2 m high; or within 100 m of a free-face less than 2 m high.

The free-face height (H_{ff}) is measured as the difference in height between the lowest point (bottom of a riverbed or base of terrace) and the highest point (e.g., top of riverbank/terrace). For the purposes of this simplified screening assessment, the lateral spread hazard can be considered likely to be minor if the free face height is less than 0.5 m.

The distance to the free face (L) is measured as the distance between the top of the bank/terrace and the closest part of the proposed building.
The ratio between the distance to and height of the free face (L/Hff) is used as a normalised parameter to evaluate the relative proximity of the site to the free face.

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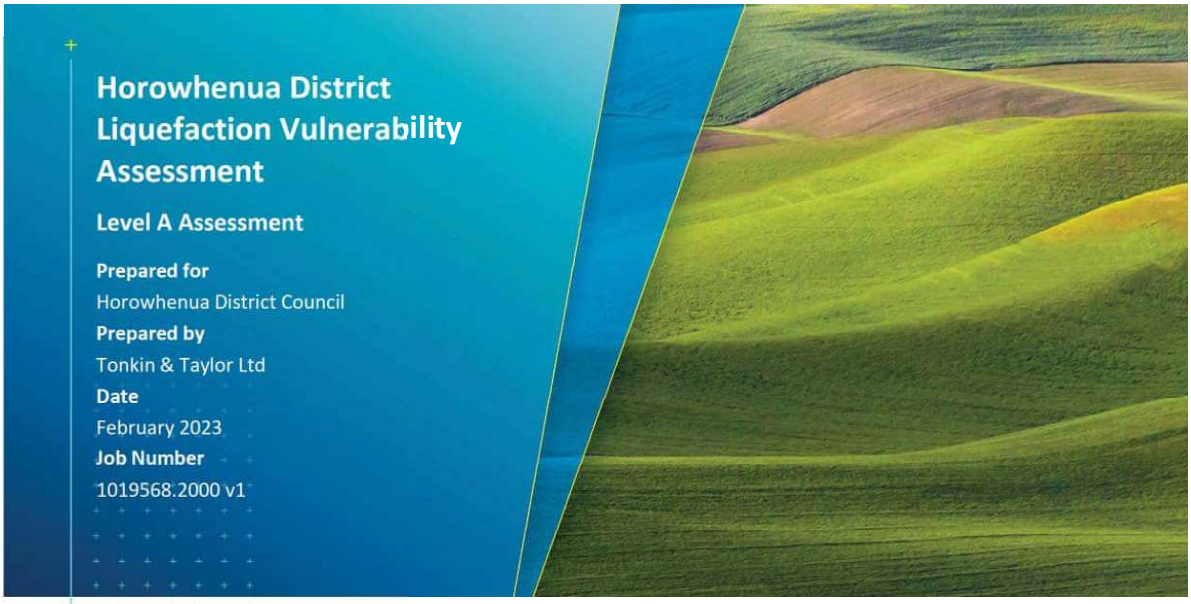

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Document control

Title: Horowhenua District Liquefaction Vulnerability Assessment					
Date	**Version**	**Description**	**Prepared by:**	**Reviewed by:**	**Authorised by:**
20 Feb 2023	1.0	Liquefaction Vulnerability mapping – Level A	E. Armstrong	M. Jacka	M. Jacka

Distribution:

Horowhenua District Council	1 PDF copy
Tonkin & Taylor Ltd (FILE)	1 electronic copy

Table of contents

LIQUEFACTION ASSESSMENT SUMMARY	
This liquefaction assessment has been undertaken in general accordance with the guidance document 'Assessment of Liquefaction-induced Ground Damage to Inform Planning Processes' published by the Ministry for the Environment and the Ministry of Business, Innovation and Employment in 2017. https://www.building.govt.nz/building-code-compliance/b-stability/b1-structure/planning-engineering-liquefaction-land/	
Client	Horowhenua District Council (HDC)
Assessment undertaken by	Tonkin + Taylor Ltd, 2 Hunter Street, Wellington 6011
Report date	February 2023
Extent of the study	The Study Area aligns with Horowhenua District Council boundary.
Intended RMA planning and consenting purposes	To provide HDC with a district-wide liquefaction vulnerability assessment to identify areas of land susceptible to liquefaction. The technical report and resulting map outputs will be used to inform land use, subdivision and building consent applications.
Other intended purposes	Not applicable.
Level of detail	This assessment is considered to be a **Level A** ***"Basic desktop assessment"*** for the Horowhenua District with the exception of an isolated area in Foxton that is a **Level B** ***"Calibrated Desktop assessment".***
Notes regarding base information	- The available base information provides enough information for a Level A (basic desktop assessment) level of detail across the Study Area. The main factor controlling this level of detail is the spatial extent of the available geotechnical investigations, groundwater information and high-resolution elevation data across the Study Area. Further studies could be undertaken at higher levels of detail once additional information becomes available. - The assessment included relevant Cone Penetration Test (CPT), Machine Borehole (BH) and Hand-Auger (HA) data within or near the study area that was available on the New Zealand Geotechnical Database (NZGD) as at December 2022. - Depth to groundwater was based on groundwater encountered within investigations, Horizons Regional Council groundwater database, and observation of surface water such as lakes and rivers.
Other notes	This assessment has been made at a broad scale across the entire region and is intended to approximately describe the typical range of liquefaction vulnerability across neighbourhood-sized areas. It is not intended to precisely describe liquefaction vulnerability at individual property scale. This information is general in nature, and more detailed site-specific liquefaction assessment may be required for some purposes (e.g., for design of building foundations). A key consideration of the liquefaction vulnerability categorisation undertaken in accordance with the MBIE/MfE Guidelines (2017) is the degree of uncertainty in the assessment. Discussion about the key uncertainties in this assessment is provided in sections 3.3 and 3.4 of this report.

1 Introduction

Tonkin & Taylor Ltd (T+T) was engaged by Horowhenua District Council (HDC) to undertake a Level A liquefaction vulnerability assessment of the district. The work was undertaken in accordance with our proposal dated 22 December 2021[1], and the variation order dated 4 July 2022[2]. This Level A assessment serves as an updated version to our Level A assessment provided in 2020[3] which focussed on ten identified growth areas in the district.

This assessment has been undertaken in accordance with the Ministry of Business Innovation and Employment (MBIE) & Ministry for the Environment (MfE) guidance document: *Planning and engineering guidance for potentially liquefaction prone land* (referred to as the MBIE/MfE Guidance (2017)). This assessment provides a risk-based assessment of liquefaction vulnerability across the region.

Geotechnical investigations and more detailed assessments[4] were undertaken by T+T in 2019, for a smaller area located near the centre of the current Foxton Beach assessment area. This assessment is considered to be of Level C *"Detailed area-wide assessment"* based on Table 3.3 of the MBIE/MfE (2017) guidance. As the scope of this assessment was focused on a district wide scale, the refined assessment is not presented in detail, but the investigation data was utilised for this assessment.

Figure 1.1 shows the extent of the Study Area, which aligns with Horowhenua District territorial boundary.

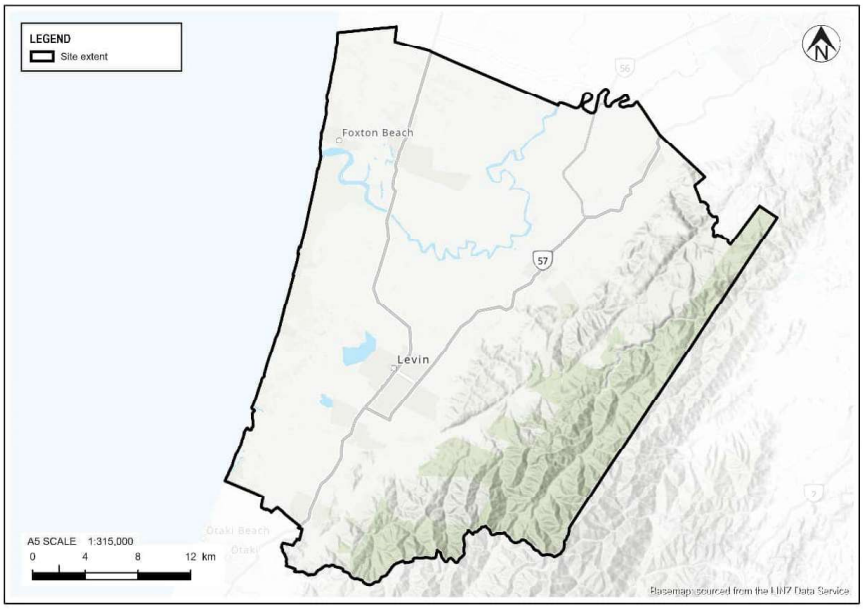


Figure 1.1: Map showing the extent of the Study Area.

[1] T+T (22 December 2021). Letter of Engagement to HDC. *Geotechnical Services – Develop guidance for HDC.* T+T Ref: 1019568.0000.
[2] T+T (4 July 2022). Letter to HDC. *Liquefaction mapping of Horowhenua District, Variation Order No. 1.* T+T Ref: 1019568.0000.
[3] T+T (September 2020). *Horowhenua District Potential Growth Areas Liquefaction Assessment.* T+T Ref: 1001677.v2
[4] T+T (September 2020). *HDC Property, Foxton Beach, Liquefaction Assessment.* T+T Ref: 1001677.0010v2

This report includes:

- The context in which this assessment has been undertaken, the intended purposes for its use, and a summary of previously collated information about liquefaction across the Study Area (Section 2).
- A summary of collated base information that is relevant to the assessment of liquefaction for the Study Area (Section 3.2).
- Analysis of the uncertainty associated with the collated base information (Section 3.3).
- The evaluation of groundwater levels and earthquake scenarios to be assessed, and the delineation of the Study Area into zones of similar expected ground performance (sections 4.1, 4.2, and 4.3).
- The determination of the expected degree of liquefaction-induced ground damage for the chosen groundwater levels and earthquake scenarios (Section 4.4).
- The assessment of liquefaction vulnerability as determined from the performance criteria provided in the MBIE/MfE Guidance (2017) (Section 4.4).
- Discussion about the results of this assessment and a summary of the key conclusions (Section 5).

The liquefaction vulnerability assessment and the layout of this report follows the risk management process recommended in ISO 31000:2018, as shown in Figure 1.2.

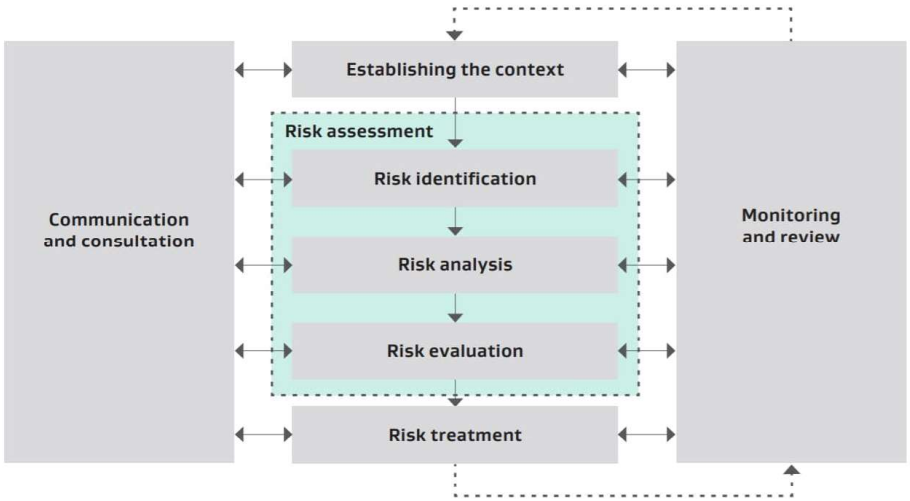


Figure 1.2: Risk management process defined in ISO 31000:2009, which has been used to guide the liquefaction vulnerability assessment and the layout of this report - from MBIE/MfE Guidance (2017). Note, this figure has been slightly modified in the ISO 31000:2018 standard, however the general concepts remain unchanged.

It is emphasised that the discussion in this report regarding vulnerability categories and options for further geotechnical assessment relate only to liquefaction hazard. There are various other natural hazards and geotechnical constraints which would also need to be considered as part of any future land development or building activities.

2 Context

2.1 MBIE/MfE Guidance (2017)

The MBIE/MfE Guidance (2017) presents a risk-based approach to the management of liquefaction-related risk in land use planning and development decision-making. The guidance was developed in response to the Canterbury Earthquake Sequence 2010-2011 as a result of recommendations made by the Royal Commission of Inquiry into Building Failure caused by the Canterbury Earthquakes[5].

The focus of the MBIE/MfE Guidance (2017) is to assess the potential for liquefaction-induced ground damage to inform Resource Management Act (RMA) and Building Act planning and consenting processes. However, there are a number of ways in which liquefaction information may be used which are outside of the planning and consenting process and the following is a non-exhaustive list that is provided in Section 1.2 of the guidance document:

- Long term strategic land use and planning.
- Developing planning processes to manage the effects of natural hazard events and related risks.
- Design of land development, building and infrastructure works.
- Informing earthquake-prone building assessments.
- Improving infrastructure and lifelines resilience.
- Civil defence and emergency management planning.
- Catastrophe loss modelling for insurance, disaster risk reduction and recovery planning.

While there may be specific additional information required to inform the uses above that are outside of the planning and consenting process, many of the concepts presented in the MBIE/MfE Guidance (2017) are likely to be relevant and provide useful information to support these uses.

The MBIE/MfE Guidance (2017) includes the overview of the recommended process for categorising the potential for liquefaction-induced ground damage shown in Figure 2.1. This figure shows the key steps in this categorisation process as establishing the *Context, Risk Identification, Risk Analysis, and Monitoring and Review* broken down into high level tasks. Comparison of Figure 2.1 with Figure 1.2 also demonstrates how the process maps to the risk management process defined in ISO 31000:2018.

[5] The MBIE/MfE Guidance (2017) does not provide technical guidance on liquefaction analysis or earthquake engineering. Detailed information about this topic can be found in the NZGS/MBIE Earthquake Geotechnical Engineering Practice series (NZGS/MBIE, 2016; NZGS/MBIE, 2017a – 2017f).

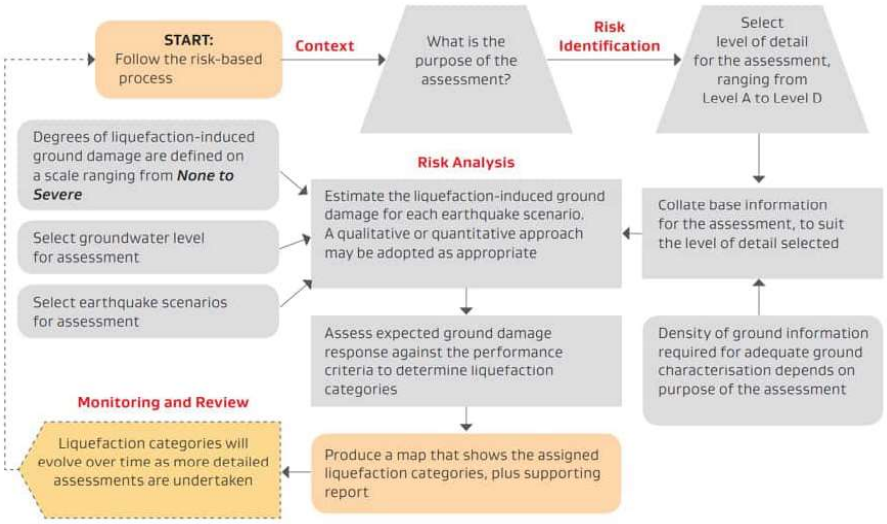
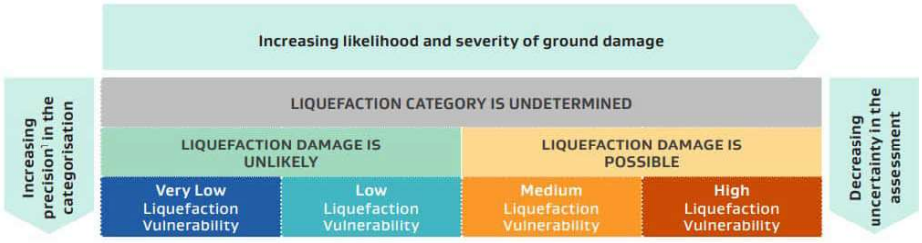


Figure 2.1: Overview of the recommended process for categorising the potential for liquefaction-induced ground damage - from MBIE/MfE Guidance (2017).

The MBIE/MfE Guidance (2017) provides a performance-based framework for categorising the liquefaction vulnerability of land to inform planning and consenting processes. That framework is based on the severity of liquefaction-induced ground damage that is expected to occur at various intensities of earthquake shaking. Figure 2.2 shows the recommended liquefaction vulnerability categories for use in that performance-based framework.



Note:

1 In this context the 'precision' of the categorisation means how explicitly the level of liquefaction vulnerability is described. The precision is different to the accuracy (ie trueness) of the categorisation.

Figure 2.2: Recommended liquefaction vulnerability categories for use in liquefaction assessment studies to inform planning and consenting processes - from MBIE/MfE Guidance (2017).

As shown in Figure 2.2, the liquefaction vulnerability categories established in the MBIE/MfE Guidance (2017) are a function of both the *precision in the categorisation* and the *degree of uncertainty* in the assessment. To provide guidance on how to manage these aspects, recommendations are provided in the MBIE/MfE Guidelines (2017) for the minimum level of detail required in the liquefaction assessment for specific applications. Figure 2.3 shows the categories used to define the levels of detail for liquefaction vulnerability studies.

Figure 2.3: Categories of level of detail used to define the levels of detail for liquefaction vulnerability studies - from MBIE/MfE Guidance (2017).

Regional scale studies, such as this one, are typically undertaken to a Level A or Level B level of detail. Level C and Level D assessments are typically associated with site-specific development to support subdivision and building consent applications.

It is important to note that regional scale studies typically result in categorisation of the land into one of the top three vulnerability categories of ***"Liquefaction Category is Undetermined"*** or ***"Liquefaction Damage is Unlikely"*** or ***"Liquefaction Damage is Possible"***. The categorisation of the liquefaction vulnerability of the land within Horowhenua District into one of the categories shown in Figure 2.2 is one of the key deliverables of this assessment.

The key feature defining each level of detail is the degree of "residual uncertainty" in the assessment, such that the residual uncertainty is reduced as the level of detail in the liquefaction assessment increases. It is likely that substantial residual uncertainty will remain in some locations, and this has been acknowledged, recorded, and clearly conveyed. Further information about the level of detail hierarchy and residual uncertainty is provided in Section 3.1. Section 3.3 discusses the key sources of uncertainty associated with this assessment.

2.2 Background to this project

Horowhenua District Council has commissioned this project to identify areas of land within the district that have potential for liquefaction-induced ground damage. The district spans across a variety of landscapes that have varying vulnerability to liquefaction-related hazards. Identifying areas of the region that are prone to liquefaction-induced damage will help to make communities safer by enabling an appropriate land use planning and building consenting response.

This assessment is intended to improve the understanding of liquefaction vulnerability in the district and will produce a liquefaction vulnerability map that can be utilised by different stakeholders. The outputs of the assessment will have two specific uses, the first being related to recent changes to the Building Act and the second being Resource Management Act applications.

Regarding the Building Act changes, in November 2019 the Building Code was amended with respect to ground prone to liquefaction and/or lateral spreading. The changes were:

- Limiting the application of the B1 Acceptable Solution B1/AS1 so that it may not be used on ground prone to liquefaction or lateral spreading.
- Limiting the application of B1/AS1 Foundation Design buildings to those that are on "Good Ground" that is not prone to liquefaction or lateral spreading.

The outputs of the vulnerability assessment provide information to users that can relate to these two Building Code amendments. To categorise land as "prone to liquefaction or lateral spreading" within the context of these Building Code amendments we recommend the following:

- Land that has been categorised as ***"Liquefaction Damage is Possible"*** as part of this assessment is considered to be "prone to liquefaction or lateral spreading" and therefore does not meet the definition of "Good Ground" as outlined in the Building Code amendments. Note that subsequent liquefaction vulnerability assessment at a higher level of detail may result in reclassification of the land into a different category and whether it meets the definition of "Good Ground" should be reconsidered based on that new information.
- Land that has been categorised as ***"Liquefaction Damage is Unlikely"*** as part of this assessment is considered to be "not prone to liquefaction or lateral spreading" within the context of the definition of "Good Ground" as outlined in the Building Code amendments. Note there may be other reasons why the definition of "Good Ground" is not satisfied at a particular site (e.g., the presence of compressible or expansive soils) and the person specifying the foundation solution will need to undertake their own assessment for these factors.
- For land that has been categorised as ***"Liquefaction Category is Undetermined"*** as part of this assessment, there is currently insufficient information to determine whether it is "prone to liquefaction or lateral spreading" within the context of the definition of "Good Ground" as outlined in the Building Code amendments. Note that subsequent liquefaction vulnerability assessment at a higher level of detail will likely result in reclassification of the land into a different category and whether it meets the definition of "Good Ground" should be reconsidered based on that new information.

Regarding Resource Management Act applications, the outputs of the vulnerability assessment will provide applicants with a base information source to determine the liquefaction vulnerability for the land associated with their resource consent application. This information will allow the applicant to address the potential liquefaction hazard in the early stages of their project, and may result in the hazard being mitigated or taken off the table prior to the building consent stage.

2.3 Liquefaction hazard

Liquefaction is a natural process where earthquake shaking increases the water pressure in the ground in some types of soil, resulting in temporary loss of soil strength.

The following three key elements are all required for liquefaction to occur:

- Loose non-plastic soil (typically sands and silts, or in some cases gravel).
- Saturated soil (i.e., below the groundwater table).
- Sufficient ground shaking (a combination of the duration and intensity of shaking).

These elements are shown in Figure 2.4 , and Figure 2.5 summarises the process of liquefaction with a schematic representation.

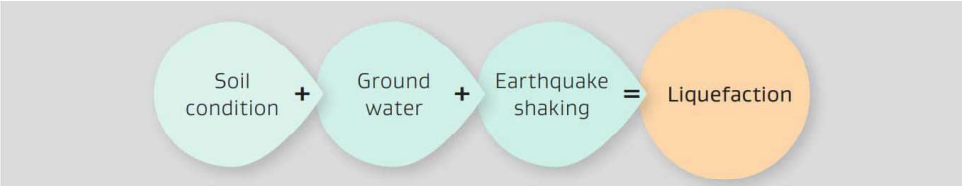


Figure 2.4: Three key elements required for liquefaction to occur - reproduced from MBIE/MfE Guidance (2017).

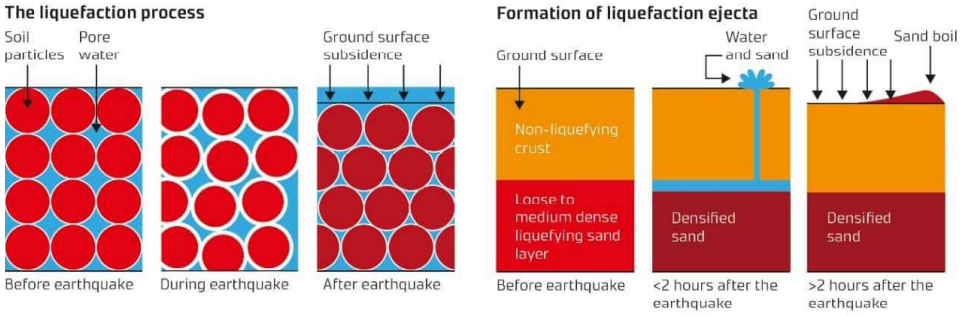


Figure 2.5: Schematic representation of the process of liquefaction and the manifestation of liquefaction ejecta - reproduced from MBIE/MfE Guidance (2017).

Liquefaction can give rise to significant land and building damage through, for example, the ejection of sediment to the ground surface, differential settlement of the ground due to volume loss in liquefied soil and lateral movement of the ground (known as lateral spreading). These effects are schematically presented in Figure 2.6 and summarised in Table 2.1.

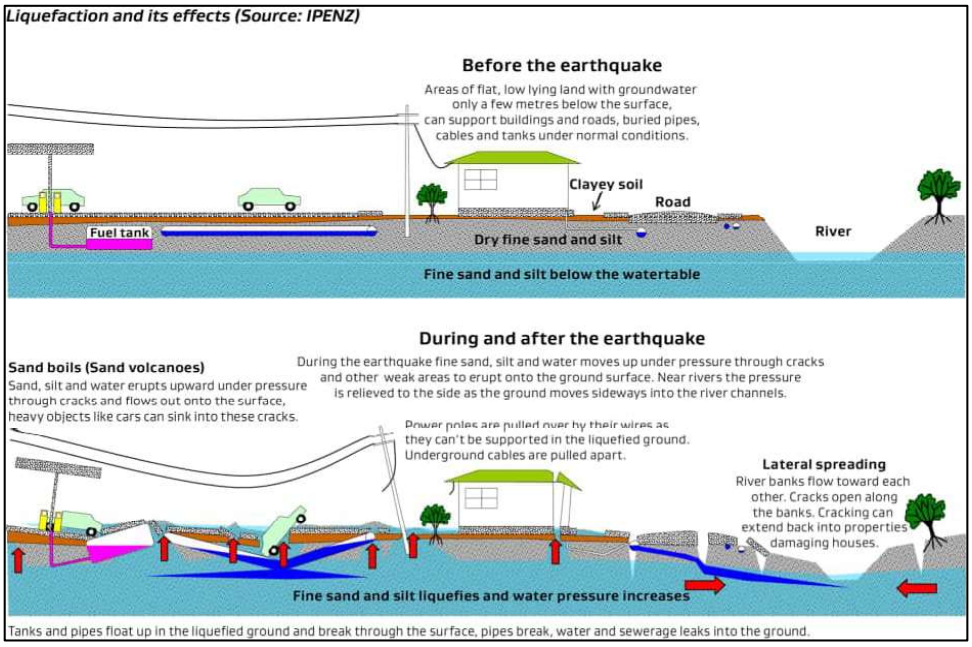


Figure 2.6: Visual schematic of the consequences of liquefaction - reproduced from the MBIE/MfE Guidance (2017).

Table 2.1: Overview of potential consequences of liquefaction (reproduced from MBIE/MfE Guidance (2017))

Land	• Sand boils, where pressurised liquefied material is ejected to the surface (ejecta). • Ground settlement and undulation, due to consolidation and ejection of liquefied soil. • Ground cracking from lateral spreading, where the ground moves downslope towards an unsupported face (e.g., a river channel or terrace edge).
Environment	• Discharge of sediment into waterways, impacting water quality and habitat. • Fine airborne dust from dried ejecta, impacting air quality. • Potential contamination issues from ejected soil. • Potential alteration of groundwater flow paths and formation of new springs.
Buildings	• Distortion of the structure due to differential settlement of the underlying ground, impacting the amenity and weather tightness of the building. • Loss of foundation-bearing capacity, resulting in settlement of the structure. • Stretch of the foundation due to lateral spreading, pulling the structure apart. • Damage to piles due to lateral ground movements, and settlement of piles due to downdrag from ground settlement. • Damage to service connections due to ground and building deformations.
Infrastructure	• Damage to road, rail, and port infrastructure (settlement, cracking, sinkholes, ejecta). • Damage to underground services due to ground deformations (e.g., 'three waters', power, and gas networks). • Ongoing issues with sediment blocking pipes and chambers. • Uplift of buoyant buried structures (e.g., pipes, pump stations, manholes and tanks). • Damage to port facilities. • Sedimentation and 'squeezing' of waterway channels, reducing drainage capacity. • Deformation of embankments and bridge abutments (causing damage to bridge foundations and superstructure). • Settlement and cracking of flood stopbanks, resulting in leakage and loss of freeboard. • Disruption of stormwater drainage and increased flooding due to ground settlement.
Economic	• Lost productivity due to damage to commercial facilities, and disruption to the utilities, transport networks, and other businesses that are relied upon. • Absence of staff who are displaced due to damage to their homes or are unable to travel due to transport disruption. • Cost of repairing damage.
Social	• Community disruption and displacement – initially due to damage to buildings and infrastructure, then the complex and lengthy process of repairing and rebuilding. • Potential ongoing health issues (e.g., respiratory and psychological health issues).

These consequences can have severe impacts that range from land damage through to social disruption as seen in the 2010-2011 Canterbury Earthquake Sequence.

The risk identification and analysis undertaken for this assessment considered how the severity of these consequences at any particular location can vary depending on a range of factors, such as:

- **Soil condition –** Liquefaction typically occurs in loose non-plastic soils i.e., silts and sands and in some cases loose gravels. Liquefaction does not typically occur in soils with higher plasticity such as clay and does not occur in rock or dense gravel.
- **Depth to groundwater –** Soil can only liquefy if it is fully saturated, so deeper groundwater can mean there is a thicker surface "crust" of non-liquefied soil at the ground surface that helps to reduce the consequences from liquefaction below.
- **Strength of earthquake shaking –** Stronger shaking can mean that greater thickness of the soil profile liquefies, resulting in more severe consequences.
- **Layering of the soil profile –** The way in which a soil was deposited (e.g., by a river, an estuary, or the sea) can influence how the soil profile is layered. If there are thick continuous layers of liquefied soil, then this can have more severe consequences than if there are thinner isolated layers of liquefied soil interbedded between layers of non-liquefied soil.
- **Proximity to free faces or sloping ground –** For lateral spreading to occur, liquefiable soils must be within close proximity to a free face (such as a river channel or a road cut) or sloping ground. Typically, a location that is closer to these topographic features will sustain more severe consequences than a location that is further away.

2.4 Intended purpose and scope of works

The information produced from this liquefaction vulnerability assessment will be used to inform land use planning and consenting requirements under the RMA and Building Act for Horowhenua District. In particular, the liquefaction vulnerability information produced from this assessment can be used to address the changes that have occurred to the New Zealand Building Act related to liquefaction and lateral spreading (as discussed in Section 2.1). Note that in some cases, a more detailed site-specific assessment of liquefaction vulnerability may be required to meet the requirements of the amended Building Act. Section 3.5 of the MBIE/MfE Guidelines (2017) provides guidance for more detailed liquefaction vulnerability assessments depending on the particular activity under consideration.

2.5 Previous information about liquefaction in Horowhenua District

From a review of publicly available information, we were unable to find many previous regional studies of liquefaction in the Horowhenua District. A key reference is a GNS Science (GNS) report from 2016, that assessed hazard information for Horizons Regional Council (Dellow, Heron, Scott, Ries, & Lukovic, 2016). Below is an extract from this assessment which represents the GNS assessed liquefaction susceptibility of the Horowhenua District at a regional level. A key assumption used in the GNS mapping was any geological units older than Holocene, or dominated by gravels were considered non-liquefiable.

This GNS liquefaction hazard assessment pre-dated the development of the MBIE/MfE Guidance document (2017), and there is no direct correlation between the GNS "Susceptibility Class" and the MBIE/MfE "Liquefaction Vulnerability Category".

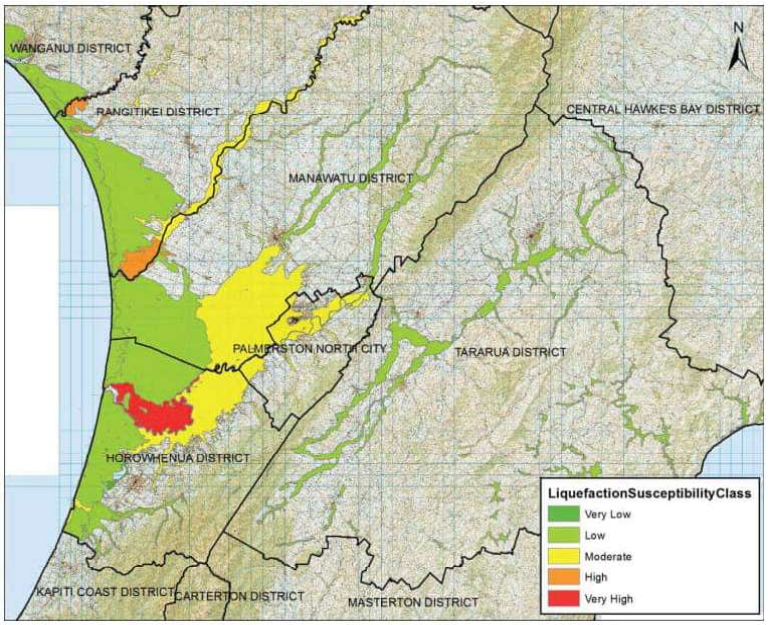


Figure 2.7: The liquefaction susceptibility map produced by GNS in 2016 – reproduced from (Dellow, Heron, Scott, Ries, & Lukovic, 2016)

3 Risk identification

3.1 Level of detail

This section outlines the risk identification that has been carried out for the liquefaction vulnerability assessment for the region.

The first task is the determination of the level of detail required for the intended purposes (refer to Section 3.1.2). This requires consideration of the key features associated with each level of detail as established by the MBIE/MfE Guidance (2017) and consideration of HDC's intended purposes for undertaking the liquefaction vulnerability assessment.

The second task is review of the base information currently available for this liquefaction vulnerability assessment (refer to Section 3.2). The base information that has been reviewed for this region includes the following:

- Ground surface levels (refer to Section 3.2.1).
- Geology and geomorphology (refer to Section 3.2.2).
- Geotechnical investigations (refer to Section 3.2.3).
- Groundwater (refer to Section 3.2.4).
- Seismic hazard (refer to Section 3.3.5).
- Historical observations of liquefaction (refer to Section 3.2.6).

3.1.1 Level of detail hierarchy

The MBIE/MfE Guidance (2017) provides recommendations for four different levels of detail ranging from the least detailed (Level A) to the most detailed (Level D). Figure 3.1 shows the key features associated with each level of detail.

LEVEL OF DETAIL	KEY FEATURES
Level A **Basic desktop assessment**	Considers only the most basic information about geology, groundwater and seismic hazard to assess the potential for liquefaction to occur. This can typically be completed as a simple 'desktop study', based on existing information (eg geological and topographic maps) and local knowledge. **Residual uncertainty:** The primary focus is identifying land where there is a ***High*** degree of certainty that ***Liquefaction Damage is Unlikely*** (so it can be 'taken off the table' without further assessment). For other areas, substantial uncertainty will likely remain regarding the level of risk.
Level B **Calibrated desktop assessment**	Includes high-level 'calibration' of geological/geomorphic maps. Qualitative (or possibly quantitative) assessment of a small number of subsurface investigations provides a better understanding of liquefaction susceptibility and triggering for the mapped deposits and underlying ground profile. For example, the calibration might indicate the ground performance within a broad area is likely to fall within a particular range. It may be possible to extrapolate the calibration results to other nearby areas of similar geology and geomorphology, however care should be taken not to over-extrapolate (particularly in highly variable ground such as alluvial deposits), and the associated uncertainties (and potential consequences) should be clearly communicated. Targeted collection of new information may be very useful in areas where existing information is sparse and reducing the uncertainty could have a significant impact on objectives and decision-making. **Residual uncertainty:** Because of the limited amount of subsurface ground information, significant uncertainty is likely to remain regarding the level of liquefaction-related risk, how it varies across each mapped area, and the delineation of boundaries between different areas.
Level C **Detailed area-wide assessment**	Includes quantitative assessment based on a moderate density of subsurface investigations, with other information (eg geomorphology and groundwater) also assessed in finer detail. May require significant investment in additional ground investigations and more complex engineering analysis. **Residual uncertainty:** The information analysed is sufficient to determine with a moderate degree of confidence the typical range of liquefaction-related risk within an area and delineation of boundaries between areas, but is insufficient to confidently determine the risk more precisely at a specific location.
Level D **Site-specific assessment**	Draws on a high density of subsurface investigations (eg on or very close to the site being assessed), and takes into account the specific details of the proposed site development (eg location, size and foundation type of building). **Residual uncertainty:** The information and analysis is sufficient to determine with a ***High*** degree of confidence the level of liquefaction-related risk at a specific location. However, the scientific understanding of liquefaction and seismic hazard is imperfect, so there remains a risk that actual land performance could differ from expectations even with a high level of site-specific detail in the assessment.

Increasing level of detail and decreasing degree of uncertainty

Figure 3.1: Levels of detail for liquefaction assessment studies and the defining key features - from MBIE/MfE Guidance (2017).

As highlighted in Figure 3.1, the key feature of the level of detail assessment is the degree of residual uncertainty in the assessment. This refers to the uncertainty which remains after the available information has been analysed. The concept of residual uncertainty is important because it informs the suitability of the information for the intended purpose and helps guide risk evaluation and risk treatment.

There are two key parts to the determination of the level of detail as follows:

1 **Determination of the level of detail required for the intended purpose.** This step involves consultation with the key stakeholders and a review of the different applications where this information will be applied (refer to this Section 3.1.2 of this report).

2 **Determination of the level of detail supported by the currently available base information.** This step involves collation and review of the base information available for the assessment (refer to Section 3.2 of this report) including consideration of the uncertainty associated with that information (refer to Section 3.3 of this report).

3.1.2 Level of detail required for intended purposes

The MBIE/MfE Guidance (2017) provides recommendations about the minimum level of detail likely to be appropriate for a liquefaction assessment, depending on the intended purpose, likelihood/severity of ground damage and the development intensity. Refer to Section 3.5 of the MBIE/MfE Guidance (2017) for further detail.

The target level of detail for the assessment (in accordance with MBIE Guidance (2017)) that is required for HDC's intended purposes was discussed in a meeting held with key stakeholders from Horowhenua District Council on 16 June 2022. Following the meeting, HDC confirmed on 23 August 2022 that a Level A (Basic Desktop Assessment) level of detail across the entire district would be suitable for the intended purposes of the assessment. This establishment of the target level of detail included consideration of the following:

- The range of intended purposes for the liquefaction vulnerability assessment.
- The target level of detail required for those intended purposes.
- The availability and spatial density/extent of data required for assessment at the selected level of detail.
- Whether a better overall outcome could be achieved by adopting a higher target level of detail than the minimum requirements.

As shown in Figure 3.2 and Figure A1 in Appendix A, a Level A (Basic Desktop Assessment) level of detail was targeted for the for the entire Study Area.

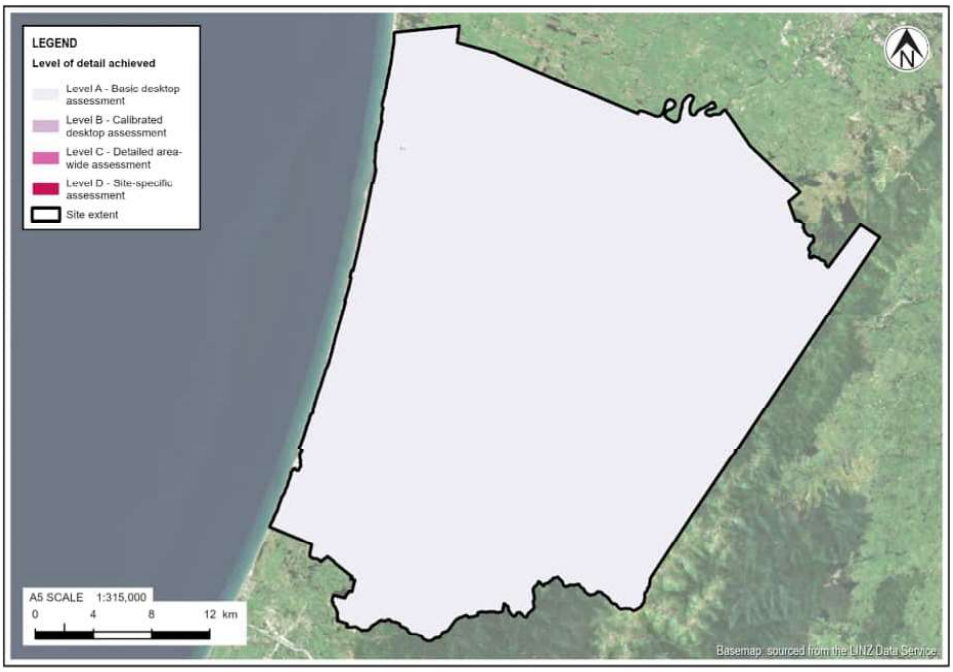


Figure 3.2: Target level of detail for Horowhenua District (Level A for the entire district)

3.2 Base information currently available

This section of the report collates and documents the available base information and how the information was used in the risk assessment process.

3.2.1 Ground surface levels

The ground surface level of Horowhenua District is characterised by four digital elevation models (DEM). Three of the DEMS have been derived from LiDAR and cover the majority of the land surface west of the Tararua Ranges. These DEMS have a 1 m horizontal resolution. The fourth DEM covers the entire study area and has been derived from the LINZ Topo50 20 m contours to a horizontal resolution of 8 m. The LiDAR-derived DEM provides data with a higher degree of precision and accuracy than the DEM derived from the LINZ Topo50 20 m contours. Table 3.1 provides information about the DEM's that are available for this liquefaction hazard assessment and Figure 3.3 shows the extent of each of the LiDAR-derived DEM across the Study Area.

Table 3.1: Available DEM datasets for Horowhenua District

Year of acquisition	Acquired by	DEM Derived from	DEM horizontal resolution (m)	Coverage of Study Area
2018	HDC	Classified Point cloud (LiDAR)	1	Areas within HD
2013	HDC	Classified Point cloud (LiDAR)	1	Urban Areas within HD
2013	HDC	Classified Point cloud (LiDAR)	1	Rural Areas within HD
2012	LINZ	Topo50 20 m contours	8	Full Horowhenua District

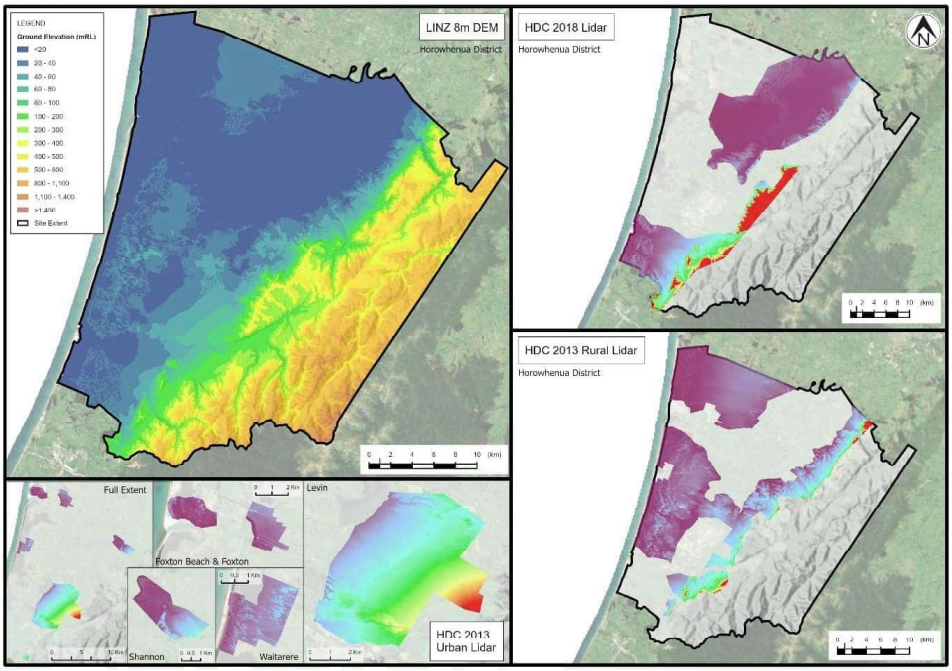


Figure 3.3: Extent of LiDAR survey data across the Study Area.

As shown in Figure 3.4 and Figure A2 in Appendix A, the ground surface elevation within Horowhenua District is highly variable, varying from 0 mRL along the coastline to >1,400 m RL (NZTM 2000) at the highest point. The topography is defined by coastal dunes (active and relic), alluvial plains, wetlands, alluvial and marine terraces, and sedimentary rock ranges.

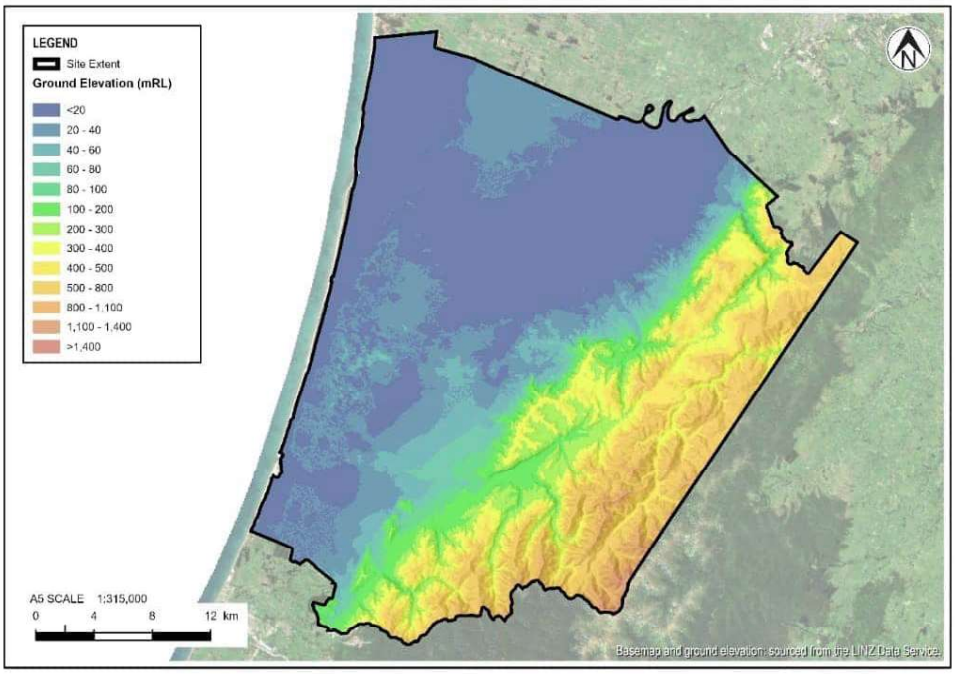


Figure 3.4: Ground surface elevations derived from the DEM across the Study Area.

3.2.2 Geology and geomorphology

Geology

The geology of Horowhenua District is represented by a 1:250,000 scale geological map compiled by GNS, "The Geology of the Wellington Area"(Begg & Johnston, 2000). For the purposes of this vulnerability assessment and level of detail required, the 1:250,000 scale geological map compilation produced by GNS has been used. Figure 3.5 shows the main geological units for Horowhenua District.

The geological formations identified by GNS within the Study Area can be simplified into the following broad categories:

- **Holocene alluvial and marine deposits:** Comprise the active river systems, swamps and alluvial lowlands associated with the recent coastline around the Study Area. The lowlands are dominated by fixed and mobile sand dunes across the western third of the district. They generally comprise sand, silt, gravel, and organic soil deposits.
- **Pleistocene alluvial and marine deposits:** Older alluvial deposits generally sit at higher elevations than the Holocene alluvial deposits and have been formed by historic river systems and marine environments within the Study Area. They also generally comprise sand, silt, gravel, and organic soil deposits.
- **Sedimentary rocks:** Cretaceous to Neogene sedimentary rocks comprise a large portion of the Study Area. These rock units are represented by the hills and mountain ranges that border the Horowhenua region.

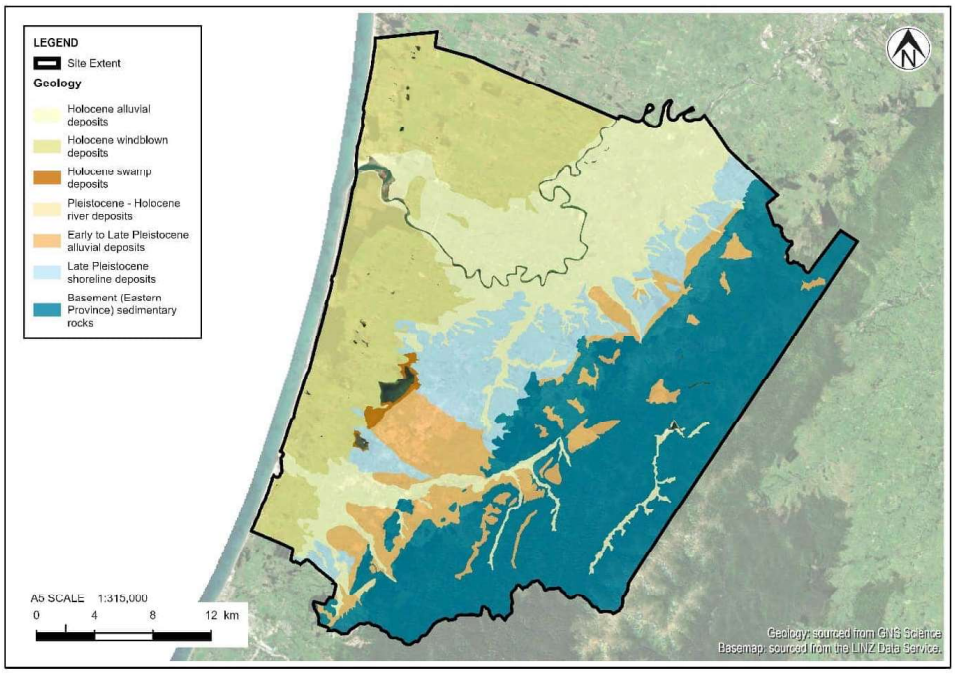


Figure 3.5: Main geological units associated with Horowhenua District (Begg & Johnston, 2000)

Geomorphology

Geomorphic terrains have been defined and mapped to help identify areas of potential liquefaction vulnerability. Geomorphic terrain categories have been defined based on their general susceptibility to liquefaction, following the MBIE/MfE Guidance (2017) and research by Youd and Perkins (1978). Terrains expected to be underlain by silt, sand, and gravel sediments (e.g. flood plains etc.) are more likely to be vulnerable to liquefaction. As a result, these terrains have been categorised in more detail for this assessment compared to the various types of hill country within the region, which are less likely to be vulnerable to liquefaction. The geomorphic terrain mapping methodology is summarised in Table 3.2.

Table 3.2: Geomorphic terrain mapping and methodology

Data sources:	Geological maps – see this section Ground surface levels – see Section 3.2.1 Current and historical aerial imagery – obtained from LINZ and Retrolens Topographical screening tool and associated geomorphons – see Section 3.2.1
Terrain definition:	Geomorphic terrain categories have been defined based on their general susceptibility to liquefaction following guidance in MBIE (2017) and Youd and Perkins (1978). Areas expected to be more vulnerable to liquefaction have been divided into more detailed terrain units (i.e., alluvial channels, alluvial flood plains etc.) compared with hill and rocky areas which are less likely to contain soils that are susceptible to liquefaction.
Terrain mapping:	Terrain mapping has been undertaken as a desktop assessment largely based on the ground surface levels, associated geomorphons and the QMAP geological units. Surface elevation data was used to infer landform features, such as areas of low-lying and elevated land, and gently sloping to steeply sloping land etc. These areas of land often reflect sedimentary depositional processes that relate to liquefaction vulnerability of soils. The QMAP geological units have also been rationalised into the geomorphic terrain categories and incorporated into the landform feature interpretation listed above. The resulting geomorphic terrains have been reviewed against aerial imagery and the geomorphons produced by the topographical screening tool. During this process, terrain extents can be modified or re-classified.
Mapping Scale	1:25,000[6]

The geomorphic mapping process identified six different geomorphic terrains across the Study Area. These geomorphic terrains are described as follows:

- **Active Coastline and Dunes:** Represents the coastal dune system that is actively subject to wind/aeolian and coastal processes. Associated with the present-day shoreline along the western extent of the Study Area. The Horowhenua region is situated within one of the largest dune fields in New Zealand, which has been separated into Active and Stabilised (termed 'Relic' for the purposes of this assessment report), (Begg & Johnston, 2000). The active dunes terrain covers less than 1% of the Study Area.
- **Alluvial Plains and River Flats:** This terrain represents the late Pleistocene to Holocene sediments deposited by active and historic river systems across the region and is generally flat to gently sloping. This terrain covers approximately 20% of the Study Area. The Late Pleistocene to Holocene-aged silts and sands associated with this terrain are likely to be susceptible to liquefaction.
- **Relic Dunes:** Represents the stabilised coastal dune system that is no longer actively subjected to wind/aeolian and coastal processes. This terrain covers approximately 25% of the Study Area. The Holocene-aged silts and sands associated with this terrain are likely to be susceptible to liquefaction.
- **Wetlands and Swamps:** This terrain is characterised by present day large wetlands and swamps that can be observed at a 1:25,000 scale and are a common feature in the Horowhenua dune fields (Begg & Johnston, 2000). Sediments within this terrain are expected to be fined grained organic soils (peat), silts, mud, and sand. Terrain covers less than 1% of the Study Area. It is difficult to determine the typical liquefaction susceptibility of this terrain due to the characteristics of the sediments.

