PAR 135849 (H)

Site File: 357 Princes Drive
Please Ask for: Roger McLeod
Phone: (03) 546 0330

28 February 2008

The Manager
K.B. Quarries
P.O. Box 19746
CHRISTCHURCH

AUTHORIZED | D | INITIALS | DATE
FILE:

Dear Sir,

Re. – 357 Princes Drive-Nelson-Fire Hazard.

I write in reference to our letter dated 13th February 2008 regarding the fire hazard at the above address. I received a phone call from one of your employees who did not think the parcel of land belong to KB Quarries. I can understand the confusion as the land is in Istana Place but still listed on the council database as 357 Princes Drive, therefore I have attached documentation which identifies the property concerned and a plan indicating the minimum distance the section is to be cleared. I have reinstated the original complaint but extended the deadline date to 30 days from the date of this letter.

Council has received a complaint regarding the long grass, gorse etc on your property at the above address. Accordingly, please find attached a legal notice requiring the growth to be cut and removed as it is considered a potential fire hazard.

It is necessary for you to cut and clear a defensible space as follows:

Clearing distances from structures:
Flat land 25 Metres
Sloping land 10m uphill
15m sides
30m downhill

This is the bare minimum and we would prefer to see the whole of the sections cut if possible. As a landowner you have a legal responsibility to ensure you do not have a fire risk situation that could affect a neighbouring property.

The attached legal notice sets out time constraints and rights of appeal. A follow up visit to ensure compliance will be made in due course. Please ensure that regular on going maintenance occurs to your property so that future intervention by Council will not be necessary.

If you require clarification or wish to discuss the above matters, please phone the under signed.

Yours faithfully,

Roger McLeod
Enforcement Officer
642942

Site File: 357 Princes Dr.
Please Ask for: Ian Hackney
Phone: (03) 546 0330

13th February 2008

The Manager
K.B Quarries Ltd.
P.O Box 19746
Woolston
CHRISTCHURCH

Re. 357 Princes Drive, Nelson – Fire Hazard.

Council has received a complaint regarding the long grass, gorse etc on your property at the above address. Accordingly, please find attached a legal notice requiring the growth to be cut and removed as it is considered a potential fire hazard.

It is necessary for you to cut and clear a defensible space as follows:

Clearing distances from structures:

Flat land 25 Metres
Sloping land 10m uphill
15m sides
30m downhill

This is the bare minimum and we would prefer to see the whole of the sections cut if possible. As a landowner you have a legal responsibility to ensure you do not have a fire risk situation that could affect a neighbouring property.

The attached legal notice sets out time constraints and rights of appeal. A follow up visit to ensure compliance will be made in due course. Please ensure that regular on going maintenance occurs to your property so that future intervention by Council will not be necessary.

If you require clarification or wish to discuss the above matters, please phone the under signed.

Yours faithfully,

Ian Hackney.
Enforcement Officer
637130

Section 183(1) of the Local Government Act 2002

IN THE MATTER OF:

The property situated at: 357 Princes Drive

Nelson

Being Lot 1 DP 380751

TO:
K B Quarries Ltd
Po Box 19746
Woolston
Christchurch

TAKE NOTICE that the long grass, weeds and gorse situated on the above property is likely to become a source of danger from fire.

SECTION 183
Requires the owner of the land to cut down or otherwise eradicate AND to remove any such growth on that land, whether standing or not, within one month of service of this notice.

FURTHER if you fail to act in compliance with these requirements within one month, you commit an offence against the Act and the Nelson City Council may then enter upon your land and undertake the said work and recover the costs from you, being a charge upon the land.

TAKE NOTICE THAT WITHIN ten (10) days after service of this notice you may apply to a district Court for an order setting aside this notice. Pending the determination of the application, this shall be deemed to be suspended.

DATED at Nelson this 12th day of February 2008.

R Johnson

(for) V Altments
Chief Executive
Nelson City Council

File: RM005141
STREET NUMBERING
When calling please ask for: Kathy Mardon
Direct Dial Phone: 546 0258
Email: kathy.mardon@ncc.govt.nz

2 July 2009

NOTIFICATION OF NEW STREET NUMBERING – NELSON CITY COUNCIL

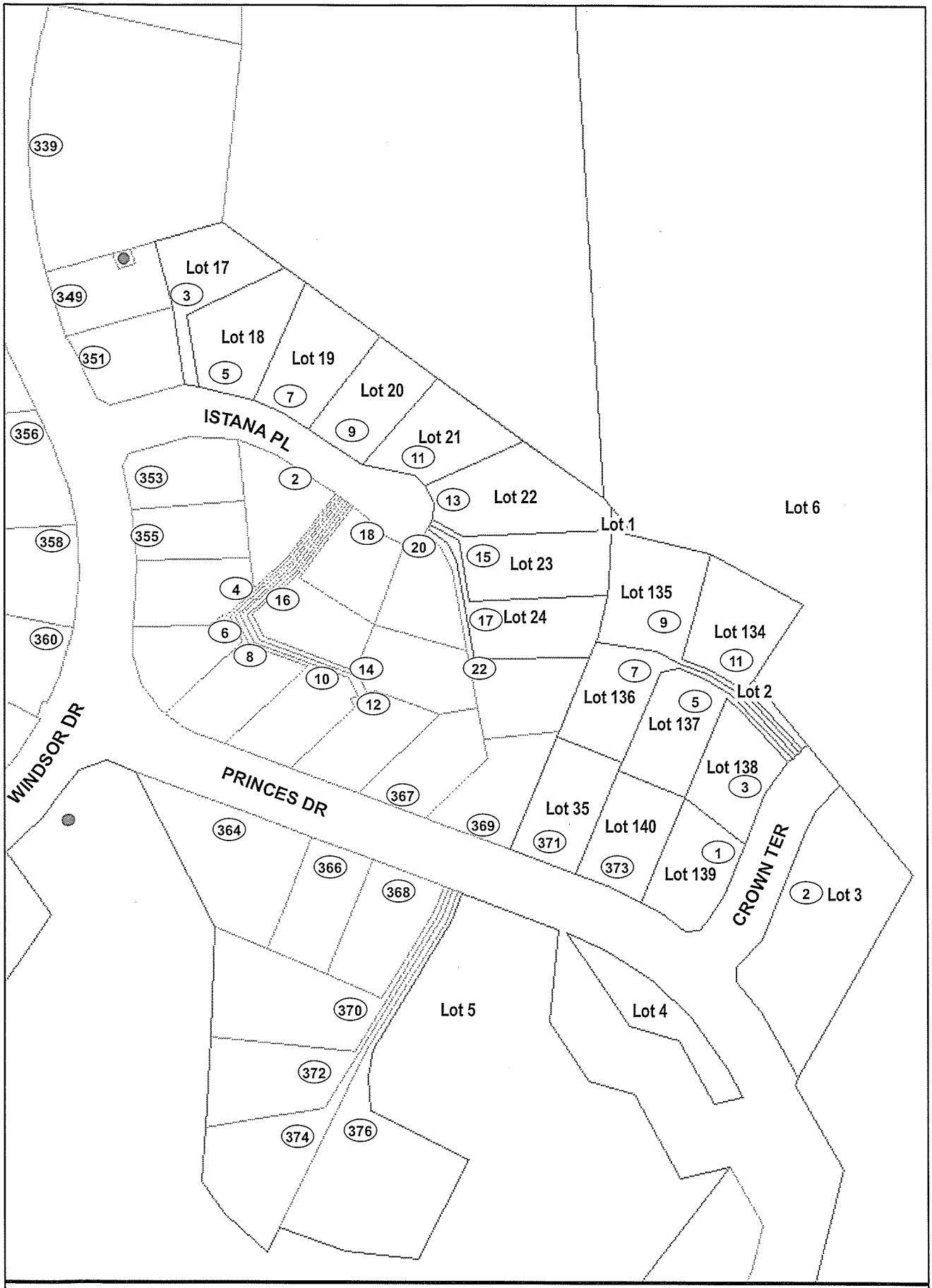
Subdivision Number: RM005141

New Lots Created PPR	**New Street Address**
Lot 3 LT417875 137468	2 Crown Terrace
Lot 17 LT417875 137472	3 Istana Place
Lot 18 LT417875 137473	5 Istana Place
Lot 19 LT417875 137474	7 Istana Place
Lot 20 LT417875 137475	9 Istana Place
Lot 21 LT417875 137476	11 Istana Place
Lot 22 LT417875 137477	13 Istana Place
Lot 23 LT417875 137478	15 Istana Place
Lot 24 LT417875 137479	17 Istana Place
Lot 35 LT417875 137480	371 Princes Drive
Lot 134 LT417875 137481	11 Crown Terrace
Lot 135 LT417875 137482	9 Crown Terrace
Lot 136 LT417875 137483	7 Crown Terrace
Lot 137 LT417875 137484	5 Crown Terrace
Lot 138 LT417875 137485	3 Crown Terrace
Lot 139 LT417875 137486	1 Crown Terrace
Lot 140 LT417875 137487	373 Princes Drive

A copy of the digital title plan is attached.

Yours faithfully

Kathy Mardon
Consents Administrator Coordinator



Nelson City Council Street Numbering

RM005141 Stage 3C - Istana Pl, Princes Dr and Crown Ter

NELSON CITY COUNCIL

0 20 40 60 80 m

Scale 1:1,600

N

June 2009

The map is approximate only and must not be used to determine the location or size of items shown, or to identify legal boundaries.
To the extent permitted by law, the Nelson City Council, its employees, agents and contractors will not be liable for any costs, damages or loss suffered as a result of the data or plan, and no warranty of any kind is given as to the accuracy or completeness of the information represented by the GIS data. This publication is copyright reserved by Nelson City Council. Cadastral information derived from the CRS. CROWN COPYRIGHT RESERVED. IJT. Original map size A4.

PPR 125200
125201
125202

NELSON CITY COUNCIL

Town Clerk's Office,
Nelson.

31st July, 1973.

MEMO FOR: Town Planner

Notice is hereby given that a special meeting of Council will be held in the Council cafeteria on Tuesday the 7th day of August 1973 at 7.30 p.m. to discuss with property owners the feasibility study of a proposed residential development in the Observatory Hill area.

Copies of the Feasibility Study Report and accompanying volume of Illustrations, and a letter to all property holders, involved are enclosed.

H.A. Levestam
TOWN CLERK

HAL:CG
Encl:

PROCESSED

All communications
to be addressed to
THE TOWN CLERK,
P.O. BOX 313
TELEPHONE 81-059

Town Clerk
H. A. LEVESTAM,
M.Com., D.P.A.

CITY OF NELSON

NEW ZEALAND

30th July, 1973.

Town Planner

Dear Sir,

PROPOSED RESIDENTIAL DEVELOPMENT
OBSERVATORY HILL AREA

The City Council recently co missioned a feasibility study the basic purposes of which were:

1. To assess, from a review of published information and by surface reconnaissance, whether it is feasible to develop the natural hill slopes near Observatory Hill for residential purposes in view of the stability problems that exist in the Nelson area.
2. If the geotechnical aspects are favourable, to evaluate the economic feasibility of alternative schemes for an integrated residential development.

The Council has recently received the report of the study and this letter is to inform the land owners in the area of what is under consideration, and to invite them to discuss the project and to share the decision making from the earliest stage.

Obviously such a project, once it is known, could give rise to speculation and the Mayor has asked me to say that he calls on the property owners not to engage in any property transactions which might lead to speculation and prejudice the whole enterprise.

As one of the property owners involved, you are invited to a meeting, to be attended by property owners and Councillors, to be held in the City Council cafeteria on Tuesday the 7th of August 1973 at 7.30 p.m. The public will not be invited to this meeting, but the news media will be present.

Copies of the report and of plans illustrating the report are available for all property owners. They can be obtained on request from the receptionist in the City Engineer's Department.

Yours faithfully,

H. A. Levestam

TOWN CLERK

HAL:CG

For File on Observatory Hill Subdivision.

Return to TP
Thanks GPT

Mr. ~~Toynbee~~.

Comments on Preliminary Report
Observatory Hill Delevelopment.

Page I. Introduction

The alternatives listed for potential residential development should include the assumption of more rural land into the city. In terms of long term population growth (and the consultants report is more optimistic than forecasts of the Ministry of Works) hillside development in itself could represent only a mid term palliative to development pressure in the city.

This is a question of planning policy that goes beyond the scope of ~~this~~ the report and which the report in itself will help to determine, but, one of the basic planning problems facing the city is determining the rate, if any, that further rural land should be committed to urban development yet retain sufficient incentive for the more dificult land to be developed by controlling the demand/supply situation.

For instance it will not be possible to maintain a girdle around expansion south of Stoke indefinitely nor could a realistic planning

policy support the absolute denial of this land to urban development as an immutable principle.

I do not have the answer to the main questions that this comment raises at this time but the consultants comments may be appropriate as to the possible effects of ~~boundary~~ city boundary shifts on the feasibility of the proposed development.

General Comments:

I agree in general with comments made about facilities and amenities that should form an integral part of developments of this nature. However when the specific schemes are detailed in Chapter 4 it should be pointed out that specific aspects of the designs presented represent only possible solutions to the expressed planning requirements. The scope and nature of some of the design features could only be determined by further planning study and establishment of planning objectives during the review of the District Scheme.

For example :—

1. A review of zoning policy may determine that the type and intensity of development currently allowed under Residential B zoning is inappropriate in these hillside locations in relation to the provision of general access and possible traffic burden on the roading system.

The consultants meaning of the term "high density" which is a relative and not absolute term needs clarification. In the ultimate "high density" development will have to be related to the housing types permitted by zoning proposals determined for the area.

2. The requirements for commercial zoning and extent of shopping facilities required may require specialist study and perhaps the costing of a supermarket chain or similar retailing developers if satisfactory development is to be achieved during the currency of the development.

3. Hotel Site Scheme II: This represents only a possibility not necessarily related to the community needs of the subdivision. In general the area is not likely to be appropriate for travellers accomodation

I consider that reference to a specific hotel site within terms of the brief should be deleted at this stage as this ~~represents~~ "gilding the lily" and Reference might be better made in the text of the report — common to at least scheme I + II of the possible establishment of a "local tavern" as part of the community shopping centre.

A G Alley.

18. TOWN PLANNER

FEASIBILITY STUDY

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL

NELSON

FOR CITY OF NELSON

VOLUME I : REPORT

BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

BRICKELL, MOSS, RANKINE & HILL

CONSULTING ENGINEERS

JOHN D. MOSS BE, FICE, FIE AUST, FASCE FNZIE,
JOHN RANKINE BE, MS(MIT), ME(UC), FIE AUST, MNZIE
HARRY W. PRIDDEY MI STRUCT E, MNZIE
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WILLIAM D. CHAMPION BE, MICE, MI STRUCT E, MNZIE
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Associate

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7 DALY STREET
LOWER HUTT, N.Z.
P.O. BOX 30499
TELEPHONE 63-926
CABLES: 'RANHILL' LOWER HUTT
Also at
WELLINGTON, AUCKLAND,
UPPER HUTT, MELBOURNE, SYDNEY

3200

4 July 1973

The City Engineer,
City of Nelson,
P.O. Box 313,
NELSON.

Dear Sir,

We submit herewith 25 copies of our report, "Feasibility Study, Proposed Residential Development, Observatory Hill, Nelson."

This study was initiated by your letter of 14 September 1972 in which representatives of our firm were invited to discuss preliminary aspects of the project with His Worship The Mayor and Council officers. The scope of the study, as confirmed by the Council, was submitted in our letter of 29 September 1972.

The report on this study is presented in two volumes as follows:-

Volume 1	Report
Volume 2	Illustrations

A draft of the report was submitted to The City Engineer for review on 23 May 1973 and the resulting comments have been incorporated in this final report. It should be noted that the dates shown on the report covers are incorrect and should read July 1973.

We wish to record our appreciation of the assistance provided by The City Engineer and his officers during the course of this study.

Yours faithfully,
p.p. BRICKELL, MOSS, RANKINE & HILL

John D. Moss

JDM:o'b

FEASIBILITY STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
OBSERVATORY HILL, NELSON
FOR CITY OF NELSON

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BASIC PURPOSES OF STUDY

1. To assess, from a review of published information and by surface reconnaissance, whether it is feasible to develop the natural hillslopes near Observatory Hill for residential purposes in view of the stability problems that exist in the Nelson area.

2. If the geotechnical aspects are favourable, to evaluate the economic feasibility of alternative schemes for an integrated residential development.

****

*.... "The time is right for major developers to promote improvements in the aesthetic and environmental character of our future residential suburbs."

*.... "Planners in both private practice and public service have an important contribution to make in ensuring that the future home owners in our cities will in fact be buying a way of life."

* Excerpts from Issue 8 of 'Prospect', the publication of the Australian Planning Institute, May 1970.

SUMMARY OF CONCLUSIONS

Stability Problems (Section 2.3)

1. The development of the site for residential purposes is both feasible and practicable from a geologic standpoint. Whilst it is recognised that the site does involve stability problems not normally encountered in comparable developments, these are judged to be of minor rather than major significance. Providing appropriate measures are taken in design and construction to overcome existing and potential landslide problems, the development will not involve significant or unforeseen contingencies that could jeopardise its success.

2. The inferred geologic conditions at the site differ from and are less severe than in nearby areas of the Port Hills where deep stability problems have occurred in the past.

3. Shallow surface landslides and soil creep have occurred in many areas of the site, particularly on higher steep slopes. These are consistently of shallow depth and localised extent.

4. No evidence of large scale deep-seated sliding has been observed at the site.

5. The natural stability of slopes in the area will be improved by mass earthworks and recontouring of the topography.

Planning Considerations (Section 3.5)

6. The population of Nelson is increasing at approximately the same rate as the national average.

7. The current market prices for sections in Nelson are judged to be higher than in cities of comparable size; this trend applies particularly in low to average valued sections which command prices similar to those currently applying in Wellington.

8. At present there is a high demand for flat units and high-density housing in Nelson. This trend could stem from and be aggravated by current shortages of sections and the high prices that available sections command.

9. A seller's market exists in Nelson for residential land; this situation, manifested by an excess of demand over supply and high market prices, will continue until more sections become available in the area.

Proposed Development (Section 4.6)

10. A comprehensive and integrated scheme plan can be evolved to develop the site for residential usage. This plan can incorporate all of the functional, community and environmental factors demanded in contemporary residential areas.

11. The maintenance and enhancement of Princes Drive as a scenic facility is assured.

12. The provision of adequate access roads both to and within all significant areas of the development can be achieved.

13. Whereas two of the three prospective developments illustrated in this report provide good solutions that meet all basic planning requirements, the third involves a marginal development with significant long-term planning problems.

14. The optimum scheme plan of development is likely to include the better features of the alternative preliminary schemes reviewed in this study.

15. The major ridges and valleys within the site provide topographic restraints which limit the subdivisional potential of the overall development. The alignment, shape and relative elevations of certain of these features do not permit other than a single subdivisional solution.

Economic Assessment (Section 6.6)

16. In terms of rate of return on investment, there are only marginal differences in the relative attractiveness of the three schemes analysed.

17. The influence of property and financial markets at the time of development is so significant that the anticipated pre-tax rates of return on investment could vary from 18 to 45 percent.

18. The market conditions at the time of development may be the determining factor in selecting the agency to carry out the development.

INTRODUCTION

1.1 Nelson City is facing a scarcity of suitable land that can be readily and economically developed for residential purposes. The growth of housing construction in the City since the end of World War II has now absorbed a large portion of the flat land which was previously zoned for residential use. At the present rate of housing development, Stoke and the adjoining areas near the City's southwestern limits will be fully utilised within the next decade. Although the City boundaries were extended to the northeast several years ago by the assumption of land formerly within Waimea County, the natural topography and potentially unstable characteristics of this area will restrict residential development to relatively small discrete pockets.

Having recognised the problem, the City could consider the following possible alternatives to alleviate the situation:-

(a) to rezone part of the undeveloped areas previously dedicated for industrial or commercial use;

(b) to reclaim marginal foreshore areas;

(c) to promote the redevelopment of existing older, low-density residential areas within the City; and

(d) to encourage residential development in hillside areas.

While it is recognised that the first three alternatives may provide limited short-term palliatives, each would involve significant planning problems that are unlikely to be acceptable by the City authorities or the community. Accordingly, the City Council has directed its immediate attention to evaluating the possibility of encouraging residential developments in previously neglected hillside areas. As a result, this study has been commissioned to assess the development potential of a block of land on the slopes of Observatory Hill.

1.2 THE SITE

The area considered in this study includes all of the presently undeveloped land shown in the central portion of the Site Plan, Plate 1. The block has an area of some 400 acres and is bounded by:-

- Toi Toi Street on the north;
- Thompson Terrace, Murphy Street, Matipo Terrace and Emano Street on the east;
- the proposed Motorway route on the south and southeast, and
- the foothill residential areas which overlook Main Road, Tahunanui and extend from Greenhill Road to Princes Drive, on the west.

Thus the site is strategically located within the City. It is within two miles of the central business district and adjoins the established residential areas of Toi, Toi, Bishopdale and Enner Glynn. It is also located within short distances of the seaside amenities of Tahunanui, the airport and the industrial areas to the west of Annesbrook and at Port Nelson. In addition, the more elevated portions of the site command spectacular views towards Tasman Bay, The Grampians or Nelson Haven.

1.3 TOPOGRAPHY

Apart from an area of relatively low relief near the southeastern corner of the block, the natural topography of the site comprises a series of steep-sided ridges, spurs and gullies. The Observatory Hill-Princes Drive ridge is the dominant central feature in the area, its crest being some 570 feet above sea level at the highest point. This ridge extends northwards from Observatory Hill to near Port Nelson; its side slopes fall steeply to the east and west and at moderate gradients towards the south. There are three major gullies on the east side of the main ridge; these are located at the heads of Toi Toi and Emano Streets and beyond the junction of Murphy Street with Thompson Terrace. In addition, a large gully extends through the southern portion of the site east of Douglas Road. The steep side slopes of the ridges on both sides of this valley have been heavily eroded to form alternating spurs and gullies. Although large areas of the site are covered with gorse and low scrub, some 100 acres in the southeastern portion have been cleared and are used for grazing.

1.4 PRESENT OWNERSHIP

The site has been previously subdivided into a number of irregularly shaped parcels. The location and extent of these parcels, together with details of the present owners, title numbers and lot areas are shown on Plate 2, Legal Ownership.

1.5 SCOPE OF STUDY

The purpose of this study, as discussed with the City Engineer and confirmed in our letter of 19 September 1972, was to determine the technical and economic feasibilities for developing the block as a residential subdivision. The scope of the study was directed towards assessing two principal aspects:-

(a) the geological and stability implications of future development; and

(b) an evaluation of alternative scheme plans for residential subdivision.

The brief provided that a study of the geology of the area be based upon a search of previously published data and a surface geological reconnaissance of the site. No provision was made for a programme of drilling to determine subsurface information. The geological study was to be particularly directed to the stability of the natural land forms and the short-term and long-term stability of future cut and fill slopes.

If the geological aspects of site development were favourable, the study was to be extended to include the preparation of alternative schemes of subdivision involving varying extents of earthworks. These schemes were to provide sections for low, medium and high cost housing. In planning studies, particular consideration was to be given to:-

- current housing trends and demands in Nelson;
- section values;
- environmental factors;
- maintenance and extension of the existing scenic drive;
- access to existing feeder roads and the future motorway;
- community facilities;
- existing City services; and
- possible City requirements for a proposed refuse tip.

It was further agreed that the scope of the study was to include an economic appraisal of each scheme to relate estimated construction costs to sales potential.

STABILITY PROBLEMS

2.1 PREVIOUS PROBLEMS

It is commonly recognised that the Nelson area is subjected to more frequent and severe problems of hillside instability than most parts of New Zealand. The occurrence of slides in Nelson is not a recent phenomenon since the basic cause of instability is attributable to the local geological characteristics of the area. It is true to conclude, however, that the incidence of sliding in the area has been aggravated by man-made developments and the partial neglect of drainage provisions.

2.1.1 The most unstable area in Nelson appears to be the western slopes of the Port Hills between Magazine Point and the Tahunanui Post Office and extending to Princes Drive. This slip-prone hillside is a unique feature in the Nelson area as accumulated evidence suggests that the area is a zone of ancient deep-seated instability. Originally the instability of this section of the Tahunanui hillside was activated by severe erosion at the foot of the hill which exposed the inherently unstable fine-grained sediments of the Paeora-Southland series to wave action. Deep seated rotational slides initially disrupted the block and later, localised shallow slide movements have occurred regularly upon its surface. Where the lower, more erosion-resistant Landon series outcrop at or above sea level, the Paeora-Southland series deposits do not appear to be subjected to instability problems. A detailed account of the problems in this area is given in Appendix A.

2.1.2 Apart from the unstable Tahunanui hillside area, a common feature of landslides in Nelson is that, in general, they have been limited to shallow depth. In most cases, the plane upon which surface movement has occurred lies within 10 to 15 feet, and rarely more than 20 feet, below the surface. The resulting slides have been manifested as surface slumps or earthflows and are generally restricted in area.

2.1.3 Several causes contribute to the typical shallow-seated instability problems in the Nelson area. Many hillside areas, particularly to the west of the Maitai Ranges, are comprised of geologically young and relatively unconsolidated mudstones and conglomerates. These sediments, originally laid down in horizontal beds, have subsequently been uplifted by folding and now involve steeply inclined bedding planes. Consequently the weakest sediments, being the laminations parallel to the bedding planes, are now more susceptible to gravity collapse than they were prior to folding. A second contributory factor involves subsurface drainage. The natural sedimentary deposits in the area include alternating strata of mudstones

and relatively loose, silty, well-rounded conglomerates. Any influx of water saturates the surface of the mudstone and the silty matrix of the conglomerates, causes a reduction of cohesion and leads to consequential slumping. Any form of ground vibration such as an earthquake further increases the natural tendency for sliding to occur when the surface soils are saturated.

2.1.4 It can be concluded that surface landslides can be expected to occur in any area of Nelson where the above contributory conditions exist either singly or in combination.

2.2 GEOLOGICAL RECONNAISSANCE

In order to assess the potential landslide problems that could result from development of the subject site, we have undertaken a detailed surface geological reconnaissance of the area. This study involved a review of available literature relating to the geology of the area and several reports dealing with specific problems. With the considerable background of these reviews, one of our senior Engineering Geologists spent two days in Nelson undertaking a detailed "walk-over" inspection of the site. As well as mapping the geomorphology of the site, he examined all significant surface outcrops, slide scarps and roadway cuttings in the area. No borings were drilled as part of this reconnaissance to determine the type and sequence of the subsurface deposits in the area.

Details of this reconnaissance and the conclusions that were drawn from its summary are reproduced in Appendix A of this report.

In 1969, Dr R. D. Northey of the Soil Bureau, Department of Scientific and Industrial Research, reported on the proposed development of the 42-acre block on Observatory Hill vested in the Cawthron Institute Trust Board. We were provided with a copy of Dr Northey's report for review in this study, the text of which is reproduced in Appendix B.

2.3 CONCLUSIONS

2.3.1 Based on a review of available geological information and a detailed surface inspection, we conclude that the development of the site for residential purposes is both feasible and practicable from a technical standpoint. It is acknowledged that the site does involve stability problems not normally encountered in developments of this type. However, in view of the probable scale of development, we judge the problems that do exist are of minor rather than major significance. Providing the existing and potential landslide problems are recognised and appropriate measures taken in design and construction to overcome their effects, it is our opinion that the development will not involve any significant or unforeseeable contingencies that could jeopardise its success.

2.3.2 The following geological aspects have been considered in determining this conclusion:-

(a) The inferred geological conditions at the site differ from and are less severe than in nearby areas of the Port Hills where deep stability problems have occurred in the past.

(b) Shallow surface landslides and soil creep have occurred in many areas of the site, particularly on higher steep slopes. These are consistently of shallow depth and localised extent.

(c) No evidence of large scale deep seated sliding has been observed at the site.

(d) The natural stability of slopes in the area will be improved by mass earthworks and recontouring of the topography.

(e) It is essential that all future fills be founded in and constructed from the bases of valleys. Perched or hanging fills constructed solely on natural slopes and not confined within valleys could involve onerous stability problems.

(f) The placement of all fills must be carefully controlled. It is essential that all weak detritus be stripped from valley floors prior to filling and that the fill materials be adequately keyed into natural slopes.

(g) Fill batters should be constructed not steeper than 2 horizontal to 1 vertical and, in major fill slopes exceeding 40 feet in vertical height, at slopes preferably flatter than 2 to 1.

(h) Cut batters should be designed generally not steeper than 2 to 1. The design of cut slopes should be sufficiently flexible that modifications to their slope and detail can be made during construction when the type, extent and sequence of exposed deposits are known. Irrespective of the subsoil conditions exposed at batter locations, cut slopes should be constructed not steeper than at 1 to 1 providing horizontal benches are provided at regular heights on the slope faces. Provision should be made for the installation of permanent drainage systems in cut batters should this necessity become apparent in construction.

(i) Adequate provisions should be made in design and construction for fully-effective drainage measures. These include the collection and disposal of subsurface seepage from within and beneath fill areas and the disposal of surface runoff from individual sections, streets, community areas and slopes.

(j) Consideration should be given to planting all constructed batters and steep natural slopes with suitable trees, shrubs or ground cover to promote stability of slopes.

2.3.3 These conclusions presume that the earthworks for the development will involve deep cuts and fills and significant reshaping of the natural topography. It is recognised that this process is contrary to that advocated and recommended by Dr Northey in his report to the Cawthron Institute Trust Board in 1969. However, different conditions apply to the site as a whole than to a discrete area straddling the crest of an elevated ridge. In the latter case, mass earthworks would involve constructing perched fills at the heads or on the side slopes of valleys. As concluded in paragraph (e) above, we concur with Dr Northey's opinion that such construction would reduce rather than improve the natural stability of the slopes. Likewise, we agree with Dr Northey's recommendation that the development of the Trust Board's property as a separate unit would be safely and most efficiently accomplished by minimal rather than by mass earthworks. We contend, however, that this type of development is not applicable to the overall site since different requirements and problems are involved. This comment is not intended as a criticism of Dr Northey's conclusions; in fact, the converse is implied for we agree fully with his opinion regarding the particular problem upon which he reported.

PLANNING CONSIDERATIONS

3.1 This section describes some of the factors which were considered in the preparation of preliminary scheme plans of subdivision for this study.

As stated in the Introduction, this study relates to the potential development of a confined area of Nelson. For this reason, its scope was limited to a general assessment, rather than a detailed investigation, of specific statistics such as population growth and housing demands. All information of this type quoted in the following sections has been provided by the City Engineer's Department.

3.2 POPULATION TRENDS

The population of Nelson City in late 1972 was estimated to be on the order of 30,000. It is further estimated that the annual growth rate is approximately 2 percent.

If this growth rate continues consistently, the projected population of the City at five year increments will be:-

1972	30,000
1975	31,840
1980	34,850
1985	38,470
1990	42,470
1995	46,890
2000	51,770

By the same assessment, the population of the City will reach 40,000 in 1987 and 50,000 in 1999.

3.3 CURRENT HOUSING DEMANDS

3.3.1 The City Engineer has advised that, in the year ending 31 August 1972, the number of residential building permits uplifted in Nelson City was as follows:-

AREA	DWELLINGS	OWNERSHIP FLATS	FLATS	TOURIST ACCOMMODATION UNITS
City	20	29	16	12
Atawhai	19	-	4	-
Northwest Nelson	26	16	13	9
Annesbrook	21	4	2	-
Stoke	53	44	17	-
Totals	139	93	52	21

* City: includes Wood, Nelson South, Nelson East, The Brook, Toi Toi and Bishopdale.

Northwest Nelson: includes Tahunanui, Britannia Heights, Washington Valley, Beachville and the Port area.

Annesbrook: includes Enner Glynn and Wakatu.

Stoke: includes Monaco.

3.3.2 The above figures, relating to a single year, do not indicate trends in the types of residential accommodation being constructed in Nelson. The fact that the total number of permits for rented and owner-occupied flat units (145) exceeded the total number for single-family residences is of particular interest. Without attempting to compare these figures with those for similar provincial cities, we judge that the proportion of high density residential units being constructed in Nelson is particularly high.

3.4 SECTION VALUES

3.4.1 We interviewed several real estate agents in Nelson in order to assess the approximate range of current market prices for residential sections in the area. It is not possible to analyse this information in a factual manner because of the relatively small number of sections available at the time of our enquiries; in addition, section prices vary considerably due to location, lot size, ease of access and other factors.

3.4.2 As a result of these enquiries, we conclude that the present market prices for sections in Nelson are of the following generalised orders:-

(a)	Average sections; (areas of from 23 to 25 perches with drive-on access; located in new subdivisions with or without views).	$6,000 to $6,500
(b)	Low value sections: (areas of from 20 to 25 perches with variable forms of access; located in less desirable areas and generally without views).	$3,500 to $4,000
(c)	Premium sections: (areas up to 30 perches with drive-on access; located in desirable areas with views).	$10,000 to $12,000

We were also advised that average sections presently in the range of from $6,000 to $6,500 commanded prices of from $4,000 to $5,000 two years ago. Land agents also confirmed that there is a continual unsatisfied demand for sections in the bracket of from $4,000 to $5,000.

3.5 FUTURE DEMANDS

Based on the facts reviewed in the three preceding sections, we conclude that:-

3.5.1 The population of Nelson is increasing at approximately the same rate as the national average.

3.5.2 The current market prices for sections in Nelson are judged to be higher than in cities of comparable size; this trend applies particularly in low to average sections which command prices similar to those currently applying in Wellington.

3.5.3 At present there is a high demand for flat units and high-density housing in Nelson. This trend could stem from and be aggravated by shortages of sections and the high prices that available sections command.

3.5.4 A seller's market for residential land in Nelson, manifested by an excess of demand over supply and high market prices, will continue until the availability of sections in the area is improved.

3.6 STANDARDS OF DEVELOPMENT

3.6.1 The form of residential subdivisions has changed markedly in the last decade. Although some of these changes have involved technical and planning aspects of sections, roads and other functional elements, the most significant advances have been in areas of community amenities and environmental features. These improvements apply particularly to hillside developments which, by virtue of the topography, tend to be partly isolated from the remainder of the community.

The following sections outline the general standards of development that were considered and applied in this study.

3.6.2 Roads

Wherever possible, the grades of roads in residential subdivisions should be not steeper than 1 vertical in 10 horizontal, although short sections of up to 1 in 8 can be tolerated in secondary streets.

There are many examples especially in hillside areas of Wellington, where chain-wide reserves have been provided for all streets. In older hillside developments, constructed before the advent of mass earthworks, many streets were formed by minimal cuttings into the natural slopes; the sealed carriageways, generally not more than 20 feet wide, meandered within the road reserve and the areas between the pavement and property boundaries were left undeveloped. The maintenance of these strips was subsequently the burden of the residents and, not infrequently, was totally neglected. This situation has changed and would not be tolerated today. The width of street reserves varies from 40 to 66 feet depending upon the volume of traffic using the street. The street reserves are fully developed to provide street channels, berms and footpaths on both sides of the carriageways. Wherever possible, power and Post Office cables are reticulated underground to avoid unsightly power poles and strings of overhead wires. Direct vehicular access is provided to all sections; apart from the resulting convenience to residents, this amenity reduces kerbside parking problems.

A uniform and pleasing visual impression is gained in residential areas by street planting. Suitable shade or decorative trees planted in berm areas eventually grow to provide a mature avenue-type setting. Experience has shown, however, that tree planting in street and community areas must be undertaken as part of the development to be effective. If street landscaping is left to future residents, optimum results and benefits are seldom achieved. The costs incurred in providing subdivisional landscaping is relatively small and is recouped by increased section values. Moreover, the existence of street landscaping encourages residents to maintain and improve both their properties and frontages.

3.6.3 Sections

The demand for large sections and particularly the traditional quarter-acre lot has decreased as values for residential land have increased. A second factor contributing to this trend has been the changes in family life brought about by increasing affluence, more mobility and leisure time and widened recreational activities. As a consequence, the minimum sizes for street and rear lots are now commonly accepted as 20 and 30 perches, respectively.

Contemporary planners strive to avoid monotonous lineal developments wherever possible. The shapes of sections are varied and so proportioned that a measure of freedom is available for siting of houses. The minimum width of street frontages is generally 55 feet and sections tend to be shallow rather than deep. Wherever possible, sections are aligned to take full advantage of views and, at the same time, arranged so that views are not impaired by neighbouring houses. Although difficult to achieve, account is taken in planning subdivisions to minimise adverse micro-climatic conditions and the effects of prevailing winds.

