NOTICE OF MEETING

Notice is hereby given of the Meeting of the Community and Regulatory Committee to be held in the Council Chamber, First Floor, Civic Theatre, 88 Tay Street, Invercargill on Tuesday 11 August 2026 at 2.00 PM

Cr D J Ludlow (Chair)
Mayor T Campbell
Cr A J Arnold
Cr R I D Bond
Cr P M Boyle
Cr S J Broad
Cr A H Crackett
Cr A L de Vries
Cr G M Dermody
Cr M Lush
Cr I R Pottinger
Cr B R Stewart
Cr L Tou-McNaughton
Matua M Bain

MICHAEL DAY
CHIEF EXECUTIVE

A6567749

Community and Regulatory Committee - Public

11 August 2026 02:00 PM

Agenda Topic — Page

1. Apologies

2. Declaration of Interest
   a. Members are reminded of the need to stand aside from decision-making when a conflict arises between their role as an elected representative and any private or other external interest they might have.
   b. Elected members are reminded to update their register of interests as soon as practicable, including amending the register at this meeting if necessary.

3. Public Forum
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11.	Public Excluded Session		

Public Excluded Session

Moved , seconded that the public be excluded from the following parts of the proceedings of this meeting, namely:

a) Minutes of the Public Excluded Session of the Community and Regulatory Committee Meeting held on 9 June 2026
b) Minutes of the Public Excluded Session of the Community Wellbeing Fund Subcommittee Meeting held on 30 July 2026

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 are as follows:

General subject of each matter to be considered	Reason for passing this resolution in relation to each matter	Ground(s) under Section 48(1) for the passing of this resolution
a) Minutes of the Public Excluded Session of the Community and Regulatory Committee Meeting held on 9 June 2026	**Section 7(2)(i)** Enable any local authority holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations)	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7
b) Minutes of the Public Excluded Session of the Community Wellbeing Fund Subcommittee Meeting held on 30 July 2026	**Section 7(2)(i)** Enable any local authority holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations)	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7

MINUTES OF THE COMMUNITY AND REGULATORY COMMITTEE, HELD IN THE COUNCIL CHAMBERS, FIRST FLOOR, CIVIC THEATRE, 88 TAY STREET, INVERCARGILL ON TUESDAY 9 JUNE 2026 AT 2.00 PM

Present:
Cr D J Ludlow (Chair)
Mayor T Campbell (from 2.28 pm)
Cr A J Arnold
Cr R I D Bond
Cr P M Boyle
Cr S J Broad
Cr A L de Vries
Cr M Lush
Cr I R Pottinger
Cr B R Stewart
Cr L Tou-McNaughton
Matua M Bain – Pou Manawhenua – Waihōpai Rūnaka

In Attendance:
Mrs P Christie – Group Manager – Finance and Assurance
Mr J Shaw – Group Manager - Consenting and Environment
Mr J Garnett – Group Manager – Capital Portfolio
Mr M Morris – Manager – Governance and Legal
Ms R Suter – Manager – Strategy and Policy
Ms C Rain – Manager – Parks and Recreation
Ms E Wallace – Director – Te Unua – Museum of Southland
Mr N Hamlin – Project Director
Ms L Knight – Manager – Communications and Marketing
Mr A Eng – Team Leader – Communications
Ms H Kennedy – Senior Policy Analyst
Ms G Crawford – Engagement and Partnerships Officer
Ms L Matua Kuresa – Executive Support

1. Apologies

Cr A H Crackett, Cr G M Dermody and Mayor T Campbell for lateness.

Moved Cr Tou-McNaughton, seconded Cr Broad and **RESOLVED** that the apologies be accepted.

2. Declaration of Interest

It was declared that Matua M Bain was on the Iwi Liaison Committee, which was an Interest not a conflict.

3. Public Forum

Nil.

4. Minutes of the Community Wellbeing Fund Subcommittee Meeting held on Thursday 7 May 2026

A6438686

Moved Cr Broad, seconded Cr de Vries and **RESOLVED** that the Minutes of the Community Wellbeing Fund Subcommittee meeting held on Thursday 7 May 2026 be received.

5. Minutes of the Community and Regulatory Committee Meeting held on Tuesday 12 May 2026

A6445830

Moved Cr Boyle, seconded Cr Broad and **RESOLVED** that the Minutes of the Community and Regulatory Committee meeting held on Tuesday 12 May 2026 be confirmed.

6. Minutes of the Creative Communities Scheme Invercargill Fund Committee Meeting held on Thursday 21 May 2026

A6458310

Moved Cr Boyle, seconded Cr de Vries (proforma) and **RESOLVED** that the Minutes of the Creative Communities Scheme Invercargill Fund Committee Meeting held on Thursday 21 May 2026 be received.

7. Minutes of the District Licensing Committee - May 2026 Meetings

A6479787

Moved Cr Ludlow, seconded Cr de Vries and **RESOLVED** that the Minutes of the District Licensing Committee - May 2026 Meetings be received.

8. Invercargill City Youth Council 2026 - General Update

A6470930

Youth Councillors Rubie Maliao and Mathilda Hare spoke to the report.

A query was raised as to whether the Youth Council had used the STV Voting system recently. It was clarified that the Youth Council had used the STV Voting system to vote for Chairperson/s for the Youth Council and to determine what snacks members preferred for their meetings.

A query was raised as to how easy the STV Voting system was to use. It was clarified that the Youth Council viewed a short video on the STV system, which helped them to better understand how the system works.

It was noted that the Youth Council was undertaking research on names for roads, and it was queried, as to how that was progressing. It was clarified that it was a fun Workshop for the Youth Council to undertake. They were looking into old train names from when

the trains were operating from Invercargill to other cities. Some of the Youth Councillors thought that naming the roads after one of those trains would be a good idea. They were also researching Māori plant names from Southland as road names.

Moved Cr Tou-McNaughton, seconded Cr Stewart and **RESOLVED** that the Community and Regulatory Committee:

1. Receives the report "Invercargill City Youth Council 2026 General Update".

9. Commercial Use of Parks and Reserves Policy – Deliberations

A6451563

Ms Hannah Kennedy and Ms Caroline Rain spoke to the report.

A query was raised, as to whether there had been any conflict between different users of the parks. It was clarified that examples of those conflicts were heard during the Fees and Charges Hearing last month. The onus was on Council to ensure that people were aware of the best areas for their activities and enable them to access the best places for those activities.

A query was raised, as to why it was 'Charitable Trust' and not 'Charitable Organisations', in relation to incorporated societies that wanted to use the space as well. It was clarified that there was no specific reason for that, but they would investigate the wording that could be used going forward and make the amendment. The wording 'registered Charitable Trust' was an attempt to ensure that Council was talking about registered organisations. It was correct that 'Incorporated Society' would also be a formal organisation. The Policy was never intended to apply to those groups, because they were not undertaking commercial activities, so that wording change had been recommended for clarification.

In response to a question, as to how this would affect the owner of Barking Mad Dog Adventures and what process she would need to undertake. It was clarified that they would be able to apply for a permit, by approaching Council to look at how they could utilise the services and assess the impact of her activity on those reserves and areas. They would need to negotiate what it would mean for their activity for a good period of time. Staff had researched other councils that had these policies in place, and they were usually annual permits.

A query was raised regarding the wording registered 'Charitable Trust', that had an interest in relation to a group wanting a book the park to have a public meeting. Would that not allow them to do that currently. It was clarified that it would not be a commercial activity, so it would go ahead as a normal booking.

A query was raised, that if a SIT student undertaking a photography course or hairdressing course and wanted to use the parks to do some modelling shots for a competition, would that be considered a commercial activity. It was clarified that it was not a commercial activity.

A query was raised, as to whether this policy would be charging commercial dog walkers. It was clarified it would be charging for commercial use of parks and reserves.

A query was raised, as to where the information was for restrictions with regards to dog walkers. It was clarified that this was an overarching Policy and dog walkers would need to make an application to Parks and Reserves. They would need to ask for a permit and Council would negotiate the permit with them. It was a broad Policy that covered all the new users of parks of reserves. There were multiple ways to use the parks and reserves and Council could not legislate all users. Those that could be legislated, were included in the Fees and Charges document, and those that sit outside that, were covered by this Policy.

It was noted that there was a potential risk of inconsistency with this Policy, so how would that consistency be established. It was clarified that the consistency would be established by the application. This was not in place currently, so as soon as it was in place and Council started receiving requests for permits, a pattern would be established. If it became a multiple use, it would then be included in the Fees and Charges document.

A query was raised, as to whether dog walkers would be charged. It was clarified that Council would only be charging for commercial dog walkers.

In response to a question, as how Council would be measuring the effectiveness of this Policy. It was clarified that the policy had a review date, which was a standard six-year review period, but if there was any reason that Council wanted to review a Policy earlier, it could be done. If there was also any suggestion for an amendment to the Policy that could also be undertaken.

A query was raised, as to how Council had the ability to enforce any of the aspects set out in the Policy after the fact. It was clarified that the Policy had a Statement of non-compliant within it. This was a high trust model to start with. Council also had an Enforcement Policy, which was due for review soon, and because this was a new policy, staff would be checking what the Enforcement Policy covered within this new policy.

A query was raised, as to what research showed in comparison to other councils and this Council. It was clarified that other councils ranged from very broad all commercial activities needing permission and approaches, which was what this Council was proposing to do. Some councils had very targeted requirements for commercial activities. There was a range of approaches, but the approach proposed today, was a broad strokes approach to try and capture a range of commercial activities. There was a wide range of activities and it was good to know what commercial activities were happening.

A query was raised, as to whether there was a plan to come back to Council for an update on how this Policy was progressing, due to the fact it was a new policy. It was clarified that this could happen on Council's request after 12 months.

Moved Cr Tou-McNaughton, seconded Cr de Vries and **RESOLVED** that the Community and Regulatory Committee:

1. Receives the report "Commercial Use of Parks and Reserves Policy – Deliberations".

2. Notes the Submissions and Social Media report received by Council at the 6 May 2026 Hearings meeting.

3. Moved Cr Boyle, seconded Cr Broad and **RESOLVED** that the Community and Regulatory Committee:

    a. Approves the Commercial Use of Parks and Reserves Policy with the following changes **(to be added/amended as required)**:

        i. To amend the "Purpose and Scope" section to clarify that registered Charitable Trusts are not covered by this Policy.
        ii. To clarify that permission for a commercial event or activity can be sought by making a booking or (where exclusive use of a space is not required) by applying directly to the Manager – Parks and Recreation, and that such permission may be granted by way of a permit for such duration as the Manager – Parks and Recreation determines is appropriate in the circumstances.

Note: Cr Pottinger voted against the recommendation.

Recommends to Council:

Moved Cr broad, seconded Matua M Bain and **RESOLVED**:

4. To adopt the Commercial Use of Parks and Reserves Policy.

Note: Cr Pottinger voted against recommendation.

10. Te Kupeka Tiaki Taoka- Southern Regional Collections Trust -Statement of Intent 2026/2027 and Statement of Service Performance

A6475373

Ms Eloise Wallace spoke to the report.

Moved Cr Tou-McNaughton, seconded Cr Broad and **RESOLVED** that the Community and Regulatory Committee:

1. Receives the report "Te Kupeka Tiaki Taoka- Southern Regional Collections Trust - Statement of Intent 2026/2027 and Statement of Service Performance".

2. Notes and approves the Te Kupeka Tiaki Taoka- Southern Regional Collections Trust Statement of Intent 2026/2027.

3. Notes the Statement of Service Performance.

11. Te Unua – Museum of Southland Progress Report

A6446684

Mr Nick Hamlin spoke to the report.

A query was raised, as what the process was in relation to the appointment for the café manager. It was clarified that a recruitment process was in place for a new café manager.

In response to a question, as to when the recruitment process would be happening with regard to visitor experience key roles. It was clarified that a staged recruitment process for onboarding the operational team was in place. The Visitor Experience team would be first, because they were responsible for developing temporary exhibitions and delivering the opening and ongoing experience for exhibition programmes. They were specialist technical roles that were challenging to recruit, so they were putting a lot of emphasis into recruitment over the course of this year. Mitigating risks and issues that arise from those vacancies would mean allocating key roles to other staff and working within the broader sector to get those aspects of the project across the line. It was noted, that it was a challenging recruitment requirement, especially for those technical, specialist roles across the exhibitions and collections teams. As we move through the year, we would start to see those more visitor facing operational roles come out, so we are making progress.

In response to a question, as to what the implications of the Asset Management Plans running behind schedule in relation to the opening of Museum. It was clarified it did not affect the dates around the opening of the Museum, but it was ideal to have it in place prior to opening. The work would be completed, and it was well in play now, with the specialist consultant onboard developing that in conjunction with Naylor Love and working with Council staff for completion of the Naylor Love physical build. This was the key element that staff was working towards.

Moved Cr Boyle, seconded Cr Stewart and **RESOLVED** that the Community and Regulatory Committee:

1. Receives the report "Te Unua –Museum of Southland Progress Report".

2. Notes the project status, budget, and key programme risks.

12. Public Excluded Session

Moved Cr Tou-McNaughton, seconded Cr Broad and **RESOLVED** that the public be excluded from the following parts of the proceedings of this meeting, namely:

a. Minutes of the Public Excluded Session of the Community Wellbeing Fund Subcommittee Meeting held on 7 May 2026

b. Minutes of the Public Excluded Session of the Community and Regulatory Committee Meeting held on 12 May 2026

c. Minutes of the Public Excluded Session of the Creative Communities Scheme Invercargill Fund Committee Meeting held on Thursday 21 May 2026

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 are as follows:

General subject of each matter to be considered	Reason for passing this resolution in relation to each matter	Ground(s) under Section 48(1) for the passing of this resolution
a. Minutes of the Public Excluded Session of the Community Wellbeing Fund Subcommittee Meeting held on 7 May 2026	**Section 7(2)(i)** Enable any local authority holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations)	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7
b. Minutes of the Public Excluded Session of the Community and Regulatory Committee Meeting held on 12 May 2026	**Section 7(2)(i)** Enable any local authority holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations)	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7
c. Minutes of the Public Excluded Session of the Creative Communities Scheme Invercargill Fund Committee Meeting held on Thursday 21 May 2026	**Section 7(2)(i)** Enable any local authority holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations)	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7

There being no further business, the meeting finished at 2.31 pm.

MINUTES OF COMMUNITY WELLBEING FUND SUBCOMMITTEE, HELD IN THE COUNCIL CHAMBER, FIRST FLOOR, CIVIC THEATRE, 88 TAY STREET, INVERCARGILL ON THURSDAY 30 JULY 2026 AT 12.30 PM

Present: Cr S J Broad (Chair)
Cr A L de Vries
Cr M Lush
Cr T Boyle
Mr N Burdon
Miss T Willis

In Attendance: Ms G Crawford – Engagement and Partnerships Officer
Ms M Gray – Governance Specialist
Ms D Hallas – Executive Support

1. Apologies

Cr L Tou-McNaughton, Ms A Nikora-Wilson

Moved Cr de Vries seconded Mr Burdon and **RESOLVED** that the apologies be accepted.

2. Declarations of Interest

The Subcommittee were asked if they had any conflicts of interest and advised the following:

- Cr de Vries declared a conflict of interest with Accountability Report 2 – Active Southland.
- Mr Burdon declared conflict of interests with Accountability Report 2 – Active Southland, Funding Application 10 – Freestyle Kings, Funding Application 6 – Cycling Southland and Funding Application 9 – West Invercargill Health – Men's Health Day 2026.

Moved Cr Lush, seconded Cr Boyle and **RESOLVED** that the declarations of interest be confirmed.

3. Minutes of the Community Wellbeing Fund Subcommittee Meeting Held on 7 May 2026

A6438686

Moved Cr de Vries, seconded Mr Burdon and **RESOLVED** that the Minutes of the Community Wellbeing Fund Subcommittee meeting held on 7 May 2026 be confirmed.

4. Financial Report for the Community Wellbeing Fund Year-End 2025-2026

A6525223

Ms Crawford spoke to the report. It was confirmed that over $495,000 was spent during the 2025/2026 financial year, noting some grants were returned. This financial year $500,000 was available as allocated through the Long-term Plan and would be distributed over five funding rounds.

Moved Cr Boyle, seconded Cr de Vries and **RESOLVED** that the Community Wellbeing Fund Subcommittee:

1. Receives the report "Financial Report for the Community Wellbeing Fund Year-End 2025-2026".

2. Notes Attachment 1 – Community Wellbeing Fund Financial Report as at 30 June 2026.

5. Community Wellbeing Fund – Updated Weighting for Strategic Decision-Making Framework

A6509562

Ms Crawford distributed the 2025 Fund Framework to subcommittee members to demonstrate the changes for the recommendation to adopt the new Framework for 2026/2027. The revised Framework was based on the Long-term Plan Scoring Framework and outlined how decisions are made for each funding round. The first funding round for the 2026/2027 financial year would be assessed using the 2025 Framework.

The Framework criteria were clarified noting that if an event was economically viable and generated a surplus or profit 25% of the allocated funding would be returned to the fund for redistribution. It was also noted that an accountability report would be required within a two-month timeframe after the event or project was held.

Moved Cr Lush, seconded Cr de Vries and **RESOLVED** that the Community Wellbeing Fund Subcommittee:

1. Receives the report "Community Wellbeing Fund – Updated Weighting for Strategic Decision-Making Framework".

2. Notes the Assessment Scoring Framework for use as part of the Fund application process, noting any changes required.

6. Public Excluded Session

Moved Cr de Vries, seconded Mr Burdon and **RESOLVED** that the public be excluded from the following parts of the proceedings of this meeting, namely:

(a) Minutes of the Public Excluded Session of the Community Wellbeing Fund Subcommittee Held on 7 May 2026
(b) Correspondence 1 - 81 Tay Street Garden - Former refugees - A gratitude letter
(c) Correspondence 2 – Presbyterian Support Southland - Letter of Thanks - Chiller to Store Donated Food

(d) Accountability Report 2 - Multiyear 2/3 - Active Southland - Surf to City 2026
(e) Accountability Report 3 - Athletics Southland - Colgate Games 2022
(f) Accountability Report 4 - Southland Sri Lankan Society - SSLS Cricket Match for Women and Children
(g) Accountability Report 5 - Multiyear 2/3 - Arts Murihiku - Running an Arts Space
(h) Accountability Report 7 - The Anderson Park Trust - 100 Year Anniversary of Anderson House
(i) Accountability Report 8 - The Lodge of Remembrance No 318 - At Home in Southland Where Our Story Begins
(j) Accountability Report 9 - Manaaki Tangata - Victim Support - Front-line Service Delivery in Invercargill
(k) Accountability Report 10 - Hellenic New Zealand Congress Inc. - Greek Pantry Staples Cooking Class
(l) Accountability Report 11 - Southland Mangaia Club Inc - Purchase of New Tables and Chairs
(m) Accountability Report 12 - Heritage South Trust - Southland Heritage Month 2026
(n) Accountability Report 13 - The Royal New Zealand Society for the Prevention of Cruelty to Animals - Enabling Stronger Communities and Safer Animals - Support for the SPCA Invercargill Centre Manager
(o) Accountability Report 14 - Southland Community Broadcasters Charitable Trust Incorporated - Waitangi Day Esk Fest 2026
(p) Accountability Report 15 - Bluff Coastguard Inc. - Floating Pontoon Project
(q) Accountability Report 16 - Hiringa Oranga o Awarua Ltd - Try-Whānau Triathlon Festival (Try-Whānau)
(r) Accountability Report 17 - Southland Schools Pipe Band Programme Trust – Piping and Drumming Tuition and Leadership Programme
(s) Accountability Report 18 - Multiyear 1/2 - Loss & Grief Support Trust Southland - Loss & Grief Centre Community Events Year 1
(t) Accountability Report 19 - Tuurama Trust - Rangatahi Zone 2025
(u) Accountability Report 20 - Methodist Mission Southern - Waihopai Rangatahi Housing Kaupapa
(v) Accountability Report 21 - Takahoa Community Trust - Youth Work at Southland Boys' High School
(w) Accountability Report 22 - Attic Arts Centre Charitable Trust - Operational Costs for the Art Attic Gallery
(x) Accountability Report 23 - ET Patchwork Circle
(y) Accountability Report 24 - Presbyterian Support Southland - Purchase of Freezer to Store Donated Food
(z) Accountability Report 25 - Otatara Landcare Group - Printing of the Pigeon Post
(aa) Accountability Report 26 - Outreach Singing Aotearoa - The Sing Thing 2024
(bb) Accountability Report 27 - Tutuki Harnessing Potential Charitable Trust – Education with Therapeutic Benefits
(cc) Accountability Report 28 - Outreach Singing Aotearoa - The Sing Thing 2023
(dd) Ranked Summary of Incoming Applications – 2026/27 – Round 1
(ee) Assessment Scoring of Applications
(ff) Hearing Timetable
(gg) Funding Application 1 - Map my Mouth - Community Oral Health Access Pilot
(hh) Funding Application 14 - Royal New Zealand Society for the Prevention of Cruelty to Animals - SPCA Invercargill Centre
(ii) Funding Application 10 - Invercargill City Charitable Trust - Freestyle Kings Live
(jj) Funding Application 5 - Insert Coin to Play Charitable Trust - E5: E-Waste, Education, Entertainment, Esports and Employment
(kk) Funding Application 11 - Takahoa Community Trust - Youth Work at Southland Boys High School and Aurora College
(ll) Funding Application 6 - Cycling Southland Incorporated - SBS Bank Tour of Southland 2026

(mm) Funding Application 12 - Spirit Army - Spirit Army Social
(nn) Funding Application 16 - Eco-Fest Committee - Eco-Fest 2026
(oo) Funding Application 15 - Scott Richardson Memorial Trust - The Scott Richardson Program
(pp) Funding Application 2 - St Andrew's Scottish Society of Southland - St Andrew's Day Concert 2026
(qq) Funding Application 3 - Southland Workers Educational Association Inc. - Sit N Be Fit
(rr) Funding Application 4 - Koha Yoga - Free Yoga
(ss) Funding Application 8 - Multiyear - Victim Support New Zealand Inc. - Supporting Victims of Crime & Traumatic Events
(tt) Funding Application 9 - West Invercargill Health - Men's Health Day 2026
(uu) Funding Application 17 - Late Application - Kartsport Southland Incorporated - New Zealand Karting National Championships
(vv) Deliberations and Resolutions

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(b) Correspondence 1 - 81 Tay Street Garden - Former refugees - A gratitude letter	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(c) Correspondence 2 - Presbyterian Support Southland - Letter of Thanks - Chiller to Store Donated Food	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.

(d)	Accountability Report 2 - Multiyear 2/3 - Active Southland - Surf to City 2026	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(e)	Accountability Report 3 - Athletics Southland - Colgate Games 2022	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(f)	Accountability Report 4 - Southland Sri Lankan Society - SSLS Cricket Match for Women and Children	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(g)	Accountability Report 5 - Multiyear 2/3 - Arts Murihiku - Running an Arts Space	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(h)	Accountability Report 7 - The Anderson Park Trust - 100 Year Anniversary of Anderson House	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.

(i) Accountability Report 8 - The Lodge of Remembrance No 318 - At Home in Southland Where Our Story Begins	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(j) Accountability Report 9 - Manaaki Tangata - Victim Support - Front-line Service Delivery in Invercargill	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(k) Accountability Report 10 - Hellenic New Zealand Congress Inc. - Greek Pantry Staples Cooking Class	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(l) Accountability Report 11 - Southland Mangaia Club Inc - Purchase of New Tables and Chairs	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(m) Accountability Report 12 - Heritage South Trust - Southland Heritage Month 2026	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.

(n)	Accountability Report 13 - The Royal New Zealand Society for the Prevention of Cruelty to Animals - Enabling Stronger Communities and Safer Animals - Support for the SPCA Invercargill Centre Manager	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(o)	Accountability Report 14 - Southland Community Broadcasters Charitable Trust Incorporated - Waitangi Day Esk Fest 2026	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(p)	Accountability Report 15 - Bluff Coastguard Inc. - Floating Pontoon Project	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(q)	Accountability Report 16 - Hiringa Oranga o Awarua Ltd - Try-Whānau Triathlon Festival (Try-Whānau)	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(r)	Accountability Report 17 - Southland Schools Pipe Band Programme Trust – Piping and Drumming Tuition and Leadership Programme	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.

(s)	Accountability Report 18 - Multiyear 1/2 - Loss & Grief Support Trust Southland - Loss & Grief Centre Community Events Year 1	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(t)	Accountability Report 19 - Tuurama Trust - Rangatahi Zone 2025	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(u)	Accountability Report 20 - Methodist Mission Southern - Waihopai Rangatahi Housing Kaupapa	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(v)	Accountability Report 21 - Takahoa Community Trust - Youth Work at Southland Boys' High School	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(w)	Accountability Report 22 - Attic Arts Centre Charitable Trust - Operational Costs for the Art Attic Gallery	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.

(x) Accountability Report 23 - ET Patchwork Circle	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(y) Accountability Report 24 - Presbyterian Support Southland - Purchase of Freezer to Store Donated Food	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(z) Accountability Report 25 - Otatara Landcare Group - Printing of the Pigeon Post	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(aa) Accountability Report 26 - Outreach Singing Aotearoa - The Sing Thing 2024	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(bb) Accountability Report 27 - Tutuki Harnessing Potential Charitable Trust – Education with Therapeutic Benefits	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.

(cc) Accountability Report 28 - Outreach Singing Aotearoa - The Sing Thing 2023	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(dd) Ranked Summary of Incoming Applications – 2026/27 – Round 1	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(ee) Assessment Scoring of Applications	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(ff) Hearing Timetable	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(gg) Funding Application 1 - Map my Mouth - Community Oral Health Access Pilot	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.

(hh)	Funding Application 14 - Royal New Zealand Society for the Prevention of Cruelty to Animals - SPCA Invercargill Centre	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(ii)	Funding Application 10 - Invercargill City Charitable Trust - Freestyle Kings Live	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(jj)	Funding Application 5 - Insert Coin to Play Charitable Trust - E5: E-Waste, Education, Entertainment, Esports and Employment	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(kk)	Funding Application 11 - Takahoa Community Trust - Youth Work at Southland Boys High School and Aurora College	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(ll)	Funding Application 6 - Cycling Southland Incorporated - SBS Bank Tour of Southland 2026	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.

(mm) Funding Application 12 - Spirit Army - Spirit Army Social	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(nn) Funding Application 16 - Eco-Fest Committee - Eco-Fest 2026	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(oo) Funding Application 15 - Scott Richardson Memorial Trust - The Scott Richardson Program	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(pp) Funding Application 2 - St Andrew's Scottish Society of Southland - St Andrew's Day Concert 2026	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(qq) Funding Application 3 - Southland Workers Educational Association Inc. - Sit N Be Fit	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.

(rr) Funding Application 4 - Koha Yoga - Free Yoga	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(ss) Funding Application 8 - Multiyear - Victim Support New Zealand Inc. - Supporting Victims of Crime & Traumatic Events	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(tt) Funding Application 9 - West Invercargill Health - Men's Health Day 2026	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(uu) Funding Application 17 - Late Application - Kartsport Southland Incorporated - New Zealand Karting National Championships	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.
(vv) Deliberations and Resolutions	**Section 7(2)(i)** To enable any local organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations).	**Section 48(1)(a)** That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7.

There being no further business, the meeting finished at 4.00 pm.

MINUTES OF THE DISTRICT LICENSING COMMITTEE – JUNE AND JULY 2026 MEETINGS

Present: Cr Darren Ludlow

Ms Catherine Howard

1. Manager - New Certificate - Approved by DLC Chair Cr Ludlow

1.1 INVDLC 2026/90 – Approved 4 June 2026

1.2 INVDLC 2026/112 – Approved 4 June 2026

1.3 INVDLC 2026/92 – Approved 18 June 2026

1.4 INVDLC 2026/102 – Approved 18 June 2026

1.5 INVDLC 2026/122 – Approved 18 June 2026

1.6 INVDLC 2026/132 – Approved 18 June 2026

1.7 INVDLC 2026/37 – Approved 25 June 2026

1.8 INVDLC 2026/106 – Approved 25 June 2026

1.9 INVDLC 2026/119 – Approved 25 June 2026

1.10 INVDLC 2026/142 – Approved 2 July 2026

1.11 INVDLC 2026/159 – Approved 8 July 2026

1.12 INVDLC 2026/116 – Approved 8 July 2026

1.13 INVDLC 2026/136 – Approved 16 July 2026

1.14 INVDLC 2026/109 – Approved 16 July 2026

1.15 INVDLC 2026/138 – Approved 23 July 2026

1.16 INVDLC 2026/153 – Approved 23 July 2026

1.17 INVDLC 2026/108 – Approved 23 July 2026

1.18 INVDLC 2026/83 – Approved 23 July 2026

1.19 INVDLC 2026/176 – Approved 30 July 2026

1.20 INVDLC 2026/175 – Approved 30 July 2026

1.21 INVDLC 2026/178 – Approved 30 July 2026

2. Manager – Renewal of Certificate - Approved by DLC Chair Cr Ludlow

2.1 INVDLC 2026/53/2022 – Approved 4 June 2026

2.2 INVDLC 2026/74/2025 – Approved 11 June 2026

2.3 INVDLC 2026/79/2025 – Approved 11 June 2026

2.4 INVDLC 2026/106/2025 – Approved 18 June 2026

2.5 INVDLC 2026/134/2014 – Approved 25 June 2026

2.6 INVDLC 2026/104/2025 – Approved 25 June 2026

2.7 INVDLC 2026/117/2025 – Approved 25 June 2026

2.8 INVDLC 2026/126/2025 – Approved 25 June 2026

2.9 INVDLC 2026/135/2025 – Approved 25 June 2026

2.10 INVDLC 2026/146/2025 – Approved 25 June 2026

2.11 INVDLC 2026/91/2025 – Approved 25 June 2026

2.12 INVDLC 2026/76/2016 – Approved 2 July 2026

2.13 INVDLC 2026/144 – Approved 8 July 2026

2.14 INVDLC 2026/57/2022 – Approved 8 July 2026

2.15 INVDLC 2026/47/2019 – Approved 8 July 2026

2.16 INVDLC 2026/115/2019 – Approved 8 July 2026

2.17 INVDLC 2026/144/2025 – Approved 8 July 2026

2.18 INVDLC 2026/75/2022 – Approved 8 July 2026

2.19 INVDLC 2026/137/2025 – Approved 16 July 2026

2.20 INVDLC 2026/128/2016 – Approved 23 July 2026

2.21 INVDLC 2026/122/2025 – Approved 23 July 2026

2.22 INVDLC 2026/141/2022 – Approved 23 July 2026

2.23 INVDLC 2026/170/2014 – Approved 30 July 2026

2.24 INVDLC 2026/128/2025 – Approved 30 July 2026

2.25 INVDLC 2026/140/2022 – Approved July 2026

3. Special Licences - Approved by DLC Chair Cr Ludlow

3.1 Club Southland – Multi events – INVDLC 2026/111 – Approved 4 June 2026

3.2 Squash City Invercargill – INVDLC 2026/120 – Approved 4 June 2026

3.3 ILT – The Shack – INVDLC 2026/121 – Approved 11 June 2026

3.4 Bluff Distillery – INVDLC 2026/124 – Approved 11 June 2026

3.5 RadDad – INVDLC 2026/125 – Approved 18 June 2026

3.6 Ascot Park Motor Hotel – INVDLC 2026/105 – Approved 18 June 2026

3.7 Ascot Park Motor Hotel – INVDLC 2026/127 – Approved 25 June 2026

3.8 Avenal Homestead – INVDLC 2026/128 – Approved 25 June 2026

3.9 Kelvin Hotel – INVDLC 2026/129 – Approved 25 June 2026

3.10 Marist Bros Old Boys Rugby Club – INVDLC 2026/160 – Approved 30 June 2026

3.11 Auld Distillery – INVDLC 2026/131 – Approved 2 July 2026

3.12 Straight 8 Estate – INVDLC 2026/130 – Approved 2 July 2026

3.13 Arrowtown Distillery – INVDLC 2026/133 – Approved 2 July 2026

3.14 South Pole Dance – INVDLC 126 – Approved 2 July 2026

3.15 Club Southland – INVDLC 2026/150 – Approved 2 July 2026

3.16 Club Southland – INVDLC 2026/141 – Approved 2 July 2026

3.17 Club Southland – INVDLC 2026/151 – Approved 2 July 2026

3.18 ILT – The Shack – INVDLC 2026/134 – Approved 2 July 2026

3.19 RadDad – INVDLC 2026/137 – Approved 2 July 2026

3.20 Waverley Bowling Club – INVDLC 2026/139 – Approved 2 July 2026

3.21 Rugby Southland Supporters Club – INVDLC 2026/152 – Approved 8 July 2026

3.22 Club Southland – INVDLC 2026/155 – Approved 8 July 2026

3.23 Invercargill Northend Bowling Club – INVDLC 2026/161 – Approved 8 July 2026

3.24 GWD Russells – INVDLC 2026/165 – Approved 8 July 2026

3.25 Anderson Park Trust – INVDLC 2026/162 – Approved 16 July 2026

3.26 ILT Northern Tavern – INVDLC 2026/181 – Approved 16 July 2026

3.27 Waverley Bowling Club – INVDLC 2026/166 – Approved 16 July 2026

3.28 Waverley Bowling Club – INVDLC 2026/154 – Approved 16 July 2026

3.29 Marist Brothers Old Boys – INVDLC 2026/143 – Approved 16 July 2026

3.30 Bluff Distillery – INVDLC 2026/167 – Approved 16 July 2026

3.31 Queens Park Golf Club – INVDLC 2026/171 – Approved 16 July 2026

3.32 RadDad – INVDLC 2026/145 – Approved 16 July 2026

3.33 Southland Rugby Inc – INVDLC 2026/135 – Approved 16 July 2026

3.34 Ascot Park Racecourse Consortium – INVDLC 2026/174 – Approved 16 July 2026

3.35 Southland Rugby Referees – INVDLC 2026/164 – Approved 16 July 2026

3.36 Cycling Southland – INVDLC 2026/168 – Approved 23 July 2026

3.37 Thistle AFC – INVDLC 2026/156 – Approved 23 July 2026

3.38 Club Southland – INVDLC 2026/188 – Approved 30 July 2026

3.39 Club Southland – INVDLC 2026/187 – Approved 30 July 2026

3.40 RadDad – INVDLC 2026/172 – Approved 30 July 2026

3.41 RadDad – INVDLC 2026/173 – Approved 30 July 2026

3.42 Cardrona Distillery – INVDLC 2026/184 – Approved 30 July 2026

3.43 Club Southland – INVDLC 2026/182 – Approved 30 July 2026

4. Licence Renewal - Approved by DLC Chair Cr Ludlow

4.1 INVDLC 2026/59/2019 – Approved 4 June 2026

4.2 ASRK Ltd – INVDLC 2026/42/2022 – Approved 18 June 2026

4.3 Thistle AFC – INVDLC 2026/88/2016 – Approved 18 June 2026

4.4 Four Square Bluff – Approved 18 June 2026

4.5 The Eagle – INVDLC 2026/21/2022 – Approved 16 July 2026

4.6 The Eagle – INVDLC 2026/22/2022 – Approved 16 July 2026

4.7 ILT – Ascot Park Catering – INVDLC 2026/93/2016 – Approved 30 July 2026

5. Licence Variation – Approved by DLC Chair Cr Ludlow

5.1 Baba Louies Ltd – INVDLC 2026/2/2008 – Approved 11 June 2026

6. Temporary Authority – Approved by DLC Chair Cr Ludlow

6.1 A M J Ventures Ltd – INVDLC 2026/146 – Approved 25 June 2026

7. Other Business

04 June 2026

Amendment to issued special licence 73/SPL/108/2026 approved.
Medical Officer of Health acknowledged for educational workshop.
Permanent club charter confirmation for Invercargill Club.
DLC Network training dates noted.
Infringement fees paid to the Crown.
Manager's certificates on hold: CERT/83/2026, CERT/37/2026.
Potential issues around location discussed.

11 June 2026

Amendment to Special Licence 73/SPL/117/2026 approved.
LAP adopted 27 April; trading hours issues noted.
On-licence at 16B Don Street in liquidation.
Manager's Certificate 73/CERT/154/2021 suspended.
Lunch training sessions begin 18 June.

18 June 2026

Discussion on lunchtime training with the DLC network
Hold period extended for 73/CERT/61/2022.
Discussion on manager renewal if not working in industry.

25 June 2026

Amendment to On-licence 73/ON/9104/2026 approved.
New On-licence at 250 Ocean Beach Road on hold.

02 July 2026

Late special licence applications for GWD Russell's, Bluff Distillery, Waverley Bowling Club and Anderson Park Trust accepted.

Due to LAP maximum closing time for Off-licences amended from 11pm to 10pm, the following amended Off-licences approved and issued 29 June 2026.

1. Waikiwi Tavern 73/OFF/9106/2026
2. Super Liquor Southland 73/OFF/9107/2026
3. Lorneville Super Liquor 73/OFF/9108/2026
4. Kelvin Hotel 73/OFF/9109/2026
5. Invercargill Working Men's Club 73/OFF/9110/2026
6. Avenal Homestead Tavern 73/OFF/9111/2026
7. Northern Tavern 73/OFF/9112/2026
8. Ascot Park Motor Hotel 73/OFF/9113/2026
9. East End Bottle Store 73/OFF/9114/2026
10. Collingwood Bottle Store 73/OFF/9115/2026
11. Windsor Street Wine Store 73/OFF/9116/2026
12. Eastern Suburbs Tavern 73/OFF/9117/2026
13. South City Liquorland 73/OFF/9118/2026
14. Centrepoint Liquorland 73/OFF/9119/2026

15. Newfield Tavern 73/OFF/9120/2026

16. Golden Age Tavern 73/OFF/9121/2026

17. The Eagle Hotel 73/OFF/9122/2026

08 July 2026

Manager's certificates on hold due to non-payment.
Amendment to 73/SPL/108/2026 approved.
Blanket approval discussion for Parks & Reserves.

16 July 2026

Amendment to 73/CERT/134/2023 approved.
Retrobowl licensed area discussion.

23 July 2026

Potential licensed premises in Esk Street.
Draft approval letter sent to Parks & Reserves.

30 July 2026

Late special licence from Waverley Bowling Club declined.
Amendment to 73/CERT/233/2024 approved.
Discussion on amended conditions for Ascot Park Catering.
Bluff Distillery On-licence on hold pending 100(f) certificate.

PRIVATE PLAN CHANGE FROM TULLOCH LIMITED AT 805, 815 AND 819 NORTH ROAD, INVERCARGILL

To:	Community and Regulatory Committee
Meeting Date:	Tuesday 11 August 2026
From:	Mishka Banhidi - Consultant Planner
Approved:	Jonathan Shaw - Group Manager - Consenting and Environment
Approved Date:	Friday 31 July 2026
Open Agenda:	Yes

Purpose and Summary

To assess the options and make a recommendation on how to process the private plan change request to amend the zoning at 805, 815 and 819 North Road, Invercargill (the site) from Rural to Industrial 1 (Light Industrial) according to Clause 25, Schedule 1, Resource Management Act 1991.

Invercargill City Council (Council) must decide how a private plan change request is processed under the Resource Management Act 1991.

Tulloch Limited seeks to rezone approximately 9.7 hectares of land at 805, 815 and 819 North Road, Lorneville, from Rural Zone to Industrial 1 (Light Industrial) Zone under the Invercargill City District Plan. The Plan Change also introduces a site-specific Concept Plan (North Road), which sets out development controls relating to access, internal road layout, stormwater management, landscaping, building design, and interface mitigation.

The Plan Change has been prepared to recognise the established industrial activity on the site (the existing wool store) and to provide additional serviced industrial land to meet demonstrated demand in Invercargill. The rezoning would enable light industrial activities, flexible lot configuration, and integrated servicing upgrades, while managing landscape, transport and amenity effects through the Concept Plan provisions.

The private plan change relates to the district plan zoning maps and provisions of the Industrial 1 Zone, including the addition of a new Concept Plan (Appendix 2 – Concept Plans). A full copy of the private plan change request and associated further information received since lodgement is included within the application documentation.

Recommends Option 3, that the private plan change request is accepted in whole under clause 25(2)(b) of Schedule 1 to the Resource Management Act 1991.

Recommendations

That the Community and Regulatory Committee:

1. Receives the report "Private Plan Change from Tulloch Limited at 805, 815 and 819 North Road, Invercargill".

Recommendations to Council:

2. That the Community and Regulatory Committee, Invercargill City Council, having had particular regard to the applicant's section 32 evaluation report, accepts the private plan change request by Tulloch Limited, included within the application documentation, pursuant to clause 25(2)(b) Schedule 1 Resource Management Act 1991, for the following reasons:

    a. The applicant's section 32 evaluation report and subsequent further information contain sufficient information for the notification of the plan change to be considered by submitters.

    b. Accepting the private plan change request enables the matters raised by the applicant to be considered on their merits during a public participatory planning process.

    c. Council is subject to the Plan Stop process. Council cannot adopt the plan change without seeking an exemption, to date no exception has been granted.

    d. The are no grounds to reject a private plan change request under clause 25(4).

    e. It is not appropriate to deal with the private plan change as if it were a resource consent application because the applicant seeks development that exceeds what the current zoning readily enables.

Background

Site and Surrounding Areas

The Plan Change relates to land located at 805, 815 and 819 North Road (SH6), Lorneville, Invercargill. The site is located approximately 6 km north of Invercargill's urban area and contains two residential dwellings, one located within 805 North Road and the other within 819 North Road. 815 North Road contains the Tulloch wool store, along with associated hardstand, storage areas and rural paddocks. The land subject to the Plan Change is shown in Figure 1 below.

Figure 1: Localised Aerial of Subject site. Source Council Aerial Photo and Property Viewer

The site is approximately 9.7 hectares in size and is comprised of predominantly flat terrain with small changes in ground level typical of the Lorneville area. The existing wool store and associated hardstand occupy the central portion of the site, with the remainder used for grazing and rural/ rural residential activities. Vegetation within the site consists of open pasture, shelter belts, scattered exotic trees, and boundary planting.

The site is accessed directly from North Road (State Highway 6), a two-lane arterial route connecting Lorneville to Invercargill and Winton. North Road is a typical urban to rural highway with limited pedestrian or cycling facilities. No public transport services operate in the immediate vicinity of the site.

Existing facilities include the wool store building, loading and unloading areas, truck access, sealed and unsealed yards, storage areas, and ancillary operational spaces. The wool store is a large industrial-style building (2ha), with associated vehicle manoeuvring areas.

Stormwater and wastewater servicing is currently limited, with on-site systems supporting the existing activity. The Plan Change documentation notes that new wastewater and stormwater infrastructure will be required to support future industrial development. There are no public wastewater or stormwater networks within the site. Water supply is currently provided via on-site arrangements associated with the wool store. Stormwater is discharged to existing drains.

The land is identified as LUC 2 and 3 under the New Zealand Land Resource Inventory, meaning it is considered as highly productive under the NPS-HPL. The site is surrounded by rural land, with North Road providing separation between the site and neighbouring properties to the west. The closest dwelling outside of the subject site, is located approximately 60m from the site boundary, with additional dwellings located further north toward Lorneville. The location of the site in relation to Invercargill and Lorneville is shown in Figure 2 below.

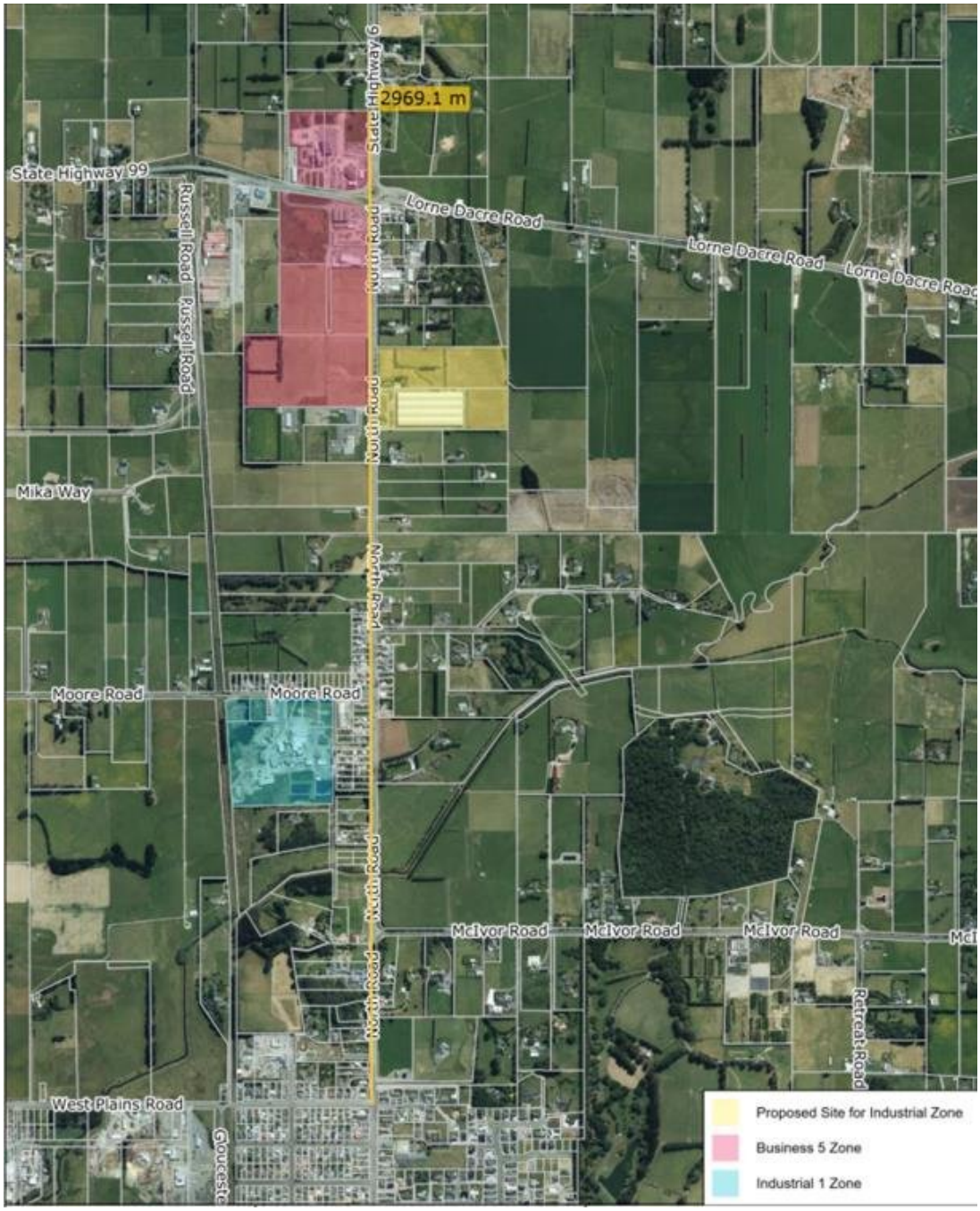


Figure 2: Subject site in relation to Invercargill and Lorneville. Source: Applicants Application

Private Plan Change Content

The applicant provided the following information to support the plan change request:

- Tulloch Limited Private Plan Change Request 805, 815 & 819 North Road, Invercargill
- Appendix 1: Certificate of Titles
- Appendix 2: Concept Plan

- Appendix 3: Contours Map
- Appendix 4: Geosolve Geotechnical Assessment
- Appendix 5: Pattie Delamore Partners Preliminary Site Investigation Report
- Appendix 6: Pattie Delamore Partners Detailed Site Investigation Report
- Appendix 7: Industrial Capacity Desktop Analysis Report
- Appendix 8: Full Services Report
- Appendix 9: Kamo Marsh Landscape Assessment
- Appendix 10: Land and Water Science Soil Classification Report
- Appendix 11: Agribusiness Productivity Assessment
- Appendix 12: Insight Economics Report
- Appendix 13: Integrated Transport Assessment
- Appendix 14: New Zealand Transport Agency Communications
- Appendix 15: Marshall Day Acoustics Report
- Further Information:
    - Tulloch RFI response 11 February 2026:
        - Attachment A - Invercargill Property Market Overview.
        - Attachment B - CBRE ' Tight at the Top' Article.
        - Attachment C - Initial Consultation with Te Ao Mārama Inc.
    - Tulloch Final RFI response 7 July 2026:
        - DHI Memo - Wastewater Modelling.

The Plan Change proposes to rezone the site from Rural Zone to Industrial 1 (Light Industrial) Zone (IND1Z) and introduce a new Concept Plan (North Road) with accompanying site-specific provisions.

The Plan Change proposes to make changes to the following sections of the Invercargill City District Plan:

- Planning Maps: rezoning 805, 815 & 819 North Road from Rural to IND1Z, both within Planning Map 2, and the GIS planning Maps
- Part 3 - Area Specific Matters - Industrial 1 Zone (IND1Z): inclusion of Proposed Rules requiring development in accordance with the Concept Plan (North Road).
- Part 4 - Appendices and Maps – Appendix 5: Concept Plans – addition of APP5-8: Concept Plan (North Road).
- Consequential re numbering of Industrial 1 Rules

The proposed additional rules within the Light Industrial 1 Zone are as follows:

IND1Z-R2 Restricted Discretionary Activities

The following are restricted discretionary activities in the Industrial 1 Zone:

1. Any activity that does not comply with IND1Z-R13
2. Any activity that does not comply with IND1Z-R14

IND1Z-R3 Discretionary Activities

The following are discretionary activities in the Industrial 1 Zone:

1. Any activity not listed as permitted, restrict discretionary or non-complying.

IND1Z-R13 Within that part of the Industrial 1 Zone at Lorneville, illustrated on the North Road Concept Plan - Industrial 1 Zone in APP5-8, Appendix 5, all land use shall comply with the Concept Plan.

IND1Z-R14 Where an activity does not comply with IND1Z-R13, the activity is a restricted discretionary activity.

The matters over which Council shall exercise discretion are:

1. Vehicle Access and Roading:

    - the safety and efficiency of SH 6 relating to access location and design from the site
    - the ability of the site to service all developments from an appropriately located and sized main road
    - That any planting or screening along the western boundary of the site maintain vehicle visibility at any access to SH 6

2. Visual Amenity:

    - The extent to which the site can be reasonably screened to reduce bulk and scale effects on adjoining rural farmland to the east, north and south of the site boundaries
    - Planting and landscaping to screen activity on site consider finished land contour ground levels

3. Stormwater:

    - Stormwater sediment and contaminants are treated onsite prior to discharge to the adjoining stream to the east to mitigate or avoids downstream impacts

IND1Z-R15 Within that part of the Industrial 1 Zone at Lorneville illustrated on the North Road Concept Plan:

a. All new buildings and structures to have a recessive exterior wall and roof cladding with a light reflectance value (LVR) of less than 37%
b. All building signage is either directed to the west towards North Road or directed inwards to the internal road, reducing potential glare on the adjacent rural land (to the north, east and west). All signage to avoid bright and dominant colours.
c. External lighting:
    - Set back a minimum of 3 metres from site boundary and to not create light spill beyond the site boundaries.
    - Limited to downlighting only, to reduce adverse effects on the night sky.

- Security lighting to be sensor monitored where possible.

d. The planting buffer will include (but is not limited to) the following native species:

- Pittosporum tenuifolium, Kohuhu.
- Cordyline australis, Tī Kōuka.
- Coprosma propinqua, Mingimingi.
- Aristotelia serrata, Wineberry.
- Chionochloa flavicans, Toetoe.
- Phormium tenax, Flax.
- Exotic species within the planting buffer are limited to Cupressus x leylandii 'Leighton Green'.
- Exotic species within the planting buffer are limited to Cupressus x leylandii 'Leighton Green'.

INDIZ-R16 Any activity that does not comply with Rule IND1Z-R15 is a restricted discretionary activity.

The matters over which Council shall exercise discretion are:

i. Effects on neighbouring landowners resulting from the non-compliance
ii. Effects on visual amenity and native tree species as a result of planting exotic species other than those permitted by the rule.

The North Road Concept Plan is included within Appendix 2 of the Application and included below within figure 3 for ease of reference:

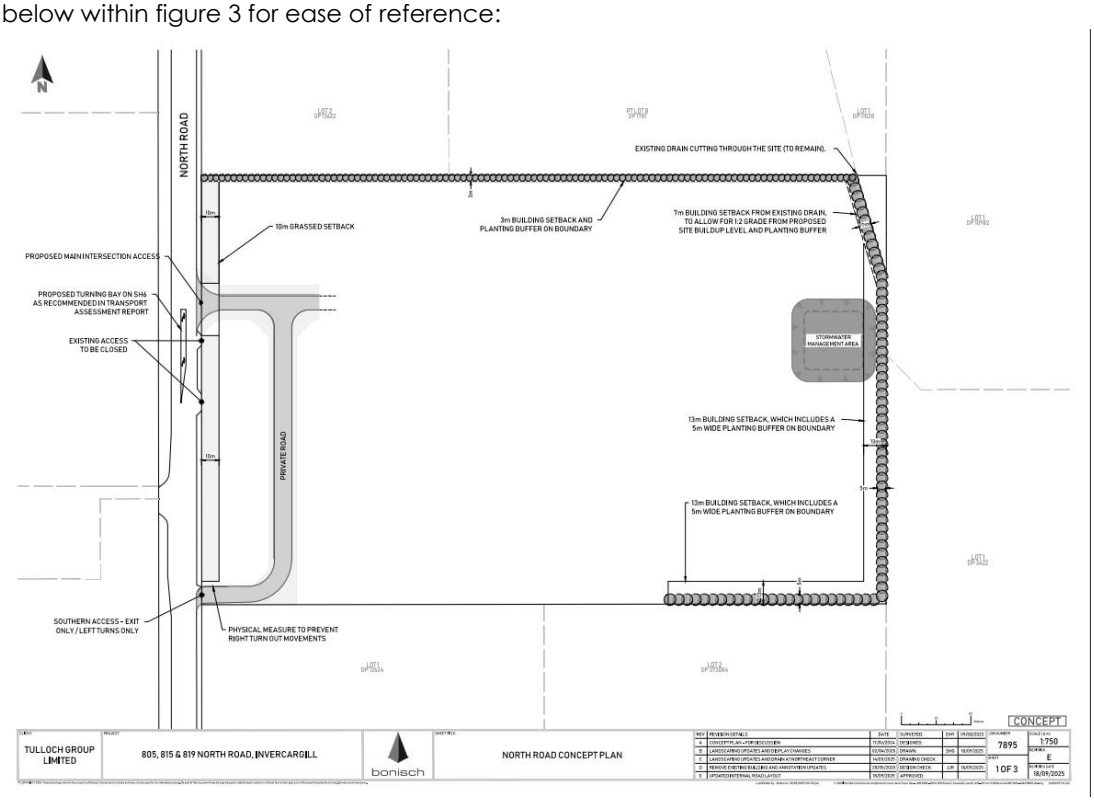


Figure 3: North Road Concept Plan

The plan change aims to rezone 805 - 819 North Road from Rural to Industrial 1 (Light Industrial) so the land can be used for future light industrial activities rather than rural purposes. It provides a framework for how the land may be developed over time, including coordinated access, internal roads, stormwater and wastewater servicing, and landscaping through the Concept Plan (North Road). The applicants' goal is to make additional industrial land available in a location with good transport access while ensuring that any future development manages its interface with neighbouring land.

Timeframes

This plan change application was received for processing on 4 November 2025
Further information was requested on 10 December 2025
A complete further information response was received on 7 July 2026

Council is required to decide how the private plan change request is processed within 30 working days of the latest date specified above. Being 18 August 2026

Issues and Options

Significance

This decision under clause 25 is considered to be of low to medium significance under Council's Significance and Engagement Policy. It is a process decision only, with the substantive decision to be made following formal public consultation as prescribed by the RMA.

Analysis

Statutory Context: Resource Management Act 1991

Any person may request a change to a district plan, a regional plan or a regional coastal plan. The procedure for private plan change requests is set out in Part 2 of Schedule 1, RMA.

Council must decide under clause 25 of Schedule 1 RMA which is the most appropriate processing option for each private plan change request. In making this decision council must have particular regard to the applicant's section 32 evaluation report. The clause 25 decision is the subject of this report with the statutory requirements detailed throughout.

The Consultant Planner considered that the applicant has provided sufficient information for the request to be accepted and considers that the insufficient information grounds for rejection in clause 23(6) are not available in this instance.

The Consultant Planner evaluated the options available under clause 25 in the next sections of this report and has had particular regard to the applicant's section 32 evaluation report in undertaking the assessment of clause 25 options.

The following options have been considered:

- Option 1: adopt the request as if it were a proposed plan change made by Council.
- Option 2: reject the private plan change request in whole or in part.
- Option 3: accept the private plan change request in whole or in part.

- Option 4: deal with the request as if it were an application for a resource consent.

OPTION 1: ADOPT THE REQUEST AS IF IT WERE A PROPOSED PLAN CHANGE MADE BY COUNCIL

Council can decide to adopt the request, or part of the request. If adopted, Council would then process it as though it were a Council-initiated plan change. Adoption would transfer cost and risk to council.

As of August 2025, under the Resource Management Amendment Act 2025, Invercargill City Council is subject to a plan stop, which restricts Council from initiating or adopting plan changes. While the legislation provides limited exceptions, such as plan changes required to give effect to national direction, these exceptions do not apply to this private plan change request. Because adopting a private plan change is treated as initiating a plan change, Council cannot adopt this request while the plan stop is in force. This restriction applies only to adoption and does not prevent Council from accepting the private plan change under clause 25(2)(b) of Schedule 1, for processing as an applicant-led plan change.

The Consultant Planner recommends that the private plan change request not be adopted.

OPTION 2: REJECT THE PRIVATE PLAN CHANGE REQUEST IN WHOLE OR IN PART

Council has the power to reject a private plan change request, in whole or in part, in reliance on one of the limited grounds set out in clause 25(4).

The grounds for rejection under clause 25(4) are as follows:

a. the request or part of the request is frivolous or vexatious; or
b. within the last two years, the substance of the request or part of the request;
    i. has been considered, and given effect to, or rejected by, the local authority or the Environment Court; or
    ii. has been given effect to by regulations made under section 360A; or
c. the request or part of the request is not in accordance with sound resource management practice; or
d. the request or part of the request would make the policy statement or plan inconsistent with Part 5; or
e. in the case of a proposed change to a policy statement or plan, the policy statement or plan has been operative for less than two years.

Is the Request Frivolous or Vexatious

The request includes a section 32 evaluation report supported by specialist assessments on relevant matters, including transport, engineering servicing, and planning. The Consultant Planner consider the request is not frivolous as the private plan change:

a. has been considered thoroughly in the application materials
b. is supported by expert opinion and a section 32 analysis, and
c. cannot be said to have no reasonable chance of succeeding.

The applicant is not acting in bad faith by lodging a private plan change request. The request does not require Council to revisit matters already decided or subject to extensive community engagement or investment. Accordingly, The Consultant Planner does not consider the private plan change request to be vexatious.

The Consultant Planner recommends the private plan change request not be rejected on this ground.

Has The Substance of the Request Been Considered and Been Given Effect, or Rejected by Council Within the Last Two Years?

The last review of the District Plan was completed in 2019. A more targeted review through Plan Change 2 (Housing and Code of Practice) recently had decisions notified on 13 July 2026, however this plan change does not directly relate to industrial land supply or the subject site.

Neither the contents of the proposed plan change or the operative provisions relating to this site have been considered in the last two years.

The Consultant Planner recommend the private plan change request not be rejected on this ground.

Is the Request in Accordance with Sound Resource Management?

The term sound resource management practice is not defined in the RMA.

In Orakei Point Trustee v Auckland Council [2019] NZEnvC 117, the Court summarised earlier case law (including Malory Corporation Ltd v Rodney District Council and Kerikeri Falls Investments Ltd v Far North District Council) and confirmed that the concept should be tied to the Act's purpose and principles, and assessed only at a coarse-grain merits level.

A threshold assessment is therefore required, considering whether the private plan change aligns with the purpose and principles of the RMA, noting that a full merits assessment will occur following notification.

The proposal seeks to rezone the Tulloch North Road properties from Rural to Industrial 1 (Light Industrial) Zone and introduce a site-specific Concept Plan. This is intended to better align the existing industrial activities on the site with an appropriate zoning and provide for future light industrial development. At a coarse level, this is considered capable of supporting the efficient use and development of land and physical resources, consistent with RMA section 5.

RMA section 6 identifies matters of national importance. Those potentially relevant to this plan change are:

a. s6(a) - the preservation of the natural character of wetlands, lakes and rivers and their margins; and
b. s6(e) - the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu and other taonga.

The watercourse along the north-western boundary is recognised in the plan change through proposed setback areas within the Concept Plan, which will assist in protecting its margins from inappropriate use and development.

The plan change area does not contain any outstanding natural features or landscapes, nor areas of significant indigenous vegetation or significant habitats of indigenous fauna.

Consultation with mana whenua (through Te Ao Mārama - TAMI) has occurred, with TAMI providing a list of high-level recommendations and advising that they "look forward to further korero as part of the formal process under Schedule 1 of the RMA".

Based on the above, and at a high level the proposed plan change is considered to be consistent with RMA section 6.

RMA section 7 sets out other matters to which particular regard must be had.

Sections 7(b), 7(c), 7(f) and 7(g) are considered relevant because:

a. Rezoning to Industrial 1 may enable more efficient use and development of the site given its existing industrial activities and servicing context.
b. The Concept Plan includes setbacks, screen planting and built-form controls to manage visual and amenity effects, supporting maintenance of amenity values and environmental quality.
c. Aligning the zoning with existing industrial activities supports efficient use and development of natural and physical resources while managing associated effects.
d. The proposed framework recognises existing industrial and primary production activities and restricts other industrial activities that could compromise the intended role and function of the site.

The plan change is considered broadly consistent with the principles of Te Tiriti o Waitangi, noting the applicant's engagement with mana whenua and with future engagement available through the notification process.

The applicant has supplied technical reports and a section 32 evaluation report. These support the proposal to rezone the site to Industrial 1 (Light Industrial) Zone and introduce a Concept Plan to provide long-term operational certainty as well as enable future development.

Based on the applicant's information, the coarse-grain merits assessment, and consideration of RMA Part 2, the private plan change request is considered to be in accordance with sound resource management practice for the purposes of clause 25(4)(c), Schedule 1.

Initial Council engineering feedback identified stormwater and wastewater capacity concerns, noting the site sits outside Council stormwater and wastewater networks and that downstream effects required clarification. Updated modelling and design work now demonstrate that stormwater can be managed on-site with controlled discharge to the existing drain, and that wastewater capacity is sufficient, should approval be granted for a reticulation extension with the DHI modelling confirming "*the downstream network has sufficient capacity to accommodate the proposed additional discharge*" with no predicted flooding or constraints.

Any future subdivision, land-use or building consent will need to demonstrate adequate stormwater and wastewater capacity, provide detailed design, confirm ownership responsibilities, and secure any required discharge consents.

Water supply can be provided from the existing network, subject to standard design requirements at development stage. Transport and access can be appropriately managed through future design, with no constraints preventing rezoning.

The proposed plan provisions contain sufficient detail for Council to understand the intended development framework. Subject to submissions, any refinements or additional detail can be addressed through the hearing process, where the applicant, submitters, and Council experts can work through matters in full.

The Consultant Planner recommends the private plan change request not be rejected on this ground.

Would The Request or Part of the Request Make the Policy Statement or Plan Inconsistent with Part 5 of the RMA?

Part 5 of the RMA sets out the role and purpose of planning documents created under the Act, including that they must assist local authorities to give effect to the sustainable management purpose of the RMA.

Section 74 of the RMA sets out matters to be considered by territorial authorities when preparing or changing district plans. Any change to a district plan must be in accordance with the functions in section 31, the provisions of Part 2, and the requirement to prepare a section 32 report. District plan provisions must give effect to the regional policy statement and relevant national direction and must not be inconsistent with any applicable regional plan.

The private plan change is considered to be in accordance with the functions set out in section 31 of the RMA, noting that it relates to the integrated management of the effects of the use and development of land within the district.

The Invercargill City District Plan was made operative before the 2019 National Planning Standards and is therefore not in the National Planning Standards format, noting this is no longer required under section 58JA of the RMA. The provisions proposed through this private plan change have been drafted to align with the existing structure and formatting of the District Plan. The plan change is not contrary to the National Planning Standards and does not prevent Council from undertaking future updates to fully align the District Plan with the Standards through a separate process.

The private plan change uses existing methods for managing resource management issues. The applicant seeks to rezone the Tulloch North Road properties under section 73(2) of the RMA to the Industrial 1 (Light Industrial) Zone, which forms part of Council's adopted suite of zones and is therefore relevant to Council's corresponding obligations under the RMA. The request is supported by a section 32 evaluation and technical assessments of effects, including consideration of relevant plans and strategies as required under section 74.

As the private plan change seeks to adopt the existing Industrial 1 zoning with some additional rules, a coarse examination of the private plan change indicates that rezoning and associated provisions will not make the Invercargill City District Plan inconsistent with Part 5 of the RMA. The rezoning to Industrial 1 (Light Industrial) Zone would contribute to the provision of appropriately zoned industrial land in the district and support the efficient use and development of land and physical resources.

As part of this examination, the most relevant higher order documents to the plan change include the Southland Regional Policy Statement and applicable national policy statements, including the National Policy Statement for Highly Productive Land 2022 to the extent that the subject land is classified as highly productive. The applicant's assessment of these documents is included within their application and further information, however for clarity The Consultant Planner has included a summary of the assessment of the application against the Southland Regional Policy Statement and the National Policy Statement for Highlight Productive Land below:

Southland Regional Policy Statement

The applicant's assessment concludes the plan change is consistent with the Southland Regional Policy Statement, including provisions relating to Tangata whenua, water quality, rural land/soils, contaminated land, transport, and urban development. The proposal aligns with Objective URB.1 and Policy URB.2 by enabling integrated, well-planned industrial development in an appropriate location, and the loss of LUC 3 soils is considered acceptable given the site's limited productive capacity. Overall, the plan change is assessed as being in general accordance with the direction of the SRPS.

National Policy Statement for Highly Productive Land

The NPS-HPL came into force in October 2022 and seeks to enhance protection for highly productive land from inappropriate subdivision, use and development. The objective of the NPS-HPL is that:

"*Highly productive land is protected for use in land-based primary production, both now and for future generations*".

This is supported by a set of nine policies, which set out at a high level how the objective is to be achieved. The NPS-HPL also includes a range of clauses to implement the objectives and policies.

Policy 5 and clause 3.6(4) of the NPS-HPL restrict any rezoning of highly productive land to situations where:

a. *the urban zoning is required to provide sufficient development capacity to meet expected demand for housing or business land in the district; and*
b. *there are no other reasonably practicable and feasible options for providing the required development capacity; and*
c. *the environmental, social, cultural and economic benefits of rezoning outweigh the environmental, social, cultural and economic costs associated with the loss of highly productive land for land-based primary production, taking into account both tangible and intangible values.*

In addition, under clause 3.6(5), territorial authorities must take measures to ensure that the spatial extent of any urban zoning of highly productive land is the minimum necessary to provide the required development capacity.

The application, inclusive of the further information provides the following (summarised assessment):

a. The site is well-located to serve industrial activities with good access to SH6 and proximity to existing Business 5 activities. The applicant considers that the location and accessibility of the site are relevant under Clause 3.6(4), and that there are no other practicable industrially zoned sites in Invercargill that could feasibly provide equivalent development capacity for light industrial activities.
b. The rezoning is required to provide sufficient development capacity for industrial land, with the applicant noting that Invercargill has a slow release of industrial land and is unlikely to have a 'sufficient' 10-year supply under the NPS-UD. The private plan change is therefore considered necessary to meet expected business land demand.

c. The applicant considers that intensifying existing industrial land elsewhere would face several challenges, including:
    i. Significant upgrades to infrastructure and utilities, particularly wastewater treatment, which would be costly, time-consuming, and potentially constrained by regional water quality issues;
    ii. Compliance challenges associated with retrofitting industrial activities into existing sites;
    iii. Increased operating costs that could affect business viability; and
    iv. Potential reverse sensitivity effects arising from locating new industrial activities near established residential or incompatible uses.

d. The applicant states that the District Plan does not sufficiently recognise the specialised requirements of industrial activities needing larger sites and coordinated development. The private plan change seeks to address this shortfall by providing additional Industrial 1 (Light Industrial) Zone land supported by a Concept Plan that manages access, internal roads, stormwater, wastewater, and landscaping.
e. The applicant considers that this framework aligns with Policy 5 and Clause 3.6 of the NPS-HPL by ensuring that urban zoning of highly productive land is only enabled where it is needed to provide sufficient business land capacity and where no other reasonably practicable options exist.
f. The applicant's economic assessment concludes that the social and economic benefits of rezoning the site significantly outweigh the environmental, social, cultural, and economic costs associated with the loss of highly productive land, noting the site's limited realistic productive capacity.

With regard to Clause 3.6(5), the applicant has assessed alternative spatial options and concludes that the area proposed to be rezoned represents the minimum necessary to provide for future industrial development, respond to market demand, and reflect the site's existing partial industrial use and operational constraints.

Clause 3.11 of the NPS-HPL (continuation of existing activities) requires territorial authorities to enable the maintenance, operation, or upgrade of existing activities on highly productive land. The applicant notes that the PPC will better provide for the continuation and future development of the long-standing Tulloch wool store operations, ensuring these activities can be maintained and upgraded within an appropriate zoning framework.

Based on the above assessment the plan change is in my opinion, consistent with the requirements of Clause 3.6 and clause 3.11. Rezoning the subject site from Rural to Industrial 1 will give effect to the NPS-HPL.

My preliminary assessment indicates the private plan change request will not make the Invercargill District Plan inconstant with Part 5 of the RM. The conclusions in the application documents would be best evaluated via the submissions and hearing processes to that these matters can be considered in full.

The Consultant Planner recommends that the private plan change request not be rejected on this ground.

Has the Plan to Which the Request Relates Been Operative for Less Than Two Years?

The local authority may reject the request in whole or in part, but only on the grounds that the plan has been operative for less than 2 years.

The last review of the District Plan was completed in 2019, as such the operative provisions relating to this site have been operative for more than 2 years.

The Consultant Planner recommends that the private plan change request not be rejected on this ground.

OPTION 3 - ACCEPT THE PRIVATE PLAN CHANGE REQUEST, IN WHOLE OR IN PART

Council can decide to accept the request in whole, or in part. If accepted, the plan change cannot have legal effect until it is operative. In my opinion the private plan change may be accepted as there is not a demonstrable need for any rule to have immediate legal effect; adoption is not required.

The private plan change mechanism is an opportunity for an applicant to have their proposal considered between a council's ten-yearly plan review cycle. The subject matter of this private plan change request is not presently being considered by Council. The private plan change process is a means by which this matter can be considered before the next plan review.

If the private plan change is accepted the matters raised by the applicant can be considered on their merits, during a public participatory planning process.
The applicant did not request that council adopt the private plan change request.

The Consultant Planner recommends that the private plan change request is accepted.

OPTION 4 – DECIDE TO DEAL WITH THE REQUEST AS IF IT WERE AN APPLICATION FOR A RESOURCE CONSENT

Council may decide to deal with the request as if it were an application for a resource consent and the provisions of RMA Part 6 would then apply accordingly.

The Consultant Planner considered that the plan change process was the most appropriate process because the applicant seeks to develop the property more intensively than the operative zone provides for and therefore seeks a zone that enables the proposed intensification.

A resource consent is for a specific project, whereas a zoning is more appropriate where final development specifics are unclear. A relevant zoning is more enduring if this is the case.

The Consultant Planner recommends the private plan change request not be dealt with as if it were an application for a resource consent.

Conclusion: options assessment

The Consultant Planner have assessed the private plan change request against the options available and the relevant matters. These include clause 25 Schedule 1 matters, having particular regard to the applicant's section 32 evaluation, and case law that provides guidance on the statutory criteria for rejection of a private plan change request.

Overall, Council does not have the ability to adopt the plan change, largely due to the plan stop status (option 1), there are no grounds to reject the plan change (option 2) or assess as a resource consent (option 4) which leaves option 3.

The Consultant Planner recommend the private plan change request is accepted.

Preliminary Consultation

Council Engineering Services - Three Waters and Development Engineering

Engineering Services reviewed the servicing aspects of the PPC and provided initial feedback through the 28 April 2026 Engineering Services Memo and the 10 December 2025 RFI. Their input focused on wastewater, stormwater, water supply, and transport/access matters. Key points from their review are summarised below, with additional mention if subsequent information was provided by the applicant:

- Wastewater: Engineering Services raised concerns about downstream capacity and requested modelling to confirm whether the network could accommodate additional industrial flows.
    - These comments were made before the DHI wastewater modelling, which was provided subsequently and demonstrated sufficient downstream capacity should the reticulation boundary be accepted.
- Stormwater: Engineering Services sought clarification on stormwater management, including discharge pathways, ownership of the existing drain/watercourse, and whether upgrades or easements would be required.
    - The applicant provided additional information through the RFI response outlining the intended stormwater approach and confirming that further detailed design would be undertaken at subdivision stage.
- Water Supply: Engineering Services advised that water supply could be provided from the existing network, subject to detailed design at later stages.
- Transport / Development Engineering: Engineering Services highlighted the need for safe and compliant access to SH6, internal road layout considerations, and integration with the wider transport network.
    - The applicant provided transport correspondence and design updates, including discussions with Stantec and NZTA. The response included sight-distance assessments and access design refinements, with further work to be undertaken as part of the Concept Plan and any future consenting stages.

NZ Transport Agency Waka Kotahi (NZTA)

NZTAs input is documented through the SH6 Access Correspondence contained in the applicants Appendix 14.

- Access Design & Safety: NZTA reviewed the proposed SH6 access and requested additional information to confirm safety and compliance with state highway standards.
- Sight Distances & Geometry: They sought clarification on sight distances, access geometry, and vehicle movement safety, noting that further assessment was required.

- The applicant provided updated access drawings, sight-distance assessments, and Stantec commentary in response. These materials were supplied through Appendix 14 of the application and the RFI response, demonstrating iterative refinement of the SH6 access design.

Overall: Waka Kotahi's feedback focused on ensuring safe and compliant access to SH6, with the applicant providing additional technical information to address these matters.

Te Ao Mārama Inc - Mana Whenua

Mana whenua input is documented in the Email Correspondence with TAMI (14 August 2025).

- Engagement & Process: TAMI noted that further kōrero could occur post-lodgement and that they retained the ability to submit formally. TAMI provided high-level engagement confirmation rather than technical input, supporting lodgement while reserving the opportunity for further dialogue through the plan change process.

Should the application be accepted for processing, the private plan change would proceed to full public notification under Schedule 1 of the RMA. This provides the opportunity for all interested parties, including Council, community members, neighbouring landowners, agencies, and mana whenua, to lodge submissions and have their views formally considered through the statutory process.

Implications and Risks

Financial Implications

If the request is adopted (Option 1), council would pay all costs associated with processing it. The Strategic Planning and Policy Team would be required to cover this unbudgeted expenditure; and there would be less funding available to progress the department's work programme.

If the request is accepted (Option 3), if the request is dealt with as a resource consent application (Option 4), the applicant would pay all reasonable costs associated with processing on a user-pays basis.

Legal Implications

An applicant may appeal under clause 27 of the RMA, to the Environment Court a decision to:

a. adopt the private plan change request in part only under clause 25(2)
b. accept the private plan change request in part only under clause 25(2)
c. reject the private plan change in whole or in part under clause 23(6)
d. deal with the private plan change request as if it were an application for a resource consent.

The Consultant Planner recommends that all of the private plan change request is accepted. The risk of a legal challenge by the applicant utilising the clause 27 appeal rights is negligible. No avenue for appeal would be available.

No substantial changes can be made to the private plan change request following the clause 25 decision. Council has worked with the applicant on the plan change leading up to this clause 25 report. Further information was provided by the applicant to ensure there would be sufficient information to evaluate the private plan change.

Next Steps

If accepted, the private plan change must be publicly notified within four months of its acceptance within accordance with council procedures.

Council will need to hold a hearing to consider any submissions, and a decision would then be made on the private plan change request in accordance with Schedule 1 of the RMA.

Clause 25 Recommendation

This private plan change request requires decision-making pursuant to clause 25 of Part 2 of Schedule 1 of the Resource Management Act 1991, to determine whether it will be adopted, accepted, rejected or dealt with as if it were a resource consent application.

The Consultant Planner recommends that the private plan change request from Tulloch Ltd to rezone the property at 805, 815 and 819 North Road, from Industrial 1 (Light Industrial) be accepted under Clause 25(2)(b) of Schedule 1 of the Resource Management Act 1991 for the reasons set out in this report.

Attachments

1. Application for the Tulloch Limited Private Plan Change Request 805, 815 & 819 North Road, Invercargill (A6192725).
2. Further Information Requests and Responders:
    - 2.1 Councils Further Information Request (A6434849).
    - 2.2 Tulloch RFI response 11 February 2026 - (A6434863).
        - Attachment A - Invercargill Property Market Overview - (A6434859).
        - Attachment B - CBRE 'Tight at the Top' Article - (A6434865).
        - Attachment C - Initial Consultation with Te Ao Mārama Inc - (A6544202).
    - 2.3 Tulloch Final RFI response 7 July 2026 - DHI Memo - Wastewater Modelling (A6493803).
3. Engineering Services Memo(A6439476).

A6192725

bonisch

Tulloch Limited Private Plan Change Request, 805, 815 & 819 North Road, Invercargill

Appendices

Bonisch Reference 7895

Appendix 1: Certificate of Titles

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier **SL10A/518**

Land Registration District **Southland**

Date Issued 01 April 1992

Prior References
SL8A/598

Estate Fee Simple

Area 3213 square metres more or less

Legal Description Lot 1 Deposited Plan 12624

Registered Owners
Tulloch Group Limited

Interests

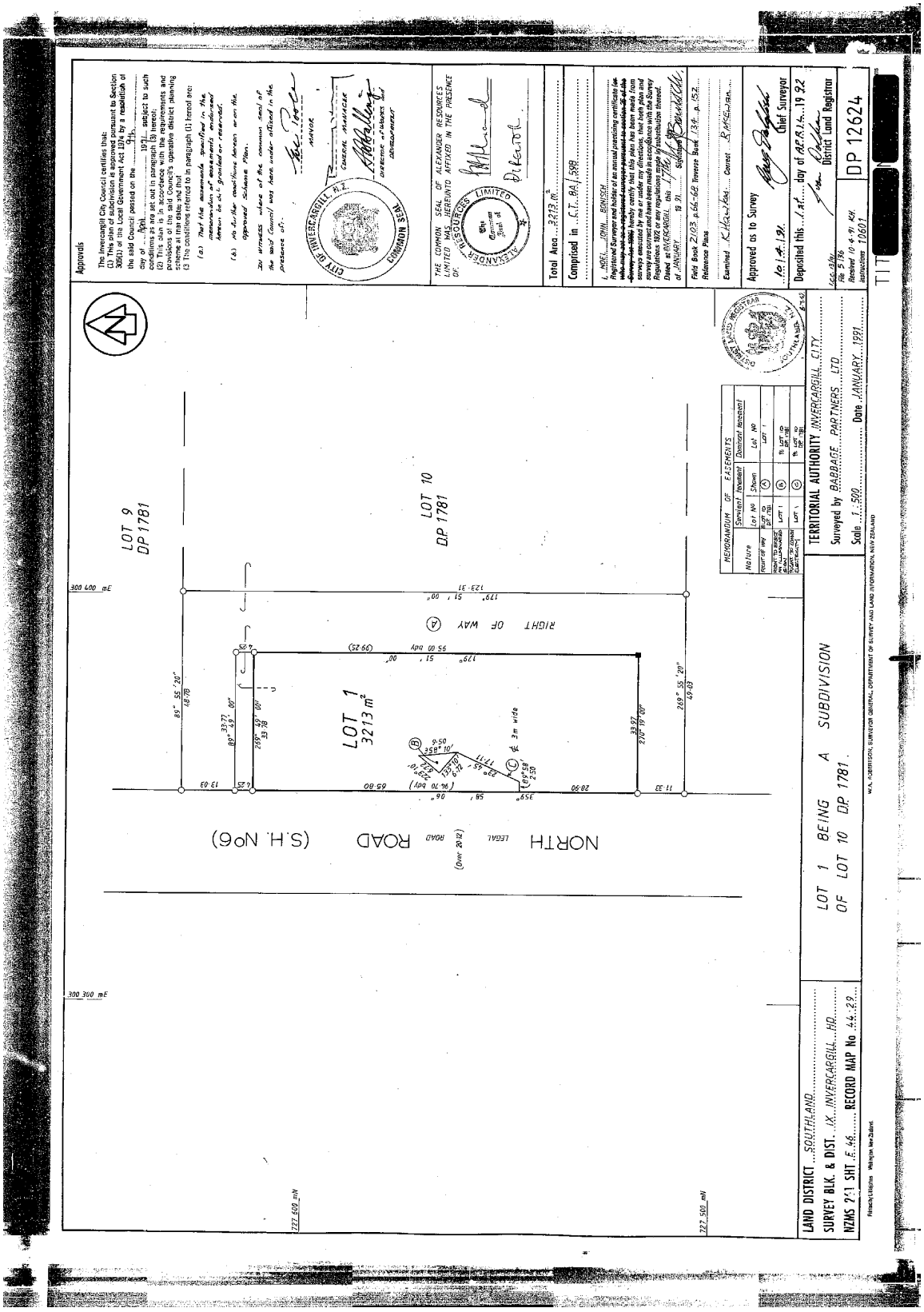
232369 Gazette Notice declaring No.6 State Highway fronting the above land to be a Limited Access Road - 4.3.1969 at 2.05 pm

191629.9 Transfer creating the following easements - produced 21.10.1991 at 11.53 am and entered 1.4.1992 at 9.35 am

Type	Servient Tenement	Easement Area	Dominant Tenement	Statutory Restriction
Convey electricity	Lot 1 Deposited Plan 12624 - herein	C DP 12624	Part Lot 10 Deposited Plan 1781 - CT SL10A/519	Section 309(1)(a) Local Government Act 1974
Right of way	Part Lot 10 Deposited Plan 1781 - CT SL10A/519	A DP 12624	Lot 1 Deposited Plan 12624 - herein	Section 309(1)(a) Local Government Act 1974
Erect an Illuminated Sign	Lot 1 Deposited Plan 12624 - herein	B DP 12624	Part Lot 10 Deposited Plan 1781 - CT SL10A/519	Section 309(1)(a) Local Government Act 1974

12837222.3 Mortgage to Ian Tulloch, Annette Margaret Tulloch and Bubbling Brook Trustees Limited - 15.12.2023 at 11:42 am

Identifier **SL10A/518**



RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier **SL10A/519**

Land Registration District **Southland**

Date Issued 01 April 1992

Prior References
SL8A/598

Estate Fee Simple

Area 4.5349 hectares more or less

Legal Description Part Lot 10 Deposited Plan 1781

Registered Owners
Tulloch Group Limited

Interests

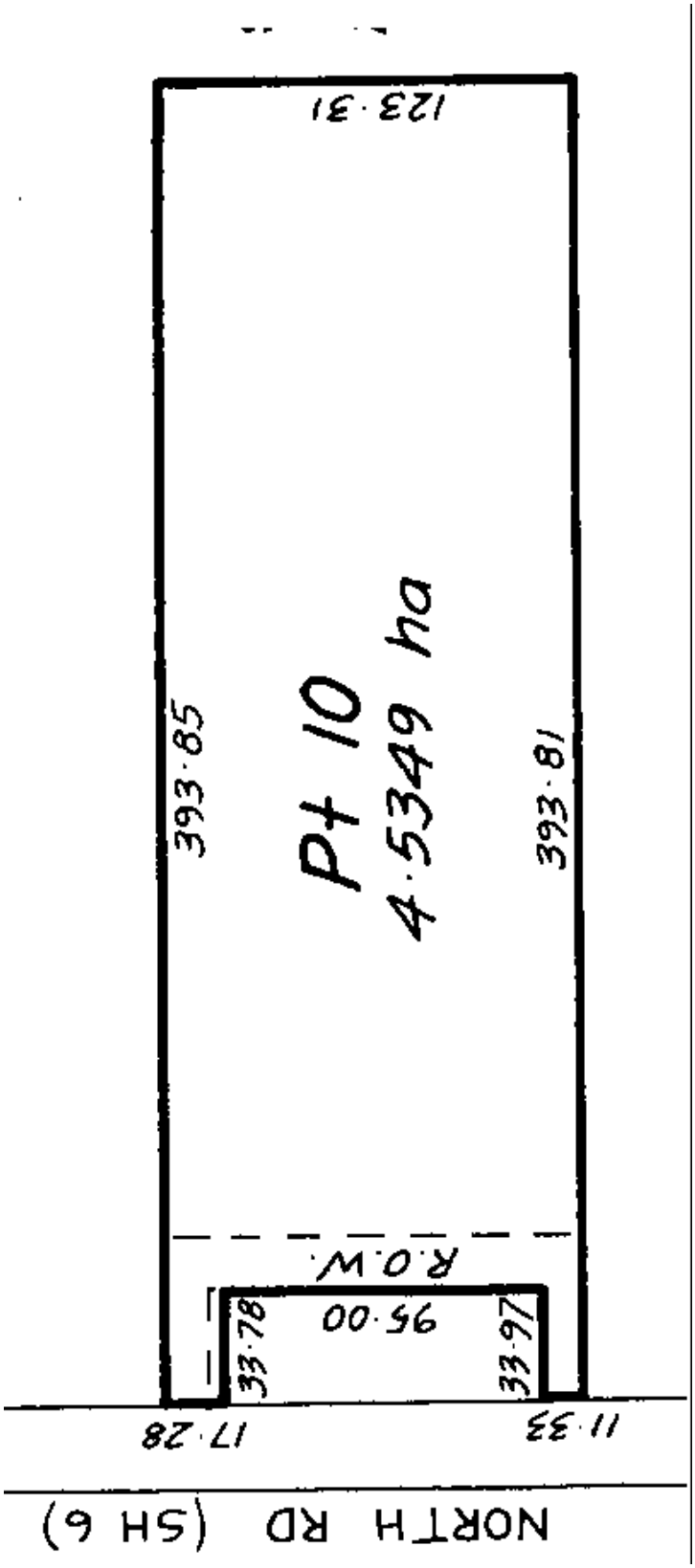
232369 Gazette Notice declaring No.6 State Highway fronting the above land to be a Limited Access Road - 4.3.1969 at 2.05 pm

191629.9 Transfer creating the following easements - produced 21.10.1991 at 11.53 am and entered 1.4.1992 at 9.35 am

Type	Servient Tenement	Easement Area	Dominant Tenement	Statutory Restriction
Erect an illuminated sign	Lot 1 Deposited Plan 12624 - CT SL10A/518	B Transfer 191629.9	Part Lot 10 Deposited Plan 1781 - herein	Section 309(1)(a) Local Government Act 1974
Convey electricity	Lot 1 Deposited Plan 12624 - CT SL10A/518	C Transfer 191629.9	Part Lot 10 Deposited Plan 1781 - herein	Section 309(1)(a) Local Government Act 1974
Right of way	Part Lot 10 Deposited Plan 1781 - herein	A DP 12624	Lot 1 Deposited Plan 12624 - CT SL10A/518	Section 309(1)(a) Local Government Act 1974

12837222.3 Mortgage to Ian Tulloch, Annette Margaret Tulloch and Bubbling Brook Trustees Limited - 15.12.2023 at 11:42 am

Identifier **SL10A/519**



RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**SLB4/1444**
Land Registration District	**Southland**
Date Issued	01 December 1970

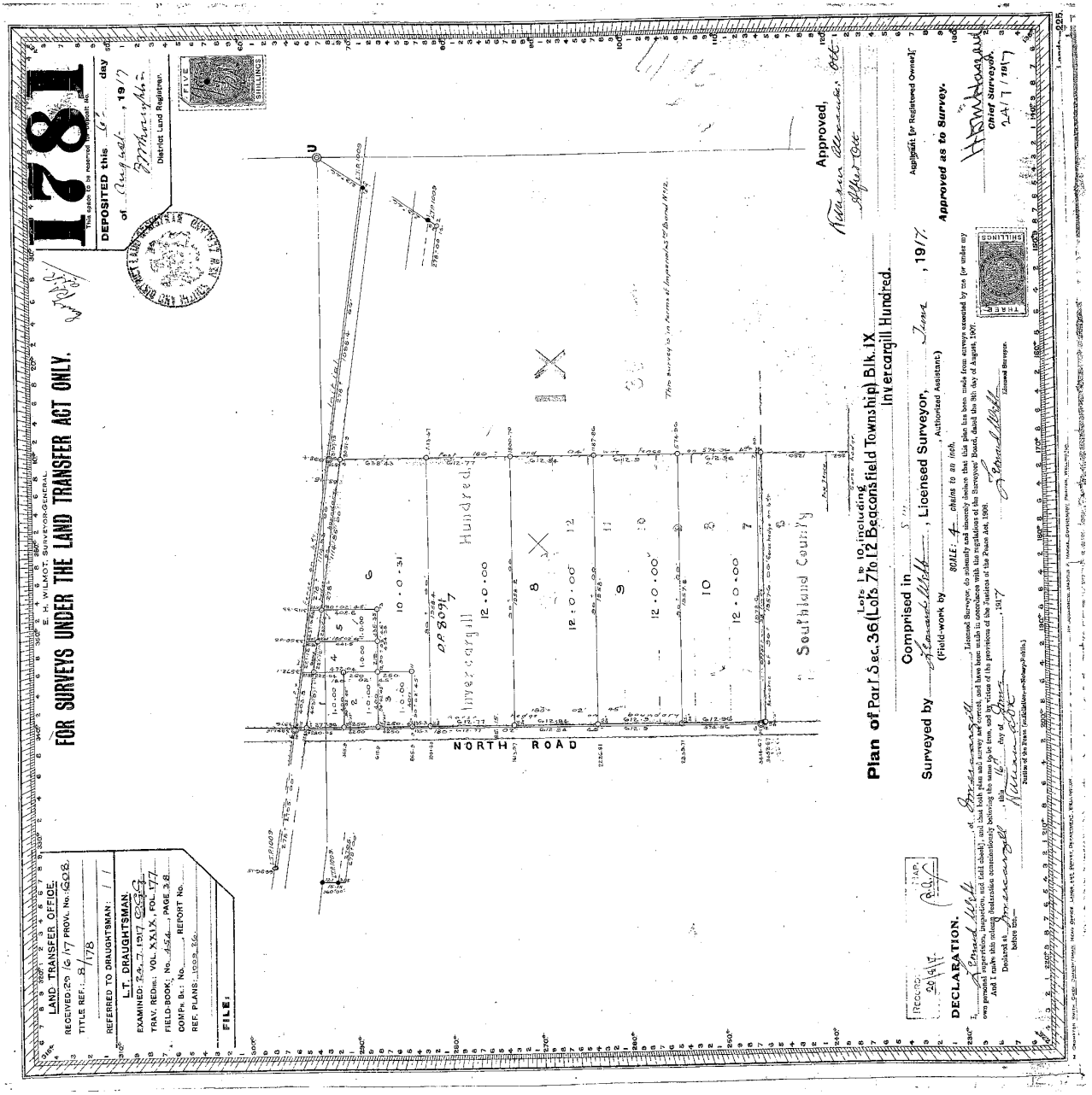
Prior References
SL151/53

Estate	Fee Simple
Area	4.8562 hectares more or less
Legal Description	Lot 9 Deposited Plan 1781
Registered Owners	
Tulloch Limited	

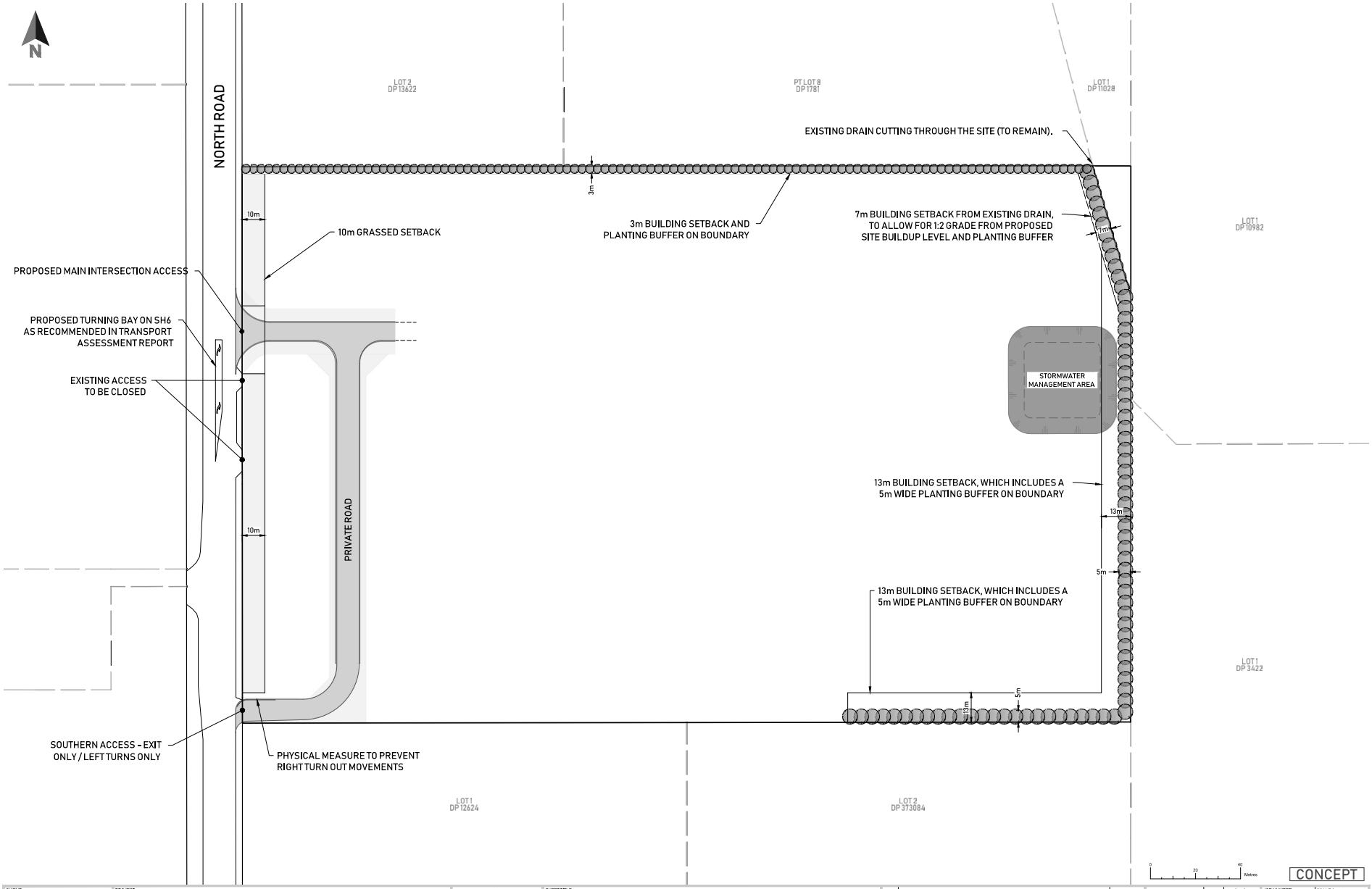
Interests

232369 Gazette Notice declaring No. 6 State Highway (Awanui-Bluff) fronting above land to be a Limited Access Road - 4.3.1969 at 2:05 pm

Identifier **SLB4/1444**



Appendix 2: Concept Plan



CLIENT:	TULLOCH GROUP LIMITED		
PROJECT:	805, 815 & 819 NORTH ROAD, INVERCARGILL		
	bonisch		
SHEET TITLE:	NORTH ROAD CONCEPT PLAN		

REV	REVISION DETAILS	DATE
A	CONCEPT PLAN - FOR DISCUSSION	17/04/2024
B	LANDSCAPING UPDATES AND DISPLAY CHANGES	02/04/2025
C	LANDSCAPING UPDATES AND DRAIN AT NORTHEAST CORNER	14/05/2025
D	REMOVE EXISTING BUILDING AND ANNOTATION UPDATES	28/05/2025
E	UPDATED INTERNAL ROAD LAYOUT	18/09/2025

SURVEYED:	EMY	09/08/2023	
DESIGNED:			
DRAWN:	SHG	18/09/2025	
DRAWING CHECK:			
DESIGN CHECK:	JJR	18/09/2025	
APPROVED:			

JOB NUMBER	7895
SHEET	1 OF 3
SCALE (@ A1)	1:750
REVISION	E
REVISION DATE	18/09/2025

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Last Edited by: Stefan on 28/05/2025 3:02:56 pm

C:\BONISCH\Bonisch Consultants\Bonisch Consultants Team Site - JOBS\7600 - 7699\7695 Tulloch, Feasibility assmt, 805-819 North Rd\06 Autocad\7695 - MASTERPLAN.dwg (CONCEPT PLAN)

Appendix 3: Contours Map

A6192725

Appendix 4: Geosolve Geotechnical Assessment

GEOSOLVE

Geotechnical Report

805, 815, 819 North Road

Invercargill

Report prepared for:

Tulloch Group Ltd

Report prepared by:

GeoSolve Limited

Distribution:

Tulloch Group Ltd

Bonisch Consultants Ltd

GeoSolve Limited (File)

September 2023

GeoSolve Ref: 230505

Revision	Issue Date	Purpose	Author	Reviewed
0	25.09.23	Client issue	SLB	TJP/FAW

GEOTECHNICAL WATER RESOURCES PAVEMENTS

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1 Introduction

1.1 General

This report presents the results of a geotechnical investigation carried out by GeoSolve Ltd in order to determine subsoil conditions and provide geotechnical inputs for a proposed commercial subdivision located at 805, 815 and 819 North Road, Invercargill.

Figure 1 – Site overview photo looking North.

The investigations were carried out for Tulloch Group Ltd. in accordance with GeoSolve Ltd's proposal dated 20 July 2023, which outlines the scope of work and conditions of engagement.

1.2 Development

We understand the proposed development will comprise approximately 10 lease areas for development including associated roading and infrastructure. An engineering feasibility report has been provided by Bonisch Consultants Ltd. (Project number 7895, Rev A, dated May 2023) and outlines the extent and layout of the proposed development.

2 Site Description

2.1 General

The subject site is located approximately 6.5 km north of Central Invercargill, as shown in Figure 2 below.

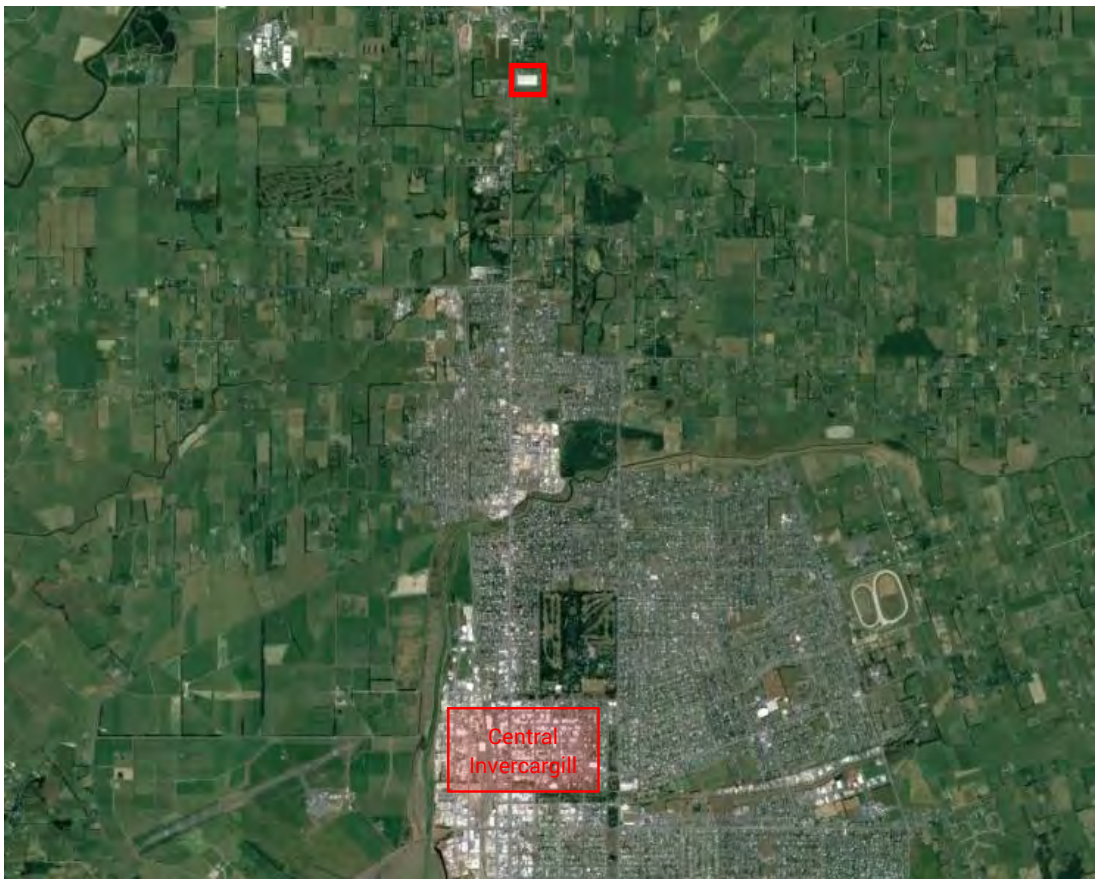

Figure 2 – Site location plan (red marking)

The site is bounded by North Road to the west, commercial and residential properties to the north and rural properties to the east and south.

An existing dwelling is located at the southwest corner of the property and a large shed covers the centre-south of the site. The property is currently fenced and covered in grass with some trees along field boundaries.

2.2 Topography and Surface Drainage

The majority of the site occupies a sub-horizontal upper terrace, and slopes down in the east to a lower terrace and drainage ditch. The drainage ditch is approximately 1 m deep and runs generally north-south along the eastern boundary. A second drainage ditch runs generally north to south between the western boundary and North Road.

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A paleochannel cuts across the property from the north-western boundary toward the centre of the site. Water was observed to be ponding in the paleochannel during investigations. A further channel has been excavated along the western and southern boundaries of the south-eastern field. This channel runs to a low point in the southeast corner of the site where evidence of ponded water is noted on the property and a swampy area and pond were observed in the field directly to the south of the property boundary.

3 Geotechnical Investigations

An engineering geological site assessment has been undertaken with confirmatory subsurface investigations. GeoSolve visited the subject property on 7, 8 and 9 August 2023, undertaking geotechnical investigations comprising:

- 13 deep test pits with associated Scala penetrometer tests (TP01- TP13) which were advanced to a maximum depth of 3.9 m.
- 9 shallow test pits with associated Scala penetrometer tests (TP14 – TP22) which were advanced to a maximum depth of 0.4 m.
- 6 heavy dynamic probe tests (DPH 1- 6) advanced to refusal at a maximum depth of 11.6 m, to assess liquefaction potential and the relative density of the subsoils.
- 2 soakage pits (SP1-2) which were advanced to a maximum depth of 2.8 m below ground level (bgl) to undertake soakage testing, assess the relative permeability and soakage potential of the subsoils.

Test pit and Scala Penetrometer locations and logs are contained in Appendix A and B respectively.

DPH locations and logs are contained in Appendix A and C respectively.

4 Subsurface Conditions

4.1 Geological Setting

4.1.1 Regional Geology

The site is underlain by topsoil, which in turn overlies alluvial deposits with Tertiary-age marine sediments at depth.

The alluvial deposits comprise Quaternary outwash gravels developed during former glaciation, which occurred inland. More recent silty and sandy floodplain or mudflat deposits overlie these gravels. The alluvial deposits merge with marine deposits in the vicinity of Invercargill.

No active faults were identified in the field, nor have any been reported in the vicinity of Invercargill. Strong earthquakes are common in Fiordland near the current tectonic plate boundary and consequently some ground shaking can be expected to occur in Invercargill during such events. The nearest trace of any mapped active fault is the Hillfoot Fault, approximately 60 km to the north of the site.

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Seismic risk exists in this region from potentially strong ground shaking, likely to be associated with a rupture of the Alpine Fault, located along the West Coast of the South Island. There is a high probability that an earthquake with an expected magnitude of over 8 will occur along the Alpine Fault within the next 50 years.

4.2 Stratigraphy

Subsurface soils encountered beneath the site generally comprise the following:

- 0.2-0.5 m of **topsoil**, overlying;
- 0.5-0.6 m of **uncontrolled fill** (only in TP01, TP02 and TP04), overlying
- 0.1 m of **buried topsoil** (only in TP02), overlying
- 0.6-2.6 m of **alluvial silt** (all test pits except TP01 & TP02), or 1.2 m of **swamp deposit** (only in TP04), overlying
- 0.5-2.6+ m of **alluvial sand** (TP02, TP03, TP05, TP06, TP07, TP08, TP09, TP10, TP11, TP12, TP13) or
- 1.1-2.9+ m of **alluvial gravel** (TP01, TP02, TP04).

Topsoil was observed at the surface of all test pits to depths of between 0.2 and 0.5 m. The topsoil typically comprises soft to stiff, organic SILT with trace to some sand and/or gravel.

Uncontrolled fill was observed underlying the topsoil in TP01, TP02 and TP04, to depths of between 0.8 and 1.1 m. The uncontrolled fill typically comprises firm to stiff, organic SILT with trace to some sand, gravel and rubbish, or SILT with some gravel and/or trace sand.

Buried topsoil was observed underlying the uncontrolled fill in TP02 at 0.8-0.9 m. The buried topsoil typically comprises stiff, organic SILT with minor sand.

Swamp deposit was observed underlying the uncontrolled fill in TP04 in the southeast corner of the site, to a depth of 2.3 m. The swamp deposit typically comprises very soft to soft, organic SILT with trace to some sand.

Alluvial silt was observed underlying the topsoil, uncontrolled fill or swamp deposit in all test pits, except TP01 and TP02. The alluvial silt typically comprises soft to very stiff, sandy SILT or SILT with trace to some sand**.** Alluvial silt was also interbedded with the alluvial sand in TP02, TP03, TP12 and TP13 in layers up to 1.8 m+ thick.

Alluvial sand was observed underlying or interbedded with the alluvial silt in all test pits except TP01 and TP04. The alluvial sand typically comprises loose to dense, SAND, silty SAND or SAND with trace silt.

Alluvial gravel was observed in TP01 and TP02 below the uncontrolled fill and buried topsoil and TP04 below the alluvial silt. The alluvial gravel typically comprises medium dense to dense, sandy GRAVEL with trace organics and/or silt. DPH testing infers this medium dense to dense material continues to at least the maximum testing depth of 11.6 m bgl.

Although uncontrolled fill was not observed in all test pits during investigations, the use of the site as farmland plus the presence of the existing dwelling, sheds and surrounding landscaping suggest potential for the presence of isolated uncontrolled fill at the site.

4.3 Groundwater

The static groundwater table was measured in the test pits at 0.8 – 3.0 m below existing ground level (bgl) in the lower terrace, and at 1.8 – 2.8 m bgl in the upper terrace. Groundwater seepages were also observed between 0.9 m and 3.5 m depth.

Groundwater is likely to be subject to seasonal variations and vary in response to rainfall.

5 Liquefaction Analysis

5.1 Design Earthquakes

The site is mapped in the Invercargill City Council Liquefaction Vulnerability map as "Undetermined" however, due to the variable water-table and alluvial soils a liquefaction assessment has been undertaken.

Two earthquake scenarios have been assessed in accordance with NZS 1170 – Structural Design Actions[1] for an Importance Level 2 structure with a 50-year design life. We have also considered a 1 in 100-year intermediate earthquake event to provide further insight to the liquefaction risk at the site.

Peak horizontal ground accelerations and effective magnitudes were calculated using the procedure from the MBIE NZGS Module 1[2]. Table 1 summarises the scenarios considered.

The MBIE NZGS Module 1 design earthquakes are an interim hazard recommendation until results of the national seismic hazard update are made available for use. Therefore, we have undertaken a sensitivity assessment for a range of earthquake events to provide further insight to the liquefaction risk.

Table 1 – Earthquake accelerations and effective magnitudes for liquefaction assessment

Scenario	Performance Requirements	Annual Probability of Exceedance (APE)	Peak Horizontal Ground Acceleration (PGA)	Effective Magnitude
Serviceability Limit State (SLS)	*Avoid damage that would prevent the structure being used as originally intended without repair.*	1/25	0.05 g	6.1
Intermediate earthquake event	*No specific requirements, unless further resilience is desired.*	1/100	0.11 g	6.1
Ultimate Limit State (ULS)	*Avoid collapse of the structural system.*	1/500	0.21 g	6.1

5.2 Liquefaction Analysis

The following analysis has been undertaken:

- A liquefaction assessment was undertaken using the heavy dynamic probe data based on the method of Boulanger and Idriss (2014).

[1] NZS 1170-5 (2004) Structural Design Actions, Part 5: Earthquake Actions – New Zealand.
[2] https://www.building.govt.nz/assets/Uploads/building-code-compliance/b-stability/b1-structure/geotechnical-guidelines/module-1-overview-of-earthquake-geotechnical-engineering-practice-guidelines-version-1.pdf.

- The DPH data has been correlated to equivalent SPT N60 values for this assessment.
- All layers have been assumed to be able to liquefy from a plasticity perspective below the ground water level. Fines content has been estimated based on test pit logs and knowledge of the deeper ground conditions. We have assumed that there are no further liquefiable layers below the refusal of the DPH tests at 11.6 m depth.
- Ishihara and Yoshimine (1992) method has been used to calculate settlement.
- Groundwater levels have been adopted at between 1 and 4 m depth based on investigation observations and ground level variations.
- Lateral spreading has been assessed quantitatively based on topography, calculated liquefiable layers and comments in the MBIE (2017) and MBIE/NZGS Module 3[3].

5.3 Liquefaction Results

The liquefaction analysis indicates the following with reference to Table 2 and Figure 3 below:

- No liquefaction is calculated for the SLS and intermediate design earthquakes due to the relatively low levels of shaking.
- The alluvial sand and silt layers are calculated to liquefy at depths between 7-8 m in DPH 1, 5.5-6 m in DPH2, 4-5 m in DPH3, 3.5-4 m in DPH4, 4.5-5 m in DPH 5 and between 4-5.5 m in DPH6. Based on this we have calculated up to 40 mm of liquefaction induced settlement and limited expression of liquefaction or ground damage.
- Liquefaction at the site is triggered at a PGA of around 0.10g which has an annual probability of exceedance (AEP) of around 100 years. More layers liquefy in earthquake events above a ULS design event with up to 90 mm of liquefaction-induced reconsolidation settlements occurring and increased LSN in the 1 in 2,500 year return period (IL4 ULS event). This is shown in Figure 3.
- Although not applicable for this site given the proposed development, the west of the project area is equivalent to a MBIE TC2 site in Canterbury, albeit with a crust thickness typically more than 3.5 m and the remainder of the site is MBIE TC1 equivalent (see Figure 2, Appendix A).
- Further cone penetrometer (CPT) testing may rule out some of the liquefiable zones and reduce the liquefaction hazard.

[3] New Zealand Geotechnical Society (NZGS) and Ministry of Business, Innovation & Employment (MBIE) Earthquake Geotechnical Engineering Practice in New Zealand, Rev 1, Issue date November 2021, ISBN: 947497-51-4 (Online).

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Table 2 – Summary of factors considered to assess the consequences of the predicted liquefaction

Factor	Assessment		Implications
Crust thickness	The crust thickness is typically more than 3.5 m for the ULS design earthquake. Data from the Canterbury earthquake sequence plus other historic earthquakes[4] has been collated and observed surface damage compared with crust thickness. This data indicates that surface damage is likely for crusts of less than about 3.5 m thickness.		The crust across the site is sufficiently thick to limit surface damage in a ULS seismic event.
LSN	1/500 AEP (ULS)	LSN range = 0-11	Insignificant to mild, negligible deformation of the ground and small settlements.
	1/100 AEP (INT)	LSN range = 0-1	
	1/25 AEP (SLS)	LSN range = 0	
Free field settlement	1/500 AEP (ULS)	Settlement = 0-40 mm	Minor differential settlement likely, up to 40 mm estimated in the area tested.
	1/100 AEP (INT)	Settlement = 0-5 mm	
	1/25 AEP (SLS)	Settlement = 0 mm	
Lateral spread	Free faces of less than 2 m depth are present along the channel which runs approximately north to south along the eastern boundary.		The lateral spreading is limited as the free face is less than 2 m and liquefiable layers are not continuous.

A detailed discussion of the process of liquefaction and the various considerations summarised in Table 2 above can be found in Appendix C, which also contains the full liquefaction analysis results from the DPH's.

[4] *Bowen, H.J. and Jacka, M.E. (2013).* Liquefaction induced ground damage in the Canterbury Earthquake: Predictions versus reality. Proceedings of the 19th NZGS Geotechnical Symposium. Editor CY Chin. Queenstown, New Zealand.

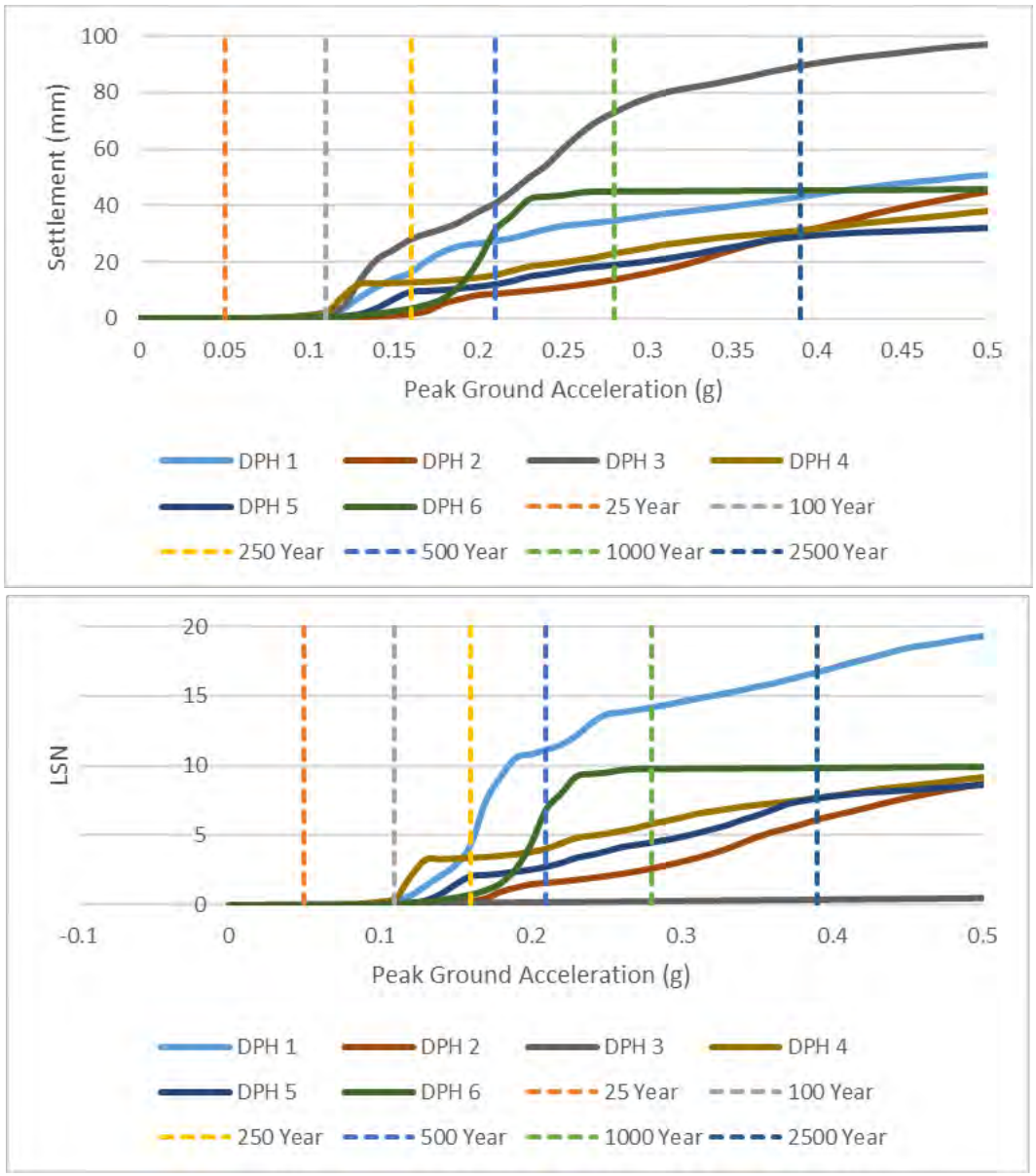


Figure 3: Calculated settlements and LSN for various Peak Ground Accelerations (PGA).

6 Engineering Considerations

6.1 General

The recommendations and opinions contained in this report are based upon ground investigation data obtained at discrete locations and historical information held on the GeoSolve database. The nature and continuity of subsoil conditions away from the investigation locations is inferred and cannot be guaranteed.

6.2 Geotechnical Parameters

Table 3 provides a summary of the recommended geotechnical design parameters for the soil materials expected to be encountered during construction of the proposed development.

Table 3 – Recommended geotechnical design parameters

Unit	Thickness (m)	Bulk Density γ (kN/m^3)	Effective Cohesion c´ (kPa)	Effective Friction ϕ´ (deg)	Elastic Modulus E (kPa)	Poissons Ratio ν
Topsoil (soft to stiff, organic SILT with trace to some sand and/or gravel).	0.2-0.5	17	To be removed from beneath building footprint, or piles to extend through these layers.			
Uncontrolled fill (firm to stiff, organic SILT with trace to some sand, gravel and rubbish, or SILT with some gravel and/or trace sand).	0.5-0.6	17				
Buried topsoil (stiff, organic SILT with minor sand).	0.1	17				
Swamp deposit (very soft to soft, organic SILT with trace to some sand)	1.2	17				
Alluvial SILT (soft to very stiff, sandy SILT or SILT with trace to some sand).	0.6-2.6	18	0	29-30	3,000-7,000	0.3
Alluvial Sand (loose to dense, SAND, silty SAND or SAND with trace silt).	0.5-2.6+	18	0	30-32	7,000-10,000	0.3
Alluvial GRAVEL (medium dense to dense, sandy GRAVEL with trace organics and/or silt).	1.1-2.9+	19	0	34-36	20,000-50,000	0.3

6.3 Site Preparation/Earthworks

During the earthworks operations all topsoil, organic matter, uncontrolled fill and other unsuitable materials (observed to 0.2-1.7 m depth in test pits but possibly deeper in isolated areas) should be removed from the construction areas in accordance with the recommendations of NZS 4431:2022. Alternatively, piles should extend through these layers.

Robust, shallow graded sediment control measures should be instigated during earthworks construction where rainwater and drainage run-off over exposed soils is anticipated.

The fine-grained alluvial silt soils are particularly susceptible to moisture and will weaken if subject to rainfall, frost or vehicle trafficking. Exposure to the elements should be limited for fine-grained soils and covering the soils with polythene sheeting, site concrete or granular engineered fill will reduce degradation due to wind, rain and surface run-off.

Water should not be allowed to pond or collect near or under a foundation slab, footings or earthworks subgrade under any circumstances. Positive grading of the subgrade should be undertaken to prevent water ingress or ponding.

Engineered fill that is utilised as bearing for foundations should be placed and compacted in accordance with the recommendations of NZS 4431:2022 and certification provided to that effect.

Granular fill is recommended to be imported from a local source or quarry for consistency and fine-grained site won soils can be reused as landscaping fill if needed.

We recommend topsoil stripping and subsequent earthworks be undertaken only when a suitable interval of fair weather is expected, or during the earthworks construction season.

Exposure to the elements should be limited for all soils. Excavations in soils should be left proud of the finished subgrade level by 300 mm if a delay prior to construction is expected. The final cut to grade should be performed immediately prior to foundation construction or engineered fill compaction.

6.4 Groundwater Issues

The static groundwater table was measured in the test pits at 0.8 – 3 m depth in the lower terrace, and at 1.8 – 2.8 m in the upper terrace. Groundwater seepages were also observed between 0.9 m and 3.5 m depth. The static groundwater table is expected to lie below typical excavation levels for building platforms. However, this should be reviewed when an earthworks plan and foundation levels are available. Groundwater seepage will need considered during service trench excavations.

It is important that GeoSolve be contacted should there be any seepage, spring flow or under-runners encountered during construction.

6.5 Excavations

No earthworks plans have been provided to date for this development, however excavations may be required to remove topsoil and uncontrolled fill at the site, create service trenches and to create level building platforms.

Table 4 summarises the recommended batter slopes for temporary and permanent slopes up to 3.0 m high formed in dry ground.

Table 4 - Recommended maximum batters for cut slopes in site soils less than 3.0 m high in dry ground.

Material Type	Recommended Maximum Batter Angles for Temporary Cut Slopes Formed in Dry Soil (horizontal to vertical)	Recommended Maximum Batter Angles for Permanent Cut Slopes Formed in Soil – dry ground only (horizontal to vertical)
Topsoil & Uncontrolled Fill	2H: 1V	3H: 1V
Silt & Sand	1.5H: 1V	3H: 1V
Alluvial Gravel	1H: 1V	2.5H: 1V
Engineered Fill	NA	2.5H: 1V

If wet slopes are encountered, they should be inspected on a case-by-case basis by a geotechnical engineer/engineering geologist to confirm any specific recommendations e.g. drainage installation, cut off diversion drains or retaining.

All cuts should be periodically monitored during construction for signs of instability and excessive erosion, and, where necessary, corrective measures should be implemented to the satisfaction of a geotechnical engineer or engineering geologist.

6.6 Preliminary Foundation Options

6.6.1 General

We have undertaken a geotechnical investigation to assist with feasibility and consenting for the development. Further geotechnical investigation will be required to be undertaken following completion of the development plans to support building consent assessments. However, for completeness we have provided advice on potential foundation options, with the geotechnical information to date.

Based on the above either shallow or piled foundations can be used. We have provided further recommendations below.

During earthworks all uncontrolled fill, organic matter and other soft/unsuitable materials should be removed from the building platforms in accordance with the recommendations of NZS 4431:2022. Any engineered fill underlying a foundation should be placed and compacted in accordance with NZS 4431:2022 and certification provided to that effect.

The alluvial silt soils are susceptible to softening from rainfall, frost and vehicle trafficking. If softening occurs further undercutting will be required.

Once the final development plan has been completed, it should be reviewed by a suitability experienced geotechnical engineer to confirm the design assumptions are met and whether further geotechnical investigation is warranted. It is also standard practice that the stripped building and earthworks platforms will need to be inspected and tested by a geotechnical practitioner.

6.6.2 Shallow Foundations

Near surface foundation bearing will be governed by the alluvial silt which will provide a reduced bearing capacity and will require specific engineering design, as shown on Figure4 below.

Figure 4 provides an assessment of allowable bearing capacity for shallow footings. It should be noted the foundation working stresses presented in Figure 4 are governed by bearing capacity in the case of narrow footings and settlement in the case of wide footings.

As an example, from Figure 4, it can be seen an allowable working stress of approximately 50 kPa is recommended for a 400 mm wide by 400 mm deep strip footing founded within alluvial silt. This corresponds to a factored (ULS) bearing capacity of approximately 75 kPa and an ultimate geotechnical bearing capacity of 150 kPa.

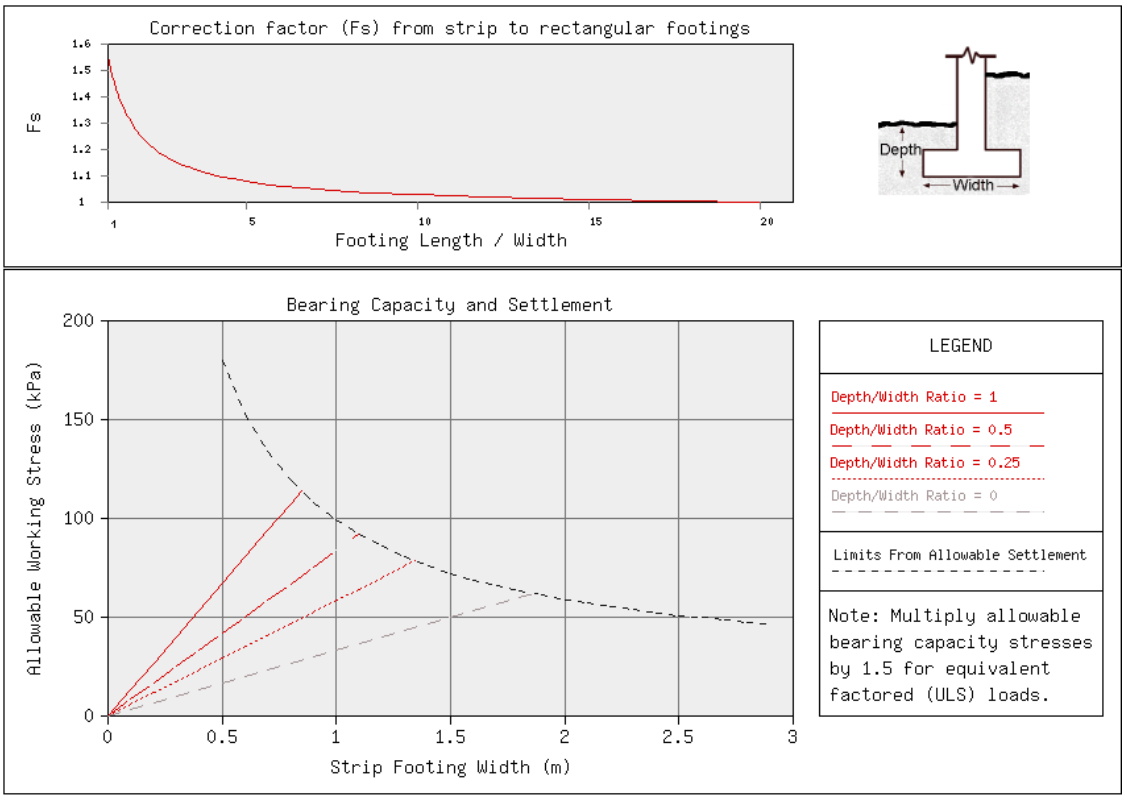


Figure 4– Recommended Bearing for Alluvial Silt

It should be noted that the bearing capacities presented above assume that the loads are vertical with no horizontal loads or moments applied to the foundations. Reduction factors to account for eccentric and/or horizontal loads can be provided during detailed design once loads are finalised.

If the bearing capacity is not sufficient for design, or structural engineering input is not preferred, ground improvement can be conducted to improve the bearing capacity of the underlying soil materials. Undercut and replacement with engineered fill can be used to increase the bearing capacity. The depth of undercut required can be confirmed during detailed design once the footing dimensions and loads are known. It is recommended that the engineered fill extends sufficiently past the edges of the footings. This is to allow enough width to ensure that there is sufficient allowable load spread below the footing and for a minimum 400 kg plate compactor to work in the footing to compact the engineered fill.

Any softened soils will need to be undercut and replaced with engineered fill placed and compacted in accordance with NZS4431:2022.

Liquefaction is not calculated in a SLS or intermediate level event and is calculated at variable depth in the ULS event. Therefore, as long as foundations are kept narrow and shallow, it is possible to design based on the above to meet minimum building code design levels, subject to final foundation design review. Regardless, thought should be given to design so all foundations are tied together to gain further resilience, where practicable. If further resilience is desired than the above, the foundation could be designed to span fully unsupported 2 m around the edge of the building and 4 m internally. GeoSolve can provide further advice if required.

6.6.3 Piled Foundations

Driven timber or bored piled foundations could be founded within the medium dense to dense alluvial gravel. As the gravel and liquefiable layers vary in depth across the site, GeoSolve can provide further advice on proposed depths and capacities once further development information is known.

6.7 Pavement CBR Values

Preliminary testing for pavements has been undertaken at this stage. Subsurface shallow test pits and Scala penetrometers have been undertaken across the subdivision area providing sufficient information on the near surface soil profile for preliminary pavement CBR recommendations.

