

830.97

18 June 2009

SKM
Mayfair House
54 The Terrace
PO Box 10 283
WELLINGTON 6143



Attn: Ben Fountain

PINEHAVEN STREAM CROSS SECTIONS

Further to your instructions, we now summarise our surface feature survey report as follows :-

1.0 Overview

The information obtained from this survey is to be used to model the streams throughout the Silverstream area.

Landlink Ltd has been responsible for compiling cross section information as detailed in PARTICULAR REQUIREMENTS of the contract documents.

2.0 Methodology

A GPS survey system was used to layout survey marks in order to collect the surface feature information by total station methods. The GPS point data was collected in the *real time kinetic (RTK)* mode using IBASE technology (A permanent base station communicating to a rover receiver via cell phone), and uploaded into the Leica Total Station.

The surface feature data is collected in Geodetic 2000 Wellington Circuit coordinates based on control marks as setout in the Control Points file previously supplied

All data was subsequently converted to NZMG Co-ordinates during the data processing.

2.1 Data Collection

Survey points were established with the GPS equipment and the cross sections were surveyed using the Total Station theodolite.

ClientFinalReport.doc/Page 1 of 2

Landlink – Your Trusted Advisor in Land Development

LANDLINK LTD
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contactus@landlink.co.nz



WELLINGTON
P O Box 29003
Wellington 6030
Phone:(04) 938 1093
Fax: (04) 902 6162

KAPITI COAST
P O Box 370
Waikanae 6454
Phone: (04) 902 6161
Fax: (04) 902 6162

3.0 Accuracies

The recognised accuracy for GPS *real time kinetic (RTK)* is ;

- Horizontal 0.02m
- Vertical 0.04m

These were the error parameters set for capture of the GPS data. No data is accepted for any single measurement without the instruments internal checks meeting these parameters

4.0 Data Gained

All structures identified were surveyed and a photo has been supplied marked up with the dimensions. A cross section was surveyed upstream each structure and an invert level at the inlet and outlet where possible.

All data has been tabulated in the attached XLS file with Point Code, Position and Height data displayed.

Field notes of the particular control points have been attached, and obtained from the LINZ Geodetic Database and survey plans. This is how we located the points for the survey.

5.0 Problems Encountered

No major problems were encountered with the survey.

Thank you for your instructions and we would be happy to clarify any matters which are unclear.

Yours sincerely
LANDLINK LTD



Paul Turner
Registered Professional Surveyor

LINZ Geodetic database

The Geodetic Database can be used to search for and download information about 106757 geodetic marks in New Zealand, the Chatham Islands, and Antarctica.

The database can be accessed by searching on a [map](#) or by using a [text only](#) version.

Search Help

code
 name
 address

c4jw

[Advanced Search](#)
[Display previous search results](#)
[Display saved marks](#)

[Save C4JW for download](#)

C4JW

Name(s)

RM 69 SO 30190

Description

15 mm SS pin in corner of concrete Telecom junction box up 0.01 m.
 Last maintained: 11-Aug-2008

Detailed information

- [Mark details](#)
- [Maintenance history](#)
- [Site photograph \(2000\)](#)
- [Site photograph \(2000\)](#)
- [Mark diagram \(scanned Jun 2000\)](#)
- [Reliability diagram \(2000\)](#)
- [KML mark file](#)



Key

- Order 0 stations
- Order 1 stations
- Order 2 stations
- Order 3 stations
- Order 4 stations
- Order 5 (GPS) stations
- Order 5 (traverse) stations
- Order 6 stations
- Order 7i stations
- Order 7ii stations
- Order 7iii stations
- Order 8 stations
- Order 9 stations
- Order 10 stations

Warning: Geodetic marks may appear out of place by tens of metres with respect to the underlying map.

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code
 name
 address

[Advanced Search](#)
[Display previous search results](#)
[Display saved marks](#)

[Save C4JY for download](#)

C4JY

Name(s)

BM 3 SO 37228

Description

25 mm SS pin in concrete block up
0.01 m.

Last maintained: 14-Jul-2008

Detailed information

Mark details

[Maintenance history](#)

[Site photograph \(2000\)](#)

[Site photograph \(2000\)](#)

[Mark diagram \(scanned Jun 2000\)](#)

[Reliability diagram \(2000\)](#)

[KML mark file](#)