Relatively small subdivisions and developments on flat land normally only cater for limited income markets. On the other hand, it is much easier to provide for a complete range of section values in large subdivisions and hillside developments. In the latter case, the topography partially dictates the solution since higher priced premium lots can be readily provided in elevated areas which command views. Similarly, the less desirable depressed areas of the site which have no views or limited outlooks can be developed for low cost sections.

It is also desirable in an integrated subdivision to provide for multiple unit housing. Town houses and rentable or owner-occupied apartments have an increasing appeal to many sections of the community as is shown by the current demands for high density housing in Nelson. Such units are competitively priced since their total cost includes only a portion of the land cost borne by a separate dwelling. Accordingly, town houses and flats are attractive to single people, childless or business couples and retired folk, many of whom do not want the responsibility for maintaining large gardens. As the income capacities of these occupants vary appreciably, sites for multiple unit housing should be provided in from low to high value section areas.

Providing the earthworks are specified to well-defined standards of construction and rigid fill control measures are observed, houses supported on normal residential-type foundations perform entirely satisfactory in hillside developments. Properly placed and adequately

compacted fill materials provide equal or better foundation conditions than many natural soils. Deep piling is not required and foundations normally comprise continuous strip footings or conventional shallow-founded precast piles.

3.6.4 Community Facilities

In a development of the proposed type, involving an ultimate population of from 3,500 to 5,000 people, it is most desirable that provision be made in planning for a community centre. Preferably, the centre should be located near or adjacent to a school so that optimum use can be made of common facilities. It is envisaged that such community amenities should include a comprehensive shopping centre, community hall, kindergarten, dental clinic, and recreational facilities such as a swimming pool, playing fields, and tennis courts. Because of the high development costs of land, it would appear most desirable that the recreational amenities be utilised by both school pupils and the public alike since their periods of usage do not normally coincide. If this concept is followed, the cooperation of the Education Department would need to be sought in the initial stages of detailed planning.

The design of the shopping centre should include adequate provision for both parking and pedestrian traffic. The area should be adequately landscaped and suitable areas set aside as play areas for youngsters whilst mothers are shopping. The architectural treatment of the centre should be representative of a residential area with provision for stage construction to its ultimate capacity.

Desirably, the development should provide for several small parks to provide off-street playing facilities for young children and restful areas for elderly occupants of multiple units. These areas should be reasonably flat and landscaped at an early stage of the development. The landscaping should be so planned as to minimise maintenance.

In hillside developments, pedestrian paths can frequently be provided to connect local residential zones with shopping areas, school sites and reserve areas. If the natural slopes in reserve areas are planted as recommended, walking paths through these areas could provide a pleasant community amenity.

Public transport facilities to the development should be provided as soon as possible after occupation commences as this is an important consideration to prospective purchasers.

3.6.5 Environmental Features

The Princes Drive and Observatory Hill area provides the most accessible panoramic views of the Nelson area of any vantage point close to the City. This feature could be further improved with the development of the area by providing suitable lookout and rest areas at selected points on the ridge roads.

As indicated in an earlier section, we strongly recommend that consideration be given to tree planting in reserve areas of the development. Apart from improving the stability of natural slopes, the resulting plantations will provide an area amenity. It is appreciated that these plantations will involve maintenance expenditure but this burden will reduce as the trees become established. The type of trees planted should be carefully selected for their root stabilising properties but they should not grow to such heights as to cast excessive shade and limit views from adjacent areas.

3.6.6 Roading Access

There are three principal roads which provide suitable access to the site - Murphy Street from the east, Princes Drive from the Port Hills area to the north and Douglas Road from the west. All of these streets can be inter-connected by suitably located access roads through the development. The present standards of the three external access roads are inadequate for the volume of traffic to which they will be ultimately subjected. These streets will need to be reconstructed as development of the site proceeds to provide similar standards of service as access roads within the subdivision.

The proposed motorway route from Stoke to the City abuts the southern and southeastern boundaries of the site. It has been assumed that no direct access to the motorway can be provided from the site.

3.6.7 Utility Services

At present, stormwater from the bulk of the area gravitates to the low points of the valleys which abut the perimeter of the site. The runoff from these natural depressions is concentrated in a number of ditches and culverts which, in turn, discharge into two open channel systems. These main channels, which originate in the Toi Toi Street and Douglas Road areas, outflow to the harbour or open sea to the east and west of the site.

PROPOSED DEVELOPMENT

4.1 ALTERNATIVE SUBDIVISION SCHEMES

A number of preliminary schemes of subdivision were prepared and assessed in the initial stages of this study. However, many of these basic layouts included common planning aspects because of the necessity to take advantage of certain topographic features and existing restraints in order to provide for principal roads and ensure optimum views from a maximum number of sections. As a consequence, we have limited our detailed study to the three alternative schemes of development described in the following sections.

The three schemes submitted have been selected to illustrate the overall development potential of the site. They provide for the production of from approximately 875 to 1114 individual sections and, in turn, involve from 2 million to 3.8 million cubic yards of earthworks. We judge that the ranges of these parameters represent the approximate minimum and maximum orders of economical development that should be considered for a site of this type.

The schemes illustrated are not claimed to be optimum solutions. It is likely that additional planning studies will indicate that a better and more economical subdivisional layout can be evolved by combining features from more than one of the alternatives. Furthermore, a detailed study of any one proposal would undoubtably indicate improved arrangements and numbers of sections and facilities than those assumed in this feasibility study.

The three alternative subdivision schemes presented in this study are each illustrated on two plates in Volume 2 of this report:-

	Scheme No:	I	II	III
.	Basic Plan:	Plate 3	Plate 5	Plate 7
.	Location and Extent of Earthworks:	Plate 4	Plate 6	Plate 8

4.2 SCHEME I

This scheme is intended to illustrate a maximum extent of development and would provide approximately 1114 lots. Its principal features are:-

4.2.1 A central main thoroughfare (street 1) connecting Princes Drive with Murphy Street.

4.2.2 The central gully, extending west of Murphy Street towards Observatory Hill, is developed by a large fill with a relatively flat final surface and a high terminal batter. Access from street 5 would provide an optimum number of view sections in the central portion of the site.

4.2.3 Direct access is provided from Douglas Road to Princes Drive by street 2.

4.2.4 An optimum number of premium view sections is provided on the ridge south of street 3.

4.2.5 Street 6 and its secondary side streets provide good utilisation of the spur which falls to the northeast of Observatory Hill.

4.2.6 Streets 8 and 9 provide direct access from Princes Drive to Emano and Montreal Streets respectively.

4.2.7 The base fills in the gullies above Emano and Toi Toi Streets provide lineal developments along both sides of streets 7 and 10.

4.2.8 Scheme I includes two school sites (southeast of the junction of streets 1 and 2 and at the junction of street 1 with Murphy Street). In addition, a central commercial area is provided at the junction of streets 1 and 2 as well as one-or two-lot local shopping areas at three peripheral locations.

4.2.9 The scheme provides for 28 high density residential sections generally located in the elevated portions of the site. It also allows for six small public parks, three of which are sited at the centres of residential blocks. Experience indicates that such parks enhance the potential value of neighbouring sections.

4.2.10 This scheme would involve some 3.8 million cubic yards of earthmoving, the largest volume of the three alternatives illustrated. We judge from past experience in hillside developments that the average volume of earthworks for this scheme - 3,400 cubic yards per developed section - approaches the upper limit for economical subdivision. This scheme would yield the highest percentage of desirable view lots of the three proposals shown. The principal feature of the scheme is that it provides vehicular access from Princes Drive to four existing peripheral streets. With the minor exception of short lengths of streets 2, 8 and 9, residential lots can be constructed on both sides of all streets.

4.3 SCHEME II

This scheme provides an intermediate sized development that yields 1076 lots. It incorporates the following main features:-

4.3.1 A central through road (street 1) connects Princes Drive with Murphy Street. This road traverses the uniformly sloping surface of a major fill area in the gully west of Murphy Street.

4.3.2 Princes Drive is connected to Douglas Road by street 2. The alignment of this access varies slightly from that of Scheme I but the sloping ridges to the southwest are tapped by two cul-de-sacs to provide a different subdivision layout in this prime view area.

4.3.3 A secondary access road (street 5) connects street 2 with Thompson Terrace and Murphy Street.

4.3.4 The subdivision of the extreme southern ridge varies slightly from that of Scheme I.

4.3.5 Direct access from Princes Drive to Montreal Road is provided by street 9.

4.3.6 Fills in the three gullies at the heads of Toi Toi and Emano Streets provide ribbon developments along both sides of streets 7, 8 and 10. However, these new streets do not allow direct access from the existing streets in this area to the Port Hills.

4.3.7 Scheme II provides for two school sites (southeast of the junction of streets 2 and 5 and at the lower end of street 1 near Murphy Street).

4.3.8 A community shopping centre is located at the intersection of streets 2 and 5; two-or three-lot commercial sites are also provided at two peripheral locations.

4.3.9 A potential tavern site is included in this scheme. This site is located on a local knoll below the levels of neighbouring residential lots and access would be gained from street 1 near the present southern end of Princes Drive. The site commands magnificent views over Tahunanui Beach towards Tasman Bay.

4.3.10 The scheme provides for 34 high density lots suitable for apartments or condominiums; these are sited in the central and southern parts of the site in from four to seven lot clusters. It also provides for five public parks, three of which are located at the centres of blocks and adjoin the rear boundaries of residential lots.

4.3.11 The construction of this scheme is estimated to involve approximately 3.6 million cubic yards of earthmoving, some 5 percent less than for Scheme I. It provides for direct access from Princes Drive to Douglas Road, Murphy Street and Montreal Road, but not to Emano Street as in Scheme I. The percentage of view lots is high but slightly less than that of Scheme I. This mainly results from the use of the central gully west of Murphy Street as a through-access route, rather than as a confined elevated area providing good quality view sections. Although street 5 also serves as a secondary access road, the value of sections in this area would probably be higher than those in the comparable area of Scheme I. The subdivision of the southern portion of the block is basically similar to that of Scheme I although better view lots result from the arrangement of elevated cul-de-sacs.

4.3.12 The direct connection of street 9 with Princes Drive would require the gradient of a short length of this street to exceed the preferable maximum of 1 in 8. Furthermore, the intersection would involve the realignment of the present U-bend in Princes Drive; this reconstruction appears to be desirable in any case.

4.4 SCHEME III

This scheme involves a minimum scope of development and would yield some 876 lots. It incorporates the following features:-

4.4.1 The scheme results in three isolated developments located in the northern, central and southern portions of the site. There is no vehicular access between the three areas in a north to south direction. Access to each block is gained from existing streets in either east and/or west directions.

4.4.2 In the central block, street 1 connects Princes Drive with Murphy Street via the spur that terminates near the existing Thompson Terrace reservoir.

4.4.3 The gully west of Murphy Street is filled and provides access to an isolated cul-de-sac development on the spur above Emano Street. This central gully area is not connected directly to the Princes Drive area as in the other schemes.

4.4.4 The valley east of Douglas Road is filled and the resulting development consists primarily of ribbon sections along the principal valley and ridge roads with cul-de-sacs tapping isolated truncated spurs and filled gullies.

4.4.5 The roading network and housing development in the northern block is identical to that of Scheme I. Both Emano Street and Montreal Road are connected to Princes Drive by streets 7 and 8 respectively.

4.4.6 Scheme III would involve some 2 million cubic yards of earthmoving, a volume that is significantly lower than in Schemes I and II. The average earthworks amounts to approximately 2,300 cubic yards per section.

4.4.7 This scheme, providing three distinct and isolated areas of development introduces planning problems that did not arise in the two other schemes. In hillside developments, the provision of relatively flat land for educational and recreational uses can be both difficult and expensive. To ensure optimum utilisation, such sites must be reasonably accessible from all areas of their potential catchment. This cannot be achieved in a development split into three separate zones. Consequently, only one school site has been provided, this being in the lower area of the central block. Although the development as a whole justifies provision for two schools, pupils from the northern and southern areas would require to attend existing schools beyond the site.

4.4.8 For similar reasons to those given above, it is difficult to justify a large community centre facility in a split development. The scheme does provide for small neighbourhood commercial blocks in each of the northern and southern areas and for larger shopping areas in the upper and lower portions of the central block.

4.4.9 Provision has been made in each of the three zones for a total of 28 high density residential sections and for at least one public park in each area.

4.5 DEVELOPMENT DETAILS

Although specific details are not necessarily shown on the accompanying illustrations, provision has been made in preliminary planning and cost estimates of each scheme for the following common features:-

4.5.1 Roads

(see Plate 9 for typical details).

(a) The main access streets are 66-feet-wide reserves with a central 32-feet-wide carriageway. Provision is made for 4½-feet-wide footpaths and planted grassed berms on both sides of the reserve.

36 feet better

(b) Connector streets have a 50-feet-wide reserve and a 26-feet-wide roadway. The footpaths on both sides of the street are separated from the kerbs by grass berms which also accommodate kerbside trees.

(c) Minor streets and cul-de-sacs have 40-feet-wide reserves and 20-feet-wide roadways. Footpaths on both sides of the street abut the kerbs and are separated from the property frontages by grass berms and community trees.

(d) Alternative layouts for cul-de-sac turning areas are shown on Plate 9. Provision is made in each type for central raised planting areas and for either perimeter or central parking.

(e) The steepest longitudinal gradient of streets is 1 vertical in 8 horizontal. This gradient has not been exceeded in any scheme except for a short length of street 9 in Scheme II.

(f) All services are to be installed underground in road sections. Whereas water, gas, stormwater and sanitary mains are generally located below the roadway, power and Post Office cables will be installed in the berms adjacent to the property boundaries.

4.5.2 Residential Sections

(a) All residential lots have drive-on vehicular access and building sites are to be located on relatively flat areas in the front portion of lots. It is envisaged that local building restrictions would be introduced to preclude erection of houses on cut or fill slopes.

(b) All sections have been proportioned to provide:-

- minimum frontages of 55 feet for street lots;
- minimum areas of 20 and 30 perches for street and rear lots, respectively.

4.5.3 Dual-use Schools

It is proposed that the school facilities such as playing fields, tennis courts, swimming pool and meeting hall be used by the local community outside of school hours and particularly on weekends. Such usage would require the sanction and close cooperation of the Educational authorities.

4.5.4 Area Planting.

As recommended in Section 2 of this report, provision has been made for the planting of all non-usable slope areas within the development. Apart from the future aesthetic value to the community of such plantations and the avoidance of unsightly, unkempt areas within the development, tree planting will improve the stability of both natural and constructed slopes.

4.5.5 Stage Construction

Construction of the development is likely to be undertaken in stages related to demands for residential sections, available financing and construction sequence. A preliminary assessment of the extent of separate stages of construction is indicated on the subdivision scheme plans.

In determining the approximate limits of each stage, consideration was given to balanced cut and fill volumes of earthwork construction, probable earthmoving haul paths, traffic access and provision of services.

4.5.6 Refuse Tip

For the reasons outlined in section 3.6.8, no provision has been made in any of the three schemes illustrated for a refuse tip.

4.6 SUMMARY OF PLANNING FACTORS

Based purely on planning aspects and disregarding geologic and economic considerations of development, we conclude that:-

4.6.1 A comprehensive and integrated scheme plan can be evolved to develop the site for residential usage. Such a plan can incorporate all of the functional, community and environmental factors demanded in contemporary residential areas.

4.6.2 The maintenance and enhancement of Princes Drive as a scenic facility is assured.

4.6.3 The provision of adequate access roads both to and within all significant areas of the development can be achieved.

4.6.4 Whereas the type of developments illustrated by Schemes I and II provide good solutions that meet all basic planning requirements, Scheme III involved a marginal development with significant long-term planning problems.

4.6.5 The optimum scheme plan of development is likely to comprise the better features of the alternative preliminary schemes discussed in this study.

4.6.6 The major ridges and valleys within the site provide topographic restraints which limit the subdivisional potential of the overall development. The alignment, shape and relative elevations of certain of these features do not permit other than a single subdivisional solution.

CONSTRUCTION

5.1 CONSTRUCTION METHODS

5.1.1 The construction of a large subdivision of the type envisaged requires careful planning, good management and the involvement of an experienced, well-equipped contractor. The techniques involved in this type of work have changed considerably during the past decade. Earth-moving equipment has become more sophisticated and efficient with the result that basic construction costs have been relatively stable during a period of marked inflation. More importantly, contractors now appreciate the necessity for planning their sequence of operations and secondary requirements such as erosion control.

5.1.2 The construction of a hillside development requiring large scale earthworks normally involves the following aspects and sequence of work:-

(a) The contractor plans the sequence of work taking into account such factors as:-

- contractural obligations for completion and/or timing;
- locations of cut and fill areas and volumes of material required;
- siting of haul roads;
- equipment available and/or required;
- protection of partially completed work from weather effects; and
- erosion control measures to minimise damage within and beyond the site, etc.

(b) The site is cleared; buildings are demolished where necessary and all surface vegetation is removed and burned or otherwise disposed.

(c) Topsoil is stripped from construction areas and stockpiled for future reuse.

(d) All organic or saturated soils unsuitable for use as fills are stripped from the bases of gullies and construction areas; any material not acceptable for reuse is rejected to waste.

(e) Subsoil drains (perforated pipes surrounded by filter material) are laid in the bases of gullies to intercept springs or seepage water in future fill areas.

(f) Material is excavated from cut areas by earthmoving plant, hauled to fill areas and spread in uniform thin layers. Where necessary, the filling is dried by discing and harrowing or moistened by spraying to ensure it has a uniform and optimum moisture content prior to compaction. Any boulders or cobbles exceeding specified dimensions are removed from the fill material during the conditioning/ spreading process.

(g) Each fill layer is compacted with special rollers until it has attained a specified minimum density. Field tests are made by the Engineer to ensure that the specification requirements have been achieved. No additional fill layers may be placed until the underlying layer has been approved. Thus, fill areas are progressively constructed in successive 6- to 8-inch thick layers, each of which is accepted as the work advances.

(h) All fill materials placed against slopes are keyed into the natural ground by benches.

(i) While earthwork construction proceeds, the contractor must exercise vigilant control to ensure that completed work is not jeopardised or damaged by rain. Protective measures include strategically located brush fences or similar retards to minimise the erosional effects of channelled water; sealed fill surfaces to minimise water penetration; temporary ponding areas; berms or deflectors to prevent sheet flow of surface runoff and detritus traps to prevent mud discharging on to neighbouring properties.

(j) When final surface grades have been achieved, all cut and fill surfaces are trimmed to level and shape.

(k) The alignments of future roads are set out and successively, the following elements constructed:-

kerbs and channels; underground services; footpaths and berms; and roadway subgrade, basecourse and surface pavement.

(l) Drainage provisions for the disposal of surface water from sections are installed concurrently with (j) and (k) above.

(m) Underground cables for power and Post Office services are installed in berm areas.

(n) Topsoil is spread over sections and in berm areas; grass is sown and trees planted.

(o) The boundaries of sections are pegged in the field and a legal survey plan for the subdivision is prepared and deposited for title registration.

(p) Following completion of construction, all temporary stormwater control measures are inspected; those to be retained for semi-permanent use are maintained and associated areas are tidied. After a detailed post-contract inspection, the Engineer certifies the completion of the contract and all public services and facilities are assigned to the Local Authorities for subsequent administration.

5.2 STAGE CONSTRUCTION

It will be readily appreciated that a residential development of this magnitude must be planned and constructed in stages. For purposes of preliminary planning and economic appraisal, each of the illustrative schemes shown on Plates 3, 5 and 7 have been notionally subdivided into three construction stages - A, B and C. These stages were selected solely on the basis that the earthwork volumes of cut and fill in each phase are roughly balanced. The selection of practical construction stages is only possible after detailed planning has been completed and all relevant contributory factors can be assessed.

The three main factors which affect stage construction are:-

5.2.1 Housing Demands

Ideally, sections, like houses, should be developed in response to demand. Although this situation can be approached in flat areas, it is not feasible in hillside developments involving extensive earthworks construction. Apart from external housing demands, the number of sections developed each year in a hillside area can be dictated by construction restraints such as topographic features, weather, available equipment and the provision of services. Conversely, there is a minimum rate at which sections must be produced if the overall development is to be acceptably profitable.

We judge in this instance that the minimum market demand for sections in Nelson would be met by the completion of 50 lots in each of the first three years of the development. It is commonly shown that, as a development becomes established and more mature with the construction

of houses, provision of transport and shopping facilities and the growth of trees, the demand for sections in the area increases significantly. For this reason, we have assumed in economic analyses that 100 sections could be produced and sold annually in the fourth and successive years of the development. Such assumptions are merely generalisations for the purposes of this study. It is likely that a higher rate of construction would be warranted by the local attraction of the scheme. It may, for instance, be found prudent and economical in detailed planning to construct more sections than required during the first three years to budget for progressively increasing demands in subsequent years.

5.2.2 Method of Construction

The haulage of materials from cut to fill areas involves a significant cost in mass earthworks. Consequently, it is essential that fill materials be placed as close to the borrow source as is possible and preferably in adjoining depressions. It is equally essential that volumes of cutting and filling be roughly equal in a single earthmoving contract to avoid subsequent rehandling or damage to completed work. For these reasons, the stages of construction in hillside developments are frequently dictated by contractural considerations.

The only way to overcome this problem is to undertake earthworks phases in relatively large stages as dictated by the topography and delay roading and related finishing work to conform to demand. This method of operation has disadvantages in that interest costs increase, exposed surfaces are prone to damage from weathering and drainage problems are aggravated.

5.2.3 Economics

The maximum amount of capital required to finance a project at any one time is of particular concern to a developer. This item can be minimised if it is possible to reduce initial expenditure or alternatively accelerate returns from sales.

In this development, elevated view lots will command sale prices between two and three times those of the minimum value sections. For this reason, consideration could be given to completing a number of premium lots in the early stages of development providing adequate link roading can also be constructed to service such lots.

ECONOMIC ASSESSMENT

6.1 The economic feasibility of the three alternative schemes prepared for this study has been assessed in three ways to evaluate the effects of different marketing conditions at the time of development. Each scheme has been analysed on the basis of the assumed costs and revenues outlined below.

6.2 DEVELOPMENT PROGRAMME

6.2.1 As described in earlier sections, the construction of each scheme considered has been divided into three stages. For purposes of economic analyses, it has been assumed that each construction stage of a scheme may be carried out independently of the others. We believe that, with the exception of providing the public services required to service more than one stage, this assumption is reasonably valid.

6.2.2 Accordingly, we have evaluated the feasibility of each scheme by first assessing the profitability of the individual stages and then selecting the order of stage construction to provide the best overall return. Should the Council decide, for civic or political reasons, that the suggested staging of development be altered, some reduction in the overall profitability of the development should be expected.

6.2.3 It has further been assumed in analyses that, upon the acceptance of any scheme, Nelson City Council or the development agency would acquire all necessary lands prior to commencement of construction or the sale of any sections.

6.3 METHOD OF ECONOMIC ANALYSES

The economic feasibility of the three schemes has been assessed by the Discounted Cash Flow Method. The method, also known as the Rate of Return Method, is generally accepted as the most powerful and universally applicable method of economic analysis. The method has the advantage that it assesses the relative profitability of any scheme by considering the timing of all revenues and expenditures. Thus, it provides an accurate evaluation of the compounding effect of interest payable or earned. The calculated rate of return of the project may then be compared to the rate being paid for loan monies, the rates of return of alternative schemes, or the rates at which money alternatively invested on the financial market would return.

The method of analysis adopted thus provides a more rational and economically sound basis for decision-making than given by a simple direct comparison of estimated expenditure and revenue.

6.4 DEVELOPMENT COSTS

6.4.1 Land Acquisition

The City Engineer requested Messrs Duke & Cooke, Registered Public Valuers of Nelson, to provide a current valuation of all of the land that may be required for the development. A copy of their valuation report, dated 5 February 1973, is given in Appendix C.

6.4.2 We have assessed that the cost of purchasing the actual area of land required for the development, based upon current 1973 valuations, would be as summarised in Table 6A below. The total purchase cost should be regarded as a minimum since it may be necessary to acquire all, rather than part, of some properties located near the perimeter of the site.

PRESENT OWNER(s)	APPROX AREA (Acres)	CURRENT VALUE	MINIMUM PORTION REQUIRED
Bishopdale Potteries Ltd	200	$143,000*	All
Bogle, A.	9½	1,900	Part
Brown, A.R.	18	10,800	All
Cawthron Institute Trust Board	41¾	55,900	All
Dalhoff, J.H.	6¾	1,350	Part
Gates, G.H.	4½	2,700	Part
Gibbons, R.	1¼	3,000+	Part
King-Turner, L.V. & D.M.	52½	27,100+	All
Lambert, L.C.	3	2,400+	All
Lublow, H.M.		18,600	All
McCaw, J.T.	29½	11,900	All
Neal, A.M.	3¼	2,000	All
Nelson City Council	22½	7,580	All
Roy, L.H.		200	Minor
Squire, E.J.		150	Minor
Fleming, T.H.		175	Minor
TOTAL VALUE		$288,655	

* The value of the dwelling and farm buildings has been included in the purchase cost since these buildings are likely to have little or no salvage value.

+ The value of the dwellings on these properties has not been included since, if their purchase is necessary, their value would be recovered through subsequent sale.

TABLE 6A: CURRENT PROPERTY VALUATIONS

6.4.3 It should be noted that the values given in Table 6A represent the total current values of the individual holdings. It is likely that negotiated purchase prices may be higher than these values. Furthermore, it may be necessary to acquire the whole of a property rather than merely that portion required; this necessity will depend upon the economic size and future use of the remnant area if retained by the present owner.

6.4.4 Construction Costs

Based upon experience in similar subdivision developments and current construction costs for projects of comparable scope, we have assumed the following construction costs:-

6.4.5 Bulk Earthworks

This total item includes provision for the following construction activities:-

- site preparation - demolition, clearing, construction of access roads, etc;
- topsoil - stripping and stockpiling;
- unsuitable material - excavation and disposal;
- sub-drainage - provision and installation of subsoil drains in gullies, etc;
- cut and fill - excavation and hauling of material from cut to fill areas;
- compaction - spreading, shaping and compacting of fill soils to specified standards;
- final grading - shaping and completing all construction areas, topsoil spreading, etc; and
- earthworks management - organisation and management of earthworks construction; erosion control during all stages of construction, etc.

An allowance of $0.40 per cubic yard of cut to fill material has been assumed for providing the above services.

6.4.6 Roading

Construction items included under this heading are:-

- underground services - the supply and installation of all underground services such as water, sewerage and stormwater mains, connecting lot boundaries with the supply source or disposal point, together with all necessary appurtenances, e.g. manholes, thrust blocks, etc;
- roadway sections - the preparation of subgrade surfaces; supply and construction of subgrade materials and surface sealing;
- footpaths etc - material supply and the construction of kerbs, channels, stormwater inlets, berms, footpaths and vehicle crossings.

The allowances given in Table 6B have been made in economic analyses for the above construction items:-

ROADWAY WIDTH	ESTIMATED COST
66 feet	$3,700 per 100 feet
50 feet	$3,460 per 100 feet
40 feet	$3,325 per 100 feet
20 feet	$3,040 per 100 feet

TABLE 6B: ROADING COSTS

6.4.7 Power and Post Office Services

An allowance of $100 per section has been made for the installation of all electrical power and telephone cables from the sources of supply to section boundaries.

6.4.8 Contingency Items

An allowance equal to approximately 10 percent of the combined earthworks and roading costs has been made for providing ancillary services such as:-

- Reservoirs
- Stormwater retention dams
- Traffic control signals
- Area planting
- Other items for which definitive provision cannot be foreseen in initial planning studies.

6.4.9 Professional Services

An allowance of $350 per section has been made for engineering and surveying services involved in planning, detailing, supervising and administrating the overall development.

This item does not allow for legal, valuation and real estate fees associated with the marketing of the development. Although these are real and attributable costs, they are normally included in part of the development agency's overhead and profit.

6.4.10 Existing Roads and Services

As discussed in earlier sections 3.6.6 and 3.6.7, it will be necessary to upgrade existing roads and services such as sewerage and stormwater channels not only in the near vicinity of the site but perhaps at critical points some distance away. Due to the complexity of this problem, no allowance of costs has been made for these items in the economic analyses.

Problems from overloading of existing services generally arise gradually and are undertaken by Local Authorities when the need arises. In general, new developments which are a contributing cause to overloading tend to support the costs of external services by providing additional rates revenue for Local Authorities to finance the upgrading costs.

6.5 REVENUE

6.5.1 The ultimate value of the completed development has been assessed by assigning an assumed sales price to each residential section. For this purpose, all sections shown on the scheme plans have been rated and assigned anticipated values. In determining the rating of groups of sections, consideration has been given to their size, location, access and view.

6.5.2 Based on the above factors, sections have been rated as shown on Table 6C:-

CLASS	RANGE OF CURRENT VALUE	AVERAGE SALES PRICE
A	$7,500 to 8,500	$8,000
B	$6,500 to 7,500	$7,000
C	$5,500 to 6,500	$6,000
D	$4,500 to 5,500	$5,000
E	$3,500 to 4,500	$4,000

TABLE 6C: SECTION VALUES

6.5.3 In view of current market trends for residential sections in Nelson, the above assumptions tend to be conservative. However, the majority of sections shown on the scheme plans have areas averaging 20 perches or one-eighth of an acre. Although this approach is correct for purposes of preliminary planning, it will be possible in final detailed planning to provide individual or groups of sections to take optimum advantage of their marketing potential. For instance, in elevated areas with uninterrupted views, provision can be made for a smaller number of larger sized premium lots which will command appreciably higher values than the average 20-perch section allowed on the scheme plans. It can be expected, therefore, that apart from inflationary trends, a greater total return from the sale of sections could result from careful detailed planning than has been allowed in this study.

6.5.4 Based on the assumptions outlined above, we conclude that the current market value of the developed sections shown on the three scheme plans would be as shown on Table 6D as follows:-

SCHEME	SECTION		STAGE A		STAGE B		STAGE C		TOTAL SCHEME	
	Class	Value	No.	Value	No.	Value	No.	Value	No.	Value
I	A	$8,000			10	$ 80,000	3	$ 24,000	13	$ 104,000
	B	7,000			22	154,000	9	63,000	31	217,000
	C	6,000			122	732,000	63	378,000	185	1,110,000
	D	5,000	29	$145,000	311	1,555,000	120	600,000	460	2,300,000
	E	4,000	146	584,000	125	500,000	154	616,000	425	1,700,000
	TOTALS		175	$729,000	590	$3,021,000	349	$1,681,000	1114	$5,431,000
II	A	$8,000			13	$ 104,000	4	$ 32,000	17	$ 136,000
	B	7,000			23	161,000	9	63,000	32	224,000
	C	6,000			133	798,000	106	636,000	239	1,434,000
	D	5,000	43	$215,000	220	1,100,000	136	680,000	399	1,995,000
	E	4,000	145	580,000	153	612,000	91	364,000	389	1,556,000
	TOTALS		188	$795,000	542	$2,775,000	346	$1,775,000	1076	$5,345,000
III	A	$8,000			6	$ 48,000	1	$ 8,000	7	$ 56,000
	B	7,000			28	196,000	12	84,000	40	280,000
	C	6,000			107	642,000	45	270,000	152	912,000
	D	5,000	29	$145,000	204	1,020,000	74	370,000	307	1,535,000
	E	4,000	146	584,000	107	428,000	117	468,000	370	1,480,000
	TOTALS		175	$729,000	452	$2,334,000	249	$1,200,000	876	$4,263,000

TABLE 6D ESTIMATED DEVELOPMENT REVENUE

6.6 METHOD OF ANALYSES

6.6.1 There is no accurate way to assess the current or future unsatisfied demands for residential properties in Nelson from public records. This information can only be derived from a specific study supplementing the scope of this feasibility study. Similarly, the future availability of finance for residential purposes is a matter of conjecture. For these reasons, we have analysed the above cost-revenue data by three different bases of assumption to allow for differing demand and financing conditions.

6.6.2 The assumptions made in analyses are:-

Method 1 - presumes:-

- the construction and sale of 50 sections in each of the first three years of development;
- thereafter, 100 sections are developed and sold each year;
- all sections are sold for cash or the development agency is not required to provide financial accommodation.

This is the simplest of the three methods assumed. It would only apply while a shortage of residential land exists and depends upon the ready availability of adequate finance to prospective purchasers through lending institutions.

Method 2 - presumes:-

- the completion and sale of 50 sections in each of the first three years of development;
- thereafter, 100 sections are developed and sold each year;
- all sections are sold on the basis of $1,000 deposit at sale with the balance spread over three years at an interest rate of 6 percent.

This method also assumes a high continuing demand due to a shortage of residential sections coupled with a less than buoyant financial market for private homebuilders. The assumptions tend to be conservative as some sections will either yield a higher deposit or be sold for cash.

Method 3 - presumes:-

- the development of 100 sections each year;
- only half the sections developed each year are sold in that year and the remainder are sold during the two following years;
- all sections are sold on the basis of $1,000 deposit with the balance payable over three years at 6 percent interest.

This method is the most conservative in that it provides for marginally depressed property and financial markets. Furthermore, it ignores the possibility of higher deposits, cash sales or earlier repayments.

6.6.3 The three alternative schemes of subdivision illustrated in this report have been analysed by each of the above methods. In all cases, a discounted cash flow system has been employed to compare present-day costs and worths. By comparing the accumulative costs and revenues at all stages of the development, it is then possible to calculate:-

(a) the maximum outlay required to finance the development; and

(b) the net rate of return on investment.

The results of these analyses are summarised graphically on Figs. 6-1 to 6-3 and in Table 6E.

For the purposes of brevity, the calculations upon which this information has been derived have not been included in this report. This data will be retained in our files and be available for review if required.

6.7 CONCLUSIONS

Based on the economic assessment outlined in this section, we conclude that:-

6.7.1 In terms of rate of return on investment, there appear to be only marginal differences in the relative attractiveness of the three schemes analysed. The pre-tax rate of return on investment, as summarised in Table 6E, varies by not more than 4 percent in any of the methods of analysis applied to the three schemes. As these differences are not greater than the accuracy of the assumed costs and revenues of development, little significance can be attached to them.

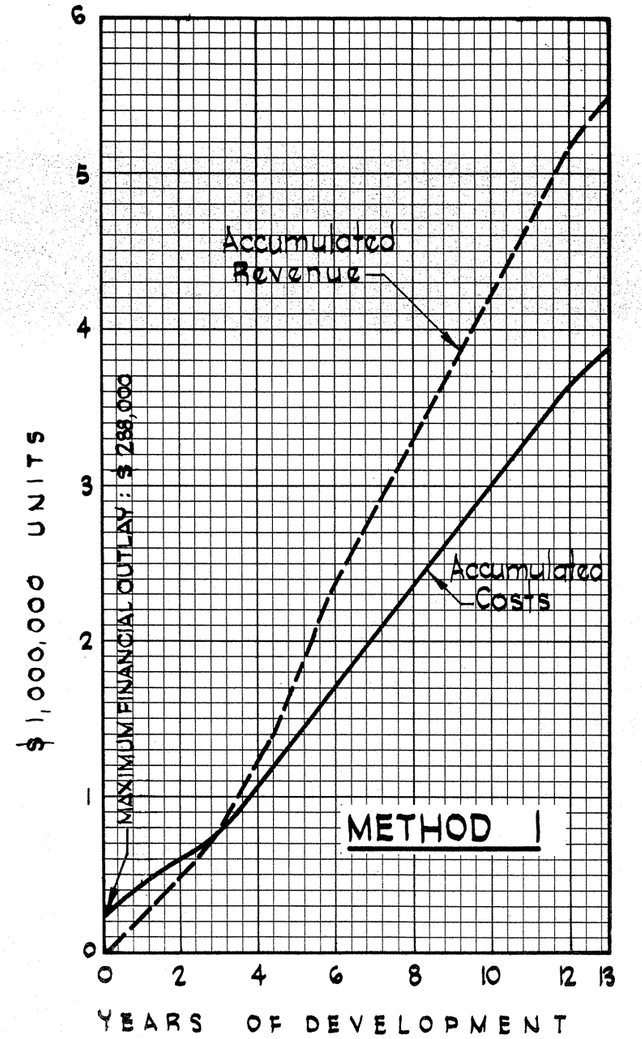
6.7.2 The influence of the property and financial markets at the time of development is so significant that the anticipated return on investment before tax could vary from 18 to 45 percent.