Following removal of the unsuitable soils, topsoil and uncontrolled fill, the pavement subgrade layer will predominantly comprise alluvial silt. A preliminary design CBR of 2% can be assumed for the silt subgrade. Note that with rain saturation, ponding and machinery trafficking the CBR could reduce to less than 2%. Further testing including falling weight deflectometer (FWD) testing could be completed if the proposed pavement design requires a value greater than 2%.

All soft, wet or unsuitable materials, which are exposed during preparation of the pavement subgrade should be excavated and replaced with engineered fill. Note that subgrade soils with any organic content will not be suitable as a pavement subgrade and will require undercutting. Road construction undertaken during the winter months will also need to take into account the presence of fine-grained soils and be planned accordingly. Saturated soils damaged by weathering, frost or construction traffic will need to be undercut and replaced with granular fill.

Silt softened by the excavation process will require rolling to recompact the softened layer prior to placement of any granular pavement layers.

All engineered fill beneath pavements should be placed and compacted in accordance with Invercargill City Council requirements. Inspection of the pavement subgrade should be completed during construction by a suitably qualified geotechnical practitioner/civil engineer to confirm subsurface conditions are in accordance with this report.

A geotextile separation layer is recommended between the undercut surface of fine-grained soils and granular hard fill.

It is recommended that pavement design CBR's are reviewed following earthworks contour design. Specific road alignment testing can be undertaken at detailed design stage to prove higher CBR values at the design pavement levels.

6.8 Site Subsoil Category

For detailed design purposes it is recommended the magnitude of seismic acceleration be estimated in accordance with the recommendations provided in NZS 1170.5:2004.

Based on readily available information at the time of writing this report, GeoSolve recommends that Subsoil Category Class D is used for structural design.

6.9 Further Geotechnical Involvement

Development plans were not confirmed at the time of reporting; therefore, this report is focussed on allowing concept development. Further investigations and assessment may be required for detailed design of structures, these could include additional shallow investigations such as test pitting as well as deep testing such as cone penetrometer testing (CPTs) to confirm piling layers and liquefaction risk.

In addition, further geotechnical assessment of foundations, once loadings and systems are known, may be required.

7 Wastewater Disposal Infiltration Rates

7.1 General

Soakage infiltration testing was undertaken at two locations, at depths of 2.2 and 2.8 m in the alluvial sand unit, adjacent to TP03 and TP05 respectively (refer to Appendix A and B for soakage/test pit locations and logs) to assess preliminary infiltration rates for wastewater disposal to ground scoping. Five test pits (TP1-5) were undertaken in the east of the site where wastewater disposal is proposed to review the ground model and groundwater levels and should be reviewed alongside the preliminary infiltration rates.

Prior to undertaking soakage testing, adjacent test pits were excavated to 3.5-3.8 m depth to log the subsoil conditions and determine a suitably consistent layer for soakage testing. Two smaller test pits/soak pits (1.4-1.8 m long and 0.4 m wide) were then excavated for the soakage test. The dimensions of the soakage pit were recorded to calculate the volume and area of soakage during testing.

Soakage testing was performed by introducing water until the designated testing level was reached. The inflow was then shut off and the time it took for the water level to drop was recorded. Where possible, testing was completed multiple times until 3 consistent readings had been achieved.

7.2 Permeability Analysis – Infiltration Rates and Soil Category

7.2.1 General

Surficial layers of topsoil, uncontrolled fill, alluvial silt and swamp deposits will provide very low infiltration rates. Infiltration testing has targeted the more permeable sand layers.

GeoSolve are to be consulted to review the final depth and location of the proposed wastewater disposal system to ensure the infiltration rates and recommendations of this report are applicable. Further testing will be required once the proposed wastewater disposal system and location are confirmed.

It is recommended the wastewater disposal areas are located downslope and are well offset from the proposed building platforms.

Provision should be included for long-term inspection and routine maintenance of any disposal system installed. Performance of the disposal systems may decline below an acceptable level over time if sufficient maintenance is not completed.

7.2.2 Wastewater Disposal Infiltration Rates

The results from field soakage infiltration testing are presented below in Table 5 and Appendix C.

Table 5 - Calculated Infiltration Rates.

Test	Depth of test	Observed thickness of alluvial sand beneath base of test	Soil type at base of pit	Unfactored infiltration rate*	Factored infiltration rate**
SP01	2.2m	1.3 m +	Fine to medium SAND	**45 mm/hr**	**22.5 mm/hr**
SP02	2.8 m	0.7 m (then alluvial SILT)	Fine to medium SAND	**0.15 mm/hr**	**0.07 mm/hr**
*Does not include a reduction factor to account for loss of soakage performance over time. ** Includes a reduction factor of 0.5 to account for loss of soakage performance over time.					

Unfactored and factored infiltration rates are provided above within Table 5. To allow for any loss of soakage performance over, a reduction factor of at least 0.5 should be applied to the unfactored values for detailed design purposes.

As discussed above, the infiltration rate is expected to vary significantly based on the proposed depth and location of the disposal system, and it is recommended that this is considered at an early stage in the layout planning.

A geotechnical practitioner who is familiar with the findings of this report should inspect the base/infiltration depth of any proposed disposal system location to ensure the infiltration rates presented in Table 5 above are applicable.

7.2.3 Preliminary Wastewater Disposal Soil Category

Table 6 – Preliminary wastewater disposal soil category

Test	Depth of test	Soil type at testing level and test subsoil	AS/NZS 1547:2012 Soil Category (Table 5.1)
SP01	2.2m	Fine to medium SAND	3-4
SP02	2.8 m	Fine to medium SAND	5

A preliminary soil category for each test, in accordance with Table 5.1 of AS/NZS 1547:2012, is presented above in Table 6. The category is based on observed grain size, soil structure and permeability test results.

It is recommended that soil category in the proposed system location be reviewed by the wastewater system designer.

7.3 Conclusions and Recommendations

Due to the varying ground model and groundwater level further testing or review will be required once the location and method of the proposed wastewater disposal field is confirmed.

8 Neighbouring Structures/Hazards

Natural Hazards: A risk of seismic activity has been identified for the region as a whole and appropriate allowance should be made for seismic loading during detailed design of dwellings, but there are no site-specific constraints.

Liquefaction risk is outlined in Section 5.

No flooding or contamination assessment has been undertaken for this report.

Distances to adjoining structures: The site is located within a rural/commercial area with an existing residential dwelling adjacent to the south-western edge of the site and existing commercial building located on the property and to the north.

Noise and vibration: Pile driving foundation options and construction of engineered fill close to the nearby structures will need to consider vibration effects on these buildings.

The construction contractor should take standard measures to control construction noise, in accordance with Invercargill City Council requirements.

Aquifers: The regional groundwater table is expected to lie below the proposed building platform levels and no aquifer resource is expected to be adversely affected by the proposed development.

Dust: The soils have a relatively low potential to generate dust. However, the Contractor should take appropriate measures to control dust in accordance with Invercargill City Council requirements. Regular dampening with sprinklers during summer months is expected to be an effective measure to control airborne dust during construction.

9 Conclusions and Recommendations

- The stratigraphy at the site comprises topsoil and uncontrolled fill overlying alluvial silt, sand and gravel.
- The static groundwater table was measured in the test pits at 0.8 – 3.0 m depth in the lower terrace, and at 1.8 – 2.8 m in the upper terrace. Groundwater seepages were also observed between 0.9 m and 3.5 m depth.
- Based on the liquefaction analysis in Section 5 of this report, the site is equivalent to both a MBIE TC1 and MBIE TC2 site in Canterbury.
- No liquefaction is calculated for the SLS and intermediate earthquake due to the relatively low levels of shaking.
- Geotechnical design parameters are presented in Table 3 of the report.
- All unsuitable materials identified in foundation excavations, particularly those softened by exposure to water, should be undercut and replaced with engineered fill during construction.
- Potential foundation options are discussed in Section 6.6.
- Pavement CBR values are included in Section 6.7.
- Fill that is utilised as bearing for foundations should be placed and compacted in accordance with NZS 4431:2022 and certification provided to that effect.
- Class D subsoil category is recommended to be used for structural design.
- Wastewater disposal infiltration rates and soil categories are presented in Section 7 of this report.
- It is recommended that the foundation excavations and earthworks subgrade be inspected and tested by a suitably qualified and experienced geotechnical specialist to confirm the conditions are in accordance with the assumptions and recommendations provided in this report.

This report may not be read or reproduced except in its entirety

10 Applicability

This report has been prepared for the benefit of Tulloch Group Ltd. with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

It is important that we be contacted if there is any variation in subsoil conditions from those described in this report.

Report prepared by:

.....

Sharyn Buunk

Engineering Geologist

Reviewed for GeoSolve Ltd by:

.....

Tim Plunket

Senior Geotechnical Engineer (CPEng)

.....

Fraser Wilson

Senior Engineering Geologist

Appendix A: Site Investigation Plan

Notes:
1. These drawings have been prepared for the benefit of Tulloch Group Ltd with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

SCALE 1: 1200
0 12 24 36 48 60 (m)

Key

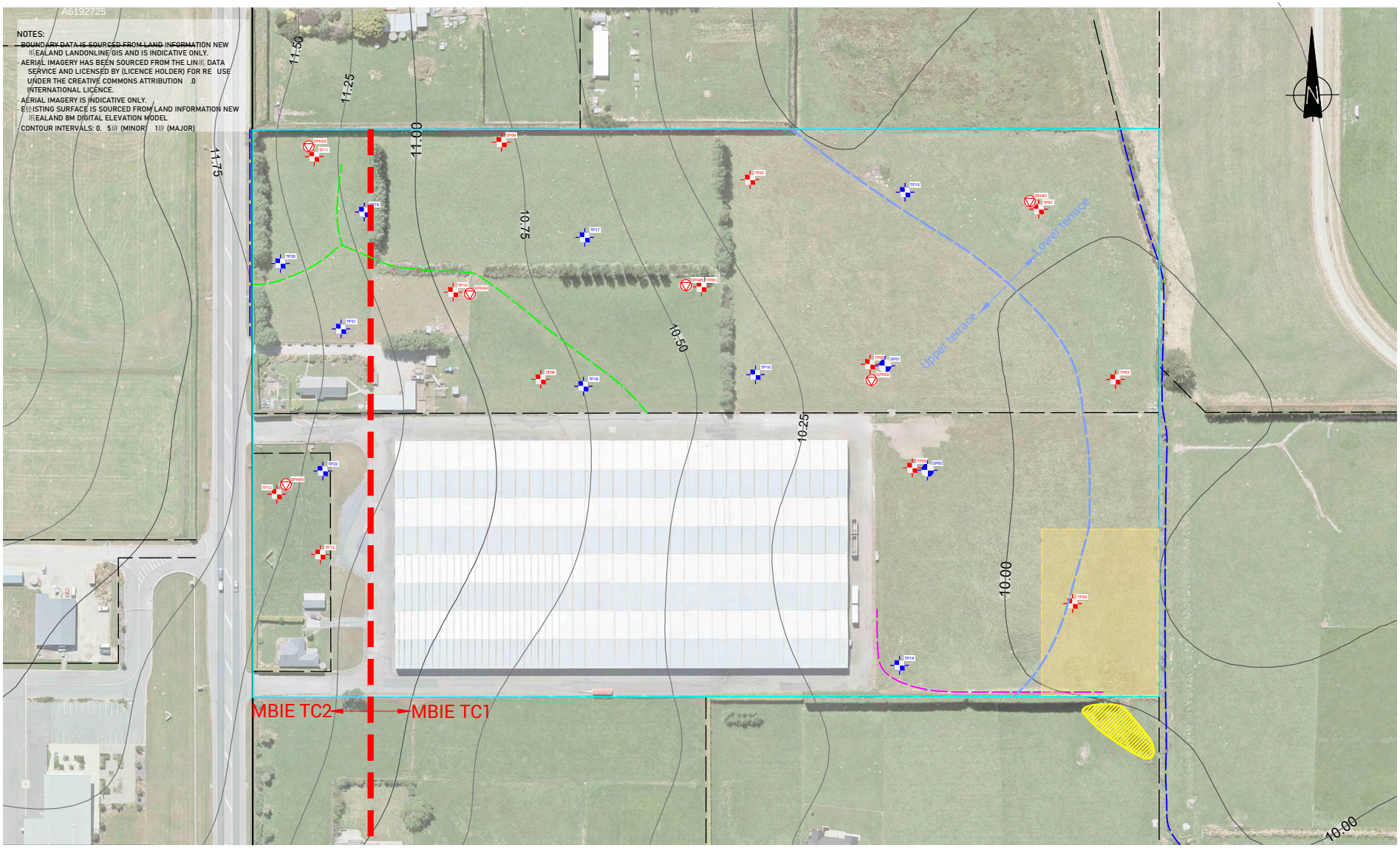
- Deep Test pit and Scala Penetrometer
- Shallow Test pit and Scala Penetrometer
- Soak pit
- Dynamic Probe Heavy Test (DPH)
- Property Boundary

GEOSOLVE
192 Spey Street, Invercargill
www.geosolve.co.nz

DRAWN	AJJ	Sep 23
DRAFTING CHECKED	SLB	Sep 23
APPROVED	FAW	Sep 23
CADFILE: Site Plan-new.dwg		
SCALES (AT A3 SIZE): 1 : 1200		
PROJECT No: 230505		

Tulloch Group Ltd
805, 815 & 819 North Road
Invercargill
Site Investigation Plan

FIG No: Appendix A - Figure 1
REV. 0



Notes:
1. These drawings have been prepared for the benefit of Tulloch Group Ltd with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

SCALE 1: 1500
0 15 30 45 60 75 (m)

Key

TP01 Deep Test pit and Scala Penetrometer
TP22 Shallow Test pit and Scala Penetrometer
SP01 Soak pit
DPH01 Dynamic Probe Heavy Test (DPH)
Property Boundary
Swampy area and pond
Potential swamp deposit area
Approximate TC1/TC2 Boundary
Drainage Ditch
Paleochannel
Excavated channel
Approximate upper and lower terrace boundary

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192 Spey Street, Invercargill
www.geosolve.co.nz

DRAWN	AJJ	Sep 23
DRAFTING CHECKED	SLB	Sep 23
APPROVED	FAW	Sep 23
CADFILE: Site Plan-new.dwg		
SCALES (AT A3 SIZE): 1 : 1500		
PROJECT No: 230505		
FIG No: Appendix A - Figure 2		REV. 0

Tulloch Group Ltd
805, 815 & 819 North Road
Invercargill
Site Investigation Plan

Appendix B: Investigation Data

GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP01

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 07/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 07/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with some gravel and a trace of sand, dark brown. Soft, moist, sand, fine to medium; gravel, fine to medium, subangular to subrounded; a trace of rootlets. 0.3 m			TS	1		
UNCONTROLLED FILL	Organic SILT with some sand, gravel and rubbish, dark brown. Firm to stiff, moist to wet, sand, fine to medium; gravel, fine to medium, subangular to subrounded; rubbish, wood, steel, wires, brick, plastic. 0.8 m		0.5		1, 1, 2, 1, 2, 5		
ALLUVIAL GRAVEL	Sandy fine to medium GRAVEL with a trace of organics, grey. Medium dense to dense, saturated, gravel, subangular to subrounded; sand, fine to medium. 1.5 m		1.0		9, 3, 6, 7		▼ 07/08/2023
	Sandy fine to medium GRAVEL, orange brown. Medium dense to dense, saturated, gravel, subangular to subrounded; sand, fine to medium. 3.7 m		1.5		6, 7, 12, 11, 15		
	End Of Hole: 3.70 m		2.0, 2.5, 3.0, 3.5				

PHOTO(S)

REMARKS

Excavation terminated at maximum reach.

WATER

- ▼ Standing Water Level
- ▷ Out flow
- ◁ Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP02

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
COORDINATES:
LOCATION METHOD: Map or aerial photograph
ELEVATION: Existing ground level

CONTRACTOR: SM Civil
EQUIPMENT: 5T
ACCURACY: ± 3 m
OPERATOR: Johnny

START DATE: 07/08/2023
END DATE: 07/08/2023
LOGGED BY: AJJ
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with some gravel and a trace of sand, dark brown. Firm, moist, gravel, fine to medium, subangular to subrounded; a trace of rootlets. 0.3 m			TS	1		
UNCONTROLLED FILL	SILT with a trace of sand, gravel and minor organics, orange brown mottled grey. Firm, moist, gravel, fine to medium, subangular to subrounded; sand, fine to medium; a trace of rootlets. 0.8 m		0.5		2, 2, 1, 2, 1		
BURIED TOPSOIL	Organic SILT with minor sand, brown. Stiff, moist, sand, fine to medium; a trace of rootlets. 0.9 m				3		
ALLUVIAL GRAVEL	Sandy fine to medium GRAVEL with some silt, grey. Medium dense, moist, sand, fine to medium; gravel, subangular to subrounded. 1.1 m		1.0		3		
	Sandy fine to medium GRAVEL, orange brown. Medium dense to dense, moist to wet, sand, fine to medium; gravel, subangular to subrounded. 2.0 m		1.5		7, 15		▼ 07/08/2023
ALLUVIAL SILT	Sandy SILT, orange brown. Very stiff, wet, sand, fine to medium. 2.8 m		2.0				
ALLUVIAL SAND	Fine to medium SAND, orange brown. Medium dense, wet. 3.8 m		2.5				
	End Of Hole: 3.80 m		3.0				
			3.5				

PHOTO(S)

REMARKS

Excavation terminated at maximum reach.

WATER

- ▼ Standing Water Level
- ▷ Out flow
- ◁ Seepage

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TEST PIT LOG

HOLE NO.: TP03

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
COORDINATES:
LOCATION METHOD: Map or aerial photograph
ELEVATION: Existing ground level

CONTRACTOR: SM Civil
EQUIPMENT: 5T
ACCURACY: ± 3 m
OPERATOR: Johnny

START DATE: 07/08/2023
END DATE: 07/08/2023
LOGGED BY: AJJ
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with minor gravel and a trace of sand, brown. Firm to stiff, moist, sand, fine to medium; gravel, fine to medium, subangular to subrounded; a trace of rootlets. 0.3 m			TS	2, 2, 5		
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium. 1.3 m		0.5, 1.0		6, 5, 4, 4, 6, 6		
ALLUVIAL SILT	SILT with some sand, orange brown. Firm to very stiff, moist, sand, fine to medium. 2.1 m		1.5, 2.0		1, 2, 3, 2, 4, 5, 7, 10, 15		
	SILT with a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium. 2.6 m		2.5				
ALLUVIAL SAND	Fine to medium SAND, grey mottled orange brown. Medium dense, moist. 3.5 m		3.0, 3.5				
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Very stiff, moist, sand, fine to medium. 3.8 m						07/08/2023
	End Of Hole: 3.80 m						

PHOTO(S)

REMARKS

Excavation terminated at maximum reach.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP04

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 07/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 07/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with some sand, gravel and a trace of rubbish, brown. Soft to firm, moist, sand, fine to medium; gravel, fine to medium, subangular to subrounded; rubbish, brick; a trace of rootlets. 0.5 m		0.5	TS	1, 1, 1, 2, 1		
UNCONTROLLED FILL	SILT with some gravel and a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium; gravel, fine to medium, subangular to subrounded; a trace of rootlets. 0.7 m				4, 5		
	SILT with a trace of sand, orange brown mottled brown. Stiff, moist, sand, fine to medium. 1.1 m		1.0		4, 3		
SWAMP DEPOSIT	Organic SILT with a trace of sand, dark brown. Very soft to soft, moist, sand, fine to medium; some roots and a trace of rootlets. 1.7 m		1.5		1		07/08/2023
SWAMP DEPOSIT	Organic SILT with some sand, dark grey. Soft to stiff, moist, sand, fine to medium; some roots and a trace of rootlets. 2.3 m		2.0		1, 1, 1, 1, 2, 3, 3		
ALLUVIAL GRAVEL	Sandy fine to medium GRAVEL with minor silt, bluish grey mottled orange brown. Medium dense to dense, wet to saturated, sand, fine to medium; gravel, subangular to subrounded. 3.0 m		2.5				
	Sandy fine to coarse GRAVEL with minor silt, orange brown. Medium dense to dense, saturated, sand, fine to medium; gravel, subangular to subrounded. 3.8 m		3.0				07/08/2023
	End Of Hole: 3.80 m		3.5				

PHOTO(S)

REMARKS

Excavation terminated at maximum reach.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP05

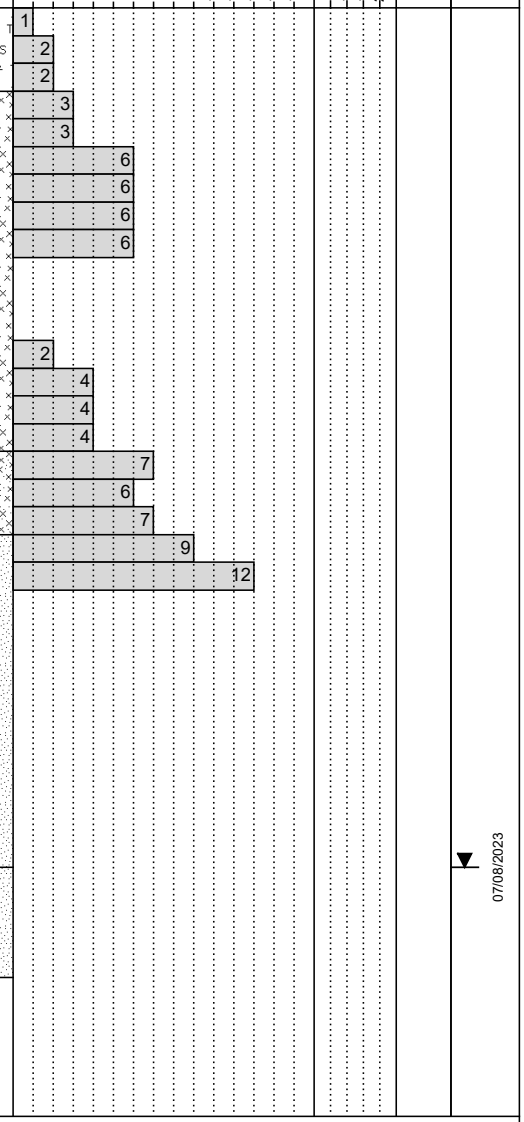
CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
COORDINATES:
LOCATION METHOD: Map or aerial photograph
ELEVATION: Existing ground level

CONTRACTOR: SM Civil
EQUIPMENT: 5T
ACCURACY: ± 3 m
OPERATOR: Johnny

START DATE: 07/08/2023
END DATE: 07/08/2023
LOGGED BY: AJJ
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL
TOPSOIL	Organic SILT with a trace of sand, dark brown. Soft to firm, moist, sand, fine to medium; a trace of rootlets.		
	0.3 m		
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium; a trace of rootlets.		0.5
	1.6 m		1.0
	Sandy SILT, orange brown. Very stiff, moist, sand, fine to medium.		1.5
	1.9 m		
ALLUVIAL SAND	Fine to medium SAND, grey. Medium dense to dense, moist.		2.0
	3.1 m		2.5
	Fine to coarse SAND, orange brown. Medium dense to dense, moist.		3.0
	3.5 m		3.5
	End Of Hole: 3.50 m		



PHOTO(S)

REMARKS

Excavation terminated at maximum reach.

WATER

- Standing Water Level
- Out flow
- Seepage

Page 1 of 1

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP06

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants

PROJECT: 805, 815, 819 North Road, Invercargill

JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 07/08/2023

COORDINATES:
EQUIPMENT: 5T
END DATE: 07/08/2023

LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ

ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand and gravel, dark brown. Soft to firm, moist, sand, fine to medium; gravel, fine to medium, subangular to subrounded; a trace of rootlets. 0.3 m			TS	1, 1, 2		
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to very stiff, moist, sand, fine to medium; a trace of rootlets. 2.0 m		0.5, 1.0, 1.5, 2.0		4, 3, 3, 3, 3, 3, 2, 2, 3, 5, 4, 5, 4		
	Sandy SILT, grey. Stiff to very stiff, moist, sand, fine to medium. 2.3 m				6		
ALLUVIAL SAND	Fine to medium SAND, grey. Medium dense, moist to wet. 3.6 m		2.5, 3.0, 3.5				07/08/2023
	Fine to medium SAND, orange brown mottled grey. Medium dense to dense, wet. 3.7 m						
	End Of Hole: 3.70 m						

PHOTO(S)

REMARKS

Excavation terminated at maximum reach.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP07

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
COORDINATES:
LOCATION METHOD: Map or aerial photograph
ELEVATION: Existing ground level

CONTRACTOR: SM Civil
EQUIPMENT: 5T
ACCURACY: ± 3 m
OPERATOR: Johnny

START DATE: 07/08/2023
END DATE: 07/08/2023
LOGGED BY: AJJ
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Firm, moist, sand, fine to medium; a trace of rootlets. 0.3 m			TS	1, 2, 2		
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets. 1.9 m		0.5, 1.0, 1.5	TS	3, 3, 3, 3, 3, 4, 2, 4, 4, 4, 4, 4, 4		
	Sandy SILT, orange brown mottled grey. Very stiff, moist, sand, fine to medium. 2.2 m		2.0		10, 15		
ALLUVIAL SAND	Fine to medium SAND, grey. Medium dense, moist to wet. 3.2 m		2.5, 3.0				07/08/2023
	Fine to medium SAND, orange brown mottled grey. Medium dense, wet. 3.6 m		3.5				
	End Of Hole: 3.60 m						

PHOTO(S)

REMARKS

Excavation terminated due to pit wall collapse.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP08

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
COORDINATES:
LOCATION METHOD: Map or aerial photograph
ELEVATION: Existing ground level

CONTRACTOR: SM Civil
EQUIPMENT: 5T
ACCURACY: ± 3 m
OPERATOR: Johnny

START DATE: 08/08/2023
END DATE: 08/08/2023
LOGGED BY: AJJ
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Very soft to firm, moist, sand, fine to medium; a trace of rootlets. 0.3 m			TS	1		
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium; a trace of rootlets. 1.1 m		0.5	TS	2, 3, 3, 3, 4, 5, 6		
ALLUVIAL SAND	Silty fine SAND, grey. Loose to medium dense, moist. 1.5 m		1.0		1, 2, 3		
	Fine to medium SAND, grey. Medium dense to dense, moist to wet. 2.3 m		1.5		4, 5, 6, 7, 7, 4		08/08/2023
	Fine to medium SAND, orange brown. Medium dense, wet. 2.6 m		2.0				08/08/2023
	Fine to medium SAND, grey mottled orange brown. Medium dense to dense, wet. 3.7 m		2.5				
	End Of Hole: 3.70 m		3.0				
			3.5				

PHOTO(S)

REMARKS

Excavation terminated due to pit wall collapse.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP09

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets. 0.3 m			TS	1, 2, 3		
ALLUVIAL SILT	Sandy SILT, orange brown mottled grey. Firm to very stiff, moist, sand, fine to medium. 2.6 m		0.5, 1.0, 1.5, 2.0, 2.5		3, 3, 4, 3, 5, 5, 2, 1, 2, 4, 3, 5, 5, 5, 7		▼ 08/08/2023
	SILT with a trace of sand, grey. Stiff to very stiff, moist to wet, sand, fine to medium. 2.9 m						
ALLUVIAL SAND	Silty fine to medium SAND, grey mottled orange brown. Medium dense, wet. 3.7 m		3.0, 3.5				
	End Of Hole: 3.70 m						

PHOTO(S)

REMARKS

Excavation terminated due to groundwater ingress.

WATER

- ▼ Standing Water Level
- ▷ Out flow
- ◁ Seepage

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GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP10

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Firm, moist, sand, fine to medium; a trace of rootlets. 0.3 m			TS	1		
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to very stiff, moist, sand, fine to medium; a trace of rootlets. 0.9 m		0.5	TS	1, 2, 3, 3, 2, 2, 2, 5		08/08/2023
	SILT with a trace of sand, grey mottled orange brown. Firm to very stiff, mosit to wet, sand, fine to medium. 2.0 m		1.0		2, 3, 5, 9, 9, 10, 12		
ALLUVIAL SAND	Fine to medium SAND, orange brown mottled grey. Medium dense to dense, wet. 2.8 m		1.5		14, 15		08/08/2023
	Fine to medium SAND, grey. Medium dense to dense, wet. 3.4 m		2.0				
	Fine to medium SAND, orange brown mottled grey. Medium dense, wet. 3.7 m		2.5				
	End Of Hole: 3.70 m		3.0				
			3.5				

PHOTO(S)

REMARKS

Excavation terminated due to pit wall collapse.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP11

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
COORDINATES:
LOCATION METHOD: Map or aerial photograph
ELEVATION: Existing ground level

CONTRACTOR: SM Civil
EQUIPMENT: 5T
ACCURACY: ± 3 m
OPERATOR: Johnny

START DATE: 08/08/2023
END DATE: 08/08/2023
LOGGED BY: AJJ
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND
TOPSOIL	Organic SILT with a trace of sand, dark brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets. 0.3 m			TS
	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets. 1.5 m		0.5, 1.0	
ALLUVIAL SILT	Sandy SILT, grey mottled orange brown. Firm to stiff, wet, sand, fine to medium. 2.9 m		1.5, 2.0, 2.5	
ALLUVIAL SAND	Fine to medium SAND, grey. Medium dense, wet. 3.4 m		3.0	
	End Of Hole: 3.40 m		3.5	

SCALA PENETROMETER (Blows / 100 mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	3	3	3	3	4	5	6					
2	2	2	4	2	2	3	4						

SHEAR STRENGTH (kPa) Vane: Values

50	100	150	200

WATER
▼ 08/08/2023

PHOTO(S)

REMARKS
Excavation terminated due to groundwater ingress.

WATER
- ▼ Standing Water Level
- ▷ Out flow
- ◁ Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP12

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants

PROJECT: 805, 815, 819 North Road, Invercargill

JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023

COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023

LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ

ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Soft to stiff, moist, sand, fine to medium; a trace of rootlets. 0.3 m			TS	1, 1, 3		
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to very stiff, moist, sand, fine to medium; a trace of rootlets. 1.6 m		0.5, 1.0, 1.5		2, 3, 4, 5, 5, 4, 2, 3, 3, 4		
ALLUVIAL SAND	Silty fine to medium SAND, orange brown mottled grey. Medium dense to dense, moist. 2.1 m		2.0		8, 8, 9, 8, 9		08/08/2023
ALLUVIAL SILT	SILT with trace to minor sand, grey mottled orange brown. Firm, moist to wet, sand, fine to medium. 3.4 m		2.5, 3.0				
ALLUVIAL SAND	Fine to medium SAND with a trace of silt, grey mottled orange brown. Medium dense, wet. 3.9 m		3.5				
	End Of Hole: 3.90 m						

PHOTO(S)

REMARKS

Excavation terminated at maximum reach.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP13

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Soft, moist, sand, fine to medium; a trace of rootlets. 0.2 m			TS	1, 1		
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium; a trace of rootlets. 0.7 m		0.5		3, 3, 4, 6, 8		
ALLUVIAL SILT	SILT with a trace of sand, orange brown mottled grey. Very stiff, moist, sand, fine to medium; a trace of rootlets. 1.3 m		1.0		10, 10		
ALLUVIAL SAND	Silty fine to medium SAND, orange brown mottled grey. Medium dense, moist. 1.4 m				4, 4, 5, 7		
	Fine to medium SAND, grey mottled orange brown. Medium dense, wet. 2.1 m		1.5		3, 3, 3, 6, 7		08/08/2023
ALLUVIAL SILT	Sandy SILT, orange brown. Firm to stiff, wet, sand, fine to medium. 3.1 m		2.0				08/08/2023
	SILT with a trace of sand, orange brown mottled grey. Firm to stiff, wet, sand, fine to medium. 3.9 m		2.5				
	End Of Hole: 3.90 m		3.0				
			3.5				

PHOTO(S)

REMARKS

Excavation terminated at maximum reach.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP14

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 07/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 07/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with some gravel and a trace of sand, brown. Firm, moist, sand, fine to medium; gravel, fine to medium, subangular to subrounded; a trace of rootlets.			TS			
	0.3 m						
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Stiff, moist, sand, fine to medium; a trace of rootlets.		0.5		5, 5, 5, 5, 3, 2, 2, 3, 4		Groundwater Not Encountered
	End Of Hole: 0.30 m		1.0				

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP15

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 07/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 07/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, brown. Soft to firm, moist, sand, fine to medium; a trace of rootlets.			TS			
	0.3 m						
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Soft, moist, sand, fine to medium; a trace of rootlets.		0.5		2, 1, 1, 1, 1, 1, 1, 2, 2		Groundwater Not Encountered
	End Of Hole: 0.30 m		1.0				

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP16

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants

PROJECT: 805, 815, 819 North Road, Invercargill

JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023

COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023

LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ

ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, brown. Firm, moist, sand, fine to medium; a trace of rootlets.			TS			
	0.3 m						
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets.				2		
	0.4 m End Of Hole: 0.30 m		0.5		3, 3, 5, 5, 6, 5, 6, 6		Groundwater Not Encountered
			1.0				

Scala penetrometer: 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Shear strength (kPa) Vane: 50 100 150 200

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP17

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants

PROJECT: 805, 815, 819 North Road, Invercargill

JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023

COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023

LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ

ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets.			TS			
	0.3 m						
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets.		0.5		2, 3, 3, 3, 3, 5, 5, 6, 6		Groundwater Not Encountered
	0.4 m						
	End Of Hole: 0.30 m		1.0				

Scala penetrometer scale: 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Shear strength (kPa) Vane: 50 100 150 200

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP18

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants

PROJECT: 805, 815, 819 North Road, Invercargill

JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023

COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023

LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ

ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets.			TS			
	0.3 m / 0.4 m						
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets.		0.5		2, 2, 3, 4, 5, 5, 6, 6, 6		Groundwater Not Encountered
	End Of Hole: 0.30 m		1.0				

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP19

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

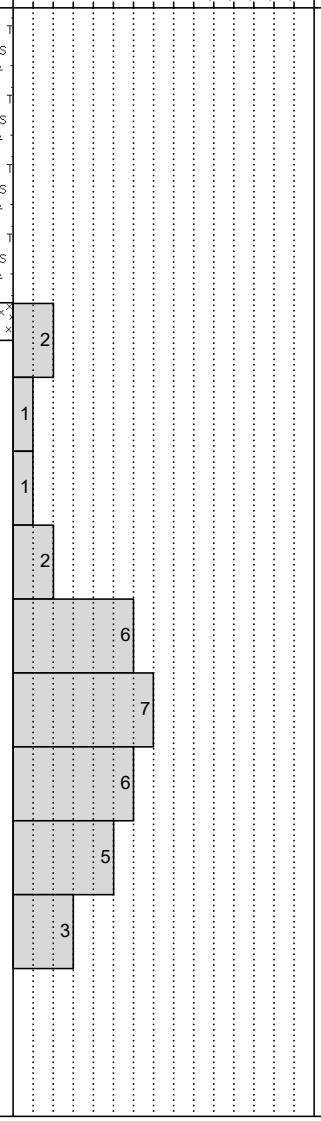
SITE LOCATION: 805, 815, 819 North Road, Invercargill
COORDINATES:
LOCATION METHOD: Map or aerial photograph
ELEVATION: Existing ground level

CONTRACTOR: SM Civil
EQUIPMENT: 5T
ACCURACY: ± 3 m
OPERATOR: Johnny

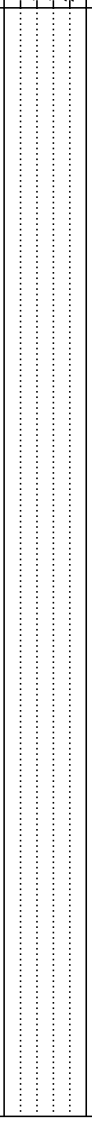
START DATE: 08/08/2023
END DATE: 08/08/2023
LOGGED BY: AJJ
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND
TOPSOIL	Organic SILT with a trace of sand, dark brown. Soft to firm, moist, sand, fine to medium; a trace of rootlets.			TS
			0.4 m	
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets.		0.5 m	
	End Of Hole: 0.40 m		0.5	
			1.0	

SCALA PENETROMETER (Blows / 100 mm)



SHEAR STRENGTH (kPa) Vane: Values



WATER

Groundwater Not Encountered

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

Generated with CORE-GS by Geroc - Test Pit x Hand Auger - scala & vane bars - 11/09/2023 2:50:15 pm

GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP20

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Firm, moist, sand, fine to medium; a trace of rootlets.			TS			
	0.3 m						
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets. 0.4 m				2		
	End Of Hole: 0.30 m		0.5		2		
					2		
					2		
					2		
					2		
			1.0		4		
					4		
					5		

Groundwater Not Encountered

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

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Page 1 of 1

GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP21

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants

PROJECT: 805, 815, 819 North Road, Invercargill

JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023

COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023

LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ

ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets.			TS			
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets. 0.4 m End Of Hole: 0.40 m 0.5 m		0.5 1.0		2 2 3 4 4 6 7 8 10		Groundwater Not Encountered

Scala penetrometer: 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Shear strength (kPa) Vane: 50 100 150 200

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

Page 1 of 1

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GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP22

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
COORDINATES:
LOCATION METHOD: Map or aerial photograph
ELEVATION: Existing ground level

CONTRACTOR: SM Civil
EQUIPMENT: 5T
ACCURACY: ± 3 m
OPERATOR: Johnny

START DATE: 08/08/2023
END DATE: 08/08/2023
LOGGED BY: AJJ
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND
TOPSOIL	Organic SILT with a trace of sand and gravel, dark brown. Stiff, moist, sand, fine to medium; gravel, fine to medium, subangular to subrounded; a trace of rootlets.			TS
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets. 0.2 m / 0.3 m End Of Hole: 0.20 m		0.5 1.0	

SCALA PENETROMETER (Blows / 100 mm): 2, 3, 2, 3, 2, 4, 4, 5, 7

SHEAR STRENGTH (kPa) Vane: Values

WATER: Groundwater Not Encountered

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

Page 1 of 1

Generated with CORE-GS by Geroc - Test Pit x Hand Auger - scala & vane bars - 11/09/2023 2:50:23 pm

GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: SP01

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND
TOPSOIL	Organic SILT with a trace of sand, dark brown. Soft to firm, moist, sand, fine to medium; a trace of rootlets. 0.3 m			TS
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium; trace of rootlets. 1.6 m		0.5, 1.0, 1.5	
	Sandy SILT, orange brown. Very stiff, moist, sand, fine to medium. 1.9 m			
ALLUVIAL SAND	Fine to medium SAND, grey. Medium dense, moist. 2.2 m		2.0	
	End Of Hole: 2.20 m		2.5	

SCALA PENETROMETER (Blows / 0 mm): 1 2 3 4 5 6 7 8 9 10 11 12 13 14

SHEAR STRENGTH (kPa) Vane: 50 100 150 200 Values

WATER: Groundwater Not Encountered

PHOTO(S)

REMARKS

Target depth achieved.

WATER

- Standing Water Level
- Out flow
- Seepage

Page 1 of 1

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: SP02

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 07/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 0 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with minor gravel and a trace of sand, brown. Firm to stiff, moist, sand, fine to medium; gravel, fine to medium, subangular to subrounded; a trace of rootlets. 0.3 m			TS			
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium. 1.3 m		0.5, 1.0				Groundwater Not Encountered
	SILT with some sand, orange brown. Firm to very stiff, moist, sand, fine to medium. 2.1 m		1.5, 2.0				
	SILT with a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium. 2.6 m		2.5				
ALLUVIAL SAND	Fine to medium SAND, grey mottled orange brown. Medium dense, moist. 2.8 m						
	End Of Hole: 2.80 m						

Scala penetrometer: 1 2 3 4 5 6 7 8 9 10 11 12 13 14
Shear strength (kPa): 50 100 150 200

PHOTO(S)

REMARKS

Target depth achieved.

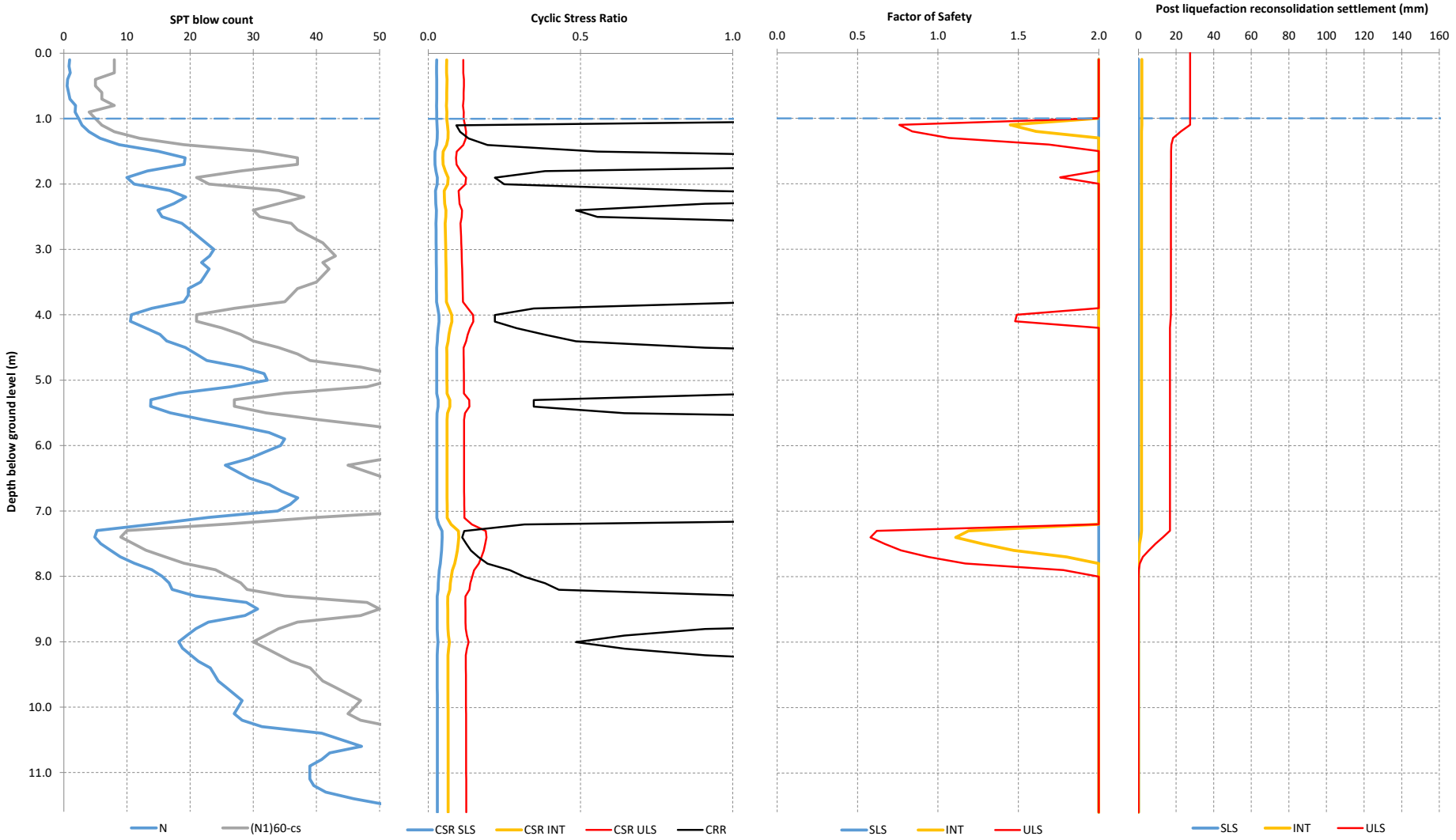
WATER

- Standing Water Level
- Out flow
- Seepage

Generated with CORE-GS by Geroc - Test Pit x Hand Auger - scala & vane bars - 11/09/2023 2:49:28 pm

Appendix C: Liquefaction Analysis

LSN (SLS)	LSN (INT)	LSN (ULS)	Settlement (SLS)	Settlement (INT)	Settlement (ULS)
0	0	11	0 mm	0 mm	25 mm

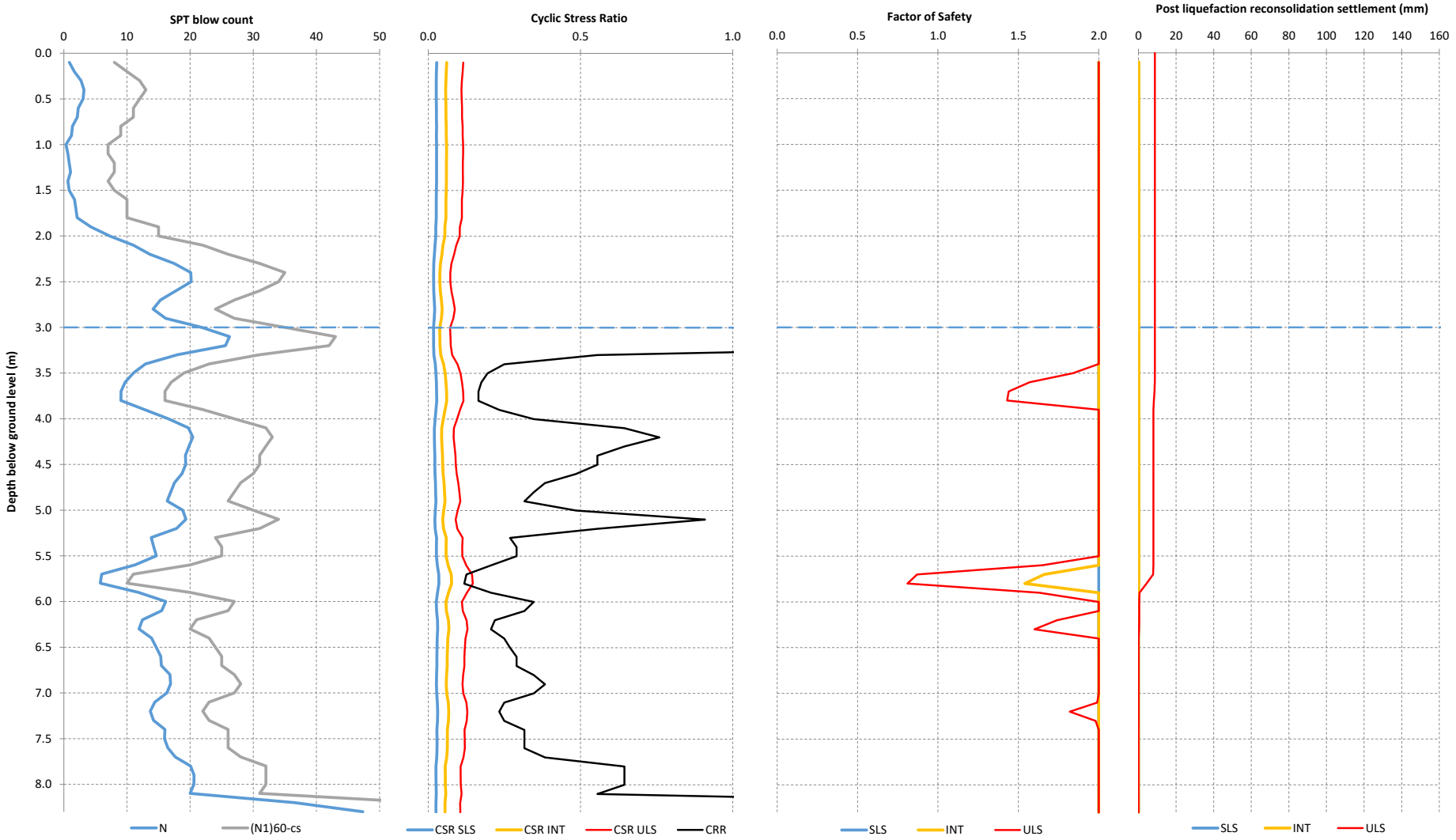


Note: Settlements as per Idriss and Boulanger (2014)

GEOSOLVE

PROJECT	230505 - 805-815-819NorthRoad_Invercargill
DESCRIPTION	Liquefaction Assessment
LOCATION	805,815 & 819 North Road, Invercargill
CLIENT	Bonisch Consultants
TEST NUMBER	DPH 1
DATE	7/08/2023
LOGGED BY	RC
ANALYSED BY	RC
CHECKED BY	FAW

LSN (SLS)	LSN (INT)	LSN (ULS)	Settlement (SLS)	Settlement (INT)	Settlement (ULS)
0	0	2	0 mm	0 mm	10 mm

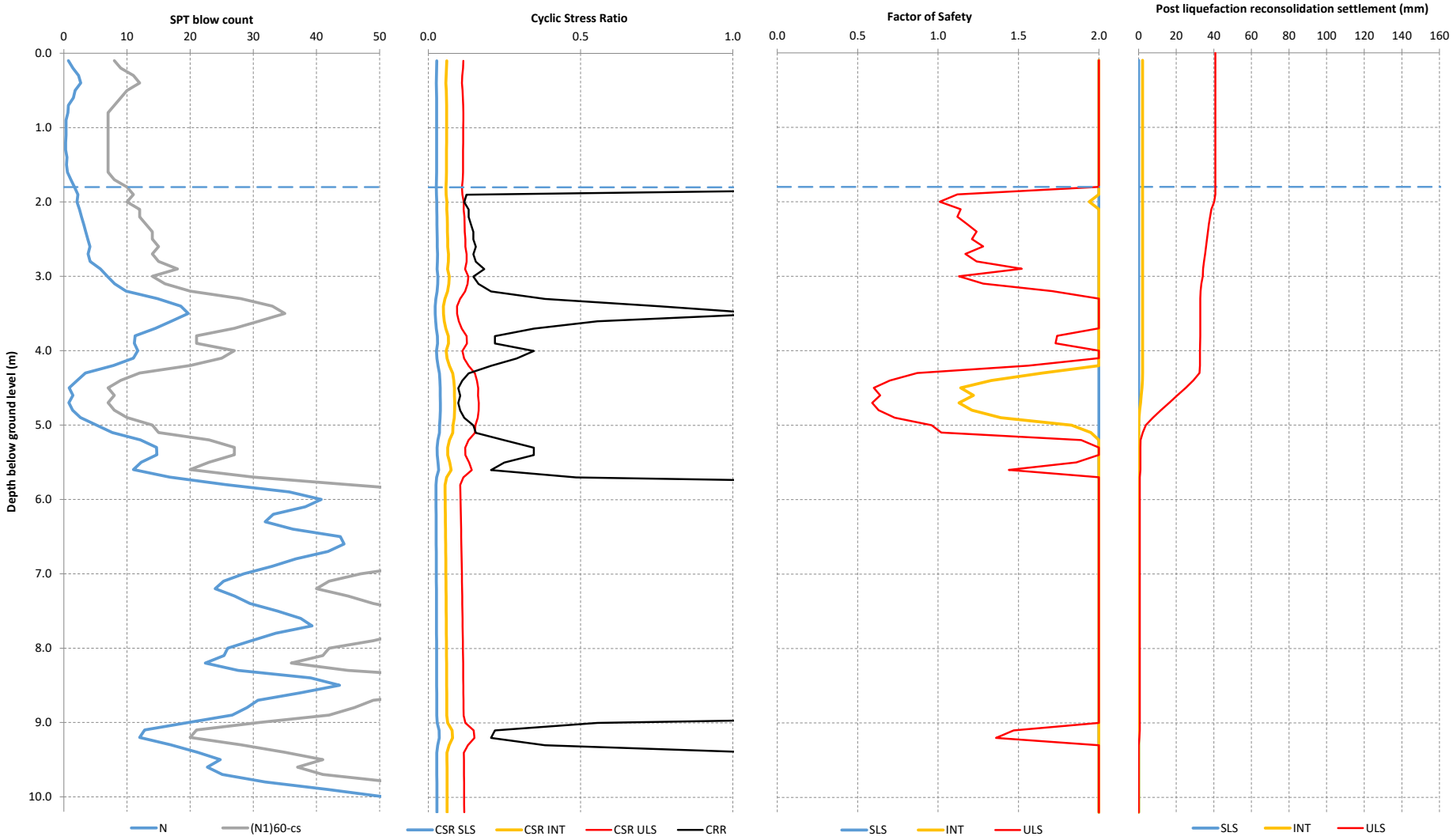


Note: Settlements as per Idriss and Boulanger (2014)

GEOSOLVE

PROJECT	230505 - 805-815-819NorthRoad_Invercargill
DESCRIPTION	Liquefaction Assessment
LOCATION	805,815 & 819 North Road, Invercargill
CLIENT	Bonisch Consultants
TEST NUMBER	DPH 2
DATE	7/08/2023
LOGGED BY	RC
ANALYSED BY	RC
CHECKED BY	FAW

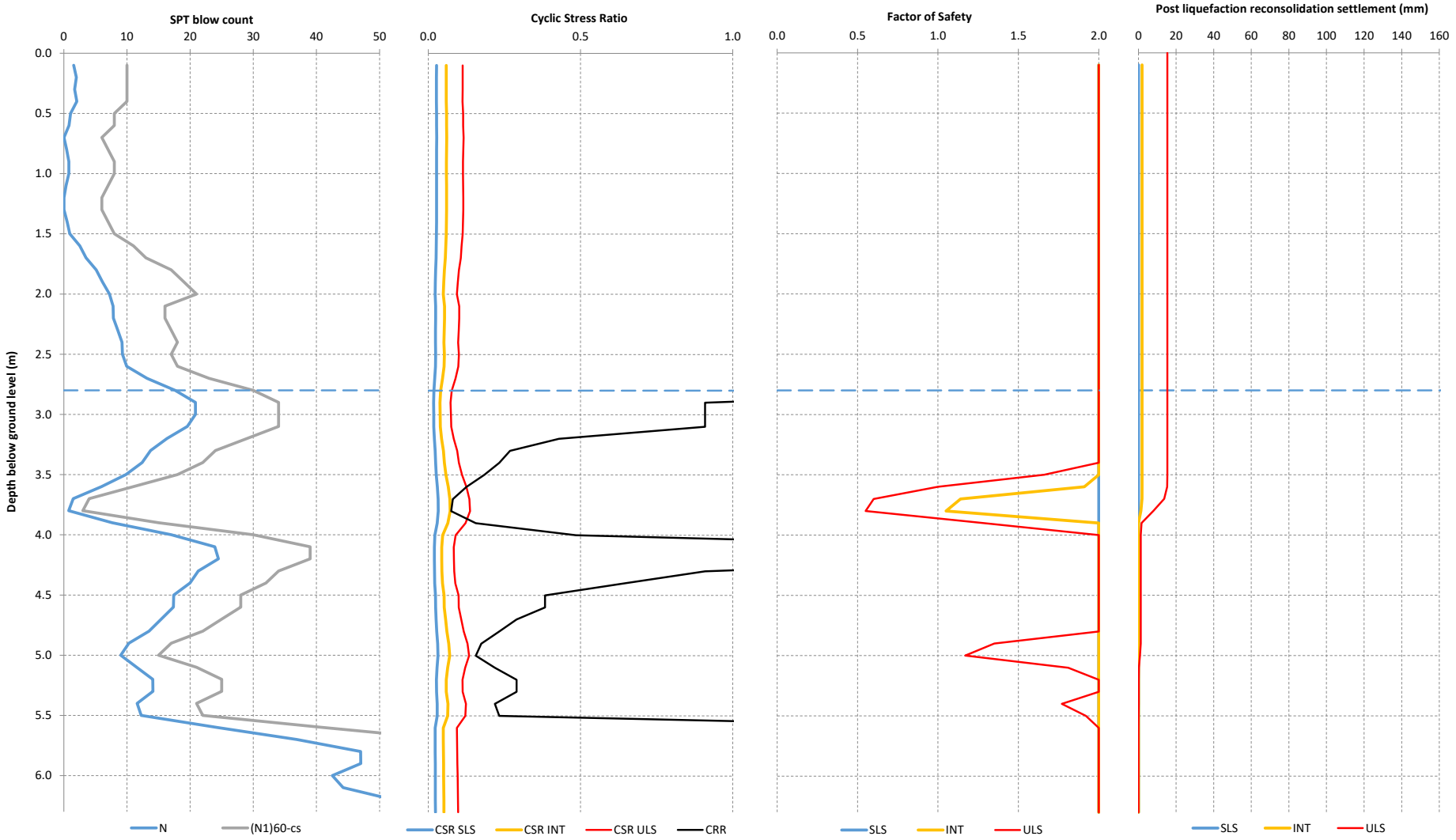
LSN (SLS)	LSN (INT)	LSN (ULS)	Settlement (SLS)	Settlement (INT)	Settlement (ULS)
0	0	10	0 mm	0 mm	40 mm



Note: Settlements as per Idriss and Boulanger (2014)

PROJECT	230505 - 805-815-819NorthRoad_Invercargill	CLIENT	Bonisch Consultants
DESCRIPTION	Liquefaction Assessment	TEST NUMBER	DPH 3
LOCATION	805,815 & 819 North Road, Invercargill	DATE	8/08/2023
		LOGGED BY	RC
		ANALYSED BY	RC
		CHECKED BY	FAW

LSN (SLS)	LSN (INT)	LSN (ULS)	Settlement (SLS)	Settlement (INT)	Settlement (ULS)
0	1	4	0 mm	0 mm	15 mm

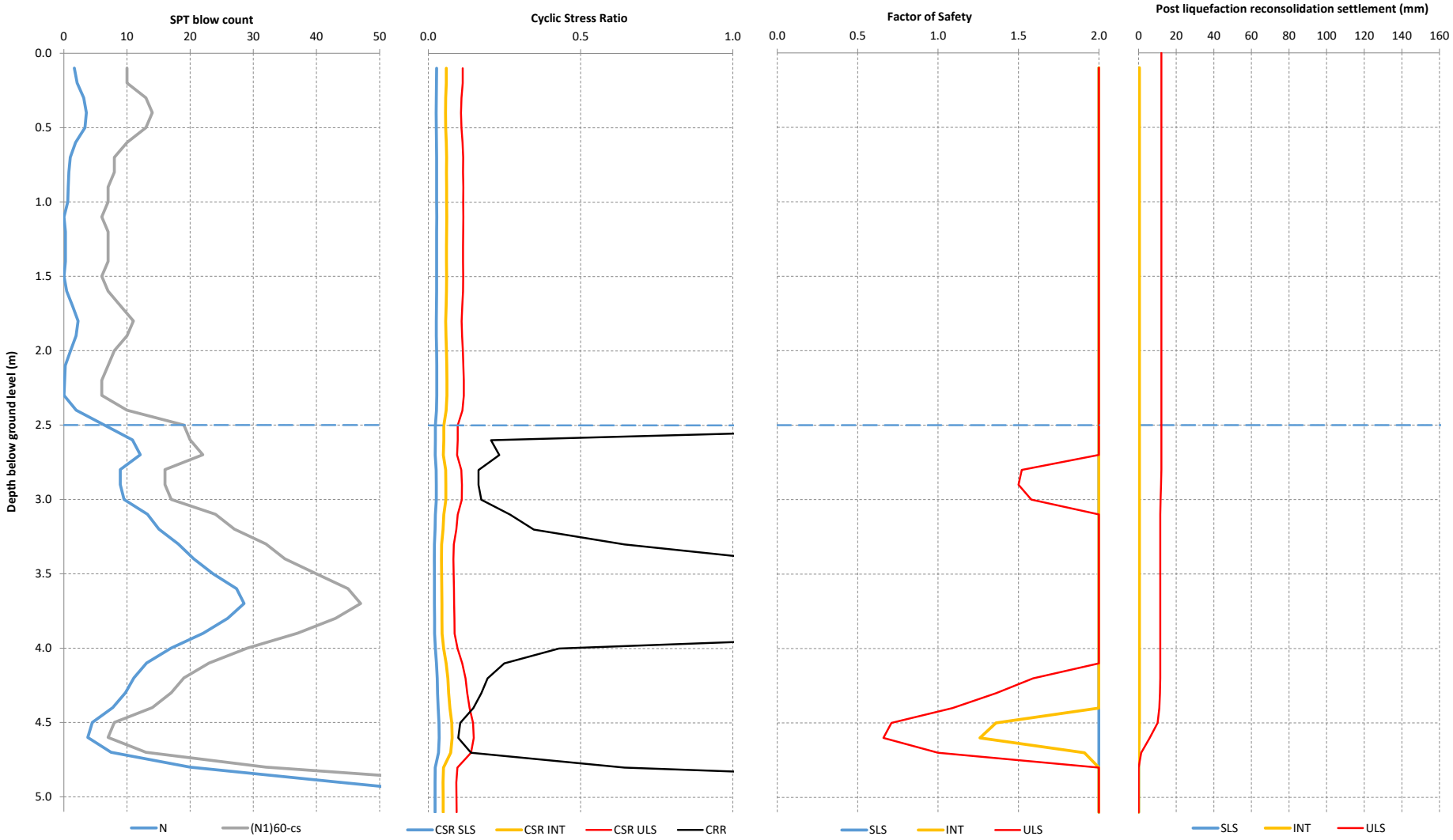


Note: Settlements as per Idriss and Boulanger (2014)

GEOSOLVE

PROJECT	230505 - 805-815-819NorthRoad_Invercargill	CLIENT	Bonisch Consultants
DESCRIPTION	Liquefaction Assessment	TEST NUMBER	DPH 4
LOCATION	805,815 & 819 North Road, Invercargill	DATE	8/08/2023
		LOGGED BY	RC
		ANALYSED BY	RC
		CHECKED BY	FAW

LSN (SLS)	LSN (INT)	LSN (ULS)	Settlement (SLS)	Settlement (INT)	Settlement (ULS)
0	0	3	0 mm	0 mm	10 mm

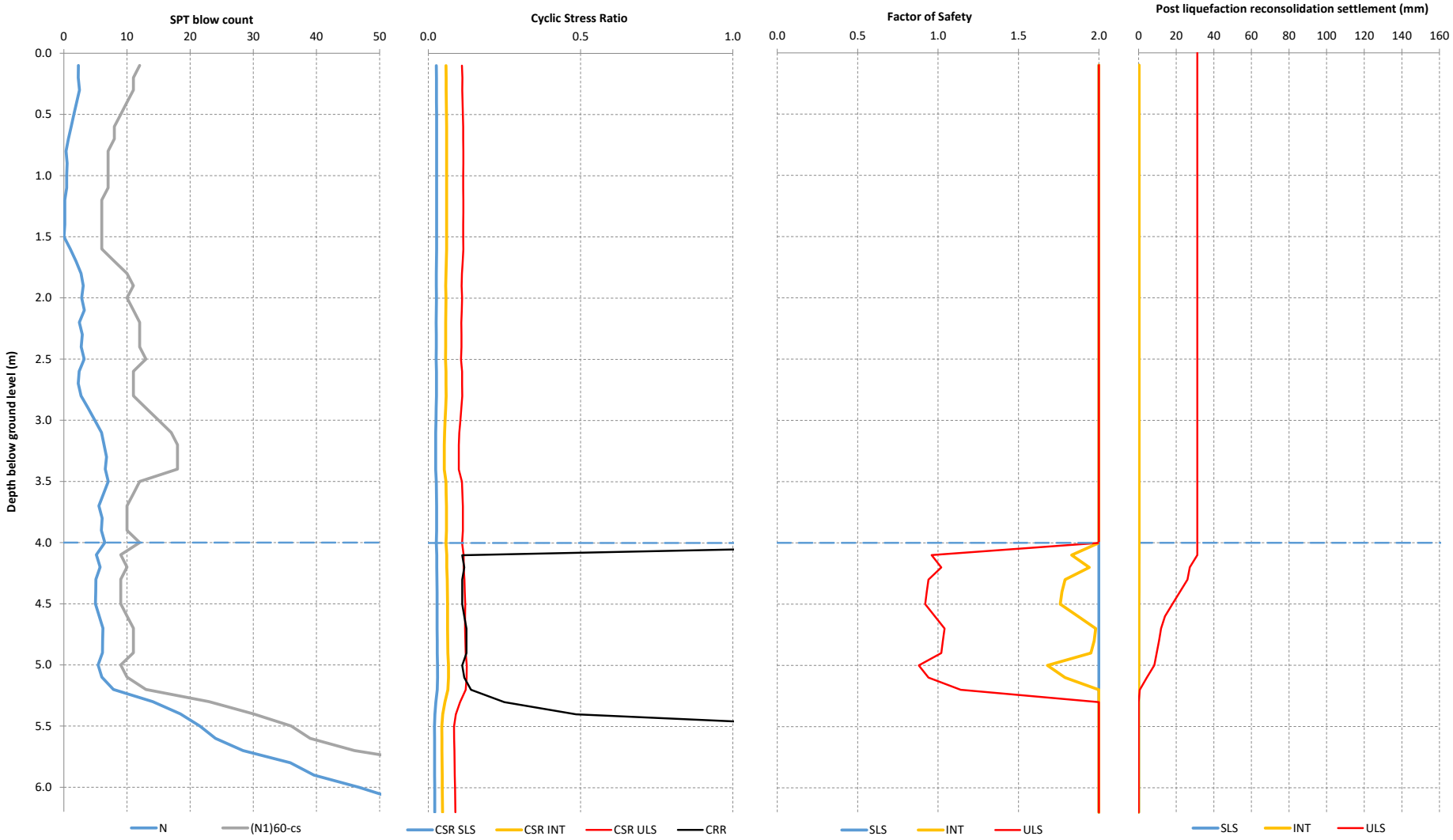


Note: Settlements as per Idriss and Boulanger (2014)

GEOSOLVE

PROJECT	230505 - 805-815-819NorthRoad_Invercargill
DESCRIPTION	Liquefaction Assessment
LOCATION	805,815 & 819 North Road, Invercargill
CLIENT	Bonisch Consultants
TEST NUMBER	DPH 5
DATE	8/08/2023
LOGGED BY	RC
ANALYSED BY	RC
CHECKED BY	FAW

LSN (SLS)	LSN (INT)	LSN (ULS)	Settlement (SLS)	Settlement (INT)	Settlement (ULS)
0	0	7	0 mm	0 mm	30 mm



Note: Settlements as per Idriss and Boulanger (2014)

GEOSOLVE

PROJECT	230505 - 805-815-819NorthRoad_Invercargill
DESCRIPTION	Liquefaction Assessment
LOCATION	805,815 & 819 North Road, Invercargill
CLIENT	Bonisch Consultants
TEST NUMBER	DPH 6
DATE	8/08/2023
LOGGED BY	RC
ANALYSED BY	RC
CHECKED BY	FAW

Appendix C - Liquefaction Analysis

General

Liquefaction occurs when susceptible, saturated soils attempt to move to a denser state under cyclic shearing. In this report, liquefaction is defined as when pore pressures rise to reach the overburden stress. When this occurs, the following effects can happen at flat sites:

- loss of strength;
- ejection of material under pressure to the ground surface; and
- post-liquefaction volumetric densification as the materials reconsolidate.

In addition, sloping sites or sites with a 'free face' may experience lateral spreading or movement.

Liquefaction Susceptibility

Soils susceptible to liquefaction have the following characteristics:

- Saturated. Below the ground water level;
- Have "sand like" behaviour[5]; and
- Are in loose or medium dense condition.

Soils which are susceptible to liquefaction require a certain level of earthquake shaking (trigger) to cause them to liquefy. Denser soils require more intense and/or longer duration of shaking (higher trigger) than less dense soil.

Analysis Method

Liquefaction analyses were undertaken on the test data using the Boulanger & Idriss (2014)[7] deterministic method.

Assessment of Consequences of Liquefaction

The following can be assessed to estimate the consequences of liquefaction at this site:

- Crust thickness
- Liquefaction severity index
- Free field settlements
- Lateral spread

Crust Thickness

The non-liquefiable upper layer of soils (crust) provides some protection against ground surface damage as a result of liquefaction. The thicker the crust, the less ground surface damage is expected with significant protection provided by thicknesses of more than 5 m.

Empirical correlations have been developed by Ishihara[6] to quantify the thickness of non-liquefiable crust required to prevent the formation of sand boils resulting from the

[5] "Geotechnical earthquake engineering practice: Module 1 Guideline for the identification, assessment and mitigation of liquefaction hazards", Rev 0, July 2010. New Zealand Geotechnical Society. This document states that soil with: Fc <30%, or; Fc >30% and PI < 7% (where Fc= percent passing a 0.075mm sieve and PI=plasticity index) is considered as "sand-like" and is susceptible to liquefaction.

[6] Ishihara, K. (1985). "Stability of natural deposits during earthquakes," Theme lecture, Proc. 11th Int. Conf. On Soil Mechanics and Foundation Engineering, San Francisco, 2, 321-376pp.

liquefaction of underlying soil layers. These correlations indicate that for a given thickness of liquefiable soil, as the peak ground acceleration increases a greater thickness of non-liquefiable soil is required to prevent liquefaction damage from manifesting on the surface.

Liquefaction Severity Number

Liquefaction severity number (LSN) is a single value which can be calculated from a liquefaction assessment considering the thickness density and depth of liquefiable layers and the intensity of earthquake shaking. Based on observations of ground surface damage in Christchurch an indicative correlation has been developed between ground surface damage from liquefaction and LSN as described below.

As the LSN increases, so does the risk of severe effects on the land and structure. In general, the following surface effects are considered likely at sites with various LSN values.

Table 1C - Liquefaction Severity Number[7]

	Effects from excess porewater pressure and liquefaction	Characteristic LSN	Characteristics of liquefaction and its consequences
L0	Insignificant	< 10	No significant excess pore water pressures (no liquefaction)
L1	Mild	5 – 15	Limited excess pore water pressures; negligible deformation of the ground and small settlements.
L2	Moderate	10 – 25	Liquefaction occurs in layers of limited thickness (small proportion of the deposit, say 10 percent or less) and lateral extent; ground deformation results in relatively small differential settlements.
L3	High	15 – 35	Liquefaction occurs in significant portion of the deposit (say 30 percent to 50 percent) resulting in transient lateral displacements, moderate-to-large differential movements, and settlement of the ground in the order of 100 mm to 200 mm.
L4	Severe	> 30	Complete liquefaction develops in most of the deposit resulting in large lateral displacements of the ground, excessive differential settlements and total settlement of over 200 mm.
L5	Very severe		Liquefaction resulting in lateral spreading (flow), large permanent lateral ground displacements and/or significant ground distortion (lateral strains/stretch, vertical offsets and angular distortion).

Free Field Settlements

This describes the settlement of ground not occupied by a building, occurring due to dissipation of excess pore water pressure generated during earthquake shaking. Where appropriate, we have estimated reconsolidation settlement of any potentially liquefiable layers using the methodology recommended by Idriss & Boulanger (2014)[7].

A component of building settlement may also occur due to yield of any liquefied founding soils. This component of settlement is very difficult to predict and depends on the interaction of the building and the soil it is founded on.

[7] New Zealand Geotechnical Society [NZGS] and Ministry of Business, Innovation and Employment [MBIE] (2021). Earthquake geotechnical engineering practice in New Zealand. Module 3: Identification, assessment and mitigation of liquefaction hazards. Rev 1.

Appendix 5: Pattie Delamore Partners Preliminary Site Investigation Report

PATTLE DELAMORE PARTNERS LTD
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235 Broadway, Newmarket, Auckland 1023
PO Box 9528, Auckland 1149, New Zealand

Tel +64 9 **523 6900**
Web **www.pdp.co.nz**

solutions for your environment

6 August 2024

Tulloch Group Limited
15a Hokonui Drive
GORE

Dear Sir/Madam

PRELIMINARY SITE INVESTIGATION – 805, 815 AND 819 NORTH ROAD, LORNEVILLE, INVERCARGILL

1.0 Introduction and Purpose

Pattle Delamore Partners Limited (PDP) has been engaged by Tulloch Group Limited (i.e. the landowner) to undertake a preliminary site investigation (PSI; desktop review of land use history) for three properties located at 805, 815 and 819 North Road, Lorneville, Invercargill (i.e. the site). It is understood that the current landowner is proposing to subdivide and develop the site as commercial/industrial land.

815 North Road is recorded within Environment Southland's (ES) Selected Land Use Sites (SLUS) register[1] (registration number: SLUS-20191067) due to reported presence of 'storage tanks or drums for fuel, chemicals or liquid waste', category A17 on the Ministry for the Environment's (MfE) Hazardous activities and Industries List (HAIL)[2]. As such, the requirements of the *Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011* (i.e. the NESCS) need to be considered for the proposed development activity.

This PSI was undertaken to ascertain the presence and location of current or historic HAIL activities or other potential sources of contaminated land at the site through the review of available district and regional council records, property file records, aerial photographs, and a site inspection.

This assessment has been carried out in accordance with MfE *Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand (Revised 2021)* (MfE, 2021). The investigation has been certified by suitably qualified and experienced practitioners (SQEP) as outlined by the NESCS. A certifying statement to this effect is attached.

2.0 Site Details

The site is located approximately 7 km to the north of the township centre of Invercargill. The site is comprised of three properties (refer to Table 1): a large woolstore commercial building at south of the site and residential dwellings to southwest and west of the site. The dwelling at 805 North Road is used for commercial purposes as a woodworking studio, the majority of the site is grassed paddocks. The site is surrounded by rural residential land use. To the immediate west of the site is North Road.

[1] The SLUS register is a tool that the council use to manage information related to contaminated land in the region, particularly those that are classified as HAIL sites.
[2] The *Hazardous Activities and Industries List* (HAIL; MfE, 2011) is a compilation of activities and industries that are considered likely to cause land contamination resulting from hazardous substance use, storage or disposal. The HAIL is intended to identify most situations in New Zealand where hazardous substances could cause, and in many cases have caused, land contamination.

A plan showing current layout and location of the site is presented as Figure 1. Photographs of the site taken during the PDP site inspection activities are presented in Appendix A.

2.1 Site Identification

The site identification is summarised in Table 1 below.

Table 1: Site Identification

Address	Legal Description	Lot Area (m^2)	Current Land Use	Current Owner
805 North Road, Lorneville, Invercargill	Lot 1 DP 12624	3,213	Commercial	Tulloch Group Limited
815 North Road, Lorneville, Invercargill	Pt Lot DP 1781	45,349	Commercial/Industrial and Pastoral	Tulloch Group Limited
819 North Road, Lorneville, Invercargill	Lot 9 DP 1781	48,562	Residential and Pastoral	Tulloch Group Limited

2.2 Environmental Setting

The environmental setting is summarised in Table 2 below.

Table 2: Environmental Setting

Immediate Surrounding Land Uses	Rural residential and agricultural.
Topography[1]	The site and wider area are located on slightly elevated land from the surrounding areas. The site is generally flat and level, with a slight incline towards the north and a slight decline towards the south.
Regional Geology	Reference to GNS Science New Zealand (GNS) Geology Web Map (https://data.gns.cri.nz/geology/, accessed 26/04/2024) indicates the site and surrounding area is underlain by Middle Pleistocene river deposits comprising "*moderately weathered clay-rich gravel in high terraces*".
Regional Groundwater Information	The ES GIS database shows three bores within a 500 m radius of the site: one bore (E46/0116) located approximately 210 m to the southwest of the site, one bore (E46/0587) located approximately 272 m to the north of the site and one bore (E46/1338) located approximately 270 m to the northeast of the site. Groundwater was encountered at the depth of 6 m at bore (E46/0587) and 7.3 m at E46/1338 (assumed to be measured from top of casing [m bTOC]).
Surface Water Information	There are no known fresh surface water bodies within the site or immediate surroundings. The nearest surface water body to the site is Waikiwi stream located approximately 970 m to the south, which flows from southeast to southwest of the site before discharging into the Orati River.

3.0 Proposed Development

A copy of the proposed concept masterplan is shown on Figure 2.

The large woolstore which occupies the western half of 815 North Road will be retained and therefore was not inspected for this investigation.

The remainder of the site, including the current residential dwelling, will be subdivided for use as commercial/industrial land.

4.0 Desktop Review of Information

A desktop review of available information has been undertaken to establish the history of the site. The following information was obtained and reviewed:

- Historical and current aerial photograph from publicly available sources;
- Invercargill City Council (ICC) records including property file information;
- ES records including information SLUS register; and
- Site inspection by a PDP staff member.

4.1 Historical Aerial Photograph Review

Selected historical aerial photographs of the site from between 1956 and 2023 have been reviewed, with referenced aerial photographs provided in Appendix B and a summary provided in Table 3 below.

Table 3: Summary of Historical Aerial Photography

1941[a]	Several small buildings/dwellings are present at the southwest and west boundaries of the site at 805 and 819 North Road. The majority of the site and immediate surrounding land appear to be largely vacant, likely used for pastoral purposes. Two lines of trees running north to south are visible within the site. New Zealand State Highway 6 (North Road) is visible to the immediate west of the site. Several buildings/dwellings are present to the north and south of the site. A large stockyard is present to further northwest of the site, and possible horticultural activities are visible to further north and south of the site.
1962[a]	A structure, potentially a stockyard, is visible west of the buildings at 819 North Road. Remaining land use within the site and surrounding area appears relatively unchanged.
1967[a]	A large commercial building (the woolstore) is present at southern boundary of the site. The potential stockyard has been extended. Stockyards are present to the south and north of the site. More buildings/dwellings are present further north of the site.
1972[a]	The site and surrounding areas remain relatively unchanged. However, horticultural activities within the site appear to have ceased, and a residential dwelling is present to the south of the site.
1974[a]	Some of the potential stockyard structures are no longer visible. Remaining land use within the site and surrounding area appears relatively unchanged.

Table 3: Summary of Historical Aerial Photography	
1981[a]	Two rectangular buildings behind the dwelling at 819 North Road are no longer visible. The land surface appears to have changed to gravel or an impervious surface, three new buildings/structures are visible within this area. Disturbed land is visible in the paddock north-west of the wool store. The surrounding areas remain relatively unchanged; however, horticultural land use is present immediately to the north of the site. The remaining surrounds are largely pastoral land use.
1992[b]	A possible horticultural activity is visible to the northwest boundary of the site; however, the remaining area is relatively unchanged. Horticultural land use is visible to the west of the site across NZ State Highway 6, and a possible racetrack is present to the east of the site.
1998[a]	The site and surrounding area appear to be relatively unchanged.
2004[c]	The site appears to be largely unchanged, but earthworks/cultivation is visible to the southeast of the site. The horticultural land uses to the south and west of the site appear to have ceased. More commercial buildings are present to the north of the site.
2009[c]	The site and surrounding area appear to be relatively unchanged. A building is present the west of the site.
2013[c]	The site and surrounding area appear to be relatively unchanged. The development to the west of the site has growth with further buildings.
2018[c]	The site and surrounding area appear to be relatively unchanged.
2023[c]	The site and surrounding area appear to be relatively unchanged.

Notes:

a. *Retrolens – https://retrolens.co.nz/*
b. *Environmental Southland – Historic Photos of Southland - https://esgis.maps.arcgis.com/apps/webappviewer/index.html?id=63714d49e41a40cda14189e5862e144f*
c. *Google Earth Pro*

4.2 Invercargill City Council (ICC) Records

Available property files were obtained from ICC. There was limited property file documentation available.

4.2.1 805 North Road

The files that were reviewed comprised the following:

- Documents (building consent, consent applications and similar) from 1969 to 2003 mainly relating to the property identification number for the site at 805 North Road, the subdivision of land and the Building Warrant of Fitness. One document also stated that the application for the subdivision and land use applications were cancelled by the council. No information pertaining to contaminated land at or nearby the site was included in these documents.

4.2.2 815 North Road

The files that were reviewed comprised the following:

- Documents (building consents, consent applications and similar) from 1962 to 1990 relating to the building permit for construction of a woolstore and administrative office in 1962 and 1963, an extension of administration block to the main building and Wool Press PTT in 1976, internal alterations in 1981 and Dangerous Goods Licence. The documents also stated that a fuel tank and an 'Ajax' Pump were proposed to be installed within the site in 1963; however, the document issued for installing the tank was not included. The Dangerous Goods Licence was issued for one 3,000 L tank and a dispensing pump. No other information pertaining to contaminated land at or nearby the site was included in these documents.
- Documents (consent application and similar) from 1991 to 2000 mainly related to the consent for the change in the property identification number, the temporary use of the woolstore for a House and Garden Show, utilising the ex Southwool Woolstore for the storage of wool, general warehousing and freight depot, warrant of fitness for the woolstore building and the Dangerous Goods Licence for one 3,000 L underground Petrol Tank, one 250 L above ground diesel tank, one 200 L Flammable liquid and one 209 L Kerosene. No information pertaining to contaminated land at or nearby the site was included in these documents.
- Documents (building consents, consent applications and similar) from 2004 to 2012 mainly relating to the Dangerous Goods Licences, the upgrading diesel fire pump/water storage tank, decommissioning electric fire pump, and converting exiting system from dry pipe to antifreeze and file note of historic hazardous substances information. One document also stated that the consent application for the work had not been approved. In addition, the file note indicated that one 3,000 L underground petrol with bowser, three smaller diesel tanks associated with sprinkler alarm system and one tank with some bunding, possible diesel were observed during the inspection.

4.2.3 819 North Road

- Documents (building consents, consent applications and similar) from 1962 to 1991 relating to the building permit issued for alteration and additions to dwelling in 1962, a shed in 1974, private dwelling alterations in 1979, permission for drainage and plumping work on property, and the property identification number for the site as 819 North Road. No other information pertaining to contaminated land at or nearby the site was included in these documents.

Relevant documents are provided in Appendix C.

4.3 Environment Southland Records

Available information held by ES showed the SLUS register (classified part of 815 North Road) as 'Verified HAIL', the HAIL extent is the footprint of the woolstore. Additional notes in the SLUS indicated that the land use history has been verified as being HAIL A17– Storage tanks or drums for fuel, chemicals or liquid waste (Appendix D). 805 and 819 North Road are not listed on the SLUS.

4.4 Site Walkover

A PDP field scientist completed a site walkover as part of the site investigation on 24 April 2024. During the site walkover, an old stock yard, a shed, a garage associated with the dwelling were observed at 819 North Road. The remainder of the property was pasture.

There was no evidence of storage tanks or drums observed during the site walkover. The interior of the woolstore at 815 North Road was not accessed because the building will remain and is not part of the proposed development.

No evidence of staining of soil or suspected asbestos containing material (ACM) was observed during the site walkover.

Photographs taken during the site inspection are presented in Appendix A.

In addition, the landowners provided the following information when asked (via their agent Bonisch) whether they had any knowledge of an underground tank with bowser or above ground diesel tanks associated with the woolstore at 815 North Road: "*To the best of our knowledge, the only fuel storage on site is one above ground diesel tank. This diesel is used for the pump for the fire sprinkler system. We don't have knowledge of there ever being a below ground petrol tank…*"

5.0 Summary of Site History

The information gathered during this PSI investigation regarding the current and historical land-use at the site relating to potential ground contamination, particularly in relation to HAIL land-uses, is summarised below:

- The site is owned by Tulloch Group Limited.
- The majority of the site is and has historically been pastoral land.
- The two residential dwellings at 805 and 815 North Road were constructed prior to 1956, they are currently in use for commercial and residential purposes respectively.
- The woolstore was constructed circa 1962 and is still in use for this purpose.
- The record on the SLUS register of the Environment Southland indicates that 815 North Road has potentially been subject to HAIL Category A17 – "Storage tanks or drums for fuel, chemicals or liquid waste". In addition, the file note indicates that one 3,000 L underground petrol with bowser, three smaller diesel tanks associated with sprinkler alarm system and one tank with some bunding, possible diesel were present at 815 North Road. As mentioned above the HAIL area is not part of the proposed commercial development at the site.
- There is evidence in the photographic record of horticultural activity in the western portion of 819 North Road, close to the dwelling, stockyards are also present in this area and may have extended further east historically.

No other potentially contaminating activities were identified within the site during this investigation.

6.0 Conceptual Site Model

A risk can only exist if there is a contaminant source (e.g. chemicals or materials that have resulted in contaminated soil, groundwater or vapours), a receptor (e.g. people or the environment) and an exposure pathway between the source and the receptor. If any of the components are missing, then the risk exposure pathway is considered incomplete, and the risk to receptors is considered low or unlikely.
A CSM is designed to identify the contaminant sources, receptors and possible links between these.
The conceptual site model developed for the site is provided in Table 4.

Table 4: Conceptual Site Model

Source	Pathway	Receptor	Pathway Linkage
HAIL land use (Category A8: livestock dip or spray race operations, potentially associated with current and former stockyards)	Ingestion of soil	Construction workers/Site users	Potentially complete – site surface is unsealed, but linkage is dependent upon a significant source of contamination being present in soils.
	Dermal contact with soil	Construction workers/Site users	
	Infiltration to groundwater	Groundwater	Potentially complete – site surface is unsealed, but linkage is dependent upon a significant source of contamination being present in soils. Groundwater is expected to be more than 4 m bgl.
	Runoff to surface water	Surface water	Potentially incomplete – Waikiwi Stream is approximately 1 km from the site and CSM linkage is dependent upon a significant source of contamination being present in soils and inadequate erosion and sediment controls being in place.
HAIL land use (Category I: any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment) associated with historic building materials and storage of petroleum hydrocarbons	Ingestion of soil	Construction workers/Site users	Potentially complete – site surface is unsealed, but linkage is dependent upon a significant source of contamination being present in soils.
	Dermal contact with soil	Construction workers/Site users	
	Infiltration to groundwater	Groundwater	Potentially complete – site surface is unsealed, but linkage is dependent upon a significant source of contamination being present in soils. Groundwater is expected to be more than 4 m bgl.
	Runoff to Surface Water	Surface Water	Potentially incomplete – Waikiwi Stream is approximately 1 km from the site and CSM linkage is dependent upon a significant source of contamination being present in soils and inadequate erosion and sediment controls being in place.
HAIL land use (A10 - persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds)	Ingestion of soil	Construction workers/Site users	Due to horticultural activities present to the north of the site, the spray drift may have reached the northern boundary of the site. Potentially complete as the site surface is unsealed, and but linkage is dependent upon a significant source of contamination being present in soils.
	Dermal contact with soil	Construction workers/Site users	

Table 4: Conceptual Site Model

Source	Pathway	Receptor	Pathway Linkage
	Infiltration to groundwater	Groundwater	Potentially incomplete - the site surface is unsealed, but linkage is dependent upon a significant source of contamination being present in soils at/near the soil-groundwater interface. In addition, groundwater is expected to be more than 4 m bgl.
	Runoff to surface water	Surface water	Potentially incomplete – Waikiwi Stream is approximately 1 km from the site and CSM linkage is dependent upon a significant source of contamination being present in soils and inadequate erosion and sediment controls being in place.

7.0 Assessment of HAIL

The following potential HAIL activities have been identified within the proposed development site:

- Category A8: livestock dip or spray race operations, potentially associated with current and former stockyards at 819 North Road.
- Category I: any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment. There is potential for land contamination associated with historic building materials namely asbestos and lead based paint, which were common construction materials until 2000 and the 1980's respectively. The two dwellings and associated sheds and garages (including demolished sheds/garages) were constructed in this time period, and therefore there is potential for lead and asbestos in soil proximal to these buildings at 805 and 819 North Road.

The following HAIL activities have been identified adjacent to the proposed development site:

- Category A17: Storage tanks or drums for fuel, chemicals or liquid waste, property files indicate this included an underground petrol tank and four above ground diesel tanks at 815 North Road, associated with the woolstore.
- Category A10: persistent pesticide bulk storage or use, potentially associated with historic horticultural activity at 839 and 841 North Road.

The HAIL activities within and adjacent to the proposed development site that are recorded on Environment Southland's SLUS register are provided in Appendix D and Figure 1.

8.0 Applicability of the NESCS for the Proposed Land Development

The NESCS seeks to control activities on contaminated land so as to protect human health. The regulations apply to land, which is described as having, has had or is more likely than not to have had an activity or industry described in the HAIL undertaken on it and if a person wants to do an activity described in sub-clauses (2) to (6) of regulation 5, including removal/replacement of fuel storage system, sampling of soil, disturbance of soil, change of land use and land subdivision.

As discussed in Section 7.0, potential HAIL activities from past and present land use activities have been identified over parts of the site. The Concept Masterplan shows the site will be subdivided and that part of the proposed new road and proposed new private right-of-way will intersect three potential HAIL activities (associated with the existing residential buildings and former horticultural activity identified as Category I and Category A8 on Figure 1). Therefore, under regulation 5(7), the NESCS regulations apply to the proposed subdivision and development of the site where HAIL activities have been identified.

9.0 Summary and Conclusions

PDP has undertaken a PSI for the property at 805, 815 and 819 North Road, Lorneville, Invercargill. The landowners are proposing to develop these three lots for commercial purposes, excluding the existing woolstore which will remain. The PSI was undertaken to understand the past and present land use practices and ascertain the presence/otherwise of HAIL activities at the site and assess the applicability of the NESCS for the proposed development and change in land use. The PSI was undertaken through the review of publicly available information, as well as undertaking a site inspection.

Potential HAIL activities have been identified on part of the site associated with fuel storage, horticulture, stockyards and historic building materials.

For subdivision where HAIL sites have been identified and soil disturbance in or adjacent to HAIL (including soil disturbance associated with construction of infrastructure), the NESCS will be applicable and further investigations (i.e. soil sampling) are recommended to support compliance with the regulations.

10.0 References

Environment Southland Beacon Map Viewer - https://maps.es.govt.nz/. Accessed 23 April 2024.

GNS, 2003. *Geology of the Murihiku Area, 1:250,000*. Institute of Geological and Nuclear Sciences.

MfE, 2011. *Hazardous Activities and Industries List (HAIL) Guidance – Identifying HAIL Land*. Ministry for the Environment, Wellington.

MfE, 2021. *Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand (Revised 2021)*. Ministry for the Environment, Wellington.

Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.

11.0 Limitations

This report has been prepared on the basis of information provided by the Tulloch Group Limited and others not directly contracted by PDP for the work, including Invercargill City Council and Environment Southland. PDP has not independently verified the provided information and has relied upon it being accurate and sufficient for use by PDP in preparing the report. PDP accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.

This report has been prepared by PDP on the specific instructions of for the Tulloch Group Limited for the limited purposes described in the report. PDP accepts no liability to any other person for their use of or reliance on this report, and any such use or reliance will be solely at their own risk.

Owing to the limited nature of this assessment (as described in Section 1.0), there could be conditions at the site that have not been identified and which have not been considered in this report. There is a risk that sources of contamination could exist that have not been identified by the assessment. This risk could be reduced by undertaking further research or intrusive investigation.

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Yours faithfully

PATTLE DELAMORE PARTNERS LIMITED

Prepared by

Zetang Hawng Dau

Environmental Geologist/Scientist

Reviewed and Approved by

Nerena Rhodes

Technical Director - Contaminated Land

Certifying Statements

I, Nerena Rhodes of Pattle Delamore Partners Limited, certify that:

1. This preliminary site investigation meets the requirements of the *Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011* (the NESCS) because it has been:
    a. done by a suitably qualified and experienced practitioner, and
    b. reported on in accordance with the current edition of *Contaminated land management guidelines No 1 – Reporting on contaminated sites in New Zealand*, and
    c. the report is certified by a suitably qualified and experienced practitioner.
2. This preliminary site investigation concludes that the NESCS regulations are considered to be applicable for the proposed commercial development.

Evidence of the qualifications and experience of the suitably qualified and experienced practitioner who has done this investigation and certified this report is provided below.

This certification applies to the date of this report.

Signed

Nerena Rhodes

Technical Director – Contaminated Land

A6192725
Makarewa
98
Invercargill
North Rd
Woolstore
SITE BOUNDARY
WOOLSTORE / HAIL CATEGORY - A17
HAIL CATEGORY - I
HAIL CATEGORY - A8
HAIL CATEGORY - A10
pdp
FIGURE 1: PRELIMINARY SITE INVESTIGATION – 805, 815, AND 819 NORTH ROAD, LORNEVILLE, INVERCARGILL
PRELIMINARY SITE INVESTIGATION – 805, 815, AND 819 NORTH ROAD, LORNEVILLE, INVERCARGILL
SOURCE:
1. AERIAL IMAGERY: EAGLE TECHNOLOGY, LINZ, STATSNZ, NIWA, NATURAL EARTH, © OPENSTREETMAP CONTRIBUTORS., DEPRECATED BASEMAP - EAGLE TECHNOLOGY, LAND INFORMATION NEW ZEALAND, EAGLE TECHNOLOGY, LAND INFORMATION NEW ZEALAND, GEBCO, COMMUNITY MAPS CONTRIBUTORS.
2. ROAD INFORMATION SOURCED FROM LINZ.
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REVISION: 01 | DATE: MAY 24 | BY: JR
CLIENT: TULLOCH GROUP LIMITED
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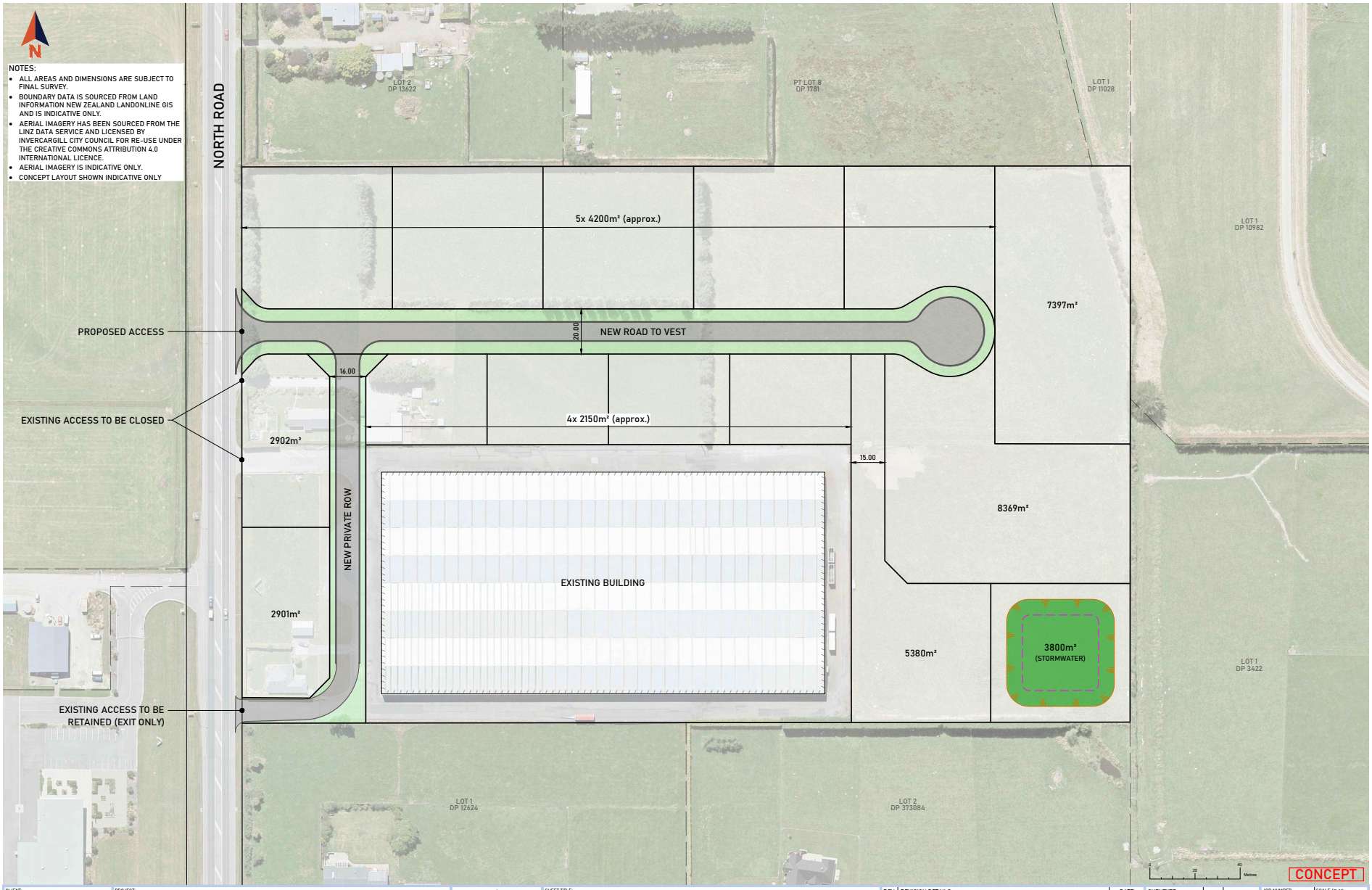

CLIENT:	PROJECT:		SHEET TITLE:
TULLOCH GROUP LIMITED	DEVELOPMENT FEASIBILITY ASSESSMENT 805 - 189 NORTH ROAD, INVERCARGILL	bonisch	CONCEPT MASTERPLAN

REV	REVISION DETAILS	DATE
A	CONCEPT PLAN - FOR DISCUSSION	17/06/2024

SURVEYED:		
DESIGNED:		
DRAWN:	CHM	17/06/2024
DRAWING CHECK:		
DESIGN CHECK:		
APPROVED:	JJR	17/06/2024

JOB NUMBER	7895
SHEET	1 OF 1
SCALE (@ A1)	1:750
REVISION	A
REVISION DATE	17/06/2024

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Last Edited by: Chris on 17/06/2024 10:28:28 am C:\Bonisch\Bonisch Consultants\Bonisch Consultants Team Site - JOB\7895 - 7899\7895 Tulloch, Feasibility assmt, 805-819 North Rd\04 AutoCAD\7895 - MASTERPLAN.dwg (A4.)

Appendix A: Site Photographs

Photograph 1: View of the rear yard at 815 North Road, looking from west to east

Photograph 2: View of the rear yard at 815 North Road, looking to southeast.

Photograph 3: View of rear yard at 815 North Road, looking from east to southwest.

Photograph 4: View of organic waste (vegetation) at 815 North Road, looking to west.

Photograph 5: View of front yard at 815 North Road, looking to northwest.

Photograph 6: View of an old stockyard and a shed at 819 North Road, looking from north to south.

Photograph 7: View of an old stockyard and a shed at 819 North Road, looking from north to southeast, woolshed in the background.

Photograph 8: View of middle and rear yard at 819 North Road, looking from west to east.

Photograph 9: View of garage and shed at 819 North Road, looking from east to west.

Photograph 10: View of an old shed and rear yard at 819 North Road, looking from southwest to northeast.

Appendix B: Historical Aerial Photographs

Historical Aerial Photograph 1: 1956 (*source – Retrolens*)

Historical Aerial Photograph 2: 1962 (*source – Retrolens*)

Historical Aerial Photograph 3: 1967 (*source – Retrolens*)

Historical Aerial Photograph 4: 1972 (*source – Retrolens*)

Historical Aerial Photograph 5: 1974 (*source – Retrolens*)

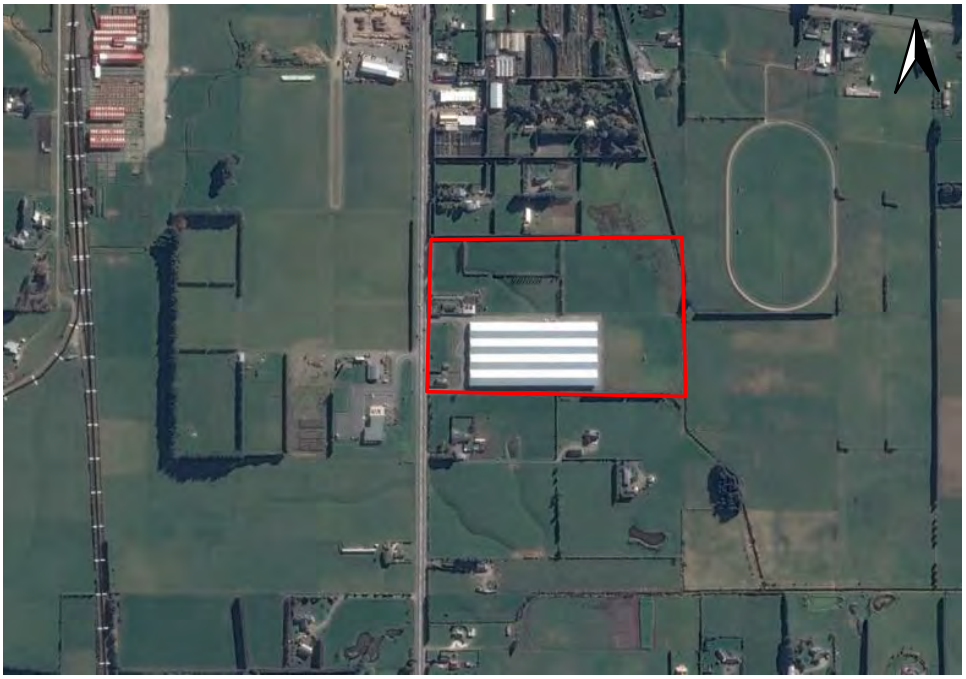
Historical Aerial Photograph 6: 1981 (*source – Retrolens*)

Historical Aerial Photograph 7: 1992 (*source – Environment Southland*)

Historical Aerial Photograph 8: 1998 (*source – Retrolens*)

Historical Aerial Photograph 9: 2004 (*source – Google Earth Pro*)

Historical Aerial Photograph 10: 2009 (*source – Google Earth Pro*)



Historical Aerial Photograph 10: 2013 (*source – Google Earth Pro*)

Historical Aerial Photograph 10: 2018 (*source – Google Earth Pro*)

Historical Aerial Photograph 10: 2023 (*source – Google Earth Pro*)

Appendix C: Relevant Property File Excerpts

Scanning Quality Advice Note

Advice Note from: Exedee Scanning Team

Please note the following page(s) may have one or more quality issues identified. Examples of quality issues include:

- faint printing, writing or graphics
- the original page may be damaged e.g., torn, missing a corner or has a hole
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The following page(s) have been quality checked during the scanning process to verify completeness and integrity as accurate replicas of the original paper documents.

NXTAHFGRPV FPTRKYCSE

Scanning Quality Advice Note (ver 1.0) Exedee

Invercargill
city council
"CITY OF WATER AND LIGHT"

Dangerous Goods Licence

Hazardous Substances & New Organisms Act 1996

Name of Holder and Occupier Primary Wool Coop Limited

Postal Address P O Box 949, INVERCARGILL 9515

Situation of Licensed Premises (Street Address) 815 North Road

Trading Name Primary Wool Coop Ltd

Date of Expiry of this Licence 31/03/2004

Pursuant to the Hazardous Substances & New Organisms Act 1996 and Regulations made thereunder, a licence is hereby granted to store dangerous goods in quantities in containers scheduled below:

Classes 2(d) and 3

3,000L	Underground Petrol Tank	Class 3a
209 L	Drum of Diesel	Class 3c
209L	Kerosene	Class 3b

COPY

Authorised Officer

Dated 25 March, 2003

Licence No. 03/2998/HDG

NOTE CHANGE OF OCCUPIER
After any change in the occupation of the premises, the new occupier must apply to have the change noted and pay the appropriate fee.

Environmental and Planning Services Directorate
Civic Administration Building • 101 Esk Street • Private Bag 90104 • Invercargill 9520 • New Zealand
DX No. YA90023 • Telephone: (03) 218 1959 • Fax: (03) 214 3670

SOUTHLAND NEW ZEALAND SPIRIT

OLD 3·1D

C. ?

3000L U/G

CLASS 3·1A

A. UNUSED

EAST SIDE.

NORTH SIDE.

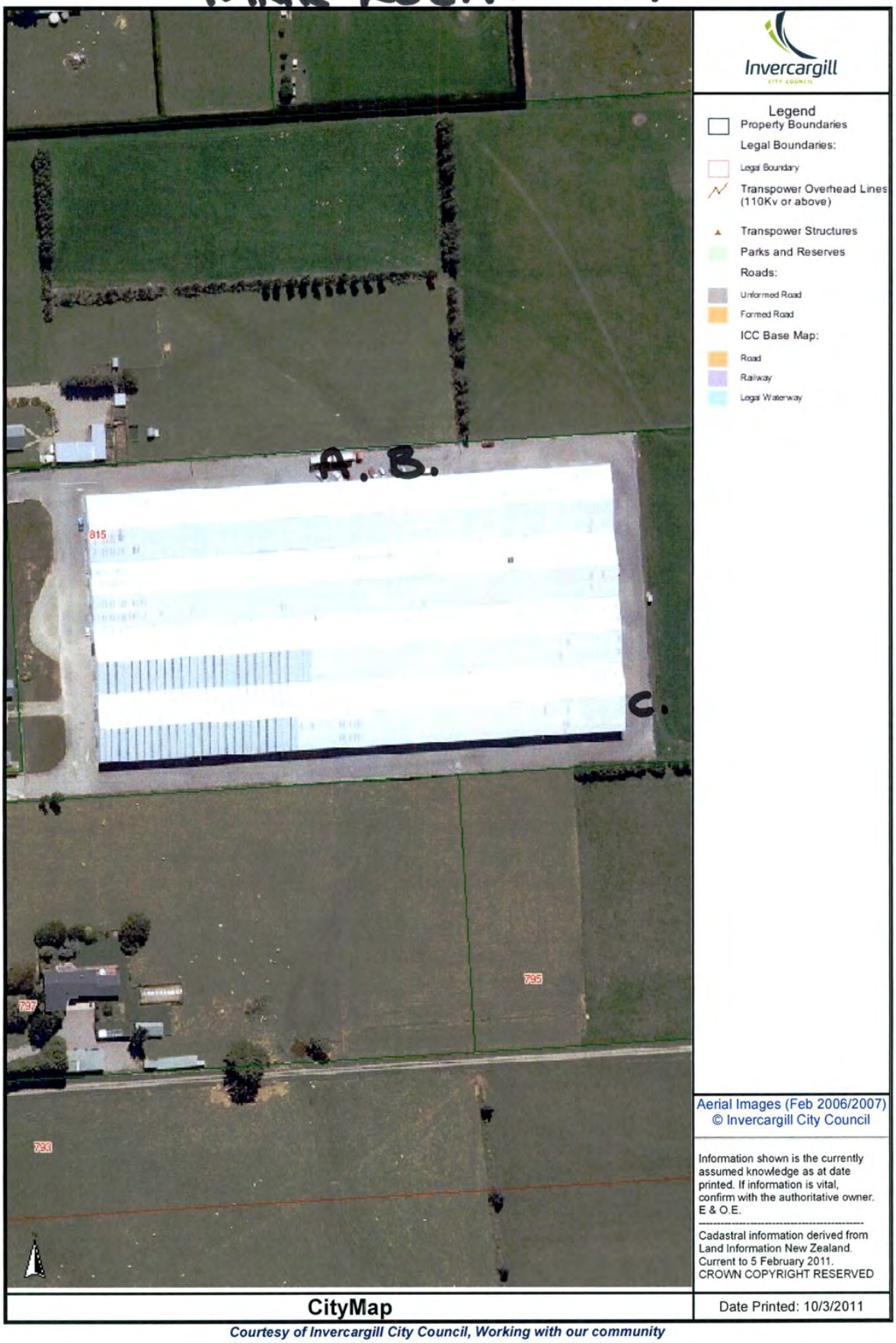
B.

IN USE TANKS

3·1D

NORTH SIDE SPRINKLER SYSTEM

TANK LOCATIONS.



Courtesy of Invercargill City Council, Working with our community

References
Prior C/T 8A/598

Transfer No.
N/C. Order No. 191629.7

19 OCT 1999
COPY

Land and Deeds 69

REGISTER

10A / 519

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

This Certificate dated the 1st day of April one thousand nine hundred and ninety-two under the seal of the District Land Registrar of the Land Registration District of SOUTHLAND

WITNESSETH that ALEXANDER RESOURCES LIMITED a duly incorporated company having its registered office at Auckland

is seised of an estate in fee-simple (subject to such reservations, restrictions, encumbrances, liens, and interests as are notified by memorial underwritten or endorsed hereon) in the land hereinafter described, delineated with bold black lines on the plan hereon, be the several admeasurements a little more or less, that is to say: All that parcel of land containing 4.5349 hectares more or less being part Lot 10 Deposited Plan 1781 and being part Section 36 Block IX INVERCARGILL HUNDRED

DISTRICT LAND REGISTRAR

Interests as at Date of Issue:

232369 Gazette Notice declaring No. 6 State Highway fronting the above land to be a Limited Access Road - 4.3.1969 at 2.05 p.m.

198836.3 DISCHARGED 12 JUN 2009 A.L.R.

170583.2 Mortgage to (now) United Bank Limited - 19.1.1990 at 11.15 a.m.

189426.1 Caveat by Hundale Pty Limited - 14.8.1991 at 11.11 a.m.

189592.1 Caveat by Hundale Pty Limited - 20.8.1991 at 11.15 a.m.

198836.4 DISCHARGED 12 JUN 2009 A.L.R.

191628.2 Mortgage to Hundale Proprietary Limited - produced 21.10.1991 at 11.52 a.m. and entered 1.4.1992 at 9.35 a.m. (with consent of Caveator in Caveats 189426.1 and 189592.1)

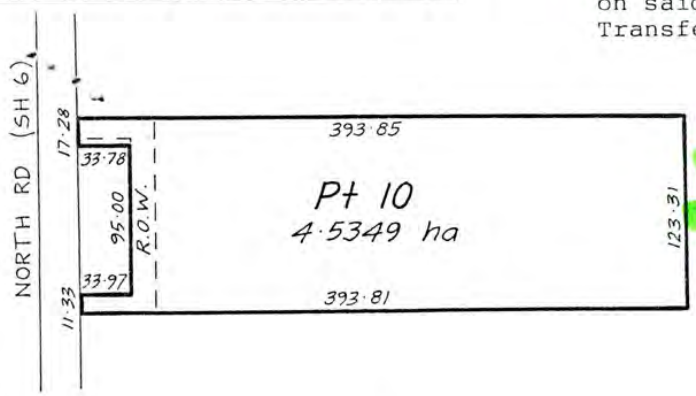
D.L.R.

191629.9 Transfer granting a Right of Way over part marked 'A' on DP 12624 appurtenant to Lot 1 said Plan (CT 10A/518) Alexander Resources Limited to Brian Robert Dowling - produced 21.10.1991 at 11.53 a.m. and entered 1.4.1992 at 9.35 a.m. (with consent of Caveator in Caveats 189426.1 and 189592.1)

D.L.R.

Appurtenant hereto is a Right to Erect an Illuminated Sign and Right to Convey Electricity over part Lot 1 DP 12624 (CT 10A/518) marked 'B' and 'C' respectively on said Plan and created by Transfer 191629.9

D.L.R.



Subject to Section 309 (1)(a) Local Government Act 1974

D.L.R.

O V E R

Measurements are Metric

No. 10A / 519

CERTIFICATE OF TITLE No. 10A/519

182083.1 Change of Name of the mortgagee in mortgage 170583.2 to United Bank Limited - 4.12.1990 at 11.15 a.m.

A.L.R.

198836.5 Transfer to Hundale Pty Limited at Sydney, Australia - 12.6.1992 at 11.08 a.m.

A.L.R.

223524.1
DISCHARGED

198836.6 Mortgage to State Bank of South Australia - 12.6.1992 at 11.08 a.m.

A.L.R.

A.L.R.

223524.2 Transfer to Ian Tulloch and Annette Margaret Tulloch both of Mataura company directors - 24.8.1994 at 11.45 a.m.

A.L.R.

223524.3 Mortgage to Bank of New Zealand - 24.8.1994 at 11.45 a.m.

A.L.R.

14838J—48,000/3/90M K

A6192725

Invercargill City Council

Environmental & Planning Services

101 Esk St • Private Bag 90104 Invercargill • DX YA90023 • Ph (03) 218-1959 • Fax (03) 214-3670

Please Contact: Mr Harrington *Ref:* Property

6 August, 1996

Mr Bill Batt
Manager
Tulloch Transport Limited
P O Box 590
INVERCARGILL

Dear Sir

Re: INSPECTION REPORT ON STORMWATER DRAINAGE SYSTEM AND FOUL SEWER SYSTEM

Part of the request for the resource consent to utilise the ex Southwool Woolstore for the storage of wool, general warehousing and freight depot at 815 North Road, Invercargill - Rural A Zone requested by Mr Bill Batt.

25 July 1996
Collection of stormwater from existing building is collected with external and internal downpipes, connecting to drain running from the south side of the property boundary through to the north boundary. All sealed surfaces outside are fall-in to stormwater channels which are connected to stormwater sumps going into the stormwater drains. The main drain runs from west to east and discharges into a drainage creek on the north/east boundary.

29 July 1996
The foul sewer drain runs to a septic tank on the north side of the building approximately 10m in from the east end of the building and 6m off the building and is under a cast iron manhole lid.

It would be expected that the effluent field would be located in the paddock on their property to the east end of the building.

It is expected that full time staff on site would not exceed five people.

Please find enclosed an invoice for $240.00 (GST inclusive) to cover site work and investigation report.

A6192725

Yours faithfully

D B Harrington
PLUMBING AND DRAINAGE INSPECTOR

DBH:cgm

Regional House
Corner Price St and North Rd
Invercargill,
New Zealand

SOUTHLAND REGIONAL COUNCIL

Private Bag 90116
Invercargill
Telephone (03) 215-6197
Fax (03) 215-8081

1 MAR 1994

Ref No. 662. File. D26/1.			
	I/A	INIT.	DATE
DCW			
ESM	✓		
RM			
PPM			
EHM			

	INFO.	ACT.	INIT.	DATE
WM				
DM		✓		
TSM				
APM				

Our Reference: RM 14/1
Enquiries to: Mr S West

24 February 1994

The General Manager
Invercargill City Council
Private Bag 90104
INVERCARGILL

Attention: Malcolm Loan

Dear Sir

CONTAMINATED STORMWATER DISCHARGE

815

Staff recently investigated an oily sheen on the Lorn tributary which runs east of, and parallel to, State Highway 6. Oil/fuel is discharged from a stormwater pipe during rain events. The stormwater pipe comes from the northern end of Hundale Pty Ltd's woolstore (Pt Lot 10 DP 1781 Blk IX Invercargill Hundred), which is leased to CRT.

Unfortunately, the layer of oil/fuel was too thin to collect sufficient material for identification. The contaminant may come from the underground fuel tank, or the small substation on site, or from other stormwater drains. Can the Invercargill City Council provide a plan of the stormwater system in the area?

I would like to identify any other possible sources of the oil/fuel. The stormwater pipe discharges at about map reference E46:185:522.

I would appreciate your assistance in this matter. If you have any queries, please contact Stephen West of this office.

To Ray Smith.
Please reply with what assistance we can offer.
MRL.

Yours faithfully

J F ENGEL
Consents Manager

JFE:JMB

Managing Your Environment

Invercargill City Council

FAXED 9.09am 7/3/94

Works and Development Directorate

PRIVATE BAG 90104, INVERCARGILL. Phone 03 218 1959
Building Consent office >>> Fax 03 214 3683

DATE 7-3-94 TIME _____ REF. _____

To

FAX # (03)2158081
COMPANY Southland Regional Council

From

Invercargill City Council

No. of pages including cover 1

Attention Mr West.

Re Drainage Plan for Hundale Pty Ltd's woolstore North Road.

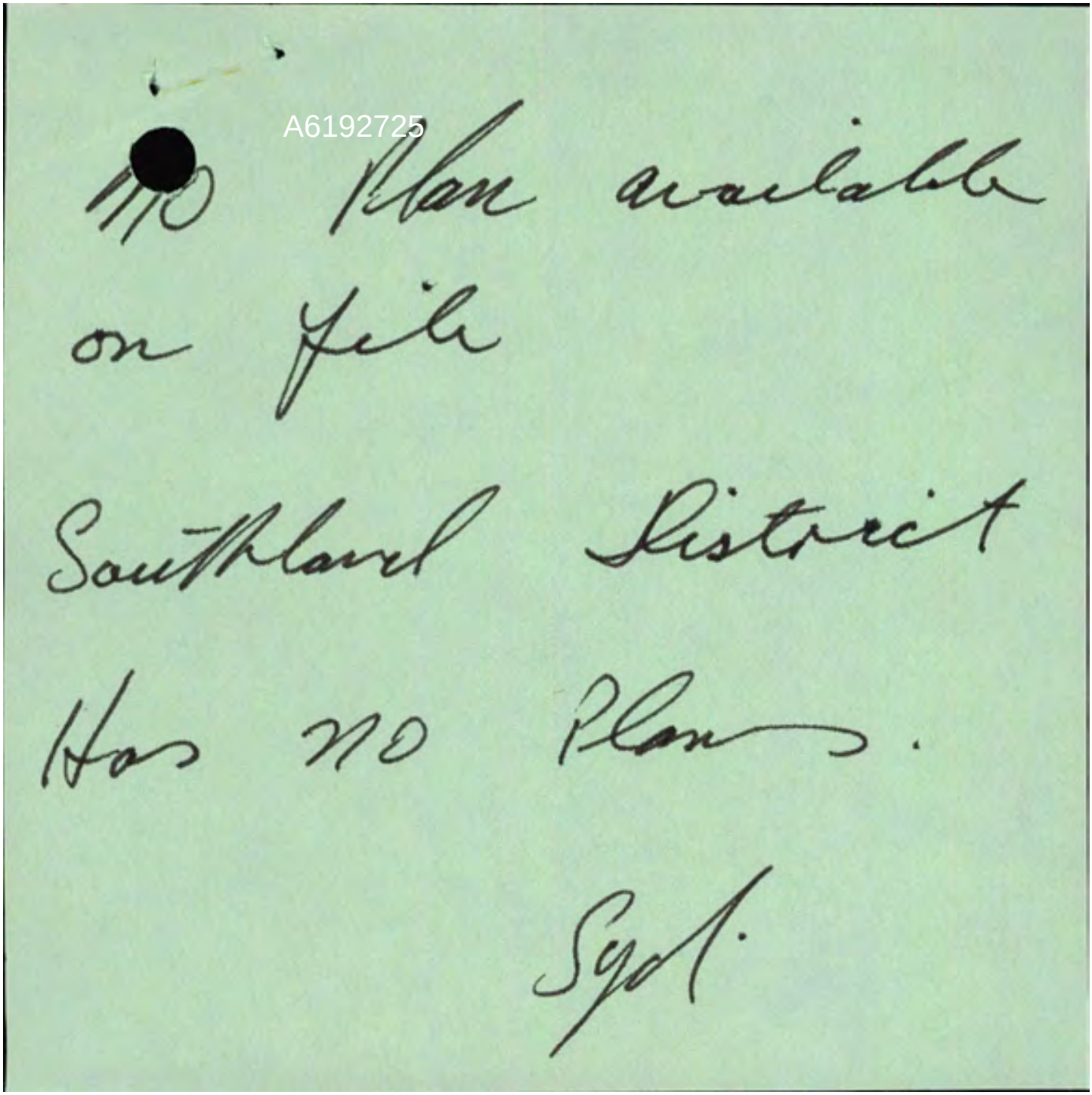
We regret NO plans are available from this office or the Southland District Council for the above Building.

Regards

Roy Smith

Snr Code Inspetor.

" We've got what it takes! - Southland "


A6192725
No Plan available
on file
Southland District
Has no Plans.
Sgd.

Scanning Quality Advice Note

Advice Note from: Exedee Scanning Team

Please note the following page(s) may have one or more quality issues identified. Examples of quality issues include:

- faint printing, writing or graphics
- the original page may be damaged e.g., torn, missing a corner or has a hole
- the original page is askew or printing runs over the page edge
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The following page(s) have been quality checked during the scanning process to verify completeness and integrity as accurate replicas of the original paper documents.

NXTAHFGRPV FPTRKYCSE

Scanning Quality Advice Note (ver 1.0) Exedee

Property

10 March 2011

File Note

HISTORIC HAZARDOUS SUBSTANCES INFORMATION
815 NORTH ROAD, INVERCARGILL

Please note that the above property has an historic hazardous substances file. For further information please contact the Environmental Health Department of ICC.

The Department of Labour (Invercargill), Environment Southland or the current owner of property may hold more up-to-date information on hazardous substances on site and can advise of any current licencing/testing that may be required.

Robert Bird
GENERAL INSPECTOR - ENVIRONMENTAL HEALTH

Ref: Property

10 March 2011

FILE NOTE

STATIONARY CONTAINER SYSTEMS (FUEL STORAGE TANKS AND ASSOCIATED EQUIPMENT) - 815 NORTH ROAD, INVERCARGILL.

Inspection of the above property on the 8th March 2011 to check what fuel storage facilities this site has in relation Invercargill City Councils historic licence information (see file).

It is noted that several tanks and equipment still exsist on site.

- One 3000L underground petrol with bowser appears to be unused.
- Three smaller diesel tanks associted with sprinker alarm system still in use.
- Large tank to rear of building on stand with some bunding, possibly diesel.

Please note that underground tanks that are not in use are required to be removed in accordance with the HSNO ACT.

Rob Bird

GENERAL INSPECTOR- ENVIRONMENTAL HEALTH

402 SCANNED 7

FILE COPY

DANGEROUS GOODS LICENCE

0083749

(Dangerous Goods Act 1974)

This licence authorises the holder thereof to store dangerous goods in quantities and in containers not exceeding those scheduled hereunder and only under the conditions set out in the schedule or in Clause(s) ..... of the Conditions of Storage enfaced on the reverse side of this document.

replaces 83657.

Licensee ELDERS PASTORAL LTD
PO BOX 949
INVERCARGILL

50
+12.5% 6.25
$56.25

Location of licensed premises LORNEVILLE

Dated: 10th April 19[illegible]

Unless sooner surrendered or revoked, this licence shall remain in force until 31 March 19[illegible] and may be renewed annually thereafter.

Classes, maximum quantities and number of containers of Dangerous Goods authorised in this Licence.

	Class 2									
	2		2		2		2		2	
	Quantity	No.	Quantity	No.	Quantity	No.	Quantity	No.	Quantity	No.
In cylinders										
In tanks										

	Class 3									
	Under ground tanks		Above ground tanks		Mobile tanks		Drums capacity exc. 60 litres)	Containers (capacity not exc. 60 l)	Workroom containers	
	Litres	No.	Litres	No.	Litres	No.	Litres	Litres	Litres	No.
3a	3000	1								
3b										
3c										

Number of dispensing pumps 1 Number of oil heaters .....

	Class 4		Class 5	
4a	kg.	5a		kg.
4b	kg.	5b		kg/litres

	Class 8							
	Above ground tanks		Drums (capacity exc. 60 litres)	Containers (capacity not exc. 60 l)	Workroom containers			
	Litres	No.	Litres	Litres	Litres	No.	Litres	No.

NOTES.

1. Your attention is called to the declaration on the application form and subsequent renewal declarations (if any). Should the information given to this office be incorrect, then the licence will be invalid.
2. Keep this licence on the licenced premises, readily available for production on request.