Imagery ©2009 DigitalGlobe, G



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Search Help

code
 name
 address

d50b

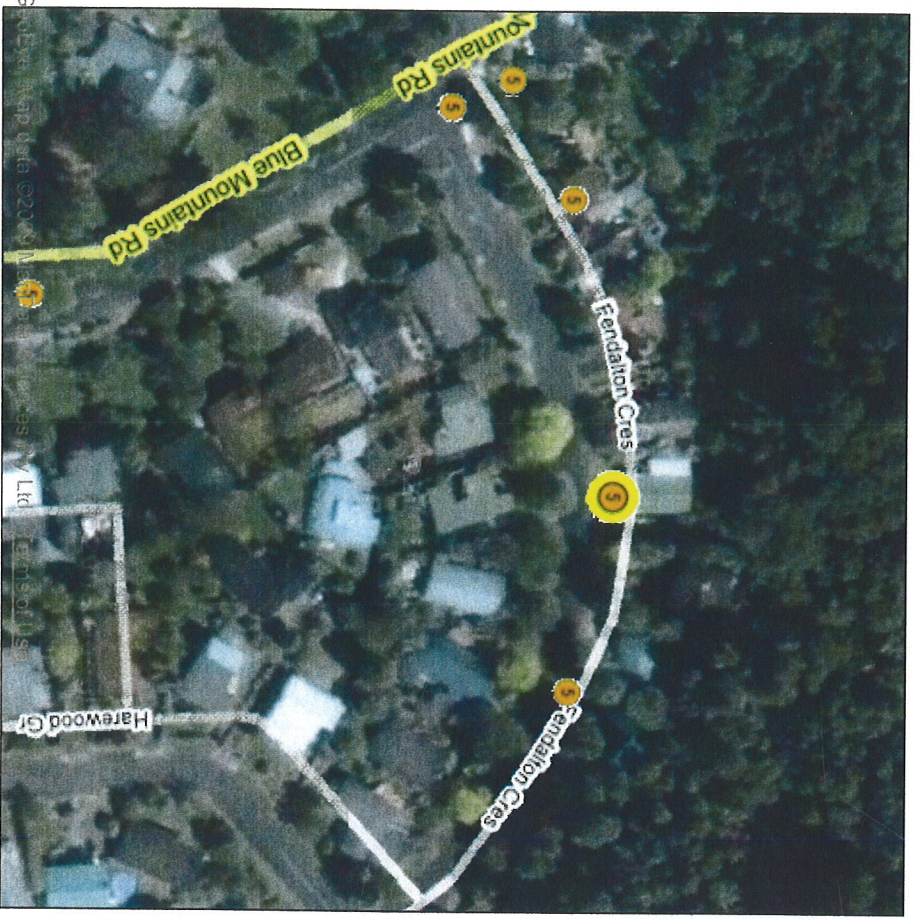
[Advanced Search](#)
[Display previous search results](#)
[Display saved marks](#)

[Save D50B for download](#)

D50B
 Name(s) LP XIX DP 25679
 Description N/A
 Last maintained: 2-Mar-1994

Detailed information

[Mark details](#)
[Maintenance history](#)
[KML mark file](#)



D50B: LP XIX DP 25679

-41.15582 175.01719

Key

- Order 0 stations
- Order 1 stations
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Search Help

code
 name
 address

d4yh

[Advanced Search](#)
[Display previous search results](#)
[Display saved marks](#)

[Save D4YH for download](#)

D4YH

Name(s)

BM 4 SO 37228

Description

N/A

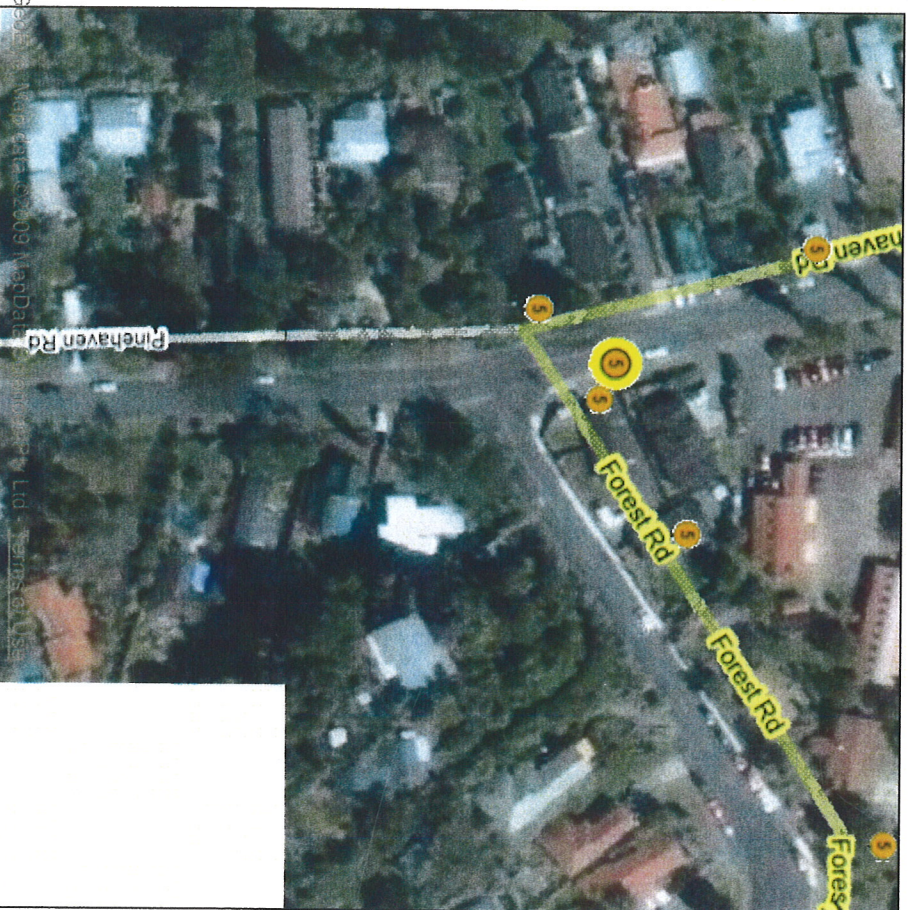
Last maintained: 6-Sep-2005

Detailed information

[Mark details](#)