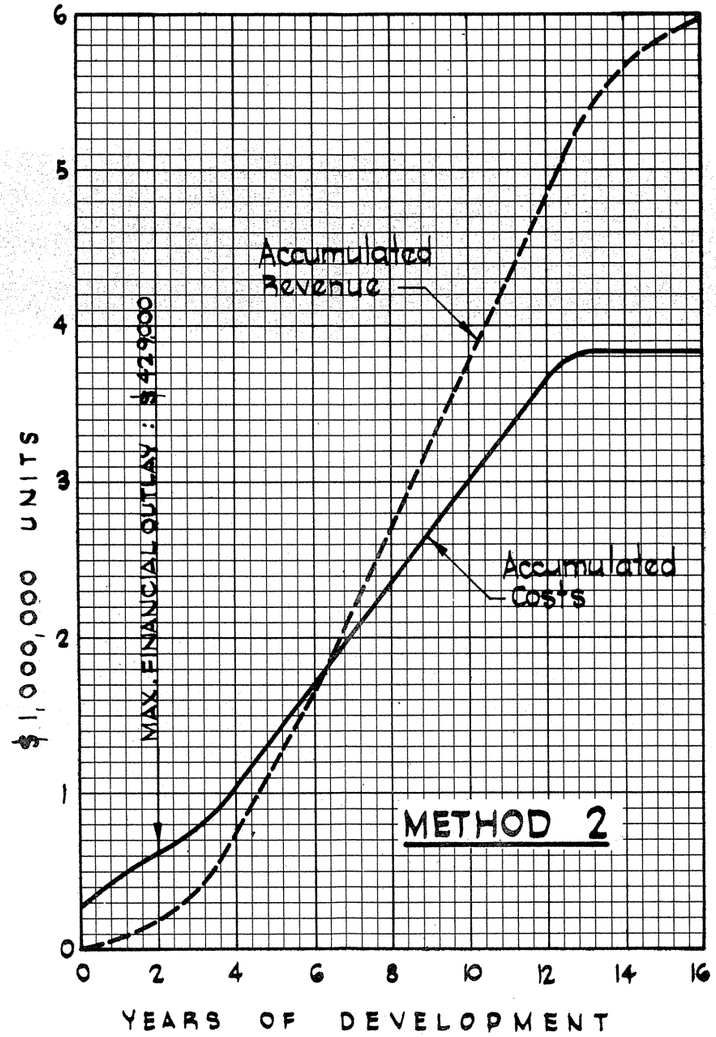
6.7.3 While the development is clearly economically feasible, market conditions at the time of implementation may be the determining criteria in selecting the agency to undertake the development.

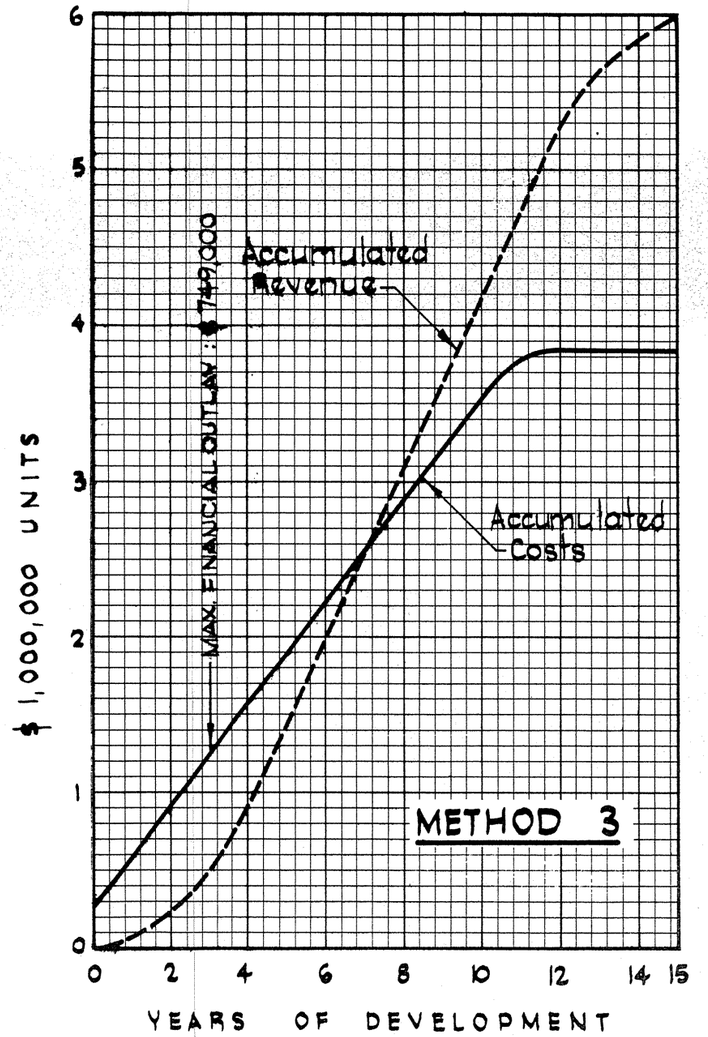
SCHEME	METHOD	TOTAL ACCUMULATED COSTS	TOTAL ACCUMULATED REVENUE	MAXIMUM FINANCE REQUIRED	PRE-TAX RATE OF RETURN ON INVESTMENT (see Note)
I	1	$3,850,000	$5,430,000	$288,000	42½%
	2	$3,850,000	$5,920,000	$429,000	22½%
	3	$3,850,000	$5,980,000	$749,000	18½%
II	1	$3,670,000	$5,345,000	$288,000	44½%
	2	$3,670,000	$5,880,000	$337,000	25½%
	3	$3,670,000	$5,900,000	$573,000	20½%
III	1	$3,030,000	$4,263,000	$288,000	42½%
	2	$3,030,000	$3,770,000	$419,000	22½%
	3	$3,030,000	$4,750,000	$718,000	18 %

TABLE 6E: SUMMARY OF DEVELOPMENT REVENUES

Note: The percentage shown in the extreme right hand column is the gross rate of return on investment. The interest rate for borrowed capital must be deducted from this percentage to obtain the net pre-tax return.



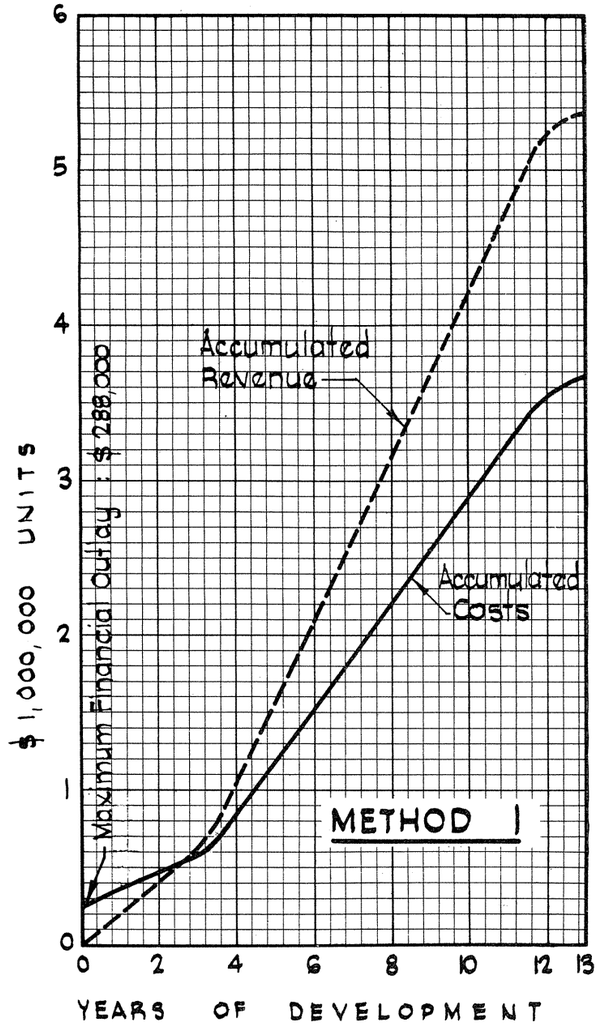


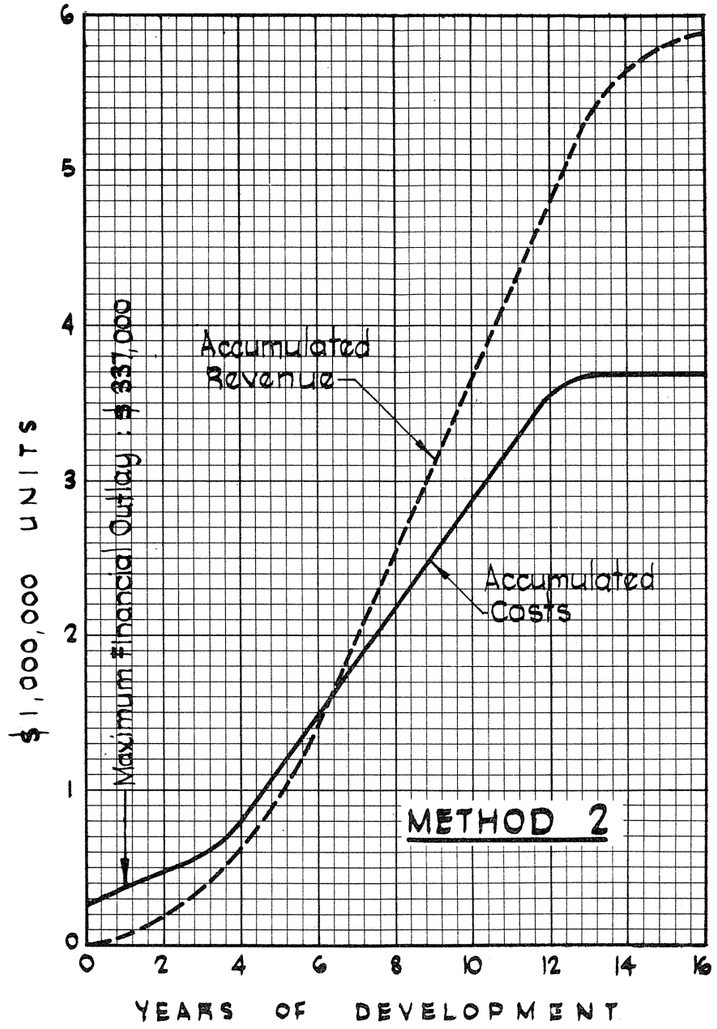


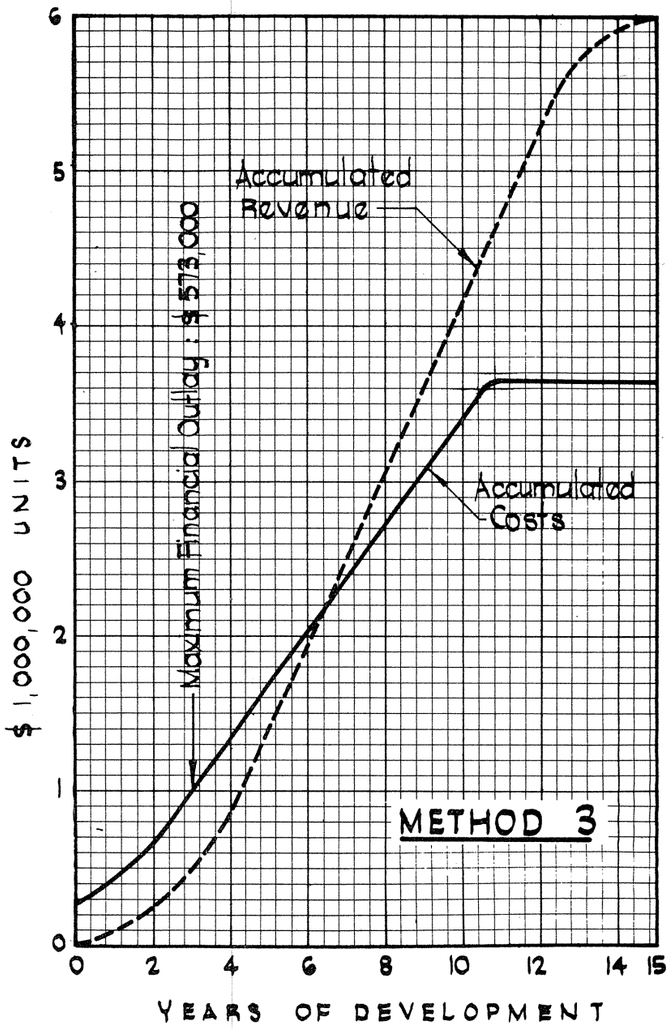
Refer to pages 36 & 37 of text for assumption upon which methods of analysis are based.

ECONOMIC ASSESSMENT OF SCHEME I

Fig. 6-1



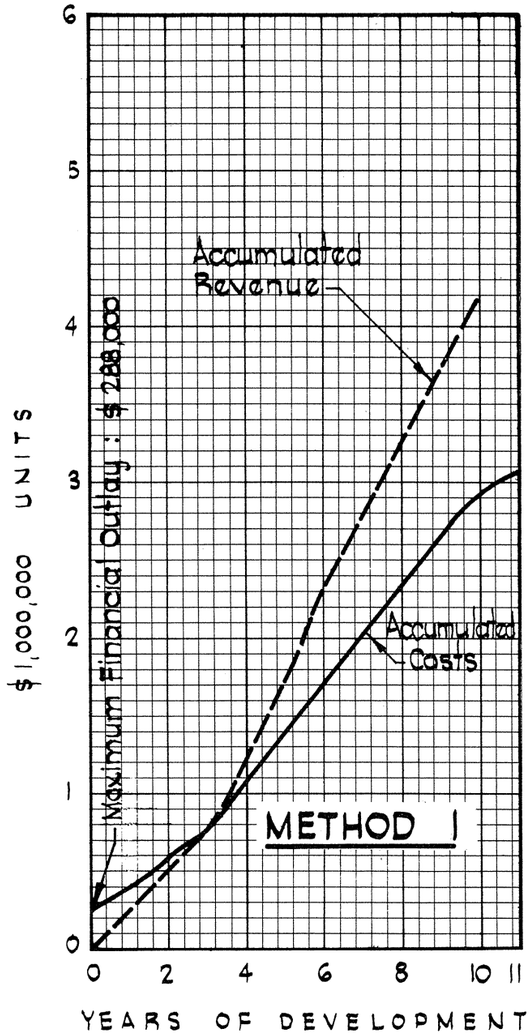


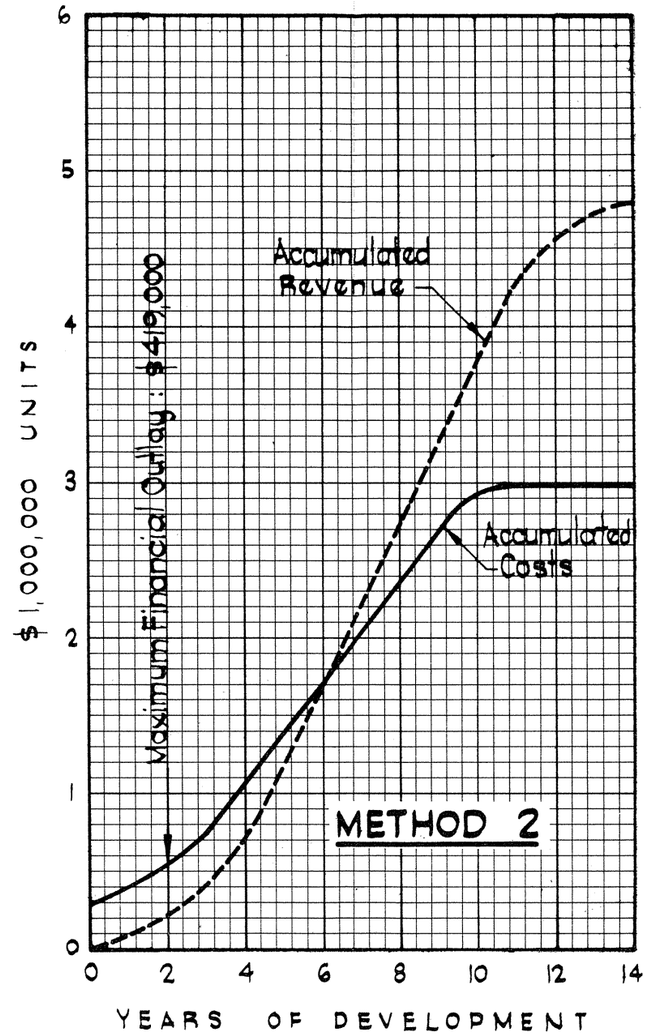


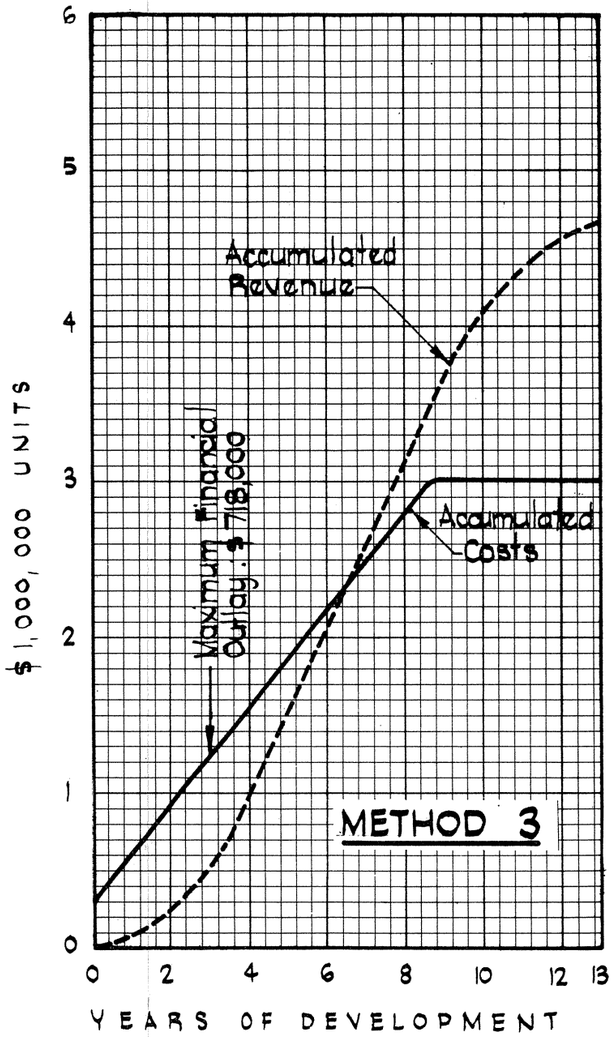
Refer to pages 36 & 37 of text for assumption upon which method's of analysis are based.

ECONOMIC ASSESSMENT OF SCHEME II

Fig. 6-2







Refer to pages 36 & 37 of text for assumption upon which methods of analysis are based.

ECONOMIC ASSESSMENT OF SCHEME III

Fig. 6-3

IMPLEMENTATION

7.1 Although this study has been limited to preliminary aspects of development, it is apparent that no significant geologic, planning or economic factors exist that could jeopardise the success of the proposal. As a result, the Council may decide to either encourage or undertake the development. Probably the most critical factor which will influence this decision is how the scheme can be best implemented to achieve the City's requirements.

7.2 A project of this type could be undertaken:-

(a) by the present owners, individually or collectively;

(b) by a commercial developer or Government agency; or

(c) by Nelson City Council.

In either of the first two alternatives, the Council would likely act as a catalyst to assist and promote the development. In addition to regulating the town planning, engineering and environmental standards to be observed in the development, the Council would probably wish to dictate the rate at which the project was to be undertaken to ensure its implementation within a reasonable period of time.

7.3 DEVELOPMENT BY OWNERS

There are numerous precedents of adjoining owners cooperating in joint development projects. However, it is unlikely that this method would be feasible in this case as:-

(a) the total site is owned by a relatively large number of individuals, joint occupiers or institutions, and the holdings vary appreciably in size; and

(b) it would be fortuitous if all of the owners had the desire, sustained interest or financial capacity to embark upon and complete a project of this size.

Thus we conclude that development of this site by joint private participation would not be practicable. Providing goodwill exists, it is more likely that the present owners may welcome the opportunity to dispose of their properties for a fair market return.

7.4 DEVELOPMENT BY OUTSIDE AGENCY

There are no doubt a number of commercial developers, financial institutions or central government agencies which would welcome the opportunity to undertake a concentrated, integrated development of this type. In view of the Government's policies to promote both housing and regional development, a scheme of this type located in a stable, progressive provincial city would be most attractive to developers. Currently, adequate finance is readily available in the private sector market for projects which indicate assured returns.

In order to ensure its concern that housing demands be met, the Council would need to be truely satisfied that a potential developer's motives are genuine and not solely based upon a quick, spectacular financial return on investment. It has been our observation that, with few exceptions, the well established and experienced developers in New Zealand do operate to high ethical standards.

7.5 DEVELOPMENT BY COUNCIL

7.5.1 The Council may regard direct participation in a land development project as a function which exceeds its experience, capacity and obligations to the community. However, as Lower Hutt and Wellington City Corporations have proven in recent years, a local authority is in an advantageous position to undertake land development projects without jeopardising its primary responsibility for civil administration in any way.

7.5.2 The prime advantages that result from a local authority undertaking land development projects are:-

(a) the availability of low cost finance;

(b) the resulting sale price of sections is lower than in comparable private developments; and

(c) an Authority has more freedom to regulate construction rates to demands than a private subdivider.

7.5.3 A local authority can borrow money on the financial market for approved development projects at interest rates of from $5\frac{1}{2}$ to $6\frac{1}{2}$ percent. The equivalent interest rate for this type of development undertaken by private developers varies from 12 to 14 percent. Depending upon the size and term of the loan required, it will be appreciated that the effect of the difference in interest rates involves a significant increase in the overall project cost. This additional cost must be included in the sale price of the final sections.

7.5.4 If the project is adequately planned and the stages of construction are determined realistically at the outset, a local authority has the added advantage that it can seek short-term loans to suit the construction period of each stage. Thus, a Council has the option year by year to regulate construction to meet the demands at that time. This freedom is not so readily available to private developers as lenders require to be satisfied that construction will proceed continuously from the outset, thus providing a better measure of security.

7.5.5 Apart from cheaper finance, Local Authorities can afford to offer sections at lower prices than private developers, who in addition to recouping their costs, require to achieve a reasonable profit margin. Local Authorities on the other hand, are not bound to make a similar percentage of profit providing all costs are recovered and the development is not subsidised from capital or normal income.

In the case of the Maungaraki subdivision at Lower Hutt, the Corporation's net profit on the project, after meeting all capital and service charges, exceeded $250,000. Whereas the initial sections in this development were disposed of by ballot at prices considerably lower than ruling values, sections in the later stages were sold by private treaty at current market valuations.

7.5.6 In the course of its Maungaraki development, Lower Hutt City Corporation utilised three factors which minimised its financial commitments:-

(a) In negotiating for the purchase of the undeveloped land, it contracted with the initial owners to provide them with a number of completed and marketable lots as part payment for the land. The Council thereby reduced its long-term capital investment by foregoing the return on a defined number of sections.

(b) In order to promote an early yield of revenue, the Council made common practice of pre-selling lots prior to the commencement of construction. In addition to normal scheme plans of subdivision, topographic models of the future development were prepared to assist prospective purchasers. The sections were sold on the basis of a deposit with the balance spread over five years.

(c) During periods when local body finance was difficult to procure, the Council found it convenient to provide for deferred payments in some construction contracts. In these cases, the Contractor discounted his normal payment claims with a financial institution and settlement was effected by the Council at a specified future date.

7.5.7 Rather than strain their existing resources or recruit additional staff, local authorities which undertake development projects of this type commonly assign the responsibility for design and supervision to private firms with experience in this field. Apart from the administering of financial control, the authority's direct contribution in implementing the project can be relatively small.

APPENDIX A

GEOLOGICAL APPRAISAL
PROPOSED RESIDENTIAL SUBDIVISION
OBSERVATORY HILL, NELSON

GENERAL

The only previous geological study of the subject site was included in a study of the Nelson area by J. G. Bruce. This account is summarised in his report titled, "The Geology of the Nelson City," printed in The Transactions of the Royal Society of New Zealand, Geology, Vol. No. 11, August 1962. Apart from this paper, published information on the detailed geology of the area is limited.

GEOLOGY

In his report, Bruce has mapped the subject site as comprising freshwater conglomerates and siltstones of Wanganui-Taranaki age. These deposits form a synclinal structure, the axis of which trends approximately northeast to southwest through the centre of the site. The eastern limb of this syncline is overturned and, in general, all of the sedimentary deposits dip towards the east. An estimated geological section through the site illustrating the inferred structure is shown on the attached Plate A-1.

The results of our inspection of the subject site confirm the interpretation by Bruce.

Traverses of the area made in this study indicate that the site is comprised mainly of uncemented conglomerates. Outcrops are rare and generally provide very limited examples of the structural features. Several outcrops indicate that the bedding dips towards the east at moderate to steep angles. On the western side of the site near Princes Drive, the conglomerate consists mainly of granite boulders and cobbles with only a minor silty matrix. Towards the centre and east, the conglomerate contains generally smaller sized coarse material and has a higher matrix content. Sandstone comprises a large percentage of the coarser material in these younger beds, with fresh sandstone forming the hard resistant boulders nearer the centre of the site.

Generally where conglomerates outcrop along ridge tops or on exposed slump surfaces, these deposits are moderately to highly weathered and partially break down to sand-and-silt-sized particles on impact.

On the western side of the site, along Princes Drive and to the southwest of Observatory Hill, the cut batters that expose coarse conglomerate are reasonably stable, up to 20 feet high and have slopes of about $\frac{1}{4}$ to 1. These batters appear to remain stable because the high percentage of coarse material in the conglomerate forms an intimate interlocking mass with only a minor matrix surround.

Over most of the site, a relatively lean rock topsoil mantle has developed to generally not deeper than 9 inches.

STABILITY

There is no indication within the site of deep seated rotational slides similar to those which occurred on the Tahunanui Hill. No massive beds of mudstone, as are found at Tahunanui Hill, can be detected or inferred within the subject site. However, as there are few outcrops of rock at the site, the existence of interbeded mudstones within the conglomerates has yet to be determined. Should mudstone exist it is likely to occur in relatively thin beds and will probably not cause major stability problems. Should outcrops of mudstone be exposed on future cut batters, these batters may have to be redesigned to suit the conditions.

Numerous shallow sheet slumps occur throughout the site, generally on steeper valley sides and head slopes. These slumps are located mainly on slopes of 30 degrees or steeper and penetrate to not more than 6 feet in depth. The occurrence of these slumps appears to be more prevalent on the western side of the site where the natural slopes are generally steeper; often these slumps are located on dense gorse covered slopes.

Occasional and apparently shallow soil slumping has occurred on some of the more gentle pasture slopes in the eastern area of the site. One of these features occurs on the flatter portion of a marked change in slope and may be connected with a change of the subsurface drainage pattern. The ground in this slumped surface appeared to hold a considerable amount of water at the time of our inspection.

The relatively unstable nature of the land appears to be due principally to the strata comprising well rounded uncemented and relatively uncompacted (by normal geological standards) sediments. The silty matrix material within the conglomerate is presumably susceptible to saturation and to consequent loss of cohesion. The well rounded cobbles and boulders if physically separated by matrix from one another, provide no strength to the rock unit once the matrix is weakened.

CONSTRUCTION CONSIDERATIONS

The conglomerates at the site should be easily worked with normal earthwork equipment. Conventional back-mounted hydraulic rippers mounted on moderate sized machines should adequately rip the hardest material that is likely to be encountered. Owing to the moderately to highly weathered state of the conglomerates, this material will be most suitable for use as fill since much of the coarser-sized material will break down to sand and silt sized particles.

It is expected that the clay content of the conglomerate will be fairly limited. The ridge at the head of the creeks flowing into Emano Street contains some clay presumably derived from residual weathering; this material may be suitable for use as a sealing cover for fill surfaces left fallow during winter periods.

Some boulders over 2 feet in diameter that are contained within the conglomerates will have to be rejected from the fill. Water will probably be required to achieve maximum compaction of the fill material during construction. The majority of the bases of the valleys are flat rather than V-shaped and have shallow swampy surfaces. The valleys are partly infilled with alternating layers of topsoil and non-organic alluvial material. Prior to installing subsoil drains, these deposits will have to be stripped to waste and the bases of the valleys adequately cleaned.

CONCLUSIONS AND RECOMMENDATIONS

The subject site consists generally of a moderately steep hill and valley topography. Shallow surface slumps are common. The area does not appear to involve problems of deep seated instability. Lithologically, the country appears to be different from the nearby area of known deep instability.

Providing that the work is adequately designed and constructed, mass earthworks will increase the overall stability of the existing country. The natural stability will be improved by controlling slope angles and stormwater drainage.

All fills should be constructed from the natural bases of valleys and not commenced part way up valley heads and so left hanging. Any form of perched fill could be most unstable considering the relative instability of the material into which they would be keyed. We judge that this is probably the type of situation condemned by Dr Northey in his report, "Proposed Subdivision Observatory Park, for the Cawthron Institute Trust Board" and which caused him to recommend against massive cut and fill development. As the Cawthron Institute land straddles the top of the main western ridge, any filling of the existing valley heads would have resulted in perched fills with unsupported batters.

Particular attention should be given to correct batter emplacement control. From observation of local hillside stability, it is recommended that no fill batters be constructed steeper than 2 horizontal to 1 vertical. Preferably, all major fill batters should be constructed at 3 to 1 or flatter and be planted with deep rooting plants. Relatively gentle, planted batters will provide stable slopes and also serve as recreational bush reserve. Properly placed and compacted fill material will result in horizontally bedded ground and provide more stable batter faces than the existing, steeply dipping natural surfaces.

Based on this assessment, the design slopes of cut batters should be not steeper than 2 to 1. However, where possible, the design should be left flexible until a detailed inspection of the exposed subsurface material can be made during construction. It is advisable that regular inspections of cut areas be made in order to determine the presence and effects of potentially unstable exposed deposits such as mudstone outcrops.

The stormwater runoff from individual sections, whether located on natural, cut or fill ground, should be adequately controlled to discharge through individual drains to road surfaces or through communal drains to the main stormwater system. These systems should be subject to official approval if the method of disposal is not determined prior to the sale of individual sections. Such approval may be more necessary for sections situated on natural ground.

References

Bruce, J.G., 1962: The Geology of Nelson City Area. Trans. Roy. Soc. N.Z., 88: 157-181.

Beck, A.C., 1964: Geological Map of New Zealand, Sheet 14, Marlborough Sounds, N.Z. Geol. Surv.

Falconer, B.H., 1963: Stability of the Hillside at Tahunanui, Nelson. Report to Nelson City Council.

Northey, R.D., 1962: Report on Land Slip at Tahunanui, Nelson. Report to Earthquake and War Damage Commission.

Northey, R.D., 1969: Report on Proposed Development of Observatory Hill, for the Cawthron Institute Trust Board.

Marshall, P., 1939: Report on Geological Features of Tahunanui Town District, to N.Z. Housing Loans Board.

N.Z. Geological Survey, 1962: Tahunanui Slump of 6 June 1962.

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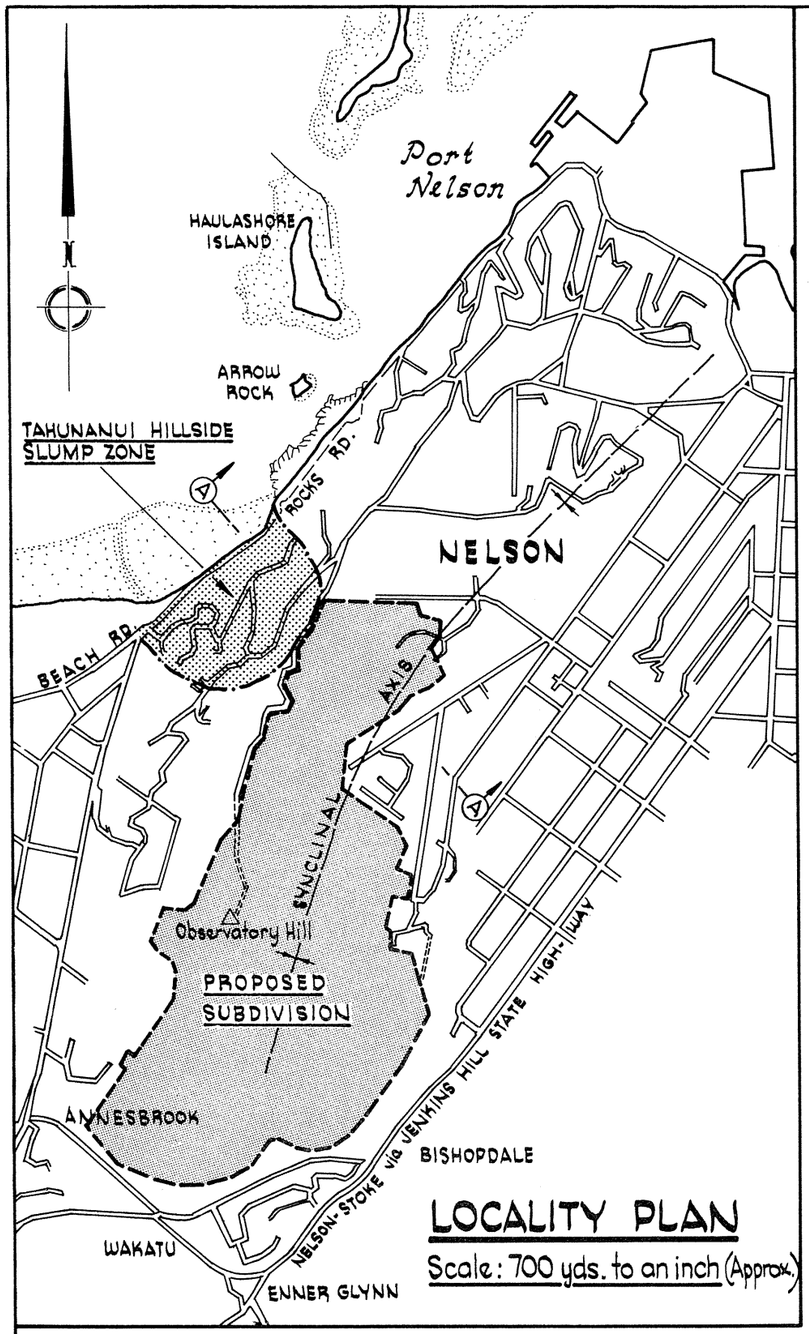
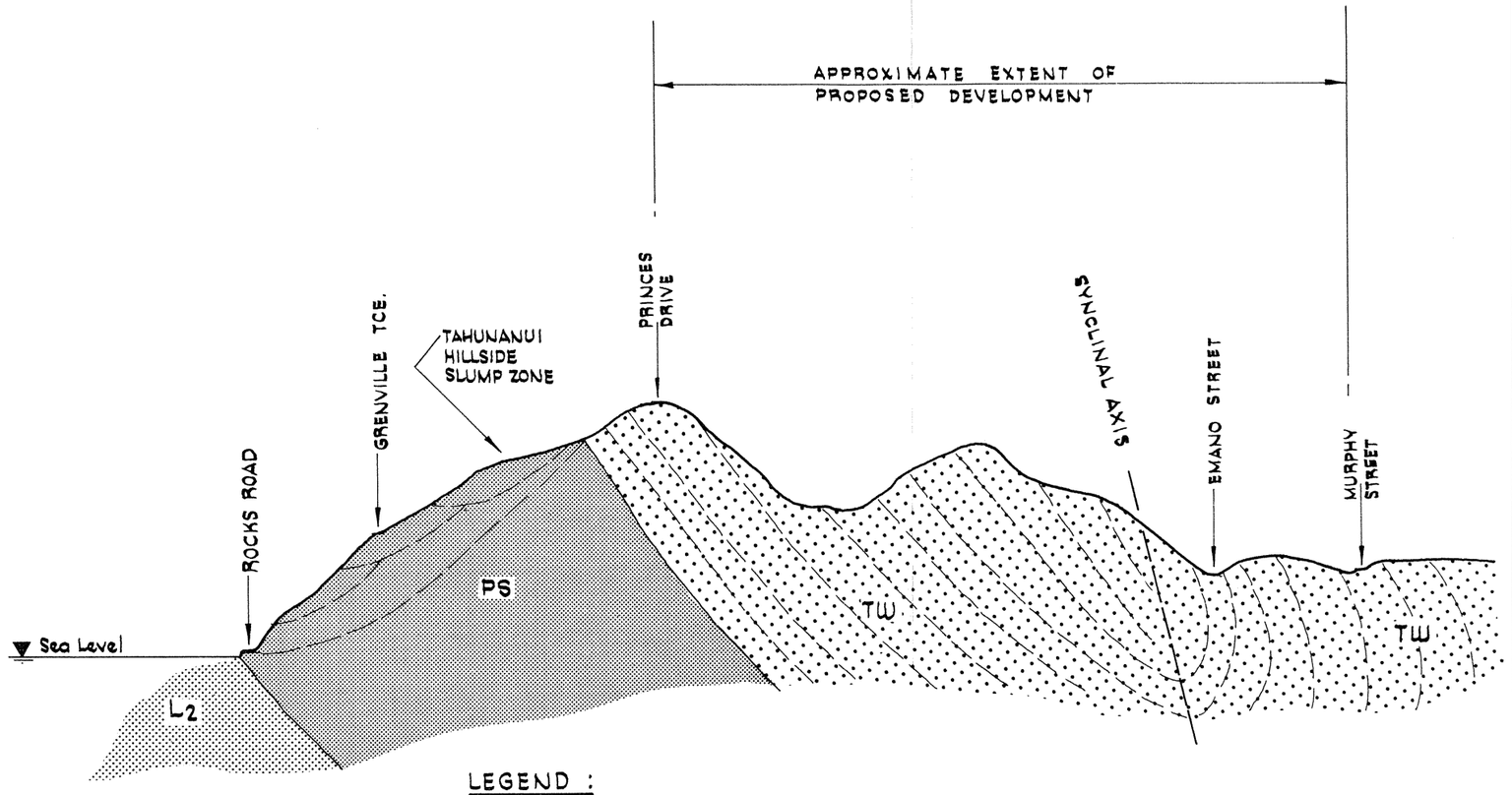
The following plate is attached and completes this Appendix:-

Plate A-1 Geological Section, Port Hills Area, Nelson.