[6] In practice, we have reviewed or drawn terrain boundaries within GIS at an onscreen scale between 1:25,000 to 1:15,000.

- **Alluvial and Marine Terraces:** These terraces typically comprise early to late Pleistocene-aged marine and alluvial deposits. This terrain is dominant between the low-lying alluvial plains to the west and the Tararua hills and ranges to the east. This terrain covers approximately 20% of the Study Area. It is difficult to determine the typical liquefaction susceptibility of this terrain due to the varying geological age of the sediments, the varying groundwater depth and variability of the deposits vertically and spatially.
- **Hills, Ranges and Mountains:** One of the most extensive geomorphic terrains across the district (covers approximately 35% of the Study Area). Represents the elevated, sloping land features that dominate the northern extent of the Study Area. Incised, steep, stream valleys and alluvial features are common throughout this terrain, however, they do not characterise the dominant geomorphic processes in this terrain. Typically, this terrain has rock near the ground surface and therefore, it is less likely to contain soils that are susceptible to liquefaction.

The geomorphic map of the Study Area is shown in Figure 3.6 and Figure A4 in Appendix A.

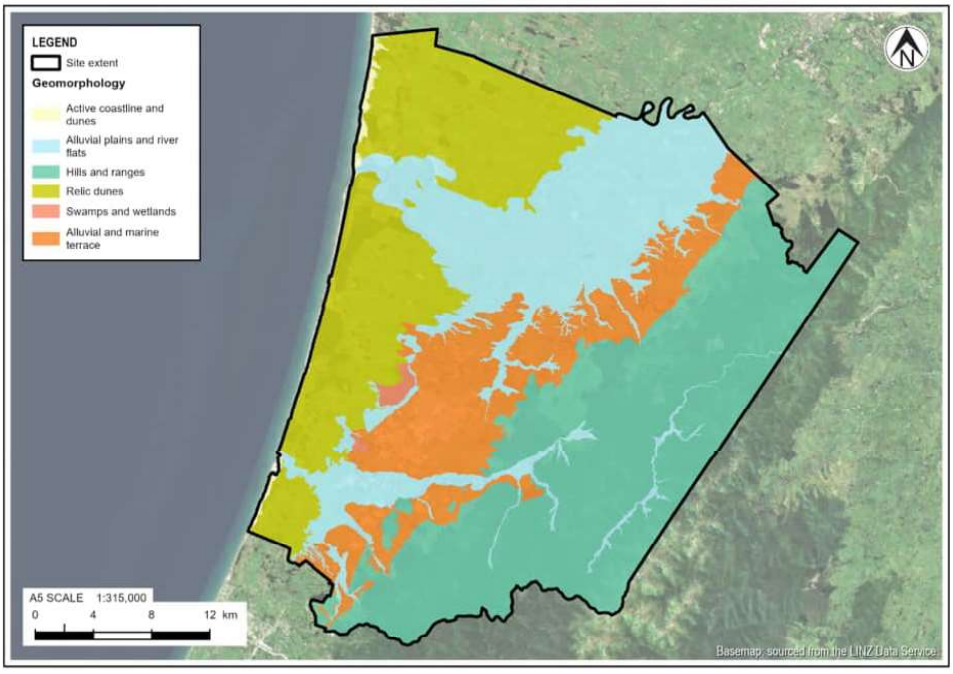


Figure 3.6: Geomorphic map of Study Area.

3.2.3 Geotechnical investigations

Existing geotechnical investigations from the publicly available New Zealand Geotechnical Database (NZGD) and from T+T's records have been considered for this assessment. This includes Cone Penetration Tests (CPT), Boreholes (BH), and Test Pits (TP). The number of CPT, BH, and TP within each geomorphic terrain is shown in Table 3.3.

Table 3.3: Geotechnical investigation count from NZGD and T+T's records by geomorphic terrain as at 8 November 2022.

Geomorphic terrain	CPT count (No.)	BH count (No.)	Test Pit Count (No.)
Active coastline and dunes	0	0	0
Alluvial plains and river flats	76	40	109
Relic dunes	123	10	1
Wetlands and swamps	0	0	0
Alluvial/Marine terraces	43	11	61
Hills, ranges and mountains	0	0	0

Most of the geotechnical investigations in the Study Area are concentrated around Levin, Foxton and the proposed KiwiRail and State Highway realignment projects.

Figure 3.7 and Figure A6 in Appendix A show the location of the geotechnical investigations available on the NZGD as at 5 December 2022.

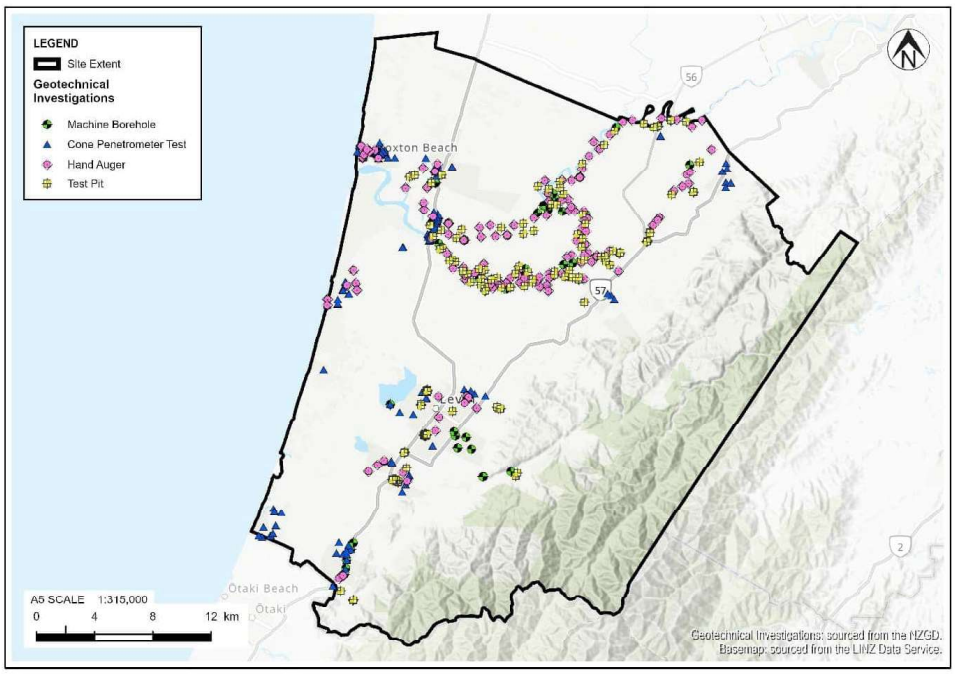


Figure 3.7: Geotechnical investigations available on the NZGD as at 5 December 2022. Note there are fewer investigations shown on this figure than in Table 3.3 because the figure does not include investigations from T+T's records. All geotechnical investigations that T+T has permission to upload are currently available on the NZGD.

3.2.4 Groundwater

Groundwater observation data

Within the Study Area, there are 152 mapped bore locations within a dataset provided by Horizons District Council on 13 December 2022. Groundwater monitoring is conducted generally at a monthly frequency, however some wells are monitored at less frequent or regular intervals. An additional dataset from HDC, representing 10 continuously monitored bores, was provided on 12 December 2022, giving daily groundwater depth readings.

In addition, the New Zealand Geotechnical Database contains 788 geotechnical investigations within the Study Area, of which 107 have recorded groundwater levels and the depth of the investigations.

T+T applied the following screening criteria to estimate how many of these bores are representative of shallow groundwater (i.e., water table) and therefore can be used to provide information about the groundwater surface elevation:

- Bore depth less than or equal to 15 m (and not equal to 0 m) because bore depths of greater depth may not be representative of the shallow unconfined groundwater.
- Measured water depth greater than 0 m below ground level, so as to filter out any artesian wells and any bores with measurement or data transcription errors.

A total of 127 investigations met these screening criteria, and of these, 6 have multiple readings over a period of months to years.

The spatial distribution of the in-situ groundwater data is shown in Table 3.5, Figure 3.8 and Figure A7 in Appendix A. Figure 3.9 shows the spatial distribution of mapped water bodies, which provides useful information because the groundwater may be shallower in these areas.

Comments are also provided in Table 3.5 on the distribution of the groundwater data points within the individual terrains, (as outlined in Section 3.2.2), for example, whether the data points are clustered in discrete locations or distributed evenly around the Study Area.

Table 3.4: In-situ data sources

Data name	Source	Type	Temporal range	Total no.	Filtered Observation points
Historic geotechnical investigations	TTGD & NZGD	Static	1994 - 2022	788	107
Monitoring Bores	HDC	Continuous	1991 - 2022	10	6
Discrete wells and bores	HDC	Monitoring	1990 - 2022	38	24

Table 3.5: Count of groundwater data type points per geomorphic terrain

Geomorphology unit	Monitoring points	Static points	Spatial distribution
Active coast and coastal Dunes	0	0	-
Alluvial plains and river flats	8	71	Well-distributed; cluster around SH1 south of Foxton
Relic dunes	12	13	Moderately distributed, lacking observations south of Ohau River.
Wetlands and swamps	0	0	-
Alluvial terraces	14	9	Moderately distributed in south of district; lacking observations in north-east
Hills, ranges and mountains	0	0	-

Table 3.6: Groundwater depth for all groundwater observation wells by geomorphic terrain

Geomorphology unit	Measurement count	Mean (mbgl[1])	Median (mbgl[1])	Min (mbgl[1])	Max (mbgl[1])
Active coast and coastal Dunes	0				
Alluvial plains and river flats	79	2.1	1.5	0.2	13.6
Relic dunes	25	3.4	1.4	0.1	9.9
Wetlands and swamps	0				
Alluvial terrace	23	5.6	4.7	0.8	11.2
Hills, ranges and mountains	0				

[1] Meters below ground level.

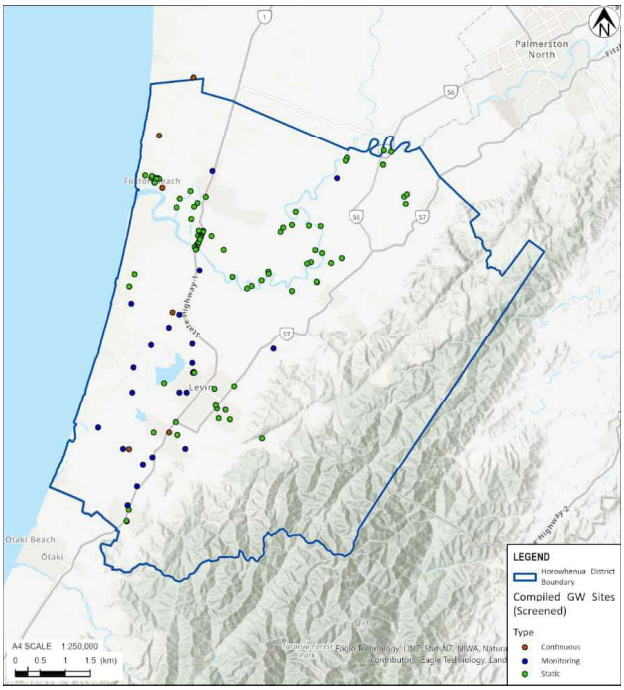


Figure 3.8: Spatial distribution of filtered in-situ groundwater data in the Study Area.

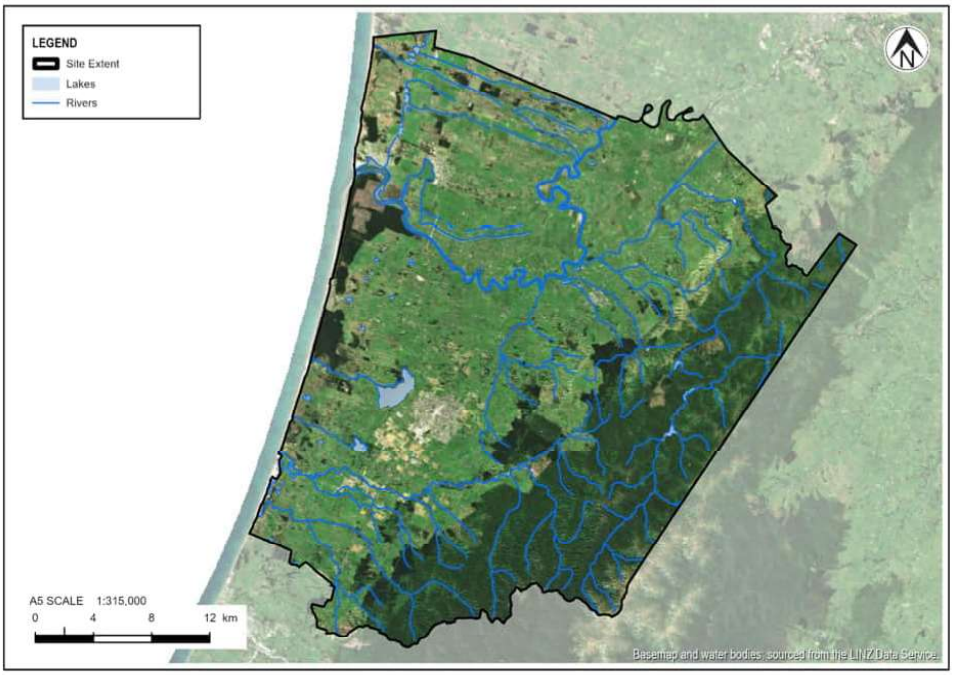


Figure 3.9: Spatial distribution of water bodies within the Study Area.

Groundwater models and studies

The lowlands of the district are dominated by fixed and mobile sand dunes, and drainage from the Tararua Range to the east results in fans of alluvial debris forming inland from the dunes[7]. Lake Horowhenua and Lake Papaitonga are the major lakes in the region. Peat swamps occur where dunes have impeded drainage around these lakes. The Ohau River and the Waikaiwa and Manakau streams drain from the inland hills to the coast. Begg et. al. (2005) describes the groundwater storage capacity in the region as limited.[1] The area is believed to have significant surface-ground water interactions exhibited by the series of coastal lakes that are maintained by discharged groundwater[8].

Also considered was the modelled water table depth from the National Water Table (NWT) dataset which is a coarse resolution (250 m x 250 m) modelled water table for NZ[9]. The NWT is based on the existing global-scale Equilibrium Water Table (EWT) model[10], and incorporates a national terrain model recharge estimates, and hydraulic conductivity values.

Assessment of seasonality

Based on statistical analysis of monthly shallow groundwater data, there is a slight seasonal fluctuation for most of the geomorphic zones (Figure 3.10). The limited data available in each zone, and differentiating between static and continuous monitoring sites, makes a clear seasonal effect difficult to observe from the data.

Table 3.7 demonstrates a significant difference in the median values of the static investigation points from TTGD and the monitoring sites provided by HDC.

Table 3.7: Seasonal median groundwater level by site type

Groundwater Site Type	Summer Median	Winter Median
TTGD/NZGD Static Site	1.7	1.1
HDC Monitoring Site	6.1	6.2

The temporal resolution of the available monitoring data is coarse, which masks possible fluctuations of shallow groundwater levels on a daily or sub-daily (i.e., event-based responses). In addition, seasonal fluctuations vary based on geomorphic zone, as for example, *Relic Dunes* displays seasonal fluctuations of up to 3.0 m, whereas *Alluvial plains and river flats* and *Alluvial Terraces* do not display seasonal fluctuations greater than 1.5 m.

[7] Begg, J.G., Palmer, A. and Gyopari, M., 2005. Geological synopsis of the ManawatuHorowhenua area for a review of the region's hydrogeology. Report prepared for Horizons Manawatu Regional Council. Client report 2005/172, Project Number: 440W1159, Geological and Nuclear Sciences Limited.
[8] Bekesi, G., 2001. Manawatu-Wanganui. In: M.R. Rosen and P.A. White (Editors), Groundwaters of New Zealand. New Zealand Hydrological Society Inc. & the Caxton Press, Wellington, pp. 387-396
[9] National water table (250m x 250m), as described by Westerhoff, R., White, P., and Miguez-Macho, G.: Application of an improved global-scale groundwater model for water table estimation across New Zealand, *Hydrol. Earth Syst. Sci.*, 22, 6449-6472, hhttps://doi.org/10.5194/hess-22-6449-2018, 2018.
[10] Fan, Y., Miguez-Macho, G., Weaver, C. P., Walko, R., and Robock, A.: Incorporating water table dynamics in climate modeling: 1. Water table observations and equilibrium water table simulations, *J. Geophys. Res.*, 112, D10125, https://doi.org/10.1029/2006JD008111, 2007.

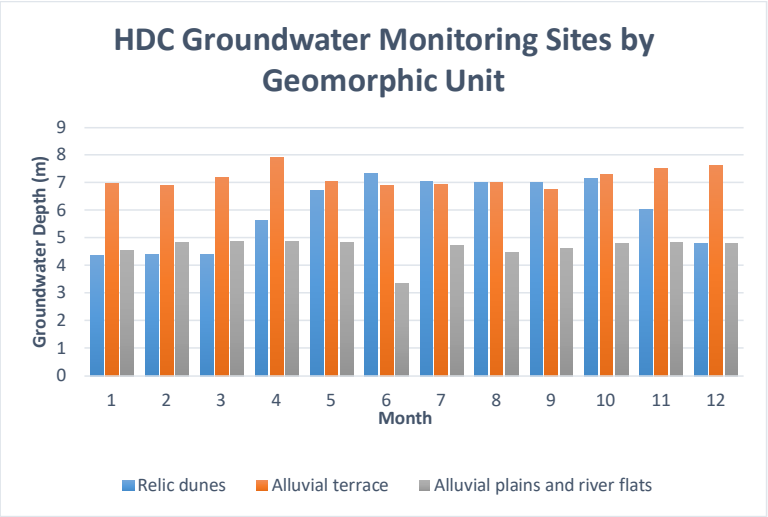


Figure 3.10: Example of temporal heterogeneity in groundwater observations within geomorphic units.

Sea-level rise

Sea-level rise has the potential to elevate groundwater levels in low-lying areas within close proximity to the coast. These low-lying areas are generally highly valued for development and as a result, are typically associated with townships across New Zealand. The actual impact of the predicted sea-level rise on the groundwater conditions within these low-lying areas is not fully understood. However, preliminary research suggests that, in some locations, the effects on liquefaction vulnerability could be wide reaching ((Quilter, et al., 2015), (Risken, Fraser, Gadsby, & Ruttler, 2015) and (Tonkin & Taylor Ltd, 2020)).

A significant proportion of the Study Area is at low elevation. Therefore, elevated groundwater levels in response to sea-level rise is likely to be widespread. Within the context of this project (refer to Section 2), particular attention should be given to the potential effects of sea-level rise on groundwater in these locations.

3.2.5 Seismic hazard

Background

Soils that are susceptible to liquefaction require a particular level of earthquake shaking (duration and intensity of ground shaking) to cause them to liquefy. A key source of uncertainty in liquefaction analyses is the intensity of shaking that will occur at a particular location in future earthquake events. The following is a summary of the available seismic hazard information for Horowhenua District.

Seismicity in New Zealand is estimated using the National Seismic Hazard Model (NSHM) published by Stirling et al. (2012). This outlines the known faults and their characteristics of magnitude and average recurrence of rupture. Across New Zealand, the tectonic setting and the seismicity varies.

This subsection provides seismic hazard information about the Horowhenua region, including:

- The location of known active faults.
- A summary of information about shaking intensity recurrence.

Tectonic setting

The Study Area is positioned on the Australian tectonic plate within close proximity to the Hikurangi subduction margin (the area where the Pacific Plate subducts below the Australian Plate). This interaction between the Australian Plate and the Pacific Plate is known as Hikurangi Subduction Margin (HSM) (Langridge, 2018). Due to the proximity of the Study Area to the subduction zone, the tectonic regime is active and the resultant seismic hazard high. As shown in Figure 3.11, there are four known active faults located within the Horowhenua District.

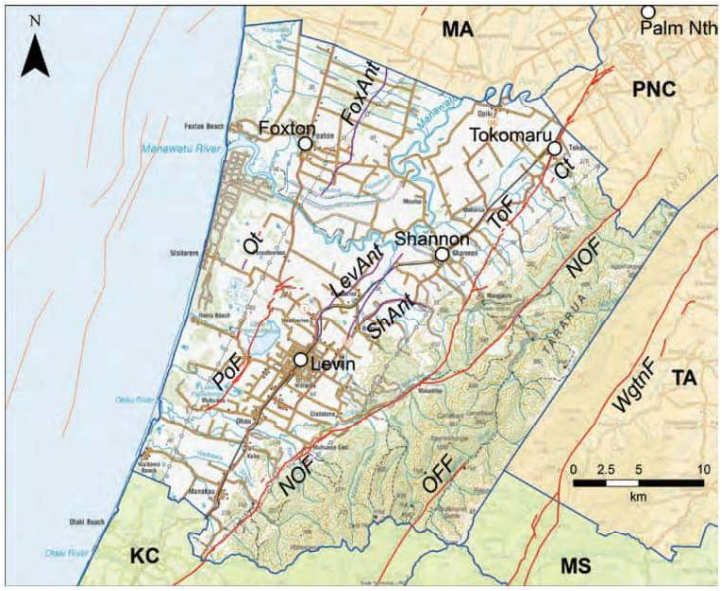


Figure 3.11: Known active faults in the Horowhenua Region (taken from GNS, 2018[11], Figure 5.1)

The characteristics of three of the larger faults within the Study Area are summarised in Table 3.8 (noting that other large faults outside the study area could also cause strong shaking within it).

Table 3.8: Examples of the larger known active faults in the Study Area

Fault name	M_w	Fault type	Recurrence interval*
Northern Ohariu Fault	7+	Active Shallow Crust	2000-3500 years (Class II)
Otaki Forks Fault	7+	Active Shallow Crust	3500-5000 years (Class III)
Poroutawhao Fault	6.8	Reverse Fault - Active Shallow Crust	5000-10,000 years (Class IV)

*Based on MfE and GNS Planning for Development of Land on or Close to Active Faults Report (Kerr, et al., 2003)

[11] Langridge RM, Morgenstern R. 2018. Active Fault Mapping and Fault Avoidance Zones for Horowhenua District and Palmerston North City. Lower Hutt (NZ): GNS Science. 70 p. (GNS Science consultancy report; 2018/75).

Further to the known active faults, unknown faulting and other seismogenic (earthquake generating) sources are likely within the region. Surface expressions of past fault ruptures can be hidden by younger soil deposits. Earthquakes could be expected to occur at any location and are not limited to known faults. This was illustrated by the Canterbury Earthquake Sequence, which occurred predominantly on previously unknown faults. The hazard assessment associated with this vulnerability assessment has considered the possibility of unmapped/unknown active faults within Horowhenua District by utilising the earthquake design loadings outlined in the MBIE & NZGS (2021) guidance. These design loadings include a contribution from "background seismicity" to allow for the possibility of unmapped/unknown active faults.

Seismic hazard information available for this assessment

For routine engineering projects, the NZTA Bridge Manual (New Zealand Transport Agency, 2018) has historically been the commonly accepted method for determination of seismic hazard for routine liquefaction analysis in New Zealand (in the absence of a site-specific assessment or regional study).

However, research completed by Cubrinovski et al (2021) demonstrated that the NZTA Bridge Manual and NZS 1170.5 (structural loading standard) significantly under-predict the seismic hazard for the Wellington Region. To address this issue of underprediction, Module 1 of the NZGS *Earthquake Geotechnical Engineering Practice Guidelines* (NZGS/MBIE, 2021) has provided updated seismic design parameters for use in geotechnical design. Peak Ground Accelerations (PGA) and Magnitudes (M) recommended for adoption by NZGS and MBIE for a select range of return period events in Horowhenua are provided in Table 3.9. These updated design values are significantly higher than has previously been adopted for design in the region.

Table 3.9: Geotechnical seismic design parameters for Horowhenua (NZGS/MBIE, 2021)

Return period							
25 year		100 year		500 year		1,000 year	
PGA (g)	M	PGA (g)	M	PGA (g)	M	PGA (g)	M
0.13	6.4	0.27	6.9	0.55	7.5	0.72	7.5

3.2.6 Historical observations of liquefaction

The previous liquefaction hazard report for the Palmerston North region published by GNS (Downes and Dowrick, 2014) outlines historic earthquakes in New Zealand and their associated Modified Mercalli Intensities (MMI) felt in the Horizons District. These seismic events which noted felt MMI's are summarised in Table 3.10. Research suggests that for liquefaction to occur in the most susceptible sediments, a MMI of 7 or larger is required (Hancox, Perrin, & Dellow, 2002). The GNS report (Dellow & Ries, 2013) provides a Modified Mercalli seismic intensity scale for New Zealand alongside the liquefaction hazard report. The scale describes the likely effects of each of the MMI. The likely *environmental effects* (that include descriptions of liquefaction) of MMI greater than 6 are shown in Table 3.11.

Table 3.10: Historic earthquakes and their MMI felt in Horowhenua (Downes, 2014), (Fairless, 1984)

Historic Earthquake	MMI felt in Horowhenua	Liquefaction Observations
1848 Wairau	7	Soil cracking and ground water ejection near Ohau
1855 Wairarapa	7 - 9	Sand boils and ground fissures in Ohau
1863 Hawkes Bay	7 – 8	No reports
1904 Cape Turnagain	5 - 7	No reports
1917 Tinui	5 - 7	No reports
1931 Hawkes Bay	6 - 7	No reports
1942 Masterton	8 – 9	Sand boils and ground fissures noted in Opiki
2014 Eketahuna	7	No reports

As shown in Table 3.10, there have been multiple historic earthquakes in New Zealand that resulted in MMI in Horowhenua that could have caused liquefaction. Although there have not been accounts of liquefaction for all events associated with a MMI7 or greater, three earthquakes have reports of liquefaction damage in areas of Horowhenua (Fairless, 1984).

Table 3.11: Modified Mercalli Intensity scale for New Zealand and resultant environmental effects provided by GNS (Dellow & Ries, 2013)

Modified Mercalli Intensity	Environmental effects associated with given MMI as per Appendix 1 of the GNS report (Dellow & Ries, 2013)
MMI6	A few minor cases of liquefaction (sand boil) in highly susceptible alluvial and estuarine deposits
MMI7	A few instances of non-damaging liquefaction (small water and sand ejections) in alluvium
MMI8	Evidence of soil liquefaction common, with small sand boils and water ejections in alluvium, and localised lateral spreading (fissuring, sand and water injections and settlements along banks of river, lakes and canals
MMI9	Liquefaction effects widespread with numerous sand boils and water ejections on alluvial plains, and extensive, potentially damaging lateral spreading (fissuring and sand ejections) along banks of rivers, lakes, canals etc. Spreading and settlement of river stopbanks likely
MMI10	Liquefaction effects (as for MMI9) widespread and severe. Lateral spreading and slumping may cause rents over large areas, causing extensive damage, particularly along riverbanks, and affecting bridges, wharves, port facilities, and road and rail embankments on swampy, alluvial or estuarine areas

3.3 Uncertainty assessment

This section of the report presents an assessment of the uncertainty associated with the base information available for the Study Area. The key output from this assessment is determination of the level of detail supported by the available base information.

In general, the MBIE/MfE Guidance allows for the management of uncertainty by assigning less precise liquefaction vulnerability categories where greater residual uncertainty exists. In this section, we have also noted where steps have been undertaken to manage specific sources of uncertainty as applicable.

3.3.1 Ground surface levels

As described in Section 3.2.1, the available information to define the ground surface levels comprises four DEM datasets. That being the higher resolution LiDAR-derived 1.0 m DEM for the urban areas and certain rural areas of Horowhenua District and the other being the 8.0 m DEM derived from the LINZ Topo50 20 m contours. For this assessment, this data is used primarily in the development of the geomorphic map. It would also be a key data source in the development of any future depth to groundwater models and the identification of free faces for lateral spreading assessment. The key uncertainties associated with the ground surface levels are discussed below.

Uncertainty due to the accuracy and limitations of the 1.0 m LiDAR-derived DEM

While this LiDAR-derived DEM is high resolution and considered fit for the purposes of this liquefaction assessment, the following accuracy limitations generally associated with this survey technique should also be acknowledged:

- Measurement error associated with the LiDAR point cloud collection method.
- Localised error due to interpolation in areas with low density of ground classified points.
- Spatial resolution of the DEM and the accuracy and appropriateness in representing the ground surface elevation.

In most cases these limitations will have a relatively minor effect on the representation of the ground surface for liquefaction assessment. However, there are some specific applications which result in significant uncertainty in the assessment. A key example of this is the inability of LiDAR to penetrate water bodies. This limits the usefulness of LiDAR data for mapping free faces in water features because when water bodies are present at the invert of free faces, the height of the free face may be under-estimated resulting in under prediction of the extent and severity of lateral spreading.

Uncertainty due to the accuracy and limitations of the 8.0 m Topo50 20 m contour-derived DEM

This DEM dataset extends across the entire country and was used in this assessment for areas of the district where the higher resolution LiDAR-derived DEM did not cover. This DEM is very low resolution and was developed from the LINZ Topo50 20 m contours. LINZ state that this dataset should be used for cartographic visualisation only as it was created by digital interpolation of the 20 m contour dataset associated with the 1:50,000 topographical data available for New Zealand.

As a result, this DEM dataset has a significantly lower resolution compared to the 1.0 m LiDAR-derived DEM and may misinterpret landform features across the Study Area. This DEM dataset often over-represents flat land features across the Study Area, which are often associated with liquefaction susceptible soils.

To manage this source of uncertainty, the 8 m DEM that has been derived from it has been used only to assess the general characteristics of the terrains and landforms that make up the study area rather than as a means to map discrete boundaries between terrains.

Uncertainty due to temporal changes in ground surface elevation

To a greater or lesser extent, any ground surface will be undergoing change in elevation. These changes may be attributable to natural processes (e.g., tectonic movement and earthquake-induced ground deformation) or anthropogenic (man-made) changes (e.g., land development activities). It is not feasible to predict with any reasonable degree of accuracy the extent and degree of future changes in ground surface elevation.

Future studies or assessments should account for temporal changes in ground surface elevation by reviewing the most recent ground surface elevation datasets for the study area and considering the proposed finished landform.

3.3.2 Geology and geomorphology

As discussed in Section 3.2.2 the geology and geomorphology of the Study Area are presented in the form of maps. The mapped information is used in the liquefaction assessment to group areas of similar expected performance. The key uncertainties associated with the geology and geomorphology are discussed below.

Uncertainty due to the precision of mapping and the accuracy of boundaries between terrains

This can result in the incorrect categorisation of the land (if placed into the wrong geomorphology type) and hence incorrect estimation of ground performance. The specification of a scale of approximately 1:25,000 for the geomorphic mapping provides an indication of the degree of uncertainty and areas where there is more uncertainty associated with the location of the boundary have been identified.

These uncertainties have been allowed for by providing buffer zones of ***Liquefaction Damage is Undetermined*** in the liquefaction vulnerability classification map where an area classified as ***Liquefaction Damage is Possible*** is adjacent to an area classified as ***Liquefaction Damage is Unlikely***.

Uncertainty due to anthropogenic landform changes

Some anthropogenic landform changes, in particular those associated with large infrastructure or land development projects, can result in changes to the severity of liquefaction-related land damage under seismic load. In some cases, these changes will result in an improvement of liquefaction performance (e.g. ground improvements such as dynamic compaction or stone columns) or in some instances there will be a degradation in liquefaction performance (e.g. reduction of the ground surface elevation resulting in a reduced depth to groundwater).

The level of detail targeted by this assessment (i.e. Level A) means that incorporating the site-specific information that would be required to assess the effects of these landform changes is not included in the scope for this project. More detailed assessment incorporating site-specific information (i.e., Level C or D) would be required to differentiate these areas.

Uncertainty due to soil age

As sediments age, chemical and physical changes can occur between soil particles that increase the resistance of the soil to liquefaction triggering. This process is known as the "aging effect." However, the direct relationship between aging effects and liquefaction triggering is not clearly defined and is still an active area of research (Clayton & Johnson, 2013).

Module 3 of the NZGS guidance document *Earthquake geotechnical engineering practice* (NZGS/MBIE, 2021) provides recommendations for engineering on methods that can be used to assess aging effects for site-specific liquefaction assessments. It includes the following relevant information:

- *"Liquefaction has been reported in late Pleistocene sediments…though such episodes are rare and comprise a small part in the total body of liquefaction case histories.*
- *… time since last liquefaction event supersedes deposition age. For example, the deposits in Christchurch that liquefied in the 2011 Canterbury earthquakes will be considered as recent deposits in the liquefaction evaluation, as their 'age-clock' was reset in 2011."*

The second point above is particularly relevant for this assessment as a number of significant earthquakes have occurred in the region in recent history (refer to Section 3.2.6 for more information).

This source of uncertainty applies to the Pleistocene-age and older silt, sand, and gravel deposits in the Study Area which are predominantly found in the Alluvial Terraces and Alluvial Basins terrains.

Uncertainty due to presence unmapped surficial alluvial deposits

Due to the scale of the geomorphic mapping, it is likely that some smaller areas of Holocene-aged deposits were not identified within the Pleistocene-age and older silt, sand, and gravel deposits in the Study Area. These younger alluvial terrains could contain liquefaction-susceptible soils.

3.3.3 Geotechnical investigations

As discussed in Section 3.2.3, there are a range of geotechnical investigations available on the NZGD within the Study Area. These geotechnical investigations can be used to estimate (both quantitatively and qualitatively) the expected liquefaction-related performance of the land. The key uncertainties associated with the geotechnical investigations are discussed below.

Uncertainty due to geotechnical investigation data quality

Each geotechnical investigation has inherent data quality issues. Some of these are readily identifiable, are logged as part of the investigation and can be allowed for in the analysis (e.g., post ground improvement investigations and portions of predrilled CPTs). Others are not readily identifiable without being able to refer to the data source and must be considered using engineering judgement (e.g., incorrectly logged borehole data).

The relatively low concentration of geotechnical investigations within the Study Area and the level of detail targeted (i.e., Level A) mean that this source of uncertainty does not contribute significantly to the overall uncertainty in the assessment.

Uncertainty due to variability in ground conditions within geomorphic terrains

Within each geomorphic terrain there is a degree of natural variability in ground conditions that results in subsequent variability in expected liquefaction-related performance. Some geomorphic terrains, such as the Coastal Dunes, are likely to have a low degree of variability and this is reflected in a relatively uniform estimate of liquefaction-related performance for a constant depth to groundwater. Other geomorphic terrains, such as the alluvial terraces, are likely to have much more variable soil conditions and this is reflected in a variable estimate of liquefaction-related performance for a constant depth to groundwater.

This source of uncertainty is managed by considering the likely variability in soil conditions within each geomorphic unit as part of the liquefaction vulnerability categorisation process. The results of this are discussed in Section 4.4.

Uncertainty due to spatial density of geotechnical investigations

Section 3.4 of the MBIE/MfE Guidance (2017) provides guidance about the required spatial density of ground information. It emphasises that the key features which define the level of detail for a particular assessment are the nature of the assessment undertaken and the residual uncertainties, not simply the investigation density. Specifically, it states that:

"*The key requirement is that the investigations should be sufficient for adequate ground characterisation for the specific purpose of the assessment and ground conditions encountered.*"

With that noted, the guidance provides the indicative spatial density of deep ground investigations for adequate ground characterisation for liquefaction assessments (see Figure 3.12).

LEVEL OF DETAIL IN THE LIQUEFACTION ASSESSMENT [1,2]	AVERAGE INVESTIGATION DENSITY	AVERAGE SPACING BETWEEN	MINIMUM TOTAL NUMBER OF INVESTIGATIONS
Level A[3] Basic desktop assessment	0.01 to 1 per km^2	1 to 10 km	–
Level B Calibrated desktop assessment	0.5 to 20 per km^2	220 to 1400 m	3 for each geological sub-unit
Level C Detailed area-wide assessment	0.1 to 4 per Ha	50 to 320 m	5 if area > 1 Ha 3 if area 0.25 – 1 Ha 2 if area < 0.25 Ha
Level D[4] Site-specific assessment	2 to 40 per Ha	15 to 70 m	2 within or very close to the building footprint

Notes:

1 Investigation densities listed in this table are cumulative – suitable data from investigations undertaken in previous stages of work should be incorporated in subsequent stages.

2 The key feature defining each level of detail is the degree of residual uncertainty in the assessment (refer Table 3.1), not necessarily the spatial density of ground investigations. In some circumstances a significantly higher or lower investigation density might be appropriate to provide the required degree of certainty for a particular target level of detail or purpose. For example, the lower end of the recommended minimum range might be appropriate where investigations show ground conditions to be reasonably consistent (eg some marine or lake deposits), while the upper end of the range may be more appropriate if ground conditions prove to be highly variable (eg many river deposits).

3 There are no minimum investigation density requirements for a ***Level A*** liquefaction assessment. However, the geological maps that are normally used for a ***Level A*** assessment have often been 'ground-truthed' at approximately the density shown. New ground investigations are unlikely to be required, provided that existing information such as geology, geomorphology and groundwater maps is suitable (relative to the scale and purpose of the assessment), and categories are assigned with appropriate consideration of the uncertainties.

4 For a ***Level D*** assessment, the key requirement is to confidently characterise the ground conditions at the specific location of the proposed building. Therefore the particular arrangement and proximity of investigations within and surrounding the building footprint will often be of greater importance than the minimum investigation density criteria.

Figure 3.12: Indicative spatial density of deep ground investigation for adequate ground characterisation for liquefaction assessments to inform planning and consenting processes.

Compared to other parts of New Zealand there are relatively few geotechnical investigations within the Study Area on the NZGD and within T+T's records. As shown in Figure 3.7 the few available investigations are predominantly associated with the towns of Levin and Foxton and along proposed large scale infrastructure development e.g. Otaki to Levin North highway. This low spatial density means that it is not possible to reliably calibrate the soil conditions from the available geotechnical investigations for the majority of the Study Area.

While calibration with geotechnical investigations is not required for a Level A assessment, it does help reduce some of the uncertainty associated with inferences about ground conditions within a particular area. To manage this issue, we have carefully considered this source of uncertainty in the assignment of liquefaction vulnerability categories, and areas with significant residual uncertainty about the nature of the soil conditions have been mapped as "Liquefaction Category is Undetermined".

3.3.4 Groundwater

As discussed in Section 3.2.4, there are a number of in-situ groundwater data records within the Study Area, the majority of which are single measurements from boreholes that are sourced from the Horizons Regional Council Open Data database. The key uncertainties associated with the available groundwater data are discussed below.

Uncertainty due to spatial density of groundwater data

The available groundwater data records are predominantly widely spaced throughout the region leaving significant gaps between these records. This makes meaningful interpolation of the depth to groundwater between locations with groundwater records challenging.

While not critical for the Level A level of detail, this uncertainty becomes increasingly important in areas where quantitative analysis is required to support a higher level of detail.

Uncertainty due to length of groundwater data records

Most of the groundwater data that T+T has been able to source to date are single point measurements of groundwater. There are only 6 locations within the Study Area with multiple readings over a period of months to years.

While not critical for the Level A level of detail, this information becomes increasingly important at higher levels of detail because it helps to understand the range of fluctuation in groundwater levels between seasons and years.

Uncertainty due to the effects of climate change

Climate change introduces further uncertainty regarding the groundwater conditions that could exist at some time in the future when an earthquake occurs. The key effects of climate change on the future groundwater conditions may include:

- Changes in the intensity and distribution of rainfall influencing the recharge rate of the groundwater surface.
- Reduction in the depth to groundwater due to the effects of sea-level rise.

Validation and possible ground truthing of existing records would be a useful first step to reduce some of the uncertainty associated with the existing records and effects of climate change. More detailed analysis would require installation of a network of piezometers to monitor groundwater level fluctuations over time. Development of groundwater models from this information would provide valuable information for climate change studies and other applications.

Validation and ground truthing of the existing groundwater information would provide a significant reduction in uncertainty in the assessment and potentially enable more detailed classification of the liquefaction vulnerability in the area. In addition, monitoring in these areas could infer potential relationships between groundwater and sea-level rise, and provide a foundation for future management of sea-level rise hazards from groundwater. As discussed in Section 3.2.4, the data shown in Figure 3.9 can be used to identify those areas that are likely to be most sensitive to the effects of sea-level rise. In this assessment, this data has been used to identify those geomorphic units which are likely to be most sensitive to the effects of sea-level rise on groundwater. It is also useful information to inform the scope of any potential future groundwater monitoring studies.

Uncertainty due to the accuracy of mapped water bodies

Sourcing an accurate database of waterbodies in the Study Area was difficult for this assessment as several of the main data sources did not accurately represent the rivers in the district when visually checked against aerial imagery. Visual observations determined that the MfE River Flows dataset was the most accurate for the Study Area. However, this dataset was not 100% accurate and did not identify all of the active river or stream channels within the Study Area. As a result, buffers were applied to the MfE River Flows dataset to capture the majority of river and stream channels within the Study Area.

Uncertainty associated with the assumed depth of groundwater within each geomorphic terrain

In the past it was generally assumed that groundwater is likely to be deep in some of the geomorphic terrains across the Study Area (e.g., Alluvial and Marine Terraces) due to the higher elevation of the associated deposits. As a result, previous liquefaction assessments have tended to discount the potential for liquefaction-induced ground surface damage to occur in these terrains. However, as shown in Table 3.6, statistical analysis of the available groundwater data in the Study Area does not support this general assumption, with groundwater being significantly shallow in some locations within these geomorphic terrains. In the current assessment this uncertainty regarding the potential for shallower groundwater to be present in some locations has been taken into account in the assignment of liquefaction vulnerability categories.

3.3.5 Seismic hazard

The primary focus of a Level A level of detail is to identify land where there is a high degree of certainty that "Liquefaction Damage is Unlikely" (so that it can be taken off the table without further assessment) (refer to Figure 3.1). This involves the use of qualitative methods that do not rely heavily on the precise seismic hazard parameters adopted.

Regardless of the method used, the 500-year level of earthquake shaking (i.e., PGA and magnitude pairing) across Horowhenua District is well above the level of shaking required to trigger liquefaction in most susceptible soils. This is the primary consideration in this qualitative assessment of liquefaction vulnerability. Therefore, due to a Level A level of detail being targeted in this assessment, any uncertainty associated with seismic hazard parameters does not contribute significantly to the residual uncertainty in the current assessment.

National Seismic Hazard Model update

The National Seismic Hazard Model (NSHM) for New Zealand is currently being updated. In the interim, a paper published by Cubrinovski et al (2021) and Module 1 of the NZGS *Earthquake Geotechnical Engineering Practice Guidelines* (NZGS/MBIE, 2021) provide guidance regarding seismic hazard parameters for use in design. It is important to recognise that there could be further changes when the NSHM update is released which contributes further to the uncertainty.

However, the primary focus of a Level A level of detail is to identify land where there is a high degree of certainty that ***Liquefaction Damage is Unlikely*** (so that it can be confirmed as not needing further assessment). This involves the use of qualitative methods that do not rely heavily on the precise seismic hazard parameters adopted.

Regardless of the method used, the 500-year level of earthquake shaking (i.e., PGA and M pairing) across the Study Area is well above the level of shaking required to trigger liquefaction in susceptible soils. This is the primary consideration in this qualitative assessment of liquefaction vulnerability. Therefore, due to a Level A level of detail being targeted in this assessment, the uncertainty associated with the methods used to calculate seismic hazard parameters does not contribute significantly to the residual uncertainty in the current assessment.

3.3.6 Historical observations of liquefaction

As detailed in Section 3.2.6, there are only limited documented accounts of liquefaction occurring in Horowhenua district following significant historic earthquakes. The absence of liquefaction records for some earthquakes does not necessarily mean that liquefaction did not occur in those events. The key uncertainty associated with historical observations of liquefaction is discussed below.

Uncertainty due to evidence of liquefaction that was not observed

It is possible that liquefaction may have occurred in more instances in the past, but that it was not documented. As detailed in Table 3.10, there have been at least three recorded earthquake events felt in Horowhenua with a MMI greater than 7. MBIE/MfE guidance (2017) provides the following examples of why liquefaction-related land damage might not be observed following an earthquake even if soils are susceptible:

- It is possible that the soil is susceptible to liquefaction, but the intensity and/or duration of shaking was not sufficient to trigger liquefaction.
- It is possible that liquefaction was triggered at depth in the soil but there was no surface evidence of liquefaction, and greater intensity and/or duration of shaking may be required to induce liquefaction damage at the ground surface.
- There may have been surface evidence of liquefaction, but the observation was not recorded or was attributed to some other cause such as flooding.

3.3.7 Assess ground damage response against performance criteria

The MBIE/MfE Guidance (2017) provides the performance criteria shown to determine the liquefaction vulnerability category for a particular area of land.

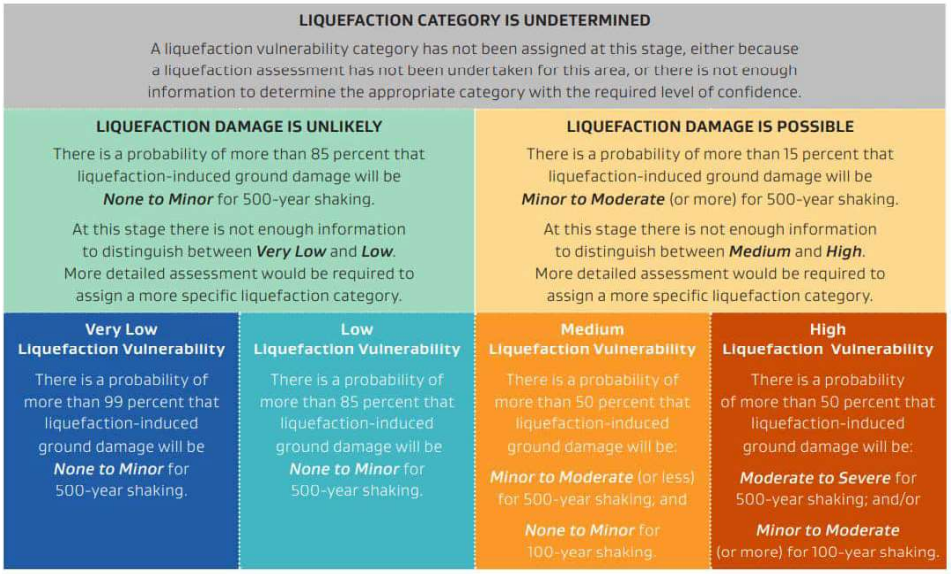


Figure 3.13: Performance criteria for determining the liquefaction vulnerability category – reproduced from MBIE/MfE Guidance (2017).

As discussed in Section 4.5.2 of the MBIE/MfE Guidance (2017), the performance criteria make reference to particular probabilities of a certain degree of damage occurring. These probabilities are intended to provide an indication of the level of confidence required to assign a particular category, rather than specific numerical thresholds to be calculated for each category. It is also important to recognise that these probabilities relate to the total effect of all uncertainties in the assessment, a characteristic that makes probabilistic calculation particularly challenging.

For this liquefaction vulnerability assessment, the level of confidence has been evaluated qualitatively with these indicative probabilities used as guidance. As with any qualitative assessment,

it is necessary to apply a degree of judgement to determine the liquefaction vulnerability category for each area of land within the Study Area and there is inherent uncertainty associated with this subjective process.

For typical buildings and infrastructure, the consequences (or costs) of over-predicting the hazard are incurred upfront in the form of unnecessary capital expenditure on overly robust solutions. Conversely the costs of under-prediction are incurred at some time in the future when sufficiently strong earthquake shaking occurs and the buildings and infrastructure must be rebuilt or repaired. The potential consequences of this uncertainty in characterising the liquefaction vulnerability are discussed further in Appendix J of the MBIE/MfE Guidance (2017) and are reflected in the relativity between indicative probabilities specified for various categories in Figure 3.13.

For the current assessment, a key outcome of this balanced cost/benefit approach to uncertainty can be seen in areas where there is currently insufficient certainty to assign a category of "Liquefaction Damage is Unlikely" (i.e., an indicative confidence level of less than 85%). In many of these areas the nature of the expected ground conditions means that if more detailed site-specific assessment was undertaken in the future then this would likely indicate a category of "Low Liquefaction Vulnerability".

Rather than assign the areas described above an interim category of "Liquefaction Damage is Possible" in the current assessment "just to be safe" (imposing upfront costs from over-prediction), these have been assigned "Liquefaction Category is Undetermined". This lack of a definitive category might appear to be unhelpful because it does not immediately tell people whether their land is vulnerable to liquefaction damage. Therefore, supporting information should be provided which draws on the technical work undertaken to date to provide clear direction on the process that people can follow to efficiently determine which liquefaction vulnerability category applies.

Appendix B discusses key aspects for future assessments in each geomorphic terrain. For example, in some geomorphic terrains, undertaking simple shallow hand auger boreholes and plasticity testing of soil samples would likely be sufficient to demonstrate "Low Liquefaction Vulnerability" for a specific site. This supporting information will be provided via the GIS metadata, which accompanies each sub area of similar expected performance.

3.4 Level of detail achieved in this assessment

As shown in Figure 3.14, a Level A – basic desktop assessment was targeted across the Study Area and this is the level of detail that has been achieved in this assessment.

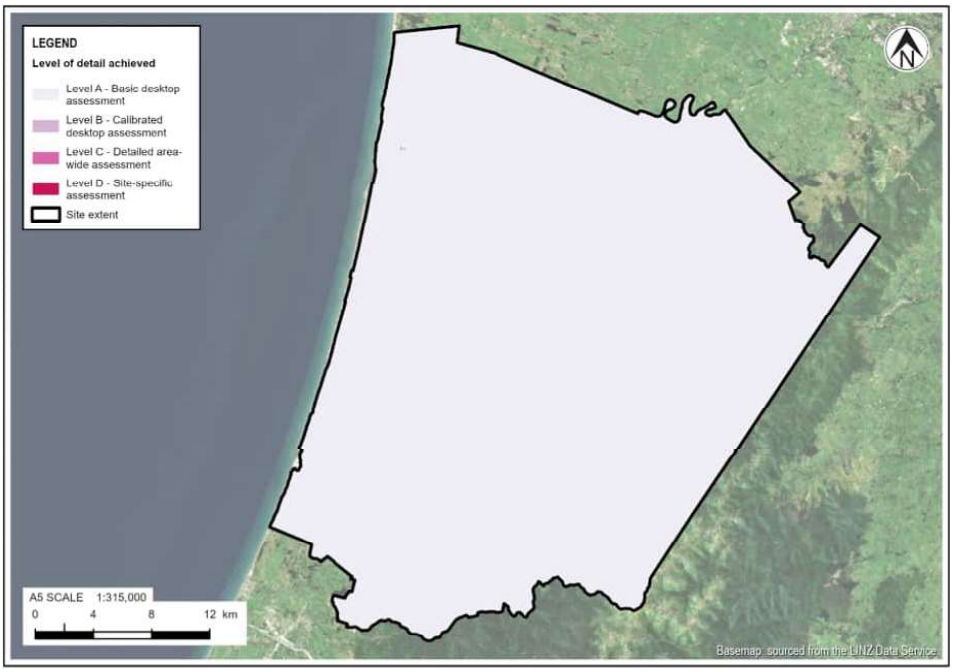


Figure 3.14: Level of detail achieved in this assessment (Level A across the entire Study Area)

4 Risk analysis

The section outlines how the base information was analysed to determine the liquefaction vulnerability of the land within the Study Area. The key tasks in this step involve the following:

- Choosing groundwater levels to support the analysis.
- Choosing earthquake scenarios to support the analysis.
- Identifying sub-areas of similar expected performance.
- Evaluating the expected degree of liquefaction-induced ground damage.
- Assessing the liquefaction vulnerability category against the performance criteria.