[Maintenance history](#)

[KML mark file](#)



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D4YH: BM 4 SO 37228

-41.16095 175.01491

Key

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Search [Help](#)

code
 name
 address

d4y1

[Advanced Search](#)
[Display previous search results](#)
[Display saved marks](#)

[Save D4Y1 for download](#)

D4Y1

Name(s)

IS XLIV SO 37228

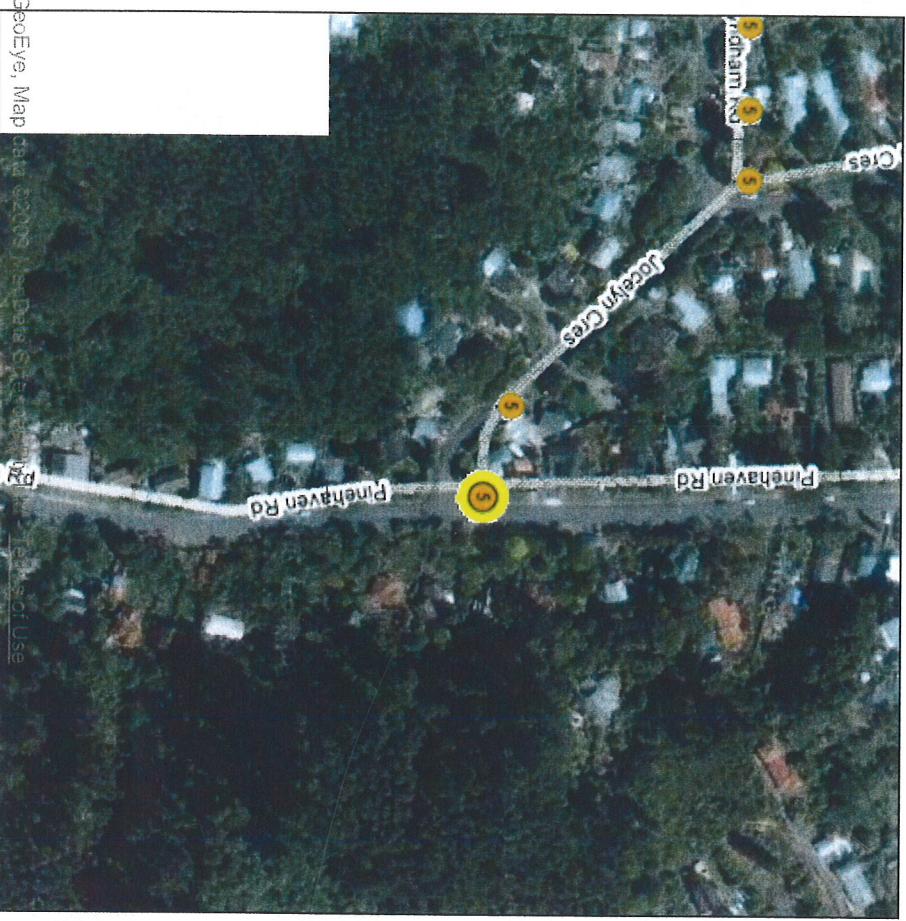
Description

N/A

Last maintained: 30-Mar-2005

Detailed information

- [Mark details](#)
- [Maintenance history](#)
- [KML mark file](#)



Imagery ©2009 DigitalGlobe, GeoEye, Map

data ©2009 MapData Corp, GeoEye, Map

-41.16195 175.01366

Key

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- Order 2 stations
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Search Help