LOCALITY PLAN

Scale: 700 yds. to an inch (Approx.)



LEGEND :

- TW — Taranaki and Wanganui Series conglomerate and occasional fresh water mudstone.
- PS — Pareora and Southland Series Marine mudstone, fine sandstone, non-marine siltstone and conglomerate.
- L2 — Landon Series sandstone and mudstone.

TYPICAL SECTION A-A

Scale : { Horizontal : 500 feet / Vertical : 250 feet } to an inch

NOTE : The geology indicated on this section is based upon J.G. Bruce : "The Geology of Nelson City Area", Trans. Royal Society of N.Z. ; and field inspection by Brickell, Moss, Rankine & Hill.

GEOLOGICAL SECTION

PORT HILLS AREA NELSON

BRICKELL, MOSS, RANKINE & HILL

PLATE A-1

APPENDIX B

Copy of Report
by R.D. Northey, MSc, PhD, DIC,
to Cawthron Institute Trust Board
April 1969

PROPOSED SUBDIVISION OBSERVATORY PARK

At the request of the Cawthron Institute Trust Board, I visited Nelson on 2 April 1969 to inspect the above site and the preliminary plans prepared by their Surveyor, and to report on the suitability of the area for residential subdivision. Observatory Park comprises lots 1 and 2 DP 7374 Suburban South District and contains some 42 acres. It extends southward from the end of Princes Drive and consists of a north to south rolling ridge top, bifurcating at the southern end with moderately steep to steep slopes falling away to each side.

Although no bores or excavations have been made on the property to reveal the specific soil and rock conditions, some general observations can be made. The soils exposed in shallow (6' to 12') cuttings along Princes Drive are principally yellow brown sandy clays with granite cobbles and boulders, and it is likely that these continue across the site but to an unknown depth. According to Mr J.G. Bruce** the geology of this area shows the underlying rocks to be interbedded sandstones, mudstones and conglomerates of late Tertiary age folded in a syncline whose axis lies sub-parallel to Princes Drive close to the eastern boundary of the property, so that these strata dip steeply eastward. About a half mile north, along the western side of the ridge similar strata are shown at the head of an old and extensive landslide. The slump zone of this old landslide has now been developed as a housing area, but from time to time further movements cause property damage, especially after periods of abnormally high rainfall. Small slumps in other areas along the Port Hills confirm the potentially unstable nature of some of the underlying strata, though apart from some soil creep near the heads of the steeper gullies there is little obvious sign of instability within Observatory Park.

The development of a hillside area for housing purposes inevitably leads to some recontouring of the landscape and changes in hydrology, and perhaps stability. Two courses are open; one, the modern practice of significant or even substantial earthworks giving rise to gently sloping sections with essentially level access and the other, a minimum interference with natural contour at the time of subdivision. The former means

a development of the whole area at one time with a higher capital outlay but more and more easily saleable sections of higher potential value, and the means of handling water disposal and stability problems caused by the development for the area as a whole with little need for the individual purchaser to change conditions subsequently. The latter allows a development by stages within an overall plan with little capital outlay but with fewer sections, some of rather lower value and perhaps saleability and leaves the problem of recontouring to the individual purchaser.

For the development of Observatory Park, I am not in favour of substantial earthworks with the problems of stability in both cut and filled areas. Substantial earthworks would inevitably reveal mudstone material in the cut areas and unless great care was taken such cuts could allow percolation of water into potentially unstable strata. Disposal of fill could prove a problem. The gullies would all require major stripping before being used as disposal areas and since they tend to be narrow with steep sides control of compaction could suffer due to lack of room to manoeuvre. However, even with nominal earthworks at the time of subdivision, I would like to see some restriction on indiscriminate interference with the natural contour by individual property owners and also to see careful consideration given to the disposal of stormwater, not only from street and roofs, but also from other privately paved areas and at rapid changes of slope.

I have little criticism of the preliminary plan of the proposed subdivision by Staig & Smith. Although it means quite large-scale retirement of land into planted reserve with development of the ridge top only, I feel this is the better course. As discussed with Mr Smith, I have some reservations about the suggested access to the development of the spur immediately west of trig station. Responsibility for maintenance of such a right of way would need to be clearly defined to ensure it did not become the initiating point of instability of the gully head it skirts.

Signed: R. D. NORTHEY
16/4/1969

** The Geology of the Nelson City Area.
Trans. Roy. Soc. (Geol) 1: 11: 157-181 (1962)

APPENDIX C

DUKE & COOKE
Registered Public Valuers

P.G. Cooke A.N.Z.I.V.
L.M. Kolff A.N.Z.I.V.

Tel:
Private 86028
5002
Business 6691

CML Building, Cnr Trafalgar & Hardy Streets, Nelson.

5 February 1973

COPY

The City Engineer,
Nelson City Council.

Dear Sir,

re Brickell, Moss Report - City Hill Country

Herewith is an estimated assessment of the properties which are ticked on the plan, both copies of which are returned.

I proceed on various properties as follows:-

Bogle	16½ acres total but 7 acres is residential development.		
	Remainder 9½ acres at $200 =		$1,900
Lambert	3A-1R-12 perches. Large residence erected on road frontage, occupying 1R-12 perches.		
	Value 3 acres at $800		2,400
	House site	3,000	
	Dwelling and other improvements	25,000	
Brown	28 acres purchased by MOW for Motorway $18,450, 1965. Half of the area had subdivisional potential. Scheme Plan prepared about 1964.		
	10 acres at $3,000 =		30,000
	18 acres at $600 =		10,800

Dalhoff	Steep country, unsuitable for residential development. Limited to plantation, possibly one house site.		
	1 acre possible house site	=	$ 3,000
	6¾ acres at $200	=	1,350
Cawthron	500' to 560' scheme plan for subdivision 6 years ago ? 30 sections ? Services and development expensive. Over optimistic proposals for extensive subdivision.		
	10 acres at $4,000	=	40,000
	21 acres at $600		12,600
	10¾ acres at $300	=	3,300
Rodger Gibbons	House site near reservoir. Purchased 8/71. $2,500 family sale.		
	1A-1R-04.5P.	3,000	
	Dwelling on completion say	20,000	
L.D. Roy	Motorway take house and site. Balance remaining is steep, probably unstable country with no access.		
	Say 2 acres at $100	=	200
T.H. Fleming	Motorway take house and site. Balance remaining, with no access		
	1¾ acres at $100	=	175
E.J. Squire	Motorway takes several houses. Balance remaining is steep, south face, limited to plantation.		
	1A-1R-16.5P.	=	150
A.M. Neal	A builder, subdivided all the suitable land, the balance almost uneconomic to develop, other than several house sites.		
	3¼ acres at $600	=	2,000
N.C.C. 119/195	Steep easterly slopes, limited use.		
	3A-2R-16P at $300	=	1,880

King-Turner	A mixture of steep slopes and gullies, with some lesser slopes and flat tops. Some residential development potential but limited to Council approval of further right of way access strip type of subdivision.	
	Approx 30 acres =	$9,000
	" 22 acres 2R-17.4P $800 =	18,100
	House and site $12,000	
N.C.C. 52/144	Steep country 18 acres at $300 =	5,400
N.C.C. 52/143	1 acre	300
McCaw	Steep uneconomical to subdivide, narrow access off Emano Street and limited access off Princes Drive Slopes N.E.	
	$15\frac{1}{4}$ acres at average $400 =	6,100
McCaw	Steep again, limited access from Emano Street only.	
	$14\frac{1}{4}$ acres at average $400 =	5,800
Gates	Developed to maximum. Remainder approx	
	$4\frac{1}{4}$ acres at $600 =	2,700
Lublow	Adjoins Waikanae Property Enterprises who averaged $1,600 per acre for partly subdivided land.	
	31 acres at average $600 =	15,625
	House and site $7,000	

Bishopdale Potteries

A variety of country ranging from steep south faces, which are unstable, to easy workable slopes, with potential residential development 10-20 years.

Bishopdale Potteries
cont'd

Estimated area		
200 acres at average $600	=	$120,000
House and farm buildings $23,000		
Vacant land		292,000
Houses and their sites		93,000
Total assessment		$385,000

18. TOWN PLANNER

RETURN TO
GARY PEDERSEN
C/- Nelson City Council

FEASIBILITY STUDY

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL

NELSON

FOR CITY OF NELSON

VOLUME 2 : ILLUSTRATION

BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

0 200 400 600 800 1000 1400 FEET

0 100 200 300 400 METRES

0 2 4 6 8 10 15 20 CHAINS

SCALES

NORTH

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL
NELSON

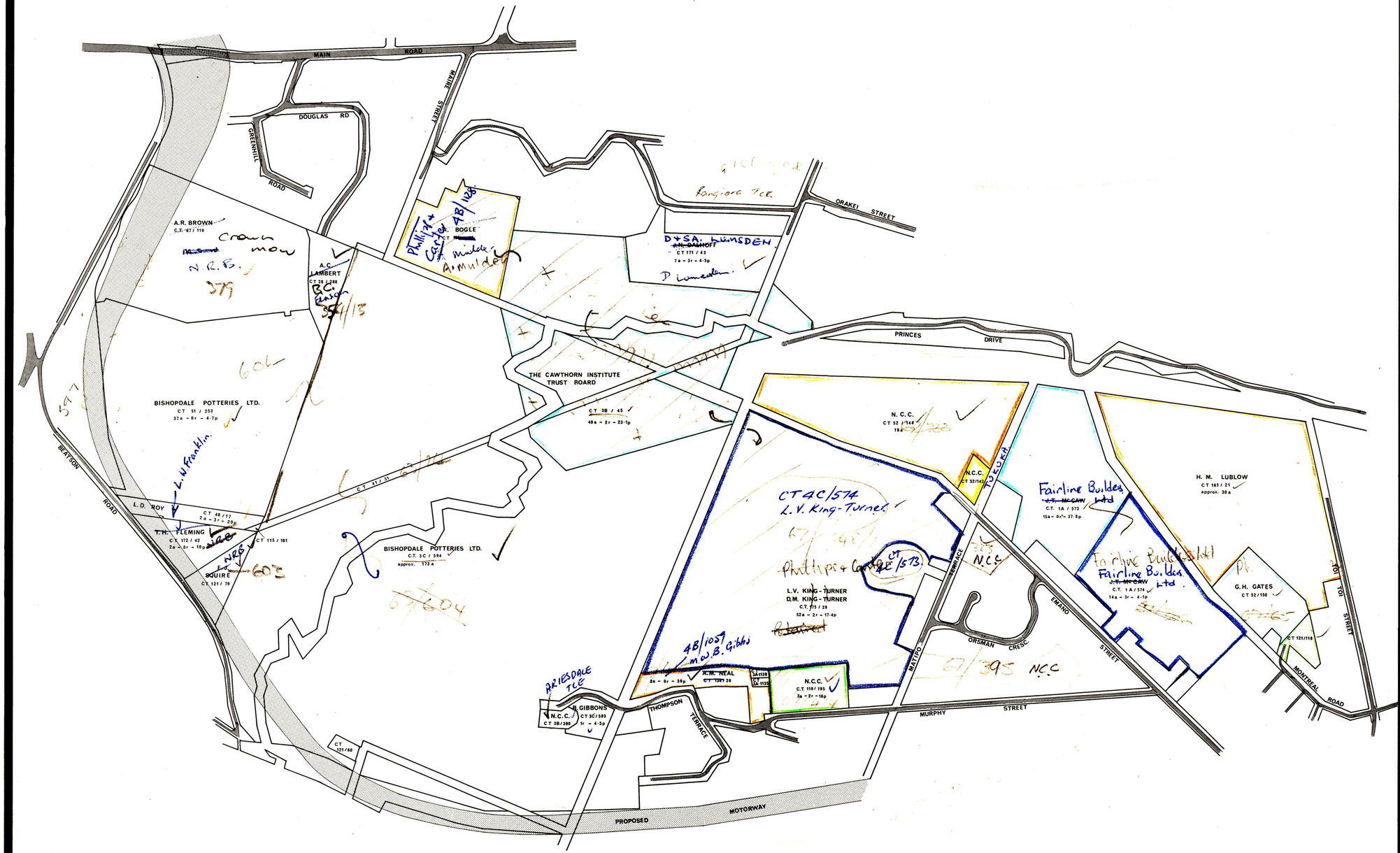
BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

SITE PLAN

PLATE I

B.C Phillips
T.R Carter



0 200 400 600 800 1000 1400 FEET

0 100 200 300 400 METRES

0 2 4 6 8 10 15 20 CHAINS

SCALES

NORTH

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

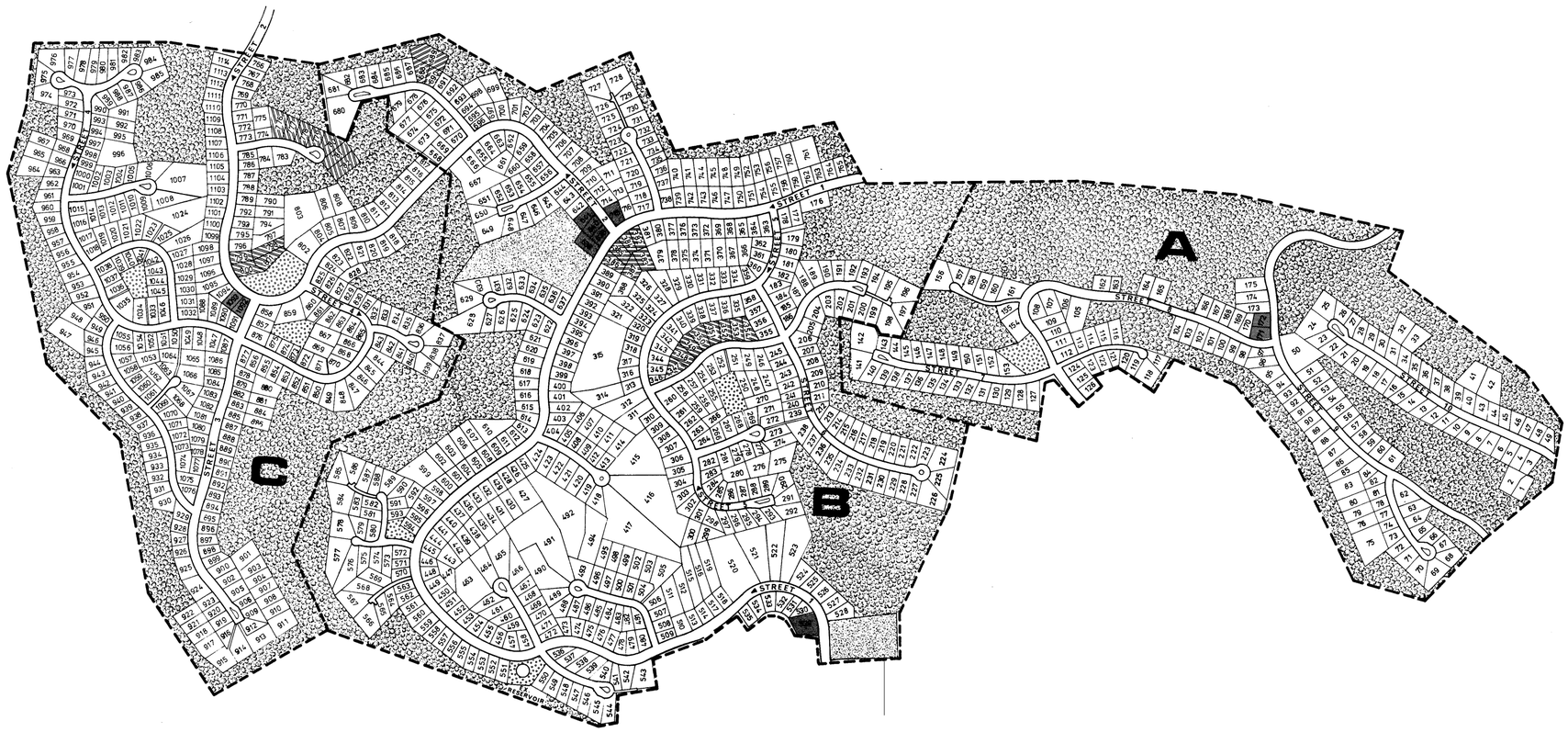
OBSERVATORY HILL
NELSON

BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

LEGAL OWNERSHIP

PLATE 2



LEGEND

- SINGLE-FAMILY RESIDENTIAL LOT.
- HIGH-DENSITY RESIDENTIAL LOT.
- COMMERCIAL AREA.
- DUAL-USE SCHOOL SITE AND RECREATIONAL AREA.
- PUBLIC PARKS.
- PLANTED HILLSLOPE.
- CONSTRUCTION PHASE.

0 200 400 600 800 1000 1400 FEET

0 100 200 300 400 METRES

0 2 4 6 8 10 15 20 CHAINS

SCALES

NORTH

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL
NELSON

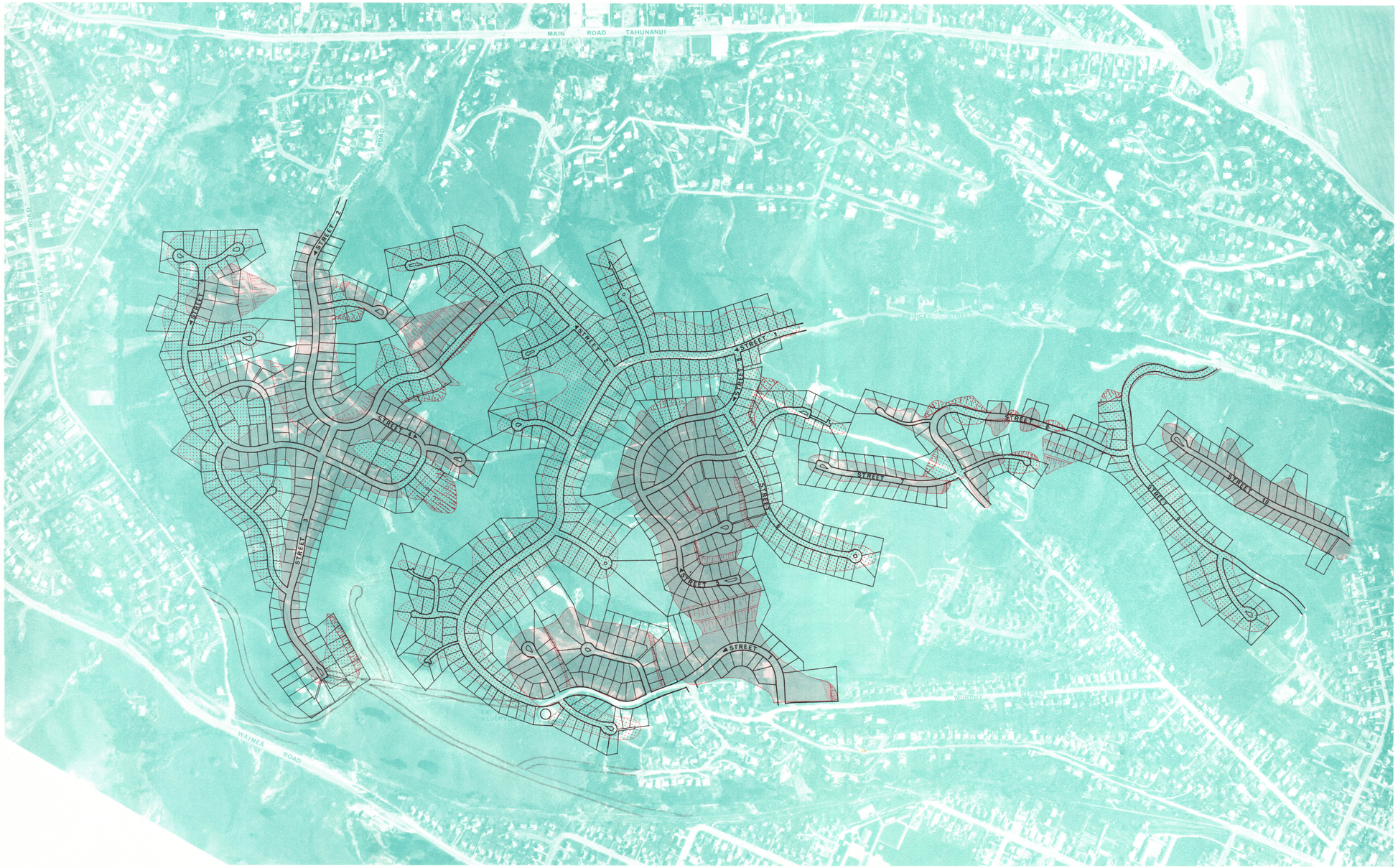
BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

SCHEME I

PROPOSED SUBDIVISION

PLATE 3



LEGEND

- CUT AREA.
- FILL AREA.
- BATTER SLOPE.
- SUBDIVISION LAYOUT. (ROADS AND LOTS)

0 200 400 600 800 1000 1400 FEET

0 100 200 300 400 METRES

0 2 4 6 8 10 15 20 CHAINS

SCALES

NORTH

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL
NELSON

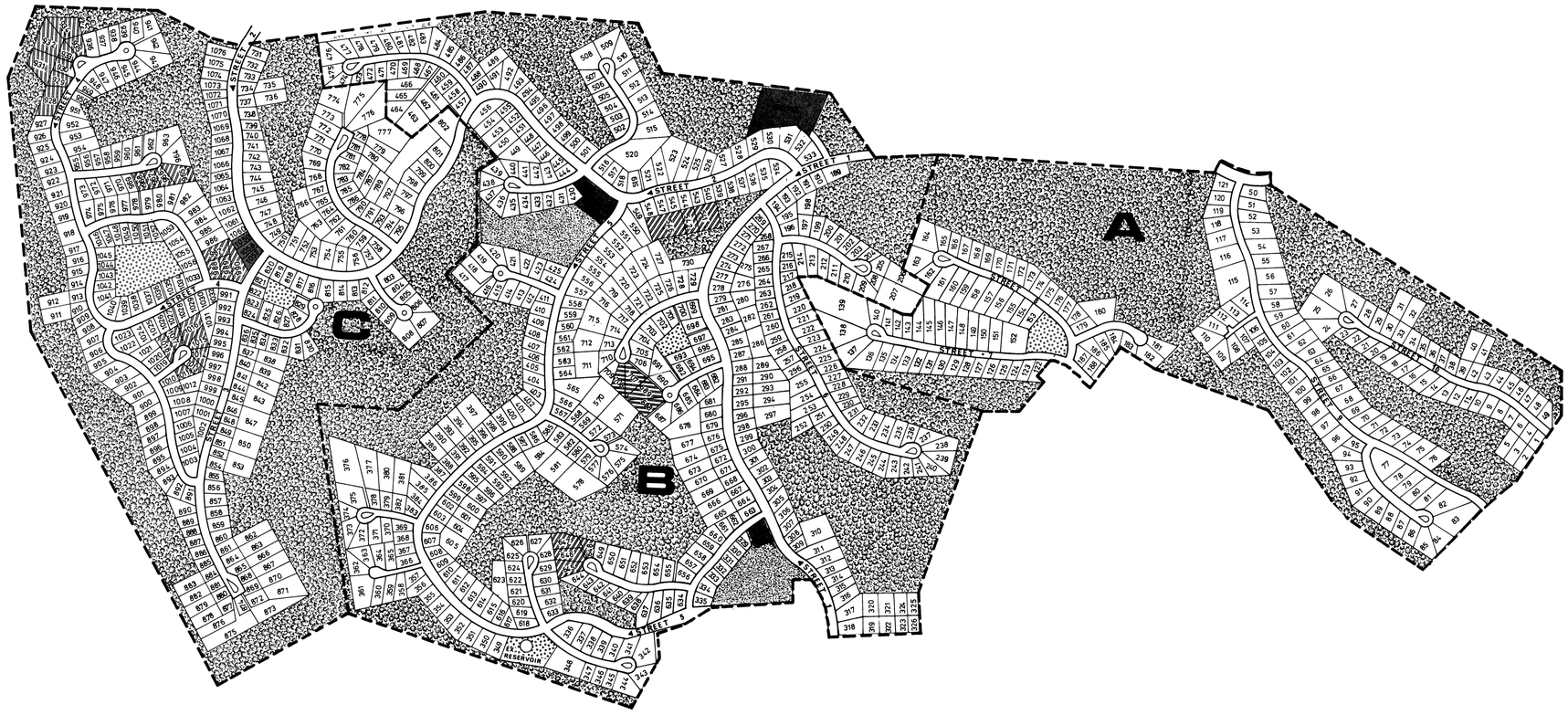
BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

SCHEME I

LOCATION PLAN AND EXTENT OF EARTHWORKS

PLATE 4



LEGEND

- 1000 — SINGLE-FAMILY RESIDENTIAL LOT.
- HIGH-DENSITY RESIDENTIAL LOT.
- COMMERCIAL AREA.
- DUAL-USE SCHOOL SITE AND RECREATIONAL AREA.
- PUBLIC PARKS.
- PLANTED HILLSLOPE.
- A — CONSTRUCTION PHASE.

0 200 400 600 800 1000 1400 FEET

0 100 200 300 400 METRES

0 2 4 6 8 10 15 20 CHAINS

SCALES

NORTH

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL
NELSON

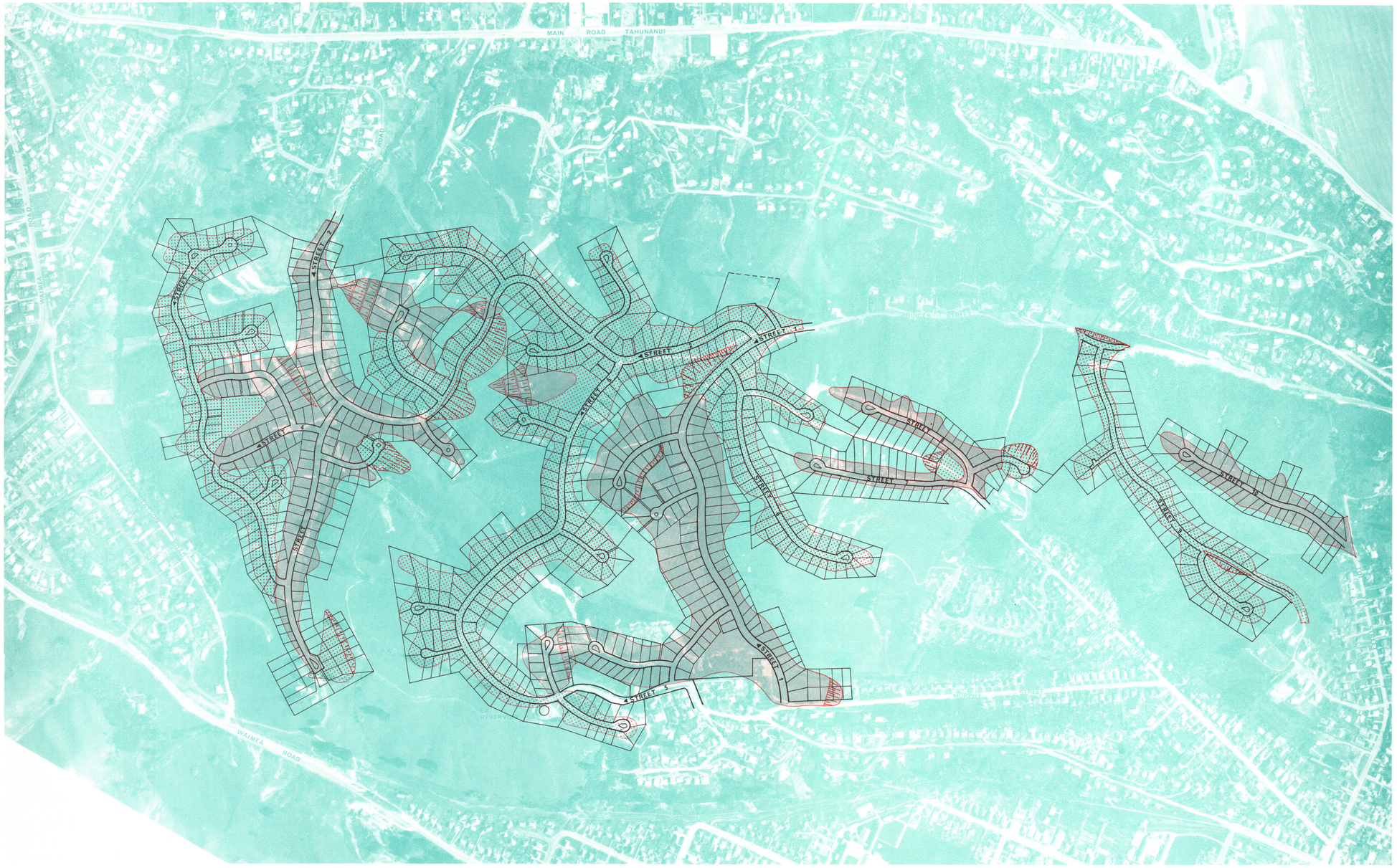
BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

SCHEME II

PROPOSED SUBDIVISION

PLATE 5



LEGEND

- CUT AREA.
- FILL AREA.
- BATTER SLOPE.
- SUBDIVISION LAYOUT. (ROADS AND LOTS)

SCALES

0 200 400 600 800 1000 1400 FEET

0 100 200 300 400 METRES

0 2 4 6 8 10 15 20 CHAINS

NORTH

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL
NELSON

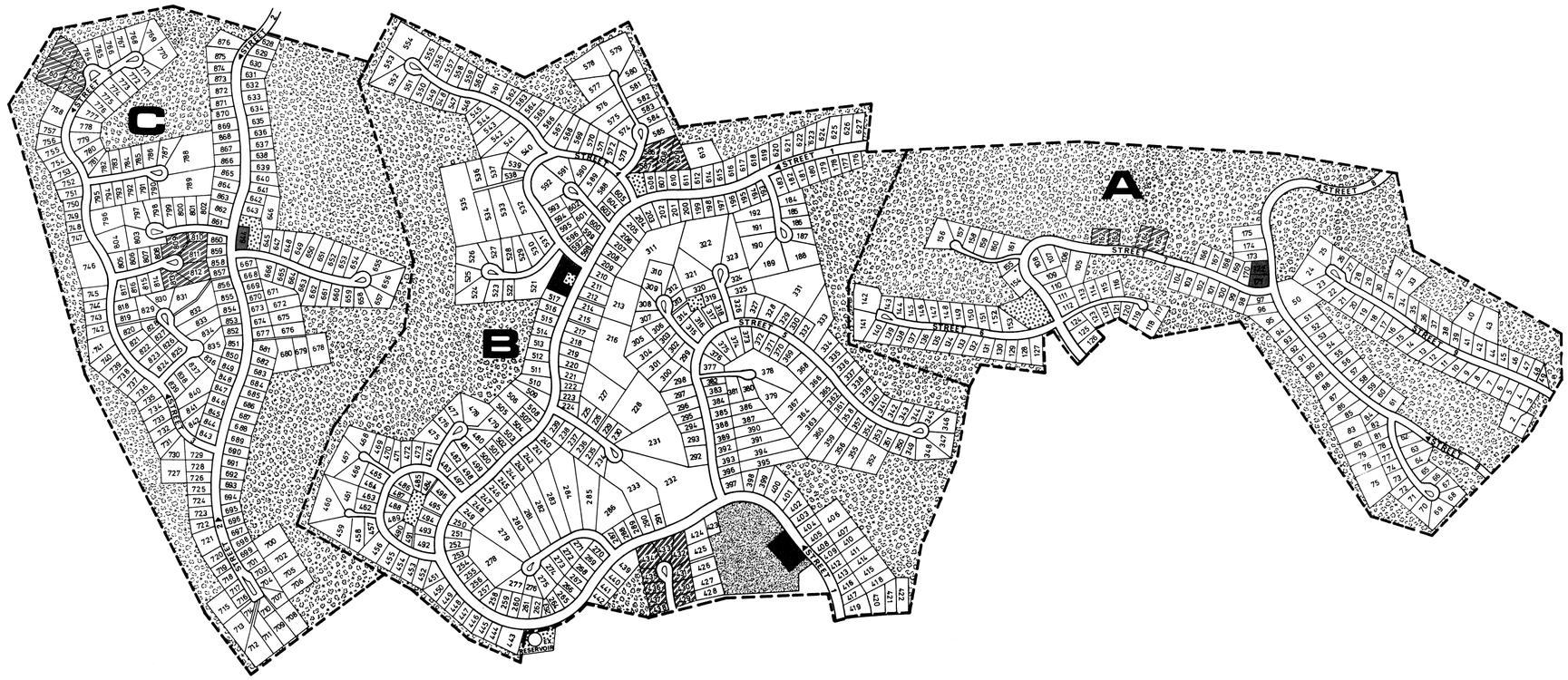
BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

SCHEME II

LOCATION PLAN AND EXTENT OF EARTHWORKS

PLATE 6



LEGEND

- SINGLE-FAMILY RESIDENTIAL LOT. (1000)
- HIGH-DENSITY RESIDENTIAL LOT.
- COMMERCIAL AREA.
- DUAL-USE SCHOOL SITE AND RECREATIONAL AREA.
- PUBLIC PARKS.
- PLANTED HILLSLOPE.
- A — CONSTRUCTION PHASE.