LAB EXP. 19

A6192725

5

SCANNED

Invercargill City Council

Environmental & Planning Services

101 Esk St • Private Bag 90104 Invercargill • Ph (03) 2181959 • Fax (03) 2143670

DANGEROUS GOODS LICENCE

Hazardous Substances & New Organisms Act 1996

Name of Holder and Occupier C R T Wool

Postal Address PO Box 159, Oamaru

Situation of Licensed Premises (Street Address) 815 North Road, Invercargill

Date of Expiry of this Licence 31 March 1998

Pursuant to the Hazardous Substances & New Organisms Act 1996 and Regulations made thereunder, a licence is hereby granted to store dangerous goods in quantities in containers scheduled below:

1X3000L	Underground Petrol Tank	CLASS 3A
1X250L	Above Ground Diesel Tank	CLASS 3C
200L	Flammable Liquid	CLASS 3C
209L	Kerosene	

Dated this 3rd day of June 19 97

Licence No. 933789/01

Authorised Officer

Craigs 129264

To: *Dangerous Goods Inspector*
Environmental Health Section
Invercargill City Council
Private Bag 90104
INVERCARGILL

Telephone (03) 218 1959
Facsimile (03) 214 3670
GST No. 10-432-146

APPLICATION TO RENEW LICENCE

HAZARDOUS SUBSTANCES & NEW ORGANISMS ACT 1996

I/We C R T WOOL
(persons or company to be named on licence

of P O BOX 159 OAMARU
(postal address)

hereby apply for the renewal of a licence with respect to premises situated at:

815 NORTH RD
(street address/location)

trading as C R T WOOL
(trade name of business)

Daytime contact telephone number: 2155199

Contact Person: DONALD CRAWFORD

Listed below are any changes in products stored and/or methods of storage since 1 April last year.

add 1-209 lt Kerosene

Enclosed please find fees payable totalling $56.25 *(GST inclusive)*

Applicant's Signature: [signature] ***Date:*** 28-5-97

OFFICE USE ONLY

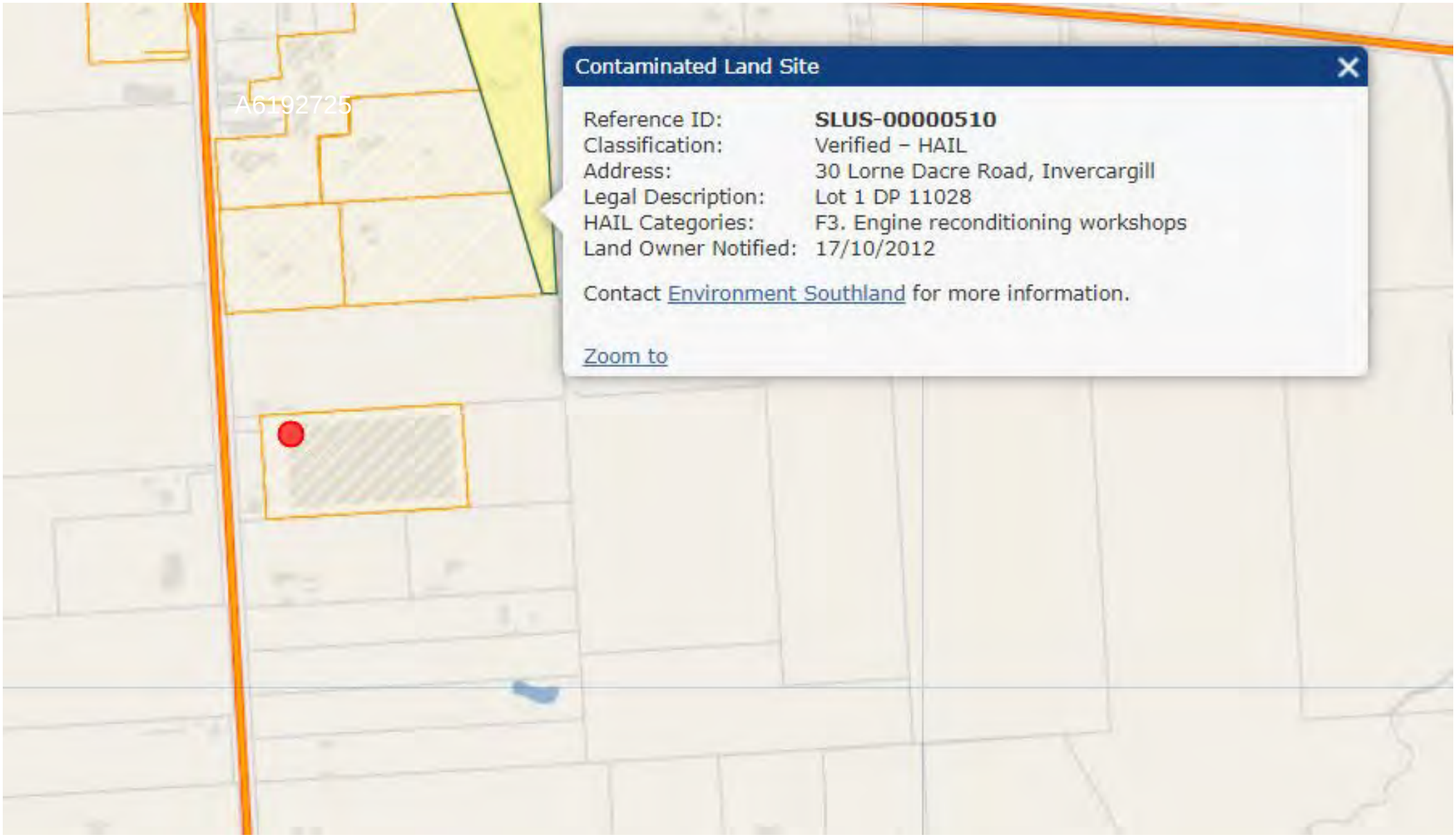
Fee Received 56.25 Date of Receipt 28/5/97 Receipt No 27607

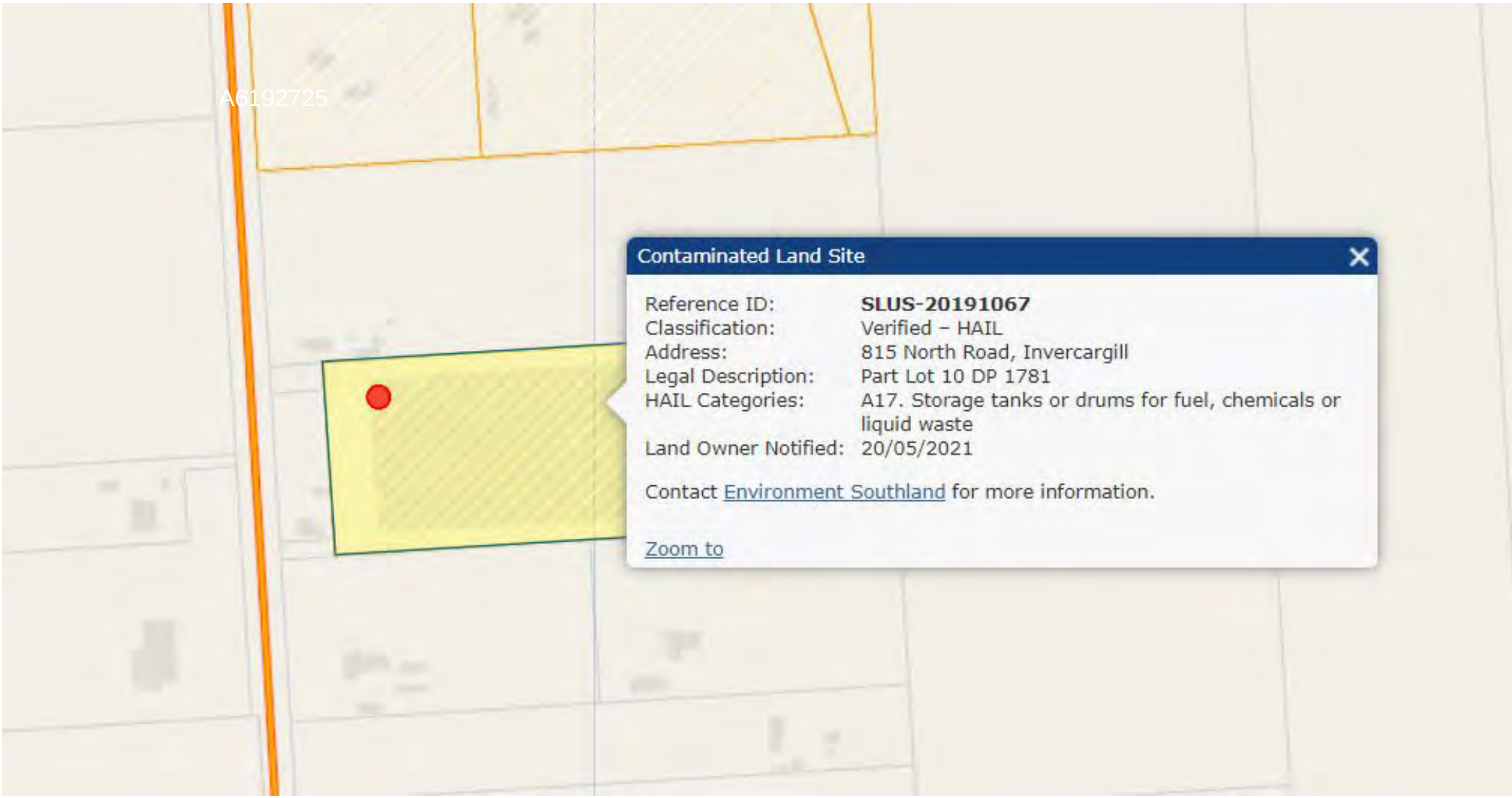
EHO Comment

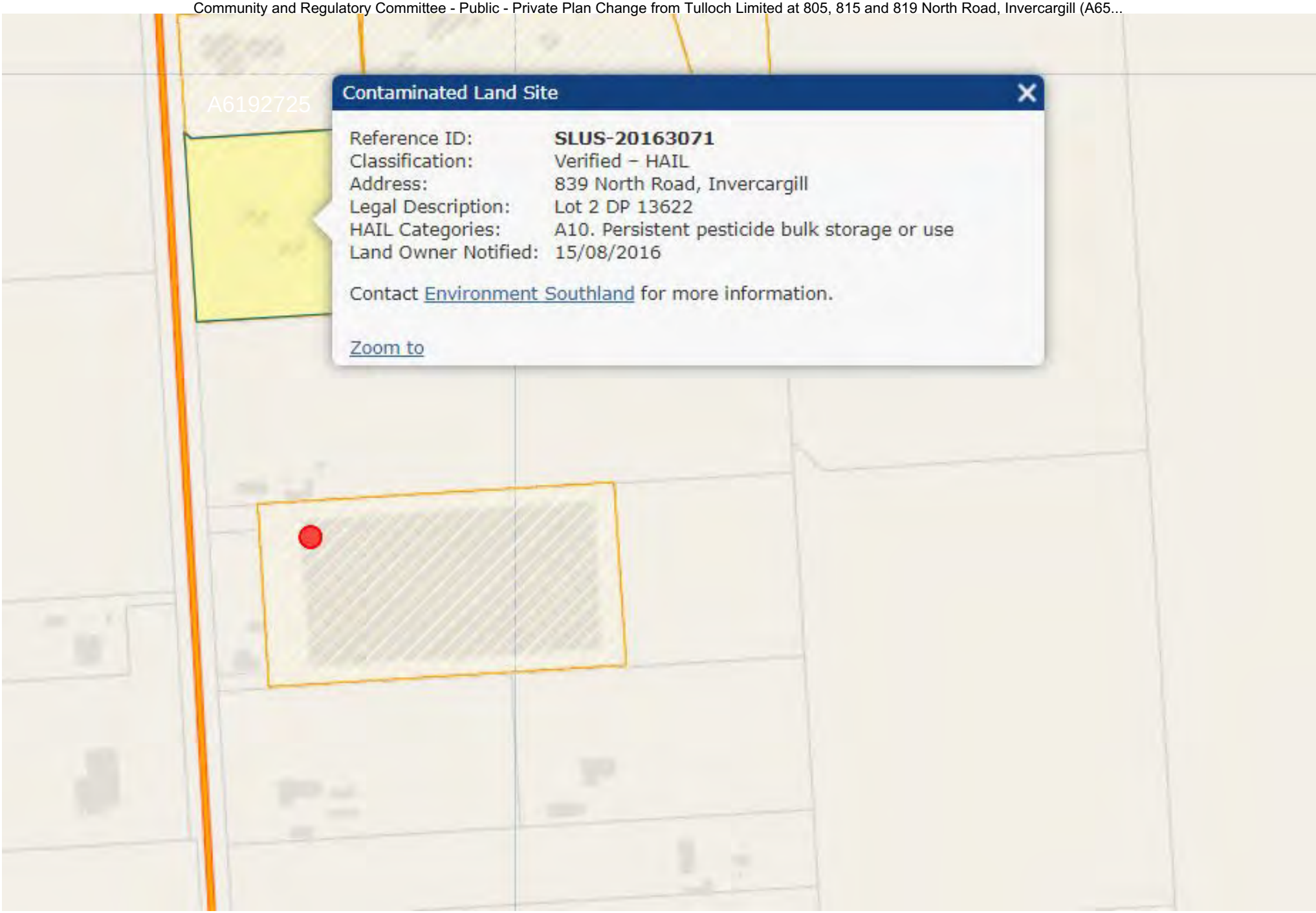
Signature Date ICC Reference No. 933789/01

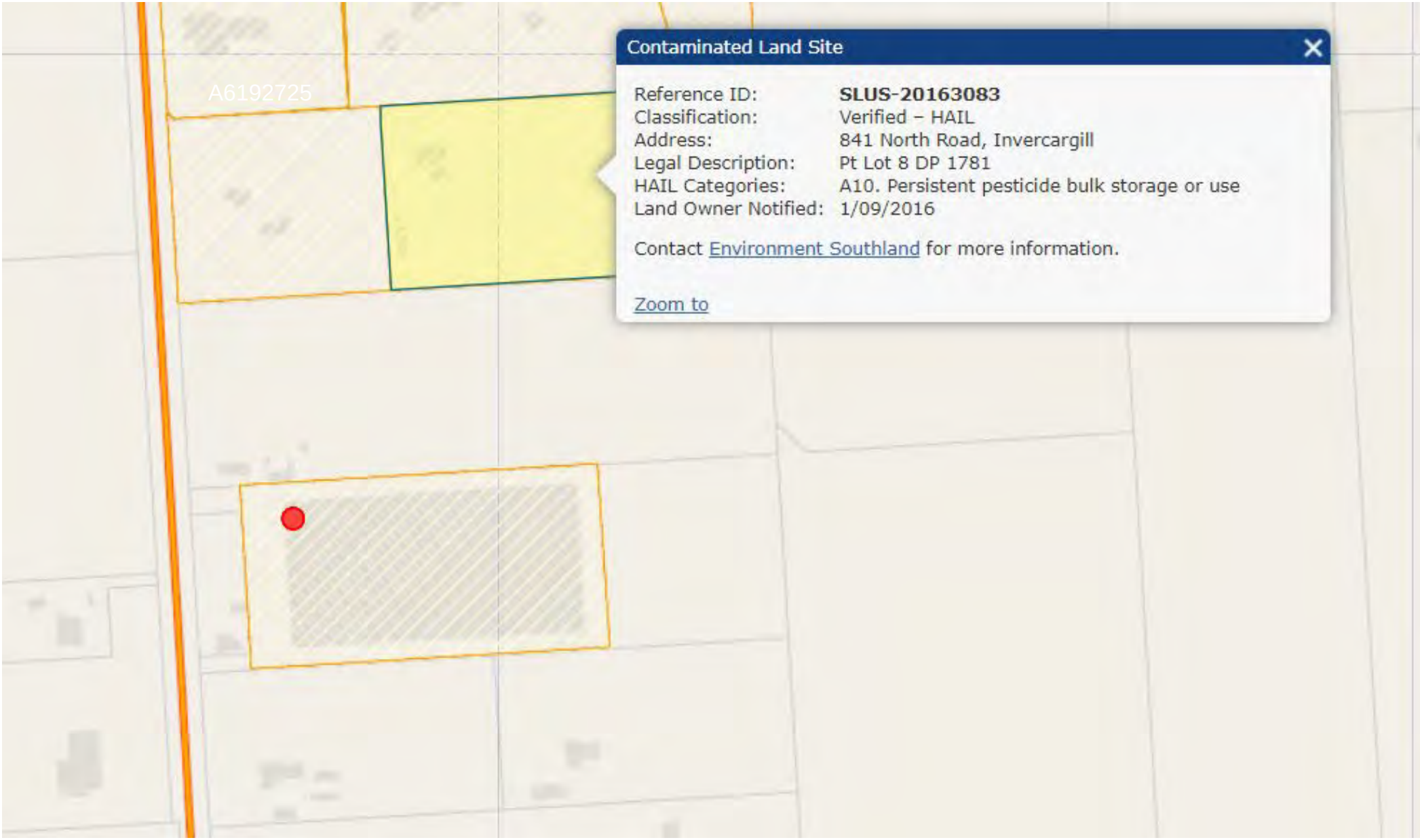
~~AB~~ 28/5/97
LA 3/6/97

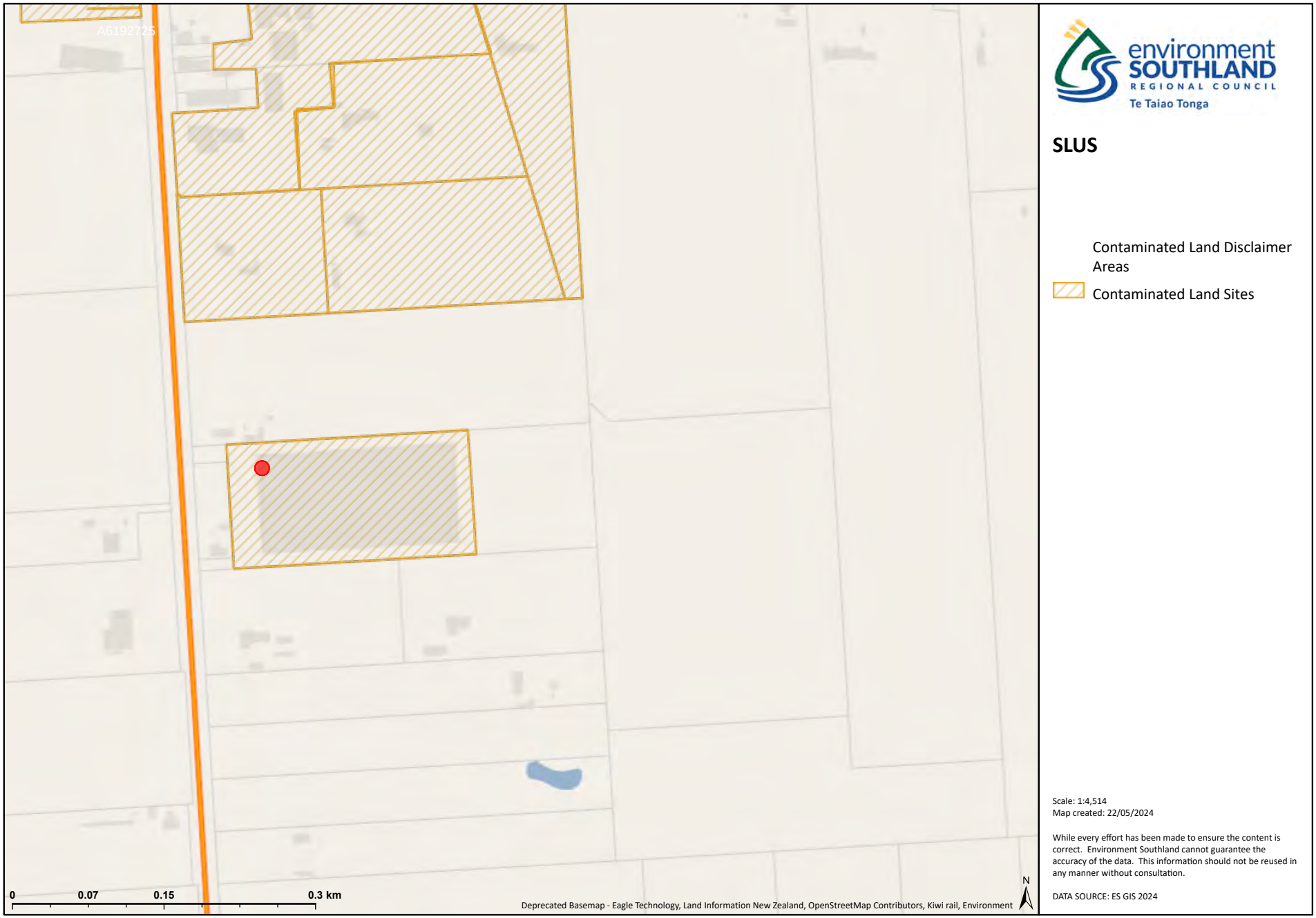
Appendix D: HAIL Listing


A6192725
Contaminated Land Site
Reference ID: SLUS-00000510
Classification: Verified – HAIL
Address: 30 Lorne Dacre Road, Invercargill
Legal Description: Lot 1 DP 11028
HAIL Categories: F3. Engine reconditioning workshops
Land Owner Notified: 17/10/2012
Contact Environment Southland for more information.
Zoom to


A6192725
Contaminated Land Site
Reference ID: SLUS-20191067
Classification: Verified – HAIL
Address: 815 North Road, Invercargill
Legal Description: Part Lot 10 DP 1781
HAIL Categories: A17. Storage tanks or drums for fuel, chemicals or liquid waste
Land Owner Notified: 20/05/2021
Contact Environment Southland for more information.
Zoom to


A6192725
Contaminated Land Site
Reference ID: SLUS-20163071
Classification: Verified – HAIL
Address: 839 North Road, Invercargill
Legal Description: Lot 2 DP 13622
HAIL Categories: A10. Persistent pesticide bulk storage or use
Land Owner Notified: 15/08/2016
Contact Environment Southland for more information.
Zoom to


A6192725
Contaminated Land Site
Reference ID: SLUS-20163083
Classification: Verified – HAIL
Address: 841 North Road, Invercargill
Legal Description: Pt Lot 8 DP 1781
HAIL Categories: A10. Persistent pesticide bulk storage or use
Land Owner Notified: 1/09/2016
Contact Environment Southland for more information.
Zoom to


A6192725
environment SOUTHLAND REGIONAL COUNCIL
Te Taiao Tonga
SLUS
Contaminated Land Disclaimer Areas
Contaminated Land Sites
Scale: 1:4,514
Map created: 22/05/2024
While every effort has been made to ensure the content is correct. Environment Southland cannot guarantee the accuracy of the data. This information should not be reused in any manner without consultation.
DATA SOURCE: ES GIS 2024
0
0.07
0.15
0.3 km
N
Deprecated Basemap - Eagle Technology, Land Information New Zealand, OpenStreetMap Contributors, Kiwi rail, Environment

Appendix 6: Pattie Delamore Partners Detailed Site Investigation Report

PATTLE DELAMORE PARTNERS LTD
Level 2, 109 Fanshawe Street,
Auckland Central 1010
PO Box 9528, Auckland 1149, New Zealand

Tel +64 9 **523 6900**
Web **www.pdp.co.nz**

solutions *for your environment*

12 December 2024

Tulloch Group Limited
15A Hokonui Drive
GORE 9710

Dear Sir/Madam

DETAILED SITE INVESTIGATION – 805, 815 AND 819 NORTH ROAD, LORNEVILLE, INVERCARGILL

1.0 Introduction

Pattle Delamore Partners Limited (PDP) has been engaged by Tulloch Group Limited (TGL; the landowner) to undertake a Detailed Site Investigation (DSI) to investigate potential surface soil impacts as a result of the potential historical Hazardous Activity and Industry List (HAIL[1]) activities that have been identified within and/or adjacent to the proposed development site located at 805, 815 and 819 North Road, Lorneville, Invercargill (hereafter referred to as the 'site') (shown in Figure 1).

This DSI builds upon the Preliminary Site Investigation (PSI) report completed by PDP in August 2024, which identified potential activities within and/or adjacent to the site, categorised under the HAIL (PDP, 2024).

The following HAIL activities were identified as potentially occurring within or adjacent to the site:

- Potential livestock dip or spray race operations (HAIL Activity A8) associated with current and former stockyards at 819 North Road;
- Potential localised impacts to soils from historical building materials, namely asbestos/asbestos containing material (ACM) and lead-based paint, which were common construction materials until 2000 and the 1980s, respectively (potential HAIL Activity I[2]). Two dwellings with associated sheds and garages (including demolished sheds/garages) were constructed in this time period, and therefore there is potential for lead and asbestos in soil proximal to these buildings at 805 and 819 North Road;
- Storage tanks or drums for fuel, chemicals or liquid waste (HAIL Activity A17 and/or Activity I) as suggested by property file documents which indicated the presence of an underground petrol tank and four above ground diesel tanks (associated with the woolstore) at 815 North Road; and

[1] The Hazardous Activities and Industries List (HAIL) is a compilation of activities and industries that are considered likely to cause land contamination resulting from hazardous substance use, storage or disposal. The HAIL is intended to identify most situations in New Zealand where hazardous substances could cause, and in many cases have caused, land contamination. The most recent version of the HAIL was published by the Ministry for the Environment (MfE) in 2011.
[2] HAIL Activity I – Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment.

- Potential persistent pesticide bulk storage or use (HAIL Activity A10) associated with historic horticultural activity at 819, 839 and 841 North Road.

The PSI report concluded that the *Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011* ('the NESCS'; NESCS, 2011) would apply to the localised pieces of land where these potential contamination sources have been identified, and would be triggered by the proposed activities anticipated to be undertaken within the proposed development site (refer to Figure 1) in the future, which are expected to include change of land use (from mixed commercial/industrial/pastoral/rural-residential to commercial/industrial), subdivision and soil disturbance. A DSI was recommended to be undertaken on the identified potential contamination sources to investigate whether impacts to ground (specifically surface soil) have occurred as a result of these historical activities.

This DSI has been carried out to investigate the contaminants of potential concern (COPC) to ground (that is to be disturbed by the proposed development as outlined in Section 3.0) as a result of the historical activities that have or have potentially been undertaken, prior to completing any soil disturbance activities on the site.

This DSI has been directed and reviewed by a Suitably Qualified and Experienced Practitioner (SQEP) with respect to contaminated land and has been undertaken in accordance with the Ministry for the Environment's (MfE's) *Contaminated Land Management Guidelines* (CLMG) *No.1 – Reporting on Contaminated Sites in New Zealand (Revised 2021)* (MfE, 2021a), and the principles contained in *CLMG No.5: Site Investigation and Analysis of Soils (Revised 2021)* (MfE, 2021b). A certifying statement to this effect is provided in Appendix A.

This report provides the findings of the investigation.

2.0 Objectives and Scope of Work

2.1 Objectives

The key objectives of this DSI are to:

- Assess, by means of soil sampling and analysis, the presence of any residual contamination impacts to surface and near-surface soils from identified potential current or historical activities;
- Assess the likelihood of human health and environmental risk associated with the proposed soil disturbance, subdivision and change of land use through comparison of analytical results against relevant guidelines/criteria;
- Assess the requirements for potential contaminated land consents in relation to the NESCS, the *Proposed Southland Water and Land Plan* (PSWLP) (Environment Southland Regional Council [ESRC], 2024), the ESRC *Regional Water Plan* (RWP; ESRC, 2010) and the *Invercargill City District Plan* (ICDP) (Invercargill City Council [ICC], 2019); and
- Identify any special soils management required during the proposed redevelopment.

2.2 Scope of Work

In order to meet the project objectives, the following scope of work was undertaken:

- Soil sampling from 13 locations within the proposed development area with identified potential contamination/HAIL sources that are proposed to be disturbed/developed (as described in Section 3.0).

- Laboratory analysis of collected soil samples for key COPC based on potential/recorded site use, including:
  - Heavy metals (namely arsenic, cadmium, chromium, copper, lead, nickel and zinc);
  - Benzene, toluene, ethylbenzene and xylenes (BTEX);
  - Organochlorine pesticides (OCPs);
  - Polycyclic aromatic hydrocarbons (PAHs);
  - Total petroleum hydrocarbons (TPHs); and
  - Semi-quantitative asbestos in soil (SQ AsbInS).
- Assessment of the analytical sample results against the relevant criteria from applicable guideline documents.
- Provision of this report, including updating the conceptual site model (CSM) for the contaminant sources identified and providing an assessment of the applicable NESCS and contaminated land rules of the PSWLP.

3.0 Proposed Development

PDP understands that TGL intend to subdivide the existing three Lots (listed in Section 4.1 below) and develop the site for commercial/industrial purposes. The large woolstore which occupies the western half of 815 North Road will be retained and therefore was not inspected or assessed for this investigation.

A copy of the proposed concept masterplan is included in the PSI report (PDP, 2024).

4.0 Site Description

4.1 Site Identification and Proposed Development Area

The site is located at 805, 815 and 819 North Road, Lorneville, Invercargill, approximately 7 km north of the township centre of Invercargill. Legal descriptions for the site comprise Lot 1 DP 12624 (805 North Road), Part Lot 10 DP 1781 (815 North Road) and Lot 9 DP 1781 (819 North Road). The site encompasses a total area of approximately 9.73 hectares (97,300 m^2).

The site is zoned as 'Rural' under the ICDP (ICC, 2019). The surrounding zoning includes further rural zoning in all directions except west/northwest which is zoned as 'Business 5'.

The site is bound by commercial and rural-residential land use to the north, pastoral and agricultural land use to the east, commercial and rural-residential land use to the south, and commercial sites (butcher shop and adventure sports centre) and pastoral land use to the west (refer to Figure 1). The site is immediately bordered to the west by North Road (State Highway 6).

The site is currently occupied by a large woolstore commercial building at the south of the site (815 North Road) and dwellings in the southwest (805 North Road) and west (819 North Road) of the site. The dwelling at 819 North Road is currently used as a residence, and the dwelling at 805 North Road is in commercial use. The remainder of the site is predominantly grassed paddocks for pastoral land use.

A full description of the site and surrounds is provided in the site's PSI report (PDP, 2024).

4.2 Geology, Topography and Hydrogeology

The Geological Map of the Murihiku area (Turnbull & Allibone, 2003) indicates that the site area is predominantly underlain by Quaternary-age weathered clayey sand and gravel in high terrace and associated fan remnants. During the site investigation, soils within the site consisted generally of silty topsoil and angular gravel, underlain by clayey silt/silty clay.

Site topography is predominantly flat and level with a gentle slope towards the east in the eastern area of the site. The western border to the centre of the site has topographical highs of approximately 11-12 m above mean sea level (amsl), whereas the eastern border of the site has an elevation of approximately 6 m amsl.

The nearest surface water body is a farm drain is located along the eastern boundary of the site. It is assumed to flow southeast, discharging into the Waikiwi Stream approximately 900 m southeast of the site (at the closest point), before flowing in a southeast to southwest direction towards the Oreti River (located approximately 10 km southwest of the site).

A bore search using the ESRC Groundwater web map[3] identified three bores (E46/0116, E46/0587 and E46/1338) within a 500 m radius of the site used for domestic and/or stock supply. The closest bore (E46/0116) is located approximately 100 m southwest of the site boundary at the closest point. Well depths of the three bores ranged between 8-31 meters below ground level (m bgl). Water levels were noted to encountered at depths of 6 and 7.3 m, assumed to be from top of the well casing.

5.0 Site Investigation

5.1 Soil Sampling and Analysis Plan

Soil sampling was undertaken in accordance with the principles contained in *CLMG No.5* (MfE, 2021b).

Site investigation works were undertaken on 24-25 August 2024. The investigation involved collecting soil samples from 13 locations targeting identified potential contamination/HAIL sources (refer to Figure 1) using a stainless-steel hand auger from the surface to a maximum depth of 0.9 m bgl. Fresh nitrile gloves were worn at each new sample location. Samples were immediately collected in laboratory supplied glass jars and placed into a chilled storage bin during the site works (and subsequent transport to the analysing laboratory). At the completion of the site works, samples were sent to RJ Hill Laboratories (Hill Labs) in Hamilton under standard PDP Chain of Custody (COC) procedures. Sample analyses were scheduled with the following rationale:

- Five surface soil samples collected within the area of a proposed road and general soil disturbance were analysed for a suite of heavy metals (namely arsenic, cadmium, chromium, copper, lead, nickel and zinc);
- One surface soil sample collected in the area of former horticultural use (potential HAIL Activity A10) was analysed for the heavy metal suite and OCPs;
- One surface soil sample collected in the area of potential livestock dip/spray operations (potential HAIL Activity A8) was analysed for arsenic and OCPs;
- Four soil samples (two near- and two sub-surface) collected within the area of land which may have been subject to the migration of hazardous substances (i.e. fuel storage tanks in the woolstore; potential HAIL Activity H) were analysed for the heavy metal suite, BTEX, PAHs and TPHs; and

[3] Environment Southland Regional Council Groundwater web map – https://maps.es.govt.nz/index.aspx?app=groundwater, Accessed 3/10/2024.

- 12 surface soil samples collected within the area of land which may have been subject to the intentional or accidental release of a hazardous substance (i.e. from historical building materials; potential HAIL Activity I) were analysed for lead and SQ AsbInS.

5.2 Soil Sampling Observations

The following observations were made during the collection of soil samples:

- The soils were generally described across the site as silty topsoil and angular gravel, underlain by clayey silt/silty clay.
- No visual or olfactory evidence of contamination was observed in any of the collected soil samples.
- No groundwater was encountered in any of the sampling locations down to the target depths.
- No fragments of ACM were encountered in any of the sampling locations down to the target depths.

Photographs of the general site and typical soils encountered during the soil sampling investigation are provided in Appendix B.

6.0 Applicable Guidelines and Criteria

The following assessment guidelines and criteria have been selected for comparison to carry out a human health and environmental risk assessment. These guideline values were selected in accordance with the guidance provided in the CLMG No.2 '*Hierarchy and Application in New Zealand of Environmental Guideline Values' (Revised 2011)* (MfE, 2011a).

6.1 Background Concentrations

According to Regulation 5(9) of the NESCS, if a DSI can demonstrate that contaminants in or on a piece of land that has potential/known HAIL activities described as being/been undertaken on it are at, or below, background concentrations, then the NESCS regulations do not apply.

To assess COPC results (namely heavy metals), the applicable environmental assessment criteria for soils at the site are considered to be site-specific background concentrations. Heavy metal concentrations reported for soil samples collected from areas within the site which are located distally from and/or are not associated with any current or former HAIL activity (namely SS3 (0.1-0.3), SS4 (0.1-0.3) and SS5 (0.1-0.3)), are considered to be representative of site-specific/local background concentrations. Ranges encompassing the heavy metal concentrations reported for these three soil samples listed above have been adopted as the background concentrations for the site and are provided for comparison in Table 1.

6.2 Environmental Assessment Criteria

The draft ecological soil guideline values (Eco-SGVs) from the '*Updated Development of soil guideline values for the protection of ecological receptors (Eco-SGVs): Technical document*' (MWLR, 2019) have been adopted to make an initial assessment of whether there is a risk to environmental receptors. The commercial/industrial (60%) values have been adopted as the most appropriate given the anticipated future land-use at the site.

6.3 Human Health Assessment Criteria

The applicable human health assessment criteria for soils on this site are the Soil Contaminant Standards (SCSs) from the '*Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health*' (MfE, 2011b), which is incorporated by reference in the NESCS.

Where the *Methodology* does not provide a guideline value, alternative guideline values were selected for use in accordance with the hierarchy. On this basis, soil guideline values (SGVs) for nickel and zinc were obtained from the National Environmental Protection Council's National Environmental Protection Measure (NEPM), Schedule B(1) of the '*Guideline on Investigation Levels for Soils and Groundwater*' (NEPM, 2013). It is noted here that for certain contaminants (i.e. heavy metals), the NESCS does not include specific guidelines for the protection of maintenance/excavation workers and as such, commercial/industrial guideline values used to inform soil/fill handling controls are likely to be conservative for this assessment.

For all of the NESCS SCSs and NEPM SGVs, the commercial/industrial land use criteria have been selected as the most appropriate to determine the soil handling controls required during the proposed works, given the anticipated future land use at the site.

Given all samples analysed for BTEX, PAHs, OCPs, TPHs and SQ AsbInS reported concentrations below the laboratory detection limit, the relevant guidelines are not required to assess the risk to human health.

Note that the dwelling at 819 North Road is still being used for residential purposes prior to the proposed development of the site and as such, analytical results of the soil samples collected within the vicinity of this dwelling (analysed for lead only) have also been conservatively assessed (in discussion) against the NESCS SCS for lead for a rural residential/lifestyle block land use scenario (160 mg/kg).

7.0 Results and Assessment

Laboratory analytical results of the analysed soil samples are summarised in Table 1. The COC documentation and laboratory analytical reports are provided in Appendix C.

Laboratory analytical results of the analysed soil samples indicate that:

- One of five soil samples collected from within the area of the proposed road and general soil disturbance (SS1 (0.1)) reported concentrations of all analysed heavy metals above the site-specific background concentrations, but below the MWLR Eco-SGVs, NESCS SCSs and NEPM SGVs.
- The soil sample collected in the area of potential former horticultural use (SS6 (0.1-0.3)) reported concentrations of heavy metals all below the site-specific background concentrations, the MWLR Eco-SGVs, NESCS SCS and NEPM SGVs, as well as concentrations of OCPs below the laboratory detection limit.
- The soil sample collected in the area of the potential livestock dip/spray operations (SS7 (0.1-0.3)) reported an arsenic concentration below the relevant site-specific background concentration, MWLR Eco-SGV and NESCS SCS, as well as concentrations of OCPs below the laboratory detection limit.
- One of the four samples collected within the vicinity of fuel storage tanks (SS8 (0.9)) reported a concentration of nickel above the relevant site-specific background concentration but below the MWLR Eco-SGV and NEPM SGV. The remaining three samples (SS8 (0.3), SS9 (0.3) and SS9 (0.9)) reported heavy metal concentrations below the site-specific background concentrations, MWLR Eco-SGVs, NESCS SCS and NEPM SGVs. Concentrations of BTEX compounds, PAHs and TPHs were all reported below the laboratory detection limit in all four samples.

- Concentrations of lead in five of the 12 soil samples collected within the vicinity of historical building materials at 805 and 819 North Road (SS10 (C), SS12 (A), SS12 (B), SS12 (D) and SS13 (A)) exceed the site-specific background concentrations but are below the relevant lead MWLR Eco-SGV and NESCS SCS for the proposed commercial/industrial land use. The remaining seven samples reported lead concentrations below background levels. No asbestos was detected in any of these samples.

  Note that two soil samples (SS12 (B) and SS13 (A)) reported lead concentrations (720 mg/kg and 200 mg/kg, respectively) above the relevant NESCS SCS for a rural residential/lifestyle block land use scenario (160 mg/kg).

Overall, no exceedances of the adopted acceptance criteria for protection of environmental receptors and human health for a commercial/industrial land use were recorded for any soil samples collected. Subsequently, the proposed development (which includes the disturbance of soils, subdivision and possible redistribution of soils across the site) is not considered to pose an unacceptable risk to environmental receptors or human health during both the proposed development as well as ongoing land use as commercial/industrial.

However, as mentioned in Section 6.3 above, the dwelling at 819 North Road is still being used for residential purposes prior to the proposed development of the site. Two out of five soil samples reported lead concentrations above the NESCS SCS for rural residential/lifestyle block land use. Nevertheless, given the small extent of soils above the SCS, average exposure to soils during residential occupation is not likely to present a risk to human health.

8.0 Updated Conceptual Site Model

A risk to human health or the environment can only exist if there is a contamination source (e.g. storage or use of materials that could have impacted soil or groundwater), a receptor (e.g. people or surface water bodies) and a migration pathway linking the source and the receptor. An absence of any one of these components means that the exposure pathway is incomplete.

A CSM was developed for the development and proposed future land use using the information acquired in the preparation of the PSI report (PDP, 2024). The CSM has been updated to reflect the findings of this DSI, as summarised below in Table 2.

Table 2: Updated Conceptual Site Model

Source	Pathway	Receptor	Pathway Linkage
HAIL land use (Activity A8: livestock dip or spray race operations, potentially associated with current and former stockyards)	Ingestion of soil	Construction workers/Site users	**Incomplete** – due to the analysed soil samples having concentrations of COPC that are either below the NESCS SCSs for commercial/industrial land use or not detected.
	Dermal contact with soil		
	Infiltration to groundwater	Groundwater	**Incomplete** – due to the analysed soil samples having concentrations of COPC that are either below the NESCS SCSs for commercial/industrial land use or not detected. Groundwater is expected to be more than 4 m bgl.
	Runoff to surface water	Surface water	**Incomplete** – due to the analysed soil samples having concentrations of COPC that are either below the NESCS SCSs for commercial/industrial land use or not detected. The nearest surface water (i.e. farm drain) is located approximately 300 m from the potential HAIL Activity A8 land use area.
HAIL land use (Activity I: any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment) associated with historic building materials and storage of petroleum hydrocarbons	Ingestion of soil	Construction workers/Site users	**Incomplete** – due to the analysed soil samples having concentrations of COPC that are either below the NESCS SCSs for commercial/industrial land use or not detected.
	Dermal contact with soil		
	Infiltration to groundwater	Groundwater	**Incomplete** – due to the analysed soil samples having concentrations of COPC that are either below the NESCS SCSs for commercial/industrial land use or not detected. Groundwater is expected to be more than 4 m bgl.
	Runoff to surface water	Surface water	**Incomplete** – due to the analysed soil samples having concentrations of COPC that are either below the NESCS SCSs for commercial/industrial land use or not detected. The nearest surface water (i.e. farm drain) is located approximately 300 m from the potential HAIL Activity I land use area.

Table 2: Updated Conceptual Site Model

Source	Pathway	Receptor	Pathway Linkage
HAIL land use (Activity A10: persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds)	Ingestion of soil	Construction workers/Site users	**Incomplete** – due to the analysed soil samples having concentrations of COPC that are either below the NESCS SCSs for commercial/industrial land use or not detected.
	Dermal contact with soil		
	Infiltration to groundwater	Groundwater	**Incomplete** – due to the analysed soil samples having concentrations of COPC that are either below the NESCS SCSs for commercial/industrial land use or not detected. Groundwater is expected to be more than 4 m bgl.
	Runoff to surface water	Surface water	**Incomplete** – due to the analysed soil samples having concentrations of COPC that are either below the NESCS SCSs for commercial/industrial land use or not detected. The nearest surface water (i.e. farm drain) is located approximately 350 m from the potential HAIL Activity A10 land use area.
HAIL land use (Activity H: any land that has been subject to the migration of hazardous substances from adjacent land in sufficient quantity that it could be a risk to human health or the environment)	Ingestion of soil	Construction workers/Site users	**Incomplete** – due to the analysed soil samples having concentrations of COPC that are either below the NESCS SCSs for commercial/industrial land use or not detected.
	Dermal contact with soil		
	Infiltration to groundwater	Groundwater	**Incomplete** – due to the analysed soil samples having concentrations of COPC that are either below the NESCS SCSs for commercial/industrial land use or not detected. Groundwater is expected to be more than 4 m bgl.
	Runoff to surface water	Surface water	**Incomplete** – due to the analysed soil samples having concentrations of COPC that are either below the NESCS SCSs for commercial/industrial land use or not detected. The nearest surface water (i.e. farm drain) is located approximately 200 m from the potential HAIL Activity H land use area.

9.0 Regulatory Assessment

9.1 NESCS

The NESCS seeks to control activities on contaminated land so as to protect human health. The regulations apply to a 'piece of land' which is described as having, has had or is more likely than not to have had an activity or industry described in the HAIL undertaken on it. The results of the historical review (PDP, 2024) identified potential HAIL land uses (HAIL Activities A8, A10, A17 and I) within and adjacent to the proposed development site. This DSI investigated potential HAIL Activities A8, A10, H and I.

Soil sampling, analysis and comparison against applicable assessment criteria undertaken as part of this DSI demonstrates that:

- The NESCS does not apply to the proposed development within areas of potential livestock dip/spray operations (potential HAIL Activity A8), nor the area of potential former horticultural use (potential HAIL Activity A10), as the COPC in these soils were reported below site-specific background concentrations.
- The NESCS does not apply to the proposed development within the area of land which may have been subject to the migration of hazardous substances (i.e. from the fuel storage tanks at 815 North Road; potential HAIL Activity H) as the COPC reported no exceedances of the adopted criteria for the protection of human health and environmental receptors for commercial/industrial land use. Subsequently, it is on this basis that HAIL Activity H is not considered to be applicable to the site and the proposed development as COPC are not present '*…in sufficient quantity that it could be a risk to human health or the environment*'.
- The NESCS does not apply to the proposed development within the area of land which may have been subject to the intentional or accidental release of a hazardous substance (i.e. from historical building materials at 805 and 819 North Road; potential HAIL Activity I) as COPC reported no exceedances of the adopted criteria for the protection of human health and environmental receptors for commercial/industrial land use. Two isolated exceedances of the rural residential SCS for lead were recorded. Given the limited extent of soils above the lead SCS, and impending change of land use to commercial industrial, average exposure to soils during residential occupation is not likely to pose a human health risk. Therefore, COPC are not present '*…in sufficient quantity that it could be a risk to human health or the environment*' and HAIL Activity I is not considered to be applicable.

On this basis, the NESCS regulations are not considered to be applicable for the proposed development at the site as the findings of this DSI indicate that the activities described in the HAIL have not been undertaken at the site, or alternatively, the DSI demonstrates that COPC in or on a 'piece of land' are at or below background concentrations. Consequently, a NESCS consent is not required.

9.2 Environment Southland Regional Council

Rule 57 from the ESRC RWP (ESRC, 2010) and Rule 46 from the PSWLP (ESRC, 2024) both state that the discharge from land contaminated by a hazardous substance is a permitted activity provided[4]:

I. The discharge does not result in a breach of the trigger values presented in Australia and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018 – formerly Australian and New Zealand Environment and Conservation Council [ANZECC], 2000) at the level of protection for 80% of species (90% of species for benzene); and

[4] Note that both Rule 57 from the *Regional Water Plan* and Rule 46 of the *Proposed Water and Land Plan* have additional criteria to determine if a discharge is a permitted activity, however, only the two criteria relevant to this investigation are discussed here.

II. The discharge does not result in a breach of the Drinking Water Standard for New Zealand 2005 (revised 2018) in any bore utilised for potable supply.

The results from this investigation and implementation of sediment and erosion controls during proposed soil disturbance works) show that the risk to the surrounding environment from discharges during the proposed works is minimal. As such, discharges from the site during the proposed works are unlikely to exceed the trigger values mentioned above and it is considered that the works can be carried out as a permitted activity under the above ESRC plans.

9.3 Invercargill City Council

The ICDP (ICC, 2019) gives effect to the NESCS to outline consenting requirements in relation to contaminated land. As discussed in Section 9.1 above, the NESCS regulations are not considered to apply to the proposed development at the site and a NESCS consent is not required. However, further review of the IDCP should be undertaken prior to undertaking any soil disturbance works to determine if any other consents are required, such as for subdivision and earthworks volumes.

9.4 Material Handling Requirements

The analytical results indicate that soils are suitable for onsite re-use under a commercial/industrial land use setting. However, if soils require offsite disposal, they may need to be taken to a managed fill facility on the basis of there being some exceedances of the site-specific background concentrations for heavy metals for the site, dependant on the waste acceptance criteria for the disposal site. Pre-acceptance must be sought from the landfill prior to disposal of the materials offsite.

10.0 Conclusions and Recommendations

PDP has been engaged by TGL to undertake a DSI for the proposed development site located at 805, 815 and 819 North Road, Lorneville, Invercargill. The objectives of this DSI were to assess the likelihood of human health and environmental risk associated with the proposed development at the site (involving change of land use, subdivision and soil disturbance); assess the requirements for potential resource consents in relation to the NESCS and the ESRC PSWLP and RWP; and identify any special soils management required.

The investigation included collection and analysis of soil samples for a suite of heavy metals (arsenic, cadmium, chromium, copper, lead, nickel and zinc), BTEX compounds, OCPs, PAHs, TPHs and SQ AsbInS in soil from 13 locations within the proposed development area.

The key findings of this DSI are as follows:

- No visual or olfactory evidence of contamination was observed in any of the collected soil samples.
- No groundwater was encountered in any of the sampling locations down to the target depths.
- No fragments of ACM were encountered in any of the sampling locations down to the target depths.
- A majority of the soil samples collected to target residual contamination impacts to soils from the identified current or historical activities variously reported concentrations of heavy metals above the site-specific background concentrations, but all below the MWLR Eco-SGVs, NESCS SCSs and NEPM SGVs for commercial/industrial land use.
- No BTEX compounds, OCPs, PAHs, TPHs or asbestos were detected in any of the analysed soil samples.

Based on the findings of this investigation, the following conclusions and recommendations have been made in relation to the objectives of this DSI:

- The change of land use, subdivision and soil disturbance associated with the proposed development at the site is not considered to pose an unacceptable risk to human health (in the context of commercial/industrial land use), nor the environment.
- The proposed development:
  - Can be completed without the requirement for an NESCS consent; and
  - Can be completed as a permitted activity under the land contamination rules of the ESRC RWP (ESRC, 2010) and PSWLP (ESRC, 2024).
- The soil analytical results have confirmed that site soils are suitable for onsite re-use under a commercial/industrial land use setting. Alternatively, if soil materials require offsite disposal, they may need to be taken to a managed fill facility on the basis of there being exceedances of the site-specific background concentrations for heavy metals, dependant on the waste acceptance criteria of the disposal site. Pre-acceptance must be sought from the landfill prior to disposal of the materials offsite.
- It is recommended, as part of the soil disturbance works, that an erosion and sediment control plan is prepared in accordance with industry best practice and include accidental discovery of contamination protocols to follow in the event contaminated materials are observed during the proposed soil disturbance works.
- Two soil samples collected adjacent to the dwelling at 819 North Road reported lead concentrations above the NESCS SCS for rural residential/lifestyle block land use. Given the limited extent, these soils are not considered to present a risk to human health. Nevertheless, retaining the grass cover and limiting soil exposure in the northern yard and the grassed area on the western side of the garage/shed near the water tanks would be a conservative measure.

11.0 References

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12.0 Limitations

This report has been prepared by Pattle Delamore Partners Limited (PDP) on the basis of information provided by Tulloch Group Limited. PDP has not independently verified the provided information and has relied upon it being accurate and sufficient for use by PDP in preparing the report. PDP accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.

This document has been prepared based on the collection and laboratory analysis of 37 soil samples from 13 locations within and adjacent to the proposed development area for heavy metals (arsenic, cadmium, chromium, copper, lead, nickel and zinc); benzene, toluene, ethylbenzene and xylenes; organochlorine pesticides; polycyclic aromatic hydrocarbons; total petroleum hydrocarbons; and semi-quantitative asbestos in soil. The site conditions as described in this document have been interpreted from, and are subject to, this information and its limitations and accordingly PDP does not represent that its interpretation accurately represents the full site conditions.

This assessment is limited to collection and analysis of soil samples from discrete sampling locations. Interpretations of subsurface conditions, including contaminant concentrations, are not guaranteed at distance away from the specific points of sampling.

The information contained within this document applies to soil sampling undertaken on the dates stated in this document, or if none is stated, the date of this document. With time, the site conditions and environmental standards may change. Accordingly, the reported assessments and conclusions are not guaranteed to apply at a later date.

This report has been prepared by PDP on the specific instructions of Tulloch Group Limited for the limited purposes described in the report. PDP accepts no liability if the report is used for a different purpose or if it is used or relied on by any other person. Any such use or reliance will be solely at their own risk.

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Yours faithfully

PATTLE DELAMORE PARTNERS LIMITED

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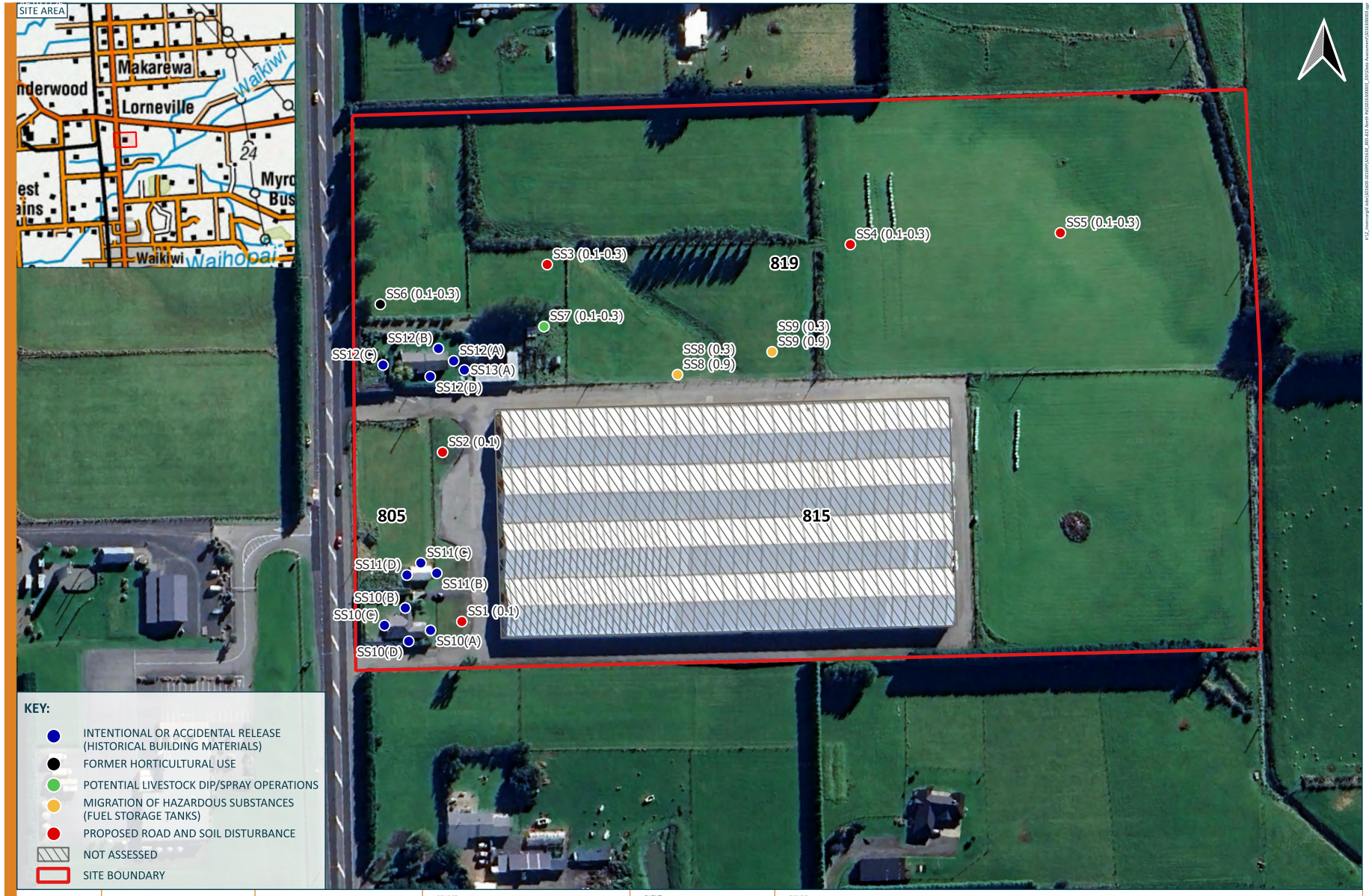
SITE AREA
Makarewa
Lorneville
Waikiwi
Waihopai
SS1 (0.1)
SS2 (0.1)
SS3 (0.1-0.3)
SS4 (0.1-0.3)
SS5 (0.1-0.3)
SS6 (0.1-0.3)
SS7 (0.1-0.3)
SS8 (0.3)
SS8 (0.9)
SS9 (0.3)
SS9 (0.9)
SS10(A)
SS10(B)
SS10(C)
SS10(D)
SS11(B)
SS11(C)
SS11(D)
SS12(A)
SS12(B)
SS12(C)
SS12(D)
SS13(A)
805
815
819
KEY:
INTENTIONAL OR ACCIDENTAL RELEASE (HISTORICAL BUILDING MATERIALS)
FORMER HORTICULTURAL USE
POTENTIAL LIVESTOCK DIP/SPRAY OPERATIONS
MIGRATION OF HAZARDOUS SUBSTANCES (FUEL STORAGE TANKS)
PROPOSED ROAD AND SOIL DISTURBANCE
NOT ASSESSED
SITE BOUNDARY
0 25 50 m
SCALE 1:500 (A3)
B DRAFT NOV 24 ZHD
A FINAL DEC 24 NM
NO. REVISION DATE BY
SOURCE:
1. AERIAL IMAGERY SOURCED FROM GOOGLE SATELLITE (MAY NOT BE SPATIALLY ACCURATE).
CLIENT
TULLOCH GROUP LIMITED
FIGURE
FIGURE 1: SITE LOCALITY AND SAMPLE LOCATIONS
PROJECT
S016300003 DETAILED SITE INVESTIGATION - 805, 815 AND 819 NORTH ROAD, LORNEVILLE, INVERCARGILL
PATTLE DELAMORE PARTNERS LTD

Table 1: Soil Analytical Results - Heavy Metals [1], BTEX, Organochlorine Pesticides (OCPs), Polycyclic Aromatic Hydrocarbons (PAHs), Total Petroleum Hydrocarbons (TPHs) and Asbestos - COMMERCIAL/INDUSTRIAL LAND USE [2]

Sample Name	SS1 (0.1)	SS2 (0.1)	SS3 (0.1-0.3)	SS4 (0.1-0.3)	SS5 (0.1-0.3)	SS6 (0.1-0.3)	SS7 (0.1-0.3)	SS8 (0.3)	SS8 (0.9)	SS9 (0.3)	SS9 (0.9)	Site-Specific Background Concentrations [3]	Protection of Ecological Receptors Eco-SGVs [4]	NES SCSs & SGVs [5]
Laboratory Reference	3681117.1	3681117.2	3681117.3	3681117.5	3681117.7	3681117.9 / 3681117.10	3681117.13 / 3681117.14	3681117.17	3681117.18	3681117.19	3681117.20			
Date Sampled	25 Sep 2024													
Property Address	815 and 819 North Road, Lorneville, Invercargill													
Sample Location	SS1	SS2	SS3	SS4	SS5	SS6	SS7	SS8		SS9			Commercial / Industrial (60%)	Commercial / Industrial
	Proposed road and soil disturbance					Former horticultural use	Potential livestock dip/spray operations	Migration of hazardous substances (fuel storage tanks)						
Sample Depth (meters below ground level)	0.1	0.1	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3	0.3	0.9	0.3	0.9			
Heavy Metals														
Arsenic	**17**	4	3	3	4	3	3	3	3	3	2	3 - 4	150	70
Cadmium	**0.38**	< 0.10	0.15	0.16	0.11	< 0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	0.11 - 0.16	33	1,300
Chromium	**31**	15	24	25	29	23	-	22	29	25	26	24 - 29	650	6,300 [5a]
Copper	**30**	9	11	16	18	12	-	11	18	14	13	11 - 18	220 [4a]	> 10,000
Lead	**97**	10.5	83	11	11.6	16.1	-	11.7	9.8	8.5	8.5	11 - 83	2,500 [4b]	3,300 [5b]
Nickel	**17**	11	11	12	16	11	-	10	**18**	12	12	11 - 16	-	6,000 [6]
Zinc	**138**	50	69	64	50	48	-	66	54	46	40	50 - 69	210 [4a]	400,000 [6]
BTEX														
All BTEX compounds below the laboratory detection limit [7]	-	-	-	-	-	-	-	ND	ND	ND	ND	-	-	-
Organochlorine Pesticides (OCPs)														
All OCPs below the laboratory detection limit [7]	-	-	-	-	-	ND	ND	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)														
All PAHs below the laboratory detection limit [7]	-	-	-	-	-	-	-	ND	ND	ND	ND	-	-	-
Total Petroleum Hydrocarbons (TPHs)														
All TPHs below the laboratory detection limit [7]	-	-	-	-	-	-	-	ND	ND	ND	ND	-	-	-

100	Result exceeds the MWLR Predicted Background Soil Concentrations
-	Parameter not tested / Guideline value not available
ND	Result below the laboratory limit of detection

Notes.

1. Results in mg/kg.
2. Based proposed future commercial/industrial land-use.
3. Heavy metal concentrations reported for soil samples collected from areas within the site which are located distally from and/or are not associated with any current or former Hazardous Activities and Industries List activity, are considered to be representative of site-specific/local background. Ranges encompassing the heavy metal concentrations reported for soil samples SS3 (0.1-0.3), SS4 (0.1-0.3) and SS5 (0.1-0.3) have been adopted as the site-specific background concentrations.
4. Critera from the 'Soil Guideline Values for the Protection of Ecological Receptors (Eco-SGVs)' updated June 2019 - Commercial/industrial (60%) values adopted.
4a. Guideline value is conservatively for typical, fresh soil.
4b. Extra protection due to potential for secondary poisoning at higher soil concentrations.
5. NES Soil Contaminant Standards (SCSs) from 'Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health' (MfE, 2011) - Commercial/industrial outdoor worker (unpaved).
5a. SCS value is for chromium VI.
5b. SCS value is for inorganic lead.
6. Guideline values from 'Schedule B(1) Guideline on Investigation Levels for Soils and Groundwater National Environment Protection Measure' (NEPM), updated May, 2013 - Commercial/industrial D.
7. All compounds were reported below the laboratory detection limits and have been excluded from this table. Refer to laboratory documentation for full results.
8. Asbestos presence/absence from analytical testing ('Y' = yes or 'N' = no).

Table 1 (continued): Soil Analytical Results - Heavy Metals [1], BTEX, Organochlorine Pesticides (OCPs), Polycyclic Aromatic Hydrocarbons (PAHs), Total Petroleum Hydrocarbons (TPHs) and Asbestos - COMMERCIAL/INDUSTRIAL LAND USE [2]

Sample Name	SS10 (A)	SS10 (B)	SS10 (C)	SS10 (D)	SS11 (B)	SS11 (C)	SS11 (D)	SS12 (A)	SS12 (B)	SS12 (C)	SS12 (D)	SS13 (A)	Site-Specific Background Concentrations [3]	Protection of Ecological Receptors Eco-SGVs [4]	NES SCSs & SGVs [4]
Laboratory Reference	3681117.26	3681117.27	3681117.28	3681117.29	3681117.30	3681117.31	3681117.32	3681117.21	3681117.22	3681117.23	3681117.24	3681117.25			
Date Sampled	24 Sep 2024							25 Sep 2024							
Property Address	805 North Road, Lorneville, Invercargill							819 North Road, Lorneville, Invercargill							
Sample Location	SS10				SS11			SS12				SS13			
	Intentional or accidential release of hazardous substances (historical building materials)													Commercial / Industrial (60%)	Commercial / Industrial
Sample Depth (meters below ground level)	0.1														
Heavy Metals															
Arsenic	-	-	-	-	-	-	-	-	-	-	-	-	3 - 4	150	70
Cadmium	-	-	-	-	-	-	-	-	-	-	-	-	0.11 - 0.16	33	1,300
Chromium	-	-	-	-	-	-	-	-	-	-	-	-	24 - 29	650	6,300 [4a]
Copper	-	-	-	-	-	-	-	-	-	-	-	-	11 - 18	220 [4a]	> 10,000
Lead	62	58	**105**	54	36	46	67	**84**	**720**	24	**99**	**200**	11 - 83	2,500 [4b]	3,300 [4b]
Nickel	-	-	-	-	-	-	-	-	-	-	-	-	11 - 16	-	6,000 [5]
Zinc	-	-	-	-	-	-	-	-	-	-	-	-	50 - 69	210 [4a]	400,000 [5]
Asbestos Semi-Quantitative															
Sample Name	SS10 (A)	SS10 (B)	SS10 (C)	SS10 (D)	SS11 (B)	SS11 (C)	SS11 (D)	SS12 (A)	SS12 (B)	SS12 (C)	SS12 (D)	SS13 (A)	-	-	-
Laboratory Reference	3681118.6	3681118.7	3681118.8	3681118.9	3681118.1	3681118.11	3681118.12	3681118.1	3681118.2	3681118.3	3681118.4	3681118.5	-	-	-
Present (Y/N) [8]	N	N	N	N	N	N	N	N	N	N	N	N	-	-	-
Description of Asbestos Form	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

100	Result exceeds the MWLR Predicted Background Soil Concentrations
-	Parameter not tested / Guideline value not available
ND	Result below the laboratory limit of detection

Notes.

1. Results in mg/kg.
2. Based proposed future commercial/industrial land-use.
3. Heavy metal concentrations reported for soil samples collected from areas within the site which are located distally from and/or are not associated with any current or former Hazardous Activities and Industries List activity, are considered to be representative of site-specific/local background. Ranges encompassing the heavy metal concentrations reported for soil samples SS3 (0.1-0.3), SS4 (0.1-0.3) and SS5 (0.1-0.3) have been adopted as the site-specific background concentrations.
4. Critera from the 'Soil Guideline Values for the Protection of Ecological Receptors (Eco-SGVs)' updated June 2019 - Commercial/industrial (60%) values adopted.
4a. Guideline value is conservatively for typical, fresh soil.
4b. Extra protection due to potential for secondary poisoning at higher soil concentrations.
5. NES Soil Contaminant Standards (SCSs) from 'Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health' (MfE, 2011) - Commercial/industrial outdoor worker (unpaved).
5a. SCS value is for chromium VI.
5b. SCS value is for inorganic lead.
6. Guideline values from 'Schedule B(1) Guideline on Investigation Levels for Soils and Groundwater National Environment Protection Measure' (NEPM), updated May, 2013 - Commercial/industrial D.
7. All compounds were reported below the laboratory detection limits and have been excluded from this table. Refer to laboratory documentation for full results.
8. Asbestos presence/absence from analytical testing ('Y' = yes or 'N' = no).

Appendix A: Certifying Statement

I, Nerena Rhodes, of Pattle Delamore Partners certify that:

1. This combined preliminary site investigation and detailed site investigation meets the requirements of the Resource Management (*National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health*) Regulations 2011 (the NESCS) because it has been:
    a. Completed by a suitably qualified and experienced practitioner;
    b. Completed in accordance with the current edition of *Contaminated Land Management Guidelines No. 5 – Site Investigation and Analysis of Soils*;
    c. Reported on in accordance with the current edition of *Contaminated Land Management Guidelines No. 1 – Reporting on Contaminated Sites in New Zealand*; and
    d. Certified by a suitably qualified and experienced practitioner.
2. This detailed site investigation concludes that the soil disturbance associated with the proposed returfing at the investigation area do not exceed the applicable standard in Regulation 7 of the NESCS.

Evidence of the qualifications and experience of the suitably qualified and experienced practitioner(s) who have done this investigation and certified this report is provided below.

This certification applies to the date of this report.

Signed

Nerena Rhodes

Technical Director - Contaminated Land

Nerena Rhodes – Project Director and DSI Report Reviewer

Nerena is an environmental scientist with over 20 years of experience in undertaking environmental and contaminated land assessments. She has a BSc in Biology and a MSc in Environmental Science from The University of Auckland. Nerena has experience with organising and undertaking site investigations, environmental assessments, and monitoring programmes for a range of environmental issues, across a broad range of media including soil, sediment, surface water and groundwater; and for a wide range of contaminants including heavy metals, petroleum hydrocarbons, and asbestos. Nerena has experience in the assessment of data. She has familiarity with and understanding of the current contaminated land regulation and practice in New Zealand including assessments against the NES-CS.

Ella van den Berg – Author

Ella is an environmental geologist with four years of professional experience in undertaking contaminated land assessments in New Zealand. She has a BSc and MSc in Geology from the University of Otago. Ella has been heavily involved in both small- and large-scale monitoring and sampling of groundwater and soil for various clients, as well as technical reporting including data analysis and comparison of results to guidance criteria to inform clients of consenting requirements.

Appendix B: Site Photographs

Photograph 1: Photograph facing northwest showing the dwelling and garage at 805 North Road, the woolshed at 815 North Road (right), and residential dwelling and sheds at 819 North Road (background).

Photograph 2: Photograph facing southeast showing stockyards and sheds at 819 North Road.

Photograph 3: Photograph facing southeast showing grassed paddocks adjacent to the woolshed.

Photograph 4: Photograph showing typical surface and shallow soils encountered at site. Soils were generally described as silty topsoil with angular gravel, underlain by clayey silt/silty clay.

Photograph 5: Photograph showing the north yard of the rural residential property at 819 North Road. Lead concentrations at this location were noted to exceed applicable guideline criteria for the current land use. Average exposure to soils during residential occupation is not likely to present a risk to human health.

Photograph 6: Photograph showing the grassed area on the western side of the garage/shed at 819 North Road. Lead concentrations at this location were noted to exceed applicable guideline criteria for the current land use. Average exposure to soils during residential occupation is not likely to present a risk to human health.

Appendix C: Laboratory Report and Chain of Custody Documentation

Hill Labs

ANALYSIS REQUEST

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand
0508 HILL LAB 44 555 22
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Job No: **368 1117**

Date Recv: 27-Sep-24 08:16

Received by: Brittney McLean

3136811175

Quote No **Lab Order No** 469764

Primary Contact Gurman Minhas 312720

Submitted By Gurman Minhas 312720

Client Name Pattle Delamore Partners Limited 268614

Address Level 3, 36-40 Kelvin Street
Invercargill 9810

Phone 03 422 1690 *Mobile*

Email hills@pdp.co.nz

Charge To Pattle Delamore Partners Limited 59

Client Reference

Additional Client Ref

Order No

Results To *Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.*

☑ *Email Primary Contact* ☐ *Email Submitter* ☐ *Email Client*

☐ *Email Other*

☐ *Other*

Dates of testing are not routinely included in the Certificates of Analysis. Please inform the laboratory if you would like this information reported.

CHAIN OF CUSTODY RECORD

Sent to Hill Labs *Date & Time:*

Name:

☐ *Tick if you require COC to be emailed back* *Signature:*

Received at Hill Labs *Date & Time:*

Name:

Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:* 2.3

☐ Sample & Analysis details checked

Signature:

ADDITIONAL INFORMATION / KNOWN HAZARDS

Priority ☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, *extra charge applies, please contact lab first*)

Requested Reporting Date:

Quoted Sample Types

No.	Sample Name	Sample Date/Time	Sample Type	Tests Required
1				
2				
3				
4				
5				
6				
7				
8				

Hill Labs

ANALYSIS REQUEST

R J Hill Laboratories Limited
221A Ellis Street, Hamilton 3204
Private Bag 3205
Hamilton 3240, New Zealand

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Office use only (Job No)

Quote No JOB NO: S016300003
Primary Contact Naomi Macorison
Submitted By GURMAN MINHAS
Client Name PDP Ltd.
Address L-3 36 Kelvin Street Inv.
Postcode
Phone 02108370950 *Mobile*
Email Naomi.Macorison@pdp.co.nz
Charge To PDP Ltd
Client Reference S016300003
Order No

Results To *Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.*

☑ *Email Primary Contact* ☑ *Email Submitter* ☐ *Email Client*
☐ *Email Other* Naomi.Macorison@pdp.co.nz
☐ *Other*

CHAIN OF CUSTODY RECORD

Sent to Hill Labs
☐ *Tick if you require COC to be emailed back*
Date & Time: 26/09 12:00pm
Name: GURMAN Minhas
Signature:

Received at Hill Labs *(Refer to Lab created Job No above)*
Date & Time:
Name:
Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen*
Temp:

ADDITIONAL INFORMATION / KNOWN HAZARDS

Priority ☐ **Low** ☑ **Normal** ☐ **High**
☐ **Urgent** (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date:

No.	Sample Name	Sample Date	Sample Time	Sample Type	Tests Required (if not as per Quote)
1	SS1 (0.1)m	25/09	4.10pm	Soil	Heavy Metals
2	SS2 (0.1)m	25/09	4.10pm	Soil	"
3	SS(3) 0.1-0.3m	"	2.30pm	"	"
4	SS(3) 0.5-1.0m	"	2.30pm	"	Hold Cold
5	SS(4) 0.1-0.3m	"	11.15am	"	Heavy Metals
6	SS(4) 0.5-1.00m	"	11.15am	"	Hold Cold
7	SS(5) 0.1-0.3m	"	10.45am	"	Heay Metals
8	SS(5) 0.5-1.00m	"	10.45am	"	Hold Cold
9	SS(6) OCP (0.1-0.3)	"	3.00pm	"	OCP's
10	SS(6) HM (0.1-0.3)	"	3.00pm	"	Heay Metals
11	SS(6) OCP (0.5-1m)	"	3.00pm	"	Hold Cold
12	SS(6) HM (0.5-1m)	"	3.00pm	"	Hold Cold

Continued on next page

No.	Sample Name	Sample Date	Sample Time	Sample Type	Tests Required (if not as per Quote)
13	SS(7) OCP 0.1-0.3	25/09	2.00pm	"	OCP's
14	SS(7) Ars 0.1-0.3	"	"	"	Arsenic
15	SS(7) OCP 0.5-1.0m	"	"	"	Hold Cold
16	SS(7) Ars 0.5-1.0m	"	"	"	Hold Cold
17	SS(8) 0.3m	"	1.20pm	"	TPH, BTEX and PAH
18	SS(8) 0.9m	"	1.20pm	"	TPH, BTEX and PAH
19	SS(9) (0.3m)	"	11.50am	"	" " "
20	SS(9) (0.9m)	"	11.50	"	" " "
21	SS12 (9) Asb	"	330	"	Asbestoses (Semi quant
22	SS(12)(b) Asb	"	"	"	"
23	SS(12)(c) Asb	"	"	"	"
24	SS12(d) Asb	"	"	"	"
25	SS12 (a) Lead	"	"	"	Lead
26	SS12 (b) Lead	"	"	"	"
27	SS12 (c) Lead	"	"	"	"
28	SS12 (d) Lead	"	"	"	"
29	SS13(a) Asb	"	4.00pm	"	Asbestoses
30	SS13 (a) Lead	"	"	"	Lead.
31	SS10 (a)	24/09	1.00pm	"	Asbestoses & Lead
32	SS10 (b)	"	"	"	" "
33	SS10 (c)	"	"	"	" "
34	SS10 (d)	"	"	"	" "
35	SS11 (b)	"	1.30pm	"	" "
36	SS11 (c)	"	"	"	" "
37	SS11 (d)	"	"	"	" "
38					
39					
40					

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

0508 HILL LAB (44 555 22)
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mail@hill-labs.co.nz
www.hill-labs.co.nz

Job Information Summary

Client:	Pattle Delamore Partners Limited	**Lab No:**	3681117
Contact:	Naomi Macorison	**Date Registered:**	27-Sep-2024 12:05 pm
	C/- Pattle Delamore Partners Limited	**Priority:**	High
	PO Box 9528	**Quote No:**	81087
	Newmarket	**Order No:**	
	Auckland 1149	**Client Reference:**	8016300003
		Add. Client Ref:	
		Submitted By:	Gurman Minhas
		Charge To:	Pattle Delamore Partners Limited
		Target Date*:	02-Oct-2024 4:30 pm

* As the samples require analysis at a Hill Labs location that is different to where they were received, the Target Date for reporting has been extended.

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	SS1 (0.1)m 25-Sep-2024 4:10 pm	Soil	PSoil250	Heavy Metals, Screen Level
2	SS2 (0.1)m 25-Sep-2024 4:10 pm	Soil	PSoil250	Heavy Metals, Screen Level
3	SS(3) 0.1-0.3m 25-Sep-2024 2:30 pm	Soil	PSoil250	Heavy Metals, Screen Level
4	SS(3) 0.5-1.0m 25-Sep-2024 2:30 pm	Soil	PSoil250	Hold Cold
5	SS(4) 0.1-0.3m 25-Sep-2024 11:15 am	Soil	PSoil250	Heavy Metals, Screen Level
6	SS(4) 0.5-1.00m 25-Sep-2024 11:15 am	Soil	PSoil250	Hold Cold
7	SS(5) 0.1-0.3m 25-Sep-2024 10:45 am	Soil	PSoil250	Heavy Metals, Screen Level
8	SS(5) 0.5-1.00m 25-Sep-2024 10:45 am	Soil	PSoil250	Hold Cold
9	SS(6) OCP (0.1-0.3) 25-Sep-2024 3:00 pm	Soil	cPSoil250	Organochlorine Pesticides Screening in Soil
10	SS(6) HM (0.1-0.3) 25-Sep-2024 3:00 pm	Soil	GSoil300	Heavy Metals, Screen Level
11	SS(6) OCP (0.5-1m) 25-Sep-2024 3:00 pm	Soil	PSoil250	Hold Cold
12	SS(6) HM (0.5-1m) 25-Sep-2024 3:00 pm	Soil	GSoil300	Hold Cold
13	SS(7) OCP 0.1-0.3 25-Sep-2024 2:00 pm	Soil	cPSoil250	Organochlorine Pesticides Screening in Soil
14	SS(7) Ars 0.1-0.3 25-Sep-2024 2:00 pm	Soil	PSoil250	Total Recoverable Arsenic
15	SS(7) OCP 0.5-1m 25-Sep-2024 2:00 pm	Soil	PSoil250	Hold Cold
16	SS(7) Ars 0.5-1m 25-Sep-2024 2:00 pm	Soil	PSoil250	Hold Cold
17	SS(8) 0.3m 25-Sep-2024 1:20 pm	Soil	GSoil300	TPH + PAH + BTEX profile
18	SS(8) 0.9m 25-Sep-2024 1:20 pm	Soil	GSoil300	TPH + PAH + BTEX profile
19	SS(9) (0.3m) 25-Sep-2024 11:50 am	Soil	GSoil300	TPH + PAH + BTEX profile
20	SS(9) (0.9m) 25-Sep-2024 11:50 am	Soil	GSoil300	TPH + PAH + BTEX profile
21	SS12 (A) Lead 25-Sep-2024 3:30 pm	Soil	PSoil250	Total Recoverable Lead
22	SS12 (B) Lead 25-Sep-2024 3:30 pm	Soil	PSoil250	Total Recoverable Lead
23	SS12 (C) Lead 25-Sep-2024 3:30 pm	Soil	PSoil250	Total Recoverable Lead
24	SS12 (D) Lead 25-Sep-2024 3:30 pm	Soil	PSoil250	Total Recoverable Lead

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
25	SS13 (A) Lead 25-Sep-2024 4:00 pm	Soil	PSoil250	Total Recoverable Lead
26	SS10 (A) 24-Sep-2024 1:00 pm	Soil	PSoil250	Total Recoverable Lead
27	SS10 (B) 24-Sep-2024 1:00 pm	Soil	PSoil250	Total Recoverable Lead
28	SS10 (C) 24-Sep-2024 1:00 pm	Soil	PSoil250	Total Recoverable Lead
29	SS10 (D) 24-Sep-2024 1:00 pm	Soil	PSoil250	Total Recoverable Lead
30	SS11 (B) 24-Sep-2024 1:30 pm	Soil	PSoil250	Total Recoverable Lead
31	SS11 (C) 24-Sep-2024 1:30 pm	Soil	PSoil250	Total Recoverable Lead
32	SS11 (D) 24-Sep-2024 1:30 pm	Soil	PSoil250	Total Recoverable Lead

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-3, 5, 7, 10, 14, 21-32
Environmental Solids Sample Preparation	Air dried at 35°C and sieved, <2mm fraction. Used for sample preparation May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	14, 21-32
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	17-20
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	9, 13, 17-20
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	14, 21-32
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	14
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	21-32
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	BaP Potency Equivalence calculated from; Benzo(a) anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a) pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	17-20
Benzo[a]pyrene Toxic Equivalence (TEF)	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	17-20
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-3, 5, 7, 10
BTEX in Soil by Headspace GC-MS	Solvent extraction, Headspace GC-MS analysis. Tested on as received sample. In-house based on US EPA 8260 and 5021.	0.05 - 0.10 mg/kg dry wt	17-20
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	9, 13
Polycyclic Aromatic Hydrocarbons Screening in Soil	Sonication extraction, GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.010 - 0.05 mg/kg dry wt	17-20
Total Petroleum Hydrocarbons in Soil			

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	17-20
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	17-20
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	17-20
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	17-20
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	17-20

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0508 HILL LAB (44 555 22)
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www.**hill-labs**.co.nz

Certificate of Analysis

Client:	Pattle Delamore Partners Limited	**Lab No:**	3681117	SPv2
Contact:	Naomi Macorison	**Date Received:**	27-Sep-2024	
	C/- Pattle Delamore Partners Limited	**Date Reported:**	08-Oct-2024	**(Amended)**
	PO Box 9528	**Quote No:**	81087	
	Newmarket	**Order No:**		
	Auckland 1149	**Client Reference:**	8016300003	
		Submitted By:	Gurman Minhas	

Sample Type: Soil

Sample Name:		SS1 (0.1)m 25-Sep-2024 4:10 pm	SS2 (0.1)m 25-Sep-2024 4:10 pm	SS(3) 0.1-0.3m 25-Sep-2024 2:30 pm	SS(4) 0.1-0.3m 25-Sep-2024 11:15 am	SS(5) 0.1-0.3m 25-Sep-2024 10:45 am
Lab Number:		3681117.1	3681117.2	3681117.3	3681117.5	3681117.7
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	17	4	3	3	4
Total Recoverable Cadmium	mg/kg dry wt	0.38	< 0.10	0.15	0.16	0.11
Total Recoverable Chromium	mg/kg dry wt	31	15	24	25	29
Total Recoverable Copper	mg/kg dry wt	30	9	11	16	18
Total Recoverable Lead	mg/kg dry wt	97	10.5	83	11.0	11.6
Total Recoverable Nickel	mg/kg dry wt	17	11	11	12	16
Total Recoverable Zinc	mg/kg dry wt	138	50	69	64	50

Sample Name:		SS(6) OCP (0.1-0.3) 25-Sep-2024 3:00 pm	SS(6) HM (0.1-0.3) 25-Sep-2024 3:00 pm	SS(7) OCP 0.1-0.3 25-Sep-2024 2:00 pm	SS(7) Ars 0.1-0.3 25-Sep-2024 2:00 pm	SS(8) 0.3m 25-Sep-2024 1:20 pm
Lab Number:		3681117.9	3681117.10	3681117.13	3681117.14	3681117.17
Individual Tests						
Dry Matter	g/100g as rcvd	68	-	73	-	71
Total Recoverable Arsenic	mg/kg dry wt	-	-	-	3	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	-	3	-	-	3
Total Recoverable Cadmium	mg/kg dry wt	-	< 0.10	-	-	< 0.10
Total Recoverable Chromium	mg/kg dry wt	-	23	-	-	22
Total Recoverable Copper	mg/kg dry wt	-	12	-	-	11
Total Recoverable Lead	mg/kg dry wt	-	16.1	-	-	11.7
Total Recoverable Nickel	mg/kg dry wt	-	11	-	-	10
Total Recoverable Zinc	mg/kg dry wt	-	48	-	-	66
BTEX in Soil by Headspace GC-MS						
Benzene	mg/kg dry wt	-	-	-	-	< 0.06
Toluene	mg/kg dry wt	-	-	-	-	< 0.06
Ethylbenzene	mg/kg dry wt	-	-	-	-	< 0.06
m&p-Xylene	mg/kg dry wt	-	-	-	-	< 0.12
o-Xylene	mg/kg dry wt	-	-	-	-	< 0.06
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.015	-	< 0.014	-	-
alpha-BHC	mg/kg dry wt	< 0.015	-	< 0.014	-	-
beta-BHC	mg/kg dry wt	< 0.015	-	< 0.014	-	-
delta-BHC	mg/kg dry wt	< 0.015	-	< 0.014	-	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.015	-	< 0.014	-	-
cis-Chlordane	mg/kg dry wt	< 0.015	-	< 0.014	-	-
trans-Chlordane	mg/kg dry wt	< 0.015	-	< 0.014	-	-

This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised.
The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked * or any comments and interpretations, which are not accredited.

Sample Type: Soil						
Sample Name:		SS(6) OCP (0.1-0.3) 25-Sep-2024 3:00 pm	SS(6) HM (0.1-0.3) 25-Sep-2024 3:00 pm	SS(7) OCP 0.1-0.3 25-Sep-2024 2:00 pm	SS(7) Ars 0.1-0.3 25-Sep-2024 2:00 pm	SS(8) 0.3m 25-Sep-2024 1:20 pm
Lab Number:		3681117.9	3681117.10	3681117.13	3681117.14	3681117.17
Organochlorine Pesticides Screening in Soil						
2,4'-DDD	mg/kg dry wt	< 0.015	-	< 0.014	-	-
4,4'-DDD	mg/kg dry wt	< 0.015	-	< 0.014	-	-
2,4'-DDE	mg/kg dry wt	< 0.015	-	< 0.014	-	-
4,4'-DDE	mg/kg dry wt	< 0.015	-	< 0.014	-	-
2,4'-DDT	mg/kg dry wt	< 0.015	-	< 0.014	-	-
4,4'-DDT	mg/kg dry wt	< 0.015	-	< 0.014	-	-
Total DDT Isomers	mg/kg dry wt	< 0.09	-	< 0.08	-	-
Dieldrin	mg/kg dry wt	< 0.015	-	< 0.014	-	-
Endosulfan I	mg/kg dry wt	< 0.015	-	< 0.014	-	-
Endosulfan II	mg/kg dry wt	< 0.015	-	< 0.014	-	-
Endosulfan sulphate	mg/kg dry wt	< 0.015	-	< 0.014	-	-
Endrin	mg/kg dry wt	< 0.015	-	< 0.014	-	-
Endrin aldehyde	mg/kg dry wt	< 0.015	-	< 0.014	-	-
Endrin ketone	mg/kg dry wt	< 0.015	-	< 0.014	-	-
Heptachlor	mg/kg dry wt	< 0.015	-	< 0.014	-	-
Heptachlor epoxide	mg/kg dry wt	< 0.015	-	< 0.014	-	-
Hexachlorobenzene	mg/kg dry wt	< 0.015	-	< 0.014	-	-
Methoxychlor	mg/kg dry wt	< 0.015	-	< 0.014	-	-
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	-	-	-	-	< 0.4
1-Methylnaphthalene	mg/kg dry wt	-	-	-	-	< 0.014
2-Methylnaphthalene	mg/kg dry wt	-	-	-	-	< 0.014
Acenaphthylene	mg/kg dry wt	-	-	-	-	< 0.014
Acenaphthene	mg/kg dry wt	-	-	-	-	< 0.014
Anthracene	mg/kg dry wt	-	-	-	-	< 0.014
Benzo[a]anthracene	mg/kg dry wt	-	-	-	-	< 0.014
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	-	-	< 0.014
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	-	-	-	< 0.033
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	-	-	-	< 0.033
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	-	-	-	< 0.014
Benzo[e]pyrene	mg/kg dry wt	-	-	-	-	< 0.014
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	-	-	< 0.014
Benzo[k]fluoranthene	mg/kg dry wt	-	-	-	-	< 0.014
Chrysene	mg/kg dry wt	-	-	-	-	< 0.014
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	-	-	< 0.014
Fluoranthene	mg/kg dry wt	-	-	-	-	< 0.014
Fluorene	mg/kg dry wt	-	-	-	-	< 0.014
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	-	-	< 0.014
Naphthalene	mg/kg dry wt	-	-	-	-	< 0.07
Perylene	mg/kg dry wt	-	-	-	-	< 0.014
Phenanthrene	mg/kg dry wt	-	-	-	-	< 0.014
Pyrene	mg/kg dry wt	-	-	-	-	< 0.014
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	-	-	-	-	< 20
C10 - C14	mg/kg dry wt	-	-	-	-	< 20
C15 - C36	mg/kg dry wt	-	-	-	-	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	-	-	-	-	< 80

Sample Name:	SS(8) 0.9m 25-Sep-2024 1:20 pm	SS(9) (0.3m) 25-Sep-2024 11:50 am	SS(9) (0.9m) 25-Sep-2024 11:50 am	SS12 (A) Lead 25-Sep-2024 3:30 pm	SS12 (B) Lead 25-Sep-2024 3:30 pm
Lab Number:	3681117.18	3681117.19	3681117.20	3681117.21	3681117.22

Sample Type: Soil						
Sample Name:		SS(8) 0.9m 25-Sep-2024 1:20 pm	SS(9) (0.3m) 25-Sep-2024 11:50 am	SS(9) (0.9m) 25-Sep-2024 11:50 am	SS12 (A) Lead 25-Sep-2024 3:30 pm	SS12 (B) Lead 25-Sep-2024 3:30 pm
Lab Number:		3681117.18	3681117.19	3681117.20	3681117.21	3681117.22
Individual Tests						
Dry Matter	g/100g as rcvd	76	71	77	-	-
Total Recoverable Lead	mg/kg dry wt	-	-	-	84	720
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	3	2	-	-
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	-	-
Total Recoverable Chromium	mg/kg dry wt	29	25	26	-	-
Total Recoverable Copper	mg/kg dry wt	18	14	13	-	-
Total Recoverable Lead	mg/kg dry wt	9.8	8.5	8.5	-	-
Total Recoverable Nickel	mg/kg dry wt	18	12	12	-	-
Total Recoverable Zinc	mg/kg dry wt	54	46	40	-	-
BTEX in Soil by Headspace GC-MS						
Benzene	mg/kg dry wt	< 0.06	< 0.06	< 0.06	-	-
Toluene	mg/kg dry wt	< 0.06	< 0.06	< 0.06	-	-
Ethylbenzene	mg/kg dry wt	< 0.06	< 0.06	< 0.06	-	-
m&p-Xylene	mg/kg dry wt	< 0.11	< 0.12	< 0.11	-	-
o-Xylene	mg/kg dry wt	< 0.06	< 0.06	< 0.06	-	-
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.4	< 0.4	< 0.4	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Acenaphthylene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Acenaphthene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Anthracene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.032	< 0.033	< 0.032	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.032	< 0.033	< 0.031	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Benzo[e]pyrene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Chrysene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Fluoranthene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Fluorene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Naphthalene	mg/kg dry wt	< 0.07	< 0.07	< 0.07	-	-
Perylene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Phenanthrene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Pyrene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 20	< 20	< 20	-	-
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	-	-
C15 - C36	mg/kg dry wt	< 40	< 40	< 40	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	< 80	< 80	-	-

Sample Name:		SS12 (C) Lead 25-Sep-2024 3:30 pm	SS12 (D) Lead 25-Sep-2024 3:30 pm	SS13 (A) Lead 25-Sep-2024 4:00 pm	SS10 (A) 24-Sep-2024 1:00 pm	SS10 (B) 24-Sep-2024 1:00 pm
Lab Number:		3681117.23	3681117.24	3681117.25	3681117.26	3681117.27
Individual Tests						
Total Recoverable Lead	mg/kg dry wt	24	99	200	62	58

Sample Type: Soil						
Sample Name:		SS10 (C) 24-Sep-2024 1:00 pm	SS10 (D) 24-Sep-2024 1:00 pm	SS11 (B) 24-Sep-2024 1:30 pm	SS11 (C) 24-Sep-2024 1:30 pm	SS11 (D) 24-Sep-2024 1:30 pm
Lab Number:		3681117.28	3681117.29	3681117.30	3681117.31	3681117.32
Individual Tests						
Total Recoverable Lead	mg/kg dry wt	105	54	36	46	67

Analyst's Comments

Amended Report: This certificate of analysis replaces report '3681117-SPv1' issued on 02-Oct-2024 at 4:23 pm.
Reason for amendment: Metals added to 4 samples.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-3, 5, 7, 10, 14, 17-32
Environmental Solids Sample Preparation	Air dried at 35°C and sieved, <2mm fraction. Used for sample preparation May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	14, 21-32
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	17-20
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	9, 13, 17-20
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	14, 21-32
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	14
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	21-32
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	17-20
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	17-20
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-3, 5, 7, 10, 17-20
BTEX in Soil by Headspace GC-MS	Solvent extraction, Headspace GC-MS analysis. Tested on as received sample. In-house based on US EPA 8260 and 5021.	0.05 - 0.10 mg/kg dry wt	17-20
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	9, 13
Polycyclic Aromatic Hydrocarbons Screening in Soil*	Sonication extraction, GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.010 - 0.05 mg/kg dry wt	17-20
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	17-20
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	17-20

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	17-20
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	17-20

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 28-Sep-2024 and 08-Oct-2024. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

Kim Harrison MSc
Client Services Manager - Environmental

Hill Labs

ANALYSIS REQUEST

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Hamilton 3240 New Zealand
0508 HILL LAB 44 555 22
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Job No: **368 1118**
Date Recv: **27-Sep-24 08:16**
Received by: Brittney McLean
3136811187

Quote No	**Lab Order No**	469764
Primary Contact	Gurman Minhas	312720
Submitted By	Gurman Minhas	312720
Client Name	Pattle Delamore Partners Limited	268614
Address	Level 3, 36-40 Kelvin Street Invercargill 9810	
Phone	03 422 1690 *Mobile*	
Email	hills@pdp.co.nz	
Charge To	Pattle Delamore Partners Limited	59
Client Reference		
Additional Client Ref		
Order No		

Results To *Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.*

☑ *Email Primary Contact* ☐ *Email Submitter* ☐ *Email Client*
☐ *Email Other* _____
☐ *Other* _____

Dates of testing are not routinely included in the Certificates of Analysis. Please inform the laboratory if you would like this information reported.

CHAIN OF CUSTODY RECORD

Sent to Hill Labs *Date & Time:*
Name:
☐ *Tick if you require COC to be emailed back* *Signature:*

Received at Hill Labs *Date & Time:*
Name:
Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:* 2.3

☐ Sample & Analysis details checked
Signature:

ADDITIONAL INFORMATION / KNOWN HAZARDS

Priority ☐ **Low** ☐ **Normal** ☑ **High**
☐ **Urgent** (ASAP, *extra charge applies, please contact lab first*)

Requested Reporting Date: _____

Quoted Sample Types

No.	Sample Name	Sample Date/Time	Sample Type	Tests Required
1				
2				
3				
4				
5				
6				
7				
8				

HillLabs

ANALYSIS REQUEST

R J Hill Laboratories Limited
221A Ellis Street, Hamilton 3204
Private Bag 3205
Hamilton 3240, New Zealand

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
www.**hill-labs**.co.nz

Office use only (Job No)

Quote No JOB NO: SO1630000 3
Primary Contact Naomi Macorison
Submitted By GURMAN MINHAS
Client Name PDP Ltd.
Address L-3 36 Kelvin Street
Inv *Postcode*
Phone 0210837095O *Mobile*
Email Naomi.Macorison@pdp.co.nz
Charge To PDP Ltd
Client Reference SO1630003
Order No

Results To *Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.*

☑ Email Primary Contact ☑ Email Submitter ☐ Email Client
☐ Email Other Naomi.Macorison@pdp.co.nz
☐ Other

CHAIN OF CUSTODY RECORD

Sent to Hill Labs *Date & Time:* 26/09 12:00pm
Name: GURMAN Minhas
☐ *Tick if you require COC to be emailed back* *Signature:*

Received at Hill Labs *(Refer to Lab created Job No above)*
Date & Time:
Name:
Signature:

Condition ☐ Room Temp ☐ Chilled ☐ Frozen *Temp:*

ADDITIONAL INFORMATION / KNOWN HAZARDS

Priority ☐ Low ☑ Normal ☐ High
☐ **Urgent** (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date:

No.	Sample Name	Sample Date	Sample Time	Sample Type	Tests Required (if not as per Quote)
1	SS1 (0-1)m	25/09	4-10pm	Soil	Heavy Metals
2	SS2 (0-1)m	25/09	4-10pm	Soil	〃
3	SS(3) 0-1-0-3m	〃	2-30pm	〃	〃
4	SS(3) 0-5-1-0 m	〃	2-30pm	〃	Hold Cold
5	SS(4) 0-1-0-3m	〃	11-15am	〃	Heavy Metals
6	SS(4) 0-5-1-00m	〃	11-15am	〃	Hold Cold
7	SS(5) 0-1-0-3 m	〃	10-45am	〃	Heay Metals
8	SS(5) 0-5 -1-00m	〃	10-45am	〃	Hold Cold
9	SS(6) OCP (0-1-0-3)	〃	3-00pm	〃	OCPs
10	SS(6) HM (0-1-0-3)	〃	3-00pm	〃	Heay Metals
11	SS(6) OCP (0-5-1m)	〃	3-00pm	〃	Hold Cold
12	SS(6) HM (0-5-1m)	〃	3-00pm	〃	Hold Cold

Continued on next page

No.	Sample Name	Sample Date	Sample Time	Sample Type	Tests Required (if not as per Quote)
13	SS(7) OCP 0.1-0.3	25/09	2.00pm	"	OCP's
14	SS(7) Ars 0.1-0.3	"	"	"	Arsenic
15	SS(7) OCP 0.5-1.0m	"	"	"	Hold Cold
16	SS(7) Ars 0.5-1.0m	"	"	"	Hold Cold
17	SS(8) 0.3m	"	1.20pm	"	TPH, BTEX and PAH
18	SS(8) 0.9 m	"	1.20pm	"	TPH, BTEX and PAH
19	SS(9) (0.3m)	"	11.50am	"	" " "
20	SS(9) (0.9m)	"	11.50	"	" " "
21	SS12 (9) Asb	"	3.30	"	Asbestoses (Semi quant
22	SS(12)(b) Asb	"	"	"	"
23	SS(12)(c) Asb	"	"	"	"
24	SS12(d) Asb	"	"	"	"
25	SS12 (a) Lead	"	"	"	Lead
26	SS12 (b) Lead	"	"	"	"
27	SS12 (c) Lead	"	"	"	"
28	SS12 (d) Lead	"	"	"	"
29	SS13 (a) Asb	"	4.00pm	"	Asbestoses
30	SS13 (a) Lead	"	"	"	Lead
31	SS10 (a)	24/09	1.00pm	"	Asbestoses & Lead
32	SS10 (b)	"	"	"	" "
33	SS10 (c)	"	"	"	" "
34	SS10 (d)	"	"	"	" "
35	SS11 (b)	"	1.30pm	"	" "
36	SS11 (c)	"	"	"	" "
37	SS11 (d)	"	"	"	" "
38					
39					
40					

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Job Information Summary

Client:	Pattle Delamore Partners Limited	**Lab No:**	3681118
Contact:	Naomi Macorison	**Date Registered:**	27-Sep-2024 9:43 am
	C/- Pattle Delamore Partners Limited	**Priority:**	High
	PO Box 9528	**Quote No:**	81087
	Newmarket	**Order No:**	
	Auckland 1149	**Client Reference:**	5016300003
		Add. Client Ref:	
		Submitted By:	Gurman Minhas
		Charge To:	Pattle Delamore Partners Limited
		Target Date:	01-Oct-2024 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	SS12 (A) 25-Sep-2024 3:30 pm	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil
2	SS12 (B) 25-Sep-2024 3:30 pm	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil
3	SS12 (C) 25-Sep-2024 3:30 pm	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil
4	SS12 (D) 25-Sep-2024 3:30 pm	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil
5	SS13 (A) 25-Sep-2024 4:00 pm	Soil	cPSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil
6	SS10 (A) 24-Sep-2024 1:00 pm	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil
7	SS10 (B) 24-Sep-2024 1:00 pm	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil
8	SS10 (C) 24-Sep-2024 1:00 pm	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil
9	SS10 (D) 24-Sep-2024 1:00 pm	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil
10	SS11 (B) 24-Sep-2024 1:30 pm	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil
11	SS11 (C) 24-Sep-2024 1:30 pm	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil
12	SS11 (D) 24-Sep-2024 1:30 pm	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
New Zealand Guidelines Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	0.1 g	1-12
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	0.1 g	1-12
Moisture	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-12
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	0.1 g dry wt	1-12

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	0.1 g dry wt	1-12
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	0.1 g dry wt	1-12
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-12
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-12
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-12
Asbestos in ACM as % of Total Sample	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-12
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-12
Asbestos as Fibrous Asbestos as % of Total Sample	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-12
Weight of Asbestos as Asbestos Fines (Friable)	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-12
Asbestos as Asbestos Fines as % of Total Sample	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-12
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-12

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Certificate of Analysis

Client:	Pattle Delamore Partners Limited	**Lab No:**	3681118	A2Pv1
Contact:	Naomi Macorison	**Date Received:**	27-Sep-2024	
	C/- Pattle Delamore Partners Limited	**Date Reported:**	01-Oct-2024	
	PO Box 9528	**Quote No:**	81087	
	Newmarket	**Order No:**		
	Auckland 1149	**Client Reference:**	8016300003	
		Submitted By:	Gurman Minhas	

Sample Type: Soil

Sample Name:		SS12 (A) 25-Sep-2024 3:30 pm	SS12 (B) 25-Sep-2024 3:30 pm	SS12 (C) 25-Sep-2024 3:30 pm	SS12 (D) 25-Sep-2024 3:30 pm	SS13 (A) 25-Sep-2024 4:00 pm
Lab Number:		3681118.1	3681118.2	3681118.3	3681118.4	3681118.5
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
As Received Weight	g	790.7	721.0	723.8	739.0	759.9
Dry Weight	g	515.9	479.3	505.4	523.0	609.4
Moisture*	%	35	34	30	29	20
Sample Fraction >10mm	g dry wt	8.9	4.3	2.3	1.4	80.0
Sample Fraction <10mm to >2mm	g dry wt	112.4	86.9	137.1	102.3	248.0
Sample Fraction <2mm	g dry wt	391.4	385.5	362.8	417.0	279.8
<2mm Subsample Weight	g dry wt	51.1	52.6	55.8	56.2	56.8
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Sample Name:		SS10 (A) 24-Sep-2024 1:00 pm	SS10 (B) 24-Sep-2024 1:00 pm	SS10 (C) 24-Sep-2024 1:00 pm	SS10 (D) 24-Sep-2024 1:00 pm	SS11 (B) 24-Sep-2024 1:30 pm
Lab Number:		3681118.6	3681118.7	3681118.8	3681118.9	3681118.10
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
As Received Weight	g	697.9	634.2	672.3	709.4	685.7
Dry Weight	g	490.5	443.6	406.0	537.3	479.5

This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised.
The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked * or any comments and interpretations, which are not accredited.

Sample Type: Soil						
Sample Name:		SS10 (A) 24-Sep-2024 1:00 pm	SS10 (B) 24-Sep-2024 1:00 pm	SS10 (C) 24-Sep-2024 1:00 pm	SS10 (D) 24-Sep-2024 1:00 pm	SS11 (B) 24-Sep-2024 1:30 pm
Lab Number:		3681118.6	3681118.7	3681118.8	3681118.9	3681118.10
Moisture*	%	30	30	40	24	30
Sample Fraction >10mm	g dry wt	< 0.1	< 0.1	10.4	24.2	13.3
Sample Fraction <10mm to >2mm	g dry wt	114.2	98.6	93.0	246.5	134.6
Sample Fraction <2mm	g dry wt	374.1	342.9	300.6	264.7	329.7
<2mm Subsample Weight	g dry wt	52.4	53.3	54.5	56.0	56.7
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Sample Name:		SS11 (C) 24-Sep-2024 1:30 pm	SS11 (D) 24-Sep-2024 1:30 pm
Lab Number:		3681118.11	3681118.12
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001
As Received Weight	g	626.3	577.1
Dry Weight	g	422.1	350.5
Moisture*	%	33	39
Sample Fraction >10mm	g dry wt	14.1	29.4
Sample Fraction <10mm to >2mm	g dry wt	85.6	51.2
Sample Fraction <2mm	g dry wt	320.1	268.6
<2mm Subsample Weight	g dry wt	54.8	57.5
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001

Glossary of Terms
• Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• ACM Debris (Minor) - One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
• Trace - Trace levels of asbestos, as defined by AS4964-2004.
For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
https://www.branz.co.nz/asbestos

The following assumptions have been made:

1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
New Zealand Guidelines Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	0.1 g	1-12
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	0.1 g	1-12
Moisture*	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-12
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	0.1 g dry wt	1-12
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	0.1 g dry wt	1-12
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch.	0.1 g dry wt	1-12
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-12
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-12
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-12
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-12
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-12
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-12
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; Unit 1, 17 Print Place, Middleton, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-12
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-12
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-12

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 30-Sep-2024 and 01-Oct-2024. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

Jessica Griffin BSc, BOHS W504
Team Leader - Asbestos

Appendix 7: Industrial Capacity Desktop Analysis Report

Invercargill City Council Industrial Zone 1

Overall total lot size	overall average lot size	Overall developed land	Overall % of developed land	Overall potentially developable land	Overall % of potentially developable land
840366	2393	654724	77.9	156511	22.1

	name	Total Lot size	average lot size	developed land area m2	developed land %	Undeveloped land m2	Undeveloped land %
1	Slaney/Gore road Bluff	2024	506	2024	100	0	0
2	Barrow/palmer street South Bluff	6589	732	5579	84.7	1010	15.3
3	Barrow/Palmer street north Bluff	10544	895	12537	100	0	0
4	Lee/Gore street Bluff	19345	773	16802	86.9	2543	13.1
5	Shannon/Gore street Bluff	506	506	506	100	0	0
6	Gore street Bluff	2024	674	2024	100	0	0
7	Gore/barrow street	9108	1012	2026	22.2	7082	77.8
8	Gore/boyne street Bluff	251	251	251	100	0	0
9	Bluff highway/Lake st	27373	5475	2918	10.7	24455	89.3
10	North Road/Dudley Street	5050	1683	5050	100	0	0
11	North road gimblett st	61633	4108	39814	64.6	21819	35.4
12	North road/Benmore st	7098	3549	7098	100	0	0
13	North road/preston st	20081	1825	20081	100	0	0
14	North Road East	39333	2185	34684	88.2	4649	11.8
15	Balmoral/Nith st	18215	827	14295	78.5	3920	21.5
16	Earn/nith street	18205	866	18205	100	0	0
17	Crinan/Nith st	18206	958	16178	88.9	2028	11.1
18	Bowmont/Nith st	18216	867	17204	94.4	1012	5.6
19	Ettrick/nith st	19731	857	18729	94.9	1002	5.1
20	Teviot clyde st	5034	1006	5034	100	0	0
21	Tay Street	16883	938	15023	89	1860	11
22	Moore Road	117389	11739	94464	80.5	22925	19.5
23	West plains Road	45186	22595	28139	62.3	17047	37.7
24	Bay Road	35395	5056	22015	61.1	13380	38.9
25	Douglas street	34297	1143	32046	93.4	2251	6.6
27	Otepuni ave- lindisfarne	44838	1067	21888	48.8	2947	51.2
28	Otepuni ave- rockdale	75812	1166	60378	79.6	15434	20.4
29	Onslow street south	49875	7125	42795	85.8	7080	14.2
30	Onslow st north	6466	3233	6466	100	0	0
31	Inglewood Road	696	696	0	0	696	100
33	Tyne/Nith street	7281	809	809	100	0	0
34	Eye/nith street	18215	958	16242	89.2	1973	10.8
35	tweed/nith street	12142	867	11126	91.6	1016	8.4
36	Eye/Conon street	22262	1236	20911	93.9	1351	6.1
37	Tweed/Conon st	12595	968	12595	100	0	0
38	Eye/Ythan st	20839	744	19179	92.0	1660	8
39	Tweed/ Ythan street	11629	1057	9609	82.6	2020	17.4

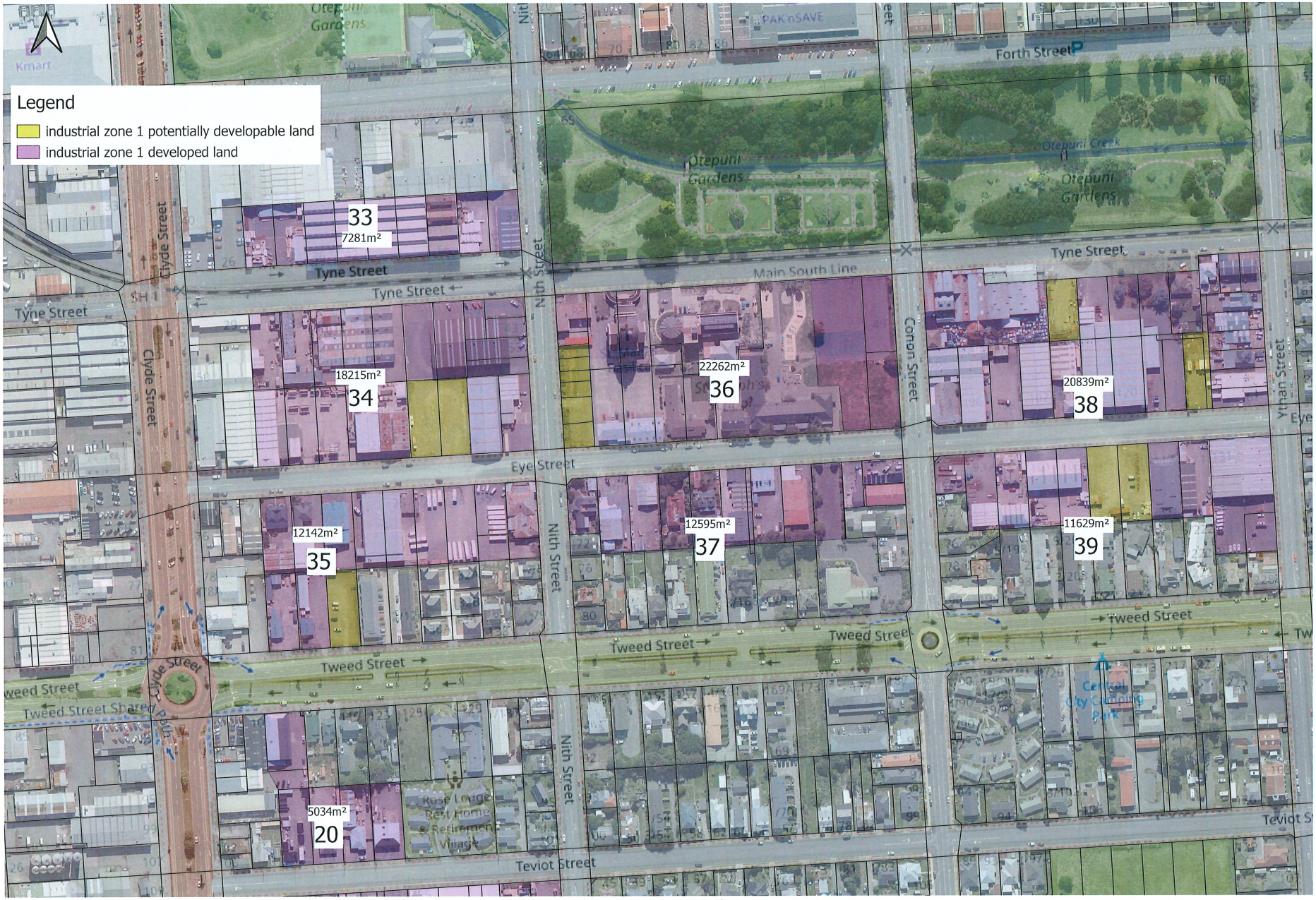
Community and Regulatory Committee - Public - Private Plan Change from Tulloch Limited at 805, 815 and 819 North Road, Invercargill (A65...

Moore Road - industrial zone 1

West Plains Road Industrial Zone 1

North Road Industrial Zone 1

Bay Road Industrial Zone 1



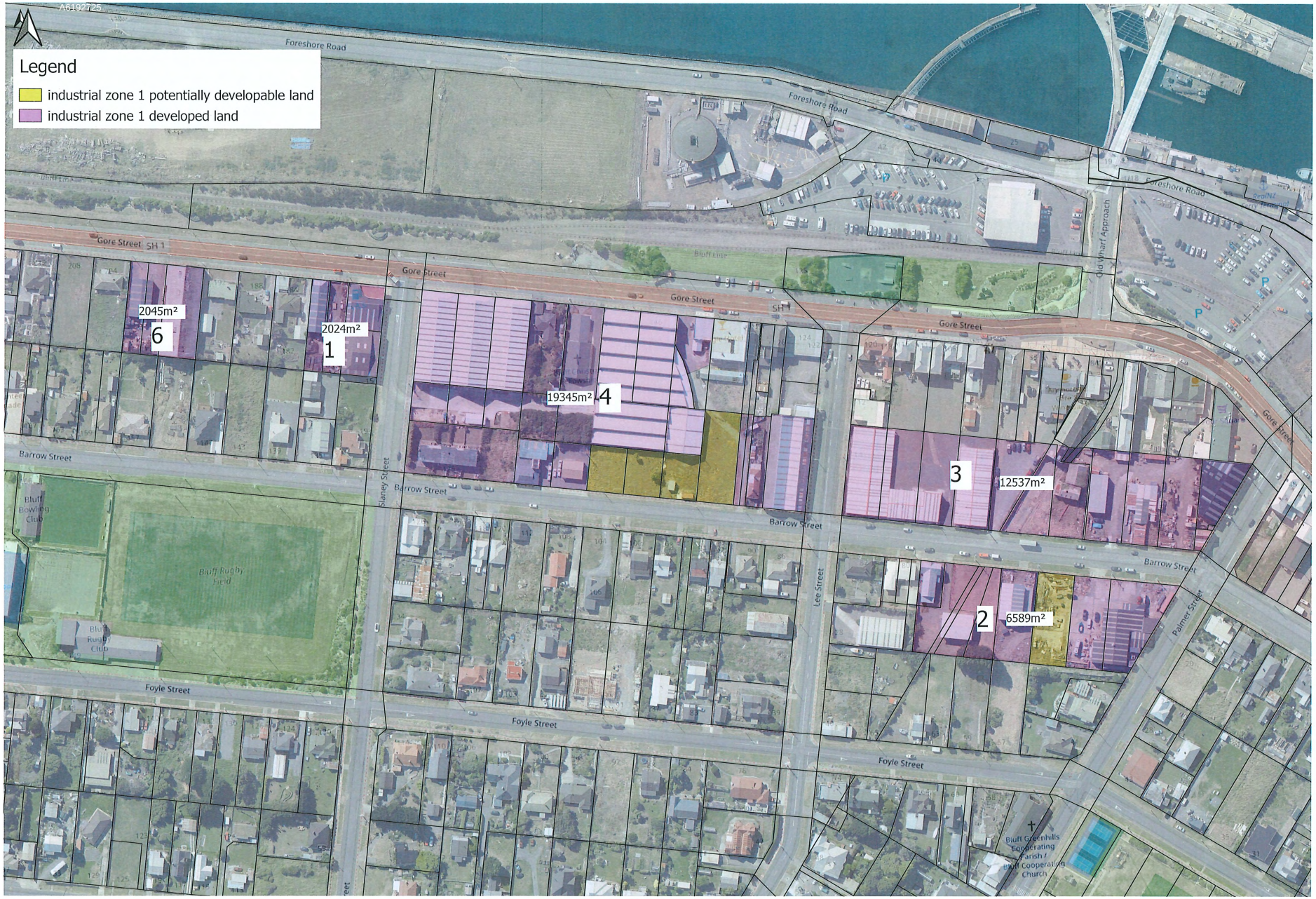
Eye street industrial Zone 1

Nith Street Industrial Zone 1

Otepuni Avenue Industrial Zone 1

Bluff Highway Industrial Zone 1

Gore Street Bluff Industrial Zone 1



Barrow Street Bluff Industrial Zone 1

Appendix 8: Full Services Report

A6192725

bonisch

Plan Change Servicing Assessment

February 2025

805-819 North Road Industrial Development

PLAN CHANGE SERVICING ASSESSMENT

Revision A – Issued for Consent

Quality Assurance Statement

Project number	7895
Project Name	805-819 North Road Industrial Development
Project Manager	Jeremy Rees
Revision	A – Issued for consent

	Name	Signature	Date
Prepared by	Meredith Ryan		18-Feb-2025
Reviewed by	Jeremy Rees		21-Feb-2025
Approval for issue	Jeremy Rees		21-Feb-2025

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Geotechnical Investigation Report
Appendix B
Integrated Transport Assessment Report
Appendix C
Council Correspondence

1. Introduction and Purpose of Report

The following report outlines the civil engineering aspects of the proposed industrial development at 805 – 819 North Road, Invercargill.

The purpose of this report is to detail how the proposed development can be practically serviced for roading and utilities in support of the consent application for rezoning of the land.

2. Site Description and Proposed Development

The site is located on the eastern side of North Road, Lorneville, Invercargill. The existing land use is both industrial (wool storage) and stock grazing with an existing dwelling located at the south-west corner 819 North Road and 805 North Road. The overall site area of 805, 815 and 819 North Road is approximately 9.7 ha.

The undeveloped portion of site generally has grass pasture cover with a vegetated drainage channel running through the middle of 819 North Road. The site falls generally eastwards and falls away to a lower terrace behind the existing wool storage. The eastern boundary of the site is adjacent to an open rural drainage channel. This channel is part of a wider network which drains a larger catchment from the north to the Waikiwi Stream to the south.

Figure 1: Existing Site Aerial Photo

The proposed development is to extend the use of 805, 815 and 819 North Road, Invercargill into an industrial area with generally as per the proposed concept plan layout below. Note, that the lot layout provided is indicative only, and will be subject to future subdivision consents as appropriate.

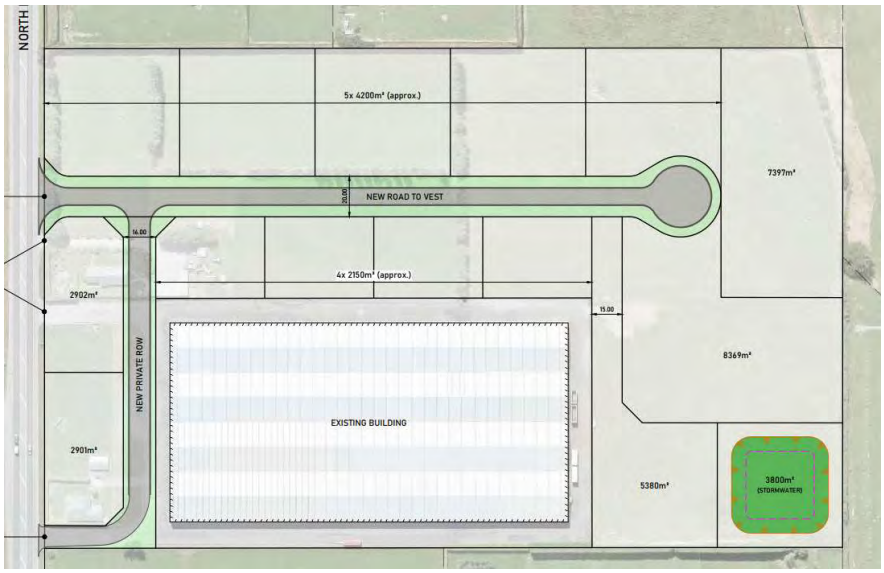

Figure 2: Preliminary development layout

3. Geotechnical, Earthworks and Site Shaping

3.1 INVESTIGATIONS COMPLETED

To support the application, a number of investigations have been undertaken, as noted below:

- Geotechnical investigations
- Land contamination investigations
- Property file
- Topographical survey
- LiDAR information
- Site visit
- Aerial Photography
- S-Maps
- District Plan hazard maps

3.1.1 GEOTECHNICAL INVESTIGATIONS

Geotechnical investigations have been completed by Geosolve for the site including test pits with associated scala penetrometer testing, heavy dynamic probe testing (DPH) and soakage testing. A brief summary is provided below, and the full report is provided in Appendix A.

Testing indicates the site is generally alluvial deposits overlaid by topsoil with isolated areas of uncontrolled fill and swamp deposits up to 1.2 m in depth which will require either removal from building footprints and replacement with engineered fill or piles extending through these layers.

Groundwater was observed at 0.8-3.0 m below ground level in the lower terrace and 1.8-2.8 m in the upper terrace and is not expected to be encountered during normal foundation excavations.

Soakage testing on site indicates ground infiltration rates will be slow at 0.07 – 22.5 mm/hr. It is unlikely soakage will be used for stormwater disposal for the development and stormwater soakage is not proposed for any vested infrastructure.

Additional key recommendations are:

- Shallow foundations will require specific engineering design in accordance with Figure 4 of the Geosolve report
- Piled foundations extending into the medium dense to dense alluvial gravel can be considered on site.
- Pavement CBR values can be assumed at 2% for pavement design and should be confirmed during construction.

3.1.2 GROUNDWATER SUPPLY

In addition, it is understood there is currently a bore feed on site with sufficient capacity to service the existing industrial building. It is not proposed to utilise this for any additional buildings.

3.1.3 LAND CONTAMINATION

A Detailed Site Investigation (DSI) report dated 12-Dec-24 has been completed by PDP and indicate that development at the site is not considered to pose an unacceptable risk to human health (in the context of commercial/industrial land use), not the environment. The DSI is included in the plan change application itself.

Additional recommendations highlighted in the report are:

- Soil material removed from site may need to be disposed of at an approved managed fill facility.
- Erosion and sediment control measures should include protocols for accidental discovery of contaminated materials.
- Soil disturbance should be limited as much as is practical around water tanks and waterways to prevent contaminant egress.

3.2 PROPOSED EARTHWORKS

3.2.1 SITE CLEARANCE AND DEMOLITION

General site clearance and demolition would be required to remove existing farm fencing, trees and vegetation located within the site extent. Removal of minor structures (garden sheds or standalone garages) is also likely to be required.

3.2.2 PROPOSED SITE SHAPING / EARTHWORKS

Earthworks will be required to enable construction of roading and servicing infrastructure as well as general smoothing of the site in preparation for industrial use (i.e. buildings, storage and parking).

The existing open channel running through 819 North Road is proposed to be filled with engineered fill to enable road construction as well as providing an approximately levelled surface for buildings or parking. The management of the upstream flows through this open channel is discussed in Section 5 below. It is not expected that additional major earthworks will be undertaken as part of the development.

Major filling in the other areas of the site is not expected to be required as part of the development, with each lease area likely being required to complete some site shaping earthworks and removal of topsoil to enable development to match their needs.

Earthworks in the lower portion of the site to the east may be required to facilitate stormwater basins for treatment and attenuation. These would likely be achieved through excavation to waste.

It is assumed surplus topsoil from site would be bunded in the lower-level lot area during construction and respread in construction areas. Excess topsoil is expected to be removed to waste off site.

3.2.3 EARTHWORKS VOLUMES

The expected earthworks volumes required are summarised below:

- Topsoil strip to stockpile and reinstate on completion = 9,000 m³
- Cut to waste (onsite) = 4,000 m³
- Import aggregates for road and services construction = 2,500 m³
- Engineered fill for reshaping of the existing drainage swale = 5,000 m³

3.2.4 EROSION AND SEDIMENT CONTROL

A site-specific erosion and sediment control plan will be produced during the construction phase of the development. It is proposed this is submitted to Council for approval prior to construction.

The plan will detail how the works will be undertaken to control and minimise the discharge of sediment into the receiving environment and control and minimise wind-blown dust and dirt.

For this site it is expected this will be achieved via the below measures with particular attention to the swale outlet to the west and the existing drainage ditch along the western boundary:

- Minimising the construction footprint and completing work in stages, stabilising exposed areas quickly
- Installing perimeter controls and diversions (silt fencing, earth bunds / cutoff drains) to divert clean water around the site and control dirty water within it
- Providing a stabilised entranceway for construction traffic
- Use of the following tools to control and minimise erosion and sediment discharge:
  - Silt fences / earth bunding
  - Silt socks / Geotextile / Witches' hats to protect Sump Inlets
  - Decanting Earth Bund (recommended maximum catchment 0.3 ha)

4. Traffic, Roading, Footpaths and Lighting

4.1 EXISTING SITE ACCESS

The existing site has multiple access points to North Road. These are described below:

815 North Road which houses the existing woolshed has an entry only access to the north, and exit only to the south. There is an internal loop road surrounding the woolshed building typically ranging in width from approximately 10.5 m to 11.5 m. Angle parking is included along the northern frontage of the woolshed. The existing access around the woolshed will remain as a private accessway. Any existing pavement that would be incorporated into vested roading will be renewed and tested to ensure it complies with ICC's engineering standards.

On the opposite side of North Road there is an industrial access to Prime Range Meats and Adventure Southland. This access point is located directly between the existing entry and exit points to 815 North Road (55 m separation to each)

805 North Road houses a single dwelling which has no access from North Road, and instead accessed from the internal loop road within 815 North Road.

819 North Road includes a single dwelling that has driveway access direct off North Road. This is approximately 35 m north of the entry access to 815 North Road.

4.2 INTERSECTIONS AND SITE ACCESS

An Integrated Transport Assessment (ITA) Report dated 31-Oct-24 has been completed by Stantec New Zealand for the proposed development and is attached in Appendix B. This report recommends:

- Closing the existing northern site access and relocating the site entrance north with a new access road to increase separation distances from other existing intersections on the western side of North Road.
- New road turning layouts with associated signage and physical passive traffic calming methods (kerbs or traffic islands).

4.3 ROADING CORRIDOR LAYOUT

The internal road network will be generally as per the proposed layout plan (Figure 3: Proposed Road Layout) to accommodate changes in access location as required. This includes:

- Construction of a new local road (to be vested) with new intersection on SH6 with right turn bay
- Extension of the existing private Right of Way providing access to the southern lots with left exit only at the existing southern vehicle access.

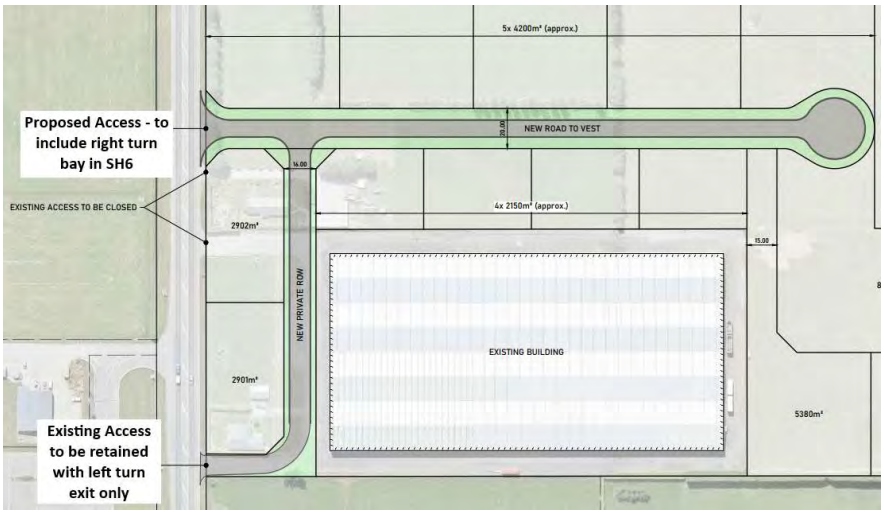

Figure 3: Proposed Road Layout

The new road to be vested is proposed to be 8.0 m in width allowing for 1 x 3 m lane widths with 2x 2.5 m parking lanes, as per Table 5.4 of ICC's Code of Practice (2023) for Commercial/Industrial – M4 - Minor. Footpaths on both sides will be provided in line with Table 5.4 as well.

The new Right of Way is proposed to have a 6.0 m carriageway.

It is proposed to light the roading corridor to the appropriate P category in line with NZ standards.

5. Stormwater

5.1 EXISTING STORMWATER CONTEXT

5.1.1 INVESTIGATIONS COMPLETED – SUMMARY

In order to understand the runoff characteristics of the existing site, multiple sources of information were consulted, and investigations completed including the below:

- LiDar sourced from LINZ Data Service
- Aerial Photography sourced from LINZ Data Service
- Topographical survey of key features
- Council GIS of pipe networks
- Site visit
- S-Maps
- Geotechnical testing including infiltration testing
- District Plan Hazard Maps

5.1.2 EXISTING CATCHMENTS

A high-level catchment definition of the area has been completed utilising the available LiDAR information. A site walkover was also undertaken to ground-truth the LiDAR catchments and flowpaths.

The site is generally falling towards an existing stormwater drainage channel on the eastern site boundary with an historic drainage channel conveying runoff from the western side of the State Highway running through the centre of the site and under the existing building on site (both indicated in blue in Figure 4 below). It appears that this historic flowpath has been disrupted by the construction of the current building and redirected by piped network (525 mm concrete main shown indicatively in green) to outlet to the drainage channel at the eastern boundary.

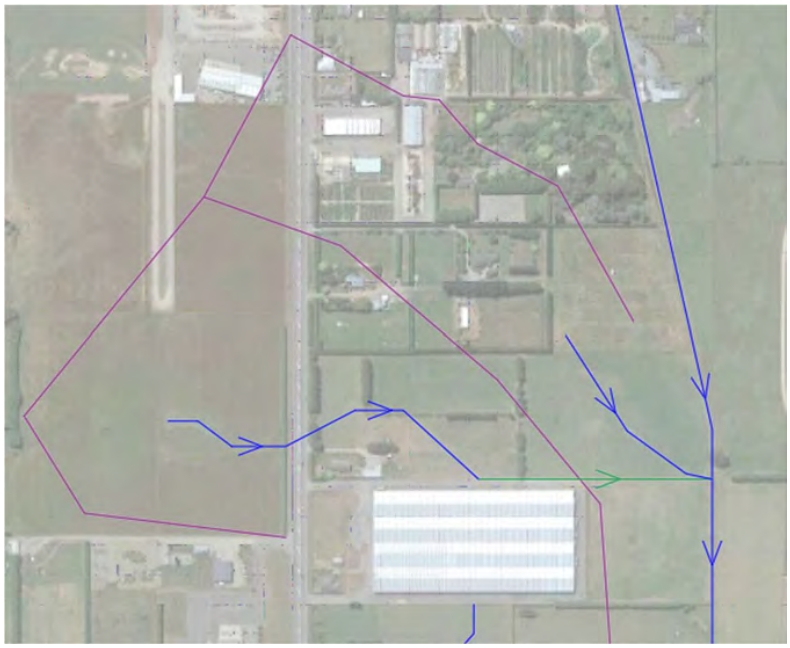

Figure 4: Site assessed catchments and flow paths

5.1.3 EXISTING INFRASTRUCTURE

There is an existing 525 mm RCRRJ pipe running west-east along the northern side of the existing main accessway draining into the adjacent drainage channel in the east of the site. This pipe has a varying capacity depending on the hydraulic grade achievable in the system. The grade of the main is not known but it is expected it will be between 0.5% to 3% which provides capacity between 330 l/s to 806 l/s.

The existing runoff from the development site, independent of the wider catchment, is 280 l/s and is expected to increase to 730 l/s with an assumption of a fully developed industrial area for a 20% AEP storm event.

Based on this, post development flows may exceed the capacity of the existing 525 mm pipe and should be confirmed during detailed design, however it is expected we can manage this through use of swales to direct flow in the proposed development area, or upsizing of relevant infrastructure as required.

The existing outfall of the site is to the drainage channel towards the south adjacent to the eastern site boundary. The drainage channel is currently servicing a large upper catchment. The development will not change or inhibit flows through this channel.

5.1.4 LEVEL OF SERVICE AND OTHER REQUIREMENTS

As per the ICC Subdivision, Land Use, and Development Cod of Practice 2023 Clause 6.3.6 the level of service for the stormwater system is:

- Primary Event – 20% AEP
- Secondary Event – 1% AEP

Additionally:

- Rainfall intensity shall allow for climate change. Rainfall intensity design charts developed from NIWA High Intensity Rainfall Design Systems (HIRDS) V4 RCP 6.0 data for 2081-2100 should be used for rainfall design

Environment Southland have confirmed (refer to Appendix C for correspondence) that attenuation is not required for the development however they have indicated an expectation for onsite stormwater treatment prior to discharge from site which is further detailed in Section 5.2.

5.2 SERVICING METHODOLOGY

The below stormwater servicing methodology, with reference to the layout plan in Figure 5 below is proposed for conveyance and treatment. Note that soakage to ground is not being relied on as a means of stormwater disposal due to low infiltration rates observed from site investigations:

- The existing building drainage connection to the existing 525 mm concrete pipe is intended to be left in situ. Capacity will be confirmed during detailed design and will be subject to engineering approval.
- The existing 525 mm concrete pipe provides drainage for the existing overland swale and catchment west of North Road. The existing culvert underneath North Road appears to be insufficient for the catchment and the proposed roading layout will require the channel to be piped. The existing culvert beneath North Road will not be modified by this development, but provision for an upgrade will be made by providing a manhole connection point at the boundary.
- Roof and road runoff will be collected from each new allotment via private lot laterals and roadside swales with sump inlets to trap hydrocarbons and coarse sediments with a siphon outlet.
- Site specific treatment (depending on end use) as required by any trade waste or building consents obtained during the building construction process and under ICC's stormwater bylaw. It is expected that site specific systems to provide removal of contaminants that arise as a result of industrial activities.
- Allotment roof and road, and new road stormwater runoff will then be conveyed through the site via a piped network discharging to the first flush pond for initial sediment removal prior to discharge to the existing 525 mm concrete pipe outfall before discharge drainage channel. During detailed design, the sizing of the outfall pipe will be confirmed.
- Finished floor levels for all new buildings will be set during detailed design to ensure freeboard from pond levels. The site was not noted as being within an identified floodplain by Environment Southland.
- The existing drainage channel to the east encroaches into the northeastern corner of the proposed development, it is not proposed to undertake any realignment works of this channel and leave the existing flow path and maintenance access undisturbed.
- Secondary flow will be directed towards the road corridor which falls generally to the east and the existing drainage channel.