code
 name
 address

d4xd Go

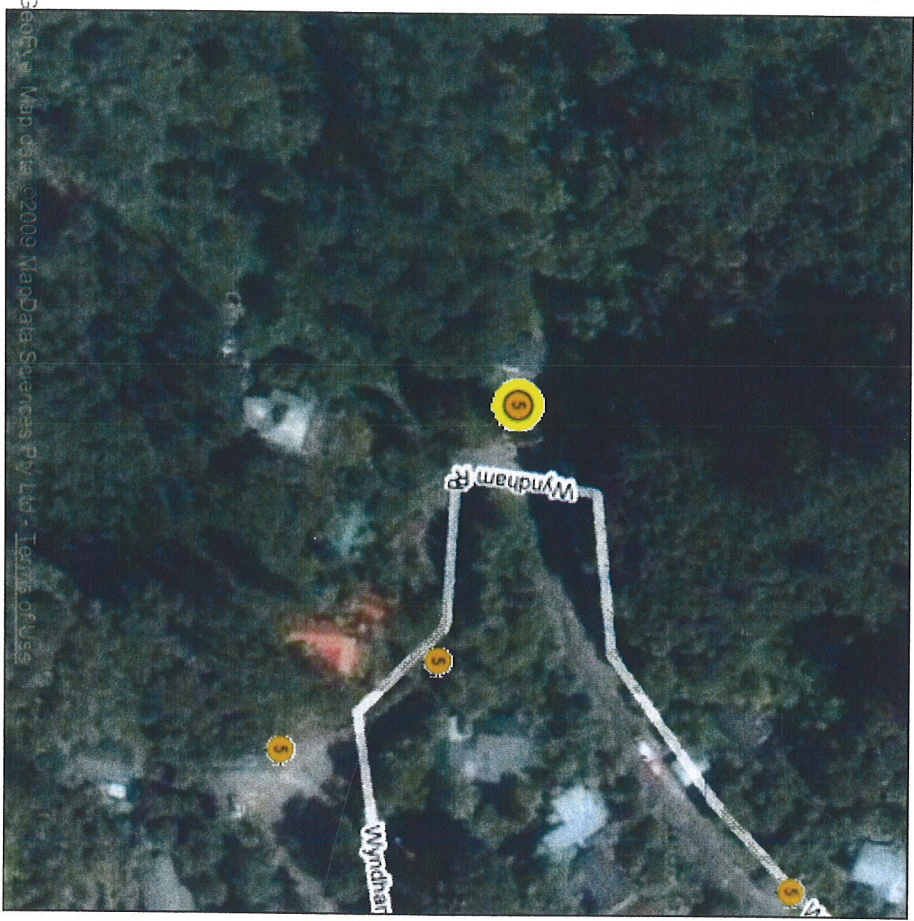
[Advanced Search](#)
[Display previous search results](#)
[Display saved marks](#)

[Save D4XD for download](#)

D4XD
 Name(s) IT VI DP 33937
 Description N/A
 Last maintained: 2-Mar-1994

Detailed information

- [Mark details](#)
- [Maintenance history](#)
- [KML mark file](#)



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-41.15865 175.00906

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- Order 0 stations
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Search Help

code
 name
 address

defw

[Advanced Search](#)
[Display previous search results](#)
[Display saved marks](#)

[Save DEFW for download](#)

DEFW

Name(s)

IT III DP 90027

Description

N/A

Last maintained: 26-Aug-2005

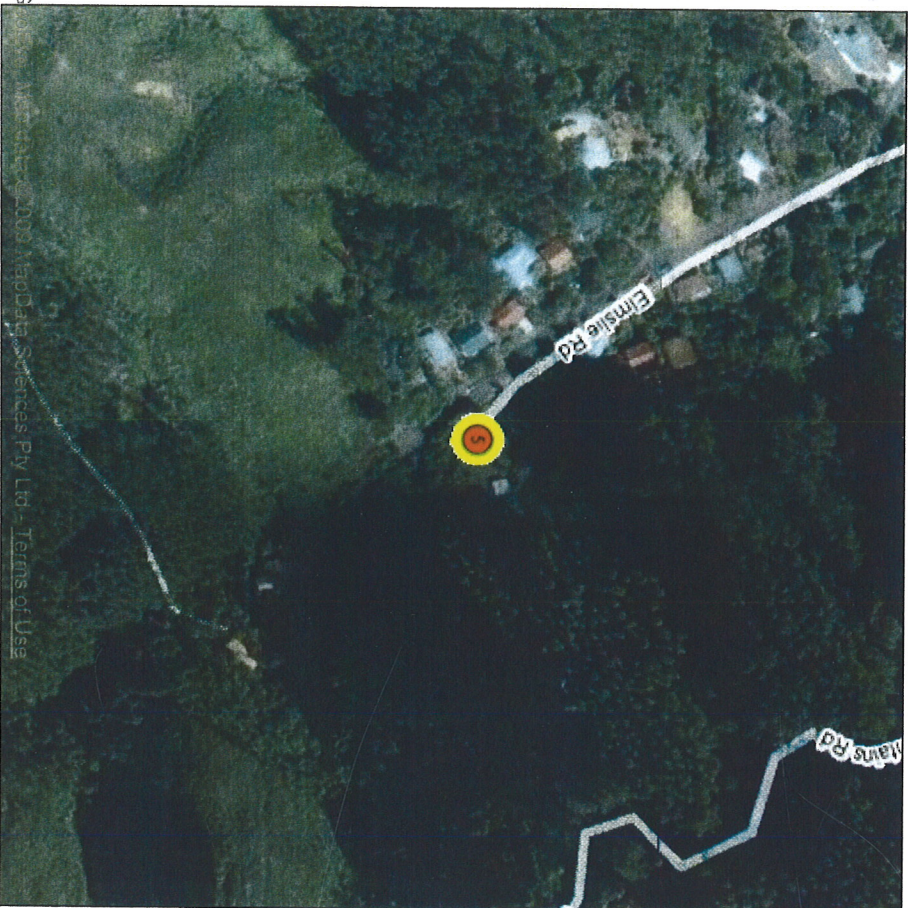
Detailed information

[Mark details](#)