0 200 400 600 800 1000 1400 FEET

0 100 200 300 400 METRES

0 2 4 6 8 10 15 20 CHAINS

SCALES

NORTH

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL
NELSON

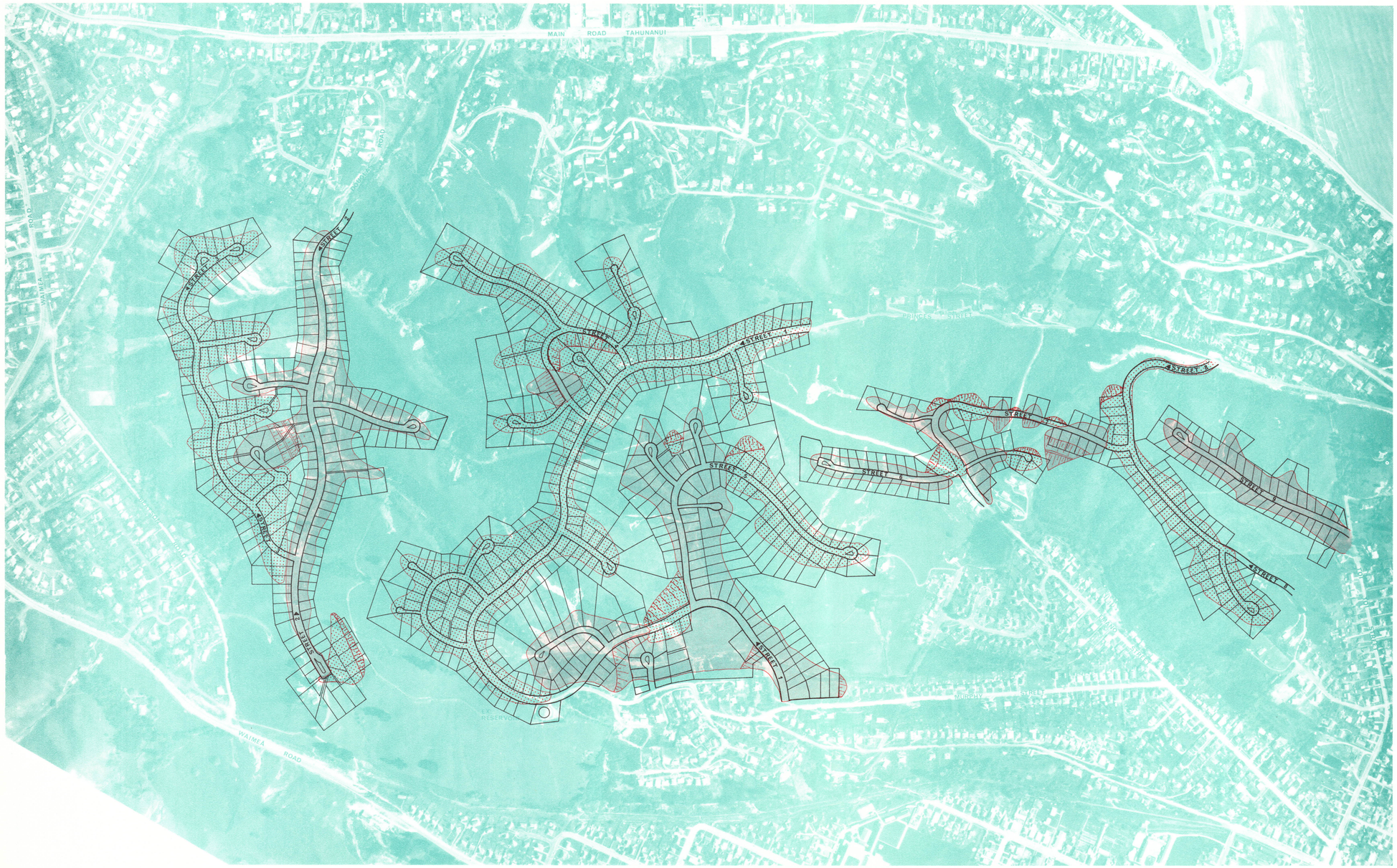
BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

SCHEME III

PROPOSED SUBDIVISION

PLATE 7



LEGEND

- CUT AREA.
- FILL AREA.
- BATTER SLOPE.
- SUBDIVISION LAYOUT. (ROADS AND LOTS)

0 200 400 600 800 1000 1400 FEET

0 100 200 300 400 METRES

0 2 4 6 8 10 15 20 CHAINS

SCALES

NORTH

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL
NELSON

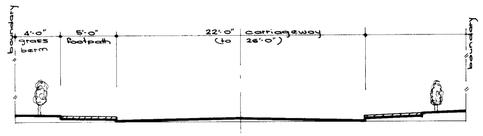
BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

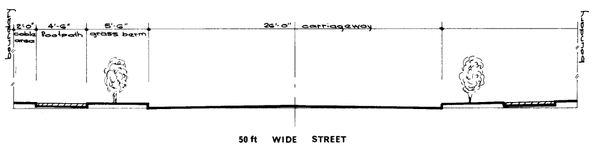
SCHEME III

LOCATION PLAN AND EXTENT OF EARTHWORKS

PLATE 8



40 ft WIDE STREET



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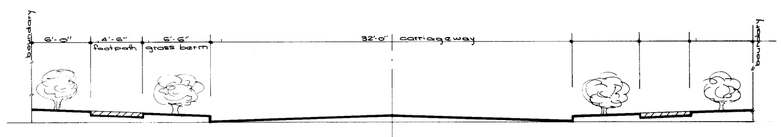
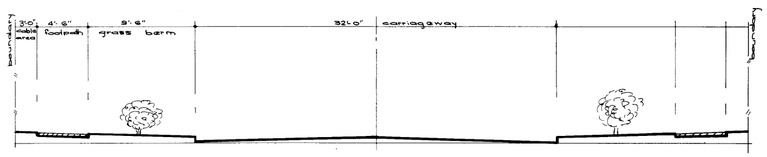
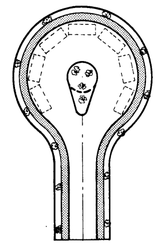


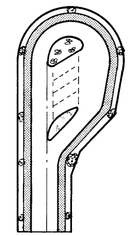
66 ft WIDE STREET

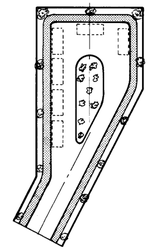


66 ft WIDE STREET

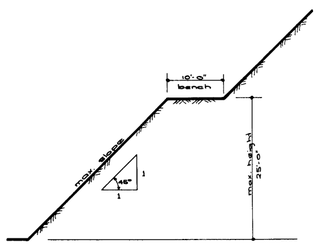
STREET SECTIONS



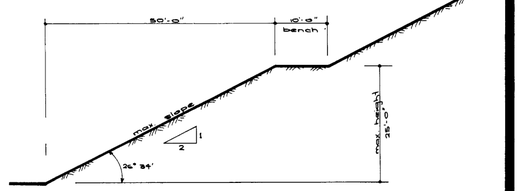




CUL - DE - SACS



CUT BATTER SLOPE



FILL BATTER SLOPE

CONSTRUCTION SLOPES

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL
NELSON

BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

TYPICAL DETAILS

PLATE 9

34. SQUIRE E.J.

FEASIBILITY STUDY

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL

NELSON

FOR CITY OF NELSON

VOLUME 2 : ILLUSTRATION

BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

0 200 400 600 800 1000 1400 FEET

0 100 200 300 400 METRES

0 2 4 6 8 10 15 20 CHAINS

SCALES

NORTH

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

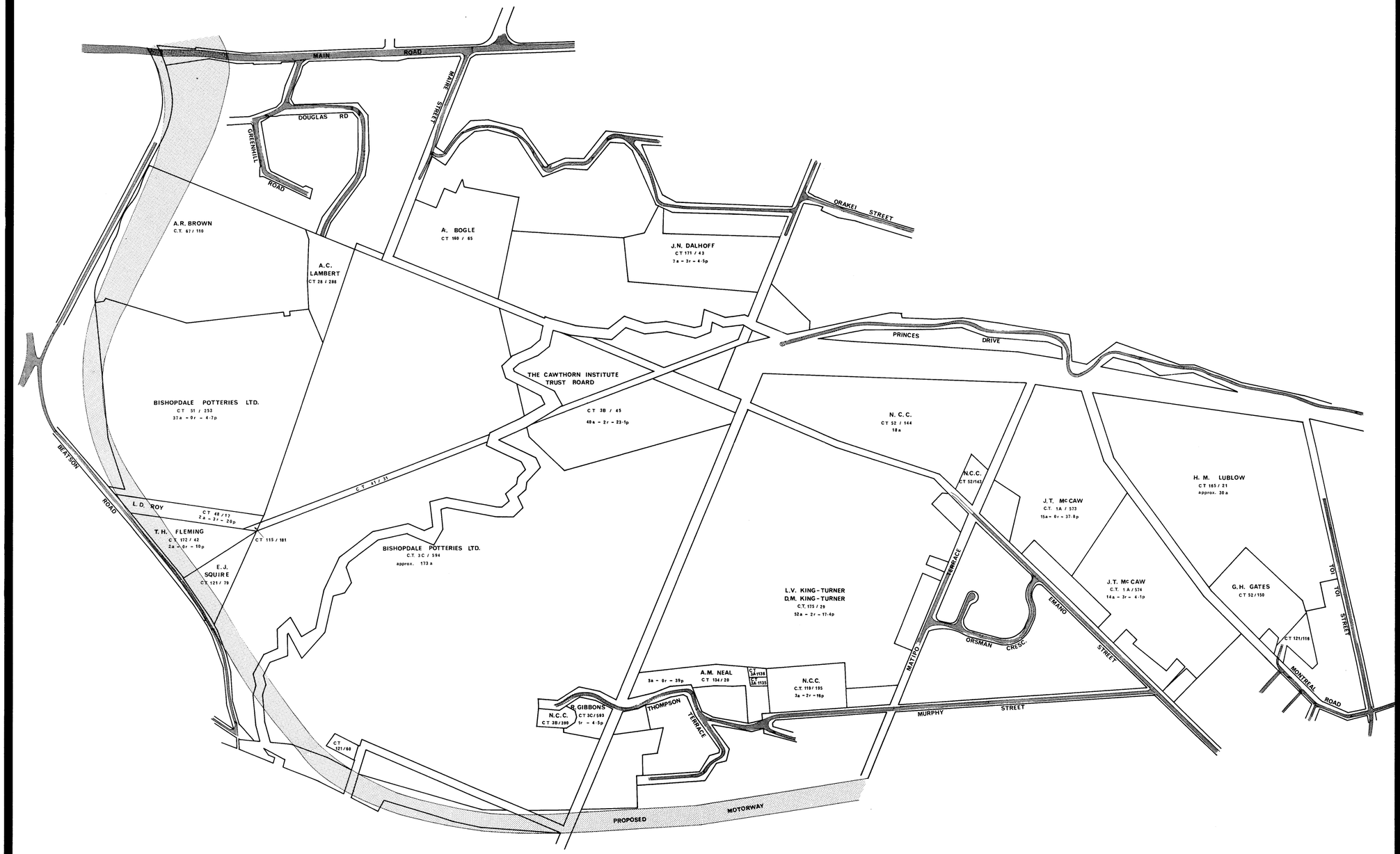
OBSERVATORY HILL
NELSON

BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

SITE PLAN

PLATE I



0 200 400 600 800 1000 1400 FEET

0 100 200 300 400 METRES

0 2 4 6 8 10 15 20 CHAINS

SCALES

NORTH

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

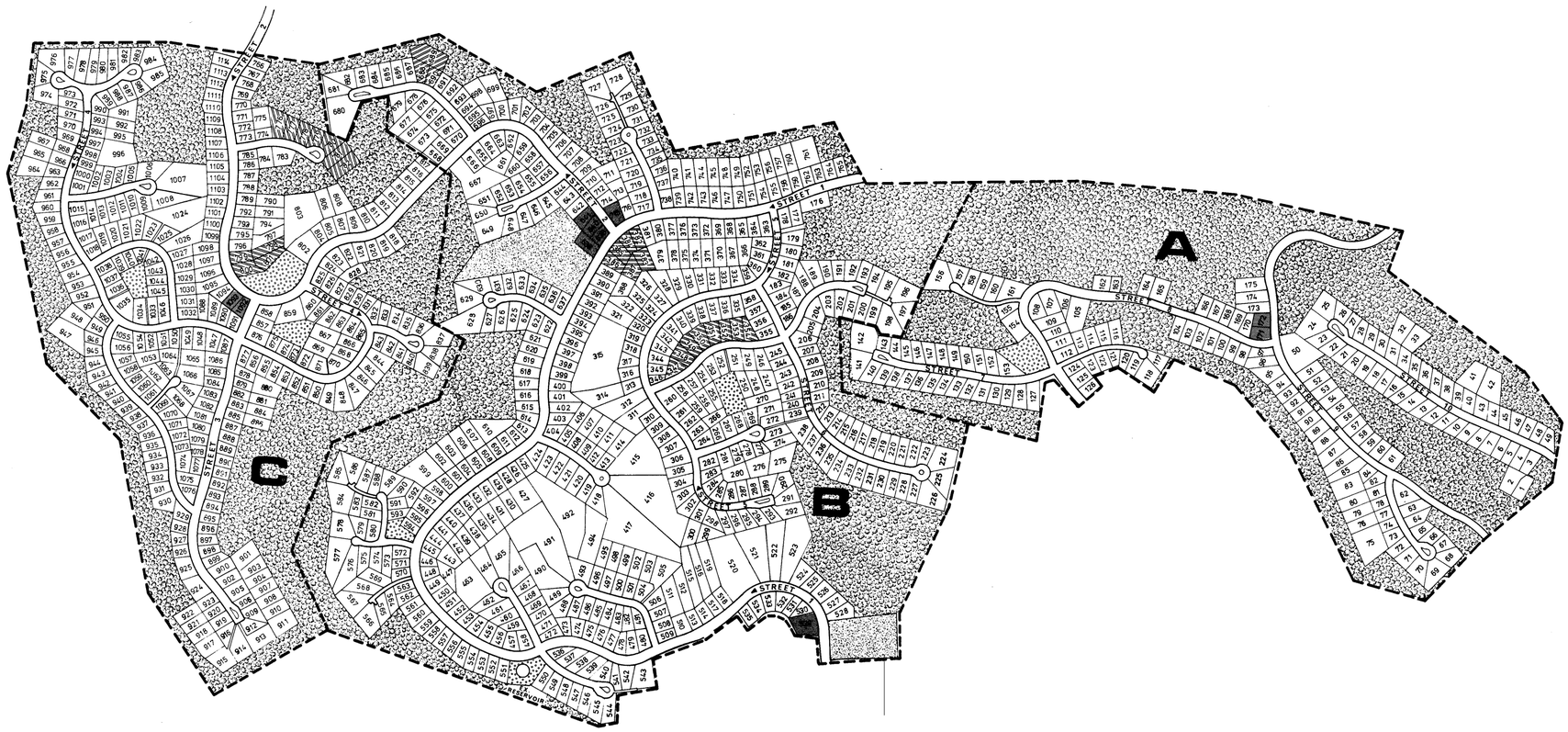
OBSERVATORY HILL
NELSON

BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

LEGAL OWNERSHIP

PLATE 2



LEGEND

- SINGLE-FAMILY RESIDENTIAL LOT.
- HIGH-DENSITY RESIDENTIAL LOT.
- COMMERCIAL AREA.
- DUAL-USE SCHOOL SITE AND RECREATIONAL AREA.
- PUBLIC PARKS.
- PLANTED HILLSLOPE.
- CONSTRUCTION PHASE.

0 200 400 600 800 1000 1400 FEET

0 100 200 300 400 METRES

0 2 4 6 8 10 15 20 CHAINS

SCALES

NORTH

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL
NELSON

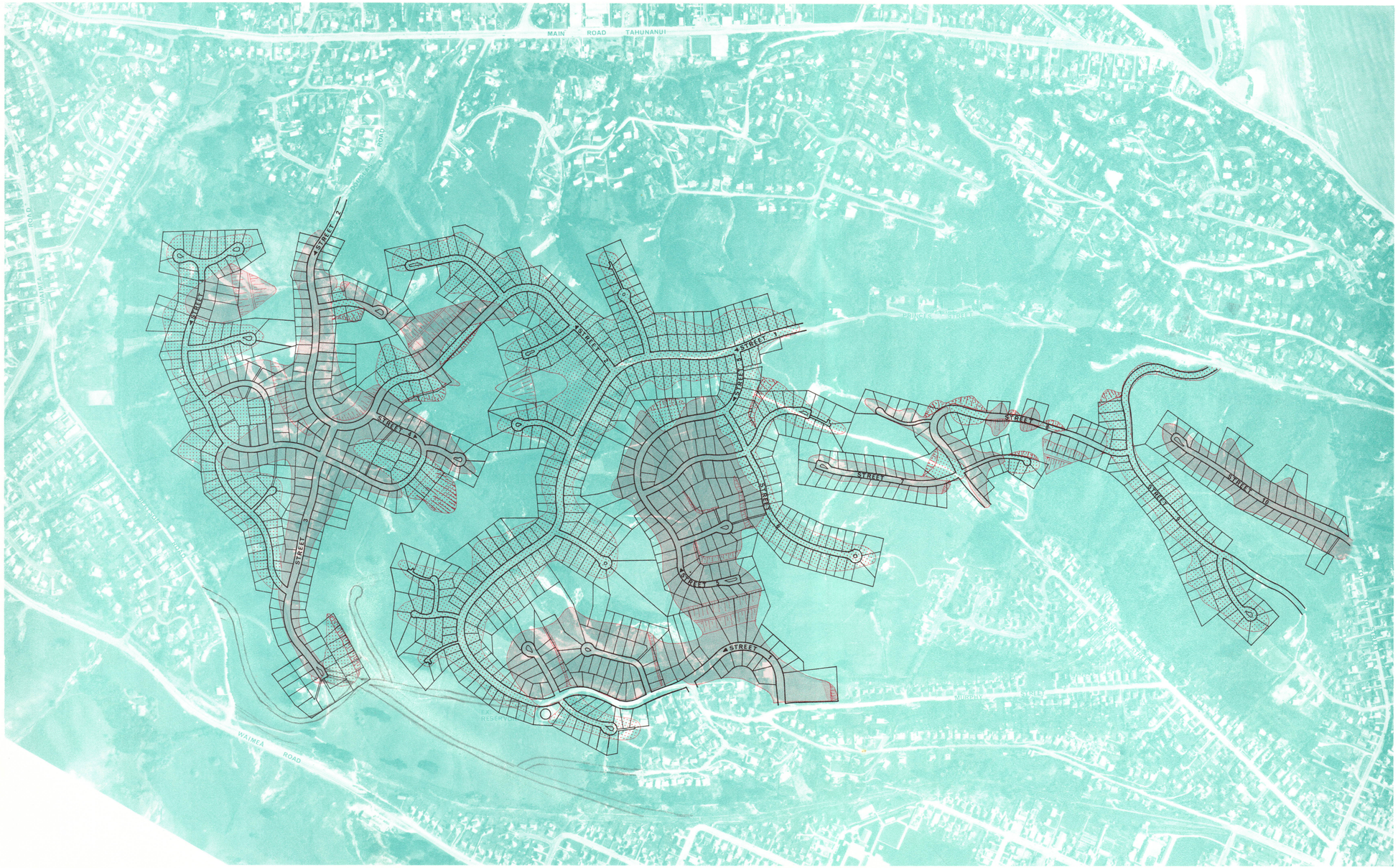
BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

SCHEME I

PROPOSED SUBDIVISION

PLATE 3



LEGEND

- CUT AREA.
- FILL AREA.
- BATTER SLOPE.
- SUBDIVISION LAYOUT. (ROADS AND LOTS)

0 200 400 600 800 1000 1400 FEET

0 100 200 300 400 METRES

0 2 4 6 8 10 15 20 CHAINS

SCALES

NORTH

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL
NELSON

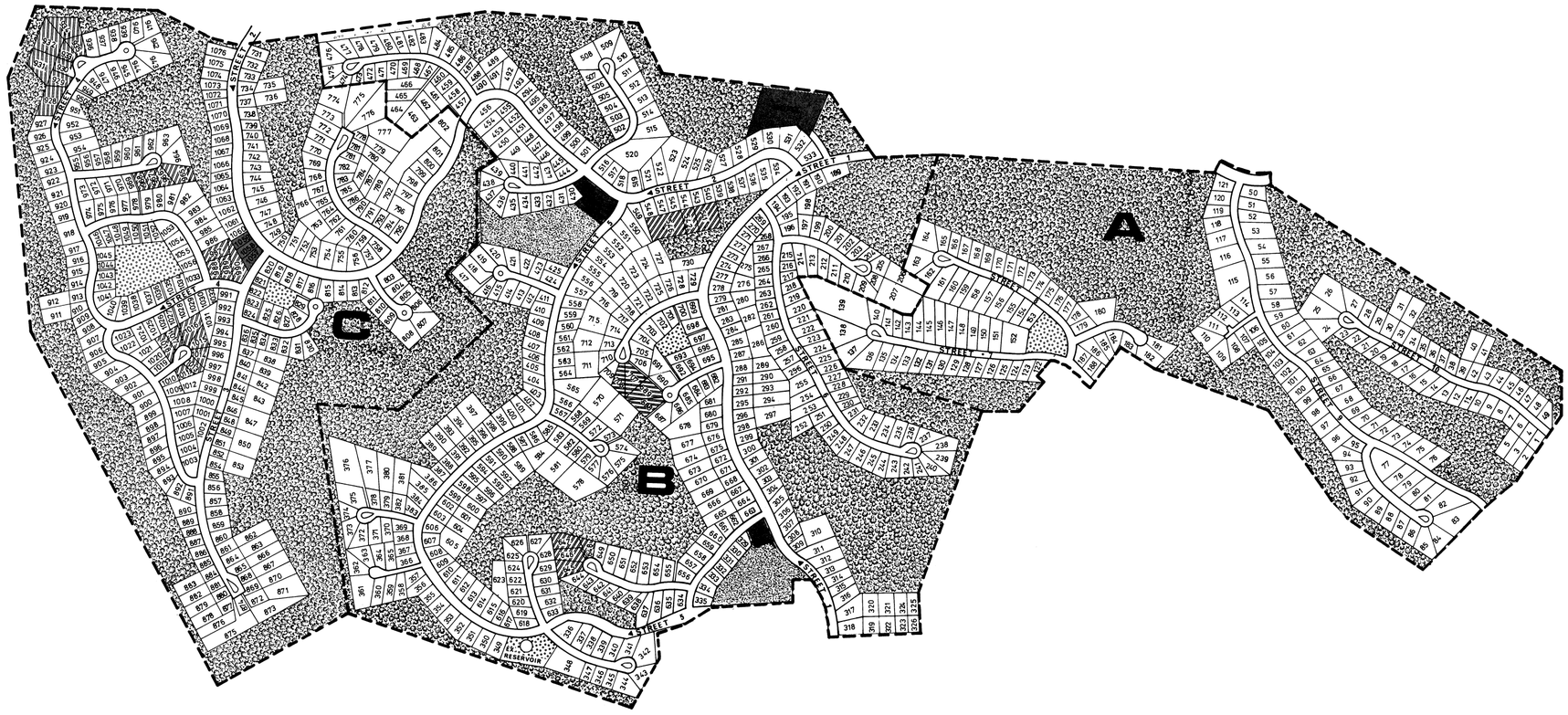
BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

SCHEME I

LOCATION PLAN AND EXTENT OF EARTHWORKS

PLATE 4



LEGEND

- 1000 — SINGLE-FAMILY RESIDENTIAL LOT.
- HIGH-DENSITY RESIDENTIAL LOT.
- COMMERCIAL AREA.
- DUAL-USE SCHOOL SITE AND RECREATIONAL AREA.
- PUBLIC PARKS.
- PLANTED HILLSLOPE.
- A — CONSTRUCTION PHASE.

0 200 400 600 800 1000 1400 FEET

0 100 200 300 400 METRES

0 2 4 6 8 10 15 20 CHAINS

SCALES

NORTH

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL
NELSON

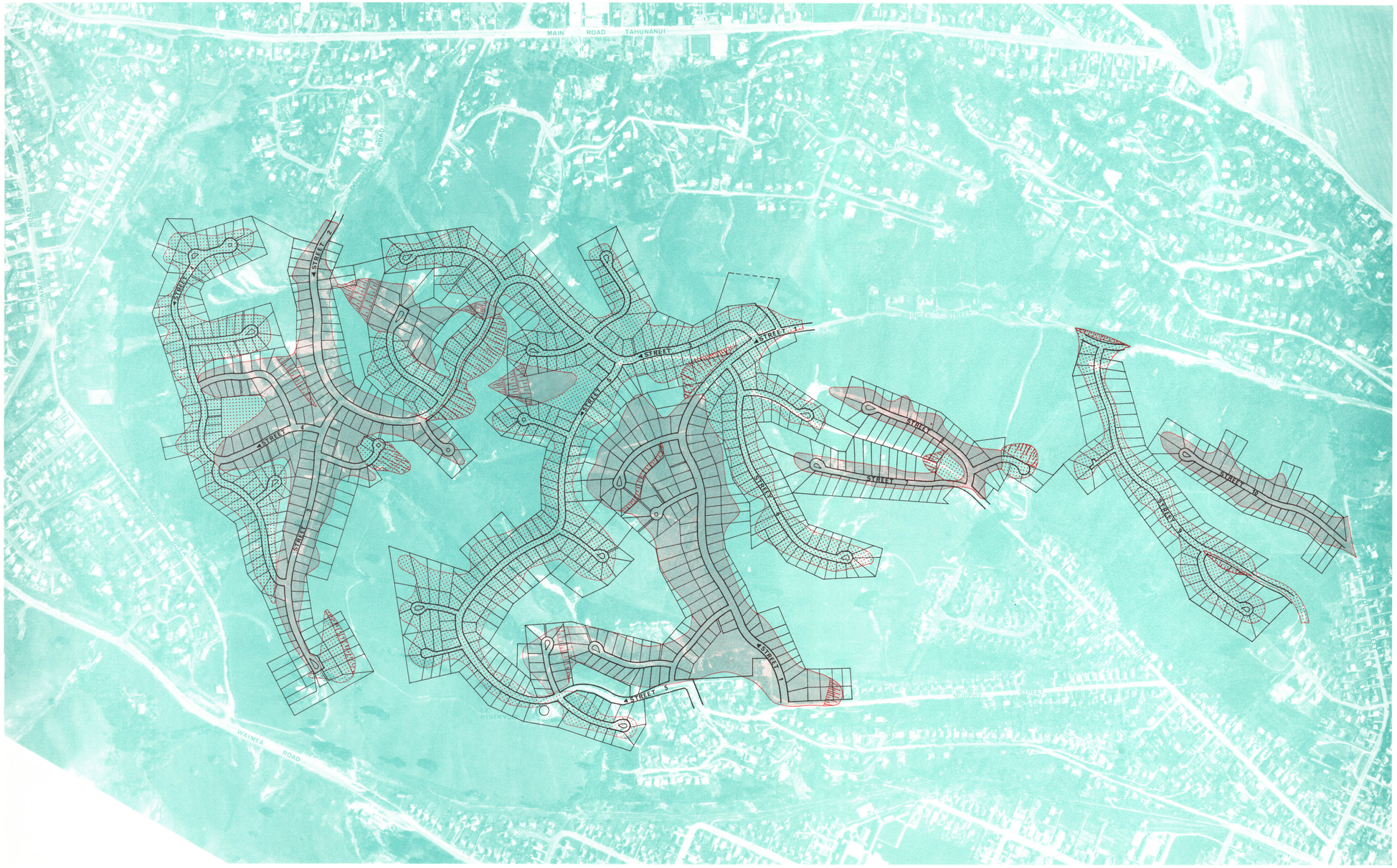
BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

SCHEME II

PROPOSED SUBDIVISION

PLATE 5



LEGEND

- CUT AREA.
- FILL AREA.
- BATTER SLOPE.
- SUBDIVISION LAYOUT. (ROADS AND LOTS)

0 200 400 600 800 1000 1400 FEET

0 100 200 300 400 METRES

0 2 4 6 8 10 15 20 CHAINS

SCALES

NORTH

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL
NELSON

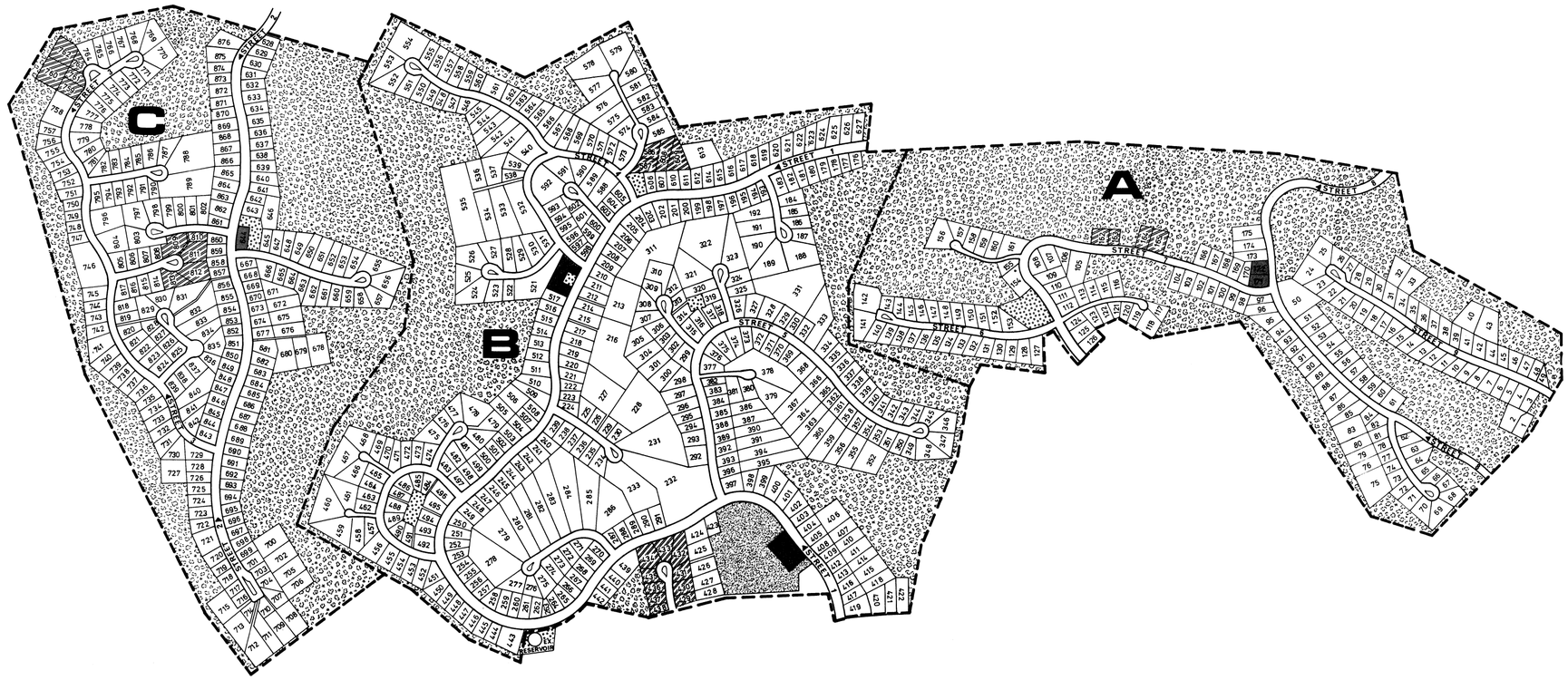
BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

SCHEME II

LOCATION PLAN AND EXTENT OF EARTHWORKS

PLATE 6



LEGEND

- SINGLE-FAMILY RESIDENTIAL LOT. (1000)
- HIGH-DENSITY RESIDENTIAL LOT.
- COMMERCIAL AREA.
- DUAL-USE SCHOOL SITE AND RECREATIONAL AREA.
- PUBLIC PARKS.
- PLANTED HILLSLOPE.
- A — CONSTRUCTION PHASE.

0 200 400 600 800 1000 1400 FEET

0 100 200 300 400 METRES

0 2 4 6 8 10 15 20 CHAINS

SCALES

NORTH

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL
NELSON

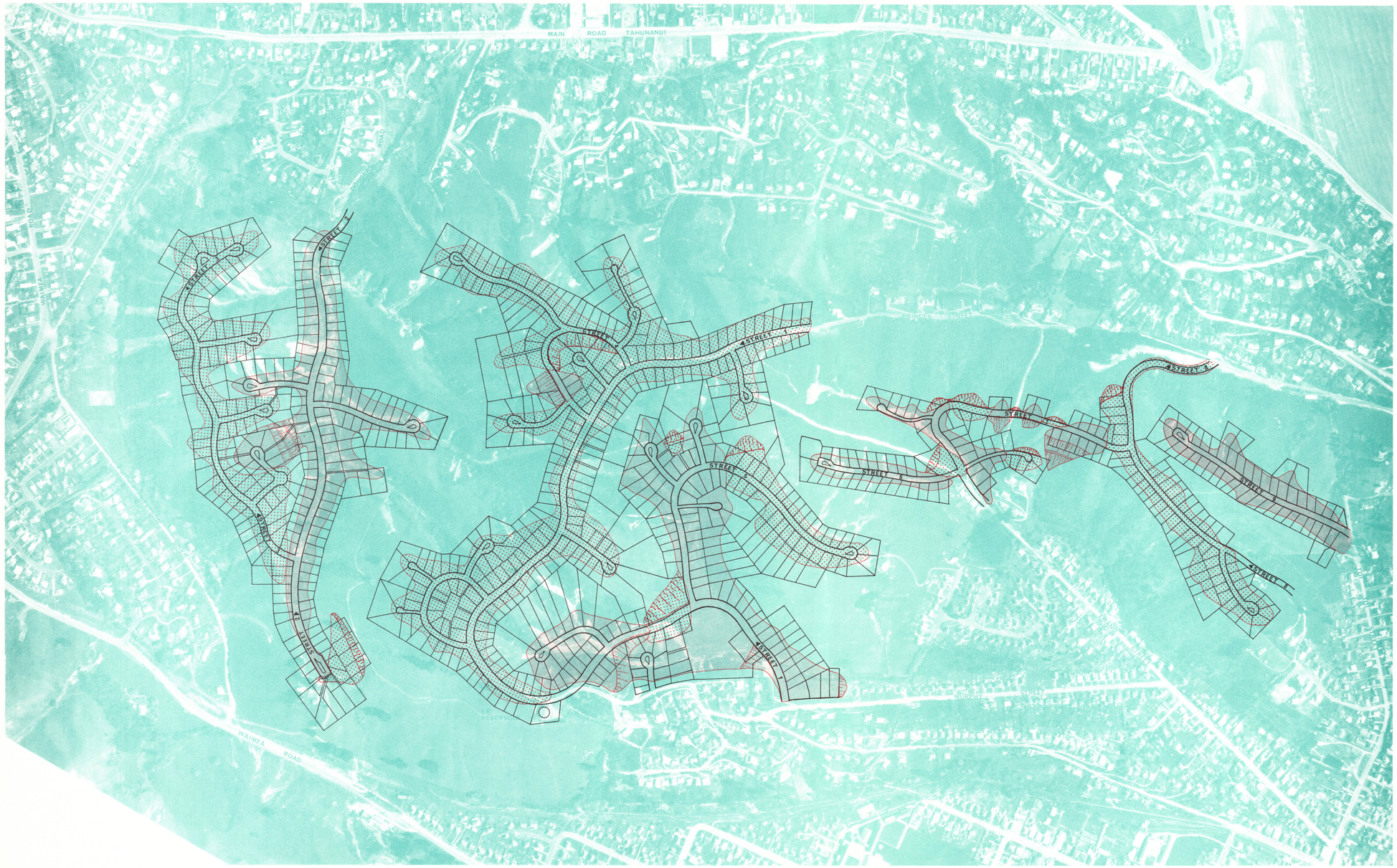
BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

SCHEME III

PROPOSED SUBDIVISION

PLATE 7



LEGEND

- CUT AREA.
- FILL AREA.
- BATTER SLOPE.
- SUBDIVISION LAYOUT. (ROADS AND LOTS)

0 200 400 600 800 1000 1400 FEET

0 100 200 300 400 METRES

0 2 4 6 8 10 15 20 CHAINS

SCALES

NORTH

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL
NELSON

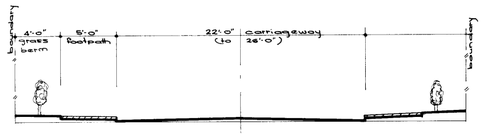
BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

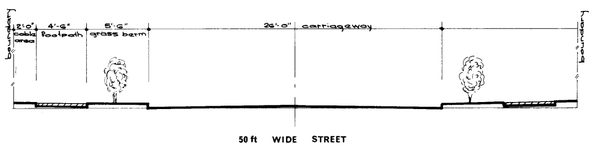
SCHEME III

LOCATION PLAN AND EXTENT OF EARTHWORKS

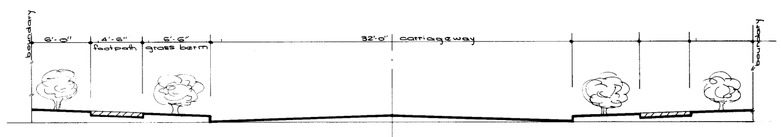
PLATE 8



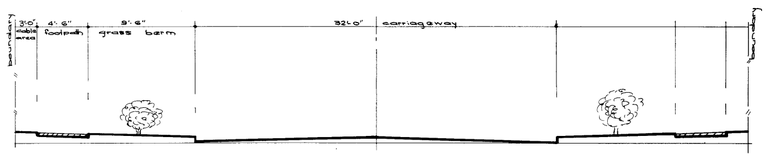
40 ft WIDE STREET



50 ft WIDE STREET

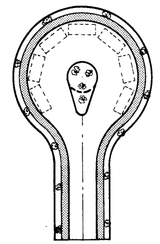


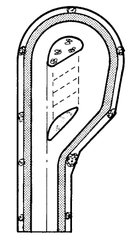
66 ft WIDE STREET

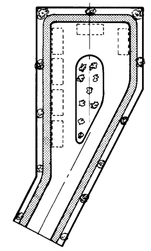


66 ft WIDE STREET

STREET SECTIONS







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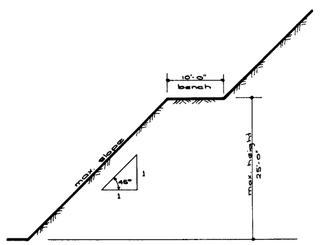
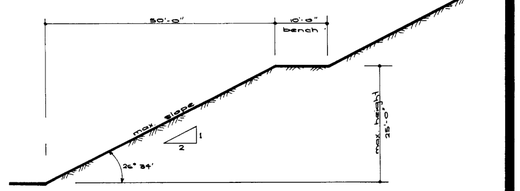


CUT BATTER SLOPE



FILL BATTER SLOPE

CONSTRUCTION SLOPES

CITY OF NELSON

PROPOSED RESIDENTIAL DEVELOPMENT

OBSERVATORY HILL
NELSON

BRICKELL, MOSS, RANKINE & HILL
CONSULTING ENGINEERS

FEBRUARY, 1973.

