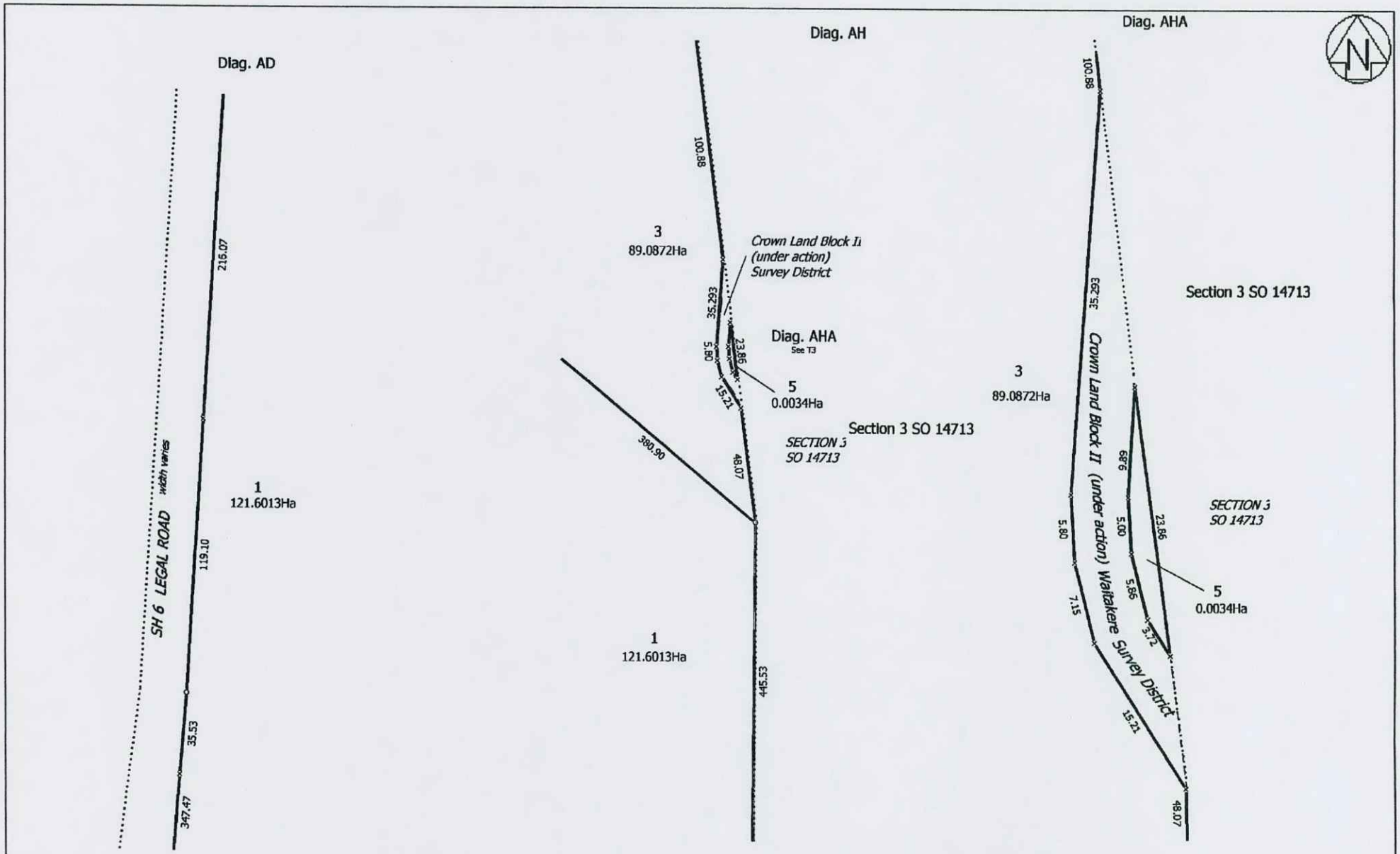
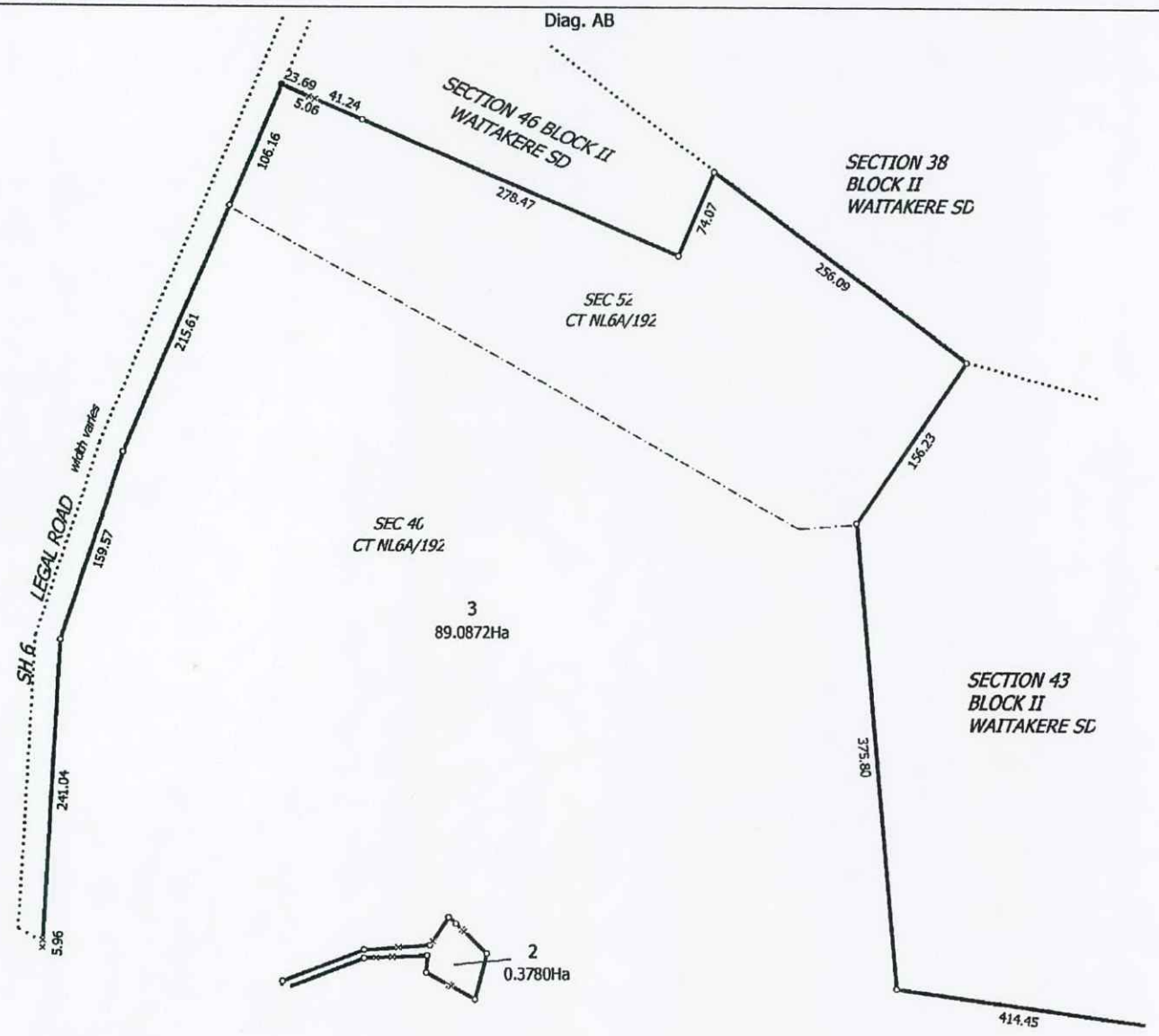


T 3/8

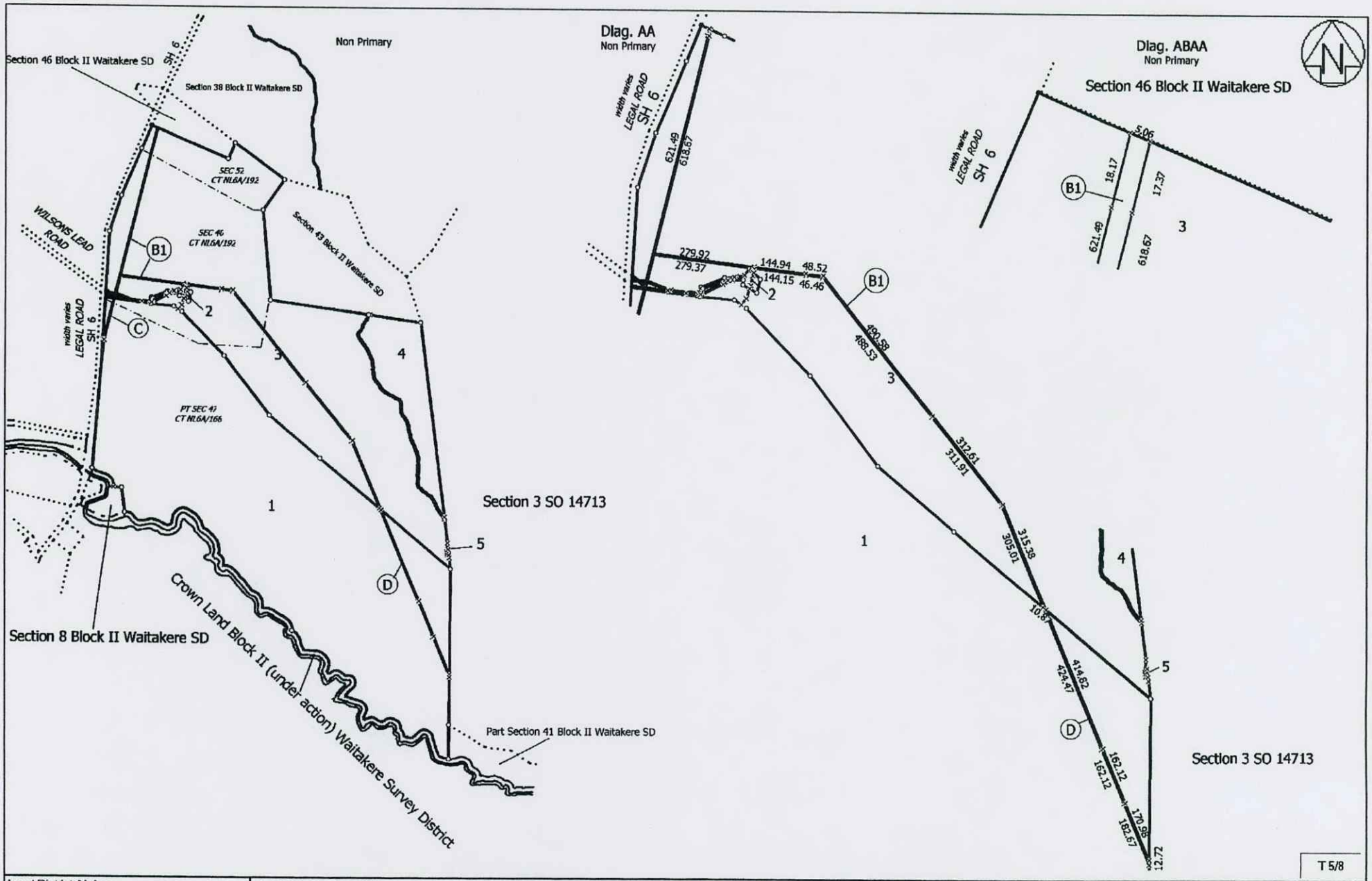
Land District: Nelson Digitally Generated Plan Generated on: 04/05/2006 09:44am Page 6 of 11	LOTS 1-5 BEING SUBDIVISION OF SECTIONS 40, 52 AND PART SECTION 47 BLK II WAITAKERE SD	Surveyor: Christopher John Coll Firm: Chris J Coll Surveyor	Digital Title Plan LT 360520 Approved on: 04/05/2006

Diag. AB

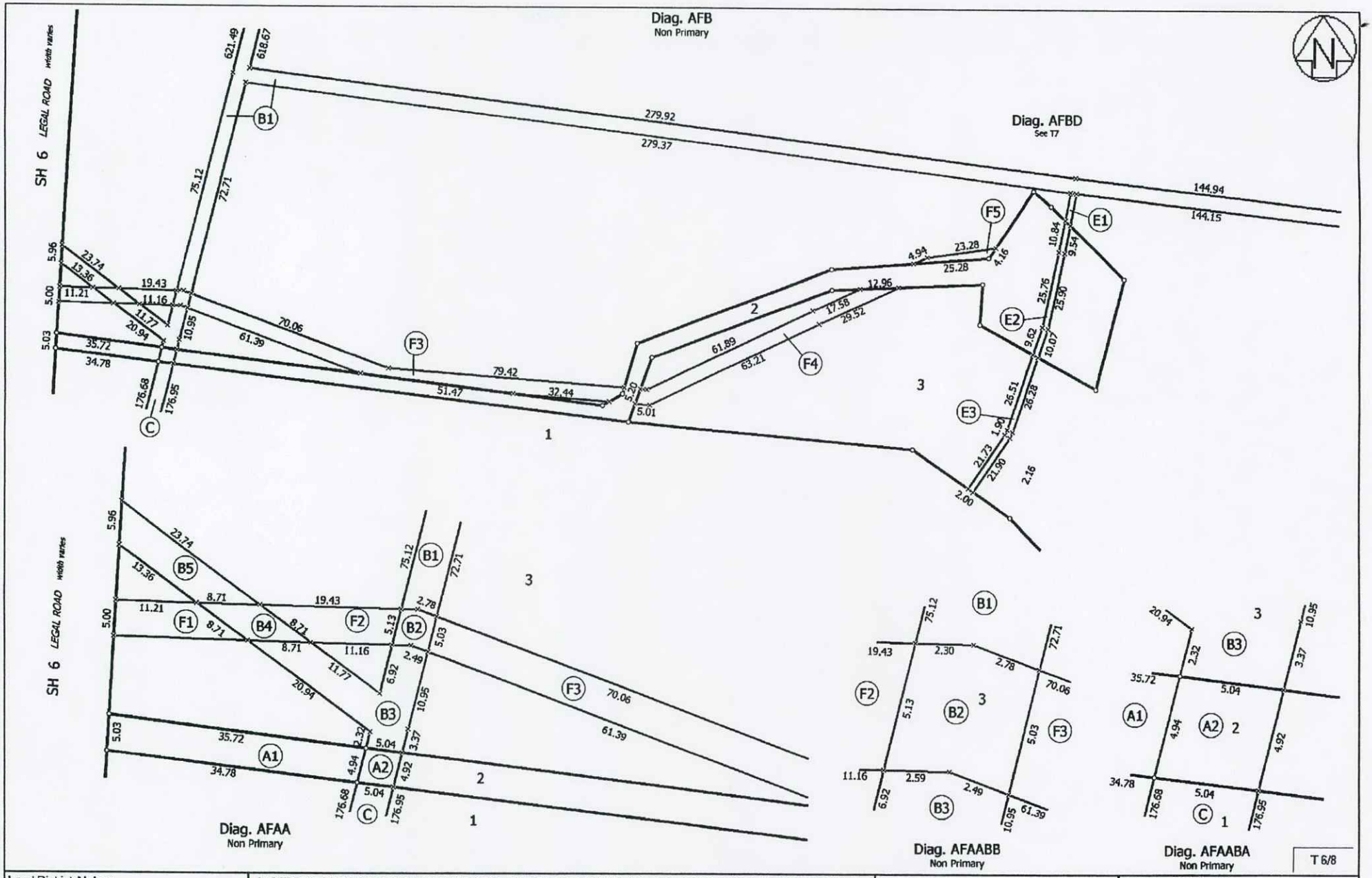


T 4/8

Land District: Nelson Digitally Generated Plan Generated on: 04/05/2006 09:44am Page 7 of 11	LOTS 1-5 BEING SUBDIVISION OF SECTIONS 40, 52 AND PART SECTION 47 BLK II WAITAKERE SD	Surveyor: Christopher John Coll Firm: Chris J Coll Surveyor	Digital Title Plan LT 360520 Approved on: 04/05/2006

