

Appendix E

Direct Push Dual Tube Logs



23 March, 2005

Pegasus Town Limited
C/- URS New Zealand Limited
PO Box 4479
CHRISTCHURCH

Attn: Mr Richard Sisson

58 Kilmore Street, PO Box 345, Christchurch

General enquiries: (03) 365-3828

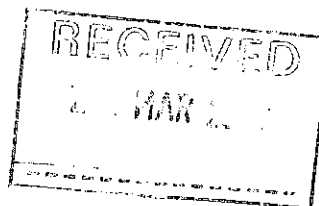
Fax: (03) 365-3194

Email: ecinfo@ecan.govt.nz

Customer services: (03) 353-9007

or: 0800 EC INFO (0800 324-636)

Website: www.ecan.govt.nz



Dear Mr Sisson

**RESOURCE MANAGEMENT ACT 1991
NOTICE OF DECISION: RESOURCE CONSENT NO. CRC052426**

The decision of Environment Canterbury is to grant your application on the terms and conditions specified in the attached resource consent document. The reasons for the decision are

- 1) The drilling of the proposed bores is unlikely to have any adverse effects on the environment.

For some activities a report is prepared, with officer recommendations, to provide information to the decision makers. If you require a copy of the report please contact our Customer Services section and a copy can be provided.

If you do not agree with the consent authority decision, you may object to the whole or any part of the decision. Notice of any objection must be in writing and lodged with Environment Canterbury within 15 working days of receipt of this decision.

Alternatively you may appeal to the Environment Court, P O Box 2069, Christchurch. The notice of appeal must be lodged with the Court within 15 working days of receipt of this decision, with a copy forwarded to Environment Canterbury within the same period. If you are in any doubt about the correct procedures, you should seek legal advice.

The commencement date for your resource consent is the date of this letter advising you of the decision, unless you lodge an appeal against the decision. The commencement date will then be the date on which the decision on the appeal is determined.

Enclosed is our Customer Satisfaction Survey. Please help us to provide a quality service that meets our customer needs by filling out the survey form and returning it in the postage paid envelope provided. Your feedback is anonymous unless you complete the space provided on the survey form with your name and consent number. If you would like a reply to any matters raised in your survey reply, please tick the box provided on the form.

Also enclosed is a Consent Holder Fact Sheet, which you should read and keep for future reference. This fact sheet contains important information about your consent and answers some commonly asked questions about what will happen next in the life of your resource consent.

Our Ref: CO6C/22855
Your Ref:
Contact: Customer Services

Charges, set in accordance with section 36 of the Resource Management Act 1991, shall be paid to the Regional Council for the carrying out of its functions in relation to the administration, monitoring and supervision of resource consents and for the carrying out of its functions under section 35 of the Act.

Thank you for helping us make Canterbury a great place to live.

If you have any queries please contact our Customer Services Section by telephoning (03) 365 3828, or 0800 ECINFO (0800 324 636).

Yours sincerely

A handwritten signature in black ink, appearing to read 'Tania Harris', with a stylized flourish at the end.

Tania Harris
TEAM LEADER CONSENTS ADMINISTRATION
on behalf Environment Canterbury
Encl.

RESOURCE CONSENT

Pursuant to Section 104 of the Resource Management Act 1991

The Canterbury Regional Council (known as Environment Canterbury)

GRANTS TO: Pegasus Town Limited

A LAND USE CONSENT: To install 15 bores for groundwater chemistry purposes

DATE DECISION: 23 March 2005

EXPIRY DATE: 23 March 2008

IN CONNECTION WITH THE FOLLOWING PROPERTY:

LOCATION: between Gladstone Road & Preeces Road PEGASUS TOWN

SUBJECT TO THE FOLLOWING CONDITIONS:

- 1) Bores (see schedule one) (proposed diameter: 50 millimetres, proposed depth 10 metres beneath the ground surface) shall be located at or about map references shown on schedule one.
- 2) The location of screens in the bore(s) shall not allow the movement of water between water bearing layers.
- 3) In the event of any disturbance of Koiwi Tangata (human bones) or taonga (treasured artefacts), the consent holder shall:
 - (a) cease any further excavation for a period of at least 24 hours;
 - (b) immediately advise the Canterbury Regional Council of the disturbance; and
 - (c) immediately advise the Upoko Runanga of Tuahuriri, or his representative, of the disturbance.
 - (d) the New Zealand Historic Places Trust is to be notified and a response is required before work commences.
- 4) Bores M35/10710, M35/10711, M35/10712, M35/10715, M35/10716 and M35/10720 shall be excavated by hand up to a metre below ground level.
- 5) The Upoko Runanga of Tuahuriri, or his representative, shall be given 48 hours notice of the commencement of excavation.
- 6) A concrete pad of at least 0.3 metres radius and 0.1 metres thickness shall be constructed around the bore head at ground or pumphouse floor level to prevent leakage around the casing. The concrete pad shall slope away from the bore.
- 7) The annulus of the bore shall be sealed with bentonite to above the screen pack or four metres below ground level, whichever is the lesser, to prevent fluid movement down the sides of the casing into the screened collection layer.
- 8) The top of the bore shall be covered or capped to prevent contaminants entering the bore and underlying groundwater.
- 9) The bore shall be easily identifiable by a permanent label, which may be welded or engraved on the casing, or on the equivalent fixed part of the well construction or associated building. The numbering on the label shall be the bore number assigned by Environment Canterbury e.g. [M35/1234].

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- 10) A standard 25 millimetre socket and screw-in bung shall be installed on top of the bore to allow water level measurements to be taken using:
- (a) A water level probe where:
 - (i) there is sufficient space for it between the riser pipe and the well casing
 - (ii) the lowest pumped water level is <10 metres.
 - (b) Otherwise:
 - (i) a socket and bung of 25 millimetres diameter shall be connected to a 20 millimetre diameter pipe down the well so a probe can be inserted without being caught in cables or between the flanges of the riser pipe and casing. The pipe should extend to within two metres of the top of the pump.
If unable to comply with (i) then (ii) applies.
 - (ii) a small pressure tube of not less than five millimetres shall be installed down the well to allow a pressure gauge to be used for a water level depth measurement. The depth at which the end of the pressure tube is installed shall be measured from the top of the casing to an accuracy of 0.05 metres. The pressure gauge dial shall be accurate to the nearest 0.1 metres. After lifting and re-placing the submersible pumps the pressure tube shall be back at the same depth or the difference shall be recorded in a notebook kept for the purpose.
- Note: Method (b)(ii) is less accurate than (b)(i). This system is already in use in a lot of wells but the purpose of this pipe is to measure the height of the water remaining above the pump (including a safety margin). It can be used to calculate the depth to groundwater level.
- 11) The information requirements of the "Bore Completion Report" CRC052426 Parts 1 & 2 shall be completed and returned to the Canterbury Regional Council within eight weeks after completion of drilling.

ISSUED AT CHRISTCHURCH ON 23 MARCH 2005



Tania Harris
TEAM LEADER CONSENTS ADMINISTRATION
on behalf of the Canterbury Regional Council

Environment Canterbury is the promotional name of the Canterbury Regional Council

PROPOSED BORE - CRC052426 PEGASUS TOWN LIMITED



Old Reference: M052465-6822

The information in this plot has been taken from Environment Canterbury's records. It is supplied in good faith but its accuracy or completeness is not guaranteed. If the information is relied on in support of a resource consent application it should be verified independently.