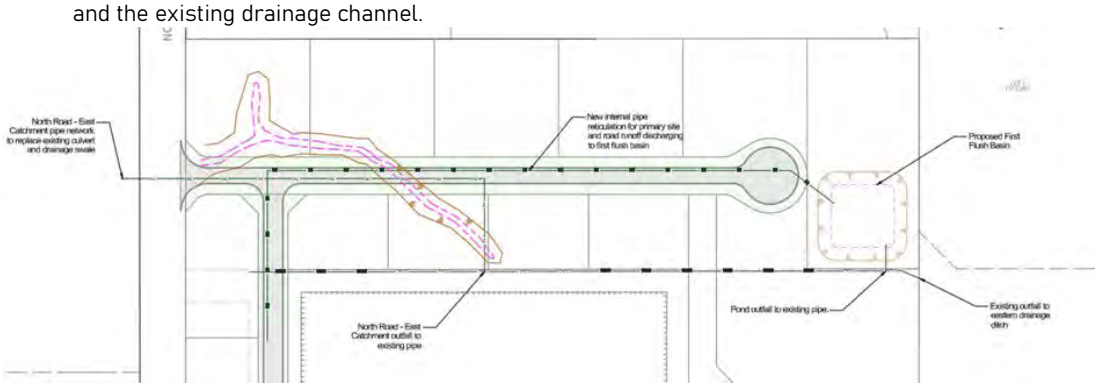

Figure 5: Preliminary stormwater layout

5.3 STORMWATER NETWORK PRELIMINARY DESIGN AND ASSESSMENT

In order to confirm the proposed servicing methodology a preliminary design has been completed as below.

5.3.1 DESIGN COEFFICIENTS AND INPUTS

Surface water runoff has been calculated using the Rational Method.

Design rainfall intensities have been derived for the site from HIRDS V4 RCP8.5 for 2081-2100 as below:

Design Rainfall Table

Source - NIWA HIRDS

Rainfall intensities (mm/hr) :: RCP8.5 for the period 2081-2100

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
5	0.2	54.4	36.8	29.2	19.6	12.9	6.47	4.14	2.62	1.66	1.27	1.05	0.905
100	0.01	139	89.5	69.1	44.2	27.8	13	7.93	4.79	2.9	2.16	1.75	1.48

Run-off coefficients have been derived from New Zealand Building Code E1 Surface Water as follows:

- Commercial/Industrial - 0.85
- Rural/Reserves – 0.35

Time of concentration was assessed for the various catchments based on NZ building code E1 formula and assumed pipe/channel flow durations as follows:

- Development Site Catchment – 13 minutes (pre), 34 minutes (post)
- Wider Catchment – 41 minutes

5.3.2 WATER QUALITY VOLUME AND FIRST FLUSH BASIN

The water quality volume for the site has been calculated below. This is used to size the first flush basin. Noting that the existing building and external western catchment are captured by an independent network and bypasses the first flush pond as treatment for these areas is ether not required or is part of the existing solution, the proposed arrangement of the stormwater system is as below:

- the development pipe network will discharge directly to the first flush basin.
- When the first flush basin is overwhelmed flow from the first flush basin will overtop the broad crested weir and enter the existing 525 mm concrete pipe, or directly into the receiving water channel via a discharge structure.
- An emergency overflow and overland flow path from the first flush basin is proposed that discharges to the existing drainage channel.
- A first flush basin of up to 1,000 m² will be provided to provide treatment for the development's road runoff, and to provide final treatment of the individual allotment runoff. This volume will provide first flush treatment for approximately 63,000 m³ of hardstand area, based on a first flush depth of 20 mm.

6. Wastewater

6.1 EXISTING INFRASTRUCTURE

There is currently no reticulated wastewater connections to the site. It is understood from Karl Boniface plumbing that the existing woolshed utilises two separate on-site septic tanks and dispersal fields for wastewater disposal. The below summary was provided by Karl:

There are two septic tanks on the property.

- *West septic tank*
  - *Serves amenities on west wall.*
  - *Discharges to adjacent soakhole.*

- *Property at 805 also discharges to soakhole.*
- *Last cleaned out around 2016 from memory.*
- *Soakhole has backed up previously and an explosive charge was used to free it up. Not aware of any current problems but most likely nearing end of life.*

- *North septic tank*
  - *Located under North sealed yard near East end of building.*
  - *Unknown when last cleaned out.*
  - *Appears to be working freely.*
  - *Unknown where it discharges to but possibly to adjacent stormwater line to creek as this practice was common back then but does not meet current requirements. A dye test may help confirm.*
  - *Fresh air inlet vent against building broken and blocked. Will repair when repairing terminal vent by offices.*
  - *First 50m of sewer drains to this inspected by camera and confirmed in good condition.*

The nearest council infrastructure is located within North Road approximately 690 m south of the existing site entrance. This drains to the Moore Road pump station. This station discharges to a rising main on North Road which ultimately connects to the ICC gravity network.

6.2 DEVELOPMENT FLOWS

Flow from industrial / commercial premises is difficult to predict and is very reliant on the type of industry which chooses to establish, and the number of staff and customers.

The likely future use of the area is for storage facilities with general facilities for staff rather than manufacturing type activities generating trade waste. On this basis a preliminary assessment of development flows has been completed below to provide a range. The assessment has been completed based on industry guidance from Watercare firstly for office based activities, and secondly for industrial based warehouse activities.

The office based flow calculation generally aligns with flow demand predictions for the industrial development on the north-western corner of the Lorneville Roundabout.

Office Based Calculation									
Item	Number	Flow/Demand Allowance (l/day)	Dry weather peaking factor	Wet weather peaking factor	Average Dry Weather Flow (litres/second)	Average Dry Weather Volume (m3/day)	Peak Dry Weather Flow (litres/second)	Maximum Flow (peak wet weather) (litres/second)	Notes
Staff	160	65	2	5	0.12	10.40	0.24	0.60	Based on 1 person per 15m2 (office buildings). Based on Thompson plan approx area for staff on each site would be 200m2 office space. Assume woolstore accounts for 400m2. Expect up to 12 office spaces total including woolstore. On this basis expect 160 staff

The industry based calculation below predicts higher flows, essentially predicting either higher staff numbers per floor area.

Industry Based Calculation									
Item	Floor Area m2	Flow/Demand Allowance (l/m2/d)	Dry weather peaking factor	Wet weather peaking factor	Average Dry Weather Flow (litres/second	Average Dry Weather Volume	Peak Dry Weather Flow (litres/second)	Maximum Flow (peak wet weather)	Notes
New Demand	6000	4.5	5	6.7	0.31	27.00	1.56	2.09	Assume light water usage, with floor area making up 20% of lot area. Expect approx 30,000m2 of lot area.
Existing Demand	1950	4.5	5	6.7	0.10	8.78	0.51	0.68	Assume light water usage, with 10% of woolshed floor area being active for WW flows. SO 19500 x .1 = 1950m2

Based on the above peak flows and daily volumes could range from 0.6 l/s to 2.77 l/s, and 10.4 m³/day to 35.78 m³/day.

6.3 SERVICING METHODOLOGY

It is proposed to service the development by constructing a low-pressure sewer network extending down North Road and connecting to the ICC network. It is intended that each new

building will be required to install an individual site pump as part of the building construction. Early consultation with ICC has been undertaken and it has been accepted, in principle, that connection to the North Road rising main from the Moore Road pumpstation is acceptable but discharge directly to the Moore Road pump station is not possible due to lack of additional capacity. Specific connection to the network has 2 options:

- Connection to the existing rising main in North Road with controls given to ICC for the low-pressure sewer pumps, or
- Extension of the new rising main to the existing gravity sewer in North Road.

Connection to the existing rising main is the recommended approach enabling greater flexibility in grades/levels as well as additional controls over discharge volumes and pump cycles. We expect this will be developed further during detailed design and engineering approval.

7. Water Supply

7.1 EXISTING INFRASTRUCTURE

There is currently no reticulated water supply connection to the site. It is understood from Karl Boniface plumbing that the existing woolshed is serviced by an on-site bore. The below summary was provided by Karl:

- *A bore water supply and pump is located on the northern property boundary not far from main offices.*
- *There is an underground storage tank within the building used as a reservoir for sprinkler supply which presumably overflows to stormwater main.*

The existing on site water bore is considered to be sufficient to cater for the existing woolshed and is not expected to have capacity for the full development.

Council have confirmed that connection to the new Branxholme transmission line is not permissible for the development. Therefore, each allotment will capture rainwater and provide onsite treatment for potable water, as outlined in the following sections.

7.2 DEVELOPMENT DEMAND

7.2.1 EXPECTED DEVELOPMENT DEMAND

Water supply demand is expected to closely match the calculated wastewater flows expected and be dependent on the industry that establishes on site. Some additional water use that does not contribute to wastewater may increase volumes e.g. irrigation, isolated washing activities that are collected.

7.2.2 FIRE FIGHTING REQUIREMENT

The minimum firefighting requirement for the site is FW2, with the potential for the requirement to increase dependant on the building design for industry establishing on site. Each building/allotment will be responsible for providing their own fire water storage and this will be managed during the building consent phase of each building.

SNZ PAS 4509:2008 Table 2 stipulates the below requirements:

Table 2 – Method for determining firefighting water supply

	Reticulated water supply			Non-reticulated water supply	
Fire water classification	Required water flow within a distance of 135 m	Additional water flow within a distance of 270 m	Maximum number of fire hydrants to provide flow	Minimum water storage within a distance of 90 m (see Note 8)	
				Time (firefighting) (min)	Volume (m^3)
FW1	450 L/min (7.5 L/s) (See Note 3)	–	1	15	7
FW2	750 L/min (12.5 L/s)	750 L/min (12.5 L/s)	2	30	45
FW3	1500 L/min (25 L/s)	1500 L/min (25 L/s)	3	60	180
FW4	3000 L/min (50 L/s)	3000 L/min (50 L/s)	4	90	540

8. Power and Telecommunications

8.1 POWER

Early consultation with PowerNet indicate that the site can be serviced however specific requirements are yet to be confirmed. It is expected that to service the site, a new transformer will be required with the existing overhead lines to be replaced with new 11kV underground cables.

8.2 TELECOMMUNICATIONS

Early design consultation with Chorus indicates the site can be serviced for the additional industrial development however specific layout and infrastructure requirements have not been confirmed.

Broadband maps show there is currently no Fibre to the gate, however the other industrial sites at Lorneville do have Fibre access. The network could likely be extended to the site if required. There is high-speed wireless access. Alternatively wireless high-speed internet could be achieved through Starlink. We can engage with telecommunications providers in the next phase of the project to better understand available options.

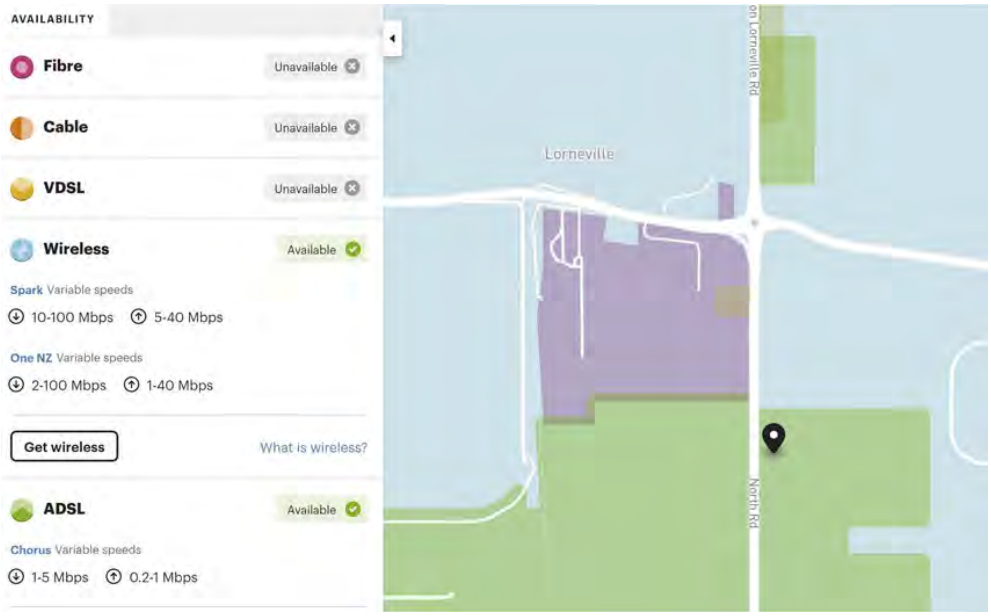

Figure 6: Broadband Map Excerpt

9. Conclusion

Based on the information available at the time of writing this report, it is considered that the site can be practically serviced from a civil infrastructure perspective utilising the servicing methodology presented.

Some new infrastructure will be vested with ICC as part of the development, namely the new road and associated stormwater infrastructure. The proposed sewer rising main is also proposed to be vested with ICC, but the individual sewer pump stations will be privately owned.

Appendix A

Geotechnical Investigation Report

GEOSOLVE

Geotechnical Report

805, 815, 819 North Road

Invercargill

Report prepared for:

Tulloch Group Ltd

Report prepared by:

GeoSolve Limited

Distribution:

Tulloch Group Ltd

Bonisch Consultants Ltd

GeoSolve Limited (File)

September 2023

GeoSolve Ref: 230505

Revision	Issue Date	Purpose	Author	Reviewed
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GEOTECHNICAL WATER RESOURCES PAVEMENTS

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1 Introduction

1.1 General

This report presents the results of a geotechnical investigation carried out by GeoSolve Ltd in order to determine subsoil conditions and provide geotechnical inputs for a proposed commercial subdivision located at 805, 815 and 819 North Road, Invercargill.

Figure 1 – Site overview photo looking North.

The investigations were carried out for Tulloch Group Ltd. in accordance with GeoSolve Ltd's proposal dated 20 July 2023, which outlines the scope of work and conditions of engagement.

1.2 Development

We understand the proposed development will comprise approximately 10 lease areas for development including associated roading and infrastructure. An engineering feasibility report has been provided by Bonisch Consultants Ltd. (Project number 7895, Rev A, dated May 2023) and outlines the extent and layout of the proposed development.

2 Site Description

2.1 General

The subject site is located approximately 6.5 km north of Central Invercargill, as shown in Figure 2 below.

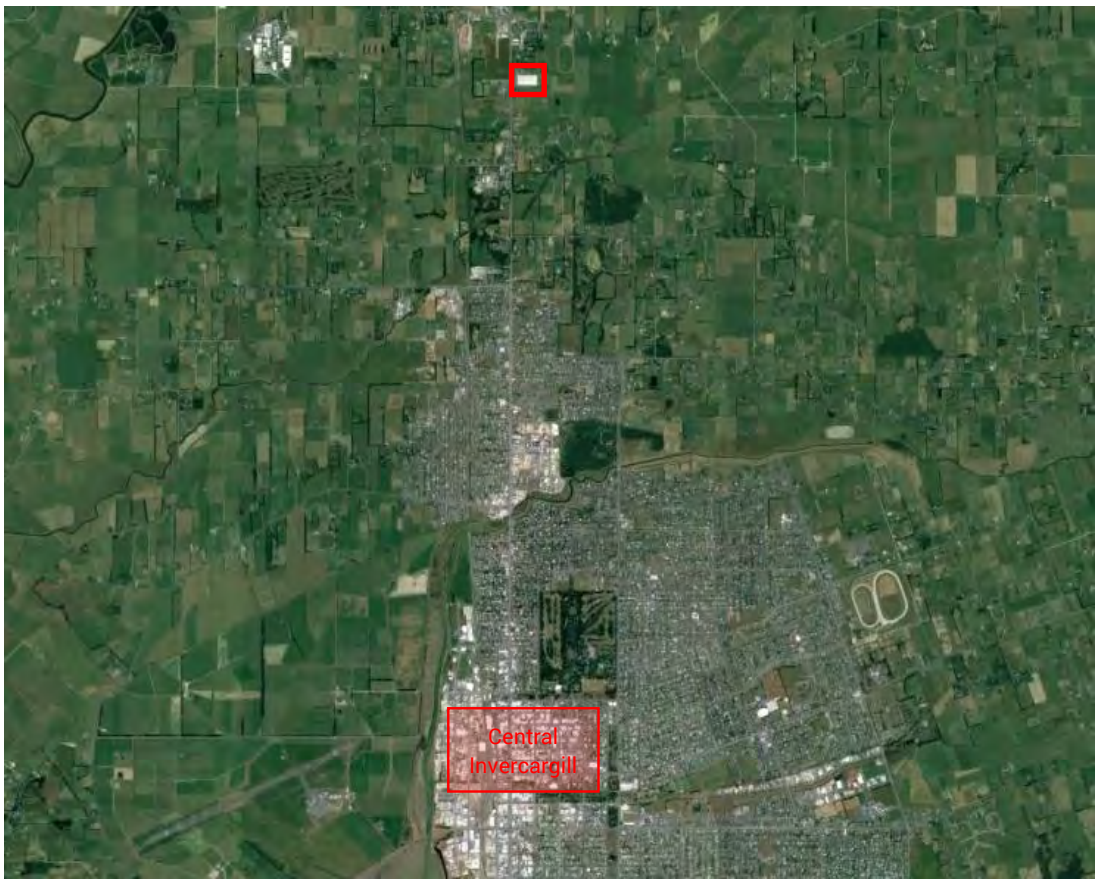

Figure 2 – Site location plan (red marking)

The site is bounded by North Road to the west, commercial and residential properties to the north and rural properties to the east and south.

An existing dwelling is located at the southwest corner of the property and a large shed covers the centre-south of the site. The property is currently fenced and covered in grass with some trees along field boundaries.

2.2 Topography and Surface Drainage

The majority of the site occupies a sub-horizontal upper terrace, and slopes down in the east to a lower terrace and drainage ditch. The drainage ditch is approximately 1 m deep and runs generally north-south along the eastern boundary. A second drainage ditch runs generally north to south between the western boundary and North Road.

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A paleochannel cuts across the property from the north-western boundary toward the centre of the site. Water was observed to be ponding in the paleochannel during investigations. A further channel has been excavated along the western and southern boundaries of the south-eastern field. This channel runs to a low point in the southeast corner of the site where evidence of ponded water is noted on the property and a swampy area and pond were observed in the field directly to the south of the property boundary.

3 Geotechnical Investigations

An engineering geological site assessment has been undertaken with confirmatory subsurface investigations. GeoSolve visited the subject property on 7, 8 and 9 August 2023, undertaking geotechnical investigations comprising:

- 13 deep test pits with associated Scala penetrometer tests (TP01- TP13) which were advanced to a maximum depth of 3.9 m.
- 9 shallow test pits with associated Scala penetrometer tests (TP14 – TP22) which were advanced to a maximum depth of 0.4 m.
- 6 heavy dynamic probe tests (DPH 1- 6) advanced to refusal at a maximum depth of 11.6 m, to assess liquefaction potential and the relative density of the subsoils.
- 2 soakage pits (SP1-2) which were advanced to a maximum depth of 2.8 m below ground level (bgl) to undertake soakage testing, assess the relative permeability and soakage potential of the subsoils.

Test pit and Scala Penetrometer locations and logs are contained in Appendix A and B respectively.

DPH locations and logs are contained in Appendix A and C respectively.

4 Subsurface Conditions

4.1 Geological Setting

4.1.1 Regional Geology

The site is underlain by topsoil, which in turn overlies alluvial deposits with Tertiary-age marine sediments at depth.

The alluvial deposits comprise Quaternary outwash gravels developed during former glaciation, which occurred inland. More recent silty and sandy floodplain or mudflat deposits overlie these gravels. The alluvial deposits merge with marine deposits in the vicinity of Invercargill.

No active faults were identified in the field, nor have any been reported in the vicinity of Invercargill. Strong earthquakes are common in Fiordland near the current tectonic plate boundary and consequently some ground shaking can be expected to occur in Invercargill during such events. The nearest trace of any mapped active fault is the Hillfoot Fault, approximately 60 km to the north of the site.

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Seismic risk exists in this region from potentially strong ground shaking, likely to be associated with a rupture of the Alpine Fault, located along the West Coast of the South Island. There is a high probability that an earthquake with an expected magnitude of over 8 will occur along the Alpine Fault within the next 50 years.

4.2 Stratigraphy

Subsurface soils encountered beneath the site generally comprise the following:

- 0.2-0.5 m of **topsoil**, overlying;
- 0.5-0.6 m of **uncontrolled fill** (only in TP01, TP02 and TP04), overlying
- 0.1 m of **buried topsoil** (only in TP02), overlying
- 0.6-2.6 m of **alluvial silt** (all test pits except TP01 & TP02), or 1.2 m of **swamp deposit** (only in TP04), overlying
- 0.5-2.6+ m of **alluvial sand** (TP02, TP03, TP05, TP06, TP07, TP08, TP09, TP10, TP11, TP12, TP13) or
- 1.1-2.9+ m of **alluvial gravel** (TP01, TP02, TP04).

Topsoil was observed at the surface of all test pits to depths of between 0.2 and 0.5 m. The topsoil typically comprises soft to stiff, organic SILT with trace to some sand and/or gravel.

Uncontrolled fill was observed underlying the topsoil in TP01, TP02 and TP04, to depths of between 0.8 and 1.1 m. The uncontrolled fill typically comprises firm to stiff, organic SILT with trace to some sand, gravel and rubbish, or SILT with some gravel and/or trace sand.

Buried topsoil was observed underlying the uncontrolled fill in TP02 at 0.8-0.9 m. The buried topsoil typically comprises stiff, organic SILT with minor sand.

Swamp deposit was observed underlying the uncontrolled fill in TP04 in the southeast corner of the site, to a depth of 2.3 m. The swamp deposit typically comprises very soft to soft, organic SILT with trace to some sand.

Alluvial silt was observed underlying the topsoil, uncontrolled fill or swamp deposit in all test pits, except TP01 and TP02. The alluvial silt typically comprises soft to very stiff, sandy SILT or SILT with trace to some sand**.** Alluvial silt was also interbedded with the alluvial sand in TP02, TP03, TP12 and TP13 in layers up to 1.8 m+ thick.

Alluvial sand was observed underlying or interbedded with the alluvial silt in all test pits except TP01 and TP04. The alluvial sand typically comprises loose to dense, SAND, silty SAND or SAND with trace silt.

Alluvial gravel was observed in TP01 and TP02 below the uncontrolled fill and buried topsoil and TP04 below the alluvial silt. The alluvial gravel typically comprises medium dense to dense, sandy GRAVEL with trace organics and/or silt. DPH testing infers this medium dense to dense material continues to at least the maximum testing depth of 11.6 m bgl.

Although uncontrolled fill was not observed in all test pits during investigations, the use of the site as farmland plus the presence of the existing dwelling, sheds and surrounding landscaping suggest potential for the presence of isolated uncontrolled fill at the site.

4.3 Groundwater

The static groundwater table was measured in the test pits at 0.8 – 3.0 m below existing ground level (bgl) in the lower terrace, and at 1.8 – 2.8 m bgl in the upper terrace. Groundwater seepages were also observed between 0.9 m and 3.5 m depth.

Groundwater is likely to be subject to seasonal variations and vary in response to rainfall.

5 Liquefaction Analysis

5.1 Design Earthquakes

The site is mapped in the Invercargill City Council Liquefaction Vulnerability map as "Undetermined" however, due to the variable water-table and alluvial soils a liquefaction assessment has been undertaken.

Two earthquake scenarios have been assessed in accordance with NZS 1170 – Structural Design Actions[1] for an Importance Level 2 structure with a 50-year design life. We have also considered a 1 in 100-year intermediate earthquake event to provide further insight to the liquefaction risk at the site.

Peak horizontal ground accelerations and effective magnitudes were calculated using the procedure from the MBIE NZGS Module 1[2]. Table 1 summarises the scenarios considered.

The MBIE NZGS Module 1 design earthquakes are an interim hazard recommendation until results of the national seismic hazard update are made available for use. Therefore, we have undertaken a sensitivity assessment for a range of earthquake events to provide further insight to the liquefaction risk.

Table 1 – Earthquake accelerations and effective magnitudes for liquefaction assessment

Scenario	Performance Requirements	Annual Probability of Exceedance (APE)	Peak Horizontal Ground Acceleration (PGA)	Effective Magnitude
Serviceability Limit State (SLS)	*Avoid damage that would prevent the structure being used as originally intended without repair.*	1/25	0.05 g	6.1
Intermediate earthquake event	*No specific requirements, unless further resilience is desired.*	1/100	0.11 g	6.1
Ultimate Limit State (ULS)	*Avoid collapse of the structural system.*	1/500	0.21 g	6.1

5.2 Liquefaction Analysis

The following analysis has been undertaken:

- A liquefaction assessment was undertaken using the heavy dynamic probe data based on the method of Boulanger and Idriss (2014).

[1] NZS 1170-5 (2004) Structural Design Actions, Part 5: Earthquake Actions – New Zealand.
[2] https://www.building.govt.nz/assets/Uploads/building-code-compliance/b-stability/b1-structure/geotechnical-guidelines/module-1-overview-of-earthquake-geotechnical-engineering-practice-guidelines-version-1.pdf.

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- The DPH data has been correlated to equivalent SPT N60 values for this assessment.
- All layers have been assumed to be able to liquefy from a plasticity perspective below the ground water level. Fines content has been estimated based on test pit logs and knowledge of the deeper ground conditions. We have assumed that there are no further liquefiable layers below the refusal of the DPH tests at 11.6 m depth.
- Ishihara and Yoshimine (1992) method has been used to calculate settlement.
- Groundwater levels have been adopted at between 1 and 4 m depth based on investigation observations and ground level variations.
- Lateral spreading has been assessed quantitatively based on topography, calculated liquefiable layers and comments in the MBIE (2017) and MBIE/NZGS Module 3[3].

5.3 Liquefaction Results

The liquefaction analysis indicates the following with reference to Table 2 and Figure 3 below:

- No liquefaction is calculated for the SLS and intermediate design earthquakes due to the relatively low levels of shaking.
- The alluvial sand and silt layers are calculated to liquefy at depths between 7-8 m in DPH 1, 5.5-6 m in DPH2, 4-5 m in DPH3, 3.5-4 m in DPH4, 4.5-5 m in DPH 5 and between 4-5.5 m in DPH6. Based on this we have calculated up to 40 mm of liquefaction induced settlement and limited expression of liquefaction or ground damage.
- Liquefaction at the site is triggered at a PGA of around 0.10g which has an annual probability of exceedance (AEP) of around 100 years. More layers liquefy in earthquake events above a ULS design event with up to 90 mm of liquefaction-induced reconsolidation settlements occurring and increased LSN in the 1 in 2,500 year return period (IL4 ULS event). This is shown in Figure 3.
- Although not applicable for this site given the proposed development, the west of the project area is equivalent to a MBIE TC2 site in Canterbury, albeit with a crust thickness typically more than 3.5 m and the remainder of the site is MBIE TC1 equivalent (see Figure 2, Appendix A).
- Further cone penetrometer (CPT) testing may rule out some of the liquefiable zones and reduce the liquefaction hazard.

[3] New Zealand Geotechnical Society (NZGS) and Ministry of Business, Innovation & Employment (MBIE) Earthquake Geotechnical Engineering Practice in New Zealand, Rev 1, Issue date November 2021, ISBN: 947497-51-4 (Online).

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Table 2 – Summary of factors considered to assess the consequences of the predicted liquefaction

Factor	Assessment		Implications
Crust thickness	The crust thickness is typically more than 3.5 m for the ULS design earthquake. Data from the Canterbury earthquake sequence plus other historic earthquakes[4] has been collated and observed surface damage compared with crust thickness. This data indicates that surface damage is likely for crusts of less than about 3.5 m thickness.		The crust across the site is sufficiently thick to limit surface damage in a ULS seismic event.
LSN	1/500 AEP (ULS)	LSN range = 0-11	Insignificant to mild, negligible deformation of the ground and small settlements.
	1/100 AEP (INT)	LSN range = 0-1	
	1/25 AEP (SLS)	LSN range = 0	
Free field settlement	1/500 AEP (ULS)	Settlement = 0-40 mm	Minor differential settlement likely, up to 40 mm estimated in the area tested.
	1/100 AEP (INT)	Settlement = 0-5 mm	
	1/25 AEP (SLS)	Settlement = 0 mm	
Lateral spread	Free faces of less than 2 m depth are present along the channel which runs approximately north to south along the eastern boundary.		The lateral spreading is limited as the free face is less than 2 m and liquefiable layers are not continuous.

A detailed discussion of the process of liquefaction and the various considerations summarised in Table 2 above can be found in Appendix C, which also contains the full liquefaction analysis results from the DPH's.

[4] *Bowen, H.J. and Jacka, M.E. (2013).* Liquefaction induced ground damage in the Canterbury Earthquake: Predictions versus reality. Proceedings of the 19th NZGS Geotechnical Symposium. Editor CY Chin. Queenstown, New Zealand.

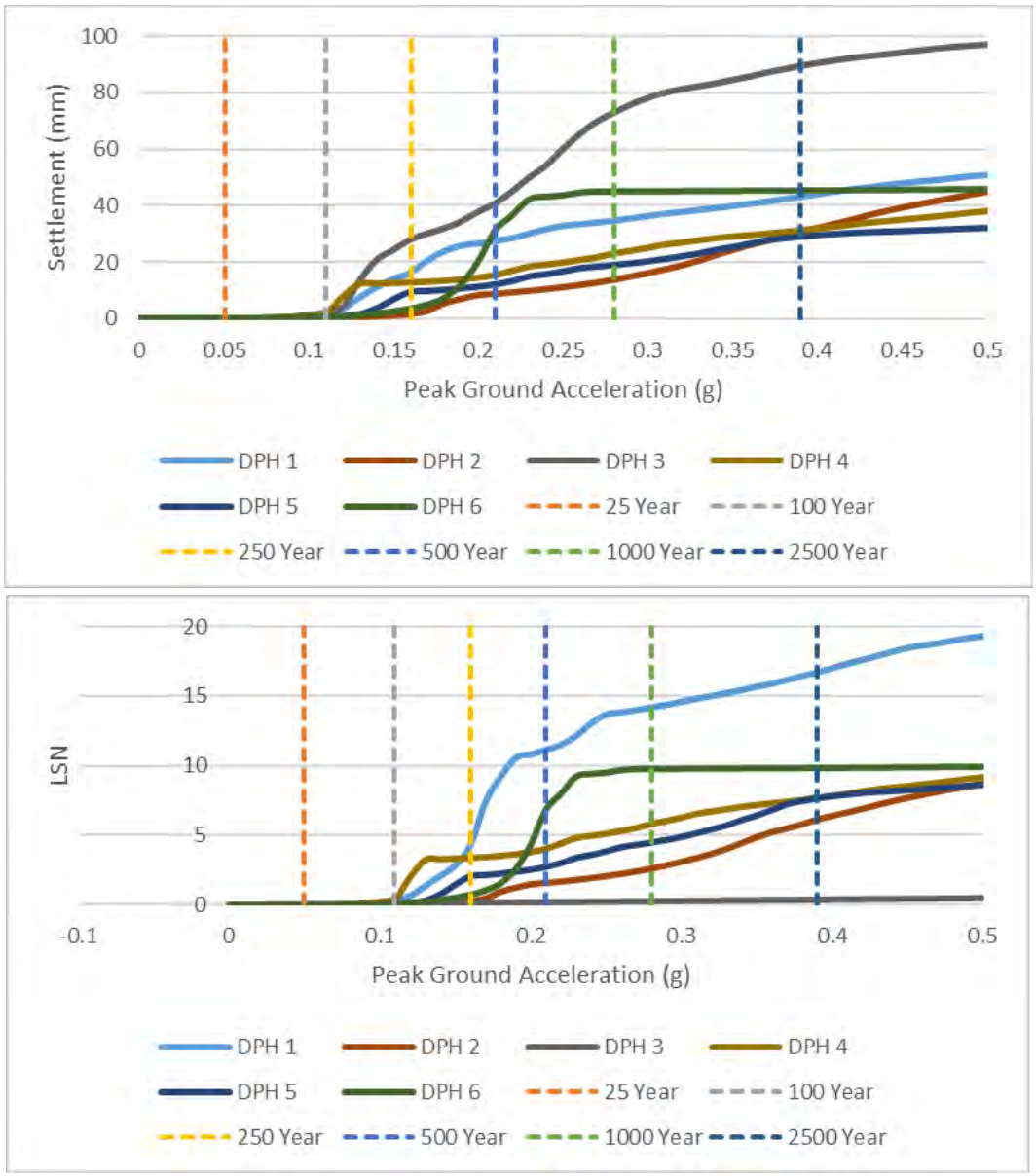

Figure 3: Calculated settlements and LSN for various Peak Ground Accelerations (PGA).

6 Engineering Considerations

6.1 General

The recommendations and opinions contained in this report are based upon ground investigation data obtained at discrete locations and historical information held on the GeoSolve database. The nature and continuity of subsoil conditions away from the investigation locations is inferred and cannot be guaranteed.

6.2 Geotechnical Parameters

Table 3 provides a summary of the recommended geotechnical design parameters for the soil materials expected to be encountered during construction of the proposed development.

Table 3 – Recommended geotechnical design parameters

Unit	Thickness (m)	Bulk Density γ (kN/m^3)	Effective Cohesion c´ (kPa)	Effective Friction ϕ´ (deg)	Elastic Modulus E (kPa)	Poissons Ratio ν
Topsoil (soft to stiff, organic SILT with trace to some sand and/or gravel).	0.2-0.5	17	To be removed from beneath building footprint, or piles to extend through these layers.			
Uncontrolled fill (firm to stiff, organic SILT with trace to some sand, gravel and rubbish, or SILT with some gravel and/or trace sand).	0.5-0.6	17				
Buried topsoil (stiff, organic SILT with minor sand).	0.1	17				
Swamp deposit (very soft to soft, organic SILT with trace to some sand)	1.2	17				
Alluvial SILT (soft to very stiff, sandy SILT or SILT with trace to some sand).	0.6-2.6	18	0	29-30	3,000-7,000	0.3
Alluvial Sand (loose to dense, SAND, silty SAND or SAND with trace silt).	0.5-2.6+	18	0	30-32	7,000-10,000	0.3
Alluvial GRAVEL (medium dense to dense, sandy GRAVEL with trace organics and/or silt).	1.1-2.9+	19	0	34-36	20,000-50,000	0.3

6.3 Site Preparation/Earthworks

During the earthworks operations all topsoil, organic matter, uncontrolled fill and other unsuitable materials (observed to 0.2-1.7 m depth in test pits but possibly deeper in isolated areas) should be removed from the construction areas in accordance with the recommendations of NZS 4431:2022. Alternatively, piles should extend through these layers.

Robust, shallow graded sediment control measures should be instigated during earthworks construction where rainwater and drainage run-off over exposed soils is anticipated.

The fine-grained alluvial silt soils are particularly susceptible to moisture and will weaken if subject to rainfall, frost or vehicle trafficking. Exposure to the elements should be limited for fine-grained soils and covering the soils with polythene sheeting, site concrete or granular engineered fill will reduce degradation due to wind, rain and surface run-off.

Water should not be allowed to pond or collect near or under a foundation slab, footings or earthworks subgrade under any circumstances. Positive grading of the subgrade should be undertaken to prevent water ingress or ponding.

Engineered fill that is utilised as bearing for foundations should be placed and compacted in accordance with the recommendations of NZS 4431:2022 and certification provided to that effect.

Granular fill is recommended to be imported from a local source or quarry for consistency and fine-grained site won soils can be reused as landscaping fill if needed.

We recommend topsoil stripping and subsequent earthworks be undertaken only when a suitable interval of fair weather is expected, or during the earthworks construction season.

Exposure to the elements should be limited for all soils. Excavations in soils should be left proud of the finished subgrade level by 300 mm if a delay prior to construction is expected. The final cut to grade should be performed immediately prior to foundation construction or engineered fill compaction.

6.4 Groundwater Issues

The static groundwater table was measured in the test pits at 0.8 – 3 m depth in the lower terrace, and at 1.8 – 2.8 m in the upper terrace. Groundwater seepages were also observed between 0.9 m and 3.5 m depth. The static groundwater table is expected to lie below typical excavation levels for building platforms. However, this should be reviewed when an earthworks plan and foundation levels are available. Groundwater seepage will need considered during service trench excavations.

It is important that GeoSolve be contacted should there be any seepage, spring flow or under-runners encountered during construction.

6.5 Excavations

No earthworks plans have been provided to date for this development, however excavations may be required to remove topsoil and uncontrolled fill at the site, create service trenches and to create level building platforms.

Table 4 summarises the recommended batter slopes for temporary and permanent slopes up to 3.0 m high formed in dry ground.

Table 4 - Recommended maximum batters for cut slopes in site soils less than 3.0 m high in dry ground.

Material Type	Recommended Maximum Batter Angles for Temporary Cut Slopes Formed in Dry Soil (horizontal to vertical)	Recommended Maximum Batter Angles for Permanent Cut Slopes Formed in Soil – dry ground only (horizontal to vertical)
Topsoil & Uncontrolled Fill	2H: 1V	3H: 1V
Silt & Sand	1.5H: 1V	3H: 1V
Alluvial Gravel	1H: 1V	2.5H: 1V
Engineered Fill	NA	2.5H: 1V

If wet slopes are encountered, they should be inspected on a case-by-case basis by a geotechnical engineer/engineering geologist to confirm any specific recommendations e.g. drainage installation, cut off diversion drains or retaining.

All cuts should be periodically monitored during construction for signs of instability and excessive erosion, and, where necessary, corrective measures should be implemented to the satisfaction of a geotechnical engineer or engineering geologist.

6.6 Preliminary Foundation Options

6.6.1 General

We have undertaken a geotechnical investigation to assist with feasibility and consenting for the development. Further geotechnical investigation will be required to be undertaken following completion of the development plans to support building consent assessments. However, for completeness we have provided advice on potential foundation options, with the geotechnical information to date.

Based on the above either shallow or piled foundations can be used. We have provided further recommendations below.

During earthworks all uncontrolled fill, organic matter and other soft/unsuitable materials should be removed from the building platforms in accordance with the recommendations of NZS 4431:2022. Any engineered fill underlying a foundation should be placed and compacted in accordance with NZS 4431:2022 and certification provided to that effect.

The alluvial silt soils are susceptible to softening from rainfall, frost and vehicle trafficking. If softening occurs further undercutting will be required.

Once the final development plan has been completed, it should be reviewed by a suitability experienced geotechnical engineer to confirm the design assumptions are met and whether further geotechnical investigation is warranted. It is also standard practice that the stripped building and earthworks platforms will need to be inspected and tested by a geotechnical practitioner.

6.6.2 Shallow Foundations

Near surface foundation bearing will be governed by the alluvial silt which will provide a reduced bearing capacity and will require specific engineering design, as shown on Figure4 below.

Figure 4 provides an assessment of allowable bearing capacity for shallow footings. It should be noted the foundation working stresses presented in Figure 4 are governed by bearing capacity in the case of narrow footings and settlement in the case of wide footings.

As an example, from Figure 4, it can be seen an allowable working stress of approximately 50 kPa is recommended for a 400 mm wide by 400 mm deep strip footing founded within alluvial silt. This corresponds to a factored (ULS) bearing capacity of approximately 75 kPa and an ultimate geotechnical bearing capacity of 150 kPa.

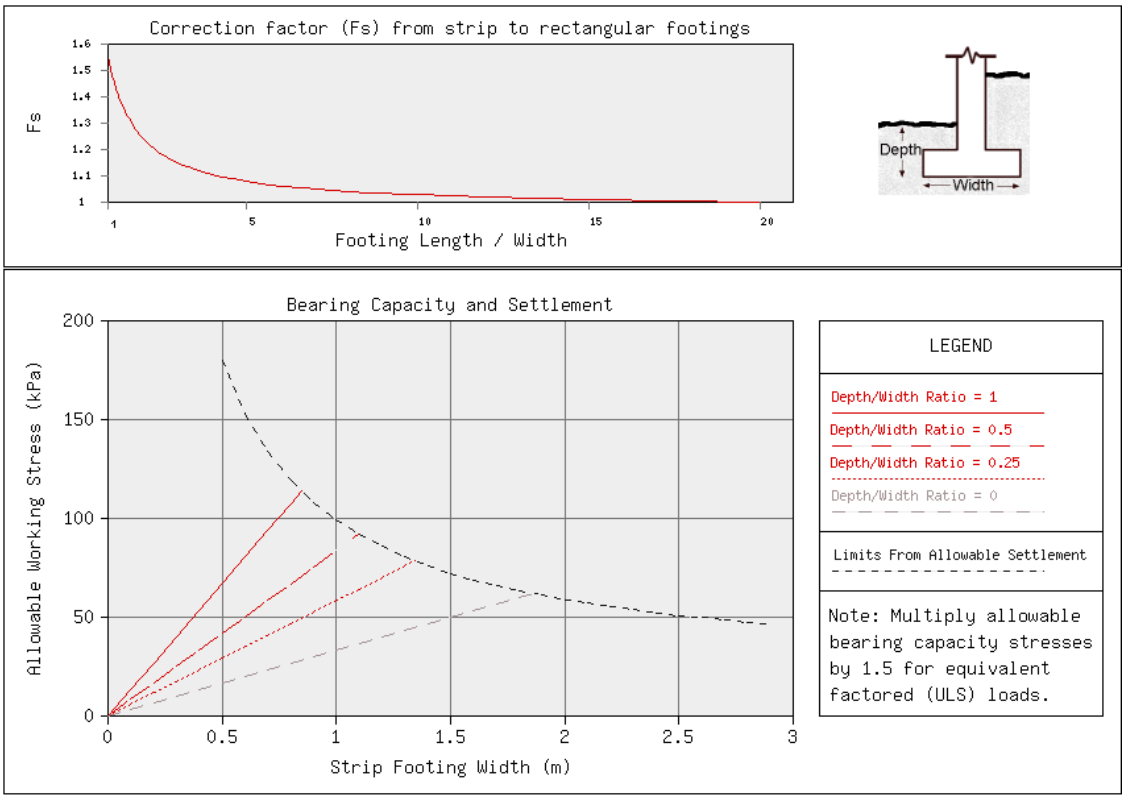

Figure 4– Recommended Bearing for Alluvial Silt

It should be noted that the bearing capacities presented above assume that the loads are vertical with no horizontal loads or moments applied to the foundations. Reduction factors to account for eccentric and/or horizontal loads can be provided during detailed design once loads are finalised.

If the bearing capacity is not sufficient for design, or structural engineering input is not preferred, ground improvement can be conducted to improve the bearing capacity of the underlying soil materials. Undercut and replacement with engineered fill can be used to increase the bearing capacity. The depth of undercut required can be confirmed during detailed design once the footing dimensions and loads are known. It is recommended that the engineered fill extends sufficiently past the edges of the footings. This is to allow enough width to ensure that there is sufficient allowable load spread below the footing and for a minimum 400 kg plate compactor to work in the footing to compact the engineered fill.

Any softened soils will need to be undercut and replaced with engineered fill placed and compacted in accordance with NZS4431:2022.

Liquefaction is not calculated in a SLS or intermediate level event and is calculated at variable depth in the ULS event. Therefore, as long as foundations are kept narrow and shallow, it is possible to design based on the above to meet minimum building code design levels, subject to final foundation design review. Regardless, thought should be given to design so all foundations are tied together to gain further resilience, where practicable. If further resilience is desired than the above, the foundation could be designed to span fully unsupported 2 m around the edge of the building and 4 m internally. GeoSolve can provide further advice if required.

6.6.3 Piled Foundations

Driven timber or bored piled foundations could be founded within the medium dense to dense alluvial gravel. As the gravel and liquefiable layers vary in depth across the site, GeoSolve can provide further advice on proposed depths and capacities once further development information is known.

6.7 Pavement CBR Values

Preliminary testing for pavements has been undertaken at this stage. Subsurface shallow test pits and Scala penetrometers have been undertaken across the subdivision area providing sufficient information on the near surface soil profile for preliminary pavement CBR recommendations.

Following removal of the unsuitable soils, topsoil and uncontrolled fill, the pavement subgrade layer will predominantly comprise alluvial silt. A preliminary design CBR of 2% can be assumed for the silt subgrade. Note that with rain saturation, ponding and machinery trafficking the CBR could reduce to less than 2%. Further testing including falling weight deflectometer (FWD) testing could be completed if the proposed pavement design requires a value greater than 2%.

All soft, wet or unsuitable materials, which are exposed during preparation of the pavement subgrade should be excavated and replaced with engineered fill. Note that subgrade soils with any organic content will not be suitable as a pavement subgrade and will require undercutting. Road construction undertaken during the winter months will also need to take into account the presence of fine-grained soils and be planned accordingly. Saturated soils damaged by weathering, frost or construction traffic will need to be undercut and replaced with granular fill.

Silt softened by the excavation process will require rolling to recompact the softened layer prior to placement of any granular pavement layers.

All engineered fill beneath pavements should be placed and compacted in accordance with Invercargill City Council requirements. Inspection of the pavement subgrade should be completed during construction by a suitably qualified geotechnical practitioner/civil engineer to confirm subsurface conditions are in accordance with this report.

A geotextile separation layer is recommended between the undercut surface of fine-grained soils and granular hard fill.

It is recommended that pavement design CBR's are reviewed following earthworks contour design. Specific road alignment testing can be undertaken at detailed design stage to prove higher CBR values at the design pavement levels.

6.8 Site Subsoil Category

For detailed design purposes it is recommended the magnitude of seismic acceleration be estimated in accordance with the recommendations provided in NZS 1170.5:2004.

Based on readily available information at the time of writing this report, GeoSolve recommends that Subsoil Category Class D is used for structural design.

6.9 Further Geotechnical Involvement

Development plans were not confirmed at the time of reporting; therefore, this report is focussed on allowing concept development. Further investigations and assessment may be required for detailed design of structures, these could include additional shallow investigations such as test pitting as well as deep testing such as cone penetrometer testing (CPTs) to confirm piling layers and liquefaction risk.

In addition, further geotechnical assessment of foundations, once loadings and systems are known, may be required.

7 Wastewater Disposal Infiltration Rates

7.1 General

Soakage infiltration testing was undertaken at two locations, at depths of 2.2 and 2.8 m in the alluvial sand unit, adjacent to TP03 and TP05 respectively (refer to Appendix A and B for soakage/test pit locations and logs) to assess preliminary infiltration rates for wastewater disposal to ground scoping. Five test pits (TP1-5) were undertaken in the east of the site where wastewater disposal is proposed to review the ground model and groundwater levels and should be reviewed alongside the preliminary infiltration rates.

Prior to undertaking soakage testing, adjacent test pits were excavated to 3.5-3.8 m depth to log the subsoil conditions and determine a suitably consistent layer for soakage testing. Two smaller test pits/soak pits (1.4-1.8 m long and 0.4 m wide) were then excavated for the soakage test. The dimensions of the soakage pit were recorded to calculate the volume and area of soakage during testing.

Soakage testing was performed by introducing water until the designated testing level was reached. The inflow was then shut off and the time it took for the water level to drop was recorded. Where possible, testing was completed multiple times until 3 consistent readings had been achieved.

7.2 Permeability Analysis – Infiltration Rates and Soil Category

7.2.1 General

Surficial layers of topsoil, uncontrolled fill, alluvial silt and swamp deposits will provide very low infiltration rates. Infiltration testing has targeted the more permeable sand layers.

GeoSolve are to be consulted to review the final depth and location of the proposed wastewater disposal system to ensure the infiltration rates and recommendations of this report are applicable. Further testing will be required once the proposed wastewater disposal system and location are confirmed.

It is recommended the wastewater disposal areas are located downslope and are well offset from the proposed building platforms.

Provision should be included for long-term inspection and routine maintenance of any disposal system installed. Performance of the disposal systems may decline below an acceptable level over time if sufficient maintenance is not completed.

7.2.2 Wastewater Disposal Infiltration Rates

The results from field soakage infiltration testing are presented below in Table 5 and Appendix C.

Table 5 - Calculated Infiltration Rates.

Test	Depth of test	Observed thickness of alluvial sand beneath base of test	Soil type at base of pit	Unfactored infiltration rate*	Factored infiltration rate**
SP01	2.2m	1.3 m +	Fine to medium SAND	**45 mm/hr**	**22.5 mm/hr**
SP02	2.8 m	0.7 m (then alluvial SILT)	Fine to medium SAND	**0.15 mm/hr**	**0.07 mm/hr**
*Does not include a reduction factor to account for loss of soakage performance over time. ** Includes a reduction factor of 0.5 to account for loss of soakage performance over time.					

Unfactored and factored infiltration rates are provided above within Table 5. To allow for any loss of soakage performance over, a reduction factor of at least 0.5 should be applied to the unfactored values for detailed design purposes.

As discussed above, the infiltration rate is expected to vary significantly based on the proposed depth and location of the disposal system, and it is recommended that this is considered at an early stage in the layout planning.

A geotechnical practitioner who is familiar with the findings of this report should inspect the base/infiltration depth of any proposed disposal system location to ensure the infiltration rates presented in Table 5 above are applicable.

7.2.3 Preliminary Wastewater Disposal Soil Category

Table 6 – Preliminary wastewater disposal soil category

Test	Depth of test	Soil type at testing level and test subsoil	AS/NZS 1547:2012 Soil Category (Table 5.1)
SP01	2.2m	Fine to medium SAND	3-4
SP02	2.8 m	Fine to medium SAND	5

A preliminary soil category for each test, in accordance with Table 5.1 of AS/NZS 1547:2012, is presented above in Table 6. The category is based on observed grain size, soil structure and permeability test results.

It is recommended that soil category in the proposed system location be reviewed by the wastewater system designer.

7.3 Conclusions and Recommendations

Due to the varying ground model and groundwater level further testing or review will be required once the location and method of the proposed wastewater disposal field is confirmed.

8 Neighbouring Structures/Hazards

Natural Hazards: A risk of seismic activity has been identified for the region as a whole and appropriate allowance should be made for seismic loading during detailed design of dwellings, but there are no site-specific constraints.

Liquefaction risk is outlined in Section 5.

No flooding or contamination assessment has been undertaken for this report.

Distances to adjoining structures: The site is located within a rural/commercial area with an existing residential dwelling adjacent to the south-western edge of the site and existing commercial building located on the property and to the north.

Noise and vibration: Pile driving foundation options and construction of engineered fill close to the nearby structures will need to consider vibration effects on these buildings.

The construction contractor should take standard measures to control construction noise, in accordance with Invercargill City Council requirements.

Aquifers: The regional groundwater table is expected to lie below the proposed building platform levels and no aquifer resource is expected to be adversely affected by the proposed development.

Dust: The soils have a relatively low potential to generate dust. However, the Contractor should take appropriate measures to control dust in accordance with Invercargill City Council requirements. Regular dampening with sprinklers during summer months is expected to be an effective measure to control airborne dust during construction.

9 Conclusions and Recommendations

- The stratigraphy at the site comprises topsoil and uncontrolled fill overlying alluvial silt, sand and gravel.
- The static groundwater table was measured in the test pits at 0.8 – 3.0 m depth in the lower terrace, and at 1.8 – 2.8 m in the upper terrace. Groundwater seepages were also observed between 0.9 m and 3.5 m depth.
- Based on the liquefaction analysis in Section 5 of this report, the site is equivalent to both a MBIE TC1 and MBIE TC2 site in Canterbury.
- No liquefaction is calculated for the SLS and intermediate earthquake due to the relatively low levels of shaking.
- Geotechnical design parameters are presented in Table 3 of the report.
- All unsuitable materials identified in foundation excavations, particularly those softened by exposure to water, should be undercut and replaced with engineered fill during construction.
- Potential foundation options are discussed in Section 6.6.
- Pavement CBR values are included in Section 6.7.
- Fill that is utilised as bearing for foundations should be placed and compacted in accordance with NZS 4431:2022 and certification provided to that effect.
- Class D subsoil category is recommended to be used for structural design.
- Wastewater disposal infiltration rates and soil categories are presented in Section 7 of this report.
- It is recommended that the foundation excavations and earthworks subgrade be inspected and tested by a suitably qualified and experienced geotechnical specialist to confirm the conditions are in accordance with the assumptions and recommendations provided in this report.

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10 Applicability

This report has been prepared for the benefit of Tulloch Group Ltd. with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

It is important that we be contacted if there is any variation in subsoil conditions from those described in this report.

Report prepared by:

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Sharyn Buunk

Engineering Geologist

Reviewed for GeoSolve Ltd by:

.....

Tim Plunket

Senior Geotechnical Engineer (CPEng)

.....

Fraser Wilson

Senior Engineering Geologist

Appendix A: Site Investigation Plan

Notes:
1. These drawings have been prepared for the benefit of Tulloch Group Ltd with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

SCALE 1: 1200
0 12 24 36 48 60 (m)

Key

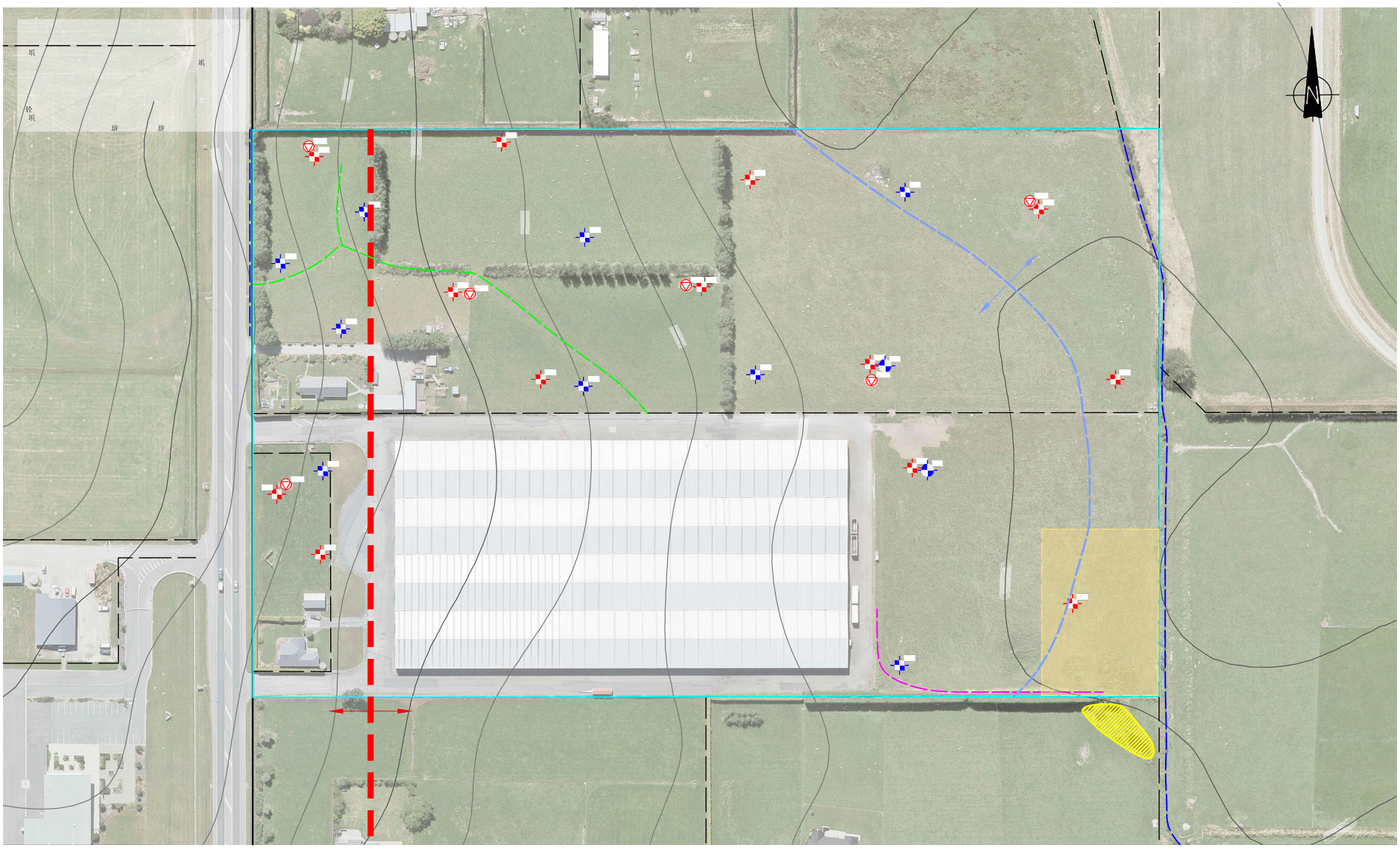
- Deep Test pit and Scala Penetrometer
- Shallow Test pit and Scala Penetrometer
- Soak pit
- Dynamic Probe Heavy Test (DPH)
- Property Boundary

GEOSOLVE
192 Spey Street, Invercargill
www.geosolve.co.nz

DRAWN	AJJ	Sep 23
DRAFTING CHECKED	SLB	Sep 23
APPROVED	FAW	Sep 23
CADFILE: Site Plan-new.dwg		
SCALES (AT A3 SIZE): 1 : 1200		
PROJECT No: 230505		

Tulloch Group Ltd
805, 815 & 819 North Road
Invercargill
Site Investigation Plan

FIG No: Appendix A - Figure 1
REV. 0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GEOSOLVE

Appendix B: Investigation Data

GEOSOLVE ENGINEERING CONSULTANTS

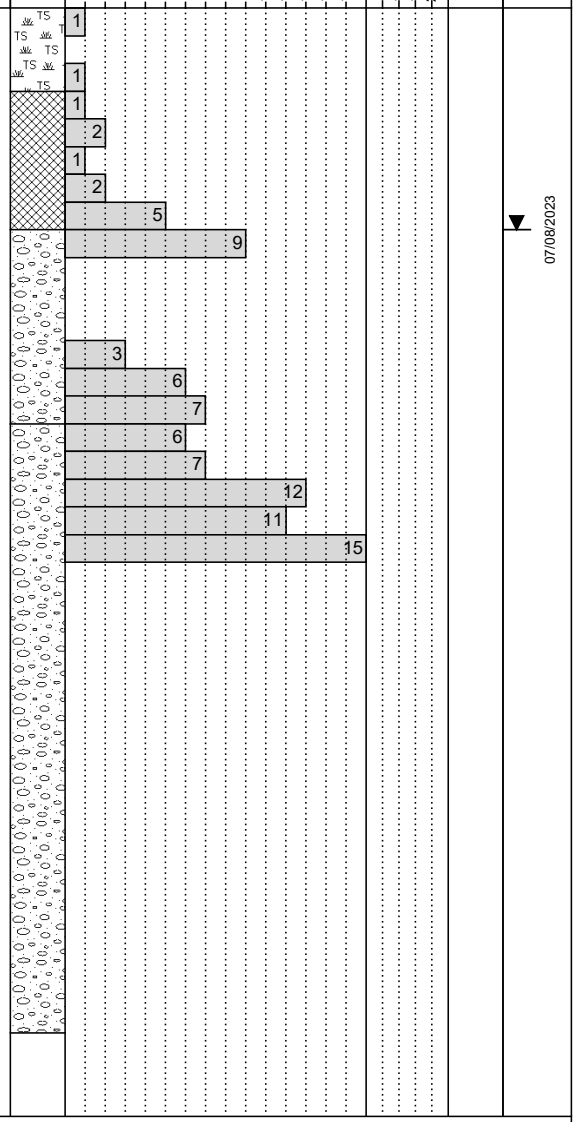
TEST PIT LOG

HOLE NO.: TP01

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 07/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 07/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL
TOPSOIL	Organic SILT with some gravel and a trace of sand, dark brown. Soft, moist, sand, fine to medium; gravel, fine to medium, subangular to subrounded; a trace of rootlets. 0.3 m		
UNCONTROLLED FILL	Organic SILT with some sand, gravel and rubbish, dark brown. Firm to stiff, moist to wet, sand, fine to medium; gravel, fine to medium, subangular to subrounded; rubbish, wood, steel, wires, brick, plastic. 0.8 m		0.5
ALLUVIAL GRAVEL	Sandy fine to medium GRAVEL with a trace of organics, grey. Medium dense to dense, saturated, gravel, subangular to subrounded; sand, fine to medium. 1.5 m		1.0
	Sandy fine to medium GRAVEL, orange brown. Medium dense to dense, saturated, gravel, subangular to subrounded; sand, fine to medium. 3.7 m		1.5 2.0 2.5 3.0 3.5
	End Of Hole: 3.70 m		



PHOTO(S)

REMARKS

Excavation terminated at maximum reach.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP02

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 07/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 07/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND
TOPSOIL	Organic SILT with some gravel and a trace of sand, dark brown. Firm, moist, gravel, fine to medium, subangular to subrounded; a trace of rootlets. 0.3 m			TS
UNCONTROLLED FILL	SILT with a trace of sand, gravel and minor organics, orange brown mottled grey. Firm, moist, gravel, fine to medium, subangular to subrounded; sand, fine to medium; a trace of rootlets. 0.8 m		0.5	
BURIED TOPSOIL	Organic SILT with minor sand, brown. Stiff, moist, sand, fine to medium; a trace of rootlets. 0.9 m			
ALLUVIAL GRAVEL	Sandy fine to medium GRAVEL with some silt, grey. Medium dense, moist, sand, fine to medium; gravel, subangular to subrounded. 1.1 m		1.0	
	Sandy fine to medium GRAVEL, orange brown. Medium dense to dense, moist to wet, sand, fine to medium; gravel, subangular to subrounded. 2.0 m		1.5	
ALLUVIAL SILT	Sandy SILT, orange brown. Very stiff, wet, sand, fine to medium. 2.8 m		2.0 2.5	
ALLUVIAL SAND	Fine to medium SAND, orange brown. Medium dense, wet. 3.8 m		3.0 3.5	
	End Of Hole: 3.80 m			

SCALA PENETROMETER (Blows / 100 mm)

Depth (m)	Blows / 100 mm
0.0 – 0.1	1
0.1 – 0.2	2
0.2 – 0.3	1
0.3 – 0.4	2
0.4 – 0.5	2
0.5 – 0.6	1
0.6 – 0.7	2
0.7 – 0.8	1
0.8 – 0.9	3
0.9 – 1.0	3
1.0 – 1.1	7
1.1 – 1.2	15

SHEAR STRENGTH (kPa) Vane: Values

WATER 07/08/2023

PHOTO(S)

REMARKS

Excavation terminated at maximum reach.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP03

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
COORDINATES:
LOCATION METHOD: Map or aerial photograph
ELEVATION: Existing ground level

CONTRACTOR: SM Civil
EQUIPMENT: 5T
ACCURACY: ± 3 m
OPERATOR: Johnny

START DATE: 07/08/2023
END DATE: 07/08/2023
LOGGED BY: AJJ
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND
TOPSOIL	Organic SILT with minor gravel and a trace of sand, brown. Firm to stiff, moist, sand, fine to medium; gravel, fine to medium, subangular to subrounded; a trace of rootlets. 0.3 m			TS
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium. 1.3 m		0.5, 1.0	
ALLUVIAL SILT	SILT with some sand, orange brown. Firm to very stiff, moist, sand, fine to medium. 2.1 m		1.5, 2.0	
	SILT with a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium. 2.6 m		2.5	
ALLUVIAL SAND	Fine to medium SAND, grey mottled orange brown. Medium dense, moist. 3.5 m		3.0, 3.5	
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Very stiff, moist, sand, fine to medium. 3.8 m			
	End Of Hole: 3.80 m			

SCALA PENETROMETER (Blows / 100 mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
2	2	5	6	5	4	4	6	6					
1	2	3	2	4	5	7	10	15					

SHEAR STRENGTH (kPa) Vane: Values

50	100	150	200

WATER
07/08/2023

PHOTO(S)

REMARKS
Excavation terminated at maximum reach.

WATER
- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP04

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 07/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 07/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with some sand, gravel and a trace of rubbish, brown. Soft to firm, moist, sand, fine to medium; gravel, fine to medium, subangular to subrounded; rubbish, brick; a trace of rootlets. 0.5 m		0.5	TS	1, 1, 1, 2, 1		
UNCONTROLLED FILL	SILT with some gravel and a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium; gravel, fine to medium, subangular to subrounded; a trace of rootlets. 0.7 m				4, 5		
	SILT with a trace of sand, orange brown mottled brown. Stiff, moist, sand, fine to medium. 1.1 m		1.0		4, 3		
SWAMP DEPOSIT	Organic SILT with a trace of sand, dark brown. Very soft to soft, moist, sand, fine to medium; some roots and a trace of rootlets. 1.7 m		1.5		1		07/08/2023
SWAMP DEPOSIT	Organic SILT with some sand, dark grey. Soft to stiff, moist, sand, fine to medium; some roots and a trace of rootlets. 2.3 m		2.0		1, 1, 1, 1, 2, 3, 3		
ALLUVIAL GRAVEL	Sandy fine to medium GRAVEL with minor silt, bluish grey mottled orange brown. Medium dense to dense, wet to saturated, sand, fine to medium; gravel, subangular to subrounded. 3.0 m		2.5				
	Sandy fine to coarse GRAVEL with minor silt, orange brown. Medium dense to dense, saturated, sand, fine to medium; gravel, subangular to subrounded. 3.8 m		3.0				07/08/2023
	End Of Hole: 3.80 m		3.5				

PHOTO(S)

REMARKS

Excavation terminated at maximum reach.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP05

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
COORDINATES:
LOCATION METHOD: Map or aerial photograph
ELEVATION: Existing ground level

CONTRACTOR: SM Civil
EQUIPMENT: 5T
ACCURACY: ± 3 m
OPERATOR: Johnny

START DATE: 07/08/2023
END DATE: 07/08/2023
LOGGED BY: AJJ
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL
TOPSOIL	Organic SILT with a trace of sand, dark brown. Soft to firm, moist, sand, fine to medium; a trace of rootlets.		
	0.3 m		
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium; a trace of rootlets.		0.5
	1.6 m		1.0
	Sandy SILT, orange brown. Very stiff, moist, sand, fine to medium.		1.5
	1.9 m		
ALLUVIAL SAND	Fine to medium SAND, grey. Medium dense to dense, moist.		2.0
	3.1 m		2.5
	Fine to coarse SAND, orange brown. Medium dense to dense, moist.		3.0
	3.5 m		3.5
	End Of Hole: 3.50 m		

LEGEND: TS

SCALA PENETROMETER (Blows / 100 mm)

Depth (m)	Blows / 100 mm
0.0 – 0.1	1
0.1 – 0.2	2
0.2 – 0.3	2
0.3 – 0.4	3
0.4 – 0.5	3
0.5 – 0.6	6
0.6 – 0.7	6
0.7 – 0.8	6
0.8 – 0.9	6
0.9 – 1.0	2
1.0 – 1.1	4
1.1 – 1.2	4
1.2 – 1.3	4
1.3 – 1.4	7
1.4 – 1.5	6
1.5 – 1.6	7
1.6 – 1.7	9
1.7 – 1.8	12

SHEAR STRENGTH (kPa) — Vane: Values (50, 100, 150, 200)

WATER: 07/08/2023

PHOTO(S)

REMARKS

Excavation terminated at maximum reach.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP06

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants

PROJECT: 805, 815, 819 North Road, Invercargill

JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 07/08/2023

COORDINATES:
EQUIPMENT: 5T
END DATE: 07/08/2023

LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ

ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand and gravel, dark brown. Soft to firm, moist, sand, fine to medium; gravel, fine to medium, subangular to subrounded; a trace of rootlets. 0.3 m			TS	1, 1, 2		
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to very stiff, moist, sand, fine to medium; a trace of rootlets. 2.0 m		0.5, 1.0, 1.5, 2.0	TS	4, 3, 3, 3, 3, 3, 2, 2, 3, 5, 4, 5, 4		
	Sandy SILT, grey. Stiff to very stiff, moist, sand, fine to medium. 2.3 m				6		
ALLUVIAL SAND	Fine to medium SAND, grey. Medium dense, moist to wet. 3.6 m		2.5, 3.0, 3.5				07/08/2023
	Fine to medium SAND, orange brown mottled grey. Medium dense to dense, wet. 3.7 m						
	End Of Hole: 3.70 m						

PHOTO(S)

REMARKS

Excavation terminated at maximum reach.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP07

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
COORDINATES:
LOCATION METHOD: Map or aerial photograph
ELEVATION: Existing ground level

CONTRACTOR: SM Civil
EQUIPMENT: 5T
ACCURACY: ± 3 m
OPERATOR: Johnny

START DATE: 07/08/2023
END DATE: 07/08/2023
LOGGED BY: AJJ
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Firm, moist, sand, fine to medium; a trace of rootlets. 0.3 m			TS	1, 2, 2		
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets. 1.9 m		0.5, 1.0, 1.5		3, 3, 3, 3, 3, 4, 2, 4, 4, 4, 4, 4, 4		
	Sandy SILT, orange brown mottled grey. Very stiff, moist, sand, fine to medium. 2.2 m		2.0		10, 15		
ALLUVIAL SAND	Fine to medium SAND, grey. Medium dense, moist to wet. 3.2 m		2.5, 3.0				07/08/2023
	Fine to medium SAND, orange brown mottled grey. Medium dense, wet. 3.6 m		3.5				
	End Of Hole: 3.60 m						

PHOTO(S)

REMARKS

Excavation terminated due to pit wall collapse.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP08

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill

JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
COORDINATES:
LOCATION METHOD: Map or aerial photograph
ELEVATION: Existing ground level

CONTRACTOR: SM Civil
EQUIPMENT: 5T
ACCURACY: ± 3 m
OPERATOR: Johnny

START DATE: 08/08/2023
END DATE: 08/08/2023
LOGGED BY: AJJ
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Very soft to firm, moist, sand, fine to medium; a trace of rootlets. 0.3 m			TS	1		
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium; a trace of rootlets. 1.1 m		0.5	TS	2, 3, 3, 3, 4, 5, 6		
ALLUVIAL SAND	Silty fine SAND, grey. Loose to medium dense, moist. 1.5 m		1.0		1, 2, 3		
	Fine to medium SAND, grey. Medium dense to dense, moist to wet. 2.3 m		1.5		4, 5, 6, 7, 7, 4		08/08/2023
	Fine to medium SAND, orange brown. Medium dense, wet. 2.6 m		2.0				08/08/2023
	Fine to medium SAND, grey mottled orange brown. Medium dense to dense, wet. 3.7 m		2.5				
	End Of Hole: 3.70 m		3.0				
			3.5				

PHOTO(S)

REMARKS

Excavation terminated due to pit wall collapse.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP09

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants

PROJECT: 805, 815, 819 North Road, Invercargill

JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023

COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023

LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ

ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets. 0.3 m			TS	1, 2, 3		
ALLUVIAL SILT	Sandy SILT, orange brown mottled grey. Firm to very stiff, moist, sand, fine to medium. 2.6 m		0.5, 1.0, 1.5, 2.0, 2.5		3, 3, 4, 3, 5, 5, 2, 1, 2, 4, 3, 5, 5, 5, 7		08/08/2023
	SILT with a trace of sand, grey. Stiff to very stiff, moist to wet, sand, fine to medium. 2.9 m						
ALLUVIAL SAND	Silty fine to medium SAND, grey mottled orange brown. Medium dense, wet. 3.7 m		3.0, 3.5				
	End Of Hole: 3.70 m						

PHOTO(S)

REMARKS

Excavation terminated due to groundwater ingress.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP10

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Firm, moist, sand, fine to medium; a trace of rootlets. 0.3 m			TS	1		
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to very stiff, moist, sand, fine to medium; a trace of rootlets. 0.9 m		0.5		1, 2, 3, 3, 2, 2, 2, 5		
	SILT with a trace of sand, grey mottled orange brown. Firm to very stiff, mosit to wet, sand, fine to medium. 2.0 m		1.0				08/08/2023
ALLUVIAL SAND	Fine to medium SAND, orange brown mottled grey. Medium dense to dense, wet. 2.8 m		1.5		2, 3, 5, 9, 9, 10, 12, 14, 15		
	Fine to medium SAND, grey. Medium dense to dense, wet. 3.4 m		2.0				08/08/2023
	Fine to medium SAND, orange brown mottled grey. Medium dense, wet. 3.7 m		2.5				
	End Of Hole: 3.70 m		3.0				
			3.5				

PHOTO(S)

REMARKS

Excavation terminated due to pit wall collapse.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP11

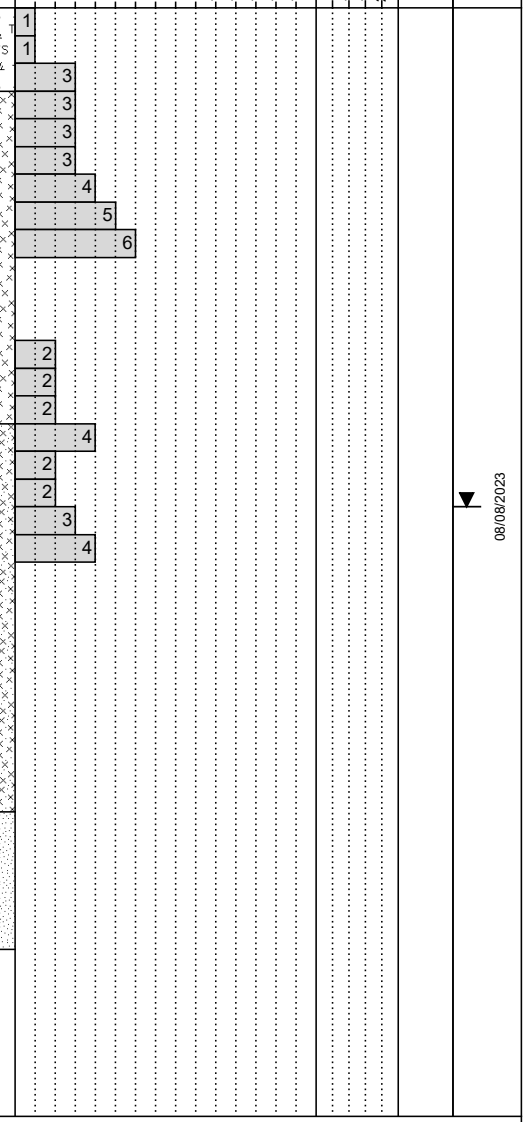
CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
COORDINATES:
LOCATION METHOD: Map or aerial photograph
ELEVATION: Existing ground level

CONTRACTOR: SM Civil
EQUIPMENT: 5T
ACCURACY: ± 3 m
OPERATOR: Johnny

START DATE: 08/08/2023
END DATE: 08/08/2023
LOGGED BY: AJJ
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL
TOPSOIL	Organic SILT with a trace of sand, dark brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets.		
	0.3 m		
	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets.		0.5
	1.5 m		1.0
ALLUVIAL SILT	Sandy SILT, grey mottled orange brown. Firm to stiff, wet, sand, fine to medium.		1.5
	2.9 m		2.0
ALLUVIAL SAND	Fine to medium SAND, grey. Medium dense, wet.		2.5
	3.4 m		3.0
	End Of Hole: 3.40 m		3.5



PHOTO(S)

REMARKS

Excavation terminated due to groundwater ingress.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP12

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
COORDINATES:
LOCATION METHOD: Map or aerial photograph
ELEVATION: Existing ground level

CONTRACTOR: SM Civil
EQUIPMENT: 5T
ACCURACY: ± 3 m
OPERATOR: Johnny

START DATE: 08/08/2023
END DATE: 08/08/2023
LOGGED BY: AJJ
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Soft to stiff, moist, sand, fine to medium; a trace of rootlets. 0.3 m			TS	1, 1, 3		
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to very stiff, moist, sand, fine to medium; a trace of rootlets. 1.6 m		0.5, 1.0, 1.5		2, 3, 4, 5, 5, 4, 2, 3, 3, 4		
ALLUVIAL SAND	Silty fine to medium SAND, orange brown mottled grey. Medium dense to dense, moist. 2.1 m		2.0		8, 8, 9, 8, 9		08/08/2023
ALLUVIAL SILT	SILT with trace to minor sand, grey mottled orange brown. Firm, moist to wet, sand, fine to medium. 3.4 m		2.5, 3.0				
ALLUVIAL SAND	Fine to medium SAND with a trace of silt, grey mottled orange brown. Medium dense, wet. 3.9 m		3.5				
	End Of Hole: 3.90 m						

PHOTO(S)

REMARKS

Excavation terminated at maximum reach.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP13

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Soft, moist, sand, fine to medium; a trace of rootlets. 0.2 m			TS	1		
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium; a trace of rootlets. 0.7 m		0.5		3, 3, 4, 6, 8		
ALLUVIAL SILT	SILT with a trace of sand, orange brown mottled grey. Very stiff, moist, sand, fine to medium; a trace of rootlets. 1.3 m		1.0		10, 10		
ALLUVIAL SAND	Silty fine to medium SAND, orange brown mottled grey. Medium dense, moist. 1.4 m				4, 4, 5, 7		
	Fine to medium SAND, grey mottled orange brown. Medium dense, wet. 2.1 m		1.5		3, 3, 3, 6, 7		08/08/2023
ALLUVIAL SILT	Sandy SILT, orange brown. Firm to stiff, wet, sand, fine to medium. 3.1 m		2.0				08/08/2023
	SILT with a trace of sand, orange brown mottled grey. Firm to stiff, wet, sand, fine to medium. 3.9 m		2.5				
	End Of Hole: 3.90 m		3.0				
			3.5				

PHOTO(S)

REMARKS

Excavation terminated at maximum reach.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP14

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 07/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 07/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with some gravel and a trace of sand, brown. Firm, moist, sand, fine to medium; gravel, fine to medium, subangular to subrounded; a trace of rootlets.			TS			
	0.3 m						
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Stiff, moist, sand, fine to medium; a trace of rootlets.		0.5		5, 5, 5, 5, 3, 2, 2, 3, 4		Groundwater Not Encountered
	End Of Hole: 0.30 m		1.0				

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP15

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 07/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 07/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, brown. Soft to firm, moist, sand, fine to medium; a trace of rootlets.			TS	2		Groundwater Not Encountered
	0.3 m						
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Soft, moist, sand, fine to medium; a trace of rootlets.		0.5		1		
	End Of Hole: 0.30 m				1		
					1		
					1		
			1.0		1		
					1		
					2		
					2		

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

Generated with CORE-GS by Geroc - Test Pit x Hand Auger - scala & vane bars - 11/09/2023 2:50:06 pm

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP16

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants

PROJECT: 805, 815, 819 North Road, Invercargill

JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023

COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023

LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ

ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, brown. Firm, moist, sand, fine to medium; a trace of rootlets.			TS			
	0.3 m						
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets.						
	0.4 m End Of Hole: 0.30 m		0.5		2, 3, 3, 5, 5, 6, 5, 6, 6		Groundwater Not Encountered
			1.0				

Scala penetrometer: 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Shear strength (kPa) Vane: 50 100 150 200

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

Page 1 of 1

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP17

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants

PROJECT: 805, 815, 819 North Road, Invercargill

JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023

COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023

LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ

ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets.			TS			
	0.3 m / 0.4 m						
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets.		0.5		2, 3, 3, 3, 3, 5, 5, 6, 6		Groundwater Not Encountered
	End Of Hole: 0.30 m		1.0				

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP18

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants

PROJECT: 805, 815, 819 North Road, Invercargill

JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023

COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023

LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ

ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets.			TS			
	0.3 m						
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets.		0.5		2, 2, 3, 4, 5, 5, 6, 6, 6		Groundwater Not Encountered
	0.4 m End Of Hole: 0.30 m		1.0				

Scala penetrometer axis: 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Shear strength (kPa) Vane: 50 100 150 200

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP19

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants

PROJECT: 805, 815, 819 North Road, Invercargill

JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023

COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023

LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ

ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Soft to firm, moist, sand, fine to medium; a trace of rootlets.			TS			
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets. 0.4 m End Of Hole: 0.40 m 0.5 m		0.5 1.0		2 1 1 2 6 7 6 5 3		Groundwater Not Encountered

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP20

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND
TOPSOIL	Organic SILT with a trace of sand, dark brown. Firm, moist, sand, fine to medium; a trace of rootlets.			
			0.3 m	
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets.		0.4 m	
	End Of Hole: 0.30 m		0.5	
			1.0	

SCALA PENETROMETER (Blows / 100 mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	2	2	2	2	2	2	4	4	5				

SHEAR STRENGTH (kPa)
Vane: 50 100 150 200 Values

WATER: Groundwater Not Encountered

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

Generated with CORE-GS by Geroc - Test Pit x Hand Auger - scala & vane bars - 11/09/2023 2:50:18 pm

GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: TP21

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants

PROJECT: 805, 815, 819 North Road, Invercargill

JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023

COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023

LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ

ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 100 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets.			TS			Groundwater Not Encountered
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets. 0.4 m End Of Hole: 0.40 m 0.5 m		0.5 1.0		2, 2, 3, 4, 4, 6, 7, 8, 10		

Scala penetrometer: 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Shear strength (kPa) Vane: 50 100 150 200

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

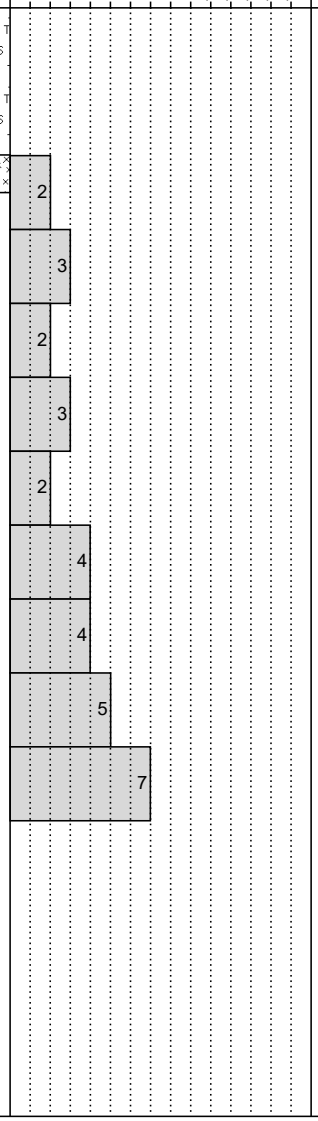
HOLE NO.: TP22

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 08/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND
TOPSOIL	Organic SILT with a trace of sand and gravel, dark brown. Stiff, moist, sand, fine to medium; gravel, fine to medium, subangular to subrounded; a trace of rootlets.			TS
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Firm to stiff, moist, sand, fine to medium; a trace of rootlets. 0.2 m End Of Hole: 0.20 m 0.3 m		0.5 1.0	

SCALA PENETROMETER (Blows / 100 mm)



SHEAR STRENGTH (kPa)
Vane: 50 100 150 200 Values

WATER: Groundwater Not Encountered

PHOTO(S)

REMARKS

Shallow pit for CBR.

WATER

- Standing Water Level
- Out flow
- Seepage

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GEOSOLVE
ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: SP01

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
COORDINATES:
LOCATION METHOD: Map or aerial photograph
ELEVATION: Existing ground level

CONTRACTOR: SM Civil
EQUIPMENT: 5T
ACCURACY: ± 3 m
OPERATOR: Johnny

START DATE: 08/08/2023
END DATE: 08/08/2023
LOGGED BY: AJJ
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 0 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with a trace of sand, dark brown. Soft to firm, moist, sand, fine to medium; a trace of rootlets. 0.3 m		0.5 1.0 1.5 2.0 2.5	TS	1 2 3 4 5 6 7 8 9 10 11 12 13 14	50 100 150 200	Groundwater Not Encountered
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium; trace of rootlets. 1.6 m						
	Sandy SILT, orange brown. Very stiff, moist, sand, fine to medium. 1.9 m						
ALLUVIAL SAND	Fine to medium SAND, grey. Medium dense, moist. 2.2 m						
	End Of Hole: 2.20 m						

PHOTO(S)

REMARKS

Target depth achieved.

WATER

- Standing Water Level
- Out flow
- Seepage

Generated with CORE-GS by Geroc - Test Pit x Hand Auger - scala & vane bars - 11/09/2023 2:49:25 pm

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GEOSOLVE ENGINEERING CONSULTANTS

TEST PIT LOG

HOLE NO.: SP02

CLIENT: Tulloch Group Ltd. C/- Bonish Consultants
PROJECT: 805, 815, 819 North Road, Invercargill
JOB NO.: 230505

SITE LOCATION: 805, 815, 819 North Road, Invercargill
CONTRACTOR: SM Civil
START DATE: 07/08/2023
COORDINATES:
EQUIPMENT: 5T
END DATE: 08/08/2023
LOCATION METHOD: Map or aerial photograph
ACCURACY: ± 3 m
LOGGED BY: AJJ
ELEVATION: Existing ground level
OPERATOR: Johnny
CHECKED DATE: 18/08/2023

SOIL / ROCK TYPE	MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH / RL	LEGEND	SCALA PENETROMETER (Blows / 0 mm)	SHEAR STRENGTH (kPa) Vane: Values	WATER
TOPSOIL	Organic SILT with minor gravel and a trace of sand, brown. Firm to stiff, moist, sand, fine to medium; gravel, fine to medium, subangular to subrounded; a trace of rootlets. 0.3 m			TS			
ALLUVIAL SILT	SILT with a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium. 1.3 m		0.5, 1.0				Groundwater Not Encountered
	SILT with some sand, orange brown. Firm to very stiff, moist, sand, fine to medium. 2.1 m		1.5, 2.0				
	SILT with a trace of sand, orange brown. Stiff to very stiff, moist, sand, fine to medium. 2.6 m		2.5				
ALLUVIAL SAND	Fine to medium SAND, grey mottled orange brown. Medium dense, moist. 2.8 m						
	End Of Hole: 2.80 m						

Scala penetrometer: 1 2 3 4 5 6 7 8 9 10 11 12 13 14
Shear strength (kPa): 50 100 150 200

PHOTO(S)

REMARKS

Target depth achieved.

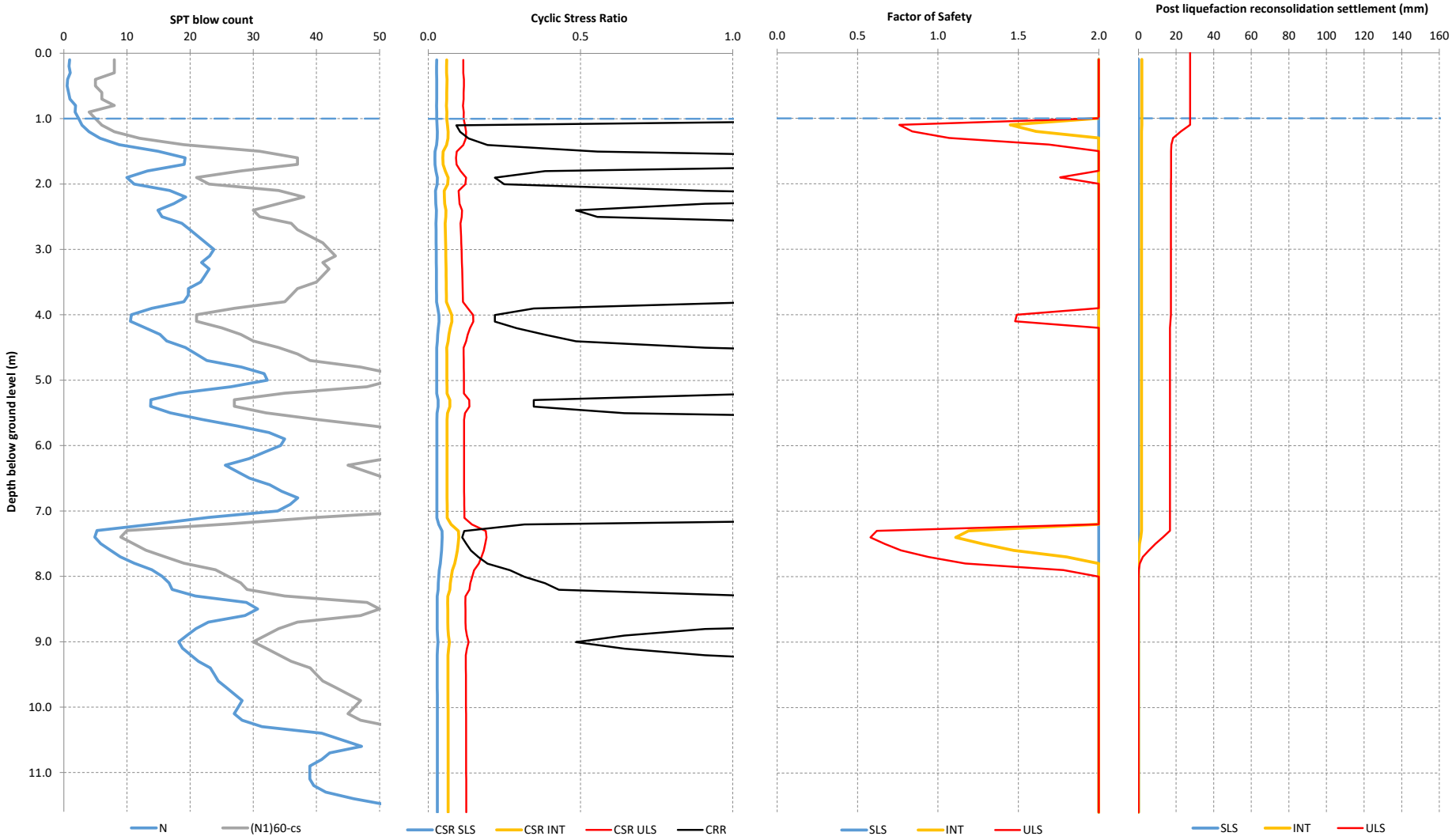
WATER

- Standing Water Level
- Out flow
- Seepage

Generated with CORE-GS by Geroc - Test Pit x Hand Auger - scala & vane bars - 11/09/2023 2:49:28 pm

Appendix C: Liquefaction Analysis

LSN (SLS)	LSN (INT)	LSN (ULS)	Settlement (SLS)	Settlement (INT)	Settlement (ULS)
0	0	11	0 mm	0 mm	25 mm

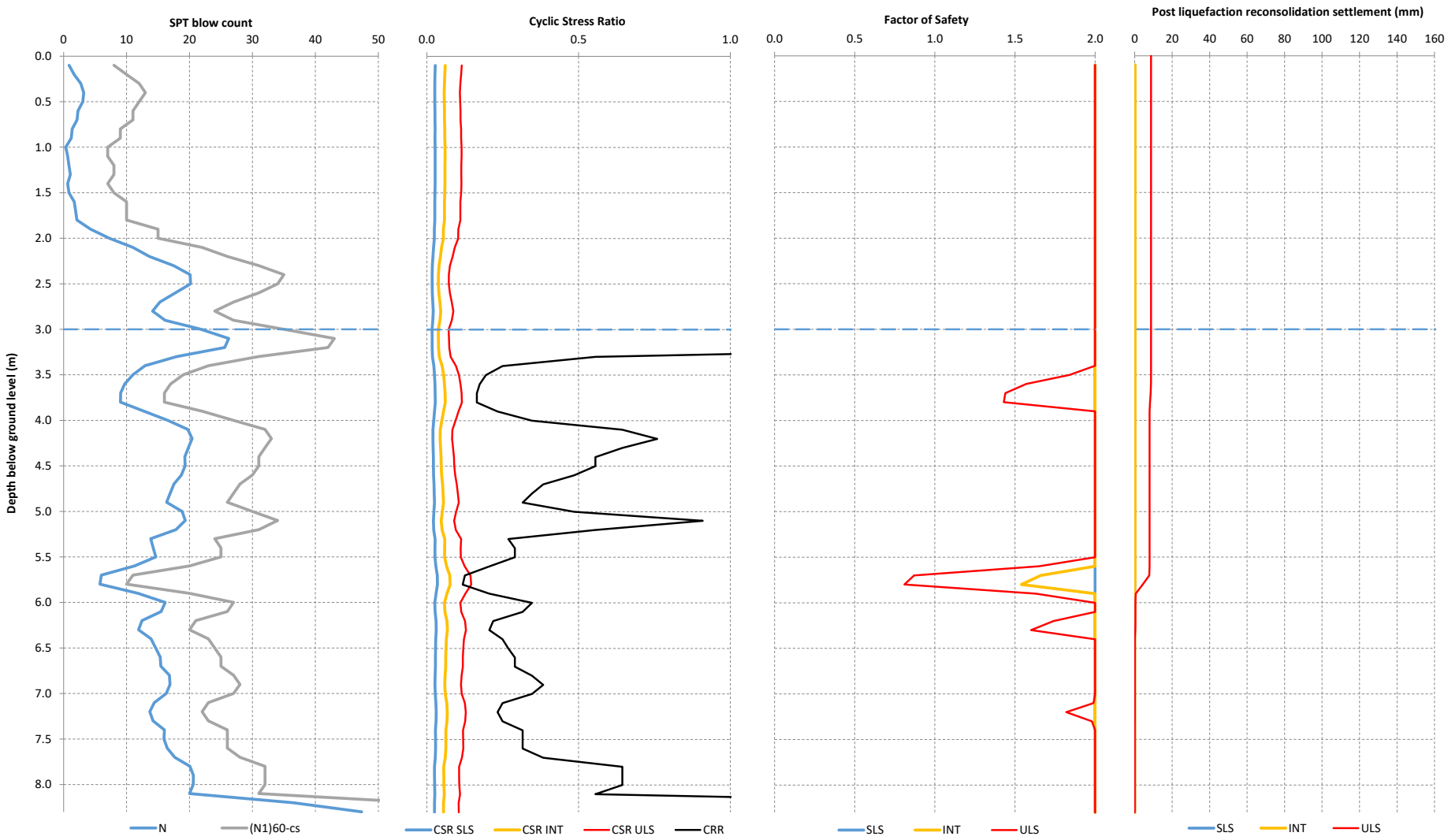


Note: Settlements as per Idriss and Boulanger (2014)

GEOSOLVE

PROJECT	230505 - 805-815-819NorthRoad_Invercargill
DESCRIPTION	Liquefaction Assessment
LOCATION	805,815 & 819 North Road, Invercargill
CLIENT	Bonisch Consultants
TEST NUMBER	DPH 1
DATE	7/08/2023
LOGGED BY	RC
ANALYSED BY	RC
CHECKED BY	FAW

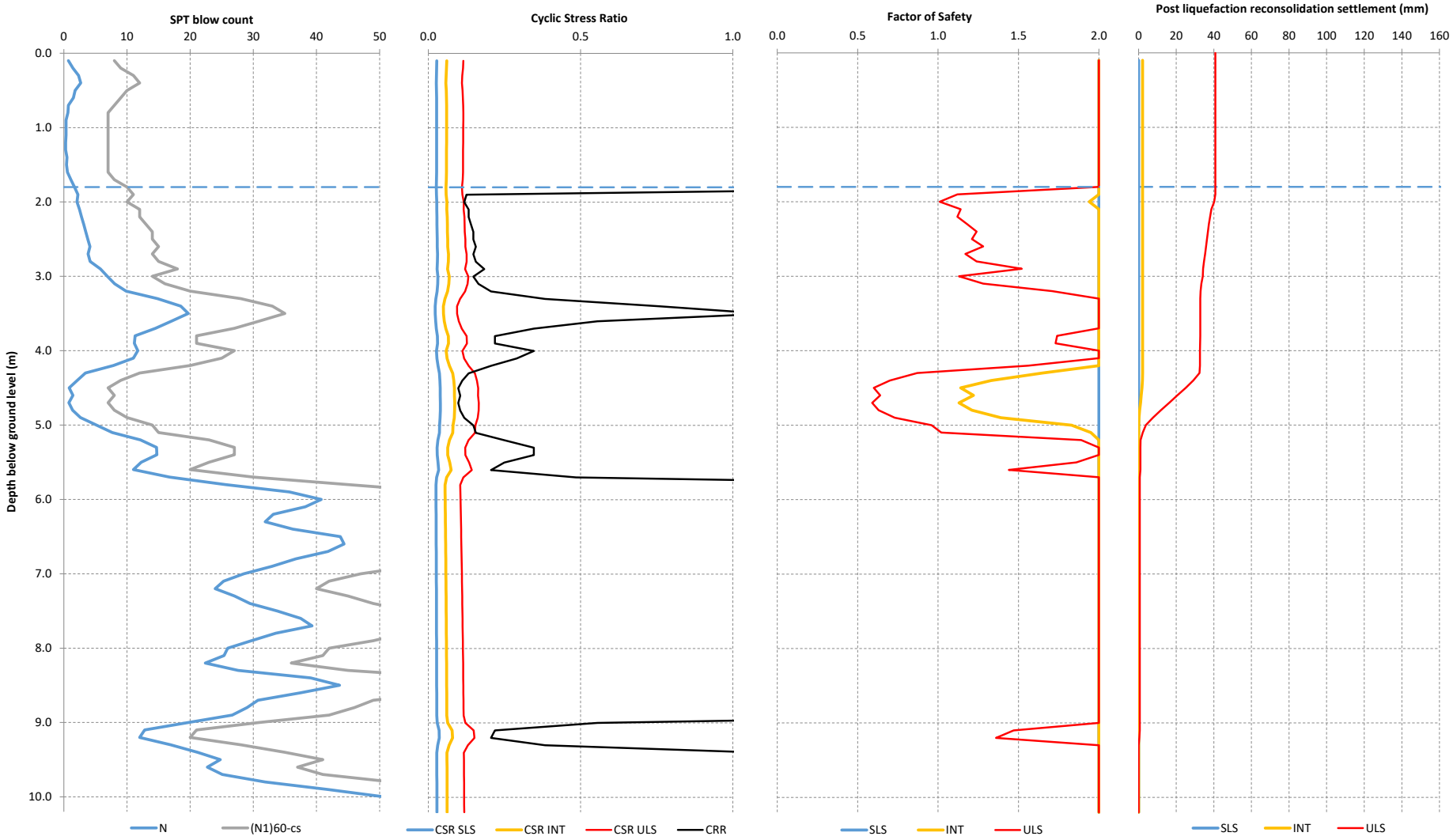
LSN (SLS)	LSN (INT)	LSN (ULS)	Settlement (SLS)	Settlement (INT)	Settlement (ULS)
0	0	2	0 mm	0 mm	10 mm



Note: Settlements as per Idriss and Boulanger (2014)

PROJECT	230505 - 805-815-819NorthRoad_Invercargill	CLIENT	Bonisch Consultants
DESCRIPTION	Liquefaction Assessment	TEST NUMBER	DPH 2
LOCATION	805,815 & 819 North Road, Invercargill	DATE	7/08/2023
		LOGGED BY	RC
		ANALYSED BY	RC
		CHECKED BY	FAW

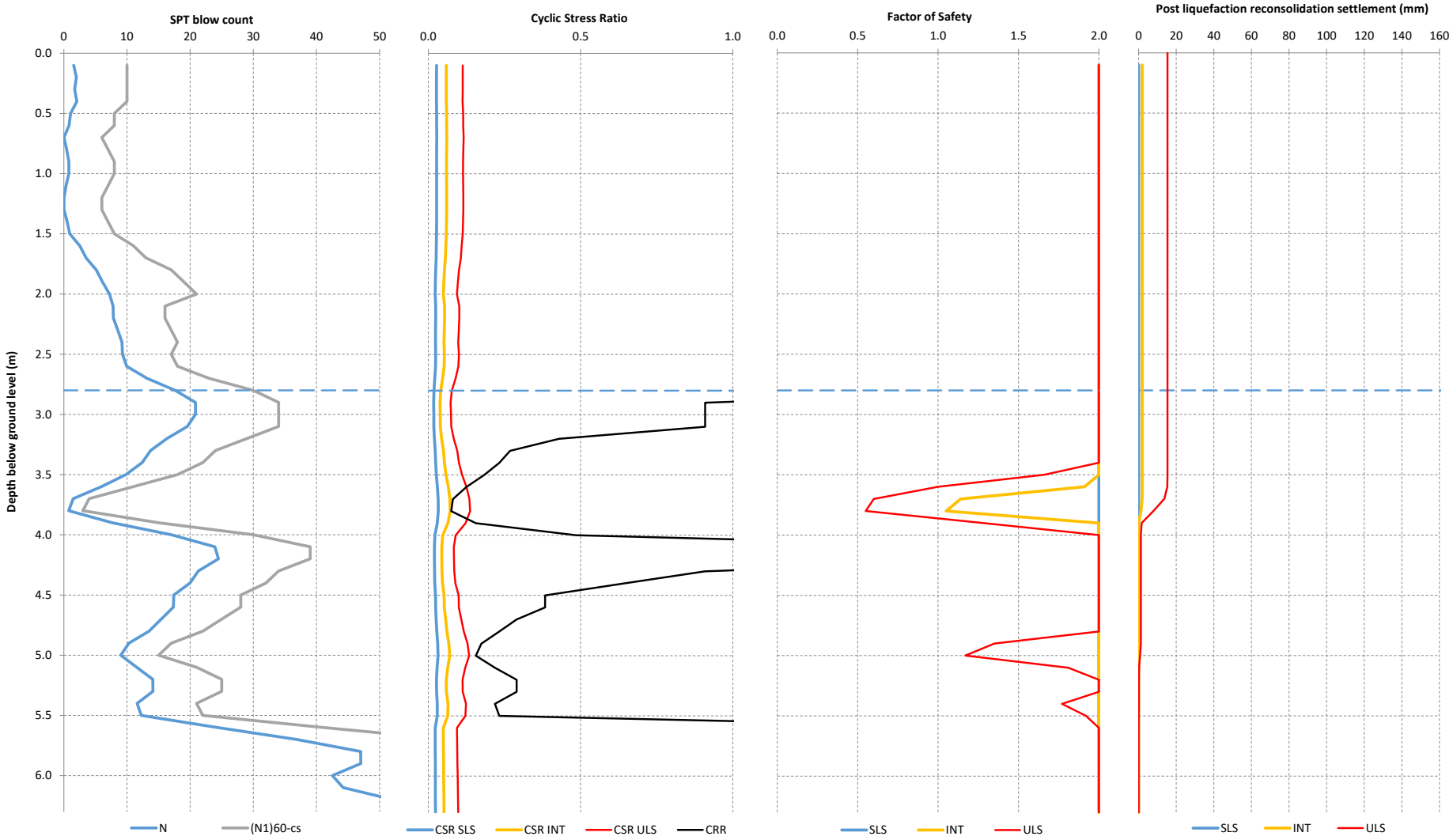
LSN (SLS)	LSN (INT)	LSN (ULS)	Settlement (SLS)	Settlement (INT)	Settlement (ULS)
0	0	10	0 mm	0 mm	40 mm



Note: Settlements as per Idriss and Boulanger (2014)

PROJECT	230505 - 805-815-819NorthRoad_Invercargill	CLIENT	Bonisch Consultants
DESCRIPTION	Liquefaction Assessment	TEST NUMBER	DPH 3
LOCATION	805,815 & 819 North Road, Invercargill	DATE	8/08/2023
		LOGGED BY	RC
		ANALYSED BY	RC
		CHECKED BY	FAW

LSN (SLS)	LSN (INT)	LSN (ULS)	Settlement (SLS)	Settlement (INT)	Settlement (ULS)
0	1	4	0 mm	0 mm	15 mm

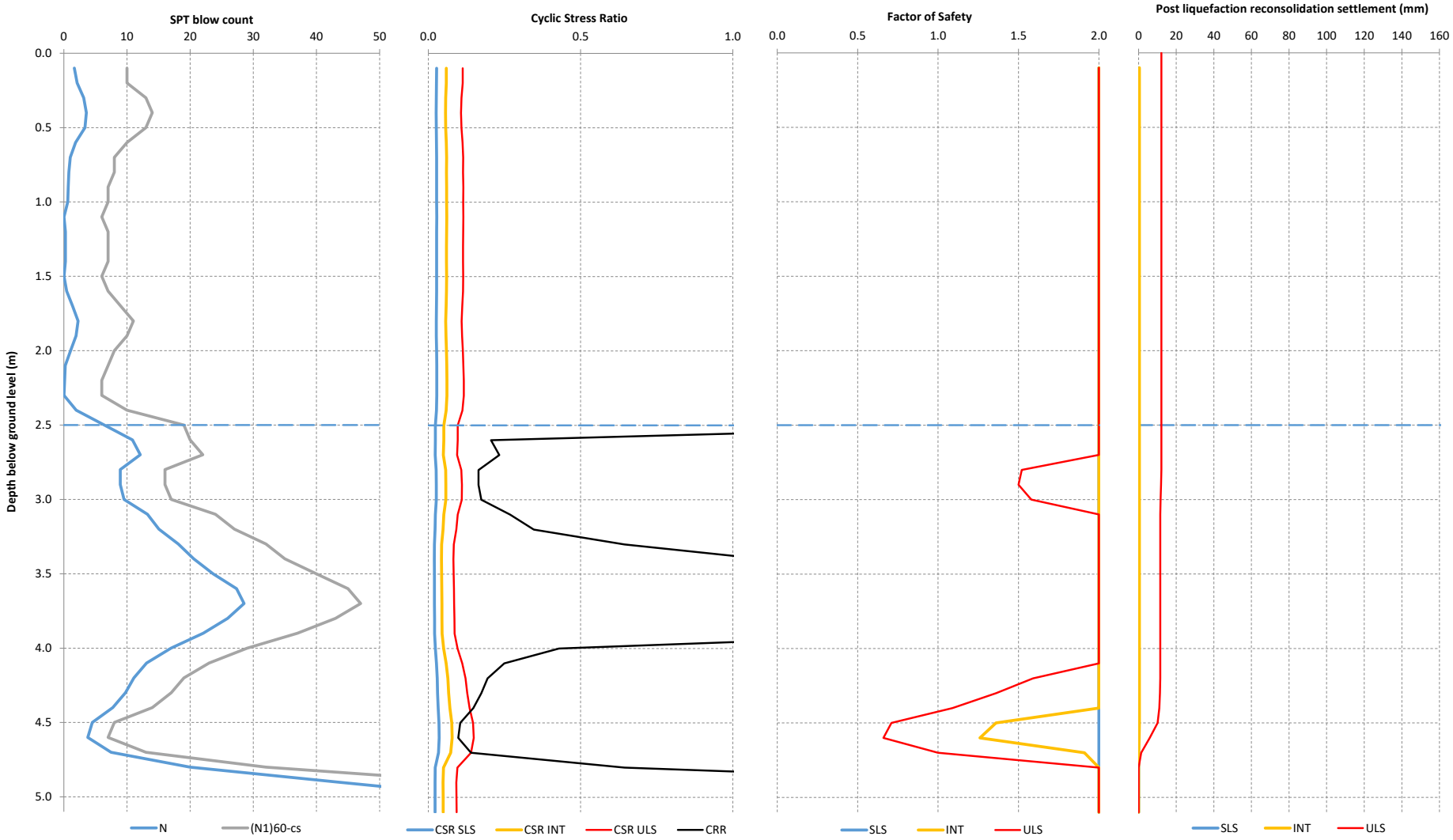


Note: Settlements as per Idriss and Boulanger (2014)

GEOSOLVE

PROJECT	230505 - 805-815-819NorthRoad_Invercargill
DESCRIPTION	Liquefaction Assessment
LOCATION	805,815 & 819 North Road, Invercargill
CLIENT	Bonisch Consultants
TEST NUMBER	DPH 4
DATE	8/08/2023
LOGGED BY	RC
ANALYSED BY	RC
CHECKED BY	FAW

LSN (SLS)	LSN (INT)	LSN (ULS)	Settlement (SLS)	Settlement (INT)	Settlement (ULS)
0	0	3	0 mm	0 mm	10 mm

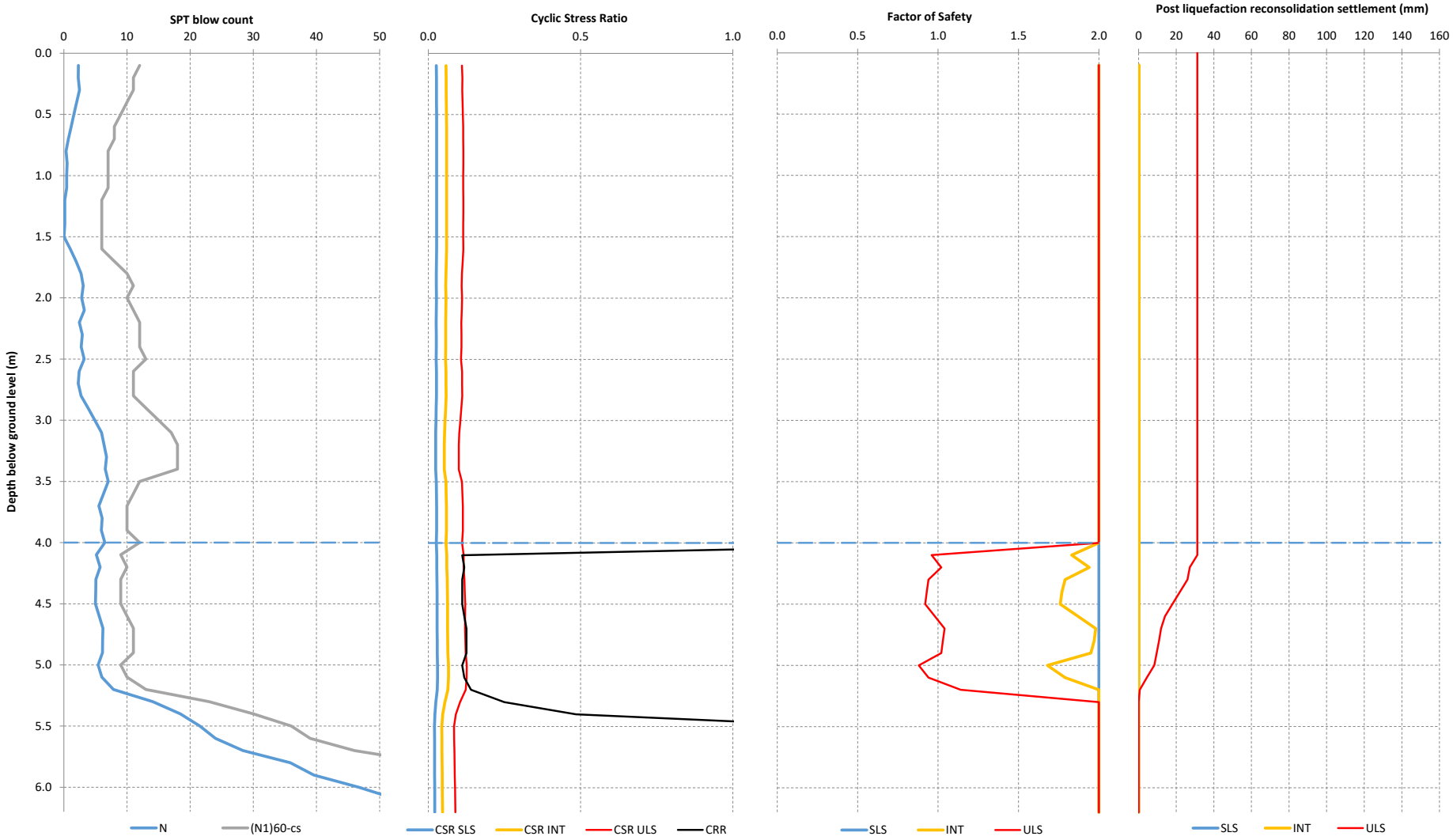


Note: Settlements as per Idriss and Boulanger (2014)

GEOSOLVE

PROJECT	230505 - 805-815-819NorthRoad_Invercargill	CLIENT	Bonisch Consultants
DESCRIPTION	Liquefaction Assessment	TEST NUMBER	DPH 5
LOCATION	805,815 & 819 North Road, Invercargill	DATE	8/08/2023
		LOGGED BY	RC
		ANALYSED BY	RC
		CHECKED BY	FAW

LSN (SLS)	LSN (INT)	LSN (ULS)	Settlement (SLS)	Settlement (INT)	Settlement (ULS)
0	0	7	0 mm	0 mm	30 mm



Note: Settlements as per Idriss and Boulanger (2014)

GEOSOLVE

PROJECT	230505 - 805-815-819NorthRoad_Invercargill
DESCRIPTION	Liquefaction Assessment
LOCATION	805,815 & 819 North Road, Invercargill
CLIENT	Bonisch Consultants
TEST NUMBER	DPH 6
DATE	8/08/2023
LOGGED BY	RC
ANALYSED BY	RC
CHECKED BY	FAW

Appendix C - Liquefaction Analysis

General

Liquefaction occurs when susceptible, saturated soils attempt to move to a denser state under cyclic shearing. In this report, liquefaction is defined as when pore pressures rise to reach the overburden stress. When this occurs, the following effects can happen at flat sites:

- loss of strength;
- ejection of material under pressure to the ground surface; and
- post-liquefaction volumetric densification as the materials reconsolidate.

In addition, sloping sites or sites with a 'free face' may experience lateral spreading or movement.

Liquefaction Susceptibility

Soils susceptible to liquefaction have the following characteristics:

- Saturated. Below the ground water level;
- Have "sand like" behaviour[5]; and
- Are in loose or medium dense condition.

Soils which are susceptible to liquefaction require a certain level of earthquake shaking (trigger) to cause them to liquefy. Denser soils require more intense and/or longer duration of shaking (higher trigger) than less dense soil.

Analysis Method

Liquefaction analyses were undertaken on the test data using the Boulanger & Idriss (2014)[7] deterministic method.

Assessment of Consequences of Liquefaction

The following can be assessed to estimate the consequences of liquefaction at this site:

- Crust thickness
- Liquefaction severity index
- Free field settlements
- Lateral spread

Crust Thickness

The non-liquefiable upper layer of soils (crust) provides some protection against ground surface damage as a result of liquefaction. The thicker the crust, the less ground surface damage is expected with significant protection provided by thicknesses of more than 5 m.

Empirical correlations have been developed by Ishihara[6] to quantify the thickness of non-liquefiable crust required to prevent the formation of sand boils resulting from the

[5] "Geotechnical earthquake engineering practice: Module 1 Guideline for the identification, assessment and mitigation of liquefaction hazards", Rev 0, July 2010. New Zealand Geotechnical Society. This document states that soil with: Fc <30%, or; Fc >30% and PI < 7% (where Fc= percent passing a 0.075mm sieve and PI=plasticity index) is considered as "sand-like" and is susceptible to liquefaction.

[6] Ishihara, K. (1985). "Stability of natural deposits during earthquakes," Theme lecture, Proc. 11th Int. Conf. On Soil Mechanics and Foundation Engineering, San Francisco, 2, 321-376pp.

liquefaction of underlying soil layers. These correlations indicate that for a given thickness of liquefiable soil, as the peak ground acceleration increases a greater thickness of non-liquefiable soil is required to prevent liquefaction damage from manifesting on the surface.

Liquefaction Severity Number

Liquefaction severity number (LSN) is a single value which can be calculated from a liquefaction assessment considering the thickness density and depth of liquefiable layers and the intensity of earthquake shaking. Based on observations of ground surface damage in Christchurch an indicative correlation has been developed between ground surface damage from liquefaction and LSN as described below.

As the LSN increases, so does the risk of severe effects on the land and structure. In general, the following surface effects are considered likely at sites with various LSN values.

Table 1C - Liquefaction Severity Number[7]

	Effects from excess porewater pressure and liquefaction	Characteristic LSN	Characteristics of liquefaction and its consequences
L0	Insignificant	< 10	No significant excess pore water pressures (no liquefaction)
L1	Mild	5 – 15	Limited excess pore water pressures; negligible deformation of the ground and small settlements.
L2	Moderate	10 – 25	Liquefaction occurs in layers of limited thickness (small proportion of the deposit, say 10 percent or less) and lateral extent; ground deformation results in relatively small differential settlements.
L3	High	15 – 35	Liquefaction occurs in significant portion of the deposit (say 30 percent to 50 percent) resulting in transient lateral displacements, moderate-to-large differential movements, and settlement of the ground in the order of 100 mm to 200 mm.
L4	Severe	> 30	Complete liquefaction develops in most of the deposit resulting in large lateral displacements of the ground, excessive differential settlements and total settlement of over 200 mm.
L5	Very severe		Liquefaction resulting in lateral spreading (flow), large permanent lateral ground displacements and/or significant ground distortion (lateral strains/stretch, vertical offsets and angular distortion).

Free Field Settlements

This describes the settlement of ground not occupied by a building, occurring due to dissipation of excess pore water pressure generated during earthquake shaking. Where appropriate, we have estimated reconsolidation settlement of any potentially liquefiable layers using the methodology recommended by Idriss & Boulanger (2014)[7].

A component of building settlement may also occur due to yield of any liquefied founding soils. This component of settlement is very difficult to predict and depends on the interaction of the building and the soil it is founded on.

[7] New Zealand Geotechnical Society [NZGS] and Ministry of Business, Innovation and Employment [MBIE] (2021). Earthquake geotechnical engineering practice in New Zealand. Module 3: Identification, assessment and mitigation of liquefaction hazards. Rev 1.

Appendix B

Integrated Transport Assessment Report

805, 815 & 819 North Road, Lorneville

Private Plan Change Request
Integrated Transport Assessment Report

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04 November 2024

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310206118

Stantec New Zealand

805, 815 & 819 North Road

Revision	Description	Author	Date	Quality Check	Date	Independent Review	Date
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1	Final	S Jayasinghe	31/10/24	C Rossiter	31/10/24	S Lloyd	31/10/24

805, 815 & 819 North Road

The conclusions in the Report titled 805, 815 & 819 North Road are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

Stantec has assumed all information received from Jeremy Rees (Bonisch Consultants), Tulloch Limited (the "Client") and third parties in the preparation of the Report to be correct. While Stantec has exercised a customary level of judgment or due diligence in the use of such information, Stantec assumes no responsibility for the consequences of any error or omission contained therein.

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Abbreviations

Abbreviations	Full Name
ADT	Annual Average Daily Traffic Volume
ICC	Invercargill City Council
NZTA	New Zealand Transport Agency
vpd	Vehicle movements per day
vph	Vehicle movements per hour

1 Introduction

Tulloch Limited operates an industrial warehouse activity at 815 North Road, Lorneville north of Invercargill. Access to the site from North Road, which forms part of State Highway 6 (SH6), is currently provided by two one-way driveways. A Private Plan Change Request is proposed to rezone the site and two adjacent lots from Rural to Industrial 1. Primary access to the rezoned land will be via a new single, all-movement intersection to North Road.

Following preliminary consultation in relation to the site access, NZTA raised concerns with forming a new intersection at the location of the existing entrance because of the potential for conflict with right turn movements at the driveway to the commercial activities on the opposite side of the highway. This report provides an assessment of alternate access options and identifies a preferred configuration.

The report then provides an assessment of the potential transport effects that could arise from the rezoning. The focus of the report is the location and design of the vehicle access to the rezoned land.

The report has been structured to provide:

- A description of the existing transport environment;
- A description of the existing travel patterns in the area;
- A description of the proposal and activities enabled by the rezoning;
- An assessment of transport effects;
- An assessment of compliance with the relevant rules, policies and objectives of the District Plan.

2 Existing Transport Environment

2.1 Site Context

Figure 2-1 shows the location of the plan change site in the context of the surrounding area. The site is located on the eastern side of North Road which forms part of SH6. State Highway 98 (SH98) and State Highway 99 (SH99) meet SH6 at a roundabout about 600 metres north of the site.

Figure 2-1: Site Location in Context of Surrounding Area (Invercargill City Council Maps)

The existing access to the site is via two one-way driveways as shown in Photograph 2-1 and Photograph 2-4. The vehicle routes (Photograph 2-2 and Photograph 2-3) around the warehouse operate with one-way, clockwise movement controls as shown in Figure 2-2.

Figure 2-2 also shows a driveway on the opposite side of the highway approximately midway between the two site driveways. The driveway leads to a commercial activity.

805, 815 & 819 North Road
2 Existing Transport Environment

Photograph 2-1: Entry Driveway

Photograph 2-2: Internal driveway (north)

Photograph 2-3: Internal Driveway (South)

Photograph 2-4: Exit Driveway

Figure 2-3 shows the land zoning surrounding the site. The site itself is located on rural zoned land. Land to the west of SH6 and south of SH99 is zoned as Business 5. New buildings are under construction on the rural zoned land in the north-east quadrant of the SH6 / SH98 / SH99 roundabout.

805, 815 & 819 North Road
2 Existing Transport Environment

Figure 2-2: Site Layout

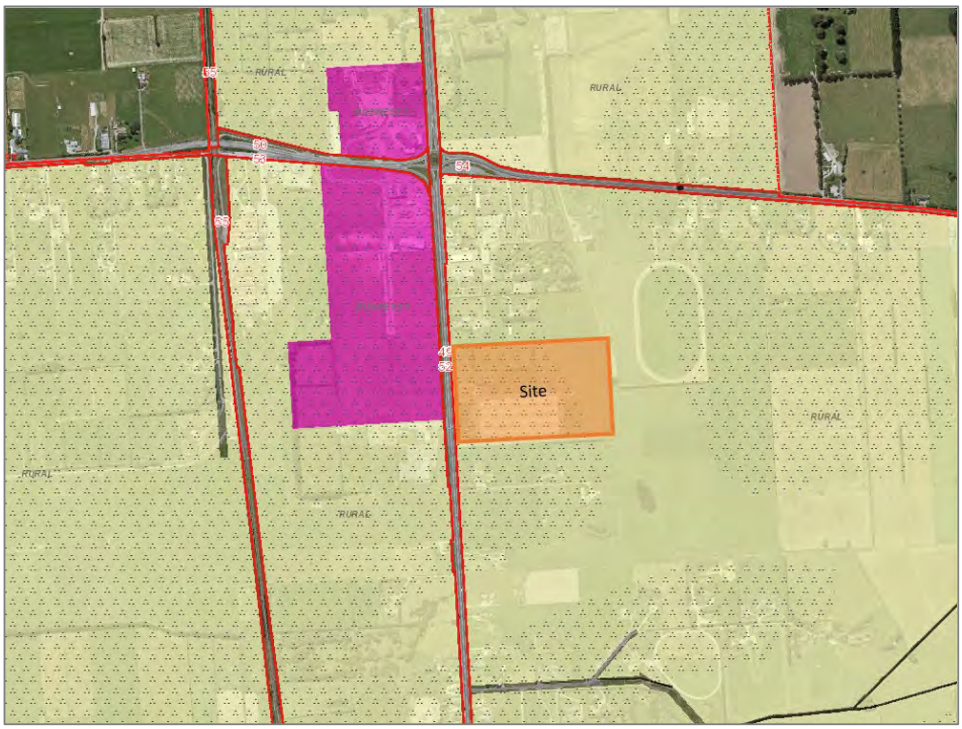


Figure 2-3: Land zoning

2.2 Road Network

Figure 2-4 shows the state highway network for the surrounding area. SH6 forms the primary strategic link for towns along the West Coast to Queenstown and Invercargill. SH98 and SH99 are regional links for Southland. SH6 meets State Highway 1 (SH1) which forms the primary link through towns and cities along the east coast in Invercargill. SH1 continues south from Invercargill to Bluff.

All state highways in the area are classified as High Productivity Motor Vehicle (HPMV) routes.

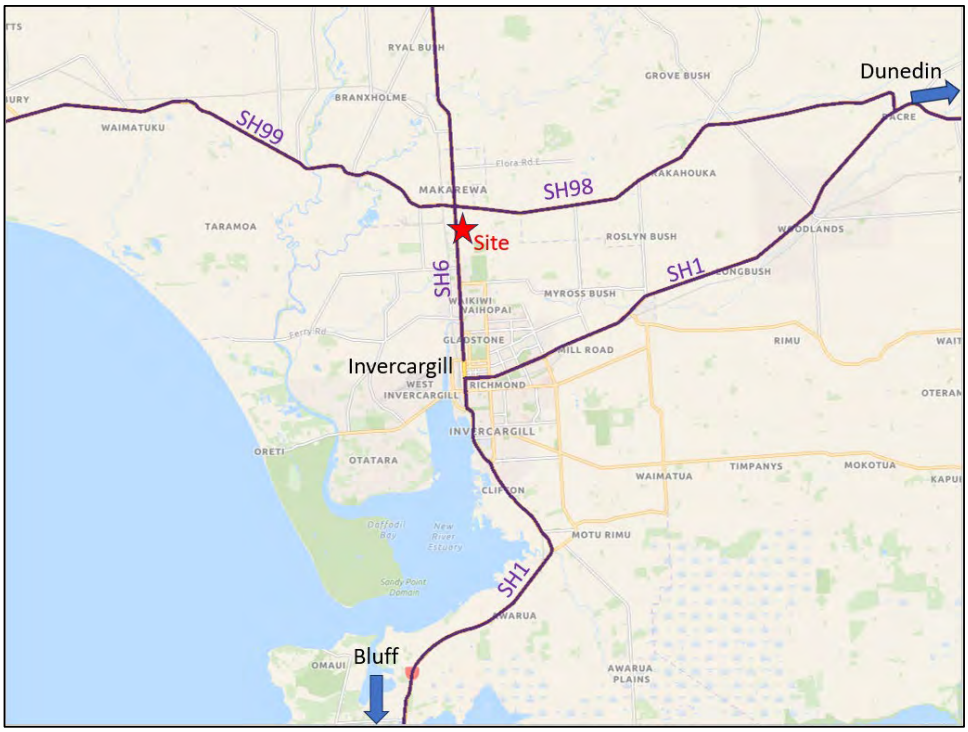


Figure 2-4: State Highway Network

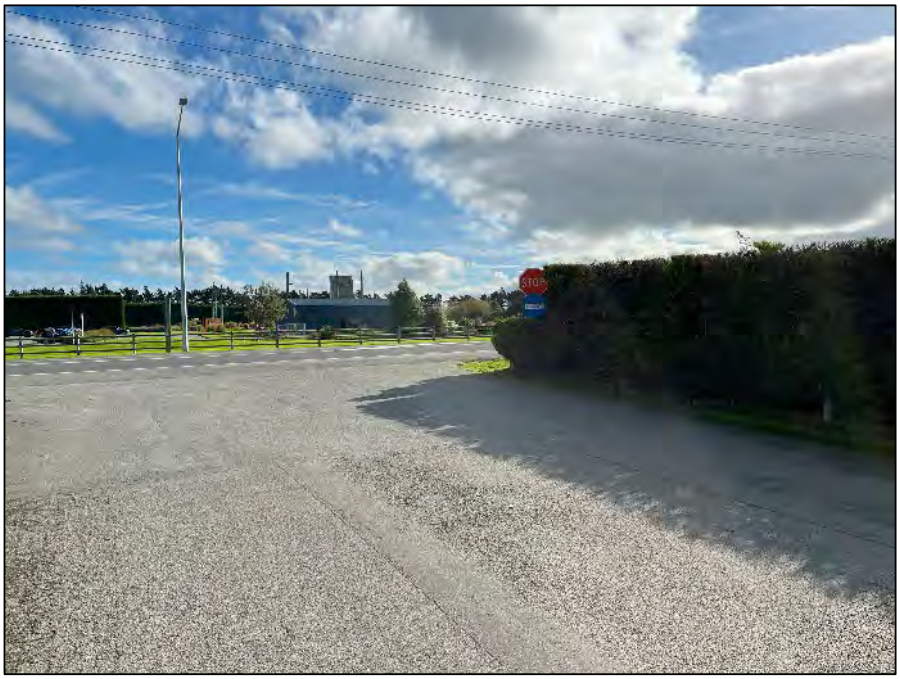
SH6 North Road has been constructed as a two-lane, median divided carriageway with wide sealed shoulders south of the SH6 / SH98 / SH99 roundabout as shown in Photograph 2-5 and Photograph 2-6. There is one through lane in each direction with a flush median and wide shoulders. The central flush median is about three metres wide which provides sufficient width for large trucks to stop clear of through traffic before turning right into driveways. Right turn bays are marked within the median at the local road intersections with Beaconsfield Road and Moore Road. The speed limit on North Road is 80km/h.

The exit driveway has stop signs installed but these are largely hidden by the hedgerows (Photograph 2-7 and Photograph 2-8). A Stop line has not been marked.