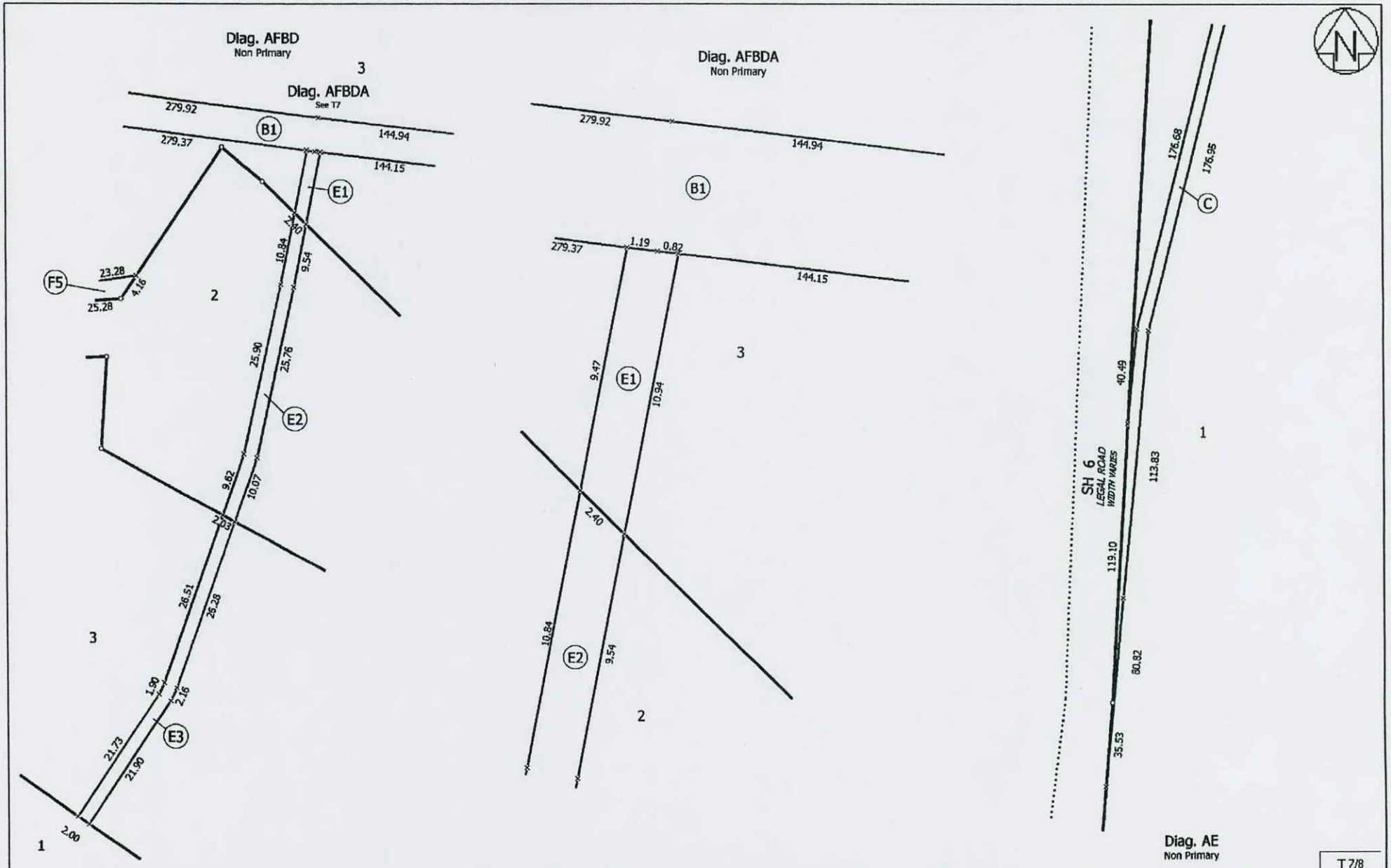


Land District: Nelson Digitally Generated Plan Generated on: 04/05/2006 09:44am Page 8 of 11	LOTS 1-5 BEING SUBDIVISION OF SECTIONS 40, 52 AND PART SECTION 47 BLK II WAITAKERE SD	Surveyor: Christopher John Coll Firm: Chris J Coll Surveyor	Digital Title Plan LT 360520 Approved on: 04/05/2006



T 6/8

Land District Nelson Digitally Generated Plan Generated on: 04/05/2006 09:44am Page 9 of 11	LOTS 1-5 BEING SUBDIVISION OF SECTIONS 40, 52 AND PART SECTION 47 BLK II WAITAKERE SD	Surveyor: Christopher John Coll Firm: Chris J Coll Surveyor	Digital Title Plan LT 360520 Approved on: 04/05/2006



Land District: Nelson Digitally Generated Plan Generated on: 04/05/2006 09:44am Page 10 of 11	LOTS 1-5 BEING SUBDIVISION OF SECTIONS 40, 52 AND PART SECTION 47 BLK II WAITAKERE SD	Surveyor: Christopher John Coll Firm: Chris J Coll Surveyor	Digital Title Plan LT 360520 Approved on: 04/05/2006

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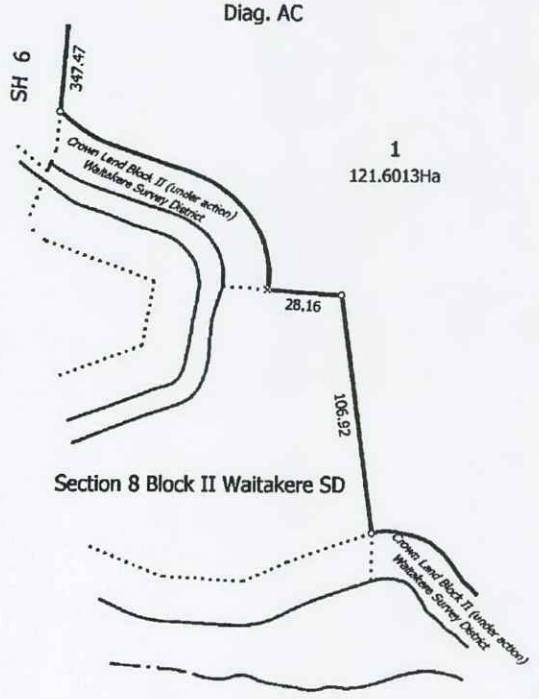

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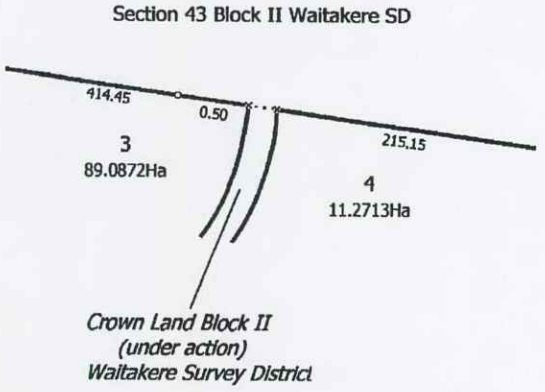

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Land District Nelson Digitally Generated Plan Generated on: 04/05/2006 09:44am Page 11 of 11	LOTS 1-5 BEING SUBDIVISION OF SECTIONS 40, 52 AND PART SECTION 47 BLK II WAITAKERE SD	Surveyor: Christopher John Coll Firm: Chris J Coll Surveyor	Digital Title Plan LT 360520 Approved on: 04/05/2006

CYCLONE INDUSTRIES (NZ) LTD. CHRISTCHURCH

9M SPAN GABLE TYPE BUILDINGS

Basic Covering Material List
for 4.5 metre bays

Ref. Drg No. 424

Building Length M		9	13.5	18	22.5	27
3.6M	Girts 125x50 M	8/4.8	4/4.5 8/4.8	8/4.5 8/4.8	12/4.5 8/4.8	16/4.5 8/4.8
	Dwangs 100x50 M	2/2.7	3/2.7	4/2.7	5/2.7	6/2.7
High	G.C. Iron 8 Corr	17/3600	25/3600	33/3600	41/3600	49/3600
	OR 10½ Corr	or 13/3600	or 19/3600	or 25/3600	or 31/3600	or 37/3600
	Nails S.H. kg	2.5	3.5	4	5	6
	Nails R.H. 100kg	.5	.5	1	1	1
4.2M	Girts 125x50 M	8/4.8	4/4.5 8/4.8	8/4.5 8/4.8	12/4.5 8/4.8	16/4.5 8/4.8
	Dwangs 100x50 M	2/3.3	3/3.3	4/3.3	5/3.3	6/3.3
High	G.C. Iron 8 Corr	17/2100 17/2400	25/2100 25/2400	33/2100 33/2400	41/2100 41/2400	49/2100 49/2400
	OR 10½ Corr	or 13/4200	or 19/4200	or 25/4200	or 31/4200	or 37/4200
	Nails S.H. kg	2.5	3.5	4	5	6
	Nails R.H. 100 kg	.5	.5	1	1	1

One end Incl. Gable. Building Height 'A' M		2.4	3	3.6	4.2
	Girts 125x50 M	1/2.1 2/2.7 8/4.8	1/2.1 2/2.7 8/4.8	1/2.1 2/2.7 10/4.8	1/2.1 2/2.7 10/4.8
	Dwangs 100x50 M	3/2.4	3/3	3/3.6	3/4.2
Wall	G.C. Iron 8 Corr	17/2400	17/3000	17/3600	17/2100 17/2400
Gable	G.C. Iron 8 Corr	10/2100	10/2100	10/2100	10/2100
	OR 10½ Corr.	7/2100 13/2400	7/2100 13/3000	7/2100 13/3000	7/2100 13/4200
	Nails S.H. kg	2	2	3	3
	Nails R.H. 100 kg	.5	.5	1	1
	Flashing 150x150 M	4.8	6	7.2	8.4

NOTE:
1. Double materials listed for two end walls.
2. If Longrun Iron is to be used it is preferable to measure on site and order to suit.

Minimum Foundation Materials: Premix .3 cubic metres
Cement 1¼ Bags per hole

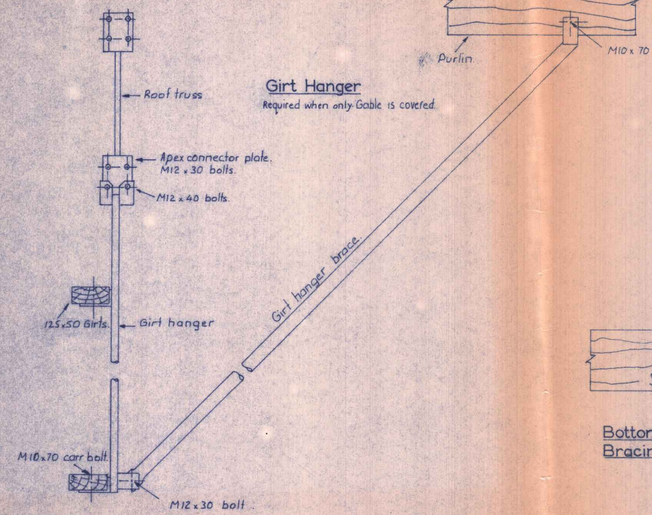
E. & O.E.

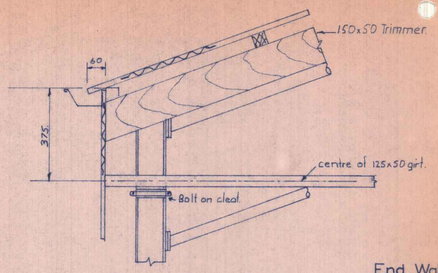
B

REVISIONS

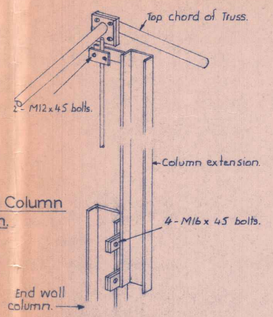
Girt Hanger

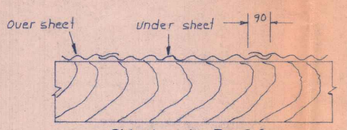
Required when only Gable is covered.





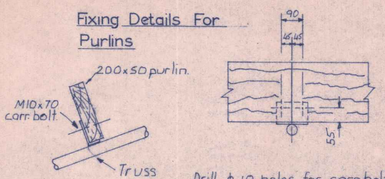
End Wall Column Extension.



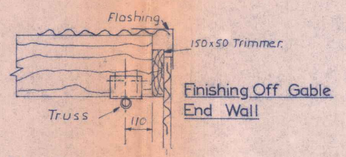


Side Lap In Roof & Wall Covering

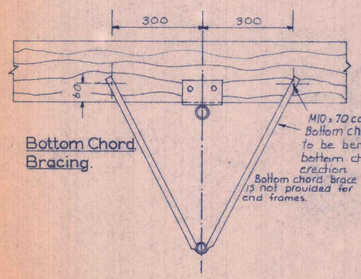
Fixing Details For Purlins



Drill ϕ 10 holes for carr bolts.
Use jig supplied for marking holes.