Each of these key tasks are discussed in further detail below.

4.1 Groundwater levels for analysis

As described in Section 3.2.4 and Section 3.3.4, within the Study Area there are relatively few in-situ groundwater data points available. This makes it challenging to establish precise groundwater levels to apply across a geomorphic terrain and to make allowances for seasonal groundwater level fluctuations. However, based on the analysis of the available data (refer Section 3.3.4), assumptions have been made for the purpose of qualitative screening and engineering judgement has been applied to estimate the typical range of depth to groundwater in each of the geomorphic terrains as shown in Table 4.1. An accompanying evaluation of the potential effects of sea-level rise has also been made.

Table 4.1: Assumed depth to groundwater and potential influence of climate change in each geomorphic terrain

Geomorphic terrain	Assumed depth to groundwater (below existing ground level)	Potential influence of climate change on groundwater
Active coast and coastal Dunes	Less than 4 m	Likely to become shallower (located close to coast so could be influenced by sea-level rise).
Alluvial plains and river flats	Less than 4 m (however likely to be more variable than other alluvial terrains)	Areas of low elevation adjacent to coastal margins are likely to become shallower (sea-level rise). Areas of high elevation could be affected (variable weather patterns).
Active coastline and dunes; Alluvial plains and river flats; Relic dunes; Wetlands and swamps.	Less than 4 m	Areas of low elevation adjacent to coastal margins are likely to become shallower and highly influenced by climate change.
Alluvial terraces	Variable	Undetermined (variable weather patterns).
Hills, Ranges and Mountains	Ridge lines and elevated areas assumed to be more than 8 m depth. Sloping land assumed to be highly variable depending on antecedent rainfall and position on slope. Bottom of valleys and gullies assumed to be less than 4 m	Areas of high elevation unlikely to be affected (sea-level rise and variable weather patterns).

4.2 Earthquake scenario for analysis

The 500-year return period is the recommended minimum earthquake scenario for Level A and B studies (as per MBIE/MfE Guidance, 2017). The 500-year level of earthquake shaking (i.e., PGA and magnitude pairing) across Horowhenua District is well above the level of shaking required to trigger liquefaction in most susceptible soils (Table 3.9). This is the primary consideration in this qualitative assessment of liquefaction vulnerability (at a Level A level of detail).

4.3 Sub areas of similar expected performance

Sub-areas of similar expected performance have been delineated by grouping areas of land according to the following characteristics:

- **Geomorphic screening** – as described in Section 3.2.2, the Study Area has been mapped according to the dominant geomorphic processes shaping each region. This is used as the primary basis for evaluating the likely soil conditions within each sub-area of similar expected performance. Where available, selected geotechnical investigations have been utilised to inform the potential variability in soil conditions within a given terrain.
- **Lateral spread screening** – A high level screening of areas where lateral spreading is more likely to be possible has been undertaken by applying a buffer to the water bodies identified in the MfE River Flows dataset.

4.4 Liquefaction vulnerability assessed against performance criteria

Using the available information, the liquefaction vulnerability of each sub-area has been assessed against the performance criteria. Each sub-area is then assigned one of the corresponding liquefaction vulnerability categories shown in Figure 4.1. The liquefaction vulnerability map of the Study Area is shown in Figure 4.2 and Figure B2 in Appendix B. A zoomed-in view of the liquefaction vulnerability map (from Figure 4.2) is shown in Figure 4.3 for the Levin township. Appendix B provides further detail about the risk analysis undertaken and associated liquefaction vulnerability classification for each of the geomorphic terrains identified within the Study Area.

It is emphasised that the discussion in this report regarding vulnerability categories and options for further geotechnical assessment relates only to liquefaction hazard. There are various other natural hazards and geotechnical constraints which would also need to be considered as part of any future land development or building activities.

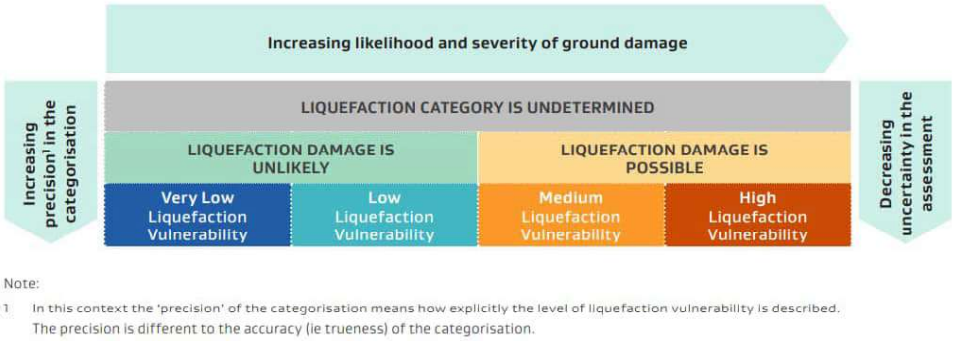


Figure 4.1: Recommended liquefaction vulnerability categories for use in liquefaction assessment studies to inform planning and consulting processes – from MBIE/MfE Guidance (2017).

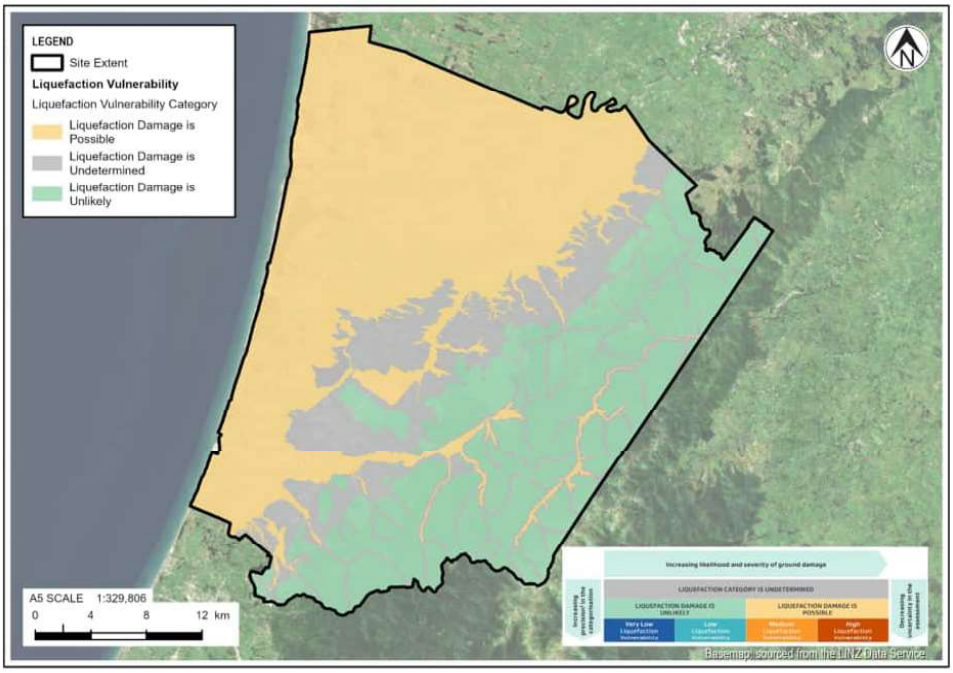


Figure 4.2: Liquefaction vulnerability classification assessed against performance criteria.

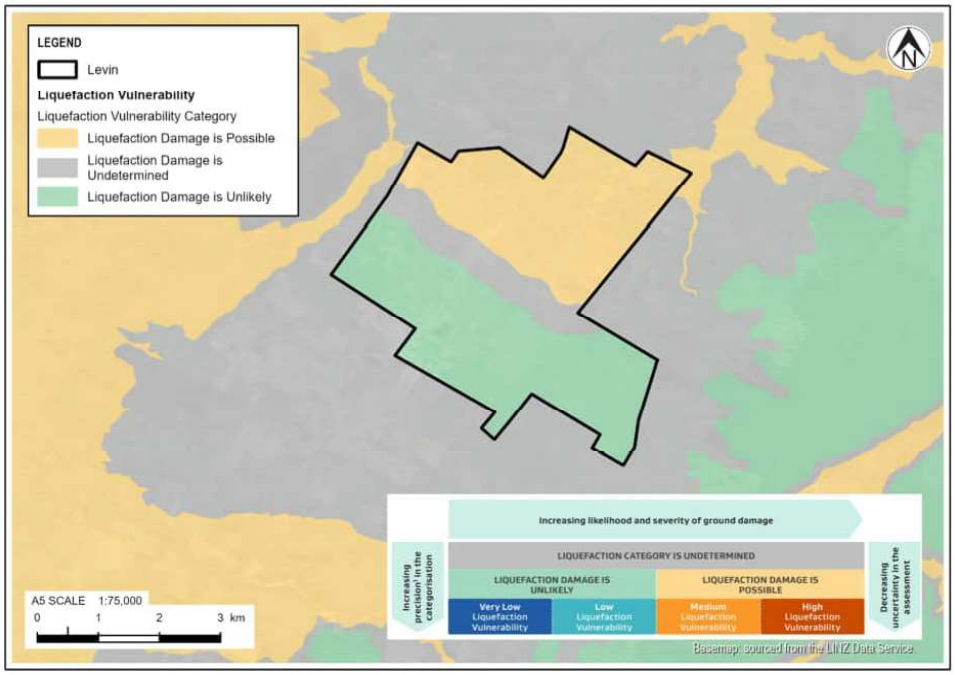


Figure 4.3: Zoomed in level of liquefaction vulnerability classification for Levin township.

5 Discussion and recommendations

T+T has completed a Level A – Basic Desktop Assessment to assess the liquefaction vulnerability of Horowhenua District in accordance with the MBIE/MfE Guidelines (2017). The key conclusions and recommendations are:

- Land has been classified into one of three liquefaction vulnerability categories: ***Liquefaction Category is Undetermined***, ***Liquefaction Damage is Unlikely*** or ***Liquefaction Damage is Possible***. The currently available information does not support further classification of the land into the other more precise categories of ***Very Low***, ***Low***, ***Medium*** and ***High*** liquefaction vulnerability. This degree of precision in the liquefaction categorisation is consistent with a regional scale assessment (such as this) undertaken to a Level A level of detail.
- The outputs of this assessment have been provided in a geospatial format which can be displayed on a GIS platform.
- The liquefaction vulnerability assessment can help guide information requirements for Resource Management Act (RMA) consent applications. In some cases with a higher risk profile (e.g. large subdivision developments), it is likely that further liquefaction vulnerability assessments will need to be completed to a higher level of detail to satisfy RMA requirements.
- HDC can also use the outputs of the assessment to help inform evaluation of building consent applications. In some cases with a higher risk profile (e.g. buildings of greater complexity or importance), it is likely that further liquefaction vulnerability assessments will need to be completed to a higher level of detail to satisfy Building Code requirements.
- To assess whether land is "prone to liquefaction or lateral spreading" with respect to the definition of "good ground" in the Building Code we recommend the following:
  - Land that has been categorised as ***Liquefaction Damage is Unlikely*** is not considered to be "prone to liquefaction or lateral spreading" so is not excluded from the B1/AS1 definition of 'Good Ground' on this basis. There may be other reasons why the definition of 'Good Ground' is not satisfied at a particular site (e.g., the presence of compressible/expansive soils, uncontrolled fill or slope instability) and the person assessing the site and specifying the foundation solution will need to undertake their own assessment for these factors.
  - Land that has been categorised as ***Liquefaction Damage is Possible*** is considered to be "prone to liquefaction or lateral spreading" and therefore does not meet the definition of 'Good Ground' as outlined in the Building Code amendments.
  - For land that has been categorised as ***Liquefaction Category is Undetermined*** there is currently insufficient information to determine whether it is "prone to liquefaction or lateral spreading" in terms of the Building Code amendments.
  - If liquefaction vulnerability assessment at a higher level of detail is undertaken in future (e.g., a site-specific assessment), then this may result in reclassification of the land into a different category and whether it meets the definition of 'Good Ground' should be reconsidered based on that new information.
- As part of the liquefaction vulnerability assessment process, we have developed a geomorphic map of the Study Area that categorises the land into six terrains. This map has been developed at a scale of approximately 1:25,000 (i.e., high-level) for the specific purpose of categorising liquefaction vulnerability, with a focus on areas of existing and currently proposed future residential development. The current geomorphic map is not intended for any other purpose, however there may be future opportunities to refine this mapping to help inform other applications (e.g., slope stability mapping).

HDC may choose to improve the resolution of the liquefaction vulnerability output to promote additional uses of the liquefaction vulnerability information. The two main areas where additional base information would be required to support more detailed studies are geotechnical investigations and groundwater information. Potential steps to improve the available information are:

- **Geotechnical investigations:** A key source of uncertainty in this liquefaction assessment is the lack of geotechnical investigation data throughout much of the Study Area. This information is important for both the assessment of liquefaction vulnerability and for other future applications.

  To help make more geotechnical investigation data available, HDC may wish to consider:

  - Identification of geotechnical investigations from historical projects and uploading of these investigations onto the NZGD.
  - Advocating uploading supporting geotechnical investigations onto the NZGD as part of the process of evaluating resource and building consent applications. Local engineering and scientific practitioners may need to be educated about why this sharing of information is important.
  - Engagement of suitably competent geo-professionals to undertake geotechnical investigations within given areas where more information about the ground conditions is required (e.g., areas where a Level B, C or D level of detail is targeted). Table 3.5, 3.6 and 3.7 in the MBIE/MfE Guidelines (2017) provide additional information relating to higher level of detail studies. For example, if a land use or subdivision consent application was proposed for urban residential land that had been categorised as "Liquefaction Damage is Possible", it would be likely that a Level B or Level C level of detail assessment would be required for the consent application.

- **Groundwater information**:
  - A key source of uncertainty in this liquefaction vulnerability assessment is the limited amount of groundwater information in the Study Area.
  - While not critical for this Level A assessment, detailed information about shallow groundwater levels becomes increasingly important when targeting higher level of detail liquefaction vulnerability studies. It also provides a valuable data source for other purposes such as asset management and this information is likely to be particularly useful in areas where the effects of sea-level rise may influence groundwater conditions.
  - To help facilitate the collection of more detailed groundwater data, HDC could consider installing a network of piezometers to monitor groundwater level fluctuations over time. This data could also be used to develop depth to groundwater surface models.

6 Applicability

This report has been prepared for the exclusive use of our client Horowhenua District Council, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that this report will be used by Horowhenua District Council in undertaking its regulatory functions in connection with Plan Change submissions and Building Consent processing.

Recommendations and opinions in this report are based on data from discrete investigation locations. The nature and continuity of subsoil away from these locations are inferred but it must be appreciated that actual conditions could vary from the assumed model.

This assessment has been made at a broad scale across the defined Study Area and is intended to describe the typical range of liquefaction vulnerability across areas of similar ground conditions in an approximate way only. It is not intended to precisely describe liquefaction vulnerability at individual property scale. This information is general in nature, and more detailed site-specific liquefaction assessment may be required for some purposes (e.g. for design of building foundations).

Tonkin & Taylor Ltd
Environmental and Engineering Consultants

Report prepared by:

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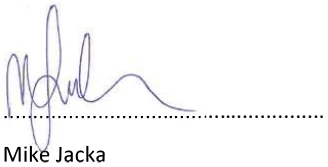
Elyse Armstrong
Engineering Geologist

Reviewed and authorised for Tonkin & Taylor Ltd by:



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Mike Jacka
Project Director

20-Feb-23
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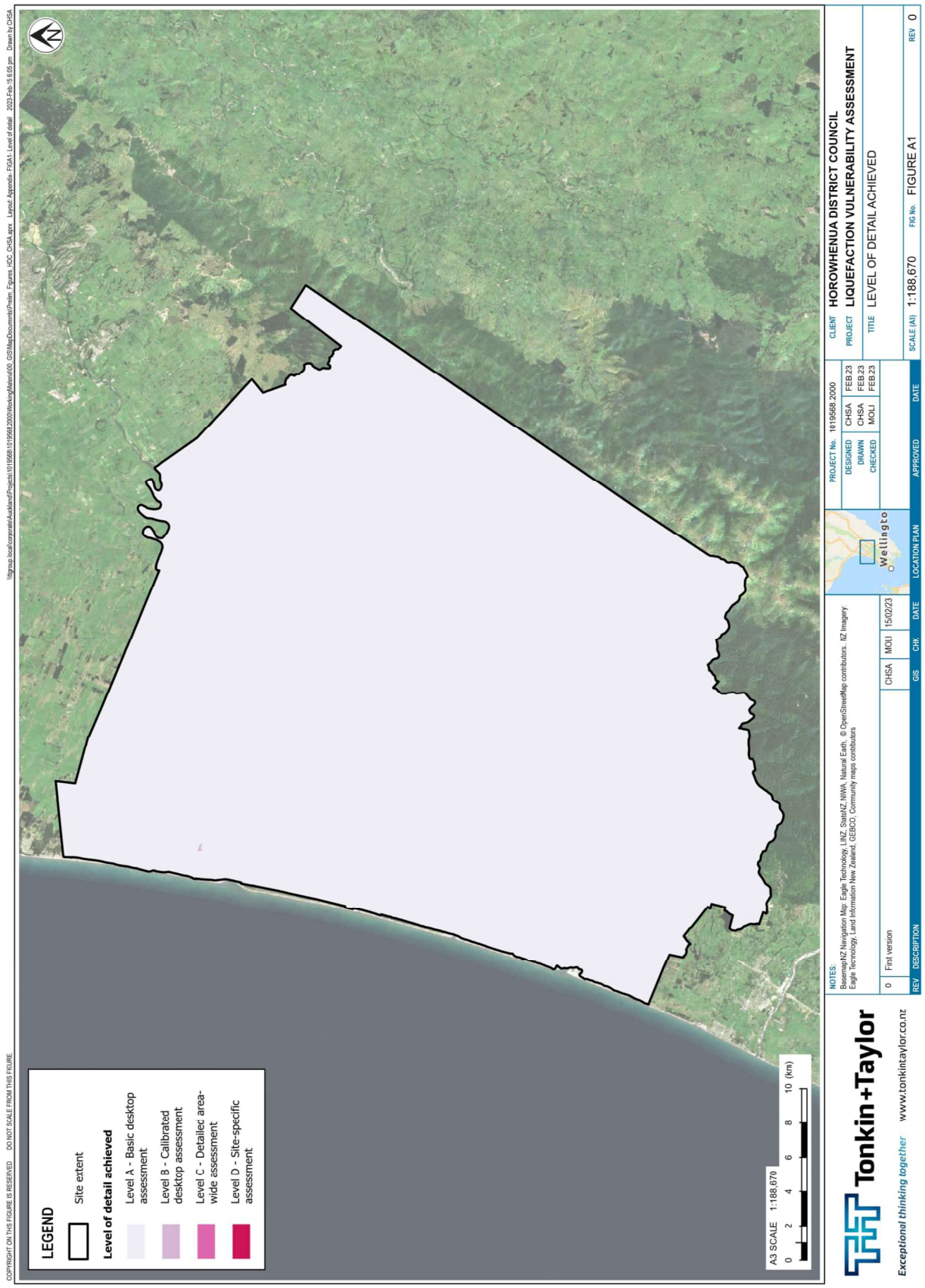
Appendix A Risk identification

- **Figure A1 – Level of detail achieved in the liquefaction assessment**
- **Figure A2 – Ground surface elevation**
- **Table A1 – Geomorphic terrain descriptions**
- **Figure A3 – Geomorphic map of Study Area**
- **Figure A4 – Geotechnical investigations available on NZGD within Study Area**
- **Figure A5 – Water sources within Study Area**
- **Figure A6 – Shallow groundwater monitoring locations within Study Area**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Site extent
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Level A - Basic desktop assessment
Level B - Calibrated desktop assessment
Level C - Detailed area-wide assessment
Level D - Site-specific assessment
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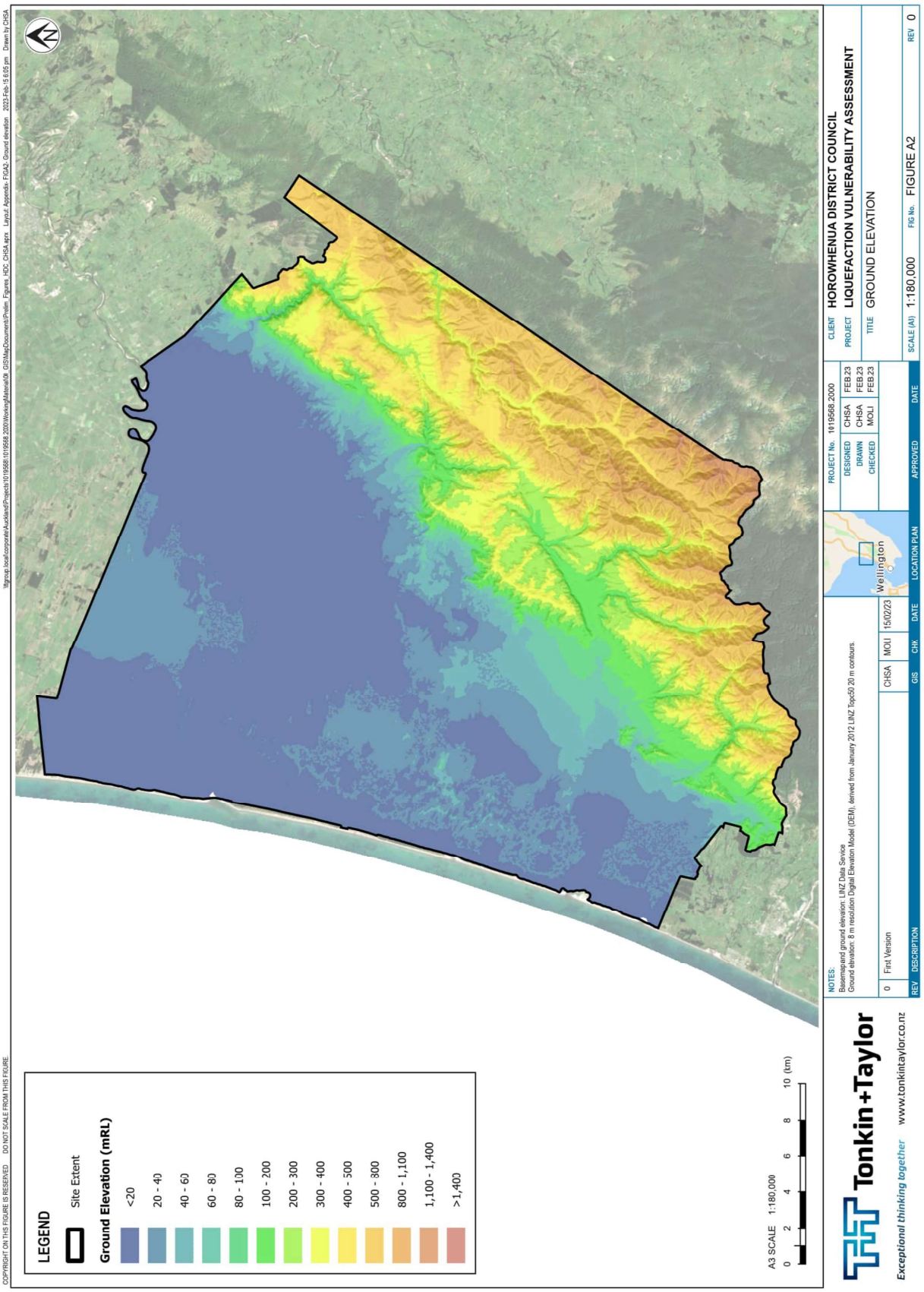
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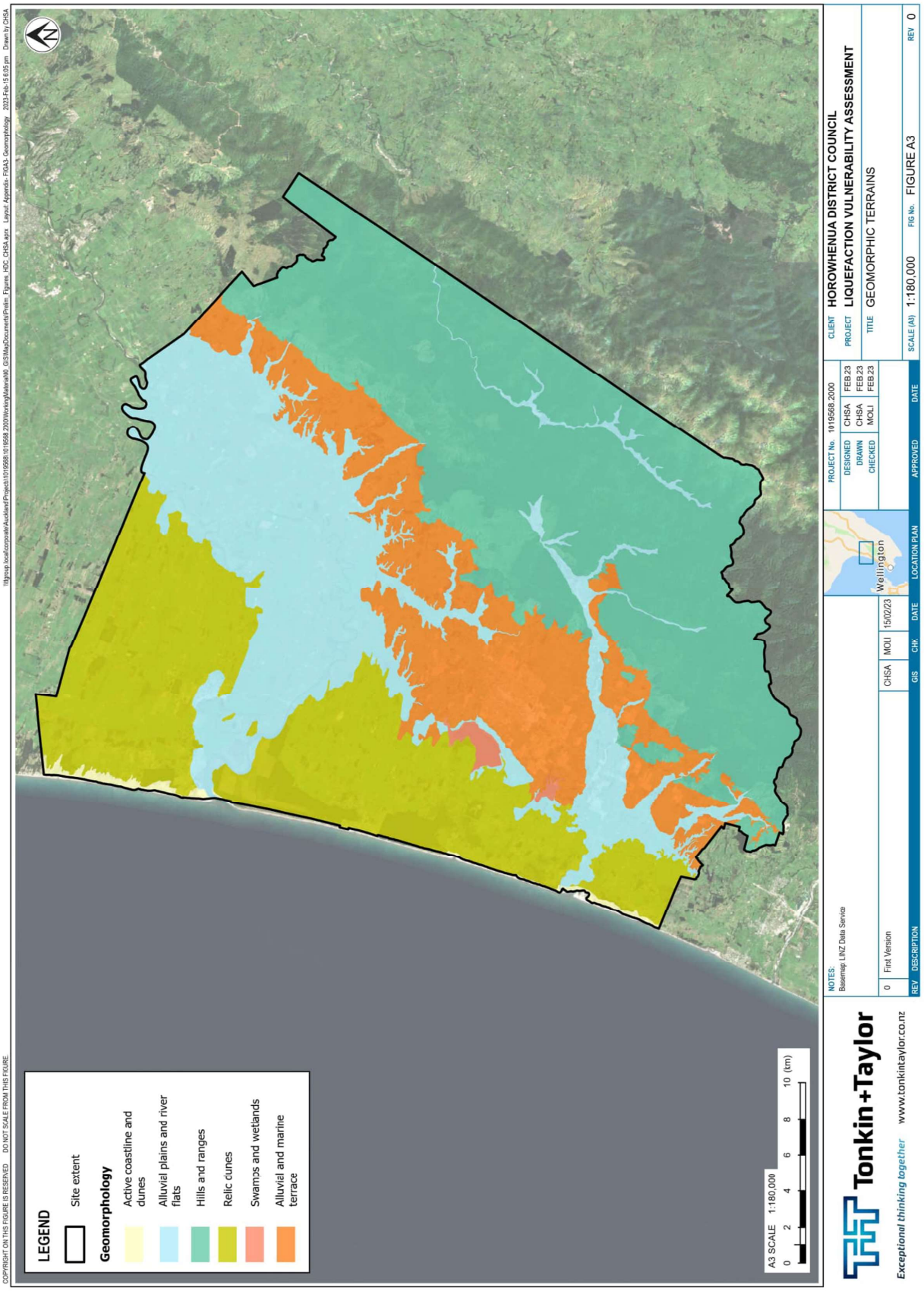
Appendix A Table A1: Description of geomorphic terrains

Geomorphic Terrains	Terrain Description	Geological Age	Typical Groundwater Depth	Type Location	Liquefaction Vulnerability Classification
Active coastline and dunes	Dune systems associated with the present day shoreline. Comprise sand dunes which are, prior to development, actively subject to windblown and coastal processes. These dunes include the current shoreline. Difficult to map accurately due to anthropogenic land use changes.	Holocene	< 4 m below ground level	-	Possible
Alluvial plains and river flats	This terrain represents the sediments deposited from the active and historic river systems within the district. The surface of this terrain typically increases in elevation in a landward direction from the coast.	Late Pleistocene to Holocene	< 4 m below ground level	Foxton	Possible
Relic dunes	This terrain comprises a series of crests and troughs which represent remnant coastal features. These sediments are predominantly Holocene-aged sand dune deposits from historical coastal systems. These sand dunes are no longer likely to be subject to active windblown and coastal processes.	Holocene	< 4 m below ground level	Waikawa Beach	Possible
Wetlands and swamps	Represents significant wetland and swamp deposits visible at 1:25,000 scale. Generally fine grained, cohesive organic soils.	Holocene	< 4 m below ground level	Lake Horowhenua	Undetermined
Alluvial and Marine terraces	This terrain typically comprises steep-sided Pleistocene-aged or older alluvium, with various interbedded ash, tephra and loess deposits. Some of these terraces have been influenced by shallow marine environments and as a result, contain more sediments deposited by coastal processes. It is difficult to determine the liquefaction susceptibly of the soils in this terrain due to the geological age of the sediments.	Early Pleistocene - Late Pleistocene	Variable	Levin	Undetermined
Hills, ranges and mountains	Terrain characterised by elevated topography which is often capped with volcanic ash and residual soils. This terrain typically sits above the alluvial terraces terrain. Covers a large portion of the project area. Represents the oldest terrain in the project area.	Jurassic - Triassic	> 4 m below ground level	Tararua Forest Park	Unlikely


LEGEND
Site extent
Geomorphology
Active coastline and dunes
Alluvial plains and river flats
Hills and ranges
Relic dunes
Swamps and wetlands
Alluvial and marine terrace
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TITLE GEOMORPHIC TERRAINS
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FIG No. FIGURE A.3
REV 0
REV DESCRIPTION GIS CHK DATE
0 First Version CHSA MOLI 15/02/23
LOCATION PLAN APPROVED DATE
Tonkin+Taylor
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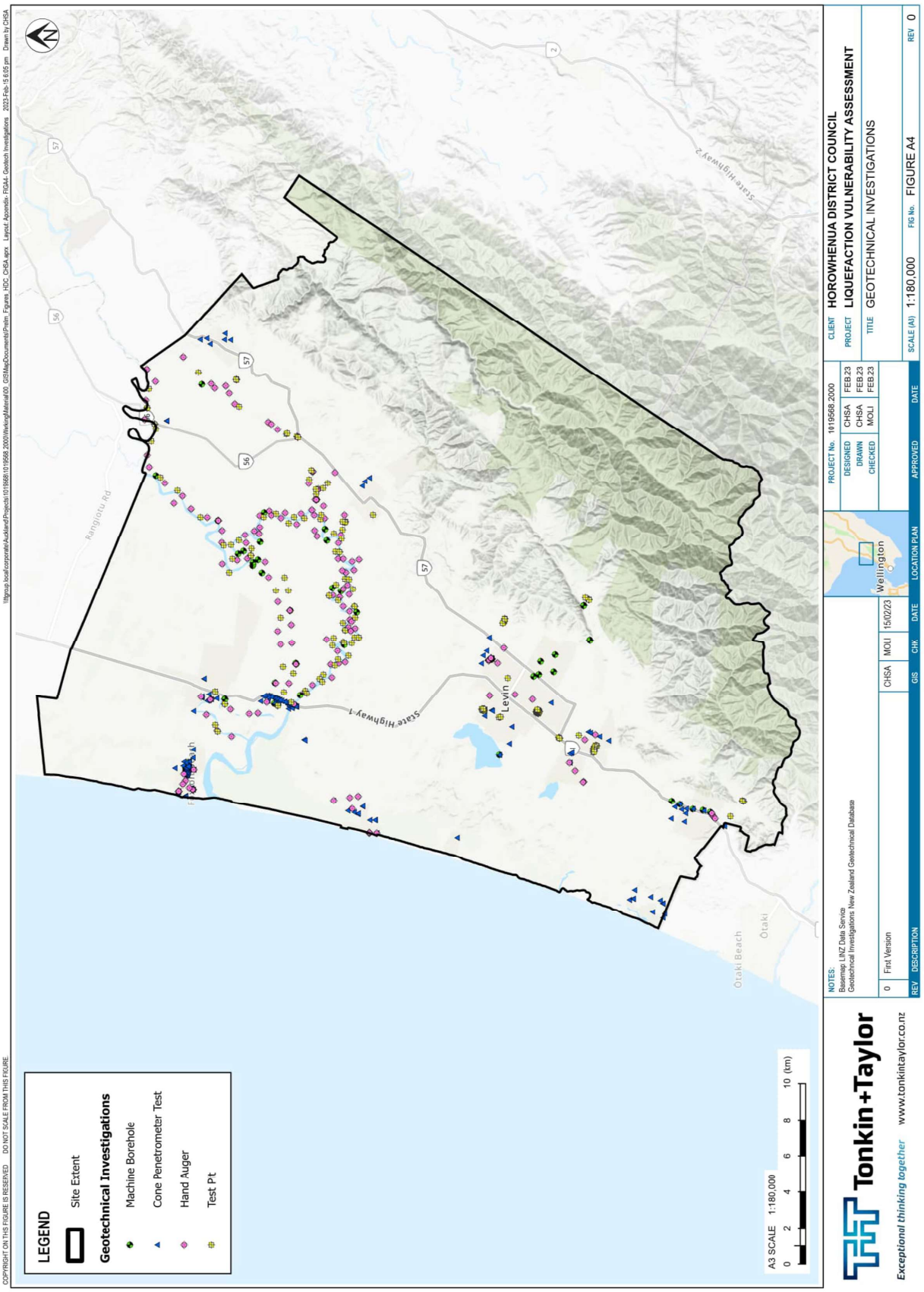
LEGEND
Site Extent
Geotechnical Investigations
Machine Borehole
Cone Penetrometer Test
Hand Auger
Test Pit
A3 SCALE 1:180,000
0 2 4 6 8 10 (km)
Levin
Otaki
Otaki Beach
State Highway 1
State Highway 2
Rangiotu Rd
Wellington
HOROWHENUA DISTRICT COUNCIL
LIQUEFACTION VULNERABILITY ASSESSMENT
GEOTECHNICAL INVESTIGATIONS
1:180,000
FIGURE A4
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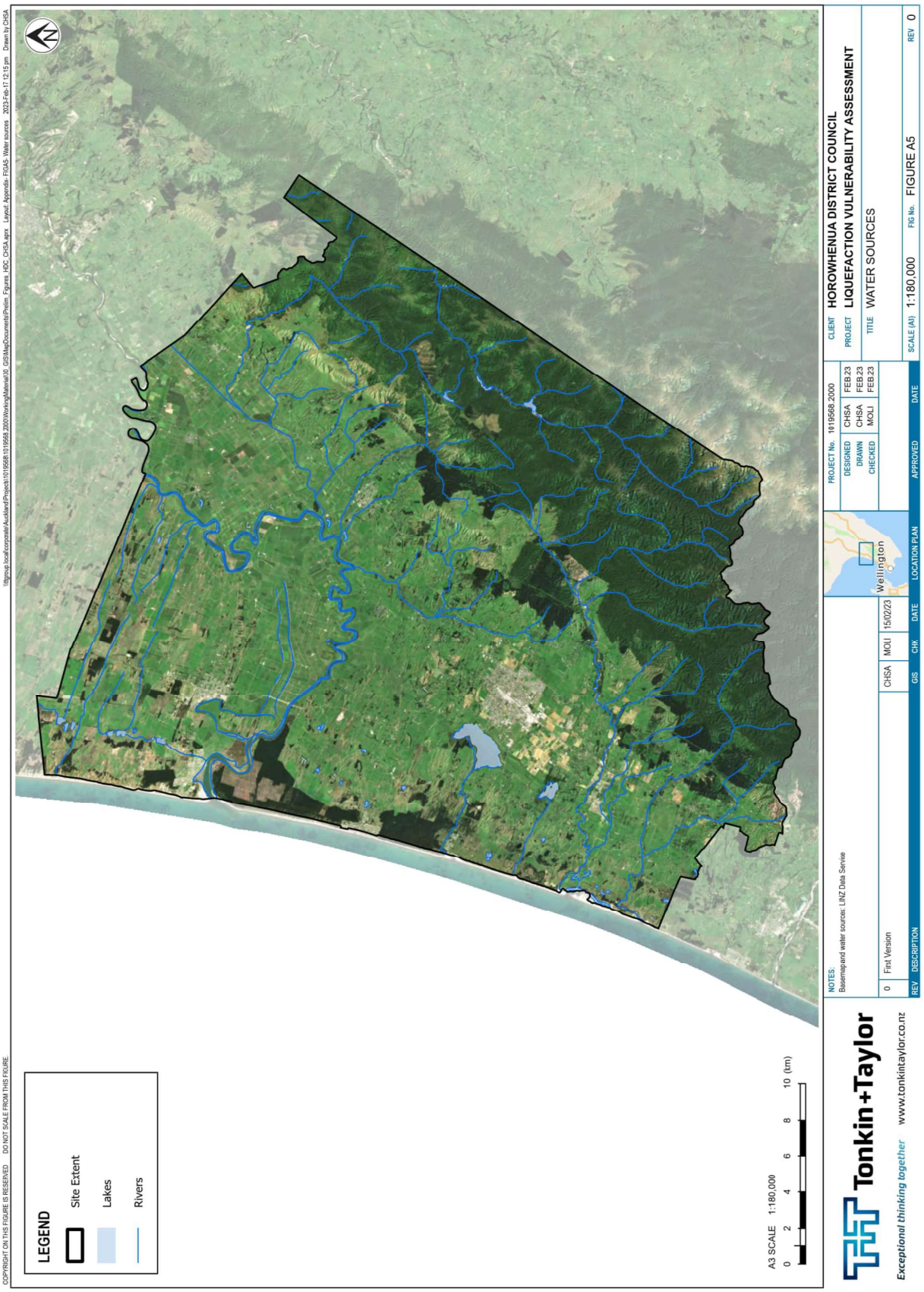
LEGEND
Site Extent
Lakes
Rivers
A3 SCALE 1:180,000
0 2 4 6 8 10 (km)
COPYRIGHT ON THIS FIGURE IS RESERVED DO NOT SCALE FROM THIS FIGURE
\\tgroup.local\corporate\Auckland\Projects\1019568\1019568.2000\WorkingMaterial\0_GIS\MapDocuments\Prelim_Figures_HDC_CHSA.aprx Layout: Appendix_FIGA5_Water sources 2023-Feb-17 12:15 pm Drawn by CHSA
NOTES:
Basemapend water sources: LINZ Data Servie
PROJECT No. 1019568.2000
DESIGNED CHSA FEB.23
DRAWN CHSA FEB.23
CHECKED MOLI FEB.23
Wellington
CLIENT HOROWHENUA DISTRICT COUNCIL
PROJECT LIQUEFACTION VULNERABILITY ASSESSMENT
TITLE WATER SOURCES
SCALE (A3) 1:180,000
FIG No. FIGURE A5
REV 0
REV DESCRIPTION GIS CHK DATE
0 First Version CHSA MOLI 15/02/23
LOCATION PLAN APPROVED DATE
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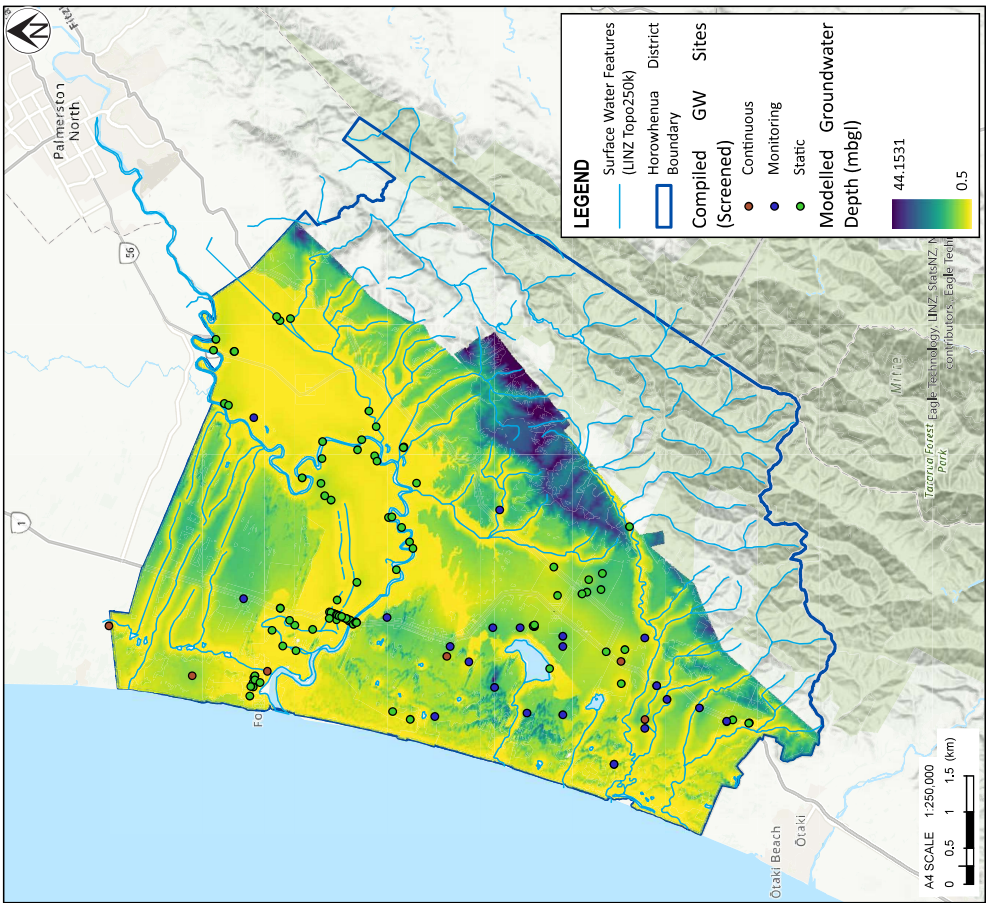

LEGEND
Surface Water Features (LINZ Topo250k)
Horowhenua District Boundary
Compiled GW Sites (Screened)
Continuous
Monitoring
Static
Modelled Groundwater Depth (mbgl)
44.1531
0.5
Palmerston North
Otaki Beach
Otaki
A4 SCALE 1:250,000
0 0.5 1 1.5 (km)

FIGURE A6

Appendix B Risk analysis

- **Risk analysis for each geomorphic terrain**
- **Figure B1 – Liquefaction vulnerability categories for the Study Area**

B1.1 Risk analysis for each geomorphic terrain

The following sections provide a summary of the assessment for each geomorphic terrain.

The following sections provide a summary of the assessment for each geomorphic terrain.

B1.1.1 Active Coastline and Dunes

The Active Coastline and Dune terrain is likely to comprise thick (>5 m), Holocene-age deposits of sands and silts (which are susceptible to liquefaction) and are unlikely to contain a significant proportion of plastic sediments (which are not susceptible to liquefaction). These sediments are typically deposited in higher energy environments, which means the soils are likely to be denser than those found in lower energy environments. The densest soils are typically found within dune deposits adjacent to the open coast.

Groundwater is also generally shallow (< 4 m) in this terrain because of the close proximity of the coastal margin and the low elevation. The proximity to coastal margins means that the depth to groundwater is likely to become shallower with sea-level rise. For these reasons, these terrains are identified as landforms that are commonly susceptible to liquefaction in Section 2.3 of the MBIE/MfE Guidance (2017).

In this terrain the potential for lateral spreading is consistent with the definition provided in the MBIE/MfE Guidelines (2017), that is in the presence of liquefaction-susceptible soils, lateral spreading is more likely to be possible in areas within 200 m of free faces more than 2m high or within 100m of free faces less than 2m high.

Based on engineering judgement and in accordance with Section 4.5.2 of the MBIE/MfE Guidelines (2017), *"…there is a probability of more than 15 percent that liquefaction-induced ground damage will be minor to moderate (or more) for 500-year shaking*". Therefore, the mapped Active coastline and dunes terrain has been classified as "***Liquefaction Damage is Possible***."

B1.1.2 Alluvial Plains and River Flats

Typically, soils found in this terrain are late Pleistocene to Holocene-aged and deposited in low energy environments forming loose and soft layers. The depth to groundwater is also likely to be shallow (< 4 m) within this terrain because it is generally associated with active and historic river systems. The MBIE/MfE Guidance (2017) typically associates these alluvial terrains as being susceptible to liquefaction.

The characteristics of the soils comprising this terrain are highly variable in nature and vary spatially across the landscape. Alluvial sediments typically range from non-plastic sands and silts to plastic clays and silts. These soils typically contain soil layers that are susceptible to liquefaction.

In this terrain the potential for lateral spreading is consistent with the definition provided in the MBIE/MfE Guidelines (2017), that is in the presence of liquefaction-susceptible soils, lateral spreading is more likely to be possible in areas within 200 m of free faces more than 2 m high or within 100m of free faces less than 2m high.

Based on engineering judgement and in accordance with Section 4.5.2 of the MBIE/MfE Guidelines (2017), "*…there is a probability of more than 15 percent that liquefaction-induced ground damage will be minor to moderate (or more) for 500-year shaking.*" Therefore, the mapped Alluvial Plains and River Flats terrain have been classified as "***Liquefaction Damage is Possible***".

B1.1.3 Relic Dunes

The Relic Dunes terrain is likely to comprise thick (> 10 m), Holocene-age deposits of sands and silts (which are susceptible to liquefaction) and are unlikely to contain a significant proportion of plastic

sediments (which are not susceptible to liquefaction). This terrain contains sediments that are typically deposited in higher energy environments, which means the soils are typically denser than those found in lower energy environments.

Groundwater is also generally shallow (< 4 m) in this terrain due to the close proximity to the low-lying alluvial terrains and coastal margin and is likely to become shallower with sea level rise. For these reasons, this terrain is identified as a landform that is commonly susceptible to liquefaction in Section 2.3 of the MBIE/MfE Guidance (2017).

In this terrain, the potential for lateral spreading is consistent with the definition provided in the MBIE/MfE Guidelines (2017), that is in the presence of liquefaction-susceptible soils, lateral spreading is more likely to be possible in areas within 200 m of free-faces more than 2 m high and within 100 m of free-faces less than 2 m high.

Based on engineering judgement and in accordance with Section 4.5.2 of the MBIE/MfE Guidelines (2017), *"…there is a probability of more than 15 percent that liquefaction-induced ground damage will be minor to moderate (or more) for 500-year shaking*". Therefore, the mapped Historic dune terrain has been classified as ***Liquefaction Damage is Possible***.

B1.1.4 Wetlands and Swamps

The Wetlands and Swamps terrain is likely to comprise thick (> 5 m), Holocene-aged deposits of plastic silts and clays, non-plastic sands and large amounts of organic material. These sediments have typically accumulated in a low energy environment. There is some uncertainty associated with the liquefaction susceptibility of these soils due to the large amounts of organic material that are likely to be present. However, Section 2.3 of the MBIE/MfE Guidelines identify swamp landforms as being commonly susceptible to liquefaction.

Groundwater is also likely to be shallow (< 4 m) in this terrain because of the saturated conditions required for the terrain to develop.

In this terrain the potential for lateral spreading is consistent with the definition provided in the MBIE/MfE Guidelines (2017), that is in the presence of liquefaction-susceptible soils, lateral spreading is more likely to be possible in areas within 200 m of free-faces more than 2 m high and within 100 m of free-faces less than 2 m high. However, as described above, there is currently significant uncertainty as to if/where liquefaction-susceptible soils are present in this terrain.

Due to the uncertainty associated with whether liquefaction-susceptible soils are present, there is currently insufficient information to characterise the expected land performance. Therefore, based on engineering judgement and in accordance with Section 4.5.2 of the MBIE/MfE Guidelines (2017), in this terrain "***Liquefaction Category is Undetermined***" has been assigned at this time.

B1.1.5 Alluvial and Marine Terraces

This terrain comprises elevated land that is predominantly early to late Pleistocene in age and includes sediments deposited in both high energy and low energy coastal and alluvial environments, which have both plastic and non-plastic behaviours. The older age of these sediments means that there is the potential for ageing effects to impact on liquefaction triggering as described in Section 3.3.2. Furthermore, some younger marginal marine swamp and dune deposits also overlay this terrain in some areas of the district forming surficial swales and hummocks on the older marine and alluvial terraces. As a result, there is significant uncertainty associated with the liquefaction vulnerability of this terrain.

Due to the higher elevation of this terrain, the depth to groundwater is, on average, likely to be deeper (> 4 m) than the groundwater level in the previously described alluvial terrains. However, our analysis of available groundwater data indicates that there are some locations within this terrain

where groundwater is shallower (< 4m). These areas of shallow groundwater are most likely associated with gullies and streams that intersect the Alluvial Plains and River Flats. Note that these gullies are small and difficult to differentiate based on the information available and therefore many of the smaller gully features have not been mapped at the target scale for the geomorphic mapping (1:25,000). This also introduces a significant source of uncertainty into the assessment of this terrain.

In this terrain the potential for lateral spreading is consistent with the definition provided in the MBIE/MfE Guidelines (2017), that is in the presence of liquefaction-susceptible soils, lateral spreading is more likely to be possible in areas within 200 m of free faces more than 2 m high and within 100 m of free-faces less than 2 m high. However, as described above, there is currently significant uncertainty about the potential for ageing effects to impact on liquefaction triggering, and the depth to groundwater in the Alluvial and Marine Terraces.

Due to the uncertainty associated with the ground conditions and the depth to groundwater, there is currently insufficient information to characterise the expected land performance over the entire terrain. Therefore, based on engineering judgement and in accordance with Section 4.5.2 of the MBIE/MfE Guidelines (2017), in this terrain "***Liquefaction Category is Undetermined***" has been assigned at this time.

As discussed in Section 3.3.7, the nature of the expected ground conditions in this terrain suggest that if more detailed site-specific assessment was undertaken, it is likely that a category of "Low Liquefaction Vulnerability" could be assigned to individual sites. For parts of this terrain, undertaking simple shallow hand auger boreholes to confirm soil properties and/or groundwater depths may be all that is required to determine which liquefaction vulnerability category applies for a specific site[12].

The exception to this generalised categorisation for the Alluvial and Marine Terraces terrain is the southern area of Levin township (as shown in Figure 4.3). Due to more available geotechnical investigation information and previous liquefaction assessments completed (T+T, 2020), the southern area of Levin, as shown in Figure 4.3, has been assessed as "***Liquefaction Category is Unlikely".*** The extent of this category has been mapped based on the 1:250,000 geological map (late Pleistocene river deposit gravels). However, there is significant uncertainty in the mapped extent of this geological unit because there are no distinct features visible at the ground surface to delineate its boundary. To allow for this uncertainty a 500m wide buffer zone of ***"Liquefaction Category is Undetermined"*** has been assigned along the mapped geological unit boundary. It is also recommended that before the assigned liquefaction vulnerability categories in Levin (both northern and southern areas) are relied upon for individual site assessments, ground truthing should be undertaken to determine whether the site is underlain by this gravel geological unit.