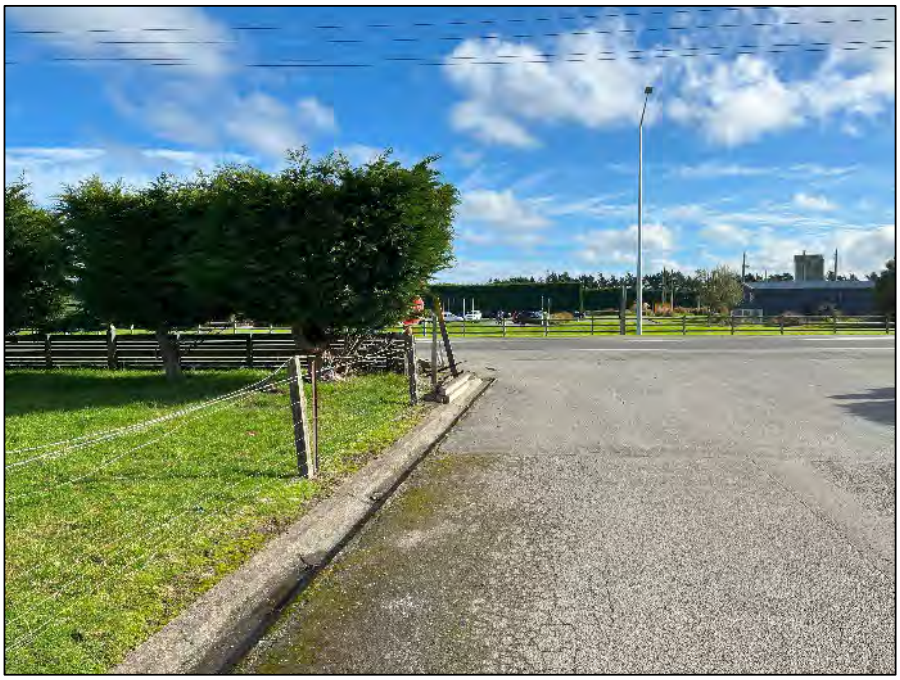
Photograph 2-5: SH6 North Road – View North from Site Entrance

Photograph 2-6: SH6 North Road – View South from Site Entrance

805, 815 & 819 North Road
2 Existing Transport Environment



Photograph 2-7: Stop signs at exit



Photograph 2-8: Concealed stop sign at exit

2.3 Active Mode Network

There are no footpaths, cycle lanes or bus routes on North Road. The nearest cycle lanes and bus routes to the site are in Invercargill to the south of the site. However, the wide sealed shoulders do provide space for cyclists to travel along SH6 clear of the traffic lane.

3 Existing Travel Patterns

3.1 State Highway Traffic Volumes

Figure 3-1 shows the annual average daily traffic volumes recorded on SH6 between the site and the Lorneville roundabout. The daily volumes have been about 12,200 vehicles per day (vpd) since 2018. The 90th and 98th percentile traffic volumes which provide an indication of the volumes during the busiest weeks of the year were about 14,300 vpd and 15,200 vpd respectively. Although there has been some year to year variation in daily volumes, there is no evidence for any growth over the 2018-2023 period.

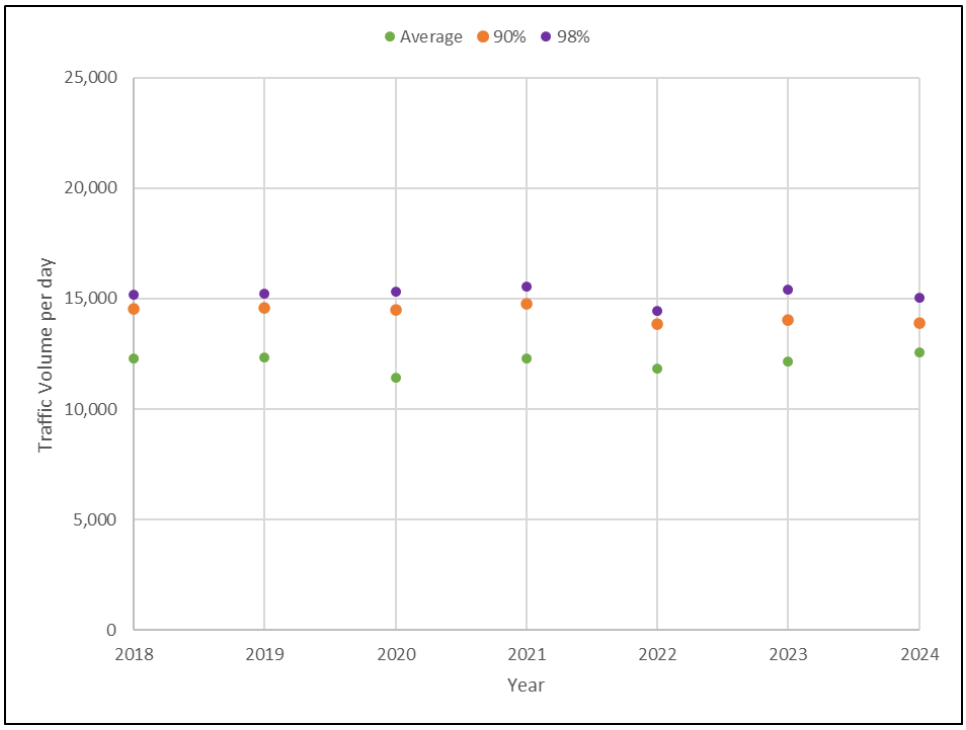


Figure 3-1: Annual Traffic Volumes South of Lorneville Roundabout

Figure 3-2 shows the weekday traffic volumes recorded on SH6 for the 2022-23 period. The lowest weekday volumes occur during the peak holiday period in early January with the highest volumes occurring the November-December period.

Figure 3-3 shows the hourly volumes recorded on SH6 in March 2024 which reflects typical volumes for much of the year. On weekday, there are clear peaks in the flows, one in the morning (7:30am-8:30am) and the other in the late afternoon (4.45pm-5:45pm). Figure 3-4 shows that the dominant flow direction is southbound towards Invercargill in the morning and northbound in the afternoon. This represents typical workplace travel patterns. At the weekend, there are single broad peaks during the middle of the day.

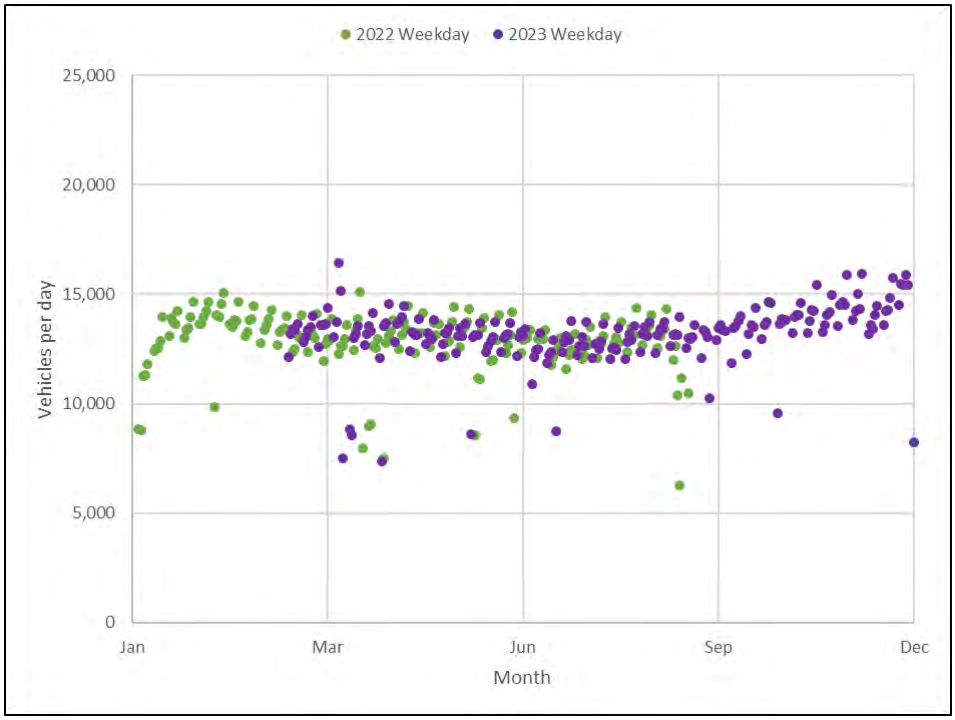


Figure 3-2: Weekday Traffic Volumes on SH6, 2022-2023

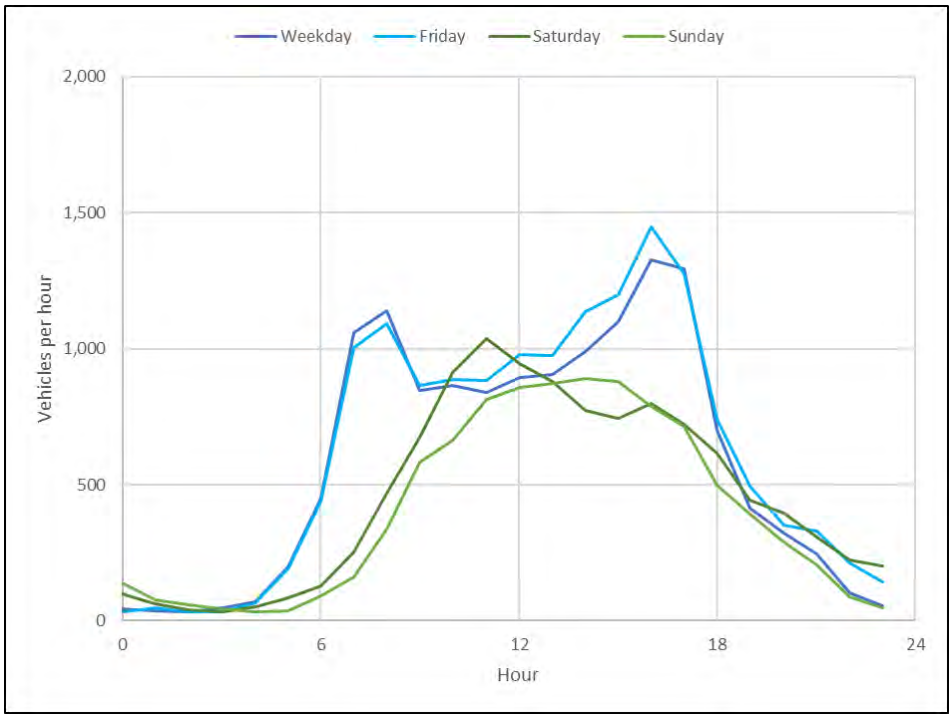


Figure 3-3: Hourly Traffic Volumes on SH6 South of Lorneville Roundabout

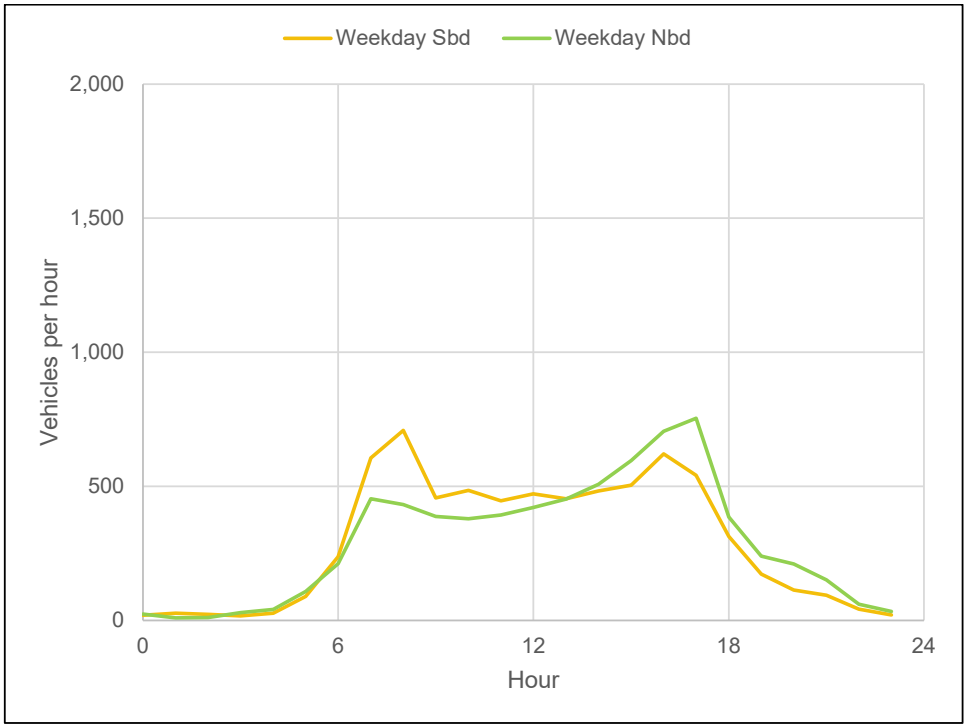


Figure 3-4: Weekday Directional Traffic Volumes on SH6 south of Lorneville Roundabout

3.2 Existing Activity

The warehouse employs six full-time staff and two casual staff during the peak season. Staff typically travel independently to the site by vehicle and have an average daily traffic generation of about 12 vpd.

Truck movements at the warehouse vary widely across the year. Wool is transported to the warehouse in a wide variety of trucks but is generally shipped using truck and trailer units. During the peak season, there can be 40-50 truck movements into the site bringing wool into the warehouse with these trucks generating a similar number of outbound movements. The exports from the site can involve 5-10 truck and trailer movements (in and out combined).

During the off-season, imports to the warehouse typically involve less than ten inbound truck movements per day.

Peak hourly movement volumes are typically below 10 vpd throughout the year.

3.3 Road Safety

Crash records of the surrounding road network from the full five-year period 2019-2023 have been reviewed using the NZTA Crash Analysis System. During the five-year period, there have been four crashes reported along North Road between the Lorneville roundabout 500 metres to the north of the site and Moore Road about 800 metres to the south. One of these resulted in a serious injury, one caused minor injury with no injuries being reported following the other two crashes.

The serious injury crash involved a driver travelling north on North Road at high speed, reportedly as high as 140 km/h, before losing control and leaving the road.

The minor injury crash involved a vehicle travelling north on North Road, just south of the Lorneville roundabout, running into the rear end of a stationary vehicle from traffic in the middle of the road. The crash was likely to be attributable to driver error because they were following too close to the vehicle in front.

One of the non-injury crashes involved a vehicle travelling north on North Road, to the south of Lorneville roundabout, falling asleep behind the wheel and hitting a fence to the left of the road. The second non-injury crash occurred when a driver attempted to u-turn but failed to check their blind spot as they pulled into the road from the shoulder, leading to a crash with a vehicle travelling south of North Road.

There were no crashes associated with turning movements the driveways to the site. The reported crashes do not raise any specific safety concerns with the road network.

From a Safe System perspective, the wide sealed shoulders reduce the potential for drivers to lose control if they inadvertently move out of the traffic lane. The wide flush median provides separation between opposing traffic lanes which will reduce the potential for head-on type crashes and also provides space for right-turning vehicles to stop in the carriageway clear of through traffic. The wide shoulders also provide space for any cyclists using the highway to travel outside the high speed traffic lane.

The primary safety concern is the short separation between the entry driveway to the site and the driveway on the opposite side of the road. Although only low volumes of movement were observed at both driveways, the short separation means that there will be a conflict between the paths of right turning vehicles if these occur at the same time.

4 Proposed Plan Change

4.1 NZTA Consultation

Consultation with NZTA began in 2020 with a request for preliminary comment on a site layout that was based on retaining the existing crossings but with the northern crossing and internal access lane being vested as a local road. NZTA raised a number of concerns with the proposed access arrangements including:

- *There is a potential that safety issues could occur with the proposed commercial operation and the existing operations on the western side of the highway (Adventure Southland Limited and Prime Range Fresh). The safety issues would mainly be associated with right turning vehicles into the existing access for these existing operations and if vehicles were to turn right into the northern access of the proposed activity.*
- *Any vehicle movements with the proposed activity will need to avoid conflicts from the existing access on the opposite side of the highway.*
- *Right turning vehicle movements could be mitigated if only right turns into the site were to occur at the southern entrance.*
- *No right turn turns in the northern entrance, only left in / left out and potentially right out could occur.*
- *Appropriate signage and road markings (painted right turn bay) would be required to ensure that the southern entrance is identified as the main entrance and that no right turns in could occur at the northern entrance.*
- *Ensure that internal accessways are positioned more than 45m from the intersection.*
- *Ensure that vehicles will not be required to park on the highway or cause obstruction to the highway.*
- *This section of the State Highway is a Limited Access Road under the Government Roading Powers Act 1989. The two entrances to the site have registered vehicle crossings that have conditions associated with them. These conditions do not reflect what is being proposed and would need to be updated once there is agreement on the access situation.*

Following this feedback, a range of alternate access arrangements were considered in relation to how the access to the site as a whole would operate. Appendix A provides a summary of the options that were considered. The revised access arrangements involve forming a new local road intersection about 60 metres north of the existing northern crossing and retaining the southern crossing for one-way exit movements only.

Appendix B includes details of the design criteria that have been adopted for the new intersection with Appendix C providing an assessment of the arrangements from a Safe System perspective. Appendix D includes drawings of the intersection concept design.

Further comment from NZTA was sought on the revised access arrangements. Although NZTA have indicated a preference for the southern crossing to be closed once the new local road intersection has been formed, retention of the crossing is desired by Tulloch to better manage truck movements to the south from the warehouse. Following further discussion, NZTA have indicated that they would accept retention of the southern crossing subject to the crossing being modified to restrict movements to left turn out only. It is anticipated that this would require regulatory signage requiring a left turn out only,

no entry signage from the highway and some reshaping of the crossing with kerbing and islands to physically prevent right turns.

4.2 Concept Masterplan

Tulloch Limited is seeking rezoning of its land at 805, 815 and 819 North Road from rural to industrial. The industrial zoning reflects the existing activity at its warehouse at 815 North Road. The site masterplan in Figure 4-1 shows the extent of the proposed rezoning and the proposed access arrangements.

The existing exit-only driveway from 815 North Road will be retained as a private driveway and continue to operate one-way. A new intersection is proposed on North Road to provide access to the currently undeveloped land. The new intersection will replace the existing entry driveway to 815 North Road and two-way driveway to 819 North Road.

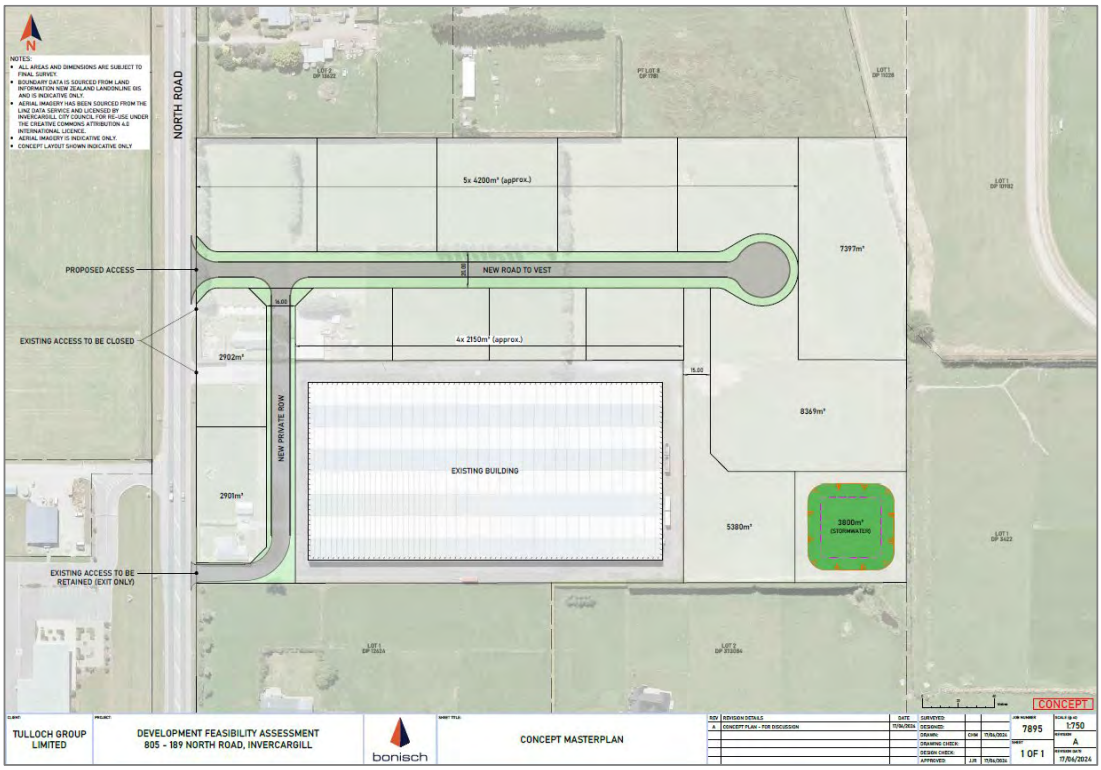


Figure 4-1: Plan Change Site and Access

4.3 Traffic Generation

The plan change site has a total area of about 9.7 ha with the existing wool store activity occupying about 3 ha, inclusive of the driveways. The rezoning would create about 5.6 ha of developable land after allowing for the existing wool store, new road reserve and other reserves.

The traffic generation of the site will be dependent upon the nature of activities that are established. Warehouse type activity such as the wool store generate lower volumes of movement than manufacturing or contractor type activities.

The 2018 New Zealand Trip and Parking Database includes traffic generation rates for industrial parks and suggest that the peak hour generation rate could be in the range 21-23 vph per hectare. Since this information is based on surveys collected in 2004-5, reference to other sources have also been considered.

The Institute of Transportation Engineers (ITE) Trip Generation web-based application reports traffic generation rates for light industrial activity of 0.41 vph per 1,000 sq ft of floor area which represents a rate of about 17 vph per hectare based on 40 percent site coverage.

The Trip Rate Information Computer System (TRICS) is a database of trip rates for developments used in the United Kingdom for transport planning purposes. This reports traffic generation rates for an Industrial Estate of 6.3 vph per hectare.

The wide range of rates is likely to be a reflection of the very wide range of activities that exist in industrial zones. For the purposes of this assessment, a peak hour traffic generation rate of 17 vph per hectare has been adopted. Based on that rate, new development at the site would generate about 95 vph at peak times. This means that peak hour volumes with full development of the site inclusive of the existing activity at the wool store will be 95-110 vph.

Light industrial activity typically has a short duration traffic generation peak early in the morning, 7:00-8:00am, as workers arrive but a broader peak in the afternoon that can extend from 2:00pm through to 6:00pm. This reflects the different working hours that often are adopted in the industry compared with office based activity. During the morning peak, 80-90 percent of vehicle movements are typically made into the site with this reversing during the afternoon.

The daily traffic generation of industrial activity can be 5-8 times the peak hour volume. On this basis, the site as a whole could generate 500-900 vpd on average.

5 Assessment of Transport Effects

5.1 Site Access

The SIDRA intersection analysis software has been used to assess the likely delays and operational performance of a new priority intersection. The analysis has been based on about 80% of movements being to or from the south during the peak periods. Table 5-1 shows the longest delays are for the lowest volume movement, that is the right turn out, could be about 20 seconds on average. The forecast delays during the afternoon / evening peak period are shown in Table 5-2. The average delay for the right turn out movement in the afternoon is about 25 seconds because of the higher two-way volumes on SH6 at that time. Average delays for all other turning movements are low, typically less than 10 seconds. Overall, this suggests that a priority intersection would provide an acceptable level of service.

Table 5-1: Intersection Performance - Morning Peak (8:00am)

Approach	Movement	Volume (vph)	Delay (s) / LOS
SH6 Invercargill	Through	430	n/a
	Right	60	11 (B)
New Road	Left	20	4 (A)
	Right	5	20 (C)
SH6 Lorneville	Left	10	7 (A)
	Through	710	n/a

Table 5-2: Intersection Performance – Afternoon / Evening Peak (4:00pm)

Approach	Movement	Volume (vph)	Delay (s) / LOS
SH6 Invercargill	Through	700	n/a
	Right	20	10 (A)
New Road	Left	70	4 (A)
	Right	10	25 (D)
SH6 Lorneville	Left	5	7 (A)
	Through	630	n/a

5.2 Road Safety

Although a priority intersection would operate with low levels of delay, the 80 km/h speed limit means that in the event of a crash, the consequences are likely to involve serious injuries or a fatality. The NZTA Moneterised Benefit and Cost Manual (MBCM) includes crash rate forecast models. The crash rate model for a high speed priority intersection has been used to assess likely crash rates at the proposed new intersection.

The forecast average crash rate is about 0.1 injury crashes per annum based on the new industrial zone generating 900 vpd on average. This crash rate is not considered sufficiently high to warrant construction of a roundabout.

5.3 Traffic Volumes

Full development of the plan change site could result in an average daily traffic generation of up to 900 vpd. It is expected that about 80% of all movements will be to or from the South. This means that the traffic volumes on SH6 south of the plan change site could increase by about 700 vpd. The higher traffic volumes at peak times will contribute to small increases in average delays at all driveways and intersections south of the site.

6 District Plan

6.1 Transport Objectives

Development of transport infrastructure and land use takes place in an integrated and planned manner which:

1. Integrates transport planning with land use.
2. Protects the function, safety, efficiency and effectiveness of the transport network.
3. Minimises potential for reverse sensitivity effects to arise from changing land uses.
4. Provides for positive, social, recreational, cultural and economic outcomes.
5. Minimises, where practical, the adverse public health and environmental effects.

The existing woolstore operation represents an industrial activity and has been established on rural land. The proposed rezoning will allow for expansion of industrial activities on the adjacent land. Since the site is located beside the state highway, it provides direct access to the strategic road network which will limit the potential for new industrial activity affecting residential activity within the wider area.

Access to the industrial zone will be via a new intersection that is formed in accordance with Austroads design standards. The design provides drivers with good visibility from limit lines which will enable drivers to clearly assess approaching traffic before turning. Since the zone will attract usage by large, articulated vehicles, the intersection has been designed to accommodate two-way movement of that size of vehicle. Overall, it is considered that the design will allow the intersection to operate safely and with the little effect on the operation of the highway.

6.2 Transport Policies

6.2.1 TRA-P1 Infrastructure

To provide for the safe and efficient operation, improvement and protection of transport infrastructure.

Access to the industrial zone is proposed via a new intersection rather than a vehicle crossing. This represents an appropriate approach to the access design because of the high volume of movements that is anticipated compared with the current situation. This will not affect the movement of existing traffic on the state highway and will allow turning movements to be undertaken safely.

6.2.2 TRA-P2 Noise

To manage the impact of noise associated with the airport, seaport, State Highway and railway networks.

Since the proposed industrial zone is located beside the state highway and will contribute to a small increase in traffic volumes, it could contribute to higher traffic noise on the highway. However, any increase is consistent with the purpose of the highway which is intended for carrying high volumes of traffic.

6.2.3 TRA-P3 Roading Hierarchy

To have regard to the Council's Roading Hierarchy when considering subdivision, use and development of land.

The subdivision site has frontage to the state highway only and access is proposed to the highway. This will ensure that any new industrial activities do not generate heavy commercial vehicle movements onto roads where these would not be anticipated. On that basis, the development of the subdivision and proposed road is considered to be consistent with the overall road hierarchy for the district.

6.2.4 TRA-P4 Standards

To set development standards for vehicle access, loading, parking and manoeuvring facilities.

There are no reasons why development within the site will not be able to meet the District Plan standards in relation to parking and loading.

6.2.5 TRA-P5 Adverse Effects

To manage subdivision, use and development adjacent to transport infrastructure in such a way as to avoid, remedy or mitigate potential effects, including reverse sensitivity effects on transportation infrastructure.

The proposed plan change involves rezoning of land from rural to industrial and does not involve any subdivision. Access to the new zone is proposed at a new intersection that will mitigate any potential effects on existing driveways on North Road. The provision of direct access to the state highway via the new local road will ensure that heavy vehicle movements at the site will not generate traffic effects on adjacent properties.

6.2.6 TRA-P6 State Highways

To have regard to any New Zealand Transport Agency standards regarding the location of new accesses on to, and egresses from, State Highways where the speed limit exceeds 50 kph.

The new intersection will be designed to mean NZTA requirements. Its location will provide appropriate separation from nearby driveways to allow a right turn bay to be marked.

6.2.7 TRA-P7 Cross Boundary Effects

To promote the management of the effects of activities which occur outside the District on the transportation networks of the District.

This policy is not applicable to this application because the proposed rezoning and activities enabled by the rezoning are within the District.

6.2.8 TRA-T8 Public Health

To manage transport activities and surrounding land use activities to protect public health and environmental values.

The plan change site is located adjacent to the state highway and will promote use of the highway for access. This will enable consolidation of industrial activities which will reduce the potential for generating effects on the surrounding land use activities.

6.2.9 TRA-T9 Integration

To integrate the planning of land use with existing transport infrastructure and provide for future transportation requirements.

The plan change site is located opposite the Business 5 zoned land and will provide an opportunity for industrial activity to be established close to that zone. The site location adjacent to the state highway will promote use of the highway for access.

6.2.10 TRA-T10 Public Transport, Walking and Cycling

To promote the use of public transport,and walking and cycling networks.

Since the site is located remote from existing public transport, walking and cycling networks, it is not practical to promote use of these travel modes.

6.2.11 TRA-T11 Significant Transport Networks

To recognise that the Invercargill Airport, seaport, railway, State Highways, and the arterial roads which link this infrastructure are regionally significant transportation networks and are essential to the ongoing viability and functioning of the District.

The plan change site is located adjacent to the state highway and will promote use of the highway for access. This will ensure that new activities can easily access the strategic road network and contribute to the viability and functioning of the District.

6.3 Transport Rules

The size of the plan change site means that there are no reasons why compliance with the rules relating to provision of parking and loading cannot be met (TRA-R1 to TRA-R10).

Under TRA-R11, construction of a new intersection on the State Highway represents a Discretionary Activity because the speed limit is greater than 50 km/h. The matters of discretion include:

The location of the vehicle accesses and egresses

1. The dimensions, formation and surfacing of the vehicle accesses and egresses

2. Any additional works that may be required on site or on the roadway itself to avoid, remedy or mitigate any potential traffic safety problems.

The proposed location of the new intersection provides sufficient separation from nearby driveways to allow a right turn bay to be marked within the flush central median and minimise the potential conflict with right turn movements at nearby driveways. The new road can be constructed to a standard that is suitable for the volumes of heavy vehicle movement anticipated within the proposed industrial zone.

Appendix D includes a concept design for the new intersection. The construction of the new intersection does not involve major alterations to the state highway. New kerbs will be constructed at the intersection and the existing line markings altered to include a right turn bay.

7 Conclusion

Tulloch Limited operates an industrial warehouse activity on rural zoned land at 815 North Road, Lorneville north of Invercargill. A Private Plan Change Request is proposed to rezone the site and two adjacent lots from Rural to Industrial. Following preliminary consultation with NZTA, site access to the rezoned land will be via a new single, all-movement intersection to North Road about 115 metres north of the driveway proving access to commercial activity on the western side of the highway. The separation of the new intersection from the western driveway will minimize the potential for conflict between right turns and is sufficient to allow a right turn bay to be marked at the new intersection.

Based on the size of the proposed industrial zone, it will have potential to generate 500 -900 vpd depending on the activities that are established. The priority intersection will provide sufficient capacity for this volume of movement. The right turn out movement will experience the greatest delays and are likely to be in the range 20-25 seconds at peak times if traffic generation is at the upper end of the forecast range.

The location of the proposed industrial zone adjacent to the highway ensures direct access to the strategic road network is possible which will reduce the potential for reverse sensitivity effects.

Overall, it has been concluded that the plan change proposal can be supported from a transport perspective subject to the following access arrangements being implemented.:

1. A new local road and intersection with SH6 being formed in accordance with an outline development plan that provides a minimum separation of 115 metres from the nearest driveways on the western side of SH6.
2. A right turn bay being marked on the state highway at the new intersection.
3. Regulatory signage being installed at the southern crossing permitting left turn out movements only.
4. Physical measures such as kerbs or raised islands to prevent right turn out movements.

Appendices

Appendix A Site Access Assessment

A.1 Primary Site Access Requirements

Create a new local road through the site that provides access to all potential future lots and meets the state highway at an all movement intersection.

The new road needs to accommodate two-way movement of large, articulated vehicles.

A.2 Access Options

A.2.1 Use Existing Drivewaysways

Figure A 1 shows an indicative layout for new local roads based on the existing driveway locations. A full intersection would be formed at the northern driveway location with the existing exit only driveway being retained.

Figure A 1: Potential Road layout based on existing driveways

This option would require the road to be formed with at least two small radius curves to provide an access route to new industrial land. It creates a short section of road between the highway and the wool store for vehicle queuing.

This option would not address the concerns raised by NZTA in relation to the conflicting right turns at the new intersection and driveway on the western side of the highway.

A.2.2 Restricted Movement Intersections

Figure A 2 shows one way to eliminate the potential conflict with right turn movements on the highway. This involves creating two new intersections with movements at the northern driveway restricted to left-in / right-out and movements at the southern intersection restricted to right-in / left-out.

Although this option could resolve the NZTA concern, it creates a more complex internal movement network and will increase the volume of movements across the western side of the wool store building which is used for access by the Segard Masurel business. Truck movements associated with this activity require the whole of the yard space along the west side of the building for manoeuvring which would conflict with the movement of general traffic.

Figure A 2: Potential Road with restricted movement intersections

A.2.3 New Intersection and Road

Figure A 3 shows an access option based on a new road being formed through the northern part of the site and meeting the highway at a new all-movement intersection. Under this option, the existing northern crossing would be closed. Entry to the existing wool store would be via the new road with truck exiting via the existing southern driveway. Access to the Segard Masurel business could be via new right of way.

Since access arrangements based on this road configuration would provide good access to new industrial zoned land and have the least effect on the operation of the existing activities, this represents the preferred layout from a transport perspective.

Figure A 3: New Road and intersection

Appendix B Intersection Design

B.1 Design Warrant

Figure B 1 shows the Austroads design warrants for turning treatments at priority intersections for a design speed of 70-100 km/h. A channelised treatment for right turns from the highway is considered appropriate at the new intersection because peak hour turning volumes will exceed 5 vph and the major road volumes during the day are greater than 800 vph.

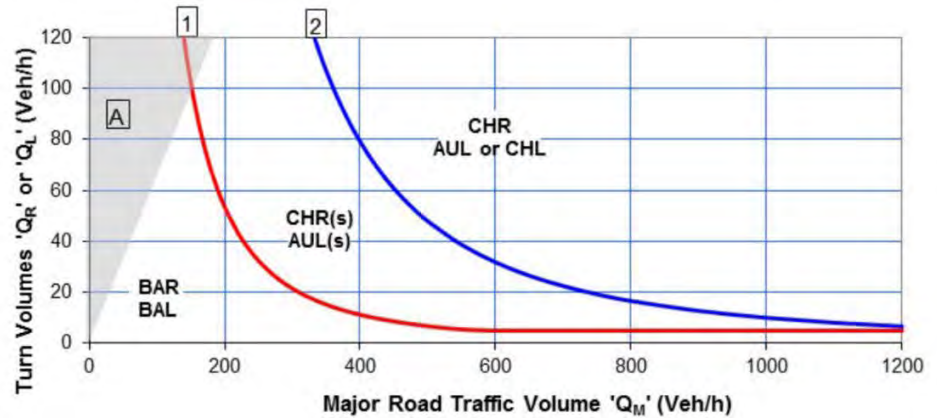


Figure B 1: AGTM6 Warrant for Turning Treatments – 70km/h < design speed < 100 km/h

B.2 Right Turn Treatment

Since the Austroads Guide to Road Design Part 4A does not include specific design guidelines for a rural, median divided road such as SH6 along the site frontage, the intersection design has been based on providing sufficient space to enable back-to-back right turn bays to be formed in relation to the driveway on the west side of SH6. The design parameters are set out in Table B 1.

Table B 1: Design Parameters - Right Turn Treatment

Design Parameter	Value
Design speed	80 km/h
Lane Width	3.5m (existing)
Flush median width	3.0 m (existing)
Storage length	25m
Taper length	20m
Deceleration length (including taper)	65m

Based on these design parameters, the new road should be located no closer than 110 metres north of the driveway on the western side of the highway.

Appendix C Safe System Assessment

C.1 Summary

The construction of a new, all movement intersection on SH6 is considered to be the most appropriate way to provide access to the rezoned land while maintaining access to the existing activities. Although the intersection will increase the number of conflict points at the site entrance, its relocation to the north will increase the separation from other driveways. From a Safe System perspective, the effects on safety are expected to be largely neutral.

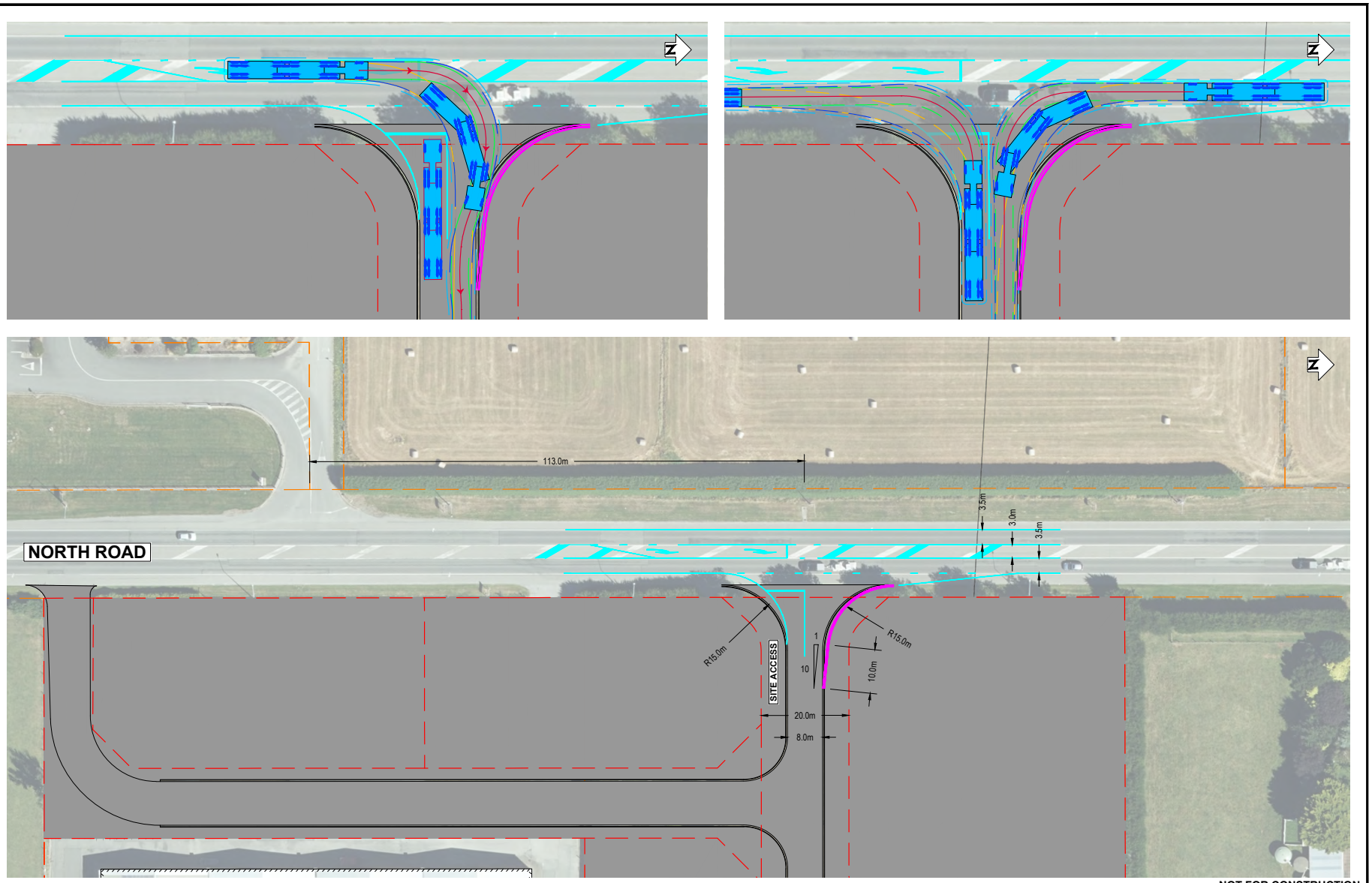
Table C 1: Existing Situation

	Run-off road	Head-on	Intersection	Other	Pedestrian	Cyclist	Motorcyclists
Exposure Comments:	SH6 – 13,000 vpd	SH6 – 13,000 vpd	SH6 – 13,000 vpd Driveways – 100 vpd	Nearby driveways Driveways – 100 vpd	SH6 – < 10 per day	SH6 – < 10 per day	SH6 – < 150 per day
Exposure Score:	4/4	4/4	4/4	1/4	1/4	1/4	4/4
Likelihood Comments:	Factors that increase the likelihood include: • Grassed berms	Factors that increase the likelihood include: • No median barriers	Factors that increase the likelihood include: • Conflicting right turns	Factors that increase the likelihood include: • Short separation • Conflicting right turns	Factors that increase the likelihood include: • No footpaths	Factors that increase the likelihood include: • Truck volumes	Factors that increase the likelihood include: • Truck Volumes
	Factors that decrease the likelihood include: • Wide sealed shoulders • Straight road alignment • Lighting	Factors that decrease the likelihood include: • Wide flush median • Straight road alignment • lighting	Factors that decrease the likelihood include: • Wide flush median • Wide, one-way driveways • Stop controls • Good sightlines	Factors that decrease the likelihood include: • Straight road alignment • Good visibility between driveways • Wide sealed shoulders	Factors that decrease the likelihood include: • Wide sealed shoulders	Factors that decrease the likelihood include: • Wide sealed shoulders	Factors that decrease the likelihood include: • Wide sealed shoulders
Likelihood Score:	2/4	1/4	2/4	2/4	1/4	1/4	2/4
Severity Comments:	Factors that increase the severity include: • 80 km/h speed limit • Trees and power poles •	Factors that increase the severity include: • 80 km/h speed limit •	Factors that increase the severity include: • 80 km/h speed limit •	Factors that increase the severity include: • 80 km/h speed limit	Factors that increase the severity include: • 80 km/h speed limit • Truck volumes	Factors that increase the severity include: • 80 km/h speed limit • Truck volumes	Factors that increase the severity include: • 80 km/h speed limit • Truck volumes
	Factors that decrease the severity include: • •	Factors that decrease the severity include: • •	Factors that decrease the severity include: • •	Factors that decrease the severity include: • Decelerating vehicles •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •
Severity Score:	4/4	4/4	3/4	3/4	4/4	4/4	4/4
Product **(multiply scores above for crash type)**	**32/64**	**16/64**	**24/64**	**6/64**	**4/64**	**4/64**	**32/64**
			TOTAL				**118/448**

Table C 2: North Road with new intersection

	Run-off road	Head-on	Intersection	Other	Pedestrian	Cyclist	Motorcyclists
Exposure Comments:	SH6 – 13,000 vpd	SH6 – 13,000 vpd	SH6 – 13,000 vpd ~~Driveways – 100 vpd~~ New local road – 1,000 vpd	Nearby driveways Driveways – 100 vpd	SH6 – < 10 per day	SH6 – < 10 per day	SH6 – < 150 per day
Exposure Score:	4/4	4/4	4/4	1/4	1/4	1/4	4/4
Likelihood Comments:	Factors that increase the likelihood include: • Grassed berms •	Factors that increase the likelihood include: • No median barriers •	Factors that increase the likelihood include: • ~~Conflicting right turns~~ • More conflict points with intersection	Factors that increase the likelihood include: • ~~Short separation~~ • ~~Conflicting right turns~~	Factors that increase the likelihood include: • No footpaths •	Factors that increase the likelihood include: • Truck volumes •	Factors that increase the likelihood include: • Truck Volumes •
	Factors that decrease the likelihood include: • Wide sealed shoulders • Straight road alignment • Lighting	Factors that decrease the likelihood include: • Wide flush median • Straight road alignment • lighting	Factors that decrease the likelihood include: • Wide flush median • ~~Wide, one-way driveways~~ • Stop controls • Good sightlines • Right turn bay	Factors that decrease the likelihood include: • Straight road alignment • Good visibility between driveways • Wide sealed shoulders • Separation > 115m	Factors that decrease the likelihood include: • Wide sealed shoulders	Factors that decrease the likelihood include: • Wide sealed shoulders	Factors that decrease the likelihood include: • Wide sealed shoulders
Likelihood Score:	2/4	1/4	2/4	1/4	1/4	1/4	2/4
Severity Comments:	Factors that increase the severity include: • 80 km/h speed limit • Trees and power poles •	Factors that increase the severity include: • 80 km/h speed limit •	Factors that increase the severity include: • 80 km/h speed limit •	Factors that increase the severity include: • 80 km/h speed limit	Factors that increase the severity include: • 80 km/h speed limit • Truck volumes	Factors that increase the severity include: • 80 km/h speed limit • Truck volumes	Factors that increase the severity include: • 80 km/h speed limit • Truck volumes
	Factors that decrease the severity include:	Factors that decrease the severity include:	Factors that decrease the severity include:	Factors that decrease the severity include: • Decelerating vehicles	Factors that decrease the severity include:	Factors that decrease the severity include:	Factors that decrease the severity include:
Severity Score:	4/4	4/4	3/4	3/4	4/4	4/4	4/4
Product (multiply scores above for crash type)	**32/64**	**16/64**	**24/64**	**3/64**	**4/64**	**4/64**	**32/64**
			TOTAL				**115/448**

Appendix D Intersection Concept Design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NOT FOR CONSTRUCTION
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Appendix C

Council Correspondence

Meredith Ryan

From: Paul Pollard <paul.pollard@es.govt.nz>
Sent: Wednesday, 29 January 2025 10:49 am
To: Meredith Ryan
Subject: RE: [External] FW: 805 - 819 North Road, Industrial Development

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Hi Meredith

I talked to Colin Young about it yesterday and he thought attenuation wouldn't be necessary but did recommend installing a sump to intercept any sediment before it exits into the Waikiwi Stream trib on the eastern boundary.

Regards, Paul

Paul Pollard
Team Leader Catchment Operations
Environment Southland *Te Taiao Tonga*

P 03 211 5115 |M 021 784 953
Cnr Price St & North Rd, Private Bag 90116, Invercargill 9840
paul.pollard@es.govt.nz|es.govt.nz|facebook.com/environmentsouthland
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Environment Southland supports flexible working arrangements. I may have sent this email outside of business hours and I only anticipate a response during your working hours.

From: Meredith Ryan <meredith@bonisch.nz>
Sent: Wednesday, 29 January 2025 10:45 am
To: Paul Pollard <paul.pollard@es.govt.nz>
Subject: RE: [External] FW: 805 - 819 North Road, Industrial Development

Hi Paul,

Just following up to see if you'd managed to look into this query at all?

Thanks,

Meredith Ryan
CIVIL ENGINEER

bonisch

03 218 2546 EXT 219
027 320 1554
0800 802 546
Level 4, 25 Esk Street , Invercargill

Connect with us

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From: Paul Pollard <paul.pollard@es.govt.nz>
Sent: Monday, 27 January 2025 2:17 pm
To: Meredith Ryan <meredith@bonisch.nz>
Subject: RE: [External] FW: 805 - 819 North Road, Industrial Development

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Hi Meridith

Colin usually works here on Tuesday afternoons as he's semi retired so I'll follow up tomorrow unless he sees the earlier message and responds directly

Regards Paul

Paul Pollard
Team Leader Catchment Operations
Environment Southland *Te Taiao Tonga*

P 03 211 5115 |M 021 784 953
Cnr Price St & North Rd, Private Bag 90116, Invercargill 9840
paul.pollard@es.govt.nz|es.govt.nz|facebook.com/environmentsouthland
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From: Meredith Ryan <meredith@bonisch.nz>
Sent: Monday, 27 January 2025 2:12 pm
To: Paul Pollard <paul.pollard@es.govt.nz>
Cc: Colin Young <colinshenyoung@gmail.com>
Subject: RE: [External] FW: 805 - 819 North Road, Industrial Development

Hi Paul,

The current intention is to leave the existing drain in situ without realignment etc, so I don't expect there to be any interference with the maintenance access. We may however, be looking at an additional outfall in the southeast of the site to drain the proposed first flush pond.

That would be great if you could follow up with Colin and come back to me,

Thanks,

Meredith Ryan
CIVIL ENGINEER

bonisch

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027 320 1554
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From: Paul Pollard <paul.pollard@es.govt.nz>
Sent: Monday, 27 January 2025 2:01 pm
To: Meredith Ryan <meredith@bonisch.nz>
Cc: Colin Young <colinshenyoung@gmail.com>
Subject: RE: [External] FW: 805 - 819 North Road, Industrial Development

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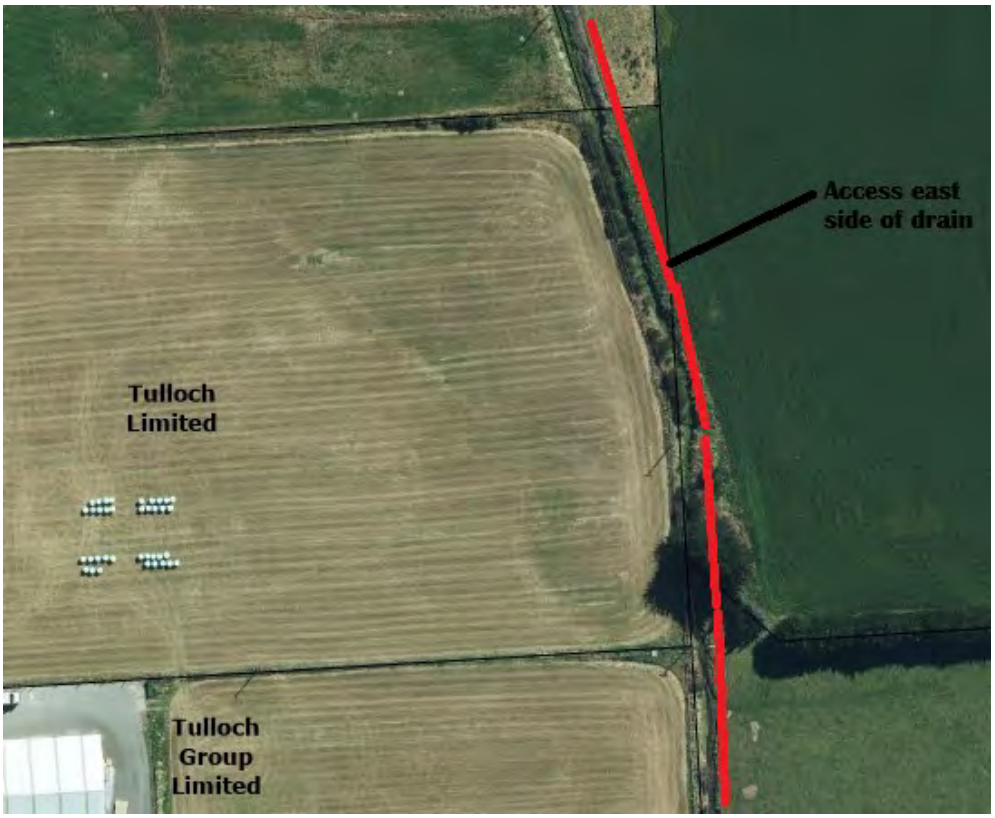
Hi Meredith

I look after the Lorne Trib drain that runs along the east boundary of the site and we periodically clean the weed and silt out of it to ensure properties upstream have sufficient drainage outfall. Maintenance machinery travels up the eastern side of the drain and technically the upper eastern corner of the Tulloch property cuts across the drain. My question is whether the development work is likely to interfere with this access?

I'll talk to Colin Young about the stormwater when I catchup with him tomorrow.

Regards, Paul



Paul Pollard
Team Leader Catchment Operations
Environment Southland *Te Taiao Tonga*

P 03 211 5115 | M 021 784 953
Cnr Price St & North Rd, Private Bag 90116, Invercargill 9840
paul.pollard@es.govt.nz | es.govt.nz | facebook.com/environmentsouthland
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From: Meredith Ryan <meredith@bonisch.nz>
Sent: Monday, 27 January 2025 1:37 pm
To: Colin Young <Colin.Young@es.govt.nz>
Cc: Paul Pollard <paul.pollard@es.govt.nz>
Subject: [External] FW: 805 - 819 North Road, Industrial Development

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Hi Colin/Paul,

We are investigating a proposed industrial development at 805 – 819 North Road, Invercargill (proposed plan attached) and currently looking at stormwater discharge from site. The site currently discharges to the drainage channel adjacent the eastern boundary..

This job has been in the pipeline for a number of years and it seems that previously, ES have told us attenuation is not required for discharge to the eastern channel. Can you please confirm this is still the case?

I've been pointed in your direction for this so hopefully you can give us a steer in the right direction, let me know if you need any additional information etc,

Regards,

Meredith Ryan
CIVIL ENGINEER

bonisch

03 218 2546 EXT 219
027 320 1554
0800 802 546
Level 4, 25 Esk Street , Invercargill
Connect with us bonisch.nz

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Appendix 9: Kamo Marsh Landscape Assessment

LANDSCAPE ASSESSMENT
TULLOCH LIMITED
PRIVATE PLAN CHANGE

Prepared for: 805, 815 and 819 North Road, Tullock Limited

Prepared by: Jade Au Morris, (Registered NZILA Landscape Architect)
Kamo Marsh Landscape Architects (KM)

Date: 14 May 2025
Revision: C

KamoMarsh Landscape Architects Ltd
Queenstown I Christchurch
Tel: (03) 366-8181

LANDSCAPE AND VISUAL EFFECTS ASSESSMENT

CONTENTS

A. Introduction
B. Landscape Methodology
C. Description of the proposal
D. Relevant statutory provisions
E. Description of existing landscape
F. Landscape and visual effects
G. Conclusion

ATTACHMENTS

The following landscape **Attachments** are referred to in this assessment:

Attachment A:	Context and Photo Location Plan
Attachment B:	Landscape Mitigation Measures
Attachment B1 – B2:	Mitigation Planting - Sections
Attachment C:	Invercargill District Plan Map
Attachment D1 – D8:	Potential Visibility Photos

A. INTRODUCTION

1. This landscape assessment has been prepared by Jade Au Morris (Registered NZILA Landscape Architect), on behalf of Kamo Marsh Landscape Architects (KM), to assess the potential landscape and visual effects of the future development 805, 815 and 819 North Road.

2. The proposal seeks consent for a private plan change to rezone the area of Rural land to Industrial 1 Zone (IND1Z-R1) land. This will enable activities which are listed in the Industrial 1 Activities, of the Invercargill City District Plan (ICDP) to be established on the site as a permitted activity.

3. KM's role within this proposal includes a site visit to undertake a landscape and visual assessment from surrounding public views and to provide landscape recommendations. This is to ensure that any potential adverse landscape and visual effects of future development within the proposed Industrial zone will be visually suitable within the surrounding Rural landscape.

B. LANDSCAPE METHODOLOGY

4. The general structure of this report will follow the concept and principles of the *Te Tangi A Te Manu – Aotearoa New Zealand Landscape Assessment Guidelines.*

5. The methodology is consistent with the above guidelines and KM's role within this application includes the following:

- Desk-top research of the site zoning and Invercargill City District Plan (ICDP) policies, objectives, and assessment matters,
- A site visit to assess the potential adverse visual effects of the proposed plan change,
- Provide landscape recommendations to ensure the proposed development is visually appropriate within the receiving landscape,
- Consideration on measures to avoid, remedy and mitigate any potential adverse visual effects.

6. The site visit and landscape assessment has been undertaken by Jade Au Morris (Registered NZILA Landscape Architect), Senior Landscape Architect and Head of the Otago/Southland Region from Kamo Marsh Landscape Architects (KM).

7. The landscape assessment photos have been taken in accordance with the NZILA Best Practice Guidelines. All photos have been taken by Jade Au Morris from KM. The photos are a panoramic multiple image stitch, taken with a 50mm focal length in portrait orientation and stitched together using Microsoft Image Composite Editor. The view represents an approximate 124-degree horizontal field of view and an approximate 55-degree vertical field of view. The photos are taken at eyeline, approx. 1.6m above ground level.

5. To provide consistency on identifying the extent of landscape and visual effects, the effects rating scale used is a modification on the NZILA 7-point scale of effects, adopting the Guidelines for the Assessment of Landscape and Visual Effects, Supplementary Statement of Evidence of Bridget Mary Gilbert for Queenstown Lakes District Council, Topic 2 – Rural Landscapes, 29 April 2019 (refer **Appendix A**).

Table 1: Te Tangi A Te Manu – Aotearoa New Zealand Landscape Assessment Guidelines[1] 7-point scale:

Very Low	*Low*	*Low – Moderate*	*Moderate*	*Moderate - High*	*High*	*Very High*

[1] Lister, G., De Lambert, R., & Titchener, A. (2022). *Te Tangi a Te Manu: Aotearoa New Zealand Landscape Assessment Guidelines*.

C. DESCRIPTION OF THE PROPOSAL

8. The following will outline the key components of the proposal which are pertinent to the assessment of the potential landscape and visual effects. *(Note: the project description of the AEE provides full details of the proposal)*.

9. The proposal seeks:

- Approval to rezone the site from Rural to Industrial 1 (light) Zone (IND1Z-R1). This will permit light industrial activity as permitted in the ICDP,
- To retain the existing warehouse building,
- A new entry location onto SH6 (and close the existing entrance). It is understood that an appropriate entry point onto SH6 has been recommended by NZTA.
- The construction of light industrial buildings, car parking and an internal access road, refer plan change 'concept masterplan' for indicative layout,
- Landscape mitigation measures, as shown on **Attachment B**.

10. To ensure that any future development within the proposed IND1Z-R1 is visually appropriate within the wider Rural and Business 5 Zone, the following architectural and landscape design controls are proposed (refer **Attachment B**):

a) All new buildings and structures to have a recessive exterior wall and roof cladding with a light reflectance value (LRV) of less than 37%.

b) Signage: All building signage is either directed to the west towards North Road or directed inwards to the internal roads, reducing potential glare on the adjacent rural land (to the north, east and west). All signage to avoid bright and dominant colours and to comply with the relevant ICDP Rules.

c) External lighting:
   - To be set back a minimum of 3m from site boundaries and to not create light spill beyond the site boundaries,
   - Downlighting only, to reduce adverse effects on the night sky,
   - Security lighting to be sensor monitored where possible.

d) Building set back and native vegetation buffer. This will be located between the proposed IND1Z-R1 land and the adjacent Rural land. This will include:
   - Northern boundary – 3m building setback, planted with native vegetation.
   - North-eastern site corner – 7m building setback from edge of the existing drain, to be planted with native vegetation.
   - Eastern boundary – 13m building setback, which includes a 5m wide native planting buffer adjacent to the boundary.

- Southern boundary – The existing warehouse will be retained. The south-eastern portion of this boundary will include a 13m building setback to align with the set back of the existing building. A 5m wide native planting buffer will be located along the boundary.
- Western boundary – 10 building setback, to be a grass verge.

e) The native vegetation buffer will include (but not limited to) the following species:

- Pittosporum tenuifolium, Kohuhu
- Cordyline australis, Tī kōuka
- Coprosma propinqua, Mingimingi
- Aristotelia serrata, Wineberry
- Chionochloa flavicans, Toetoe
- Phormium tenax, Flax

The above species reflect plants found in the surrounding vicinity and are to be planted in natural clusters. Refer **Attachment B** for species install grade, spacing and approximate mature height.

f) Exotic *Cupressus x leylandii 'Leighton Green'*, Leyland Cypress trees are proposed to supplement the native vegetation buffer and achieve a greater screening height. These will reach beyond the maximum built structure height and compensate for the required site buildup. Refer **Attachment B** for species install grade, spacing and approximate mature height.

g) Plant establishment and maintenance: All plants shall include plant protection sleeves or a similar pest protection method. All planting and existing vegetation shall be maintained in accordance with the plan. If any plant or tree dies or become diseased it shall be replaced within 12 months as per the plant schedule and landscape plan.

D. RELEVANT STATUTORY PROVISIONS

11. At present, the Invercargill City District Plan (ICDP) zones the site Rural Land (refer **Attachment C**). The proposal seeks approval for a private plan change, to rezone the Rural Land to Industrial 1 (light) Zone (IND1Z-R1). The ICDP, provides a list of permitted, discretionary and non-complying activities for this zone.

12. The following assessment shall refer to the relevant Rules, Objectives and Policies of the IND1Z-R1, while acknowledging the landscape character and qualities of the existing and surrounding Rural Land.

E. DESCRIPTION OF EXISTING LANDSCAPE

13. For the purpose of this report, the proposed 'site' refers to the area of future light industrial development, which is proposed for 805, 815 and 819 North Road (refer **Attachment B**).

14. The proposed site is located in Lorneville, which is approximately 8km north of the Invercargill city centre. SH6/North Road is located on the western side of the site and connects Lorneville to Invercargill.

15. Approximately 2.0km to the south of the site, along SH6/North Road, is the northern edge of Waikiwi (suburb of Invercargill city). The land use either side of the highway consists of a diverse mixture of uses. Residential, semi-rural, peri-urban, small business and light industrial developments, interspersed through glimpses of rural farmland.

16. Approximately 600m north of the site, is the Winton-Lorneville Road (SH6) and Lorne Dacre Road (SH98) intersection. The roundabout is bordered by large scale agricultural warehouses and farm vehicle showrooms, with vibrantly coloured signage boards and farm vehicles located along the road boundary. This existing built development and activity reflects the land use and rural servicing of the surrounding vicinity.

17. Under the ICDP, the land on the western side of the roundabout is zoned Business 5 and the land to the east is zoned Rural. Although, zoned Rural, the landscape character at this intersection and in the surrounding vicinity is not typically 'rural'. Rather the built environment reflects that of a commercial character. This intersection acts as a gateway to Lorneville, reflecting the transition from rural land (to the north of the intersection) to the more industrial and commercial character of Lorneville and the mixed land uses evident further south, toward Invercargill.

18. Directly north, east and south of the subject site, the land is zoned Rural. To the north, is the Wat Buddha Samakhee. To the east the land is held in lifestyle blocks, characterised by open paddocks, residential dwellings, farm fencing, accessway and shelterbelts. Directly south of the site, are rural lifestyle blocks, characterised by smaller paddocks, farm fencing, shelterbelts, accessways and rural dwellings. Further south, rural residential dwellings line the SH6 and Beaconsfield Road. These are smaller lot sizes with associated domesticated activity.

19. The land to the west and northwest of SH6 is zoned Business 5. This zone begins opposite the site, extending north beyond the Lorneville roundabout. With a 10-metre building height limit, this zone is currently occupied by several large-scale warehouses and commercial buildings. Much of the Business 5 zone is still to be developed, therefore further change of the existing landscape character is anticipated.

20. Southwest of the site, on the western side of SH6, is Prime Range Fresh meat & fish exports. This commercial business is located opposite the site and is zoned rural in the district plan.

21. Near the site, well-established shelterbelts partially line the SH6. This reduces the visual catchment of some of the existing built development. However, there are also breaks in the shelterbelt, which provide intermittent views of the warehouses and built form. Due to this, views of large-scale buildings and industrial style development is not unexpected in surrounding vicinity.

22. The site itself is currently occupied by a large-scale warehouse which is approximately 200 x 100 x 8m high. This existing warehouse is set back approximately 60m from the road boundary and 13m from the southern boundary. In addition, there are 2 smaller scale buildings adjacent to SH6, surrounded by established vegetation. The remaining site is currently held in pasture, segmented by farm fencing and shelterbelts. Existing shelterbelts partially border the site and adjacent rural land to the north-west and south-east. The east end of the site slopes down to the neighbouring paddocks to the east. A modified drain also cuts diagonally across the far north-east corner of the site.

23. From SH6, Beaconsfield Road and the neighbouring rural land, the existing site is visible, with views of the existing warehouse, buildings and signage. Visibility of the site is limited to intermittent glimpses, visually contained by the framework of shelterbelts and existing built development in the vicinity.

F. LANDSCAPE AND VISUAL EFFECTS

24. This landscape assessment shall address:

a) The potential adverse effects of the proposed private Plan Change on the existing visual amenity values of the surrounding Rural land,
b) The potential adverse effects of the proposed private Plan Change on the existing landscape character and quality,
c) The Rules, Objectives and Policies of the IND1Z-R1, which are relevant to the scope of the landscape assessment.

A. Existing Visual Amenity Values

25. This report has assessed the key location in which the future development may be visible, this includes (refer **Attachment A**).

- State Highway 6 (SH6), Winton – Lorneville Highway (to the north of the roundabout),
- State Highway 6 (SH6), North Road (to the south of the roundabout),

- The residential dwellings lining Beaconsfield Road (to the south of the site),
- Neighbouring private properties within the Rural zone.

26. **Attachments D1 – D8** provides visual assessment photos from the identified public locations and commentary on the extent of potential visibility of the future development within the IND1Z-R1.

27. SH6 – Winton – Lorneville Highway (north of the roundabout)

(refer photo locations A, B and C, **Attachments D1-D2**)

28. When approaching Lorneville from the north, the landscape transitions from rural to industrial in both the character and visual amenity. To the north of Lorneville, the landscape is characterised by open paddocks, segmented by long shelterbelts, accessways, farm fencing, large farm buildings and scattered rural residential dwellings.

29. In contrast, the intersection between Winton-Lorneville Road (SH6) and Lorne Dacre Road (SH98) (refer photo Location C and E, **Attachment D**), which is approximately 500m north of the site, is bordered by large scale agricultural warehouses and farm vehicle showrooms, with vibrantly coloured signage boards and farm vehicles located along the road boundary. The existing built development surrounding the roundabout acts a gateway into Lorneville and reflects the rural servicing and land use of the surrounding vicinity.

30. Due to the foreground development and distance from the site, the proposed site is not visible from this section of the SH6 or the intersection. The proposal will have no adverse landscape and visual effect from the identified views along the Winton-Lorneville Highway.

31. SH6 – North Road (south of the roundabout)

(refer photo locations D, F and G, **Attachments D2-D4**)

32. Travelling towards the site, the land adjacent to the SH6 is a variety of established shelterbelts lining the road, open paddocks, warehouse developments with associated signage and industrial scale storage yards. The land on the western side of the SH6 is zoned Business 5.

33. From the identified locations (refer **Attachments A, D2-4**), the site itself is predominantly screened by the wider framework of existing shelterbelts lining the SH6 and the foreground development. On approaching the site, there are glimpse views of the deciduous vegetation on the street frontage.

34. Due to the lack of visibility and surrounding built environment, it is considered that any glimpse views of the proposed development will have a very low adverse effect on the existing visual amenity values from the identified views.

35. SH6 – North Road (adjacent to the site boundary)
(refer photo locations H, I, J and K, **Attachments D4-D6**)

36. When adjacent to the site boundary on SH6, the northern portion of the site is partially screened by the deciduous trees lining the boundary. There is no screening on the southern side of the site, with views of the existing large warehouse building.

37. On the opposite side of the road, the land is zoned Business 5, and is currently occupied by the Prime Range Fresh building and associated car park.

38. Taking into account the existing warehouse on site and surrounding built development, the existing landscape does not reflect that of a typical rural character. It is considered that future development within the proposed IND1Z-R1 zone will be visually appropriate within the surrounding vicinity and will not appear out of context.

39. Furthermore, due to the surrounding development, potential views of the proposed site are limited to a small visual catchment, when adjacent to the site boundaries. It is further noted that this section of the road is an 80km zone, therefore, views of the site are fleeting.

40. To that end, the limited views of the future IND1Z-R1 zone from the SH6 will be visually cohesive within the receiving landscape and will have a low adverse effect on the existing visual amenity values of the landscape.

41. SH6 – North Road (south of the site)
(refer photo locations L and M, **Attachments D6-D7**)

42. Similarly to when approaching the site from the north, the proposed site is only visible on approaching the site boundaries. Beyond this, the site is screened by the wider framework of shelterbelts and existing development.

43. Considering the built context in the immediate vicinity and within the site, the proposed IND1Z-R1 zone is considered appropriate to the site and will have a low adverse effect on the existing visual amenity values of the receiving landscape.

44. Beaconsfield Road (to the south of the site)
(refer photo location P, **Attachment D8**)

45. From the existing private residential properties which line Beaconsfield Road, the proposed site and existing warehouse are visible, located in the context of the large farm buildings scattered within the wider rural zone.

46. It is acknowledged that the existing warehouse on site is large scale and highly visible, therefore, to protect the existing residential views from further development, the proposal includes a vegetated buffer to the site boundaries. This will aid in mitigating views of the future development and break the bulk of the future built forms. Furthermore, the proposal provides restrictions on the LRV of the exterior cladding, reducing potential glare which is currently experienced from the existing warehouse.

47. The proposed mitigation measures will ensure that any future development will be visually consistent to the receiving landscape and protect the nearby private views. Therefore, the proposed plan change will have a low adverse visual effect on the existing residential views.

48. Neighbouring private properties within the Rural zone.

49. The land to the north, east and south are zoned Rural, with a mix of lifestyle blocks and larger paddocks. The existing site boundaries are partially lined with exotic shelterbelts.

50. To maintain the visual amenity values of the neighbouring rural land, the proposal provides a building setback from adjoining boundaries and a vegetated buffer. This will visually soften the edge of the proposed light industrial zone, mitigating potential visual dominance of industrial activity for the neighbouring properties.

51. Taking into account the existing built development within the site and the surrounding vicinity, it is considered that the proposed plan change is suitable to the area and will have a low adverse effect on the neighbouring Rural zone.

B. Existing Landscape Character and Quality

52. The wider landscape is a framework of a variety of land uses, including large-scale warehouses, industrial and business activity, pastoral land and lifestyle blocks. The existing views of the site are occupied by the large warehouse, located in the nearby context of the Business 5 zone on the western side of SH6. As discussed, it is considered that the existing landscape does not reflect a typical rural character.

53. Potential views of the site are limited to a small visual catchment and from the identified views (as previously discussed in this report), future development within the proposed IND1Z-R1 will read as a small part of the wider built development in the vicinity.

54. In addition, much of the Business 5 zone is yet to be developed, therefore future development in the immediate vicinity is anticipated, which in turn will alter the perceived landscape character and quality.

55. Furthermore, the location of the proposed IND1Z-R1 is visually consistent with activities within the surrounding landscape and will not appear out of context in the landscape character and quality of the receiving environment or introduce densities which are inappropriate to the area.

C. Relevant Rules, Objectives and Policies of the IND1Z-R1

56. *IND1Z-P1 Industrial 1 (Light) Zone: To provide for a range of light industrial, wholesaling, warehousing and service activities of a nature, size and scale appropriate near residential areas.*

Explanation: The Industrial 1 Zone have been identified as areas of the District that can sustain industrial activities that are good neighbours to adjoining residential areas in terms of environmental effects. The activities carried out within the Industrial 1 Zone are to be of a scale appropriate to the urban environment.

57. The proposed development will result in the site being segmented into smaller lots for light industrial activity and buildings, reflecting the smaller scale of future buildings for the site, in comparison to the existing large-scale warehouse. The proposed scale of built form will be sympathetic to the surrounding rural landscape and existing activity in the receiving landscape.

58. In addition, the opportunity is taken to provide building set back restrictions from the boundaries, this will provide suitable separation to adjoining rural properties.

59. *IND1Z-P6 Glare: To accept glare within the zone associated with large building surfaces, whilst ensuring freedom from nuisance from glare for nearby residential areas.*

Explanation: By their nature and scale some glare from large building surfaces can be expected. However, glare can become a major nuisance or even a hazard if not considered in the operation of a site, the design of building elevations or in the design of moving signage, and the Council needs the ability to take enforcement action. Although a minor and transient inconvenience from glare is part of normal urban life, the effects of glare from within the Industrial 1 Zone on the adjoining residential areas should be controlled.

60. Within the surrounding built environment, there does not appear to be controls on the Light Reflectance Values (LRV) of exterior cladding and roofing. The existing large warehouses and built forms in the vicinity, are clad in a variety of colours, with additional brightly coloured signage. However, to ensure that the future development in the proposed site is suitable within the adjacent Rural zone, new buildings and structures within the proposed site, will have a recessive exterior wall and roof cladding, with a LRV of less than 37%.

61. Furthermore, the majority of the future built form within the proposed site will be set back from the SH6 and therefore potential glare will have a low adverse effect from public views from SH6.

62. To further manage potential glare for nearby residential properties, the proposed mitigation planting will aid in breaking the bulk of the built form, reducing the extent of potential glare.

63. *IND1Z-P9 Lightspill: To manage effects of lightspill on adjoining residential zones and transportation networks.*

Explanation: Lighting can be necessary for security and can also be a legitimate way of promoting a premises or enterprise. However, lightspill on to neighbouring properties can be a nuisance and an adverse environmental effect. Lightspill can also cause a hazard to transportation networks, including to aircraft, vehicles, trains, cyclists and pedestrians. It is necessary that the District Plan establishes limits around the amount of lightspill that can occur as a by-product to an operational industrial area.

64. To mitigate potential adverse effects of light spill onto neighbouring properties, the following design controls are applied to all external lighting:

- To be set back a minimum of 3m from site boundaries and to not create light spill beyond the site boundaries,
- Downlighting only, to reduce adverse effects on the night sky,
- Security lighting to be sensor monitored where possible.

65. The above lighting controls will aid in mitigating potential light spill on to the adjoining rural land, the adjacent SH6 and the wider residential areas.

66. *IND1Z-P11 Signage Effects on Adjoining Zones: To protect the residential amenity in adjoining zones by controlling signage in the Industrial 1 Zone.*

Explanation: Signage in the Industrial 1 Zone that is too large or otherwise over-prominent can affect the amenities of nearby residential areas. Signs can also reduce the safety and efficiency of the transportation networks if they are poorly located, distract drivers' attention or restrict visibility. Signs should be located and designed in a manner that avoids these effects.

67. The neighbouring land is zoned Rural, with residential dwellings in the wider area. To reduce building signage towards the nearby properties, it is recommended that all building signage is either directed to the west towards North Road or directed inwards to the internal roads, to protect the amenity of adjoining zones. All signage will meet the ICDP rules and requirements.

68. *IND1Z-P15 Height of Structures: To control the height of structures in order to avoid adverse effects on the adjoining residential zone.*

Explanation: The character of an area is influenced by the scale of buildings and the height of structures is a key component of scale. In the Industrial 1 Zone structures are expected to be kept in scale with the adjoining residential areas, and to be designed so as not to create adverse effects on the expected residential amenities such as shading or impositions on the feeling of open space and privacy.

69. Future development within the proposed IND1Z-R1 will meet the ICDP height requirements and will be no higher than the existing warehouse on site.

70. In addition, all future buildings will meet the setback from boundary requirements as outlined on **Attachment B**, this is to avoid adverse visual and shading effects on the adjoining properties.

71. *IND1Z-P19 Amenity and Screening: To require the provision of adequate screening in order to avoid, mitigate or remedy potential reverse sensitivity effects with neighbouring residential land uses and to encourage amenity landscaping along street frontages as part of site development and maintenance.*

Explanation: Where an Industrial 1 Zone adjoins a residential zone, screening and amenity planting will be required to avoid, remedy or mitigate any adverse effects of the industrial activity on the more sensitive residential neighbour by providing a physical, visual boundary. Ideally this amenity planting or screening will also provide a more pleasant frontage when viewed from the street or adjoining properties.

72. The proposal includes a vegetated buffer on the north, east and south-eastern boundaries of the site. This is to mitigate potential adverse visual effects on the neighbouring properties and to break potential bulk views of built form from the residential properties in the wider vicinity.

73. The proposed planting will include native species which are found naturally with the local environment. The species range in form and height and will be arranged in natural planting clusters, rather than a structured shelterbelt. Further details on the proposed species heights, spacings and growth rates are provided on **Attachment B**.

74. The proposed planting will not reach a height where the future industrial development would be screened entirely from views, however, will soften views of the built form and reduce the potential visual impact on the nearby residential properties.

75. The proposal does not include a vegetated buffer on the western property boundary which adjoins North Road. Instead, this is to be retained as a 10m wide grass verge. It is not considered necessary to provide screening of the proposed IND1Z-R1 from North Road. Rather the set back from the road will provide a sense of openness and a view into the site from a short section of the road.

G. CONCLUSION.

76. To conclude, the proposal seeks consent for a private plan change to rezone the site from Rural to Industrial 1 Zone (IND1Z-R1), this will enable activities which are listed in the Industrial 1 Activities to be established on the site as a permitted activity.

77. The site is in the vicinity to land zoned Business 5 (to the west) and adjacent to Rural land (directly north, east and south). The surrounding landscape reflects a variety of characteristics and land uses. Due to the wider built environment and existing development on the site itself, the site and surrounding landscape is not typically 'rural' in character and values.

78. To ensure that future development within the proposed IND1Z-R1 is visually sympathetic to the receiving landscape and does not disturb the existing public and private views, the opportunity is taken to provide architectural and landscape mitigation measures, to assist in reducing any potential adverse landscape and visual effects.

79. Taking into account the mitigation measures, limited visual catchment and surrounding built context, it is concluded that any views of future light industrial activity within the proposed site will have a low adverse landscape and visual effect.

APPENDIX A

Landscape and visual effects rating scales extracted from the Guidelines for the Assessment of Landscape and Visual Effects, Supplementary Statement of Evidence of Bridget Mary Gilbert for Queenstown Lakes District Council, Topic 2 – Rural Landscapes, 29 April 2019.

Adverse Visual Effects Rating Scale	
Effect Rating	**Use and Definition**
Very High	Total loss of key elements / features / characteristics, i.e. amounts to a very significant negative change in visual amenity.
High	Major modification or loss of most key elements / features / characteristics, i.e. little of the pre-development visual amenity remains and amounts to a significant negative change in visual amenity values. Concise Oxford English Dictionary Definition High: adjective - Great in amount, value, size, or intensity.
Moderate - High	Modifications of several key elements / features / characteristics, i.e. the pre-development visual amenity remains evident but materially changed.
Moderate	Partial loss of or modification to key elements / features / characteristics, i.e. the pre-development visual amenity remains evident but is changed. Concise Oxford English Dictionary Definition Moderate: adjective - average in amount, intensity, quality or degree
Moderate - Low	Small loss of or modification to one or more key elements / features / characteristics, i.e. new elements are not uncharacteristic within the visual environment and do not disturb the pre development visual amenity.
Low	Very little material loss of or modification to key elements / features / characteristics. i.e. new elements integrate seamlessly into the pre-development visual environment. Concise Oxford English Dictionary Definition Low: adjective- 1. Below average in amount, extent, or intensity.
Very Low	Negligible loss of or modification to key elements/ features/ characteristics of the baseline, i.e. visual influence of new elements is barely discernible.

Adverse Landscape Effects Rating Scale	
Effect Rating	**Use and Definition**
Very High	Total loss of key elements / features / characteristics / values, i.e. amounts to a very significant negative change in landscape character and / or landscape values.
High	Major modification or loss of most key elements / features / characteristics / values, i.e. little of the pre-development landscape character remains and amounts to a significant negative change in landscape character and / or landscape values. Concise Oxford English Dictionary Definition High: adjective - Great in amount, value, size, or intensity.
Moderate - High	Modifications of several key elements / features / characteristics / values, i.e. the pre-development landscape character and / or landscape values remains evident but materially changed.
Moderate	Partial loss of or modification to key elements / features / characteristics / values, i.e. the pre-development landscape character and / or landscape values remains evident but is changed. Concise Oxford English Dictionary Definition Moderate: adjective - average in amount, intensity, quality or degree
Moderate - Low	Small loss of or modification to one or more key elements / features / characteristics / values, i.e. new elements are not uncharacteristic within the receiving landscape and do not disturb the pre development landscape character and / or landscape values.
Low	Very little material loss of or modification to key elements / features / characteristics / values. i.e. new elements integrate seamlessly into the pre-development landscape character and / or landscape values. Concise Oxford English Dictionary Definition Low: adjective- 1. Below average in amount, extent, or intensity.
Very Low	Negligible loss of or modification to key elements/ features/ characteristics / values of the baseline, i.e. influence of new elements on landscape character and / or landscape values is barely discernible.

For the purposes of notification determination, an adverse effects rating of Moderate- Low corresponds to a 'minor' adverse effects rating. An adverse effects rating of 'Low' or 'Very Low' corresponds to a 'less than minor' adverse effects rating.
NB. These rating scales apply to adverse effects, not to positive effects.

CLIENT

Tulloch Limited

PROJECT NAME

TULLOCH - LORNEVILLE

ADDRESS

805, 815 and 819 North Road, Lorneville Invercargill

LANDSCAPE VISUAL ASSESSMENT

RESOURCE CONSENT

14.05.2025

PREPARED BY

Kamo Marsh

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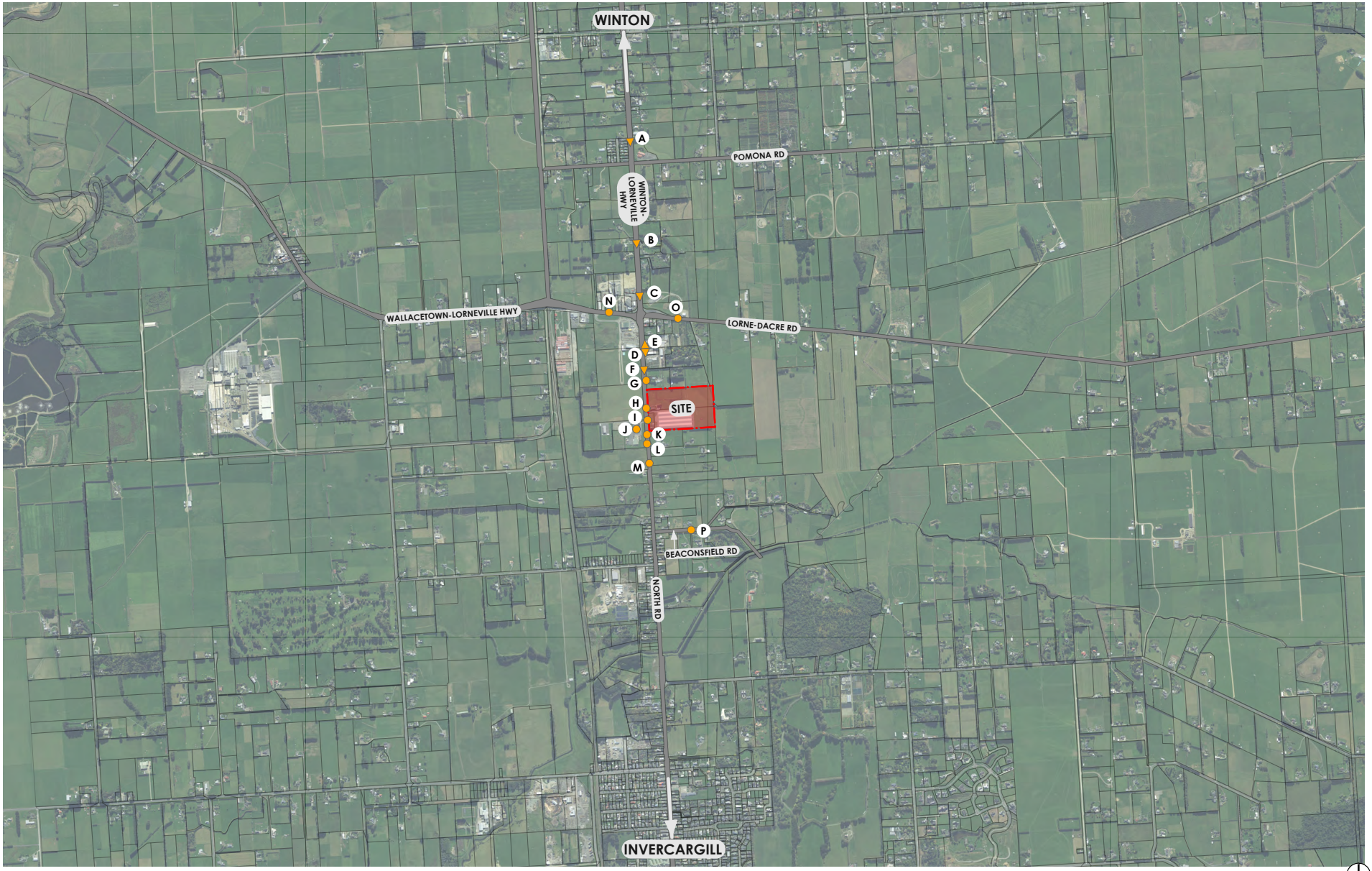
REFERENCE NO.

5470Q

SHEET NO.	STAGE	SHEET TITLE	REV
ATTACHMENT A	LANDSCAPE VISUAL ASSESSMENT	CONTEXT & PHOTO LOCATION PLAN	A
ATTACHMENT B	LANDSCAPE VISUAL ASSESSMENT	LANDSCAPE MITIGATION MEASURES	B
ATTACHMENT B1	LANDSCAPE VISUAL ASSESSMENT	MITIGATION PLANTING - SECTIONS	A
ATTACHMENT B2	LANDSCAPE VISUAL ASSESSMENT	MITIGATION PLANTING - SECTIONS	A
ATTACHMENT C	LANDSCAPE VISUAL ASSESSMENT	INVERCARGILL DISTRICT PLAN MAP	A
ATTACHMENT D1	LANDSCAPE VISUAL ASSESSMENT	POTENTIAL VISIBILITY PHOTOS - A & B	A
ATTACHMENT D2	LANDSCAPE VISUAL ASSESSMENT	POTENTIAL VISIBILITY PHOTOS - C & D	A
ATTACHMENT D3	LANDSCAPE VISUAL ASSESSMENT	POTENTIAL VISIBILITY PHOTOS - E & F	A
ATTACHMENT D4	LANDSCAPE VISUAL ASSESSMENT	POTENTIAL VISIBILITY PHOTOS - G & H	A
ATTACHMENT D5	LANDSCAPE VISUAL ASSESSMENT	POTENTIAL VISIBILITY PHOTOS - I & J	A
ATTACHMENT D6	LANDSCAPE VISUAL ASSESSMENT	POTENTIAL VISIBILITY PHOTOS - K & L	A
ATTACHMENT D7	LANDSCAPE VISUAL ASSESSMENT	POTENTIAL VISIBILITY PHOTOS - M & N	A
ATTACHMENT D8	LANDSCAPE VISUAL ASSESSMENT	POTENTIAL VISIBILITY PHOTOS - O & P	A



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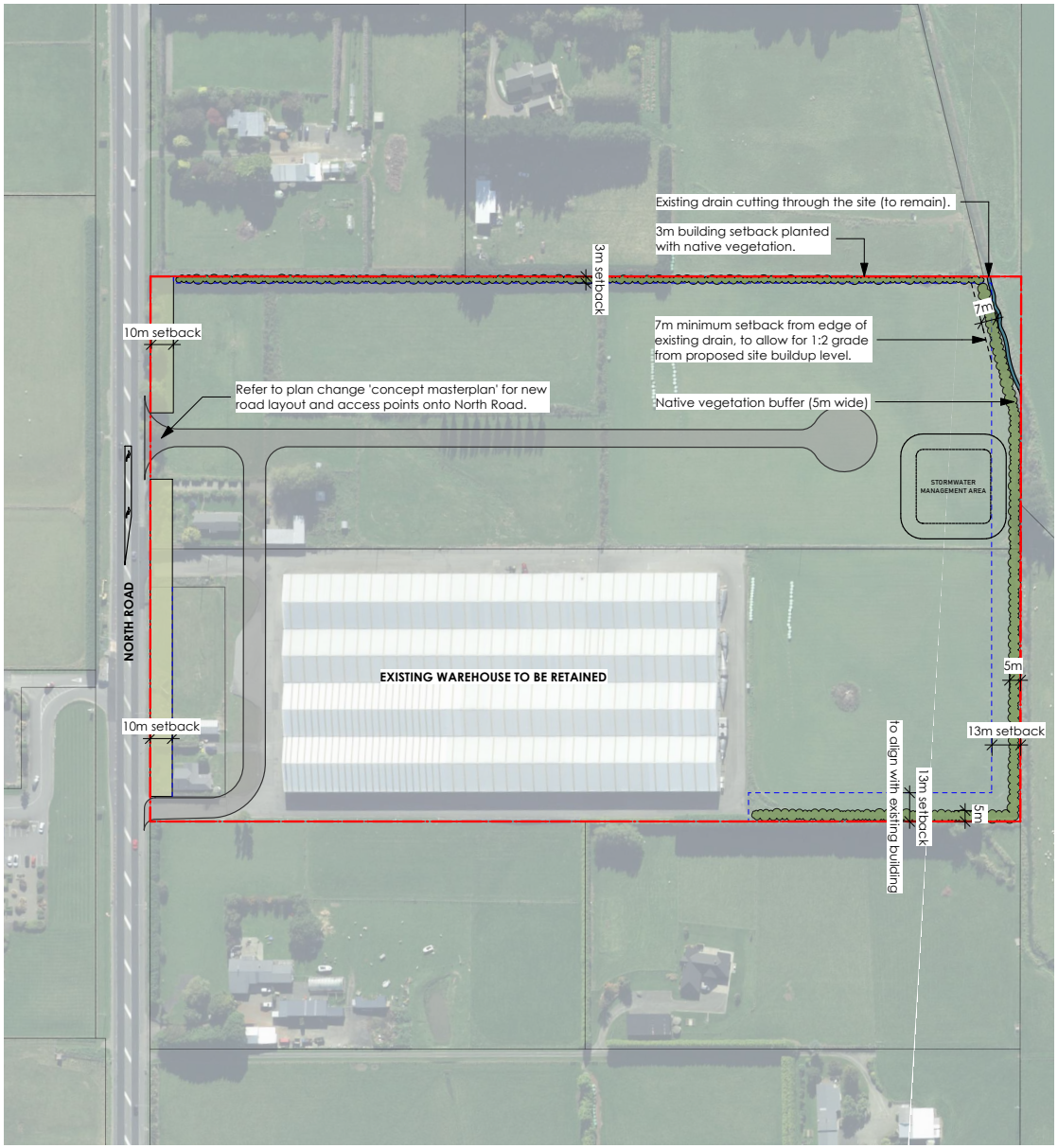
DATE	06.08.2024
REFERENCE NO.	5470Q
SCALE	1:20000@A3
ISSUE	RESOURCE CONSENT
REVISON	A

ATTACHMENT A

TULLOCH - LORNEVILLE
CONTEXT & PHOTO LOCATION PLAN



LEGEND

- Site boundary
- Building setback
- Grass verge
- Proposed mitigation native planting (3-5m buffer, refer plan)

PLANTING PALETTE

Native species to be planted within identified 3-5m buffer. Species list reflects planting in surrounding vicinity. Plants to be clustered in natural groupings.

Proposed Mitigation Native Planting Native species to include (but not limited to) :	**Spacing (m)**	**Grade/ planted height**	**Growth rate / approx height after 5 yrs**	**Approx mature height**
Pittosporum tenuifolium, Kohuhu	1.8	2.5L / 0.4m	Medium / 3m	6m
Cordyline australis, Tī kōuka	2	2.5L / 0.4m	Rapid/ 4m	10m
Coprosma propinqua, Mingimingi	1.8	2.5L / 0.4m	Rapid / 4m	5m
Aristotelia serrata, Wineberry	2	2.5L / 0.4m	Rapid / 4m	6m
Chionochloa flavicans, Toetoe	2	2.5L / 0.4m	Rapid / 3m	4m
Phormium tenax, Flax	1.8	2.5L / 0.4m	Rapid / 1.5	1.5m

Proposed Mitigation Exotic Planting Note: The following exotic species are required for faster establishment and superior height than native species:	**Spacing (m)**	**Grade/ planted height**	**Growth rate / approx height after 5 yrs**	**Approx mature height**
Cupressus x leylandii 'Leighton Green'	9	80L/4.0m	Rapid / 8	30m

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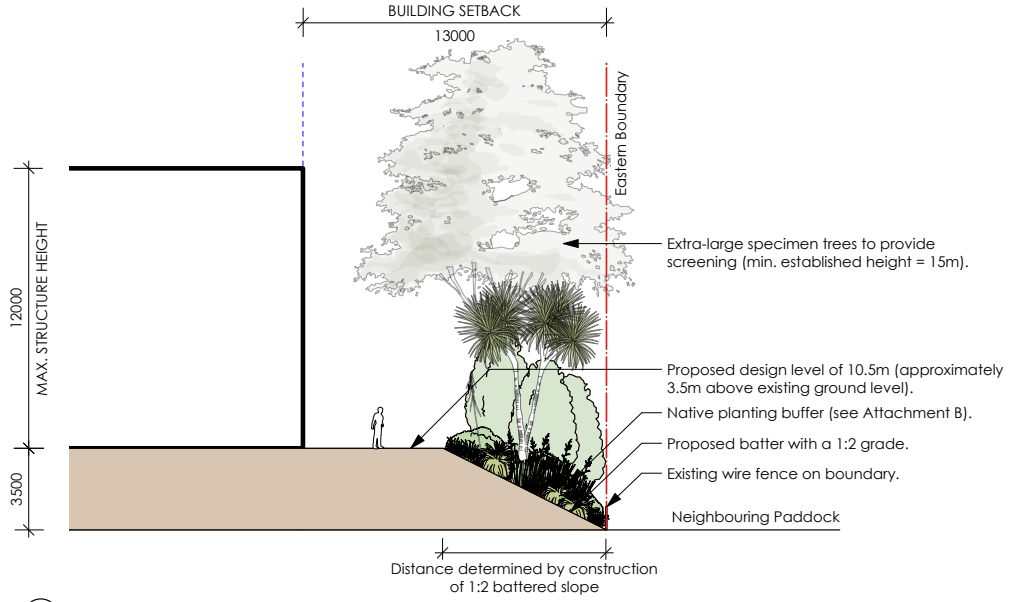
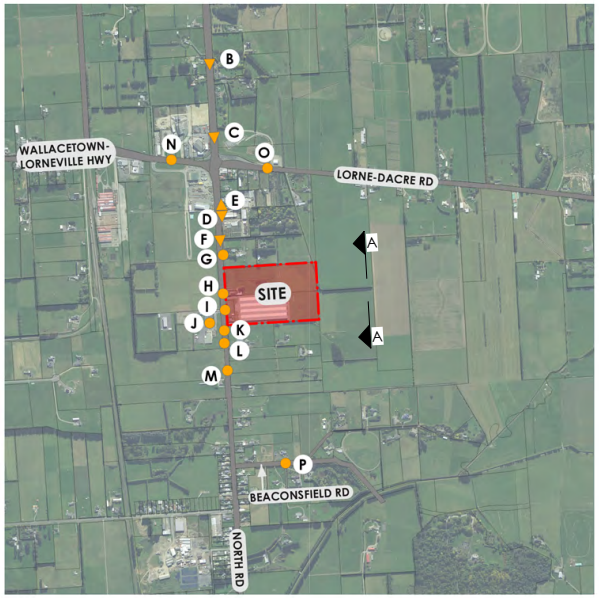
DATE	14.05.25
REFERENCE NO.	5470Q
SCALE	1:2000@A3
ISSUE	RESOURCE CONSENT
REVISON	B

ATTACHMENT B

TULLOCH - LORNEVILLE
LANDSCAPE MITIGATION MEASURES



B-B **EASTERN SITE BOUNDARY - CROSS SECTION**
SCALE 1:200@A3

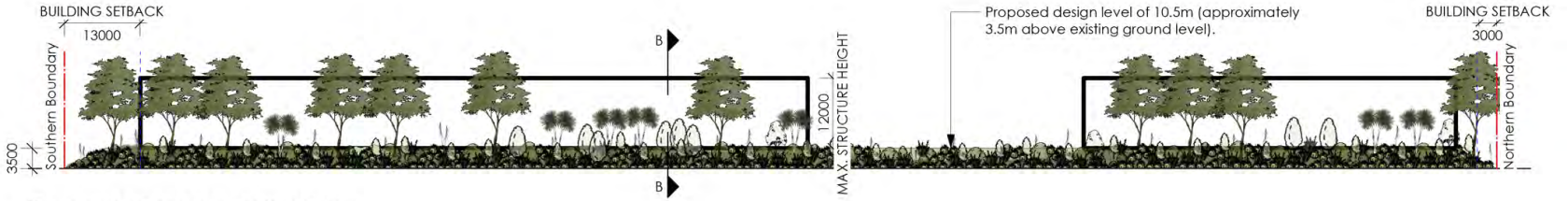


Context Plan (refer to Attachment A)
SCALE N.T.S.

Note 1 : Trees in cross sections are shown at mature height, refer to Attachment B for size when fully established.

Note 2 : Indicative buildings are shown at maximum height limit and minimum setback from boundaries.

Note 3 : Indicative earthworks only. Battering slope to be at 1:2 grade max.



A-A **EASTERN SITE BOUNDARY - FRONT ELEVATION**
SCALE 1:200@A3

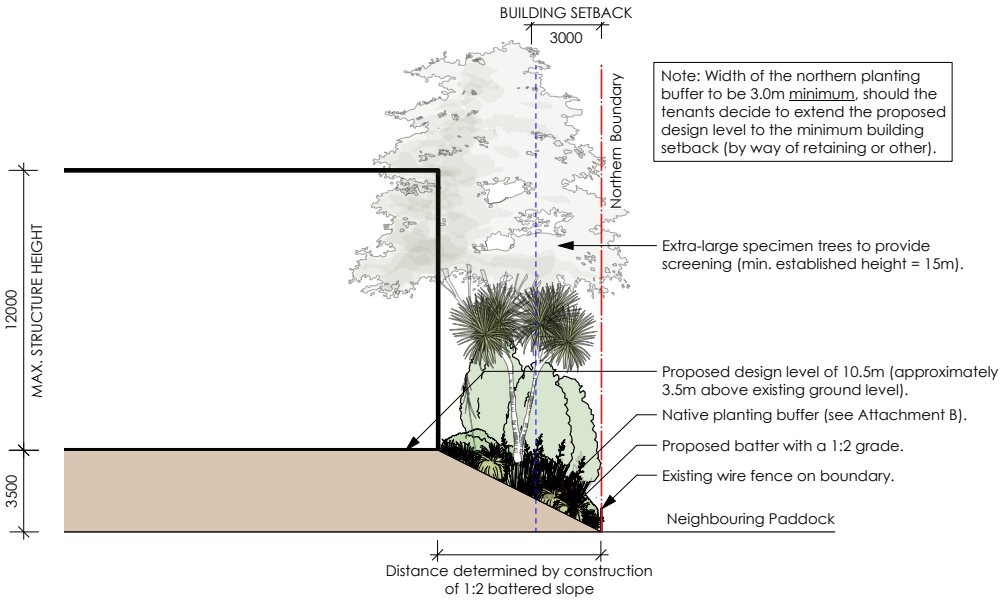
Kamo Marsh
LANDSCAPE ARCHITECTS

Mountain Club, Level 3, 36 Grant Road, Queenstown, New Zealand, 9300.
T. 03 366 8181
E. admin@kamomarsh.co.nz
www.kamomarsh.co.nz

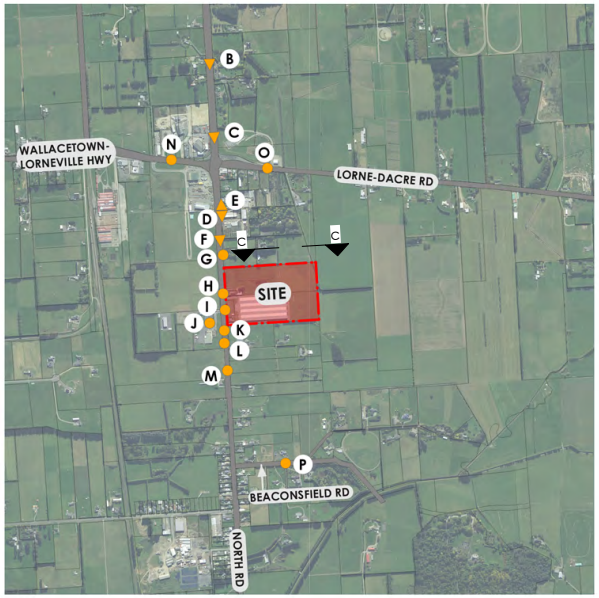
DATE	14.05.25
REFERENCE NO.	5470Q
SCALE	M/S
ISSUE	RESOURCE CONSENT
REVISON	A

ATTACHMENT B1

TULLOCH - LORNEVILLE
MITIGATION PLANTING - SECTIONS



D-D
NORTHERN SITE BOUNDARY - CROSS SECTION
SCALE 1:200@A3

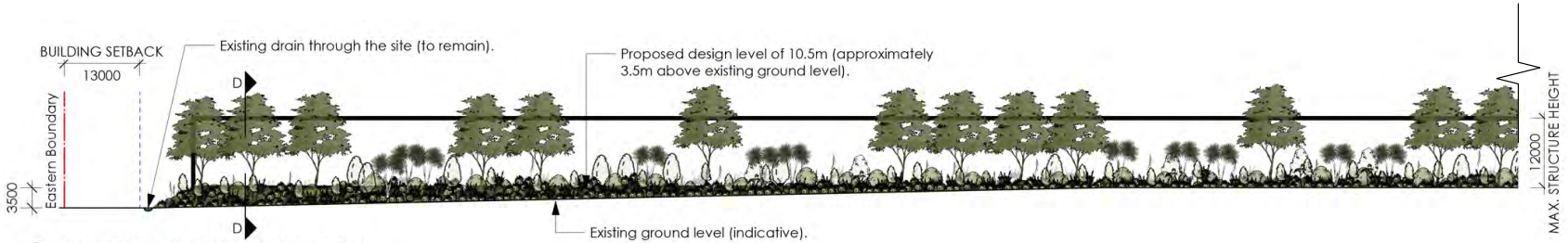


Context Plan (refer to Attachment A)
SCALE N.T.S.

Note 1 : Trees in cross sections are shown at mature height, refer to Attachment B for size when fully established.

Note 2 : Indicative buildings are shown at maximum height limit and minimum setback from boundaries.

Note 3 : Indicative earthworks only. Battering slope to be at 1:2 grade max.



C-C
NORTHERN SITE BOUNDARY - FRONT ELEVATION
SCALE 1:200@A3

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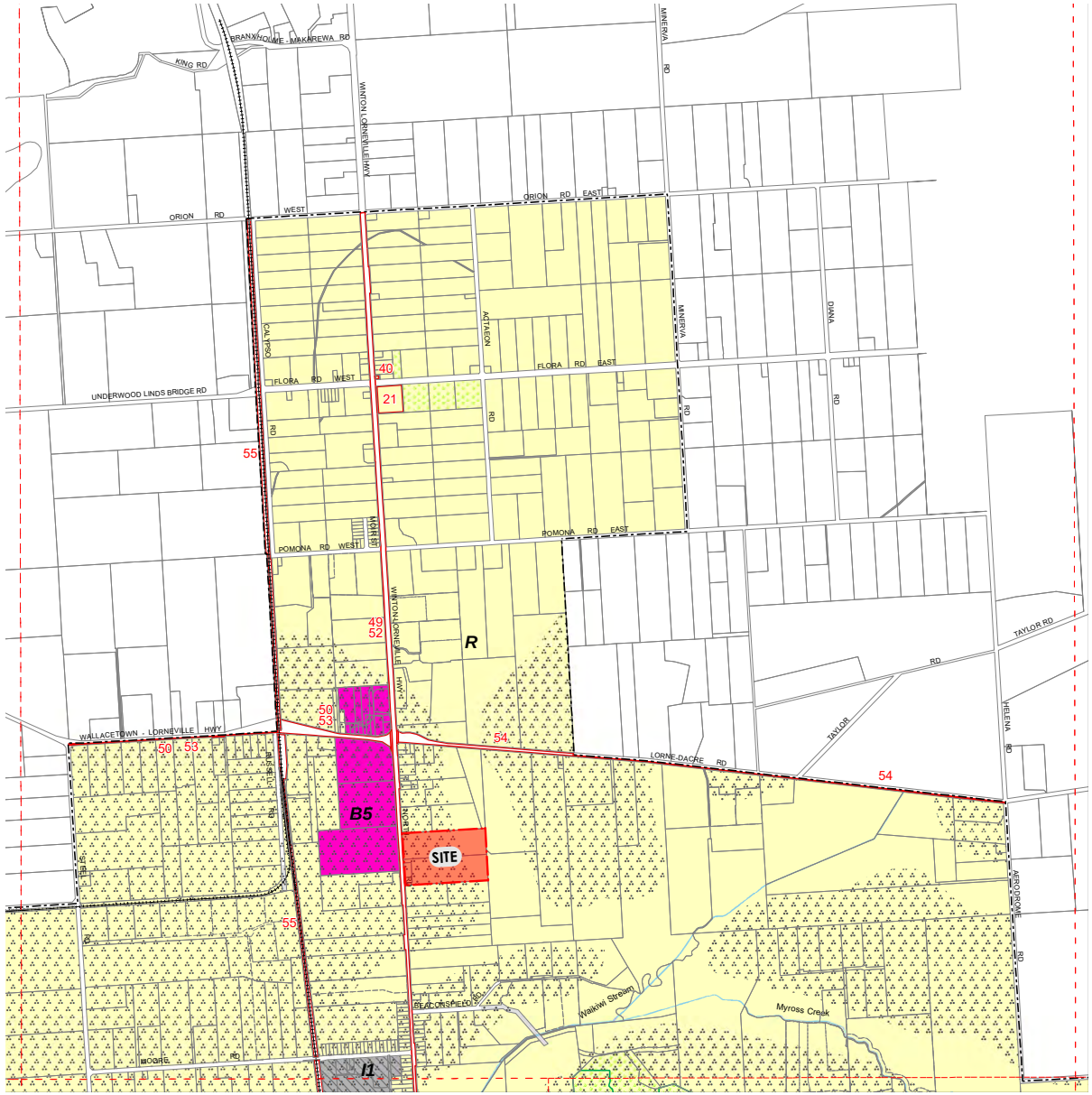
SCALE	M/S
ISSUE	RESOURCE CONSENT
REVISON	A

ATTACHMENT B2

TULLOCH - LORNEVILLE
MITIGATION PLANTING - SECTIONS



LEGEND

- R — Rural
- B5 — Business 5
- I1 — Industrial 1
- Rivers
- High Value Soils
- Reserves with Reserve Management Plans
- Areas of Significant Indigenous Biodiversity
- Designations
- Railway View Lines
- Grid Boundary
- Unformed Roaad
- Disctrict Boundary
- Railway

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REFERENCE NO.	5470Q
SCALE	N.T.S.@A3
ISSUE	RESOURCE CONSENT
REVISON	A

ATTACHMENT C

TULLOCH - LORNEVILLE
INVERCARGILL DISTRICT PLAN MAP

LOCATION A - VIEW FROM WINTON-LORNEVILLE HWY (APPROX 1.50KM FROM SITE)

CONTEXT PHOTO: PANORAMIC MULTIPLE IMAGE STITCH, 50mm FOCAL LENS
(TAKEN AT EYELINE 1.6m ABOVE GROUND LEVEL)
SOFTWARE: MICROSOFT IMAGE COMPOSITE EDITOR

LOCATION A PHOTO INFORMATION:
VIEWING DISTANCE FROM SITE: 1.50KM
ORIENTATION (RELATIVE TO SITE): NORTH
GEOLOCATION: 46°20'07.4"S 168°20'50.3"E
TAKEN BY: JADE AU MORRIS (KAMO MARSH)
DATE: JUNE 2024

LOCATION B - VIEW FROM WINTON-LORNEVILLE HWY (APPROX 0.88KM FROM SITE)

CONTEXT PHOTO: PANORAMIC MULTIPLE IMAGE STITCH, 50mm FOCAL LENS
(TAKEN AT EYELINE 1.6m ABOVE GROUND LEVEL)
SOFTWARE: MICROSOFT IMAGE COMPOSITE EDITOR

LOCATION B PHOTO INFORMATION:
VIEWING DISTANCE FROM SITE: 0.88KM
ORIENTATION (RELATIVE TO SITE): NORTH
GEOLOCATION: 46°20'27.3"S 168°20'50.4"E
TAKEN BY: JADE AU MORRIS (KAMO MARSH)
DATE: JUNE 2024

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DATE	06.08.2024
REFERENCE NO.	5470Q
SCALE	1:3000@A3
ISSUE	RESOURCE CONSENT
REVISON	A

ATTACHMENT D1

TULLOCH - LORNEVILLE
POTENTIAL VISIBILITY PHOTOS - A & B

LOCATION C - VIEW FROM WINTON-LORNEVILLE HWY (APPROX 0.56KM FROM SITE)

CONTEXT PHOTO: PANORAMIC MULTIPLE IMAGE STITCH, 50mm FOCAL LENS
(TAKEN AT EYELINE 1.6m ABOVE GROUND LEVEL)
SOFTWARE: MICROSOFT IMAGE COMPOSITE EDITOR

LOCATION C PHOTO INFORMATION:
VIEWING DISTANCE FROM SITE: 0.56KM
ORIENTATION (RELATIVE TO SITE): NORTH
GEOLOCATION: 46°20'36.6"S 168°20'50.5"E
TAKEN BY: JADE AU MORRIS (KAMO MARSH)
DATE: JUNE 2024

LOCATION D - VIEW FROM NORTH RD (APPROX 0.22KM FROM SITE)

CONTEXT PHOTO: PANORAMIC MULTIPLE IMAGE STITCH, 50mm FOCAL LENS
(TAKEN AT EYELINE 1.6m ABOVE GROUND LEVEL)
SOFTWARE: MICROSOFT IMAGE COMPOSITE EDITOR

LOCATION D PHOTO INFORMATION:
VIEWING DISTANCE FROM SITE: 0.22KM
ORIENTATION (RELATIVE TO SITE): NORTH
GEOLOCATION: 46°20'47.6"S 168°20'50.6"E
TAKEN BY: JADE AU MORRIS (KAMO MARSH)
DATE: JUNE 2024

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REFERENCE NO.	5470Q
SCALE	1:3000@A3
ISSUE	RESOURCE CONSENT
REVISON	A

ATTACHMENT D2

TULLOCH - LORNEVILLE
POTENTIAL VISIBILITY PHOTOS - C & D

LOCATION E - VIEW FROM NORTH RD TOWARDS WINTON-LORNEVILLE HWY (APPROX 0.22KM FROM SITE)

CONTEXT PHOTO: PANORAMIC MULTIPLE IMAGE STITCH, 50mm FOCAL LENS
(TAKEN AT EYELINE 1.6m ABOVE GROUND LEVEL)
SOFTWARE: MICROSOFT IMAGE COMPOSITE EDITOR

LOCATION E PHOTO INFORMATION:
VIEWING DISTANCE FROM SITE: 0.22KM
ORIENTATION (RELATIVE TO SITE): NORTH
GEOLOCATION: 46°20'47.6"S 168°20'50.6"E
TAKEN BY: JADE AU MORRIS (KAMO MARSH)
DATE: JUNE 2024

LOCATION F - VIEW FROM NORTH RD (APPROX 0.12KM FROM SITE)

CONTEXT PHOTO: PANORAMIC MULTIPLE IMAGE STITCH, 50mm FOCAL LENS
(TAKEN AT EYELINE 1.6m ABOVE GROUND LEVEL)
SOFTWARE: MICROSOFT IMAGE COMPOSITE EDITOR

LOCATION F PHOTO INFORMATION:
VIEWING DISTANCE FROM SITE: 0.12KM
ORIENTATION (RELATIVE TO SITE): NORTH
GEOLOCATION: 46°20'51.4"S 168°20'50.5"E
TAKEN BY: JADE AU MORRIS (KAMO MARSH)
DATE: JUNE 2024

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DATE	06.08.2024
REFERENCE NO.	5470Q
SCALE	1:3000@A3
ISSUE	RESOURCE CONSENT
REVISON	A

ATTACHMENT D3

TULLOCH - LORNEVILLE
POTENTIAL VISIBILITY PHOTOS - E & F

LOCATION G - VIEW FROM NORTH RD (APPROX 0.05KM FROM SITE)

CONTEXT PHOTO: PANORAMIC MULTIPLE IMAGE STITCH, 50mm FOCAL LENS
(TAKEN AT EYELINE 1.6m ABOVE GROUND LEVEL)
SOFTWARE: MICROSOFT IMAGE COMPOSITE EDITOR

LOCATION G PHOTO INFORMATION:
VIEWING DISTANCE FROM SITE: 0.12KM
ORIENTATION (RELATIVE TO SITE): NORTH
GEOLOCATION: 46°20'53.8"S 168°20'51.0"E
TAKEN BY: JADE AU MORRIS (KAMO MARSH)
DATE: JUNE 2024

LOCATION H - VIEW FROM NORTH RD (APPROX 0.01KM FROM SITE)

CONTEXT PHOTO: PANORAMIC MULTIPLE IMAGE STITCH, 50mm FOCAL LENS
(TAKEN AT EYELINE 1.6m ABOVE GROUND LEVEL)
SOFTWARE: MICROSOFT IMAGE COMPOSITE EDITOR

LOCATION H PHOTO INFORMATION:
VIEWING DISTANCE FROM SITE: 0.01KM
ORIENTATION (RELATIVE TO SITE): EAST
GEOLOCATION: 46°20'59.0"S 168°20'50.4"E
TAKEN BY: JADE AU MORRIS (KAMO MARSH)
DATE: JUNE 2024

Kamo Marsh
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www.kamomarsh.co.nz

DATE	06.08.2024
REFERENCE NO.	5470Q
SCALE	1:3000@A3
ISSUE	RESOURCE CONSENT
REVISON	A

ATTACHMENT D4

TULLOCH - LORNEVILLE
POTENTIAL VISIBILITY PHOTOS - G & H

LOCATION I - VIEW FROM NORTH RD (APPROX 0.00KM FROM SITE)

CONTEXT PHOTO: PANORAMIC MULTIPLE IMAGE STITCH, 50mm FOCAL LENS
(TAKEN AT EYELINE 1.6m ABOVE GROUND LEVEL)
SOFTWARE: MICROSOFT IMAGE COMPOSITE EDITOR

LOCATION I PHOTO INFORMATION:
VIEWING DISTANCE FROM SITE: 0.00KM
ORIENTATION (RELATIVE TO SITE): EAST
GEOLOCATION: 46°21'01.5"S 168°20'50.2"E
TAKEN BY: JADE AU MORRIS (KAMO MARSH)
DATE: JUNE 2024

LOCATION J - VIEW FROM NORTH RD (APPROX 0.07KM FROM SITE)

CONTEXT PHOTO: PANORAMIC MULTIPLE IMAGE STITCH, 50mm FOCAL LENS
(TAKEN AT EYELINE 1.6m ABOVE GROUND LEVEL)
SOFTWARE: MICROSOFT IMAGE COMPOSITE EDITOR

LOCATION J PHOTO INFORMATION:
VIEWING DISTANCE FROM SITE: 0.07KM
ORIENTATION (RELATIVE TO SITE): EAST
GEOLOCATION: 46°21'03.3"S 168°20'48.2"E
TAKEN BY: JADE AU MORRIS (KAMO MARSH)
DATE: JUNE 2024

Kamo Marsh
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DATE	06.08.2024
REFERENCE NO.	5470Q
SCALE	1:3000@A3
ISSUE	RESOURCE CONSENT
REVISON	A

ATTACHMENT D5

TULLOCH - LORNEVILLE
POTENTIAL VISIBILITY PHOTOS - I & J

LOCATION K - VIEW FROM NORTH RD (APPROX 0.03KM FROM SITE)

CONTEXT PHOTO: PANORAMIC MULTIPLE IMAGE STITCH, 50mm FOCAL LENS
(TAKEN AT EYELINE 1.6m ABOVE GROUND LEVEL)
SOFTWARE: MICROSOFT IMAGE COMPOSITE EDITOR

LOCATION K PHOTO INFORMATION:
VIEWING DISTANCE FROM SITE: 0.03KM
ORIENTATION (RELATIVE TO SITE): SOUTH
GEOLOCATION: 46°21'03.9"S 168°20'50.5"E
TAKEN BY: JADE AU MORRIS (KAMO MARSH)
DATE: JUNE 2024

LOCATION L - VIEW FROM NORTH RD (APPROX 0.08KM FROM SITE)

CONTEXT PHOTO: PANORAMIC MULTIPLE IMAGE STITCH, 50mm FOCAL LENS
(TAKEN AT EYELINE 1.6m ABOVE GROUND LEVEL)
SOFTWARE: MICROSOFT IMAGE COMPOSITE EDITOR

LOCATION L PHOTO INFORMATION:
VIEWING DISTANCE FROM SITE: 0.08KM
ORIENTATION (RELATIVE TO SITE): SOUTH
GEOLOCATION: 46°21'05.5"S 168°20'50.5"E
TAKEN BY: JADE AU MORRIS (KAMO MARSH)
DATE: JUNE 2024

Kamo Marsh
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DATE	06.08.2024
REFERENCE NO.	5470Q
SCALE	1:3000@A3
ISSUE	RESOURCE CONSENT
REVISON	A

ATTACHMENT D6

TULLOCH - LORNEVILLE
POTENTIAL VISIBILITY PHOTOS - K & L

LOCATION M - VIEW FROM NORTH RD (APPROX 0.20KM FROM SITE)

CONTEXT PHOTO: PANORAMIC MULTIPLE IMAGE STITCH, 50mm FOCAL LENS
(TAKEN AT EYELINE 1.6m ABOVE GROUND LEVEL)
SOFTWARE: MICROSOFT IMAGE COMPOSITE EDITOR

LOCATION M PHOTO INFORMATION:
VIEWING DISTANCE FROM SITE: 0.20KM
ORIENTATION (RELATIVE TO SITE): SOUTH
GEOLOCATION: 46°21'10.2"S 168°20'50.5"E
TAKEN BY: JADE AU MORRIS (KAMO MARSH)
DATE: JUNE 2024

LOCATION N - VIEW FROM WALLACETOWN-LORNEVILLE HWY (APPROX 0.50KM FROM SITE)

CONTEXT PHOTO: PANORAMIC MULTIPLE IMAGE STITCH, 50mm FOCAL LENS
(TAKEN AT EYELINE 1.6m ABOVE GROUND LEVEL)
SOFTWARE: MICROSOFT IMAGE COMPOSITE EDITOR

LOCATION N PHOTO INFORMATION:
VIEWING DISTANCE FROM SITE: 0.50KM
ORIENTATION (RELATIVE TO SITE): NORTH-EAST
GEOLOCATION: 46°20'40.3"S 168°20'40.7"E
TAKEN BY: JADE AU MORRIS (KAMO MARSH)
DATE: JUNE 2024

Kamo Marsh
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DATE	06.08.2024
REFERENCE NO.	5470Q
SCALE	1:3000@A3
ISSUE	RESOURCE CONSENT
REVISON	A

ATTACHMENT D7

TULLOCH - LORNEVILLE
POTENTIAL VISIBILITY PHOTOS - M & N

LOCATION O - VIEW FROM LORNE-DACRE RD (APPROX 0.40KM FROM SITE)

CONTEXT PHOTO: PANORAMIC MULTIPLE IMAGE STITCH, 50mm FOCAL LENS
(TAKEN AT EYELINE 1.6m ABOVE GROUND LEVEL)
SOFTWARE: MICROSOFT IMAGE COMPOSITE EDITOR

LOCATION O PHOTO INFORMATION:
VIEWING DISTANCE FROM SITE: 0.40KM
ORIENTATION (RELATIVE TO SITE): NORTH-WEST
GEOLOCATION: 46°20'42.2"S 168°21'01.8"E
TAKEN BY: JADE AU MORRIS (KAMO MARSH)
DATE: JUNE 2024

LOCATION P - VIEW FROM BEACONSFIELD RD (APPROX 0.60KM FROM SITE)

CONTEXT PHOTO: PANORAMIC MULTIPLE IMAGE STITCH, 50mm FOCAL LENS
(TAKEN AT EYELINE 1.6m ABOVE GROUND LEVEL)
SOFTWARE: MICROSOFT IMAGE COMPOSITE EDITOR

LOCATION P PHOTO INFORMATION:
VIEWING DISTANCE FROM SITE: 0.60KM
ORIENTATION (RELATIVE TO SITE): SOUTH-WEST
GEOLOCATION: 46°21'23.1"S 168°21'00.9"E
TAKEN BY: JADE AU MORRIS (KAMO MARSH)
DATE: JUNE 2024

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DATE	06.08.2024
REFERENCE NO.	5470Q
SCALE	1:3000@A3
ISSUE	RESOURCE CONSENT
REVISON	A

ATTACHMENT D8

TULLOCH - LORNEVILLE
POTENTIAL VISIBILITY PHOTOS - O & P

CLIENT

Tulloch Limited

PROJECT NAME

TULLOCH - LORNEVILLE

ADDRESS

805, 815 and 819 North Road, Lorneville Invercargill

LANDSCAPE VISUAL ASSESSMENT

RESOURCE CONSENT

14.05.2025

PREPARED BY

Kamo Marsh

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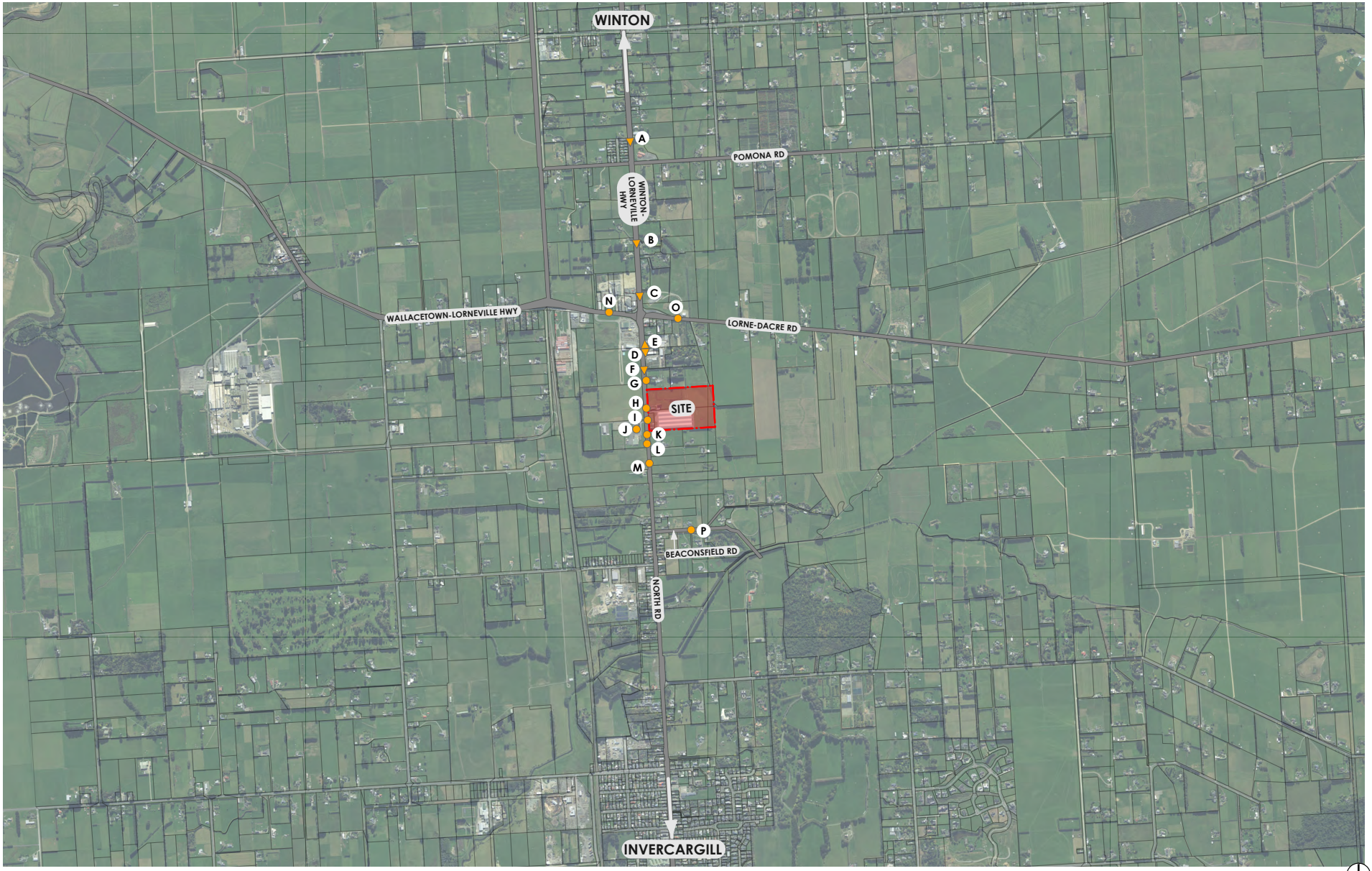
REFERENCE NO.

5470Q

SHEET NO.	STAGE	SHEET TITLE	REV
ATTACHMENT A	LANDSCAPE VISUAL ASSESSMENT	CONTEXT & PHOTO LOCATION PLAN	A
ATTACHMENT B	LANDSCAPE VISUAL ASSESSMENT	LANDSCAPE MITIGATION MEASURES	B
ATTACHMENT B1	LANDSCAPE VISUAL ASSESSMENT	MITIGATION PLANTING - SECTIONS	A
ATTACHMENT B2	LANDSCAPE VISUAL ASSESSMENT	MITIGATION PLANTING - SECTIONS	A
ATTACHMENT C	LANDSCAPE VISUAL ASSESSMENT	INVERCARGILL DISTRICT PLAN MAP	A
ATTACHMENT D1	LANDSCAPE VISUAL ASSESSMENT	POTENTIAL VISIBILITY PHOTOS - A & B	A
ATTACHMENT D2	LANDSCAPE VISUAL ASSESSMENT	POTENTIAL VISIBILITY PHOTOS - C & D	A
ATTACHMENT D3	LANDSCAPE VISUAL ASSESSMENT	POTENTIAL VISIBILITY PHOTOS - E & F	A
ATTACHMENT D4	LANDSCAPE VISUAL ASSESSMENT	POTENTIAL VISIBILITY PHOTOS - G & H	A
ATTACHMENT D5	LANDSCAPE VISUAL ASSESSMENT	POTENTIAL VISIBILITY PHOTOS - I & J	A
ATTACHMENT D6	LANDSCAPE VISUAL ASSESSMENT	POTENTIAL VISIBILITY PHOTOS - K & L	A
ATTACHMENT D7	LANDSCAPE VISUAL ASSESSMENT	POTENTIAL VISIBILITY PHOTOS - M & N	A
ATTACHMENT D8	LANDSCAPE VISUAL ASSESSMENT	POTENTIAL VISIBILITY PHOTOS - O & P	A



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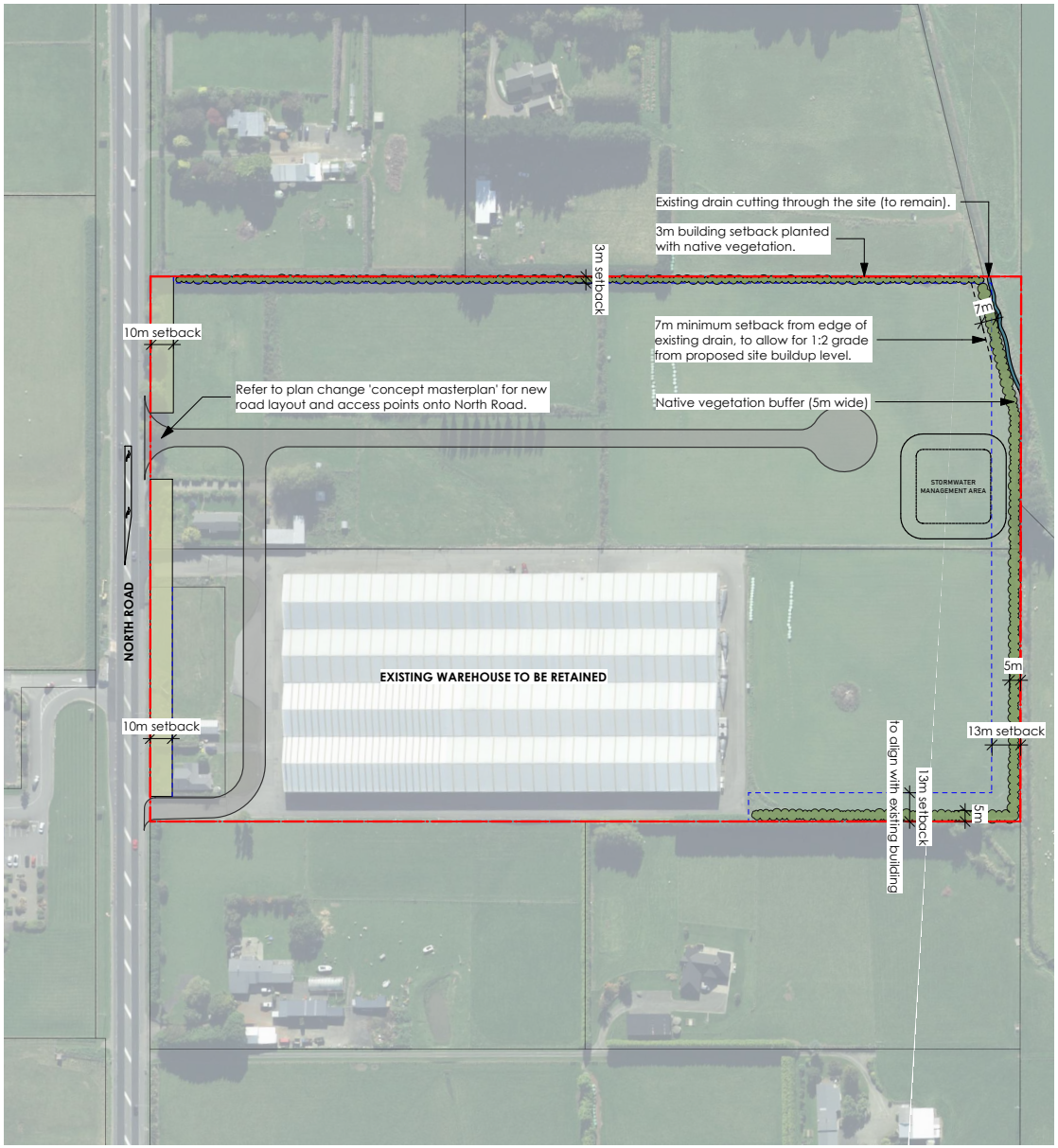
DATE	06.08.2024
REFERENCE NO.	5470Q
SCALE	1:20000@A3
ISSUE	RESOURCE CONSENT
REVISON	A

ATTACHMENT A

TULLOCH - LORNEVILLE
CONTEXT & PHOTO LOCATION PLAN



LEGEND

- Site boundary
- Building setback
- Grass verge
- Proposed mitigation native planting (3-5m buffer, refer plan)

PLANTING PALETTE

Native species to be planted within identified 3-5m buffer. Species list reflects planting in surrounding vicinity. Plants to be clustered in natural groupings.