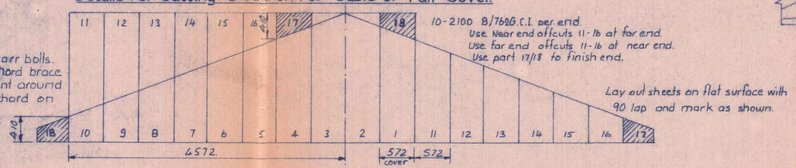


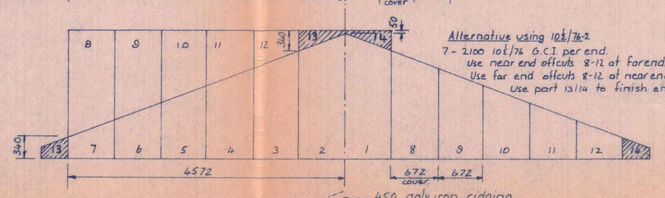
Finishing Off Gable End Wall

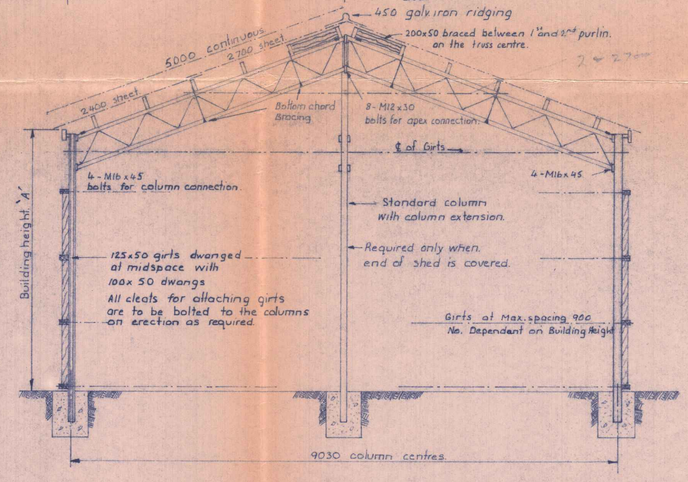


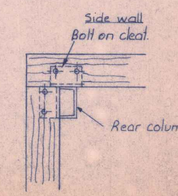
Bottom Chord Bracing.

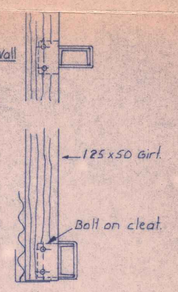
Details For Cutting Corr: Iron For Gable or Full Cover.





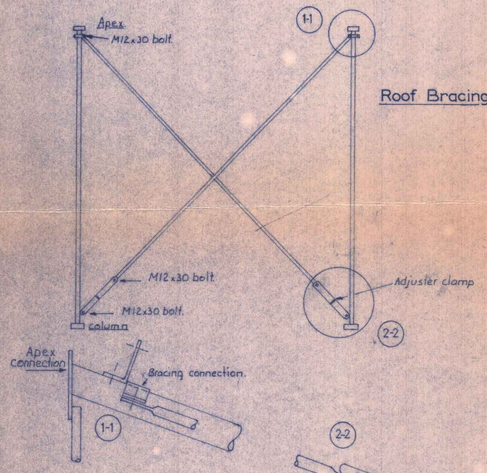


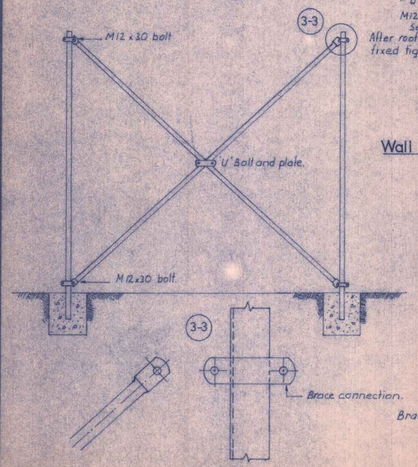




Fixing Girts

Roof Bracing.





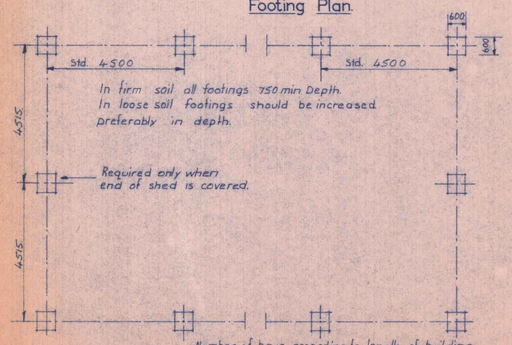
Wall Bracing

Bracing 1 set for each three bays or part thereof.
3 Bay building brace centre bay
Others brace end bays.
Always use roof & wall bracing in the same bay.
Wall bracing may be omitted for open fronted buildings.

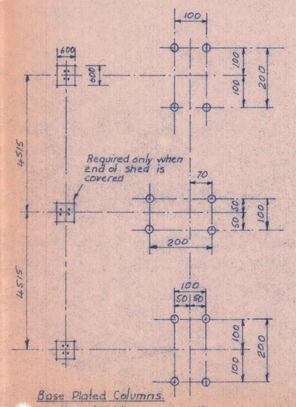
APP[illegible] Subject to Compliance with [illegible] N.Z.S. 1900, Drain[illegible] & Plumbing Regulations

Built :✓
P. &[illegible] :✓
Fire &[illegible]ress ✓
Heath[illegible] ✓
Tow[illegible]
A J Jarvis Inspector 3/10/75 Date

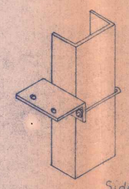
Footing Plan.



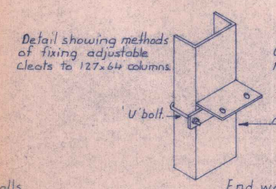
Cast in Concrete Columns.



Base Plated Columns.
Location of Holding Down Bolts.



Side walls



End walls.

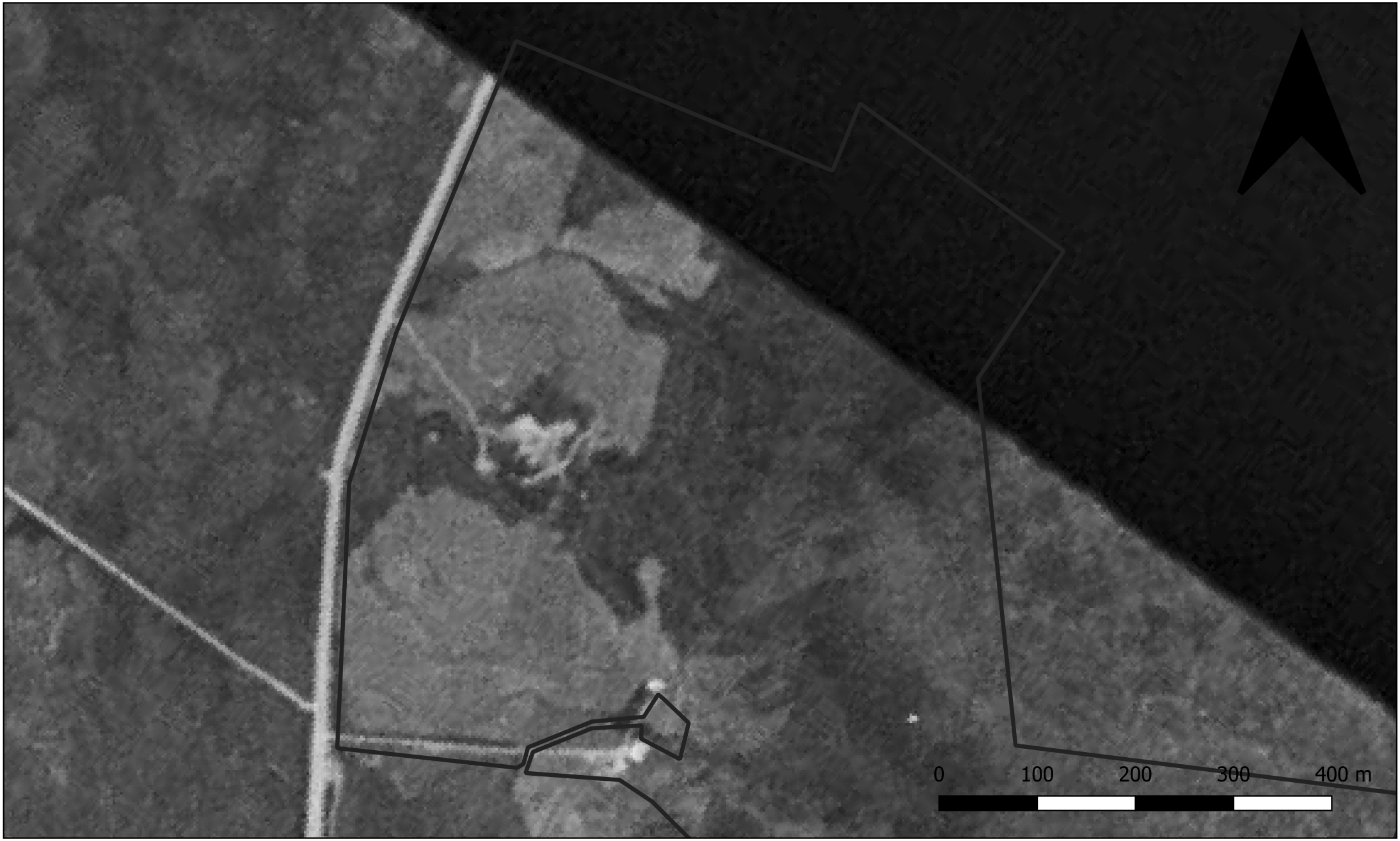
PLAN APPROVED		DATE	CUSTOMER'S SIGNATURE
PRICE VARIATION APPROVED			
DRAWN	S.E.M.		
CHECKED			424
APPROVED			
DATE	21-8-75	SCALES	1:10 1:50.

ERECTION DETAILS FOR 9metre SPAN GABLE BUILDING

CYCLONE INDUSTRIES (N Z) LTD.
CHRISTCHURCH

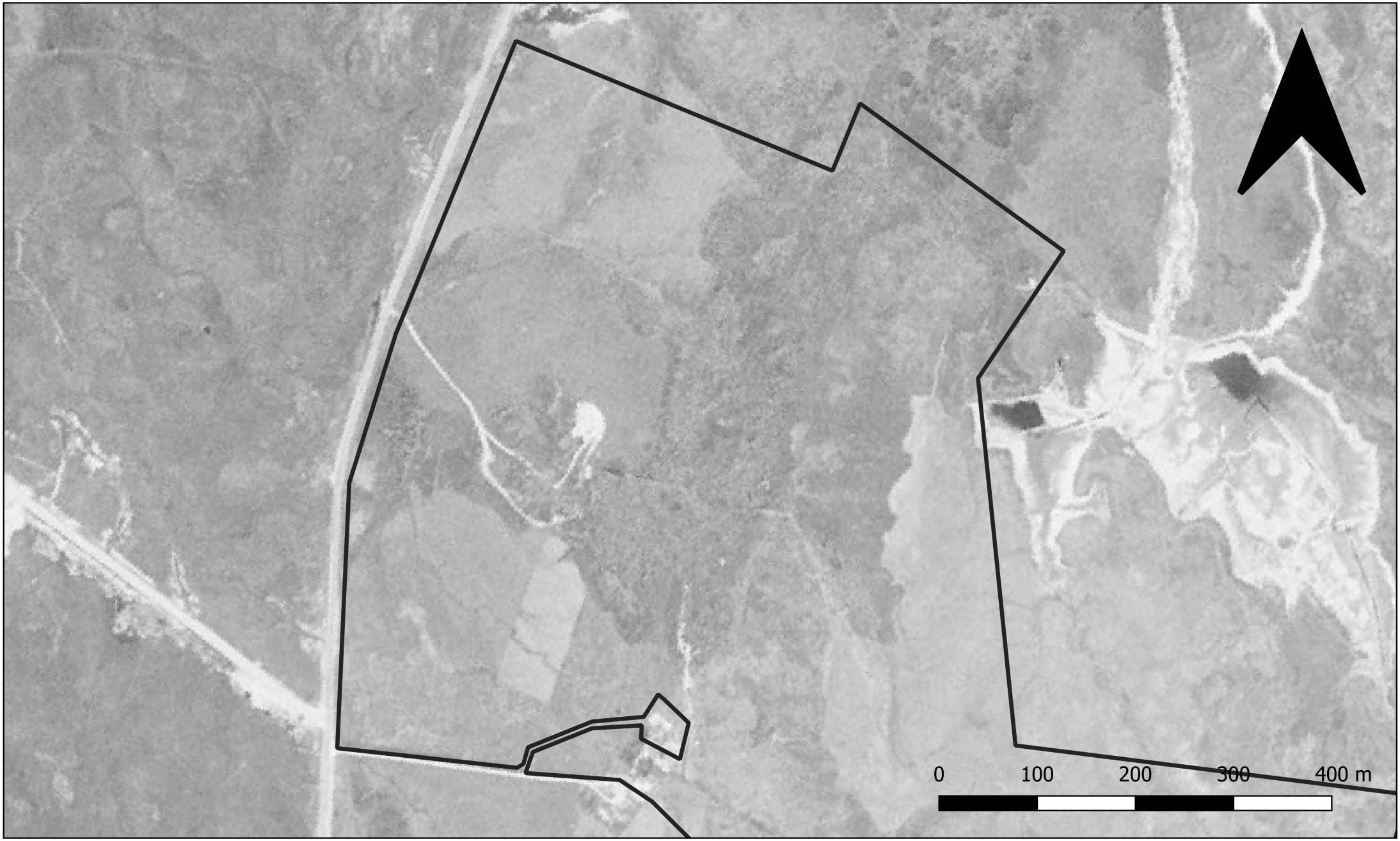
APPENDIX F

Historic Aerial



DAVIS OGILVIE
Davis Ogilvie & Partners Limited
Level 1, 24 Moorhouse Avenue, Addington, Christchurch 8140
Office 0800 999 333 Email hello@do.nz
www.do.nz

44214
SHY 6 RT 246193
1967 Historical aerial



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44214
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1974 Historical aerial

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44214
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1978 Historical aerial

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44214
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2003 Historical aerial

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44214
SHY 6 RT 246193
2012 Historical aerial

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44214
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2013 Historical aerial

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44214
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2015 Historical aerial

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44214
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2017 Historical aerial

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44214
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2019 Historical aerial

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44214
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2020 Historical aerial