B1.1.6 Hills and Ranges

This terrain comprises elevated landforms characterised by highly dissected hills with many gullies and valleys, hills that are more rolling in nature and steep tectonic mountains. These land features ultimately depend on the underlying geological units (which are typically Neogene-aged). The ground conditions vary from exposed rock at the ground surface to thick deposits of residual soils.

Based on the available information, it is likely that the residual soils within this terrain predominantly comprise plastic soils and rock that are not considered to be susceptible to liquefaction. However, although this terrain covers a large portion of the Study Area, there are relatively few geotechnical investigations available to calibrate this assumption. Furthermore, minor valley systems within this terrain may contain alluvial deposits that may not have been captured

[12] Note that these comments only apply to site-specific studies undertaken for the purposes of satisfying Resource and Building Consent requirements for individual sites. We are not suggesting that simple shallow hand auger boreholes would enable easy refinement of the liquefaction vulnerability category at a regional level across the entire terrain.

within the geomorphic map (due to the 1:25,000 target scale of the geomorphic map). This introduces additional uncertainty into the assessment.

The depth to groundwater is highly variable across this geomorphic terrain. As described in Section 4.1 and Section 4.3, it has been categorised as follows:

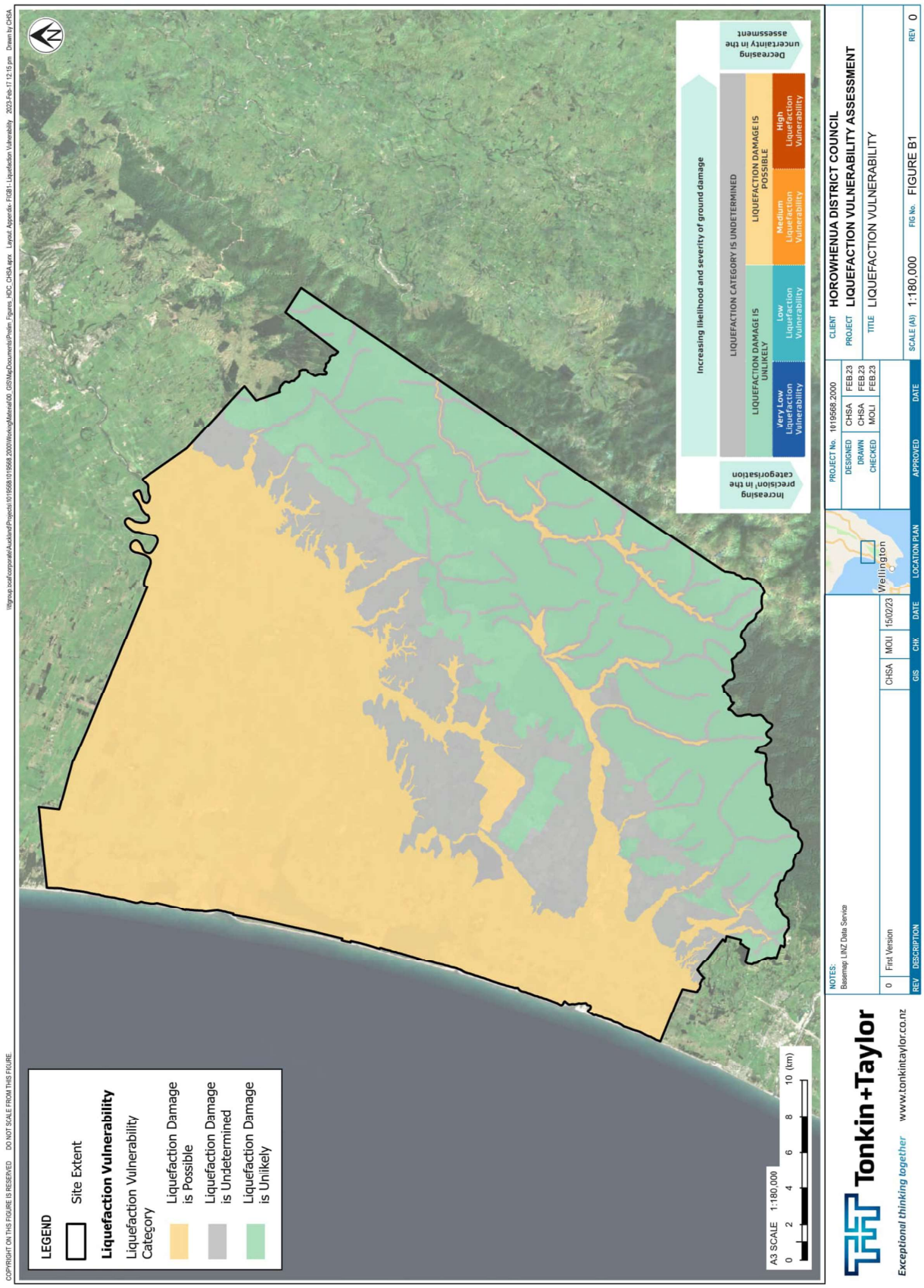
- In ridge lines and elevated areas the depth to groundwater is assumed to be more than 8 m bgl;
- In sloping land the depth to groundwater is likely to be highly variable; and
- In the bottom of valleys and gullies the depth to groundwater is likely to be highly variable depending on antecedent rainfall conditions and the position of the slope, and assumed to be less than 4 m bgl.

In this terrain the potential for lateral spreading is consistent with the definition provided in the MBIE/MfE Guidelines (2017), that is in the presence of liquefaction-susceptible soils, lateral spreading is more likely to be possible in areas within 200 m of free faces more than 2 m high and within 100 m of free-faces less than 2 m high.

A 100 m buffer zone has been applied to the mapped streams within this terrain to capture the incised valley floors where lateral spreading could occur if liquefaction-susceptible soils are present. However, as described above there is currently significant uncertainty to whether liquefaction-susceptible soils are present in the Hills, Ranges and Mountains terrain.

As a result, in the minor valley systems, due to the uncertainty associated with the presence/absence of liquefaction-susceptible soils and the depth to groundwater, there is currently insufficient information to characterise the expected land performance. Therefore, in these locations this terrain has been classified as "***Liquefaction Category Undetermined***" at this time.

In regard to the hilltops, ridges and elevated areas of this terrain, based on engineering judgement and in accordance with Section 4.5.2 of the MBIE/MfE Guidelines (2017), *"…there is a probability of more than 85 percent that liquefaction-induced ground damage will be none to minor for 500-year shaking.*" Therefore, these areas are classified as "***Liquefaction Damage is Unlikely***".


LEGEND
Site Extent
Liquefaction Vulnerability
Liquefaction Vulnerability Category
Liquefaction Damage is Possible
Liquefaction Damage is Undetermined
Liquefaction Damage is Unlikely
A3 SCALE 1:180,000
0 2 4 6 8 10 (km)
Increasing likelihood and severity of ground damage
Increasing 'precision' in the categorisation
LIQUEFACTION CATEGORY IS UNDETERMINED
LIQUEFACTION DAMAGE IS UNLIKELY
LIQUEFACTION DAMAGE IS POSSIBLE
Very Low Liquefaction Vulnerability
Low Liquefaction Vulnerability
Medium Liquefaction Vulnerability
High Liquefaction Vulnerability
Decreasing uncertainty in the assessment
Wellington
NOTES:
Basemap: LINZ Data Service
PROJECT No. 1019568.2000
DESIGNED CHSA FEB.23
DRAWN CHSA FEB.23
CHECKED MOLI FEB.23
CLIENT HOROWHENUA DISTRICT COUNCIL
PROJECT LIQUEFACTION VULNERABILITY ASSESSMENT
TITLE LIQUEFACTION VULNERABILITY
SCALE (A3) 1:180,000
FIG No. FIGURE B1
REV 0
REV DESCRIPTION GIS CHK DATE
0 First Version CHSA MOLI 15/02/23
APPROVED DATE
LOCATION PLAN
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REPORT

Tonkin+Taylor

Options for Liquefaction Assessment for Resource and Building Consent

Prepared for
Horowhenua District Council
Prepared by
Tonkin & Taylor Ltd
Date
June 2023
Job Number
1019568.0000.v2

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Document Control

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Date	**Version**	**Description**	**Prepared by:**	**Reviewed by:**	**Authorised by:**
15/03/2022	Draft 0.1	Draft for consultation	Elyse Armstrong	John Brzeski	Mike Jacka
30/05/2022	1.0	Client issue	Elyse Armstrong	John Brzeski	Mike Jacka
22/06/2023	2.0	Updated guidance for entire mapped district	Elyse Armstrong	Mike Jacka	Mike Jacka

Distribution:

Horowhenua District Council	1 PDF copy
Tonkin & Taylor Ltd (FILE)	1 PDF copy

Table of contents

1 Objective

This report is intended to assist Horowhenua District Council (HDC) as they develop a framework for assessing liquefaction vulnerability for practitioners and council staff, to promote a consistent approach to liquefaction hazard in Building Consent applications in Horowhenua District.

The objectives of this report are to:

- Provide an overview of the existing national-level and district-level guidance related to resource consent and building consent liquefaction assessments.
- Provide a potential framework or a pragmatic screening approach that Horowhenua District Council could consider for assessing liquefaction vulnerability assessments accompanying resource consent and building consent applications for typical individual building projects in Horowhenua District. This includes a focus on residential-style buildings, to help find an appropriate balance between the costs involved in detailed liquefaction assessment and the level of precision required for a particular situation.

This report is not intended to be a prescriptive document that captures all possible eventualities. The responsibility for specific engineering design and construction review for land development and building works remains with the designers of those works.

2 Background

In 2020 Horowhenua District Council (HDC) engaged Tonkin & Taylor Ltd (T+T) to undertake liquefaction hazard mapping for potential growth areas within the district (T+T, 2020[1]) and further assessment for a development in Foxton Beach[2] in accordance with the MBIE/MfE (2017)[3] guidance. Ten areas were identified as potential growth areas comprising Foxton Beach, Foxton, Tokomaru, Shannon, Waitarere Beach, Mangaore, Levin, Ohau, Waikawa Beach, and Manakau.

Following delivery of the preliminary framework to assist in assessing liquefaction vulnerability across these 10 previously identified growth areas, HDC engaged T+T to undertake a Level A assessment (T+T, 2023[4]) for the remaining Horowhenua District in accordance with the MBIE/MfE Guidance (2017)[3].

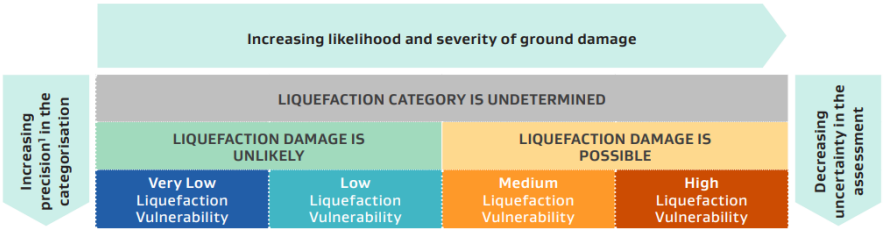
The MBIE/MfE guidance defines a tiered system of liquefaction vulnerability categories, as shown in Figure 2.1. Much of the land in the district's western third has been assigned the liquefaction vulnerability category of ***Liquefaction Damage is Possible***, while the alluvial and marine terraces through the central third was assigned ***Liquefaction Damage is Undetermined***, with the exception of southern Levin which along with the Hills and Ranges to the east, which have been assigned a category of ***Liquefaction Damage is Unlikely*** (Figure 2.2). As is typically the case for regional assessments such as this, more precise categorisation (e.g., distinguishing between ***Medium*** and ***High*** liquefaction vulnerability categories) was not possible due to a lack of both subsurface geotechnical investigation and detailed groundwater information.

Recognising that in many cases more detailed assessment of liquefaction will be required to support Building Consent applications, HDC has now engaged T+T to provide technical advice regarding the ways in which Council could assist practitioners and HDC Building Control staff. This report focusses

[1] Tonkin and Taylor, (2020). *HDC Horowhenua District Potential Growth Areas, Liquefaction Assessment* report reference 1009677.v2
[2] Tonkin and Taylor, (2020). *HDC Property, Foxton Beach Liquefaction Assessment* report reference 1009677.0010.v2
[3] MBIE/MfE (2017) Planning and engineering guidance for potentially liquefaction-prone land, Version 0.1, September 2017, Wellington: Ministry of Business Innovation and Employment.
[4] Tonkin and Taylor, (2023), *Horowhenua District Liquefaction Vulnerability Assessment, Level A Assessment* reference 1019568.2000 v1.

2

on the scope of liquefaction assessment likely to be appropriate for each liquefaction vulnerability category, taking into account the types of development and ground conditions most common across the district and in particular within the areas identified as potential growth areas.



Note:

1 In this context the 'precision' of the categorisation means how explicitly the level of liquefaction vulnerability is described. The precision is different to the accuracy (ie trueness) of the categorisation.

Figure 2.1: Liquefaction classifications from MBIE/MfE (2017)

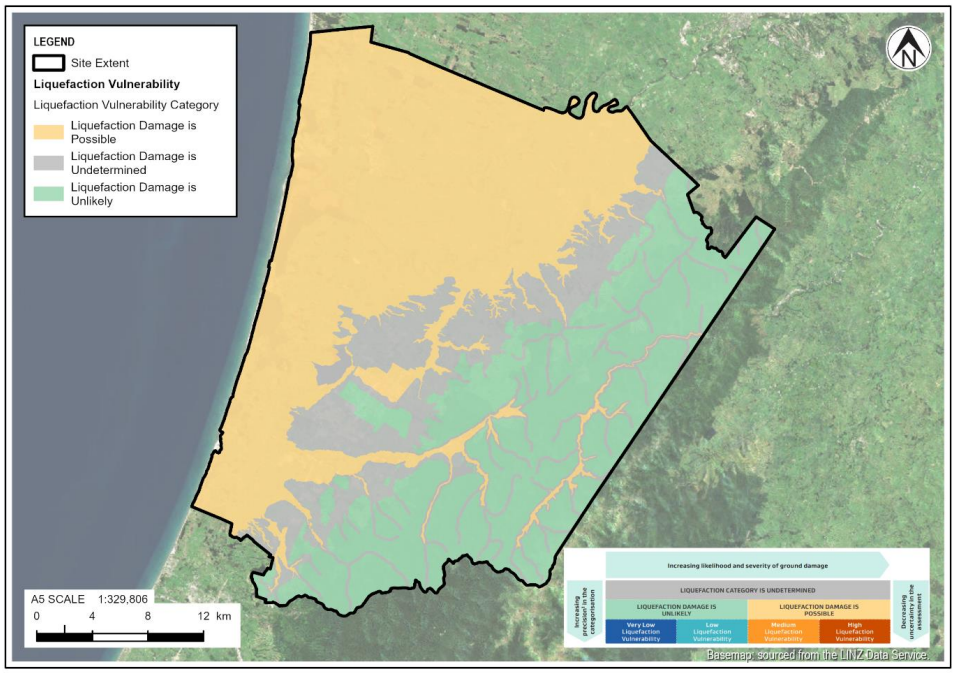


Figure 2.2: HDC liquefaction vulnerability categories assigned by T+T (2023)[4]

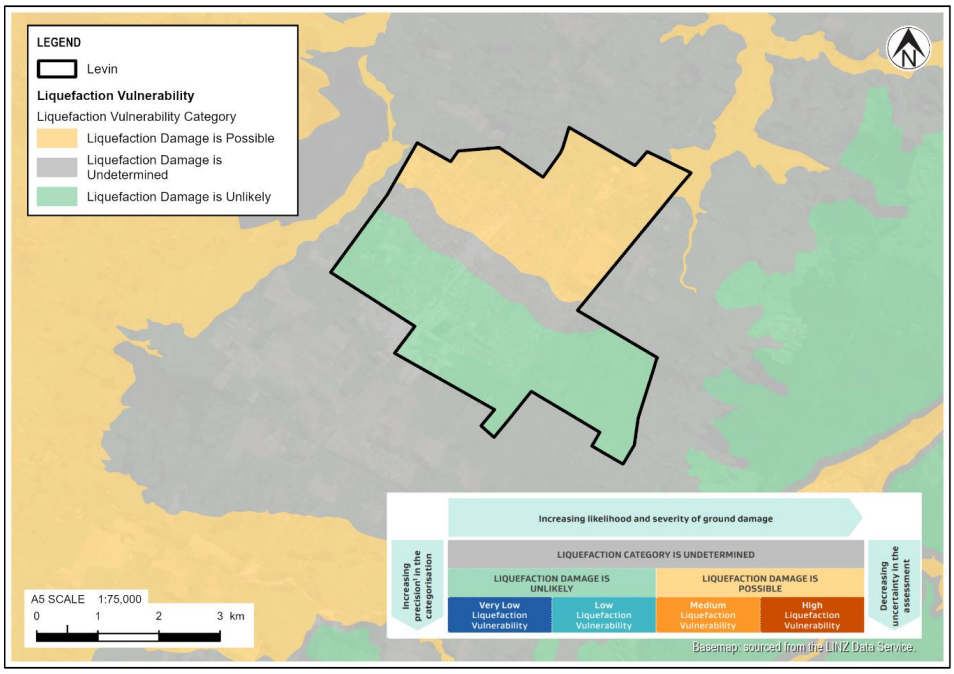


Figure 2.3: Zoomed in level of liquefaction vulnerability classification for Levin township assigned by T+T (2023)[4]

4

3 Liquefaction guidance, resource and building consent compliance

3.1 National-level guidance

In November 2019, the Ministry of Business, Innovation and Employment (MBIE) made changes to the NZ Building Code which limit the application of the B1 Acceptable Solution B1/AS1 so that it may not be used on ground prone to liquefaction or lateral spreading from 29 November 2021 onward[5]. This was implemented by changing the definition of 'Good Ground' to exclude land with the potential for liquefaction and/or lateral spreading.

Figure 3.1 illustrates the Building Code regulatory framework for New Zealand (MBIE, 2022b). The Building Act and Building Code are mandatory legislation that control three different compliance pathways for buildings in New Zealand. These compliance pathways comprise Alternative Solutions, Verification Methods and Acceptable Solutions.

B1/AS1 is the Acceptable Solution that is the most used means of compliance for residential buildings in New Zealand. For other types of buildings (such as commercial and industrial buildings), other compliance pathways may be more appropriate (such as specific engineering design using the MBIE/New Zealand Geotechnical Society (NZGS) modules in conjunction with B1/VM1) so these are less affected by the change to the definition of 'Good Ground'. The advice in this current report is therefore primarily focussed on residential buildings.

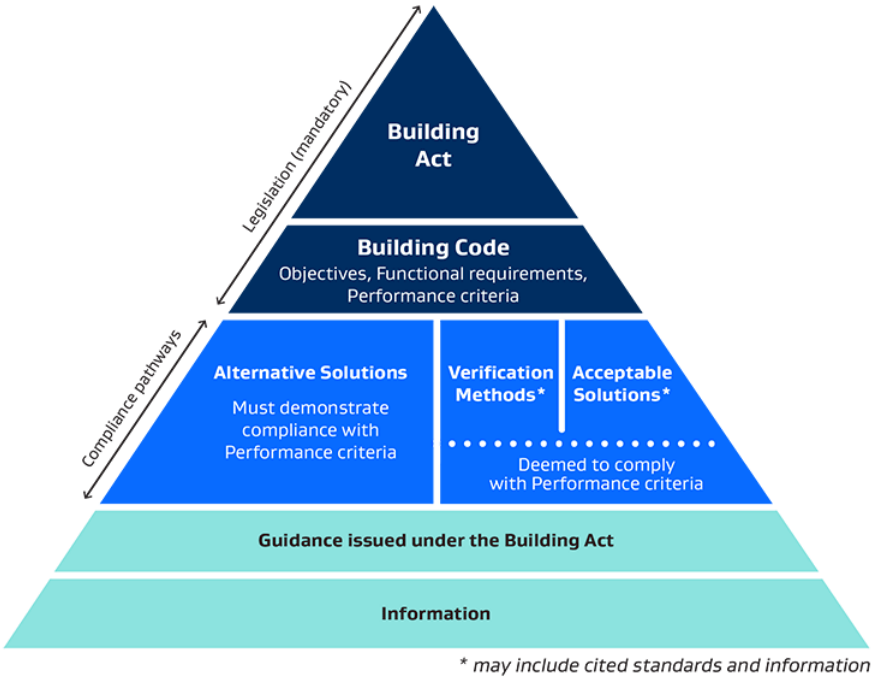


Figure 3.1: Regulation framework figure provided by MBIE – Building Performance (2021)

[5] November 2019 Building Code update | Building Performance, accessed 25 November 2021

MBIE have issued various guidance documents on assessing and addressing liquefaction hazards. The following guidance documents were issued under Section 175 of the Building Act, so while not Acceptable Solutions or Verification Methods, where appropriate they may be used to demonstrate compliance with the Building Code[6] under the Alternative Solution pathway.

- **Ministry of Business, Innovation & Employment – Canterbury Guidance (2018):** The Canterbury Guidance was written to provide a streamlined approach for investigating and selecting foundation solutions for addressing liquefaction prone land in Canterbury to aid in fast-tracking the earthquake recovery. The guidance and processes contained therein are based on the Technical Category (TC) maps, published in 2011 which are only available in Canterbury. While it was initially intended only for use in Canterbury (and this is a stated limitation in the text), at the time of the change to B1/AS1, MBIE added the following note, referring users to the MBIE Canterbury guidance (2018): 'For houses built in areas that have potential for liquefaction, the MBIE guidance document "Repairing and rebuilding houses affected by the Canterbury earthquakes" may be appropriate. This guidance provides a range of potential foundation solutions depending on the expected ground movement and available bearing capacity. These parameters also determine the required degree of involvement of structural and geotechnical engineers and the extent of specific engineering design." MBIE has also published information on their website that relates the TC categories to the liquefaction vulnerability categories in the MBIE/MfE Guidance (2017) (discussed below).
- **Ministry of Business, Innovation & Employment/New Zealand Geotechnical Society Earthquake geotechnical engineering Modules (2021):** MBIE/NZGS module 4 "Earthquake resistant foundation design" discusses compliance and is primarily intended for buildings which typically require specific engineering design. This approach requires defining settlement limits (both total and differential) for buildings to achieve satisfactory performance. Compliance is thereby achieved by defining allowable settlement limits, and specifically designing the foundation and any required earthworks to achieve these limits. This approach is generally not used for routine residential buildings.
- **Ministry of Business, Innovation & Employment/Ministry for the Environment Guidance (2017):** The primary focus of the MBIE/MfE Guidance (2017) is on developing a framework for managing liquefaction hazard by appropriate land use planning under the Resource Management Act, however, Section 3.8 of the document also briefly addresses compliance with the Building Act. It contemplates that most residential houses not requiring specific engineering design would achieve compliance via B1/AS1 but acknowledges that B1/AS1 currently does not address liquefaction.

MBIE also subsequently published information on their website (MBIE, 2022a) on liquefaction in July 2021. This indicates that designers can follow a simplified compliance pathway by considering foundation options outlined in the MBIE Canterbury Guidance (2018). It also provides an indication of how these foundations could relate to the MBIE/MfE Guidance (2017) liquefaction vulnerability categories as shown below (while also noting there is not a direct correlation and other factors and uncertainties should also be considered).

- ***Very Low*** and ***Low*** liquefaction vulnerability = Adopt TC1-type foundations
- ***Medium*** liquefaction vulnerability = Adopt TC2-type foundations
- ***High*** liquefaction vulnerability = Adopt TC3-type foundations

[6] Building Act (2004), Section 19 (2)(b)

3.2 District-level liquefaction guidance

3.2.1 Liquefaction vulnerability categories and 'Good Ground'

T+T (2023)[4] classified land across Horowhenua District into one of three liquefaction vulnerability categories: ***Liquefaction Category is Undetermined***; ***Liquefaction Damage is Unlikely,*** or ***Liquefaction Damage is Possible***. The currently available information does not support further classification of the land into the other (more precise) categories of ***Very Low***, ***Low***, ***Medium*** or ***High*** liquefaction vulnerability. Therefore, translating the currently mapped vulnerability categories to recommendations for TC1/2/3-type foundations is not immediately possible. This outcome is generally expected in a regional-scale study, and it is anticipated that more detailed site-specific assessments to support resource and building consents would follow.

The relevant classifications for the Horowhenua district are explained below:

- Land that has been categorised as ***Liquefaction Damage is Unlikely*** is not considered to be "prone to liquefaction or lateral spreading" so is not excluded from the B1/AS1 definition of 'Good Ground' on this basis (however some locations may still not qualify as 'Good Ground' due to unrelated issues such as such as soft soils).
- Land that has been categorised as ***Liquefaction Damage is Possible*** is considered to be "prone to liquefaction or lateral spreading" and therefore does not meet the definition of 'Good Ground' as outlined in the Building Code amendments.
- For land that has been categorised as ***Liquefaction Category is Undetermined*** there is currently insufficient information to determine whether it is "prone to liquefaction or lateral spreading" within the context of the definition of 'Good Ground' as outlined in the Building Code amendments. If liquefaction vulnerability assessment at a higher level of detail is undertaken in future (e.g., a site-specific assessment) then this may result in reclassification of the land into a different category and whether it meets the definition of 'Good Ground' should be reconsidered based on that new information.
- For land that is ***Unmapped***, no liquefaction assessment has been completed, so this land has not been categorised into one of the three liquefaction vulnerability categories above.

The following sections provide a summary of the assessment for each geomorphic terrain.

3.2.2 Active Coastline and Dunes

The Active Coastline and Dune terrain is likely to comprise thick (>5 m), Holocene-age deposits of sands and silts (which are susceptible to liquefaction) and are unlikely to contain a significant proportion of plastic sediments (which are not susceptible to liquefaction). These sediments are typically deposited in higher energy environments, which means the soils are likely to be denser than those found in lower energy environments. The densest soils are typically found within dune deposits adjacent to the open coast.

Groundwater is also generally shallow (< 4 m) in this terrain because of the close proximity of the coastal margin and the low elevation. The proximity to coastal margins means that the depth to groundwater is likely to become shallower with sea-level rise. For these reasons, these terrains are identified as landforms that are commonly susceptible to liquefaction in Section 2.3 of the MBIE/MfE Guidance (2017).

In this terrain the potential for lateral spreading is consistent with the definition provided in the MBIE/MfE Guidelines (2017), that is in the presence of liquefaction-susceptible soils, lateral spreading is more likely to be possible in areas within 200 m of free faces more than 2 m high or within 100 m of free faces less than 2 m high.

Based on engineering judgement and in accordance with Section 4.5.2 of the MBIE/MfE Guidelines (2017), *"…there is a probability of more than 15 percent that liquefaction-induced ground damage will be minor to moderate (or more) for 500-year shaking*". Therefore, the mapped Active coastline and dunes terrain has been classified as "***Liquefaction Damage is Possible***."

3.2.3 Alluvial Plains and River Flats

Typically, soils found in this terrain are late Pleistocene to Holocene-aged and deposited in low energy environments forming loose and soft layers. The depth to groundwater is also likely to be shallow (< 4 m) within this terrain because it is generally associated with active and historic river systems. The MBIE/MfE Guidance (2017) typically associates these alluvial terrains as being susceptible to liquefaction.

The characteristics of the soils comprising this terrain are highly variable in nature and vary spatially across the landscape. Alluvial sediments typically range from non-plastic sands and silts to plastic clays and silts. These soils typically contain soil layers that are susceptible to liquefaction.

In this terrain the potential for lateral spreading is consistent with the definition provided in the MBIE/MfE Guidelines (2017), that is in the presence of liquefaction-susceptible soils, lateral spreading is more likely to be possible in areas within 200 m of free faces more than 2 m high or within 100 m of free faces less than 2 m high.

Based on engineering judgement and in accordance with Section 4.5.2 of the MBIE/MfE Guidelines (2017), "*…there is a probability of more than 15 percent that liquefaction-induced ground damage will be minor to moderate (or more) for 500-year shaking.*" Therefore, the mapped Alluvial Plains and River Flats terrain have been classified as "***Liquefaction Damage is Possible***".

3.2.4 Relic Dunes

The Relic Dunes terrain is likely to comprise thick (> 10 m), Holocene-age deposits of sands and silts (which are susceptible to liquefaction) and are unlikely to contain a significant proportion of plastic sediments (which are not susceptible to liquefaction). This terrain contains sediments that are typically deposited in higher energy environments, which means the soils are typically denser than those found in lower energy environments.

Groundwater is also generally shallow (< 4 m) in this terrain due to the close proximity to the low-lying alluvial terrains and coastal margin and is likely to become shallower with sea level rise. For these reasons, this terrain is identified as a landform that is commonly susceptible to liquefaction in Section 2.3 of the MBIE/MfE Guidance (2017).

In this terrain, the potential for lateral spreading is consistent with the definition provided in the MBIE/MfE Guidelines (2017), that is in the presence of liquefaction-susceptible soils, lateral spreading is more likely to be possible in areas within 200 m of free-faces more than 2 m high and within 100 m of free-faces less than 2 m high.

Based on engineering judgement and in accordance with Section 4.5.2 of the MBIE/MfE Guidelines (2017), *"…there is a probability of more than 15 percent that liquefaction-induced ground damage will be minor to moderate (or more) for 500-year shaking*". Therefore, the mapped Relic Dunes terrain has been classified as ***Liquefaction Damage is Possible***.

3.2.5 Swamps and Wetlands

The Swamps and Wetlands terrain is likely to comprise thick (> 5 m), Holocene-aged deposits of plastic silts and clays, non-plastic sands and large amounts of organic material. These sediments have typically accumulated in a low energy environment. There is some uncertainty associated with the liquefaction susceptibility of these soils due to the large amounts of organic material that are

likely to be present. However, Section 2.3 of the MBIE/MfE Guidelines identify swamp landforms as being commonly susceptible to liquefaction.

Groundwater is also likely to be shallow (< 4 m) in this terrain because of the saturated conditions required for the terrain to develop.

In this terrain the potential for lateral spreading is consistent with the definition provided in the MBIE/MfE Guidelines (2017), that is in the presence of liquefaction-susceptible soils, lateral spreading is more likely to be possible in areas within 200 m of free-faces more than 2 m high and within 100 m of free-faces less than 2 m high. However, as described above, there is currently significant uncertainty as to if/where liquefaction-susceptible soils are present in this terrain.

Due to the uncertainty associated with whether liquefaction-susceptible soils are present, there is currently insufficient information to characterise the expected land performance. Therefore, based on engineering judgement and in accordance with Section 4.5.2 of the MBIE/MfE Guidelines (2017), in this terrain "***Liquefaction Category is Undetermined***" has been assigned at this time.

3.2.6 Alluvial and Marine Terraces

This terrain comprises elevated land that is predominantly early to late Pleistocene in age and includes sediments deposited in both high energy and low energy coastal and alluvial environments, which have both plastic and non-plastic behaviours. The older age of these sediments means that there is the potential for ageing effects to increase the resistance to liquefaction triggering. Furthermore, some younger marginal marine swamp and dune deposits also overlay this terrain in some areas of the district forming surficial swales and hummocks on the older marine and alluvial terraces. As a result, there is significant uncertainty associated with the liquefaction vulnerability of this terrain.

Due to the higher elevation of this terrain, the depth to groundwater is, on average, likely to be deeper (> 4 m) than the groundwater level in the previously described alluvial terrains. However, our analysis of available groundwater data indicates that there are some locations within this terrain where groundwater is shallower (< 4m). These areas of shallow groundwater are most likely associated with gullies and streams. Note that these gullies are small and difficult to differentiate based on the information available and therefore many of the smaller gully features have not been mapped at the target scale for the geomorphic mapping (1:25,000). This also introduces a significant source of uncertainty into the assessment of this terrain.

In this terrain the potential for lateral spreading is consistent with the definition provided in the MBIE/MfE Guidelines (2017), that is in the presence of liquefaction-susceptible soils, lateral spreading is more likely to be possible in areas within 200 m of free faces more than 2 m high and within 100 m of free-faces less than 2 m high. However, as described above, there is currently significant uncertainty about the potential for ageing effects to impact on liquefaction triggering, and the depth to groundwater in the Alluvial and Marine Terraces.

Due to the uncertainty associated with the ground conditions and the depth to groundwater, there is currently insufficient information to characterise the expected land performance over the entire terrain. Therefore, based on engineering judgement and in accordance with Section 4.5.2 of the MBIE/MfE Guidelines (2017), in this terrain "***Liquefaction Category is Undetermined***" has been assigned at this time.

As discussed in Section 3.3.7 of T+T (2023)[4] the nature of the expected ground conditions in this terrain suggest that if more detailed site-specific assessment was undertaken, it is likely that a category of "Low Liquefaction Vulnerability" could be assigned to individual sites. For parts of this terrain, undertaking simple shallow hand auger boreholes to confirm soil properties and/or

groundwater depths may be all that is required to determine which liquefaction vulnerability category applies for a specific site[7].

The exception to this generalised categorisation for the Alluvial and Marine Terraces terrain is the southern area of Levin township (as shown in Figure 2.3). Due to more available geotechnical investigation information and previous liquefaction assessments completed (T+T, 2020), the southern area of Levin, as shown in Figure 4.3, has been assessed as "***Liquefaction Category is Unlikely".*** The extent of this category has been mapped based on the 1:250,000 geological map (late Pleistocene river deposit gravels). However, there is significant uncertainty in the mapped extent of this geological unit because there are no distinct features visible at the ground surface to delineate its boundary. To allow for this uncertainty a 500 m wide buffer zone of ***"Liquefaction Category is Undetermined"*** has been assigned along the mapped geological unit boundary. It is also recommended that before the assigned liquefaction vulnerability categories in Levin (both northern and southern areas) are relied upon for individual site assessments, ground truthing should be undertaken to determine whether the site is underlain by this gravel geological unit.

3.2.7 Hills and Ranges

This terrain comprises elevated landforms characterised by highly dissected hills with many gullies and valleys, hills that are more rolling in nature and steep tectonic mountains. These land features ultimately depend on the underlying geological units (which are typically Neogene-aged). The ground conditions vary from exposed rock at the ground surface to thick deposits of residual soils.

Based on the available information, it is likely that the residual soils within this terrain predominantly comprise plastic soils and rock that are not considered to be susceptible to liquefaction. However, although this terrain covers a large portion of the Study Area, there are relatively few geotechnical investigations available to calibrate this assumption. Furthermore, minor valley systems within this terrain may contain alluvial deposits that may not have been captured within the geomorphic map (due to the 1:25,000 target scale of the geomorphic map). This introduces additional uncertainty into the assessment.

The depth to groundwater is highly variable across this geomorphic terrain. As described in Section 4.1 and 4.3 of T+T (2023)[4], it has been categorised as follows:

- In ridge lines and elevated areas the depth to groundwater is assumed to be more than 8 m bgl.
- In sloping land the depth to groundwater is likely to be highly variable.
- In the bottom of valleys and gullies the depth to groundwater is likely to be highly variable depending on antecedent rainfall conditions and the position of the slope, and assumed to be less than 4 m bgl.

In this terrain the potential for lateral spreading is consistent with the definition provided in the MBIE/MfE Guidelines (2017), that is in the presence of liquefaction-susceptible soils, lateral spreading is more likely to be possible in areas within 200 m of free faces more than 2 m high and within 100 m of free-faces less than 2 m high.

A 100 m buffer zone has been applied to the mapped streams within this terrain to capture the incised valley floors where lateral spreading could occur if liquefaction-susceptible soils are present. However, as described above there is currently significant uncertainty to whether liquefaction-susceptible soils are present in the Hills and Ranges terrain.

[7] Note that these comments only apply to site-specific studies undertaken for the purposes of satisfying Resource and Building Consent requirements for individual sites. We are not suggesting that simple shallow hand auger boreholes would enable easy refinement of the liquefaction vulnerability category at a regional level across the entire terrain.

As a result, in the minor valley systems, due to the uncertainty associated with the presence/absence of liquefaction-susceptible soils and the depth to groundwater, there is currently insufficient information to characterise the expected land performance. Therefore, in these locations this terrain has been classified as "***Liquefaction Category Undetermined***" at this time.

In regard to the hilltops, ridges and elevated areas of this terrain, based on engineering judgement and in accordance with Section 4.5.2 of the MBIE/MfE Guidelines (2017), *"…there is a probability of more than 85 percent that liquefaction-induced ground damage will be none to minor for 500-year shaking*." Therefore, these areas are classified as "***Liquefaction Damage is Unlikely***".

4 Assessing and mitigating liquefaction vulnerability in Horowhenua District

For consent applications where liquefaction hazard could be relevant if it were present (e.g., almost all subdivision and building consents) the application will either need to:

- Justify why liquefaction isn't a hazard associated with a subject site or proposed activity.
- Provide mitigation options to appropriately manage the liquefaction hazard.

Consent applications will need to assess soil conditions and ground water conditions on a site-specific basis to assess the liquefaction hazard, particularly for sites that have been categorised as ***Liquefaction Category is Undetermined*** and ***Liquefaction Damage is Possible***.

4.1 Level of detail in resource and building consents

The key difference between resource and building consent applications will lie in the level of detail in the assessment. Resource consent applications are typically lodged when designs are largely conceptual and there are still a number of details to be worked through. The conceptual design may be based on relatively limited investigation information which means that there may be more residual uncertainty about liquefaction vulnerability at the site. As result, there could be a broad number of mitigation options available at this stage. A key focus is demonstrating that there are practical and effective options available to manage hazards, rather than selecting and finalising the details of one single option.

Conversely, at building consent stage the design will be significantly refined as it will have moved through to detailed design stage. If, as part of the resource consent application, liquefaction was identified as a hazard requiring mitigation it may be necessary to collect additional investigation information to further reduce the degree of residual uncertainty. Therefore, a higher level of detail study may be necessary to support the building consent application.

Recognising these differences, the MBIE/MfE Guidance (2017) outlines the minimum level of detail required for liquefaction vulnerability assessments for three different development stages. These development stages relate to resource consents for plan changes, resource consents for subdivision and building consents. For each stage of the development cycle, the guidance relates to five development scenarios which are defined as:

- Sparsely populated rural area (lot > 4 hectares) e.g., a new farm building.
- Rural-residential setting (lot size of 1 to 4 hectares) e.g., a "lifestyle" property.
- Small-scale urban infill (original lot size <2500 m^2) e.g., demolish old house and replace with four townhouses.
- Commercial or industrial development e.g., a warehouse building in an industrial park.
- Urban residential development (typically 15 – 60 households per hectare) e.g., a home in a new subdivision.

The guidance outlines a risk-based approach where the recommended minimum level of detail in the liquefaction assessment varies by both the stage of the development and the type of development scenario. Lower levels of detail are recommended for earlier stages of the development cycle (e.g., resource consent for plan change). Similarly, lower levels of detail are recommended for smaller scale developments (e.g., sparsely populated rural area). For more information about these recommendations refer to Section 3.5 (specifically Tables 3.5, 3.6 and 3.7) of the MBIE/MfE Guidance (2017).

4.2 Options for assessing and mitigating liquefaction vulnerability

We have identified several different options for approaches that Horowhenua District Council could consider when assessing liquefaction vulnerability during resource consent or building consent applications in the Horowhenua District. These options are:

Option 1: No liquefaction assessment / mitigation guidance provided to practitioners

The default approach (in the absence of guidance from MBIE or Council) would be that site-specific geotechnical engineering assessment would be required to support the resource consent or building consent application in all cases where liquefaction hazard could be relevant if it were present (e.g., almost all subdivision and building consents). This approach would use fundamental geotechnical engineering principles to assess liquefaction vulnerability. Typically this would include site-specific deep ground investigations and recommendations for site development works and foundation solutions to mitigate the effects of liquefaction (if required). Unless the assessment demonstrated that the site was not prone to liquefaction, every building would require specific engineering design, typically with reference to the MBIE/NZGS Earthquake engineering modules – there would be no reference to NZS 3604:2011 foundation options or the MBIE Canterbury Guidance (2018) foundation options.

Option 2: HDC endorse adoption of Canterbury guidance

Alternatively, foundation options provided in the MBIE Canterbury Guidance (2018) could be specified to mitigate the potential effects of liquefaction for land and building developments across the district. This approach would still require site-specific geotechnical assessment (and often deep ground investigations) and as such, constitutes a form of specific engineering design. However, the process used by designers to choose appropriate mitigation options would be streamlined with reference to the MBIE Canterbury Guidance (2018). Selection of the foundation options could be further streamlined by undertaking a site-specific liquefaction vulnerability assessment in accordance with the MBIE/MfE Guidance (2017) and correlating the foundation options to the assigned liquefaction vulnerability category as described in Section 3.1.

Option 3: HDC provide Horowhenua-specific guidance

A third approach could remove the need for extensive site-specific geotechnical investigations for some sites and development scenarios. It would aim to provide a balance between cost and accuracy of liquefaction assessments, taking into account the associated risks. A simplified screening assessment could be developed to strike a pragmatic balance between the cost and accuracy of liquefaction assessments for typical individual building projects in the Horowhenua district. This risk-based approach to managing uncertainty is discussed in more detail in Appendix J1 of the MBIE/MfE Guidance (2017), and similar concepts around also feature in recent MBIE regulatory reform discussion documents (MBIE, 2018 & MBIE, 2019).

This approach would allow users to transition from sites previously categorised as ***Liquefaction Category is Undetermined*** to an assumed category of either ***Liquefaction Damage is Unlikely*** or ***Liquefaction Damage is Possible***.

If application of the screening criteria results in recategorisation of the site as ***Liquefaction Damage is Unlikely*** then it is assumed to be not "prone to liquefaction or lateral spreading" and it is not excluded from the B1/AS1 definition of 'Good Ground' on this basis. If application of the screening criteria results in recategorization of the site as ***Liquefaction Damage is Possible*** then the site can be assessed against two additional screening criteria to assess the non-liquefiable crust thickness, and the potential for lateral spread. The outcome of the assessment against those two criteria will result in an assumption of ***Medium*** or ***High*** liquefaction vulnerability and specification of TC2-type or TC3-type foundations respectively.

Because of the balance adopted between cost and accuracy of Option 3, there remains greater residual uncertainty in the accuracy of the results, which needs to be accepted as part of using this simplified screening assessment. In particular:

- It is expected that in the majority of cases the screening assessment will determine the correct liquefaction vulnerability category.
- In some cases, the screening assessment will over-predict the liquefaction vulnerability. In these cases it is favouring an approach where money is invested in building a more robust foundation which can handle poorer ground conditions (more than only liquefaction), rather than spending an often-similar amount of money on more detailed liquefaction assessment which might (or might not) show that a less robust foundation system would suffice.
- In a smaller number of cases, the screening assessment will under-predict the liquefaction vulnerability. In these cases, it is favouring an approach where a minor increase in damage in localised areas if/when/where an earthquake occurs in the future is balanced against the high up-front cost of more detailed assessment and more robust foundations across the entire district. We note than in most (but not all) circumstances the consequences of under-predicting liquefaction vulnerability relate primarily to matters of amenity, habitability and repair cost, rather than questions of life-safety.
- To issue a Building Consent, Council needs to be "satisfied on reasonable grounds" that the provisions of the Building Code would be met if the building work were properly completed in accordance with the plans and specifications. Similarly, owners, designers and builders must have reasonable grounds to believe that building work complies with the Building Code. It may be useful to seek legal advice and/or a determination from MBIE to confirm that this option for a risk-based approach is appropriate, and that the residual uncertainty in the liquefaction assessment does not undermine these reasonable grounds for Building Code compliance.

4.3 Possible policy approaches for Horowhenua District Council

Section 4.2 presents three options for assessment and mitigation of liquefaction vulnerability, ranging from providing no guidance to practitioners (Option 1) through to providing district-specific guidance (Option 3). However, there is no need for HDC to select a blanket approach which applies in all cases, and it may be appropriate to adopt different options in different situations. Table 4.1 provides four examples (Policy A through to D) for different combinations of liquefaction assessment/mitigation options that could be adopted in different development scenarios. Each example policy approach is discussed in further detail below.

Deciding on the policy approach that is most appropriate for HDC will involve consideration of a range of factors, such as the need to balance cost and demand for urban development against the risk appetite for accepting a degree of uncertainty in the liquefaction assessment. As noted in Section 5 of the MBIE/MfE Guidance (2017), the risk management process now moves from a technical stage to the beginning of a decision-making stage and so needs to involve the relevant stakeholders and decision-makers.

The level of engineering assessment and mitigation that is optimum for HDC will be strongly influenced by the specific local context, including:

- Availability of existing subsurface geotechnical investigations and groundwater monitoring.
- The spatial extent, density and type of building activity expected in future.
- The skillset of local engineering practitioners.
- The expected range of ground conditions inferred from geomorphic mapping.
- The level of seismic hazard.
- Integration with other council processes for natural hazard management (e.g., District Plan).

Table 4.1: Example of the range of policy approaches that could be considered for liquefaction assessment/mitigation options adopted in different development scenarios

Decreasing detail & cost for engineering assessment
Increasing residual uncertainty

Increasing new capital investment and total exposure / consequence in a single event

Development scenario	Potential HDC policy settings			
	Policy A	Policy B	Policy C	Policy D
Sparsely populated rural area (lot size >4 ha) e.g., a new farm building	Option 1	Option 2	Option 3	Option 3
Rural-residential setting (lot size of 1 to 4 ha) e.g., a "lifestyle" property	Option 1	Option 2	Option 3	Option 3
Small-scale urban infill (original lot size <2500 m^2) e.g., demolish old house and replace with four townhouses	Option 1	Option 2	Option 3	Option 3
Commercial or industrial development e.g., a warehouse building in an industrial park	Option 1	Option 1	Option 1	Option 1
Urban residential development (typically 15-60 households per ha) e.g. home in a new subdivision	Option 1	Option 2	Option 2	Option 3

Notes:

1. ***Option 1:*** No liquefaction assessment /mitigation guidance provided to practitioners.
   Option 2: HDC endorse adoption of Canterbury guidance.
   Option 3: HDC provide Horowhenua-specific guidance.
2. This table shows the highest option number that would be available for practitioners to use in each development scenario for each policy option. In most cases practitioners would also have the option to choose a lower numbered option (e.g., site-specific liquefaction assessment and engineering design would remain an option if practitioners did not wish to follow the available guidance or it was not applicable for the particular circumstances).

Policy A: This involves application of Option 1 (no guidance) in all cases, which would require site-specific liquefaction assessment and specific engineering design to determine suitable mitigation options (if required) for each of the development scenarios and for 'unmapped' areas. This approach would provide practitioners with a high level of flexibility in how they determine suitable mitigation solutions. The detailed assessment required would likely result in lower residual uncertainty about the liquefaction vulnerability, and provide greater confidence in the efficiency and effectiveness of the adopted mitigation solution. However, it would require a high degree of technical competency from both the practitioners developing the solution and the building control officer evaluating the suitability of those solutions. It may also result in higher costs for both investigation requirements, design and approvals being passed on to the applicant as well as longer lead times to develop and evaluate those solutions.

Policy B: Option 1 (no guidance) would apply to all commercial and industrial development scenarios, and all 'unmapped' areas. This is because for these types of development the geotechnical requirements can vary greatly depending on the specific details of the site, the proposed building and foundation type, and the particular functional requirements. This means that specific engineering input is typically required (even if liquefaction is not an issue) and there is little scope to provide guidance for simplified assessment.

Option 2 (Canterbury guidance) would be available for all residential development scenarios. Alternatively, Option 1 could be adopted by the practitioner if they considered it was more appropriate to undertake site-specific assessment and design. This approach provides the same high level of flexibility to practitioners as Policy A, but also with the option of streamlining the selection of standard mitigation solutions from the MBIE Canterbury Guidance (2018). This guidance is intended for use with one- and two-storey timber framed dwellings and therefore for larger and/or more complex residential builds the practitioner may opt for Option 1. When compared to Policy A, this approach enables streamlining of the selection of mitigation solutions for standard residential buildings although the costs may still be significant, in particular on sites where deep investigations are required. At present this approach is being used frequently across New Zealand for liquefaction prone sites.

Policy C: Option 1 (no guidance) would apply to all commercial and industrial development scenarios and 'unmapped' areas, for the reasons discussed above.

Option 2 (Canterbury guidance) would be available for all residential scenarios, with the option for the practitioner to adopt Option 1 if preferred.

Additionally, Option 3 (Horowhenua-specific guidance) would be available for simpler smaller-scale residential applications. This approach further simplifies the process by adding a screening criteria as a tool for practitioners to select a mitigation solution for lower-risk situations. However, as discussed in Section 4.2, the upfront saving this gives in terms of reduced time and cost for engineering assessment is offset against the potentially reduced accuracy. This means that in some cases the adopted foundation may be more robust than required to meet minimum Building Code requirements (incurring higher up-front construction costs), or in some cases the adopted foundation may be less robust than required (with potential for increased damage if/when/where an earthquake occurs in the future).

Policy D: Option 1 (no guidance) would apply to all commercial and industrial development scenarios and 'unmapped' areas, for the reasons discussed above.

Option 3 (Horowhenua-specific guidance) would be available for all residential scenarios, with the option for the practitioner to adopt Option 1 or 2 if preferred. This approach extends the use of the simplified screening criteria to larger residential developments. Therefore, the benefits in terms of upfront savings in time and costs for engineering assessment are extended to a larger number of properties. However, the associated risks relating to adopted foundations being more or less robust than required are also extended to a larger number of properties.

5 HDC preferred approach

Following discussion between HDC and T+T on 16 and 22 March 2022 regarding the options discussed within this report, HDC selected Policy C (refer Section 4.3) as their preferred risk-based approach for liquefaction assessment.

Further guidance regarding a simplified liquefaction screening assessment (Option 3) to assist in Building Consent applications is provided in Appendix A.

As discussed within Sections 4.2 and 4.3, this simplified screening approach results in upfront cost savings by reducing the need for deep ground investigations and specialist geotechnical engineering input. However, this is offset against the potentially reduced accuracy. In some cases the adopted foundation may be more robust than required to meet minimum Building Code requirements (incurring higher up-front construction costs), or in some cases the adopted foundation may be less robust than required (with potential for increased damage if/when/where an earthquake occurs in the future).

6 Future opportunities to reduce uncertainties

The T+T 2023 liquefaction assessment[4] mapped the entire district, and because of limited available geotechnical investigations and groundwater information it was only able to achieve a level of detail of ***Level A (Basic Desktop Assessment)***. This means there is substantial residual uncertainty regarding liquefaction-related risk across the district, which limits the accuracy and applicability of simplified screening criteria.

To help reduce these uncertainties, HDC may wish to consider the following opportunities:

- For the identified future growth areas, targeted ground investigations and groundwater monitoring could be undertaken to help better understand the key uncertainties, enabling a ***Level B (Calibrated Desktop Assessment)***. A potential focus of this work could be to identify areas where liquefaction vulnerability was likely to be no more than ***Medium***, providing greater confidence that a TC2-type foundation could be adopted without the need for additional assessment (simplifying the building consent process for both council and applicants).

7 Document status and limitations

This report is intended to assist parties to comply with their obligations under the Building Act 2004 and the Resource Management Act 1991. It is not mandatory to follow this guidance, but if followed:

- It does not relieve any person of the obligation to consider any matter to which that information relates according to the circumstance of the particular case.
- The consent authority may have regard to the guidance but is not bound to accept the guidance as demonstrating compliance.
- All users should satisfy themselves to the applicability of the content and should not act on the basis of any matter contained in this document without considering, and if necessary, taking appropriate professional advice.