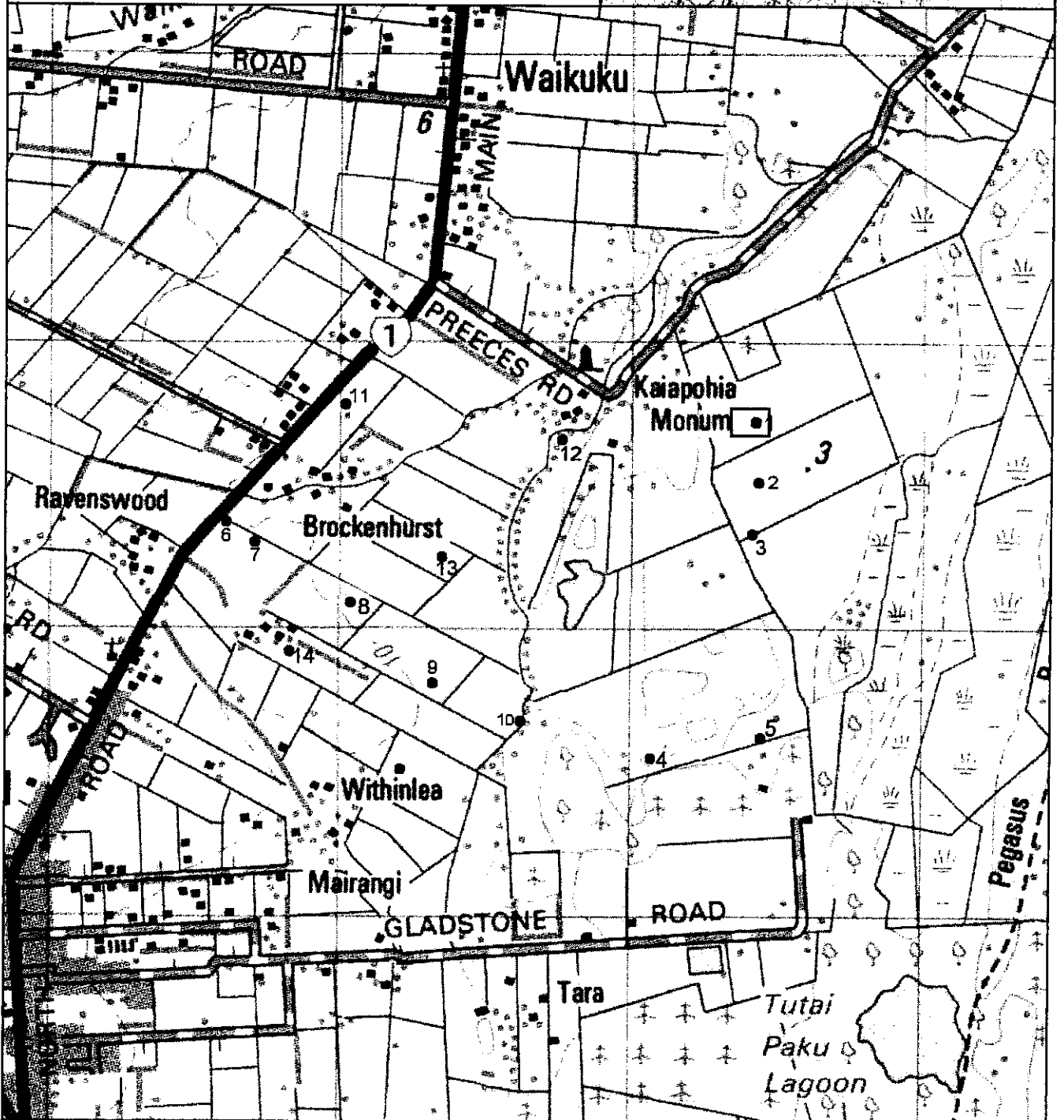
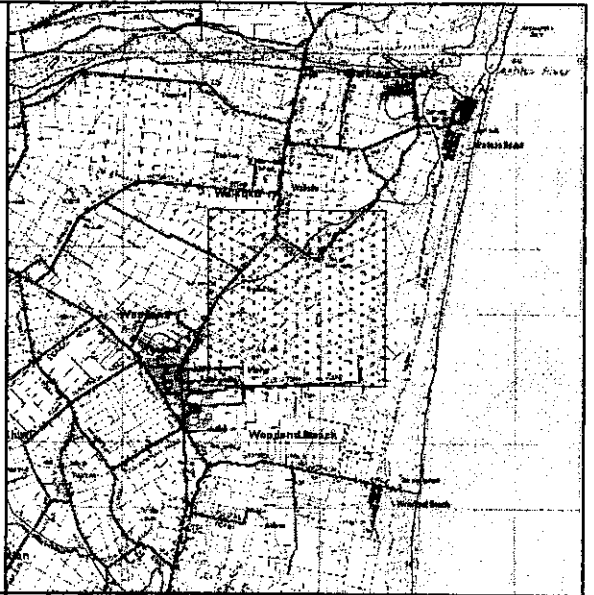
Digital Terrain Information obtained from the NZTopo Database. (CROWN COPYRIGHT RESERVED).