TYPICAL DETAILS

PLATE 9

General Property Information: 1970015328

Property

Valuation No	1970015328
Location	9 Istana Place, Nelson
Legal Description	LOT 20 DP 417875
Area (Hectares)	0.0757

Rates

Government Valuation

Land	470,000
Improvements	
Capital Value	470,000

Current Rates Year 2024 to 2025

Planning/Resource Management

7/02/03	RESOURCE CONSENT 025514 : 11 Residential Lots and a right of way - new DP321436 : Section 224 Issued 22/09/03 (Found on related property: 1970015410)
3/12/02	RESOURCE CONSENT 025436 : 2 Lots from 1. Lot 1 to be amalgamated with Lot 78 DP 20177. : Section 224 Issued 28/11/02 (Found on related property: 1970015285)
18/03/02	RESOURCE CONSENT 025052 : Earthworks - cuts up to 2m, fill up to 8m max : Decision Notified 25/02/02 (Found on related property: 1970015228)
7/02/02	RESOURCE CONSENT 005139 : Stage 1, 19 lots, road to vest & reserve to vest (Tasman Heights stage 1V) Creating DP305936 : Section 224 Issued 6/09/02 (Found on related property: 1970015228)
7/02/02	RESOURCE CONSENT 005140 : Stage 2, 22 lots, a new road & 2 reserves to vest (Tasdale MRJV) (Creating LT 328935) : Section 224 Issued 14/04/04 (Found on related property: 1970015422)
7/02/02	RESOURCE CONSENT 005141 : Stage 3 of RM005140, 41 lots, reserve & 2 roads to vest (Creating DP417875, 380751, 359801) : Section 224 Issued 7/09/09 (Found on related property: 1970015335)
25/05/01	RESOURCE CONSENT 015075 : To rearrange boundaries of lot 75 : Section 224 Issued 11/07/01 (Found on related property: 1970015228)
6/09/00	RESOURCE CONSENT 005279 : To create a ROW over ajoining property : Decision Notified 16/08/00 (Found on related property: 1970015207)

27/04/00	RESOURCE CONSENT 005067 : Addition of 2 extra lots, to lots granted in 985316/1 & 995465 : Section 224 Issued 13/06/00 (Found on related property: 1970015228)
8/02/00	RESOURCE CONSENT 995465 : Variation to RM985316/1 -includes lots 3-7,64-67,68-78,79-83 : Section 223 Issued 26/03/01 (Found on related property: 1970015228)
2/12/99	RESOURCE CONSENT 995074 : StageII - subdivide a further 6 lots, - 58 to 63. : Section 224 Issued 11/04/01 (Found on related property: 1970015228)
12/11/99	RESOURCE CONSENT 995129 : Extend the time frame for the completion of the detention pond for consent 985372 : Decision Notified 21/10/99 (Found on related property: 1970015228)
28/05/99	RESOURCE CONSENT 995163 : To subdivide 1 lot into 2 : Section 224 Issued 22/11/99 (Found on related property: 1970015207)
8/02/99	RESOURCE CONSENT 985372 : Undertake earthworks in excess of 1.2m in depth & erect various temporary silt control measures : Decision Notified 29/12/98 (Found on related property: 1970015228)
11/09/98	RESOURCE CONSENT 985316 : to create 45 new lots,rec reserve & 3 new streets (creating DP19583) : Section 224 Issued 23/08/99 (Found on related property: 1970015228)
20/10/97	RESOURCE CONSENT 975470 : Remove up to 4000m3 of material (part of proposed earthworks for subdivision 950361) : Decision Notified 29/09/97 (Found on related property: 1970015228)
2/11/95	RESOURCE CONSENT 950361 : LOTS 50-98 INCLUDING ROAD TO VEST : Consent Effective 3/11/95 (Found on related property: 1970015228)
6/10/81	TOWN PLANNING PERMIT 206/40/108 EARTHWORKS FOR SUBDIVISION/REMOVE SOIL/FILL RECLAMATION AREA : WITHDRAWN (Found on related property: X1970015228)
	RESOURCE CONSENT 025122 : Excavations exceeding 1.2m : Withdrawn 9/04/02 (Found on related property: 1970015228)
	RESOURCE CONSENT 975669 : Undertake earthworks in excess of 1.2mtrs in depth for proposed subdivison : Withdrawn 13/01/98 (Found on related property: 1970015228)
	RESOURCE CONSENT 995392 : To create 110 residential allotments. : Withdrawn 17/05/00 (Found on related property: 1970015228)
	RESOURCE CONSENT 995393 : To subdivide 14 residential lots (lots 17-29) & new roads : Withdrawn 17/05/00 (Found on related property: 1970015228)
	RESOURCE CONSENT 995394 : To subdivide 19 res lots (lots 31-34 & 132-144) and new road : Withdrawn 17/05/00

	(Found on related property: 1970015228)
	RESOURCE CONSENT 995395 : To subdivide 14 res lots (lots 64-68,79-83,98,99,115,116) &(reserve to vest & new roads : Withdrawn 17/05/00 (Found on related property: 1970015228)
	RESOURCE CONSENT 995396 : To subdivide 10 res lots (lots 69-78) reserve & road to vest : Withdrawn 17/05/00 (Found on related property: 1970015228)
	RESOURCE CONSENT 995397 : To subdivide 21 res lots (16,40-45,84-97) reserve & road : Withdrawn 17/05/00 (Found on related property: 1970015228)
	RESOURCE CONSENT 995398 : To subdivide 21 res lots (lots 101-114,117-122) res & roads : Withdrawn 17/05/00 (Found on related property: 1970015228)
	RESOURCE CONSENT 995399 : To subdivide 9 res lots(lots 123-131) reserve & road to vest : Withdrawn 17/05/00 (Found on related property: 1970015228)

Building

24/01/06	BUILDING CONSENT 051029 : Construct Floor Detention Dam : NO CCC WILL BE ISSUED : Decision made under S93 BA2004 4/03/20 (Found on related property: 1969037803)
19/09/02	BUILDING CONSENT 020906 : Timber Pole Retaining Wall : Code Compliance Certificate issued 3/04/03 (Found on related property: 1970015400)
5/09/00	BUILDING CONSENT 000846 : Erect Retaining Wall : GRANTED 5/09/00 (Found on related property: 1970015228)
29/11/99	BUILDING CONSENT 990056 : To erect a timber pole retaining wall : GRANTED 29/11/99 (Found on related property: 1970015228)
10/05/99	BUILDING CONSENT 990491 : Erect viewing platform and landscaping structures : GRANTED 10/05/99 (Found on related property: 1970015228)
	BUILDING CONSENT 990273 : ERECT RETAINING WALL : Cancelled 20/02/04 (Found on related property: 1970015228)

Licences

28/02/2008	ENVIRONMENTAL HEALTH NOTES Fire Hazard - Legal Notice Issued (Found on related property: X1969037806)

Sewer and Drainage

No information located

Land and Building Classifications

No information located

Transport

No information located

Special Land Features

No information located

Swimming Pools

No information located

Other

23/09/09	LIM APPLICATION L090216L090216 : LAND INFORMATION MEMORANDUM (Found on related property: 1969037806)
5/02/07	LIM APPLICATION L070045L070045 : LAND INFORMATION MEMORANDUM (Found on related property: 1970015400)
24/09/02	LIM APPLICATION L020251L020251 : LAND INFORMATION MEMORANDUM (Found on related property: 1970015400)
10/09/02	LIM APPLICATION L020244L020244 : LAND INFORMATION MEMORANDUM (Found on related property: 1970015228)
10/01/02	LIM APPLICATION L020008L020008 : LAND INFORMATION MEMORANDUM (Found on related property: 1970015228)
9/04/01	LIM APPLICATION L010101L010101 : LAND INFORMATION MEMORANDUM (Found on related property: 1970015228)
16/06/99	LIM APPLICATION L990149L990149 : LAND INFORMATION MEMORANDUM (Found on related property: 1970015228)
13/02/2008	OTHER Fire Hazard - Legal Notice issued (Found on related property: X1969037806)

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Date	12 January 2006	Condition No.	C1401
Street address	All properties contained in the Nelson Urban Area within Airshed A or B1 (consult Fig A2.1, A2.2A and A2.2B in Air Plan)		
Diagram	No		
Legal Description	Various		
Property Owner or Subdivider	Various		
Scheme Plan No.	N/A		
NCC Plan	Air Quality Plan		
Authority	Principal Adviser - City Development (see David Jackson)		
Reason for condition	(Abbreviated) This property may contain a domestic spaceheater or open fire that falls under the rules set out in the Council's Air Quality Plan. Under rule AQr.24.1, within the Urban Area the use of open fires was allowed to continue up until 1 January 2008 (except that any 'Jetmaster' type open fire (including Warmington brands) may continue until 1 January 2013). Discharge to air from open fires is prohibited after that date. In addition, within Airsheds A and B1 (as defined in the Air Plan) the use of existing enclosed burners has been phased out. The use of all enclosed burners that do not comply with the emissions standards set out by the Air Quality Plan has been progressively banned between 2010 and 2012, starting with the oldest burners. This was necessary to meet the targets imposed by the National Environmental Standards for air quality. Updated 7th June 2012.		

Condition

The Air Quality Plan states that in the Nelson Urban Area within these airsheds (Airshed A and B1 – consult Fig A2.1, A2.2A and A2.2B in Air Plan) no discharge from domestic-type fires may occur after the cessation date below.

Type of Heating Appliance	Disused By
Open fires (Jetmaster type open fires)	**1/01/2008** **(1/01/2013)**
Burners installed before 1996	**1/01/2010**
Burners installed between 1996 and 1999	**1/01/2012**

Date entered: 12th January 2006

DATE: 28-Jul-09 CONDITION No: C1466

STREET ADDRESS: Istana Place/Princes Drive/Crown Terrace

DIAGRAM: Yes

LEGAL DESCRIPTION LT417875

PROPERTY OWNER
or SUBDIVIDER: K B Quarries Ltd

SCHEME PLAN No: RM005141

NCC PLAN No:

AUTHORITY: Mike Johnstone

REASON FOR CONDITION:
(Abbreviated) As result of a Subdivision

CONDITION:

1. Buildings shall be within the areas designated as *Area Generally Suitable for Development in Accordance with NZS3604* and/or *Area requiring Specific Investigation and Design* as shown on Tonkin & Taylor drawing *Lot Certification Plan (*ref.81069.010-05 Rev S), dated July 2009.

2. The subdivision incorporating Lots 17 to 24, 35 and 134 to 140 has involved substantial earthworks resulting on all lots, other than lots 138 and 139, natural, cut or filled ground interfaces as depicted on Tonkin & Taylor *Fill Certification Plan* (ref.81069.010-03), dated June 2009. Indicative cut and fill thicknesses are shown on Staig & Smith *Iso Contour Plan* 10471/1, dated 27 February 2009.

3. No earthworks involving cuts or fills greater than 0.3 m in height or thickness or buildings other than minor non-habitable structures, such as garden sheds or gazebos that can be easily relocated, shall be undertaken within the areas on Lots 17 to 23 inclusive, and 134 and 135 designated *Restricted Building Area* on Tonkin & Taylor drawing 81069.010-05 Rev S *Lot Certification Plan (*ref.81069.010-05 Rev S), dated July 2009.

4. Foundations for all buildings shall extend through topsoil, subsoil and any fill not certified in accordance with NZS 4431: 1991 – *Code of Practice for Earth Fill for Residential Development* and be founded on "Good ground" as defined by the New Zealand Building Code. Foundations on land sloping in excess of 1V:3H shall be designed to accommodate lateral loads.

5. The *Area Generally Suitable for Development in Accordance with NZS3604* comprises cut and filled ground suitable for shallow foundations constructed in accordance with NZS 3604: 1999 – *Timber Framed Buildings*. Foundations for all buildings not meeting NZS 3604 and requiring an ultimate bearing capacity greater than 300kPa, foundations shall be specifically investigated, designed and constructed under the supervision of a

chartered professional engineer practising in civil engineering and experienced in foundation design.

6. Within the *Specific Investigation and Design Area*, foundations shall be specifically investigated, designed and inspected during construction by or under the direction of a chartered professional engineer practising in geotechnical engineering. Specific attention shall be given to verify the presence of cut/fill boundaries on lots 35, 136, 137 and 140 where they may occur under or in close proximity to buildings.

7. Where foundations straddle the boundary between the *Area Generally Suitable for Development in Accordance with NZS3604* and the *Area requiring Specific Investigation and Design* the entire design structure shall be reviewed by a chartered professional engineer practising in geotechnical engineering.

8. Within the *Area Generally Suitable for Development in Accordance with NZS3604* all temporary and permanent cuts greater than 1.2 m in height shall be specifically investigated by a chartered professional engineer practising in geotechnical engineering or by an experienced engineering geologist. No existing slopes inclined on a grade steeper than 2.5H: 1V shall be steepened by unretained cutting.

9. Within the *Area requiring Specific Investigation and Design* all temporary and permanent cuts greater than 0.8 m in height shall be specifically investigated by a chartered professional engineer practising in geotechnical engineering or by an experienced engineering geologist. No existing slopes inclined on a grade steeper than 2.5H: 1V shall be steepened by unretained cutting.

10. Fill greater than 0.8 m thick and all fill proposed to be beneath structures, including hardstanding areas, shall be certified as meeting the requirements of NZS 4431: 1989 – *Code of Practice for Earth Fill for Residential Development*, and shall include adequate stripping, benching and underdrainage. All fills within the *Area requiring Specific Investigation and Design* greater than 1.0 m in thickness shall be investigated, designed and inspected during construction by or under the direction of a chartered professional engineer practising in geotechnical engineering. No unretained fill shall be placed on ground sloping greater than 2.5H: 1V.

11. In the *Generally Suitable for Development in Accordance with NZS3604* area retaining walls over 1.2 m in height shall be specifically investigated, designed and inspected during construction by or under the direction of a chartered professional engineer practising in civil engineering. All walls shall be adequately drained.

12. In the *Area requiring Specific Investigation and Design* retaining walls shall be specifically investigated, designed and inspected during construction by or under the direction of a chartered professional engineer practising in geotechnical engineering. All walls shall be adequately drained.

13. Development of the lots shall not detrimentally alter overland flows, including on adjacent lots, and if necessary additional drainage shall be installed under the direction of a chartered professional engineer practising in civil engineering.

14. Buried sewer or stormwater drains or subsoil drainage exist on most lots and their presence shall be allowed for during development of the lots.

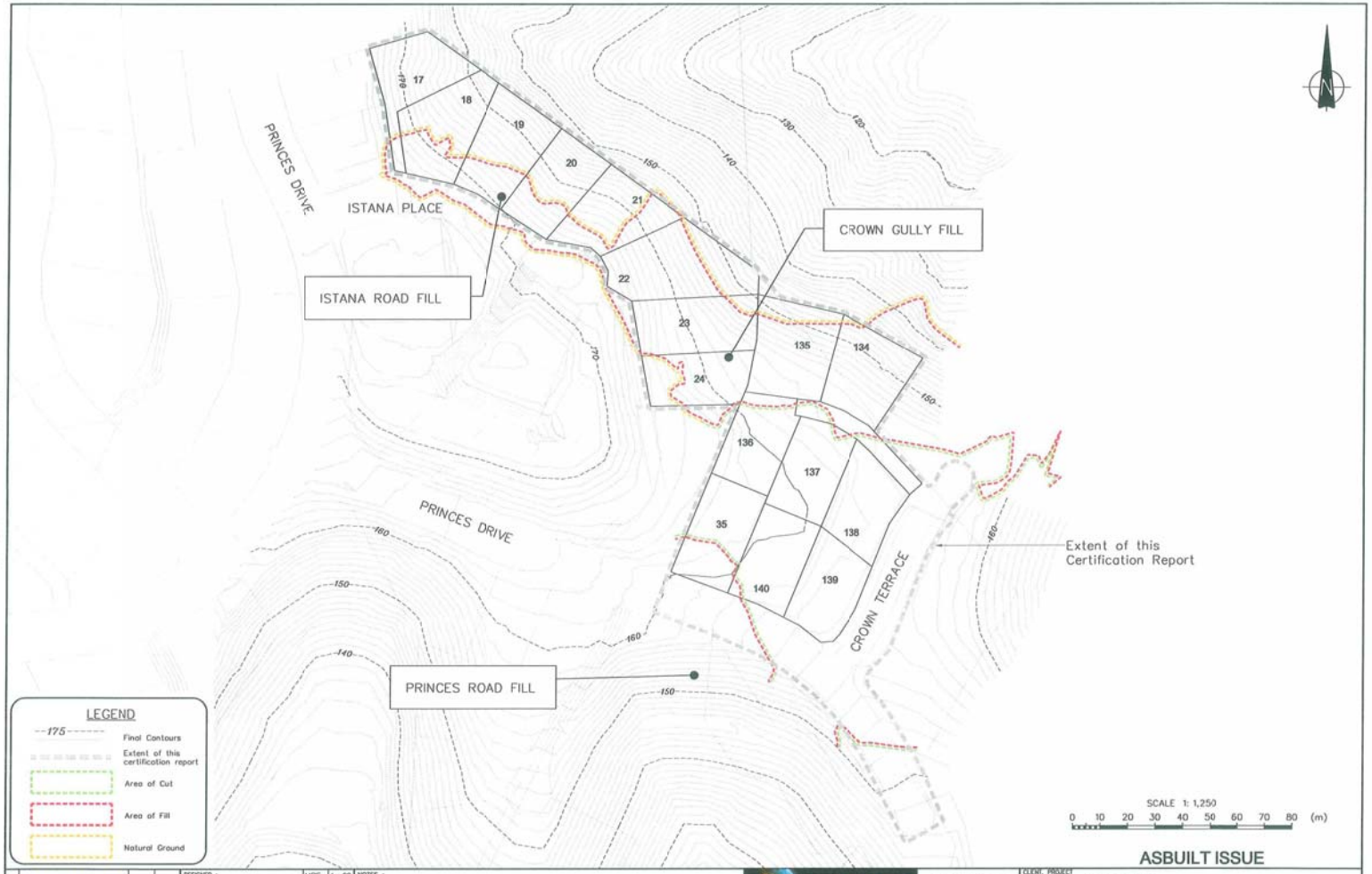
15. A subsoil drain outlet exists within the Lot 134 as approximately located on Staig & Smith drawing *Stormwater* 10275/10471, dated 1 May 2009. As required by a consent notice on the title of the lot, the lot owner shall ensure that the outlet is kept clear of any obstruction, including spoil and vegetation roots.

16. All stormwater from roofs, hardstanding or impermeable areas, retaining wall drainage, surface and subsoil drains and overflows from standing water such as pools and ponds shall be collected and discharged in a controlled manner to the Nelson City Council Stormwater System.

17. Where practical to do so, the lots shall be maintained in a vegetation cover or alternative slope cover that prevents erosion with on sloping ground an emphasis on deep-rooted trees and shrubs to enhance slope stability.

    Explanatory Note: depending on the location and scale of works requiring geotechnical input, Council may allow design and construction to be investigated, designed and inspected during construction by or under the direction of a chartered professional engineer practising in civil engineering. In such circumstances the design shall be reviewed, and ground conditions confirmed, by a chartered professional engineer practising in geotechnical engineering or by an experienced engineering geologist and recognised as such by the Nelson City Council.

    Tonkin & Taylor (ref.81069) *Earthworks and Building Site Certification Report Istana Place/Crown Terrace Subdivision, Tasman Heights, Nelson*, dated June 2009, *Statement of suitability of earthfill for residential development: Istana Place/Crown Terrace Subdivisions, Tasman Heights, Nelson*, 8 June 2009, and *Geotechnical Certificate – Proposed Building Sites, Lots 17 to 24, 35 and 134 to 140 Istana Place, Tasman Heights, Nelson*, dated 23 July 2009, relate to the general suitability of the lots. They do not remove the need for specific site investigation, design and inspection as required by the Building Code, NZS 3604: 1999 and NZS 4431: 1989.



ASBUILT ISSUE

P:\8\1069\8\1069.010 Beck Ridge\Istana Pl\Istana Pl Certification 2009\WorkingMaterial\CAD\8'1069.010-03_05.dwg, 03, 8/06/2009 11:56:48 a.m., caduser, 1:1

DESIGNED :	MRF	Jun.09	
DRAWN :	DNV	Jun.09	
DESIGN CHECKED :			
DRAFTING CHECKED :			
CADFILE : \\8 1069.0 10-03_05.dwg			
APPROVED :			
NOT FOR CONSTRUCTION			
This drawing is not to be used for construction purposes unless signed as approved			
COPYRIGHT ON THIS DRAWING IS RESERVED			
REFERENCE :			

REVISION	DESCRIPTION	BY	DATE
0	First Issue		

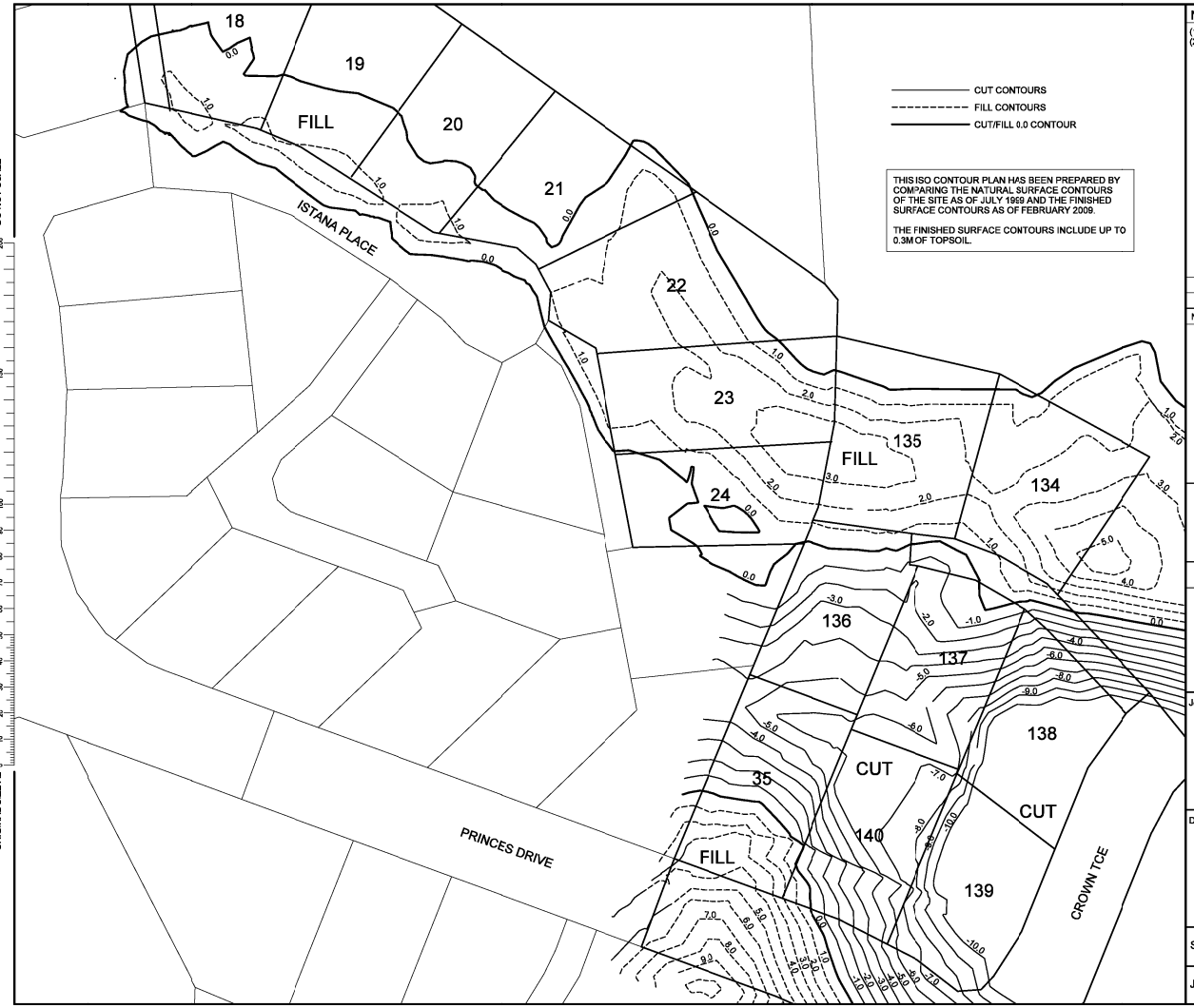
NOTES :
1. Lot Boundaries, contours and earthworks boundaries from Steig and Smith.

Tonkin & Taylor
Environmental & Engineering Consultants
Nelson 43 Halifax St
Tel. (03) 546 6339 Fax. (03) 546 7819
Email : nel@tonkin.co.nz
Auckland Wellington Christchurch Hamilton Whangarei

CLIENT, PROJECT
KB QUARRIES
TASMAN HEIGHTS SUBDIVISION

TITLE
ISTANA PLACE / CROWN TERRACE, NELSON
FILL CERTIFICATION PLAN

SCALES (AT A3 SIZE)	DWG. No.	REV.
1: 1250	8 '1069.0 10-03	0



NOTES

(1) VERIFY ALL DIMENSIONS ON SITE.
(2) DO NOT SCALE FROM DRAWING.

NO	AMENDMENT	DATE

STAIG & SMITH LTD

81 Selwyn Place
PO Box 913 Nelson

Ph: 03 548 4422
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SURVEYING-PLANNING-ENGINEERING-RESOURCE MANAGEMENT

APPROVED

MANAGER INFRASTRUCTURAL ASSETS DATE

NCC DWG NO.

Design:
Drawn: RNS
Checked:
Approved:
Date: Fri Feb 27 12:18:53 2009

Job Title:

TASMAN HEIGHTS
ISTANA PLACE
CROWN TCE

Drawing Title:

ISO CONTOUR PLAN

Scale: 1:500 at A2	DWG CFW2:	Rev. 0
Job No 10471	Sheet 1 of 1	

Y:\jobs\10400\10471\cad\12d\CROWN TCE

STORMWATER MH'S

ITEM	N	E	LID LVL	INV.IN	INV.OUT
SWMH.01	798187.39	396311.53	162.18	--	160.11
SWMH.02	798099.10	396360.98	159.82	158.02	157.98
SWMH.03	798068.52	396380.65	158.52	156.72	156.74
SWMH.04	798012.71	396404.42	150.90	148.87	148.81
SWMH.05	798065.94	396419.52	146.79	141.26	145.24
OUTLET.06	798068.92	396428.09	--	--	141.74
OUTLET.07A	797731.20	396382.74	--	--	103.69
SWMH.07	797790.57	396390.76	165.78	104.01	103.91
SWMH.08	797750.45	396441.86	130.29	129.49	129.41
SWMH.09	797748.74	396459.77	132.72	132.01	131.93
SWMH.10	797795.59	396485.98	149.46	146.94	146.92
SWMH.11	797775.03	396463.38	149.46	148.25	148.17
SWMH.12	797888.64	396448.82	154.25	151.64	152.57
SWMH.13	797922.16	396467.74	154.46	151.08	153.03
SWMH.14	797963.17	396482.79	154.97	151.70	153.66
SWMH.15	797987.91	396458.46	156.28	154.47	154.43
SWMH.16	797986.48	396440.03	157.04	--	155.21

STORMWATER LATERALS

ITEM	N	E	GL	DEPTH
LOT 17	798114.05	396306.94	162.90	1.0D
LOT 18	798103.36	396313.80	162.73	0.5D
LOT 19	798090.44	396332.88	162.01	0.5D
LOT 20	798077.76	396348.12	160.15	0.7D
LOT 21	798066.21	396378.85	159.06	1.1D
LOT 22	798043.95	396416.12	148.30	0.4D
LOT 23	798035.86	396417.40	150.89	0.8D
LOT 24	798030.67	396442.15	150.89	0.8D
LOT 135	798030.67	396462.75	146.52	0.9D
LOT 134	798028.19	396451.83	146.45	1.3D
LOT 136	797987.38	396434.32	157.56	1.5D
LOT 137	797985.99	396431.85	156.62	0.9D
LOT 138	797966.86	396473.77	156.51	0.7D
LOT 35	797930.82	396409.90	158.39	0.8D
LOT 140	797923.80	396430.26	157.32	0.9D
LOT 139	797932.89	396446.35	155.69	1.2D
Sk 12-12	797879.79	396474.92	153.17	1.8D
Sk 11-10	797851.87	396488.25	148.89	0.7D
SUMP.10A	797818.45	396498.00	143.90	1.1D
Sk 10-09	797784.50	396482.89	142.89	1.6D
Sk 10-06	797717.37	396480.19	137.78	0.8D

STORMWATER LHCE'S

ITEM	N	E	LID LVL
LHCE.05A	798032.82	396452.40	145.46
LHCE.05B	798016.95	396418.37	157.40

STORMWATER SUMPS

ITEM	N	E	GRATE LVL	INV.IN	INV.OUT
SUMP.09A	797753.82	396461.33	136.23	--	135.39
SUMP.09B	797748.90	396430.90	138.12	--	137.42
SUMP.10A	797865.05	396480.47	144.92	144.08	144.02
SUMP.10B	797817.74	396481.00	144.90	--	143.80
SUMP.12A	797908.07	396444.34	154.83	153.81	153.80
SUMP.12B	797926.43	396410.07	158.04	--	156.88
SUMP.12C	797899.84	396437.63	154.88	--	153.77
SUMP.12D	797909.90	396451.64	154.13	153.29	153.10
SUMP.12E	797903.42	396457.74	154.07	--	153.20
SUMP.14A	797869.48	396480.10	153.04	--	154.08

Notes

(1) Verify all dimensions on site.
(2) Do not scale from drawing.
(3) Contractor to locate all existing services prior to start of construction. Contractor also responsible to protect throughout construcion
(4) All works undertaken in existing legal roads requires a road opening notice and traffic management plan to the approval of the Nelson City Council. It shall be the contractors sole responsibility to obtain all consents and arrange for all traffic management plans.
(5) All works to be in accordance with Tasman District Council Engineering Standards .

NO	AMENDMENT	DATE

STAIG & SMITH LTD
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PO Box 913 Nelson
Ph: 03 548 4422
Fax: 03 548 4427
e-mail: enquiries@staigsmith.co.nz
SURVEYING-PLANNING-ENGINEERING-RESOURCE MANAGEMENT

APPROVED

MANAGER INFRASTRUCTURAL ASSETS DATE

NCC DWG NO.

Design:
Drawn:
Checked:
Approved:
Date: Fri May 01 10:57:43 2009

Job Title

ISTANA PLACE & CROWN TERRACE AS-BUILT PLANS

Drawing Title

STORMWATER

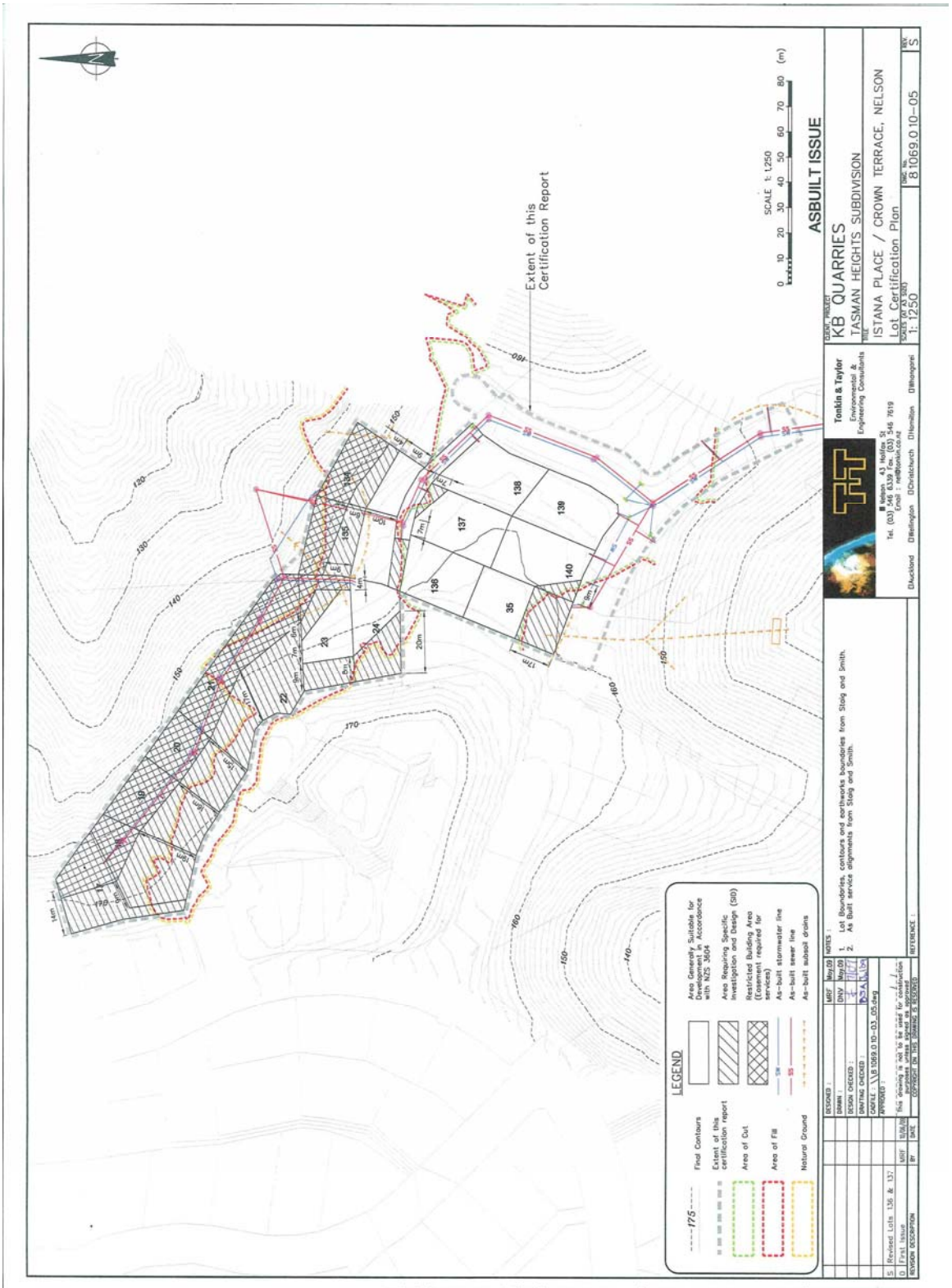
Scale: ':500 at A1

DWG CPW2:

Rev.

Job No: 10275/10471

Sheet 4 of



Date Entered: 21-Jul-09

DATE: 7-Sep-09 CONDITION No: C1470

STREET ADDRESS: Istana Place & Crown Terrace

DIAGRAM: No

LEGAL DESCRIPTION Lots 17-24, 35, 134-140 DP417875

PROPERTY OWNER
or SUBDIVIDER: K B Quarries

SCHEME PLAN No:

NCC PLAN No:

AUTHORITY: Don Ballagh

REASON FOR CONDITION:
(Abbreviated) Consent Notice

CONDITION:

1. In respect of the Lots numbered 17,18,19, 20, 21, 35, 139 and 140 inclusive on Deposited Plan 417875 referred to in the above Schedule and at the request of K B Quarries Limited an access crossing is to be installed at the time of a Building Consent in respect of each of the Lots and at no cost to the Council. Damage to the kerb, channel and footpath across the frontage to each of the Lots will be the responsibility of the owner for the time being of each of the Lots.

2. In respect of Lots 35 and 134, 135, 136, 137, 138, 139 and 140 on Deposited Plan 417875 referred to in the above Schedule any dwelling constructed on any of the specified Lots shall have a water connection installed of a minimum 25 millimetre diameter and the dwelling shall be provided with oversized plumbing to allow for lower than normal supply pressure.

3. In respect of Lots 17, 18, 19, 20, 21, 22, 23 and 24 on Deposited Plan 417875 referred to in the above Schedule, any dwelling constructed on any of the specified lots with a floor level higher than 165metres above the Nelson City Datum shall have a water connection installed of a minimum 25 millimetre diameter and the dwelling shall be provided with an individual pressure pump and tank to ensure an adequate supply of water to the dwelling.

4. In respect of Lots 17, 18, 19, 20, 21, 22, 23, and 24 on Deposited Plan 417875 referred to in the above Schedule, and dwelling constructed on any of the specified lots with the floor level lower than 165 metres above the Nelson City Council Datum shall have a water connection installed of a minimum 25 millimetre diameter and the dwelling shall be provided with oversized plumbing to allow for lower than normal supply pressure.