[Maintenance history](#)

[Reliability diagram \(2001\)](#)

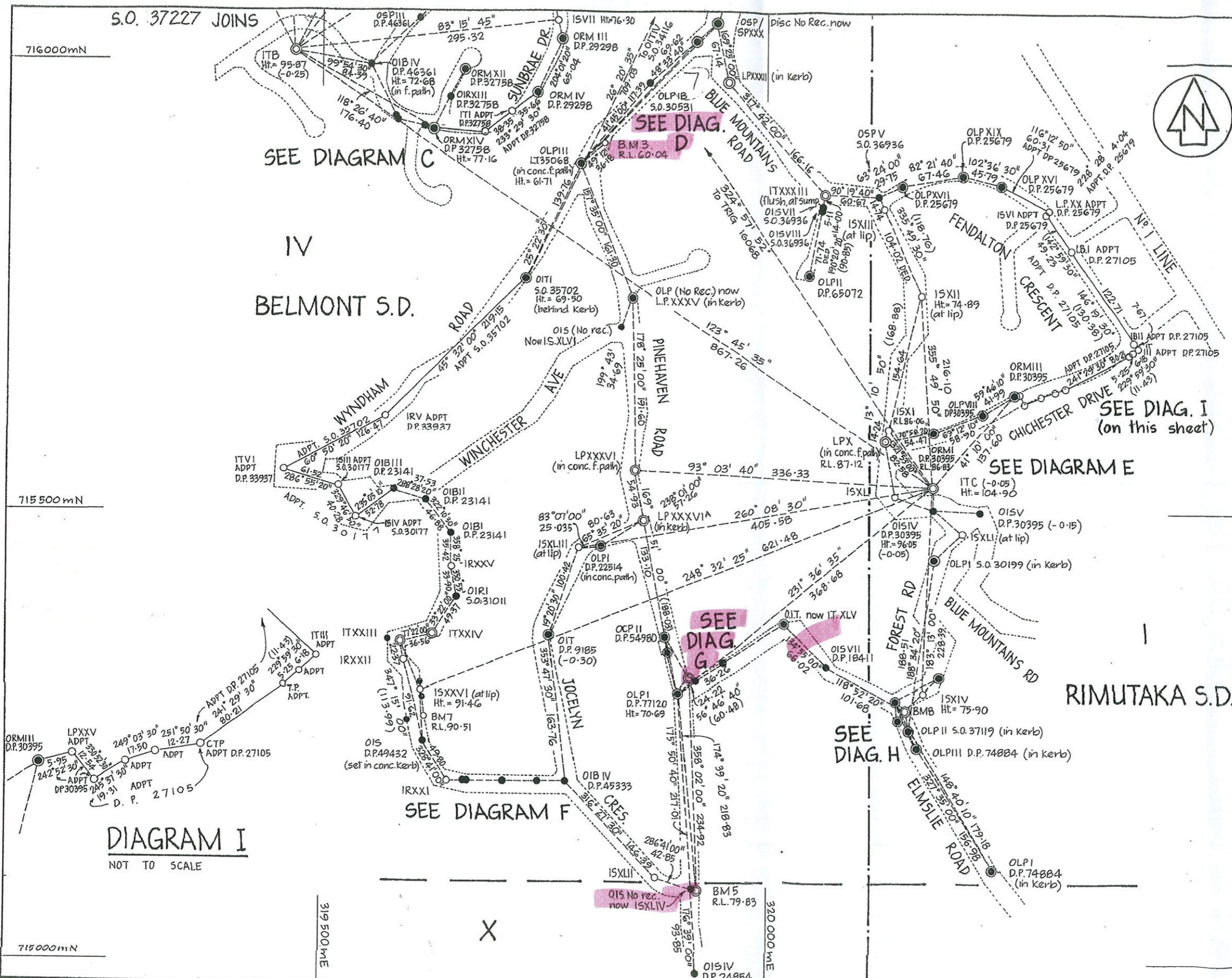
[KML mark file](#)



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Approvals

TABLE OF COORDINATES		
MARK	m NORTH	m EAST
ITB	716 009.41	319 469.36
ITC (G.P.S)	715 527.47	320 190.39
Source: File 6375-02 F.15		
S.P. XXX	716 040.58	319 941.21
OIT D.P. 9185	715 363.28	319 757.54

NOTES:

- This plan is to be read in conjunction with S.O. 37227
- All distances by E.M.
- Bearings adopted from D.P.'s 25679, 27105, 30395 & S.O. 30177 have been adjusted by -00'30" to bring into terms of Geodetic Datum, and bearings from D.P.s. 29298 and 32758 have been adjusted by -01'40".