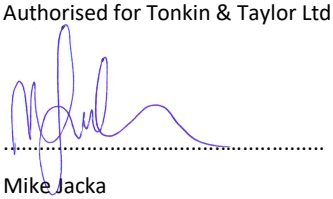
This report has been prepared for the exclusive use of our client Horowhenua District Council, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without prior written agreement. We understand and agree that this report will inform general guidance about liquefaction assessment provided by Horowhenua District Council to consent applicants and their designers, on the basis that any use or reliance on this guidance is at the party's sole risk.

While T+T has taken care in preparing this document, it is only a guide and professional judgement is required for each site. T+T is not liable for any reliance on this guidance. The responsibility for specific engineering design and construction review for land development and building works remains with the designers of the works.

Tonkin & Taylor Ltd

Report prepared by: Elyse Armstrong, Engineering Geologist

Authorised for Tonkin & Taylor Ltd by:



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Mike Jacka

Project Director

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Appendix A: Liquefaction vulnerability guidance for Horowhenua District

Liquefaction vulnerability screening tool / flow diagrams

For each of the broad liquefaction vulnerability categories mapped across Horowhenua District, the attached flow chart provides a framework for liquefaction assessment to enable hazard screening for Building Consent applications for routine individual building projects (primarily residential-style buildings). It is emphasised that these screening criteria have been developed specifically in relation to the local context, so these screening criteria may not be applicable in other locations. Some factors of particular relevance are summarised in Table A.1, to provide an overview of how these considerations have influenced the development of the screening criteria.

Table A.1: Local context most relevant to development of liquefaction screening criteria for Horowhenua District

Local context	How this has influenced the screening criteria
A lack of subsurface geotechnical investigations and groundwater monitoring across the district.	A focus on confirming soil types and groundwater levels at each individual site.
There is a relatively small amount of new building activity in the district, and much of this is small-scale/in-fill and spread out over a large geographical area.	This means that there is a lower density of capital/social investment and lower total exposure to a single event, so a lower level of risk (refer risk matrices in Tables 3.5 to 3.7 of MBIE/MfE 2017 guidance).
Much of the site investigation and building design in the district is currently undertaken by general civil/structural practitioners, following B1/AS1 and NZS3604:2011.	Use the same types of shallow soil testing that have traditionally been used to confirm "good ground", but with enhancements to also allow simplified liquefaction screening. Structure the screening criteria around factors which can reasonably be assessed by general practitioners without specialist geotechnical expertise. Clearly flag the types of situations where specialist geotechnical engineering input is required.
If a specialist geotechnical engineer or deep geotechnical testing is required, these often need to be brought in from elsewhere around the country – so this poses some logistical and cost challenges. However, the district is relatively easily accessed so this is unlikely to add excessive expense for medium to larger sized projects.	It is not unreasonable to expect specialist geotechnical input for medium to larger projects, where the risk profile is greater and the project budget is better able to accommodate costs by sharing across multiple buildings. For smaller projects, more careful thought may be required to strike a pragmatic balance between cost and benefit of specialist geotechnical input. Where specialised geotechnical testing and assessment is undertaken, this should be collated by council and the factual data made available on the NZ Geotechnical Database to help inform future developments in the area.

Table A.1 (continued):

Local context	How this has influenced the screening criteria
Areas mapped as ***Liquefaction Category is Undetermined***	In these areas there is insufficient information available to determine the liquefaction vulnerability. Some areas within this category have a higher potential for liquefaction-induced ground damage due to the lower ground elevations and therefore closer proximity to the groundwater table and/or loose soils identified in shallow investigations. Furthermore, there are paleo channels throughout the region expected, which results in variable ground conditions over relatively short distances. This means unfavourable ground conditions are more likely in lower elevation areas while more favourable ground conditions are possible in higher elevation areas.
The district is within an area of relatively high seismic hazard (e.g., a 500-year design ground acceleration of 0.55g)*.	Where susceptible soils are present, consequential liquefaction-induced ground damage could occur at relatively frequent levels of design shaking (e.g. as low as 25-to-100-year return period). This means it is especially important for site-specific subsoil and groundwater assessment to identify where significant thickness of liquefiable soils are present at shallow depth.
The next time the District Plan is reviewed this will provide an opportunity to manage liquefaction-related risk proactively through land use planning. In the meantime, the recent Building Code change regarding "good ground" means this risk will be managed predominantly through the Building Consent process.	This guidance note focusses on managing liquefaction-related risk for individual building projects through the Building Consent process. For larger-scale developments (e.g. larger than 4 lots as outlined in Table 3.6 of the MBIE/MfE 2017 guidance) it is likely a Resource Consent will first be required, providing an opportunity to manage risk through that process (refer Section 6.7.2 of MBIE/MfE 2017 guidance).

* MBIE Module 1 November 2021 Update has provided a revised calculation for design ground acceleration that has resulted in higher PGAs than quoted in the HDC liquefaction vulnerability assessments[1,2].

Site assessment for simplified liquefaction screening

To assess the screening criteria outlined in the attached flowchart, various techniques may be utilised. Examples of potential site assessment and ground investigation options are discussed below. Other investigations may be required to assess other aspects of the site (e.g., the presence of compressible/expansive soils, uncontrolled fill or slope instability) and the person assessing the site and specifying the foundation solution will need to undertake their own assessment for these factors.

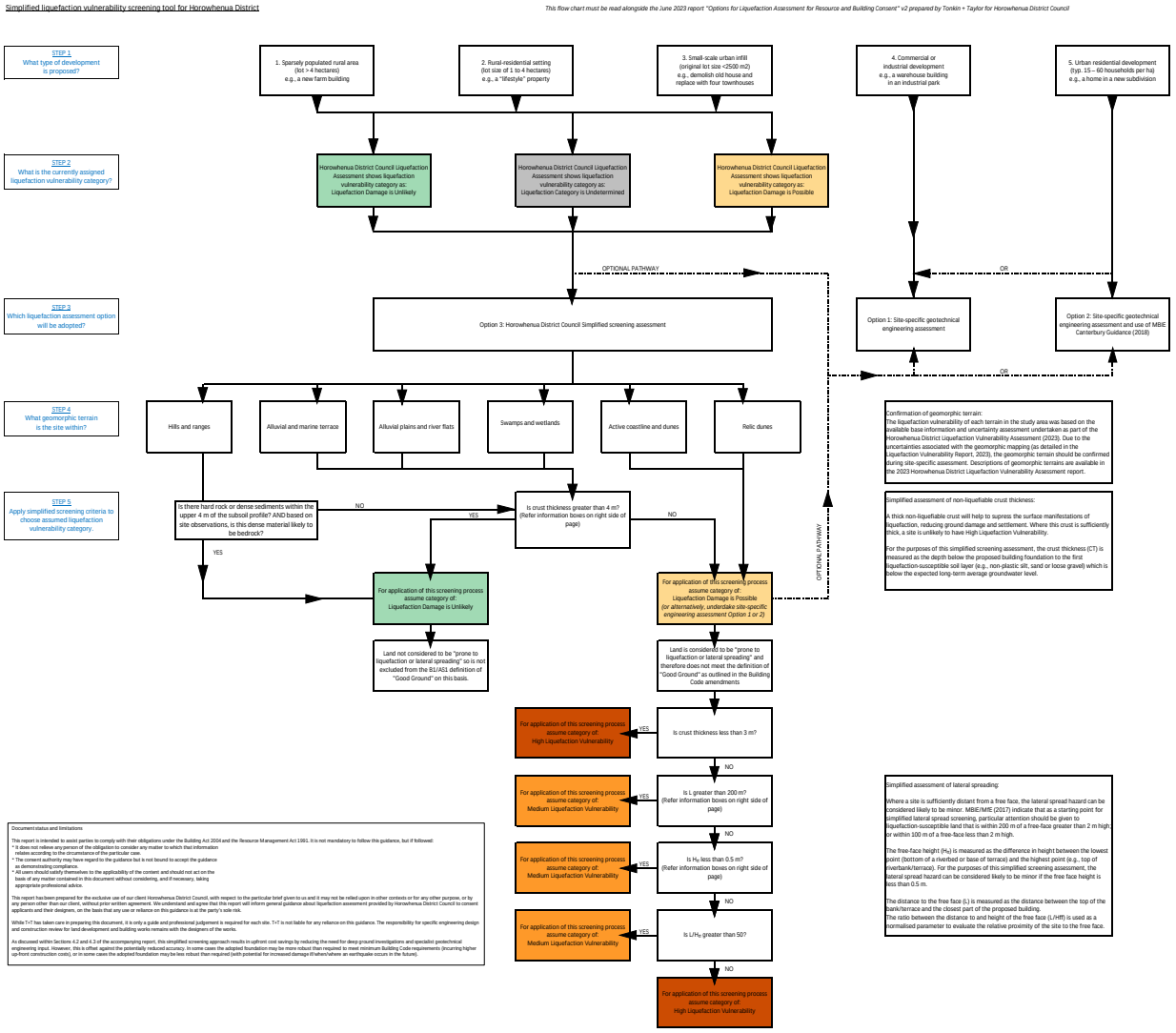
Lateral spread assessment: This could be undertaken based on a desktop study (including air photos, and ground elevation contours/LiDAR) but should be calibrated by a site visit and visual assessment of the site and its surrounds, noting any channels or free faces present in the vicinity of the site.

Groundwater assessment: This assessment may be undertaken using either direct investigation methods (such as hand augers, machine augers or testpit excavation to 3 to 4 m depth), or by comparison with known, nearby sources of groundwater data such as nearby waterbodies with known water levels, or nearby investigations such as boreholes or excavations where groundwater was recorded. Seasonal groundwater fluctuations should be considered.

Soil conditions: The investigation of shallow soil conditions should generally follow the procedures outlined in NZS3604:2011 but it is recommended that where practical, hand augers for the examination of soil materials extend to between 3 and 4 m below ground level. Alternatively, test pits, boreholes or Cone Penetration Tests (CPT) may be used to assess soil conditions. Where sufficient nearby data is available to demonstrate ground conditions, this may also be relied upon, in conjunction with investigations on the site in question. Soils should be logged in accordance with the NZGS field guide for description of soil and rock[8].

We note that very little data exists in the New Zealand Geotechnical Database (NZGD) for the Horowhenua District. Advocating the uploading of geotechnical investigations onto the NZGD as part of the process of evaluating resource and building consent applications would progressively increase the amount of geotechnical data available. This would inform future investigations, allow refinement of existing liquefaction hazard mapping and provide valuable information to support future land-use planning and site assessments.

[8] Field description of soil and rock – field sheet – New Zealand Geotechnical Society (nzgs.org) accessed 29 November 2021


Simplified liquefaction vulnerability screening tool for Horowhenua District
This flow chart must be read alongside the June 2023 report "Options for Liquefaction Assessment for Resource and Building Consent" v2 prepared by Tonkin + Taylor for Horowhenua District Council
STEP 1
What type of development is proposed?
1. Sparsely populated rural area (lot > 4 hectares) e.g., a new farm building
2. Rural-residential setting (lot size of 1 to 4 hectares) e.g., a "lifestyle" property
3. Small-scale urban infill (original lot size <2500 m2) e.g., demolish old house and replace with four townhouses
4. Commercial or industrial development e.g., a warehouse building in an industrial park
5. Urban residential development (typ. 15 – 60 households per ha) e.g., a home in a new subdivision
STEP 2
What is the currently assigned liquefaction vulnerability category?
Horowhenua District Council Liquefaction Assessment shows liquefaction vulnerability category as: Liquefaction Damage is Unlikely
Horowhenua District Council Liquefaction Assessment shows liquefaction vulnerability category as: Liquefaction Category is Undetermined
Horowhenua District Council Liquefaction Assessment shows liquefaction vulnerability category as: Liquefaction Damage is Possible
OPTIONAL PATHWAY
OR
STEP 3
Which liquefaction assessment option will be adopted?
Option 3: Horowhenua District Council Simplified screening assessment
Option 1: Site-specific geotechnical engineering assessment
Option 2: Site-specific geotechnical engineering assessment and use of MBIE Canterbury Guidance (2018)
OR
STEP 4
What geomorphic terrain is the site within?
Hills and ranges
Alluvial and marine terrace
Alluvial plains and river flats
Swamps and wetlands
Active coastline and dunes
Relic dunes
Confirmation of geomorphic terrain:
The liquefaction vulnerability of each terrain in the study area was based on the available base information and uncertainty assessment undertaken as part of the Horowhenua District Liquefaction Vulnerability Assessment (2023). Due to the uncertainties associated with the geomorphic mapping (as detailed in the Liquefaction Vulnerability Report, 2023), the geomorphic terrain should be confirmed during site-specific assessment. Descriptions of geomorphic terrains are available in the 2023 Horowhenua District Liquefaction Vulnerability Assessment report.
STEP 5
Apply simplified screening criteria to choose assumed liquefaction vulnerability category.
Is there hard rock or dense sediments within the upper 4 m of the subsoil profile? AND based on site observations, is this dense material likely to be bedrock?
NO
YES
Is crust thickness greater than 4 m? (Refer information boxes on right side of page)
NO
YES
OPTIONAL PATHWAY
Simplified assessment of non-liquefiable crust thickness:
A thick non-liquefiable crust will help to supress the surface manifestations of liquefaction, reducing ground damage and settlement. Where this crust is sufficiently thick, a site is unlikely to have High Liquefaction Vulnerability.
For the purposes of this simplified screening assessment, the crust thickness (CT) is measured as the depth below the proposed building foundation to the first liquefaction-susceptible soil layer (e.g., non-plastic silt, sand or loose gravel) which is below the expected long-term average groundwater level.
For application of this screening process assume category of: Liquefaction Damage is Unlikely
For application of this screening process assume category of: Liquefaction Damage is Possible (or alternatively, undertake site-specific engineering assessment Option 1 or 2)
Land not considered to be "prone to liquefaction or lateral spreading" so is not excluded from the B1/AS1 definition of "Good Ground" on this basis.
Land is considered to be "prone to liquefaction or lateral spreading" and therefore does not meet the definition of "Good Ground" as outlined in the Building Code amendments
For application of this screening process assume category of: High Liquefaction Vulnerability
Is crust thickness less than 3 m?
YES
NO
For application of this screening process assume category of: Medium Liquefaction Vulnerability
Is L greater than 200 m? (Refer information boxes on right side of page)
YES
NO
For application of this screening process assume category of: Medium Liquefaction Vulnerability
Is H_f less than 0.5 m? (Refer information boxes on right side of page)
YES
NO
For application of this screening process assume category of: Medium Liquefaction Vulnerability
Is L/H_f greater than 50?
YES
NO
For application of this screening process assume category of: High Liquefaction Vulnerability
Simplified assessment of lateral spreading:
Where a site is sufficiently distant from a free face, the lateral spread hazard can be considered likely to be minor. MBIE/MIE (2017) indicate that as a starting point for simplified lateral spread screening, particular attention should be given to liquefaction-susceptible land that is within 200 m of a free-face greater than 2 m high, or within 100 m of a free-face less than 2 m high.
The free-face height (H_f) is measured as the difference in height between the lowest point (bottom of a riverbed or base of terrace) and the highest point (e.g., top of riverbank/terrace). For the purposes of this simplified screening assessment, the lateral spread hazard can be considered likely to be minor if the free face height is less than 0.5 m.
The distance to the free face (L) is measured as the distance between the top of the bank/terrace and the closest part of the proposed building.
The ratio between the distance to and height of the free face (L/H_f) is used as a normalised parameter to evaluate the relative proximity of the site to the free face.
Document status and limitations
This report is intended to assist parties to comply with their obligations under the Building Act 2004 and the Resource Management Act 1991. It is not mandatory to follow this guidance, but if followed:
* It does not relieve any person of the obligation to consider any matter to which that information relates according to the circumstances of the particular case.
* The consent authority may have regard to the guidance but is not bound to accept the guidance as demonstrating compliance.
* All users should satisfy themselves to the applicability of the content and should not act on the basis of any matter contained in this document without considering, and if necessary, taking appropriate professional advice.
This report has been prepared for the exclusive use of our client Horowhenua District Council, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without prior written agreement. We understand and agree that this report will inform general guidance about liquefaction assessment provided by Horowhenua District Council to consent applicants and their designers, on the basis that any use or reliance on this guidance is at the party's sole risk.
While T+T has taken care in preparing this document, it is only a guide and professional judgement is required for each site. T+T is not liable for any reliance on this guidance. The responsibility for specific engineering design and construction review for land development and building works remains with the designers of the works.
As discussed within Sections 4.2 and 4.3 of the accompanying report, this simplified screening approach results in upfront cost savings by reducing the need for deep ground investigations and specialist geotechnical engineering input. However, this is offset against the potentially reduced accuracy. In some cases the adopted foundation may be more robust than required to meet minimum Building Code requirements (incurring higher up-front construction costs), or in some cases the adopted foundation may be less robust than required (with potential for increased damage if/when/where an earthquake occurs in the future).

www.tonkintaylor.co.nz

Simplified liquefaction vulnerability screening tool for Horowhenua District

This flow chart must be read alongside the June 2023 report "Options for Liquefaction Assessment for Resource and Building Consent" v2 prepared by Tonkin + Taylor for Horowhenua District Council

STEP 1
What type of development is proposed?

All residential building consent applications and resource consent applications other than commercial or urban residential scale

Commercial or industrial development e.g., a warehouse building in an industrial park

Resource consents for urban residential - scale development (typ. 15 – 60 households per ha)

OPTIONAL PATHWAY

OR

STEP 2
Which liquefaction assessment option will be adopted?

Option 3: Horowhenua District Council Simplified screening assessment

Option 1: Site-specific geotechnical engineering assessment

Option 2: Site-specific geotechnical engineering assessment and use of MBIE Canterbury Guidance (2018)

OR

STEP 3
What geomorphic terrain is the site within?

Hills and ranges | **Alluvial and marine terrace** | **Alluvial plains and river flats** | **Swamps and wetlands** | **Active coastline and dunes** | **Relic dunes**

Confirmation of geomorphic terrain:
The liquefaction vulnerability of each terrain in the study area was based on the available base information and uncertainty assessment undertaken as part of the Horowhenua District Liquefaction Vulnerability Assessment (2023). Due to the uncertainties associated with the geomorphic mapping (as detailed in the Liquefaction Vulnerability Report, 2023), the geomorphic terrain should be confirmed during site-specific assessment. Descriptions of geomorphic terrains are available in the 2023 Horowhenua District Liquefaction Vulnerability Assessment report.

STEP 4
Apply simplified screening criteria to choose assumed liquefaction vulnerability category.

Is there hard rock or dense sediments within the upper 4 m of the subsoil profile? AND based on site observations, is this dense material likely to be bedrock?

NO

YES

Is crust thickness greater than 4 m? (Refer information boxes on right side of page)

NO

YES

OPTIONAL PATHWAY

Simplified assessment of non-liquefiable crust thickness:

A thick non-liquefiable crust will help to supress the surface manifestations of liquefaction, reducing ground damage and settlement. Where this crust is sufficiently thick, a site is unlikely to have **High Liquefaction Vulnerability.**

For the purposes of this simplified screening assessment, the crust thickness (**CT**) is measured as the depth below the proposed building foundation to the first liquefaction-susceptible soil layer (e.g., non-plastic silt, sand or loose gravel) which is below the expected long-term average groundwater level.

For application of this screening process assume category of:
Liquefaction Damage is Unlikely

Land not considered to be "prone to liquefaction or lateral spreading" so is **not excluded** from the B1/AS1 definition of "Good Ground" on this basis.

For application of this screening process assume category of:
Liquefaction Damage is Possible
(or alternatively, undertake site-specific engineering assessment Option 1 or 2)

Land is considered to be "prone to liquefaction or lateral spreading" and therefore **does not meet** the definition of "Good Ground" as outlined in the Building Code amendments

Simplified assessment of lateral spreading:

Where a site is sufficiently distant from a free face, the lateral spread hazard can be considered likely to be minor. MBIE/MfE (2017) indicate that as a starting point for simplified lateral spread screening, particular attention should be given to liquefaction-susceptible land that is within 200 m of a free-face greater than 2 m high; or within 100 m of a free-face less than 2 m high.

The free-face height (H_{ff}) is measured as the difference in height between the lowest point (bottom of a riverbed or base of terrace) and the highest point (e.g., top of riverbank/terrace). For the purposes of this simplified screening assessment, the lateral spread hazard can be considered likely to be minor if the free face height is less than 0.5 m.

The distance to the free face (**L**) is measured as the distance between the top of the bank/terrace and the closest part of the proposed building.
The ratio between the distance to and height of the free face (**L/Hff**) is used as a normalised parameter to evaluate the relative proximity of the site to the free face.

Is crust thickness less than 3 m?

YES → For application of this screening process assume category of: **High Liquefaction Vulnerability**

NO

Is L greater than 200 m? (Refer information boxes on right side of page)

YES → For application of this screening process assume category of: **Medium Liquefaction Vulnerability**

NO

Is H_{ff} less than 0.5 m? (Refer information boxes on right side of page)

YES → For application of this screening process assume category of: **Medium Liquefaction Vulnerability**

NO

Is L/H_{ff} greater than 50?

YES → For application of this screening process assume category of: **Medium Liquefaction Vulnerability**

NO

For application of this screening process assume category of:
High Liquefaction Vulnerability

Key:

- Liquefaction Damage is Possible - further categorisation required to detemine foundation design
- Liquefaction Damage is Unlikely - Foundation design in accordance with B1/AS1 and NZS3604:2011
- Liquefaction Damage is Undeterined - further categorisation required to detemine foundation design
- Liquefaction Damage is Unlikely or Undetermined - further categorisation required to detemine foundation design
- Medium liquefaction vulnerability = Adopt TC2-type foundations
- High liquefaction vulnerability = Adopt TC3-type foundations

File No.: 24/125

8.1 Interim Organisation Performance Report

1. Purpose

1.1 To present the Interim Organisation Performance Report for November 2023.

This report directly aligns with one of Council's top 10 priorities *"Get the basics right and support the customer focussed delivery of core services".*

2. Recommendation

2.1 That Report 24/125 Interim Organisation Performance Report be received.

2.2 That this matter or decision be recognised as not significant in terms of s76 of the Local Government Act 2002.

2.3 That having considered all matters raised in the Interim Organisation Performance Report 20 March 2024 the report be noted.

3. Background / Previous Council Decisions

3.1 This report is provided for information purposes only and seeks to update Council on a number of key projects and priorities for Horowhenua District Council. This report seeks to provide a snapshot of progress since the previous meeting. Officers are happy to receive feedback on future improvements to this report. The full Organisation Performance Report will be presented at the next Council meeting in May 2024.

Confirmation of statutory compliance

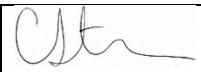
In accordance with section 76 of the Local Government Act 2002, this report is approved as:

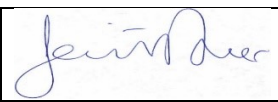
a. containing sufficient information about the options and their advantages and disadvantages, bearing in mind the significance of the decisions; and,

b. is based on adequate knowledge about, and adequate consideration of, the views and preferences of affected and interested parties bearing in mind the significance of the decision.

4. Attachments

No.	Title	Page
A⇩	FINAL 20 March Interim OPR	142

Author(s)	Charlie Strivens **Senior Advisor - Organisation Performance**	

Approved by	Jacinta Straker **Group Manager Organisation Performance**	
	Monique Davidson **Chief Executive Officer**	

Horowhenua
DISTRICT COUNCIL

Horowhenua District Council Organisation Interim Performance Report

20 March 2024

Mō tēnei pūrongo
About this report

We're on a journey on being transparent on how our Organisation is performing with Elected Members and our Community, this report is a step in that journey. The report is a great opportunity to share our stories, our successes, our concerns and where we need to improve. This report is just a snapshot of the great work we do across our community.

This report will be prepared for every second full Council meeting, each time you will see refinements, improvements, additions and deletions. We will always be working towards keeping Elected Members and our community fully informed and up to date.

You will notice the Organisation Report has been completely revamped, mostly to align with the Council Plan on a Page. We have also changed our Activity Updates to Group Updates which include Activity Updates. This is to allow work completed within a Group but not in an activity to be reported on.

The reporting period for the Top 10 Priorities Updates and Capital Projects Lifecycle and Confidence Report

17 January 2024 – 28 February 2024

The reporting period for the finanical and performance measure reporting is .

Year to date January 2024

Top 10 Priorities

This section provides updates on each of the 10 priorities identified in the Council Plan on a Page.

Dashboard

This dashboard contains key summarised financial and performance measure information. This will be provided in the Interim and Full OPR.

Capital Projects Lifecycle and Confidence Report

This report provides an overview of some of our capital projects, where they sit in the lifecycle of the projects and our level of confidence in the delivery of the project at this point in time

Ngā Ihirangi
Contents

o

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Organisation Performance Dashboard

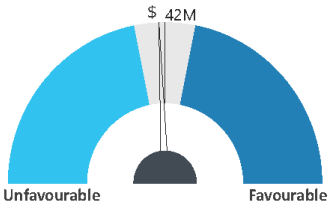
Organisation Performance Dashboard

Organisational Performance

YTD Ending 31 January 2024

This dashboard shows a snapshot of how we are tracking against our performance measure targets, our financial performance overall and activity financial information.

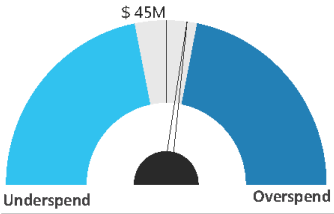
Financial Performance



INCOME

YTD Actual:	$41.97M
YTD Budget:	$42.39M
Full Year Forecast:	$76.40M
Full Year Budget:	$72.69M
Variance:	-$0.43M, (1.0%)

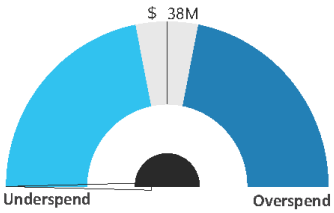
on target



OPERATING EXPENDITURE

YTD Actual:	$46.39M
YTD Budget:	$44.90M
Full Year Forecast:	$83.38M
Full Year Budget:	$77.25M
Variance:	-$1.49M, (3.3%)

on target



CAPITAL EXPENDITURE

YTD Actual:	$18.62M
YTD Budget:	$38.18M
Target Full Year Budget:	$40.00M
Full Year Budget:	$61.70M
Variance:	$19.56M, 51.2%

below target

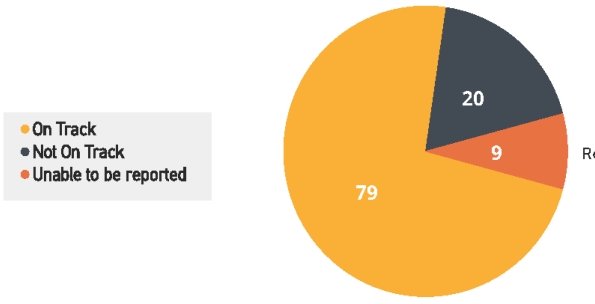
below target	< -5%
on target	>= -5% to <= +5%
above target	> +5%

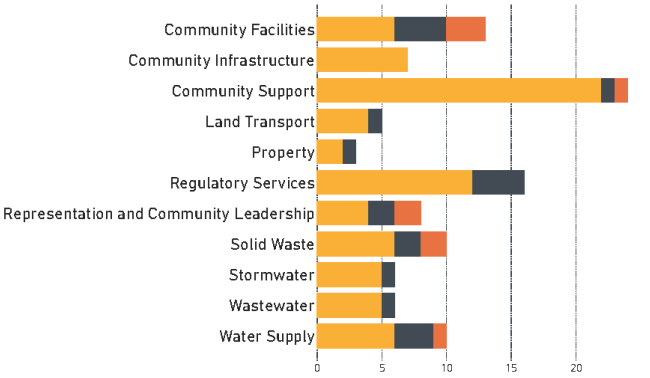
Council's underlying surplus (this excludes rates, capital related income, depreciation and interest) as at 31 January 2024 is $1.9m higher than budgeted, forecasting to be a $0.8m underlying funding surplus at the end of the financial year. In the previous report we were forecasting being close to the $1m underlying savings target. Officers are working on identifying a further $180k savings and aim to provide an updated forecast in the next full report.

Council has completed $18.6m (46.5%) as at the end of January 2024 towards the revised target capital programme of $40m set following Council direction as part of the long-term planning process. The level of capital grants is also lower than budgeted year-to-date due to the timing of the capital programme in Roading, Property, and Three Waters activities. We forecast to fully spend the targeted capital budget of $40m.

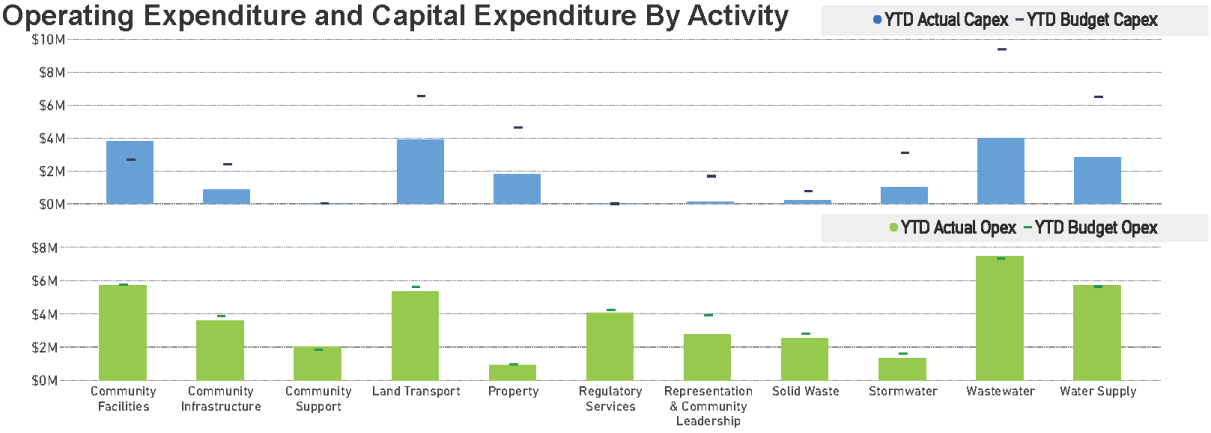
Our net debt (total borrowings less term deposits, borrower notes and cash) at 31 January 2024 was $158 million, equating to 222% of operating income - below the limit of 250% set out in the Long-term plan amendment 2023/24. This ratio is currently higher than the 196% budgeted and 204% forecasted due to the timing of capital grant payments and lower than expected asset sales.

Overall Performance Measures





Operating Expenditure and Capital Expenditure By Activity



Horowhenua
DISTRICT COUNCIL

Ngā Whāinga Matua 10

Plan on a Page – Top 10 Priorities

Ngā Whainga Matua
Top 10 priorities

Enabling affordable housing that meets the needs of a growing population through the implementation of the Housing Action Plan

Work continues in the affordable housing space with the recent update of the Housing Action Plan. The revocation of some underutilised council land is progressing, enabling these properties to be redeployed to the market for affordable housing opportunities in the near term.

An increase in activity and delivery of housing opportunities is visible through a growing number of proposed Kainga Ora developments, and the private sector has also recently completed, in partnership with MHud, 26 new 1,2 & 3 bedroom units on Hinemoa Street.

The great news is that that the pipeline of forward work is filling up and you can expect to see new developments becoming more visible to the community throughout 2024.

Achieve the best outcome for Horowhenua in the face of Three Waters Reform Transition

The repeal of the previous Government's water services legislation is now complete, the Government & Coalition has signaled their intention to implement Local Water Done Well (LWDW) through two further pieces of legislation.

- By 28 March 2024, the water services reform National Transition Unit (NTU) and iwi Māori directorate will be disestablished.
- Effective 29 March 2024, the Department of Internal Affairs (DIA) Local Government Partnership Directors will become the primary interface with councils for LWDW.
- Local Government Partnership Directors have a range of responsibilities and are focused on providing support to council chief executives and tier-2 council executives.
- All council information that has been collated by the NTU will be released in March 2024 to support future water services delivery plans.

Officers will continue to work through information as it becomes available from Te Tari Taiwhenua (DIA).

Deliver on the Levin Town Centre Transformation Strategy

Work continues to progress the property acquisition strategy. Ongoing work is being undertaken to identify further earthquake prone buildings and strategic buildings of interest.

The recommendation for an independent member on the Steering Group was fully endorsed by Steering Group members and we anticipate the new independent member being able to attend the next monthly meeting scheduled for 8 March 2024.

The process to recruit representatives for the Reference Group is underway with engagement and conversations had with iwi and youth representation. The nominations process for Reference Group Members is on track to be advertised to the community for applications later in March.

Discussions have also taken place with HKRFU around the Levin Domain and awaiting a response from Age Concern Horowhenua.

The team is currently working through community feedback from the Levin War Memorial Hall + Village Green + Skatepark Expressions of Interest process that closed on 29 February 2024.

The Levin Town Centre Transformation now has its own designated logo that was created by Richard Pearse, Senior Graphics Designer and approved by the Steering Group and Crs Tamihana and Hori Te Pa. This logo is now being used on all communication and correspondence relating to the Levin Town Centre programme of work.

David McCorkindale presented an update on the Levin Town Centre Strategy to the wider Levin Business/Retailers Group and the team are working through that feedback also. Other presentations at this session were from Elevate Otaki on the implications of PP2O to businesses within Otaki, and an update from Waka Kotahi NZTA on O2NL. Over 40 people interested in the Town Centre were present to hear these presentations.

Positive feedback has been received via social media posts and the Youth Voice campaign on the We are Horowhenua placemaking portraits currently displayed within the town centre.

Council committed to undertake a Rates Review after the Annual Plan 2022/2023 to consider how rates and costs are shared across the district

A rates review was completed as part of the Long Term Plan Amendment. As a result, the Rates Remission policy review was completed during 2023 and reported to Council in December. This policy is included as one of the consultation topics in the consultation document that is currently being developed for the Long Term Plan 2024-2044. The main reason for this is to seek community feedback on the level of rates remissions budgeted for.

Provide advocacy and leadership to Ōtaki to North Levin expressway project

October 2023 saw the key milestone for the O2NL project achieved with the Environment Court hearing held in Levin in the Council Chamber. The hearing ran very smoothly and required less hearing time than had been initially scheduled with only four days required. A decision from the Environment Court is anticipated in March/April 2024.

In the meantime, other phases of the NZ Transport Agency Waka Kotahi lead project such as procurement for the Alliances to deliver the construction and of purchasing of properties are just some of the workstreams that continue to advance the project. The two preferred alliance partners to construct the new road were confirmed 18 December 2023. These partners include Downer, McConnell Dowell, Beca and Tonkin & Taylor as one Alliance and Fulton Hogan, WSP and Aurecon make up the second Alliance.

Council's role as an advocate continues to be mainly in space of the Legacy Outcomes Investment Framework. This remains an ongoing piece of work with the Council looking to ensure that positive legacy outcomes for the community. A workshop with elected members and the New Zealand Transport Agency Waka Kotahi was held late January 2024 to advance the legacy outcomes. Officers are currently working to finalise an integrated Legacy Outcome Investment Framework.

The general election result is not perceived to be a threat to the project going ahead given that the National Party campaigned on getting the road built.

Get the basics right and support the customer focused delivery of core services

Information Services

In the reporting period the Digital Workplace Programme has continued to make good progress. Digital Workspaces team engagement is underway with the Organisation Performance Team and the Executive Office. Development of the governance operating model for our Digital environment is also progressing well.

Our Data programme has starting to ramp up with planning undertaken for the development of the Civica Data Warehouse and, prioritisation of business reporting requirements to feed into our new Information Product Register.

The review of our current ICT environment is well underway with recommendations for improvements being made along the way. This review is due to be completed by end of March.

Energy

In the reporting period the x4 new contracts for Council electricity and gas connections were executed, and the switching process commenced ready for the contract effective date 01 February 2024. The first invoice for each connection point will be checked (x135 Non Time of Use accounts, x22 Time of Use accounts and x16 Gas accounts) in detail to ensure correct pricing is applied as per the new contract rates.

January energy consumption checks against 23/24 projections showed:

- Electricity Time of Use tracking 10% less than projected
- Electricity Non Time of Use tracking 12% less than projected
- Gas Time of Use tracking 17% higher than projected
- Gas Non Time of Use tracking 29% less than projected

Finance

Direct debit form refresh – our direct debit forms have been in use for a long time. We recently reviewed the look of the forms and considered the feedback we have received from our community. We are moving towards online direct debit form and this is being drafted with the aim to be rolled out in the next financial year to streamline the process. Hard copy forms are still available.

Customer Excellence Action Plan

Staff contributions to Kbase content continued to make good progress during this reporting period, with input being provided covering most areas of the organisation. Customer Services staff are working their way through the information translating staff contributions into FAQs for easy reading and access.

Organisation wide CRM training sessions kicked off during this reporting period with x4 sessions open to all staff being delivered in March. CRM training covers expectations on staff around response times to customers as well as how to use the corporate CRM operating system to record actions and comments.

Review of the Customer Feedback and Complaints Policy is underway, with a full review of the policy content being carried out to ensure it covers the needs of the Building Consent Authority's complaints process quality system requirements as well.

Deliver the capital infrastructure programme, and achieve an increase in the percentage of completed works

Programme of works on track, following adjustments due to budget limitations. Elected Members briefed on 21 February. Budget capped at $40M for 2023/24 Financial Year, $40M for 2024/25 and $47M for 2025/26. Further detailed work to be undertaken ahead of finalising 20-year LTP capital programme.

Reset our engagement and partnership approach, and work more with and for the community

One of the key pieces of engagement that has occurred over this reporting period is the community consultation in respect to Waikawa Beach Vehicle access. Consultation closed 20 February and there were over 400 submissions received.

Horowhenua District Council's initiative to seek feedback and explore options for vehicle access at Waikawa Beach directly aligns with one of its top ten priorities: "Reset our engagement and partnership approach, and work more with and for the community."

By actively involving the community in the decision-making process through consultations and feedback mechanisms, the council demonstrates its commitment to engaging with and listening to the concerns and preferences of the local residents. This approach ensures that the community has had input to the final decision of council and that the perspectives and needs of those affected have been heard.

Voice of the customer

Resident satisfaction surveys began being sent via email from 13 February, with infrastructure first, followed a week later by leadership and engagement and finally places and spaces. Surveys are also being distributed by social media, the community connection and we still have some signs up from our previous parks and property pilot. A total of 10 surveys are now live, closing 11 March 2024 to allow for analysis and reporting. Survey completion is being incentivised by 2 x $250 vouchers. Emails are being distributed to a base of c.8,500 ratepayers, with interim survey responses for the majority of surveys showing statistical significance already.

LTP engagement

Elected Members were presented with a consultation and engagement plan that looks to utilise traditional media channels, such as online, print, radio and social media. Leveraging the insights from the last Long Term Plan Amendment, we'll again engage with the Citizen's Panels and target those audiences harder to reach, such as rangitahi, Māori and Pasifika, with sessions that are tailored towards the audience. A brand campaign will go live prior to the LTP, with messaging that shows the value exchange between community and council and thanking the community for what their rates actually enable. Elected Members will lead the LTP conversation and engage with the community via several online and in-person events, including FB lives, interactive workshops and Cuppa with a Councillor sessions. The LTP consultation period opens 15 March and closes 15 April.

Enable the rebuilding of the Horowhenua District Council organisation, with a focus to empower a culture of excellence, service and continuous improvement

Our journey to build a high performing organisation continues and we are still heading in the right direction. Staff turnover continues to decrease with overall turnover down from 39% to 36% and excluding internal moves from 23% to 22%

All staff excluding a select few in Aquatics have now completed a declaration of any conflicts of Interest. Work is now underway to confirm the accuracy of the information declared and ensure management plans are in place where required.

All staff pulse survey focusing on how we build a culture of high performance and how we manage poor performance has been prepared and will be sent 6 March and closes 15 March

During the reporting period, work commenced on a new Leave Policy and review of the Individual Employment Agreement (IEA).

Sick leave taken during February remains stable compared to January at 80 days.

Make a decision on the Future of the Levin Landfill and follow through on the review of our WMMP

A Waste Assessment and draft Waste Management Minimisation Plan (WMMP) has been prepared and finalised during the reporting period in preparation for consultation on the Long Term Plan 2024 - 2044 . Consultation topics include a targeted rate for landfill aftercare and the level of service and funding mechanism for kerbside recycling.

Horowhenua
DISTRICT COUNCIL

Tiro Whānui
Hinonga Matua

Capital Projects Overview

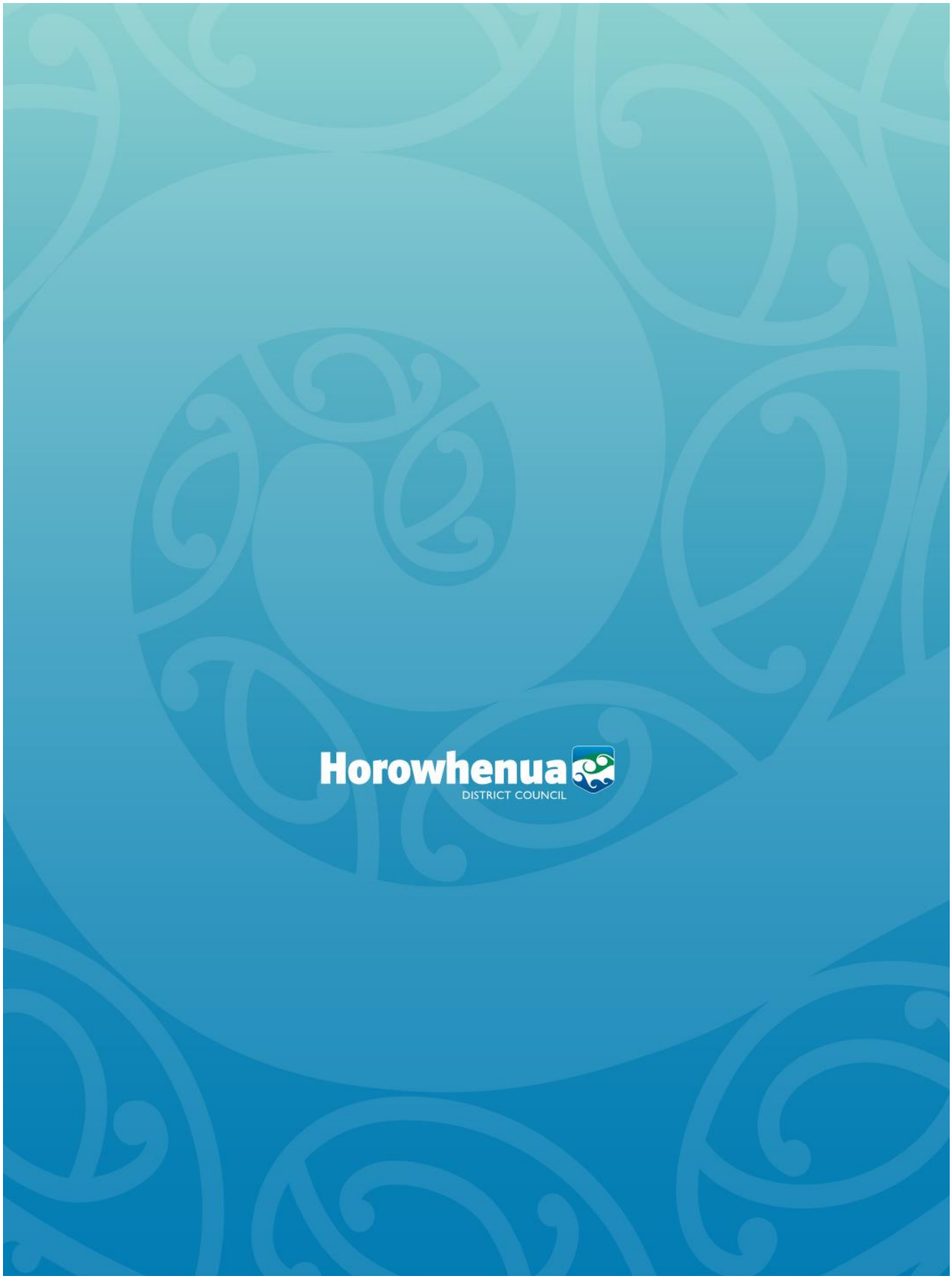
Capital Projects Lifecycle and Confidence Report

	Successful delivery of the project against its project parameters appears on track as planned, and there are no major outstanding issues or risks that appear to threaten delivery.
	Successful delivery of the project against its project parameters appears feasible but significant issues already exist, requiring management attention. These appear resolvable at this stage and, if addressed promptly, should not present a cost/schedule overrun or loss/delay of benefits.
	Successful delivery of the project against its project parameters appears to be unachievable. There are major issues with schedule, budget, resource, quality and/or benefits delivery, which at this stage does not appear to be solvable. The project may need rescoping and/or its overall viability reassessed.

Key ⊖a move to the right ⊖a move to the left * If changed colour # project added since last report

Project Lifecycle	Development	Consent	Plan and Procure	Deliver - 22/23 FY	Deliver - ongoing	Close and Evaluate
	Scope and approvals		**Implementation planning**	**Implementation**		**Monitor benefits**
	Foxton East Drainage Scheme	Foxton Beach SW planning and consent	Foxton Water Renewal 23/24	Minor Road Improvements	Foxton WWTP	Gladstone Road Realignment
	Lake Horowhenua water quality improvements and Queen St SW consent	Tokomaru WW disposal	Levin WWTP renewals	Footpath Renewals	Levin WW Renewals - Kings Drive	Levin Landfill - Old dump capping – 100% Completed
	Levin Pot - Strategic upgrade	Poads Rd Reservoir	Foxton Beach Water renewal	Stormwater new including Ramona Ave, Waitarere Beach	Foxton Beach WWTP	Public toilet – Major renewals
	Shannon WWTP		SH57/Tararua Road Roundabout	Waitarere WWTP	Old Dump remedial works Leachate investigation	Sealed Road Resurfacing annual programme
	Tokomaru WWTP		Foxton WW Renewals	Sealed Pavement rehabs	Pot WW discharge development and renewals	Donnelly Park Netball Court resurfacing, lighting and fencing

	Foxton Beach WTP	Foxton Water renewal	Cycle Facilities	Levin New Landfill - Final capping - Jan 29	Tara-Ika Tararua Road Stage 1 & 2 WW
	Waikawa Beach Access		Tara-Ika - Queen St Stg.1 SW	Shannon - Mangahao Water Renewal - Stg1	Tara-Ika Trunk Watermain (Tararua)
	Levin WTP Renewal		Road Improvements	North East Levin SW - SW Trunk and Coley Pond works	⊖Shannon Water Renewal - Stafford
	Shannon WTP renewal		Weararoa/York St Wastewater Upgrade	Levin NE WW Renewals	Foxton Pools
	Foxton Beach WTP renewal		⊖Tara-Ika - Tararua Road Wastewater - Stage 3		
	Tokomaru WTP renewal		Levin Water Supply Flurodation		
	Levin Wastewater Treatment Plant – Inlet pipe Upgrade				
	Levin WWTP Master Plan				
	Levin WTP Master Plan				
	Horowhenua Transport Investment PBC				
	Okarito SW connection				
	Macarthur Wastewater and Water				


Horowhenua
DISTRICT COUNCIL

8.2 Long Term Plan 2021-2041 Monitoring Report March 2024

File No.: 24/24

1. Purpose

1.1 The purpose of this report is to present to Council the ongoing monitoring report, which reflects the progress of those actions and recommendations from the Long Term Plan 2021-2041 and Long Term Plan 2021-2041 Amendment deliberations.

This report directly aligns with one of Council's top 10 priorities "Get the basics right and support the customer focussed delivery of core services".

2. Recommendation

2.1 That Report 24/24 Long Term Plan 2021-2041 Monitoring Report March 2024 be received.

2.2 That this matter or decision be recognised as not significant in terms of s76 of the Local Government Act 2002.

3. Background/Previous Council Decisions

3.1 During deliberations for the Long Term Plan 2021-2041 and its amendment, Council gave direction on a number of actions and recommendations, which are recorded in the attached monitoring report.

4. Issues for Consideration

4.1 It is intended that this monitoring report be presented to Council on a quarterly basis.

Attachments

No.	Title	Page
A⇩	LTP 2021-2041 Monitoring Report - March 2024	159

Confirmation of statutory compliance

In accordance with section 76 of the Local Government Act 2002, this report is approved as:

a. containing sufficient information about the options and their benefits and costs, bearing in mind the significance of the decisions; and,
b. is based on adequate knowledge about, and adequate consideration of, the views and preferences of affected and interested parties bearing in mind the significance of the decision.

Signatories

Author(s)	Alice Petersen **Business Support Officer - Democracy**	

Approved by	Monique Davidson **Chief Executive Officer**	

MONITORING REPORT – Long Term Plan 2021/2041 – March 2024							
							Completed
							In Progress
							Transfer
							Off Track
Item Description	**Topic/ Reference**	**Resolved/Actions**	**Officer**	**Action by Date**	**Status**	**Officer Update**	
Three Waters	1	Council Officers will provide an update on the progress of the Levin stormwater discharge resource consent application on its website by Sept 2022.	C Hiddleston	On-going		The team will formulate an update for the webpage in consultation with our Iwi partners and communication team. HDC and our consultant are still progressing with iwi engagement, implementing an improvement strategy and assessing the environmental effects. A programme is being updated.	
	2	Council will provide an update on the Foxton Beach stormwater discharge water quality monitoring, and the resource consent application progress, on Council's website by Sept 2022.	C Hiddleston	On-going		Work is still progressing with the consenting of this project. The team are currently working on the technical assessments to inform the S92, a draft response has been prepared with further iwi engagement required.	
	9	That Council continue working collaboratively with Horizons to deliver the improvements to the Foxton East Drainage Scheme to ensure that best outcome is achieved for the community.	C Hiddleston	On-going		HRC is currently working with GHD looking at the options now availble that would be best for HRC, HDC and the community, now that Union Street overflow is not financially viable. Work is progressing in the Kings Canal with sheet pilling and the upstream attenuation. A partial refund of previous contribution from HDC has been indicated.	
	11	That Council continue promoting Enviroschools and general water conservation education.	C Hiddleston	On-going		This is an ongoing education programme. Further work required to implement future projects for water conservation, promotion of the 3P's in	

As at 12 March 2024 D22/151299

MONITORING REPORT – Long Term Plan 2021/2041 – March 2024						
						Completed
						In Progress
						Transfer
						Off Track
Item Description	Topic/ Reference	Resolved/Actions	Officer	Action by Date	Status	Officer Update
						wastewater and planting around key wastewater projects.
Solid	8	That Council continue with the feasibility study for the diversion of green waste and food waste from landfills.	T Taukiri	On-going		This workstream has been picked up as part of the WMMP strategic direction and work program.
Land Transport	5	That Officers continue to develop walking and cycling forward works programmes.	J Wallace	Jun 2021		FWP for 23/24 has been developed and is on track for delivery
		That Officers develop a 'Walking and Cycling Strategy', with input from key stakeholder groups.	J Wallace	Jun 2021		Although June 2021 target has not been met, the development of a Walking & Cycling Implementation Plan is being developed alongside the Horowhenua Transport Improvements Programme Business Case
		That Officers will investigate whether a similar education programme to 'bikes in schools' could be made available for our local schools.	J Wallace	Jun 2021		Central Government. Has cancelled the transport choices programme, in December 2023, no new funding source has been identified.
	8	That officers continue to advocate on behalf of the district for the construction of Ō2NL.	D McCorkindale	On-going		The Environment Court Notice of Requirement Hearing was held in the Council Chambers on 24 October 2023 and ran for four days across a two-week period. Council's legal and technical experts provided their evidence to the Environment Court in relation to the

As at 12 March 2024 D23/26575

MONITORING REPORT – Long Term Plan 2021/2041 – March 2024							
							Completed
							In Progress
							Transfer
							Off Track
Item Description	**Topic/ Reference**	**Resolved/Actions**	**Officer**	**Action by Date**	**Status**	**Officer Update**	
						Waka Kotahi application. During the hearing the Court expressed their level of comfort for approving the project and explained their focus would be on the conditions of approval. The hearing has concluded and now all parties eagerly await the decision from the Environment Court. It is anticipated this decision could be issued in March 2024. Officers continue to work with Waka Kotahi at various levels of the project.		