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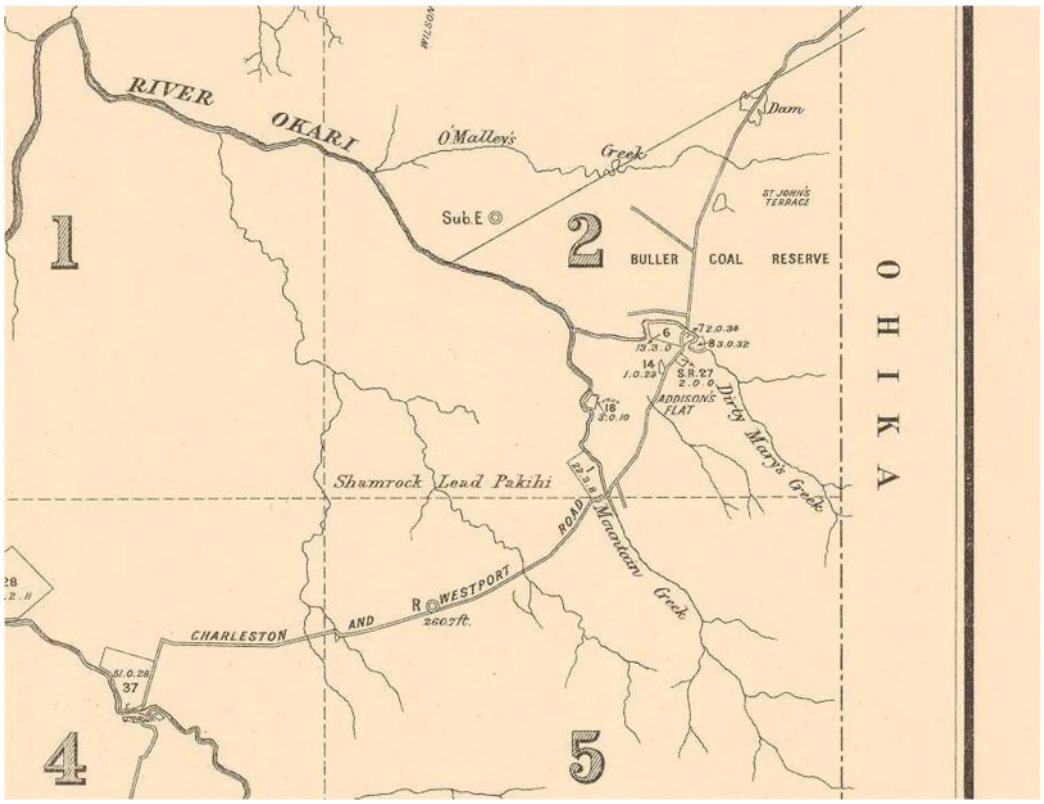
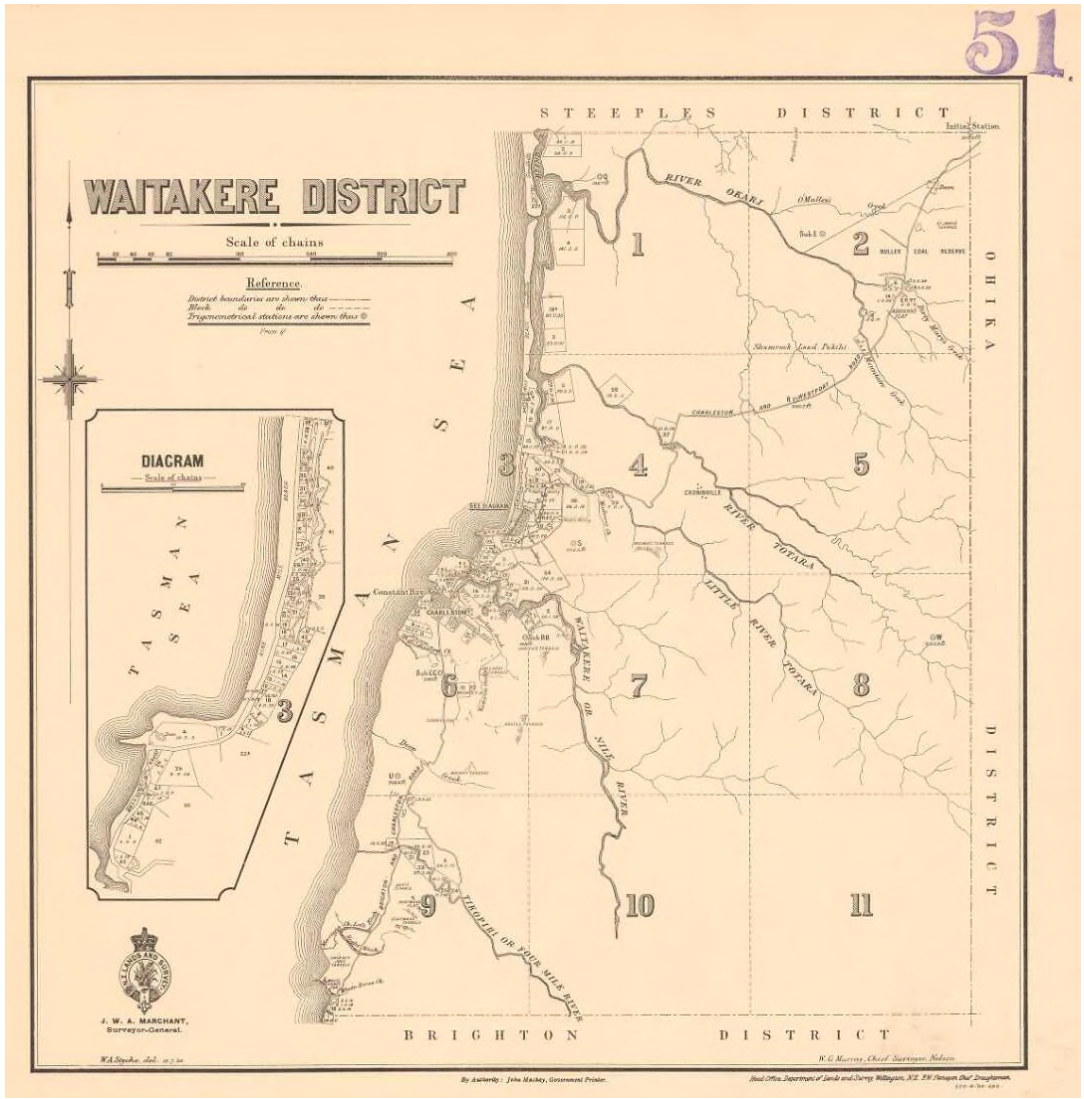
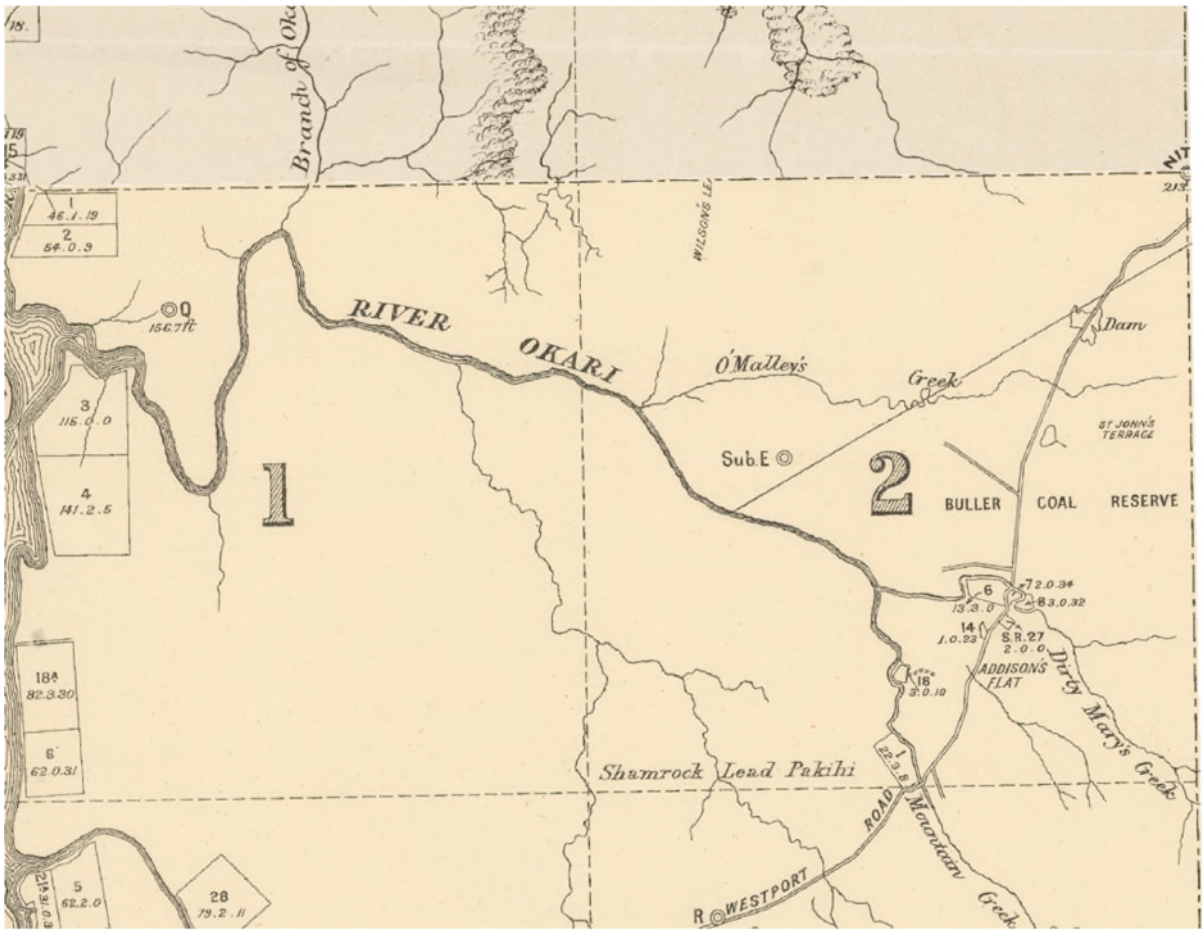
2023 Historical aerial