Date Entered: 8-Sep-09

Rm 005141
Dec 03

K B QUARRIES LTD

EARTHWORKS AND BUILDING SITE CERTIFICATION REPORT MAIRE RIDGE, TASMAN HEIGHTS SUBDIVISION, OBSERVATORY HILL, NELSON

REFERENCE NUMBER: 81069.008

DECEMBER 2003

REPORT PREPARED FOR:
K B QUARRIES LTD

REPORT PREPARED BY:
TONKIN & TAYLOR LTD

DISTRIBUTION:
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APPENDICES

Appendix A – Pre Construction Investigation
Appendix B – Survey As-Builts:
Subsoil Drains and Finished Contours – Dwg 737 AH
Earthworks Iso-Contours – Dwg 737 AI
Appendix C – Field Test Data
Appendix D – Certification Figures:
Figure 81069.008-20/21/22
Figure 81069.008-23/24/25
Appendix E – Certification Investigations
Scala Penetrometer Test Results
Test Pit Logs
Appendix F – Remedial Works List and Figure 1
Appendix G – Fill Certificate:
Subsoil Drains and Finished Contours – Dwg 737 AH
Earthworks Iso-Contours – Dwg 737 AI

1.0 Introduction

This report details the scope of works undertaken by Tonkin & Taylor Ltd (T&T) for the purpose of:

- Certifying the bulk earthworks, carried out from late January 2003 to mid May 2003 on Maire Ridge, including Lots 98 to 123 inclusive (except for Lots 107 and 119), as part of the Tasman Heights Subdivision, Observatory Hill, Nelson, in accordance with NZS 4431 "Earthfill for Residential Development";
- Certifying building sites in accordance with condition 31of resource consent RM 005139 - 005144;

The scope of work and terms of engagement for the preparation of this report are set out in T&T's letter of engagement (Ref. 81069.008) dated 17 October 2002.

Bulk earthworks construction started in January 2003, and continued through to May 2003.

A final inspection of the site development was carried out on 5 December 2003.

2.0 Site Description

2.1 Location

The site is located at the western end of Windsor Drive, Observatory Hill, Nelson and involved the construction of a new road, Heemskerck Place and 3 right-of-ways (A to C).

2.2 Topography

Prior to earthworks commencing, Maire Ridge consisted of a north - south trending spur separated from previous and future stages of the Tasman Heights Subdivision by deep gullies to the north and east. Natural slopes were inclined at 20 to 40 degrees.

2.3 Geology

The "Geology of Nelson Urban Area" scale 1:25,000 shows the site to be underlain by 'Port Hills Gravel Formation' sediments. This Formation is described as consisting of clay-bound gravels containing well rounded gravel, cobbles and boulders. Structurally, the entire ridge is part of the Port Hills Syncline with bedrock of the 'Magazine Point Formation' comprising a well bedded and graded sandstone-siltstone-mudstone sequence at depth.

Test pits excavated at the site prior to development revealed a stratigraphy of topsoils comprising organic silts; underlain by colluvium, generally inorganic silts to 0.6 – 4.0m depth ranging from firm to stiff; and Port Hill Gravels (PHG), described as orange/ brown, dense to very dense gravels within a sandy, moderately weathered matrix; often capped by a residual soil layer. A pre-construction investigation location plan is included in Appendix A. The test pit logs from these investigations are held on file at Tonkin & Taylor, Nelson.

3.0 Scope of Works

Subdivision design was carried out by Land Solutions Ltd and Staig & Smith Ltd. Tonkin and Taylor Ltd were engaged as geotechnical consultant to prepare and monitor compliance with the Soil Erosion and Sediment Control Plan (SESCP), monitor the bulk earthworks and subsoil drainage construction and provide geotechnical assistance when necessary. T&T were responsible for the following:

- Geotechnical modelling/analysis and design review of the earthworks;
- Establishment of construction practices;
- Establishment of compaction criteria;
- Establishment of test methods and appropriate apparatus for testing;
- Quality control testing of earthworks;
- Earthworks construction monitoring was carried out to level CM4 in the ACENZ/IPENZ document "The Briefing and Engagement of Consultants", July 1997.

KB Quarries Ltd was the contractor for the bulk earthworks.

4.0 Subdivisional Earthworks

The approximate extent of the cuts and fills are shown on the Staig & Smith As-Built Drawing titled Earthworks Iso-Contours (Ref: DWG737AI dated October 2003) included in Appendix B.

Subdivisional earthworks comprised cuts up to 9m below original ground levels and filling up to 12m depth. As can be seen on the appended Earthworks Iso-Contour Plan, a total of 23 Lots have been partially or totally affected by earthworks.

Prior to filling, vegetation and topsoil were stripped, loose surficial soils were undercut and the foundations were benched into competent PHG soil. Works involved filling in the gully to the east of Maire Ridge and cutting and regrading the existing ridge for road construction and to provide more uniform contours for building platforms.

Groundwater seepage encountered during earthworks construction was controlled through the use of subsoil drains and drainage blankets. The drains and blankets comprised 150mm to 300mm Megaflow drains and drainage chip wrapped in Bidim A24 geotextile filter cloth. Subsoil drains were installed at the locations shown on Staig and Smith Drawing titled Subsoil

Drains and Finished Contours (Ref: DWG737AH dated October 2003) included in Appendix B.

4.1 Fill Compaction Criteria

Quality control of the fill compaction was achieved by using the minimum compaction specifications shown in the table below.

Property	Single Test Value	Average of 10 Consecutive Tests
Undrained Shear Strength (cohesive fill)	110 kPa (minimum)	120 kPa
Air Voids	10% (maximum)	8% (maximum)
Scala penetrometer test (granular fill)	5 blows per 100mm between 100mm – 300mm depth (minimum)	n/a

In practise the fill material was predominantly granular (silty sandy gravel) and air voids and Scala test methods were used to monitor fill quality.

Results of the control testing are tabulated and summarised in Appendix C. Where tests indicated a non-compliance with the specification the contractor was instructed to re-roll, dry or add water to the fill as appropriate. Re-tests indicated that reworking had been successful, with complying test results obtained.

4.2 Final Inspection and Confirmatory Testing

An inspection of the completed earthworks was made by T&T on 29 October 2003. A number of minor defects and omissions were noted to complete certification of the earthworks. The developer, Kevin Blair has undertaken to complete the listed works within the maintenance period. The list of outstanding works is included in Appendix F.

Our certification is subject to satisfactory completion of the minor defects and omissions prior to any building development works on any of the lots.

Confirmatory testing has been conducted on each of the potential Building Sites and consisted generally of two or three Scala penetrometer tests on each lot and test pits on selected lots. The test locations are shown on Figure 81069.008-20. 21 and 22 titled 'Site Investigation Plan – Site Certification' in Appendix D. Test results are included in Appendix E.

A final inspection of the lots was made on 5 December 2003.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Recommendations and opinions expressed in this report are based on the preconstruction investigations, earthworks construction observations and testing, and post-construction Scala penetrometer testing and fifteen Test pit excavations as described in Sections 2 to 4 of this report. The nature and continuity of subsurface conditions away from test locations are inferred and it must be appreciated that actual conditions may vary from the assumed model.

5.1 Building Site Stability

We have assessed potential sites on Lots 98 to 123 inclusive (excluding Lots 107 and 119), as shown on Staig & Smith Ltd's 'As-built' plans. We consider that, on each of these Lots, a stable building site exists that is unlikely to be affected by land instability arising from high frequency rainfall or seismic events, provided the recommendations in this report are adhered to.

In terms of suitability for development we have subdivided the lots into three zones, as indicated on Figures 23 to 25.

- NZS 3604 Zone

  Land suitable for building development in which the normal conditions for hillside development apply. Foundation conditions are suitable for design in accordance with NZS 3604:1999.

- Specific Investigation and Design Zone

  Land suitable for building, but requiring specific foundation design. This includes land in the immediate vicinity of cut/fill boundaries, land adjacent to restricted building areas, moderately steep to steep natural and cut ground, and land straddling and adjacent to drainage easements.

- Restricted Building Zones

Certain areas on some lots, have been designated as restricted building areas. This is due to one or more of the following:

- there is surface or subsurface evidence of past instability;
- the natural moderately to steeply inclined slopes have been disturbed by past activities, e.g. track cutting, forestry, pipe laying. In particular, loose surface unengineered fill may be present overlying an inclined;
- the slopes are steep (e.g. ground slopes at greater than 30°);
- the areas are remote from the likely building sites and have not been investigated.

For these reasons we are unable to certify that these areas are unlikely to be affected by land instability, and consequently consider that these areas are not suitable for building.

Further geotechnical investigations will need to be carried out to verify whether certification for building in these areas can be provided. We anticipate that slope instability mitigation measures will need to be carried out to improve stability conditions in these areas. These works should be investigated and designed by a registered engineer practising in geotechnical engineering.

The following table summarises the ground conditions and development recommendations on each of the 24 residential lots in this stage of the subdivision.

Table 1: Ground Conditions and Building Development Conditions			
Lot #	Topography	Subsurface Conditions	Building Development Recommendations
98	Gently to moderately inclined slopes on natural and cut ground.	Natural and Cut ground. Variable depth to good ground[1] (locally deeper than 2m). Buried topsoil on steep slope.	Specific investigation and design for all foundations, cuts and fills on sloping ground. Restricted building area on steeper disturbed ground.
99	Gently to moderately inclined slopes on natural and cut ground.	Natural and Cut ground. Variable depth to good ground[1] (locally deeper than 1.0m).	Specific investigation and design for all foundations, cuts and fills beyond NZS 3604 Area.
100	Gently to moderately inclined slopes on cut ground.	Cut ground. Dense soil at shallow depth.	NZS 3604 on gentle slope. Specific investigation and design for all foundations, cuts and fills on moderately sloping ground.
101	Moderately to steeply inclined slopes on cut and natural ground.	Natural and Cut ground. Variable depth to good ground[1] (locally deeper than 1.5m).	Specific investigation and design for all foundations, cuts and fills. Restricted building area in northern quarter.
102	Moderately to steeply inclined slopes on cut and natural ground.	Natural and Cut ground. Variable depth to good ground[1] (locally deeper than 1.0m).	Specific investigation and design for all foundations, cuts and fills. Restricted area on lower slope.
103	Gently to moderately inclined slopes entirely on cut ground.	Cut ground. Dense soil at shallow depth. Very loose soil locally to >0.5m.	NZS 3604 Min NZS 3604
104	Gently to moderately inclined slopes on cut and natural ground.	Natural and Cut ground. Variable depth to good ground[1] (locally deeper than 1.5m).	Specific investigation and design for all foundations, cuts and fills on moderately steep ground.
105	Moderate to steeply inclined slopes on cut and natural ground. Surface evidence of past instability on did and lower slope.	Natural and Cut ground. Variable depth to good ground [1] (locally deeper than 1.0m).	Build on upper 1/3 of lot. Specific investigation and design for all foundations, cuts and fills. All foundations keyed into competent soils (Port Hills gravel). Design for lateral loads. (Note 2)
106	Moderate to steeply inclined slopes entirely on natural ground.	Natural ground, variable depth to good ground[1] (locally deeper than 1.0m). Soil profile locally disturbed by forestry tracks.	Build on upper 1/3 of lot. Specific investigation and design for all foundations, cuts and fills. All foundations keyed into competent soils (Port Hills gravel). Design for lateral loads. (Note 2)
108	Gentle to moderately inclined slopes on cut and natural ground.	Natural and Cut ground. Dense soil at shallow depth within cut. Variable depth to good ground[1] (locally deeper than 1.0m). Possible thick topsoil.	Generally suitable for NZS 3604 on cut gently sloping ground. Verify depth of topsoil. Restricted area on steeper slope. Build on ridge crest.

Table 1: Ground Conditions and Building Development Conditions			
Lot #	Topography	Subsurface Conditions	Building Development Recommendations
109	Gently to steeply inclined slopes on cut and natural ground. Steeper slopes disturbed by forestry and other works.	Natural and Cut ground. Variable depth to good ground[1] (locally deeper than 1.5m).	Gentle ridge crest suitable for NZS 3604. Specific investigation and design for all foundations, cuts and fills beyond NZS 3604 Area. Beyond 3604 zone, all foundations keyed into competent soils (Port Hills gravel) and design for lateral loads. (Note 2). Build on ridge crest.
110	Gently to steeply inclined slopes on cut and natural ground.	Natural and Cut ground. Variable depth to good ground[1] (locally deeper than 1.5m).	Gentle ridge crest suitable for NZS 3604. Specific investigation and design for all foundations, cuts and fills beyond NZS 3604 Area. Beyond 3604 zone, all foundations keyed into competent soils (Port Hills gravel) and design for lateral loads. (Note 2). Build on ridge crest.
111	Moderately to steeply inclined slopes entirely on natural ground.	Natural ground, variable depth to good ground[1] (locally deeper than 1.5m). Buried thick topsoil in gully.	Specific investigation and design for all foundations, cuts and fills. All foundations keyed into competent soils (Port Hills gravel Restricted building area in western half of Lot.
112	Moderately to steeply inclined slopes on cut and natural ground.	Natural and Cut ground. Variable depth to good ground[1] (locally deeper than 1.0m).	Specific investigation and design for all foundations, cuts and fills. Restricted building area at eastern half of Lot.
113	Gently to steeply inclined slopes on cut and filled ground.	Cut natural ground and Fill. Fill depth varies from 0 to 4m in eastern corner. Dense soil at shallow depth.	NZS 3604 area on ridge crest. Specific investigation and design on natural moderately steep sloping ground. Verify location of, and soil conditions on, cut/fill boundary. Restricted building area at eastern end of Lot.
114	Gently to moderately inclined slopes entirely on filled ground.	Fill, depth varies from 3 to 12m. Dense soil at shallow depth.	Specific investigation and design for all foundations, cuts and fills.
115	Moderately inclined slopes on cut and natural ground.	Natural ground and Fill. Fill depth varies from 0 to 6m. Dense soil at shallow depth in fill areas. Variable depth to good ground [1] (locally deeper than 1.5m) within	Specific investigation and design for all foundations, cuts and fills. Verify location of, and soil conditions on, cut/fill boundary. Restricted building area at eastern end of Lot.

Table 1: Ground Conditions and Building Development Conditions			
Lot #	Topography	Subsurface Conditions	Building Development Recommendations
		Natural areas.	
116	Gently to moderately inclined slopes on cut and filled ground.	Cut ground and Fill. Fill depth varies from 0 to 5m. Dense soil at shallow depth.	Specific investigation and design for all foundations, cuts and fills. Verify location of, and soil conditions on, cut/fill boundary.
117	Gently to moderately inclined slopes on cut and filled ground.	Cut ground and Fill. Fill depth varies from 0 to 7m. Dense soil at shallow depth.	Specific investigation and design for all foundations, cuts and fills beyond NZS3604 Area. Verify location of, and soil conditions on, cut/fill boundary.
118	Moderately inclined slopes on cut and filled ground.	Cut ground and Fill. Fill depth varies from 0 to 4m. Dense soil at shallow depth within cut and fill areas.	Specific investigation and design for all foundations, cuts and fills. Verify location of, and soil conditions on, cut/fill boundary.
120	Moderately to steeply inclined slopes on cut and filled ground.	Cut ground and Fill. Fill depth varies from 0 to 12m. Loose soil locally to >1m depth.	Specific investigation and design for all foundations, cuts and fills. Verify location of, and soil conditions on, cut/fill boundary. Restricted building area at base (east end) of Lot.
121	Moderately to steeply inclined slopes entirely on filled ground.	Fill, depth varies from 0 to 12m. Dense soil at shallow depth.	Specific investigation and design for all foundations, cuts and fills. Restricted building area at base (east end) of Lot.
122	Moderately to steeply inclined slopes on filled and natural ground.	Natural ground and Fill. Fill depth varies from 0 to 8m. Dense soil at shallow depth in fill areas. Variable depth to good ground[1] (locally deeper than 1.5m) within Natural areas.	Specific investigation and design for all foundations, cuts and fills. Verify location of, and soil conditions on, cut/fill boundary. Restricted building area at eastern edge of Lot.
123	Moderately to steeply inclined slopes entirely on natural ground.	Natural ground, variable depth to good ground[1] (locally deeper than 1.0m). Thick loose topsoil in gully.	Specific investigation and design for all foundations, cuts and fills. All foundations keyed into competent soils (Port Hills gravel). Design for lateral loads. (Note 2) Restricted building area at southern half of Lot.

Notes:

1) Good ground as defined in NZ Building Code .
2) Lateral loads should be allowed for to the depth of surface soil / PHG interface.

5.2 Earthfill Certification

The Inspecting Engineer has reviewed elements of design, the construction monitoring records and has periodically inspected the site. He has prepared a fill certificate in accordance with NZS 4431 and this is included as Appendix G.

5.3 Building Site Development Recommendations

The recommended building areas for each lot are shown on Figure 81069.008-23, 24 and 25 titled 'Recommended Building Areas – Site Certification' in Appendix D. Building development conditions are as follows:

1. Buildings shall be within the areas designated as *Generally Suitable for Development in Accordance with NZS 3604* and/or *Specific Investigation and Design Area* as shown on Tonkin & Taylor Drawing Figure 81069.008-23, 24 and 25 titled 'Site Certification - Recommended Building Areas' dated October 2003.

2. No earthworks or buildings other than minor non-habitable structures such as garden sheds or gazebos, shall be undertaken within the area designated *Restricted Building Area* shown on Tonkin & Taylor Drawing Figure 81069.008-23, 24 and 25 titled 'Site Certification - Recommended Building Areas' dated October 2003.

3. Foundations for all buildings shall extend through topsoil, and be founded on "good ground" as defined by the New Zealand Building Code (1995).

4. The NZS 3604 Areas comprise cut and filled ground which is suitable for shallow foundations constructed in accordance with NZS 3604:1999 – *Timber Framed Buildings*. Foundations for all buildings not meeting NZS 3604 and requiring a bearing capacity greater than 300kPa shall be specifically investigated and designed by a registered engineer experienced

in foundation design. Bearing capacity of house foundations straddling cut/fill/natural boundaries shall be verified by a registered engineer experienced in foundations. The approximate extent of cut and fill is shown on S&S Ltd 's drawing entitled "Earthworks Iso-Contours", Ref. 737AI dated 29 October 2003 (Appendix B).

✓ 5. Within the Specific Investigation and Design Area, foundations shall be investigated by a registered engineer practising in geotechnical engineering. Foundations shall be designed and constructed under the supervision of a registered engineer experienced in foundation design and/or geotechnical engineering. Specific attention should be given to verify the presence of cut/fill boundaries where they are shown to be under or in close proximity to buildings. On ground sloping at steeper that 2.5 (horizontal):1 (vertical) design foundations to resist lateral loads imposed by movement of surface soils over PHG. We recommend that all foundations on natural or cut ground be keyed into competent Port Hills Gravel.

✓ 6. Within the Specific Investigation and Design Area all temporary or permanent cuts greater than 0.8m in height shall be specifically investigated by a registered engineer practising in geotechnical engineering or an experienced engineering geologist. No existing slopes inclined steeper than 2.5 (horizontal) to 1 (vertical) shall be steepened by unretained cutting. No unretained cuts are to be undertaken on Lots 105 or 106.

✓ 7. Fill greater than 0.8m thick, and all structural fill, shall meet the requirements of NZS 4431:1989 – *Code of Practice for Earthfill for Residential Development.* No unretained fill shall be placed on or within 3m upslope of ground sloping greater than 3 (horizontal):1 (vertical).

✓ 8. Retaining walls in the Specific Investigation and design area shall be specifically investigated and designed by a registered engineer practising in geotechnical engineering. All walls shall be adequately drained.

9. All stormwater from roofs, hard standing or impermeable areas, retaining wall drainage, surface drains and subsoil drains and from standing water such as swimming pools and ponds, shall be collected and discharged in a controlled manner to the Nelson City Council stormwater system. No earthworks should be undertaken on Lot 111 that will redirect surface runoff from the ROW onto the certified building area.

10. The lots shall be maintained in a vegetation cover that enhances slope stability with emphasis on deep-rooted trees and shrubs.

11. The building site certification relates to the general suitability of the site; it does not remove the need for specific site investigation, design and inspection as required by the Building Code, NZS 3604 1999 and NZS 4431 1989.

6.0 Applicability

This report has been prepared for the benefit of you the client 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.

Please refer any further enquiries or correspondence to Mr Mark Foley of the Tonkin & Taylor Nelson Office.

TONKIN & TAYLOR LTD
Environmental and Engineering Consultants

Report prepared by:

Shamus Wallace/Andrew Linton

Reviewed by Mark Foley

Authorised for Tonkin & Taylor by:

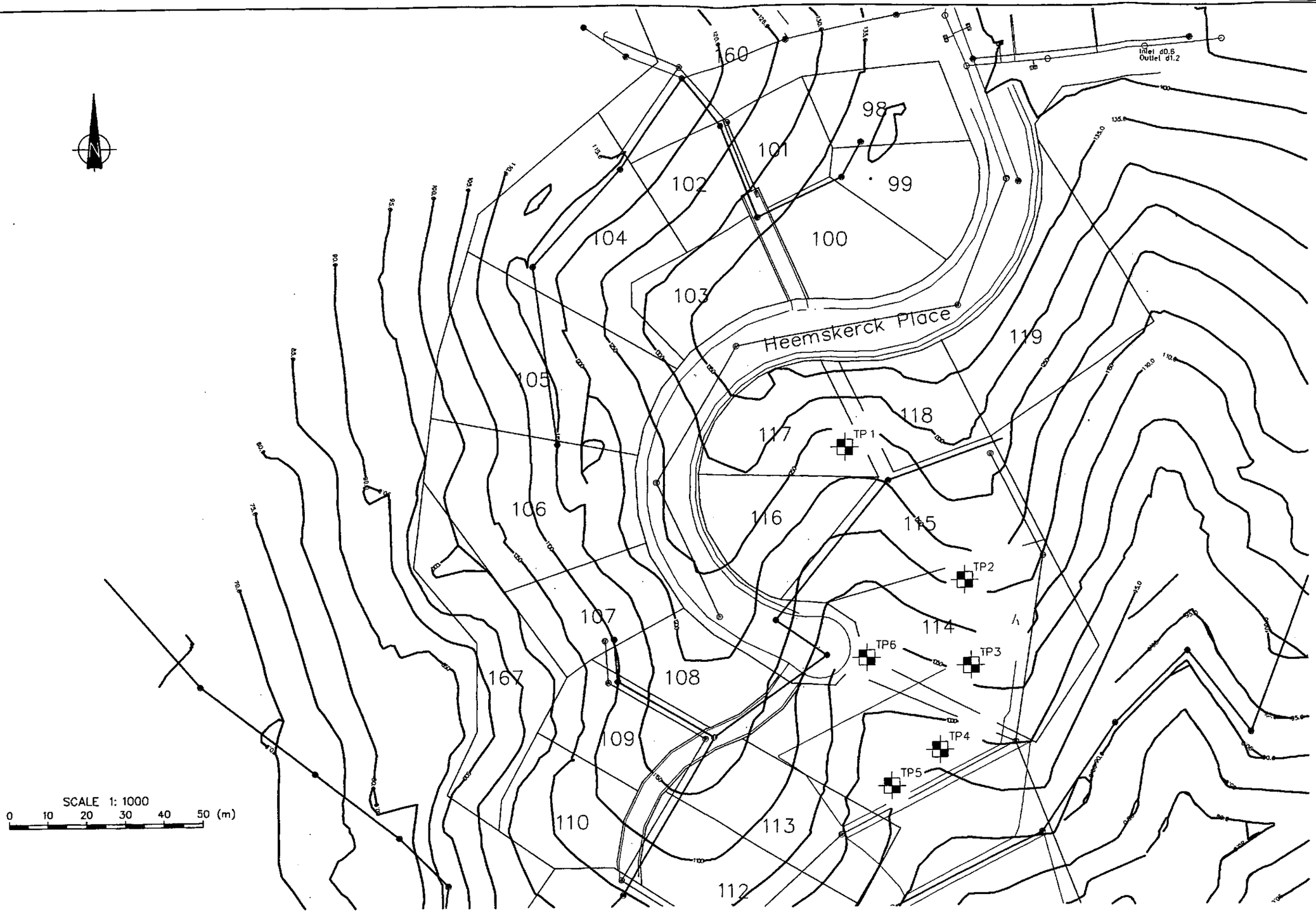
Stuart Palmer (BE)

Registered Engineer, Registration Number 9663

MRF
16 December, 2003
gerpt-220903.doc

APPENDIX A

PRE-CONSTRUCTION INVESTIGATION



Legend

TP1 Tonkin & Taylor Test Pit, October 2002

Base Plan Supplied by Staig & Smith Ltd, Ref. DWG7371A, dated 11.10.02

Tonkin & Taylor
Environmental & Engineering Consultants
Nelson
Auckland Christchurch
Hamilton Wellington Whangarei

DRAWN	AJL
DRAFTING CHECKED	
APPROVED	
CADFILE :	L:\81069.008\PreEwks S
SCALES (AT A3 SIZE)	1: 1000
PROJECT No.	81069.008

KB QUARRIES
MAIRE RIDGE, TASMAN HEIGHTS
Pre-Earthworks Site Investigation

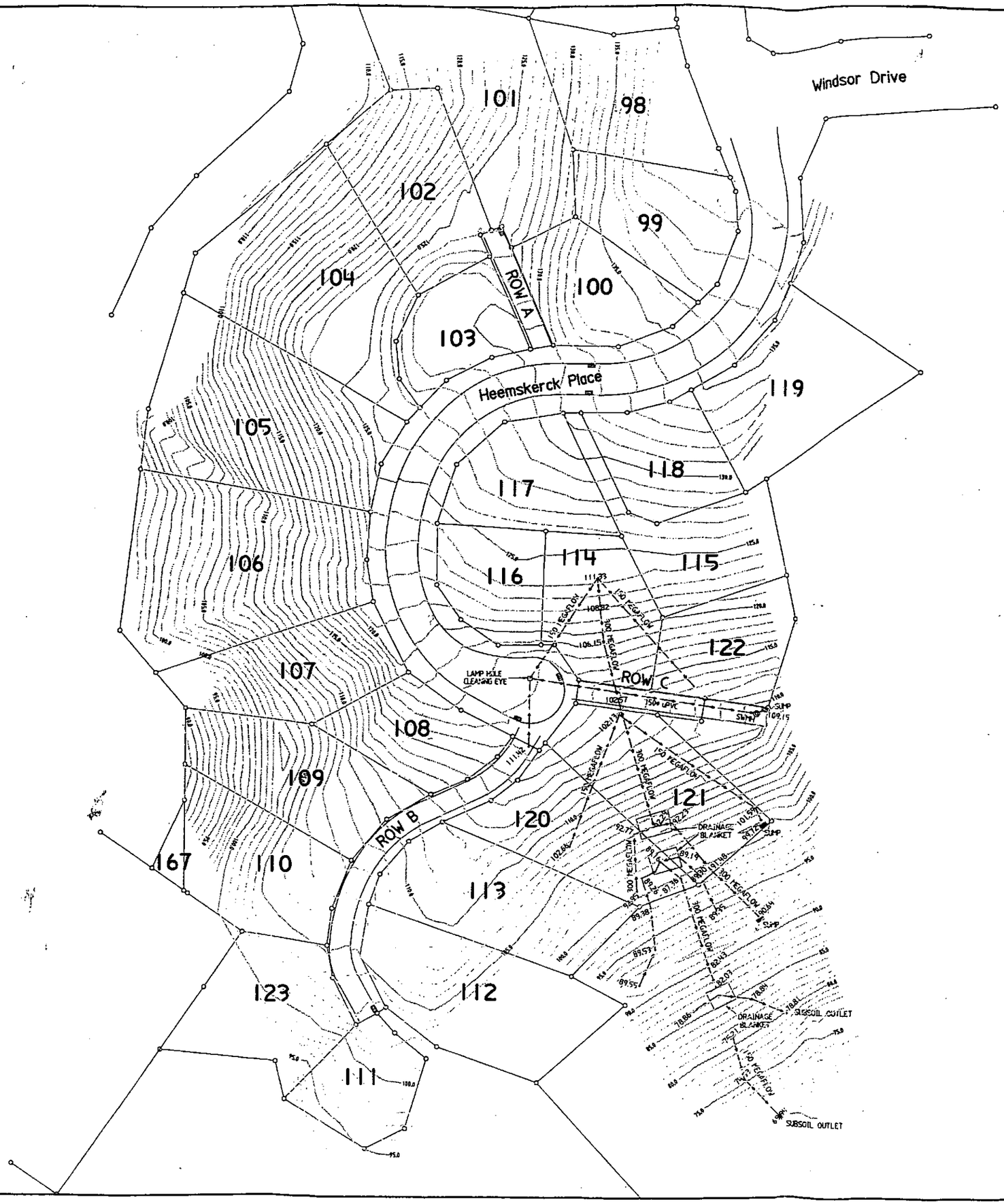
FIG. No. Figure 1 REV. 0

APPENDIX B

SURVEY AS-BUILTS

SUBSOIL DRAINS & FINISHED CONTOURS PLAN DWG737AH
EARTHWORKS ISO-CONTOUR PLAN DWG737AI

(1) VERIFY ALL DIMENSIONS ON SITE.
(2) DO NOT SCALE FROM DRAWING.
(3) THE ASBUILT CONTOURS INCLUDE UP TO 0.3M OF TOPSOIL.



LEGEND

- SUBSOIL DRAIN & DIRECTION OF FLOW
- 6.9% SUBSOIL DRAIN INVERT
- SUMP

No	Amendment	Date

Designed by
NELSON OFFICE
Hotel House
15 Parw Parw Road
PO Box 913 Nelson
Ph 03 548 4422
Fax 03 548 4427
e-mail: enquiries@staigsmith.co.nz

STAIG & SMITH LIMITED
RESOURCE MANAGEMENT
SURVEYING PLANNING ENGINEERING

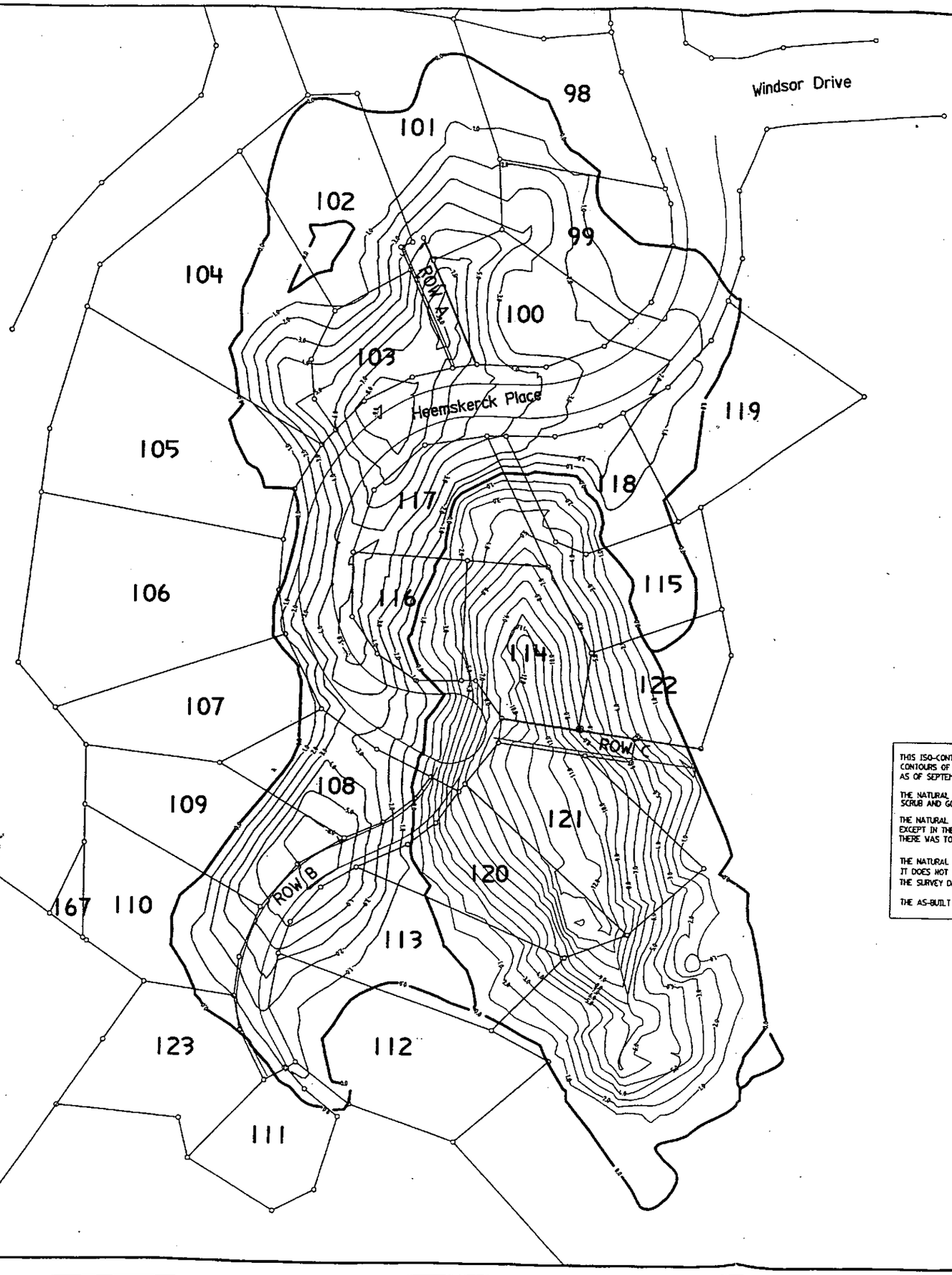
Manager Infrastructural Assets (NCC) ..... Date .....

Design	M. Standish
Drawn	M. Standish
Checked	
Approved	
Date:	29/10/09

Job Title
Tasman Heights Heemskerck Place
NCC RM005140

Drawing Title
Subsoil Drains and Finished Contours

Scale: 1:500 at A1	DWG737AH
Job No: 7371-AB	Sheet 1 of 2



Fill Contours

Cut/Fill 0.0m Contour

Cut Contours

THIS ISO-CONTOUR PLAN HAS BEEN PREPARED BY COMPARING THE NATURAL CONTOURS OF THE SITE AS OF OCTOBER 2002 AND THE ASBUILT CONTOUR PLAN AS OF SEPTEMBER 2003.

THE NATURAL CONTOUR PLAN IS LIMITED IN ACCURACY DUE TO THE EXTENSIVE SCRUB AND GORSE COVER.

THE NATURAL CONTOUR PLAN IS OF THE NATURAL GROUND BEFORE STRIPPING, EXCEPT IN THE FILL AREA WERE THE UNDERCUT SURFACE CONTOURS HAVE BEEN USED. THERE WAS TOPSOIL DEPTH OF UP TO 0.5M IN PARTS OF THE SITE.

THE NATURAL CONTOUR PLAN IS OF THE SITE AT THE DATE MENTIONED ABOVE. IT DOES NOT SHOW THE EXTENT OF ANY EARTHWORKS CARRIED OUT PRIOR TO THE SURVEY DATE.

THE AS-BUILT CONTOURS INCLUDE UP TO 0.3M OF TOPSOIL.

(1) VERIFY ALL DIMENSIONS ON SITE.
(2) DO NOT SCALE FROM DRAWING.

No	Amendment	Date

Designed by:
NELSON OFFICE
Natal House
16 Paru Paru Road
PO Box 913 Nelson
Ph 03 548 4122
Fax 03 548 4127
e-mail: enquiries@staigsmith.co.nz
STAIG & SMITH LIMITED
RESOURCE MANAGEMENT
SURVEYING PLANNING ENGINEERING

Manager Infrastructural Assets (NCC) ..... Date .....