As at 12 March 2024

D23/26575

MONITORING REPORT – Long Term Plan 2021/2041 – March 2024							
							Completed
							In Progress
							Transfer
							Off Track
Item Description	**Topic/ Reference**	**Resolved/Actions**	**Officer**	**Action by Date**	**Status**	**Officer Update**	
	9	That officers continue to advocate Waka Kotahi for the investigation and delivery of appropriate safety interventions for the Manakau section of the existing State Highway 1.	D McCorkindale	On-going		Ōtaki to Ohau safety improvement work is underway, with the first phase of work between Ōtaki and Manakau. Three turnaround bays and stretches of median and side barriers are currently being installed between Ōtaki and Manakau. All three turnaround facilities have started construction with the southern turnaround and Gleeson's Road turnaround being complete. Sections of pavement widening are complete; this activity is ongoing. Sections of side barrier are complete; this activity is ongoing. Sections of median barrier are complete. This is expected to be complete by end of April 2024. These safety improvements are designed to transition drivers safely from the dual-lane, median separated highways from Wellington to north of Ōtaki, to the single-lane State Highway 1.	

As at 12 March 2024

D23/26575

MONITORING REPORT – Long Term Plan 2021/2041 – March 2024							Completed In Progress Transfer Off Track
Item Description	Topic/ Reference	Resolved/Actions	Officer	Action by Date	Status	Officer Update	
	9	Ō2NL Revocation With the desire expressed for Elected Members to be more involved with this, it was stressed that this was part of the Horowhenua Integrated Transport Strategy and Council was doing everything it could in relation to Ō2NL.	D McCorkindale	On-going		Waka Kotahi have confirmed that the revocation process is funded separately to the O2NL project. The funding will become available July 2024 which is when Council can expect to revocation discussions with Council to commence. Officers and Elected members will commence planning for revocation in 2024 getting clear on what Council would like to see delivered through revocation associated with O2NL. One of the early pieces of work to prepare will be understanding the future form and function of Oxford Street so this can begin to be factored into the Levin Town Centre transformation plans. Revocation was identified within the Legacy Outcome prepared work by Council. Waka Kotahi and Council held a workshop 31 January 2024 to progress the Legacy Outcomes work. This work continues to be advanced towards a single integrated framework.	
	20	Council to continue to lobby Central Government in relation to the River Loop as it was not a	M Davidson	On-going		Engagement on this continues	

As at 12 March 2024 D23/26575

MONITORING REPORT – Long Term Plan 2021/2041 – March 2024							Completed In Progress Transfer Off Track
Item Description	**Topic/ Reference**	**Resolved/Actions**	**Officer**	**Action by Date**	**Status**	**Officer Update**	
		Council decision initially that gave rise to this issue.					
		Naming of Reserves *THAT the Horowhenua District Council supports officers to discuss with local iwi, a potential Te Reo name for the River Loop Reserve, with a view to undertaking wider consultation with the community concerning the proposed name.*	S Hester	Jan 2023		An initial meeting has been held with Council's Te Tūmatakahuki Navigator and Officers are currently awaiting an invite to discuss the matter with Hapu. Officers are working through this with Iwi, likely on a previous suggestion provided, which was the Waka name (from 'the landing place of Ihakara's Waka')	
	22	Officers from the Parks and Property and Roading Teams will continue to investigate the opportunity to install a shared pathway connecting Queen Street shared pathway and Mako Mako Road in the 2021/2022 Financial Year.	J Wallace	Jun 2024		This project will be investigated as part of the Walking & Cycling Strategy, and Implementation plan. Council officers have also extended an offer to assist community members in developing a LTP submission for the project.	
	1	Foxton Courthouse *THAT the Horowhenua District Council does not support providing funding to strengthen the Foxton Courthouse Museum for the purpose of establishing a Foxton Heritage Centre.*	S. Hester	Jun 2023		Council has been successful in gaining funding to the value of $80,000 from the Three Waters Better Off Funding. Consultants Miyamoto have signed a contract for this Concept Development Plan for the Foxton Courthouse Museum, and investigative works have commenced on site, with testing and analysis of the building structure, as well as geotechnical testing.	

As at 12 March 2024 D23/26575

MONITORING REPORT – Long Term Plan 2021/2041 – March 2024							Completed In Progress Transfer Off Track
Item Description	Topic/ Reference	Resolved/Actions	Officer	Action by Date	Status	Officer Update	
						A draft report has been received from consultants Miyamoto, putting forward a concept plan for the upgrade which would deliver a seismic level of 80% of NBS. The next steps are for consultation documentation to be compiled by Officers, and views sought on the proposal from our iwi Partners, the Foxton Community Board, and potentially the public. All this will inform next steps: submission by the Foxton Historical Society (FHS) to the LTP (seeking funding for the physical upgrade), and in parallel – HDC Officers and the FHS submitting to external funders to try and secure independent funding.	
	2	That Council officers continue to progress work to identify and protect Cultural Sites as part of the District Plan activity and that this be done in partnership with Iwi.	C Dick	On-going		Officers have been working with Muaūpoko to commission cultural impact assessments for the urban growth areas identified by Council. Reports are expected after April. These reports would identify sites of cultural significance and protection through a plan change could then be considered.	

As at 12 March 2024 D23/26575

MONITORING REPORT – Long Term Plan 2021/2041 – March 2024							
							Completed
							In Progress
							Transfer
							Off Track
Item Description	**Topic/ Reference**	**Resolved/Actions**	**Officer**	**Action by Date**	**Status**	**Officer Update**	
Property	17	That the group reviewing the Foxton Beach Freeholding Account Strategy and Policy considers the points relevant to the freehold account from the submission of the Foxton Beach Progressive Association to the LTP 2021-2041.	A Huria	On-going		Te Awahou Foxton Community meet and endorsed the proposed process for the review which will be considered by Council at their meeting on 20 March 2024.	
	31	Officers to contact Muaūpoko iwi representatives in regard to the Muaūpoko Report	M Davidson	Completed		Monique has discussed this with Muaūpoko Tribal Authority.	
	CO/2023/110/ LTP	That Council requests that Officers include the Ohau Shared Path proposal in Council's Cycling Facilities funding application to the 2024/2027 National Land Transport Programme. That Council requests that Officers investigate options to improve pedestrian and cyclist connectivity under the Ohau rail over bridge. That Council requests that officers continue to work with Ms Kilsby-Halliday to undertake engagement with the Ohau community. This engagement should focus on understanding their perspective, gauging the level of support for the proposed shared pathway, and exploring opportunities for community input in the pathway's development That Council requests, pending a better understanding of the project's feasibility, and level of community support, that the	J Wallace	31/06/2024		This project is currently under construction, planned to be complete in late February. Officers continue to engage with the Long Term Plan submitters and other community stakeholders on the project.	

As at 12 March 2024 D23/26575

MONITORING REPORT – Long Term Plan 2021/2041 – March 2024						
						Completed
						In Progress
						Transfer
						Off Track
Item Description	**Topic/ Reference**	**Resolved/Actions**	**Officer**	**Action by Date**	**Status**	**Officer Update**
		development of the shared pathway is included within the programme of Cycling Facilities Budget for consideration as part of the 2024 Long Term Plan (LTP).				
	CO/2023/111/ LTP	That Council requests that Officers investigate options for providing a safe cycling connection between Ōhau and Levin and present a report to Council for consideration. That Council writes to submitter #204 Jason White thanking him for his submission, acknowledging that we support the idea in principle but suggest he take it to the controlling authority "Waka Kotahi" with the understanding it would be better suited for the Revocation process.	J Wallace	30/06/2024		Work is yet to commence on this item and will be considered as part of Council's input into Revocation planning.
	CO/2023/112/ LTP	That Council requests that Officers in consultation with community develop a comprehensive and inclusive development plan for Target Reserve within the next financial year given the diverse range of recreational demands on this site. This plan should consider various recreational activities, including walking, mountain biking, horse riding, and other existing recreational groups such as Horowhenua Paintballing and the Levin Pistol Club, notwithstanding discussions will continue with	B Harvey	31/06/2024		Officers have begun planning for the Target Reserve Development Plan. Work will generally be completed in-house (by staff), with a support from a consultant acting in an advisory capacity where specific design criterion may be required (drawing plans, developing specifications). The Manawatū Mountain Biking Club (MMBC) have supplied Officers with a

MONITORING REPORT – Long Term Plan 2021/2041 – March 2024							
							Completed
							In Progress
							Transfer
							Off Track
Item Description	Topic/ Reference	Resolved/Actions	Officer	Action by Date	Status	Officer Update	
		the Manawatū Mountain Bike Club to progress a Memorandum of Understanding.				proposed concept plan for a mountain biking circuit within Target Reserve, as well as a comprehensive Health & Safety plan for their team installing this at the park. The MOU is now signed, with the Manawatu Mountain Biking Club just compiling health & safety documentation in preparation for starting physical works on site. A small scale Karakia will be undertaken before any works commence on the reserve.	
	CO/2023/113/ LTP	That Council approves funding up to $15,000 for the cost-effective fibreglass Single pan Long Drop Wilderness Toilet Unit in the event funding cannot be secured within the next 6 months. That Council requests that officers collaborate with representatives from the Te Araroa Manawatu Trust regarding the installation of the fibre glass Single pan Long Drop Wilderness Toilet Unit. This approach ensures that the facilities meet the necessary Trail standards and contribute to the overall quality of the Te Araroa trail and contribute to the overall visitor experience. That Council requests that Officers work with the Te Araroa Manawatū Trust to pursue further funding opportunities via the Tourism	B Harvey	31/12/2023		Officers have met with the Te Araroa Manawatū Trust to discuss options and the release of funding for the project. Although both the Te Araroa Manawatu Trust and HDC Officers have determined that the Tourism Infrastructure Fund is not a viable option, both parties are exploring other external funding opportunities for development of this site which is a key stopping point for trail users. Both parties will also be planning for the Longdrop Wilderness Toilet Unit to be installed within the next three months, and a site meeting is being held on 1 February 2024 between the Trust and	

As at 12 March 2024 D23/26575

MONITORING REPORT – Long Term Plan 2021/2041 – March 2024							Completed In Progress Transfer Off Track
Item Description	Topic/ Reference	Resolved/Actions	Officer	Action by Date	Status	Officer Update	
		Infrastructure Fund to advance projects across Horowhenua.				HDC Officers to advance this work, with the toilet itself being ordered from a supplier in the next week. The toilet is now ordered, and HDC officers are working on a plan for its installation with members of the Te Araroa Manawatu Trust whilst we await delivery of the toilet (expected in approximately 8 weeks).	
	CO/2023/114/ LTP	That Council request that Officers continue the ongoing consultation process between the involved parties, including Manakau United Football Club, the Manakau District Community Association, Ngāti Wehi Wehi and Council, regarding the capital funding obtained from the 'Better Off' fund. This funding should be utilised as the initial phase of works to improve the site. That Council explores the possibility of bringing Manakau Domain back under Council control. This would entail the transfer of operational maintenance and renewal responsibilities to the Council. It is important to consider the associated costs and budget implications, including an estimated annual expenditure of approximately 20-30k for maintenance, which would need to be funded through rates. Any decision to bring the site under Council control	B Harvey	31/06/2024		Officers have had an initial meeting with representatives of the Manakau United Football Club, Ngati Wehi Wehi, and Manakau Residents Association in which priorities for the application of funding have been discussed. Bollards have been installed following a collaboration between the community, Manakau United Football Club and Council staff and contractors. Council staff facilitated a meeting on site with all stakeholders in November to determine the priorities for the remainder of the funding and all parties have agreed on the priorities and the way forward.	

As at 12 March 2024 D23/26575

MONITORING REPORT – Long Term Plan 2021/2041 – March 2024							Completed In Progress Transfer Off Track
Item Description	Topic/ Reference	Resolved/Actions	Officer	Action by Date	Status	Officer Update	
		should also ensure that it remains available for public use.				At present, officers are developing the procurement plans for approval for the new public toilets. The objective is to finalise the design and build contract, with the target of signing it in March 2024. The anticipated timeline foresees the delivery of the completed toilet facility by September 2024. Upon confirming the contract value for the public toilet facilities, the scheduling of works on the sports field will be aligned with the remaining available budget. The proposed commencement of activities on the sports field is set for after the conclusion of the football season in July 2024.	
	CO/2023/115/ LTP	That Council provides support to the submitter and other interested community groups to help them identify requirements and possible suitable sites for a privately funded skid pad or other motorsport facility.	B Harvey	31/06/2024		No progress on this matter to this point.	

MONITORING REPORT – Long Term Plan 2021/2041 – March 2024							Completed In Progress Transfer Off Track
Item Description	Topic/ Reference	Resolved/Actions	Officer	Action by Date	Status	Officer Update	
	CO/2023/116/ LTP	That implementing a living wage for Council employees be considered during the Long Term Plan 2024.	J Straker	31/06/2024		This was considered as part of developing the 2024-44 LTP but it is not included in the draft budget due to budget constraints.	
	CO/2023/173	That Council direct Officers to make other plans to dispose of the Foxton War Memorial Hall and proceed with preparing the hall to be released to the general market for disposal.	B Harvey			Officers are in the process of drafting the consultation material to release to the public following the Council Meeting and on the 7 February 2024. It is envisaged that consultation with the community will take place in March and April and a paper brought back to council for a decision following this.	
	CO/2023/174	That Council delegates authority to the Chief Executive to expend up to $10,000 from within existing budgets on retrieving and appropriately displaying memorabilia from the Foxton War Memorial Hall in Foxton.	B Harvey			Memorabilia relating to the Foxton War Memorial Hall will be removed for display on conclusion of the EOI process.	

As at 12 March 2024

D23/26575

8.3 Council Resolution and Actions Monitoring Report March 2024

File No.: 24/117

1. Purpose

1.1 The purpose of this report is to present to Council the updated monitoring report covering resolutions and requested actions from previous meetings of Council.

This report directly aligns with one of Council's top 10 priorities "Get the basics right and support the customer focussed delivery of core services".

2. Recommendation

2.1 That Report 24/117 Council Resolution and Actions Monitoring Report March 2024 be received.

2.2 That this matter or decision be recognised as not significant in terms of s76 of the Local Government Act 2002.

Attachments

No.	Title	Page
A⇩	Council Actions Monitoring Report 2023 - March 2024	174

Confirmation of statutory compliance

In accordance with section 76 of the Local Government Act 2002, this report is approved as:

a. containing sufficient information about the options and their benefits and costs, bearing in mind the significance of the decisions; and,
b. is based on adequate knowledge about, and adequate consideration of, the views and preferences of affected and interested parties bearing in mind the significance of the decision.

Signatories

Author(s)	Alice Petersen **Business Support Officer - Democracy**	

Approved by	Monique Davidson **Chief Executive Officer**	

Council Actions Monitoring Report 2024
As at 12 March 2024

	Completed
	In progress
	Transfer
	Off track

Reference	Resolution/Action	Officer	Due date	Status	Officer Update
21/502	That the Chief Executive provide a full report on all options in respect of vehicular beach access at Waikawa Beach.	B Harvey	03/11/2023		Horowhenua District Council is actively seeking feedback on three proposed options for vehicle access at Waikawa Beach. Consultation opened on 20 December 2023, and closed on 20 February 2024. Officers are currently working with the Trustees of the private land with the aim of securing a lease and bringing a paper to council for a decision on the way forward at the March 20 Council meeting.
22/166	That Council enters into a variation of the existing lease for Café Molen in support of option 1, as presented to the Te Awahou Foxton Community Board's meeting of 11 April 2022 – to extend the lease for the Dutch Oven into the current tram storage space.	S Hester	02/03/2023		A meeting was held with the Windmill Trust on 23 November 2023, in which they agreed to enter into a new lease agreement incorporating the new tram area. A draft lease is still being finalised and officers will then negotiate with the tenant to progress signing.

D23/93718 Last update: 12-Mar-24

CO/2022/168	That Council agrees to: - Procure a maintenance contractor to monitor the landfill cap and repair as needed (including repairing seeps as needed) at an estimated cost of $130,000 per annum as part of opex expenditure. - Fund the importation of clay soil, shaping the top of the Old Dump to stop water ponding, cease ingress and control surface stormwater flows. Re-establish vegetation, at an estimated cost of $320,000 to be completed by June 2023. - Procure specialist assistance to confirm contamination in the gulley area at borehole C2, scope the required remediation of contaminated land, and undertake remediation at an estimated cost of $300,000. Initial actions to be completed by June 2023. - Approve a programme of work to firstly assess targeted restoration areas of the Tatana Drain and Hokio Stream by working alongside Iwi and willing landowners, develop a restoration programme, secure additional funding and then proceed with appropriate restoration projects.	D Haigh	30/03/2024		1. Council is monitoring cap for slumping and making repairs as the need arises. Foxton Landfill is due for some maintenance in March /April 2024 2. The Old Dump capping has been completed in 2023 3. Modelling of remediation methods has been undertaken. Council managers have reviewed the modelling. In February discussions were had on what design capacity of remediation engineering is to be presented for costings. Councillors have been briefed on the emerging BPO solution. NLG and PMG to discuss and provide feedback week 11 March 2024. 4. Assess targeted restoration works for Northern Farm Drain. (Tatana Drain) This will need to follow works in 3 above. 5. Scoping work is not required. Additional work for any further slumping can be undertaken on a as required basis. Further clay may be purchased and stockpiled for future slump correction.

D23/93718 Last update: 12-Mar-24

	The initial cost of this action is $300,000. - Authorise Council Officers to undertake scoping activities to determine the cost of adding additional capping to the top and sides of the Old Dump as suitable soil becomes available and ensure that suitable drainage is constructed as capping is applied. Council notes that taking these actions does not preclude any further remediation actions or enhancements on the sites. Any further remediation actions or enhancements above the scope of those outlined above will be returned to Council for approval before commencing. Council authorise the Chief Executive to begin the procurement process to undertake the work identified and authorise the Chief Executive to enter into contracts to begin the work required over the summer earthworks season.				
CO/2023/146	That Council direct the Chief Executive to meet with executive leaders of Horizons and other parties including the Manawatu Marine Boating Club, Department of Conservation and Iwi/Hapū within the next three months to progress	M Davidson	21/09/2023		A meeting has been arranged for 18 March 2024 which will include representatives of Iwi, HDC, HRC and DoC. The focus will be on the long-term. Funding was granted to the Manawatu Marine Boating Club to enable remediation

	commitment to undertaking a structural assessment of the Foxton Wharf.				work to take place. These works have been completed.
CO/2023/219	That the Council ask the Chief Executive to review the Property Disposal Strategy to include a Right of First Refusal for Mana Whenua clause for any further property disposals. As part of that review a process be developed for this clause, in collaboration with Māori ward councillors and Iwi partners, to be appended to the strategy after subsequent approval from council. The Right of First Refusal Clause should give Mana Whenua the first opportunity to purchase any surplus property council resolves to dispose of at market value prior to the property being offered for sale on the open market.	B Harvey	19/10/2023		Officers presented a report to Council on the 13 December 2023 regarding an amendment to the Property Strategy to allow First Right of Refusal for Iwi on non-core Property identified for disposal. The report provided an overview of the feedback received from our iwi partners and highlighted the ongoing efforts required to advance the proposed amendment. Council chose to leave the amended proposal on the table pending further refinement and agreement on a way forward from all Iwi Partners. Council officers have reached out to iwi partners to reengage in this kaupapa and are hopeful to progress this further over the next six weeks.
CO/2023/231	That Council authorise the Chief Executive to finalise the Draft Speed Management Plan 2024-2034 and submit to Horizons Regional Council for inclusion in the Regional Speed Management Plan	J Moore J Wallace	30/11/2023		Draft Speed Management Plan will now be submitted to NZTA's Director of Land Transport, following a Council resolution to revoke the earlier plan to submit to Horizon's Regional Speed Management Plan, which has been paused.

CO/2023/237	That council notes the existing work being undertaken within the Community Development work programme and further signals its proposal to incorporate the "Smokefree and Vapefree Environment Policy" into the "Public Places Bylaw" when that bylaw is reviewed.	V Miller	June 2024		The Public Places Bylaw review is scheduled to start in early 2024/2025 and the desire to incorporate smokefree and vape free environments is noted.
CO/2023/251	That the Council review the Road Naming Policy, and in the interim Council delegates to the Chief Executive authority to make all decisions on road naming in accordance with the current policy.	D McCorkindale	June 2024		Council officers have undertaken a stocktake of Council's policies and prepared a programme for the existing policies to be reviewed. This was presented to Council at a workshop 28 February 2024 to confirm the prioritisation of this work along with the other policies and bylaws due for review. Officers have commenced work on this policy with the aim to complete in the current financial year.

9.1 Proceedings of the Risk and Assurance Committee Meeting 21 February 2024

File No.: 24/142

1. Purpose

1.1 To present to the Council the minutes of the Risk and Assurance Committee meeting held on 21 February 2024.

2. Recommendation

2.1 That Report 24/142 Proceedings of the Risk and Assurance Committee Meeting 21 February 2024 be received.

2.2 That the Council receives the minutes of the Risk and Assurance Committee meeting held on 21 February 2024.

3. Issues for Consideration

3.1 There are no items that require further consideration.

Attachments

There are no attachments for this report.

Confirmation of statutory compliance

In accordance with section 76 of the Local Government Act 2002, this report is approved as:

a. containing sufficient information about the options and their benefits and costs, bearing in mind the significance of the decisions; and,
b. is based on adequate knowledge about, and adequate consideration of, the views and preferences of affected and interested parties bearing in mind the significance of the decision.

Signatories

Author(s)	Grayson Rowse **Principal Advisor - Democracy**	

Approved by	Monique Davidson **Chief Executive Officer**	

Risk and Assurance Committee

OPEN MINUTES
UNCONFIRMED

Minutes of a meeting of Risk and Assurance Committee held in the Council Chambers, 126-148 Oxford St, Levin on Wednesday 21 February 2024 at 10:00 am.

PRESENT

Chairperson	Cr Sam Jennings	
Deputy Chairperson	Cr Paul Olsen	Apology
Members	Cr Alan Young	Apology
	Cr Clint Grimstone	
	Cr Jonathan Procter	Apology
	Cr Piri-Hira Tukapua	
	Mayor Bernie Wanden	
	Jenny Livschitz	Independent Member
	Sarah Everton	Independent Member

IN ATTENDANCE

Reporting Officer	Jacinta Straker	Group Manager - Organisation Performance
	Monique Davidson	Chief Executive
	Daniel Haigh	Group Manager - Community Infrastructure
	Brent Harvey	Group Manager - Community Experience and Services
	David McCorkindale	Group Manager – Community Vision and Delivery
	Blair Spencer	Group Manager – Housing & Business Development
	Ashley Huria	Business Performance Manager
	Tanya Glavas	Health and Safety Lead
	Vaimoana Miller	Customer & Compliance Manager
Meeting Secretary	Grayson Rowse	Principal Advisor – Democracy
	Alice Petersen	Democracy Support Officer

1 Apologies

Resolution Number RAACC/2024/1

MOVED by Cr Jennings, seconded Mayor Wanden:

That an apology from Councillors Paul Olsen, Jonathan Proctor and Alan Young be received and accepted.

CARRIED

2 Public Participation

There was no public participation.

3 Late Items

To consider, and if thought fit, to pass a resolution to permit the Council to consider any further items which do not appear on the Agenda of this meeting and/or the meeting to be held with the public excluded.
Such resolution is required to be made pursuant to Section 46A(7) of the Local Government Official Information and Meetings Act 1987, and the Chairperson must advise:
(i) The reason why the item was not on the Agenda, and
(ii) The reason why the discussion of this item cannot be delayed until a subsequent meeting.

Late item

Resolution number **RAACC/2024/2**

MOVED by Cr Jennings, seconded Mayor Wanden :

That Item C1 in relation to Risk Management – Risk Register be accepted for consideration as a late item. The reason this item is late is that it was not finalised by the time the agenda was published and it cannot wait until the next meeting as the information in the report will be out of date by the time of the next meeting.

CARRIED

4 Declaration of Interest

The Mayor declared an interest in item 6.4 Sensitive Expenditure Report noting his expenses were included in the report.

5 Confirmation of Minutes

Resolution Number RAACC/2024/3

MOVED by Cr Jennings, seconded Cr Grimstone:

That the minutes of the meeting of the Risk and Assurance Committee held on Wednesday, 8 November 2023, be confirmed as a true and correct record.

That the minutes of the meeting of the In Committee Meeting of Risk and Assurance Committee held on Wednesday, 8 November 2023, be confirmed as a true and correct record.

CARRIED

6 Reports for Noting

6.3 Health, Safety and Wellbeing Quarterly Report - October to December 2023

This report provided the Committee with health, safety and wellbeing information and insights from 1 October to 31 December 2023.

Officers were introduced the meeting and presented the report

Safe Plus Assessment final report received and improvement in all 10 categories noted, with the organisation leading in 7 out of the 10 categories.
Recommendations from report to be included in the internal work programme. The Assessor noted and thanked the involvement of Elected Members in the assessment.

Health and Safety critical risks now included in reports going forward.

Deep dive into Animal Control activity was completed in the last quarter and shows good management of resources and processes to maintain a safe and healthy workplace.

The Chair thanked officers and noted the Safe Plus Assessment report and progress.

Mayor Wanden sought clarification of the three areas where not leading. These are in the risk management area although there has been improvement, and the organisation is now focusing on this area. The next assessment will be in 24 months.

Seven unresolved incidents were reported which was higher than previous reports. Officer clarified that this measure relates to reported incidents being reviewed within two weeks of being reported, and assured the committee that all the incidents had been reviewed. One review was not completed within the two week timeframe as this was used as a training activity for a new staff member – the incident was minor in nature. Other unresolved incidents were in the aquatics activity, and were reported during high usage and activity at the facility but were of a minor nature; these were triaged for a later review due to staff workloads. They have since been reviewed

The Safety and Wellbeing Action plan identified the development of a Strategic Charter for safety and wellbeing, and this reported as now being completed.

Committee members discussed the deep dive in to Animal Control.

The Dog Control By-law is due for review in 2025.

There are a number of new staff in the Animal Control area so there is a focus on training. Along with peer training, specialised training in de-escalation techniques is being provided. There is a need for some traffic management/control training, however there is very little in the way of traffic control training relevant to animal control. When traffic control need to officers work the NZ Police.

Risks associated with property visits are managed through reviewing alerts in relation to properties or particular dogs. These alerts are maintained by Animal Control Offices and are accessible to all Animal Control Officers.
Prior to any property visit a risk assessment is conducted, noting any alerts, to determine the appropriate response. For first time visits to an unknown property two officers will attend. Currently dog control officers are trialling a satellite tracking/emergency locater for visits to remote areas where cell phone coverage is unreliable.

The Dog Control Facility is in need of replacement as it does not meet statutory requirement and poses a risk to staff. Electronic controlled access has be introduced to improve safety for staff, and other repairs to the facility are undertaken as needed.

Resolution Number RAACC/2024/4

MOVED by Cr Jennings, seconded Cr Grimstone:

2.1 That Report 24/41 Health, Safety and Wellbeing Quarterly Report - October to December 2023 be received.

2.2 That this matter or decision be recognised as not significant in terms of s76 of the Local Government Act 2002.

CARRIED

6.1 Treasury Update - December 2023

This report updated the committee on the Bancorp Treasury Reporting Dashboard for the December 2023 quarter.

The Chair noted the receipt of the Standard and Poors rating update. This is affecting TLA across New Zealand. The rating update for Council is from AA stable to AA negative outlook. The flow on effect for Council is a higher cost of borrowing. In development of LTP officers have been conservative in their estimates of returns from asset sales, and limiting expenditure plans in response.

Capital programme has been limited and the revenue expectations have been moderated to minimise the risk posed by increasing interest rates and maintaining an appropriate debt to revenue ratio.

Discussion was held on the decision to not have the LTP Consultation Document audited. The final Long Term Plan will be audited.

The future risk posed by the changing borrowing rate landscape is being carefully managed. Officers are in active discussion with its treasury advisors at Bancorp looking at longer interest rate swaps. Projections provided by Bancorp have been used for planning purposes with a small contingency in year 1. Given change in S&P downgrade it may be prudent to look at this margin, and to seek further advice.

A report at a future meeting was requested summarising the risk assessment of changing interest rates, including looking at contingencies.

Resolution Number RAACC/2024/5

MOVED by Cr Jennings, seconded Mayor Wanden:

2.1 That Report 24/33 Treasury Update be received.

2.2 That this matter or decision be recognised as not significant in terms of s76 of the Local Government Act 2002.

2.3 That the Committee notes the Bancorp Treasury Reporting Dashboard for the December 2023 quarter.

CARRIED

6.2 Civic Financial Services - Statement of Intent 2024

This report updated elected members on the Civic Financial Services - Statement of Intent for 2024.

Officers introduced the report, noting there is only one HDC staff member enrolled in this scheme, and the administration fee has been reduced from 0.35% to 0.33%.

Resolution Number RAACC/2024/6

MOVED by Cr Jennings, seconded Mayor Wanden:

2.1 That Report 24/59 Civic Financial Services - Statement of Intent 2024 be received.

2.2 That this matter or decision is recognised as not significant in terms of S76 of the Local Government Act.

2.3 That the Committee notes the Civic Financial Services - Statement of Intent for 2024

CARRIED

6.4 Sensitive Expenditure Report

This report provided the information required for the Committee to note Sensitive Expenditure of the Mayor, Elected Members and Chief Executive for compliance with Council's Sensitive Expenditure Policy.

Mayor Wanden stepped away from the table and took no part in this item, having previously declared an interest in this item

Officers presented this report for the first time. The intentions is to provide on a six monthly basis.

The Chair noted he has oversight of some of the sensitive expenditure.

If further details of expenditure is required, the finance team have those further details available.

Committee members noted other councils release all details, but at current levels of detail of expenditure the report is reasonable. Further development of disclosures might be warranted for higher levels of expenditure.

Officers to further develop the report for next meeting.

Resolution Number RAACC/2024/7

MOVED by Cr Jennings, seconded Mrs Everton:

2.1 That Report 24/60 Sensitive Expenditure Report be received.

2.2 That this matter or decision is recognised as not significant in terms of S76 of the Local Government Act.

CARRIED

Mayor Wanden returned to the table

6.5 Risk and Assurance Committee Work Programme

This report provided the Risk and Assurance Committee with an outline of a Draft Work Programme.

Discussion on future work programme to be arranged with independent members and elected members and to report back to this committee.

An update on the Legislative compliance reporting was provided. A reporting tool to assist with legislative compliance and reporting has been identified. This will be implemented subject to LTP funding

Resolution Number RAACC/2024/8

MOVED by Cr Jennings, seconded Mrs Livschitz:

2.1 That Report 24/56 Risk and Assurance Committee Work Programme be received.

2.2 That this matter or decision be recognised as not significant in terms of s76 of the Local Government Act 2002.

2.3 That the Risk and Assurance Committee notes the Finance, Audit and Risk Committee Work Programme.

CARRIED

6.6 Continuous Improvement and Audit Actions Monitoring Report

This report updated the Risk and Assurance Committee on progress of the action items from previous resolutions.

Resolution Number RAACC/2024/9

MOVED by Cr Jennings, seconded Mayor Wanden:

2.1 That Report 24/37 Continuous Improvement and Audit Actions Monitoring Report be received.

2.2 That this matter or decision be recognised as not significant in terms of s76 of the Local Government Act 2002.

CARRIED

The Chair noted the large number of items that have been closed off as being completed. Members noted the high detail of reporting.

The Audit Management letter received and new actions noted.

It was noted the Finance team were not always across property transactions; this had been the situation in the past – the team are currently developing a formal process involving finance team from the start of any property procurement or disposal.

All three waters asset information will be contained in one system, allowing for a cohesive view of that asset class.

The committee questioned how they can we be assured that contractors and external parties are meeting our CRM reporting expectations. Audit had commented on remedial work being completed in this area. The change was made part way through the audit year, so Audit will test this area again at a subsequent audit. Officers are confident the remedial work will provide the committee with the reassurance it seeks.

Resolution Number RAACC/2024/10

MOVED by Cr Jennings, seconded Mrs Everton:

2.3 That the Risk & Assurance Committee notes the final 2022/23 Audit Management letter in Attachment A.

2.4 That the Risk & Assurance Committee notes the Risk & Assurance Committee resolution and actions monitoring report in Attachment B.

CARRIED

8 Procedural motion to exclude the public

Resolution Number RAACC/2024/11

MOVED by Cr Jennings, seconded Mayor Wanden:

That the public be excluded from the following part(s) of the proceedings of this meeting.

The general subject of each matter to be considered while the public is excluded, the reason for passing this resolution in relation to each matter, and the specific grounds under section 48(1) of the Local Government Official Information and Meetings Act 1987 for the passing of this resolution follows.

This resolution is made in reliance on section 48(1)(a) of the Local Government Official Information and Meetings Act 1987 and the particular interest or interests protected by section 6 or section 7 of that Act which would be prejudiced by the holding of the whole or relevant part of the proceedings of the meeting in public, as follows:

C1 Risk Management - Risk Register

Reason for passing this resolution in relation to each matter	Particular interest(s) protected (where applicable)	Ground(s) under section 48(1) for the passing of this resolution
The public conduct of the part of the meeting would be likely to result in the disclosure of information for which good reason for withholding exists under section 7.	s7(2)(e) - The withholding of the information is necessary to avoid prejudice to measures that prevent or mitigate material loss to members of the public.	s48(1)(a) The public conduct of the part of the meeting would be likely to result in the disclosure of information for which good reason for withholding exists under section 7.

The text of these resolutions is made available to the public who are present at the meeting and form part of the minutes of the meeting.

CARRIED

11.40 am The public were excluded.

Resolutions in relation to the confidential items are recorded in the confidential section of these minutes and are not publicly available.

12.20 pm

There being no further business, the Chairperson declared the meeting closed.

CONFIRMED AS A TRUE AND CORRECT RECORD AT A MEETING OF RISK AND ASSURANCE COMMITTEE HELD ON

DATE: .....

CHAIRPERSON:

9.2 Proceedings of Te Awahou Foxton Community Board 4 March 2024

File No.: 24/146

1. Purpose

To present to the Council the minutes of the Te Awahou Foxton Community Board meeting held on 04 March 2024.

2. Recommendation

2.1 That Report 24/146 Proceedings of Te Awahou Foxton Community Board 4 March 2024 be received.

2.2 That the Council receives the minutes of the Te Awahou Foxton Community Board meeting held on 04 March 2024.

2.3 That Te Awahou Foxton Community Board recommend Council adopt the Foxton Beach Endowment Fund Review Process including reference to pages 85 & 86 of Appendix A, the complete work.

2.4 That Te Awahou Foxton Community Board recommend that Council fund the review of the Foxton Beach Endowment Fund Review.

3. Issues for Consideration

The following items considered by the Te Awahou Foxton Community Board meeting held on the 04 March 2024 will require further consideration by the Horowhenua District Council and will be included on a future Council agenda:

Resolution Number TAFCB/2024/1

MOVED by Mr Girling, seconded Mr Russell:

2.3 That Te Awahou Foxton Community Board support the proposed approach as outlined in the Foxton Beach Endowment Fund Review Process paper.

2.4 That Te Awahou Foxton Community Board recommend Council adopt the Foxton Beach Endowment Fund Review Process including reference to pages 85 & 86 of Appendix A, the complete work.

CARRIED

Resolution Number TAFCB/2024/2

MOVED by Mr Roache, seconded Mrs Fox:

That Te Awahou Foxton Community Board recommend that Council fund the review of the Foxton Beach Endowment Fund Review

CARRIED

Attachments

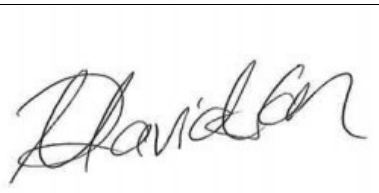
No.	Title	Page
A⇩	Foxton Beach Endowment Fund Review Process - Report to TAFCB - 4 March 2024	191
B⇩	Pages 85 & 86 of Wai2200 #A193 - Porirua ki Manawatū Inquiry District Local Government Issues Report by Suzanne Woodley June 2017	239

Confirmation of statutory compliance

In accordance with section 76 of the Local Government Act 2002, this report is approved as:

a. containing sufficient information about the options and their benefits and costs, bearing in mind the significance of the decisions; and,
b. is based on adequate knowledge about, and adequate consideration of, the views and preferences of affected and interested parties bearing in mind the significance of the decision.

Signatories

Author(s)	Ashley Huria **Business Performance Manager**	
Approved by	Monique Davidson **Chief Executive Officer**	

8.1 Foxton Beach Endowment Fund Review Process

File No.: 24/49

1. Purpose

1.1 This is a follow up on the previous Foxton Beach Endowment Fund report which now includes all attachments and aims to present the review paper for the Foxton Beach Endowment Fund to the Te Awahou Foxton Community Board. The purpose is to seek endorsement from the board to proceed to Council for official adoption.

2. Recommendation

2.1 That Report24/49 Foxton Beach Endowment Fund Review Process be received.

2.2 That this matter or decision be recognised as not significant in terms of s76 of the Local Government Act 2002.

2.3 That the Te Awahou Foxton Community Board support the proposed approach as outlined in the Foxton Beach Endowment Fund Review Process paper.

2.4 That the Te Awahou Foxton Community Board recommend Council adopt the Foxton Beach Endowment Fund Review Process.

3. Background/Previous Council Decisions

3.1 The Foxton Beach Freeholding Account, and the endowment land that underpins it, has a long and at times complex history. To maintain consistency moving forward, the name Foxton Beach Endowment Fund will be utilised.

3.2 The policy and strategy review was initiated in 2019 and encountered substantial delays, including disruptions caused by the widespread impact of the COVID-19 pandemic.

3.3 Resuming in late 2021, officers identified meaningful changes but acknowledged significant improvements that could be made with engagement with iwi and hapū during the process. In response to Council's directive, officers temporarily halted the review to actively involve iwi and hapū.

3.4 A comprehensive briefing to Elected Members was held on 23 August 2023, which included the historical context of the endowment fund and associated land, as well as a deep dive into the current policy landscape, legislative influences, funding mechanisms, and fund allocation. Within this workshop, officers sought direction from Elected Members, particularly on the extent and focus of involvement of iwi and hapū in the review process.

3.5 Officers received clear direction during the workshop on the importance of iwi participation and this led to Council coordinating a hui. Invitations were extended to representatives from Muaūpoko, Ngāti Raukawa, Rangitāne, hapū owners, Kerekere Ward Councillors, Māori Ward Councillors, Te Awahou Foxton Community Board, and Mayor Wanden.

3.6 On 14 September 2023, a hui was held at Te Awahou with representatives attending from Horowhenua District Council, Te Awahou Foxton Community Board, and hapū owners (during this session hapū owners advised that they would liaise with other iwi in relation to this review). The core objective of the hui was to provide a platform for each participating group to articulate their aspirations regarding the Foxton Beach Endowment Fund and the ongoing review process.

3.7 Subsequent to the hui, the representatives drafted the Foxton Beach Endowment Fund Review Paper which compiled the insights gathered from the hui. This review paper went through many iterations to ensure all representatives perspectives and views were captured.

3.8 On 12 December 2023, the representatives gathered at Paranui Marae to finalise the proposed review paper and established a unified process for taking the paper to Te Awahou Foxton Community Board for endorsement, ultimately presenting it to Council for adoption of the proposed review approach.

3.9 On 23 January 2024, the review process paper was tabled at Te Awahou Foxton Community Board, where TAFCB endorsed and supported the approach as outlined in the paper, however before the paper was to be endorsed to Council advised they would like to endorse the paper in full with the inclusion of Appendix A – hapu history.

4. Issues for Consideration

4.1 This is a follow up from the previous report however now includes both history appendix within the review process paper.

5. Next Steps

5.1 Upon receiving endorsement for the review paper, it will be presented to the Council for formal adoption. Upon adoption, the subsequent work will commence in accordance with the proposed process outlined.

Attachments

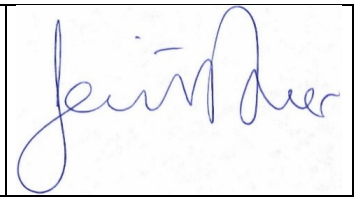
No.	Title	Page
A⇩	Foxton Beach Endowment Fund - Review Process Paper including Appendix - 8 February 2024	16

Confirmation of statutory compliance

In accordance with section 76 of the Local Government Act 2002, this report is approved as:

a. containing sufficient information about the options and their benefits and costs, bearing in mind the significance of the decisions; and,
b. is based on adequate knowledge about, and adequate consideration of, the views and preferences of affected and interested parties bearing in mind the significance of the decision.

Signatories

Author(s)	Ashley Huria **Business Performance Manager**	
Approved by	Jacinta Straker **Group Manager Organisation Performance**	

	Monique Davidson **Chief Executive Officer**	

Foxton Beach Endowment Fund Review

Poipoia te kākano kia puāwai

This document outlines the proposed review process.

To maintain consistency moving forward, the name Foxton Beach Endowment Fund will be utilised by the group (which comprises of Hapū Owners, Treaty Partners, Te Awahou Foxton Community Board (TAFCB), Mayor of Horowhenua, Kere Kere Ward and Māori Ward Councillors.

It is important to note that the following names have been used inter changeably over the years:

- Foxton Beach Freeholding Account
- Foxton Beach Freeholding Fund
- Freeholding Account
- Foxton Beach Endowment Fund
- Endowment Land
- The Fund, and
- Any combination of the above.

Also throughout the document, the term "we" will be used this refers to Hapū Owners, Treaty Partners, Te Awahou Foxton Community Board (TAFCB), Mayor of Horowhenua, Kere Kere Ward, and Māori Ward Councillors.

Preamble

Horowhenua District Council, Te Awahou Foxton Community Board, Hapū Owners, and Treaty Partners collectively acknowledge Te Tiriti o Waitangi, and its obligations to hapū and iwi. The 2009 Policy and subsequent review efforts did not recognise the unique history of the Papangaio J Block Landowners, the Whirokino Cut, Accretion Land, and the Foxton Beach Endowment Fund. Council recognises and acknowledges the historical narratives of both Māori and European communities.

The Council aims to facilitate a review process that:

- Builds effective relationships
- Builds and maintains a shared understanding of what all parties are trying to achieve
- Builds the structures, processes, and understanding about how people will work together
- Involves people who have the right experience and capacity
- Is accountable and transparent about performance, achievements, and challenges
- Plans for financial sustainability and the ability to adapt as circumstances change.

Fundamentally the principles below must be applied to ensure that the review process:

- Acknowledges the history of the fund and the impact on Hapū Owners
- Ensures that the project considers other examples around the country
- Ensures that the process gives effect to Te Tiriti o Waitangi
- Ensures Hapū Owners and Treaty Partners voice is present and involved to co-design and co-decide the proposal to Council.
- Ensures decisions are made inclusively with hapu owners and where appropriate tangata whenua.

In this process, it is acknowledged that the history of the Foxton and Foxton Beach area is currently under the Treaty of Waitangi Tribunal process. However, at this moment, we acknowledge the varying views and as an appendix to this for reference are documents outlining these viewpoints.

Appendix A – Porirua ki Manawatū Inquiry District: Local Government Issues Report - By Suzanne Woodley – June 2017 - Wai 2200, #A193 - (A report prepared for the Porirua ki Manawatū Inquiry and commissioned by the Crown Forestry Rental Trust)

Appendix B – The Foxton Beach Township Endowment Land – Report G.M.19 -15 March 1990

Purpose of the review

The last Foxton Beach Freeholding Account Strategy and Policy (current name) was adopted on 07 October 2009. Since that date, the document is yet to have a review that results in an adoption of a new strategy and policy. It is now time to review both the existing Strategy and Policy; and our intention is to engage with Hapū Owners and Treaty Partners.

The Foxton Beach Endowment Fund review will have a focus on collaboration with a partnered approach. This will result in a reviewed strategy and policy covering the intent, scope, and operation of the Foxton Beach Endowment Fund. Throughout the review process we will identify opportunities and areas for improvement.

By engaging in collaborative practices, this review seeks to acknowledge that it is time to recognise the historic and contemporary issues relating to previous reviews. The aim is to establish a more equitable and mutually beneficial relationship between all parties involved, ensuring that the interests of all stakeholders are represented and respected.

The ultimate goal of the review is to improve the management of the Foxton Beach Endowment Fund - to establish a strong foundation for ongoing collaboration and partnership, in a manner that is sustainable, transparent, and responsive, in the best interests of all stakeholders and for the benefit of the Foxton Beach/Te Wharangi community.

Outcomes of the review – Council approval required

- Explore the development of a Memorandum of Partnership
- A clear and transparent strategy and policy and associated assessment criteria
- To be a potential model for Iwi Council relationships going forward.

Key Focus Areas

Below are the key focus areas of the review, with the understanding that as the project progresses other areas may also be taken into account.

Key Focus Areas	
Understanding the history of Horowhenua and being responsible tupuna for our mokopuna	Setting a pathway which acknowledge the grief, loss, and harm caused through the effects from the sale of Papangaio, alienation from whenua, kainga, and taonga, and exclusion from direct benefits of the capital distribution raised from the lands. Policy change, criteria change, structural change, behavioural change.

Maximum level of contribution to a project	The maximum level of contribution to allocated projects is open for discussion. Current Policy states: *The maximum contribution from the fund will be 50% of any total project cost.*
Spending of the Foxton Beach Endowment Fund	The allocation of funds is open for discussion. Current Policy states: *Expenditure shall be governed by the following principles:* *Sustainability: The fund shall be applied to enhance the current and future wellbeing of the inhabitants of Foxton Beach.* *Beneficial: The fund shall be applied to services and amenities in ways that consider the social, environmental, cultural, and economic wellbeing of the inhabitants of Foxton Beach.* *Complementary: The fund is not the sole resource for funding infrastructure and other development and should be used in a way complementary to other sources to maintain a sense of community responsibility, ownership, and fairness.* *Responsiveness: The fund shall be applied for infrastructure, but also retain some flexibility to meet needs that are currently unforeseen. The fund will be used for Capital Works only, on existing and future infrastructure. The fund will not be used for operating or maintenance costs of existing infrastructure, which will be funded from rates or other revenue sources.* *The fund will only be used on items included in the Council's LTCCP (10 year plan) or Annual Plan.* *Expenditure items identified in the LTCCP or Annual Plan will be derived from the Horowhenua Development Plan (refer Appendix A for Development Plan infrastructure capital items) or relevant Asset Management Plan (refer to Appendix B for Asset management expenditure items for Foxton Beach that are not included in the Horowhenua Development Plan)* *Any works related to growth should be funded from Development Contributions and not the Free-holding a/c.* *Generally, the fund will be used on capital projects within the Foxton Beach boundary. However, the fund can be used where a Beach boundary but will benefit the residents of Foxton Beach. The service or amenity must be located within the Kere Kere Ward.*
Minimum balance of the Foxton Beach Endowment Fund	Current strategy states: *Over the next 10 years the fund will be built up to $5m worth of current assets, at which time this amount will become the minimum balance. Funds in excess of*

	$5m will be available for expenditure on services and amenities as per the policy.
Process and who can apply to the Foxton Beach Endowment Fund	Currently there is minimal guidance on this.
Advocacy or advisory role	Current Policy states: *…..and the Foxton Community Board will perform an advocacy or advisory role.*
Prioritisation/ Funding criteria	Current Policy states: *The following will be used by Council as a guide to the prioritisation of funds and how/where the funds will be used.* ▪ *Whether expenditure has been identified in the LTCCP* ▪ *Priority items identified by the Foxton Community Board in the Annual Plan/ LTCCP process* ▪ *Community consultation during the Annual Plan / LTCCP process* ▪ *The Principles of the Foxton Beach Freeholding Account Policy have been met* ▪ *Whether the minimum account balance level will be breached during the preceding 12 months.*

Legislative Influence	
	Legislative Co-Governance options are also discussed. Co-Governance mechanisms are typically implemented as a form of Treaty settlement redress. This option could potentially be available to Hapū Owners and Treaty Partners if a settlement arrangement is reached with the Crown. It is worth noting that there are examples whereby Council and Iwi have formed a co-governance arrangement that is eventually formalised through a Treaty settlement.
The purpose of the Foxton Beach Endowment Fund (what to spend the money on)	The purpose of the Fund is set by legislation, therefore the Fund will continue to be used for: *Reserves and Other Lands Disposal Act 1968 S13(14) …the provision of services and public amenities for the benefit of the inhabitants of Foxton Beach Township, or on the improvement, maintenance, or repair of any such services and amenities, or on the improvement, maintenance, or repair of any existing services or public amenities. For the purposes of this subsection, the term* **services** *includes roads, road lighting, water supply, drainage, sewerage, and other public works.*
Final Approval	The final approval of the Foxton Beach EndowmentFund is the Horowhenua District Council as appointed as the 'Corporation' controlling the Fund. *Reserves and Other Lands Disposal Act 1968 S13 (14) The council shall from time to time spend the net proceeds.*
Sale of land	The Reserves and Other Lands Disposal Act as currently written places some restrictions on the sale of the endowment land.

	Reserves and Other Lands Disposal Act 1968 - S13 (6) Where a lessee gives to the council written notice of his desire to purchase the freehold of the land comprised in his lease, then the council, in the name and on behalf of the corporation, shall be bound to make to the lessee, and the lessee to accept (at the price and on the terms prescribed by this section), a transfer of the land for an estate in fee simple absolute.

Statutory Regulations – Iwi Engagement

In compliance with HDC's legislatively mandated requirements, HDC is committed to statutory regulation that requires engagement with all iwi. Throughout this process, we emphasize a culturally sensitive approach by facilitating interactions with Treaty Partners through hapu with the model of tikanga and kawa.

Key Partners

Hapū Owners, Treaty Partners, Te Awahou Foxton Community Board (TAFCB), Mayor of Horowhenua, Kere Kere Ward and Māori Ward Councillors.

Key Sponsors

Hayden Turoa, Monique Davidson.

Council Officers

Jacinta Straker, Ashley Huria, Grayson Rowse.

OFFICIAL

Wai 2200, #A193

Porirua ki Manawatū Inquiry District:

Local Government Issues Report

By Suzanne Woodley

June 2017

A report prepared for the Porirua ki Manawatū Inquiry and commissioned by the Crown Forestry Rental Trust.