Created by the Environment Canterbury GIS PLDTS system (2001).

Created by: andrew
Date: March 11, 2005
Scale: 1:10000.0

- Ngai Tahu Settlement Areas
- Ancillary Claims
- Commercial Properties
- Holdings
- Statutory Instruments - Lakes Rivers Wetlands
- Statutory Instruments - Specific Sites
- Areas Vested/Transferred
- District Boundaries

0 200 400 600 800 Meters



PROPOSED BORES - SCHEDULE ONE

Point	Number	Map Reference
1	M35/10710	NZMS 260 M35:8543-6672
2	M35/10711	NZMS 260 M35:8544-6651
3	M35/10712	NZMS 260 M35:8542-6633
4	M35/10713	NZMS 260 M35:8507-6555
5	M35/10714	NZMS 260 M35:8545-6562
6	M35/10715	NZMS 260 M35:8361-6637
7	M35/10716	NZMS 260 M35:8371-6630
8	M35/10717	NZMS 260 M35:8404-6609
9	M35/10718	NZMS 260 M35:8432-6581
10	M35/10719	NZMS 260 M35:8462-6568
11	M35/10720	NZMS 260 M35:8402-6678
12	M35/10721	NZMS 260 M35:8476-6666
13	M35/10722	NZMS 260 M35:8435-6625
14	M35/10723	NZMS 260 M35:8383-6592
15	M35/10724	NZMS 260 M35:8421-6551

PROJECT: *Pegasus* FEATURE: *Lake excavation* LOCATION: _____
 GRID: *Mt Pleasant 2000* CO-ORD.: *831548.054* *397572.103* DATUM: *MSL Lytleton*
 ANGLE FROM HORIZONTAL: *90°* DIRECTION: *—* HAD. GROUND: *2.7* HAD. COLLAR: _____

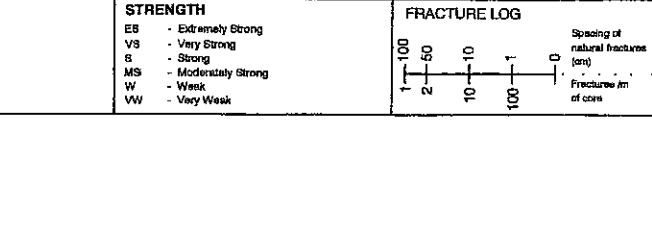
INTERPRETATION	DESCRIPTION OF CORE COLOUR, WEATHERING, FABRIC, STRENGTH, ROCK TYPE, DEFECT SPACING, LITHOLOGICAL FEATURES (bedding, foliation, mineralogy, texture, cement, etc): STRATIGRAPHIC NAME	CORE BOXES			POINT LOAD TEST (MPa)	DEPTH (m) Core Size	GRAPHIC LOG	ROCK DEFECTS PROMINENT JOINTS, BEDDING, BEAMS, VEINS, SHATTER, SHEAR AND CRUSH ZONES, FOLIATION, SCHISTOSITY (attitude, width, spacing, smoothness) (OR SOIL DESCRIPTION) (consistency, water content, group symbol etc)	SPT (n-value) (6.5, 14.1, 11.0)	DATE/DEPTH	WATER LEVEL DRILLING FLUID LOSS (%)	LUGEON TEST	PIEZOMETER INSTALLATION DETAILS
		SW ROCK WEATHERING	MW WEATHERING	HW WEATHERING									
	0-0.2 Topsoil							core loss					
	0.8-3 Yellow grey f-m SAND -loosely packed, moist Saturated from 1.4m												
	4.8-7.3 Blue grey f-m SAND -loosely packed, saturated coarsening to f-c by 5.8m							core loss					
								sample 4.8m = 2004					
								core loss					
								core loss					
								sample 9.7-9.8m = 2005					
	EOH 9.8m												