DATUM: GEODETIC 1949
 WELLINGTON CIRCUIT COORDS
 ORIGIN: MT. COOK 700 000mN
 300 000mE

HEIGHT DATUM: WELLINGTON 1953
 DATUM ORIGIN: MEAN SEA LEVEL
 ORIGIN MARK: K 22 R.L. 42.332m
 SOURCE OF LEVELS: GEODETIC DATABASE #
 S.O. 36980

Total Area

Comprised in

1. LAWRENCE STUART HARDING
 Registered Surveyor and holder of an annual practising certificate for who may act as a registered surveyor pursuant to section 25 of the Survey Act 1986 hereby certify that this plan has been made from surveys executed by me or under my directions, that both plan and survey are correct and have been made in accordance with the Survey Regulations 1972 or any regulations made in substitution thereof
 Dated at UPPER HUTT this 2 day of March 19 94
 Signature: [Signature]

Field Book 6208 p.4-78 Traverse Book 527 p.33-40
 Reference Plans As shown

Examined B. JOHNSTONE Correct B. JOHNSTONE

Approved as to Survey

21/6/94 [Signature] Chief Surveyor

Deposited this day of 19

District Land Registrar

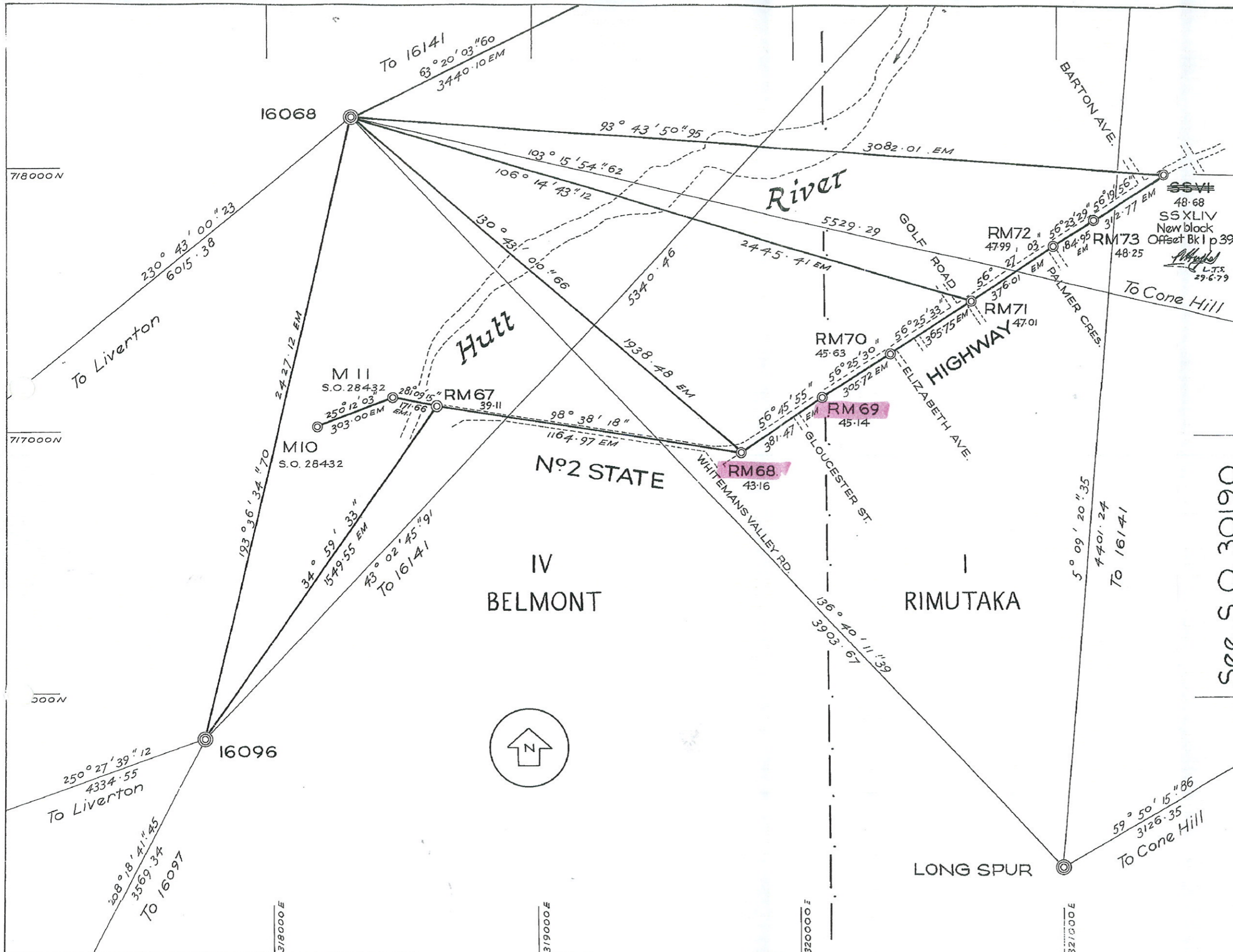
File Received 8/3/94 Instructions

SO 37228

LAND DISTRICT WELLINGTON
 SURVEY BLK. & DIST. IV # X BELMONT S.D. # RIMUTAKA S.D.
 NZMS 261 SHT R27 RECORD MAP No 02/29-05 / 02/30-05
 Hutt 71.72