Proposed Mitigation Native Planting Native species to include (but not limited to) :	**Spacing (m)**	**Grade/ planted height**	**Growth rate / approx height after 5 yrs**	**Approx mature height**
Pittosporum tenuifolium, Kohuhu	1.8	2.5L / 0.4m	Medium / 3m	6m
Cordyline australis, Tī kōuka	2	2.5L / 0.4m	Rapid/ 4m	10m
Coprosma propinqua, Mingimingi	1.8	2.5L / 0.4m	Rapid / 4m	5m
Aristotelia serrata, Wineberry	2	2.5L / 0.4m	Rapid / 4m	6m
Chionochloa flavicans, Toetoe	2	2.5L / 0.4m	Rapid / 3m	4m
Phormium tenax, Flax	1.8	2.5L / 0.4m	Rapid / 1.5	1.5m

Proposed Mitigation Exotic Planting Note: The following exotic species are required for faster establishment and superior height than native species:	**Spacing (m)**	**Grade/ planted height**	**Growth rate / approx height after 5 yrs**	**Approx mature height**
Cupressus x leylandii 'Leighton Green'	9	80L/4.0m	Rapid / 8	30m

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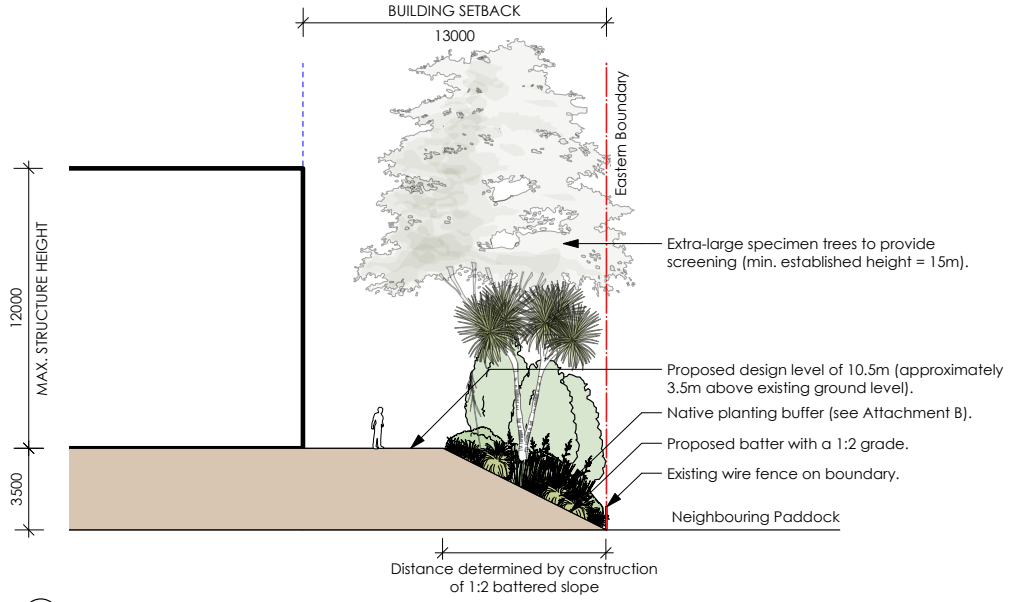
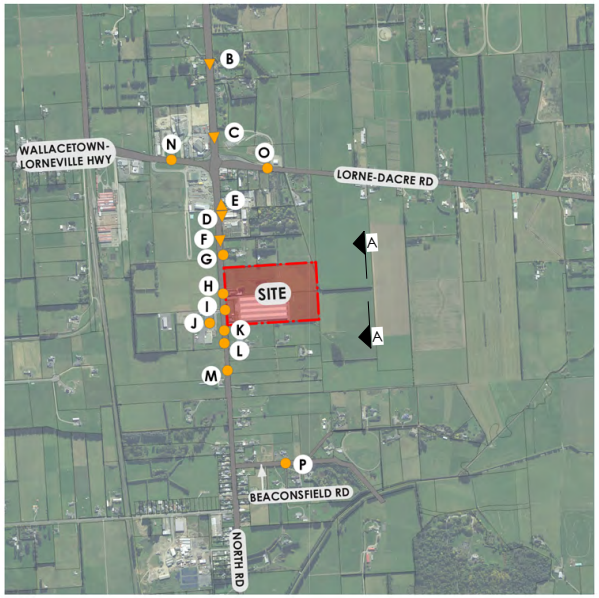
DATE	14.05.25
REFERENCE NO.	5470Q
SCALE	1:2000@A3
ISSUE	RESOURCE CONSENT
REVISON	B

ATTACHMENT B

TULLOCH - LORNEVILLE
LANDSCAPE MITIGATION MEASURES



B-B **EASTERN SITE BOUNDARY - CROSS SECTION**
SCALE 1:200@A3

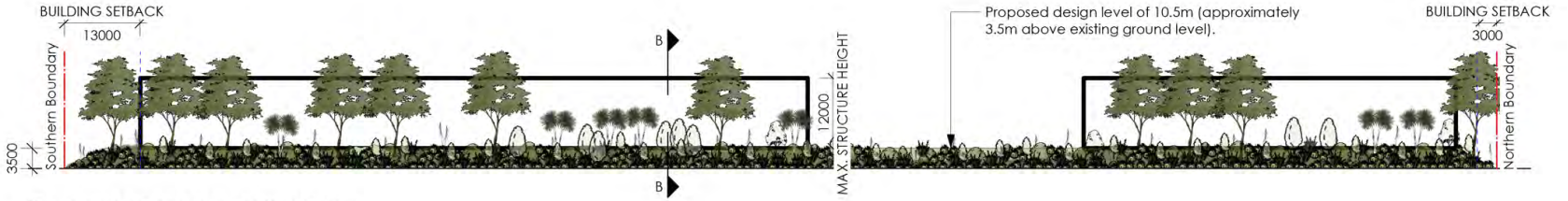


Context Plan (refer to Attachment A)
SCALE N.T.S.

Note 1 : Trees in cross sections are shown at mature height, refer to Attachment B for size when fully established.

Note 2 : Indicative buildings are shown at maximum height limit and minimum setback from boundaries.

Note 3 : Indicative earthworks only. Battering slope to be at 1:2 grade max.



A-A **EASTERN SITE BOUNDARY - FRONT ELEVATION**
SCALE 1:200@A3

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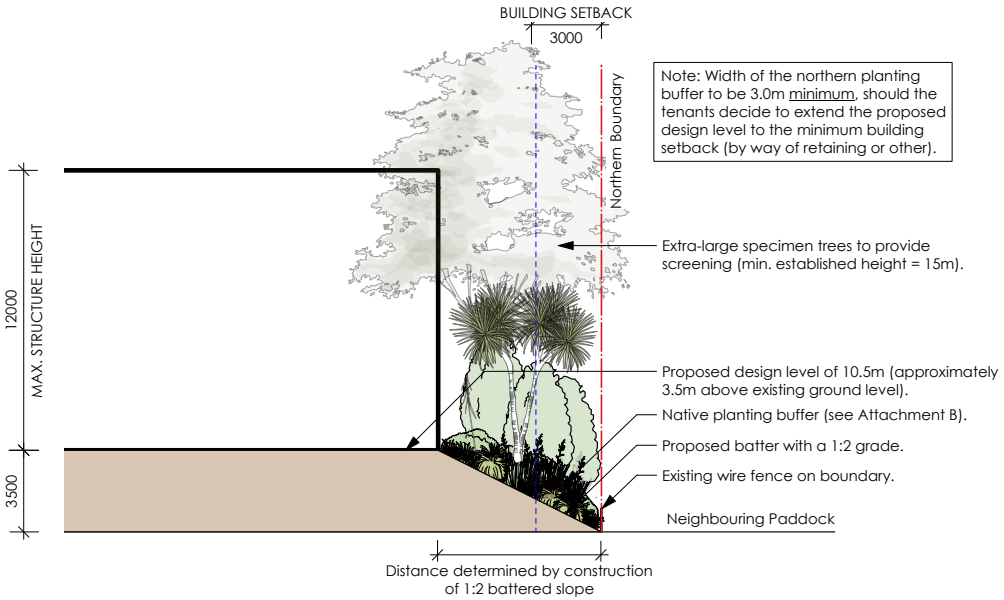
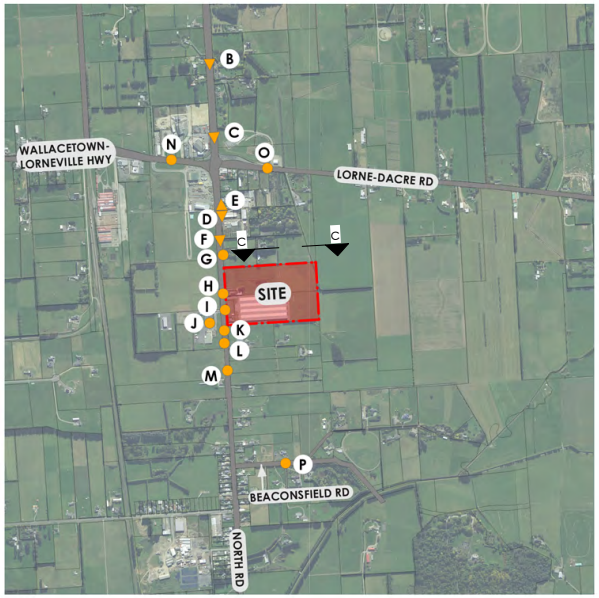
REVISON	A

ATTACHMENT B1

TULLOCH - LORNEVILLE
MITIGATION PLANTING - SECTIONS



D-D **NORTHERN SITE BOUNDARY - CROSS SECTION**
SCALE 1:200@A3

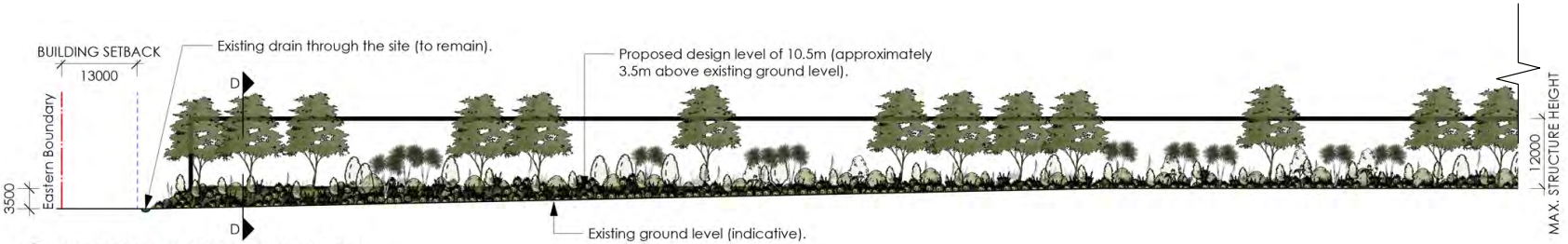


Context Plan (refer to Attachment A)
SCALE N.T.S.

Note 1 : Trees in cross sections are shown at mature height, refer to Attachment B for size when fully established.

Note 2 : Indicative buildings are shown at maximum height limit and minimum setback from boundaries.

Note 3 : Indicative earthworks only. Battering slope to be at 1:2 grade max.



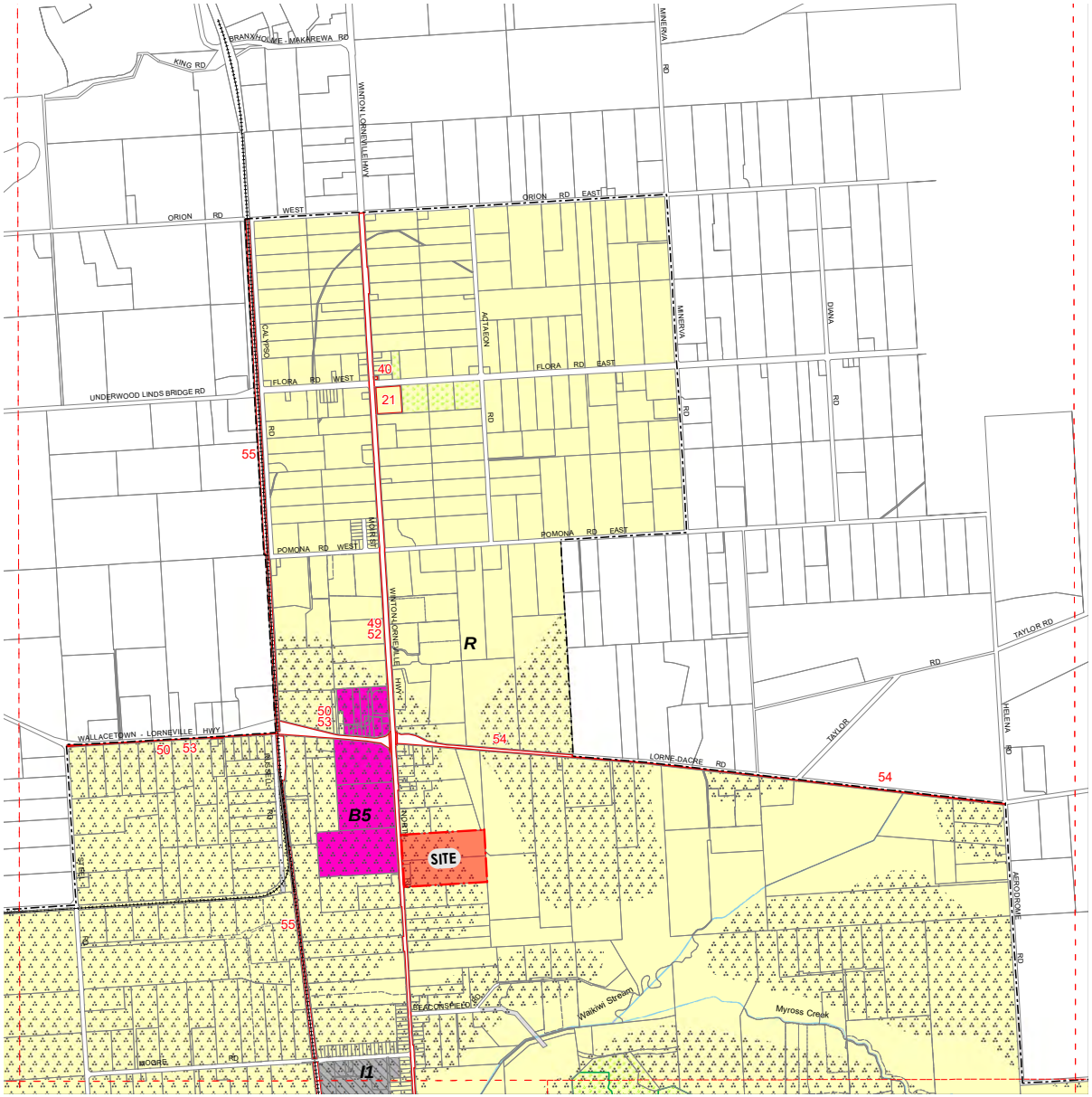
C-C **NORTHERN SITE BOUNDARY - FRONT ELEVATION**
SCALE 1:200@A3

Kamo Marsh
LANDSCAPE ARCHITECTS
Mountain Club, Level 3, 36 Grant Road, Queenstown, New Zealand, 9300.
T. 03 366 8181
E. admin@kamomarsh.co.nz
www.kamomarsh.co.nz

DATE	14.05.25
REFERENCE NO.	5470Q
SCALE	M/S
ISSUE	RESOURCE CONSENT
REVISON	A

ATTACHMENT B2

TULLOCH - LORNEVILLE
MITIGATION PLANTING - SECTIONS



LEGEND

- R — Rural
- B5 — Business 5
- I1 — Industrial 1
- Rivers
- High Value Soils
- Reserves with Reserve Management Plans
- Areas of Significant Indigenous Biodiversity
- Designations
- Railway View Lines
- Grid Boundary
- Unformed Roaad
- Disctrict Boundary
- Railway

Kamo Marsh
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DATE	06.08.2024
REFERENCE NO.	5470Q
SCALE	N.T.S.@A3
ISSUE	RESOURCE CONSENT
REVISON	A

ATTACHMENT C

TULLOCH - LORNEVILLE
INVERCARGILL DISTRICT PLAN MAP

Appendix 10: Land and Water Science Soil Classification Report

Land and Water Science Ltd.
231 Dee Street
Invercargill 9810
New Zealand

www.landwaterscience.co.nz

14/05/2024

Attention: Christine McMillian, Bonish, on behalf of Tulloch Ltd

Soil Assessment at 805, 815 and 819 North Road

1 Introduction

Bonish on behalf of Tulloch Ltd, has requested a soil assessment at 805, 815, and 819 North road, Invercargill, to support an application to rezone the land from rural to industrial zone 1. The soil assessment is to confirm the existing soil type at the site and assess the Land Use Capability class (LUC). The site consists of three properties with a total area of 9.7 hectares. The current land use of the site is a mixture of rural (lifestyle block) and industrial use (wool store). The soil was described at three locations within the area (Figure 1). The following report details the current mapped soil types and soil assessment undertaken at the location to identify the soil and corresponding LUC class.

Figure 1. Site location. Soil observation pits are numbered 1 to 3.

2 Data Review

The site is predominantly flat to gently rolling with an approximately 7-degree slope to a lower terrace in the east (Figure 2). The elevation change across the property is 13 m above sea level in the west and 7 m above sea level in the east. There are no permanent waterways on the property, which backs on to a drainage ditch on the eastern boundary. There is a swale (ephemeral stream channel) in the northwest of the site that drains to the west.

Soil information at the location is available from two datasets, Fundamental Soils Layer (FSL) and Topoclimate South (2002) (Figure 2). The LUC classification is mapped according to the FSL.

Figure 2. Elevation of the property showing an upper terrace in the west and lower terrace in the east. Soil maps for the site are shown as outlines with Fundamental Soils Layer indicated in blue and Topoclimate South indicated in red.

2.1 Soil Classification

The soil according to the Fundamental Soils Layer, the upper terrace to the west is mapped as a Waikiwi Soil Series which is classified as a Typic Firm Brown; stoneless; silty soil according to the New Zealand Soil Classification (NZSC). Waikiwi soils form in wind-deposited silt (loess). They are typically well drained, deep and have silt loam textures.

More recently the soils were mapped by Topoclimate South soil survey in 2002. The western upper terrace is in an area identifying Mokotua, Waikiwi, and Woodlands soil series (MtU1 + WiU1 + Wdu1). The dominant soil, Mokotua is classified as Mottled-acidic Orthic Brown; stoneless; silty soil according to the NZSC. Mokotua soils are found on high terraces and are formed in deep wind-deposited loess. They are strongly mottled, have imperfect to poor drainage, and silt loam textures. Secondary soils include Waikiwi and Woodlands (Mottled Firm Brown; stoneless; silty).

In the east of the site, both FSL and Topoclimate South map the soil as Dacre which is classified as an Acidic Recent Gley; stoneless; silty soil in the NZSC. Dacre soils are located on floodplains of minor streams formed in fine alluvium from rewashed loess. They are deep to moderately deep, poorly drained, and have silty textures. The Topoclimate South soil map also identifies Titipua as a secondary soil. Titipua soils are classified as Peaty Orthic Gley; stoneless; clayey over silty. They are

located on flood plains and the margins of peat swamps. The soils are moderately deep and poorly drained and have silty to silty clay textures.

2.2 LUC Class

The upper terrace in the west of the property is described in the LUC as "flat to undulating loess mantled alluvial terraces and recent floodplains below 300m asl with moderately deep Brown (lowland yellow brown earth) and Recent soils in cool, moderate (800-1600 mm) rainfall inland districts." The LUC class is identified as Class 2 (2c 2) which is defined as land with slight climate limitations for arable use, whilst suitable for cultivated crops, pasture or forestry. Climate limitations such as coldness, frost frequency, and salt-laden onshore winds limits production.

The rock type is undifferentiated floodplain alluvium. The soil is mapped as 33 (Waikiwi series). The slope class is A (0-3 degrees is flat to gently undulating). The erosion class is 0 with a potential 0-1 Sb (slight streambank erosion). The vegetation cover is P1 and P3 (high producing pasture and short tussock grassland).

The lower terrace in the east of the property is flat to gently undulating floodplains and low terraces with Gley or Recent Gley (gley and recent) soils with moderately high water tables in cool, moderate to high (800 to >1600 mm) rainfall districts. The LUC class is identified as Class 3 (3w 3) which identifies it as land with moderate wetness limitation for arable use and suitable for cultivated crops, pasture or forestry. Soil wetness resulting from poor drainage or a high water table, or from frequent overflow limits production.

The rock type is undifferentiated floodplain alluvium. The soil is mapped as 89f (Dacre series). The slope class is A (0-3 degrees flat to gently undulating). Erosion class is 0 (negligible). The vegetation cover is P1 p2 h2 (high producing pasture, low producing pasture, and rushes and sedges).

3 Site Visit

The site was visited by Dr Lisa Pearson on the 1st of May 2024 (Figure 3). The soils were profiled at 3 locations in soil pits (Figure 1) and a composite soil sample (0-75 mm depth) was collected at approximately 30 random locations across the site for soil chemical analysis. The vegetation at the site is improved pasture, flax, rushes, sedges and poplar trees. The slope is flat to gently rolling (approximately 7 degrees). There is no evidence of visible erosion at the site.

Figure 3. Site photos showing vegetive cover.

3 . 1 Soil Profile and Site Map

Pits 1 and 2 are located on the upper terrace and Pit 3 on the lower terrace. Pits 1 and 2 have similar soil profiles matching the description of the Mokotua undulating deep soil phase, an imperfectly drained silt loam soil (Table 1 and 2). Pit 1 has a deeper soil profile while Pit 2 is moderately deep with a clay base. The soil at Pit 3 matches the profile description of a Dacre undulating moderately deep soil (Table 3). The water table was shallow at approximately 0.8 m depth.

Table 1. Pit 1 Profile description.

	0 – 20 cm	Light brown silt loam, weak soil strength, moderately developed fine polyhedral peds, abundant roots.
	20 – 34 cm	Light yellow brown silt loam, few orange mottles, weak soil strength, moderately developed polyhedral peds, few roots.
	34 – 74 cm	Yellow brown silt loam with orange mottles, firm soil strength, moderately developed structure, few roots.
	74 cm +	Yellow brown silty clay, firm soil strength, weakly developed structure, no roots.

Table 2. Pit 2 Profile description.

	0 – 30 cm	Light brown silt loam, weak soil strength, moderately developed fine to moderate polyhedral peds, abundant roots.
	30 – 47 cm	Light yellow brown silt loam, common orange mottles, weak soil strength, moderately developed fine polyhedral peds, few roots.
	47 – 110 cm	Yellow brown silt loam, common orange mottles, firm soil strength, weakly developed fine polyhedral peds, no roots.
	110 cm +	Yellow brown silty clay, firm soil strength, weakly developed structure, no roots.

Table 3. Pit 3 Profile description.

	0 – 29 cm	Dark brown silt loam, weak soil strength, moderately developed polyhedral peds, abundant roots.
	29 – 57 cm	Dark brown silt loam, common orange mottles, weak soil strength, moderately developed fine polyhedral peds, few roots.
	57 – 87 cm	Light grey sandy silt with abundant yellow mottles, firm weak structure, dead roots.
	87 – 100 cm	Brown organic material in loose gravel matrix.
	100 cm +	Blue grey rounded gravels in sandy matrix. Strongly anoxic smelling.

3 . 2 Soil q uality

The soil quality was assessed using Manaaki Whenua Landcare Research's online tool for soil quality (https://sindi.landcareresearch.co.nz/). The soil is in the low range for Olsen P (available phosphorus), and optimal for pH, and adequate for Total Carbon, Total Nitrogen, and Mineralisable Nitrogen (Table 4). Bulk density is estimated at approximately 0.76 g/m^3 using Hill Laboratories volume weight method.

Table 4. Soil quality at Tulloch site, North Road.

Soil Quality Indicator	Analysis	Concentration	Range
Acidity	pH	6.0	Optimal
Fertility	Olsen P	18 mg/l	Low
Organic resources	Mineralisable N	149 mg/l	Adequate
	Total C	6.6 %	Normal
	Total N	0.57 %	Adequate
Physical resources	Bulk density	0.76 g/ml	Loose - Adequate

3.3 LUC Class

The LUC classification for the Mokotua soil is Class 3 (3c 2). This means the mapped LUC class of Class 2 on the upper terrace is unlikely at the location given the prevalence of fine textured, slowly permeable, imperfectly drained soils. The slope class is also mixed A + B across the Mototua deep silt loam on the upper terrace (Figure 4). The Mokotua soils will have limited versatility for arable and horticulture due to inadequate aeration during wet periods. Mokotua soils have moderate versatility for intensive pasture due to inadequate aeration during wet periods with a risk of short-term water logging after heavy rain. Soil fertility would also need to be increased at the site to support intensive pasture.

The lower terrace LUC class of Class 3 (3w 3) is consistent with the properties of the Dacre soil. Dacre soils have limited versatility for arable, horticulture and forestry and moderate versatility for intensive pasture due to inadequate aeration during wet periods and the risk of short-term water logging after heavy rain.

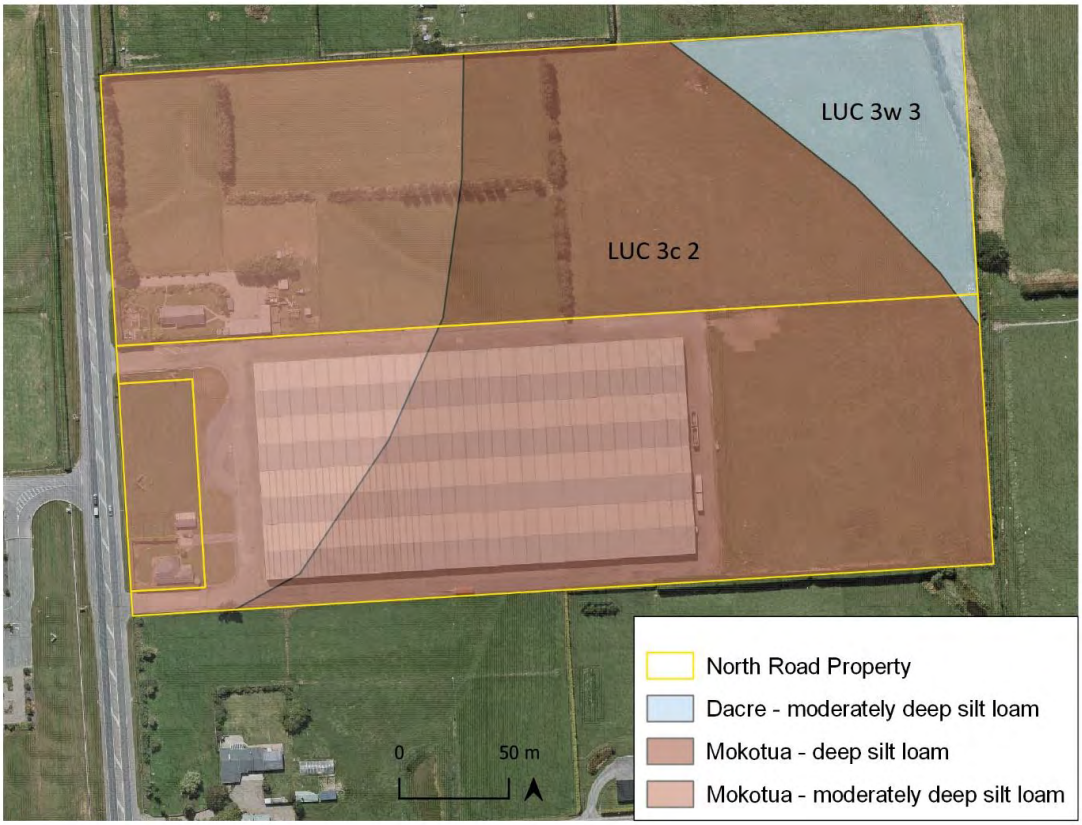


Figure 4. Revised soil map for the North road property. The soils on this property fit the LUC description for Class 3 land.

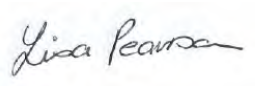
4 Summary

The soils identified at the site are consistent with the Topoclimate South soil mapping identifying variations of the Mokotua and Dacre soil series. It is noted that the identification of the Mokotua soil series changes the assigned LUC class at the site to Class 3 across the entire property. Soil quality is adequate for the current land use of low intensity pasture grazing, however available P is low for

long term use without the addition of phosphorus fertiliser. The soil at the site is limited by aeration and water logging after heavy rainfall. The size of the pastoral area (< 5 hectares) is also a limiting factor for economic primary production.

If you have any questions regarding the information provided in this letter, please contact Lisa Pearson on 0220199799 or via email at lisa@landwatersci.net.

Yours sincerely



Dr Lisa Pearson
Lead Earth and Environmental Scientist
Land and Water Science

References

Topoclimate South (2002). Topoclimate Southland Soil Technical Data Sheets. Crops for Southland.

Appendix 11: Agribusiness Productivity Assessment

Productive Capacity Assessment for: 805, 815, and 819 North Road

Date: 9/10/2024

Prepared for: Tulloch Limited

Prepared By: Agribusiness Consultants Ltd – Mark Aitken

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1. Introduction

Agribusiness Consultants Limited has been tasked with assessing what impacts on productive potential the re-zoning of the subject property into "Industrial 1 Zone Land" would have on the 9.7124ha titles known as the subject property located in in the Lornville township area. The report is being prepared for Tulloch Limited as per Bonisch Consulting's request.

This report relates to the National Policy Statement, Highly Productive Land 2022 (NPS-HPL). The NPS-HPL defines productive capacity as "the ability of the land to support land based primary production over the long term". Land-based primary production includes production from agricultural pastural, horticultural, and forestry activities.

This report's purpose is to be used as an agricultural economists/farm consultant's assessment for a submission on re-zoning the area of the subject property.

The subject property in this report is a 9.7124ha located at 805 North Roald, Lorneville, Invercargill 9876 and is used as a large scale commercial building and lifestyle blocks. The subject property is in the Lorneville township area and boundaries small and large commercial buildings, lifestyle blocks, and a state highway road that links Invercargill to the rest of the Southland Province.

This report shows calculations of what production is lost and discusses limitations to properties such as the subject properties.

This report references reports written by other professionals and references guidelines published by councils and government agencies. The survey proposal has been prepared by Bonisch Consultants. Ms Pearson of Land and Water science has completed a soils assessment on the property that is referred to in the report,

2. Methodology

This process of the report undertakes the following methodology to draw conclusions on the impacts of the re-zoning proposal.

- Property details are listed to provide information to align and support the submission proposal including climate data.
- Land Use Classification (LUC) of the property is compared to the physical features and this ties into the systems able to be run on the property, this also sets what systems are used to calculate productive capacity.
- Constraints and limitations of the property are discussed and potential remedies for these are assessed.
- The current land use and farm system being run on the property is assessed and what improvements can be made to maximize productive output for a 30 year period (if any).
- The changes to the productive output of the property are assessed based on the re-zoning proposal.
- Benefits and costs to society are mentioned and discussed briefly in this report, this may also be discussed by the surveyor at Bonisch.
- A Conclusion on the property and the re-zoning proposal is given.

3. Subject Property Details

3.1. Address

Property is located at 805, 815, 819 North Road, Lorneville

3.2. Zoning

Property is zoned Rural as per Invercargill City Council.

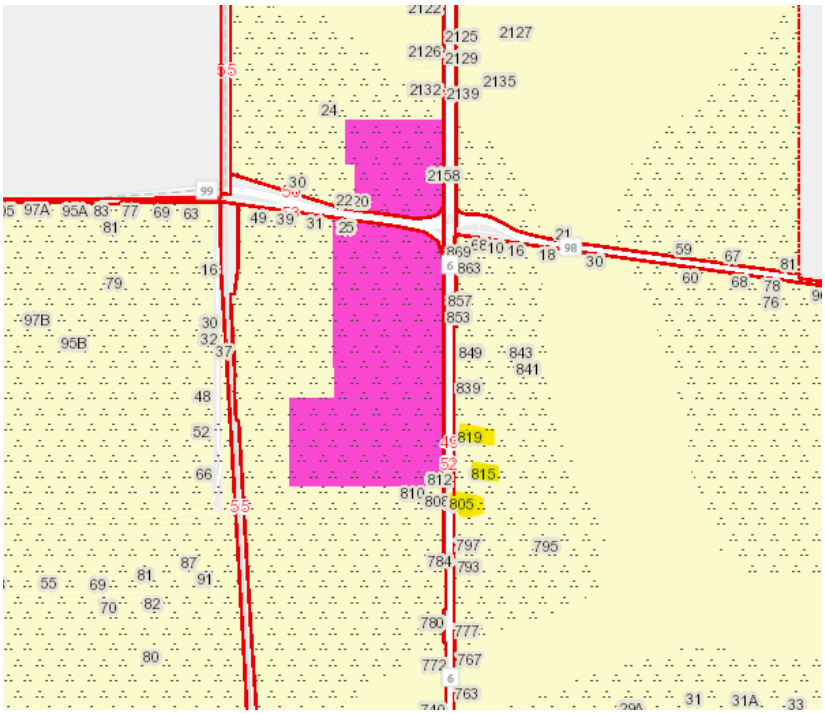


Image sourced from Invercargill City Council, Yellow is Rural and purple is Business in Lorneville township. Highlighted address are the subject titles.

3.3. Area

The below titles and areas are what is referred to as the subject property throughout this report.

CT#	Area (ha)	Description
SLB4/1444	4.8562	North title 819 North Road
SL10A/519	4.5349	South Larger title 815 North Road
SL10A/518	0.3213	West smaller title 805 North Road
Total	**9.7124ha**	

Effective pasture areas Maped on Google EarthPro = 5.47Ha

Balance of the area being ineffective areas, buildings and houses.

3.4. Legal Owners

Tulloch Limited owns all titles of the subject property.

3.5. Current Land Use

The current farmland appears to be used for very low intensity grass sales or cut and carry. This activity looks to be done to keep the property tidy. Based on the pastures on the property, (see appendix) there appears to be very little to no fertilizer used, this is also supported by the soil assessment completed by Ms Pearson showing Olsen P tests of 18 which is below the recommended optimum of 20-30, this can be fixed with fertilizer applications.

The subject properties pastures are very old and poor quality, there looks to be no re-grassing done for some time, this is typical of lifestyle type farming.

3.6. Soil types & Fertility

Soil types as mentioned in Ms Pearson's report are Mokotua, Dacre, and Woodlands types. These soils are usually used for pastural farming. The soils on the current property are limiting for arable and vegetable crop use. This is discussed in more detail in Ms Pearson's report further in this report and in section 3.11.

3.7. Climate of Lorneville Area

The Invercargill climate (5 minutes' drive from Lorneville) is a temperate climate with consistent rainfall throughout the year, this climate is considered summer safe where a larger amount of rain generally falls throughout the summer. These climates tend to be less suitable for arable crops as it is difficult to get crops sown, have them ripen, and harvesting. Below places like Gore and Winton and Northern Southland tend to be more suited for arable crops than where the subject property is located. This climate suits pasture farming (Dairy, sheep & beef, or cut and carry systems) very well as pasture maintains growth and quality throughout the year.

Table 6. Monthly and annual rainfall normals (a; mm), and monthly distribution of annual rainfall (b; %) at selected Southland stations, for the period 1981-2010.

Location		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Gore AWS	a	98	85	81	74	88	77	58	60	63	77	84	100	945
	b	10	9	9	8	9	8	6	6	7	8	9	11	
Invercargill Aero	a	115	87	97	96	114	104	85	76	84	95	90	105	1149
	b	10	8	8	8	10	9	7	7	7	8	8	9	
Kingston	a	88	61	74	75	84	85	70	79	79	87	67	96	944
	b	9	7	8	8	9	9	7	8	8	9	7	10	
Manapouri Aero AWS	a	79	85	81	91	102	105	83	99	106	106	96	105	1136
	b	7	7	7	8	9	9	7	9	9	9	8	9	
Milford Sound	a	722	455	595	533	597	487	424	464	551	640	548	700	6716
	b	11	7	9	8	9	7	6	7	8	10	8	10	
Monowai	a	119	95	105	99	117	118	92	108	108	123	98	120	1301
	b	9	7	8	8	9	9	7	8	8	9	8	9	

Table 6 continued.

Location		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Puysegur Point AWS	a	241	179	212	215	228	211	192	193	196	186	203	207	2463
	b	10	7	9	9	9	9	8	8	8	8	8	8	
South West Cape AWS	a	108	93	115	104	120	125	107	108	111	106	109	107	1313
	b	8	7	9	8	9	9	8	8	8	8	8	8	
Te Anau, Doc	a	165	92	105	80	91	112	83	85	73	134	75	108	1203
	b	14	8	9	7	8	9	7	7	6	11	6	9	
Tuatapere	a	163	123	100	103	120	92	98	91	64	105	75	104	1238
	b	13	10	8	8	10	7	8	7	5	8	6	8	
Waikaia	a	107	89	110	64	83	54	70	58	57	77	63	87	918
	b	12	10	12	7	9	6	8	6	6	8	7	9	
Winton 2	a	101	79	85	77	94	83	63	65	70	75	76	91	959
	b	11	8	9	8	10	9	7	7	7	8	8	10	

Southland rainfall data sourced from NIWA – Site in appendix.

Table 10. Average monthly rain days (a; days where at least 0.1 mm rainfall is measured) and wet days (b; days where at least 1 mm rainfall recorded is measured) at selected Southland stations.

Location		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Gore AWS	a	16	13	15	16	19	20	17	16	16	19	18	17	202
	b	12	10	11	11	12	14	10	10	11	13	13	13	141
Invercargill Aero	a	17	15	17	18	20	20	19	17	17	18	18	18	213
	b	13	11	13	13	15	15	14	12	13	13	13	13	157

Rainfall days comparing Gore to Invercargill.

The table below adds to the rainfall data table, Invercargill is generally wetter than Gore and Northern Southland areas.

Table 15. Highest and lowest recorded air temperatures, average number of days per year where maximum air temperature exceeds 25°C, and average number of days per year where the minimum air temperature is less than 0°C, for selected Southland stations from all available data.

Location	Highest recorded (°C)	Annual days max temp > 25°C	Lowest recorded (°C)	Annual days min temp < 0°C
Gore AWS	32.9	9	-6.5	34
Invercargill Aero	32.2	5	-9.0	41
Lumsden AWS	31.0	11	-9.0	62
Manapouri Aero AWS	32.0	11	-10.2	79
Milford Sound	28.3	2	-6.1	29

Highest and lowest temperatures.

The Invercargill and Southland province as shown in the above table, have temperatures during winter months that get below zero degrees. These colder temperatures make growing some crop types in Invercargill and Southland not suitable. Crops such as Maize/corn can be ruined by frosts. Many horticultural crops cannot be grown in the winter months that can be grown in the upper North Island.

3.8. Drainage Status

The drainage on the property is very poor, there is evidence of prolonged waterlogging. There is a large council drain running through the property, there is another open drain that looks to be recently piped.

The drainage will be affecting the productive output of the property, this can be upgraded and would improve pasture production. The property would also need to be cultivated and fertilizer improved to get better pasture growth.

3.9. Infrastructure

805 North Road	Lifestyle Dwelling and small sheds
815 North Road	Large commercial building
819 North Road	Lifestyle Dwelling and small sheds

3.10. Fragmentation of Locality

The Lorneville area is highly fragmented, it boundaries lifestyle blocks ranging from 2ha to 13ha, the locality also consists of many commercial type buildings and industrial complexes.

The property also boundaries a larger creek to the east that makes access or re-amalgamation with these titles unlikely and very expensive on a per hectare basis.

The subject property is very limited to what farm system activities and options for agricultural use given location, scale and physical features. The state-highway makes shifting livestock and large machinery dangerous and un-appealing.

The fragmented area makes the property only suitable for lifestyle of commercial use.

GRIP image showing title boundaries in the area.

3.11. Land Use Capability (LUC)

3.11.1. Subject Property LUC

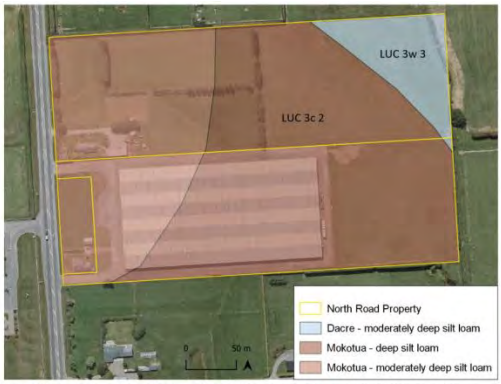


Figure 4. Revised soil map for the North road property. The soils on this property fit the LUC description for Class 3 land.

Map sourced directly from Ms Pearson's report

LUC capability as mentioned in Ms Pearson's soil assessment:

- *The LUC classification for the Mokotua soil is Class 3 (3c 2). This means the mapped LUC class of Class 2 on the upper terrace is unlikely at the location given the prevalence of fine textured, slowly permeable, imperfectly drained soils. The slope class is also mixed A + B across the Mototua deep silt loam on the upper terrace (Figure 4). The Mokotua soils will have limited versatility for arable and horticulture due to inadequate aeration during wet periods. Mokotua soils have moderate versatility for intensive pasture due to inadequate aeration during wet periods with a risk of short-term water logging after heavy rain. Soil fertility would also need to be increased at the site to support intensive pasture.*
- *The lower terrace LUC class of Class 3 (3w 3) is consistent with the properties of the Dacre soil. Dacre soils have limited versatility for arable, horticulture and forestry and moderate versatility for intensive pasture due to inadequate aeration during wet periods and the risk of short-term water logging after heavy rain.*
- ***It is noted that the identification of the Mokotua soil series changes the assigned LUC class at the site to Class 3 across the entire property.***

3.11.2. Interpretation of LUC

The LUC system analyses different areas of land to describe their physical characteristics and limitations into a basic code. The subject property's land use classifications based on Ms Pearson's report are **3c2** and **3w3.**

3c2 – Class 3 – Climate – Soil

- **Class 3** – has moderate limitations for arable use,
- **C** - has a climate limitation – this is excessive rainfall and frequent frost,
- **2** – has specific management needs relating to soil – this is likely avoiding compaction and pasture damage.

3w3 - Class 3 – wetness – Slope angle

- **Class 3** – has moderate limitations for arable use,
- **W** – Wetness, these soils are lower lying and slow to drain. (See appendix),

- **3** – Slope angle, as mentioned in Ms Pearsons report there is a 7% slope, this means erosion risk is increased which doesn't suit vegetable crops.

Based on Ms Pearsons assessment, the property is most suited to pastural farming, commercial vegetable crops are not suited, arable crops are not suited given the wetter climate (also discussed in section 3.7).

4. Submission Proposal

The submission proposal in this case is for the subject property to be re-zoned as "Industrial 1 Zone land". (Survey plan in section 7.2).

The key point to the proposal relating to the productive output is that all of the effective areas will be developed and no longer able to produce food & fiber. The subject property will however be productive in the sense that it provides support services to Agriculture discussed in section 5.4.

The property does increase its productivity in the sense that it is no longer farmed as a lifestyle block and is operated as a support business for agricultural industries such as the current wool store building located on the property.

5. Productive Capability

5.1. Current Farm System

The existing farm system involves the pastures across all the effective areas being harvested with baling equipment, this harvested grass is then removed from the subject property and sold.

In this type of system, a set amount of fertilizer is required to be applied following each cut/harvest of grass to replace the nutrients removed. These fertilizer applications do not look to have been applied, the effects of this lack of fertilizer are a gradual reduction in pasture growth and a reduced persistence in the target pasture species – in most cases this target species is ryegrass and white clover. When low (or no) fertilizer is used for long periods of time weeds generally replace ryegrass and white clover as the conditions are more optimal for the weed species.

The above lack of management does not cause any major long-term damage to the soil as per say, fertilizer can be applied to increase nutrient levels to optimum levels and pastures can be renewed through the cultivation process.

5.2. Constraints and Limitations

All properties in some ways have limitations, some of these can be mitigated or offset, some limitations significant enough that people do not use the land for various farm systems.

Limitation	Comments
Scale	The size of the property and its very low productive output is not enough to support a farm owner or farming family at the 5.47ha. This small scale makes it very unlikely to be operated alongside other farming titles.
Location	The location (along with scale) makes this property very difficult to be farmed or leased along with bigger properties. There are many properties in the area that are farmed as lifestyle and are not farmed in unison with bigger properties as it is not practical or economic. The subject property sits on a busy main road that makes it not practical to walk livestock on.

Soil types	As discussed in section 3.11, soils are limited for arable and vegetable crops.
Fragmented location	As per section 3.10, the area is very fragmented with other lifestyle and commercial lots. The issue with this is it is highly unlikely to be re-amalgamated with neighbouring properties to then be farmed.

The subject property and most properties of this scale are almost impossible to farm in a profitable or practical manner. There are other systems that cannot legally be farmed on this title such as dairy or dairy grazing or based on Ms Pearson's assessment and my experience the property is only suitable for low intensity sheep and beef or cut and carry systems.

To make use of these titles or market them is usually lifestyle use or commercial use, there are very few (or none) that are farmed or re-amalgamated with larger properties.

5.3. Productive Assessment

5.3.1. Farm systems for productive land use

There are many farm systems run in Southland that are chosen to suit the land of which they are run on for factors such as soil type, climate, topography, distance to markets, and desires of property owners. Some farm systems, although can work on a given property, are not always practical or economical and for the purposes of this report these types of systems are not assessed if deemed unsuitable. Below is a table showing various farm systems and why or why they are not suitable and justifications.

System Type	Suitability	Comments
Dairy	Not Suitable	Dairy farming requires consent for land use which would not be granted. Also, the subject property scale to small, dairy farms typically are at minimum 80ha in size.
Dairy Grazing/Support	Not Suitable	Dairy grazing requires land use consent when the property has no history of dairy stock which is the case with the subject property. The property would not be suitable for young stock given pasture performance, if this was fixed up at 10,000KgDm harvested could run 20 heifers for 12 months.
Sheep and Beef	Suitable	Permitted activity – low environmental footprint. Carrying capacity very low – discussed in section 5.3.2
Carrots and Potatoes	Not Suitable	This is not suitable for properties this small, typically 10ha paddocks or bigger are required given the large machinery required and buffer zones around housing and buildings. The LUC class 3 soil also makes it unsuitable.
Other Vegetables	Not Suitable	As per above, minimum 10ha is usually required. Also small market gardens are considered niche in Southland. Class 3 land not suitable for most crops.
Other Arable (Cereal Grains).	Not Suitable	The climate at Lorneville is not suitable, there is very little (if any) grains grown down this part of Southland. Also, the property size is very small for this system.
Grass harvest/Cut & Carry	Suitable	This is the current system; it is workable for properties this size, but the subject property is of very small scall and outputs are very small

Other systems not contained in the above are considered very niche or not present in the Southland area. It is difficult to consider niche farm systems when completing productive

capacity assessments and is not likely to be an option for property owners of this scale over a 30 year period.

5.3.2. Current System Calculations

Cut and Carry

3.92ha (effective) (on 819 title)

1.37ha (effective) (on 815 title)

0.18ha (effective) (on 805 title)

5.47ha Total	*	**5000KgDm Harvest Per year**	**27,350KgDm**
The value of the above feed working on a low value due to poor quality			$0.10
Total financial value per year			$2,735

The cut and carry system run on the subject property is depleting the soil of nutrients and the KgDm harvested each year progressively drops. This system is of low productive output and is of very low intensity in this case, the above income does not include the cost of fertilizer which is usually $0.10-$0.12 per kgDm harvested.

Sheep

The below calculations are based on district averages and considered appropriate on an average efficient management basis.

Area	*5.47*	*ha*		
SR	*8*	*SU/Ha*		
Total SU	*43.76*	*SU*		
	Numbers		*MAF SR*	
MA Ewes	*36*		*1*	*36*
Hoggests	*9*		*0.7*	*6.3*
Rams	*1*		*0.9*	*0.9*
Total				*43.2*
Productive Capacity				
Meat				
Laming % survival to sale	*140%*			
Less replacements	*25%*			
Numbers Sold	*41.4*			
Weight Slaughtered	*32.4*			
Total Lamb Produced	*18*			
	583	*KgCw*		
Cull Ewes at 20%	*7.2*			
Ewe Carcass Weight	*26*			
Total Weight Sold	*187.2*	*KgCw*		
Total Meat Production	*770.40*	*KgCw*		
Meat Production Per hectare	*140.84*	*KgCw/ha*		
Wool				
Ewe Wool Harvested Per year	*3.5*		*126*	
Hoggets wool harvested Per year	*2*		*18*	
Total Wool			***144***	***Kgs***
Total Product off Property			***914.40***	
Total Product per hectare			***167.17***	***Kgs of sheep product per hectare***

Note the above calculations are not the system run on the property, this system would be the most likely system to replace the cut and carry system. All workings based on district averages and typical assumptions for the area.

The above calculations show the meat and wool output of the property. Total meat production from the property is 914.4Kgs of Carcass weight and wool product of 144kgs. Total product sold from the property is 914.4kgs. This assumes that new ewes are purchase. Total product produced per ha is 167.17Kg per year.

The output of the property is very low given its very small scale. Often properties this size are not run efficiently and do not make the owners any profit.

Based on the proposal, the subject property loses a small 914.4kgs of product but is replaced with a building complex that will add much more value to the ag sector

5.4. Changes to Productive Capacity

Based on the concept layout shown in section 7.2, all of the subject property's productive areas will be taken up by buildings and curtilage. The property will lose the 914.4kgs of product produced on the property each year. This productive output is very low and the loss is very low, the property even with developments such as, increased fertilizer use, drainage improvements, and newer pastures, would still see the subject property's outputs very low.

6. Conclusion

The property in its current form has a very low productive output of food, fibre, grass cut and carry. Even if the property's productive output could be increased to its maximum, this would be very small and insignificant, it would also be very difficult (if not impossible) to be run in a productive way as a stand alone farm or run in unison with other properties given the location and fragmentation.

The subject property is not suitable for arable or vegetable crops, evidence of this is provided in Ms Pearson's report where all the subject property is classified as 'class 3 land' with limitations of climate and wetness.

The subject property from a farm operations perspective is highly fragmented and there is no obvious way the property could be re-amalgamated with larger titles

The subject property while does lose a small amount food and fiber production of 914Kgs per year total, but more importantly gains a large utility with the commercial development proposed which provides employment for the area.

If you wish to discuss the contents of this report, please contact me mark@agribusiness.co.nz or 021 718 956

Yours Sincerely

Mark Aitken

7. Appendix

7.1. References

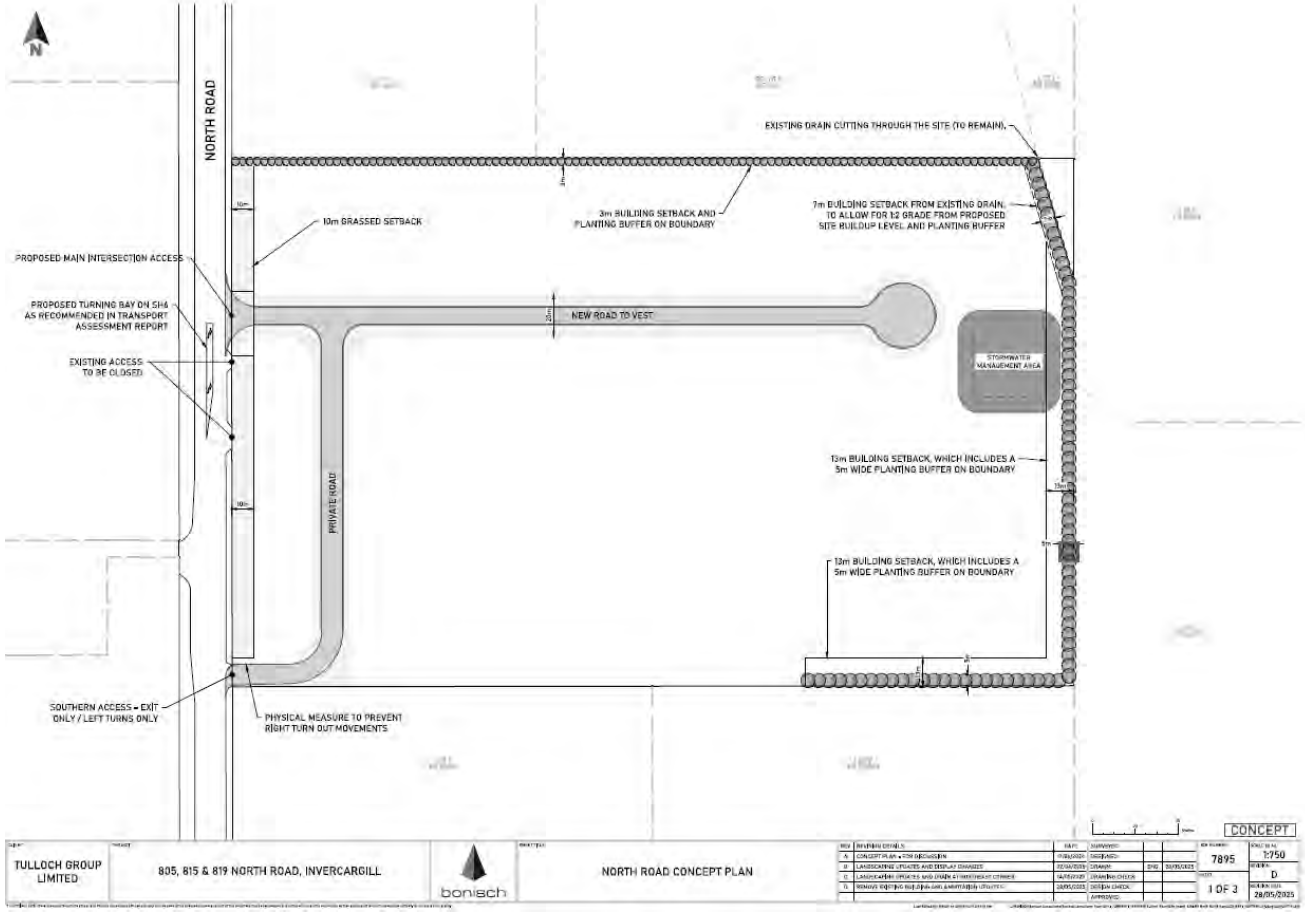
https://gis.icc.govt.nz/ICCViewer/?map=9a025e64bf4c43459033b476901c4a12 – Southland district council zoning information.

NPS-HPL guidance document https://environment.govt.nz/assets/publications/National-Policy-Statement-Highly-Productive-Land-Guide-to-implementation-March-2023.pdf

Land use capability handbook https://www.tupu.nz/media/jzbjrpy4/land-use-capability-luc-survey-handbook-3rd-edition.pdf

Climate information sourced from:
https://niwa.co.nz/sites/default/files/Southland_Climate_WEB.pdf

7.2. Survey Plan

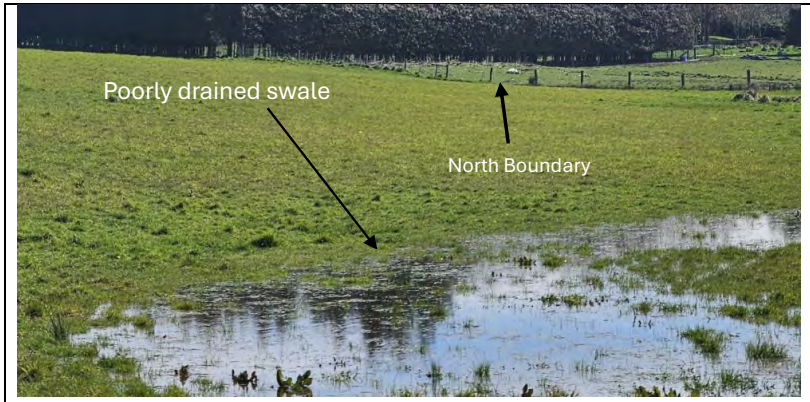


Concept layout sourced from Bonisch.

7.3. GRIP Image with Labels

Image sourced from Bonisch

7.4. Site Photographs


Poorly drained swale
North Boundary

Open Drain
South Property Boundary
Evidence of poor drainage

Large Council Drain	

Appendix 12: Insight Economics Report

INSIGHT | ECONOMICS

Final Report: 19 May 2025

Economic Assessment of Proposed Industrial Rezoning in Lorneville, Invercargill City

Prepared for: **Tulloch Limited**

Authorship
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1. Executive Summary

Context

Tulloch Limited (the **applicant**) owns approximately 9.7 hectares of rural zoned land on the northern outskirts of Invercargill City (the **site**). The applicant is seeking a private plan change to rezone the site to Industrial 1 (Light) Zone (**IND1Z**). This report was commissioned to help inform and support the proposal by assessing its likely economic effects. It assumes that the proposal will enable an additional 6.3 hectares of developable land, upon which about 19,000 m^2 of industrial floorspace could be built over time.

Key Findings

The key findings of our assessment are that:

- Industry plays a vital role in the local economy. This extends well beyond the Tiwai Point aluminium smelter, which alone contributes over $400 million annually to the Southland economy.

- Occupier demand for local industrial premises is positive. At the same time, supply is limited across the region, with a particular shortage of industrial space in Invercargill.

- Employment in the city's light industrial zones has increased by 50% over the past 20 or so years, with the construction sector experiencing the highest rate of growth.

- Beyond directly increasing industrial land supply, the economic rationale for the proposal includes its potential to address a shortage of large lots and its compatibility with industrial site and location criteria.

- We used a common graphical technique called supply-demand analysis to illustrate likely impacts on the industrial land market. In short, the proposal will increase the supply of industrial land, which will reduce the average land price, thereby making industrial land relatively more accessible and affordable to prospective future owners and occupiers.

- The proposal will also have wider economic effects. They include the one-off impacts of future development activity, which we estimate could sustain 184 full-time equivalent (**FTE**) jobs, generate $13 million in wages/salaries, and boost GDP by $23 million.

- Further, once operational, future activities supported onsite could sustain full time work for 190 people, generate over $13 million in annual wages/salaries, and provide $24 million of GDP annually.

- The main offsetting economic cost is the loss of rural production. However, the rural productive potential of the site is curtailed by existing land uses, with the balance of land currently in very low-value rural use.

- Accordingly, the proposal represents a superior economic outcome for the subject site, and we support it on that basis.

2. Introduction

2.1 Context and Purpose of Report

Tulloch Limited (the **applicant**) owns approximately 9.7 hectares of rural zoned land in Lorneville, on the northern outskirts of Invercargill City (the **site**). The site accommodates a large wool store, with much of the remaining land currently underutilised. To enable the land to be put to its highest and best use, the applicant is seeking a private plan change to rezone the site for light industrial use (the **proposal**).

2.2 Scope of Assessment

This report assesses the likely economic effects of the proposal. Based on direction from the project team:

- It does not assess the proposal against the requirements of the National Policy Statement for Highly Productive Land (**NPS-HPL**), which are set out in **Appendix A**.
- It does not consider future industrial activity in the Industrial 4 (Awarua) Zone (**IND4Z**). The IND4Z land was purchased by Calder Stewart in 2022 with the intention of developing Australasia's largest heavy industrial business park, known as "Awarua Quadrant." We understand the development is still in preliminary planning stages, and will therefore not be available to meet short to medium term demand.

2.3 Structure of Report

The remainder of this report is structured as follows:

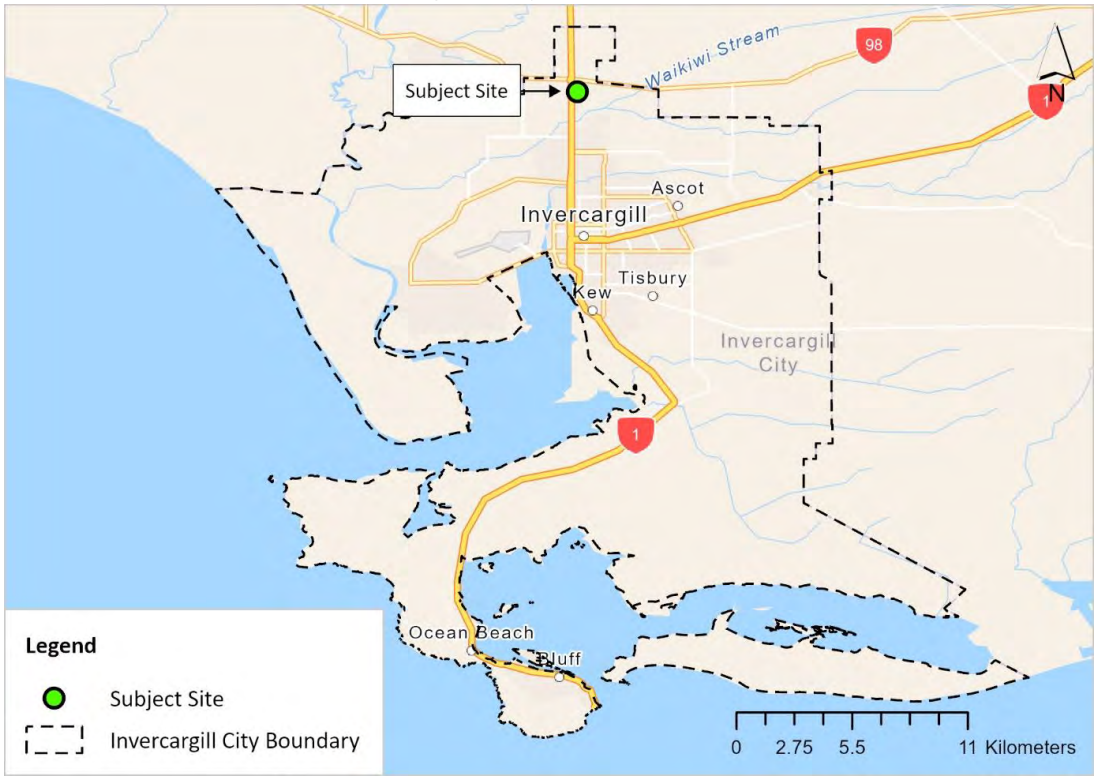
- **Section 3** locates the site and describes the proposal.
- **Section 4** briefly describes the local industrial market to provide context for the proposal.
- **Section 5** describes the economic rationale for the rezoning.
- **Section 6** illustrates the impacts of the proposal on the industrial land market.
- **Section 7** considers the likely wider economic impacts of the proposal.
- **Section 8** summarises the overall costs and benefits of the proposal.

3. About the Subject Site

3.1 Site Location and Description

The subject site is located approximately seven kilometres north of central Invercargill in Lorneville. It is bound by North Road (SH6) to the west and rural lifestyle blocks to the north, east and south. The site itself is rectangular and spans an area of approximately 9.7 hectares. The green dot on the map below denotes the site's location.

Figure 1: Subject Site Location



3.2 Current Use and Receiving Environment

The subject site accommodates a wool store that was constructed in 1960 and spans a gross floor area (**GFA**) of approximately 19,200 m^2. It is currently occupied by Wools of New Zealand, Segard Masurel, and OJI Fibre Solutions and is used for the storage and resorting of wool, as well as packaging storage and general storage. In addition, the site currently accommodates two dwellings, with the remaining land used for low-intensity rural production.

Figure 2 below shows a satellite view of the site and its immediate receiving environment.

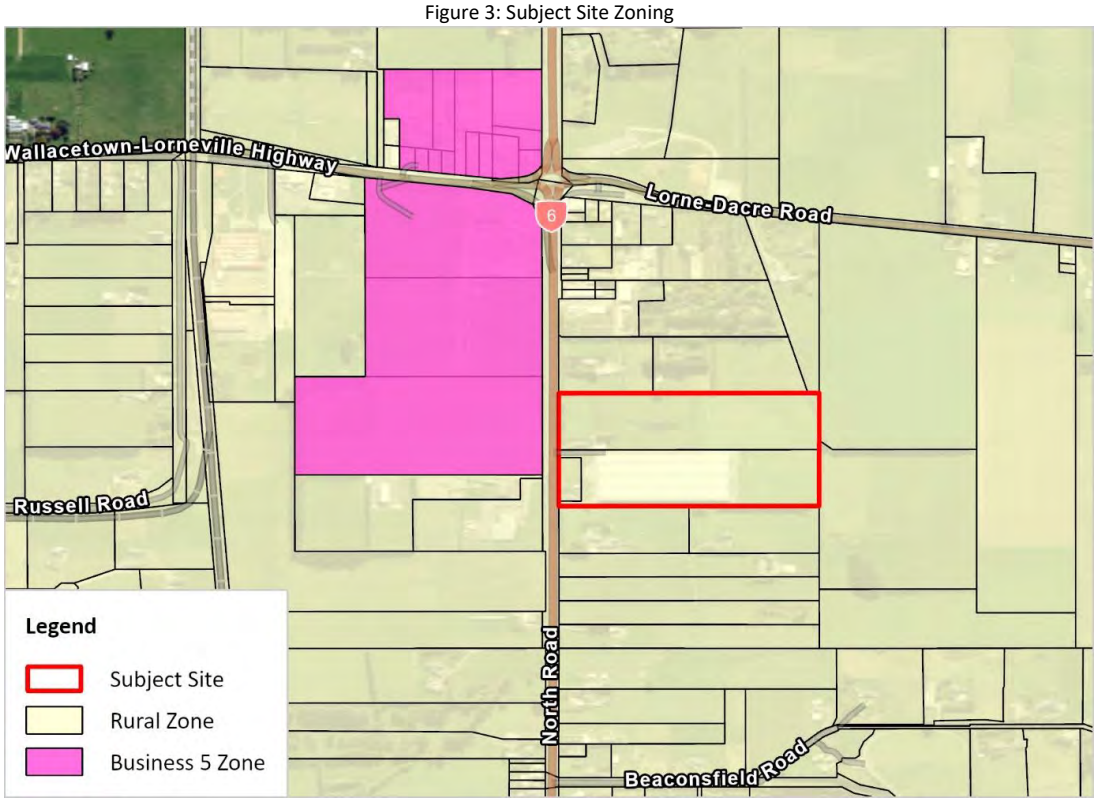
Figure 2: Receiving Environment

The land surrounding the site is in a variety of uses. There is a small Buddhist temple / community centre located immediately north of the site, while further north is a garden centre as well as the privately owned Malahide Gardens. The western side of North Road currently accommodates a butcher and adventure sports centre, north of which is a large tract of vacant land. Land to the south and east of the site appears to be in a mix of rural and rural-residential use.

3.3 Current Zoning

The site is currently zoned Rural Zone under the Invercargill City District Plan. The surrounding area is predominantly zoned for rural use, with the exception of about 24 hectares of land west of North Road that is zoned Business 5 (Rural Service) Zone. See Figure 3 below.

Figure 3: Subject Site Zoning



3.4 About the Proposal

The proposal seeks to rezone the subject site to Industrial 1 (Light) Zone (**IND1Z**). This would enable the following activities to establish onsite as permitted activities (subject to the relevant development standards)[1]:

- Caretaker accommodation;
- Community corrections facility;
- Essential services;
- Land transport facility;
- Light industry;
- Motor vehicle sales;
- Take-away food premises (not exceeding 150 m^2); and
- Trade retail.

3.5 Indicative Yields

Although not required by the proposed plan change provisions, we understand that the applicant intends to retain the existing wool store if the submission is successful. Accordingly, we limit our assessment to the impacts of industrial development enabled on the balance of the site, minus an

[1] As per IND1-R1

allowance of 20% for infrastructure / roading provision. This translates to a net developable area of **6.3 hectares**, as set out in Table 1 below.

Table 1: Net Developable Area Enabled by proposal

Measure	**Value (ha)**
Site area	9.7
Less wool store GFA	1.9
Less infrastructure allowance	1.6
Net developable area	**6.3**

Assuming a floor area ratio (**FAR**) of 0.3,[2] this corresponds to approximately **19,000 m²** of new light industrial floorspace enabled by the proposal.

[2] The floor area ratio (FAR) is calculated by dividing GFA by land area. For this analysis, we restricted our scope to the IND1Z, IND2Z, IND2AZ, and IND3Z industrial zones. The FAR for each property was computed, and the median of these values was taken as the representative FAR.

4. Industrial Market Context

This section briefly describes the local industrial market to provide context for the proposal.

4.1 Importance of Industry

Industrial activity plays a vital role in Invercargill's economy. To demonstrate, we used 2023 employment data from Statistics New Zealand (**Stats NZ**) to calculate location quotients (**LQ**) for a range of industrial activities. This is a simple tool that is used to compare the concentration of a particular industry in a local area (in this case Invercargill City) to a larger reference area (in this case New Zealand). It is derived by dividing the district share of activity by the national share. A LQ of 1 indicates that Invercargill City's concentration of that activity is the same as the national concentration. A LQ less than one indicates the district has a higher concentration than the national average and is overrepresented locally (and vice versa). Table 2 below shows the results.

Table 2: Industrial Location Quotients

Industry	Share of City Total	Share of National Total	Location Quotient
Manufacturing	12.2%	8.5%	1.4
Construction	8.9%	9.5%	0.9
Wholesale Trade	4.8%	4.7%	1.0
Transport, Postal and Warehousing	4.1%	3.8%	1.1
Total	**29.9%**	**26.5%**	**1.1**

As demonstrated in Table 2, Invercargill City is overrepresented in both Manufacturing (LQ of 1.4) and Transport, Postal and Warehousing (LQ of 1.1). Overall, industrial employment comprises just under 30% of the city's workforce compared to 26.5% nationally.

The **Tiwai Point** aluminium smelter is a key factor. For context, it uses about 13 percent of the country's electricity, which is supplied by the specially constructed Manapouri power station.[3] Each year, the smelter contributes approximately $406 million to the Southland economy, with annual export revenue of about $1 billion. Approximately 1,000 full-time equivalent (**FTE**) staff and contractors work at the smelter, with a further 2,200 people employed indirectly.[4] Following a long period of uncertainty, a power supply deal was reached earlier this year that is expected to keep the smelter open for the next 20 years.

Even when smelter operations are excluded from the above calculations, local industrial employment still represents a higher share of activity than the national average.[5] We see three potential reasons for this:

1. **Flow-on effects from smelter operations** – such as businesses that use aluminium as an input.
2. **The city's portside location**, which facilitates fishing and other maritime activities.
3. **The relatively isolated location of the city**, necessitating a certain level of self-sufficiency.

[3] https://www.rnz.co.nz/news/business/518319/tiwai-point-aluminium-smelter-to-stay-open-until-2044

[4] https://nzas.co.nz/

[5] 28.2% in Invercargill City versus 26.5% nationally.

4.2 Current State of Industrial Market

4.2.1 Report Findings

We understand that Invercargill City Council (**ICC**) has not completed a Business Capacity Assessment (**BCA**), as recommended (but not required) by the National Policy Statement on Urban Development (**NPS-UD**) (see **Appendix B**). Accordingly, there are no official estimates of the supply of, and demand for, industrial land available.

According to CBRE's latest research report[6], though, occupier demand for industrial premises remains strong, while supply is limited across both prime and secondary markets. In Invercargill, net rents for prime warehouse/workshop space now range between $110 and $150 per square metre, reflecting continued rental growth despite static market activity. This rental uplift is attributed to persistent supply constraints, cost pressures, and rising interest rates. New purpose-built tenancies continue to command higher rents, typically based on cost-plus-margin pricing rather than prevailing market rates.

A key driver of industrial floorspace demand is the sustained shift towards online shopping and the associated growth of the logistics sector. These activities require modern, high-stud, large-footprint warehousing space, which is usually located in light industrial zones. Further, the rapid emergence of demand from the datacentre sector is creating additional impetus for larger, modern fit-outs.

4.2.2 Employment Trends

To better understand local market conditions, we used detailed employment data from Stats NZ to see how the level of light industrial activity in Invercargill has changed over time. The study area adopted for this analysis includes the following industrial zones[7]:

- Industrial 1 (Light) (**IND1Z**)
- Industrial 2 (Urban) (**IND2Z**)
- Industrial 2A (Lake Street) (**IND2AZ**)
- Industrial 3 (Large Industry) (**IND3Z**)

The resulting study area is illustrated in Figure 4, and a brief description of each zone is provided in **Appendix C**.

[6] CBRE Research - Regional Figures Report – Southland - February 2025

[7] In order to isolate activity in these zones, a small amount of IND1Z and IND3Z land located at Bluff has been excluded from our study area.

Figure 4: Study Area

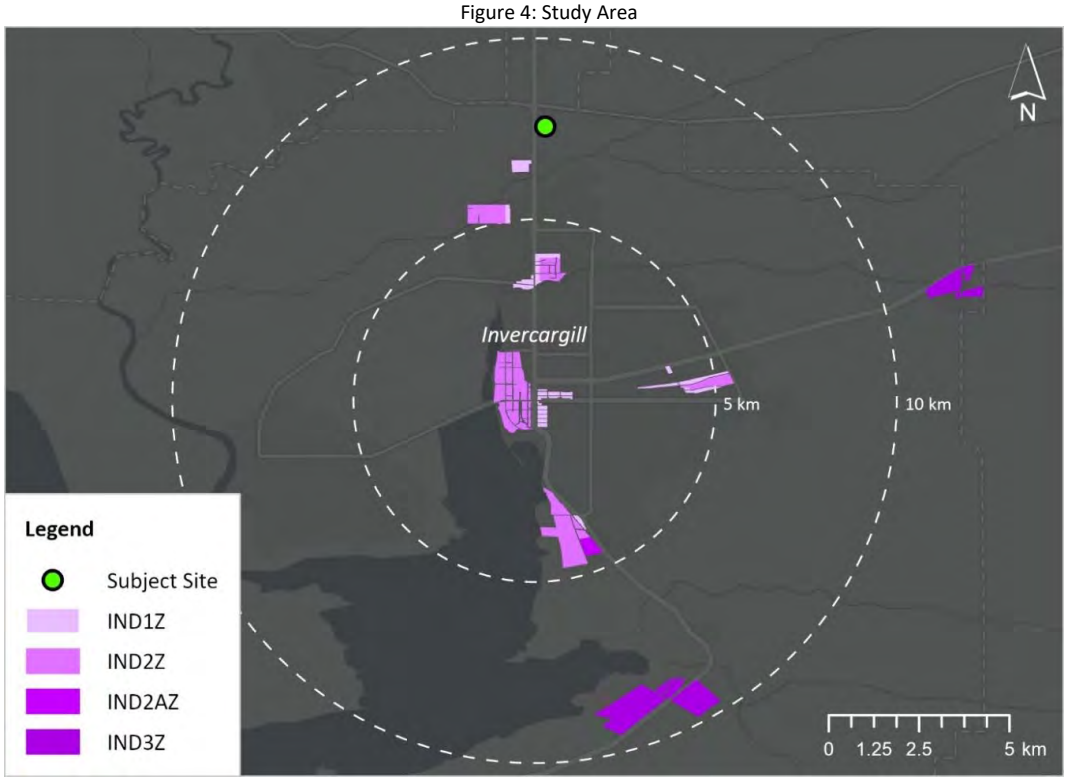
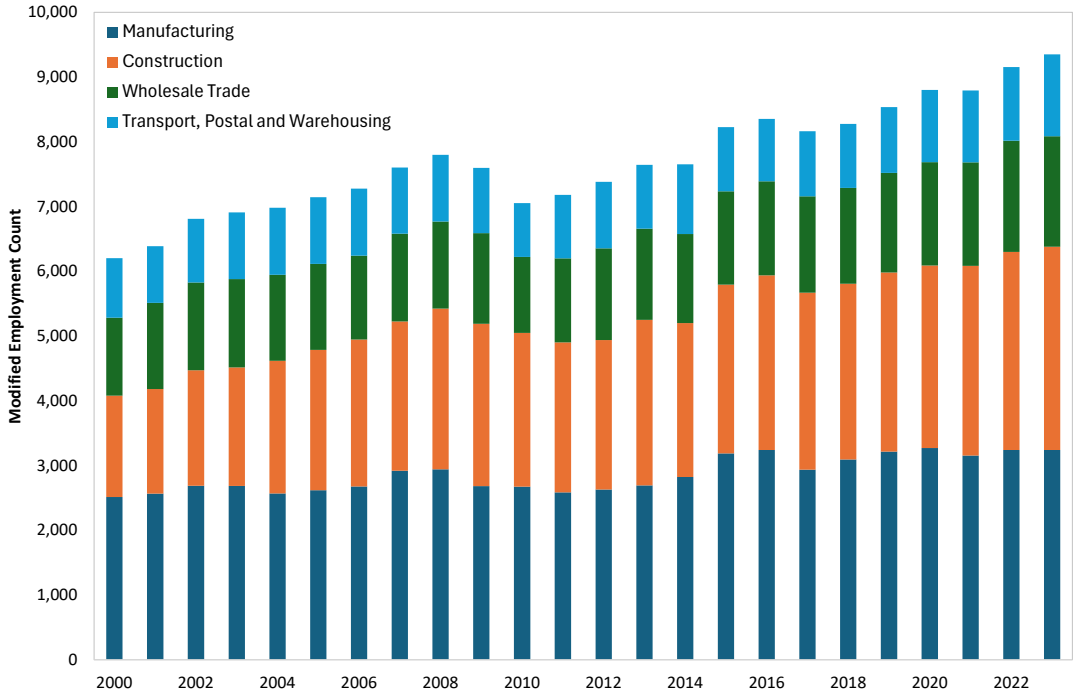


Figure 5 below charts the modified employment count (**MEC**)[8] in the study area from 2000 to 2023 for the most common industrial activities.

[8] Modified employment count = geographic units + employee count. This approach offers a more comprehensive measure of total employment by including both employees and self-employed individuals (working proprietors).

Figure 5: Industrial Employment in Study Area - 2000 to 2023 (as at February)



As the chart above illustrates, industrial employment in the study area has grown significantly over the past 20 or so years. The highest rate of growth has been in construction, where employment has doubled over that period. Overall, industrial employment has grown at a compound annual growth rate (**CAGR**) of 1.8%, as shown in Table 3 below.

Table 3: Industrial Employment in Study Area - 2000 to 2023 (as at February)

Modified Employee Count	**2000**	**2023**	**Change**	**% Change**	**CAGR**
Manufacturing	2,510	3,240	730	29%	1.1%
Construction	1,570	3,140	1,570	100%	3.1%
Wholesale Trade	1,210	1,710	500	41%	1.5%
Transport, Postal and Warehousing	920	1,270	350	38%	1.4%
Industrial Total	**6,200**	**9,350**	**3,150**	**51%**	**1.8%**

5. Economic Rationale for Rezoning

This section describes the economic rationale for the proposal.

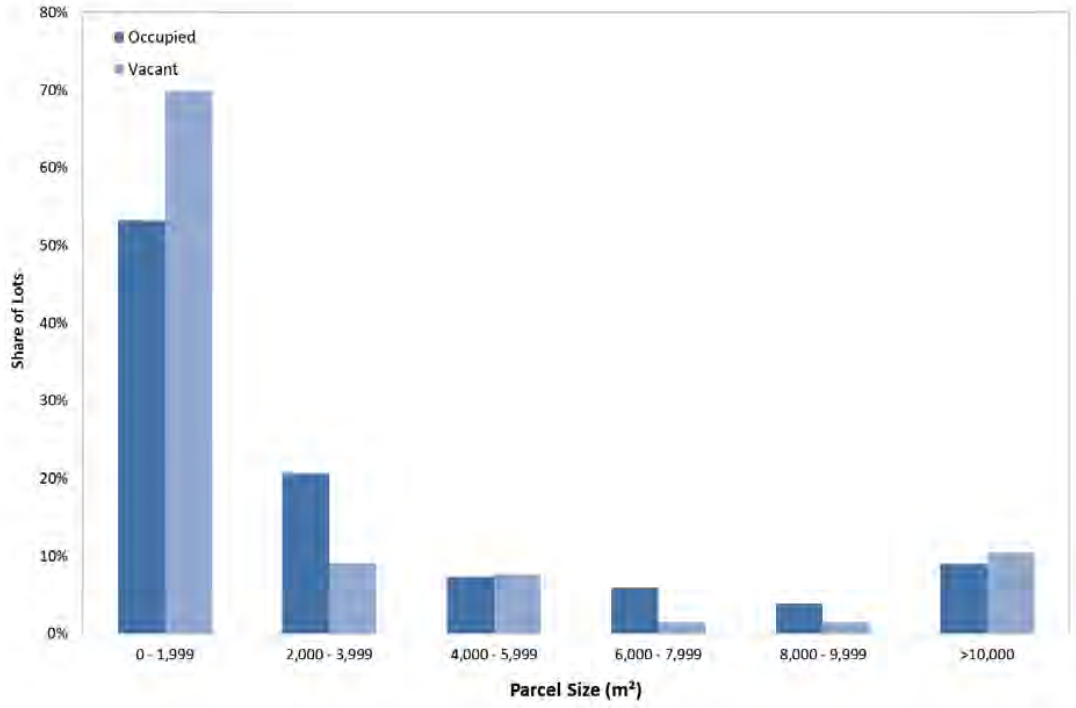
5.1 Boost in Industrial Land Supply

The proposal provides a direct boost in light industrial land supply for the city. Accordingly, it will help cater for future growth in demand for light industrial use, while helping the council to meet its requirements under the NPS-UD to provide "at least" sufficient development capacity "at all times" to meet expected future demand for additional business land.

5.2 Flexible Lot Configuration

The proposal enables 6.3 hectares of contiguous light industrial land that can be configured according to market demand. For context, we used Core Logic's Property Guru tool to extract data on all parcels within the study area delineated in Figure 4, which includes only Industrial 1, 2, 2A, and 3 zones. Figure 6 below shows the distribution of lot sizes for occupied parcels (in dark blue) and vacant parcels (in light blue).

Figure 6: Distribution of Vacant and Occupied Lot Sizes in Study Area: IND1Z, IND2Z, IND2AZ, and IND3Z

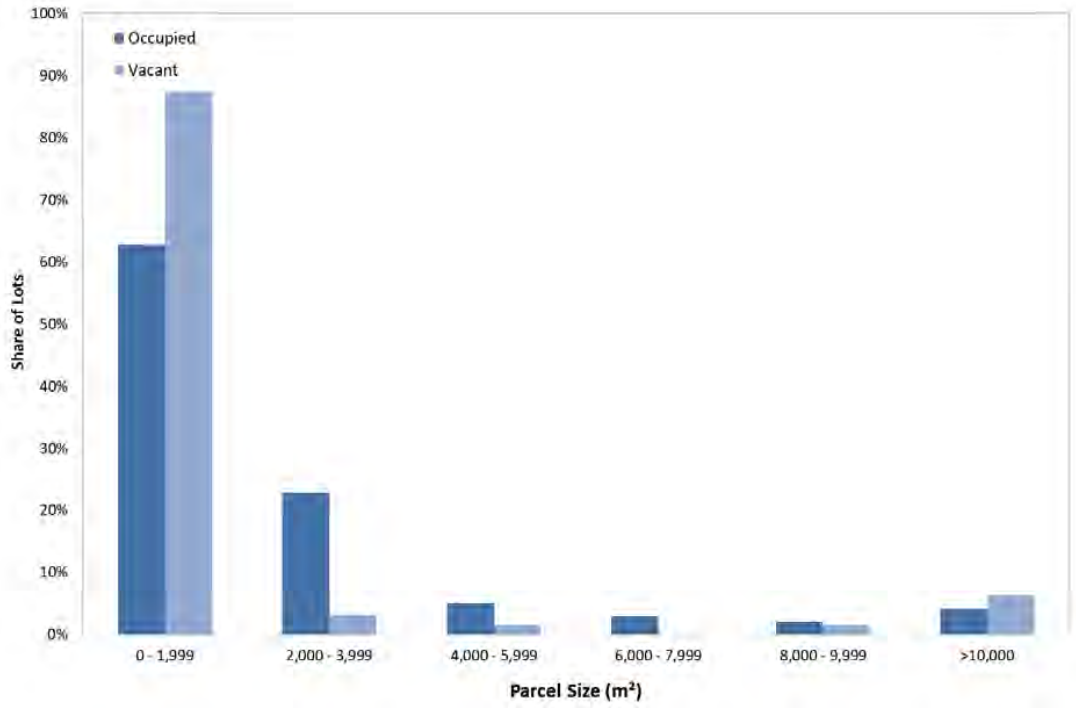


As the chart above indicates, approximately 70% of all vacant parcels in the study area are smaller than 2,000 m^2, compared to about 53% of occupied parcels. Conversely, there is a lower share of vacant parcels in the larger size bands.

To further illustrate the situation within the proposed zone, Figure 7 shows the same information restricted to parcels located within the Industrial 1 Zone. It highlights that vacancy within IND1Z is

more concentrated in smaller parcels, with 88% of vacant lots under 2,000 m², compared to 70% across the broader study area zones.

Figure 7: Distribution of Vacant and Occupied Lot Sizes in Study Area: IND1Z



Further, we identified just two vacant parcels larger than 6.3 hectares, located at 421 Bluff Highway (8.8 ha) and 10 Lake Street (11.3 ha).[9] Accordingly, the proposal may help address a shortage of large lots in the city, or alternatively, it could be subdivided into multiple smaller lots to meet the needs of prospective occupants.

5.3 Potential Synergies with Other Land Uses

The site provides an opportunity for businesses to co-locate near, and harness potential synergies with, the existing wool store. These synergies are known as "agglomeration benefits" in economics jargon, and they are the primary reason that businesses often choose to locate near one another. In addition, there may be potential for synergies with future occupants of the Business 5 (Rural Service) Zone opposite the site.

5.4 Fit with Location Criteria

Finally, the subject site is a good fit with common industrial site and location criteria, as illustrated in Table 4 below.

[9] Note this does not consider combining adjacent vacant plots that collectively would be greater than 6.3 ha in area.

Table 4: Assessment Against Common Site / Location Criteria

Criteria	**Application to Subject Site**
Access to major road / transport routes	Adjacent to SH6, with immediate access to SH98 and SH99; 10 - 15min drive to SH1 via SH98 (travelling north) or SH6 (travelling south).
Topography	Site is >9 ha contiguous, adjacent to rural zone; mostly flat to gently undulating (0-3°).
Ability to buffer adverse effects	Buffered from existing and future residential activity to the east by SH6; rural land to the north, east, and south.
Exposure / profile / visibility	Adjacent to SH6; main route to Invercargill (travelling south) and Lorneville interchange (travelling north).
Existing or proposed public transport	2.1 km north of Waikiwi bus route.
Proximity to ports	Access to South Port via SH1 (34 km) and Invercargill Airport (10 km).
Close to other industrial land	IND1Z & IND2Z land (>40 ha) approximately 2.5 km southwest of site along West Plains Road. IND1Z land (11 ha) 1 km southwest across SH6.
Access to rail	8 km from Kiwirail Network Depot in Invercargill.
Proximity to workforce	Close proximity to Invercargill and Bluff. Gore less than 1 hour drive away.
Complementary business services	Rural servicing zone (Business 5) opposite site across SH6.

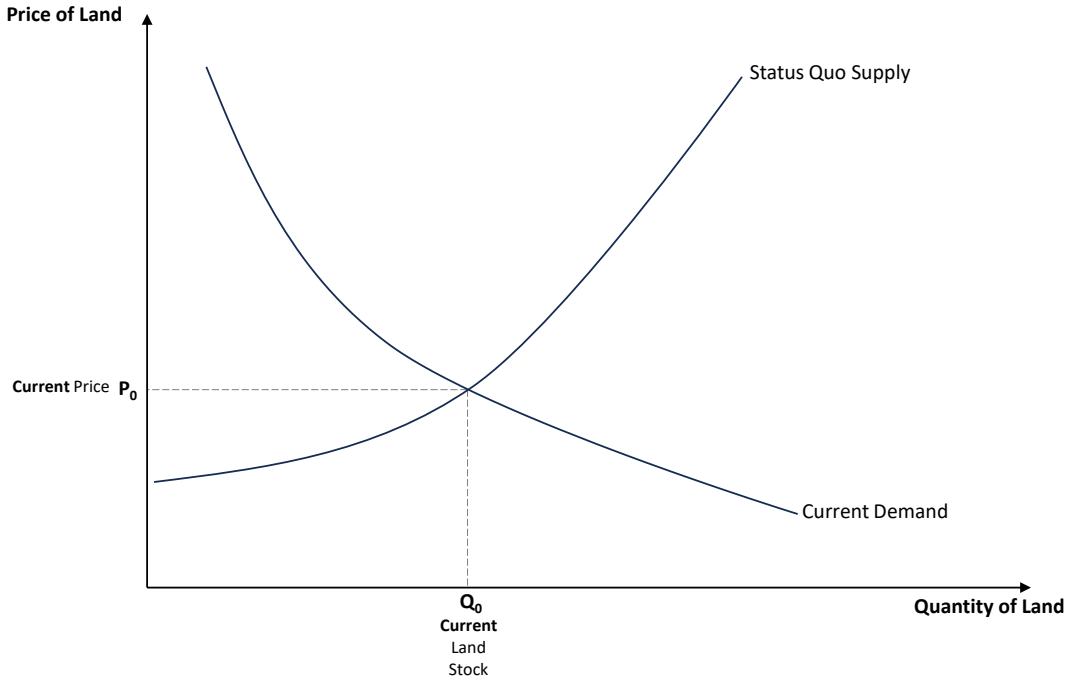
6. Industrial Land Market Impacts

This section uses a common economic technique, known as supply-demand analysis, to illustrate the impacts of the proposal on the industrial land market.

6.1 Current Situation

The proposal would unlock industrial land supply in the short-term, which may help the market to be more responsive to growth in demand over time. As a result, the price of industrial land may not increase as sharply over time as it would have otherwise. This effect is illustrated in the series of supply-demand charts below, starting with Figure 8, which represents the current state of Invercargill City's industrial land market.

Figure 8: Supply-Demand Graph of Invercargill City's **Current** Industrial Land Market



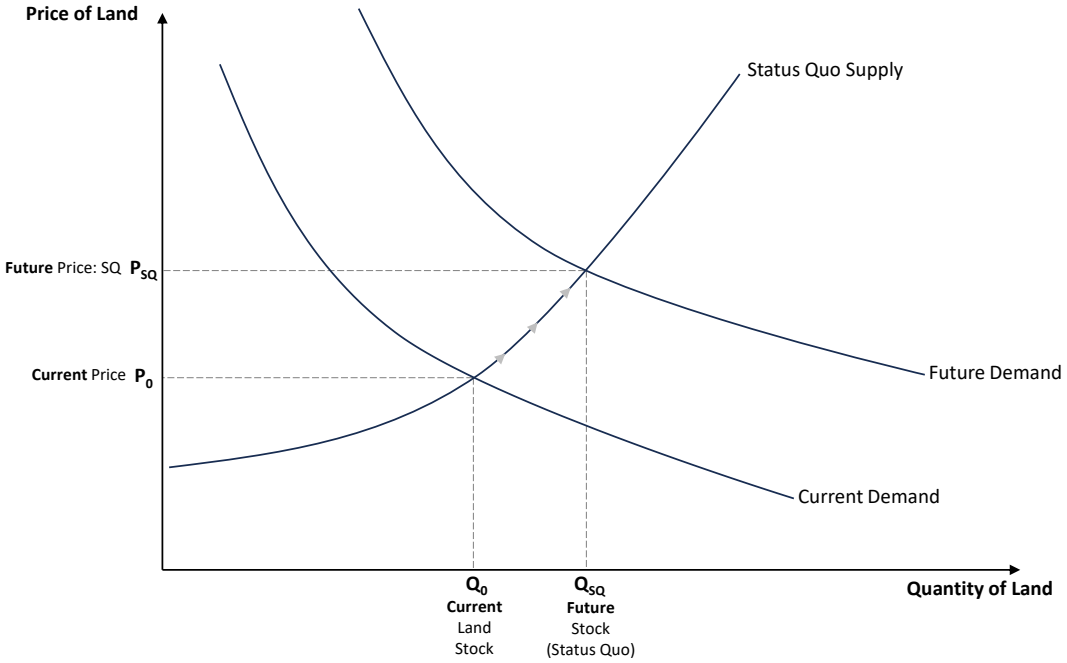
In Figure 8, the city's industrial land market is represented by its corresponding supply and demand curves, which intersect to yield the current/equilibrium industrial land stock of Q_0 hectares, and the prevailing (average) market price of P_0 per hectare.[10]

6.2 Future Situation under Status Quo

Over time, as Invercargill City's economy grows, so too will the demand for industrial land. This causes the market demand curve to shift out, which increases the size of the land stock over time (from Q_0 to Q_{SQ}). In addition, it raises the average price of industrial land (from P_0 to P_{SQ}). See Figure 9 below.

[10] The supply curve slopes up because, all other things being equal, a higher price entices more land to be supplied, and vice versa. Conversely, the demand curve slopes down because a lower price makes land affordable to a larger number of prospective buyers, and vice versa. The intersection of these curves defines the market equilibrium because it is a price that both (i) buyers are willing to pay for that quantity of land, and sellers are willing to accept for it.

Figure 9: Supply-Demand Graph of Invercargill City's **Future** Industrial Land Market **without** the Proposal



6.3 Future Situation with the Proposal

The proposal will make the city's future industrial land supply more responsive to growth in demand over time, which causes the market supply curve to flatten, as per Figure 10 below.

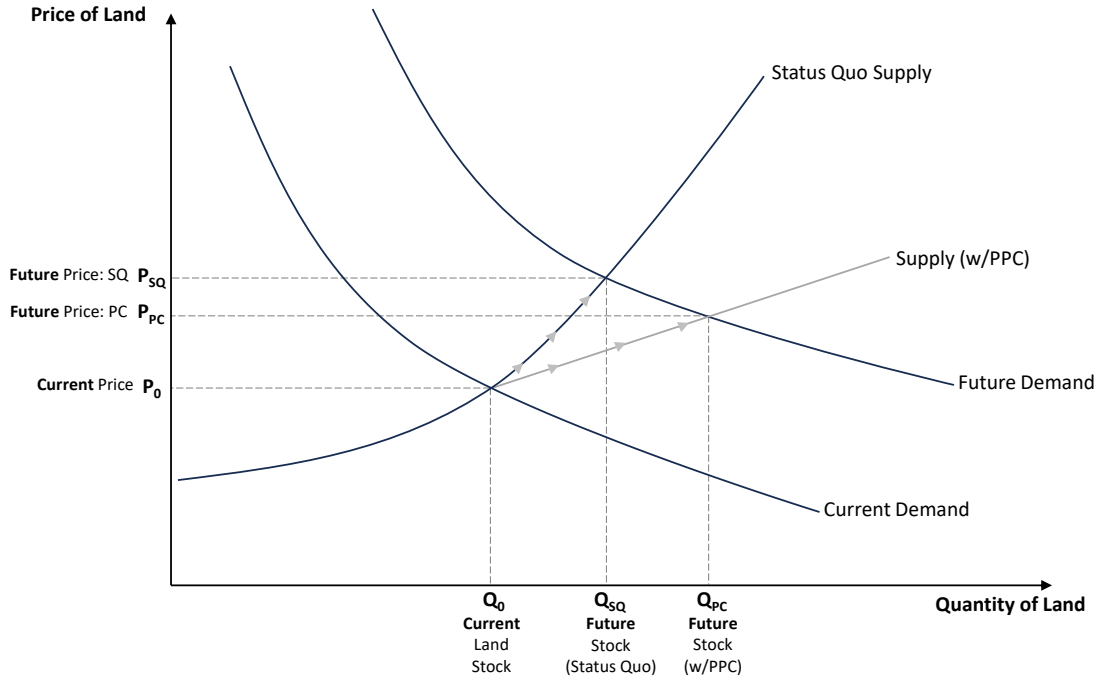
As a result, relative to the future situation under the status quo, the proposal should:

- Increase the size of the future industrial land stock (from Q_{SQ} to Q_{PC}); and
- Reduce the average price of industrial land (from P_{SQ} to P_{PC}).

In other words, the proposal will enable more people the opportunity to purchase industrial land, and to do so at lower prices than they likely could have otherwise.[11]

[11] The proposal will also have broader impacts due to changes in the trajectory of land prices. Specifically, because future land prices will be lower with the proposal than they likely would otherwise, existing landowners will be worse off, while new ones (and renters) will be better off. In economic terms, however, this is just a 'wealth transfer' from one group to another, which cancels out and has no net effects overall.

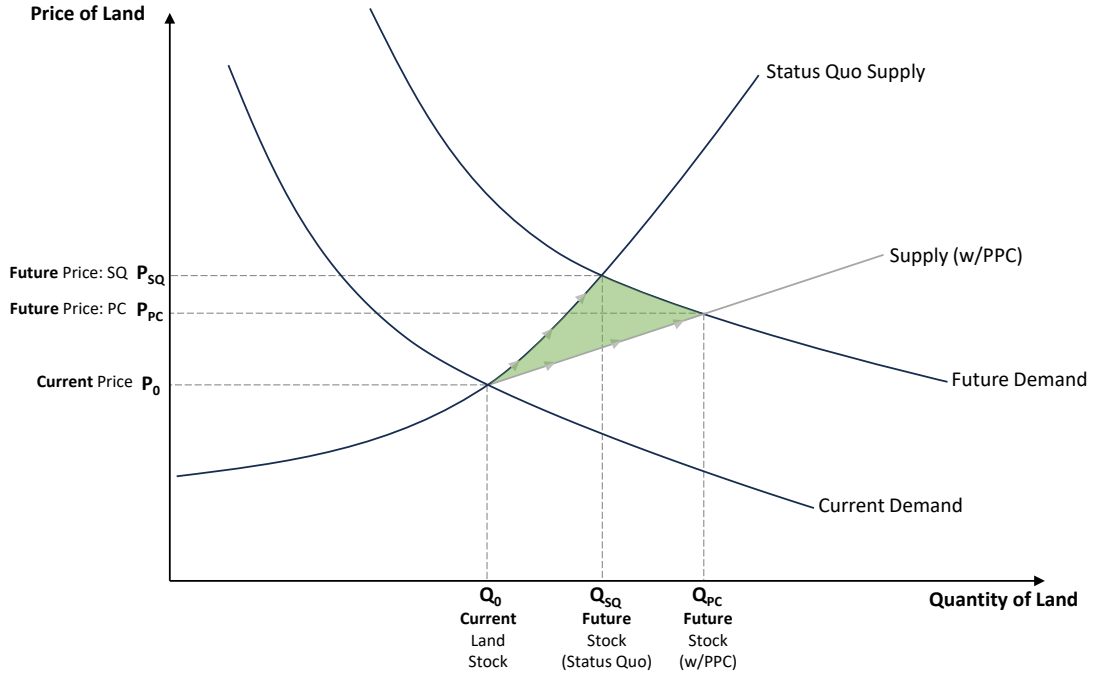
Figure 10: Supply-Demand Graph of Invercargill City's **Future** Industrial Land Market **with** the Proposal



6.4 Resulting Efficiency Gains

Finally, the proposal will create efficiency gains, which are denoted by the shaded green triangle in Figure 10 below. These represent increases in consumer and producer surplus, which are the benefits that land buyers and sellers (respectively) gain from trading with one another.

Figure 11: Industrial Land Market **Efficiency Gains** from the Proposal (Green Shaded Area)



7. Wider Economic Impacts

This section describes the likely wider economic impacts of the proposal.

7.1 One-off Economic Impacts

Developing the additional industrial floorspace enabled by the proposal will have significant one-off economic impacts on GDP, jobs, and wages. We quantified these using a technique called multiplier analysis, which traces the impacts of additional economic activity in one sector – such as construction – through supply chains to estimate the overall impacts. These impacts include:

- **Direct effects** – which capture onsite activities directly enabled by the project, plus the impacts of businesses that supply goods and services directly to the project; plus

- **Indirect effects** – which arise when businesses working directly on the project source goods and services from their suppliers, who in turn may need to source goods and services from their own suppliers, and so on.

The economic effects are usually measured in terms of:

- **Contributions to value-added (or GDP).** GDP measures the difference between a firm's outputs and the value of its inputs (excluding wages and salaries). It captures the value that a business adds to its inputs to produce its own outputs.

- **The number of FTEs employed** – this is measured in terms of full-time equivalents, which combines part-time and full-time workers to provide a single employment metric.

- **Total wages and salaries** paid to workers, which are reported as 'household incomes.'

For example, when a construction company wins a new project, they usually subcontract various parts of the build to other companies to help complete the job, such as hiring glaziers, tilers, and plumbers. Those subcontractors, in turn, will need to source a range of materials and services from their suppliers, who may also need to source materials and services from their suppliers, and so on. Multiplier analysis enables the impacts of these supply chain interactions to be captured to estimate the overall impact of the new building project, including its direct and flow-on (supply chain) effects.

Table 5 below identifies the assumptions made to estimate likely one-off construction impacts.

Table 5: Construction Cost Assumptions

Measure	Value
Total GFA	18,900
Cost per sqm[12]	$1,350
Construction costs ($m)	**$25.5**

[12] Assumed build costs reflect TA building consent averages for the 24 months to July 2024. We understand that reported construction costs are generally understated to avoid levy obligations. However, we adopt these values as a conservative approach.

In addition, we estimated planning/design/consent and land development costs based on costings provided for similar, previous projects. However, we do not disclose them here for commercial sensitivity reasons (because they are not publicly available like construction costs are in building consent data).

Having defined these key terms and assumptions, the following table shows the estimated economic impacts of the one-off activity that will be enabled by the proposal.

Table 6: One-Off Economic Impacts of Construction

Planning/Design/Consent	Direct	Indirect	Total
FTEs – 6 months	4	2	6
GDP $m	$0.3	$0.1	$0.5
Wages/Salaries $m	$0.2	$0.1	$0.2
Site Preparation			
FTEs – 6 months	26	29	54
GDP $m	$2	$2	$4
Wages/Salaries $m	$1	$1	$2
Construction			
FTEs – 1.5 years	21	81	102
GDP $m	$4	$16	$19
Wages/Salaries $m	$3	$8	$11
Project Totals			
FTE-years	46	137	184
GDP $m	$6	$18	$23
Wages/Salaries $m	$4	$9	$13

In summary, we estimate that:

- Future planning/design/consenting work will create full-time employment for about 6 people for six months, generating $0.2m in wages/salaries;

- Land development (including infrastructure provision) will generate full-time work for approximately 54 people for six months (split across various stages), with $2.0m in wages/salaries paid; and

- Building construction will provide full-time work for around 102 people for 1.5 years (again, split across various stages), with nearly $11m paid in wages and salaries.

7.2 Ongoing Economic Impacts

In addition to the significant one-off economic impacts estimated above, the proposal will also enable additional businesses to establish onsite, which themselves will generate ongoing economic impacts.

An important element of this is ongoing employment enabled onsite. To estimate this, we combined employment data from Stats NZ with floorspace data from Core Logic to determine a floorspace-to-worker ratio. Our results suggest that, on average, there is 95 square metres of floorspace per light

industrial employee in Invercargill City.[13] On that basis, the 1.9 hectares of GFA enabled by the proposal is likely to sustain ongoing employment for approximately 190 people.

To estimate the corresponding wages/salaries and annual GDP, we reviewed Statistics New Zealand's latest input-output tables, which summarise the national economy's overall structure and reveal the employment and GDP per dollar of output. The table below summarises the key information for the industries that we consider to be the most likely future uses of the land under the proposal.

Table 4: Average Annual Industrial Output, GDP, and Wages **per Employee** from National IO Tables

Industrial Sectors	**Output $**	**GDP $**	**Wages $**
Construction	405,400	124,000	67,000
Manufacturing	462,300	124,300	69,400
Transport, Postal and Warehousing	294,100	133,500	73,000
Wholesale Trade	262,800	124,000	69,700
Industrial Average	**356,150**	**126,450**	**69,775**

The corresponding annual economic impacts generated by the 190 potential future onsite employees are tabulated below.

Table 4: Estimated Annual Industrial Output, GDP, and Wages (**190 employees**)

Industrial Sectors	**Output $m**	**GDP $m**	**Wages $m**
Construction	77.0	23.6	12.7
Manufacturing	87.8	23.6	13.2
Transport, Postal and Warehousing	55.9	25.4	13.9
Wholesale Trade	49.9	23.6	13.2
Industrial Average	**67.7**	**24.0**	**13.3**

Taking the average across the industrial sectors assessed, the future onsite activity enabled by the proposal could generate:

- Full-time employment for around 190 people;
- Annual output of more than $67 million;
- Annual GDP of $24 million; and
- More than $13 million in wages/salaries.

7.3 Foregone Rural Production

The main potential economic cost of the proposal is forfeiting the subject land for alternative uses, such as rural production. To better understand this cost, the applicant engaged Agribusiness Consultants Limited (**ACL**) to assess the site. ACL found that the rural productive potential of the site is curtailed by the presence of the existing wool store and dwellings, leaving an effective pasture area of just under 5.5 hectares. That land is currently used for grass harvest / cut and carry, which is a very

[13] This is also consistent with results from the latest Business Capacity Assessment for the Future Proof sub-region, which is available here: https://futureproof.org.nz/assets/FutureProof/Future-Proof-Business-HBA-2023_WR.pdf

low-intensity and low value land use. In fact, ACL estimates its annual financial value at less than $3,000.

The only other suitable land use identified for the site was sheep and beef farming. However, the estimated output for the site is very low, and ACL notes that properties of this size seldom generate profit for their owners.

Conversely, future onsite activity enabled by the proposal is likely to generate annual GDP of $24 million and sustain ongoing employment for approximately 190 people.

7.4 Infrastructure Servicing Cost and Risk

Another potential economic downside of the proposal is the cost and risk of providing the infrastructure needed to enable it, such as roads, water and wastewater. However, all works within the boundary of the development are the sole responsibility of the applicant, with the cost and risk of works beyond the subject site also able to be (mainly or largely) transferred to them via development contributions levied on future industrial land use development. Accordingly, any infrastructure costs and risks on the ICC should be negligible.

7.5 Highest and Best Use of Land

Finally, the proposal enables the land to be put to its highest and best use. As a result, it maximises economic efficiency in the underlying land market while also supporting the overarching purpose of the RMA (to enable the sustainable use and development of natural and physical resources).

8. Overall Costs and Benefits

This section summarises the overall costs and benefits of the proposal.

8.1 Costs

The main economic costs of the proposal relative to the status quo are:

- Foregone rural production
- Infrastructure servicing cost

However, the economic cost of foregoing the site for rural productive use is minor, and any infrastructure costs or risks to council negligible.

8.2 Benefits

The key economic benefits of the proposal relative the status quo are:

- Boost in future industrial land supply
- Improved industrial land supply responsiveness
- Efficiency gains for industrial land buyers and sellers
- One-off economic impacts of construction
- Ongoing economic impacts of new industrial activity
- Putting land to its highest and best use

Overall, we consider these economic benefits to be significant.

8.3 Overall Net Impact

For the reasons set out above and assessed herein, we consider the proposal to generate significant and enduring economic benefits over the likely alternative use of the site absent it. Accordingly, we support the proposal on economic grounds.

Appendix A: NPS-HPL Requirements

The National Policy Statement for Highly Productive Land (**NPS-HPL**) came into force in October 2022 and aims to protect our most productive land for land-based production. It requires Councils to map highly productive land (**HPL**), and closely manage the subdivision, use and development of it by avoiding inappropriate use and development.

However, clause 3.6(4) of the NPS-HPL allows Tier 3 territorial authorities – including Invercargill City Council – to allow the rezoning of HPL if three sequential criteria are met, namely that:

(a) the urban zoning is required to provide sufficient development capacity to meet expected demand for housing or business land in the district; *and*

(a) there are no other reasonably practicable and feasible options for providing the required development capacity; *and*

(b) the environmental, social, cultural and economic benefits of rezoning outweigh the environmental, social, cultural and economic costs associated with the loss of highly productive land for land-based primary production, taking into account both tangible and intangible values.

We understand that the subject site contains Land Use Capability (**LUC**) Class 2 and 3 soils and must therefore comply with the NPS-HPL. However, based on direction from the project team, this report does not assess the proposal against the requirements of the NPS-HPL.

Appendix B: Business Capacity Assessments

The National Policy Statement on Urban Development (**NPS-UD**) came into effect in August 2020. Invercargill City Council (**ICC**) is classed as a Tier 3 local authority and is therefore required to provide "at least" sufficient development capacity "at all times" to meet expected future demand for additional business land well into the long-term.

The NPS-UD also imposes strict monitoring and reporting requirements, which vary depending on the extent of growth pressures experienced. For example, Tier 1 and 2 local authorities must complete a detailed Business Capacity Assessment (**BCA**) every three years. This brings together a raft of information about supply and demand to ensure that enough capacity is provided. As a Tier 3 local authority, ICC is not required to complete an BCA. However, it is strongly encouraged to do so, adopting whatever modifications are necessary or helpful.

We understand that ICC has not completed a BCA. Accordingly, there are no official estimates of supply of, and demand for, industrial land to rely upon to determine whether council is meeting its requirements under the NPS-UD.

Appendix C: Industrial Zone Descriptions

The Invercargill City District Plan (**ICDP**) identifies several zones in which industrial activity can occur, each of which has its own suite of RMA activity statuses and associated development controls. The following zones are included in the scope of this assessment:

- **IND1Z Industrial 1 (Light) Zone –** The IND1Z enables a range of low-nuisance light industrial activities to locate near residential areas. Activities anticipated in the zone include, for example, depots, wholesaling, warehousing, service activities and ancillary retailing.

- **IND2Z Industrial 2 (Urban) Zone –** The IND2Z allows for a broader range of industrial, warehousing, and service activities, supporting Invercargill's role as a provincial service city. It permits higher buildings and greater nighttime noise levels, while limiting retail and office uses to those ancillary to main industrial activities.

- **IND2AZ Industrial 2A (Lake Street) Zone –** The IND2AZ accommodates transport, storage, and light industrial activities, focusing on mitigating natural hazards and protecting nearby Clifton's residential amenity. It allows higher buildings and nighttime noise levels, with restrictions to balance industrial development and residential protection.

- **IND3Z Industrial 3 (Large Industry) Zone –** The IND3Z caters to large industrial, processing, warehousing, and service activities requiring significant space and 24/7 operation. Located outside the urban area, it supports long-term economic growth, particularly for industries adding value to primary produce.

Appendix 13: Integrated Transport Assessment

805, 815 & 819 North Road, Lorneville

Private Plan Change Request
Integrated Transport Assessment Report

Prepared for:
Bonisch Consultants, Tulloch Limited

29 May 2025

Prepared by:
Stantec NZ

Project/File:
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Stantec New Zealand

805, 815 & 819 North Road

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2	Revision 1	C Rossiter	29/05/25	S Lloyd	29/05/25	S Lloyd	29/05/25

Private Plan Change
805, 815 & 819 North Road

The conclusions in the Report titled 805, 815 & 819 North Road are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

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805, 815 & 819 North Road
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Abbreviations

Abbreviations	Full Name
ADT	Annual Average Daily Traffic Volume
ICC	Invercargill City Council
NZTA	New Zealand Transport Agency
vpd	Vehicle movements per day
vph	Vehicle movements per hour

1 Introduction

Tulloch Limited operates an industrial warehouse activity at 815 North Road, Lorneville north of Invercargill. Access to the warehouse site from North Road, which forms part of State Highway 6 (SH6), is currently provided by two one-way driveways. A Private Plan Change Request is proposed to rezone the site and two adjacent lots from Rural to Industrial 1. Primary access to the rezoned land will be via a new single, all-movement intersection to North Road.

Following preliminary consultation in relation to the site access, NZTA raised concerns with forming a new intersection at the location of the existing entrance because of the potential for conflict with right turn movements at the driveway to Prime Range Fresh commercial activities on the opposite side of the highway. This report provides an assessment of alternate access options and identifies a preferred configuration.

The report then provides an assessment of the potential transport effects that could arise from the rezoning. The focus of the report is the location and design of the vehicle access to the rezoned land.

The report has been structured to provide:

- A description of the existing transport environment;
- A description of the existing travel patterns in the area;
- A description of the proposal and activities enabled by the rezoning;
- An assessment of transport effects;
- An assessment of compliance with the relevant rules, policies and objectives of the District Plan.

2 Existing Transport Environment

2.1 Site Context

Figure 2-1 shows the location of the plan change site in the context of the surrounding area. The site is located on the eastern side of North Road which forms part of SH6. State Highway 98 (SH98) and State Highway 99 (SH99) meet SH6 at a roundabout about 600 metres north of the site.

Figure 2-1: Site Location in Context of Surrounding Area (Invercargill City Council Maps)

The existing access to the warehouse site is via two one-way driveways as shown in Photograph 2-1 and Photograph 2-4. The vehicle routes (Photograph 2-2 and Photograph 2-3) around the warehouse operate with one-way, clockwise movement controls as shown in Figure 2-2. There is a separate two-way driveway to the north of the main entrance which provides access to private dwelling.

Figure 2-2 also shows the driveway on the opposite side of the highway approximately midway between the two site driveways that serves the Prime Range Fresh commercial activity.

Private Plan Change
805, 815 & 819 North Road
2 Existing Transport Environment

Photograph 2-1: Warehouse Entry Driveway

Photograph 2-2: Internal driveway (north)

Photograph 2-3: Internal Driveway (South)

Photograph 2-4: Warehouse Exit Driveway

Figure 2-3 shows the land zoning surrounding the site. The site itself is located on rural zoned land. Land to the west of SH6 and south of SH99 is zoned as Business 5. New buildings have been

recently constructed on the rural zoned land in the north-east quadrant of the SH6 / SH98 / SH99 roundabout.

Figure 2-2: Wool store site layout and nearby driveways

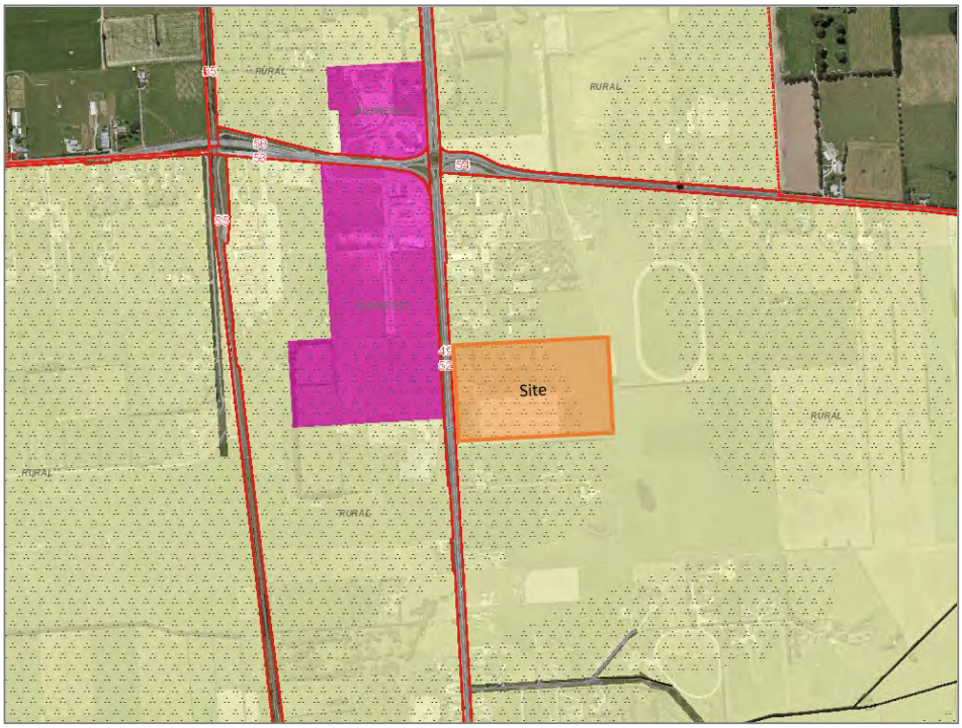


Figure 2-3: Land zoning

2.2 Road Network

Figure 2-4 shows the state highway network for the surrounding area. SH6 forms the primary strategic link for towns along the West Coast to Queenstown and Invercargill. SH98 and SH99 are regional links for Southland. SH6 meets State Highway 1 (SH1) which forms the primary link through towns and cities along the east coast in Invercargill. SH1 continues south from Invercargill to Bluff.

All state highways in the area are classified as High Productivity Motor Vehicle (HPMV) routes.

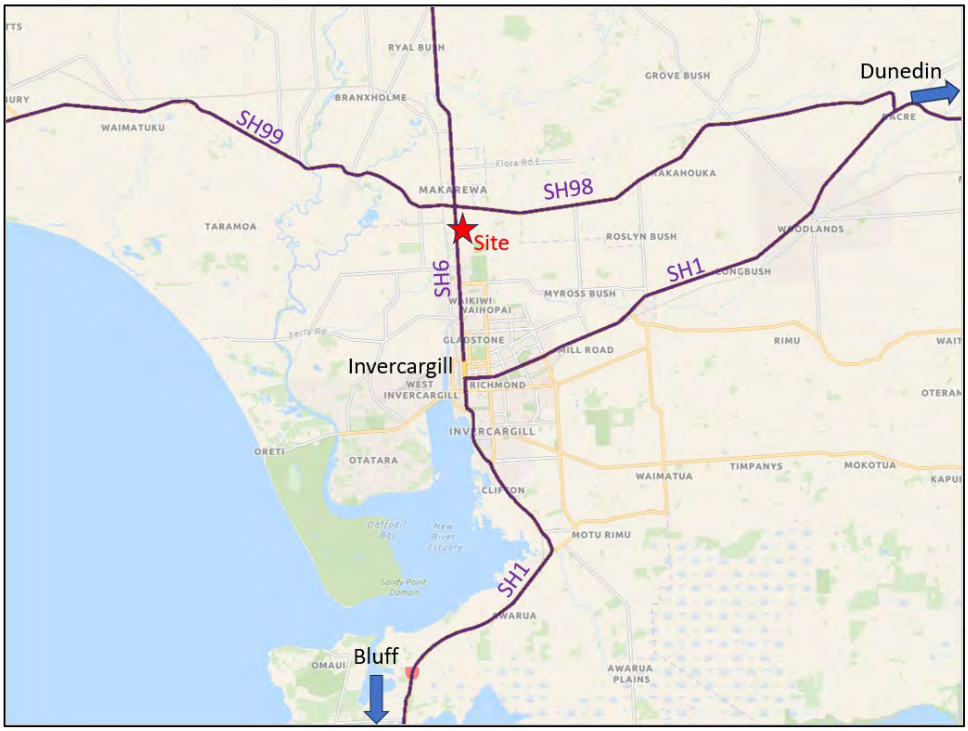


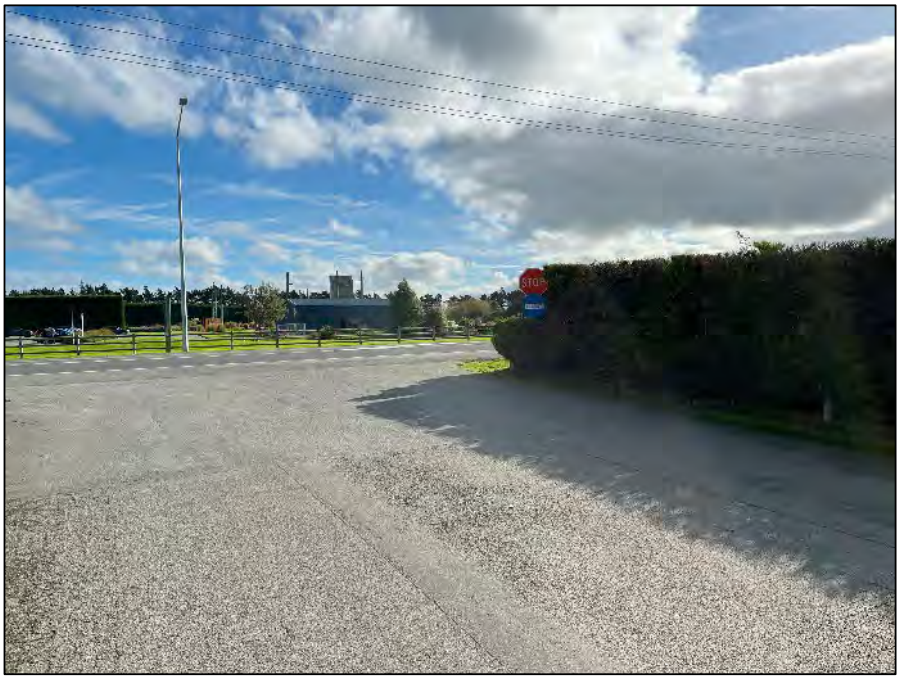
Figure 2-4: State Highway Network

SH6 North Road has been constructed as a two-lane, median divided carriageway with wide sealed shoulders south of the SH6 / SH98 / SH99 roundabout as shown in Photograph 2-5 and Photograph 2-6. There is one through lane in each direction with a flush median and wide shoulders. The central flush median is about three metres wide which provides sufficient width for large trucks to stop clear of through traffic before turning right into driveways. Right turn bays are marked within the median at the local road intersections with Beaconsfield Road and Moore Road. The speed limit on North Road is 80km/h.

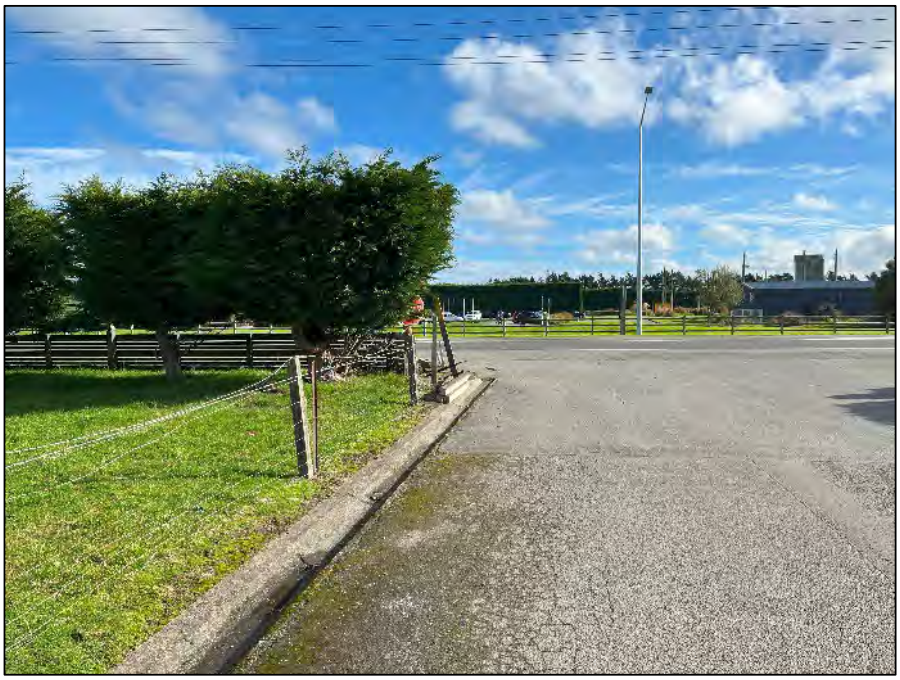
The exit driveway has stop signs installed but these are largely hidden by the hedgerows (Photograph 2-7 and Photograph 2-8). A Stop line has not been marked.

Photograph 2-5: SH6 North Road – View north from Wool store site entrance

Photograph 2-6: SH6 North Road – View south from Wool store site entrance



Photograph 2-7: Stop signs at exit from Wool store site



Photograph 2-8: Concealed stop sign at Wool store site exit

2.3 Active Mode Network

There are no footpaths, cycle lanes or bus routes on North Road. The nearest cycle lanes and bus routes to the site are in Invercargill to the south of the site. However, the wide sealed shoulders do provide space for cyclists to travel along SH6 clear of the traffic lane.

3 Existing Travel Patterns

3.1 State Highway Traffic Volumes

Figure 3-1 shows the annual average daily traffic volumes recorded on SH6 between the site and the Lorneville roundabout. The daily volumes have been about 12,500 vehicles per day (vpd) since 2018. The 90th and 98th percentile traffic volumes provide an indication of the volumes during the busiest weeks of the year and in 2024 were about 15,100 vpd and 15,800 vpd respectively. Although there has been some year to year variation in daily volumes, there is no evidence for any growth over the 2018-2024 period.

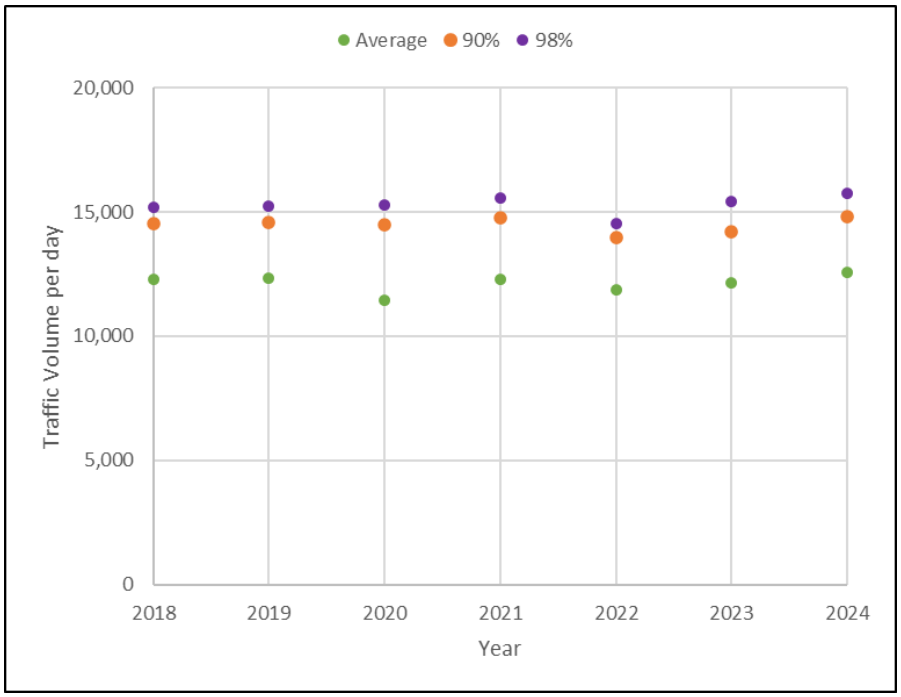


Figure 3-1: Annual Traffic Volumes South of Lorneville Roundabout

Figure 3-2 shows the traffic volumes recorded on SH6 in 2024. The weekday volumes are typically 3,000 to 4,000 vpd higher than at the weekend. The weekday volumes show some seasonal variation with the lowest volumes occurring during the peak holiday period in early January and the highest volumes occurring the November-December period.