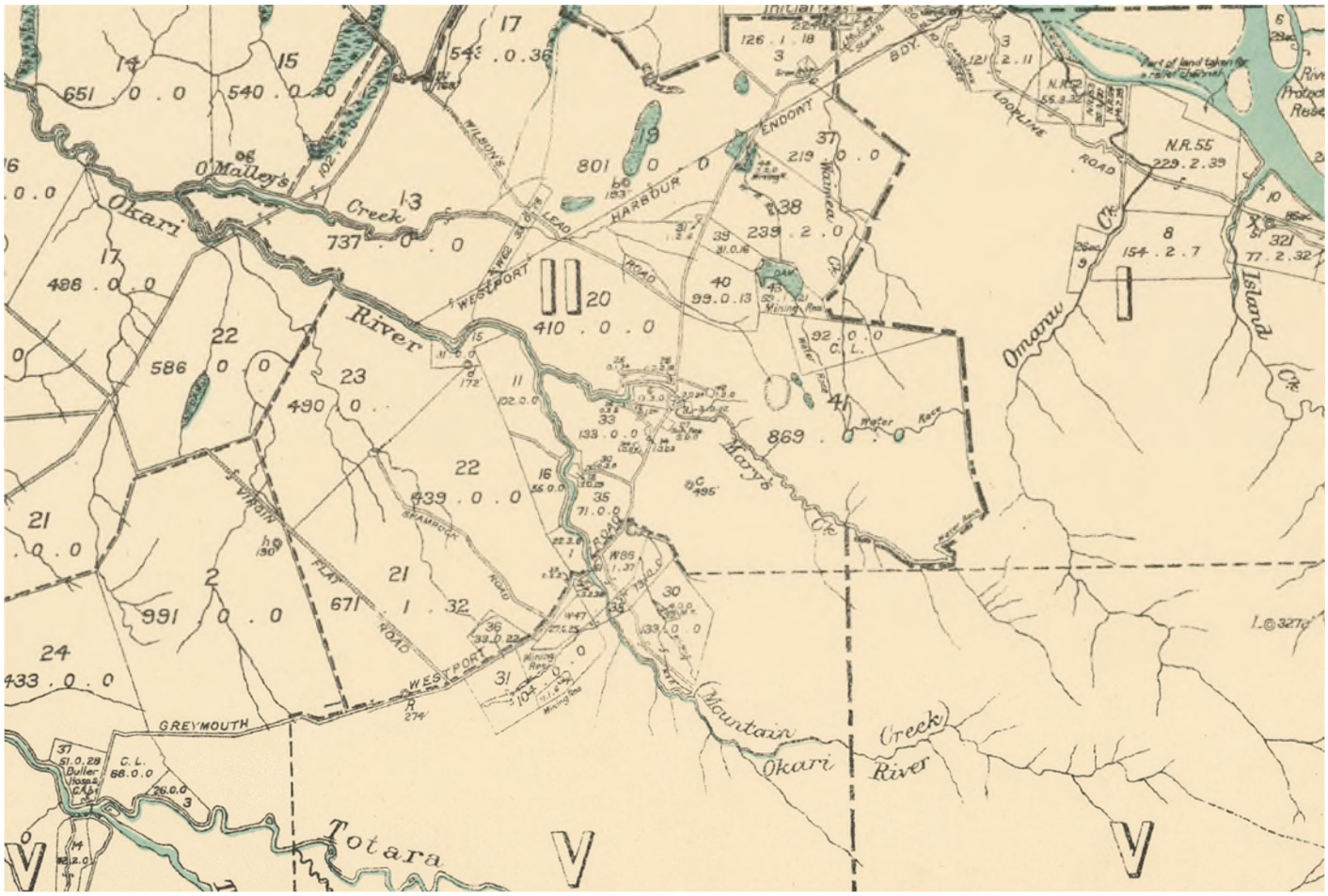
1904 Waitakere District Snip



1904 Waitakere District

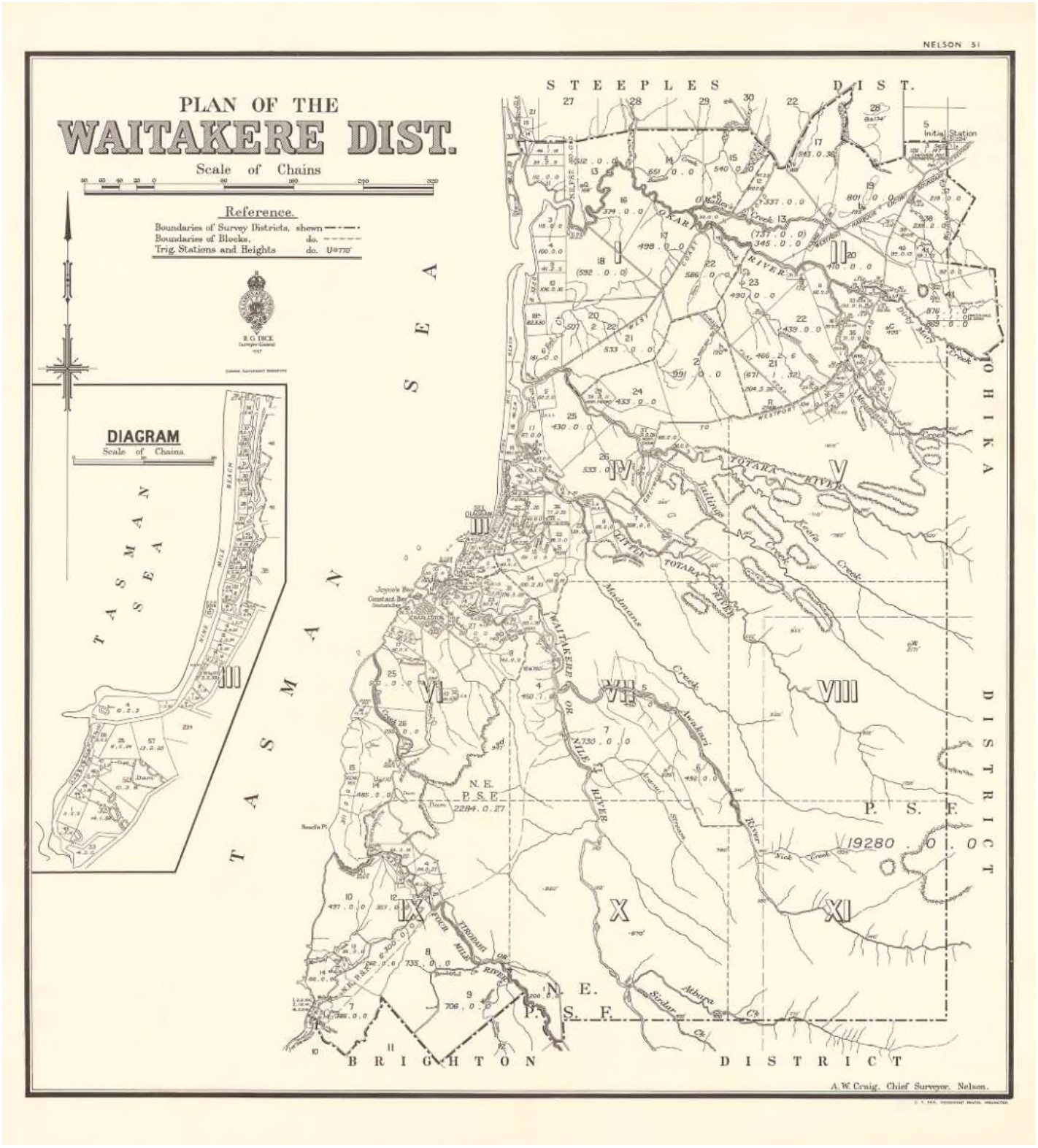

RIVER OKARI
O'Malley's Creek
Dam
Sub E
1
2
BULLER COAL RESERVE
ST JOHN'S TERRACE
ADDISONS FLAT
Dirty Mary's Creek
Shamrock Lead Pakihi
ROAD
Mountain Creek
WESTPORT

1904


Okari River
O'Malley's Creek
WESTPORT ROAD
HARBOUR LEAD
ENDONT
LOOKLINE ROAD
N.R.55
Omanu Ck
Island Ck
Mary's Ck
Mountain Creek
Okari River
GREYMOUTH
Totara

1925

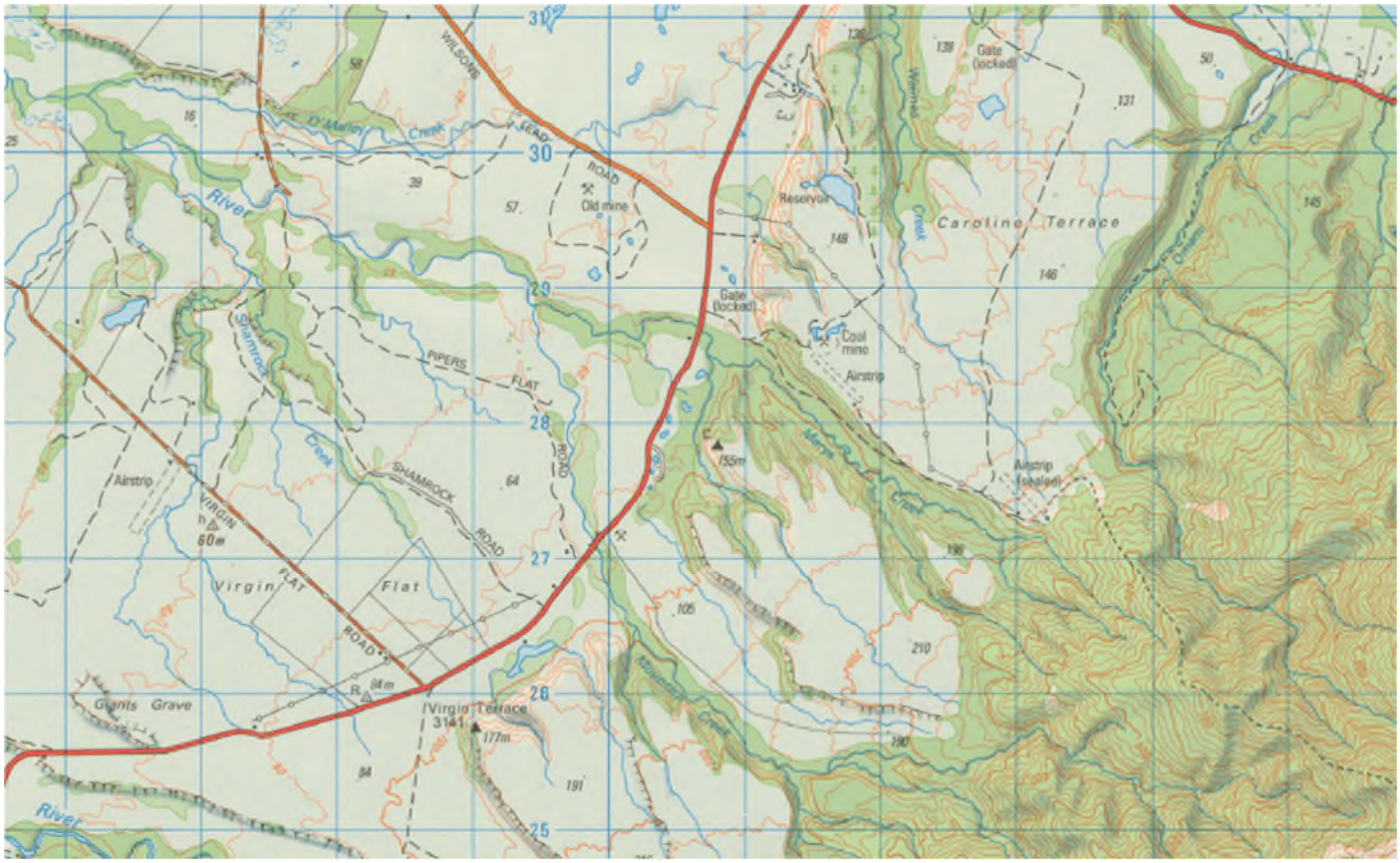
Addisons Flat
Caroline Terrace
Okari River
Flat
Pakihi
Virgin
Giants Grave
Open Pakihi
Scattered gorse and scrub
Old gold workings
Addisons Flat Gold Mine
Tailings
Dam
Huts
Pipe Line
WILSONS LEAD
GREYMOUTH
ROADS
Old Tailings
WATER RACE
Patches of burnt bush
Remn. bush on lower slopes
VIRGIN FLAT Rd
ROAD IN DISUSE
Old Tramway
WATER RACE
Mill
Waimea
Creek
Ontario Ck.
Initial
Scattered scrub
Logs
Open
Pakihi
Dam
Old Tailings
Old Gold workings
Patches roughly
Formed Road
Scrub
Open
Pakihi
Open
Pakihi
Open
Pakihi
Low stumps
Tall thick gorse & manuka
Scattered gorse and scrub running north & south in low ridges with many swampy hollows
Old gold workings
Abandoned sluicing
Flooded Claims
WATER RACE
Abandoned sluicing covered with scrub
Old Tailings
Old Tailings
Old Tailings



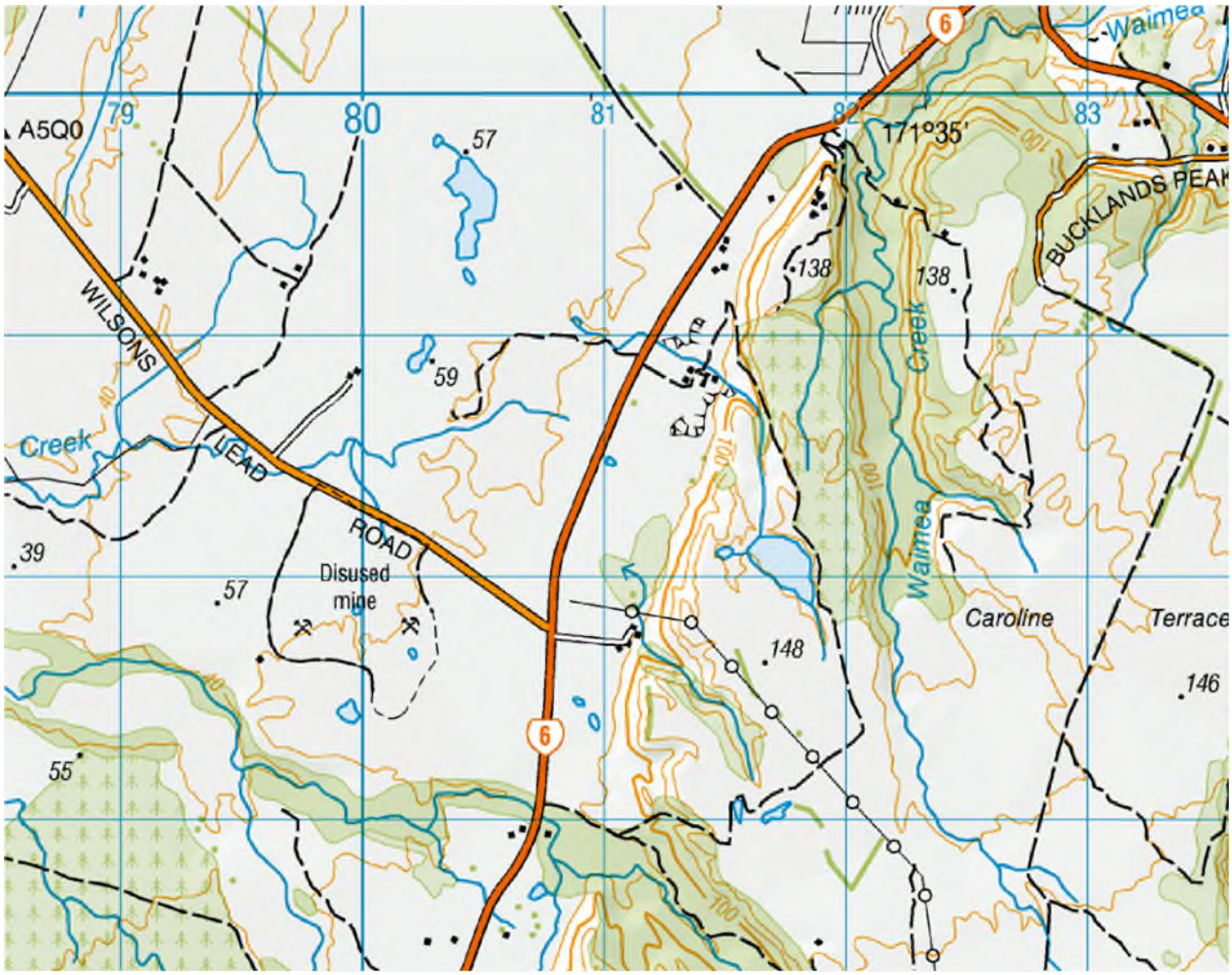
1947 Plan of the Waitakere District

Addisons
Flat
ROAD
Pump house
O'Malley Creek
Okari River
Vehicle track
Disused
Flat
Old cemetery
Caroline Terrace
Reservoir
Mill
Dam
Pakihi
Virgin
VIRGIN FLAT ROAD
Vehicle track
Scattered scrub
60 Mountain
Giants Grave
3141
Virgin Terrace
Scattered
scrub
Totara
Vehicle
Costello Hill
Locked gate
Creek
00
10

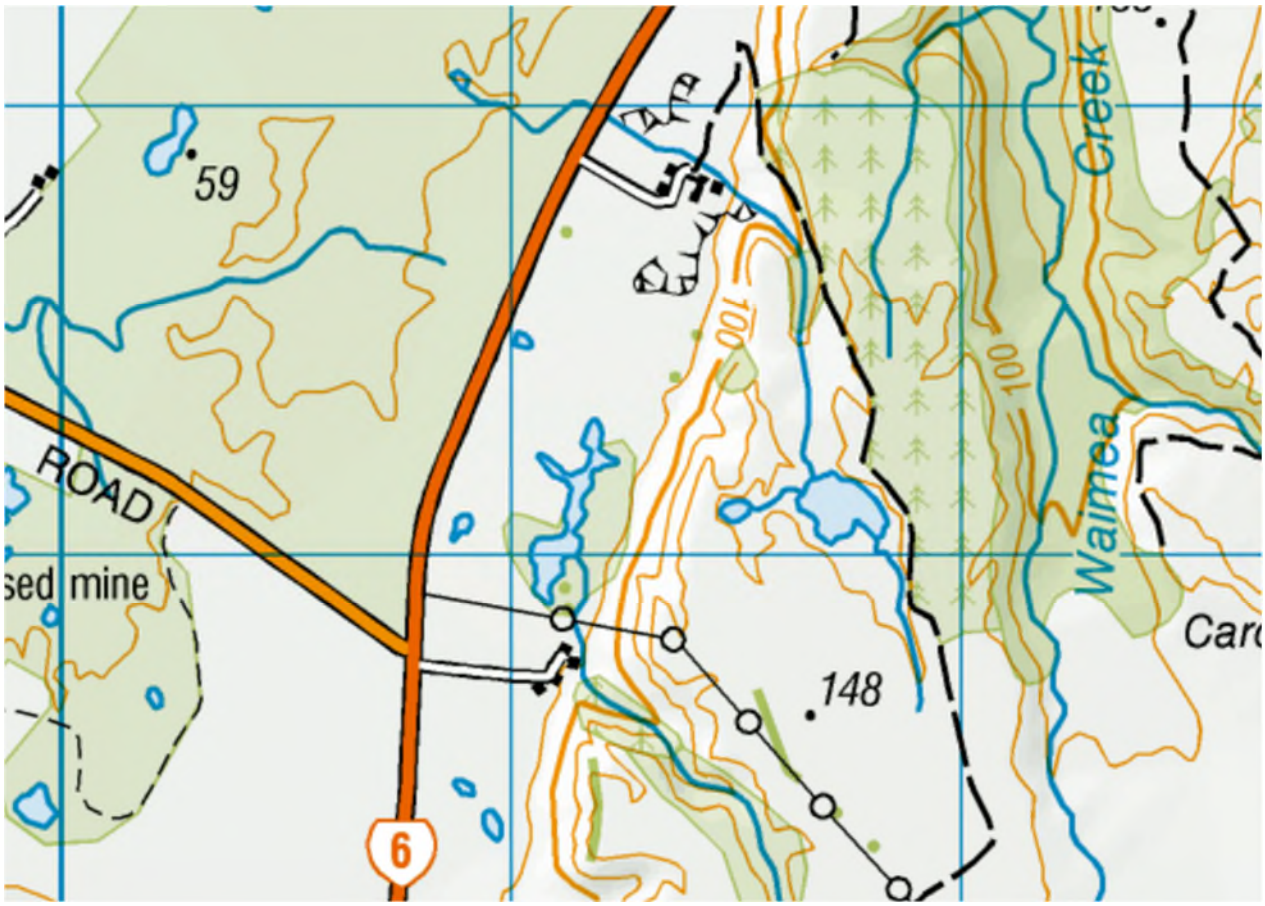
1972


WILSONS
ROAD
O'Malley Creek
River
Old mine
Reservoir
Caroline Terrace
Gate (locked)
Coal mine
Airstrip
PIPERS FLAT
SHAMROCK ROAD
Airstrip
VIRGIN FLAT ROAD
Virgin Flat
Giants Grave
Virgin Terrace
3141
177m
155m
Airstrip (sealed)
30
29
28
27
26
25

1994



2018 Topo50 BS20



Latest

IN conformity with the provisions of the Gold Mining Lease Regulations, published in the *New Zealand Gazette*, No. 15, of 1866, it is hereby notified that it is intended to GRANT a LEASE for GOLD MINING PURPOSES, of the Crown Land within the District of the Nelson South-West Goldfields, hereinafter described, viz.:—

A Block of Land containing Ten Acres, more or less, situated at the Cement Lead, Waite's Pakihis, about a quarter of a mile to the North of the Creek known as "Dirty Mary's," applied for by Patrick O'Toole and Company.