SURVEY TRAVERSES
 SILVERSTREAM - PINEHAVEN • UPPER HUTT

TERRITORIAL AUTHORITY UPPER HUTT CITY
 Surveyed by L.S. HARDING
 Scale 1:3000 Date DEC. 88 - OCT. 93



Approvals.

NOTE:
For description of mark and Cadastral connections
See S.O. 31052 - 31055

E.M. Distances shown thus. —
Observed and calculated lines shown thus. —

Heights in terms of M.S.L. Wellington Datum 1953

Datum: Geodetic 1949
Wellington Circuit Coordinates
Origin: Mt Cook 700000 N 300000 E

See S.O. 30190

Total Area
Comprised in

P.L. Chambers, P.V. Hughes of Wellington
Registered Surveyor and holder of an annual practising certificate hereby certify that this plan has been made from Surveys executed by me or under my direction; that both plan and Survey are correct and have been made in accordance with the regulations under the Surveyors Act 1966
Dated at Wellington this 27th day of November 1973
Signature *P.L. Chambers*
P.V. Hughes

Field Book 4628-4636 Traverse Book 184 p. 61-62
4550
Reference Plans

Examined *E. Lino* Correct *Ammon.*

Approved as to Survey
P.L. Chambers
31/7/74 Chief Surveyor

Deposited this day of 19
District Land Registrar

File 11/16/1 fol. 102
Received 4.12.73
Instructions Job 73/100

LAND DISTRICT Wellington
SURVEY BLK. & DIST. Rimutaka I and Belmont IV
NZMS 177 SHEET NO. 160 & 161

Survey Control and Control Traverse
from Silverstream to Akatarawa

LOCAL AUTHORITY
Surveyed by P.L. Chambers & P.V. Hughes
Scale 1:10,000 Date May-July 1972