DRILLER/CONTRACTOR: *mcmillan's*
 STARTED: *20.4.05*
 FINISHED: *20.4.05*
 DRILL: *Push-tube*

ROCK WEATHERING
 LW - Unweathered
 SW - Slightly weathered
 MW - Moderately weathered
 HW - Highly weathered
 CW - Completely weathered

STRENGTH
 ES - Extremely Strong
 VS - Very Strong
 S - Strong
 MS - Moderately Strong
 W - Weak
 VW - Very Weak

NOTES:



LOGGED: *Rose C*
 DATE: *20.4.05*
 TRACED: _____
 CHECKED: _____
 ORIGINAL VERTICAL: _____
 SCALE: _____

PROJECT: *Pegasus*
 HOLE NO.: *PT-001*
 LENGTH: *9.8m*
 CORE BOXES: _____

PROJECT: *Pegasus* FEATURE: *Lake excavation* LOCATION: _____
 GRID: *MT Pleasant 2000* CO-ORD: *831384.660 397593.527* DATUM: *MSL Lyttelton*
 ANGLE FROM HORIZONTAL: *90°* DIRECTION: _____ HAD. GROUND: *3.1* HAD. COLLAR: _____

INTERPRETATION	DESCRIPTION OF CORE COLOUR, WEATHERING, FABRIC, STRENGTH, ROCK TYPE, DEFECT SPACING, LITHOLOGICAL FEATURES (bedding, foliation, mineralogy, texture, cement, etc): STRATIGRAPHIC NAME	CORE BOXES		CORE LOSS/LIFT (%)	POINT LOAD TEST (MPa)	DEPTH (m) Core Size	GRAPHIC LOG	50 FRACTURE LOG (natural fractures) (cm)	ROCK DEFECTS PROMINENT JOINTS, BEDDING, BEAMS, VEINS, SHATTER, SHEAR AND CRUSH ZONES, FOLIATION, SCHISTOSITY (altitude, width, spacing, smoothness) (OR SOIL DESCRIPTION) (consistency, water content, group symbol etc)	SPT (n-value) (s.u.t.t.t)	DATE/DEPTH	DRILL METHOD	WATER LEVEL	% DRILLING FLUID LOSS (%)	LUGEON TEST	PIEZOMETER INSTALLATION DETAILS	
		SW	NW														HW
						1											
						2											
						3											
						4											
						5											
						6											
						7											
						8											

4.8-7.8 Blue grey f.c SAND
 below 5.5m; with some f-c gravels, slightly rounded to rounded grey washed.
 6.5-6.55 Brown SILT - slight to moderately plastic

COH 7.8m

0-4.8m
Not sampled

#3117
5.5-7.8m

2.5
Bentonite
Walton Peak
Backfill
Collapse

DRILLER/CONTRACTOR: *M. McMillan's*
 STARTED: *21.4.05*
 FINISHED: *21.4.05*
 DRILL: *Push-tube*

ROCK WEATHERING
 LW - Unweathered
 SW - Slightly weathered
 MW - Moderately weathered
 HW - Highly weathered
 CSW - Completely weathered

STRENGTH
 ES - Extremely Strong
 VS - Very Strong
 S - Strong
 MS - Moderately Strong
 W - Weak
 WW - Very Weak

NOTES:

FRACTURE LOG

LOGGED: *RJS*
 DATE: *21.4.05*
 TRACED: _____
 CHECKED: _____
 ORIGINAL VERTICAL: _____
 SCALE: _____

PROJECT: *Pegasus*
 HOLE NO.: *PT-002*
 LENGTH: *7.8m*
 CORE BOXES: _____
 SHEET 1 OF 1