7. Foxton Harbour Board, Manawatu County Council and Papangaio J

7.1 Statement of claim (Wai 1618)

Issues relating to the leasing by the Foxton Harbour Board of the Maori owned Papangaio J block and accretion to the block, and its subsequent purchase by the Crown and transfer to Manawatu County Council, have been raised in a statement of claim. The claim was submitted by Milton Rakei Te Kura Rauhihi, Hayden Bronsley Turoa and Edward Whatanui Devonshire on behalf of themselves and Nga Hapu o Himatangi, being members of Ngati Te Au, Ngati Turanga and Ngati Rakau (hapu of Ngati Raukawa). They state that the Crown, in breach of the Treaty of Waitangi, has:

> (a) failed to act in good faith towards the Hapu in terms of the dealings relating to the Claim Area, and the subsequent acquisition by the Crown, of the lands of the Hapu;
> (b) failed in its duty to actively protect the tino rangatiratanga of the Hapu in respect of the Claim Area; and
> (c) failed to protect their land base by acquiring land via direct purchase, and by way of Legislation, including without limitation the following Acts:
> (i) Foxton Harbour Board Act 1876;
> (ii) Harbour Board's Act 1876;
> (iii) Counties Amendment Act 1885;
> (iv) Reserves and Other Lands Disposal Act 1956;
> (v) Reserves and Other Lands Disposal Act 1965; and
> (vi) Reserves and Other Lands Disposal Act 1968.[571]

The statement of claim also provides a background to the acquisition of Papangaio J in 1965 some of which has been incorporated into the following discussion.

[571] Statement of Claim of Milton Rakei Te Kura Rauhihi, Hayden Bronsley Turoa and Edward Whatanui Devonshire on behalf of themselves and Nga Hapu o Himatangi, being members of Ngati Te Au, Ngati Turanga and Ngati Rakau (hapu of Ngati Raukawa), Wai 1618 # 1.1.

7.2 Papangaio J

Papangaio J is located at the mouth of the Manawatu River at Foxton Beach which is about six kilometres from Foxton. Title to the 800 acre Papangaio block was investigated by the Maori Land Court in 1891 and awarded to 78 owners. The block was partitioned on 3 May 1923 into nine parts including Papangaio J which comprised 100 acres 1 rood and 30 perches. It was awarded to 78 owners all of whom had an interest in Papangaio A-H. Papangaio J was said to have included an area that was 'in the river or had shifted to the north bank of the river'.[572]

That there was a portion of the block that lay south of the river and another portion that lay north of the river was also noted when an application was made on 31 July 1946 to have Papangaio A-H and J vested in the Ikaroa District Maori Land Board (later Maori Trustee). Hone McMillan told the Court that he had met with owners from both Otaki and Foxton who 'uaninimously' agreed to the vesting 'with the exception of Papangaio J'. The owners, he said, were 'under the impression that the subdivision was occupied by Europeans who were erecting cottages thereon'. Their objections to the vesting related only to that portion of the subdivision lying north of the river. The Court made the order in respect to Papangaio A-H and this area of Papangio J south of the river. Lands and Survey Department officials later reported that the owners 'wanted that portion of Papangaio J lying to the south of the river vested in the Board for [sand dune] reclamation, farming and other purposes' (together with Papangaio A-H). The owners 'wished to deal with the piece of Papangaio J lying to the north of the river mouth themselves'. This was due to part of it being occupied (without the permission of the Maori owners) which the owners were said to be seeking compensation for.[573]

Of note is that by 1957 no reclamation had been done on any of the Papangaio blocks with the Maori Affairs Department claiming that it was 'beyond the resources of the Maori Trustee

[572] Walghan Partners, Draft, 1 May 2017, volume 3, pp. 154-157; Director General, Department of Lands and Survey to Secretary for Maori Affairs, 4 November 1963, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 8-9.
[573] Otaki Minute Book 63, 31 July 1946, pp. 4, 65-66; Department of Lands and Survey District Office to Secretary for Maori Affairs, 24 March 1961, ACIH 16036 MAW2459 50 5/14/2 part 2 Rerengaohau and Papangaio Blocks – Sand Dune Reclamation, 1957-1962, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 37.

to handle the job'. The Judge, when considering the application to have the terms of the trust varied so the Trustee could sell the land (instead of carrying out the reclamation works) noted that for ten years the Maori Trustee had done 'nothing whatever as trustee' and that he should have 'applied for relief'. He also pointed out that the value of the land may have 'deteriorated through the trustee failing to do what he was appointed to do' and as a consequence the Lands Department would be able to 'buy at the depreciated price'. In October 1959, the Maori Land Court varied the trust so Papangaio A-H comprising 662 acres could be sold for £1191.12.0 less £100 survey costs to the Lands Department. Officials justified the sale stating that the policy of sand dune reclamation work 'should be in the hands of the Department of Lands and Survey and the NZ Forest Service'. The Lands Department was undertaking afforestation of the area and wanted to include the Papangaio blocks in the scheme.[574]

Also in 1959, the Director General of Lands explained how the river had changed its course during the previous 50 years 'with the result that Papangaio J, which was 'formerly on the south side of the river is now either in the present river bed or on the northern bank of the river'.[575]

In 1961, the Court heard an application to cancel the section 438 order in respect to Papangaio J. The minutes of the hearing record that a Mr Mason (presumably for the Maori Trustee) said that it had been proved that there was no land south of the river in the subdivision and that the Trustee could not carry out the trust. The Court ordered that the trust of 31 July 1946 be dissolved.[576]

7.3 The Foxton Harbour Board, 1876-1956

The Foxton Harbour Board was first constituted in 1876 under the Foxton Harbour Board Act 1876 for the purpose of administering the Port of Foxton. The *Manawatu Standard* reported that after a number of years the Harbour Board 'flickered out, and the control lapsed to the

[574] Otaki Minute Book 66, 5 April 1957, pp. 392-393; Otaki Minute Book 68, 28 October1959, p. 6, Chief Surveyor to Secretary for Maori Affairs, 24 March 1961, ACIH 16036 MAW2459 50 5/14/2 part 2 Rerengaohau and Papangaio Blocks – Sand Dune Reclamation, 1957-1962, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 37.
[575] Director General of Lands to Minister of Lands, 19 October 1959, ABWN W5021 6095 Box 591 22/2843 part 1 Wellington Land District – Foxton Harbour Board, 1956-1963, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 45.
[576] Otaki Minute Book 69, 20 April 1961, p. 2.

Government'. The Port was then administered by the Railway, Agricultural and Marine Departments. In 1908, Foxton residents petitioned the government to re-establish a Board and as a result further legislation was enacted that year - the Foxton Harbour Board Act 1908. Under sections 8 and 9 of the 1908 Act, land described as 'endowment land' was vested in the Harbour Board which it was able to lease.[577]

The endowment land comprised three parts. The first was all the foreshore on both banks of the Manawatu River 'commencing at the south-eastern corner of Whirokino No 3, McGregor's Bend, and extending thence to the mouth of the said river as far as high-water mark'. The second portion comprised sections Nos 268 (112 acres) and 270 (248 acres), 'being the Pilot-station Reserve' which was located at Foxton Beach. The third area was situated in the township of Carnarvon (Himatangi) which was north of Foxton township and comprised 418 acres. It was described as 'section number 332 on the official plan of the said township, and formerly known as the Omarupapaku Bush, but now designated the Signal-station Reserve'.

Section 4 of the Act specified the make-up of the Harbour Board which was to constitute seven members, one of whom was to be the Mayor of the Borough of Foxton. As well, one member each was to be appointed by the Governor; the Manawatu County Council, the Palmerston North Borough Council, the Feilding Borough Council and the Levin Borough Council. All those appointed by a local authority had to be a member of that body. The final member was a person elected by the 'electors of the Borough of Foxton'.

During this period when the endowment areas were vested in the Foxton Harbour Board, the Board subdivided and leased part of the Maori owned Papangaio J block and accretion to the block which adjoined the endowment land. About 17 leases were granted by the Harbour Board over Papangaio J and the accretion with lessees subsequently building dwellings and making other improvements to the land. According to the Maori owners, 'over the years' they objected to the Harbour Board not only granting leases over their land but also the vesting in

[577] *Manawatu Standard*, 14 May 1908, p. 2.

the Harbour Board of the former river bed. Nothing, however, was done to rectify the matter.[578]

In the 1950s it was proposed to abolish the Harbour Board as authorities considered there to be 'no further need for the maintenance of a port at Foxton'. In March 1955, the Minister of Lands approved, subject to the Harbour Board being abolished, that the Foxton Beach township endowments be disposed of to the Manawatu County Council provided a 'satisfactory figure' was agreed to. The Council was to be 'allowed to develop and administer the land provided the tenants are given security of tenure'.[579]

7.4 Reserves and Other Lands Disposal Act, 1956

It would seem that some months later, the Maori owners of Papangaio J became aware of the pending transfer of the endowment lands including the area that they considered to be accretion to Papangaio J. In July 1956, JDB Joseph wrote to the Minister of Maori Affairs, Mr Corbett, about the matter. He enclosed plans from 1889 of the Manawatu River which he said showed how the river had broken through and 'cut off Papangaio J' (so that a portion lay both to the north and to the south of the river). That portion of Papangaio J that lay north of the river had, Mr Joseph said, 'been utilized by the Harbour Board and in the vicinity of about 100 houses … [had] been built there'. He noted that the Harbour Board had leased sections and collected rents from the lessees. He said that the whole of Papangaio and the accretion on the south end of Papangaio J was Maori property. Also, that the river was 'travelling more than 1 chain [20 metres] per year' and was cutting off Papangaio to the south side of the river and building up Papangaio J on the north bank. He also asked that he and several others meet with Mr Corbett. It does not appear, however, that a meeting was held at this time.[580]

[578] Director General, Department of Lands and Survey to Secretary for Maori Affairs, 28 November 1963, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 32-34.
[579] E Corbett, Minister of Lands to Sir Matthew Oram, Minister of Marine, Parliament Buildings, 2 September 1955, MDC 00024 : 18 : 8 Land - Accretion - Papangaio J. Block & vesting of Foxton Harbour Board Endowment Manawatu County Council 1955 – 1966, Archives Central, Feilding. SW Document Bank, volume 3, p. 115.
[580] JDB Joseph, Foxton to Corbett, Minister of Maori Affairs, 16 July 1956, ACIH 16036 MAW2459 50 5/14/2 part 1 Rerengaohau and Papangaio Blocks – Sand Dune Reclamation, 1943-1956, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 36.

Some of the owners engaged the assistance of ET Tirikatene, MP for Southern Maori in October 1956. He also wrote to the Minister of Maori Affairs, Mr Corbett, advising that a deputation comprising Mr Joseph, Pei Hurinui Jones and Roy Roore wished to meet with him in connection with Papangaio J.[581] A meeting was arranged for 18 October 1956. The content of the meeting was not recorded on Maori Affairs files but Pei Te Hurinui Jones thanked Mr Corbett on 7 November 1956 for receiving the deputation and noted that he had since been supplied with a copy of the Reserves and Other Lands Disposal Bill, 1956. This legislation not only abolished the Foxton Harbour Board and provided for the transfer of its endowment land to the Manawatu County Council but it allowed for the investigation of the title to the accretion to the Papangaio J block.[582] Sub-section 6 of section 21 of the Reserves and Other Lands Disposal Act 1956 stated:

> If any portion of the endowment area is found by the Maori Land Court to be accretion to Papangaio J Block over which title should be granted to the owners of that block, that portion shall thereupon cease to be subject to the provisions of this section, and the Minister of Lands may vary, in such manner as appears to him to be just and reasonable in the circumstances of the case, the terms and conditions set out in subsection five of this section.

7.5 Papangaio J leases

As noted above, the Foxton Harbour Board had leased some of the Maori owned Papangaio J block and what was later found to be accretion to the block and dwellings built. The County Clerk of the Manawatu County Council reported in 1958, that there were 17 tenancies over the Papangaio J block though five were only partially within the block. The annual rental ranged from between £1.9.9 to £7 and totalled £68.10.3. He reported that all rentals had been paid to 30 September 1958 with the exceptions of three lots which had been paid to 30

[581] ET Tirakatene, MP to EB Corbett, Minister of Maori Affairs, 9 October 1956, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 4.
[582] ET Tirakatene, MP to EB Corbett, Minister of Maori Affairs, 9 October 1956; Pei Te Hurinui Jones to EB Corbett, 7 November 1956; Director General, Department of Lands and Survey to Secretary for Maori Affairs, 4 November 1963; ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 4-5, 8-9.; County Clerk, Manawatu County Council to Sir Matthew Oram, Minister of Marine, 29 March 1955; Commissioner of Crown Lands to County Clerk, Manawatu County Council, 14 November 1957, MDC 00024: 18: 8 Land - Accretion - Papangaio J. Block & vesting of Foxton Harbour Board Endowment, Manawatu County Council 1955 – 1966, Archives Central, Feilding. SW Document Bank, volume 3, pp. 115-116.

September 1957. Therefore, arrears totalled £9.12.6. He said that an amount of £50 had been set aside each year for the financial years ending 31 March 1957 and 31 March 1958 in a trust account and that the credit at 31 March 1958 was £100. (This was as per an agreement made by the Manawatu County Council in 1956 to 'pay the rents of buildings on Maori land into a Trust Account until matters were finalised').[583]

7.6 Proposal to Purchase, 1956-58

Prior to the 1956 legislation being passed, the purchase of Papangaio J was discussed by the Lands and Survey Department who were involved with the transfer of endowment lands from the Foxton Harbour Board to the Manawatu County Council. In August 1956, the County Clerk of the Manawatu County Council advised the Minister of Lands that the Council agreed with the suggestion that the Crown endeavour to purchase Papangaio J prior to the handing over of the endowments. If, however, 'considerable delay' was experienced, he asked if it was possible to finalise the transfer of the present endowment area and that the Maori land be dealt with as soon as possible afterwards.[584]

The Director General reported in 1957 that verbal advice received from Mr Simpson of Morison, Sprat, Taylor & Co, a solicitor for the Maori owners of Papangaio J, indicated that the owners would sell. Mr Simpson was in 1960, described by Department of Lands and Survey officials as the solicitor for 'a section of the Maori owners'.[585]

The purchase was considered desirable because the Crown believed that for, 'proper administration' Papangaio J should be added to the endowment area. The Department also described the addition of the land to the endowment and having the whole area under the control of the Council as 'regularis[ing] the position'. The Crown's view was further set out in a submission to the Land Settlement Board which sought approval for the purchase in

[583] Assistant Commissioner of Crown Lands to County Clerk, Manawatu County Council, 12 September 1958; County Clerk, Manawatu County Council to Commissioner of Crown Lands, 22 September 1958, MDC 00024: 18: 8 Land - Accretion - Papangaio J. Block & vesting of Foxton Harbour Board Endowment, Manawatu County Council 1955 – 1966, Archives Central, Feilding. SW Document Bank, volume 3, pp. 117-118.
[584] Manawatu County Council to Minister of Lands, 15 August 1956, MDC 00024: 18: 8 Land - Accretion - Papangaio J. Block & vesting of Foxton Harbour Board Endowment, Manawatu County Council 1955 – 1966, Archives Central, Feilding. SW Document Bank, volume 3, p. 119.
[585] Submission to Land Settlement Board, 7 October 1959; Commissioner of Crown Lands to Director General of Lands, 16 February 1960, ABWN W5021 6095 Box 591 22/2843 part 1 Wellington Land District – Foxton Harbour Board, 1956-1963, Archives New Zealand, Wellington. Mr Simpson was also the solicitor for some of the Maori owners of Ngarara West A14B1 (Te Karewarewa Urupa)). SW Document Bank, volume 6, pp. 42-46.

1959. It said that the presence of the Maori owned land in a 'popular and expanding holiday resort … [was] hampering the development and improvement of the area'. The submission also noted that the Maori land cut into the residential area of the Foxton Beach township but that this was because of a 'lack of survey data' which had meant that the Foxton Harbour Board had 'issued leases over part of the Maori land and collected rentals from the lessees'. Another portion of Papangaio J was also said to form part of the camping ground at the beach. [586]

It was also claimed in the submission that 'the successors of the original Maori owners of the block had taken little or no interest in the area until the Crown offered to buy the land'. This statement, however, does not marry with the actions of the owners in vesting the lower portion of Papangaio J in the Maori Land Board for 'reclamation, farming and other purposes' (together with Papangaio A-H) in 1946 (which, as noted above the Maori Land Board and its successor agency the Maori Trustee did not do). The owners said at the time that they 'wished to deal with the piece of Papangaio J lying to the north of the river mouth themselves' but it would be fair to assume that there were difficulties with this given the Foxton Harbour Board's continued trespass of the land. This was not noted in the submission in favour of purchasing which was approved in October 1959.[587]

A letter submitted to the Minister of Lands by the Director General of Lands to seek approval for the expenditure involved in purchasing the land also blamed a lack of 'reliable survey data' for the Foxton Harbour Board's actions in granting leases over Maori owned land. The Director General noted too that not only had houses been built but roads constructed as well as a public camping ground. He also stated:

> As it is desirable that the whole of the township area should be under the control of the Manawatu County Council in order to allow the roading and development of the beach township to be carried out, the Land Settlement Board at its meeting of 7

[586] Director General of Lands to Minister of Lands, 17 July 1957; Submission to Land Settlement Board, 7 October 1959, ABWN W5021 6095 Box 591 22/2843 part 1 Wellington Land District – Foxton Harbour Board, 1956-1963, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 39-44.
[587] Submission to Land Settlement Board, 7 October 1959, ABWN W5021 6095 Box 591 22/2843 part 1 Wellington Land District – Foxton Harbour Board, 1956-1963, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 42-45; Department of Lands and Survey District Office to Secretary for Maori Affairs, 24 March 1961, ACIH 16036 MAW2459 50 5/14/2 part 2 Rerengaohau and Papangaio Blocks – Sand Dune Reclamation, 1957-1962, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 37.

> October 1959 agreed to enter into negotiations with the Maori owners to acquire their interests in the Papangaio J Block at a figure of up to £4,000 plus a proportion of accrued rents received from the lessees on the area.[588]

Approval was then given by the Minister of Lands to the purchase.[589]

In September 1960, Mr Simpson advised the Commissioner of Crown Lands that unless the Crown conceded that the area west and at the northern tip of Papangaio J was the property of the Maori owners it was proposed to make application to the Court under section 21 of the Reserves and Other Lands Disposal Act 1956. The Commissioner of Crown Lands advised the Director General that he considered that the Crown should contest the claims of the Maori owners which was agreed to by the Director General.[590]

7.7 Maori Land Court, May 1962 & Appellate Court, December 1962

It was not until 15 May 1962 that the application to investigate title to the accretion to the Papangaio J block was heard by the Maori Land Court before Judge Jeune. The Court said it was authorised by the 1956 Act to determine 'whether any part of the endowment area is accretion to Papangaio J block over which title should be granted to the owners of that block'. The Court stated that accretion could not be obtained until it was claimed and by this application the owner had claimed it'. [591]

The Court found that the old river course had 'gradually and imperceptibly dried up' and that one half of it, the south-eastern half, was accretion to Papangaio J Block and the other half was accretion to sections 268 and 270 ('or to the legal road along the boundaries thereof)' which was the endowment land. The Court also found that the:

[588] Director General of Lands to Minister of Lands, 19 October 1959, ABWN W5021 6095 Box 591 22/2843 part 1 Wellington Land District – Foxton Harbour Board, 1956-1963, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 45.
[589] Ibid.
[590] NF Simpson, Morison, Spratt, Taylor & Co to Commissioner of Crown Lands, 13 September 1960; Assistant Commissioner of Crown Lands to Director General of Lands, 29 September 1960; Director General of Lands to Commissioner of Crown Lands, 3 October 1960, ABWN W5021 6095 Box 591 22/2843 part 1 Wellington Land District – Foxton Harbour Board, 1956-1963, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 47-48.
[591] Otaki Minute Book 69, 15 May 1962, pp. 291-301

> ... dry land above high-water mark to the west of Papangaio J block and of the accretion to it as above found gradually and imperceptibly was formed and is also accretion to Papangaio J Block. This area of accretion which for the purposes of the said subsection (6) the Court hereby finds as accretion is all the land to the south-west of a line drawn from where the middle line of the old river meets highwater on the north bank of the present course and extending north westerly along such middle line until it meets a line drawn from the extreme north tip of Papangaio J block in a northerly direction and to the south of a line drawn from such point of meeting in a westerly direction until it meets the high-water mark of the Tasman Sea.[592]

The Court ordered that the 'portion of the endowment area to the southwest of the middle line of the old river and to the south of the line proceeding thence westerly as above set out is accretion to Papangaio J Block title to which should be granted to the owners of that block'. Leave was 'reserved to either party to move for such order further or other order than may be necessary or expedient including an order for costs'.[593]

A file note on the Lands and Survey Department indicated that the Department was unhappy with the judgement which declared that the owners of Papangaio J were 'entitled to accretion to the mid-point of the old Manawatu riverbed'. It was noted that the Judge's reasons were 'lengthy' but that the 'main point' was that he 'disregarded completely a compiled plan prepared by the chief surveyor for the purposes of the Foxton Harbour Board Act 1908'. Therefore:

> Serious consideration must be given to an appeal as the consequential effect on the Crown financially may be great.[594]

The Acting Director General also commented in a letter to the Solicitor General that at the hearing Mr Simpson had appeared for the owners with whom the Crown had been negotiating. Also in attendance was a Mr Bergin of Bergin and Cleary who appeared for 'certain other owners'. This was, he said, a 'surprise to the Department'. He said that Mr

[592] Otaki Minute Book 69, 15 May 1962, pp. 291-301.
[593] Ibid.
[594] Lands and Survey Department file note, 16 May 1962, ABWN W5021 6095 Box 591 22/2843 part 1 Wellington Land District – Foxton Harbour Board, 1956-1963, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 50.

Bergin raised additional claims to that already raised by Mr Simpson and claimed that the Maori owners were 'entitled to accretion to the east of Papangaio J including part of the former bed and mouth of the Manawatu River'. He said that if the decision of the Court was left unchallenged the owners of Papangaio J would have 'rights to a considerable area of endowment land' which was subject to a number of leases on which many residences had been erected. He considered the finding of the Court to be 'wrong in fact and in law'. The matter was therefore referred to the Solicitor General to appeal against the decision if considered justified.[595]

The decision was indeed appealed to the Appellate Court by the Crown in respect to the finding that 'half of the old Manawatu River bed was accretion to Papangaio J Block'. Of note is that prior to the Appellate Court hearing but after the Maori Land Court's initial order, the Chief Judge of the Maori Land Court wrote to Judges Smith and Sheehan who were to hear the case. The Chief Judge said that the appeal into Papangaio J appeared to him to be a 'major one on the law of accretion'. He said that it would involve 'many interests and a valuable area of land with numerous dwellings, etc., on it and that it … [was] of the importance of say the appeal on Lake Omapere which had all the Judges other than the Chief Judge who felt himself disqualified'. Accordingly, he had tried to arrange a bench of five instead of three judges. This was not, however, possible, so had done the 'next best thing by adding Judge Davies to the panel who could sit by postponing hearings at Whanganui. He also said that he was 'aware of the potential danger of this but … consider[ed] that under the circumstances such risk is justified'. He did not elaborate further on what this risk was but he may well have been referring to the Court being tied two-all.[596]

On 13 December 1962, the earlier decision of the Maori Land Court was annulled and the Maori Appellate Court found that there was accretion to the block, but over a smaller area. The area found not to be accretion was the area of the Manawatu River Bed. The area found to be accretion was the 'subject of legislation in 1908 and 1924 which vested the land and

[595] Acting Director General of Lands to Solicitor General, 18 June 1962, ABWN W5021 6095 Box 591 22/2843 part 1 Wellington Land District – Foxton Harbour Board, 1956-1963, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 51-52.
[596] Chief Judge of Maori Land Court to Judges Smith and Sheehan, 11 September 1962, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 7; Acting Commissioner of Crown Lands, Department of Lands and Survey to County Clerk, Manawatu County Council, 18 January 1963, MDC 00024: 18: 8 Land - Accretion - Papangaio J. Block & vesting of Foxton Harbour Board Endowment, Manawatu County Council 1955 – 1966, Archives Central, Feilding. SW Document Bank, volume 3, p. 120.

other land in the Foxton Harbour Board as an endowment'.[597] That is, some of the land ruled to be accretion to Papangaio J was land vested in the Harbour Board as part of their endowment land.

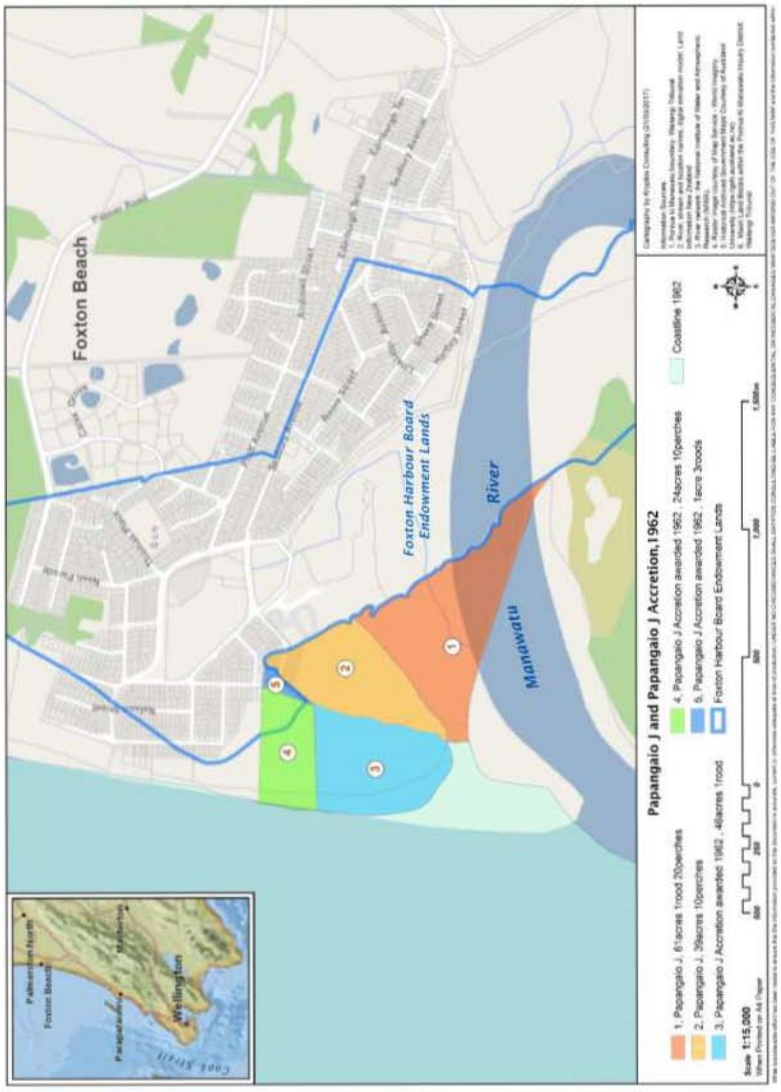
The decisions of the Courts traverse complex legal issues and are perhaps best left for legal submission. For the purposes of this report the decisions are usefully summarised in a letter from the Acting Commissioner of Crown Lands to the County Clerk of the Manawatu County Council in January 1963. He said that the result of the Appellate Court differed from the Lower Court in that it found 'only the portion of the endowment area lying to the south of a line drawn from the tip of Papangaio Block due west to the sea … [was] accretion to that block over which title should be granted to the owners of that block'. He added that it was the intention of both Maori and the Crown to accept that finding.

The accretion awarded to Maori comprised three areas totalling about 72 acres. The areas comprised 46 acres 1 rood; 24 acres 10 perches and 1 acre 3 roods. The latter two areas were those areas that the Foxton Harbour Board has assumed title over, had been leased and where houses had been built.

These three areas awarded to Maori and the two parts of the Papangaio J block are shown in the map below. Also, shown in the map is the Foxton Harbour Board endowment area which overlapped areas of what was ruled by the Appellate Court as accretion to Papangaio J and therefore owned by the Maori owners of Papangaio J. While the coastline is shown as at 1962, the blocks are overlaid on a 2016 map. Therefore, the position of the river is as per 2016.

[597] Hawkes Bay Maori Appellate Court Minute Book 8, 13 December 1962, p. 317.

Map 9: Papangaio J and Papangaio J Accretion, 1962



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7.8 Manawatu County Council Plans, August 1962

Between the Maori Land Court sitting and the Appellate Court decision, the *Manawatu Daily Times* reported that a plan to establish a toll gate and parking area at the Ocean Beach ramp at Foxton had been deferred due to 'legal technicalities in connection with Maori land'. It was reported that the chair of the Manawatu County Council, WL Carter, together with SL Kent, the County Clerk, had met with the Minister of Marine 'to obtain finality on the council's request for the control of the foreshore, a decision necessary before the scheme could be completed'. The Minister was said to be looking into the matter and had 'expressed concern at the decision of the Maori Land Court in granting a large area of the beach as accretion to the Papangaio Block already owned by the Maoris'. Mr Carter reported that the Minister considered the decision of the Court to be wrong and that the government had appealed again it. Since their meeting, the Minister had agreed in principle to the County taking over the foreshore but had asked that the scheme be deferred until the decision of the Appeal Court was known.[598]

It was also recorded in the article that the government had 'undertaken to negotiate with the Maori owners for the Papangaio block and to hand it over to the county without further charge'. The matter of the appeal, Mr Carter said, 'was one strictly between the Government and the Maori owners'. He also 'made it clear … that approval had been given in principle of the project, and that when the case was settled the county was committed to the scheme'. [599]

7.9 Purchase of Papangaio J

After the decision of the Appellate Court the Commissioner of Crown Lands wrote to the Manawatu County Council about the matter. It was noted that as the Lands and Survey Department had already sold the accretion within the endowment area to the Council the Department was 'faced with the problem of either attempting to purchase this area found to

[598] *Manawatu Daily Times*, 22 August 1962 extract in ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 6.
[599] Ibid.

be Maori accretion, or reducing your [the Council] purchase figure to exclude the area and buying out the few lessees concerned'.[600]

The Commissioner also pointed out that Papangaio J Block, over which part of Barber Street had been built, 'plus the balance of the possible accretion to the south of that awarded by the Appellate Court' to Maori was entirely outside the dealings entered into with the County and not included in the sale. The leases granted within this area were, however, 'trespass on what is and always has been Maori land'. He noted too that as the lessees had accepted their tenure and improved their sites there was an 'obligation to those people of either rectifying their titles or compensating them accordingly'. Rectification, he said, 'could be effected by the purchase from the Maori owners of either all the Maori Land or just that part affected by the leases'. This, he said, would have to be at a price that suited Maori which 'of course, could not be less than the present day capital value including the lessees improvements'. Alternatively, the lessees could be 'compensated by a cash settlement so leaving the land Maori Land to be controlled and managed by the owners'. The Commissioner then offered to help the Council and save it from embarrassment:

> Should your Council not desire to be embarrassed by the situation, which could develop if the land remains as Maori land, then this department would be prepared to enter into negotiations for purchase and ultimate disposal to you on similar lines to that which the endowment area was dealt. [601]

Meetings were then held between the Council and the Department. The contents of these meetings have not been located but the outcome was that the Lands & Survey Department would attempt to purchase the block from the Maori owners.

On 16 October 1963, the Commissioner of Crown lands at Wellington reported to the Director General of Lands about the proposed purchase by the Crown of Papangaio J and the accretion to Papangaio J. He said that valuations of the various portions of the block had been made by the Valuation Department and that preliminary discussions had been held with

[600] Acting Commissioner of Crown Lands, Department of Lands and Survey to County Clerk, Manawatu County Council, 18 January 1963, MDC 00024: 18: 8 Land - Accretion - Papangaio J. Block & vesting of Foxton Harbour Board Endowment, Manawatu County Council 1955 – 1966, Archives Central, Feilding. SW Document Bank, volume 3, p. 120.
[601] Ibid.

Mr Simpson described then as 'the Solicitor for the Maori Owners'. It was noted that the method of acquisition was a matter of concern for Mr Simpson who considered that the owners would prefer one settlement concerning both areas (the accretion and the block). Mr Simpson suggested that the land be taken by proclamation but was informed that this 'presented problems' particularly with respect to the areas dealt with by the Court (the accretion). It was also considered by the writer that legislation was the most suitable means of compensating the owners and would be quicker than acquiring the block under Part XXI of the Maori Affairs Act 1953 'with its associated problems of obtaining new lists of owners and the application of section 260 [which related to being required to pay at government valuation]'.[602]

The Commissioner advised that he had discussed the value of the lands with Mr Simpson who had supplied the valuation obtained by the owners. This, the Commissioner said, showed that the government value was £13,265 compared to the owners' total of £12,200 although the Maori valuation had been completed three years previously. Further:

> It should also be noted that while the Maori Valuation of the area dealt with by the Court exceeds the Government value by £1,857, the Government valuation of J Block, that is the area to which section 260 of the M.A. [Maori Affairs] Act would normally apply, is £2,922 in excess of the Maori valuation. A two method acquisition therefore could well mean that the Crown is forced into paying the higher price in both cases. Special legislation as suggested above could avoid this. [603]

The government valuation given in 1963 was that made in 1961. The valuation of part of Papangaio J on the north bank of 39.5 acres (later adjusted to 39 acres 10 perches) was £11,017 (including improvements of £7865). The area of 1.75 acres where a number of dwellings had been built and had previously been considered by the Foxton Harbour Board to be Endowment land was valued at £2003. The other area considered to be endowment land of 24 acres was valued at £70 (no improvements). The other portion of accretion which was then

[602] Commissioner of Crown Lands, Wellington to Director General of Lands, 16 October 1963, Valuation Department to Department of Lands and Survey, 16 July 1963, ABWN W5021 6095 Box 591 22/2843 part 2 Wellington Land District – Foxton Harbour Board, 1963-1978, Archives New Zealand, Wellington. Check quote SW Document Bank, volume 6, pp. 53-57.
[603] Commissioner of Crown Lands, Wellington to Director General of Lands, 16 October 1963, ABWN W5021 6095 Box 591 22/2843 part 2 Wellington Land District – Foxton Harbour Board, 1963-1978, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 53-54.

given as 38 acres (this was later changed on survey to 46 acres 1 rood) was valued at £115 (there were no improvements). The other piece of Papangaio J (river bank comprising 61 acres 1 rood 20 perches was said to be worth about £1 per acre and valued at £60. The total value was £13,265. [604]

In comparison, the Maori valuation totalled £12,200 which comprised £7,635 for Papangaio J, £960 for the 1.75 acres, £635 for the area of 38 acres (later changed to 46 acres 1 rood), and no value for the Papangaio J river bed. [605]

The Commissioner also said that discussions had not yet concerned themselves with a payment in respect to the 'adverse occupation of the Maori Land' though he felt this would be a subject raised by the owners. Such a payment, he said 'could best be included in a lump-sum settlement'. He recommended that an initial offer of £10,500 be made to the Maori owners in full satisfaction of all their lands and claims subject to the purchase being completed by special legislation. In addition, accrued rents on J block held by the Manawatu County Council should, he said, also be paid to the owners. Alternatively, the Maori owners could be offered, £12,200 in 'full satisfaction of all their lands and claims' if the acquisition of J Block was to be completed under Part XXI of the Maori Affairs Act. This represented £11,200 for J Block and £1,000 for the areas dealt with by the Court (the accretion). He emphasised that these would be initial offers and that no indication as to the acceptance or otherwise would be known until 'the very large number of owners had met to discuss the matter'. He considered it unlikely, however, that the owners would accept anything less than what had been mentioned. He asked that an early decision be made as Mr Simpson had mentioned that the owners were proposing approaching the Minister 'to achieve early finality on this matter'. [606]

The other issue raised by the Commissioner was the need to re-open negotiations with the Manawatu County Council noting that the County was at this stage 'reluctant to contribute

[604] Valuation Department to Department of Lands and Survey, 16 July 1963, ABWN W5021 6095 Box 591 22/2843 part 2 Wellington Land District – Foxton Harbour Board, 1963-1978, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 55-57.
[605] Ibid.
[606] Commissioner of Crown Lands, Wellington to Director General of Lands, 16 October 1963, ABWN W5021 6095 Box 591 22/2843 part 2 Wellington Land District – Foxton Harbour Board, 1963-1978, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 53-54.

towards the purchase of J. Block but that because of the embarrassing position of the block may be persuaded into giving some financial assistance.'[607]

On receipt of this letter, the Director General of the Department of Lands & Survey wrote to the Secretary for Maori Affairs regarding the Department's proposed purchase of Papangaio J. He firstly outlined the background to section 21 of the Reserves and Other Lands Disposal Act 1956 whereby the Foxton Harbour Board was abolished and the administration of the land formerly held by the Board transferred to the Manawatu County as an endowment part of which included the Foxton Beach township. The Director General noted that the township extended on to the Maori owned Papangaio J block and 'at the time legislation was being considered, the Maori owners made representations regarding this block and also regarding claims to portions of the endowment area'. He said that 'in order to protect the rights of the Maori owners' the 1956 legislation was enacted which provided that if the Maori Land Court found any of the land vested in the Manawatu County Council for endowment purposes to be owned by Maori then the land ceased to be subject to the provisions of section 21 of the Act. Subsequently, he said, the Crown endeavoured to purchase part of Papangaio J Block of 39 ½ acres and accretion to it consisting of 38 acres (which was later found to be 46 acres 1 rood) and also the present riverbed of approximately 60 acres. The Crown, he stated, 'did not contest ownership of these areas but did contest claims to portions of accretion containing 1.75 acres and 24 acres and a later claim for part of the original riverbed to the north of these areas'. [608]

The Director General also stated that Mr Simpson had advised that Maori were prepared to sell all the land to the Crown but difficulties had arisen as to the 'easiest and quickest method of acquiring the areas'. The solicitor and the Department preferred one settlement embracing all the areas. Once settlement was effected it would be 'necessary to validate the vesting the Manawatu County Council of the two areas dealt with by the Court'. He said that he understood that Papangaio J Block had a multiplicity of owners and that no succession orders have ever been made'. The Director General asked that in view of the 'associated problems in obtaining a new list of owners for Papangaio J block' which was required in order to arrange a meeting of owners to consider a purchase under Part XXI of the Maori Affairs Act 1953,

[607] Ibid.
[608] Director General, Department of Lands and Survey to Secretary for Maori Affairs, 4 November 1963, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 8-9.

whether there was 'any other easier method of acquisition of the block and the accretion area'. He suggested that it might be possible to vest the areas in the Maori Trustee with power of sale. [609]

Several Maori Affairs officials commented on the letter. One said that that the 'easiest course would be as suggested, for either the lands or the solicitors to apply to the Court for an order under section 438 to sell' (vested in the Maori Trustee for purpose of sale). A second official said that he did not think that there would be any 'undue difficulty in getting a quorum for a meeting of assembled owners' (indeed a quorum under the Act was at this time just three owners). He said that there were about 78 owners on the partition order and that a number of succession orders had been made since. In addition, he had 'put through about 30 Papangaio successions' himself several years previously which included the J block. He thought they could ask the Palmerston North Office for an up to date list of owners and addresses and that if they got on to the job 'smartly' then the meeting could be held in time to get the resolutions confirmed at the January Wellington Court. [610]

The suggestion of the later official was taken up with Maori Affairs (Head Office) who asked the Palmerston North office to supply a search of the title together with an up to date list of the owners and addresses where known. It was also noted that it was the Office Solicitor who saw 'no great difficulty' in obtaining a quorum for a meeting of owners as a number of successions had been made since the block was partitioned. The Director General of Lands was also advised that the matter would be progressed in this way.[611]

(A list of owners was compiled which listed 305 names (though some had died) for the 100 acres, 1 rood 30 perches. Particulars of title revealed that there were no survey or rate charging orders on the land.[612])

[609] Ibid.
[610] Secretary for Maori Affairs, Head Office to Director General, Department of Lands & Survey, 8 November 1963, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 10.
[611] Director General, Department of Lands and Survey to Secretary for Maori Affairs, 4 November 1963, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 8-9.
[612] List of owners; particulars of title, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 12-22.

The Director General of Lands responded on 28 November that he did not wish to proceed in this way believing it preferable for the Crown to acquire title by special legislation 'after first reaching agreement with the owners for an overall settlement'. He said that there were 'several important side issues involved and … more to be done than merely purchasing lands'. He explained that there was firstly a 'title complication with respect to the area of endowment land which the Maori Land Court found to be accretion to Papangaio J over which title should be granted to the owners of the Block', that secondly there was 'the difficulty of section 260 Maori Affairs Act 1953' which provided that the Crown had to purchase at capital valuation; and thirdly, there were 'questions of compensation for trespass'. [613]

He noted again to the Secretary for Maori Affairs that during the period that the endowment areas were vested in the Foxton Harbour Board that the Board obtained title to the former bed of the Manawatu River and leased and subdivided the land including part of Papangaio J Block 'thus committing a trespass on those lands'. Also, that 'strictly speaking the Board had no power to grant these leases and the Maori owners … [were therefore] entitled to all the improvements erected on the land by the lessees'.[614]

He also stated that the owners of Papangaio J Block had advised through their solicitors that over the years they had 'objected to the Harbour Board against not only leases over the block proper, but also against the vesting in the Board of part of the former riverbed'. He reiterated that when the Foxton Harbour Board was abolished, section 21 of the Reserves and Other Lands Disposal Act 1956 was enacted under which certain areas of land, called the endowment area, were vested in the Manawatu County Council under subsection (6). Provision was therefore made for the Maori Land Court to enquire into the Maori claims that certain parts of the endowment area were actually accretion to the Papangaio J Block. The Court enquired into the position and found that indeed certain parts of the endowment area should be accretion to Papangaio J. He then outlined the 'problem' as he saw it:

A. Part of the area vested in the Manawatu County Council (hereinafter referred to as "the Corporation") found by the Maori Land Court to be accretion to Papangaio J

[613] Director General, Department of Lands and Survey to Secretary for Maori Affairs, 28 November 1963, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 32-34.
[614] Ibid.

Block over which title should be granted to the owners of that block. This land also requires to be dealt with as to –

(1) Parts which are subject to leases granted by the Foxton Harbour Board
(2) Parts of which have been the subject of leases by the Corporation; and
(3) Parts still not alienated in any form

B. Papangaio J Block from the following aspects –

(1) Land over which the Foxton Harbour Board committed trespass (which is still continuing) by granting leases and on which the lessees have erected buildings.
(2) Unoccupied land
(3) Land which the owners claim is accretion to Papangaio J Block but in respect of which application under the Land Transfer Act has not yet been submitted.

C. Settlement in respect of the trespass over the years. [615]

The Director General also said that by reason of the finding of the Maori Land Court, the Minister was required, as per section 21(6) to 'adjust the terms on which the endowment area is vested in the Corporation' (the Manawatu County Council) noting that the Court order did not itself vest the land in the Maori owners. The order merely gave a finding in accordance with this subsection that 'title should be granted to the owners of that block'. The benefit of arranging to compensate the Maori owners for the land instead of vesting title in them, he said, was that it would not be necessary to make any adjustment with the Corporation. That is, instead of making any adjustments with the Corporation, the Crown could compensate the Maori owners for all the accretion or 'for so much of the accretion as has been subdivided and leased and over which the Crown desires to retain title'. [616]

He said that if title to any of the land comprised in the order of the Court was granted to Maori it would be subject to any 'valid dealing already made'. He also stated that the Crown was 'required to consider the acquisition of Papangaio J Block to assure the lessees under the invalid leases granted by the Foxton Harbour Board of a good title or, alternatively, to

[615] Ibid.
[616] Ibid.

acquire and compensate them for the interests they have obtained from the Foxton Harbour Board'. [617]

He also elaborated further on the issue of the valuation of the land noting that if the Crown acquired Papangaio J pursuant to Part XXI of the Maori Affairs 1953, the Crown 'must meet the difficulties of section 260 (1)'. This section stated that the Crown had to purchase land from Maori for a consideration no less than the capital value valued under the Valuation of Land Act 1951, which was, essentially, the government valuation of the land. In addition, he said, under 260(2) a special valuation might also be required. As all the improvements, could be claimed by Maori, the government valuation had to also include the value of the improvements. He advised too that the Commissioner of Crown Lands had obtained details of the government valuation of the lands to be acquired which was the total of all the individual areas subject to leases together with unleased area. The unimproved value was £4,160, improvements (effected by the lessees) were valued at £9,105 making a capital value of £13,265. Messrs Morison and Taylor (who acted for 'the owners' (how many of the owners was not specified) had obtained a valuation three years previously which gave an unimproved value of £12,200. He noted that the government valuation could 'only be compared' (was similar) with the owner's valuation because the owner's valuation did not include any improvements. So far, he said, the Maori owners in negotiations had not made any claim for the value of the improvements 'on their land' but if the matter was submitted to the Maori Land Court under Part XXI the Court was 'bound to insist that the Crown pay for these improvements'. He said that there was a 'substantial difference between the valuations … held by the owners and the Crown for the lands exclusive of improvements'. The Maori Land Court, he said 'might require the Crown to purchase the land at the values fixed by the private valuers for the owners of the land exclusive of improvements plus the value of improvements as valued by the Valuation Department'. This meant that 'the Government valuation of £13,265 as at present made could be substantially increased by the Court'. He said that the 'difficulty' had been discussed with Mr Simpson who said that it 'could be overcome by taking the land by proclamation' and that 'it should be possible for the amount of compensation to be agreed upon and then there would be no objection as far as his clients

[617] Ibid.

were concerned to the formal taking of the land by proclamation'. This, he said, could be done under the Public Works Act for 'better utilisation'. [618]

The Director General also elaborated on the question of damages for trespass noting that 'even conceding that the Minister would be prepared to use of the powers of taking, there would still be the question of damage for the trespass which had continued for many years. Strictly speaking, he said, a large amount of the damages would be statute barred. He did note, however, that the Manawatu County Council has set up a separate account for rents in respect of all the leases over Papangaio J Block. An assessment was also required for damages for the occupation prior to the lands being vested in the corporation. [619]

He thought the best solution was for a negotiation with the Maori owners to settle compensation and the question of trespass. If title to the lands affected by the Court's decision was not granted to Maori, he thought that any settlement should be ratified by legislation. If legislation was required, there would be 'no reason why the acquisition of Papangaio J should not also be included and the question of damages for trespass.' If the Crown acquired Papangaio J under Part XXI of the Maori Affairs Act, only part of the problem was settled and the 'difficulties' of the Crown 'by reason of payment for the land, would be greatly accentuated'. He also noted that Mr Simpson had mentioned that the owners had mooted the idea that the money received could be used to set up a special trust. If they wished to do so, this purpose could be included in the legislation.[620]

The Director General concluded that there were many difficulties involved and it was felt that the best course would be to reach agreement for an overall settlement with the solicitors, put this to a meeting of owners for their agreement and then 'promote legislation ratifying the settlement and providing for the extinguishing of the Maori owner's rights to the lands'. He asked if the Secretary for Maori Affairs approved the proposals. [621]

The Secretary for Maori Affairs simply responded that he approved the proposals put forward in the last paragraph of the Director General's memorandum which was essentially to reach agreement for an overall settlement with the solicitors, put this to a meeting of owners for

[618] Ibid.
[619] Ibid.
[620] Ibid.
[621] Ibid.

their agreement and then 'promote legislation ratifying the settlement and providing for the extinguishing of the Maori owner's rights to the lands'. He provided no further comment on the issue.[622]

The Director General then advised the Commissioner of Crown lands at Wellington of the Secretary's agreement and asked that the Commissioner negotiate with the solicitors for a settlement 'on the basis set out in …[his] memorandum of 16 October (discussed above). He also said that he agreed that once settlement had been reached the Manawatu County Council should be approached for a 'contribution towards the purchase price'.[623]

About six months later the Commissioner of Crown Lands was asked for a progress report on the matter. He reported that Mr Simpson was interviewed at his office on 16 December and informed of the Crown's proposal and formal offer. Mr Simpson agreed to present the offer to the owners and advise the Department of their decision. The Commissioner noted that as yet, Mr Simpson had not heard from the owners and could give no reason for the delay. He said he had been contacted on several occasions and had 'pressed the owners for an early decision'. [624]

In October 1964, Mr Simpson advised the Commissioner of Crown Lands that the Maori owners would accept the sum of £20,000 in full and final settlement of all claims against the Crown, the Foxton Harbour Board and the Manawatu County Council. In addition, it was a condition of the offer that all legal costs and disbursements incurred by the Maori owners in establishing the claim or on the negotiations with the Crown be met by the latter. These were estimated to be £750. Mr Simpson noted, presumably referring to the perceived delay in coming to the decision, that the owners were 'numerous and that in order to obtain a decision which can be said to represent the views of the majority it … [had] been necessary to refer the question to committees and to hold meetings at several different points'. He said that a

[622] Secretary for Maori Affairs to Director General of Lands, 5 December 1963, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 11.
[623] Director General, Department of Lands and Survey to Commissioner of Crown Lands, Wellington 9 December 1963, ABWN W5021 6095 Box 591 22/2843 part 2 Wellington Land District – Foxton Harbour Board, 1963-1978, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 58.
[624] Commissioner of Crown Lands, Wellington to Director General of Lands, 25 June 1964, Valuation Department to Department of Lands and Survey, 16 July 1963, ABWN W5021 6095 Box 591 22/2843 part 2 Wellington Land District – Foxton Harbour Board, 1963-1978, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 59-60.

'final meeting was held recently at which a decision was reached which represent[ed] the unanimous view of those present'.[625]

In early November, the Department received advice from the Valuation Department that an overall increase in the sale values at Foxton Beach compared with the roll values he had quoted on 16 July 1963 (using 1961 figures) were 'between 20% and 25%' which was a 'fair figure' for Papangaio J and the area of 1.75 acres that had been considered endowment land. He said that the accretion to Papangaio J which he described as 'raw sandhills' had a 'doubtful market value at any figure' and the previous figure (of £115) was 'sufficient'.[626]

A figure of £16,194 was given as the total median capital value (an increase of between 20 and 25 percent of the 1961 figures). This comprised the median figure between £13,220 and £13,770 for the northern area of Papangaio J comprising 39.5 acres, the median figure between £2,403 and £2,504 for the 1.75 acres described as 'endowment area Court award', £115 for accretion to J, £70 for accretion to Court award and 60 for the area of Papangaio J comprising river bed. [627]

In November 1964, the Commissioner of Crown Lands advised the Director General of the offer by Mr Simpson and forwarded copies of the offer as well as Valuation Department memos referred to above. He noted that the solicitor had referred to meetings being held at several different points and that he had assumed that they represented 'all of the 305 owners or the majority of them and not just one group as was the case during the Court hearings'. Mr Simpson, he said, had indicated his intention to contact a Mr Bergin who during the Court hearings 'represented the remaining owners'. He said that he therefore thought it 'safe to accept the Solicitors offer as fully expressing the wishes of the owners'. With regard to the offer from Maori, he commented that, excluding legal expenses, it was:

[625] NF Simpson, Morison, Taylor & Co, Wellington to Commissioner of Crown Lands, Wellington, 9 October 1964, ABWN W5021 6095 Box 591 22/2843 part 2 Wellington Land District – Foxton Harbour Board, 1963-1978, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 63.
[626] Branch Manager, valuation Department to Chief Surveyor, Department of Lands and Survey, 22 November 1964, Valuation Summary, Department of Lands and Survey, November 1964, ABWN W5021 6095 Box 591 22/2843 part 2 Wellington Land District – Foxton Harbour Board, 1963-1978, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 61-62.
[627] Valuation Summary, Department of Lands and Survey, November 1964, ABWN W5021 6095 Box 591 22/2843 part 2 Wellington Land District – Foxton Harbour Board, 1963-1978, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 61.