Figure 3-3 shows the hourly volumes recorded on SH6 in February 2025 which reflects typical volumes for much of the year. On a weekday, there are clear peaks in the flows, one in the morning (7:30 AM to 8:30 AM) and the other in the late afternoon (4.45 PM to 5:45 PM). Figure 3-4 shows that the dominant flow direction is southbound towards Invercargill in the morning and northbound in the afternoon. This represents typical workplace travel patterns given that Invercargill represents the largest employment centre in the area. At the weekend, there are single broad peaks during the middle of the day.

Private Plan Change
805, 815 & 819 North Road
3 Existing Travel Patterns

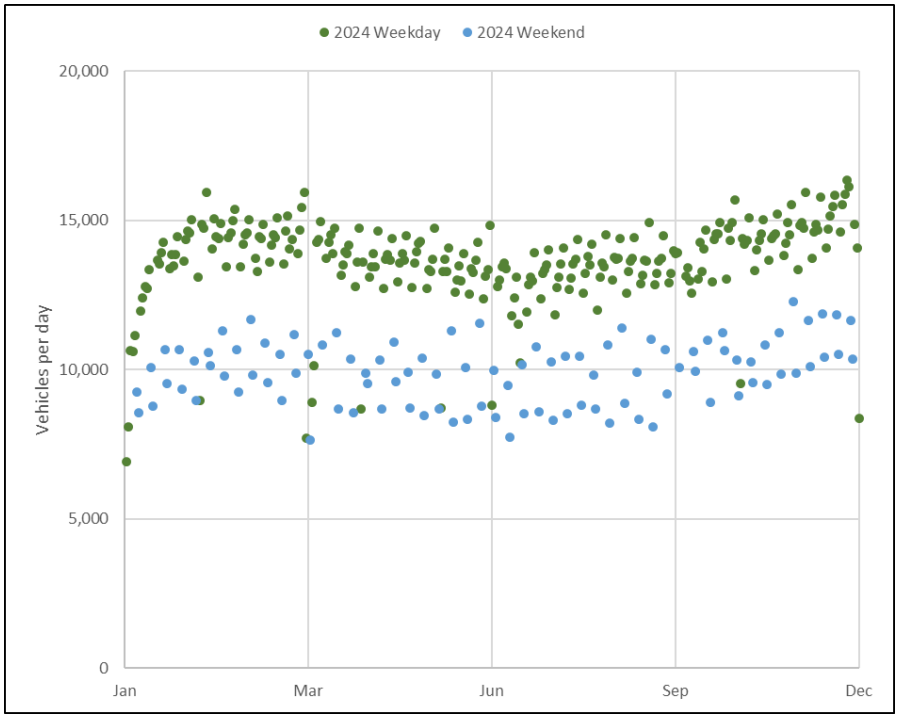


Figure 3-2: Traffic Volumes on SH6, 2024

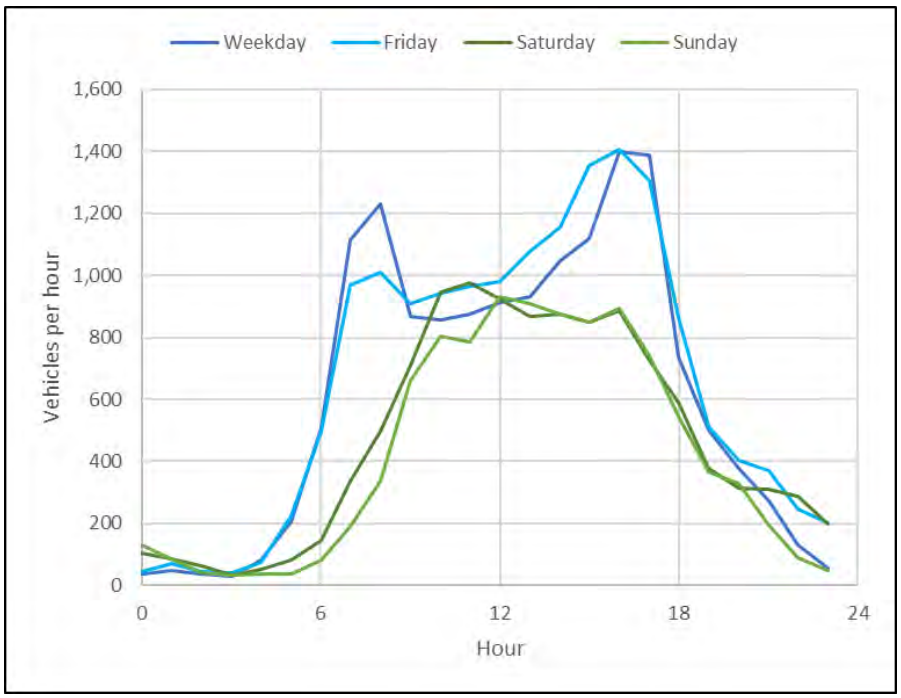


Figure 3-3: Hourly Traffic Volumes on SH6 South of Lorneville Roundabout – February 2025

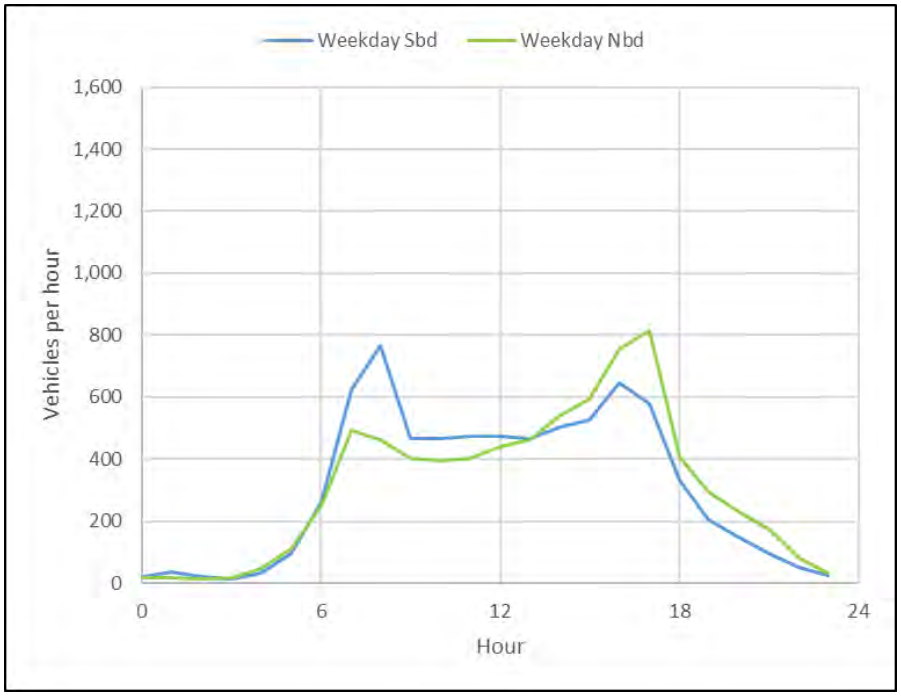


Figure 3-4: Weekday Directional Traffic Volumes on SH6 south of Lorneville Roundabout – February 2025

3.2 Existing Activity

The warehouse employs six full-time staff and two casual staff during the peak season. Staff typically travel independently to the site by vehicle and have an average daily traffic generation of about 12 vpd.

Truck movements at the warehouse vary widely across the year. Wool is transported to the warehouse in a wide variety of trucks but is generally shipped using truck and trailer units. During the peak season, there can be 40-50 truck movements each day into the site bringing wool into the warehouse with these trucks generating a similar number of outbound movements. The exports from the site can involve up to 10 truck and trailer movements (in and out combined). Overall, the warehouse activity generates about 100-120 vehicle movements per day (50-60 inbound and 50-60 outbound) during the peak season.

During the off-season, imports to the warehouse typically involve less than 10 inbound truck movements per day and less than 20 movements per day in total.

The peak hourly movement volumes are typically below 10 vph throughout the year.

3.3 Road Safety

Crash records of the surrounding road network for the five-year period 2020 to 2024 have been reviewed using the NZTA Crash Analysis System. During the five-year period, there have been seven crashes reported along North Road between the Lorneville roundabout 500 metres to the north of the

site and Moore Road about 800 metres to the south. One of these resulted in a serious injury, two caused minor injury with no injuries being reported following the other crashes.

The serious injury crash involved a driver travelling north on North Road at high speed, reportedly as high as 140 km/h, before losing control and leaving the road.

One minor injury crash involved a vehicle travelling north on North Road, just south of the Lorneville roundabout, running into the rear end of a stationary vehicle from traffic in the middle of the road. The crash was likely to be attributable to driver error because they were following too close to the vehicle in front.

The second minor injury crash also involved a rear end collision when a southbound vehicle has hit a vehicle that had stopped in the road behind a turning vehicle. The crash was attributed to driver distraction.

There were no crashes associated with turning movements at the driveways to the site. The reported crashes do not raise any specific safety concerns with the road network.

From a Safe System perspective, the wide sealed shoulders reduce the potential for drivers to lose control if they inadvertently move out of the traffic lane. The wide flush median provides separation between opposing traffic lanes which will reduce the potential for head-on type crashes and also provides space for right-turning vehicles to stop in the carriageway clear of through traffic. The wide shoulders also provide space for any cyclists using the highway to travel outside the high speed traffic lane.

The primary safety concern is the short separation between the entry driveway to the site and the driveway on the opposite side of the road. Although only low volumes of movement were observed at both driveways, the short separation means that there will be a conflict between the paths of right turning vehicles if these occur at the same time.

4 Proposed Plan Change

4.1 NZTA Consultation

Consultation with NZTA began in 2020 with a request for preliminary comment on a site layout that was based on retaining the existing crossings but with the northern crossing and internal access lane being vested as a local road. NZTA raised a number of concerns with the proposed access arrangements including:

- *There is a potential that safety issues could occur with the proposed commercial operation and the existing operations on the western side of the highway (Adventure Southland Limited and Prime Range Fresh). The safety issues would mainly be associated with right turning vehicles into the existing access for these existing operations and if vehicles were to turn right into the northern access of the proposed activity.*
- *Any vehicle movements with the proposed activity will need to avoid conflicts from the existing access on the opposite side of the highway.*
- *Right turning vehicle movements could be mitigated if only right turns into the site were to occur at the southern entrance.*
- *No right turn turns in the northern entrance, only left in / left out and potentially right out could occur.*
- *Appropriate signage and road markings (painted right turn bay) would be required to ensure that the southern entrance is identified as the main entrance and that no right turns in could occur at the northern entrance.*
- *Ensure that internal accessways are positioned more than 45m from the intersection.*
- *Ensure that vehicles will not be required to park on the highway or cause obstruction to the highway.*
- *This section of the State Highway is a Limited Access Road under the Government Roading Powers Act 1989. The two entrances to the site have registered vehicle crossings that have conditions associated with them. These conditions do not reflect what is being proposed and would need to be updated once there is agreement on the access situation.*

Following this feedback, a range of alternate access arrangements were considered in relation to how the access to the site as a whole would operate. Appendix A provides a summary of the options that were considered. The revised access arrangements involve forming a new local road intersection about 60 metres north of the existing northern crossing to the wool store and retaining the southernmost crossing for one-way exit movements only.

Appendix B includes details of the design criteria that have been adopted for the new intersection with Appendix C providing an assessment of the arrangements from a Safe System perspective. Appendix D includes drawings of the intersection concept design.

Further comment from NZTA was sought on the revised access arrangements. Although NZTA have indicated a preference for the southernmost crossing to be closed once the new local road intersection has been formed, retention of the crossing is desired by Tulloch to better manage truck movements to the south from the warehouse. Following further discussion, NZTA have indicated that they would accept retention of the southern crossing subject to the crossing being modified to restrict movements to left turn out only. It is anticipated that this would require regulatory signage requiring a

left turn out only, no entry signage from the highway and some reshaping of the crossing with kerbing and islands to physically prevent right turns.

4.2 Concept Masterplan

Tulloch Limited is seeking rezoning of its land at 805, 815 and 819 North Road from rural to industrial. The industrial zoning reflects the existing activity at its warehouse at 815 North Road. The site structure plan in Figure 4-1 shows the extent of the proposed rezoning and the proposed access arrangements.

The existing exit-only driveway from 815 North Road will be retained as a private driveway and continue to operate one-way but will be modified to prevent right turns. A new intersection is proposed on North Road to provide access to the currently undeveloped land. The new intersection will replace the existing entry driveway to 815 North Road and two-way driveway to 819 North Road.

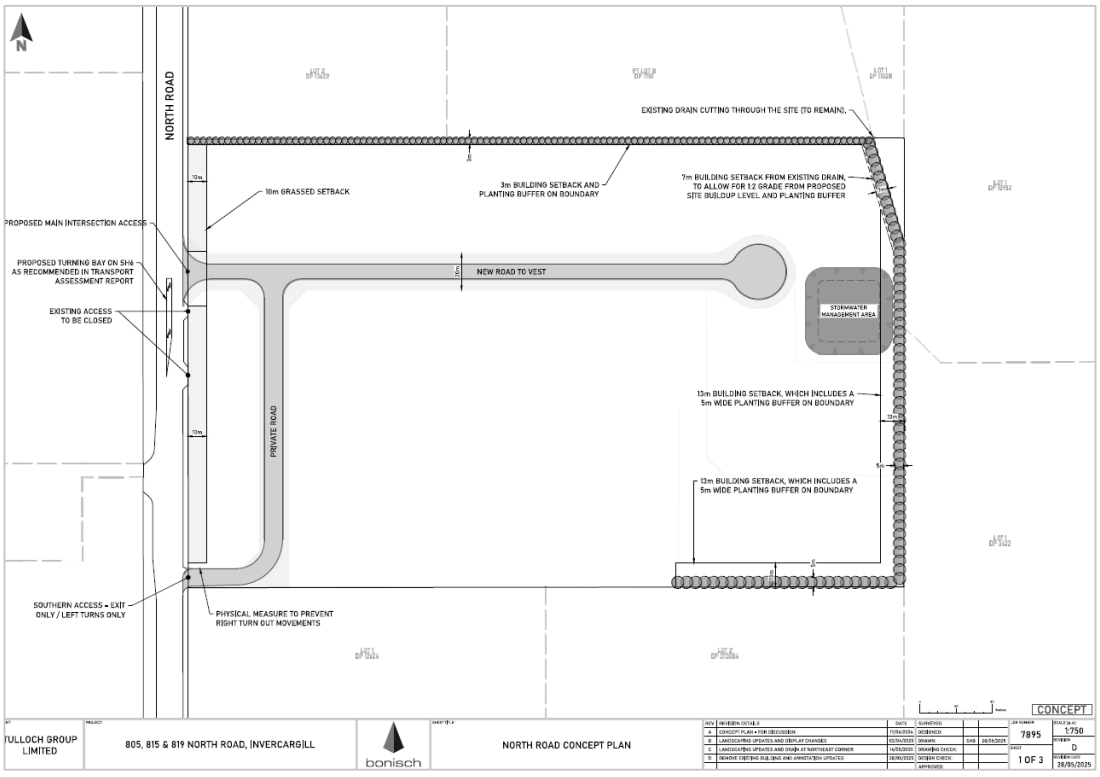


Figure 4-1: Plan change site structure plan

4.3 Traffic Generation

The plan change site has a total area of about 9.7 ha with the existing wool store activity occupying about 3 ha, inclusive of the driveways. The rezoning would create about 5.6 ha of developable land after allowing for the existing wool store, new road reserve and other reserves.

The traffic generation of the site will be dependent upon the nature of activities that are established. Warehouse type activity such as the wool store generate lower volumes of movement than manufacturing or contractor type activities.

The 2018 New Zealand Trip and Parking Database includes traffic generation rates for industrial parks and suggest that the peak hour generation rate could be in the range 21-23 vph per hectare. Since this information is based on surveys collected in 2004-5, reference to other sources have also been considered.

The Institute of Transportation Engineers (ITE) Trip Generation web-based application reports traffic generation rates for light industrial activity of 0.41 vph per 1,000 sq ft of floor area which represents a rate of about 17 vph per hectare based on 40 percent site coverage.

The Trip Rate Information Computer System (TRICS) is a database of trip rates for developments used in the United Kingdom for transport planning purposes. This reports traffic generation rates for an Industrial Estate of 6.3 vph per hectare.

The wide range of rates is likely to be a reflection of the very wide range of activities that exist in industrial zones. For the purposes of this assessment, a peak hour traffic generation rate of 17 vph per hectare has been adopted. Based on that rate, new development at the site would generate about 95 vph at peak times. This means that peak hour volumes with full development of the site inclusive of the existing activity at the wool store will be 95-110 vph.

Light industrial activity typically has a short duration traffic generation peak early in the morning, 7:00 AM to 8:00 AM, as workers arrive but a broader peak in the afternoon that can extend from 2:00 PM through to 6:00 PM. This reflects the different working hours that often are adopted in the industry compared with office based activity. During the morning peak, 80-90 percent of vehicle movements are typically made into the site with this reversing during the afternoon.

The daily traffic generation of industrial activity is typically in the range of 5 to 8 times the peak hour volume. On this basis, the site as a whole could generate 500-900 vpd on average.

5 Assessment of Transport Effects

5.1 Site Access

The SIDRA intersection analysis software has been used to assess the likely delays and operational performance of a new priority intersection. The analysis has been based on about 80% of movements being to or from the south during the peak periods. Table 5-1 shows the longest delays are for the lowest volume movement, that is the right turn out, could be about 20 seconds on average. The forecast delays during the afternoon / evening peak period are shown in Table 5-2. The average delay for the right turn out movement in the afternoon is about 25 seconds because of the higher two-way volumes on SH6 at that time. Average delays for all other turning movements are low, typically less than 10 seconds. Overall, this suggests that a priority intersection would provide an acceptable level of service.

Table 5-1: Intersection Performance - Morning Peak (8:00 AM)

Approach	Movement	Volume (vph)	Delay (s) / LOS
SH6 Invercargill	Through	430	n/a
	Right	60	11 (B)
New Road	Left	20	4 (A)
	Right	5	20 (C)
SH6 Lorneville	Left	10	7 (A)
	Through	710	n/a

Table 5-2: Intersection Performance – Afternoon / Evening Peak (4:00 PM)

Approach	Movement	Volume (vph)	Delay (s) / LOS
SH6 Invercargill	Through	700	n/a
	Right	20	10 (A)
New Road	Left	70	4 (A)
	Right	10	25 (D)
SH6 Lorneville	Left	5	7 (A)
	Through	630	n/a

5.2 Road Safety

Although a priority intersection would operate with low levels of delay, the 80 km/h speed limit means that in the event of a crash, the consequences are likely to involve serious injuries or a fatality. The NZTA Moneterised Benefit and Cost Manual (MBCM) includes crash rate forecast models. The crash rate model for a high speed priority intersection has been used to assess likely crash rates at the proposed new intersection.

The forecast average crash rate is about 0.1 injury crashes per annum based on the new industrial zone generating 900 vpd on average. This crash rate is not considered sufficiently high to warrant construction of a roundabout.

5.3 Traffic Volumes

Full development of the plan change site could result in an average daily traffic generation of up to 900 vpd. It is expected that about 80% of all movements will be to or from the South. This means that the traffic volumes on SH6 south of the plan change site could increase by up to 700 vpd. The total volumes on the highway will still be well within the capacity of the highway.

The higher traffic volumes at peak times will contribute to small increases in average delays at all driveways and intersections south of the site.

6 District Plan

6.1 Transport Objectives

Development of transport infrastructure and land use takes place in an integrated and planned manner which:

1. Integrates transport planning with land use.
2. Protects the function, safety, efficiency and effectiveness of the transport network.
3. Minimises potential for reverse sensitivity effects to arise from changing land uses.
4. Provides for positive, social, recreational, cultural and economic outcomes.
5. Minimises, where practical, the adverse public health and environmental effects.

The existing wool store operation represents an industrial activity and has been established on rural land. The proposed rezoning will allow for expansion of industrial activities on the adjacent land. Since the site is located beside the state highway, it provides direct access to the strategic road network which will limit the potential for new industrial activity affecting residential activity within the wider area.

Access to the industrial zone will be via a new intersection that is formed in accordance with Austroads design standards. The design provides drivers with good visibility from limit lines which will enable drivers to clearly assess approaching traffic before turning. Since the zone will attract usage by large, articulated vehicles, the intersection has been designed to accommodate two-way movement of that size of vehicle. Overall, it is considered that the design will allow the intersection to operate safely and with the little effect on the operation of the highway.

6.2 Transport Policies

6.2.1 TRA-P1 Infrastructure

To provide for the safe and efficient operation, improvement and protection of transport infrastructure.

Access to the industrial zone is proposed via a new intersection rather than a vehicle crossing. This represents an appropriate approach to the access design because of the high volume of movements that is anticipated compared with the current situation. This will not affect the movement of existing traffic on the state highway and will allow turning movements to be undertaken safely.

6.2.2 TRA-P2 Noise

To manage the impact of noise associated with the airport, seaport, State Highway and railway networks.

Since the proposed industrial zone is located beside the state highway and will contribute to a small increase in traffic volumes, it could contribute to higher traffic noise on the highway. However, any increase is consistent with the purpose of the highway which is intended for carrying high volumes of traffic.

6.2.3 TRA-P3 Roading Hierarchy

To have regard to the Council's Roading Hierarchy when considering subdivision, use and development of land.

The subdivision site has frontage to the state highway only and access is proposed to the highway. This will ensure that any new industrial activities do not generate heavy commercial vehicle movements onto roads where these would not be anticipated. On that basis, the development of the subdivision and proposed road is considered to be consistent with the overall road hierarchy for the district.

6.2.4 TRA-P4 Standards

To set development standards for vehicle access, loading, parking and manoeuvring facilities.

There are no reasons why development within the site will not be able to meet the District Plan standards in relation to parking and loading.

6.2.5 TRA-P5 Adverse Effects

To manage subdivision, use and development adjacent to transport infrastructure in such a way as to avoid, remedy or mitigate potential effects, including reverse sensitivity effects on transportation infrastructure.

The proposed plan change involves rezoning of land from rural to industrial and does not involve any subdivision. Access to the new zone is proposed at a new intersection that will mitigate any potential effects on existing driveways on North Road. The provision of direct access to the state highway via the new local road will ensure that heavy vehicle movements at the site will not generate traffic effects on adjacent properties.

6.2.6 TRA-P6 State Highways

To have regard to any New Zealand Transport Agency standards regarding the location of new accesses on to, and egresses from, State Highways where the speed limit exceeds 50 kph.

The new intersection will be designed to meet NZTA requirements. Its location will provide appropriate separation from the nearby driveway to the Prime Range Fresh activity to allow a right turn bay to be marked.

6.2.7 TRA-P7 Cross Boundary Effects

To promote the management of the effects of activities which occur outside the District on the transportation networks of the District.

This policy is not applicable to this application because the proposed rezoning and activities enabled by the rezoning are within the District.

6.2.8 TRA-T8 Public Health

To manage transport activities and surrounding land use activities to protect public health and environmental values.

The plan change site is located adjacent to the state highway and will promote use of the highway for access. This will enable consolidation of industrial activities which will reduce the potential for generating effects on the surrounding land use activities.

6.2.9 TRA-T9 Integration

To integrate the planning of land use with existing transport infrastructure and provide for future transportation requirements.

The plan change site is located opposite the Business 5 zoned land and will provide an opportunity for industrial activity to be established close to that zone. The site location adjacent to the state highway will promote use of the highway for access.

6.2.10 TRA-T10 Public Transport, Walking and Cycling

To promote the use of public transport, and walking and cycling networks.

Since the site is located remote from existing public transport, walking and cycling networks, it is not practical to promote use of these travel modes.

6.2.11 TRA-T11 Significant Transport Networks

To recognise that the Invercargill Airport, seaport, railway, State Highways, and the arterial roads which link this infrastructure are regionally significant transportation networks and are essential to the ongoing viability and functioning of the District.

The plan change site is located adjacent to the state highway and will promote use of the highway for access. This will ensure that new activities can easily access the strategic road network and contribute to the viability and functioning of the District.

6.3 Transport Rules

The size of the plan change site means that there are no reasons why compliance with the rules relating to provision of parking and loading cannot be met (TRA-R1 to TRA-R10).

Under TRA-R11, construction of a new intersection on the State Highway represents a Discretionary Activity because the speed limit is greater than 50 km/h. The matters of discretion include:

The location of the vehicle accesses and egresses

1. The dimensions, formation and surfacing of the vehicle accesses and egresses
2. Any additional works that may be required on site or on the roadway itself to avoid, remedy or mitigate any potential traffic safety problems.

The proposed location of the new intersection provides sufficient separation from nearby driveways to allow a right turn bay to be marked within the flush central median and minimise the potential conflict with right turn movements at nearby driveways. The new road can be constructed to a standard that is suitable for the volumes of heavy vehicle movement anticipated within the proposed industrial zone.

Appendix D includes a concept design for the new intersection. The construction of the new intersection does not involve major alterations to the state highway. New kerbs will be constructed at the intersection and the existing line markings altered to include a right turn bay.

7 Conclusion

Tulloch Limited operates an industrial warehouse activity on rural zoned land at 815 North Road, Lorneville north of Invercargill. A Private Plan Change Request is proposed to rezone the site and two adjacent lots from Rural to Industrial. Following preliminary consultation with NZTA, site access to the rezoned land will be via a new single, all-movement intersection to North Road about 115 metres north of the driveway proving access to commercial activity on the western side of the highway. The separation of the new intersection from the nearest driveway on the western side of the highway (Prime Range Fresh) will minimize the potential for conflict between right turns and is sufficient to allow a right turn bay to be marked at the new intersection.

Based on the size of the proposed industrial zone, it will have potential to generate 500 -900 vpd depending on the activities that are established. The priority intersection will provide sufficient capacity for this volume of movement. The right turn out movement will experience the greatest delays and are likely to be in the range 20-25 seconds at peak times if traffic generation is at the upper end of the forecast range.

The location of the proposed industrial zone adjacent to the highway ensures direct access to the strategic road network is possible which will reduce the potential for reverse sensitivity effects.

Overall, it has been concluded that the plan change proposal can be supported from a transport perspective subject to the following access arrangements being implemented in accordance with the annotated structure plan:

1. A new local road and intersection with SH6 being formed in accordance with an outline development plan that provides a minimum separation of 115 metres from the nearest driveway on the western side of SH6.
2. A right turn bay being marked on the state highway at the new intersection.
3. Regulatory signage being installed at the southern crossing permitting left turn out movements only.
4. Physical measures such as kerbs or raised islands to prevent right turn out movements at the southern crossing.

Appendices

Appendix A Site Access Assessment

A.1 Primary Site Access Requirements

Create a new local road through the site that provides access to all potential future lots and meets the state highway at an all movement intersection.

The new road needs to accommodate two-way movement of large, articulated vehicles.

A.2 Access Options

A.2.1 Use Existing Driveways

Figure A 1 shows an indicative layout for new local roads based on the existing driveway locations. A full intersection would be formed at the northern driveway location with the existing exit only driveway being retained.

Figure A 1: Potential Road layout based on existing driveways

This option would require the road to be formed with at least two small radius curves to provide an access route to new industrial land. It creates a short section of road between the highway and the wool store for vehicle queuing.

This option would not address the concerns raised by NZTA in relation to the conflicting right turns at the new intersection and driveway on the western side of the highway.

A.2.2 Restricted Movement Intersections

Figure A 2 shows one way to eliminate the potential conflict with right turn movements on the highway. This involves creating two new intersections with movements at the northern driveway restricted to left-in / right-out and movements at the southern intersection restricted to right-in / left-out.

Although this option could resolve the NZTA concern, it creates a more complex internal movement network and will increase the volume of movements across the western side of the wool store building which is used for access by the Segard Masurel business. Truck movements associated with this activity require the whole of the yard space along the west side of the building for manoeuvring which would conflict with the movement of general traffic.

Figure A 2: Potential Road with restricted movement intersections

A.2.3 New Intersection and Road

Figure A 3 shows an access option based on a new road being formed through the northern part of the site and meeting the highway at a new all-movement intersection. Under this option, the existing northern crossing would be closed. Entry to the existing wool store would be via the new road with truck exiting via the existing southern driveway. Access to the Segard Masurel business could be via new right of way.

Since access arrangements based on this road configuration would provide good access to new industrial zoned land and have the least effect on the operation of the existing activities, this represents the preferred layout from a transport perspective.

Figure A 3: New Road and intersection

Appendix B Intersection Design

B.1 Design Warrant

Figure B 1 shows the Austroads design warrants for turning treatments at priority intersections for a design speed of 70-100 km/h. A channelised treatment for right turns from the highway is considered appropriate at the new intersection because peak hour turning volumes will exceed 5 vph and the major road volumes during the day are greater than 800 vph.

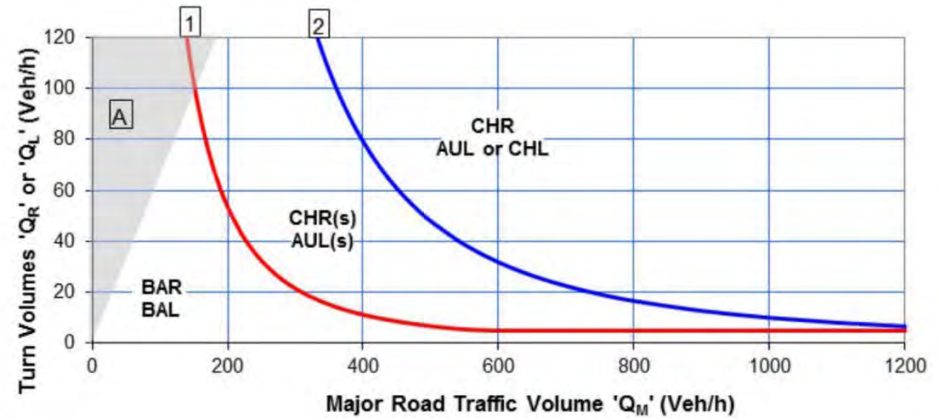


Figure B 1: AGTM6 Warrant for Turning Treatments – 70km/h < design speed < 100 km/h

B.2 Right Turn Treatment

Since the Austroads Guide to Road Design Part 4A does not include specific design guidelines for a rural, median divided road such as SH6 along the site frontage, the intersection design has been based on providing sufficient space to enable back-to-back right turn bays to be formed in relation to the driveway on the west side of SH6. The design parameters are set out in Table B 1.

Table B 1: Design Parameters - Right Turn Treatment

Design Parameter	Value
Design speed	80 km/h
Lane Width	3.5m (existing)
Flush median width	3.0 m (existing)
Storage length	25m
Taper length	20m
Deceleration length (including taper)	65m

Based on these design parameters, the new road should be located no closer than 110 metres north of the driveway on the western side of the highway.

Appendix C Safe System Assessment

C.1 Summary

The construction of a new, all movement intersection on SH6 is considered to be the most appropriate way to provide access to the rezoned land while maintaining access to the existing activities. Although the intersection will increase the number of conflict points at the site entrance, its relocation to the north will increase the separation from other driveways. From a Safe System perspective, the effects on safety are expected to be largely neutral.

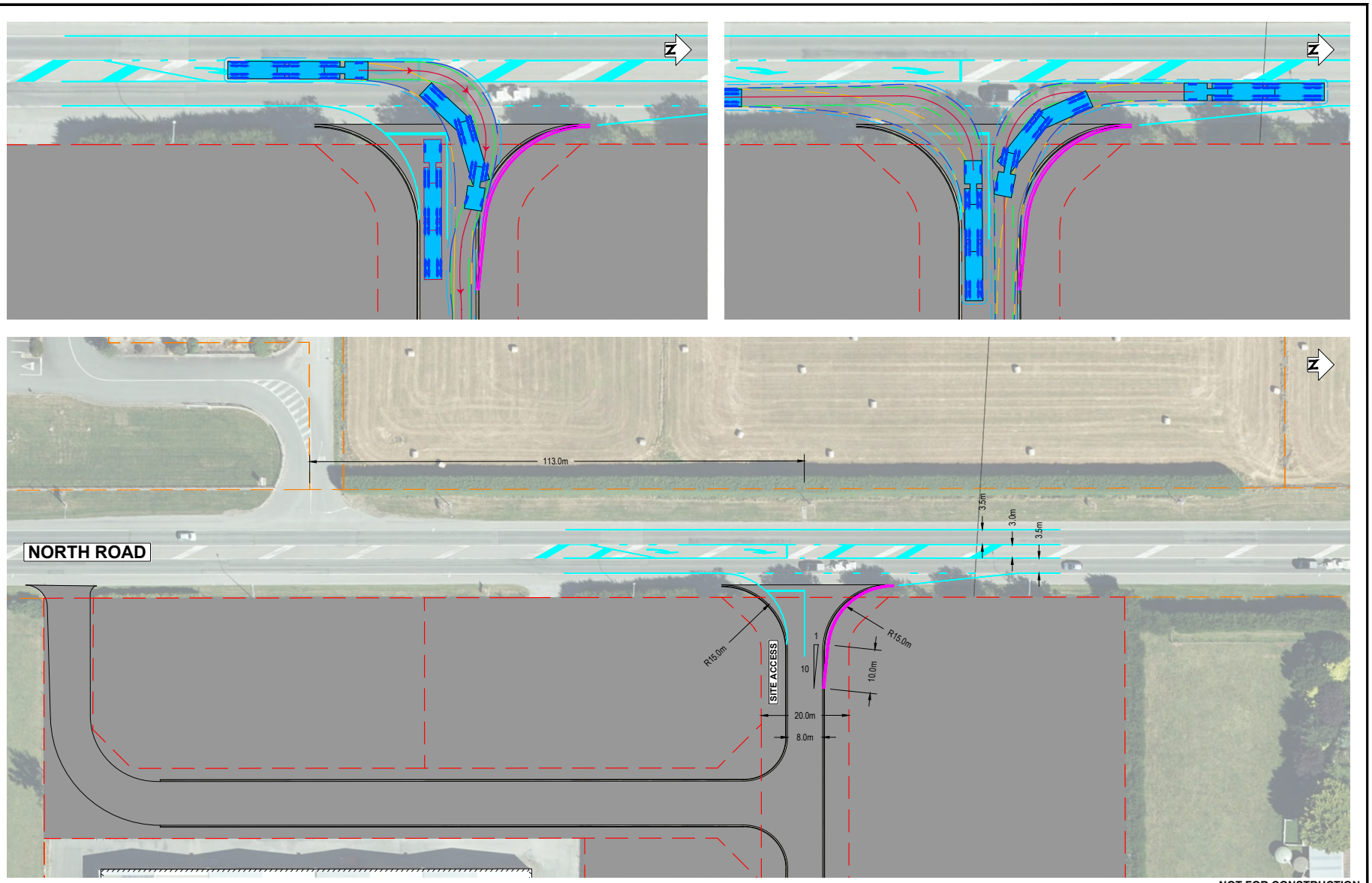
Table C 1: Existing Situation

	Run-off road	Head-on	Intersection	Other	Pedestrian	Cyclist	Motorcyclists
Exposure Comments:	SH6 – 13,000 vpd	SH6 – 13,000 vpd	SH6 – 13,000 vpd Driveways – 100 vpd	Nearby driveways Driveways – 100 vpd	SH6 – < 10 per day	SH6 – < 10 per day	SH6 – < 150 per day
Exposure Score:	4/4	4/4	4/4	1/4	1/4	1/4	4/4
Likelihood Comments:	Factors that increase the likelihood include: • Grassed berms	Factors that increase the likelihood include: • No median barriers	Factors that increase the likelihood include: • Conflicting right turns	Factors that increase the likelihood include: • Short separation • Conflicting right turns	Factors that increase the likelihood include: • No footpaths	Factors that increase the likelihood include: • Truck volumes	Factors that increase the likelihood include: • Truck Volumes
	Factors that decrease the likelihood include: • Wide sealed shoulders • Straight road alignment • Lighting	Factors that decrease the likelihood include: • Wide flush median • Straight road alignment • lighting	Factors that decrease the likelihood include: • Wide flush median • Wide, one-way driveways • Stop controls • Good sightlines	Factors that decrease the likelihood include: • Straight road alignment • Good visibility between driveways • Wide sealed shoulders	Factors that decrease the likelihood include: • Wide sealed shoulders	Factors that decrease the likelihood include: • Wide sealed shoulders	Factors that decrease the likelihood include: • Wide sealed shoulders
Likelihood Score:	2/4	1/4	2/4	2/4	1/4	1/4	2/4
Severity Comments:	Factors that increase the severity include: • 80 km/h speed limit • Trees and power poles •	Factors that increase the severity include: • 80 km/h speed limit •	Factors that increase the severity include: • 80 km/h speed limit •	Factors that increase the severity include: • 80 km/h speed limit	Factors that increase the severity include: • 80 km/h speed limit • Truck volumes	Factors that increase the severity include: • 80 km/h speed limit • Truck volumes	Factors that increase the severity include: • 80 km/h speed limit • Truck volumes
	Factors that decrease the severity include: • •	Factors that decrease the severity include: • •	Factors that decrease the severity include: • •	Factors that decrease the severity include: • Decelerating vehicles •	Factors that decrease the severity include: •	Factors that decrease the severity include: •	Factors that decrease the severity include: •
Severity Score:	4/4	4/4	3/4	3/4	4/4	4/4	4/4
Product **(multiply scores above for crash type)**	**32/64**	**16/64**	**24/64**	**6/64**	**4/64**	**4/64**	**32/64**
			TOTAL				**118/448**

Table C 2: North Road with new intersection

	Run-off road	Head-on	Intersection	Other	Pedestrian	Cyclist	Motorcyclists
Exposure Comments:	SH6 – 13,000 vpd	SH6 – 13,000 vpd	SH6 – 13,000 vpd ~~Driveways – 100 vpd~~ New local road – 1,000 vpd	Nearby driveways Driveways – 100 vpd	SH6 – < 10 per day	SH6 – < 10 per day	SH6 – < 150 per day
Exposure Score:	4/4	4/4	4/4	1/4	1/4	1/4	4/4
Likelihood Comments:	Factors that increase the likelihood include: • Grassed berms •	Factors that increase the likelihood include: • No median barriers •	Factors that increase the likelihood include: • ~~Conflicting right turns~~ • More conflict points with intersection	Factors that increase the likelihood include: • ~~Short separation~~ • ~~Conflicting right turns~~	Factors that increase the likelihood include: • No footpaths •	Factors that increase the likelihood include: • Truck volumes •	Factors that increase the likelihood include: • Truck Volumes •
	Factors that decrease the likelihood include: • Wide sealed shoulders • Straight road alignment • Lighting	Factors that decrease the likelihood include: • Wide flush median • Straight road alignment • lighting	Factors that decrease the likelihood include: • Wide flush median • ~~Wide, one-way driveways~~ • Stop controls • Good sightlines • Right turn bay	Factors that decrease the likelihood include: • Straight road alignment • Good visibility between driveways • Wide sealed shoulders • Separation > 115m	Factors that decrease the likelihood include: • Wide sealed shoulders	Factors that decrease the likelihood include: • Wide sealed shoulders	Factors that decrease the likelihood include: • Wide sealed shoulders
Likelihood Score:	2/4	1/4	2/4	1/4	1/4	1/4	2/4
Severity Comments:	Factors that increase the severity include: • 80 km/h speed limit • Trees and power poles •	Factors that increase the severity include: • 80 km/h speed limit •	Factors that increase the severity include: • 80 km/h speed limit •	Factors that increase the severity include: • 80 km/h speed limit	Factors that increase the severity include: • 80 km/h speed limit • Truck volumes	Factors that increase the severity include: • 80 km/h speed limit • Truck volumes	Factors that increase the severity include: • 80 km/h speed limit • Truck volumes
	Factors that decrease the severity include:	Factors that decrease the severity include:	Factors that decrease the severity include:	Factors that decrease the severity include: • Decelerating vehicles	Factors that decrease the severity include:	Factors that decrease the severity include:	Factors that decrease the severity include:
Severity Score:	4/4	4/4	3/4	3/4	4/4	4/4	4/4
Product (multiply scores above for crash type)	**32/64**	**16/64**	**24/64**	**3/64**	**4/64**	**4/64**	**32/64**
			TOTAL				**115/448**

Appendix D Intersection Concept Design


N
N
N
NORTH ROAD
113.0m
3.5m
3.0m
3.5m
R15.0m
R15.0m
SITE ACCESS
1
10
10.0m
20.0m
8.0m
DO NOT SCALE - IF IN DOUBT, ASK
ORIGINAL SIZE A1
NOT FOR CONSTRUCTION
SURVEYED
DESIGNED
DRAWN
CAD REVIEW
DESIGN CHECK
DESIGN REVIEW
APPROVED
PROF REGISTRATION:
NOT APPROVED
REV
REVISIONS
DRN
CHK
APP
DATE
Stantec
805 NORTH ROAD
LORNEVILLE
PROPOSED SITE ACCESS
CONCEPT LAYOUT
Status Stamp
WORKING PLOT
Date Stamp
26.06.2024
Scales
1:250@A1 1:500@A3
Drawing No.
310206118_001_001
Rev.
A
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Appendix 14: New Zealand Transport Agency Communications

Outlook

FW: Tulloch Development - North Rd (SH 6) Lorneville (NZTA ref 2023-1038)

From Helen Dempster <Helen.Dempster@nzta.govt.nz>
Date Mon 8/21/2023 10:05 AM
To Christine McMillan <christine@bonisch.nz>

4 attachments (9 MB)
LIC Invercargill PDF Package.pdf; GRIP location plan.png; ICC planning map.png; Indust 1 activities.png;

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Hi Christine,
I'm not sure if you are aware, but, back in November 2020, Paul Johnstone approached Waka Kotahi for comment on this same development proposal. A colleague of mine, Stuart Pearson, provided the following feedback to Paul:

RE: Feedback sought for industrial development - 815 North Road concept

Stuart Pearson
To Paul Johnstone

Reply | Reply All | Forward | ...
Tue 9/02/2021 10:33 am

Hi Paul,

I have now had our Safety Engineer from our Dunedin office have the recommendations and provide some feedback, which is as follows:

- There is a potential that safety issues could occur with the proposed commercial operation and the existing operations on the western side of the highway (Adventure Southland Limited and Prime Range Fresh). The safety issues would mainly be associated with right turning vehicles into the existing access for these existing operations and if vehicles were to turn right into the northern access of the proposed activity.
- Any vehicle movements with the proposed activity will need to avoid conflicts from the existing access on the opposite side of the highway.
- Right turning vehicle movements could be mitigated if only right turns into the site were to occur through the existing southern entrance.
- No right turns in the northern entrance, only left in/left out and potentially right out could occur.
- Appropriate signage and road markings (painted right turn bay) would be required to ensure that the southern entrance is identified as the main entrance and that no right turns in could occur at the northern entrance.
- Ensure that internal accessways are positioned more than 45m from the intersection.
- Ensure that vehicles will not be required to park on the highway or cause obstructions on the highway.
- This section of the State Highway is a Limited Access Road under the Government Roading Powers Act 1989. The two entrances to the site have registered vehicle crossings that have conditions associated to them. These conditions do not reflect what is being proposed to would need to be updated once there is agreement on the access situation.

Hopefully the above advice is helpful and do not hesitate to contact me if you have any queries.

Kind regards,
Stuart

Paul subsequently asked for a meeting with us about this proposal, and myself and our safety engineer (Lisa, who has subsequently retired) met with Paul and Bret Highstead from the Tulloch Group in December 2021. Here are the notes I took from that meeting:

We talked through the previous feedback and explained in more detail the rationale behind that feedback. We noted we would be able to give more detailed advice if we knew the likely vehicle types, volumes and trip distribution. They will now engage a planner to help them compile this info. They said they do not have certainty yet as to who will lease various parts of the proposed development on site, except that - in their ideal scenario - it'll be 2-3 ha of warehousing with office spaces, and 1-2 ha of rural-related businesses/service industries, like motorbike outlets, forestry support industries. They confirmed they will require consent to develop this site in the way proposed, and I noted that because they are seeking direct access onto highway, NZTA should be treated as an affected party. I

also talked about our interest in signage - location and design. Lisa mentioned that another option available to them is to relocate the northern vehicle crossing further north (and close it in its current location). They indicated an intention to contact us again once they had more traffic and sign data, and had considered their options around vehicle crossing location.

Our new safety engineer, Chris, has assessed the information you supplied to us on 26 July, and has advised that our previous advice to your client still stands- i.e. we require information about what type of business activity could occur on site, vehicle types and volumes (standard vs heavy vehicles), trip distribution, operating hours etc in order to provide further feedback on this proposal. Our safety engineer has also asked: Is the central access road to be public or private and how will the intersection be marked out? And has also noted "Similar developments have required a right turn bay and left turn slip lane, which may require relocation of streetlight columns. There is currently a wide flush median, reasonable shoulder width and good streetlighting, so its really subject to the first series of questions".

Our Network Manager has also reviewed the information you supplied to us and provided the following preliminary comments: "from my reading, they are asking for a plan change which would enable development as of right. Therefore we should ask for the ITA to be prepared on the basis of full utilization - sort of the worst case scenario that could occur as of right once the plan is changed... An ITA is anticipated by the applicant, this should cover all matters already raised previously including signage, proposed widening, lighting etc should be provided. I note that they anticipate a diagram E widening. there is already a wide carriageway here, and widening to the outside would leave a very small berm so existing services and roadside drains, should be taken into account in the ITA. I am not sure if this road has any pedestrian or cyclist use, but reducing the berm would further discourage this. The SNM and colleagues would then assess the ITA and may require detailed designs are produced, pavement design may be required to be peer reviewed by a suitably qualified person."
I hope this preliminary feedback on your client's proposal is helpful. Please do not hesitate to get in touch if you would like to discuss matters raised in this email further.

Kind regards
Helen

Helen Dempster / Senior Planner
Poutiaki Taiao I Environmental Planning
System Design

DD +64 3 742 1792 / **M** 021 428 704
E helen.dempster@nzta.govt.nz

Waka Kotahi NZ Transport Agency
Dunedin Office / AA Centre, 450 Moray Place,
PO Box 5245, Dunedin 9058, New Zealand

From: Christine McMillan <christine@bonisch.nz>
Sent: Wednesday, 26 July 2023 8:23 am
To: Environmental Planning <EnvironmentalPlanning@nzta.govt.nz>
Subject: Tulloch Development - North Rd (SH 6) Lorneville

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Hi

We are currently working with Tulloch Group Ltd on the development of their site at 805, 815 and 819 North Road, SH 6, Lorneville. The site location is shown highlighted on the attached 'GRIP location plan' and is approximately 400m south of the Lorneville Roundabout and about 2 kilometres north of Invercargill urban boundary. SH6 is a Limited Access Road with an 80km/hr speed limit in this location.

815 SH6 contains an existing wool store and there is an existing dwelling on each of 805 and 819 SH6. The existing dwellings are proposed to be removed.

Tullochs propose to develop the site as an industrial business park and intend to undertake a private plan change to re-zone the site Industrial 1 which is the same zone as exists to the south of the site along Moore Road (see grey area on attached 'ICC planning map'. Industrial 1 zoning is for 'Light Industry' and has very few bulk and location standards, particularly as the site does not adjoin a residential zone. The only applicable rule is that height is limited to 12m as a permitted activity (recession planes apply).

At the moment we are seeking preliminary comment from Waka Kotahi regarding access from the site on to State highway 6. In order to provide a discussion document for this purpose please see the attached 'LIC Invercargill PDF Package'. This is unlikely to be the final layout of the site, however it is useful for discussion purposes. The intention would be to construct a single inwards access to the site in the approximate centre as shown on the plan. All other accessways apart from the southernmost accessway would be closed and the southernmost access would be for exiting vehicles only.

The private plan change process is being followed as Tullochs do not yet know what businesses will want to locate on the site and the zoning will allow the establishment of the site to be undertaken, ensuring that individual businesses can locate on site as a permitted activity where the zone activities and standards are complied with. This provides surety on the considerable investment required to establish the site and prevents ongoing consenting requirements.

It is anticipated that a Diagram E access will be required (similar to that providing access to Prime Range and Southern Adventure on the western side of the highway. As shown on the supplied plan, allowance has been made to establish a slip lane for traffic heading south. SH 6 has a centre median strip which provides for vehicles wishing to turn right into the site to queue clear of the traffic lanes and both sides of the road also have wide verges. A Transport Impact Assessment will be prepared as part of the private plan change assessments.

Can you please provide preliminary comment relating to the site access. If you require any more information at the moment, please let me know.

Regards

Christine McMillan
DIVISIONAL MANAGER PLANNING

bonisch

03 218 2546 EXT 208
027 269 9064
0800 802 546

bonisch.nz

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Outlook

Fw: Tulloch Development - North Rd (SH 6) Lorneville (NZTA ref 2023-1038), CRM:0105000075

From Caroline Hutchison <Caroline@bonisch.nz>
Date Fri 6/6/2025 2:16 PM
To Shannon Baxter <shannon.baxter@icc.govt.nz>
Cc Christine McMillan <christine@bonisch.nz>

HI Shannon

Please find below the most recent communication with NZTA via Stantec. This communication is what Stantec used to finalise access design and locations for the Plan Change, and you will see that NZTA was comfortable with what was proposed.

NZTA don't give affected party approval for Plan Changes, they will wait to see if the notified Plan Change incorporates their concerns (I worked for NZTA in this capacity for a number of years in a previous life).

I will put this email in the Appendix folder I sent you a link to and will clearly denote it.

Have a good weekend,

Caroline Hutchison
Senior Planner
bonisch
03 343 0135 EXT 312
021 519 774
0800 802 546
2-335 Lincoln Road, Addington , Christchurch
Connect with us bonisch.nz
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From: Rossiter, Chris <chris.rossiter@stantec.com>
Sent: Friday, June 6, 2025 2:04 PM
To: Caroline Hutchison <Caroline@bonisch.nz>
Subject: FW: Tulloch Development - North Rd (SH 6) Lorneville (NZTA ref 2023-1038), CRM:0105000075

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Chris Rossiter, BSc BA(Open) CPEng
Principal Transportation Engineer
he/him

Office: Christchurch
Direct: +64 3 926 2206
Mobile: +64 27 241 9294
chris.rossiter@stantec.com

Stantec New Zealand

Stantec

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From: Helen Dempster <Helen.Dempster@nzta.govt.nz>
Sent: Thursday, 31 October 2024 1:50 pm
To: Rossiter, Chris <chris.rossiter@stantec.com>
Subject: RE: Tulloch Development - North Rd (SH 6) Lorneville (NZTA ref 2023-1038), CRM:0105000075

Ok, thanks for the update.

From: Rossiter, Chris <chris.rossiter@stantec.com>
Sent: Thursday, October 31, 2024 1:48 PM
To: Helen Dempster <Helen.Dempster@nzta.govt.nz>
Subject: RE: Tulloch Development - North Rd (SH 6) Lorneville (NZTA ref 2023-1038), CRM:0105000075

Hi Helen

I am just about to update the ITA to include a summary of the consultation and would anticipate the application will then by lodged in the coming weeks.

Thanks for your help
Chris

Chris Rossiter
Principal Transportation Engineer
DDI: +64 3 926 2206
Mob: +64 27 241 9294

Stantec

From: Helen Dempster <Helen.Dempster@nzta.govt.nz>
Sent: Thursday, 31 October 2024 1:45 pm
To: Rossiter, Chris <chris.rossiter@stantec.com>
Subject: RE: Tulloch Development - North Rd (SH 6) Lorneville (NZTA ref 2023-1038), CRM:0105000075

Hi Chris,
I would ordinarily only provide a formal response on the entire plan change proposal having seen all of the plan change proposal documents (so that our position is a fully-informed one). However, I'm happy for you to include the email correspondence from me to date, in the plan change request documents to Council.

Has the request already been lodged with the Council? Presumably the Council will notify your clients plan change request – at which point I'd expect NZTA would review all of the documents lodged in support of the request and convey its position on the plan change proposal through a submission. In light of the planning/RMA requirements we have outlined in our feedback given to date (regards the vehicle crossings, new intersection, vegetation removal), we'd hope to see those requirements formalise through proposed plan provisions.
Happy to discuss, if that'd be helpful.

As an aside, I'm away on annual leave all of next week, and won't have access to work emails during that time.

Kind regards
Helen

From: Rossiter, Chris <chris.rossiter@stantec.com>
Sent: Wednesday, October 30, 2024 1:41 PM
To: Helen Dempster <Helen.Dempster@nzta.govt.nz>
Subject: RE: Tulloch Development - North Rd (SH 6) Lorneville (NZTA ref 2023-1038), CRM:0105000075

Hi Helen

I can confirm that Tulloch accepts the proposed design requirements for the southern driveway. Do you need more information from me to allow you to provide a formal response?

Thanks
Chris

Chris Rossiter
Principal Transportation Engineer
DDI: +64 3 926 2206
Mob: +64 27 241 9294

Stantec

From: Helen Dempster <Helen.Dempster@nzta.govt.nz>
Sent: Wednesday, 30 October 2024 8:38 am
To: Rossiter, Chris <chris.rossiter@stantec.com>
Subject: RE: Tulloch Development - North Rd (SH 6) Lorneville (NZTA ref 2023-1038), CRM:0105000075

Hi Chris,
Further to my email below, I have now received this explanation of 'adequate infrastructure' from our safety engineer: "Adequate infrastructure would be regulatory signage requiring a left turn out only and no entry signage banning any entry movements. It would also likely consist of a reshaping of the exit with kerbing and islands to force vehicles to the left signalling the required direction of travel,".

Please advise if your client is accepting of these requirements. Happy to discuss further, if that'd be helpful.
Kind regards
Helen

From: Helen Dempster
Sent: Tuesday, October 29, 2024 7:29 PM
To: Rossiter, Chris <chris.rossiter@stantec.com>
Subject: RE: Tulloch Development - North Rd (SH 6) Lorneville (NZTA ref 2023-1038), CRM:0105000075

Hi Chris,
I just wanted to let you know what progress is being made at our end on this matter, as I'm aware you have requested a meeting with us. I have just heard back from our Safety Engineer. They have advised that, in respect to the suggested closure of the southern access, "…the original proposal had left and right turns out of the southern access. If they are happy to restrict this to left turns only with adequate infrastructure then we can agree to it remaining open." I will ask them to elaborate what they mean by 'adequate infrastructure' and pass this along to you.

Kind regards
Helen

From: Rossiter, Chris <chris.rossiter@stantec.com>
Sent: Tuesday, October 22, 2024 1:18 PM
To: Helen Dempster <Helen.Dempster@nzta.govt.nz>
Subject: RE: Tulloch Development - North Rd (SH 6) Lorneville (NZTA ref 2023-1038), CRM:0105000075

Hi Helen

Our client has no problems with the standard CAR and TMP conditions for works on the highway. However, they want to retain the southern access for left-out movements towards Invercargill. Since the closure of the access is suggested by your safety team, are you able to set up a meeting with your safety team so that we can discuss this and agree a way forward.

Thanks
Chris

Chris Rossiter
Principal Transportation Engineer
DDI: +64 3 926 2206
Mob: +64 27 241 9294

Stantec

From: Helen Dempster <Helen.Dempster@nzta.govt.nz>
Sent: Wednesday, September 4, 2024 11:04 AM
To: Rossiter, Chris <chris.rossiter@stantec.com>
Subject: FW: Tulloch Development - North Rd (SH 6) Lorneville (NZTA ref 2023-1038), CRM:0105000075

Hi Chris,
Our Safety Engineer, Chris Harris, and Network Manager, Jacob Manson, have reviewed the ITA and have provided the following feedback for you and your client to consider and respond to.

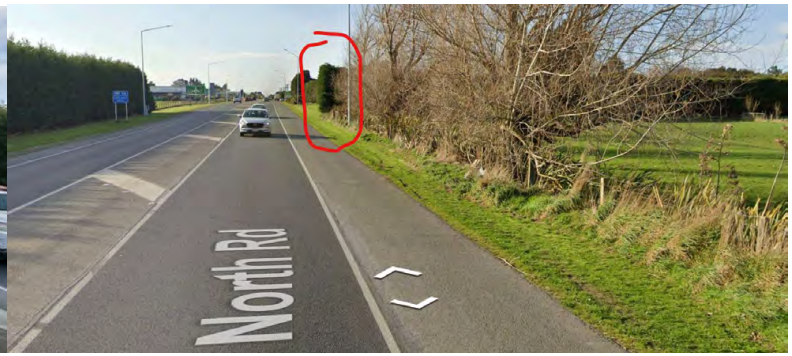
Safety Engineer has made the following comments:

'A new intersection access should be formed to the north as proposed (approx. RP 1168/0.51) to maximise the separation between adjacent accesses. This should be marked with the MOTSAM fig 3.28 layout for right turn bays. Vegetation will likely need to be abated to permit an unobstructed sightline from the new intersection.

With creation of a new intersection at approx. RP 1168/0.51 I do not support retention of the existing access to the south. Vehicles servicing the existing commercial activity currently travel clockwise around the building, and can continue to do so, exiting by the proposed ROW parallel to SH6 and the new intersection.'

The vegetation referred to in Chris response is shown in the images below and are located to the north of the proposed access. Chris has elaborated: 'There is a line of trees to the north of the proposed new intersection which 'may' need to be trimmed back (and maintained at that position) to provide an unobstructed sightline. They could be related to the adjacent property and I expect if they are an issue they will be addressed.'

Looking south towards the new access and looking north from the new access:



The Network Manager has advised the following:
'After looking over with Chris, we believe the Southern access should be closed as well and they only access from the proposed new local road. There looks like ample room for manoeuvring on-site rather than needing a secondary access.

The flush median is currently untrafficked and is an older seal which as it isn't trafficked is fit for purpose. However, if it were to be turned into a right-turn bay and trafficked then it would need re-surfaced and confirmed that the underlying pavement can handle the vehicle loading and strengthened if not. Otherwise likely to deteriorate fairly quickly. Access will need to our standard which Chris will outline in more detail to what that is. We will need to review the design and approve.

Standard CAR and TMP conditions will apply to all work on / effecting the highway.'

Please do not hesitate to get in contact if you wish to discuss this feedback.
Kind regards
Helen

From: Rossiter, Chris <chris.rossiter@stantec.com>
Sent: Monday, August 12, 2024 1:48 PM
To: Helen Dempster <Helen.Dempster@nzta.govt.nz>
Subject: RE: Tulloch Development - North Rd (SH 6) Lorneville (NZTA ref 2023-1038)

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Hi Helen

Please find attached out transport assessment for the proposed new road to service the industrial zone being proposed off North Road. Let me know if you require any additional transport related information.

Regards
Chris

Chris Rossiter
Principal Transportation Engineer
DDI: +64 3 926 2206
Mob: +64 27 241 9294

Stantec

From: Helen Dempster <Helen.Dempster@nzta.govt.nz>
Sent: Tuesday, July 23, 2024 12:51 PM
To: Rossiter, Chris <chris.rossiter@stantec.com>
Subject: RE: Tulloch Development - North Rd (SH 6) Lorneville (NZTA ref 2023-1038)

Hi Chris,
Thanks for getting in contact. Yes, I am the appropriate person still to contact about this proposed development.

Kind regards
Helen

From: Rossiter, Chris <chris.rossiter@stantec.com>
Sent: Tuesday, July 23, 2024 12:22 PM
To: Helen Dempster <Helen.Dempster@nzta.govt.nz>
Subject: Tulloch Development - North Rd (SH 6) Lorneville (NZTA ref 2023-1038)

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Hi Helen

Stantec has been engaged by Tulloch Industries to prepare an ITA for their plan change proposal. I am aware that you previously provided comments back and that has been taken into account in developing a site layout. Will you still be the appropriate person to contact in relation to this project and provision of APA and relevant conditions?

I anticipate having a draft report available later this week.

Regards
Chris

Chris Rossiter
BSc, BA(Open), CPEngNZ
Principal Transportation Engineer

DDI: +64 3 926 2206
Mob: +64 27 241 9294

Stantec New Zealand
2 Hazeldean Road, Addington
Christchurch 8024

Mail: PO Box 13052, Christchurch 8141
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Appendix 15: Marshall Day Acoustics Report

MARSHALL DAY Acoustics

TULLOCH PLAN CHANGE
NOISE ASSESSMENT

Rp 001 20241149 | 18 February 2025

MARSHALL DAY Acoustics

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Project: **TULLOCH PLAN CHANGE**

Prepared for: **Bonisch Consultants Ltd**
Level 4, 25 Esk Street
Invercargill 9840

Attention: **Christine McMillan**

Report No.: **Rp 001 20241149**

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Approved			18 Feb 2025	B Shanks	J Farren

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MARSHALL DAY Acoustics

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1.0 SUMMARY

We have assessed the potential noise effects of the proposed rezoning of a rural site near Lorneville, north of Invercargill. The site, located at 805-819 North Road, is currently zoned 'Rural' in the Invercargill City Council (ICC) District Plan. The proposal includes rezoning the site as 'Industrial 1'.

The noise limits in the District Plan relate to the zone of the receiving property. Rezoning the application site would not change the noise limits at any of the surrounding noise sensitive receivers i.e. the protections offered by the Rural zone noise limits would still apply.

The District Plan includes example activities that are permitted in the Rural and Industrial 1 zones. There are some similarities in the type of noisy equipment that is likely from these activities, though it is likely that activity would be more intensive once the site is rezoned.

While the future usage of the site has not been confirmed, we have assessed noise from some of the likely activities. These could comply with the relevant noise limits with typical mitigation and management measures in place.

We have not conducted site noise measurements of the existing ambient noise environment. However, we anticipate that noise from State Highway 6 (SH6) will be the dominant noise source. We have predicted noise from road traffic at the nearby receivers. The predicted traffic noise levels are similar or greater than the daytime noise limits at all nearby receivers.

Based on these factors, we consider that any noise effects resulting from the rezoning of the site would be reasonable.

2.0 SITE DETAILS

The proposed rezoning site is located at 805-819 North Road, Invercargill. Figure 1 shows the location of the site.

Figure 1: Site location

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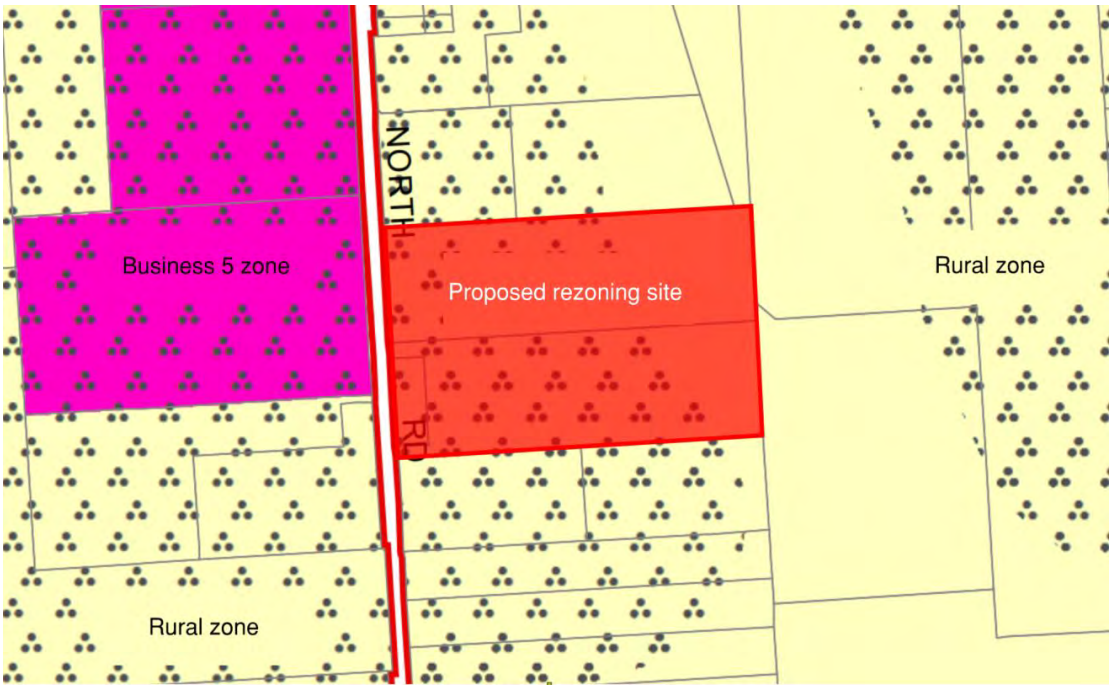
2.1 The site is currently zoned Rural

The site is zoned Rural in the ICC District Plan. The explanation of the policies for the Rural zone state that the zone is to provide for rural activities such as agriculture, horticultural, and forestry.

The existing site use includes farm activity, dwellings and a large wool store facility.

Figure 2 shows the existing site and surrounding area.

Figure 2: Proposed rezoning site – ICC District Plan zones



2.2 Proposed use and zone

The proposal is to change the zone of the site to Industrial 1 zone. The ICC District Plan policies state that this zone is to provide a range of light industrial, wholesaling, warehousing and service activities of a nature, size and scale appropriate near residential areas.

Whilst specific businesses have not yet been confirmed on the proposed site, we understand that the intention is that these are likely to be related to the rural sector e.g. machinery suppliers, agri-technology suppliers.

A concept masterplan for the site is shown in Figure 3. This shows that the proposal includes dividing the site into industrial lots. As a result, activity from the area is likely to be more intensive than the existing farmland and wool store activities.

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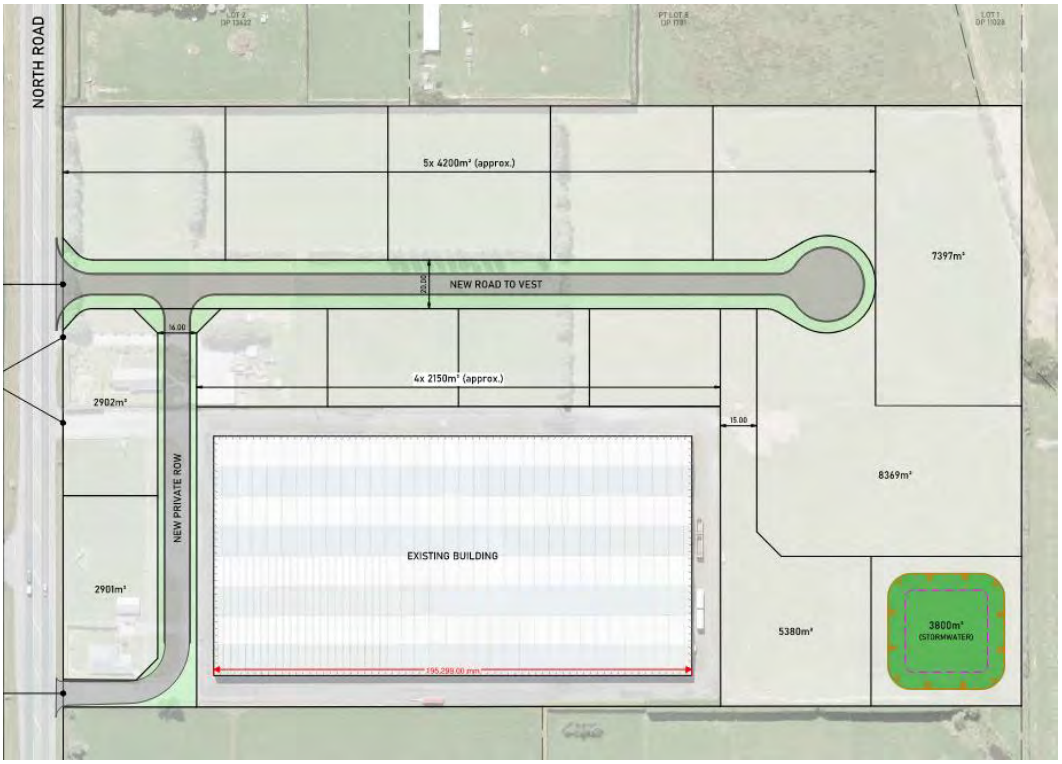
Figure 3: Concept masterplan



2.3 Nearby receivers

The immediately adjacent sites are zoned Rural, while some sites on the opposite side of North Road are zoned Business 5. The nearby noise sensitive receivers are dwellings on the adjacent Rural zoned sites. The nearby dwellings are shown in Figure 1. The buildings to the west of the site, on the opposite side of North Road, are a butchery and an adventure park. These are not considered a "noise sensitive activity" in the ICC District Plan (see definition in Appendix A).

3.0 POTENTIAL NOISE EFFECTS

We have assessed the noise effects based on the controls of the District Plan, existing activity on the site, and the likely activity on the site if a change of zone occurs.

3.1 Noise limits at receivers remain the same

In applying the noise limits from the ICC District Plan, the plan clarifies that:

> *"Noise from any site shall comply with the relevant limits for all surrounding sites. Hence, at the boundaries of Zones, measurements of noise emissions will be assessed based on the zoning of the site affected by the noise, not of the site generating the noise"*

The proposed rezoning would not change the zone of any of the surrounding properties. Therefore, the noise limits at the nearby receivers will not change as a result of the rezoning of the site. The protections offered by the Rural zone noise limits would still apply at the nearby dwellings.

The noise limits for the surrounding sites are presented in Table 1.

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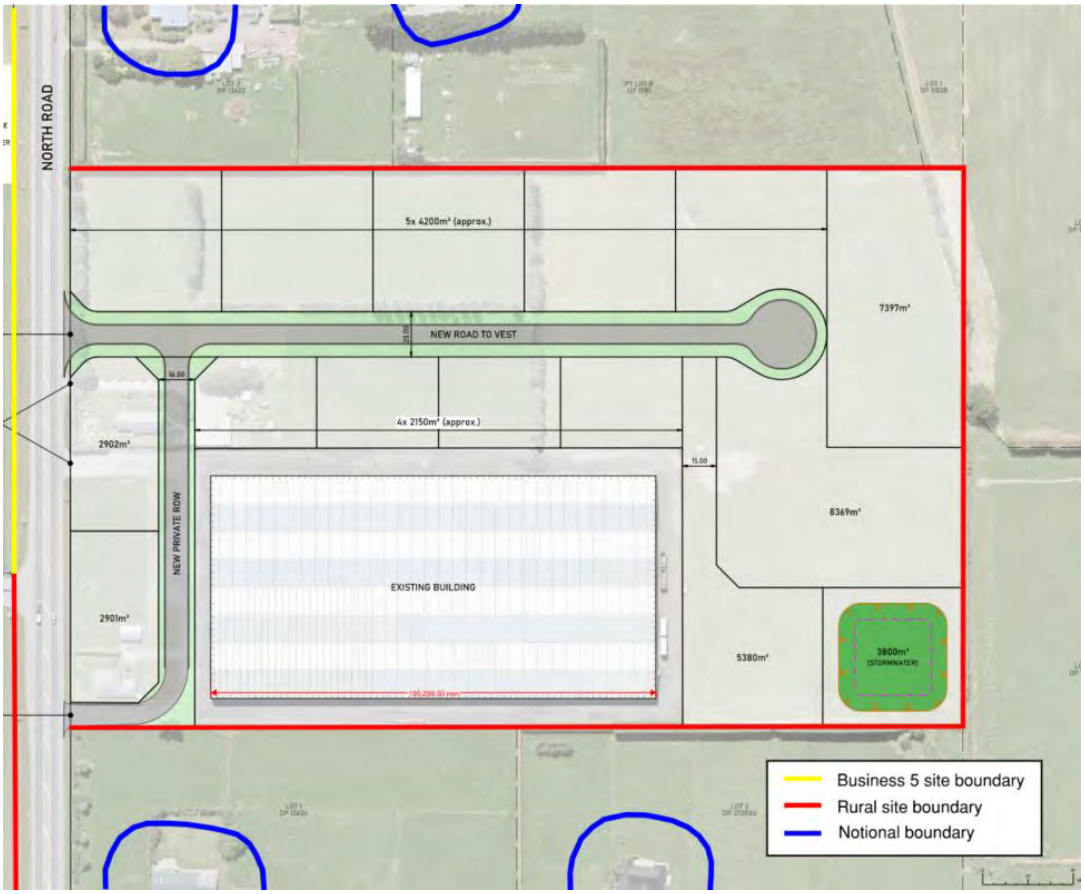
Table 1: ICC District Plan noise limits for surrounding sites

Receiving zone	Daytime 0700 - 2200		Night-time 2200 - 0700	
	L_{Aeq}	L_{Amax}	L_{Aeq}	L_{Amax}
Rural (at or within the site boundary)	65 dB	85 dB	45 dB	70 dB
Rural (at the notional boundary of a noise sensitive activity)	50 dB	80 dB	45 dB	65 dB
Business 5	65 dB	85 dB	50 dB	70 dB
Industrial 1	65 dB	85 dB	50 dB	70 dB

The rural noise zone includes noise limits at the boundary of a rural site and at the notional boundary of a noise sensitive receiver (in this case 20m from the façade of a dwelling).

Figure 4 shows the relevant assessment positions, with the notional boundaries of the nearby dwellings indicated in blue.

Figure 4: Noise limit assessment locations



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3.2 Anticipated activities can comply with the noise limits

We have considered some typical activities that may occur on the site once it is developed, to assess if compliance with the noise limits is achievable. We have considered the following potential noise sources:

- Farm machinery (John Deere tractor)
- Forklift
- Heavy vehicle movements
- Mechanical cooling plant

Any of these noise sources can comply with the relevant noise limit with typical mitigation measures, such as moderate set-backs and/or noise barriers.

The site would be subdivided, so there is potential for cumulative effects from multiple sites (i.e. each site must comply with the noise limits individually). However, the noise limits require compliance at the immediate site boundary of each site/lot (at the Rural boundary and at the boundary with other Industrial 1 lots). As a result, we consider that the likelihood for significant cumulative effects is low.

3.3 Character of noise is likely to be similar to the existing activities

There are differences between intended uses for Rural zone and Industrial 1 zone as outlined in the District Plan policies. However, the typical types of noise sources involved in each activity are likely to be similar e.g. farm machinery, vehicle movements etc.

We understand that the wool store facility is to remain. Therefore, for a large area of the site the use would remain unchanged. In other parts of the site, the development may result in more intensive activity than the existing situation. However, as stated in the District Plan policies, these would be of a nature, size and scale appropriate near residential areas

3.4 Noise from the Industrial 1 zone would be similar or less than road traffic noise

We have not measured the existing ambient noise levels at the nearby receivers. However, we anticipate that noise from State Highway 6 (SH6) is the dominant noise source in the area.

Therefore, we have calculated the road traffic noise level at the closest dwellings to provide an indication of the existing noise levels. We have used the Calculation of Road-Traffic Noise (CRTN) method, based on the characteristics of SH6 (e.g. road surface, traffic flow data, speed limit etc) and the distance from the road to the dwellings.

The predicted noise level at the closest dwelling (839 North Rd) is 60 dB L_{Aeq} during the daytime period. Of the nearby dwellings, the furthest from SH6 is 795 North Rd. The predicted daytime noise level at this dwelling is 49 dB L_{Aeq}.

As detailed above, the daytime noise limit at the notional boundary of a dwelling in the Rural zone is 50 dB L_{Aeq}. Therefore, noise from the rezoned site at the nearby receivers would be at a similar level or less than the existing level of road traffic noise.

3.5 Construction noise can comply with the relevant noise limits

As with the operational noise from the site, the specific activities are not yet confirmed. However, we understand that development of the sites is likely to include some earth works activity (minor cut/fill for foundations, trenching for services etc.), and construction of light industrial buildings (warehouses, workshops etc).

The ICC District Plan includes the following noise limits for construction activities.

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Table 2: Construction noise limits from ICC District Plan

Days and Time	Noise limit[1]
Monday to Saturday 0730 – 1800	70 dB L_{Aeq} and 85 dB L_{Amax}
At other times	45 dB L_{Aeq} and 75 dB L_{Amax}

[1] Construction noise is assessed at 1m from the façade of an occupied building

We have assessed the likely noise levels at nearby receivers based on the typical construction activities detailed above. We anticipate that construction activities could readily comply with the construction daytime noise limits with appropriate management measures in place.

Noisy night-time construction activity is not recommended on the site.

4.0 CONCLUSION

We have assessed the potential noise effects from the proposed rezoning of a Rural site to Industrial 1 zone. We anticipate that the intensity of activity on the site may increase as a result of development under the proposed new zoning.

However, the noise limits at the nearby receivers would not change as a result of the proposed rezoning and the character of noise sources on the rezoned sites is expected to be similar to the existing use. Activities would be of a nature, size and scale appropriate for nearby residential receivers.

Furthermore, the nearby dwellings are currently exposed to road traffic noise levels from SH6 that are similar or greater than the daytime noise limit from the proposed site.

Therefore, we consider that the existing noise limits would offer adequate protection against adverse noise effects at the nearby receivers and any noise effects as a result of the rezoning would be reasonable for the area.

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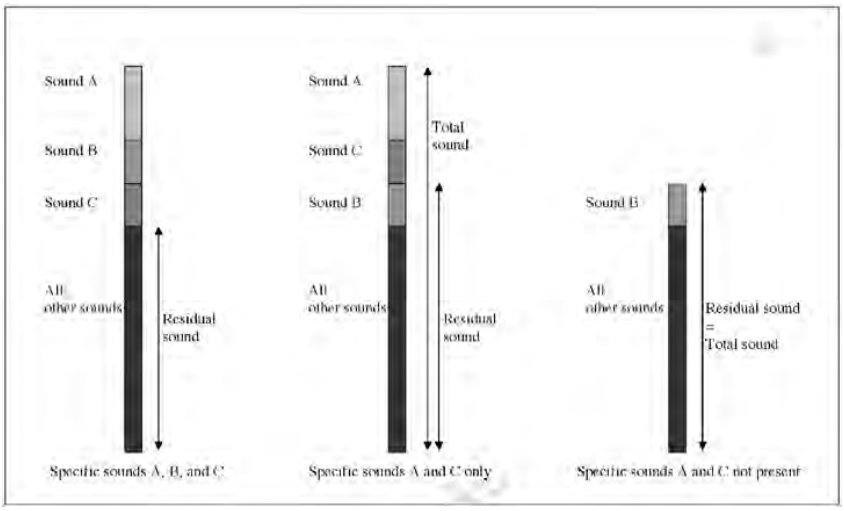
APPENDIX A GLOSSARY OF TERMINOLOGY

A-weighting	A set of frequency-dependent sound level adjustments that are used to better represent how humans hear sounds. Humans are less sensitive to low and very high frequency sounds. Sound levels using an "A" frequency weighting are expressed as dB LA. Alternative ways of expressing A-weighted decibels are dBA or dB(A).
dB	Decibel. The unit of sound level.
LAeq	The equivalent continuous A-weighted sound level. Commonly referred to as the average sound level and is measured in dB.
LAmax	The A-weighted maximum sound level. The highest sound level which occurs during the measurement period. Usually measured with a fast time–weighting i.e. LAFmax
Noise	A subjective term used to describe sound that is unwanted by, or distracting to, the receiver.
Noise Sensitive Activity	As defined in the Invercargill City District Plan (Part One, page 24) Means buildings or parts of buildings used for, or able to be used for the following purposes: 1. Residential Activity 2. Visitor Accommodation 3. Residential Care Activity 4. Educational Activity, except training related to Airport and aircraft operations 5. Hospital Activity 6. Healthcare Activity 7. Early Childhood Education and Care Centre 8. Marae Activity 9. Caretaker Accommodation.
Notional boundary	A line 20 metres from any side of a dwelling, or the legal boundary where this is closer to the dwelling. This definition is from NZS 6802:2008.
Total sound **Or** **Ambient sound**	The totally encompassing sound in a given situation at a given time, from all sources near and far.  This definition is from NZS 6802:2008.

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A6434849

10 December 2025

Tulloch Limited Private Plan Change
C/O Caroline Hutchison
Caroline Hutchison <Caroline@bonisch.nz>
Bonisch

Dear Caroline

Request for Further Information under s23 of the RMA
[MIC202532 – Tulloch Limited – 805, 815 & 819 North Road, Invercargill]

Thank you for your request for a private plan change (PPC number MIC202532) to zone 805, 815 and 819 to light Industrial, under the Invercargill City District Plan.

This letter is a request for further information that will help me better understand your proposal, including its effect on the environment and the ways any adverse effects might be mitigated. As previously noted, some of these aspects are not strictly required for the purpose of a clause 25 assessment, however as this is the applicants last chance to amend the proposal prior to notification you may want to consider the points raised.

Pursuant to clause 23 of Part 2 of Schedule 1 of the Resource Management Act 1991 (the RMA or Act), the following information is requested so that we can better understand:

- the nature of the request in respect of the effect it will have on the environment, including taking into account the provisions of Schedule 4;
- the ways in which any adverse effect may be mitigated;
- the benefits and costs, the efficiency and effectiveness, and any possible alternatives to the request;
- the nature of any consultation undertaken or required to be undertaken.

Requested information

The application has been reviewed by ICCs engineering team with assistance from Matt Bayliss. Concerns have been raised in regard to the waste water and stormwater capacity as follows:

Wastewater Servicing

- The preliminary modelling indicates that the existing Council network in this area may have limited capacity to accommodate additional flows from the proposed development. Further modelling is required to confirm if and where a connection to the network would be feasible.

  Please confirm:

A6184849

1. The proposed additional wastewater flows from your development.
2. Whether you are willing to cover the costs associated with the required modelling work to determine network capacity and connection options.

- Note: Initial indications suggest that the network is already surcharged near the Moore Road FSPS due to pumping capacity constraints. If modelling confirms insufficient capacity, upgrading pumps may be necessary, and developer contributions toward these upgrades would be required.

Development Details:

Please provide details on:

3. The proposed minimum lot size and/or maximum number of lots for the development. This information is critical for assessing servicing options.

- Note: Alternative Servicing Options - If network capacity limits the ability to connect, onsite wastewater disposal may need to be considered. This would depend on lot sizes and site suitability.

Stormwater Servicing

- Note: As the proposed stormwater infrastructure is outside the current and future stormwater rating boundary and not connected to the Council network, Council's preference is for this infrastructure to remain privately owned.

Please confirm:

4. Whether the internal road is proposed to be vested in Council ownership. If so, note that privately owned stormwater infrastructure within a Council-owned road reserve would not be desirable.

Policy Framework:

It is acknowledged that additional rules have been proposed to help align the proposed plan change within the Light Industrial Zone. However, no corresponding objectives or policies have been included to provide the necessary policy framework to support these rules.

5. Please provide suggested wording for any new objectives andpolicies , or amendments to existing objectives and policies, to ensure the proposed rules are appropriately supported.

National Policy Statement for Highlight Productive Land

As per clause 3.6(5) of the NPS-HPL:

(5) Territorial authorities must take measures to ensure that the spatial extent of any urban zone covering highly productive land is the minimum necessary to provide the required development capacity while achieving a well-functioning urban environment.

6. Please demonstrate (inline with the above request) that the spatial extent of the urban zone is the minimum necessary to provide the required development capacity.

A6184849

As per Clause 3.9(g) of the NPS-HPL, the AEE indicates that the balance area is subject to significant constraints for long-term primary production. However, the Land and Water Science assessment concludes that the soil quality is adequate to support the current land use of low-intensity pastoral grazing.

7. Please provide further discussion on this point to establish a clear pathway through Clause 3.9(g). While Table 2 of the AEE offers some assistance, it would be helpful to expand on the conclusion that "the size of the site would not make the activity sustainable or economic." For example, evidence demonstrating that pastoral grazing within the remaining productive land is not economically viable would strengthen the assessment. This could include analysis of the scale required for viable grazing operations compared to the available area, or any relevant economic benchmarks.

Consultation:

8. Section 5 of the AEE mentions that NZTA have agreed to the access location. Please provide written approval from NZTA that they are supportive of the proposed plan change and associated demand on SH6, and that the location of the proposed access is sufficient for the proposed plan change.

9. Please provide evidence of consultation with Te Ao Mārama Incorporated (TAMI).

Demand:

10. The proposal sets out the current land available for development within IND1Z land, however does not provide any evidence that there is demand for further light industrial development beyond the current capacity. While it is acknowledged that demand related to Tulloch Ltd has been stated, please provide evidence that an increase in IND1Z land is required for this demand to be met, with reasoning as to why this demand cannot be met by the current IND1Z land.

Next Steps

Please provide the above information so we have sufficient information to assess your request . If you would prefer to meet and discuss these matters before responding, please let us know.

Legislative requirements

There is no statutory time limit to the provision of this further information. Further, Clause 23 of Part 2 of Schedule 1 provides that the person who made the request:

(a) May decline, in writing, to provide the further or additional information or to agree to the commissioning of a report; and
(b) May require the local authority to proceed with considering the request.

Please advise how you wish to proceed.

If you have any queries, please contact me via mbanhidi@propertygroup.co.nz, or if in relation to servicing matters Matt Bayliss <matt.bayliss@icc.govt.nz>and quote the application number above.

A6184849

Yours faithfully

Mishka Banhidi

11th February 2026

Bonisch Ref: 7895

Mishka Banhidi
Property Group
mbanhidi@propertygroup.co.nz

Dear Mishka

Reply to Request for Further Information – Tulloch Limited Private Plan Change, North Road, Invercargill

Council reference: MIC20253

Thank you for your letter dated 10 December 2025 requesting further information in relation of the Tulloch Limited private plan change. We respond as follows:

Wastewater Servicing

The preliminary modelling indicates that the existing Council network in this area may have limited capacity to accommodate additional flows from the proposed development. Further modelling is required to confirm if and where a connection to the network would be feasible. Please confirm:

1. *The proposed additional wastewater flows from your development.*

The proposed wastewater flows associated with the plan change were provided in the tables in Section 6.2 of the Servicing Report.

2. *Whether you are willing to cover the costs associated with the required modelling work to determine network capacity and connection options.*

We acknowledge ICC's request for further wastewater modelling to confirm network capacity and feasible connection points. We agree this is a reasonable approach, noting that it would be onerous for the applicant to directly model the wider Council wastewater network solely for this development.

The applicant is willing to meet the reasonable costs associated with ICC commissioning this modelling work. We are awaiting an estimate of these costs from ICC, which we anticipate will be modest (likely less than $5,000).

Development Details

3. *Please provide details on the proposed minimum lot size and/or maximum number of lots for the development. This information is critical for assessing servicing options.*

At this stage, the plan change is intended to enable light industrial development in general terms, rather than prescribe a specific subdivision outcome. Earlier concept plans have indicated a development yield in the order of approximately 12–15 lots; however, the applicant does not wish to commit to a minimum lot size or a maximum number of lots through the plan change process.

The final number, size, and configuration of lots will be determined through the subdivision consent process, informed by detailed engineering design and servicing constraints at that time.

In relation to wastewater, the applicant acknowledges the modelled wastewater flows that underpin the proposed zone rules. These will be recognised within the plan framework, while also acknowledging that further engineering solutions at subdivision stage may allow additional wastewater capacity to be achieved. The plan change will be drafted to ensure that such matters can be addressed through engineering design, without the need for a further plan change.

Stormwater Servicing

4. *Please confirm whether the internal road is proposed to be vested in Council ownership. If so, note that privately owned stormwater infrastructure within a Council-owned road reserve would not be desirable.*

Stormwater servicing has been identified as a key issue, particularly ICC's preference not to take ownership of stormwater assets given the site's location outside the current and future stormwater rating area.

While it would be unusual for private stormwater infrastructure to treat runoff from a road, this is not unprecedented. One potential outcome is that the internal roading and associated stormwater infrastructure remain privately owned and maintained, with private stormwater management provided accordingly. Alternatively, there may be scope for the stormwater infrastructure to be included within ICC's stormwater rating area in the future, subject to agreement at that time.

Importantly, these matters can be appropriately resolved at the subdivision stage, provided it can be demonstrated that there are reasonable and practicable stormwater management solutions available. The proposed zoning framework will be drafted to retain flexibility, allowing stormwater assets to either vest in Council ownership or remain private, without requiring a further plan change.

Policy Framework

5. *It is acknowledged that additional rules have been proposed to help align the proposed plan change within the Light Industrial Zone. However, no corresponding objectives or policies have been included to provide the necessary policy framework to support proposed rules. Please provide suggested wording for any new objectives and policies, or amendments to existing objectives and policies, to ensure the proposed rules are appropriately supported.*

In preparation of the Private Plan Change (PPC) a review of all the existing Light Industrial Zone (IND1Z) objectives and policies was undertaken. The existing IND1Z objectives and policies are adopted in their totality as they provide the appropriate umbrella and framework for the IND1Z and there were no special or unique outcomes sought for the PPC that warranted additional objectives and policies. For the functionality and streamlined use of the Invercargill City District Plan (the Plan), additional objectives and policies need to add value or be necessary to warrant a change.

The Section 32 analysis in the PPC provides a comprehensive overview of the relevant IND1Z objectives and policies and there are no 'gaps' in terms of policy outcomes for the IND1Z as they relate to the PPC. The existing IND1Z policies comprehensively cover the universal environmental outcomes in managing noise, odour, glare, light spill, signage, building scale, access and connectivity, amenity, state highway function, screening and site utilisation. It is further noted that where concept plans are mentioned in policies in the Industrial Zone it is around a specific environmental issue that needs to be managed outside of the regular objective and policy framework.

In summary, the existing umbrella of objectives and policies for the IND1Z are considered appropriate, and a clear link between rules and the objective and policy frameworks are provided for.

National Policy Statement for Highly Productive Land (HPL)

6. *As per clause 3.6(5) of the NPS-HPL:*

> *(5) Territorial authorities must take measures to ensure that the spatial extent of any urban zone covering highly productive land is the minimum necessary to provide the required development capacity while achieving a well-functioning urban environment.*
>
> *Please demonstrate (in line with the above request) that the spatial extent of the urban zone is the minimum necessary to provide the required development capacity.*

Based on the Ministry for the Environment (MfE) guidance, this clause should inform how urban rezoning proposals are designed and assessed and to ensure any urban rezoning of HPL is an efficient use of that land (e.g. it provides a high yield of housing to meet the demand for housing, rather than lower density residential development which depletes more HPL). However, unlike residential land, industrial site size requirements are not as uniform, and therefore efficient use of land relates more to the type and site size required to meet industrial use needs and market demand which is a lot broader and complex than residential development.

The MfE guide identifies that the loss of HPL should only be considered if required to provide enough development capacity. The minimum amount of HPL should be lost to provide that capacity. Providing capacity in regard to this clause is linked to the National Policy Statement on Urban Development (NPS-UD) which refers to providing at least sufficient development capacity, significant additional development capacity (beyond that required for the next 10 years) should not be provided on HPL. Below is an extract from the NPS-UD as it relates to business development.

> *Policy 1: Planning decisions contribute to well-functioning urban environments, which are urban environments that, as a minimum:*
>
> *b. have or enable a variety of sites that are suitable for different business sectors in terms of location and site size; and*
>
> *c. have good accessibility for all people between housing, jobs, community services, natural spaces, and open spaces, including by way of public or active transport; and*
>
> *d. support, and limit as much as possible adverse impacts on, the competitive operation of land and development markets.*
>
> *Policy 2: Tier 1, 2, and 3 local authorities, at all times, provide at least sufficient development capacity to meet expected demand for housing and for business land over the short term, medium term, and long term.*

A key test is whether the proposed site is the 'minimum necessary' to provide enough development capacity for Industrial 1 Zone activities, which is linked to the outcomes sought in the NPS-UD where sufficient capacity is up to 10 years of supply. Using this as the baseline for defining the 'minimum necessary' the PPC is considered to meet this test for the following reasons:

- An economic assessment by 'Insight Economics' identified that:
    - Occupier demand for local industrial premises is positive while supply is limited, with a particular shortage of industrial space in Invercargill.
    - The rezoning will directly increase industrial land supply and address a shortage of larger lots. There is a lower share of vacant parcels in larger size lots over 6,000m^2. There is high occupancy for 6,000 – 8,000m^2 land areas, where there is exceptionally low vacancy.

- A key driver of industrial floorspace demand is the sustained shift towards online shopping and the associated growth of the logistics sector. These activities require modern, high-stud, large-footprint warehousing space, which is usually located in light industrial zones.

- The PPC includes a desktop analysis of the potential capacity of the existing IND1Z land. That analysis showed that 80% of the IND1Z land is already developed, and the remainder of technically 'available' land represented a total of 15.5ha. The PPC will increase IND1Z greenfield supply to a total of 22ha.
- Based on 22ha, this would provide for an annual IND1Z greenfield supply of 2.2ha a year over 10 years. There are no recorded trends on greenfield IND1Z land uptake in Invercargill, however, based on market demand for larger site sizes (6,000-8,000m^2) it is more than fair to conclude that 2.2ha a year may not even be 'sufficient' to meet capacity requirements within the next 10 years.
- CBRE, October 2025 (refer Attachment A), looks at all Industrial property in Invercargill (not just IND1Z land) and shows a vacancy rate of 2.8%, with close to 18,000m^2 of vacant stock (buildings, not land). A majority of the vacant building stock (97%) was in Grade C submarket space, and a majority of this vacancy was in Bluff. Grade A stock had an exceptionally low vacancy rate of 0.4 percent, and there was no vacancy in Grade B building stock.
- CBRE article[1] (refer Attachment B) identifies that the extremely low availability of industrial space reflects the region's healthy rural based economy and a flight to quality among industrial occupiers. Tenants want efficient loading facilities, better yard circulation and high-quality on-site offices, which is pulling demand toward newer builds. As a result, established industrial areas are close to full. It is noted that Industrial land supply is tight, with limited releases of land for new industrial estates currently in the pipeline. The limited number of transactional activities in industrial land is also sighted as a constraint making market demand high. Refer to Attachment B.

The desktop analysis of IND1Z land, along with the market trends showing the need for new high quality light industrial premises, the existing low vacancy rates for these, and the constrained and slow release of industrial land to the market, demonstrate that the proposed PPC site is the 'minimum necessary' to provide enough development capacity for Industrial 1 Zone activities. Additionally, the market information and desktop analysis show that there is unlikely to be a 'sufficient' 10-year supply under NPS-UD.

The second part of the consideration for clause 3.6(5) is achieving a well-functioning urban environment. This is discussed in the PPC under 8.2.1 on the NPS-UD.

7. *As per Clause 3.9(g) of the NPS-HPL, the AEE indicates that the balance area is subject to significant constraints for long-term primary production. However, the Land and Water Science assessment concludes that the soil quality is adequate to support the current land use of low-intensity pastoral grazing.*

   Please provide further discussion on this point to establish a clear pathway through Clause 3.9(g). While Table 2 of the AEE offers some assistance, it would be helpful to expand on the conclusion that "the size of the site would not make the activity sustainable or economic." For example, evidence demonstrating that pastoral grazing within the remaining productive land is not economically viable would strengthen the assessment. This could include analysis of the scale required for viable grazing operations compared to the available area, or any relevant economic benchmarks.

[1] Tight at the top: CBRE survey shows limited space in high-quality industrial property | CBRE New Zealand

The PPC site has both Class 2 and Class 3 soils. Refer to Figure 2 below from the Manaaki Whenua Landcare Research maps, the site is highlighted in yellow.

Figure 1: Manaaki Whenua Landcare Research LUC Map (site denoted by yellow border)

The Land and Water Science assessment undertook a more detailed site-specific soil assessment and identified that the soils at the site are consistent with Class 3 soils. The summary of the Land and Water Science assessment identifies that soil quality is adequate for the current low intensity pasture grazing, but that longer term use would require fertilizer application, and that the site is limited by aeration and water logging after heavy rainfall, and that the site size is a limiting factor for economic primary productions.

The purpose of the Land and Water Science assessment was to determine the Soil Classification, it was not a robust assessment of the viable economic use of the land, nor did it consider the wider adjoining land use and other physical constraints that restrict its use in the long term for primary production. Agribusiness Consultants undertook a more detailed economic feasibility assessment. The key conclusion of that report was that while the Land and Water Science assessment identifies the land is most suited to pastoral farming, that the scale of the property and very low productive output is not sufficient to support a farm owner and is unlikely to be operated alongside other farming titles. The site is highly unlikely to be re-amalgamated with neighbouring properties, especially given the existing fragmentation of adjoining sites. The location makes the property difficult to be farmed, including in conjunction with other land given the busy State highway does not allow animals to be walked between properties.

The discussion of Clause 3.9g of the NPS-HPL in the PPC under Section 10.2.1.2 is considered comprehensive, along with other consideration of long-term constraints under Clause 10 of NPS-HPL under section 10.2.1.3 of the PPC.

Since the lodgement of the PPC with Council there has been some changes to the NPS-HPL which now exempts urban development and urban rezoning on LUC 3 land from the NPS-HPL restrictions. Approximately one-third of the site is under Manaaki Whenua Landcare Research maps Class 3 soil classification and a site-specific assessment concludes that the site soil classification is Class 3.

Consultation

8. *Section 5 of the AEE mentions that NZTA have agreed to the access location. Please provide written approval from NZTA that they are supportive of the proposed plan change and associated demand on SH6, and that the location of the proposed access is sufficient for the proposed plan change.*
9. *Please provide evidence of consultation with Te Ao Mārama Incorporated (TAMI).*

There has extensive consultation with NZTA around the access location. NZTA were consulted with during the development of the PPC, and the location of the proposed main access was informed by that consultation to ensure it was efficient and safe. A copy of relevant consultation with NZTA is available in Appendix 13 of the Integrated Traffic Assessment and Appendix 14. NZTA do not give affected party approval for Plan Changes, they wait to see if the notified document incorporates their concerns. Apart of access design and location of the access, NZTA did not raise any capacity issue of the proposal on the state highway network.

The applicant did provide a copy of the draft PPC to TAMI for early feedback in August 2025. At that time, some general feedback was provided, but TAMI reserved the right to be involved through the formal notification process. In terms of feedback, at a general level, TAMO identified key issues for mana whenua relating to industrial activity as:

- Potential for direct and indirect impacts of industrial operations on flora and fauna, air, water, soil, mahinga kai species and places. `
- Emissions/discharge of contaminants to air and impacts on the mauri of the air, and on human health. `
- Stormwater management on industrial sites, potential for effects on soils and water. `
- Contaminated run off (stormwater) entering waterways.
- Visual amenity

All the above issues are discussed in the PPC under the AEE.

A few key observations from TAMI as it relates directly to this plan change were:

- noted the site will accommodate light industrial activity which appears to be in keeping with the other activities surrounding the area.
- noted the proposed stormwater management infrastructure as described in the application being a settling area before discharge. It would be a preference that development was directed away from the northeastern corner of the site and not of an overly concentrated nature to reduce the overall volume of stormwater being disposed of into the adjacent creek.
- noted wastewater is to be disposed of to a reticulated system yet to be installed.
- noted landscaping offered to mitigate visual impact.

A copy of this feedback email is in Attachment C.

Demand

10. *The proposal sets out the current land available for development within IND1Z land, however does not provide any evidence that there is demand for further light industrial development beyond the current capacity. While it is acknowledged that demand related to Tulloch Ltd has been stated, please provide evidence that an increase in IND1Z land is required for this demand to be met, with reasoning as to why this demand cannot be met by the current IND1Z land.*

The current land availability for development within IND1Z is covered in the PPC under Section 3.2. This is also referred to and expanded on under point 6 of this letter, with a summary of more recent market data on industrial supply and demand.

Please let me know if you require any further information or clarification of the above.

Yours faithfully

Christine McMillan
Divisional Manager Planning
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FIGURES | INVERCARGILL | H1 2025

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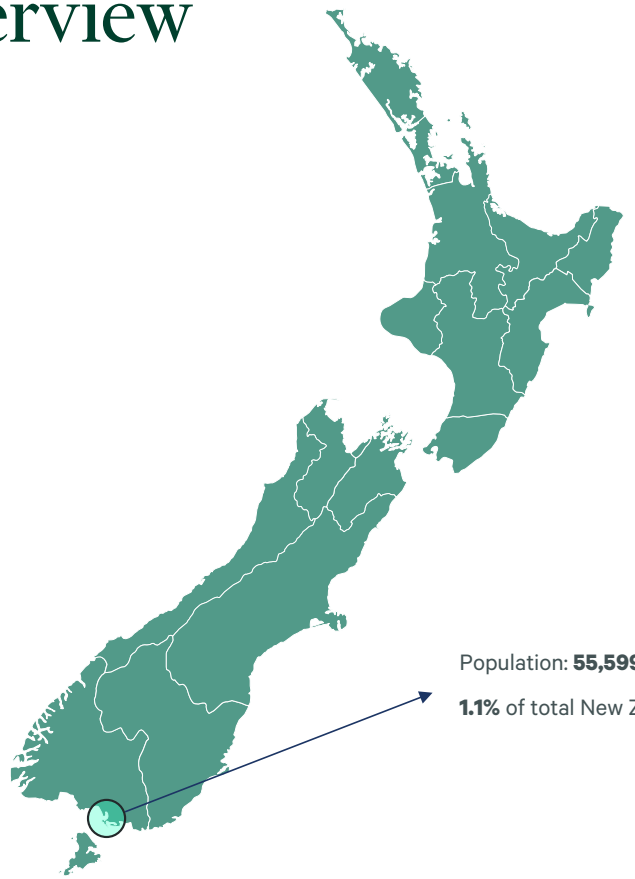
Invercargill Property Market Overview

SUMMARY

- The Invercargill office market has around 93,000 sqm of office space, most of it in low-quality buildings in Invercargill Central.
- Total office vacancy sat at 7.2% during the first half of 2025. Notably, the Prime office submarket registered only a 1.2% vacancy rate during this period.
- Most of the office assets in Invercargill were completed in the second half of the last century, and 27% of all buildings were built after 2000.
- Invercargill has circa 644,000 sqm of industrial space across 305 building. West Invercargill is the suburb with the largest industrial footprint, followed by Kennington and Bluff.
- Invercargill's industrial vacancy rate was 2.8% during H1 2025, with close to 18,000 sqm vacant stock, most of it in the Grade C submarket.

Market Sector	Stock (sqm)	Vacant Stock (sqm)	Vacancy (%)	Number of Assets
Prime Office	19,807	240	1.2%	8
Secondary Office	73,179	6,499	8.9%	70
Prime Industrial	138,984	539	0.4%	44
Secondary Industrial	504,950	17,794	3.5%	261



Population: **55,599** (2023 Census)

1.1% of total New Zealand population

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Invercargill Office Stock

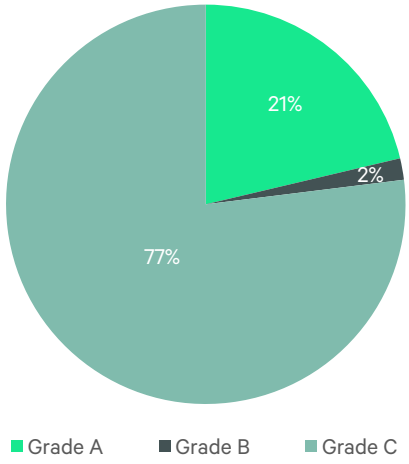
The total size of the Invercargill office market is close to 93,000 sqm, across 78 office assets located in Invercargill Central and Avenal. The Invercargill office stock includes standalone office buildings and those within mixed-use developments. Notably, in contrast to New Zealand's three larger cities, many offices in Invercargill are located within the office component of mixed-use buildings, which often combine commercial and retail spaces.

Invercargill's office market is dominated by low-quality buildings, with close to 72,000 sqm of Grade C office space in 68 buildings (77% of total space), followed by Grade A (Prime) space with almost 20,000 sqm in eight buildings (21%) and Grade B office space offering close to 1,600 sqm in two building (2%). Secondary office stock (Grade B and Grade C combined) sits close to 73,200 sqm in 70 assets. One of the largest office building in Invercargill is 25 Esk Street (circa 4,900 sqm), a Prime multi-storey building occupied by several tenants.

Regarding our definitions for the different grades considered for the Invercargill office market, Grade A quality represents the highest-quality office space, generally situated in buildings built from 2010 onwards and larger than 500 sqm. Meanwhile, Grade B quality office space is situated in buildings built between 2000 and 2009 that are larger than 500 sqm. These are inferior to Grade A space in terms of building quality and specifications. Additionally, buildings completed from 2010 onwards that do not exceed 500 sqm are also considered Grade B. Furthermore, buildings completed before 2000, regardless of size, are considered Grade C. Those completed between 2000 and 2009 that are smaller than 500 sqm are also classified as Grade C.

Office stock by grade

Grade	NLA (sqm)	Number of office assets
Grade A	19,807	8
Grade B	1,614	2
Grade C	71,565	68
Total	**92,986**	**78**



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Invercargill Office Stock

Compared to other regional cities, Invercargill has a relatively new office stock. In terms of the number of office buildings by year built, 55 were built between 1950 and 1999. Also, 11 office buildings were built after 2000, including nine that were completed from 2010 onwards.

Regarding the size of Invercargill's office stock by year built, only 8% of the total size comes from buildings completed before 1950. Around 63% the office space corresponds to buildings built between 1950 and 1999, almost 59,000 sqm. Additionally, around 26,000 sqm of office space is located in buildings completed after 2000, which accounts for 27% of the total.

In relation to the Invercargill office stock by building size, most of the assets (30 out of 78) provide an office space between 1,000-2,999 sqm, followed by buildings with less than 500 sqm of office space (27 buildings) and by buildings with 500-999 sqm of office space (17 assets).

Office stock by year built

Year Built	NLA (sqm)	Number of office assets
2020-2025	8,653	3
2010-2019	11,898	6
2000-2009	5,008	2
1980-1999	31,911	25
1950-1979	27,079	30
Older than 1950	6,986	11
Year unknown	1,452	1
Total	**92,986**	**78**

Office stock by building size

Building size (sqm)	NLA (sqm)	Number of office assets
Over 5,000	6,300	1
3,000 - 5,000	12,404	3
1,000 - 2,999	52,401	30
500 - 999	12,839	17
Less than 500	9,042	27
Total	**92,986**	**78**

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Invercargill Office Stock

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Invercargill Office Vacancy

During H1 2025, Invercargill's total office vacancy rate sat at 7.2%. Vacant office stock totalled 6,739 sqm, with Grade C buildings accounting for most of all vacant space. Grade A office vacancy rate was just over 1.0%, whilst vacancy in Grade B office buildings was zero.

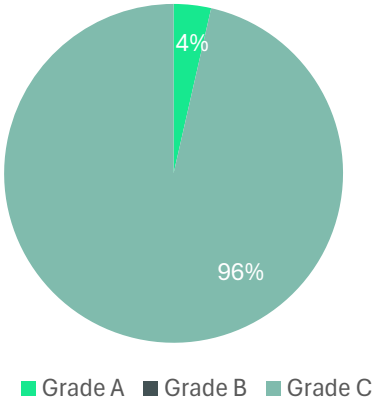
Most of the vacant office space is located in Don Street (34% of the total), followed by The Crescent (16%) and Dee Street (13%). The building with the highest vacancy rate during H1 was 33 Don Street, a Grade C asset with 929 sqm of vacant space across two levels. This was followed by 21 The Crescent, a Grade C building with 660 sqm of unoccupied space.

Office vacancy by grade

		Grade A	Grade B	Grade C	**Total**
Vacancy H1 2025	%	1.2%	0.0%	9.1%	**7.2%**
	sqm	240	0	6,499	**6,739**

Office vacancy by street name

Street Name	Vacant Office Stock	%
Don Street	2,283	34%
The Crescent	1,100	16%
Dee Street	875	13%
Deveron Street	768	11%
Kelvin Street	660	10%
Leet Street	485	7%
Spey Street	375	6%
Yarrow Street	193	3%
Total	**6,739**	**100%**



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Invercargill Industrial Stock

Invercargill has circa 644,000 sqm of industrial space across 305 industrial buildings. Around 68% of the industrial market is composed of Grade C industrial buildings (circa 439,000 sqm), followed by Grade A buildings (22%, equivalent to around 139,000 sqm) and Grade B assets (10%, corresponding to circa 67,000 sqm). The main industrial areas in Invercargill are located in West Invercargill, with almost 204,000 sqm across 117 industrial buildings (32% of the total industrial NLA), and Kennington, with close to 139,000 sqm across only 10 assets (22% of the total). Kennington has several industrial buildings that have more than 10,000 sqm in size. They are followed by Bluff, Southland's port town south of Invercargill, with almost 52,500 sqm across 21 buildings.

In terms of the distinct definitions concerning the Invercargill industrial market, Grade A quality (also referred to as Prime grade) represents industrial space generally for general warehousing or logistics, with a NLA exceeding 500 sqm. Grade A quality properties are of a high specification and well maintained. The grade encompasses properties from the current generation of design build premises to buildings built from 2010 onwards. Meanwhile, Grade B quality office space is situated in buildings built between 2000 and 2009 that are larger than 500 sqm. These are inferior to Grade A space in terms of building quality and specifications. Additionally, buildings completed from 2010 onwards that do not exceed 500 sqm are also considered Grade B. Furthermore, buildings completed before 2000, regardless of size, are considered Grade C. Those completed between 2000 and 2009 that are smaller than 500 sqm are also classified as Grade C.

Industrial stock by grade

Grade	NLA (sqm)	Number of industrial assets
Grade A	138,984	44
Grade B	66,588	37
Grade C	438,362	224
Total	**643,934**	**305**

Industrial stock by location

Suburb	NLA (sqm)	Number of industrial assets
West Invercargill	203,905	117
Kennington	138,908	10
Bluff	52,356	21
Newfield	44,892	30
Prestonville	36,775	31
Invercargill Central	36,542	26
Appleby	32,487	26
Avenal	30,291	22
Clifton	22,535	3
Hawthorndale	15,990	1
Rockdale	15,085	5
Grasmere	7,660	7
Waikiwi	2,480	3
Strathern	1,983	1
Waverley	1,315	1
Georgetown	730	1
Total	**643,934**	**305**

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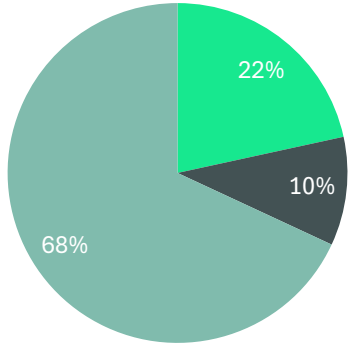
Invercargill Industrial Stock

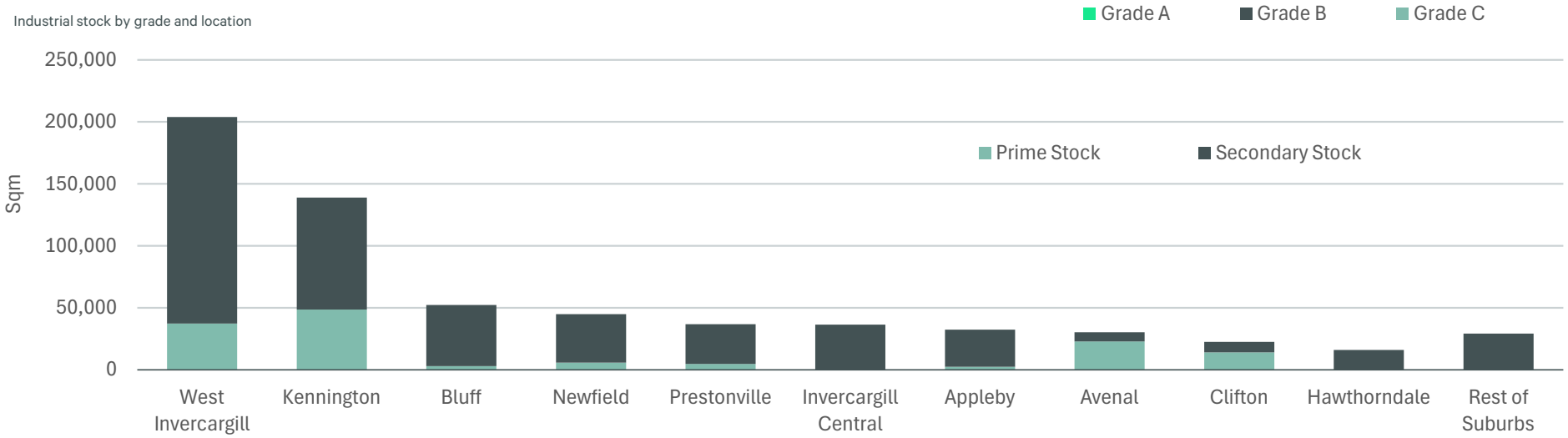
Around 78% of Invercargill's Prime industrial stock is concentrated in three suburbs: Kennington, with close to 48,700 sqm of high-quality industrial space, West Invercargill (approximately 38,000 sqm), and Avenal (circa 23,000 sqm). The suburbs that do not have any Prime industrial stock are Hawthorndale, Rockdale, Grasmere, Waikiwi, Strathern, Waverley, and Georgetown.

During H1 2025, the largest occupier in the Invercargill industrial market was Niagara Sawmill, with over 56,000 sqm of both Prime and Secondary industrial footprint on Kennington Road, east of Invercargill. The next largest occupancies during this period were Freight Haulage, with close to 22,500 sqm of industrial footprint on Lake Street in Clifton, and Kiwi Kraft Engineering, Pro Storage and others, occupying close to 17,500 sqm of Grade C industrial space at 73 Annan Street in West Invercargill.

Industrial stock by grade



Industrial stock by grade and location



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Invercargill Industrial Stock

In relation to the number of industrial buildings by year built, only 12 were built before 1950. Most of them were completed during 1950-1979 (127 assets) and 1980-1999 (61 buildings). From 2000 onwards, 81 industrial buildings were built, including 14 completed after 2020.

Regarding the size of Invercargill's industrial stock by year built, 45% of the industrial footprint belongs to buildings completed between 1950 and 1999, covering around 287,000 sqm. The newest assets, completed after 2020, comprise only 10% of the total industrial footprint.

In terms of building size in Invercargill's industrial stock, almost half of the assets (150 out of 305) have between 500 sqm and 1,000 sqm of industrial space, followed by buildings with 1,000-2,999 sqm (112 assets). Even though only 22 industrial buildings have over 5,000 sqm of space, they comprised almost 43% of the total industrial footprint in Invercargill. The largest industrial building is located at 1 Clapham Road, located in Kennington by Niagara, with almost 56,000 sqm of industrial space.

Industrial stock by year built

Year Built	NLA (sqm)	Number of industrial assets
2020-2025	65,689	14
2010-2019	89,806	31
2000-2009	50,077	36
1980-1999	101,743	61
1950-1979	184,981	127
Older than 1950	37,178	12
Year unknown	114,460	24
Total	**643,934**	**305**

Industrial stock by building size

Building size (sqm)	NLA (sqm)	Number of industrial assets
Over 5,000	278,826	22
3,000 - 5,000	74,337	21
1,000 - 2,999	182,058	112
500 - 1,000	108,713	150
Total	**643,934**	**305**

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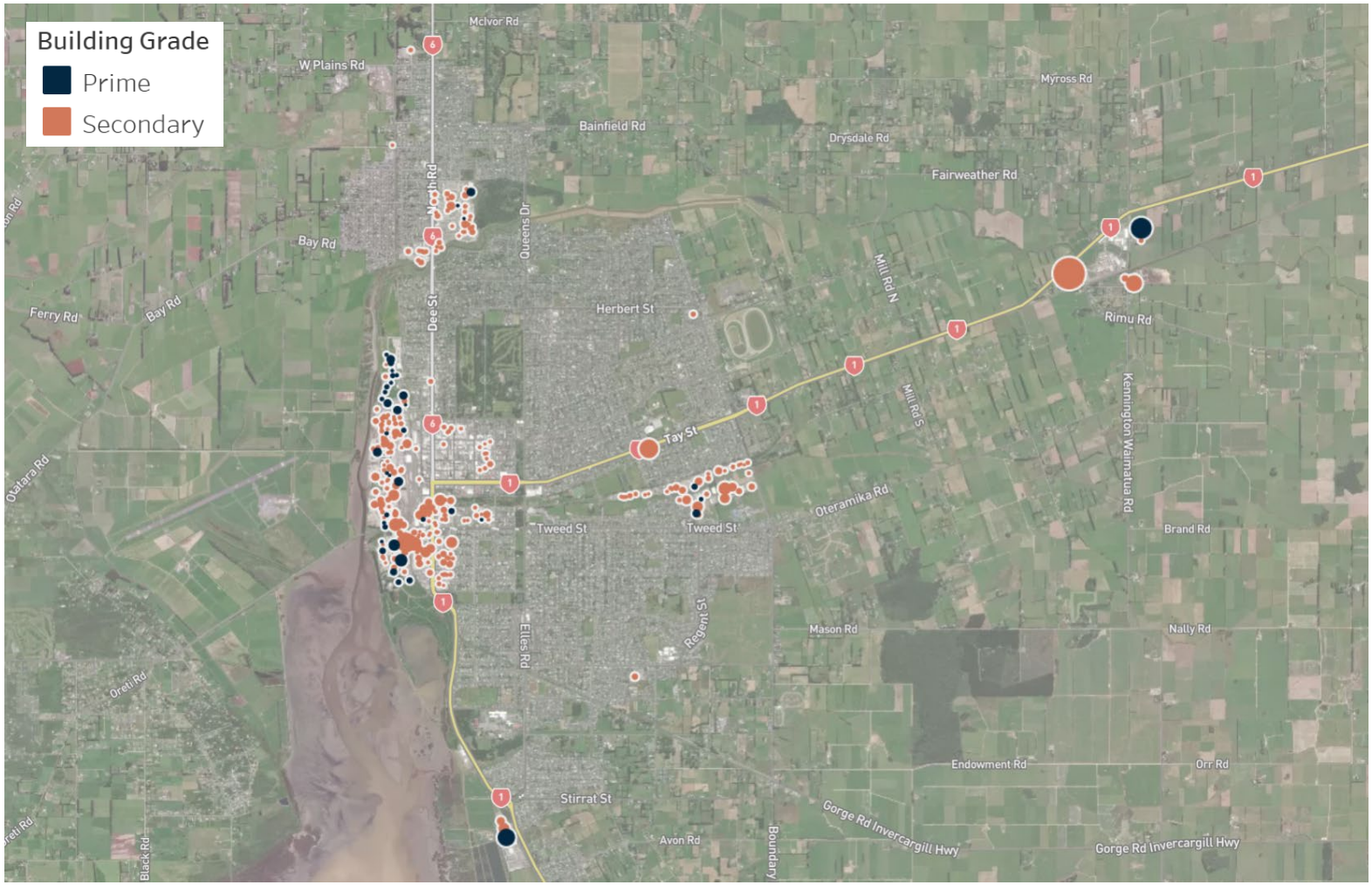
Invercargill Industrial Stock



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Bluff Industrial Stock

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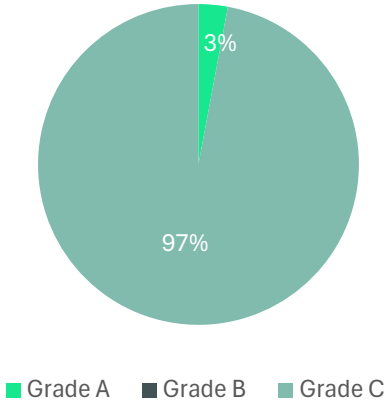
Invercargill Industrial Vacancy

During the first half of 2025, the industrial vacancy in Invercargill sat at 2.8%, with 18,333 sqm of vacant stock. The majority of vacant industrial space, approximately 17,800 sqm, was located in the Grade C submarket, accounting for 97% of the total. In contrast to the office market, industrial buildings in the Grade B submarket were fully occupied.

More than half of the total vacant industrial space is located in Bluff (52% of the total), followed by West Invercargill (42%), and Appleby (7%). The building with the highest vacancy was located at 53-55 Gore Street in Bluff, a former cold storage facility with 9,500 sqm of vacant space, followed by 76 Annan Street in West Invercargill, with 2,500 sqm of unoccupied industrial space. Both are Grade C industrial buildings.

Industrial vacancy by grade

		Grade A	Grade B	Grade C	Total
Vacancy H1 2025	%	0.4%	0.0%	4.1%	**2.8%**
	sqm	539	0	17,794	**18,333**



Industrial vacancy by suburb

Suburb	Vacant Office Stock	%
Bluff	9,500	52%
West Invercargill	7,613	42%
Appleby	1,220	7%
Total	**18,333**	**100%**

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Definitions

Office building grades

Grade A: High-quality modern space. **Grade B**: Good quality modern space with some but not all Grade A features and to a lower standard. **Grade C**: Average quality air-conditioned space. **Prime**: Grade A. **Secondary**: Combination of Grade B and C.

Industrial building grades

Prime: Industrial space used for general warehousing or logistics with stud heights of 9 metres or more, largely column free. The property will be of a high specification and well maintained. The grade encompasses properties from the current generation of design build premises to buildings built over the previous cycle. **Secondary**: Industrial space inferior to Prime space in terms of building quality and specifications being lower stud (generally between 6 and 9 metres) and in some cases lacking Capex and having deferred maintenance issues although still providing functional industrial accommodation.

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CBRE

Press Release

Tight at the top: CBRE survey shows limited space in high-quality industrial property

Invercargill

October 19, 2025

A new CBRE survey of office and industrial property across Invercargill shows the higher-quality end of the office and industrial markets are close to full, with limited options for businesses looking to relocate or establish a presence in the city.

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The survey, which provides a comprehensive review of vacant space in Invercargill commercial & industrial property, reveals that only 1% of total prime office space is sitting vacant, while prime industrial vacancy is almost zero.

Secondary-grade space (older, lower-standard building stock) offers more options for occupiers; especially in the office market, where 9% of secondary office space is vacant.

Invercargill's limited A-grade office stock is largely spoken for and much of it is owner-occupied, said Regan Johns, Valuation Director at CBRE.

"Invercargill City Council and Southland District Council relocating into the CBD have further tightened the availability of top-tier space, while banks, accounting firms and law firms occupy most of the balance. The vacancies we do have are generally concentrated in older C-grade buildings, reflecting moves and footprint reductions by government departments and businesses, as well as earthquake-prone issues in lower building grades."

The past few years have brought more high-quality office stock to Invercargill, notably the eight-level HWR Tower opened in 2023. Two refurbishment projects are also underway, which will introduce additional prime space to the market.

Jorge Chang Urrea, Research Manager at CBRE New Zealand, said the tight availability of prime offices alongside higher vacancy in secondary space is typical of the current market in many centres nationally.

"Following the Covid pandemic, trends in the office occupier market including a flight to quality and downsizing have resulted in very low prime vacancy in many centres around the country. Secondary stock often needs upgrading or seismic remediation before it can compete on the same level and attract tenants."

In the industrial market, CBRE's survey points to extremely low vacancy in the higher-quality grades, with just 0.4% vacant space in prime property.

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While secondary industrial vacancy is also fairly low, at 3.5%, there is a little more breathing space for tenants who are willing to consider lower-grade space, particularly in West Invercargill.

Robert Todd, CBRE Valuation Director, said the very low availability of industrial space reflects the region's healthy rural based economy and a flight to quality among industrial occupiers.

"Tenants want efficient loading facilities, better yard circulation and high quality on-site offices, which is pulling demand toward newer builds. As a result, established industrial areas are close to full."

Industrial land supply is tight, with limited releases of land for new industrial estates currently in the pipeline, he said.

"Southland's strong rural sector has seen the Lorneville precinct north of Invercargill evolve into a rural service and trade hub. However land supply in the industrial market in general is limited, with large owners having released very little land for development."

Invercargill's industrial market is primarily focused on servicing the rural sector and other local trade sectors, along with engineering and marine manufacturing.

"The strong local farming sector means there is good demand for well-specified industrial premises, with national and South Island-based rural service businesses competing for space."

There is also limited transactional activity in the local industrial market, with quality assets tightly held. Properties that do come up for sale are generally met with strong demand from local investors, although yields tend to be higher than in the main centres, he added.

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Mobile Email

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A6544202

From: Margaret Ferguson
To: Caroline Hutchison
Cc: Christine McMillan
Subject: Tulloch Plan Change
Date: Thursday, 14 August 2025 12:00:45 PM

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Kia ora korua,

Thank you for spending the time the other day to go through the proposed Plan Change for Tulloch Limited and then sending through the subsequent information. As said, I will need to go back to rūnanga to seek their views, but in the meantime the following points are relevant in this instance.

The key issues for mana whenua relating to industrial activity are (from Te Tangi):

- ` Potential for direct and indirect impacts of industrial operations on flora and fauna, air, water, soil, mahinga kai species and places. `
- Emissions/discharge of contaminants to air and impacts on the mauri of the air, and on human health. `
- Stormwater management on industrial sites, potential for effects on soils and water. `
- Contaminated run off (stormwater) entering waterways.
- Visual amenity

See also page 141 of Te Tangi a Tauira for policy guidance on how to address the above issues as it relates to this specific plan change.

A few key points as it relates directly to this plan change:

- we note the site will accommodate light industrial activity which appears to be in keeping with the other activities surrounding the area.
- We note the proposed stormwater management infrastructure as described in the application being a settling area before discharge. It would be a preference that development was directed away from the north eastern corner of the site and not of an overly concentrated nature to reduce the overall volume of stormwater being disposed of into the adjacent creek.
- We note wastewater is to be disposed of to a reticulated system yet to be installed.
- We note landscaping offered to mitigate visual impact.

We look forward to further korero as part of the formal process under Schedule 1 of the RMA.

Ngā mihi
Margi

A6544202

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Kaikawe Mahere a Rohe

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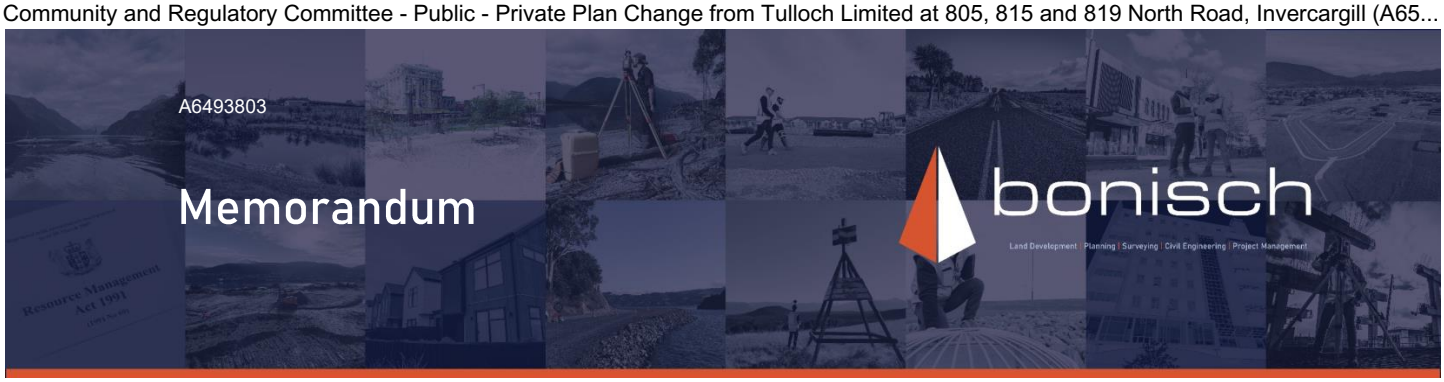

To:	Invercargill City Council
From:	Bonisch Consultants
Date:	7 July 2026
Subject:	Tulloch Plan Change (MIC202532)

Response to RFI Items 1 and 2 – Wastewater Capacity Assessment (MIC202532)

This memorandum responds to Items 1 and 2 of the Request for Further Information relating to wastewater servicing for the proposed private plan change at 805, 815 and 819 North Road.

1. Proposed Additional Wastewater Flows

The proposed development has been assessed on the basis of an additional wastewater discharge of 3 L/s to the Council wastewater network via a low-pressure rising main connection to manhole F20008, located downstream of the Moore Road Pump Station rising main. This design flow is a conservative assessment of the development potential, and it outlined further in Section 6.2 of the previously submitted Services Assessment.

It is noted that the above design wastewater flow does not allow for additional properties outside of the development to be connected to the main. We expect that Council will prevent the connection of additional properties under the provisions of the Local Government Act. Alternatively, if Council wish to strategically allow for additional connections to the proposed rising main, the assessment of these flows would be at Council's discretion and is outside of the plan change process.

2. Modelling Costs and Capacity Assessment

The applicant agreed to fund the additional wastewater modelling requested by Council to assess network capacity and identify any servicing constraints. This assessment has now been completed and is attached for Council's consideration.