OSWALD CURTIS,
Superintendent.

On Waite's Pakihi, the miners, I regret to inform you, have lost their principal supply of water, by the sale of a very valuable race, known as Jack the Waterman's. The race has been purchased by Moran and party for the sum of £550. It carries twenty-two sluice-heads of water, and owing to the conformation of the ground, one party being able to use the water after another, a large number of men were dependent on it for their supply. The present owners purpose diverting the race to Addison's, to work their claim, and from there it will be discharged into Dirty Mary's Creek, so that none but Moran and party will be in a position to derive benefit from it. This party completed their tunnel on Christmas Eve, and in a few weeks will be in full work, with, it is anticipated, a very successful future before them.

V. R.

COURTS for the INANGAHUA and LYELL DISTRICTS will be held as under :—

April 19th...At Barker and Anderson's Store, Reefton.

21st...At Christy's, Inangahua Junction.

JOSEPH GILES,
Warden.

V. R.

NELSON SOUTH-WEST GOLDFIELDS.

NOTICE.

WHEREAS, a memorial has been received by me the undersigned, Warden of the Nelson South-West Goldfields, for the District of Buller, praying that the Regulations for Wet Claims may be declared in force upon that portion of the said Goldfields known as Addison's Flat and Shamrock Lead.

Now, therefore, I, the said Warden, in conformity with the said memorial, and with the Rules and Regulations of the said Goldfields, do hereby declare that the Regulations for Wet Claims are and shall be, from the date hereof, in force upon the portion of the said Goldfields referred to in the said memorial, and more particularly described as follows, that is to say :—

All that portion of the said Goldfields bounded on the North by Dirty Mary's Creek and the Okari; on the East by the foot of the ranges from Dirty Mary's Creek to the Totara; on the South by the northern branch of the Totara; and on the West by a line commencing at a point on the Okari due south from Trig. Station N, and drawn thence south-south-west to a point on the first branch of the Totara where the new road crosses the river.

Given under my hand at Westport, this 15th day of April, 1871.

JOSEPH GILES,
Warden.

WESTPORT WARDEN'S COURT

(Before Charles Broad, Esq., Warden.)

TUESDAY, FEBRUARY 22.

APPLICATIONS.

John Brady, John Corr, and six others. — Application to register special site for dam at St. John's Terrace, back of Waite's Pakihis, north of Dirty Mary's creek. Area, 700 feet by 500 feet; height of dam wall, 11 feet. Granted.

James Finlay, John Blackmore, George Way, and Lewis Thomas.— Application for goldmining lease, ten acres, for tunnelling and sluicing. Locality, Deadman's creek, between Giles and Rochfort Terrace. Term, 14 years. The area applied for being abandoned ground in consequence of rent first charged being too high. The surveyor's report stated that no objection had been recorded against the application. Recommended.

(For remainder of news see 4th page)

NELSON SOUTH-WEST GOLDFIELDS.

APPLICATION FOR AGRICULTURAL LEASE.

Westport, District of Buller,
March 18, 1878.

TO WARDEN BROAD,

I HEREBY apply for a Lease of Land for Agricultural Purposes, situate on Dirty Mary's Creek, Addison's Flat, comprising 50 acres or thereabouts; and I deposit herewith the Receiver's receipt for Ten Pounds (£10), in accordance with the Agricultural Lease Regulations of the 7th day of May, 1872, made under the Goldfields Act, 1863.

C. C. SCHWERER,
Addison's.

APPENDIX I

Laboratory Chain of Custody and Results

HillLabs

ANALYSIS REQUEST

Job No: **386 2397** Date Recv: 17-Apr-25 11:58

R J Hill Laboratories Limited
1/17 Print Place
Middleton
Christchurch 8042, New Zealan

0508 HILL LAB (44 555 22
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Received by: Harsharan Kaur

3138628976

Quote No

Primary Contact G. ODDY

Submitted By L. WILKINSON

Client Name

Address

Postcode

Phone *Mobile*

Email

Charge To Davis Ogilvie

Client Reference 44214

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*

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories *Date & Time:* 17.04

Name:

☐ *Tick if you require COC to be emailed back* *Signature:* EdW

Received at Hill Laboratories *(Refer to Lab created Job No above)*

Date & Time:

Name:

Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* Temp: 14.4

ADDITIONAL INFORMATION / KNOWN HAZARDS

upload to esdat please.

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	SS24@0.15	15.04	1130	S	7 HM
2	SS25@0.15		1140		7 HM
3	SS23@0.15		1125		7 HM
4	SS22@0.15		1120		7 HM
5	SS21		1110		7 HM
6	SS05		0800		7 HM
7	SS11@0.15		1000		
8	DUP_01				7 HM
9	SS08@0.15-0.2		0820		composite + 7 HM + Mercury
10	SS15@0.15-0.2		1025		
11	SS12@0.15		1005		PAH, 7 HM + Mercury
12	SS14@0.15		1015		PAH, 7 HM + Mercury

Continued on next page

No.	Sample Name	Sample Date	Sample Time	Sample Type	Tests Required (if not as per Quote)
13	SS09@0.15-0.2	S	0900		THM + Mercury
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
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)
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Job Information Summary

Client:	Davis Ogilvie & Partners Limited	**Lab No:**	3862397
Contact:	Gareth Oddy	**Date Registered:**	17-Apr-2025 1:08 pm
	C/- Davis Ogilvie & Partners Limited	**Priority:**	High
	PO Box 589	**Quote No:**	82763
	Addington	**Order No:**	
	Christchurch 8140	**Client Reference:**	44214
		Add. Client Ref:	
		Submitted By:	Lizzie Wilkinson
		Charge To:	Davis Ogilvie & Partners Limited
		Target Date:	30-Apr-2025 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	SS24@0.15 15-Apr-2025 11:30 am	Soil	cpBag	Heavy Metals, Screen Level, Total Recoverable Mercury
2	SS25@0.15 15-Apr-2025 11:40 am	Soil	cpBag	Heavy Metals, Screen Level, Total Recoverable Mercury
3	SS23@0.15 15-Apr-2025 11:25 am	Soil	cpBag	Heavy Metals, Screen Level, Total Recoverable Mercury
4	SS22@0.15 15-Apr-2025 11:20 am	Soil	cpBag	Heavy Metals, Screen Level, Total Recoverable Mercury
5	SS21 15-Apr-2025 11:10 am	Soil	cpBag	Heavy Metals, Screen Level, Total Recoverable Mercury
6	SS05 15-Apr-2025 8:00 am	Soil	cpBag	Heavy Metals, Screen Level, Total Recoverable Mercury
7	DUP_01 15-Apr-2025	Soil	cpBag	Heavy Metals, Screen Level, Total Recoverable Mercury
8	SS08@0.15-0.2 15-Apr-2025 8:20 am	Soil	cpBag	
9	SS15@0.15-0.2 15-Apr-2025 10:25 am	Soil	cpBag	
10	SS12@0.15 15-Apr-2025 10:05 am	Soil	cpBag	Heavy Metals with Mercury, Screen Level, Polycyclic Aromatic Hydrocarbons Screening in Soil
11	SS14@0.15 15-Apr-2025 10:15 am	Soil	cpBag	Heavy Metals with Mercury, Screen Level, Polycyclic Aromatic Hydrocarbons Screening in Soil
12	SS15@0-0.15 15-Apr-2025 10:20 am	Soil	cpBag	Hold Cold
13	Composite of SS08@0.15-0.2 & SS15@0.15-0.2 15-Apr-2025	Soil	OrgComp	Heavy Metals extensive suite, screen level (33 metals)
14	SS11@0.15 1000	Soil	cpBag	Hold Cold

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
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).	-	1-7, 10-11, 13
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).	-	13
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	10-11

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
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	1-7
Heavy Metals with Mercury, 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	10-11
Heavy Metals extensive suite, screen level (33 metals)	Dried sample, <2mm fraction. Nitric/Hydrochloric acid digestion, ICP-MS, screen level.	0.10 - 100 mg/kg dry wt	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	10-11
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	10-11
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2 (modified).	-	13
Composite Environmental Solid Samples	Individual sample fractions mixed together to form a composite fraction.	-	8-9
Total Recoverable Mercury	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2 (modified).	0.10 mg/kg dry wt	1-7
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	10-11
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	10-11

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

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Certificate of Analysis

Client:	Davis Ogilvie & Partners Limited	**Lab No:**	3862397	SPv2
Contact:	Gareth Oddy	**Date Received:**	17-Apr-2025	
	C/- Davis Ogilvie & Partners Limited	**Date Reported:**	29-Apr-2025	**(Amended)**
	PO Box 589	**Quote No:**	82763	
	Addington	**Order No:**		
	Christchurch 8140	**Client Reference:**	44214	
		Submitted By:	Lizzie Wilkinson	

Sample Type: Soil

		Sample Name:	SS24@0.15 15-Apr-2025 11:30 am	SS25@0.15 15-Apr-2025 11:40 am	SS23@0.15 15-Apr-2025 11:25 am	SS22@0.15 15-Apr-2025 11:20 am	SS21 15-Apr-2025 11:10 am
		Lab Number:	3862397.1	3862397.2	3862397.3	3862397.4	3862397.5
Individual Tests							
Total Recoverable Mercury	mg/kg dry wt		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Heavy Metals, Screen Level							
Total Recoverable Arsenic	mg/kg dry wt		< 2	< 2	2	< 2	< 2
Total Recoverable Cadmium	mg/kg dry wt		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt		10	9	12	10	10
Total Recoverable Copper	mg/kg dry wt		6	7	10	6	6
Total Recoverable Lead	mg/kg dry wt		7.7	7.3	6.9	7.7	8.2
Total Recoverable Nickel	mg/kg dry wt		5	5	5	5	5
Total Recoverable Zinc	mg/kg dry wt		23	25	34	23	17

		Sample Name:	SS05 15-Apr-2025 8:00 am	DUP_01 15-Apr-2025	SS12@0.15 15-Apr-2025 10:05 am	SS14@0.15 15-Apr-2025 10:15 am	Composite of SS08@0.15-0.2 & SS15@0.15-0.2 15-Apr-2025
		Lab Number:	3862397.6	3862397.7	3862397.10	3862397.11	3862397.13
Individual Tests							
Dry Matter	g/100g as rcvd		-	-	42	44	-
Total Recoverable Mercury	mg/kg dry wt		< 0.10	< 0.10	-	-	-
Heavy Metals, Screen Level							
Total Recoverable Arsenic	mg/kg dry wt		< 2	< 2	-	-	-
Total Recoverable Cadmium	mg/kg dry wt		< 0.10	< 0.10	-	-	-
Total Recoverable Chromium	mg/kg dry wt		11	10	-	-	-
Total Recoverable Copper	mg/kg dry wt		8	6	-	-	-
Total Recoverable Lead	mg/kg dry wt		8.3	8.2	-	-	-
Total Recoverable Nickel	mg/kg dry wt		5	4	-	-	-
Total Recoverable Zinc	mg/kg dry wt		22	15	-	-	-
Heavy Metals with Mercury, Screen Level							
Total Recoverable Arsenic	mg/kg dry wt		-	-	3	2	-
Total Recoverable Cadmium	mg/kg dry wt		-	-	0.13	0.14	-
Total Recoverable Chromium	mg/kg dry wt		-	-	11	10	-
Total Recoverable Copper	mg/kg dry wt		-	-	10	11	-
Total Recoverable Lead	mg/kg dry wt		-	-	15.0	14.7	-
Total Recoverable Mercury	mg/kg dry wt		-	-	0.86	0.72	-
Total Recoverable Nickel	mg/kg dry wt		-	-	6	6	-
Total Recoverable Zinc	mg/kg dry wt		-	-	199	132	-