S.O. 30191

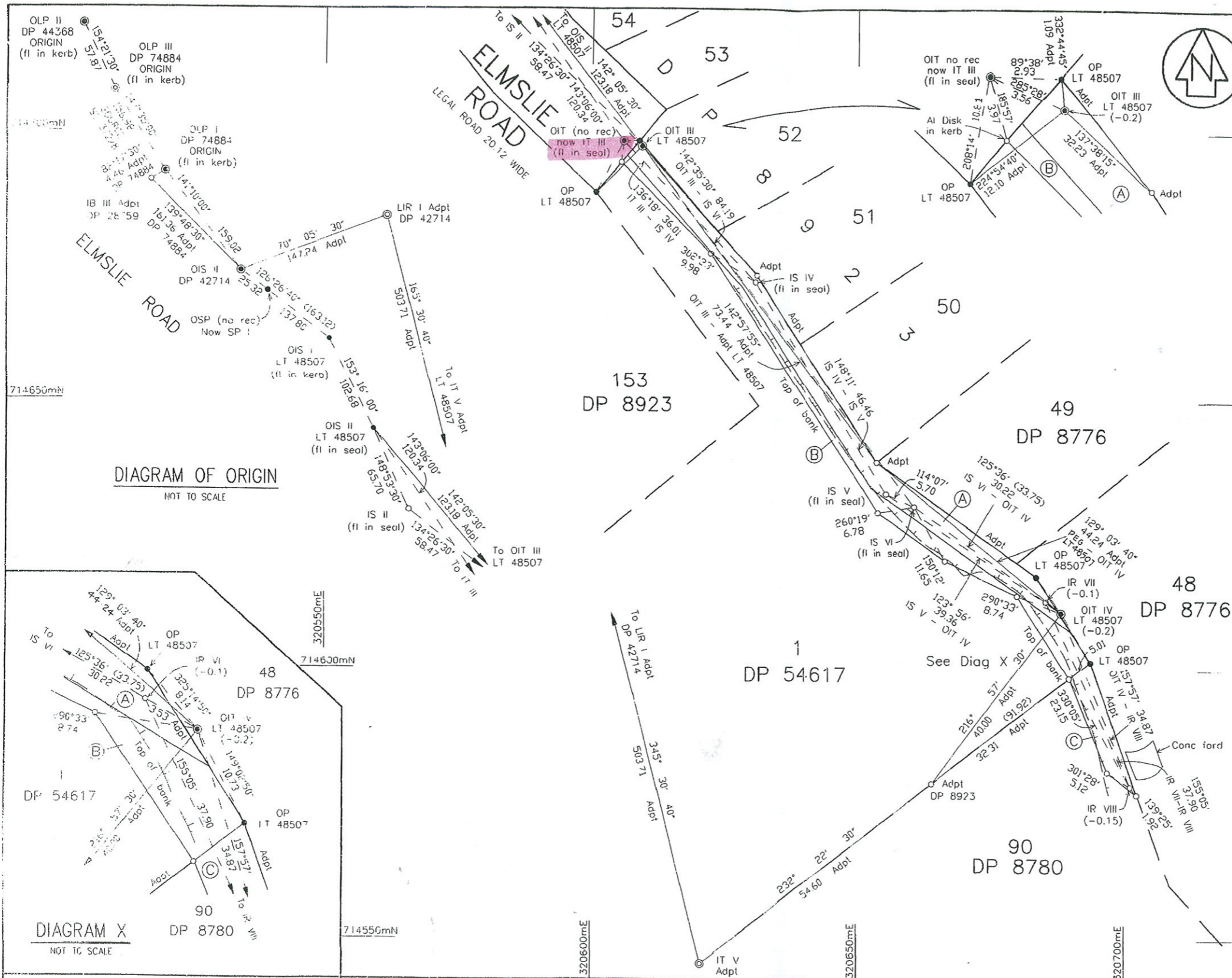


DIAGRAM OF ORIGIN
NOT TO SCALE

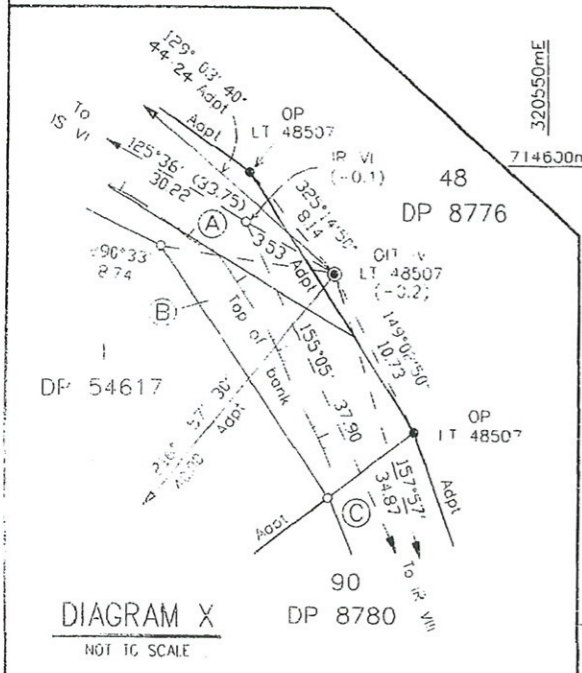


DIAGRAM X
NOT TO SCALE

Approvals

TABLE OF COORDINATES		
MARK	mNORTH	mEAST
OLP II DP 44368 Origin Source SO 37228 TB 527 Pg 36 Ln 26	715291.64	320147.38
OLP I DP 74884	715106.96	320256.57
OIT IV LT 48507	714610.80	320689.00
IT III	714695.26	320605.98

- NOTES:
- Roads shown are sealed and in use.
 - All distances are E.M.
 - All adoptions are from LT 48507 unless otherwise stated.
 - Bearings adopted from DP's 8776, 8780, 8923, 54617, 74884 and LT 48507 have been adjusted by +0°00'30" to be in terms of Geodetic Datum 1949 (See SO 37228)

DATUM: Geodetic 1949
Wellington Circuit Coordinates
ORIGIN: Mt. Cook
700000mN 300000mE

CLASS OF SURVEY : I

Total Area
Comprised in

I, ROBERT EDWARD LENDRUM of UPPER HUTT, being a person entitled to practise as a registered surveyor, certify that -
(a) the surveys to which this dataset relates are accurate, and were undertaken by me or under my direction in accordance with the Survey Act 1986 and the Survey Regulations 1998;
(b) this dataset is accurate, and has been created in accordance with that Act and those regulations.
Dated at UPPER HUTT this 27th day of March 2006. Signature *R. Lendrum*

Field Book... 657.3 p. 125-205 Traverse Book... 622 p. 38-41
Reference Plans DP's 8776, 8923, 54617, 74884, 87404
LT 48507 SO 37228
Examined Correct *[Signature]*

Approved as to Survey
[Signature]
28/3/2006 Deputy Chief Surveyor

Deposited this 27th day of March 2006
for Registrar-General of Land

File 22216
Received 18.08.2000
Instructions 90027

LAND DISTRICT Wellington
Survey Blk. & Dist. I Rimutaka
NZMS 261 Sht Record Map No.

EASEMENTS OVER LOT 1 DP 54617 AND
LOT 90 DP 8780

TERRITORIAL AUTHORITY Upper Hutt City
Surveyed by R.E. Lendrum & Associates Ltd
Scale 1 : 500 Date May 96 - June 99