The modelling confirms that the downstream wastewater network has sufficient capacity to accommodate the additional 3 L/s discharge associated with the proposed development. The assessment found that no manhole flooding is predicted under the assessed 5-year ARI peak flow condition, no downstream capacity constraints were identified, and the downstream network, including the Preston Street catchment, operates within acceptable limits under the proposed loading.

The assessment further concludes that the proposed connection arrangement is hydraulically acceptable from a downstream network capacity perspective. Accordingly, the modelling indicates that the existing wastewater network can accommodate the proposed development without the need for downstream network upgrades.

Please refer to the attached wastewater capacity assessment report for the detailed modelling methodology and results.

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Jeremy Rees
Principal Civil Engineer
BONISCH CONSULTANTS LIMITED

The expert in WATER ENVIRONMENTS

MEMO – technical note

To:	Ashwin Gogate
From:	Jan Filar
Project:	44802073-01
Date:	08 June 2026
Subject:	North Road Development Assessment

ICC has requested a further assessment of a proposed development at 805–815 North Road. A previous assessment identified insufficient capacity in the existing network; however, the developer now intends to proceed using an alternative connection point.

This assessment considers whether the existing wastewater network can accommodate an additional 3 L/s discharge associated with the proposed development at 805, 815, and 819 North Road. The proposed connection to the public wastewater system is to the gravity main manhole ID F20008, located downstream of the Moore Road Pump Station rising main tail node. The connection is via an individual DN63 low-pressure rising main. Because the proposed system will operate under low-pressure conditions, rainfall-derived inflow has not been included in the assessment.

The assessment considers the impact of the additional discharge on the downstream network, extending through to the Preston Street Pump Station. It is intended to confirm system performance under the 5-year ARI peak flow condition with the proposed loading and to identify any potential hydraulic risks or capacity constraints.

Key performance indicators assessed include pipe filling depth relative to pipe diameter and flow rates during peak wet weather flow (WWF) conditions. As specific peak flow estimates for the proposed development were not provided, the analysis was undertaken using statistical performance data derived from the current system.

The main conclusions from the analysis are as follows:

1. The downstream network has sufficient capacity to accommodate the proposed additional discharge of 3 L/s.
2. No manhole flooding is predicted under the 5-year ARI peak flow condition.
3. Pipe capacity is only reached in upstream sections of the system, with no surcharge propagation through the wider network.
4. The downstream network, including the Preston Street catchment, operates within acceptable limits under the assessed loading.
5. The adopted modelling approach of a constant 3 L/s discharge is appropriate for representing the low-pressure system and provides a conservative assessment of potential impacts.

Details of the modelling analysis are given below.

1 Assumptions and Limitations

The assessment is based on the representation of the proposed development as a constant 3 L/s discharge to node F20008 via a low-pressure rising main. Rainfall-derived inflow from the proposed development has been excluded, consistent with the system's expected low-pressure operation. The review focuses on downstream hydraulic capacity and performance through to the Preston Street Pump Station and does not include a detailed design review of the receiving manhole arrangement or connection details.

2 Modelling

As the proposed development will operate as a low-pressure system, rainfall-derived inflow is not expected to influence discharge. Accordingly, the development has been represented in the model as a **constant load of 3 L/s**, which provides a conservative and appropriate approximation of system behaviour.

The load point was connected to the manhole F20008, which is a tail node of the Moore pump station rising main.

The location of the load point and its connection to the network are shown in Figure 1.

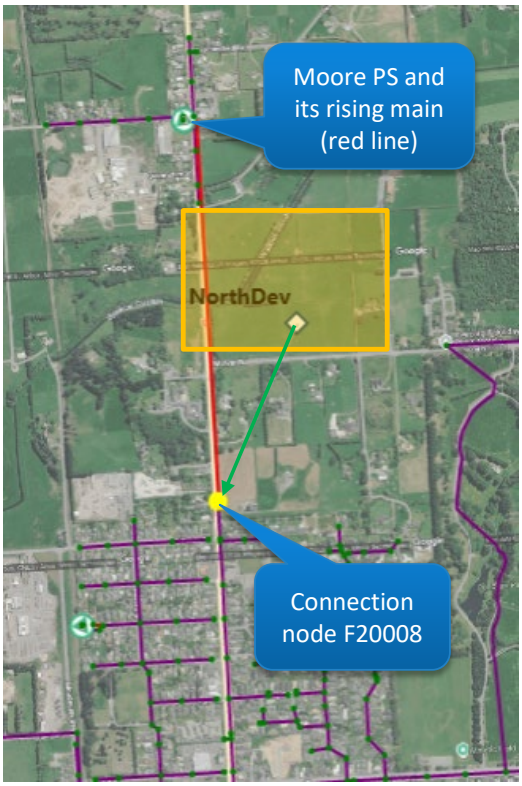

Figure 1 The North development connection

3 Performance Analysis

The simulation results indicate that the network can accommodate the 5-year ARI peak flow condition, with no manhole flooding predicted and no downstream capacity constraints identified. The system performance map (Figure 2) shows that pipe capacity is only reached in upstream sections, while downstream assets remain within acceptable operating limits. This is further confirmed by the longitudinal profile (Figure 3), which shows that surcharge conditions are localised and do not propagate through the wider network.

Overall, the results confirm that the downstream network, including the Preston Street catchment, has sufficient capacity to convey the additional flows without adverse hydraulic impacts.

This behaviour is consistent with observations from the wet weather flow (WWF) calibration, where similar patterns of pipe filling were recorded at a lower magnitude, providing confidence in both the model calibration and the reliability of the predicted system response under increased loading.

From a downstream network capacity perspective, the proposed rising main connection to the same receiving manhole as the existing Moore Road Pump Station rising main is hydraulically acceptable based on the modelling undertaken. Final acceptance should, however, remain subject to detailed design review of the receiving manhole arrangement and formal approval by ICC.

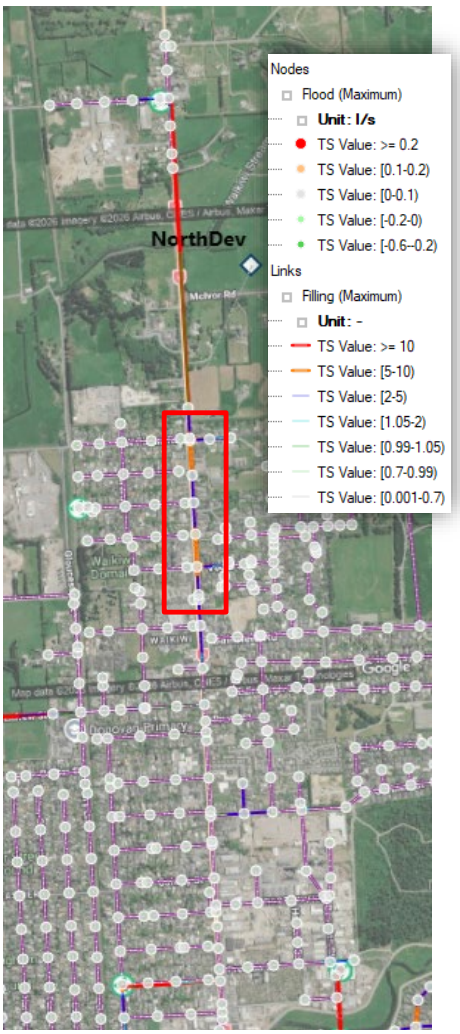

Figure 2 System performance map

Figure 3 Longitudinal profile from Moore PS to Preston PS with maximum water level

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Memorandum

DATE: 28 April 2026

TO: Mishka Banhidi, Planner

FROM: Mike Abramov, Senior Land Development Engineer

SUBJECT: MIC/2025/32 – Tulloch Limited Private Plan Change Request 805, 815 & 819 North Road, Invercargill - Engineering Assessment

Application

A private plan change is sought by Tulloch Limited to rezone approximately 9.7 hectares of land at 805, 815 and 819 North Road (SH6), Lorneville, Invercargill (the site) from Rural Zone to Industrial 1 (Light) Zone (IND1Z) under the Invercargill City District Plan.

The site currently contains a large, long-established wool store warehouse and associated industrial activity, with the balance of the land used for low-intensity pastoral purposes.

It is understood that the plan change is intended to enable light industrial development in general terms, rather than prescribe a specific subdivision outcome. Concept plans have indicated a development yield in the order of 12 – 15 lots; however, the applicant does not wish to commit to a minimum lot size of a maximum number of lots through the plan change process. The final number, size and configuration of lots will be determined through the subdivision consent process, informed by detailed engineering design and servicing constraints at that time.

Transport Assessment

Site Access/ Connectivity

The site fronts State Highway 6, a strategic regional route that carries approximately 12,200 vehicles per day with a posted speed limit of 80 km/h and connects Invercargill with key regional destinations. Future development of the site is estimated to generate in the order of 500 to 900 vehicle movements per day, depending on the scale and nature of activities established. Stantec have been engaged to complete an Integrated Transport Assessment (ITA) of the transport effects of rezoning the site. The ITA finds that this level of traffic can be accommodated safely and efficiently provided that access to the site is rationalised and upgraded in accordance with the proposed concept plans.

To address existing access safety concerns, particularly the presence of multiple uncontrolled crossings, the assessment recommends consolidation of access to a single, new, all-movement intersection on SH6. This intersection is proposed to be located approximately 115 metres north of the nearest opposing accesses, allowing for the provision of a right-turn bay on SH6 and reducing potential conflict with adjacent commercial driveways. This access arrangement has been developed

in consultation with Waka Kotahi NZ Transport Agency, and the application states that their safety concerns have been addressed through the proposed design.

It is however noted that in the correspondence with NZTA included in Appendix 14 of the application, NZTA are expecting the proposed plan change to be notified at which point they would review all of the documents lodged of the request and convey its position on the plan change proposed through a submission. It is also noted that the application proposes a rule that ensures the development complies with the North Road concept plan which includes a consolidated central main entry point to SH6, with restricted access movements to the southern access.

Based on the information that has been provided I am satisfied that appropriate access to the site can be achieved. However, it is recommended that NZTA is considered an affected party and allowed the opportunity to provide a submission on the proposed plan change and any recommended rules or requirements to be incorporated into the plan change.

Internal Roading
The application talks about a future road within the site that will be vested, however this will not be supported by Engineering Services and should remain in private ownership. There is no connection to Council's roading network.

Due to this it will be recommended that the ownership and maintenance responsibilities are resolved at the time of subdivision consent stage. To allow this it is recommended that the zoning framework is drafted indicating a preference for the internal roading to be privately owned however retaining flexibility to allow the roading assets to be vested in Council ownership if agreed by Council at the time of subdivision consent, without requiring a further plan change.

Services Assessment

Water Supply
While the Branxholme water supply trunk mains pass by the site these are not available for connection and there is not reticulated water supply available for connection in close vicinity to the site.

Due to this it is proposed that all water supply for the site will be via on-site collection methods until such time as a Council reticulated network is provided in the Lorneville area. Rainwater will be collected from roofs of buildings and held in storage tanks on each site. Static firefighting supply will be required for each lot – or a communal supply will be provided. Given the communal supply will not be connected to the Council's water supply network it is assumed all infrastructure associated with this will remain in private ownership.

This is considered a viable solution for the water supply at the site, noting that further details will need to confirmed at subdivision consent stage.

Stormwater
As part of the application, a stormwater management area located at the eastern end of the site with an area of approximately 5000 m2 and providing 1000 m3 of attenuation storage is proposed. It is proposed that all stormwater from the site will be directed to this area via internal reticulation. The stormwater will be detained in a shallow basin allowing sediments to settle before the stormwater is discharged to the adjoining stream (which discharge to the Waikiwi Stream) via a controlled outlet.

Based on the detail provided in the service report included as part of the plan change application, it is expected that a suitable solution to mitigate downstream implications can be implemented. However, it is noted that this will need to be worked through in more detail at the subdivision consent stage when there is more certainty regarding the proposed development.

Stormwater servicing is a key concern for the Council - given the site is located outside the Councils existing stormwater network and rating area, the Councils current preference is for the any required stormwater infrastructure to be privately owned and maintained. This may also create complications if the internal roading network is vested into Council ownership.

As with the roading requirements it is recommended that the ownership and maintenance responsibilities for stormwater infrastructure are resolved at the time of subdivision consent stage. To allow this it is recommended that the zoning framework is drafted indicating a preference for the stormwater infrastructure to be privately owned however retaining flexibility to allow the assets to be vested in Council ownership if agreed by Council at the time of subdivision consent, without requiring further plan change.

It is also noted that depending on the stormwater design and ownership structure either a variation to the Council's Stormwater discharge consent or a new independent discharge consent will likely need to be obtained from Environment Southland. Again, it is expected that this most appropriate time to obtain these consents is during the subdivision consent process once further detailed of the proposed development at the site are better understood.

Wastewater
There is currently no reticulated wastewater infrastructure in close vicinity to the site. Due to this a new low-pressure rising main extending from the site south on North Road connecting into the ICC wastewater network is proposed. It is proposed that all new activities establishing on the site will have their own onsite pumps that will connect to this main via an internal reticulation network.

There is limited detail provided in the application regarding the proposed ownership of the wastewater infrastructure i.e. the proposed new low-pressure rising main extending from the site south on North Road as well as the internal reticulation network. As with the other infrastructure associated with the development the Council's preferred position is that the wastewater infrastructure is privately owned.

Some concerns regarding the proposed wastewater solution for the development has been raised as follows:

- The site is located outside the Council's current wastewater rating boundary – if the site was going to be connected to the Council's system, provisions to allow the site to be rated for wastewater services (i.e., modifying the existing or creating a new wastewater rating boundary) would need to be allowed for.
- It is unclear if a privately owned wastewater main extending along the State Highway would be allowed by NZTA and approval for this may need to be sought.
- If the wastewater main along the State Highway was going to be owned by the Council the neighbouring properties may also have the right to connect to this main, and therefore this new main and the downstream network may need to have capacity to accommodate these.
- A connection to the Council's Moore Road pump station is not supported by Engineering Services due to capacity constraints in the pump station and rising main. While the existing downstream network (downstream of manhole F20008) may have sufficient capacity, modelling would need to be completed to confirm this.
- Please note that this would require a council decision as staff do not hold this delegation.

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Based on the above, there appear to be several challenges associated with allowing a connection to the Council's wastewater network. However, if a connection is not considered acceptable, there is potential for on-site wastewater treatment, noting that this may constrain the number of allotments and the nature of development achievable on the site. On this basis, it is considered appropriate that wastewater servicing arrangements be confirmed at the subdivision consent stage.

Summary and Recommendations

Based on the information that has been provided it is believed that providing appropriate access and servicing if the site was zoned Industrial 1 (Light) Zone (IND1Z) under the Invercargill City District Plan is viable. It is however noted that a significant amount of detail regarding access and service provisions will need to be worked through in consultation with the Council as the subdivision consent stage.

It is recommended that NZTA is considered an affected party and allowed the opportunity to provide a submission on the proposed plan change and any recommend rules or requirements to be incorporated into the plan change.

Additionally, it is recommended that the zoning framework for the site it drafted to:

- To include a rule that ensures the development complies with the North Road concept plan which includes a consolidated central main entry point to SH6, with restricted access movements for the proposed southern access.
- Indicates that the Council's preferred position is for the roading, stormwater, wastewater and water supply assets required for the development to be privately owned and maintained, however provides flexibility for the assets to be vested in Council ownership if agreed by Council at the time of subdivision consent, without requiring further plan change.

MIKE ABRAMOV
SENIOR LAND DEVELOPMENT ENGINEER
ENGINEERING SERVICES

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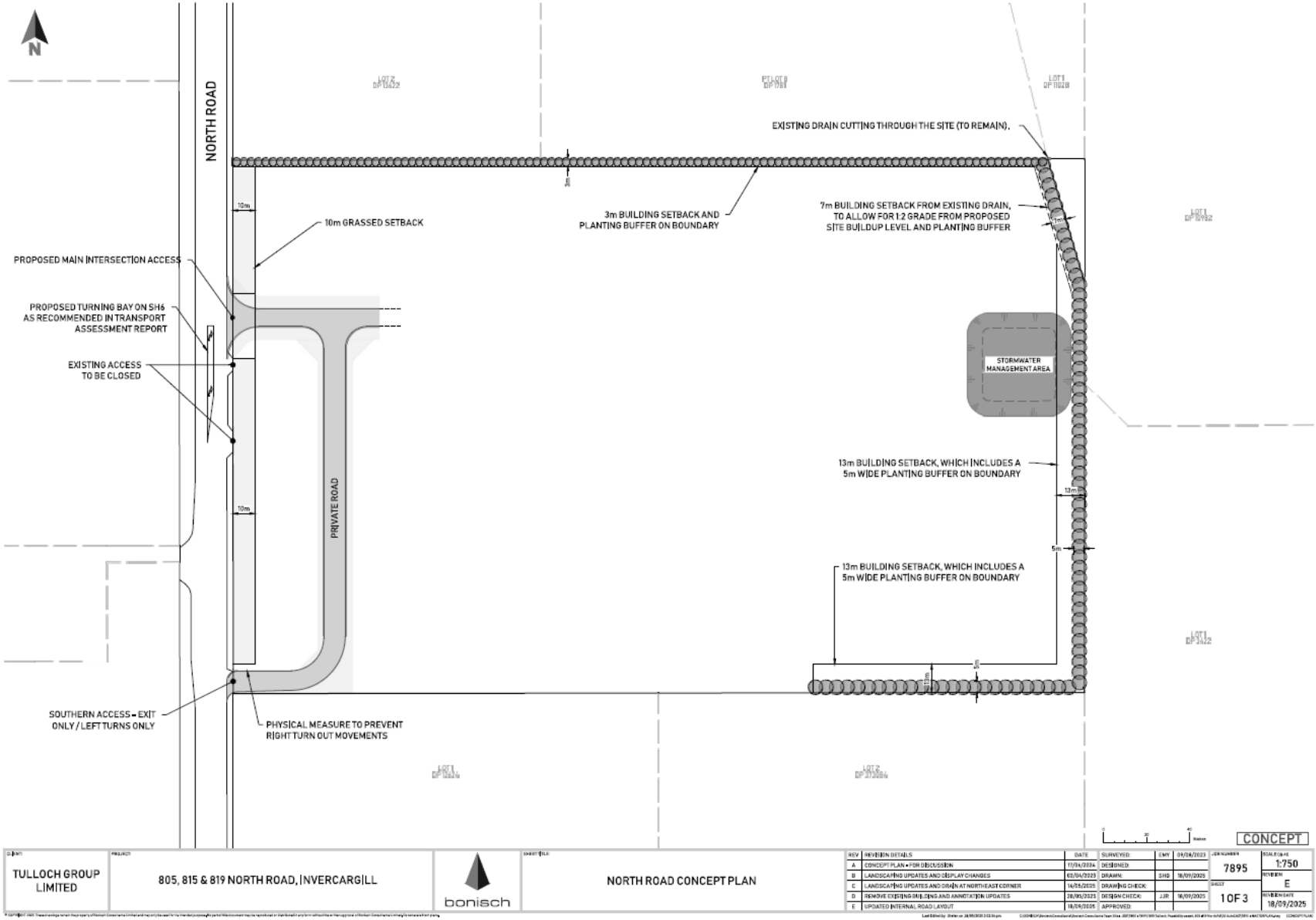
N
NORTH ROAD
EXISTING DRAIN CUTTING THROUGH THE SITE (TO REMAIN).
10m GRASSED SETBACK
3m BUILDING SETBACK AND PLANTING BUFFER ON BOUNDARY
7m BUILDING SETBACK FROM EXISTING DRAIN, TO ALLOW FOR 1:2 GRADE FROM PROPOSED SITE BUILDUP LEVEL AND PLANTING BUFFER
PROPOSED MAIN INTERSECTION ACCESS
PROPOSED TURNING BAY ON SH6 AS RECOMMENDED IN TRANSPORT ASSESSMENT REPORT
EXISTING ACCESS TO BE CLOSED
STORMWATER MANAGEMENT AREA
13m BUILDING SETBACK, WHICH INCLUDES A 5m WIDE PLANTING BUFFER ON BOUNDARY
PRIVATE ROAD
SOUTHERN ACCESS - EXIT ONLY / LEFT TURNS ONLY
PHYSICAL MEASURE TO PREVENT RIGHT TURN OUT MOVEMENTS
CONCEPT
TULLOCH GROUP LIMITED
805, 815 & 819 NORTH ROAD, INVERCARGILL
bonisch
NORTH ROAD CONCEPT PLAN
REVISION DETAILS
A CONCEPT PLAN - FOR DISCUSSION 17/04/2024
B LANDSCAPING UPDATES AND DISPLAY CHANGES 03/04/2025
C LANDSCAPING UPDATES AND DRAIN AT NORTHEAST CORNER 14/05/2025
D REMOVE EXISTING BUILDING AND ANNOTATION UPDATES 28/05/2025
E UPDATED INTERNAL ROAD LAYOUT 18/09/2025
SURVEYED
DESIGNED
DRAWN SHD 18/09/2025
DESIGN CHECK JJR 18/09/2025
APPROVED
JOB NUMBER 7895
SHEET 10F 3
SCALE (@ A3) 1:750
REVISION E
REVISION DATE 18/09/2025

PUBLIC REGULATORY SERVICES, SOCIAL HOUSING, PUBLIC TOILETS, PARKS AND RESERVES, CEMETERIES AND CREMATORIUM AND FORESTRY – 2027-2037 LTP ACTIVITY PLANNING DIRECTION

To:	Community and Regulatory Committee
Meeting Date:	Tuesday 11 August 2026
From:	Rhiannon Suter, Manager, Strategy, Policy and Engagement
Approved:	Rex Capil - Group Manager - Community Spaces and Places Jonathan Shaw – Group Manager – Consenting and Environment
Approved Date:	Thursday 30 July 2026
Open Agenda:	Yes

Purpose and Summary

This report seeks direction on key operational issues and priorities for Council Activities for the 2027-2037 Long-term Plan.

Recommendations

That the Community and Regulatory Committee:

1. Receives the report "Public Regulatory Services, Social Housing, Public Toilets, Parks and Reserves, Cemeteries and Crematorium, and Forestry – 2027-2037 LTP Activity Planning Direction".

2. Note the background appended information on planning for the Public Regulatory Services, Social Housing, Public Toilets, Parks and Reserves, Cemeteries and Crematorium, and Forestry Activities, including proposed changes to direct operational expenditure.

3. Note workshop with the Community and Regulatory Committee planned for September 2026, focusing on animal control.

4. Note the update on Social Housing review of levels of service, rental fee structure, partnership with external organisation and potential locations for the next redevelopment or rebuild will be reported in November 2026, as part of the Activity Management Plan

5. **Agree/Disagree** with the development of a Spatial Assessment of public toilet provisions to inform the Public Toilets Activity, to be funded from existing operational budget in 2026/2027.

6. Note the update report on the review of the 2020 Invercargill City Council Tree Plan will be presented in September 2026.

7. Note ongoing operational funding will be required for remedial maintenance for Stead Street Wharf and further information will be brought to Council in November 2026.

8. Note no direct operational expenditure changes proposed to the Cemeteries and Crematorium Activity budget.

9. Note no direct operational expenditure changes proposed to the Forestry Activity budget.

Recommend to Council:

10. Consideration of the following items as part of the activity planning budgeting process **(noting preferred options and deleting any not supported by the Committee):**
    a. Public Toilets Activity – maintenance and cleaning of public toilets sites – additional $55,000 operational expenditure per annum.

    b. Public Toilets Activity - The progressive replacement of environmental public toilets, to be funded from existing capital renewals budget.

    c. Parks and Reserves Activity – new operational expenditure required for Elizabeth Park as a result of capital development – additional $5000 per year for 2029/2030, 2030/2031, 2031/2032 and 2032/2033 and $6000 per year from 2033/2034 onwards.

    d. Parks and Reserves Activity – Maintenance and beautification of roundabouts:
        i. **Option 1** - Colour Management of eight sites within high priority areas within Invercargill Road network, additional $102,700 operational expenditure per annum
        or
        ii. **Option 2** - Colour Management of 3 sites within high priority areas within Invercargill Road network, additional $66,000 operational expenditure per annum
        or
        iii. **Option 3** – continue with status quo, no change to operational expenditure.

    e. Parks and Reserves Activity – Bluff Boat Ramp car park maintenance and waste management
        i. **Option 1** – User-pays model, additional $63,000 operational expenditure per annum to be funded through user charges,
        or
        ii. **Option 2** – Rates-funded model, additional $63,000 operational expenditure per annum to be funded through rates.
        or
        iii. **Option 3** – no additional budget, noting maintenance will be ad hoc, increasing the risk accelerated deterioration of asset.

f. Parks and Reserves Activity – Water usage
   i. **Option 1** - Install a pump and power connection, one-off investment of $50,000 to enable the recirculation of water for Queens Park water features, noting water meter charges will still apply
   or
   ii. **Option 2** – Water meter charges for Queens Park water features, additional $102,667 operational expenditure per annum
   or
   iii. **Option 3** – turn off all water features and fountains at Queens Park.

Background

In July 2026, Council has completed the review of the capital programme and is now progressing through the activity planning phase.

During August and September, direct operational cost changes will be reviewed. This paper presents operational items for consideration for the development of the Public Regulatory Services, Social Housing, Public Toilets, Parks and Reserves, Cemeteries and Crematorium, and Forestry Activity Management Plans.

Issues and Options

Options

Public Regulatory Services
The Public Regulatory Services activity is responsible for the delivery of key legislative requirements relating to building, planning, food, alcohol, environmental health, parking compliance, animal control, environmental compliance and litter.

Animal control
One of the ongoing challenges for Animal Control is ensuring service delivery continues to meet community expectations while operating within legislative settings that were developed over 30 years ago and may not fully reflect current community priorities.

Council manages a wide range of public concerns and enquiries relating to dogs. A key focus is understanding the true cost of service delivery and ensuring resources are aligned with community expectations regarding the level of service provided.

A workshop with Elected Members is planned for September 2026 (following the Community and Regulatory Committee meeting) to discuss issues and resourcing of the Animal Services activity.

Social Housing for Elderly Persons
Council held a workshop on the future of Elderly Persons Housing in May 2026. Following this, in June 2026 Council agreed that, as part of the 2027-2037 Long-term Plan, a review of the activity would be undertaken. This review will consider the current level of service and rental fee structure to ensure accommodation remains affordable for tenants, aligns appropriately with accommodation supplement settings, and maximises revenue to support the sustainability of the activity. Council will also consider opportunities to enter into agreements with external organisations to provide tenancy and maintenance services, manage the

activity, or partner in future redevelopment projects. In addition, the review will assess potential locations for the next redevelopment or rebuild.

The current capital renewal funding and associated depreciation is funded solely by increase the net-debt situation for council, on a portfolio of assets which is valued at over $90 million.

An update on these initiatives will be reported to Council in November 2026 through the Activity Management Plan.

Public Toilets
In the 2027-2037 Long-term Plan, Public Toilets will become a stand-alone activity – it is currently reported on as part of the Property Services Activity.

Wachner Place facility will remain open until 30 June 2027.

Maintenance budget
Funding requirements have been reduced, in line with Council decision to reallocate capital for both Greenhills and Catlins Gateway toilets.

Additional $55,000 operational expenditure per annum is required for maintenance and cleaning services (Annual Plan 2026/27 - $672,281 excluding depreciation)

Replacement of Environmental Toilets
Environmental toilets are generally used in remote areas, no not require electricity and have underground holding tanks. These will be progressively replaced, with priority given to locations experiencing high levels of vandalism, particularly within Sandy Point Domain.

Upgrading these toilets will also improve security, while reducing long term reduce operational and maintenance costs.

This will be completed within existing capital renewals budget.

Spatial Awareness Planning
A spatial assessment of public toilet provision across the district will be undertaken to identify areas of over-supply, service gaps, and opportunities for network optimisation. This work is scheduled to occur in 2027.

The review will include publicly accessible toilet facilities provided by organisations outside Council to ensure a comprehensive understanding of service coverage and accessibility. Within the Activity Management Plan, further detail will be included in the Continuous Improvement section to highlight this upcoming spatial planning work, along with the potential outcomes resulting from the findings of this analysis,

This approach will support evidence-based planning, help align investment with community needs, and ensure Council continues to meet its legislative obligations in relation to the provision of public amenities and public health outcomes.

The planning work will be funded from existing operational budget.

Parks and Reserves

Canopy cover
An update report on the review of the 2020 Tree Plan will be presented in September 2026. The report will also consider the 3-30-300 rule (three trees visible from every home, 30% urban tree canopy cover, and access to a park within 300 metres) and explore its adoption as an aspirational goal for the city.

Implementing staged improvements to Elizabeth Park
New operational budget is required for Elizabeth Park as a result of the three-stage capital expenditure process identified within the landscape plan (improving access and the primary play area, improving drainage issues and creating an events/community hub, and lastly broader connections and viewing platform).

Operational expenditure will require $5000 per year for 2029/2030, 2030/2031, 2031/2032 and 2032/2033 and $6000 per year from 2033/2034 onwards.

Stead Street Wharf
On 27 July, Council confirmed that the project would be positioned in Years 11 to 30 of the capital programme.

However, ongoing operational expenditure will be required for remedial maintenance. Further information will be brought to Council in November 2026.

Maintenance and beautification of roundabouts
In March 2026, Council requested options for higher levels of service at city entry points and central city plots. These options will refocus maintenance activities away from low native shrubs and small grass areas toward enhanced colour management and seasonal displays. The options below represent direct operational costs and do not include additional staff costs as yet. The delivery of this work will require additional resourcing related to the extra staff costs required to undertake this additional work.

Option 1: additional direct operational expenditure of $102,700 per year
Colour Management of eight sites within high priority areas within Invercargill Road network:

- Elles Road Roundabout,
- Lorneville Roundabout,
- Three sites along State Highway 1 (Tay Street),
- Two sites along State Highway 6 (Dee Street)
- One site along State Highway 1 (Clyde Street south – towards Bluff)

Option 2: additional direct operational expenditure of $66,000 per year
Colour Management of 3 sites within high priority areas within Invercargill Road network:

- Elles Road Roundabout,
- Lorneville Roundabout,
- One site along State Highway 1 (Tay Street)

Option 3: no change – continue with status quo.

Bluff Boat Ramp Car Park
The Bluff Boat Ramp is an Invercargill City Council asset that provides important public access to the water. Significant upgrades have recently been completed. The facility now requires an

ongoing operational budget to support maintenance and increasing waste management costs.

Option 1: User-pays model - $63,000 per year maintenance budget to be funded through user charges.

Option 2: Rates-funded model - New $63,000 per year maintenance budget, reduces reliance on user fees and ensure consistent upkeep.

Option 3: No additional budget – continue with ad hoc maintenance, increasing the risk of accelerated deterioration of asset.

Water meter charges
Queens Park had a water meter installed on its potable water feed in 2025, alongside backflow preventers to protect Council's water supply from the risk of cross-contamination.

Water meters are usually installed alongside backflow protection devices, due to their location at the point of supply at a commercial premise (for example, on a property boundary, where water reticulation enters the site). The monetary value refers to the water consumption typically used at a site, which is charged per m^3 unit. The water meter at Queens Park feeds the majority of this green space, not just the water play and fountains.

Option 1: Install a pump and power connection to enable the recirculation of water for Queens Park water features, eliminating reliance on the town water supply. This requires a one-off capital investment of $50,000 for a pump alongside further due diligence water use checks of the site. Water meter charges will still apply at a reduced volume.

Option 2: New operational expenditure of $102,667 per year for water meter charges for Queens Park water features and green space.

Option 3: Turn off all water features and fountains at Queens Park.

Cemeteries and Crematorium
The Cemeteries and Crematorium Activity was previously incorporated within the Parks and Reserves Activity and is now reported as a separate activity to better reflect its specific services, costs, and future planning requirements.

Long-term priorities for this activity include reviewing the Cemeteries and Crematorium Bylaw and operational guidelines, and developing a clear strategic direction for the city's cemeteries and crematorium services. This work will also consider future renewal requirements and cemetery capacity to meet long-term burial needs, as well as explore opportunities to expand interment choices, including the provision of alternative options beyond traditional burial and cremation, to better meet changing community preferences and expectations.

At the March 2026 Parks Strategic and Capital Workshop, cemetery land provision was discussed, including future provision of land and the need to address technical constraints associated with the land, noting that options for expansion are limited.

Fees and charges
Fees and charges for cremation and burial services across the district have recently been reviewed and adjusted to better reflect the actual cost of service delivery. The activity is funded through fees and charges. The overall funding model for the activity will be reviewed at a separate workshop in August 2026.

There are no changes proposed to direct operational budgets.

Forestry
The Forestry Activity was previously incorporated within the Parks and Reserves Activity and is now reported as a separate activity to better reflect its specific services, costs, and future planning requirements.

There are no changes proposed to increase direct operational budgets.

Community Views

Consultation on the 2027-2037 Long-term Plan and Activity Management Plans will take place in March/April 2027.

Implications and Risks

Strategic Consistency
The items outlined in this report have been assessed in line with the Council's strategic decision-making framework which has been set for the 2027 – 2037 Long-term Plan and are aligned with Council's community outcomes.

Financial Implications
This stage of the process addresses proposed changes to direct operational expenditure. Other costs and revenue will be considered by Council, along with further information on the budget position following the activity planning phase.

Legal Implications
There are no legal implications associated with this report.

Climate Change
The Forestry Activity provides significant opportunities to contribute to climate change mitigation through carbon sequestration and participation in the New Zealand Emissions Trading Scheme (NZ ETS). Future work includes transitioning areas of plantation forestry to native vegetation, establishing new native habitats on eligible post-1989 forest land, and exploring the registration of existing exotic forests in the NZ ETS permanent forest category. The Activity will also develop a carbon trading strategy to maximise carbon revenue, support future sequestration opportunities, and manage pre-1990 deforestation obligations, while aligning forestry management with the long-term aspirations of the Sandy Point Reserve Master Plan.

Risk
There are a range of risks to be managed within the process of activity planning. The primary risk to the process is the timely availability and completeness of information to inform decision

making. Where information is not yet available this has been noted and where relevant uncertainty will be noted within the assumptions for the Long-term plan.

Next Steps

Direct operational cost changes will be confirmed by Council during August and September 2026. Financial assumptions, other activity costs and funding sources (including rates, user charges, subsidies etc.) will be reviewed between August and October, with Council considering the LTP budgets in November 2026, ahead of audit and consultation.

Attachments

1. Public Regulatory Services Activity Planning Slides A6436668
2. Social Housing Activity Planning Slides A6436660
3. Public Toilets Activity Planning Slides A6472181
4. Parks and Reserves Activity Planning Slides A6436662
5. Cemeteries and Crematorium Activity Planning Slides A6472179
6. Forestry Activity Planning Slides A6476695

A6436668

Public Regulatory Services

LTP Council Workshop

21 July 2026

Invercargill CITY COUNCIL

Key issues for the Activity

The regulatory services activity is responsible for the delivery of key legislative requirements relating to building, planning, food, alcohol, environmental health, parking compliance, animal control, environmental compliance and litter.

Across the activity the key issues are:

- Legislative reforms
- The Future of BCAs (building only)
- Resourcing for technical roles
- Community views and expectations
- Levels of service determined by legislation

Building and Planning

- Legislative reform across building and planning due later this year
- Recruiting and retaining technical staff
- Contractor environment to ensure capacity and capability
- Status quo not sustainable to deliver building and planning services, this must be considered alongside legislative change, we need to be agile to move with the change and position ourselves to provide the required services to the community, in an environment where internal resourcing of roles is a risk
- The activities are funded via fees and charges, fees must be fit for purpose and recover the cost of the activity, and provide visibility of actual costs and billable hours.
- KPIs are based on legislative requirements
- Te Roopu Taiao – changes to funding or otherwise currently under discussion

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CITY COUNCIL

Environmental Services

- Community expectations are a significant factor when considering animal control and parking compliance activities
- Environmental Health provides services under contract to other local authorities
- Appearance Industry Bylaw
- Potential for legislative reform in the food and alcohol activities
- Health and Safety considerations - Man down radios for parking and ACO's
- Funding via fees and charges, alcohol fees and infringement fees set by legislation, all other fees set up council, with a focus on reasonable recovery for the provision of the activity
- Parking Compliance – supporting the vision for ICC's CBD and suburban centres, linked to Transit Strategy in the Roading and Public Transport Workshop, how we implement and utilise LPR technology to support our compliance strategy
- Animal Control – community expectations and the cost of delivery, resourcing to follow up unregistered dogs
- Animal Care Facility asset considerations

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Property Records

- Demand remains steady across LIMS and property file requests, impacted by the economic climate and house sales, demand for property files requests reduced by 20%-30% with the introduction of the property file request fee
- Introduction of greater natural hazard reporting in LIMs
- Property records continue to work in a hybrid environment across digital and paper records, with a continuing focus on reducing paper records
- Funding via fees and charges - introduction of property file fees in 2025/2026
- KPIs are based on legislative requirements (10 day requirement for LIMs)

Measuring performance

Proposed Level of Service	KPI	Targets Year 1-3	Targets Year 4 – 10
Council is responsive to the community to ensure regulatory processes are effectively managed to support appropriate development and economic activity	Building consents are granted within statutory timeframe	100% of building consents are granted within statutory timeframe	100% of building consents are granted within statutory timeframe
	Code Compliance Certificates are issued within statutory timeframe	100% of Code Compliance Certificates are issued within statutory timeframe	100% of Code Compliance Certificates are issued within statutory timeframe
	Non-notified resource consents not requiring a hearing are granted within statutory timeframe	100% of non-notified resource consents are granted within statutory timeframe	100% of non-notified resource consents are granted within statutory timeframe
	Land Information Memorandum (LIM) Reports are issued within 10 working days	100% of LIM Reports are issued within statutory timeframe	100% of LIM Reports are issued within statutory timeframe
	Average minimum wait time for a standard building inspection	80% within 3 working days (legislative requirement)	80% within 3 working days (legislative requirement)
	Food premises are registered within 20 working days	100% of new food premises applications are registered with 20 working days	100% of new food premises applications are registered with 20 working days
Public regulatory processes are effectively managed to support appropriate development	Percentage of residents satisfied with service received from the Building, Planning and Property Records Department	≥50%	≥50%
	Percentage of residents satisfied with the building and/or resource consent process	≥50%	≥50%

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SUPPLEMENTARY INFORMATION

(content beyond this point is for background purposes only and will not be presented)

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CITY COUNCIL

About the Activity

- **Building and Planning**
  - Building and Resource consents
  - Compliance, Monitoring & Enforcement
  - Planning Policy

- **Environmental Services**
  - Animal Control
  - Compliance – Environmental and Parking
  - Environmental Health

- **Property Records**
  - Land Information Memorandums (LIM's)
  - Property File requests

The Public Regulatory Services Activity is responsible for the delivery of key legislative requirements relating to building, planning, food, alcohol, environmental health, parking compliance, animal control, environmental health and litter.

Community outcomes

Community Outcomes	How the Activity Contributes
Nobody is Left Behind – Our youth, older people, different neighbourhoods and communities basic needs are met through cost effective investment, and they feel valued and proud to live here	The Public Regulatory Services Activity promotes the support of neighbourhoods and communities through a legislative lens ensuring the legislative requirements for building, resource planning, environmental health, animals and environmental compliance are met.
A vibrant, safe city which meets our people's diverse cultural needs.	The Public Regulatory Services Activity supports a vibrant, safe city centre ensuring compliance with relevant legislation and via processes such as monitoring, audit and inspection and education to ensure safe places and spaces for all.
A future focused economy delivered through innovation and partnership and supported by appropriate infrastructure	The Public Regulatory Services Activity promotes development that provides for effective and sustained economic growth.
A healthy, resilient environment supporting a healthy, resilient community.	The Public Regulatory Services Activity facilitates resource planning processes and implementing resource management legislation that allows for and enables appropriate development to meet the needs of the community.

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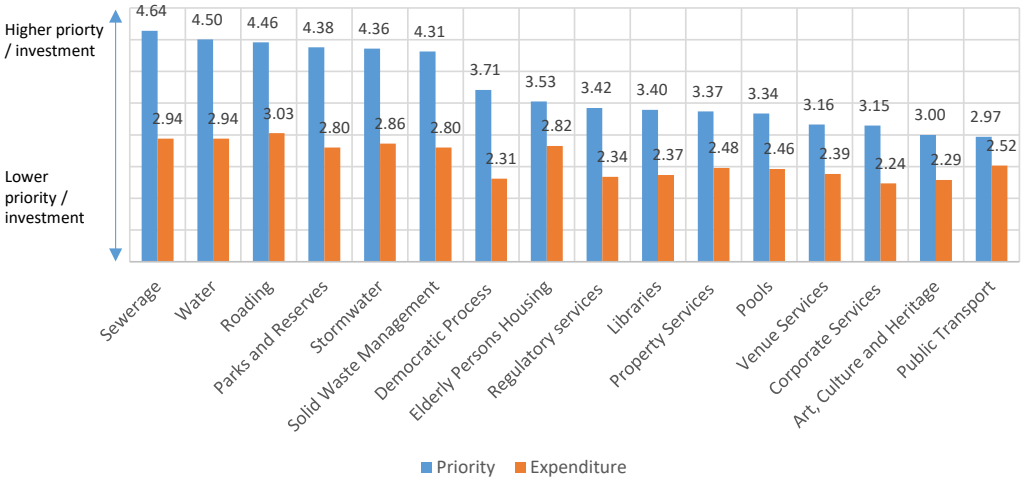
Capital Programme

Item	Cost	Year	
Dog Pound building	200K	2033/2034	Renewals

Community feedback

Residents Survey – Levels of Service feedback (2024/2025) - Residents rated the importance of various services and indicate their preferred levels of investment.

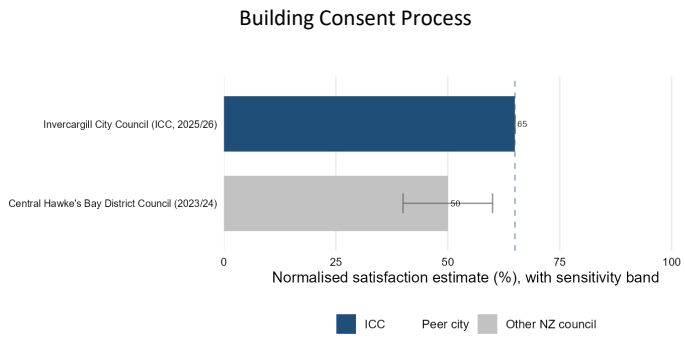
Priority – 1 (provision of service is not very important to 5 (provisions of service is very important)
Expenditure - 5 options - (1) Pay less and accept lower levels of service; (2) Pay the same and accept that service levels will be slightly lower; (3) Pay a little more to maintain the level of service, (4) Pay more for a higher level of service, (5) Council no longer deliver the service at all

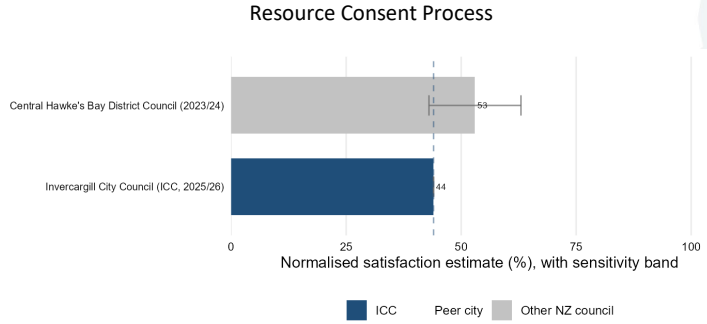


Feedback: maintain current levels of service, reduce costs (waste in current bureaucracy), address animal control issues, parking costs

Community feedback

Satisfaction Benchmarking Report (May 2026)
800 satisfaction scores from 77 councils in New Zealand (from published sources ie. annual reports or surveys). Comparisons with peer group Councils (similar to ICC) (where available) and other councils.





Community feedback

ICC Residents Satisfaction Survey (2025/2026)

Building, Planning and/or Property Records service satisfaction - 65%
Satisfaction with building and/or resource consent process – 55%

Feedback
Positives: efficient consent process, friendly and helpful staff

Concerns: inconsistent inspections or information, slow consent processing, poor communication during consent process, unhelpful or rigid consent staff, inadequate follow-through or resolution.

A6436660

Social Housing For Elderly Persons

LTP Council Workshop

21 July 2026

Invercargill CITY COUNCIL

Levels of Service - Overview

Provides affordable housing for the elderly on low fixed incomes who meet the Council's entry criteria.

- 48 people on the waiting list as at 15 July 2026
- 21 complexes providing 222 units in Invercargill and Bluff
- 10 new units built over the past three years to replace four and increase stock by six - $4.7M
- Renewals budget remaining in existing LTP of $5.5M (derived from debt funding)
- LOS met majority of the time (primarily responding to maintenance call outs)
- Limited wrap around services provided to tenants – provided advice to tenants on availability of social services
- Majority of units are in fair condition but are approaching the age where maintenance costs are rising considerably and units do not meet modern perceptions

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CITY COUNCIL

Key issues for the Activity

- Continuation of replacement of aging housing stock
- Funding the activity
- Rent review
- Forming a Community Housing Provider (CHP) or Finding an Appropriate Partner

Review of current service provision

- Councillors have requested Staff to undertake the following:
  - Review appropriate fee levels to ensure availability of accommodation supplement level and affordability while maximising revenue
  - Investigate external organisation to provide tenancy and maintenance services on behalf of Council
  - Investigate the implications of one external organisation operating the activity as a whole (ie disposal of assets, whole or part)
  - Investigate opportunities for Council to engage with an external organisation to partner in redevelopment projects only
- Information on the above including financial implications will be included in the draft Activity Management Plan to be presented to Council in November for further consideration.

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CITY COUNCIL

Continuation of Renewal Programme

- Continue review of possible site options for the next rebuild / development, including prioritising sites such as:
  - Janet Street - 3,036m2 zoned residential 1A which allows for higher intensification. Current units are 1950s weatherboards with no accessibility ramps.
  - Murphy Street - 1.49 hectares, zoned residential 1. Some but not all of the 42 units are accessible. Careful planning of demolition and construction would be required as tenants would need to remain on site.
  - Conway Crescent - undeveloped park land 6996m2, zoned residential 1. Large site with restricted vehicle access.
  - Renewal programme reduced to fit within current Capex budget funded from debt or further options considered for funding is required

Invercargill CITY COUNCIL

Measuring performance

Proposed Level of Service	KPI	Targets Year 1-3	Targets Year 4 – 10
Social housing is well utilised	Units are occupied at least 95% of the time	≥95%	≥95%
Council is responsive to the community	Percentage of urgent service requests where initial response and remedial action are in place within 24 hours	≥95%	≥95%
	Percentage of non-urgent service requests where initial response and remedial action are in place within 5 working days	≥95%	≥95%

SUPPLEMENTARY INFORMATION

(content beyond this point is for background purposes only and will not be presented)

About the Activity

Complex Name	Address	Number of Units	Built Year	Asset condition (as at November 2022)
Aiden Place	132 Princes Street	8	1982	2.6
Anzac Court	9 Tone Street	5	1991	2.0
Aurora Place	15-29 Janet Street	8	1953	2.4
Cairnsmore Flats	160 Leet Street	12	1981	2.6
Clarendon Court	60 Stirrat Street	14 (existing)	1988	2.7
		4 (new)	2024	NEW
Elston Lea Village	50 Murphy Street	42	1958	2.8
Jim Brass Place	154 Elles Road	4	1992	2.0
Kelly Court	210 Crinan Street	7	1971	2.2
Kinross Flats	30 Henderson Street	6	1982	2.1
Korimako Court	12 Waverley Street	10	1979	2.5
Laurel Court	2 Maltby Street	8	1978	2.6
Miller Street	17-29 Miller Street	6 (new)	2026	NEW
Nevill Place	26 Selwyn Street	16	1977	2.7
Niven Place	104 Earn Street	7	1977	2.5
Otarewa Village	90 Conon Street	22	1990	2.2
Pateke Place	429 Yarrow Street	8	1975	2.6
Powell Court	295 Pomona Street	6	1988	2.6
Stirling Flats	25 Gregory Street	6	1985	2.3
Strathpine Flats	246 Ettrick Street	7	1971	2.1
Thorndale	3 Lithgow Street	6	1983	2.2
Willow Park	64 Adamson Crescent	10	1987	2.0
TOTAL UNITS		**222**		

Activity provides affordable housing for the elderly, in particular those on low fixed incomes that meet the Council's entry criteria.

Criteria includes

- Age - persons over 65 years
- Asset value – limited to under $50,000
- Income – restricted to current gross NZ Superannuation rate plus 30%

The Council owns 21 complexes providing 222 units in Invercargill and Bluff.

Financials – EOY 2025/2026 –

Revenue - $1.908M

Direct Opex - $1.111M

Indirect Opex - $2.023M

Deficit of $1.226M

Indirect Opex includes depreciation and internal overheads

Invercargill CITY COUNCIL

About the Activity

Rental arrangements align with the Residential Tenancies Act 1986 including the Healthy Homes Standards in regards to heating and ventilation. Council chattels included in the tenancy are oven, washing machine, heat pump, soft furnishings and flooring. Tenants are responsible for providing their own fridge/freezer and household furniture. Pets have always been allowed at Council's housing complexes but these were restricted to cat, bird or fish. Dogs are now being trialled in units where complexes have space for a dog to be housed and have sufficient outdoor space without interfering with the quiet enjoyment of other tenants.

Council rentals are set each year through the Fees and Charges process with maximum rentals (dependant on type of tenancy) ranging from 27% to 34.5% of the gross weekly income rate from NZ Superannuation for a person living alone.

Council regularly undertakes a review of rental against market rates. The most recent market assessment was undertaken in January 2025 and current rentals range from 77%-82% of that market assessment.

Invercargill
CITY COUNCIL

Community outcomes

Community Outcomes	How the Activity Contributes
Nobody is Left Behind – Our youth, older people, different neighbourhoods and communities basic needs are met through cost effective investment, and they feel valued and proud to live here	Council endorses social outcomes that provide emphasis around the safety and care of all elderly residents, where residents feel safe within their own homes
A healthy, resilient environment supporting a healthy, resilient community	Elderly Housing units comply with all legislation including heatlty homes, which promotes sustainable heating benefits to residents
A future focused economy delivered through innovation and partnership and supported by appropriate infrastructure	Council places an emphasis on providing financially economical elderly housing, to reduce financial burden to residents, by double glazing most units, which contributes towards financial savings

Current Capex and Opex work programme

As at 16 June 2026 $4.7 million has been spent (the 10 new units at Stirrat and Miller Streets). This leaves $5.3 million available for future developments.

	New Builds		Existing build renewals	
	LTP 2024-34 budget	Actuals	LTP 2024-34 budget *^	Actuals *
	$ millions	$ millions	$ millions	$ millions
2022	0.0	0.0	0.8	0.0
2023	0.3	0.2	0.5	0.2
2024	1.4	1.6	0.3	0.4
2025	2.1	0.5	0.7	0.2
2026	0.3	2.4 as at 16/06/2026	0.6	0.1 as at 16/06/2026
2027	1.3		0.6	
2028	1.1		0.5	
2029	1.1		0.5	
2030	1.2		0.5	
2031	1.2		0.5	
Total	10.0	4.7	5.5	0.9

^ $0.5m renewal programme is ongoing and covers renewals of roof, internal refurbishments, conservatories, HVAC, washing machines, hot water cylinders, ranges, etc

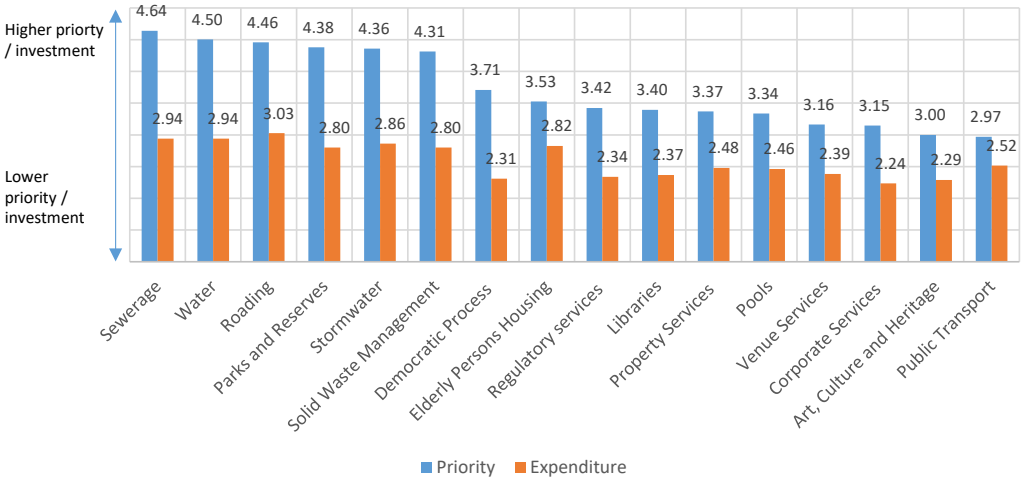
* Excludes healthy homes and Better of Funding for double glazing improvements $2.2 million

Invercargill CITY COUNCIL

Community feedback

Resides Survey (2024/2025) - Residents rated the importance of various services and indicate their preferred levels of investment.

Priority – 1 (provision of service is not very important to 5 (provisions of service is very important)
Expenditure - 5 options - (1) Pay less and accept lower levels of service; (2) Pay the same and accept that service levels will be slightly lower; (3) Pay a little more to maintain the level of service, (4) Pay more for a higher level of service, (5) Council no longer deliver the service at all



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Public Toilets

LTP Council Workshop

21 July 2026

Invercargill CITY COUNCIL

Key issues for the Activity

- Wachner Place facility
- Ongoing renewal programme for aging exeloo style toilets
- Ongoing vandalism in remote areas
- Replacement of out of date concrete block style toilets

Levels of Service - Overview

- Current portfolio includes 41 toilets:
  - Wachner Place facility
  - 14 x fully automated exeloo style
  - 12 x concrete block/manual style
  - 14 x Norski environmental style
- Exeloo toilets are aging requiring more extended periods of time for repair
- Robust repairs to environmental toilets attempt to reduce ongoing vandalism
- Meets legislative requirements

Maintenance budget

Budget increase required for new sites to cover increased service, for cleaning and repairs and maintenance - $75k per annum

Options - Replace Environmental Toilets with More Robust Style

- Progressive replacement targeting high vandalism areas (specifically Sandy Point Domain)
- Provides a higher LOS and customer experience for users
- Opportunity to increase security to assist with reduction of vandalism operational costs
- Funding from existing CapEx renewals budget

Spatial Awareness Planning

- Undertake spatial awareness planning to review over-supply vs gap analysis for provisioning of public toilets
- Include within the review public toilets which are provided by organisations outside of Council

Invercargill CITY COUNCIL

Measuring performance

Proposed Level of Service	KPI	Targets Year 1-3	Targets Year 4 – 10
Public toilets are effectively managed to provide safe appropriate spaces for the community	Percentage of residents satisfied with public toilet facilities in Invercargill District	≥55% (2027/28) ≥57% (2028/29) ≥60% (2029/30)	≥60%
Public toilets are reliable and available to the community	Percentage of total scheduled operating hours public toilets are operational	At least 90% of the time	At least 90% of the time

SUPPLEMENTARY INFORMATION

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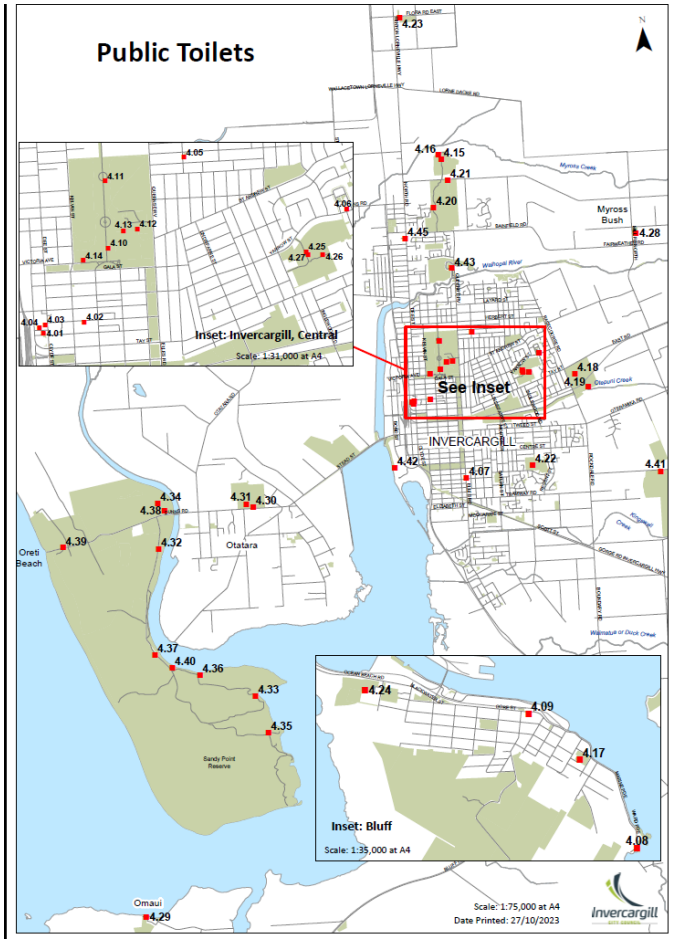
About the Activity



- 41 Facilities
- Current renewal budget ensures aging plant is renewed/replaced based on age, condition and occupancy. Renewal priorities;
  - Don St, Windsor, South City, Glengarry, Dee St, Leven Carpark, Second Circle (QP), Winter Gardens (QP).
- Stirling Point and the Bluff Service Centre (BSC) have recently had upgrades (singles to doubles)
- Recent installation of toilets servicing Bluff Boat Ramp and Bluff Hill Recreation area

Invercargill CITY COUNCIL

Community outcomes

Community Outcome	How this Activity contributes
Nobody is Left Behind – Our youth, older people, different neighbourhoods and communities basic needs are met through cost effective investment, and they feel valued and proud to live here.	Public toilets are available to all members of our community, both residents and visitors.
A future focused economy delivered through innovation and partnership and supported by appropriate infrastructure.	Public toilets are an essential part of the infrastructure network, particularly in commercial and recreational areas.
A healthy, resilient environment supporting a healthy, resilient community.	Public toilets support resilience in high-use areas and are essential during events, emergencies or peak use periods.

Current Capex and Opex work programe

(up to 30 June 2027)

Renewal of aging Exeloo toilet (Don Street) - $213K

Renewal of aging Exeloo toilet (Windsor/South City TBD) - $213K

Increase in Opex to cover increased service

Capital Programme options

Item	LTP Years	Current LTP $	Renewals or Level of Service Improvement	Score
Bluff Park Toilet (playground)	2030/31	$300k	Level of Service Improvement	26%
General Renewals	Ongoing	$216-$273 annual	Renewals	

Other Key Council decisions

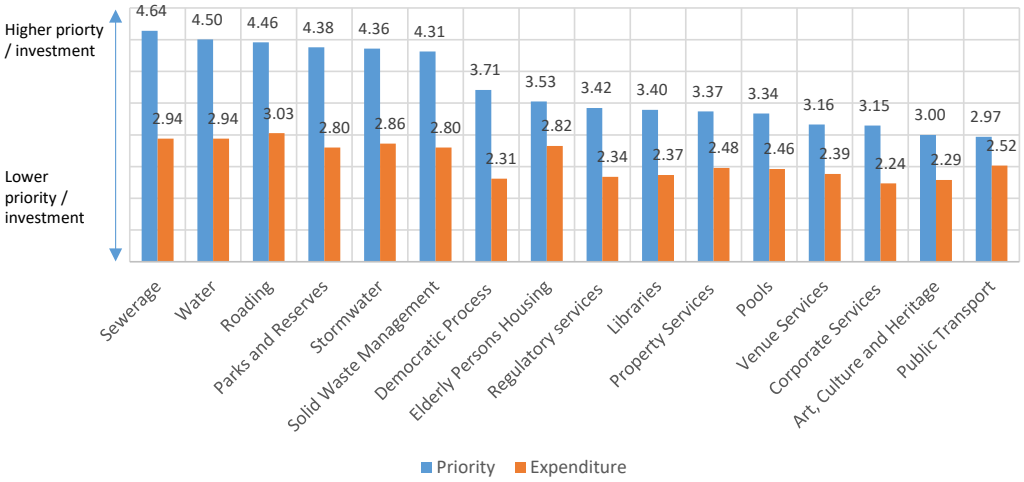
Wachner Place Facility – continue provision of further information on option regarding continuance of service at Wachner Place or another location for public shower facilities.

Current contract at reduced hours continues until 30 June 2027.

Community feedback

Residents Survey – Levels of Service feedback (2024/2025) - Residents rated the importance of various services and indicate their preferred levels of investment.

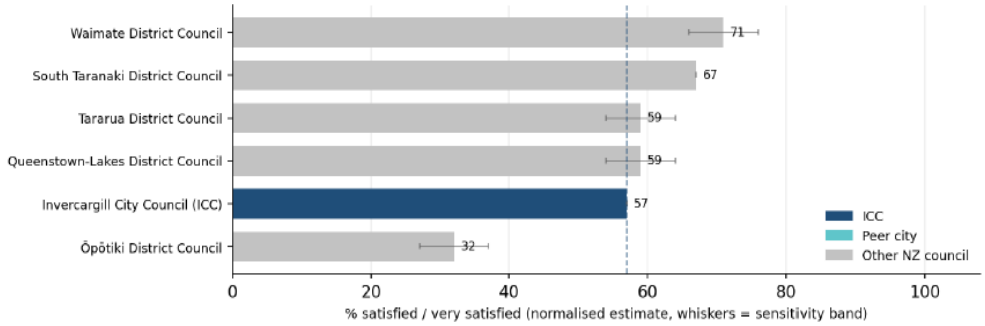
Priority – 1 (provision of service is not very important to 5 (provisions of service is very important)
Expenditure - 5 options - (1) Pay less and accept lower levels of service; (2) Pay the same and accept that service levels will be slightly lower; (3) Pay a little more to maintain the level of service, (4) Pay more for a higher level of service, (5) Council no longer deliver the service at all



Note: Public Toilets is included in Property Services
Feedback: maintain current standards, comments on facilities being poorly maintained, don't increase expenditure from rates, comments on facilities being well maintain, suggestion for user pays (a small fee to use public toilets), not lowering standards, not enough public toilets).

Community feedback

Satisfaction Benchmarking Report (May 2026)
800 satisfaction scores from 77 councils in New Zealand (from published sources ie. annual reports or surveys). Comparisons with peer group Councils (similar to ICC) (where available) and other councils.



Community feedback

ICC Residents Satisfaction Survey (2025/2026)

Satisfaction with public toilets - 57%

Overall Satisfaction with public toilets by Age and Gender									
	14-24	25-34	35-44	45-54	55-64	65+	Male	Female	Total
Public Toilets	36% (n=25)	43% (n=49)	51% (n=92)	54% (n=50)	63% (n=57)	71% (n=90)	58% (n=129)	56% (n=197)	**57% (n=366)**

Feedback
Positives: clean and well maintained, good distribution and accessibility,
Concern: cleanliness issues, not enough public toilets, Exeloo problems, toilets are old and need upgrading
Consider: Keep Wachner Place toilets open, more toilets in parks and playgrounds

A6436662

Parks and Reserves

LTP Council Workshop

21 July 2026

Invercargill CITY COUNCIL

Levels of Service - Overview

What we deliver

- 3304 hectares, comprising 162 parks and reserves, categorised under the Recreation Aotearoa Open Space Specifications
- Many are protected through legislation, their ownership and previous Council policies.
- New or changes in levels of service have meant that there are new expenses required for the following Activities:
    - Elizabeth Park
    - Water Meters across Queens Park and Gala Street Reserve
    - Delivery of maintenance for beautification along state highways and roundabouts

Levels of Service - Overview

- Due to the diverse range of parks and open spaces, the planning and management is aligning to Recreation Aotearoa categories based on the user and the type of activity.
- Every reserve is assigned a category as defined within the Recreation Aotearoa Park Category Framework.
- The reason for assigning parks categories is to ensure the City's parks are managed consistently across the City and at a standard that aligns with the national approach.

Levels of Service - Overview

Category	Description/Purpose	Alternative Name
Sports and Recreation	Parks (often quite large areas) set aside and developed for organised sport and recreation activities, recreation facilities and buildings, often multiple use	• Active • Sports
Neighbourhood	Parks developed and used for informal recreation and sporting activities, play and family based activities and social and community activities	• Local • Social Recreation • Community
Public Gardens	Parks and gardens developed to a high horticultural standard with collections of plants and landscaping for relaxation, contemplation, appreciation, education events, functions and amenity/intrinsic value	• Botanic Gardens • Horticultural • Premier
Nature	Parks that offer the experience and/or protection of the natural environment, containing native bush, coastal margins, forestry, farm parks, wetlands, riparian areas and water bodies	• Conservation • Bushland • Forest • Protected • Environmental
Cultural Heritage	Parks that protect the built cultural and historical environment and/or provide for heritage conservation, education, commemoration, mourning and remembrance	• Cemeteries • Cultural • Heritage
Outdoor Adventure	Parks developed and used for recreation and sporting activities and associated built facilities that require a large scale, forested, rural or peri-urban environment	• Regional • Forest • Farm • All terrain
Civic	Areas of open space often provided within or adjacent to central business districts and developed to provide a space for social gatherings, meeting places, relaxation and enjoyment	• Plaza • Community hub • Town squares • Streetscape
Recreation and Ecological Linkages	Areas of open space that are often linear in nature that provide pedestrian and cycle linkages, wildlife corridors and access to water margins. May provide for environmental protection and access to waterways	• Linear • Walkways • Corridor • Green corridors • Environmental corridors • Esplanade • Linkage

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Key issues for the Activity

- Ageing of assets and areas deferred maintenance
- Responding to changing community requirements for fuel and water quality outcomes, reflected in changing international and central government regulations.
- Maximising use while remaining sustainable
- Continuing the transition towards Recreation Aotearoa Park Category Framework
- As the district's population ages, the standards for specific assets shifts, e.g. providing seats with arm rests, the grade and materials used on paths, and require further development of assets on land to ensure people are catered for. This will require a change to the levels of service.
- Lease Methodology options under investigation

Resolutions to address

Notes the proposed plan for delivery of the Queens Park Masterplan/ Strategy for consultation alongside the Long-term Plan.

Notes the proposed plan for delivery of the update to the 2020 Tree Plan

Note the international standard for canopy cover (3 – 30 – 300) and request benchmarking of the current state for the city to inform decision making on potential adoption of this standard as an aspirational goal for the city.

Agree to request operational expenditure options for the following items:

Higher level of service (than the NZTA standard) for the following entry points to the city:

i. Bluff Wharf (non-Council Land).
ii. Lorneville Roundabout.
iii. Elles Road Roundabout.

Higher level of service for central city plots (flower planting).

i. Tay Street (Civic Entrance).
ii. Dee Street and Cenotaph.
iii. Tay Street (Queens Drive).
iv. Tay Street (Deveron St).

Higher level of service for Stead St Stopbank planting.

Resolutions to address

Notes the $10 million revenue forecast from land sales included in the current Long-term Plan will need to be revised.

Social need and wellbeing workshop

h. Notes that Council has representation through the Parks and Reserves area who engage with Murihiku Kai Collective and that there are a range of edible plantings in Queens Park and there are options to extend these plantings which can be considered as part of the Parks and Reserves Activity.

i. Notes that a covered BBQ area will be included as part of the proposed changes to Elizabeth Park which Council will consider as part of the Long-term Plan.

j. Notes that current lighting levels and signage supporting safety are in line with Recreation Aotearoa Standards and there is significant lighting along main arterial routes. Council could request further lighting to be scoped if it wished.

Resolutions to address

Wee Delights campaign

Allocate $5,000 investment for food/ fruit tree plantings in South Invercargill.
Allocate $5,000 investment for opening up of dog tracks within Donovan Park.
Allocate $5,000 investment to fairy lights/outdoor lighting within Parks and Reserves at one location.

Operational Requirements

Implement staged improvements to Elizabeth Park

Annual	3	10	30
5,000	15,000	44,000	132,000

Implement staged improvements to Stead Street Wharf

Annual	3	10	30
50,000	150,000	500,000	1,500,000

Beautification of roundabouts – Change in Level of Service

- There is a lack of colour within the road corridor within Invercargill City Council .
- This Operational Bid will shift the delivery of maintenance from low shrubs and small grasses to colour management.
- There will be a requirement of different resources to for this to be achieved.

Option 1: Colour Management of 8 sites within high priority areas within Invercargill Road network.
Operating Spend to be $3,080,000 and rates to be $2,800,000 over 1-30 years
Annual Operating Spend– 102,700; 3 year 308,000; 10 1,027,000; 30 3,081,000
Annual Rates 93,000; 3 year 280,000; 10 year 930,000; 30 2,800,000
- Elles Road and Lorneville Roundabouts
- Three sites along State Highway 1 (Tay Street)
- Two sites along State Highway 6 (Dee Street)
- One Site Along State Highway 1 Clyde Street (heading south to Bluff)

Option 2: Colour Management of 3 sites within high priority areas within Invercargill Road network
Operating Spend to be $1,980,000 and rates to be $4,894,134 over 1-30 years
Annual Operating Spend – 66,000; 3 year 198,000; 10 660,000; 30 1,980,000
Annual Rates 166,138; 3 year 498,414; 10 year 1,661,380; 30 4,984,134
- Elles Road and Lorneville Roundabouts
- One sites along State Highway 1 (Tay Street)

Option 3: Continue with the Status Quo (Rates $7,109,392 over 1-30 years)
Annual Rates 237,000; 3 year 711,000; 10 year 2,370,000; 30 7,109,392

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Bluff Boat Ramp car park – Development and Operational Requirements

The Bluff Boat Ramp is owned by Invercargill City Council. Over the last year construction works, placement of steel jetties and pontoons have been undertaken to the agreed specifications outlined by Offshore and Coastal Engineering Ltd. This facility is a key asset connecting people with the water.

Option 1: Operational budget is required to cover the Bluff Boat Ramp after the upgrade in the facility has been completed. This is now a user pay operations and the plan is to have this self funding. Additional costs are now also arising from waste management.

Annual	3	10	30
63,000	189,000	630,000	1,890,000

Bluff Boat Ramp car park – Development and Operational Requirements

Option 2: Take the pressure off being a user pays and maintenance on the facility is rate funded

Annual	3	10	30
63,000	235,412	630,000	1,326,180

Option 3: Have no additional budget and the maintenance on the facility become ad hoc and the asset depletes faster than renewal expected this is an approximately $3.1m asset that we want to protect (rates would be 1,848,249 over 1-30 years).

Annual	3	10	30
63,000	235,412	1,451,067	3,153,180

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Bluff Boat Ramp car park – Development and Operational Requirements

Option 2: Take the pressure off being a user pays and maintenance on the facility is rate funded

Annual	3	10	30
63,000	235,412	1,451,067	3,153,180

Option 3: Have no additional budget and the maintenance on the facility become ad hoc and the asset depletes faster than renewal expected this is an approximately $3.1m asset that we want to protect (rates would be 1,848,249 over 1-30 years).

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Water Meter Change in Level of Service

Invercargill City Council has a new meter level of service at Gala Street, which will increase water charges. There is nothing in the budget to pay for this as this was unknown to Parks and Recreation. The water features have been an integral function of the Queens Park experience.

Option 1: Install pump and power connection to stop using town supply and recirculate water to service the Queens Park water features ($50K one off purchase, then leaves Gala Street Fountain to be meter charged)

Option 2: Fund the water features including water play and fountains at Queens Park/Gala Street 3,080,000 expenditure over 1-30 years (annual 102,667; 3 year 308,000; 10 1,026,670; 30 3,080,000)

Option 3: Turn off all water features and Fountains at Queens Park

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Measuring performance

KPI	Targets Year 1-3	Targets Year 4 – 10
Queens Park is accredited as a "Garden of National Significance"	Retain accreditation	Retain accreditation
Percentage of residents satisfied with parks and recreation spaces	≥80%	≥80%
Percentage of residents who visited parks and recreation spaces at least once a year	≥75%	≥75%
Annual number of parks users	≥950,000	≥950,000
Percentage of urgent requests for service for Parks and Recreation services which are actioned within specified timeframes	≥90%	≥90%
Number active partnerships established and sustained to enhance activation of Parks and Recreation Spaces	Minimum of 13	Minimum of 13

SUPPLEMENTARY INFORMATION

(content beyond this point is for background purposes only and will not be presented)

About the Activity

Parks and Reserves are managed by Council on behalf of the residents to deliver a range of benefits to the community.

It looks after the District's green spaces and recreational environments ensuring residents and visitors have access to safe, attractive, and sustainable parks, sports grounds, playgrounds, natural areas and community open spaces.

- 18 Amenity Parks
- 26 Environmental Reserves
- 27 Linkage Reserves
- 62 Neighbourhood Parks
- 3 Outdoor Adventure Parks
- 4 Premier Parks
- 21 Sports Fields Reserves
- 27 Special Purpose Sites (including five cemeteries, crematorium and grounds)
- 4 non-Council owned reserves

Community outcomes

Community Outcomes	How the Activity Contributes
Nobody is Left Behind – Our youth, older people, different neighbourhoods and communities basic needs are met through cost effective investment, and they feel valued and proud to live here	Parks and reserves encourage residents and visitors to our green spaces of the City. The community is actively involved through engagement and consultation and enablement with regard to the management of spaces.
A vibrant, safe city which meets our people's diverse cultural needs.	Parks and reserves are developed in a way that enhances the aesthetic value of the City and the usability of reserve land.
A healthy, resilient environment supporting a healthy, resilient community.	Parks and reserves are managed in such a way as to protect and enhance important natural habitats, scenic landscapes, and other environmental features.
A future focused economy delivered through innovation and partnership and supported by appropriate infrastructure	Appropriately planning for and funding core infrastructure renewals, including ageing assets and consolidation of infrastructure and activities to ensure places are multipurpose, and community groups collaborate for better sustainability. Parks and reserves endeavour to provide Council facilities and resources for community based activities, including the best utilisation of volunteers.

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Current Capex Work programme

(up to 30 June 2027)

Description	2026/2027 Total 100% planned)
Active Recreation Development – Bluff Rugby Ground (Foyle Street reserve) and Softball Southland – Surrey Park	**941,759**
Bluff War Memorial and Turnbull Thomson Grave	**129,159**
Renewal Budget - 2 play spaces at 125k each (250k), Tracks (100k), Signage (80k), Turtle Tank (20k)	**437,510**
Organics Project – Composting	**588,303**
Queens Park connection to Museum – Integration	**564,940**
Turnbull Thomson Vehicle Safety - Access Road	**437,510**
Coronation Ave Renewal (Queen Park), 1. Replace Asset to the current Standard (Vehicle Access)	**393,759**
Pump Track - Myers Reserve and Elizabeth Park improvements to existing assets	**154,050**
Eastern Cemetery Roading	**1,027,000**

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Parks Capital Programme

Existing plans

Item	year	$ Total
General Parks renewals (including playgrounds)	2027 - 2037	$8.0 million ($800,000 a year)
Monuments renewals	2027 - 2037	$426,000 ($142,000 every 3rd year)
General Property renewals	2027 – 2037	$2.3 million ($230,000 a year)
Plant renewals	2027 - 2037	$3.7 million ($370,000 a year)
Motor vehicle renewals	2027 - 2037	$3.2 million ($320,000 a year)
Active Recreation Development	2027 – 2034	$2.0 million ($200,000 a year)

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Parks Capital Programme – Proposed changes

Item	Proposed year/s	$ Proposed	Score
Elizabeth Park	2027 – 2035	$2.51 million	39%
Queens Park • Winter Garden Replacement • Play space renewal • Signage replacement	 2031 – 2034 2031/2032 2031/2031	 $10.1 million $2.5 million $350,000	 33%
Sandy Point Domain • Fosbender Park Upgrade • Pitt Road Option for Sandy Point Road	 2031 – 2033 2034 - 2035	 $650,000 $1.6 million	 27% 44%

Parks Capital Programme – Proposed changes

Item	Proposed year/s	$ Proposed	Score
Play Strategy • - Bluff Play Space • - Kiwiskips partnership • - Southland Football partnership (Partnering on other organisation may supply some co-funding to help fund the projects)	 2027 - 2028 2028 - 2029 2029 - 2030	 $300,000 $315,000 $330,000	 27% 29% 27%
Donovan Park • Upgrade Events and Recreation area • Bainfield Road Wetland and Boardwalk Development	 2032 - 2033 2030 - 2032	 $1 million $1 million	 30% 31%
Bluff Boat Ramp Car Park Development – Existing Project	2028 - 2029	$500,000	
Car Park within Turnbull Thomson – Existing Project	2033 - 2034	$450,000	
Bluff Campground Upgrade Scoping		$100,000	
Stead St Wharf		$3.5M	

Other Key Council decisions

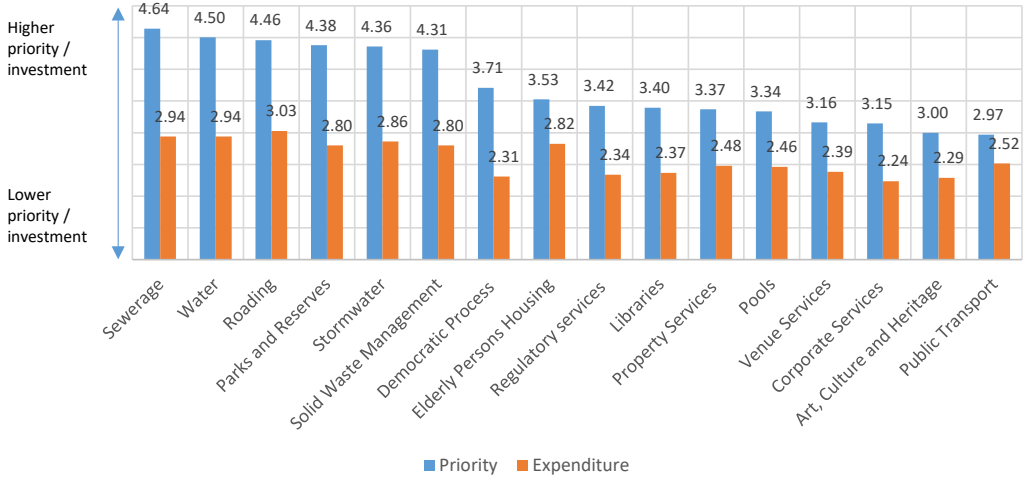
Parks revenue – land holdings and disposals update

Item	Proposed year/s	Forecast$
Land Sales Completed 2022-2025 - 21 Awarua Bay Road Reserve - 45 Awarua Bay Road Reserve	2024	 $52,500 $55,000
Approved to Progress - Mokomoko Reserve - Donovan Farm - Scott Street - Queens Drive	2024 2024	Council chose to retain Council chose not to proceed at the time
Next Land Parcels for Consideration - JG Ward Reserve / 38 Suir Street - Donovan Restaurant - Newfield Park	2026	 $150,000 (reinvest) $ TBC $ TBC
Other Land Parcels Previously considered - McMillian St / Vernon Street / Elizabeth Street / Part Bluff / Bluff Campground / Conway Crescent	2027 onwards	

Community feedback

Residents Survey – Levels of Service feedback (2024/2025) - Residents rated the importance of various services and indicate their preferred levels of investment.

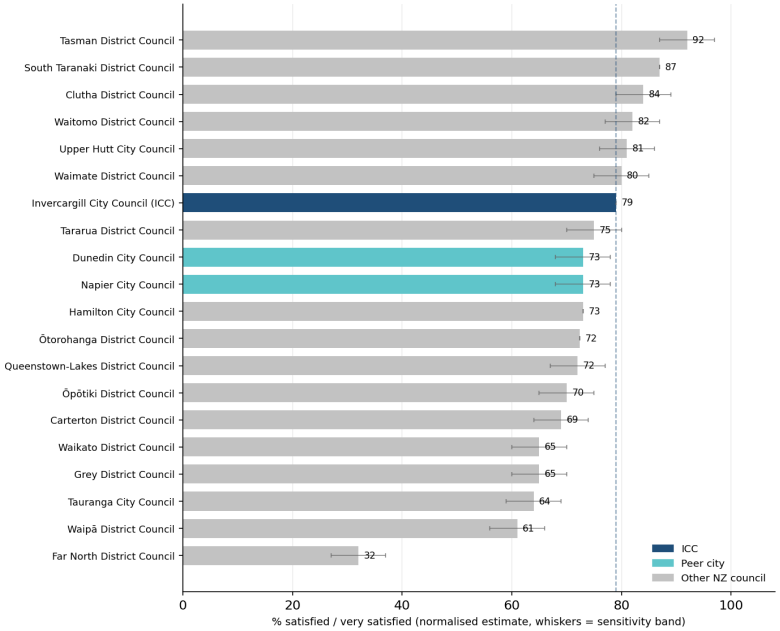
Priority – 1 (provision of service is not very important to 5 (provisions of service is very important)
Expenditure - 5 options - (1) Pay less and accept lower levels of service; (2) Pay the same and accept that service levels will be slightly lower; (3) Pay a little more to maintain the level of service, (4) Pay more for a higher level of service, (5) Council no longer deliver the service at all



Feedback: funding not used effectively, spend more on parks and recreation, landscape and facilities, don't lower levels of service, don't increase expenditure

Community feedback

Satisfaction Benchmarking Report (May 2026) - 800 satisfaction scores from 77 councils in New Zealand (from published sources ie. annual reports or surveys). Comparisons with peer group Councils (similar to ICC) (where available) and other councils.



Community feedback

ICC Residents Satisfaction Survey (2025/2026)
Satisfaction with parks and recreation spaces – 78%

Overall Satisfaction by Age and Gender									
	14-24	25-34	35-44	45-54	55-64	65+	Male	Female	Total
Parks & recreation spaces	58% (n=75)	72% (n=89)	79% (n=153)	85% (n=114)	82% (n=127)	87% (n=218)	78% (n=288)	80% (n=424)	**78% (n=788)**

Feedback
Positives: well maintained, Queens Park is excellent, Sandy Point and walking tracks valued, good variety of playgrounds, good storm response

Concerns: maintenance has declined, issues at Queens Park and Sandy Point, playground equipment, safety issues at playgrounds/antisocial behaviour in public spaces, excessive tree removal,

Consider: more family and youth recreation options, dog control in parks and public spaces, more flowers and garden displays, sports ground improvements, community orchards and edible gardens, BBQ and picnic facilities in parks, toilets at playgrounds, upgrade Queens Park playground, better tree replacement planning, Bluff needs more attention, maintain and develop safe walkways, more events and entertainment

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A6472179

Cemeteries and Crematorium

LTP Council Workshop

21 July 2026

Invercargill CITY COUNCIL

Key issues for the Activity

- Responding to diverse changing trends, community preferences and services
- Tired ageing infrastructure requiring major capital works
- Future provision of land
- Ownership of the crematorium building in the future
- Drainage requirements

About the Activity

Cemeteries are part of the public open space network. The Activity provides:

- Culturally appropriate places for remembrance, including meeting diverse religious, cultural and community needs
- Maintenance of burial networks and plots
- Long term stewardship of community heritage
- Safe, dignified and accessible public spaces for mourning, reflection and remembrance

Levels of Service - Overview

Council maintains and operates five cemeteries and one crematorium covering 56.451 hectares.

- Eastern Cemetery… Open
- Southland Crematorium… Operative
- Greenpoint Reserve Cemetery… Open
- William Stirling Reserve Cemetery… Closed
- St Johns Cemetery… Closed
- Bluff Cemetery… Closed

Staff are also contracted to SDC to attend funerals around Southland District

Levels of Service - Overview

- Cremator – this asset provides an essential regionwide service, failure would have a severe impact on many customers.
- Cemeteries – There is a requirement under Section 4 of the Burial and Cremation Act 1964 for local authorities to establish and maintain cemeteries to provide for the burial needs of people dying in the District.

Long term planning

- Cemetery renewals
- Cemetery land acquisition
- Ensure cemeteries continue to have the appropriate level of forward provision to enable future burials and are located in environments that are peaceful and safe
- Alternative methods to cremation and burial

SUPPLEMENTARY INFORMATION

(content beyond this point is for background purposes only and will not be presented)

Community outcomes

Community Outcomes	How the Activity Contributes
Nobody is Left Behind – Our youth, older people, different neighbourhoods and communities basic needs are met through cost effective investment, and they feel valued and proud to live here	Cemeteries and crematorium services help ensure nobody is left behind by providing accessible and respectful burial and cremation options for all members of the community.
A vibrant, safe city which meets our people's diverse cultural needs.	The activity meets diverse cultural and religious needs and preserve community heritage,

Assets

Council maintains and operates five cemeteries and one crematorium covering 56.451 hectares.

Description	Area (ha)	Status
Eastern Cemetery	28.5960	Open
Southland Crematorium	10.2200	Operative
Greenpoint Reserve Cemetery	10.6898	Open
William Stirling Reserve Cemetery	0.0028	Closed
St Johns Cemetery	2.0234	Closed
Bluff Cemetery	4.9195	Closed
	56.4515	

Current Capex and Opex work programme

(up to 30 June 2027)

Incorporated within the Parks and Reserves programme

Community feedback

ICC Residents Satisfaction Survey (2025/2026)

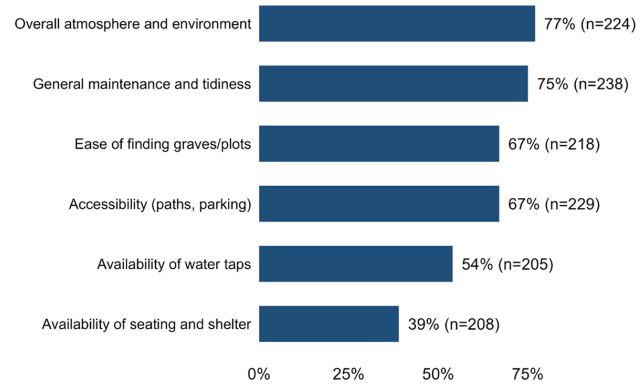
- Overall satisfaction with cemeteries – 69%
- Respondents also rated their satisfaction across six aspects of cemetery provision

Overall Satisfaction by Age and Gender									
	14-24	25-34	35-44	45-54	55-64	65+	Male	Female	Total
Cemeteries	46% (n=48)	71% (n=22)	82% (n=31)	63% (n=19)	89% (n=31)	84% (n=86)	70% (n=84)	71% (n=137)	**69% (n=243)**

Qualitative feedback
Positives: well maintained and tidy

Concerns: grass and grounds maintenance, old graves need attention, rabbit and pest problems

Consider: better water tap access



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A6476695

Forestry

LTP Council Workshop

21 July 2026

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Key issues for the Activity

- Climate Change issues
- Opportunity to replace the forestry “plantation” with native vegetation to continue the carbon credit conversion
- Storm damage (14.5 ha) created an unplanned increase in harvest which meant impacting predominantly the mountain bike trails, delaying this activity to continue and additional costs required as a result
- Balancing recreation use and harvesting schedules
- Trading ETS opportunities

Forestry Overview – including Wind Damage sites

Levels of Service - Overview

- John Turkington Limited manages the forestry estate at Sandy Point Domain, which is 654.8 hectares. Harvesting is scheduled across stands of forestry and reviewed annually to ensure it aligns with age of trees and market values.
- The Sandy Point Domain Reserve Management Plan identifies that, through the Master Plan's 50 year vision, the forestry at the southern end will be reduced. This has been addressed through the Forestry Management Plan by staging planting and regenerating of the existing natives.
- Emissions Trading Scheme - The ETS is a compliance scheme administered under the Climate Change Response Act 2002 that enables New Zealand to meet its international climate change obligations by placing a cost on carbon emissions.
- Balancing recreational use and forestry, where money raised goes back into track maintenance

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Considerations

- the establishment of new native habitats across large areas of the Reserve that are identified as eligible for the post-1989 carbon forestry in the NZ ETS;
- the establishment of new exotic tree landscapes for open space recreation adjacent to the former golf course, which is also eligible for carbon forestry, subject to design; and
- the successful establishment and/or transition of vast areas of pre-1990 exotic forest into native forest, without incurring carbon liabilities under the NZ ETS.

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Levels of Service

1. Develop a carbon trading strategy to meet ICC requirements for carbon income, future carbon sequestration opportunities, and management of pre-1990 deforestation;

2. commence feasibility and design of new exotic tree landscapes on the former golf course, in accordance with the first 10-year phase of the Master Plan;

3. establish native plant trials to support the establishment and/or transition of native forest on or within existing pre-1990 exotic forest areas identified in the Master Plan and the land eligibility assessment;

4. scope opportunities for transitional management of existing post-1989 exotic forest which could be registered in the NZ ETS permanent forest category, and align with the long-term aspirations of the Master Plan;

5. Forest Management Plan developed to support ongoing forest management operations and new ‘smart forestry’ initiatives.

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Levels of Service

No bid for any specific draw down on Forestry Reserves in this LTP process. A draw down may well be required to implement these recommendations at a later stage however more certainty of costs are required before doing so.

New KPIs are being proposed as this is a new activity management plan and prior parks and reserve activity management plans have not specifically addressed KPI for forestry.

- KPI – meet ETS requirements
- KPI – Forest Remains accessible to Recreational Users (?% of the year)

Measuring performance

What Council will provide	Performance Measures & Targets
Financial return: Maximum economic return provided environmental impacts are minimised as far as practical.	Operational management is outsourced. Radiata pine is the principal forest species. Management and operational costs and log revenues meet market rates.
Sustainability: Management of the forests in such a way as to ensure their long-term economic, social, and environmental sustainability.	Compliance with NZ forest industry codes of practice. A long-term commitment to maintaining well managed forests under generally accepted sustainability standards. FSC accreditation.
Quality: Forests are well maintained, and post-harvest areas comply with contractual terms for quality.	Forest maintenance and protection practices meet best practice standards; post-harvest forest conditions comply with contractual agreements.
Accessibility: Forests remain accessible to recreational users.	Designated tracks maintained and remain open unless conditions dictate otherwise. Tracks closed during harvesting.

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Next steps

- Forestry AMP

SUPPLEMENTARY INFORMATION

(content beyond this point is for background purposes only and will not be presented)

Community outcomes

Community Outcomes	How the Activity Contributes
A healthy, resilient environment supporting a healthy, resilient community.	The Forestry Activity ensures that forests are managed in a way that ensures their long-term economic, social and environmental sustainability.
A future focused economy delivered through innovation and partnership and supported by appropriate infrastructure	The activity generates revenue from public reserve land and this may be re-invested into other parks and reserves development and maintenance projects. The Forestry Activity also contributes to local business operations.

SMOKEFREE POLICY - REVIEW

To:	Community and Regulatory Committee
Meeting Date:	Tuesday 11 August 2026
From:	Gillian Cavanagh – Manager – Consenting and Applications Rhiannon Suter – Manager – Strategy, Policy and Engagement
Approved:	Jonathan Shaw - Group Manager - Consenting and Environment
Approved Date:	Tuesday 4 August 2026
Open Agenda:	Yes
Public Excluded Agenda:	No

Purpose and Summary

This report presents a draft updated version of the Smokefree Policy, following review, for approval and to recommend to Council that it is adopted for consultation.

Recommendations

That the Community and Regulatory Committee:

1. Receives the report "Smokefree Policy – Review".

2. **EITHER**

    a. Approves the draft updated Smokefree Vapefree Policy as presented. **OR**

    b. Approves the draft updated Smokefree Vapefree Policy following any further changes as directed by the Committee.

Recommends to Council:

3. That the draft updated Smokefree Vapefree Policy (*as adopted in 2 above*) be adopted for consultation.

Note: The wording in italics is for editorial and guidance purposes and does not form part of any resulting resolution.

Background

Council has a Smokefree Policy, last reviewed in June 2020. It is due for review.

The Smokefree Policy is an education-focused policy.

The policy supports the use of signage and promotion to discourage smoking in various designated areas, and provides Council support for smokefree events, smokefree playgrounds and various other smokefree areas. However, Council does not use enforcement measures against anyone who breaches the policy. This is common amongst other councils' Smokefree and Vapefree Policies. The policy supports Council's commitment to promoting healthy choices and outcomes.

Issues and Options

Background and Data

The Smokefree Policy has been reviewed and, in general, has been found to still be fit for purpose. The policy compares favourably with those of other councils around Aotearoa New Zealand, covering multiple key areas identified by Health New Zealand as supporting smokefree outdoor spaces.[1]

The policy currently covers the Invercargill Central Business District, workplaces, Council owned parks, playgrounds, reserves and certain sportsgrounds, and the Splash Palace car park. The existing policy applies to the use of any smoking device, including cigarettes, e-cigarettes and vaporisers (vapes).

Council rarely receives complaints from members of the public regarding smoking or vaping in public places, with just two such complaints recorded since 2020, the time at which the policy was last reviewed. Both of these related to suburban areas outside of the smokefree area in the current policy. It should be noted though that there is no particular process to record calls to Council regarding smoking (or vaping) in smokefree areas. Such calls are not common, and members of the public who make them are informed that the policy is educational only.

Smoking rates in New Zealand (of cigarettes) have declined steadily since 2011/2012, nearly halving between 2011/2012 and 2024/2025. The prevalence of daily smoking in 2024/2025 was 6.8%.[2]

9.7% of Invercargill City residents reported being regular cigarette smokers at the last census in 2023, as compared to the national average of 7.7%.[3] Rates were particularly high in Appleby

[1] Health New Zealand. 2025. Smokefree New Zealand – Council outdoor policies full map. URL: https://www.smokefree.org.nz/sites/default/files/2026-01/1.0%20Smokefree%20Maps%20NZ%20Councils%20Outdoor%20Policies%20Dec%202025%20FULL.pdf (Accessed 2 July 2026)

[2] Ministry of Health. 2025. Trends in smoking and vaping: New Zealand Health Survey 2024/2025. URL:https://www.health.govt.nz/monitoring-statistics/surveys/new-zealand-health-survey/publications/202425-survey-publications/trends-in-smoking-and-vaping (Accessed 30 June 2026)

[3] Census. 2023. Percentage of population by cigarette smoking behaviour. URL: https://tools.summaries.stats.govt.nz/places/TA/invercargill-city#cigarette-smoking-behaviour

North (15.6%), Georgetown (12.2%), Appleby South (13.0%), Strathern (14.0%), Heidelberg (12.9%), Clifton-Kew (16.4%) and Bluff (15.4%).[4]

Vaping rates in New Zealand have steadily increased over the past decade to a national average of 11.7% daily users[5], and 16.9% in Southland.[6] Vaping rates nationally among younger people have dropped somewhat in recent years, but are still higher than the average, at 13.6% for 15-17 year olds, and 23% for 18-24 year olds.[7]

As reported to Council at the time,[8] in 2023 the Invercargill City Youth Council carried out a survey of Invercargill high school students regarding vaping. Their survey attracted 164 responses, and whilst it was recognised the study had some limitations, it found that around 41% of survey participants vaped at least some of the time, with 26% doing so daily. Additionally, 16% of participants vaped but had never smoked cigarettes. Most of those who vaped said they were introduced to it by friends. Respondents to the survey could also provide comments around vaping, and of the 64 who chose to do so, 43 clearly considered vaping to be a negative or harmful activity or supported restrictions around who could vape or where people could vape. Concerns included health impacts, the fact it is addictive, the expense, and the impact on others.

The National Public Health Service carried out some informal local research by way of a small-scale observational survey over a two-week period in 2024. They informed Council staff that this survey indicated that there were significantly more people vaping than smoking with the smokefree central business district, with on average one person not following the smokefree policy nearly every minute.

The National Public Health Service have also carried out research to find out how well-known and understood Council's current Smokefree Policy is. This research, conducted through informal intercept interviews with members of the public in 2024 and 2026, indicated strong support for the purpose and intent of the Smokefree Policy but low levels of awareness of its existence, and even lower levels of understanding that the policy currently covers vaping as well as cigarette smoking. There were also very few people who had seen smokefree signage within the city centre. A report providing an overview of this community feedback has been provided to staff and is attached.

As part of efforts to raise awareness of the policy, there is some smokefree signage in our existing smokefree areas, including in the Splash Palace car park, at the back of the Civic Theatre, and in parks and reserves. Alignment with the Smokefree Policy is also recognised through the General Policies Reserve Management Plan 2023, specifically Policy 9.21 (Smoke-free and Vaping on Reserves) and Policy 6.13.6 (Signage). Council also supports smokefree

(Accessed 30 June 2026)

[4] Census. 2023. Cigarette smoking behaviour for the census usually resident population count aged 15 years and over. URL: Data sources and imputation for cigarette smoking behaviour in the 2023 Census | Stats NZ (Accessed 30 June 2026)

[5] *Ibid.* at FN1

[6] Ministry of Health. 2026. Regional Data Release: New Zealand Health Survey [Data File]. URL: https://www.health.govt.nz/publications/regional-data-release-new-zealand-health-survey (Accessed 30 June 2026)

[7] Edwards R, Nip J, Hoek J, Waa A, Ball J. 2025. Vaping prevalence and trends: Findings from the 2024-25 NZ Health Survey. Public Health Expert Briefing. URL: https://www.phcc.org.nz/briefing/vaping-prevalence-and-trends-findings-2024-25-nz-health-survey (Accessed 30 June 2026)

[8] Community Wellbeing Committee, 12 September 2023

messaging through, for example, sharing the Smokefree Events Toolkit (developed by Public Health Smokefree staff) on Council's website.

National Public Health Service staff have identified some areas which might benefit from further signage. Council staff continue to hold discussions with members of the National Public Health Service regarding how we might facilitate extending the smokefree signage on display.

Having reviewed the current available data, staff have identified several areas for potential improvements to the policy.

Smokefree Vapefree

As noted, the current policy defines smoking as including the use of e-cigarettes and vaporisers (vapes). However, this is not necessarily immediately obvious to the reader and was not well understood by the community in the research undertaken by Public Health staff. As a simple means of raising awareness of this aspect of the policy, and given that vaping rates are not insignificant, it is proposed to change the name to the "Smokefree Vapefree Policy".

No further changes are recommended relating to vaping specifically. It is noted that options for councils to regulate, license or influence the locations of specialty vape shops are currently extremely limited or non-existent. This Committee will be aware of the recent LGNZ remit on this topic, which Council voted to support with a medium-high priority, and which was ranked seventh out of nine successful remits at the LGNZ AGM on 31 July.

Additional Areas to be Designated Smokefree Vapefree

It is recommended that Council consider widening the areas which are designated smokefree vapefree. In particular, it is suggested that Council owned or operated facilities, including parking lots and buildings, bus stops and public toilets be specifically designated smokefree vapefree. Including these areas supports Council's commitment to promoting healthy choices and a healthy environment. It is also recommended that the smokefree vapefree area extend to the footpath directly in front of early learning services and schools. These premises are already required to be smokefree and vapefree at all times by law. Designating the footpath outside to also be smokefree and vapefree would support this, as well as aiming to reduce the exposure of children and young people to smoking and vaping.

No particular further areas have been included in the draft policy, but Council may wish to consider whether to include other busy suburban centres in the smokefree vapefree area, such as Windsor, South City, Glengarry or Bluff.

Businesses on the Footpath

It is recommended to state that Council will encourage businesses within the smokefree vapefree area who operate on the footpath (for example, licence holders in the central business district with a licensed area on the footpath, or venues with outdoor dining space on the footpath), to support the smokefree vapefree area. This is in line with the existing provisions of the policy which state that the smokefree areas include outdoor dining areas, outdoor public areas, and public access ways to commercial buildings such as footpaths.

It is not proposed to change the approach of this policy from being educational, and no enforcement action is suggested. Encouraging businesses to support the policy is another means of raising awareness of our smokefree vapefree areas.

Minor Updates

Minor updates have been recommended to bring the policy up to date, and to provide clarity. For example, cemeteries were included in the maps of parks and reserves in the existing policy and have been explicitly mentioned in the updated version.
Additionally, the word "vaporisers" has been clarified to be the same thing as "vapes", including the commonly used term for clarity.

Significance

This policy is considered to be of low-medium significance under Council's Significance and Engagement Policy. Public consultation as a result of community interest is recommended.

Options

This Committee can choose to recommend that Council adopt the updated policy for consultation, can direct further changes, can direct that the policy not be updated at this time, or can choose to revoke the policy entirely.

It is not recommended to revoke the policy. Public support for such policies remains high, particularly among young people[9], and this is supported by the findings of the local research conducted by Public Health staff, as well as the results of the Youth Council vaping survey. It is also not recommended to continue the existing policy without changes, as although the policy is not ineffective, this would miss the opportunity to improve it to address the matters identified.

It is recommended that the updated policy be recommended to Council for adoption for consultation, with any further changes or additions as identified by this Committee.

Community Views

Some information on public attitudes towards smokefree areas is available from the informal research provided by Public Health staff and the results of the Youth Council survey from 2023. It is further recommended that this policy be consulted on between 14 September and 9 October 2026.

Implications and Risks

Strategic Consistency

The policy is consistent with wider Council strategy including the Long-term Plan, particularly supporting social wellbeing and meeting the needs of rangatahi youth.

[9] Hammond D, Reid J, Ball J, Edwards R, Hoek J, Waa A, Stanley J and Burkhalter R. 2023. Support and perceived impact of key Smokefree policies in Aotearoa/New Zealand: Findings from the ITC Youth and Young Adult Survey. URL: https://aspireaotearoa.org.nz/sites/default/files/2023-12/2023%20ITC%20Youth%20NZ%20Report%20Final.pdf (Accessed 30 June 2026)

Financial Implications

There are no particular financial implications. Signage provided by Council is covered under existing operational budgets for the relevant activities. This would include any new areas or Council owned assets designated smokefree vapefree under an updated policy.

Legal Implications

There are no particular legal implications. This policy is educational only. This means enforcement options are limited, as indeed they are for many Council policies. Generally speaking, there needs to be relevant primary or secondary legislation (including bylaws) in place to make something legally enforceable.

Nationally, the Smokefree Environments and Regulated Products Act 1990 requires various areas to be smokefree and vapefree including internal areas of workplaces, licensed premises, retailers, and sports clubs, and anywhere on the grounds of schools and early childcare and education centres. Responsibility for the enforcement of this legislation does not rest with Council, but the Smokefree Policy is in line with its provisions.

If Council wanted to be able to exercise legal powers to enforce the provisions of this policy, it would need to develop a bylaw. There is some precedent for provisions in bylaws on this topic from other councils around the motu, however they tend to be quite limited in scope. Examples include South Waikato District Council, Waimate District Council and Western Bay of Plenty District Council in relation to Council facilities, Tauranga City Council in relation to designated parts of the airport, Wellington City Council in relation to proximity to hazardous substances in public places and in relation to one specified street, Horowhenua District Council and South Wairarapa District Council in relation to optional conditions which may be imposed on licences for outdoor dining, and Tasman District Council in relation to the ability to discount fees for outdoor dining where the business is voluntarily smokefree and vapefree. Ashburton District Council have a wider bylaw provision which directly refers to the smokefree and vapefree locations designated by their Smokefree Outdoor Areas Policy, seemingly making these smokefree areas enforceable under the bylaw. Again, a bylaw would be required to enforce the policy, if Council wished to develop any of these powers.

Options for enforcement under a bylaw may include removing a person from an area, applying for an injunction or initiating a prosecution which would result in a fine. However, many of these options will be quite a challenge for councils in terms of cost, time, staff resources, and effectiveness. Additional monitoring and enforcement budget would be required if a bylaw was introduced. Overall, it is not recommended to develop a bylaw or amend an existing bylaw to include smokefree vapefree areas at this time.

Other indirect enforcement options to support this policy could include, for example, including smokefree vapefree requirements in the terms of any license issued by Council relating to a smokefree vapefree area.

Climate Change

There are no particular climate change impacts.

Risk

This policy is considered low risk. There is a risk of reputational damage if Council were to revoke the policy.

Next Steps

If approved by this Committee and adopted by Council for consultation, public consultation will be carried out between 14 September and 9 October 2026.

Attachments

1. Draft Updated Smokefree Vapefree Policy (A6498695)

2. Invercargill City Council Smokefree Policy: Overview of Community Feedback Smokefree Murihiku (A6530983)

Invercargill
CITY COUNCIL

Smokefree Vapefree Policy

DRAFT FOR CONSULTATION – AUGUST 2026

Purpose

This is an education policy, developed with the aims of increasing the likelihood that people, particularly young people, will remain smokefree and vapefree by reducing the number of places where they see others smoking or vaping, and of improving the clean air environment of Invercargill and Bluff. It is intended that this policy will aid in reducing the visibility of smoking and vaping in public through the designation of smokefree vapefree areas.

Scope

This policy provides for smokefree vapefree areas covering all Invercargill City Council (Council) owned parks, reserves, cemeteries, children's playgrounds, sports fields, the Splash Palace car park, Council owned or operated public parking lots and buildings, Council bus stops, Council owned or operated public toilets, areas directly outside schools and early learning services, and other designated areas within Invercargill City. This will be supported by signage where possible.

Definitions

Smokefree Vapefree refers to the use of any smoking device, including but not limited to cigarettes, e-cigarettes, or vaporisers (vapes).

Smokefree Vapefree Area means the defined smokefree vapefree areas within the Invercargill City Council boundary which are listed below. Smokefree vapefree areas include all public access ways to commercial buildings (such as footpaths, doorways) and facilities in the area, outdoor public areas, events organised and held within the area, outdoor dining areas, and others. The policy also applies to any workplace within those areas, and includes entrances to all Council Parks, Reserves, playgrounds and sportsgrounds, and Splash Palace pool and car park.

Location of Smokefree Vapefree Areas

This policy applies to the following areas:

- The Invercargill City Centre, a map of which is included at Appendix A.

- Council owned parks, reserves, cemeteries, playgrounds, and sportsgrounds, as shown in the maps at Appendix B.
- Splash Palace, including the car park, as shown in the map at Appendix C.
- Council owned or operated parking lots and buildings, as detailed on Council's website: Parking in the city - Invercargill City Council
- Council bus stops, as detailed on Council's website: Bus routes and times - Invercargill City Council
- Council owned or operated public toilets, as detailed on Council's website: Public toilets - Invercargill City Council
- The footpath directly in front of all early learning services and schools. Directories are available from: Directories | Education Counts

Council's Responsibility and Implementation

This policy seeks to discourage smoking within the smokefree vapefree areas through the use of signage and promotion. The focus of signage will be targeted in high density areas, areas where smoking or vaping is prevalent, and at commercial buildings and facilities within the city centre. Council's Parks and Reserves will show smokefree vapefree signage where possible, especially around play areas and equipment, and at allocated sportsgrounds. Council will request events to be smokefree and vapefree, and that appropriate signage is displayed where possible. Council will encourage businesses within the smokefree vapefree area who have a permit or licence to operate on the footpath to support the smokefree vapefree area.

It is acknowledged that some businesses allow staff members to smoke or vape at the back of their buildings, away from main thoroughfares. This is at their discretion.

This policy is not a ban on smoking or vaping in a public place and enforcement measures will not be used against those who breach the policy. Rather, the purpose of the policy is to support Council's commitment to promote positive health choices and outcomes.

Document Control

Revision History:	
Effective Date:	[tbc 2026]
Review Period:	This Policy will be reviewed every six (6) years, unless earlier review is required due to legislative changes, or is warranted by another reason requested by Council.
New Review Date:	[tbc 2032]
Associated Documents / References:	
Supersedes:	Smokefree Policy 2020
Reference Number:	A6498695
Policy Owner:	Manager – Environmental Health
Policy Training:	[tbc]

A6530983

Invercargill City Council Smokefree Policy Review 2026:

Overview of Community Feedback Smokefree Murihiku | July 2026

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Introduction

The Invercargill City Council (ICC) Smokefree Policy aims to reduce the visibility of smoking and vaping in public places, promote clean air, and support a Smokefree Aotearoa by encouraging healthier community environments, particularly for young people.

To inform ongoing policy implementation and future decision-making, community feedback was gathered in 2024 and 2026. This feedback explored public awareness, understanding, and support for the Smokefree Policy, including its inclusion of vapefree areas, as well as perceptions of signage and opportunities for expansion.

Feedback was gathered through informal intercept interviews conducted with members of the public in 2024 and 2026. Interviews took place in Invercargill city centre, South City, Bluff, and the Southern Institute of Technology campus, with a total of 192 people participating.

Across both survey periods, findings indicate low levels of awareness of the policy, with only a minority of respondents recognising its existence and even fewer understanding that it includes vapefree areas. Knowledge of the specific locations covered by the policy was also limited. Despite this, there was strong and consistent support for extending smokefree vapefree areas to additional locations across Invercargill, particularly in high-traffic public spaces.

The research also identified low noticeability of existing signage and highlighted the importance of clear, visible communication to improve public awareness. Respondents provided a wide range of suggestions for promotion, with a strong emphasis on signage, online promotion and advertising.

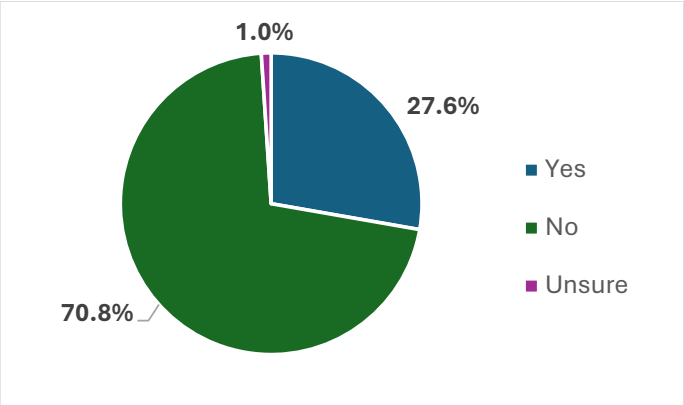
Overall, the findings suggest that while awareness and understanding of the Smokefree Policy remain limited, there is broad community support for its intent and future expansion, particularly where it contributes to healthier environments and reduces exposure for children and young people.

Awareness of the ICC Smokefree Policy

The 192 people who completed the short interview were asked, 'Did you know about the Invercargill City Council Smokefree Policy?' This question was asked to assess the current level of awareness of the ICC Smokefree Policy within the community.

Key Findings

Of the 192 total respondents, 53 were aware of the ICC Smokefree Policy (27.6%). 136 respondents (70.8%) were not aware of the policy, and two respondents (1%) were unsure.



Awareness of Vapefree Inclusion

In 2026, the 39 respondents who were aware of the Smokefree Policy were asked whether they knew it also included vapefree areas.

- 16 respondents (41%) did not realise vapefree was part of the policy
- 21 respondents (53.8%) did know
- 2 respondents (5.1%) were unsure

Overall, of the 125 respondents surveyed in 2026, only 21 (16.8%) were aware that the ICC Smokefree Policy includes vapefree areas.

This question aimed to assess whether people understood that designated smokefree areas are also vapefree. The results indicate that while some respondents are aware, many (49%) do not realise this.

Understanding of Policy Coverage

No respondents correctly recalled the areas designated smokefree and vapefree by the policy (i.e. the city centre, parks, reserves, playgrounds, sports fields, and the Splash Palace car park).

Only one respondent correctly identified which part of the city centre is designated smokefree and vapefree. Several others gave more general responses, such as "the inner city" or "the CBD."

Other responses included:

- "One side of Esk Street"
- "Reserves and parks"
- "Busiest areas of the CBD, the same as the alcohol ban"
- "Town, parks and hospital"
- "Council buildings, mall, Stadium, South City, Rugby Park, parks, schools and the CBD"
- "Public buildings and cars"

Support for Extending the Policy

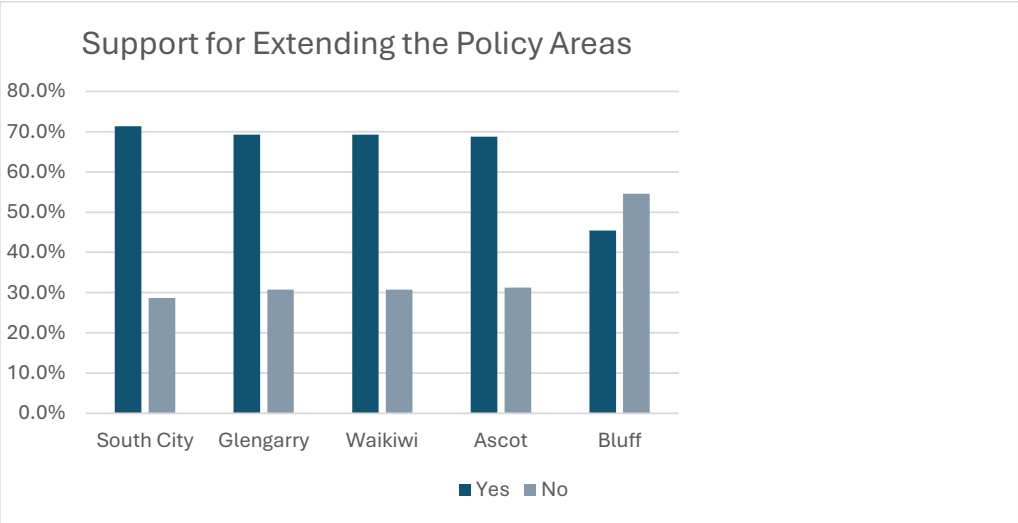
Respondents were asked:

"Aside from the areas already covered by the policy, would you support other areas of Invercargill being smokefree and vapefree? For example, other shopping areas such as South City, Glengarry, Waikiwi or Ascot?"

Freeform responses were also accepted.

Key Findings

Overall, there was strong support for extending smokefree vapefree areas to additional locations across Invercargill. There was support from approximately 70% of all respondents for each of the shopping areas (South City, Glengarry, Waikiwi and Ascot) to be included in the smokefree vapefree policy.



This consistent level of support across multiple locations suggests a broadly favourable community attitude toward expanding the policy beyond its current coverage.

The level of support indicates that many respondents are open to seeing smokefree vapefree areas applied in other high-traffic public spaces, particularly those associated with retail activity and community gathering. These areas were specifically identified as examples in the survey question, and the responses suggest they are viewed as appropriate environments for further policy application. Many respondents also emphasised the importance of reducing exposure to smoking and vaping in places where children are frequently present, with strong community support for role modelling smokefree and vapefree behaviour to young children and youth.

Respondents in Bluff were also asked whether they supported the inclusion of the Bluff main street as a smokefree vapefree area. Of the 22 respondents surveyed in Bluff, 10 (45%) expressed support for this initiative.

Compared with the Invercargill results, support in Bluff was noticeably lower, though still represents a significant proportion of respondents. This difference may indicate varying perspectives between communities, or differing views on where smokefree vapefree areas are most appropriate.

City Centre Smokefree Vapefree Signage

A total of 192 respondents participated in the survey, with 89 respondents surveyed within the Invercargill city centre. These respondents were asked: “Have you seen any Smokefree Vapefree signs in the CBD today?”

The purpose of this question was to assess the prominence of existing smokefree and vapefree signage in the city centre.

Summary of Responses

Across 2024 and 2026:

- 83 respondents (93%) reported that they had not seen any SFVF signage
- 5 respondents (6%) reported that they had seen signage
- 1 respondent (1%) was unsure

Key Findings

Overall, the findings indicate that the majority of respondents did not notice existing smokefree vapefree signage in the city centre, suggesting low visibility of current signage.

A notable trend is the decline in reported visibility over time. The proportion of respondents who had seen smokefree vapefree signage decreased from 18% (5 out of 28 respondents) in 2024 to 0% (0 out of 61 respondents) in 2026. However, this apparent change should be interpreted with caution, as the

relatively small sample sizes, particularly in 2024, mean the difference could be influenced by random variation rather than representing a true change in signage noticeability.

Promotion of Smokefree Vapefree Areas

Of the 192 respondents who participated in the survey, 173 respondents answered the question on how best to inform the public about smokefree vapefree areas in Invercargill. Responses to this open-ended question were analysed and grouped into thematic categories.

Summary of Responses

Promotion Method	Number of Mentions	Percentage of Total (192)
Signs / signage	112	58.3%
Online / social media	65	33.9%
Advertisements (any)	48	25.0%
Newspaper	18	9.4%
Billboards / digital billboards	15	7.8%
Flyers / posters	15	7.8%
Radio	14	7.3%

Overall, 90% of respondents contributed one or more ideas for informing the public about SFVF areas.

Key Findings

The most frequently suggested method of promotion was signage, identified by 112 respondents (58.3%). This highlights the perceived importance of clear, visible, on-the-ground communication.

The next most common suggestions were online and social media platforms (33.9%) and advertising in various forms (25.0%).

Other commonly mentioned approaches included billboards/digital billboards (7.8%) and flyers/posters (7.8%).

Advertising Channels

Among those who referenced advertising, respondents suggested a range of specific channels, including:

- Newspapers (9.4%)
- Radio (7.3%)

- Television
- TikTok, Instagram, Facebook, SoundCloud
- Digital billboards at the mall
- Advertising at the start of movies
- Social media platforms generally

Additional Promotion Ideas

Several additional ideas were mentioned by multiple respondents, including:

- Use of the ICC website and/or social media
- Word of mouth
- Promoting in schools
- Footpath signage
- Raising awareness through community education
- Events or seminars
- Approaching people directly (e.g. pop-up stalls)

A wider range of other suggestions were also provided, including:

- Via ICC emails
- Notices sent with rates
- Through churches
- Banners
- Door-to-door promotion
- Council messaging more broadly
- Drawing a border around the SFVF area in the CBD
- Promotion at live music events
- Promotion at skate events
- Posters at pubs
- Use of a megaphone
- Billboards at entry points to Invercargill via state highways and at the airport
- Information at vape shops
- Mail drops
- Use of a Tourist Information Centre
- Have no vape stores in the CBD
- A-frame footpath signs

Conclusion

The findings from community feedback gathered in 2024 and 2026 highlight a clear contrast between low levels of awareness and strong levels of support for the Invercargill City Council Smokefree Policy. While most respondents were not aware of the policy or its full scope, particularly its inclusion of vapefree areas, there was broad agreement with its purpose and intent.

Feedback indicates that the community largely supports the creation and expansion of smokefree vapefree environments, especially in areas where people gather and where children and young people are present. The importance of reducing exposure, protecting public health, and role modelling positive behaviours for young people was a consistent theme across responses.

At the same time, the findings highlight key areas for improvement. The feedback suggests there is an opportunity to further strengthen the reach of current communication and promotion efforts, as well as enhance the noticeability of existing signage and understanding of where the policy applies.

Respondents provided a wide range of suggestions for promoting the policy, with a strong emphasis on increasing the amount of signage, alongside broader promotion through advertising, community engagement, and online.

Overall, the results suggest that strengthening awareness and communication is likely to enhance the impact of the policy. With a solid foundation of community support already in place, there is a clear opportunity to build on this by improving how the policy is communicated and understood, supporting its ongoing success and potential expansion across Invercargill.

APPENDIX: INTERVIEW QUESTIONS

Survey: Invercargill Smokefree Policy Date: _____

CBD South City

1) Did you know about the Invercargill City Council Smokefree policy?
   Yes [ ] No [ ] **(If answered 'No', go to Q5)** Unsure [ ]

2) Did you know that it also includes vaping?
   Yes [ ] No [ ] Unsure [ ]

3) Do you know where the policy covers? Yes [ ] No [ ]
   a. If yes, ask where? _____
      _____
      _____

4) Do you know what part of the CBD is included in the smokefree vapefree area?
   a. Yes If yes, ask where: Correct [ ] Incorrect [ ]
   b. No

5) Aside from the areas already covered by the policy ***(insert brief explanation, if not already discussed*)*** - would you support other areas of Invercargill to also be Smokefree and Vapefree? For example other shopping areas such as
   a. South City [ ]
   b. Glengarry [ ]
   c. Waikiwi [ ]
   d. Ascot [ ]
   e. Other areas: e.g. council car parks _____
      _____

6) What's the best way to inform the public about the SFVF areas in Invercargill?_
   _____
   _____
   _____
   _____
   _____
   _____

7) **(For CBD pedestrians only)**
   Have you seen any SFVF signs in the CBD today? Yes [ ] No [ ] Unsure [ ]

*** The CBD, all parks, playgrounds, reserves, sports grounds and Splash Palace including the car park.**

8) Age range <18 19-30 31-50 51-65 65+

9) Do you smoke and/or vape? Smoke Y / N Vape Y / N Rather not say

10) And finally, what do you think are some benefits from having the Smokefree Vapefree areas?

_____

_____

_____

_____

Thank you for your time.

(Optional)

If you feel strongly about Smokefree & Vapefree in Invercargill I'd encourage you to keep an eye out for any public consultation opportunities when the ICC are reviewing this policy.

Survey: Invercargill Smokefree Policy Date: / / Bluff

1) Did you know about the Invercargill City Council Smokefree policy?
   Yes [ ] No [ ] **(If answered 'No', go to Q5)** Unsure [ ]

2) Did you know that it also includes vaping?
   Yes [ ] No [ ] Unsure [ ]

3) Do you know where the policy covers? Yes [ ] No [ ]
   a. If yes, ask where? _____
      _____
      _____

4) Do you know what part of the Invercargill city centre is included in the smokefree vapefree area?
   a. Yes If yes, ask where: Correct [ ] Incorrect [ ]
   b. No

5) Aside from the areas already covered by the policy ***(insert brief explanation, if not already discussed*)*** - would you support other areas of Invercargill to also be Smokefree and Vapefree? For example
   a. Bluff main street [ ]
   b. South City [ ]
   c. Glengarry [ ]
   d. Waikiwi [ ]
   e. Ascot [ ]
   f. Other areas: e.g. council car parks, other areas in Bluff _____
      _____

6) What's the best way to inform the public about the SFVF areas?_
   _____
   _____
   _____
   _____
   _____
   _____

7) Age range <18 19-30 31-50 51-65 65+

8) Do you smoke and/or vape? Smoke Y / N Vape Y / N Rather not say

*** The CBD, all parks, playgrounds, reserves, sports grounds and Splash Palace including the car park.**

10

9) And finally, what do you think are some benefits from having the Smokefree Vapefree areas?

_____
_____
_____
_____

Thank you for your time.

(Optional)

If you feel strongly about Smokefree & Vapefree in Bluff I'd encourage you to keep an eye out for any public consultation opportunities when the ICC are reviewing this policy.

Survey: Invercargill & SIT Smokefree Policy Date: 11 Feb 2026

~~CBD~~ ~~South City~~ **SIT**

1) Did you know about the Invercargill City Council Smokefree policy?
   Yes [ ] No [ ] (If answered 'No', go to Q5) Unsure [ ]

2) Did you know that it also includes vaping?
   Yes [ ] No [ ] Unsure [ ]

3) Do you know where the policy covers? Yes [ ] No [ ]
   a. If yes, ask where? _____
      _____
      _____

4) Do you know what part of the CBD is included in the smokefree vapefree area?
   a. Yes If yes, ask where: Correct [ ] Incorrect [ ]
   b. No

5) Aside from the areas already covered by the policy *(insert brief explanation, if not already discussed*)* - would you support other areas of Invercargill to also be Smokefree and Vapefree? For example other shopping areas such as
   a. South City [ ]
   b. Glengarry [ ]
   c. Waikiwi [ ]
   d. Ascot [ ]
   e. Other areas: e.g. council car parks _____
      _____

6) What's the best way to inform the public about the SFVF areas in Invercargill?_
   _____
   _____
   _____
   _____
   _____
   _____

7) Were you aware that the entire SIT campus is smokefree and vapefree?
   Yes [ ] No [ ] Unsure [ ]

8) Age range <18 19-30 31-50 51-65 65+

12

*** The CBD, all parks, playgrounds, reserves, sports grounds and Splash Palace including the car park.**

9) Do you smoke and/or vape? Smoke Y / N Vape Y / N Rather not say

10) And finally, what do you think are some benefits from having the Smokefree Vapefree areas?

_____
_____
_____
_____

Thank you for your time.

(Optional)

If you feel strongly about Smokefree & Vapefree in Invercargill I'd encourage you to keep an eye out for any public consultation opportunities when the ICC are reviewing this policy.

INVERCARGILL CITY YOUTH COUNCIL 2026 – GENERAL UPDATE

To:	Community and Regulatory Committee
Meeting Date:	Tuesday 11 August 2026
From:	Rhiannon Suter, Manager – Strategy, Policy and Engagement
Approved:	Trudie Hurst, Group Manager – Community Engagement and Corporate Services
Approved Date:	Wednesday 29 July 2026
Open Agenda:	Yes
Public Excluded Agenda:	No

Purpose and Summary

Youth Council have undertaken a range of civic learnings over the last four months. The group have made a submission to Council and attended multiple engagement events, including a Council workshop. Two Youth Councillors will be in attendance to speak to this report.

Recommendations

That the Community and Regulatory Committee:

1. Receives the report "Invercargill City Youth Council 2026 - General Update".

Background

The Invercargill City Youth Council (ICYC) has 22 members for the remainder of the 2026/2027 term. Current members are made up of community representatives from high schools in Invercargill. Youth Council meet fortnightly on a Wednesday afternoon between February and October 2026, excluding school holidays. Meetings alternate between formal ones in the Council Chamber and informal workshop style ones at the Invercargill Central Meeting Room spaces. The current Youth Council is piloting a two-year term through to October 2027.

Update

Youth Council recently had a vibrant workshop on coming up with some road names for new Invercargill Streets and will be submitting these through LetsTalk. Youth Councillors enjoyed researching historic and Te Reo Māori names for local botany and of course testing whether their own names could be put forward.

There was a suggestion by one of the Youth Council chairs to have a say in some future road naming ideas. Three proposed road names were decided on. Working with staff from other departments has been very well-received and is assisting in helping Youth Council develop a wider understanding of the various services and roles that make up Council as a whole.

Staff from the following departments have attended since the last report:

- Bluff Service Centre
- Animal Control
- Venues and Events

The attendance of Animal Control staff created some excellent engagement, with the rangatahi getting some hands-on experience with using a catchpole and learning how to micro-chip a dog. They were able to practice on Rocky, a toy rocking dog that the Environmental Services Team use to train their staff.

A recent highlight for Youth Council was the behind-the-scenes tour of the Civic Theatre. Youth Councillors were treated to an informative walk-through by the Operations and Technical Lead, where they got to see the set and costumes of Priscilla, learn about the rigging, understand more of the building history and special elements within it and end with a sunset view of the city from the theatre rooftop. The Manager, Governance and Legal presented to Youth Council about the proposed Council amalgamation and elections including information on the Representation Review. Members took a position of neutrality in regard to the Head Start process and trust the decision-makers, that the right call for Southland will be made.

Youth Council held a mini workshop to review the children's entries to the Wee Delights Competition and decide on their favourites. They were thrilled to hear many of the ideas they liked, such as fruit tree planting and outdoor movies, aligned with those chosen by Council.

Figure 1 – Youth Councillors on the rooftop of the Invercargill Civic Theatre after their tour - July 2026.

The team from Healthy Families Invercargill facilitated a session on kai resiliency in Murihiku which encouraged rangatahi to think about their local food system and the role they can play within it. The mood was bright and they worked well together to discuss ideas and solutions.

The future of food access is important for rangatahi to understand and have a say in, the decisions made today will affect them and their peers, so it was important that their voices were part of the conversation. Healthy Families said that the young people's awareness of the challenges facing their communities stood out, as well as their willingness to contribute ideas and think about what a stronger food future could look like for Murihiku.

Enviroschools has approached Youth Council to offer the opportunity for some Youth Councillors to present the school award at the up-coming Environment Southland Community Awards. Two Youth Councillors have agreed to undertake this role and will be working with Environment Southland staff to receive some Master of Ceremonies training ahead of the October 2026 event.

Three Youth Councillors also attended an information session with Citizens Advice Bureau and the Electoral Commission in the holidays. Citizens Advice hope to be out in the community with stands encouraging people to enrol and vote and are keen to partner with Youth Council around this.

Next Steps

Youth Council will have had four weeks off by the time of their next meeting of 29 July 2026 due to school holidays and the scheduling of their fortnightly hui. They have planned to hear from the Grace Street Project, learn about the up-coming Spatial Plan engagement. In the coming months they will interact with staff from the Three Waters team and undertake some training with Council Communications Team.

Youth Councillors appreciate consideration of their views on Council matters which will be contributed with consensus and as appropriate and relevant, throughout the next two years.

Attachments

Nil.