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:		SS05 15-Apr-2025 8:00 am	DUP_01 15-Apr-2025	SS12@0.15 15-Apr-2025 10:05 am	SS14@0.15 15-Apr-2025 10:15 am	Composite of SS08@0.15-0.2 & SS15@0.15-0.2 15-Apr-2025
Lab Number:		3862397.6	3862397.7	3862397.10	3862397.11	3862397.13
Heavy Metals extensive suite, screen level (33 metals)						
Total Recoverable Aluminium	mg/kg dry wt	-	-	-	-	6,200
Total Recoverable Antimony	mg/kg dry wt	-	-	-	-	< 0.4
Total Recoverable Arsenic	mg/kg dry wt	-	-	-	-	< 2
Total Recoverable Barium	mg/kg dry wt	-	-	-	-	50
Total Recoverable Bismuth	mg/kg dry wt	-	-	-	-	< 0.4
Total Recoverable Boron	mg/kg dry wt	-	-	-	-	29
Total Recoverable Cadmium	mg/kg dry wt	-	-	-	-	< 0.10
Total Recoverable Caesium	mg/kg dry wt	-	-	-	-	0.5
Total Recoverable Calcium	mg/kg dry wt	-	-	-	-	12,800
Total Recoverable Chromium	mg/kg dry wt	-	-	-	-	11
Total Recoverable Cobalt	mg/kg dry wt	-	-	-	-	1.9
Total Recoverable Copper	mg/kg dry wt	-	-	-	-	4
Total Recoverable Iron	mg/kg dry wt	-	-	-	-	12,600
Total Recoverable Lanthanum	mg/kg dry wt	-	-	-	-	10.4
Total Recoverable Lead	mg/kg dry wt	-	-	-	-	5.8
Total Recoverable Lithium	mg/kg dry wt	-	-	-	-	4.6
Total Recoverable Magnesium	mg/kg dry wt	-	-	-	-	1,480
Total Recoverable Manganese	mg/kg dry wt	-	-	-	-	570
Total Recoverable Mercury	mg/kg dry wt	-	-	-	-	0.56
Total Recoverable Molybdenum	mg/kg dry wt	-	-	-	-	1.0
Total Recoverable Nickel	mg/kg dry wt	-	-	-	-	4
Total Recoverable Phosphorus	mg/kg dry wt	-	-	-	-	370
Total Recoverable Potassium	mg/kg dry wt	-	-	-	-	550
Total Recoverable Rubidium	mg/kg dry wt	-	-	-	-	5.5
Total Recoverable Selenium	mg/kg dry wt	-	-	-	-	< 20
Total Recoverable Silver	mg/kg dry wt	-	-	-	-	< 0.4
Total Recoverable Sodium	mg/kg dry wt	-	-	-	-	60
Total Recoverable Strontium	mg/kg dry wt	-	-	-	-	41
Total Recoverable Thallium	mg/kg dry wt	-	-	-	-	< 0.2
Total Recoverable Tin	mg/kg dry wt	-	-	-	-	< 1.0
Total Recoverable Uranium	mg/kg dry wt	-	-	-	-	0.86
Total Recoverable Vanadium	mg/kg dry wt	-	-	-	-	< 100
Total Recoverable Zinc	mg/kg dry wt	-	-	-	-	20
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	-	-	< 0.6	< 0.6	-
1-Methylnaphthalene	mg/kg dry wt	-	-	< 0.03	< 0.03	-
2-Methylnaphthalene	mg/kg dry wt	-	-	< 0.03	< 0.03	-
Acenaphthylene	mg/kg dry wt	-	-	< 0.03	< 0.03	-
Acenaphthene	mg/kg dry wt	-	-	< 0.03	< 0.03	-
Anthracene	mg/kg dry wt	-	-	< 0.03	< 0.03	-
Benzo[a]anthracene	mg/kg dry wt	-	-	< 0.03	< 0.03	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	< 0.03	< 0.03	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	-	< 0.057	< 0.053	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	-	< 0.056	< 0.053	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	-	< 0.03	< 0.03	-
Benzo[e]pyrene	mg/kg dry wt	-	-	< 0.03	< 0.03	-
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	< 0.03	< 0.03	-
Benzo[k]fluoranthene	mg/kg dry wt	-	-	< 0.03	< 0.03	-
Chrysene	mg/kg dry wt	-	-	< 0.03	< 0.03	-
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	< 0.03	< 0.03	-
Fluoranthene	mg/kg dry wt	-	-	< 0.03	< 0.03	-

Sample Type: Soil						
Sample Name:		SS05 15-Apr-2025 8:00 am	DUP_01 15-Apr-2025	SS12@0.15 15-Apr-2025 10:05 am	SS14@0.15 15-Apr-2025 10:15 am	Composite of SS08@0.15-0.2 & SS15@0.15-0.2 15-Apr-2025
Lab Number:		3862397.6	3862397.7	3862397.10	3862397.11	3862397.13
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Fluorene	mg/kg dry wt	-	-	< 0.03	< 0.03	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	< 0.03	< 0.03	-
Naphthalene	mg/kg dry wt	-	-	< 0.12	< 0.11	-
Perylene	mg/kg dry wt	-	-	< 0.03	< 0.03	-
Phenanthrene	mg/kg dry wt	-	-	< 0.03	< 0.03	-
Pyrene	mg/kg dry wt	-	-	< 0.03	< 0.03	-

Analyst's Comments

Amended Report: This certificate of analysis replaces report '3862397-SPv1' issued on 28-Apr-2025 at 5:12 pm.
Reason for amendment: Mercury added to 7 samples at clients request.

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**
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).	-	1-7, 10-11, 13
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).	-	13
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	10-11
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	1-7
Heavy Metals with Mercury, 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	10-11
Heavy Metals extensive suite, screen level (33 metals)	Dried sample, <2mm fraction. Nitric/Hydrochloric acid digestion, ICP-MS, screen level.	0.10 - 100 mg/kg dry wt	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	10-11
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	10-11
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2 (modified).	-	13
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	8-9
Total Recoverable Mercury	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2 (modified).	0.10 mg/kg dry wt	1-7
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	10-11

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
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	10-11

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 17-Apr-2025 and 29-Apr-2025. 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.

Graham Corban MSc Tech (Hons)
Client Services Manager - Environmental

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Certificate of Analysis

Client:	Davis Ogilvie & Partners Limited	**Lab No:**	3862397	SUPv2
Contact:	Gareth Oddy	**Date Received:**	17-Apr-2025	
	C/- Davis Ogilvie & Partners Limited	**Date Reported:**	29-Apr-2025	**(Amended)**
	PO Box 589	**Quote No:**	82763	
	Addington	**Order No:**		
	Christchurch 8140	**Client Reference:**	44214	
		Submitted By:	Lizzie Wilkinson	

Sample Type: Soil

		Sample Name:	SS24@0.15 15-Apr-2025 11:30 am	SS25@0.15 15-Apr-2025 11:40 am	SS23@0.15 15-Apr-2025 11:25 am	SS22@0.15 15-Apr-2025 11:20 am
		Lab Number:	3862397.1	3862397.2	3862397.3	3862397.4
Individual Tests						
Total Recoverable Mercury	mg/kg dry wt		< 0.10 ± 0.067	< 0.10 ± 0.067	< 0.10 ± 0.067	< 0.10 ± 0.067
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt		< 2 ± 1.4	< 2 ± 1.4	2.1 ± 1.4	< 2 ± 1.4
Total Recoverable Cadmium	mg/kg dry wt		< 0.10 ± 0.067	< 0.10 ± 0.067	< 0.10 ± 0.067	< 0.10 ± 0.067
Total Recoverable Chromium	mg/kg dry wt		9.9 ± 2.1	8.9 ± 1.9	12.4 ± 2.4	9.5 ± 2.0
Total Recoverable Copper	mg/kg dry wt		6.1 ± 1.6	6.7 ± 1.6	9.9 ± 1.9	5.6 ± 1.6
Total Recoverable Lead	mg/kg dry wt		7.7 ± 1.2	7.3 ± 1.2	6.9 ± 1.1	7.7 ± 1.2
Total Recoverable Nickel	mg/kg dry wt		5.1 ± 1.5	4.8 ± 1.5	5.4 ± 1.5	4.9 ± 1.5
Total Recoverable Zinc	mg/kg dry wt		23.4 ± 3.2	24.9 ± 3.2	34.2 ± 3.6	23.2 ± 3.2

		Sample Name:	SS21 15-Apr-2025 11:10 am	SS05 15-Apr-2025 8:00 am	DUP_01 15-Apr-2025	SS12@0.15 15-Apr-2025 10:05 am
		Lab Number:	3862397.5	3862397.6	3862397.7	3862397.10
Individual Tests						
Dry Matter	g/100g as rcvd		-	-	-	42.5 ± 5.0
Total Recoverable Mercury	mg/kg dry wt		< 0.10 ± 0.067	< 0.10 ± 0.067	< 0.10 ± 0.067	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt		< 2 ± 1.4	< 2 ± 1.4	< 2 ± 1.4	-
Total Recoverable Cadmium	mg/kg dry wt		< 0.10 ± 0.067	< 0.10 ± 0.067	< 0.10 ± 0.067	-
Total Recoverable Chromium	mg/kg dry wt		10.0 ± 2.1	10.8 ± 2.2	10.1 ± 2.1	-
Total Recoverable Copper	mg/kg dry wt		6.3 ± 1.6	7.9 ± 1.7	6.5 ± 1.6	-
Total Recoverable Lead	mg/kg dry wt		8.2 ± 1.3	8.3 ± 1.3	8.2 ± 1.3	-
Total Recoverable Nickel	mg/kg dry wt		4.7 ± 1.5	5.2 ± 1.5	4.3 ± 1.5	-
Total Recoverable Zinc	mg/kg dry wt		16.9 ± 3.0	21.8 ± 3.1	14.8 ± 2.9	-
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt		-	-	-	2.8 ± 1.4
Total Recoverable Cadmium	mg/kg dry wt		-	-	-	0.126 ± 0.068
Total Recoverable Chromium	mg/kg dry wt		-	-	-	11.5 ± 2.3
Total Recoverable Copper	mg/kg dry wt		-	-	-	10.2 ± 2.0
Total Recoverable Lead	mg/kg dry wt		-	-	-	15.0 ± 2.3
Total Recoverable Mercury	mg/kg dry wt		-	-	-	0.86 ± 0.16
Total Recoverable Nickel	mg/kg dry wt		-	-	-	6.1 ± 1.6
Total Recoverable Zinc	mg/kg dry wt		-	-	-	199 ± 15
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt		-	-	-	< 0.6
1-Methylnaphthalene	mg/kg dry wt		-	-	-	< 0.03 ± 0.032
2-Methylnaphthalene	mg/kg dry wt		-	-	-	< 0.03 ± 0.032
Acenaphthylene	mg/kg dry wt		-	-	-	< 0.03 ± 0.0070

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:		SS21 15-Apr-2025 11:10 am	SS05 15-Apr-2025 8:00 am	DUP_01 15-Apr-2025	SS12@0.15 15-Apr-2025 10:05 am
Lab Number:		3862397.5	3862397.6	3862397.7	3862397.10
Polycyclic Aromatic Hydrocarbons Screening in Soil*					
Acenaphthene	mg/kg dry wt	-	-	-	< 0.03 ± 0.0090
Anthracene	mg/kg dry wt	-	-	-	< 0.03 ± 0.0093
Benzo[a]anthracene	mg/kg dry wt	-	-	-	< 0.03 ± 0.0087
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	-	< 0.03 ± 0.0069
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	-	-	< 0.057 ± 0.011
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	-	-	< 0.056 ± 0.011
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	-	-	< 0.03 ± 0.0080
Benzo[e]pyrene	mg/kg dry wt	-	-	-	< 0.03 ± 0.0069
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	-	< 0.03 ± 0.0076
Benzo[k]fluoranthene	mg/kg dry wt	-	-	-	< 0.03 ± 0.0073
Chrysene	mg/kg dry wt	-	-	-	< 0.03 ± 0.0075
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	-	< 0.03 ± 0.0073
Fluoranthene	mg/kg dry wt	-	-	-	< 0.03 ± 0.0070
Fluorene	mg/kg dry wt	-	-	-	< 0.03 ± 0.0072
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	-	< 0.03 ± 0.0070
Naphthalene	mg/kg dry wt	-	-	-	< 0.12 ± 0.042
Perylene	mg/kg dry wt	-	-	-	< 0.03 ± 0.0069
Phenanthrene	mg/kg dry wt	-	-	-	< 0.03 ± 0.0074
Pyrene	mg/kg dry wt	-	-	-	< 0.03 ± 0.0073

Sample Name:		SS14@0.15 15-Apr-2025 10:15 am	Composite of SS08@0.15-0.2 & SS15@0.15-0.2 15-Apr-2025
Lab Number:		3862397.11	3862397.13
Individual Tests			
Dry Matter	g/100g as rcvd	44.2 ± 5.0	-
Heavy Metals with Mercury, Screen Level			
Total Recoverable Arsenic	mg/kg dry wt	2.4 ± 1.4	-
Total Recoverable Cadmium	mg/kg dry wt	0.141 ± 0.069	-
Total Recoverable Chromium	mg/kg dry wt	10.0 ± 2.1	-
Total Recoverable Copper	mg/kg dry wt	10.8 ± 2.0	-
Total Recoverable Lead	mg/kg dry wt	14.7 ± 2.3	-
Total Recoverable Mercury	mg/kg dry wt	0.72 ± 0.13	-
Total Recoverable Nickel	mg/kg dry wt	5.5 ± 1.5	-
Total Recoverable Zinc	mg/kg dry wt	132.2 ± 9.7	-
Heavy Metals extensive suite, screen level (33 metals)			
Total Recoverable Aluminium	mg/kg dry wt	-	6,190 ± 750
Total Recoverable Antimony	mg/kg dry wt	-	< 0.4 ± 0.27
Total Recoverable Arsenic	mg/kg dry wt	-	< 2 ± 1.4
Total Recoverable Barium	mg/kg dry wt	-	50.3 ± 3.1
Total Recoverable Bismuth	mg/kg dry wt	-	< 0.4 ± 0.27
Total Recoverable Boron	mg/kg dry wt	-	29.0 ± 5.1
Total Recoverable Cadmium	mg/kg dry wt	-	< 0.10 ± 0.067
Total Recoverable Caesium	mg/kg dry wt	-	0.53 ± 0.15
Total Recoverable Calcium	mg/kg dry wt	-	12,800 ± 1,800
Total Recoverable Chromium	mg/kg dry wt	-	10.7 ± 2.2
Total Recoverable Cobalt	mg/kg dry wt	-	1.93 ± 0.38
Total Recoverable Copper	mg/kg dry wt	-	4.0 ± 1.5
Total Recoverable Iron	mg/kg dry wt	-	12,600 ± 1,300
Total Recoverable Lanthanum	mg/kg dry wt	-	10.39 ± 0.85
Total Recoverable Lead	mg/kg dry wt	-	5.78 ± 0.91
Total Recoverable Lithium	mg/kg dry wt	-	4.64 ± 0.62
Total Recoverable Magnesium	mg/kg dry wt	-	1,480 ± 160
Total Recoverable Manganese	mg/kg dry wt	-	569 ± 57