> … less than 20% in excess of the Government Valuation and is less than the Maoris' unimproved value plus the Crown's value for the improvements that it has been suggested could be the final purchase price. Considering that this negotiation involves more than just the purchase of lands the Maoris offer if not exactly generous must at least be considered reasonable.[628]

Later that month, the Department of Lands and Survey advised the Department of Maori Affairs that the 'solicitors acting for the Maori owners' had advised that they would accept the sum of £20,000 'in full and final settlement of all claims which they may have against the Crown, the Foxton Harbour Board, or the Manawatu County Council in respect of Papangaio J Block, or arising out of the making over thereof of any accretion thereto'. It was also a condition of the offer that all legal costs and disbursements incurred by the owners in the course of establishing their claim and on negotiations, be met by the Crown. These were thought to be around £750. The Director General noted that the up to date government valuation of the lands to be acquired by the Crown was approximately £16,194. He continued:

> As you know, the owners of Papangaio J Block are numerous and the solicitors advise that in order to obtain a decision which could be said to represent the view of the majority it was necessary to refer the question to Committees and to hold meetings in several different places. A final meeting was then held when the above offer was reached, and which represents the unanimous view of those present'.[629]

The Director General said that it was proposed to accept the Maori offer and as indicated previously, to 'ratify the settlement by special legislation' which would 'also provide for extinguishing the Maori owners' rights to the lands'. Before proceeding, he wanted confirmation that it was in order to do so 'in view of the fact that the offer was not reached at a meeting of assembled owners'. He thought, however, that although no such meeting had been held, that 'the decision reached at the final meeting fully expresse[d] the wishes of the

[628] Commissioner of Crown Lands, Wellington to Director General of Lands, 10 November 1964, ABWN W5021 6095 Box 591 22/2843 part 2 Wellington Land District – Foxton Harbour Board, 1963-1978, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 64.
[629] Director General, Department of Lands and Survey to Secretary for Maori Affairs, 24 November 1964, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 23.

Maori owners'. He concluded by asking whether, in view of the large number of owners, the money could be paid to the Maori Trustee for distribution.[630]

Maori Affairs officials discussed the letter with a Mr McRae who asked his senior, Mr Blane, whether they should ask the Palmerston North Office to check with representative owners of Papangaio J to see if the decision reached by the various committees 'do in fact represent the views of the owners' (no letter has been located to this effect). It was also thought that the Maori Trustee would be willing to accept the compensation of behalf of the owners for distribution to them. In response, Mr Blane asked that the Lands Department be advised that Maori Affairs thought that the proposal fitted the situation and that the Maori Trustee would distribute the money for the owners, with no commission being charged. This was duly relayed to the Department of Lands & Survey. [631]

The Director General then sought the permission of the Minister of Lands for the expenditure of £20,000. His submission noted that the solicitors for the Maori owners had advised that they would accept £20,000 in 'full and final settlement of all claims' they had against the Crown, the Foxton Harbour Board and the Manawatu County Council in respect to Papangaio J. In addition, it was a 'condition of the offer that all legal costs and disbursements incurred by the owners in establishing their claim or on negotiations be met by the Crown' which was estimated to be about £750. The Director General said that the up to date capital value of the land was 'in the vicinity of £16,194' and that 'on this valuation' the offer was 'considered reasonable particularly bearing in mind that they would be entitled to compensation for trespass plus a proportion of accrued rents received from the leases granted over their lands which would amount to approximately £800'. He said too that the Department of Maori Affairs agreed that the proposed settlement was 'satisfactory'.[632]

He recommended that the Minister approve the expenditure of 'up to £21,000 in full and final settlement'. Once settlement was effected it was proposed to ask the Manawatu County

[630] Ibid.
[631] Notes between Maori Affairs officials, 27 November and 2 December 1964 on Director General, Department of Lands and Survey to Secretary for Maori Affairs, 24 November 1964; Secretary for Maori Affairs to Director General of Lands, 4 December 1964, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 23.
[632] Director General of Lands to Minister of Lands, 14 December 1964, ABWN W5021 6095 Box 591 22/2843 part 2 Wellington Land District – Foxton Harbour Board, 1963-1978, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 65-66.

Council for a 'contribution towards the costs' but he was 'not hopeful' that it would be successful. The Minister approved the payment on 22 December 1964.[633]

In March 1965, the Commissioner of Crown Lands advised the Director General of Lands that a written undertaking had been received from the solicitors for the Maori owners that the £20,000 was in 'full and final settlement' with the proviso that solicitor's costs totalling £885.17.10 be paid and that the £20,000 would be free of Maori Trustee Commission. The Maori Trustee then agreed to accept the money for distribution without charging the usual five percent commission. Later that month, the Department of Lands & Survey forwarded a cheque for £20,000 for the Maori Trustee 'in full and final settlement of all claims by the Maori owners in respect of the above block'. The Department said that it understood that the Maori Trustee had agreed not to charge commission and that the full amount would be available for distribution to the owners. The money was then forwarded to the Palmerston North Maori Affairs office by the Maori Trustee who asked that the money not be distributed until advised as 'validating legislation' was under contemplation.[634]

The following month, the Palmerston North office advised Head Office that they were receiving enquiries from some of the owners as to when they could expect to get their share of the compensation money and asked for an indication as to how long it would be before payment was made. The District Office was told that it would be towards the end of the coming session of Parliament before legislation was passed, which was probably September or October of that year.[635]

Legislation was prepared which was proposed to be included in that year's Reserves and Other Lands Disposal Act and forwarded by the Director General of Lands to the Commissioner of Crown Lands for his perusal and comment. It was also noted that the District Land Registrar and the solicitors acting for the Maori owners should also be asked

[633] Ibid.
[634] Commissioner of Crown Lands to Director General of Lands, 17 March 1965; Director General of Lands to Commissioner of Crown Lands, 17 March 1965, ABWN W5021 6095 Box 591 22/2843 part 2 Wellington Land District – Foxton Harbour Board, 1963-1978. SW Document Bank, volume 6, pp. 67-68; Director General, Department of Lands and Survey to Maori Trustee, 31 March 1965; Maori Trustee, Head Office to District Officer, Palmerston North, 13 April 1965, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 24-25.
[635] District Officer, Palmerston North to Maori Affairs, Head Office, 23 April 1965, Maori Trustee to Palmerston North, District Office, 21 May 1965, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 26.

whether they agreed with the clause as drafted. The Secretary for Maori Affairs was also asked for comments. The main issue raised by the Secretary for Maori Affairs concerned the status of the leases. The Secretary noted that a clause vested certain land in the Manawatu County Council subject to all leases affecting the land. He asked whether the sub-clause should go further and actually validate the leases. He said that the result of the proceedings in the Maori Land Court and the Maori Appellate Court was that the land was in the title of Maori who were not parties to the leases, and even if they were parties, 'the limitations under section 235 of the Maori Affairs Act 1953 would have applied'. He felt that the lessees might feel 'more secure' if their leases were validated by legislation. (There is no response to this letter on file).[636]

On 11 November 1965, Mr Simpson acknowledged receipt of a letter from the Commissioner of Crown Lands that had advised that provision had been included in the Act that the Maori Land Court might award payment from the compensation moneys of expenses incurred by individual owners. Mr Simpson said that it was agreed that it was not necessary to withhold distribution of the major portion of the compensation pending the hearing of the claims which he estimated would be covered by £500. He noted too that the owners held a meeting on 14 March 1964 when 'individual claims were submitted and approved' which totalled £468. This was said to cover all likely claims. He also advised that they would be lodging the formal applications with the Court as soon as they had the opportunity of viewing the legislation. [637]

Later that month, the Director General advised the Secretary for Maori Affairs that £500 of the compensation money should be withheld to meet claims under subsection 3 of section 9 Reserves and Other Lands Disposal Act 1965.[638]

[636] Director General of Lands to Commissioner of Crown Lands, Wellington, 5 August 1965; Director General of Lands to Secretary for Maori Affairs, undated; Secretary for Maori Affairs to Director General of Lands, 10 August 1965, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 27-28.
[637] NF Simpson, Morison, Taylor & CO, Barristers & Solicitors to Commissioner of Crown Lands, 11 November 1956, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 29.
[638] Director General, Department of Lands & Survey, 23 November 1965, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 30.

The Maori Trustee in Wellington then advised the District Office in Palmerston North that under section 9 which came into force on 28 October, the Maori Trustee was directed pay the sum of £20,000 to the owners of Papangaio J block subject to the Maori Land Court, on the application of any person made not later than 6 months after the date of the passing of the Act, ordering payment from the compensation to 'any owner or other person of such sum as the Court deems reasonable in reimbursement of expenses incurred or loss of wages suffered incidental to the investigation of the ownership of the endowment area'. He said that the Lands Department had been advised that £500 would be sufficient to meet any claims and that to be 'on the same side', it 'would be best to hand onto £1,000. He then asked that the District Office proceed with the distribution of £19,000.[639]

Therefore, while Mr Simpson had managed to secure the £20,000 exclusive of his fees, he had not thought to make it exclusive of costs incurred by the owners meaning that the compensation was actually closer to £19,000. Given that the land had been valued at £16,194 in November 1964 and that and the value of accrued rents was recorded as £800, compensation for trespass by the Harbour Board amounted to around £2000. The £19,000, if divided equally among the 305 owners, represented just over £62 each.

Of note was that shortly after the sale, the Manawatu County Council said that it regretted that the Crown was required to pay £20,000 for the Maori land and accretion as it considered the amount paid 'exorbitant'. It would not agree to paying £4,200 to the Crown for the land and thought that the land should be included as part of the purchase of the other endowment land which the Council had paid £40,000 for. The Council later agreed to pay £2,200 for it.[640]

7.10 Reserves and Other Lands Disposal Act, 1965

The compensation payment to the Maori owners and the vesting of the land in the Crown and the Manawatu County Council was formalised in section 9 of the Reserves and Other Lands Disposal Act, 1965, which came into force on 28 October of that year. Section 9 (1) firstly

[639] Maori Trustee, Head Office to District Officer, Palmerston North, 30 November 1965, ACIH 16036 MA 1/149 5/13/255 Papangaio J Block, Accretion of land at Foxton, 1963-1965, Archives New Zealand, Wellington. SW Document Bank, volume 6, p. 31.
[640] County Clerk, Manawatu County Council to Commissioner of Crown Lands, 15 September 1965, MDC 00024: 18: 8 Land - Accretion - Papangaio J. Block & vesting of Foxton Harbour Board Endowment, Manawatu County Council 1955 – 1966, Archives Central, Feilding. SW Document Bank, volume 3, p. 121.

extinguished all rights and claims by the owners of Papangaio J block including Papangaio J accretion in respect to title to, trespass over and adverse occupation of the land. The payment of £20,000 was said to be for the purpose of compensating owners and was to be vested in the Maori Trustee for distribution 'without deduction to the persons entitled thereto in full satisfaction of all claims and rights whatsoever in respect of the land'. The Maori Land Court was given the power to deduct from the compensation sum, an amount it deemed 'reasonable in reimbursement of expense incurred or loss of wages suffered incidental to the investigation of the ownership of the endowment area'.

As noted above the accretion comprised three sections of 24 acres 10 perches; 46 acres 1 rood and 1 acre 3 roods. The two most northern portions of 24 acres 10 perches and 1 acre 3 roods were vested in the Manawatu County Council. The land vested in the Crown was Papangaio J (made up of two parts: 39 acres 10 perches and 61 acres 1 rood 20 perches) and the third area of Papangaio J accretion comprising 46 acres 1 rood. The leases were also deemed to be valid and were to remain in force.

In 1966, 85 acres 1 rood 10 perches were vested in the Manawatu County Council as an endowment by the Crown. This comprised the northern portion of Papangaio J (39 acres 10 perches) and the area of accretion to Papangaio J comprising 46 acres 1 rood. This followed the payment of £2,200.[641]

7.11 Sale of land to leaseholders

Claimants note that 'although the government had insisted in 1956 that the land was to be leased in perpetuity, without option to purchase freehold titles, Council approaches to the Minister of Lands resulted in a decision being reached in 1968 that lessees be given the option to freehold properties'.[642]

[641] Director General of Lands to Minister of Lands, 18 October 1966, and plan; Commissioner of Crown Lands to Director General of Lands 29 November 1965, ABWN W5021 6095 Box 591 22/2843 part 2 Wellington Land District – Foxton Harbour Board, 1963-1978, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 70-71.
[642] Statement of Claim of Milton Rakei Te Kura Rauhihi, Hayden Bronsley Turoa and Edward Whatanui Devonshire on behalf of themselves and Nga Hapu o Himatangi, being members of Ngati Te Au, Ngati Turanga and Ngati Rakau (hapu of Ngati Raukawa), Wai 1618 # 1.1.

A letter in 1967, from N Dustin of Foxton to WH Brown, MP suggested that the freehold of the leases had been discussed in the mid-1950s. Mr Dustin said that Mr Brown would 'no doubt recall' that when the abolition of the Foxton Harbour Board was being discussed, the Minister agreed that after the Manawatu County Council had administered the area for ten years it was 'reasonable to assume that the rents received would have cleared the roading and surveying costs of the Foxton Beach area' and that it 'would be possible at the end of that time to offer the section freeholds to the lessees'. Mr Dustin asked whether this was indeed a possibility. The matter was referred to the Minister of Lands, Duncan MacIntyre who acknowledged to Mr Dustin that representations were indeed made at the time of the endowment in the mid-1950s suggesting that the lessees should have 'immediate right to freehold their sections'. Minister MacIntyre said that the previous Minister (Mr Corbett) 'declined to agree because it was very doubtful whether the Council would then be prepared to take over administration of the township area'. Also, that a 'fresh basis of settlement would have had to be negotiated'. He confirmed that it was also stated that 'after the lapse of a number of years, following improvement of the roads and perfecting of the titles the question could be reviewed again'. As the land was vested in the Council, he suggested that the lessees approach the Council and if the Council was agreeable to lessees being granted the freehold, the Council 'could apply for legislation to be passed to give effect to this'.[643]

Indeed, there is a letter from the then Minister of Lands, Mr Corbett to the Manawatu County Council stating that it was not possible at that time but in fifteen or twenty years-time it 'might be feasible to revive the question of granting freehold titles'. No action could be taken, however, under 'present conditions'. [644]

In 1968, section 13 of the Reserves and Other Lands Disposal Act 1968 was enacted which gave the Manawatu County Council the power to sell or otherwise dispose of the land.

The *Manawatu Standard* reported that in the same year, the sale of freehold land to leaseholders and sale of unleased land began. Also, that in 1989, the Horowhenua District

[643] N Dustin, Foxton to WH Brown, MP, 6 February 1967; Minister of Lands, Duncan MacIntyre to N Dustin, undated, circa May 1967, ABWN W5021 6095 Box 591 22/2843 part 2 Wellington Land District – Foxton Harbour Board, 1963-1978, Archives New Zealand, Wellington. SW Document Bank, volume 6, pp. 74-76.
[644] EB Corbett, Minister of Lands to County Clerk, Manawatu County Council, undated, circa 1956, MDC 00024: 18: 8 Land - Accretion - Papangaio J. Block & vesting of Foxton Harbour Board Endowment, Manawatu County Council 1955 – 1966, Archives Central, Feilding. SW Document Bank, volume 3, pp. 122-123.

Council 'took over the property and funds from leasing and selling land [and] that the Foxton Community Board advised council how money should be spent'. [645]

7.12 Summary

It is questionable whether the trespass of Papangaio J land and accretion by the Foxton Harbour Board who leased it and allowed the building of houses equates with the concept of undisturbed possession for the land's Maori owners. The Crown though blamed it on a lack of accurate survey data. That the Board was able to do this for a number of years despite protest from Maori also raises questions as to the extent to which Maori interests were acknowledged and adequately protected.

Part of the motivation by the Crown to sell the land was to rid the Council of the embarrassment of the Board having trespassed so blatantly on Maori land. It was also important to the Department and Council to be able to give security of tenure to the leaseholders and for the Council to be able to develop the area as it desired. This also raises questions as to whose interest the sale was in particularly as the land could have served as an investment opportunity for Maori (it already been subject to 17 individual leases). This possibility was raised by officials on several occasions but there is no record of it having being discussed any further as a viable option. Indeed, long-term leasing was not an untried approach and it could have protected the interests of both parties especially the owners who would have retained ownership.

It is difficult to categorically state that the sale was what was wanted by all the owners. Certainly, there appeared to be a group of owners represented by Mr Simpson who were said to be agreeable to the sale. The Department of Lands and Survey who negotiated the sale had, however, only the word of who they had earlier described as the solicitor for 'some of the owners' as to the extent of consultation and consent. Mr Simpson said that there had been a number of meetings and at the final meeting, the sale and offer of £20,000 was agreed to unanimously. At the 1962 Maori Land Court hearing other owners were represented by another solicitor but there is no correspondence from him among the records viewed.

[645] *Manawatu Standard*, 22 July 2009 from http://www.stuff.co.nz/manawatu-standard/news/2662032/Foxton-residents-await-account-approval

There is also a question concerning the adequacy of the compensation. The valuation of the land was given at £16,194 and the value of accrued rents was recorded as £800. A deduction from the £20,000 figure of £1000 for owner's costs were also made. (It is not recorded whether the amount left after deductions for owner's costs was ever distributed to the owners or instead stayed with the Maori Trustee). This meant that of the £19,000 actually received, £2000 represented compensation for trespass. It is also of note that the solicitor was successful in receiving £885.17.10 which was a significant amount more than what the 305 owners would have received if the £20,000 (or £19,000) was divided equally. What raises questions about its adequacy is the content of some of the correspondence from the Department of Lands and Survey which suggests that while the Department felt that Maori were getting an adequate deal they could have claimed more. The Department's desire to avoid having the Maori Land Court assess the compensation and preference for special legislation also suggests that the Department felt that a larger amount of compensation would have been awarded had the compensation been assessed in this way. The Manawatu Council's response that the payment was 'exorbitant' may well have been part of a strategy to avoid having to pay the Crown back for the land. They did indeed succeed in halving the initial asking price of the Crown.

301

Appendix B: The Foxton Beach Township Endowment Land - Report G.M.19 - 15 March 1990

15 March 1990

REPORT:
G.M. 19

The Chairperson & Members,
FOXTON COMMUNITY BOARD.

THE FOXTON BEACH TOWNSHIP ENDOWMENT LAND

At the Foxton Community Board Meeting in December 1989, a request was made for a report being prepared, detailing properties and reserves within the Board's new area. My Report GM 15 which was submitted to the February meeting of the Board, provided details of such land, excluding details of the leasehold land at Foxton Beach, which was to be the basis of a further report.

In this report, I have attempted to provide some of the historical background to the Foxton Beach endowment land, along with the current status of the land which is principally being used for residential purposes, as well as conveying the current position of the special Foxton Beach Endowment Fund.

Historical Background

In his book entitled 'Line of the Road', Mr M.H. Hobcroft dedicated a whole chapter to 'the Foxton Endowment', noting the series of events which finally saw this land vested in the Manawatu County Council. This book was commissioned by the Manawatu County Council to mark its centenary year in 1976.

The existence of this endowment land came about following the passing of the Foxton Harbour Act of 1876 which initially saw an area of 407 acres being scheduled as Foxton's endowment, namely "a section in 'the Township of Canarvon' formally known as the 'Omarupuku' Bush, but now designated as the Signal Station Reserve." It was recorded that the newly formed Manawatu County Council protested 'most emphatically' and passed a resolution that everything possible be done to persuade government to have a block of land of say 25,000 acres being set aside as an endowment for the Foxton Harbour Board. Quite strong local feelings existed at this time as to the inadequacies of the existing port facilities to meet the increasing demand being made on what was considered an inadequate wharf. The Council's resolution was subsequently withdrawn, and the Chairman of the Manawatu County Council was requested to approach the Member of Parliament for Foxton to have the Habour Boards Act of 1876 amended 'so as to include in its schedule a reserve of 20,000 acres available for Harbour improvements.'

Three weeks later, the Foxton Harbour Endowment & Borrowing Bill was before the House of Representatives with provision being made within the Bill for the Harbour Board to have an area of 15,000 acres in the Manawatu County and the power to borrow 20,000 pounds for improvement. Pleased with this news, the Council requested that a letter of thanks be sent to Mr W.W. Johnstone MHR, yet before it was written, news was received that on 24 November 1877, the Bill lapsed in the Legislative Council. However, despite the local disappointment and frustrations, the Harbours Act was passed in 1878 which repealed all previous legislation and hope once again began to arise in Foxton for some positive progress being made. Renewed pressure was applied by the Council during 1878 for the endowment of a Harbour Board at Foxton, with care being taken to point out that the delays meant a serious loss of revenue to Manawatu. In the meantime, the port of Foxton appeared to be under the control of the Marine Department, with assistance being provided by the Public Works Department and, somewhat later, the Railways Department, the latter department being the owners of the wharf.

023 2

After the completion of the Manawatu-Wanganui Railway, the Manawatu County Council in 1886, assumed by way of resolution, that the Harbour Board 'had ceased to exercise its functions' and, on this assumption, it envoked its powers under Clause 32 of the Counties Amendment Act 1885. They requested that the Governor General gazette an Order in Council 'declaring that the Manawatu County Council shall exercise all the powers of a Harbour Board within the limits set forth in the Foxton Harbour Board Act 1876.' This move, which was considered premature, was also prophetic in that whilst the Harbour Board had not been abolished, the actual control of the Harbour facilities were largely in the hands of the Railways Department. In 1908, a new attempt was made to have a Harbour Board constituted with greater powers and endowment, due to the revival of the flax industry in the 1890s and a reassurgence of interest in Foxton due to the rail facilities to the township. Public meetings were held in 1908 to support proposals for a new Harbour Board, with the Minister of Marine agreeing to give a new Board an endowment of land of approximately 1,000 acres. Criticism had also been expressed at the lack of commitment by the Government to upgrade the poor facilities that existed, with the sum of only 1,000 pounds having been spent on the river since the wharf was built, although returns to the government in that time were considered to be in the vicinity of 25,000 pounds. After much debate and criticism of the government's handling of the whole affair, a Harbour Board was finally appointed in 1908 and continued to manage its affairs as best it could through inadequate finance from pilotage and berthage fees, special rates and eventually from rents when land was subdivided for lease-holds.

In the 1920s, a weekly steamer service had began, although fewer ships were using the port due to the problems being experienced in crossing the Foxton bar. In 1935, the Foxton Harbour Board approached its contributing bodies for finance to assist in the purchase of a launch to 'clear the shipping fairway by the dragging process'. At this time, the value of land at the beach was rising, and more and more people were seeking leaseholds, and in 1936, the Manawatu County Council sought contributions from the Foxton Harbour Board and the Foxton Borough Council to share the costs of surfacing the Foxton Beach Road.

It is recorded that the 'relationship' between the Council and the Board became one of the administrative oddities which 'made local government a continuing study in mystification'. Each of the two bodies called upon the other for assistance in special works in their common area. Up until this time, the Harbour Board endowment lands had been an asset of only moderate value, however, in 1942 when the Council opened up a subdivision on the Foxton Beach Road, it renewed interest in leashold land at the beach. By 1945 the Harbour Board was beginning to experience a demand for land with the community at the Beach growing, although the port was in decline. Then in 1947, the Harbour Board commenced steps towards its dissolution. Then in the early 1950s, the Foxton Beach Improvement Society & Leaseholders Association came into being, signalling the start of a community with an extreme interest in its future. This Association protested to the Manawatu County Council at the state of some of the buildings that were erected at the beach, many built without permits or not in compliance with permits issued. This showed concern for an acceptable standard of dwelling being erected in the beach area, and marked the popularity of the area for permanent residents. On 12 May 1951, the Harbour Board called a meeting at the beach to discuss the disposal of its funds, although a last ditch attempt by Federated Farmers to reopen the port failed. (1956 finally saw the dissolution of the Foxton Harbour Board with the control of all roads outside of the Foxton Borough transferring to the Manawatu County Council).

In October 1954, the Assistant Commissioner of Crown Lands advised the Manawatu County Council that the Foxton Harbour Board would probably be abolished from 1 October 1955 and sought details of the cost involved to bring all roads in the endowment area up to the required standard for dedication. However, there was a larger problem to be faced and that was if the Manawatu County Council was expected to take over the Board's endowment land and also become responsible for roading and development, what was to be the price of the land to be transferred? In discussions with the Commissioner of Crown Lands in 1955, a figure approaching the unimproved value of 110,000 pounds was suggested, to which the Council indicated that it was not an interested purchaser at this price. The then Manawatu County Chairman, Mr Roy Craig expressed that in his opinion, that the

2

price should be the 110,000 pound less the cost of works necessary at Foxton Beach to bring all roads up to the required standard. The cost of this work had been estimated at 70,000 pounds, leaving a balance of 40,000 pounds which he considered was 'a reasonable basis for discussion'. It is recorded that protracted and, at times, intense negotiations followed with some members of the Council considering that even 40,000 pounds was too higher a price to pay for the land in question. At a meeting in September 1955, Council decided to offer 20,000 pounds for the endowment land, 'without prejudice'. It also suggested that if the price was not acceptable to the Crown, that it should be submitted to the Local Government Commission for arbitration. After much 'toing and froing' between the Council and the Crown offices and deputations to the Minister of Lands, the purchase price of 40,000 pounds was agreed to, with repayment being over a 25 year term free of interest. However, Cabinet made conditions in that the Council was to accept the vesting of the land 'as is' in trust for the specific purpose of an endowment and, more particularly, that it had to agree to lease the land on perpetually renewable leases, with no rights of freehold. Council was also required to spend approximately 69,000 pounds within five years on roads and street improvements, along with perfecting leasehold titles to occupiers.

The Manawatu County Council agreed to all these conditions, except the five year expenditure of 69,000 pounds, however, in accordance with the recently passed National Roads Board Act, it undertook a five year sealing programme. Finally, on 16 November 1956, the Harbour Board was formally abolished with the Manawatu County Council carrying out its policy of control and improvement. At this time, outside organisations had protested to the Minister of Lands & Marine as to the stipulations within the agreement reached between the Government and the Manawatu County Council and, in particular, the refusal to allow leaseholders to freehold their sections.

At this time, rentals of endowment land at Foxton Beach had been fixed at 3.5% of the unimproved value at the time of renewal, with average rents being in the vicinity of 5 pounds per year. With the upgrading of roads at Foxton Beach came the demands for other improvements, creating entirely new problems for the Council to address. It was noted that for three quarters of a Century, the Council had been concerned mainly with building roads, draining swamps, controlling floods and, in other ways, to give farmers access to their properties and to the townships, and later to move their products along the roads to the markets and the port. Now the Council's aim was redirected to providing easier vehicle access to holiday resorts on the coast, as well as making provision for camping and picnic grounds and sanitary services for holiday makers. Whilst making some progress in meeting these aims, the Council learnt that the transfer of the Foxton endowment had a 'fish hook' in it. Under Section 21 of the Reserves & Other Lands Disposal Act 1956, the endowment was to be in two parts, the beach area of 764 acres and a farm of 320 acres which was then under lease with 12 more years to run. The Act also stipulated that conditions of sale was not to apply to any land which might to be found to be accretion to a Maori block, and the Council found itself involved in the Papangaio J block issue which was to take approximately three years to resolve. Principally, the area of land which came to be known as the Papangaio J Block was on the south bank of the Manawatu River, although a narrow tongue of it reached northwards, touching the 764 acres of beach endowment. In common with other rivers on the west coast of the North Island, there was accretion in the general area and the Roore family, as owners of Papangaio J block claimed the accretion through the Maori Land Court. However, the Harbour Board had obtained title to this gift of river and sea and had subsequently subdivided and leased it.

Following the Crown's appeal to the Maori Land Court's ruling, the Appellate Court delivered a decision which both the Crown and the Maori owners found acceptable. In a letter to the Manawatu County Council, the Acting Commissioner of Crown Lands stated:

> **"The result of the Appellate Court differed from the Lower Court in that it found that only the portion of the endowment area lying to the south of the line drawn from the tip of the Papangaio Block due west of the sea, is accretioned to the block over which title should be granted to the owners ... As we have already sold the area to your County as part of the endowment, we are faced with the problem of either attempting to purchase this area found to**

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925

be Maori accretion, or reducing your purchase price to exclude the land and buying out the few lessees concerned."

Again, the Manawatu County Council was faced with a further issue; to either buy the land from the Crown following its negotiations with the Maori owners, or reduce the area of land being vested in it. Government, being somewhat anxious to tidy up the whole transaction, paid the Maori owners 20,000 pounds for the block, including accretion and as part of its settlement, the Manawatu County Council paid the Crown 2,200 pounds (which included 1,240 pounds for existing rentals capitalised at 5%, 450 pounds for the sandhill areas and 510 pounds for the rents received) and in return received an area, residential sections and sand, of little more than 85 acres. Finally, the Foxton endowment was entirely in Manawatu County Council hands. It is recorded that this transaction had been more complicated than the original transfer of 1,084 acres, although the results were more beneficial, as the Council was free to go ahead without any further hindrance in its programme of development at the Beach.

Although the Government had insisted in 1956 that the land was to be leased in perpetuity, without option, Council approaches to the Minister of Lands resulted in a decision being reached in 1968 that lessees be given the option to freehold properties.

Nature of Freehold Properties at Foxton Beach

From information provided by the Manawatu District Council, there are currently 1912 leaseholders of the Foxton Beach endowment land remaining. Mr Hobcroft, in his research, found that whilst an immediate response would be expected from leaseholders to freehold their properties, only 60 sections were freeholded in the 1968/69 year, at an average price of $685.00. However, in the 1971/72 financial year, proceeds from freeholding returned the sum of $74,780. Manawatu County Council also, at the time, was involved in the subdivision of land at the beach, and sold sections worth $3,500 during the same year. In the 1973/74 year, Council received $200,150 from freeholding, as well as experiencing increased sales in its own subdivisions. At 31 March 1974, funds in the Foxton Beach Freeholding Account amounted to $296,000, although under SUBSECTION ~~Clause~~ 14 of the Reserves & Other Land Disposal Act 1968, the Council was authorised to utilise the fund for further development. The ~~clause~~ SUB SECTION under the 1968 Reserves & Other Lands Disposal Act states:

"The Council shall, from time to time, spend the net proceeds from the sale or lease of any of the endowment land on the provision of services and public amenities for the benefit of the inhabitants of Foxton Beach township, or the improvement, maintenance, or repair of any such services and amenities, or on the improvement, maintenance, or repair of any existing services for public amenities. For the purposes of this sub-section, the term 'services' includes roads, road lighting, water supply, drainage, sewerage, and other public works."

Mr Hobcroft recorded that at 31 March 1976, the total value of properties freeholded at Foxton Beach stood at $422,690 with land subdivided by the Manawatu County Council realising $78,775. In addition, the Council had a waiting list of 120 names for sections at Foxton Beach. 275 sections remained leasehold at the end of March 1976, which further indicates that over a period since 1 April 1976 to the current day, 83 sections have been freeholded. Over recent years, the Foxton Beach Freeholding Account has been boosted by the following sales:

1987/88 year - 8 properties were freeholded for the sum of $82,640
1988/89 year - 9 properties were freeholded for a total amount of $120,120
1989/90 year (to date) - 10 properties have been freeholded for the sum of $117,200

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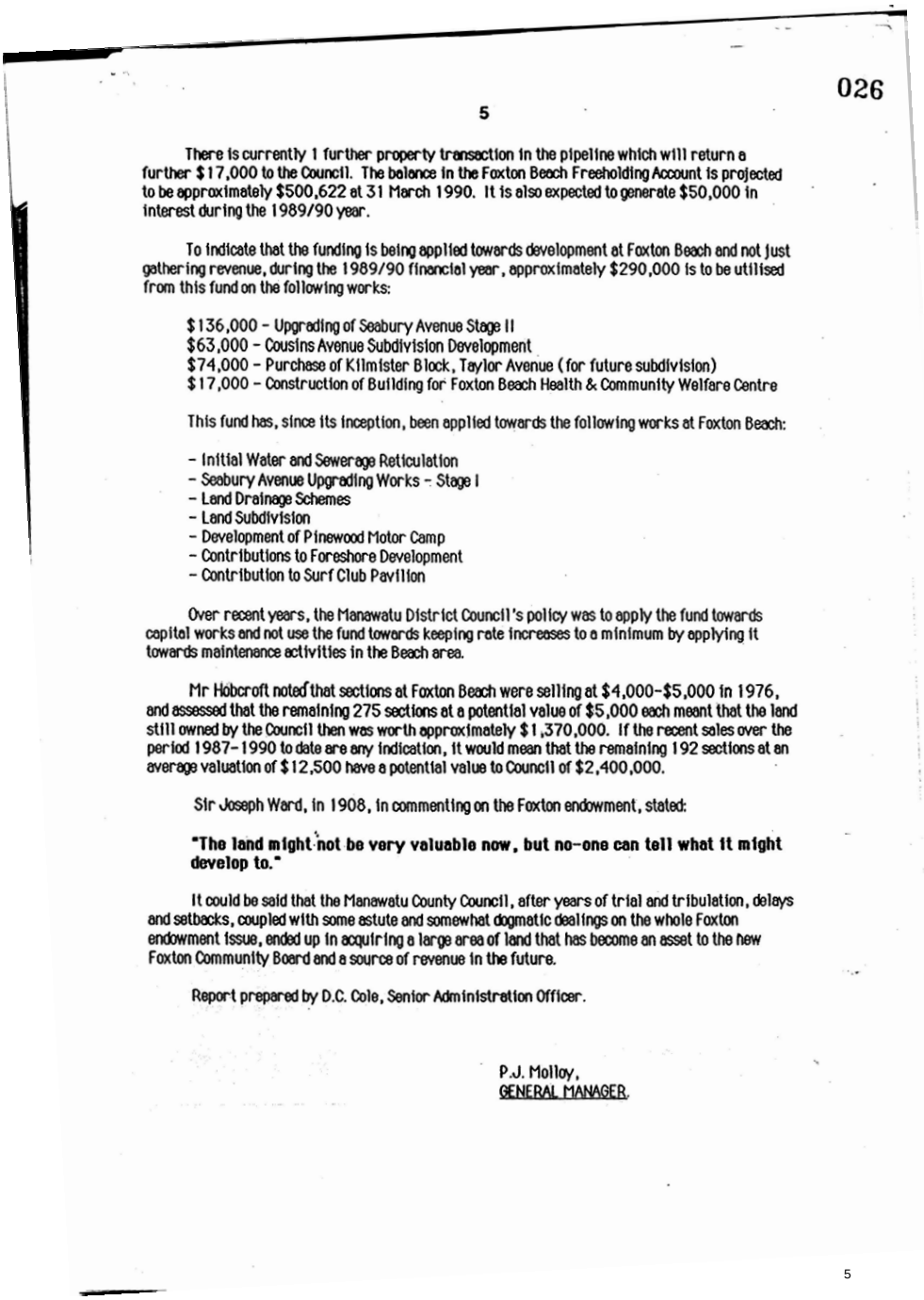

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There is currently 1 further property transaction in the pipeline which will return a further $17,000 to the Council. The balance in the Foxton Beach Freeholding Account is projected to be approximately $500,622 at 31 March 1990. It is also expected to generate $50,000 in interest during the 1989/90 year.

To indicate that the funding is being applied towards development at Foxton Beach and not just gathering revenue, during the 1989/90 financial year, approximately $290,000 is to be utilised from this fund on the following works:

$136,000 - Upgrading of Seabury Avenue Stage II
$63,000 - Cousins Avenue Subdivision Development
$74,000 - Purchase of Kilmister Block, Taylor Avenue (for future subdivision)
$17,000 - Construction of Building for Foxton Beach Health & Community Welfare Centre

This fund has, since its inception, been applied towards the following works at Foxton Beach:

- Initial Water and Sewerage Reticulation
- Seabury Avenue Upgrading Works - Stage I
- Land Drainage Schemes
- Land Subdivision
- Development of Pinewood Motor Camp
- Contributions to Foreshore Development
- Contribution to Surf Club Pavilion

Over recent years, the Manawatu District Council's policy was to apply the fund towards capital works and not use the fund towards keeping rate increases to a minimum by applying it towards maintenance activities in the Beach area.

Mr Hobcroft noted that sections at Foxton Beach were selling at $4,000-$5,000 in 1976, and assessed that the remaining 275 sections at a potential value of $5,000 each meant that the land still owned by the Council then was worth approximately $1,370,000. If the recent sales over the period 1987-1990 to date are any indication, it would mean that the remaining 192 sections at an average valuation of $12,500 have a potential value to Council of $2,400,000.

Sir Joseph Ward, in 1908, in commenting on the Foxton endowment, stated:

"The land might not be very valuable now, but no-one can tell what it might develop to."

It could be said that the Manawatu County Council, after years of trial and tribulation, delays and setbacks, coupled with some astute and somewhat dogmatic dealings on the whole Foxton endowment issue, ended up in acquiring a large area of land that has become an asset to the new Foxton Community Board and a source of revenue in the future.

Report prepared by D.C. Cole, Senior Administration Officer.

P.J. Molloy,
GENERAL MANAGER.

5

management'.[158] The Resource Management Act 1991 is discussed in relation to the Paraparaumu Airport which can be found in the Kapiti Coast District Council chapter.

3.14 Local Government Act, 2002

The Local Government Act 2002 provides local authorities with 'principles and requirements … intended to facilitate participation by Maori in local authority decision-making processes'. This is, according to section 4 of the Act 'in order to recognise and respect the Crown's responsibility to take appropriate account of the principles of the Treaty of Waitangi and to maintain and improve opportunities for Maori to contribute to local government decision making processes'.

These principles and requirements are within parts 2 and 6 of the Act. One of the principles is outlined in section 14(d) whereby 'a local authority should provide opportunities for Maori to contribute to its decision-making processes'. In addition, under section 40(d) 'a local authority must prepare and make publicly available … a local governance statement that includes information on …. representation arrangements, including the option of establishing Maori wards or constituencies, and the opportunity to change them; and … policies for liaising with, and memoranda or agreements with Maori'.

With respect to requirements when making decisions, under section 77 a local authority must 'seek to identity all reasonably practicable options for the achievement of the objective of a decision; and … if any of the options identified … involves a significant decision in relation to land or a body of water, take into account the relationship of Maori and their culture and traditions with their ancestral land, water, sites, waahi tapu, valued flora and fauna, and other taonga'.

Under section 81 a local authority 'must' do the following:

(a) establish and maintain processes to provide opportunities for Maori to contribute to the decision-making processes of the local authority; and
(b) consider ways in which it may foster the development of Maori capacity to contribute to the decision-making processes of the local authority; and

[158] Kapiti Coast District Council website: http://www.kapiticoast.govt.nz/Your-Council/Planning/District-Plan1/ accessed February 2017.

(c) provide relevant information to Maori for the purposes of paragraphs (a) and (b).

Section 82(1) outlines the principals of consultation for a local authority and 82(2) states that a local authority 'must ensure that it has in place processes for consulting with Maori in accordance with' these principals.

In addition, under section 36, a local authority must be a 'good employer'. Part of being a 'good employer' entails the 'recognition of - (i) the aims and aspirations of Maori; and (ii) the employment requirements of Maori; and (iii) the need for greater involvement of Maori in local government employment'.

Schedule 10 outlines information to be included in long-term plans prepared by local authorities. This includes information on the development of Maori capacity to contribute to decision-making processes. In addition, under section 35, an annual report of a local authority must include a report 'on the activities that the local authority has undertaken in the year to establish and maintain processes to provide opportunities for Maori to contribute to the decision-making processes of the local authority'.

This is discussed further in the Manawatu District Council and Kapiti Coast District Council chapters.

Te Awahou Foxton Community Board

OPEN MINUTES
UNCONFIRMED

Minutes of a meeting of the Te Awahou Foxton Community Board held in the Te Awahou Nieuwe Stroom, 92 Main Street, Foxton on Monday 4 March 2024 at 6:00 pm.

PRESENT

Chairperson	Mr John Girling
Deputy Chairperson	Mr Trevor Chambers
Members	Mrs Nola Fox
	Mr Brett Russell
	Mr David Roache
	Deputy Mayor David Allan

IN ATTENDANCE

Reporting Officer	Monique Davidson	Chief Executive
	Grayson Rowse	Principal Democracy Officer
Meeting Secretary	Alice Petersen	Business Support Officer

1 Apologies

There were no apologies.

2 Public Participation

There was no public participation.

3 Late Items

Resolution Number TAFCB/2024/

MOVED by Mr Girling, seconded Mr Roache:

That Te Awahou Foxton Community Board agree to consider late item C1 Foxton Wastewater Agreement - Information Only Report.

CARRIED

The Chair advised as this item is In-committee this item will be considered last.

4 Declaration of Interest

Deputy Mayor Allan declared that he would be involved in the Council decision making process, and so therefore in order to not be seen to pre-determine this matter, he withdrew from discussion, and debate and voting in item 8.1.

5 Confirmation of Minutes

Resolution Number TAFCB/2024/5

MOVED by Mr Roache, seconded Mr Chambers:

That the minutes of the meeting of the Te Awahou Foxton Community Board held on Monday, 4 December 2023, be confirmed as a true and correct record.

That the minutes of the meeting of the Extraordinary Meeting of the Te Awahou Foxton Community Board held on Tuesday, 23 January 2024, be confirmed as a true and correct record.

CARRIED

8.1 Foxton Beach Endowment Fund Review Process

1. Purpose

1.1 This is a follow up on the previous Foxton Beach Endowment Fund report which now includes all attachments and aims to present the review paper for the Foxton Beach Endowment Fund to the Te Awahou Foxton Community Board. The purpose is to seek endorsement from the board to proceed to Council for official adoption.

Resolution Number TAFCB/2024/6

MOVED by Mrs Fox, seconded Mr Roache:

2.1 That Report24/49 Foxton Beach Endowment Fund Review Process be received.

2.2 That this matter or decision be recognised as not significant in terms of s76 of the Local Government Act 2002.

CARRIED

Chief Executive Monique Davidson introduced the report thanking officers and hapū for their work together to design a joint process. Monique noted the work and conversations between Te Awahou Foxton Community Board, hapū and officers to get to this point highlighting the visit on to Paranui Pā late last year.

The Chair invited hapū representative Hayden Turoa to also speak to the report as this review process has been taken together as Mr Turoa highlighted. Mr Turoa also highlighted appendix A to the “Foxton Beach Endowment Fund Review” paper is a Waitangi Tribunal paper that commissioned by the Crown Forestry Rental Trust.

Resolution Number TAFCB/2024/7

MOVED by Mr Girling, seconded Mr Russell:

That Board thanks Hayden Turoa for his imput

CARRIED

Resolution Number TAFCB/2024/8

MOVED by Mr Girling, seconded Mr Russell:

2.3 That Te Awahou Foxton Community Board support the proposed approach as outlined in the Foxton Beach Endowment Fund Review Process paper.

2.4 That Te Awahou Foxton Community Board recommend Council adopt the Foxton Beach Endowment Fund Review Process including reference to pages 85 & 86 of Appendix A, the complete work.

CARRIED

The Chair asked the Chief Executive to make comment on the funding of the Foxton Beach Endowment Fund review. The advice was the Board should provide guidance of their preference for where the funding is sourced.

Resolution Number TAFCB/2024/9

MOVED by Mr Roache, seconded Mrs Fox:

That Te Awahou Foxton Community Board recommend that Council fund the review of the Foxton Beach Endowment Fund Review

CARRIED

Attachments

1 Pages 85 & 86 of Wai2200 #A193 - Porirua ki Manawatū Inquiry District Local Government Issues Report by Suzanne Woodley June 2017

6 Presentations

6.1 Horowhenua Community Camera Trust

Mr Ted Melton presented for the Horowhenua Community Camera Trust (HCCT). Mr Melton highlighted the work of the volunteers for the trust noting how they are selected and vetted.

Mr Melton advised the purpose of the cameras, how footage can only be requested by the police and if it's not requested within 60 days it is erased. Also noted was the ddecisions for locations of cameras is influenced from mostly local police but also community and iwi.

Mr Brett Gilles also presented. He advised HCCT are about 2 months 2 months behind schedule for Foxton camera installation due to extenuating circumstances but they have serval locations lined up and plan to be operational on Foxton's Main Street in 3 months.

Mr Gilles and Mr Melton thanked the board for their support.

Resolution Number TAFCB/2024/10

MOVED by Mr Russell, seconded Mr Roache:

That the Board thank Ted Melton and Brett Gilles for their presentation for the Horowhenua Community Camera Trust.

CARRIED

7 Elected Members Reports

7.1 Chairperson's Report

1. Purpose

1.1 To receive the Chairperson's report highlighting matters of interest to Te Awahou Foxton Community Board.

Resolution Number TAFCB/2024/11

MOVED by Mr Roache, seconded Mr Russell:

2.1 That Report 24/89 Chairperson's Report be received.

2.2 That this matter or decision be recognised as not significant in terms of s76 of the Local Government Act 2002.

CARRIED

Mr Girling highlighted 3.4 regarding presentation by Dr. Gillian Rapson given at a Manawatū Estuary Management Team workshop. Mr Girling advised he has invited Dr Rapson to present at a future Te Awahou Foxton Community Board meeting and extends invitation to Councillors to hear the presentation.

7.2 Community Board Member Report - Nola Fox

1. Purpose

1.1 To report back on liaison activity in relation to:

- MAVtech
- Foxton Beach Community Centre
- Foxton Beach Progressive Assn Inc.

Resolution Number TAFCB/2024/12

MOVED by Mr Roache, seconded Mr Russell:

2.1 That Report 24/76 Community Board Member Report - Nola Fox be received.

2.2 That this matter or decision be recognised as not significant in terms of s76 of the Local Government Act 2002.

CARRIED

Report was taken as read and there were no questions.

7.3 Community Board Member Report - Brett Russell

1. Purpose

1.1 To report back on liaison activity in relation to:

- The Manawatu Estuary Trust
- Wildlife Foxton Trust
- The Horowhenua Community Camera Trust

Resolution Number TAFCB/2024/13

MOVED by Mr Roache, seconded Mr Chambers:

2.1 That Report 24/90 Community Board Member Report - Brett Russell be received.

2.2 That this matter or decision be recognised as not significant in terms of s76 of the Local Government Act 2002.

CARRIED

Report was taken as read and there were no questions.

8 Reports

8.2 Foxton Beach Freeholding Account Update

1. Purpose

1.1 This report provides the Board the most recent Foxton Beach Freeholding account statement.

Resolution Number TAFCB/2024/14

MOVED by Mr Girling, seconded Mr Roache:

2.1 That Report 24/63 Foxton Beach Freeholding Account Update be received.

2.2 That this matter or decision be recognised as not significant in terms of s76 of the Local Government Act 2002.

CARRIED

Query from the table of the drop in rent revenue, Chief Executive advised this is due to the sale of property that were generating rent income prior to sale.

8.3 Horowhenua District Council Organisation Performance Report February 2024

1. Purpose

1.1 To present the Organisation Performance Report for February 2024 highlighting areas of interest to the Foxton Community.

Resolution Number TAFCB/2024/15

MOVED by Mrs Fox, seconded Mr Roache:

2.1 That Report 24/65 Horowhenua District Council Organisation Performance Report February 2024 be received.

2.2 That this matter or decision is recognised as not significant in terms of S76 of the Local Government Act.

CARRIED

Officers introduced the report and advised this report will be presented to the Board quarterly.

The Board had a positive response to the report and thanked officers for their work.

9 Procedural motion to exclude the public

Resolution Number TAFCB/2024/16

MOVED by Mr Girling, seconded Mrs Fox:

That the public be excluded from the following part(s) of the proceedings of this meeting.

The general subject of each matter to be considered while the public is excluded, the reason for passing this resolution in relation to each matter, and the specific grounds under section 48(1) of the Local Government Official Information and Meetings Act 1987 for the passing of this resolution follows.

This resolution is made in reliance on section 48(1)(a) of the Local Government Official Information and Meetings Act 1987 and the particular interest or interests protected by section 6 or section 7 of that Act which would be prejudiced by the holding of the whole or relevant part of the proceedings of the meeting in public, as follows:

C1 Foxton Wastewater Agreement - Information only report

Reason for passing this resolution in relation to each matter	Particular interest(s) protected (where applicable)	Ground(s) under section 48(1) for the passing of this resolution
The public conduct of the part of the meeting would be likely to result in the disclosure of information for which good reason for withholding exists under section 7.	s7(2)(a) - The withholding of the information is necessary to protect the privacy of natural persons, including that of a deceased person. s7(2)(i) - The withholding of the information is necessary to enable the local authority to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	s48(1)(a) The public conduct of the part of the meeting would be likely to result in the disclosure of information for which good reason for withholding exists under section 7.

The text of these resolutions is made available to the public who are present at the meeting and form part of the minutes of the meeting.

CARRIED

6.53pm The public were excluded.

Resolutions in relation to the confidential items are recorded in the confidential section of these minutes and are not publicly available.

7.09 pm There being no further business, the Chairperson declared the meeting closed.

CONFIRMED AS A TRUE AND CORRECT RECORD AT A MEETING OF TE AWAHOU FOXTON COMMUNITY BOARD HELD ON

DATE: .....

CHAIRPERSON:

Exclusion of the Public : Local Government Official Information and Meetings Act 1987

The following motion is submitted for consideration:

That the public be excluded from the following part(s) of the proceedings of this meeting.

The general subject of each matter to be considered while the public is excluded, the reason for passing this resolution in relation to each matter, and the specific grounds under section 48(1) of the Local Government Official Information and Meetings Act 1987 for the passing of this resolution follows.

This resolution is made in reliance on section 48(1)(a) of the Local Government Official Information and Meetings Act 1987 and the particular interest or interests protected by section 6 or section 7 of that Act which would be prejudiced by the holding of the whole or relevant part of the proceedings of the meeting in public, as follows:

C1 Levin Town Centre Transformation - Request for Expressions of Interest - Redevelopment of the Bath Street/Salisbury Street Carpark, Levin

Reason for passing this resolution in relation to each matter	Particular interest(s) protected (where applicable)	Ground(s) under section 48(1) for the passing of this resolution
The public conduct of the part of the meeting would be likely to result in the disclosure of information for which good reason for withholding exists under section 7.	s7(2)(h) - The withholding of the information is necessary to enable the local authority to carry out, without prejudice or disadvantage, commercial activities.	s48(1)(a) The public conduct of the part of the meeting would be likely to result in the disclosure of information for which good reason for withholding exists under section 7.

C2 Oxford Street Plane Trees

Reason for passing this resolution in relation to each matter	Particular interest(s) protected (where applicable)	Ground(s) under section 48(1) for the passing of this resolution
The public conduct of the part of the meeting would be likely to result in the disclosure of information for which good reason for withholding exists under section 7.	s7(2)(b)(ii) - The withholding of the information is necessary to protect information where the making available of the information would be likely unreasonably to prejudice the commercial position of the person who supplied or who is the subject of the information.	s48(1)(a) The public conduct of the part of the meeting would be likely to result in the disclosure of information for which good reason for withholding exists under section 7.

C3 Council Resolution and Actions Monitoring Report March 2024

Reason for passing this resolution in relation to each matter	Particular interest(s) protected (where applicable)	Ground(s) under section 48(1) for the passing of this resolution
The public conduct of the part of the meeting would be likely to result in the disclosure of information for which good reason for withholding exists under section 7.	s7(2)(a) - The withholding of the information is necessary to protect the privacy of natural persons, including that of a deceased person. s7(2)(h) - The withholding of the information is necessary to enable the local authority to carry out, without prejudice or disadvantage, commercial activities.	s48(1)(a) The public conduct of the part of the meeting would be likely to result in the disclosure of information for which good reason for withholding exists under section 7.

	s7(2)(i) - The withholding of the information is necessary to enable the local authority to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	

C4 Proceedings of the Chief Executive Employment and Performance Committee 14 February 2024

Reason for passing this resolution in relation to each matter	Particular interest(s) protected (where applicable)	Ground(s) under section 48(1) for the passing of this resolution
The public conduct of the part of the meeting would be likely to result in the disclosure of information for which good reason for withholding exists under section 7.	s7(2)(a) - The withholding of the information is necessary to protect the privacy of natural persons, including that of a deceased person.	s48(1)(a) The public conduct of the part of the meeting would be likely to result in the disclosure of information for which good reason for withholding exists under section 7.