Sample Type: Soil				
Sample Name:		SS14@0.15 15-Apr-2025 10:15 am	Composite of SS08@0.15-0.2 & SS15@0.15-0.2 15-Apr-2025	
Lab Number:		3862397.11	3862397.13	
Heavy Metals extensive suite, screen level (33 metals)				
Total Recoverable Mercury	mg/kg dry wt	-	0.56 ± 0.11	
Total Recoverable Molybdenum	mg/kg dry wt	-	0.98 ± 0.32	
Total Recoverable Nickel	mg/kg dry wt	-	4.0 ± 1.5	
Total Recoverable Phosphorus	mg/kg dry wt	-	367 ± 46	
Total Recoverable Potassium	mg/kg dry wt	-	550 ± 110	
Total Recoverable Rubidium	mg/kg dry wt	-	5.55 ± 0.62	
Total Recoverable Selenium	mg/kg dry wt	-	< 20 ± 14	
Total Recoverable Silver	mg/kg dry wt	-	< 0.4 ± 0.27	
Total Recoverable Sodium	mg/kg dry wt	-	60 ± 28	
Total Recoverable Strontium	mg/kg dry wt	-	41.4 ± 4.2	
Total Recoverable Thallium	mg/kg dry wt	-	< 0.2 ± 0.14	
Total Recoverable Tin	mg/kg dry wt	-	< 1.0 ± 0.67	
Total Recoverable Uranium	mg/kg dry wt	-	0.860 ± 0.085	
Total Recoverable Vanadium	mg/kg dry wt	-	< 100 ± 67	
Total Recoverable Zinc	mg/kg dry wt	-	19.9 ± 3.0	
Polycyclic Aromatic Hydrocarbons Screening in Soil*				
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.6	-	
1-Methylnaphthalene	mg/kg dry wt	< 0.03 ± 0.032	-	
2-Methylnaphthalene	mg/kg dry wt	< 0.03 ± 0.032	-	
Acenaphthylene	mg/kg dry wt	< 0.03 ± 0.0069	-	
Acenaphthene	mg/kg dry wt	< 0.03 ± 0.0087	-	
Anthracene	mg/kg dry wt	< 0.03 ± 0.0090	-	
Benzo[a]anthracene	mg/kg dry wt	< 0.03 ± 0.0084	-	
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.03 ± 0.0069	-	
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.053 ± 0.010	-	
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.053 ± 0.010	-	
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.03 ± 0.0078	-	
Benzo[e]pyrene	mg/kg dry wt	< 0.03 ± 0.0069	-	
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.03 ± 0.0075	-	
Benzo[k]fluoranthene	mg/kg dry wt	< 0.03 ± 0.0072	-	
Chrysene	mg/kg dry wt	< 0.03 ± 0.0074	-	
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.03 ± 0.0072	-	
Fluoranthene	mg/kg dry wt	< 0.03 ± 0.0070	-	
Fluorene	mg/kg dry wt	< 0.03 ± 0.0071	-	
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.03 ± 0.0069	-	
Naphthalene	mg/kg dry wt	< 0.11 ± 0.041	-	
Perylene	mg/kg dry wt	< 0.03 ± 0.0069	-	
Phenanthrene	mg/kg dry wt	< 0.03 ± 0.0073	-	
Pyrene	mg/kg dry wt	< 0.03 ± 0.0072	-	

The reported uncertainty is an expanded uncertainty with a level of confidence of approximately 95 percent (i.e. two standard deviations, calculated using a coverage factor of 2). Reported uncertainties are calculated from the performance of typical matrices, and do not include variation due to sampling.

For further information on uncertainty of measurement at Hill Laboratories, refer to the technical note on our website: www.hill-laboratories.com/files/Intro_To_UOM.pdf, or contact the laboratory.

Analyst's Comments

Amended Report: This certificate of analysis replaces report '3862397-SUPv1' issued on 28-Apr-2025 at 5:11 pm.
Reason for amendment: Mercury added to 7 samples at clients request.

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
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).	-	1-7, 10-11, 13
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).	-	13
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	10-11
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	1-7
Heavy Metals with Mercury, 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	10-11
Heavy Metals extensive suite, screen level (33 metals)	Dried sample, <2mm fraction. Nitric/Hydrochloric acid digestion, ICP-MS, screen level.	0.10 - 100 mg/kg dry wt	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	10-11
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	10-11
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2 (modified).	-	13
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	8-9
Total Recoverable Mercury	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2 (modified).	0.10 mg/kg dry wt	1-7
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	10-11
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	10-11

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 17-Apr-2025 and 29-Apr-2025. 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.

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Graham Corban MSc Tech (Hons)
Client Services Manager - Environmental

APPENDIX J

Assessment Tables

Table 1: XRF Readings Compared to Standard (NIST 2711a)						
Test Date: 15 Apr 2025 **Time**	**ID**	**Arsenic (ppm)**	**Copper (ppm)**	**Lead (ppm)**	**Nickel (ppm)**	**Zinc (ppm)**
1400	test	105	123	1311	20	344
	NISDT 2711a	107	140	1400	21.7	414
	RPD	1.9	12.9	6.6	8.2	18.5
	test	104	115	1309	20	347
	NISDT 2711a	107	140	1400	21.7	414
	RPD	2.8	19.6	6.7	8.2	17.6
1500	test	102	118	1295	20	342
	NISDT 2711a	107	140	1400	21.7	414
	RPD	4.8	17.1	7.8	8.2	19.0
	test	99	117	1323	22	341
	NISDT 2711a	107	140	1400	21.7	414
	RPD	7.8	17.9	5.7	1.4	19.3
1610	test	96	116	1298	23	346
	NISDT 2711a	107	140	1400	21.7	414
	RPD	10.8	18.8	7.6	5.8	17.9
	test	104	118	1305	22	342
	NISDT 2711a	107	140	1400	21.7	414
	RPD	2.8	17.1	7.0	1.4	19.0

Note:
RPD denotes Relative Percentage Difference
Highlighted red values denote an exceedance of 30 % RPD

44214 Soil Sample Analysis Results	Metals																														
	Aluminium	Antimony	Arsenic	Barium	Bismuth	Boron	Cadmium	Calcium	Cesium	Chromium (III+VI)	Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Strontium	Thallium	Tin	Uranium	Vanadium	Zinc
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Westport Site Specific Background Concentrations			**5.9**				**0.08**			**25**		**15.7**		**11.4**						**14.3**										**47.5**
ECan Background Concentrations (YBE)																		**0.11**												
NESCS RuralRes / Lifestyle 25% Prod			17			10,000	0.8			290		10,000		160				200												
NEPM Residential HIL A																				400										7400
ANZG Toxicant Default Guideline Values for Sediment Quality - DGV		2	20				1.5			80		65		50				0.15		21			1							200
ANZG Toxicant Default Guideline Values for Sediment Quality - GV - High		25	70				10			370		270		220				1		52			4							410

Lab Report No.	Field ID	Date	Analysis																												
3862397	**Composite of SS08@0.15-0.2 & SS15@0.15-0.2**	**15 Apr 2025**	**Laboratory**	6,200	<0.4	<2	50	<0.4	29	<0.10	12,800	0.5	11	1.9	4	12,600	5.8	4.6	1,480	570	**0.56**	1	**4**	550	<20	<0.4	41	<0.2	<1.0	0.86	<100	**20**

44214 Soil Sample Analysis Results				Metal							
				Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Elemental Mercury	Nickel	Zinc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Westport Area Background Concentrations				**5.9**	**0.08**	**25**	**15.7**	**11.4**		**14.3**	**47.5**
ECan Background Concentrations (YBE)									**0.11**		
NESCS RuralRes / Lifestyle 25% Prod				17	0.8	290	10,000	160	7		
NEPM Residential HIL A										400	7400
ANZG Toxicant Default Guideline Values for Sediment Quality - DGV				20	1.5	80	65	50	0.15	21	200
ANZG Toxicant Default Guideline Values for Sediment Quality - GV - High				70	10	370	270	220	1	52	410
Lab Report No.	**Field ID**	**Date**	**Analysis**								
	SS01@0-0.15	**15 Apr 2025**	**XRF**	2	-	-	13	**28**	-	<LOD	22
	SS02@0-0.15	**15 Apr 2025**	**XRF**	<LOD	-	-	14	9	-	<LOD	21
	SS02@0-0.15	**15 Apr 2025**	**XRF**	<LOD	-	-	14	9	-	<LOD	19
	SS03@0-0.15	**15 Apr 2025**	**XRF**	<LOD	-	-	7	9	-	<LOD	32
	SS04@0-0.15	**15 Apr 2025**	**XRF**	<LOD	-	-	8	4	-	<LOD	20
	SS05	**15 Apr 2025**	**XRF**	<LOD	-	-	11	**17**	-	<LOD	32
3862397	**SS05**	**15 Apr 2025**	**Laboratory**	<2	<0.10	11	8	8.3	< 0.10	5	22
	SS06	**15 Apr 2025**	**XRF**	<LOD	-	-	12	**19**	-	<LOD	32
	SS07	**15 Apr 2025**	**XRF**	<LOD	-	-	**21**	**19**	-	<LOD	29
	SS08@0-0.15	**15 Apr 2025**	**XRF**	4	-	-	4	2	-	<LOD	26
	SS08@0.15-0.2	**15 Apr 2025**	**XRF**	3	-	-	7	6	-	<LOD	24
	SS08@0.2-0.3	**15 Apr 2025**	**XRF**	5	-	-	8	10	-	<LOD	13
	SS09@0-0.15	**15 Apr 2025**	**XRF**	4	-	-	11	**12**	-	10	**63**
	SS10@0-0.15	**15 Apr 2025**	**XRF**	3	-	-	10	9	-	**17**	**49**
	SS10@0-0.15	**15 Apr 2025**	**XRF**	5	-	-	10	7	-	**19**	**55**
	SS10@0.15-0.2	**15 Apr 2025**	**XRF**	3	-	-	12	6	-	<LOD	44
	SS10@0.2-0.3	**15 Apr 2025**	**XRF**	4	-	-	<LOD	4	-	<LOD	15
	SS11@0.15	**15 Apr 2025**	**XRF**	3	-	-	8	7	-	<LOD	27
	SS12@0.15	**15 Apr 2025**	**XRF**	2	-	-	8	**12**	-	<LOD	**119**
3862397	**SS12@0.15**	**15 Apr 2025**	**Laboratory**	3	**0.13**	11	10	**15**	**0.86**	6	**199**
	SS13@0.15	**15 Apr 2025**	**XRF**	3	-	-	11	**15**	-	<LOD	**112**
	SS13@0.15	**15 Apr 2025**	**XRF**	4	-	-	11	**14**	-	<LOD	**111**
	SS14@0.15	**15 Apr 2025**	**XRF**	3	-	-	9	**14**	-	<LOD	**107**
	SS14@0.15	**15 Apr 2025**	**XRF**	3	-	-	10	**13**	-	<LOD	**107**
3862397	**SS14@0.15**	**15 Apr 2025**	**Laboratory**	2	**0.14**	10	11	**14.7**	**0.72**	6	**132**
	SS15@0-0.15	**15 Apr 2025**	**XRF**	<LOD	-	-	<LOD	<LOD	-	<LOD	34
	SS15@0-0.15	**15 Apr 2025**	**XRF**	3	-	-	8	9	-	<LOD	46
	SS15@0.15-0.2	**15 Apr 2025**	**XRF**	3	-	-	<LOD	7	-	<LOD	16
	SS15@0.3-0.4	**15 Apr 2025**	**XRF**	3	-	-	4	7	-	<LOD	15
	SS16	**15 Apr 2025**	**XRF**	<LOD	-	-	8	**21**	-	<LOD	47
	SS16	**15 Apr 2025**	**XRF**	<LOD	-	-	<LOD	**19**	-	<LOD	34
	SS17@0.15	**15 Apr 2025**	**XRF**	4	-	-	**27**	**33**	-	<LOD	**65**
	SS18@0-0.15	**15 Apr 2025**	**XRF**	2	-	-	7	9	-	<LOD	**59**
	SS19@0-0.15	**15 Apr 2025**	**XRF**	3	-	-	6	**16**	-	<LOD	19
	SS20@0-0.15	**15 Apr 2025**	**XRF**	<LOD	-	-	3	**13**	-	<LOD	14
	SS21	**15 Apr 2025**	**XRF**	<LOD	-	-	5	**24**	-	14	39
3862397	**SS21**	**15 Apr 2025**	**Laboratory**	<2	<0.10	10	6	8.2	< 0.10	5	17
	SS22@0.15	**15 Apr 2025**	**XRF**	3	-	-	10	**21**	-	<LOD	36
3862397	**SS22@0.15**	**15 Apr 2025**	**Laboratory**	<2	<0.10	10	6	7.7	< 0.10	5	23
	SS23@0.15	**15 Apr 2025**	**XRF**	3	-	-	11	**18**	-	<LOD	46
3862397	**SS23@0.15**	**15 Apr 2025**	**Laboratory**	2	<0.10	12	10	6.9	< 0.10	5	34
	SS24@0.15	**15 Apr 2025**	**XRF**	<LOD	-	-	9	**18**	-	<LOD	32
	SS24@0.15	**15 Apr 2025**	**XRF**	<LOD	-	-	8	**23**	-	<LOD	32
3862397	**SS24@0.15**	**15 Apr 2025**	**Laboratory**	<2	<0.10	10	6	7.7	< 0.10	5	23
	SS25@0.15	**15 Apr 2025**	**XRF**	<LOD	-	-	5	**19**	-	<LOD	30
3862397	**SS25@0.15**	**15 Apr 2025**	**Laboratory**	< 2	<0.10	9	7	7.3	<0.10	5	25

Environmental Standards

Manaaki Whenua Landcare Research, Predicted Background Soil Concentrations, New Zealand (H3 resolution 9), 2023, Westport Background Concentrations

Tonkin and Taylor Ltd (2006) Soil Trace Elements Level 2

Ministry for the Environment, April 2012, NESCS Soil Contaminant Standards for Health

The National Environment Protection Council (2011) Investigation Levels For Soil and Groundwater

ANZG, ANZG Toxicant Default Guideline Values for Sediment Quality

			PAH																				
			B(a)P PEF (NZ NES)	1-Methylnaphthalene	2-methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a) pyrene	Benzo(b+j)fluoranthene	Benzo(e)pyrene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Perylene	Pyrene	PAHs (Sum of total)
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
ECan Christchurch Urban Background (PAH)			**0.922**			**0.055**	**0.069**	**0.113**	**0.47**	**0.595**			**0.459**	**0.296**	**0.539**	**0.112**	**1.345**	**0.06**	**0.385**	**0.029**	**0.703**		**1.362**	
ANZG Toxicant Default Guideline Values for Sediment Quality - DGV																								10
ANZG Toxicant Default Guideline Values for Sediment Quality - GV - High																								50
Lab Report Number	**Field ID**	**Date**																						
3862397	**SS12@0.15**	**15 Apr 2025**	<0.057	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.12	<0.03	<0.03	<0.03	<0.6
3862397	**SS14@0.15**	**15 Apr 2025**	<0.053	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.11	<0.03	<0.03	<0.03	<0.6

Environmental Standards

Environment Canterbury, 2007, ECan Christchurch Urban Background (PAH)

ANZG, ANZG Toxicant Default Guideline Values for Sediment Quality