Design:	M. Standish
Drawn:	M. Standish
Checked:	
Approved:	
Date:	13/10/03

Job Title

Tasman Heights
Heemskerck Place
NCC RM005140

Drawing Title

Earthworks
Iso - Contours

Scale: 1:500 at A1	DWG737A1
Job No: 7371-AB	Sheet of

APPENDIX C

FIELD TEST DATA

MAIRE RIDGE - FILL VERIFICATION TEST RESULTS

Test No.	Date	Time	Field operator	Probe depth	Approx. RL (m)	Wet Density	Dry Density	MC %	AV %	Average AV %	Scala Penetrometer Results (blows per depth) 0-100	100-200	200-300	300-400	400-500	500-600	600-700	Result	Comments
1a	22-Jan-03	11am	GJM	300	77	2111.2	1855.2	13.8	6.64		5	10	10	10	10	10			
1b	22-Jan-03	11am	GJM	300	77	2023.8	1763.2	14.8	9.53	8.1								Pass	
2a	22-Jan-03	11am	GJM	300	77	2118	1919.9	10.3	10.08										
2b	22-Jan-03	11am	GJM	300	77	2093.1	1884.1	11.1	10.29	10.2								Fail	Airvoids too high
3a	22-Jan-03	2pm	MRF	300	77	2224.3	2011.9	10.6	5.28		6	7	8	9	9				
3b	22-Jan-03	2pm	MRF	200	77	2161.6	1943	11.2	7.8	6.5								Pass	Retest
4a	23-Jan-03	9am	GJM	300	78	2191.9	1920.6	14.1	2.71		2	4	4	8	11	6	4		Instructed Contractor to put more compactive effort
4b	23-Jan-03	9am	GJM	300	78	2103.6	1862.5	12.9	7.86	5.3								Pass	into Top layer
5a	27-Jan-03	12:45pm	JLH	300	79	2153.8	1921	12.1	6.56		8	10	8	8					
5b	27-Jan-03	12:45pm	JLH	300	79	2105.7	1870.8	12.5	8.19	7.4								Pass	
6a	27-Jan-03	12:45pm	JLH	300	79	2218.9	1974.6	12.4	3.45		6	4	6	4	4				
6b	27-Jan-03	12:45pm	JLH	300	79	2137	1882.3	13.5	5.77	4.6								Fail	Instructed Contractor to rework top 200mm
7a	28-Jan-03	2:30pm	GJM	300	79.5	2032.4	1812.1	12.2	11.78		2	4	5	3	2	3	2		
7b	28-Jan-03	2:30pm	GJM	300	79.5	2029.6	1797.7	12.9	11.14	11.5								Fail	Instructed Contractor to undercut 600-700mm
8a	28-Jan-03	2:30pm	GJM	300	79.5	2174.6	1966.5	11.6	5.7		3	4	2	4	3	8	5		
8b	28-Jan-03	2:30pm	GJM	300	79.5	2221.5	1987.1	11.8	3.99	4.8								Fail	Instructed Contractor to undercut 600-700mm
9a	29-Jan-03	11am	GJM	300	79.5	2183	1936	12.9	4.39		7	9	6	6	4	10	10		
9b	29-Jan-03	11am	GJM	300	79.5	2224.5	1971.1	12.8	2.66	3.5								Pass	Retest test 7 and test 8
10a	29-Jan-03	11am	GJM	300	79.5	2153	1928	11.7	7.08		8	7	6	7	4	8	10		
10b	29-Jan-03	11am	GJM	300	79.5	2191.3	1964.8	11.5	5.59	6.3								Pass	Retest test 7 and test 8
11a	30-Jan-03	9.30am	JLH	300	81	2147	1929.9	11.2	7.81		7	7	17						
11b	30-Jan-03	9.30am	JLH	300	81	2156.5	1940	11.2	7.5	7.7								Pass	
12a	30-Jan-03	9.30am	JLH	300	81	2093.5	1886.7	11	10.41		7	18	15						
12b	30-Jan-03	9.30am	JLH	300	81	2117.2	1934	9.5	11.05	10.7								Fail	Air voids too high
13a	30-Jan-03	4pm	GJM	300	81.5	2149	1938	10.9	8.13		12	15	14	18					
13b	30-Jan-03	4pm	GJM	300	81.5	2188.3	1976.3	10.7	6.62	7.4								Pass	
14a	30-Jan-03	4pm	GJM	300	81.5	2010.7	2186.1	8.7	9.04		10	14	12	10	11	14			
14b	30-Jan-03	4pm	GJM	300	81.5	2217.5	2039.2	8.7	7.71	8.4								Pass	Retest of test 12
15a	31-Jan-03	3.30pm	GJM	300	82	1922	2147.4	11.7	7.26		11	14	18						
15b	31-Jan-03	3.30pm	GJM	300	82	2136	1900.1	12.4	7.01	7.1								Pass	
16a	31-Jan-03	3.30pm	GJM	300	82	2136.4	1908.7	11.9	7.52		8	11	10	18					
16b	31-Jan-03	3.30pm	GJM	300	82	2092.7	1851.9	13	8.21	7.9								Pass	
17a	1-Feb-03	11am	GJM	300	82.5	2213.4	1990.6	11.2	8.02		12	11	13	12					
17b	1-Feb-03	11am	GJM	300	82.5	2163.6	1930.4	12.1	6.18	7.1								Pass	
18a	1-Feb-03	11am	GJM	300	82.5	2127.5	1935.1	9.9	10.1		8	7	13	11					
18b	1-Feb-03	11am	GJM	300	82.5	2110.4	1928.7	9.4	11.4	10.8								Fail	Instructed to put more water onto fill
19a	4-Feb-03	11.30am	GJM	300	83	2218.6	1961.4	13.1	2.7		5	6	8	9	11				
19b	4-Feb-03	11.30am	GJM	300	83	2225.5	1963.5	13.3	2	2.4								Pass	
20a	4-Feb-03	11.30am	GJM	300	83	2199.6	1979.5	13.1	5.7		6	6	6	4	5	11			
20b	4-Feb-03	11.30am	GJM	300	83	2179.3	1952.5	11.6	6.01	5.9								Pass	
21a	5-Feb-03	11.30am	GJM	300	83.5	2158.2	1940.4	11.2	7.36		5	8	9	6	5	5	12		
21b	5-Feb-03	11.30am	GJM	300	83.5	2142.4	1919.2	11.6	7.59	7.5								Pass	Instructed to be carefull with wetter fill.
22a	5-Feb-03	11.30am	GJM	300	83.5	2103.2	1845.3	14	6.81		6	6	7	8	12				
22b	5-Feb-03	11.30am	GJM	300	83.5	2142.8	1901.2	12.7	6.41	6.6								Pass	
23a	6-Feb-03	9am	GJM	300	85	2201.5	1951.5	12.8	3.72		7	7	10	7	6	6			
23b	6-Feb-03	9am	GJM	300	85	2127.1	1853.9	14.7	4.96	4.3								Pass	
24a	6-Feb-03	9am	GJM	300	85	2177.9	1953.4	11.5	6.2		10	9	7	9	6	9			
24b	6-Feb-03	9am	GJM	300	85	2190.2	1961.2	11.7	5.48	5.8								Pass	
25a	7-Feb-03	9am	GJM	300	86	2224.2	2005.7	10.9	4.91		7	9	17	12	10				
25b	7-Feb-03	9am	GJM	300	86	2196.4	1983.4	10.7	6.27	5.6								Pass	
26a	7-Feb-03	9am	GJM	300	86	2218.7	1925.4	12.3	3.52		7	10	12	15					
26b	7-Feb-03	9am	GJM	300	86	2197.0	1955.6	12.3	4.44	4.0								Pass	

Test No.	Date	Time	Field operator	Probe depth	Approx. RL (m)	Wet Density	Dry Density	MC %	AV %	Average AV %	Scala Penetrometer Results (blows per depth)							Result	Comments
											0-100	100-200	200-300	300-400	400-500	500-600	600-700		
27a	10-Feb-03	11am	MRF	300	90	2174.4	2011.5	7.9	10.57										
27b	10-Feb-03	11am	MRF	300	90	2110.0	1943.0	8.6	12.3	11.4								Fail	Contractor to dig out 3m x 10m and work in with wetter material
28a	10-Feb-03	11am	MRF	300	90	2257.3	2054.9	9.8	4.71		10	21	21	20	12	30			
28b	10-Feb-03	11am	MRF	300	90	2191.9	1976.6	10.7	6.47	5.6								Pass	
29a	10-Feb-03	11am	MRF	300	90	2285.0	2084.0	9.6	3.79		13	19	20						
29b	10-Feb-03	11am	MRF	300	90	2246.6	2042.4	10.2	4.99	4.4								Pass	
30a	12-Feb-03	9.45am	ACDP	300	88.5	2246.5	1953.7	15	-0.65		5	3	3	3	8	10			
30b	12-Feb-03	9.45am	ACDP	300	88.5	2198.0	1913.3	14.9	1.64	0.5	2	2	2	4	12	12		Fail	Contractor instructed to strip top 400mm and mix in some drier material. Retest in afternoon
31a	12-Feb-03	9.45am	ACDP	300	88.5	2224.2	1946.4	14.3	1.12		4	5	6	6	6	6			
31b	12-Feb-03	9.45am	ACDP	300	88.5	2268.1	2001.6	13.3	0.24	0.7	2	3	3	4	5	6		Fail	Contractor instructed to strip top 400mm and mix in some drier material. Retest in afternoon
32a	12-Feb-03	4.30pm	GJM	300	88.5	2241.4	1992.3	12.5	2.32		7	8	7	15	9	7	7		
32b	12-Feb-03	4.30pm	GJM	300	88.5	2249.0	1903.3	12.8	1.62	2.0								Pass	Retest test 30
33a	12-Feb-03	4.30pm	GJM	300	88.5	2156.4	1894.4	13.8	4.6		9	10	8	9					
33b	12-Feb-03	4.30pm	GJM	300	88.5	2140.9	1882.6	13.7	5.4	5.0								Pass	Retest test 31
34a	13-Feb-03	2pm	GJM	300	89	2301.2	2077.9	10.7	1.78		8	7	9	8	10	9	6		
34b	13-Feb-03	2pm	GJM	300	89	2308.8	2086.4	10.7	1.56	1.7								Pass	
35a	14-Feb-03	9am	GJM	300	90	2084.8	1846.9	12.9	8.75		9	7	6	3	3	9			
35b	14-Feb-03	9am	GJM	300	90	2132.8	1884.6	13.2	6.34	7.5								Fail	Re-work top 0.5m
36a	14-Feb-03	9am	GJM	300	90	2150.7	1916.4	12.2	6.58		9	10	6	4	4	6			
36b	14-Feb-03	9am	GJM	300	90	2108.6	1868.9	12.8	7.77	7.2								Fail	Re-work top 0.5m
37a	17-Feb-03	12noon	GJM	300	89.5	2214.5	1979.5	11.9	4.21		11	10	13	9	10				
37b	17-Feb-03	12noon	GJM	300	89.5	2186.6	1962.8	11.4	5.94	5.1								Pass	
38a	19-Feb-03	11am	GJM	300	90.5	2271.4	2065.8	9.9	4.0		12	17	22	20	20+				
38b	19-Feb-03	11am	GJM	300	90.5	2256.9	2067.1	9.4	5.22	4.6								Pass	
39a	19-Feb-03	11am	GJM	300	90	2499.5	1959.1	12.3	4.4		16	11	10	8	9	5			
39b	19-Feb-03	11am	GJM	300	90	2169.1	1939.1	11.9	6.12	5.3								Pass	Retest tests 35 and 36
40a	19-Feb-03	11am	GJM	300	90.5	2242.5	2046.0	9.6	5.64		6	11	16	17	20				
40b	19-Feb-03	11am	GJM	300	90.5	2215.3	2026.7	9.3	7.13	6.4								Pass	
41a	19-Feb-03	11am	GJM	300	90.5	2261.5	2059.9	9.8	4.6		7	10	14	29	20				
41b	19-Feb-03	11am	GJM	300	90.5	2208.3	1994.8	10.7	5.8	5.2								Pass	
42a	20-Feb-03	12noon	GJM	300	91	2279.6	2071.4	10	3.53		13	13	20	20					
42b	20-Feb-03	12noon	GJM	300	91	2289	2085.1	9.8	3.46	3.5								Pass	
43a	20-Feb-03	12noon	GJM	300	91	2207.1	2035.7	8.4	8.53		15	13							
43b	20-Feb-03	12noon	GJM	300	91	2247.3	2067.9	8.7	6.55	7.5								Pass	
44a	21-Feb-03	8.30am	GJM	300	91.5	2268.1	2081.1	9	5.3		10	12	17	15	10				
44b	21-Feb-03	8.30am	GJM	300	91.5	2262.5	2091.1	8.2	6.5	5.9								Pass	
45a	25-Feb-03	9.00am	GJM	300	92.5	2150.5	1931	11.4	7.52		5	7	6	8	7	7	7		
45b	25-Feb-03	9.00am	GJM	300	92.5	2169.6	1951.2	11.2	6.9	7.2								Pass	
46a	25-Feb-03	9.00am	GJM	300	92.5	2258.7	2031.1	11.2	3.06		5	8	8	5	5	8			
46b	25-Feb-03	9.00am	GJM	300	92.5	2241.6	2011.8	11.4	3.55	3.3								Pass	
47a	5-Mar-03	11.00am	GJM	300	94	2130.1	1949.8	9.2	10.7										
47b	5-Mar-03	11.00am	GJM	300	94	2112.5	1939.7	8.9	11.89	11.3								Fail	Air voids too high - Rework top 0.5m
48a	5-Mar-03	11.00am	GJM	300	94	1999.3	2157.4	7.9	11.19										
48b	5-Mar-03	11.00am	GJM	300	94	1999.3	2157.4	7.9	11.19	11.2								Fail	Air voids too high - Rework top 0.5m
49a	5-Mar-03	4.00pm	GJM	300	94	2143.4	1925.5	11.3	7.89		8	10	10	10	8	6	10		
49b	5-Mar-03	4.00pm	GJM	300	94	2131.2	1932.6	10.3	9.16	8.5								Pass	Retest test 47
50a	5-Mar-03	4.00pm	GJM	300	94	2203	2039.1	10.3	4.55		14	14	13	12	10				
50b	5-Mar-03	4.00pm	GJM	300	94	2203	2039.1	10.3	4.55	4.6								Pass	Retest test 48
51a	7-Mar-03	3.00pm	GJM	300	95	2151.8	1911.3	12.6	6.14		9	10	11	10	7	8			
51b	7-Mar-03	3.00pm	GJM	300	95	2151.8	1991.3	12.6	6.14	6.1								Pass	
52a	7-Mar-03	3.00pm	GJM	300	95	2049.1	2236.9	9.2	6.4		9	10	9	10	11				
52b	7-Mar-03	3.00pm	GJM	300	95	2235.2	2077	10.3	5.16	5.8								Pass	
53a	10-Mar-03	12.00pm	GJM	300	96	2220.3	1995.8	11.2	4.66		10	8	6	10	12				
53b	10-Mar-03	12.00pm	GJM	300	96	2215.5	1965.7	12.7	3.22	3.9								Pass	

Test No.	Date	Time	Field operator	Probe depth	Approx. RL (m)	Wet Density	Dry Density	MC %	AV %	Average AV %	Scala Penetrometer Results (blows per depth)							Result	Comments
											0-100	100-200	200-300	300-400	400-500	500-600	600-700		
54a	10-Mar-03	12.00pm	GJM	300	96	2244.8	2007.9	11.8	2.98	2.5	10	8	8	12	10			Pass	
54b	10-Mar-03	12.00pm	GJM	300	96	2262.3	2019.6	12	1.96										
55a	12-Mar-03	12.00pm	GJM	300	96.5	2297.4	2123.4	8.2	5.04	5.0	15	30	18					Pass	
55b	12-Mar-03	12.00pm	GJM	300	96.5	2287.5	2105.1	8.7	4.89										
56a	12-Mar-03	12.00pm	GJM	300	96.5	2247	2058.7	9.1	6	4.9	8	16	12	15	13			Pass	
56b	12-Mar-03	12.00pm	GJM	300	96.5	2323.5	2143.5	8.4	3.72										
57a	13-Mar-03	2.30pm	GJM	300	97.5	2265.9	2065.7	9.7	4.55	4.6	13	19	18	15				Pass	
57b	13-Mar-03	2.30pm	GJM	300	97.5	2269.5	2065.7	9.7	4.55										
58a	13-Mar-03	2.30pm	GJM	300	97.5	2245.8	2061.4	8.9	6.28	6.0	13	16	12	16				Pass	
58b	13-Mar-03	2.30pm	GJM	300	97.5	2281.5	2108.9	8.2	5.74										
59a	14-Mar-03	3.40pm	GJM	300	98.5	2281.2	2118.7	7.7	6.4	7.2	12	13	15					Pass	
59b	14-Mar-03	3.40pm	GJM	300	98.5	2231.5	2067.1	8	8.07										
60a	14-Mar-03	3.40pm	GJM	300	98.5	2276.6	2228	6.7	3.79	3.5	12	14	18					Pass	
60b	14-Mar-03	3.40pm	GJM	300	98.5	2409.7	2270.3	6.1	3.17										
61a	14-Mar-03	3.40pm	GJM	300	98.5	2194.5	1993.3	10.1	7.08	8.1	10	9	8	12	20			Pass	
61b	14-Mar-03	3.40pm	GJM	300	98.5	2161.9	1972.8	9.6	9.05										
62a	17-Mar-03	12.00pm	GJM	300	99.5	2282.4	2129.5	7.2	6.96	7.1	10	8	9	12	10			Pass	
62b	17-Mar-03	12.00pm	GJM	300	99.5	2268	2111.5	7.4	7.25										
63a	19-Mar-03	4.00pm	GJM	300	100.5	2328.8	2145.7	8.5	3.34	4.0	10	12	20					Pass	
63b	19-Mar-03	4.00pm	GJM	300	100.5	2272.7	2077.9	9.4	4.64										
64a	19-Mar-03	4.00pm	GJM	300	100.5	2233.6	2068	8	7.93	8.0	12	13	16	21				Pass	
64b	19-Mar-03	4.00pm	GJM	300	100.5	2210.5	2033.3	8.7	8.03										
65a	21-Mar-03	3.00pm	GJM	300	102.5	2206.4	2047.8	7.7	9.37	8.9	8	12	12					Fail	No remedial works to be done - water content to be increased.
65b	21-Mar-03	3.00pm	GJM	300	102.5	2214	2046.1	8.2	8.5										
66a	21-Mar-03	3.00pm	GJM	300	102.5	2281.4	2109.4	8.1	5.77	5.4	8	10	9	12	10			Pass	
66b	21-Mar-03	3.00pm	GJM	300	102.5	2319.4	2157.3	7.5	5.03										
67a	25-Mar-03	1.30pm	GJM	300	104	2251.6	2122.5	6.1	9.6	9.6								Fail	Pad to be wet and rerolled - test 69 showed that falled fill only extends 300mm deep.
67b	25-Mar-03	1.30pm	GJM	300	104	2195.9	2033.5	8	9.5										
68a	25-Mar-03	1.30pm	GJM	300	104	2229.4	2027.2	10	5.75	5.6	10	12	17					Pass	
68b	25-Mar-03	1.30pm	GJM	300	104	2266.7	2079.9	9	5.37										
69a	25-Mar-03	1.30pm	GJM	300	103.7	2318.4	2127.8	9	3.19	3.9	12	14	20					Pass	
69b	25-Mar-03	1.30pm	GJM	300	103.7	2264.3	2063	9.7	4.54										
70a	26_Mar_03	11.00am	GJM	300	105	2312.2	2108.5	9.7	2.63	2.4	4	6	11	14				Pass	
70b	26_Mar_04	11.00am	GJM	300	105	2308.7	2096	10.1	2.18										
71a	26_Mar_05	11.00am	GJM	300	105	2191.5	1987.7	10.2	7.03	3.9	6	4	11	7	4	6	14	Pass	
71b	26_Mar_06	11.00am	GJM	300	105	2344.1	2130	10.2	0.81										
72a	28-Mar-03	2.00pm	GJM	300	105.5	2149.5	1928.2	11.5	7.45	7.4	6	6	4	3	5	7	8	Pass	Soft layer at 200-300mm depth.
72b	28-Mar-03	2.00pm	GJM	300	105.5	2155.8	1936	11.3	7.31										
73a	28-Mar-03	2.00pm	GJM	300	105.5	2209.8	2033.9	8.6	8.14	8.7	7	10	11	8	5	10		Pass	
73b	28-Mar-03	2.00pm	GJM	300	105.5	2178.4	2001.9	8.8	9.25										
74a	1-Apr-03	11.00am	GJM	300	105.5	2359	2089.3	12.9	3.29	0.6	8	20	20					Pass	Rain for past 4 days. 0.3 of Pad has been reworked.
74b	1-Apr-03	11.00am	GJM	300	105.5	2280.6	1986	14.8	-2.01										
75a	1-Apr-03	11.00am	GJM	300	105.5	2323	2075.3	11.9	-0.56	-1.2	6	14	15	15				Pass	
75b	1-Apr-03	11.00am	GJM	300	105.5	2353.4	2102.4	11.9	-1.88										
76a	2-Apr-03	2.45pm	SCWW	300	106.5	2191.3	1936.9	13.1	3.82	4.9	7	11	14	8	10	10		Pass	
76b	2-Apr-03	2.45pm	SCWW	300	106.5	2120.5	1858.8	14.1	5.93										
77a	2-Apr-03	2.45pm	SCWW	300	106.5	2071	1796.8	15.3	6.95	5.6	4	6	4	8	11			Pass	
77b	2-Apr-03	2.45pm	SCWW	300	106.5	2158.2	1892.7	14	4.31										
78a	3-Apr-03	1.30pm	SCWW	300	107.5	2111.1	1836.1	15	5.43	5.8	3.5	1.5	4	9				Fail	Soft zone 150 - 300 mm deep. Water dec and re working required
78b	3-Apr-03	1.30pm	SCWW	300	107.5	2117.1	1856.4	13.9	6.25		4	7	6	8	20				
79a	3-Apr-03	1.30pm	SCWW	300	107.5	2175.7	1936.9	12.3	5.38	6.0	3	2.5	3	6	6			Fail	Soft zone 150 - 300 mm deep. Water dec and re working required
79b	3-Apr-03	1.30pm	SCWW	300	107.5	2131.1	1887.4	12.9	6.69		8	8	5	7	11	6			
80a	4-Apr-03	12.30pm	SCWW	300	108	2090.7	1859.2	12.4	8.94	7.8	[illegible]							Pass	INCOMPLETE - Scala Broke
80b	4-Apr-03	12.30pm	SCWW	300	108	2133.8	1892.6	12.7	6.75		[illegible]								

Test No.	Date	Time	Field operator	Probe depth	Approx. RL (m)	Wet Density	Dry Density	MC %	AV %	Average AV %	Scala Penetrometer Results (blows per depth)							Result	Comments
											0-100	100-200	200-300	300-400	400-500	500-600	600-700		
81a	4-Apr-03	12.30pm	SCWW	300	108	2127	1884.3	12.9	6.91	7.4								Pass	INCOMPLETE - Scala Broke
81b	4-Apr-03	12.30pm	SCWW	300	108	2123.5	1893.6	12.1	7.86		12	10	15					Pass	
82a	9-Apr-03	9.30am	SCWW	300	108.5	2220.3	2022.3	9.6	6.34	6.4								Pass	
82b	9-Apr-03	9.30am	SCWW	300	108.5	2181.3	1963.2	11.1	6.5		14	15	11	14				Pass	
83a	9-Apr-03	9.30am	SCWW	300	108.5	2192.4	1985.8	10.4	6.82	5.6								Pass	
83b	9-Apr-03	9.30am	SCWW	300	108.5	2244.1	2027.4	10.7	4.29		19	19	12	16				Pass	
84a	10-Apr-03	2.30pm	SCWW	300	109	2365.3	2217.8	6.6	4.27	4.1								Pass	
84b	10-Apr-03	2.30pm	SCWW	300	109	2364.5	2212.2	6.9	3.99		20	19	21	20+				Pass	
85a	10-Apr-03	2.30pm	SCWW	300	109	2290	2087.7	9.8	3.42	3.7								Pass	
85b	10-Apr-03	2.30pm	SCWW	300	109	2272.6	2066	10	3.9		6	8	20					Pass	
86a	14-Apr-03	1.30pm	SCWW	300	110	2120.1	1856.7	14.2	5.84	5.6								Pass	
86b	14-Apr-03	1.30pm	SCWW	300	110	2143.7	1886.4	13.6	5.36		11	23	21	24				Fail	Ripping up 400 mm and reworking - adding water to this
87a	14-Apr-03	1.30pm	SCWW	300	110	2176.2	2064.5	5.4	13.46	11.9									
87b	14-Apr-03	1.30pm	SCWW	300	110	2256.5	2143.1	5.3	10.42		14	35	24					Fail	Ripping up failed area and reworking
88a	15-Apr-03	1.30pm	SCWW	300	111	2201.4	2056.7	7	10.43	9.2									
88b	15-Apr-03	1.30pm	SCWW	300	111	2234.3	2070.2	7.9	8		22	25						Pass	
89a	15-Apr-03	1.30pm	SCWW	300	111	2356.4	2181	8	2.82	3.8									
89b	15-Apr-03	1.30pm	SCWW	300	111	2302.4	2128.1	8.2	4.86									Pass	
90a	15-Apr-03	3.30pm	SCWW	300	111	2146.2	1941.2	10.6	8.62	7.8									
90b	15-Apr-03	3.30pm	SCWW	300	111	2177.8	1965	10.8	6.95									Pass	Retest test 87 and 88
91a	16-Apr-03	12.00pm	SCWW	300	112	2263.9	2109	7.3	7.5	8.3	9	10	13	14					
91b	16-Apr-03	12.00pm	SCWW	300	112	2225.4	2074	7.3	9.13		11	14	10					Pass	
92a	22-Apr-03	3.00pm	GJM	300	113	2278.6	2119.7	7.5	5.57	6.3	10	15	15						
92b	22-Apr-03	3.00pm	GJM	300	113	2236.8	2076.8	7.7	7.05									Pass	
93a	22-Apr-03	3.00pm	GJM	300	113	2134.8	1932.5	10.5	8.15	8.5	6	13	13						
93b	22-Apr-03	3.00pm	GJM	300	113	2124.8	1927	10.3	8.81									Pass	
94a	28-Apr-03	12.30pm	DGS	300	116	2072.9	1909.1	8.6	12.88	13.3	16	11	8	16	33				
94b	28-Apr-03	12.30pm	DGS	300	116	2040.1	1869.3	9.1	13.65									Fail	Air voids too high - water added and recompacted
95a	28-Apr-03	12.30pm	DGS	300	116	2226.3	2007.5	10.9	3.72	3.7	15	19	15	13	10	18			
95b	28-Apr-03	12.30pm	DGS	300	116	2251	2045	10.1	3.61		14	20						Pass	
96a	28-Apr-03	12.30pm	DGS	300	116	2138.1	1934.5	10.5	7.95	8.0	10	10	7	8	20				
96b	28-Apr-03	12.30pm	DGS	300	116	2145.8	1945.5	10.3	7.97									Pass	
97a	28-Apr-03	12.30pm	DGS	300	116	2042.5	1882	8.5	14.21	11.9	8	9	20						
97b	28-Apr-03	12.30pm	DGS	300	116	2135	1956.1	9.1	9.62									Fail	Air voids too high
98a	28-Apr-03	1.30pm	DGS	300	116	2080.7	1797	15.8	5	4.2	10	10	11	20					
98b	28-Apr-03	1.30pm	DGS	300	116	2139.8	1865	14.7	3.42									Pass	
99a	28-Apr-03	1.30pm	DGS	300	116	2085	1888	10.4	10.39	9.2									
99b	28-Apr-03	1.30pm	DGS	300	116	2156	1965	9.7	8.08									Fail	Air voids too high
100a	28-Apr-03	1.45pm	DGS	300	116	2223	2058	8	7.2	7.8									
100b	28-Apr-03	1.45pm	DGS	300	116	2192	2026	8.1	8.38									Pass	Retest of Test 97; 1st %AV in 100b = 9.09; Rip up 300-400mm add water and roll again.
101a	28-Apr-03	4.30pm	DGS	300	116	2108.6	1913.2	10.2	9.56	9.6									
101b	28-Apr-03	4.30pm	DGS	300	116													Fail	Previous layer stripped reworked & water added. Additional 100mm added. Test of top layer.
102a	28-Apr-03	4.30pm	DGS	300	116	2168.1	1890.3	14.7	3.7	3.7	8	9	35						
102b	28-Apr-03	4.30pm	DGS	300	116	2133.6	1860.2	14.7	3.7									Pass	Retest of Tests 94-100
103a	28-Apr-03	4.30pm	DGS	300	116	2121.4	1862.3	13.9	5.06	5.3	14	10	6	5	24				
103b	28-Apr-03	4.30pm	DGS	300	116	2109.3	1851.3	13.9	5.58		9	8	12	7	20			Pass	
104a	29-Apr-03	5.30pm	DGS	300	117	2153.9	1889.6	14	3.53	5.4	12	9	9	6	10				
104b	29-Apr-03	5.30pm	DGS	300	117	2081.5	1833.8	13.5	7.26									Pass	
105a	5-May-03	3.30pm	SCWW	300	119	2220.7	2108.8	5.3	10.68	10.8	18	24							
105b	5-May-03	3.30pm	SCWW	300	119	2223.6	2118.4	5	11									Pass	
106a	5-May-03	3.30pm	SCWW	300	119	2373	2239	6	3.65	3.4	16	20+							
106b	5-May-03	3.30pm	SCWW	300	119	2357.6	2207.7	6.8	3.21									Pass	
107a	5-May-03	3.30pm	SCWW	300	119	2203.3	2066.6	6.6	9.76	8.1									
107b	5-May-03	3.30pm	SCWW	300	119	2315.2	2190.6	5.7	6.38									Pass	
108a	6-May-03	10.30am	SCWW	300	119	2115	1951	8.4	11.31	10.8	10	13	12	16					
108b	6-May-03	10.30am	SCWW	300	119	2160.5	2007.6	7.6	10.34									Fail	

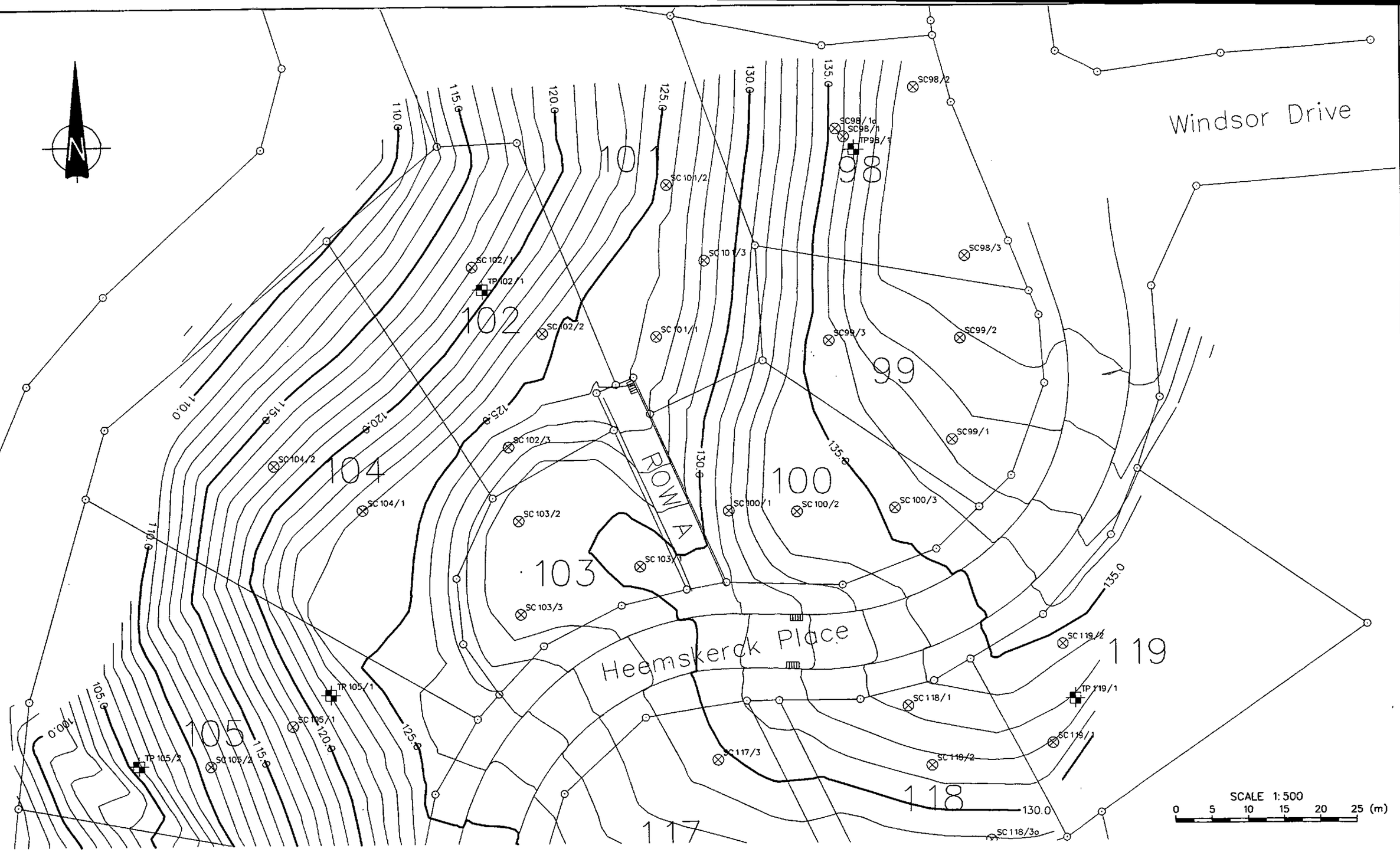
Test No.	Date	Time	Field operator	Probe depth	Approx. RL (m)	Wet Density	Dry Density	MC %	AV %	Average AV %	Scala Penetrometer Results (blows per depth)							Result	Comments
											0-100	100-200	200-300	300-400	400-500	500-600	600-700		
109a	6-May-03	10.30am	SCWW	300	119	2282.9	2065.6	10.5	1.72	1.3	15	20+						Pass	
109b	6-May-03	10.30am	SCWW	300	119	2307.4	2089.5	10.4	0.78										
110a	6-May-03	10.30am	SCWW	300	119	1977.8	1834.4	7.8	17.68	9.5								Pass	
110b	6-May-03	10.30am	SCWW	300	119	2308.2	2114.2	9.6	1.25										
111a	8-May-03	1.30pm	SCWW	300	122.5	2300.7	2074.2	11.4	0.43	1.2	9	12	7	9				Pass	Retest of test 108
111b	8-May-03	1.30pm	SCWW	300	122.5	2224.4	1977.6	12.5	2.03										
112a	8-May-03	1.30pm	SCWW	300	122.5	2258.9	2106.7	7.1	6.85	8.1	20	20+						Pass	
112b	8-May-03	1.30pm	SCWW	300	122.5	2109	2038.3	7.4	9.3										
113a	12-May-03	11.30	SCWW	300	123	2082.6	1731.2	20.3	0.67	0.4	6	7	7	14				Pass	
113b	12-May-03	11.30	SCWW	300	123	2094	1740.7	20.3	0.12										
114a	12-May-03	11.30	SCWW	300	123	2261.4	2033.4	11.2	1.87	3.0	9	8	12					Pass	
114b	12-May-03	11.30	SCWW	300	123	2203.4	1976.8	11.5	4.07										
115a	13-May-03	11.30	SCWW	300	123.5	2346	2198	6.7	3.76	5.6	10	24+						Pass	
115b	13-May-03	11.30	SCWW	300	123.5	2226.5	2065.5	7.8	7.37										
116a	13-May-03	11.30	SCWW	300	123.5	2314.4	2168.5	6.7	5.06	6.2	17+							Pass	
116b	13-May-03	11.30	SCWW	300	123.5	2233.6	2077.4	7.5	7.4										
117a	14-May-03	3.30pm	SCWW	300	126	2259.2	2120.2	6.6	7.54	7.0	23	20+						Pass	
117b	14-May-03	3.30pm	SCWW	300	126	2264.5	2111	7.3	6.43										
118a	15-May-03	10.30am	SCWW	300	128	2158.5	1889.4	14.2	3.05	2.7	9	17	11	12				Pass	
118b	15-May-03	10.30am	SCWW	300	128	2208.3	1957.9	12.8	2.39										
119a	16-May-03	2.30pm	SCWW	300	130	2158.7	1911.7	12.9	4.44	4.8	8	16	22					Pass	
119b	16-May-03	2.30pm	SCWW	300	130	2148.7	1905.8	12.7	5.07										

APPENDIX D

CERTIFICATION FIGURES

FIGURES 81069.008-20/21/22

FIGURES 81069.008-23/24/25



Legend

TP 1 — Tonkin & Taylor Test Pit, Oct–Nov 2003

SC98/1 — Tonkin & Taylor Scala Penetrometer, Oct–Nov 2003

Base Plan Supplied by Staig & Smith Ltd, Ref. Dwg 7371AH, dated 29.10.03

Tonkin & Taylor
Environmental & Engineering Consultants
Nelson
Auckland, Christchurch, Hamilton, Wellington, Whangarei

DRAWN	AJL	Oct. 03
DRAFTING CHECKED	MGF	12/03
APPROVED	MGF	12/03
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SCALES (AT A3 SIZE) 1:500		
PROJECT No. 81069.008		

KB QUARRIES LTD

MAIRE RIDGE, TASMAN HEIGHTS

Site Investigation Plan – Site Certification

FIG. No. 81069.008–20

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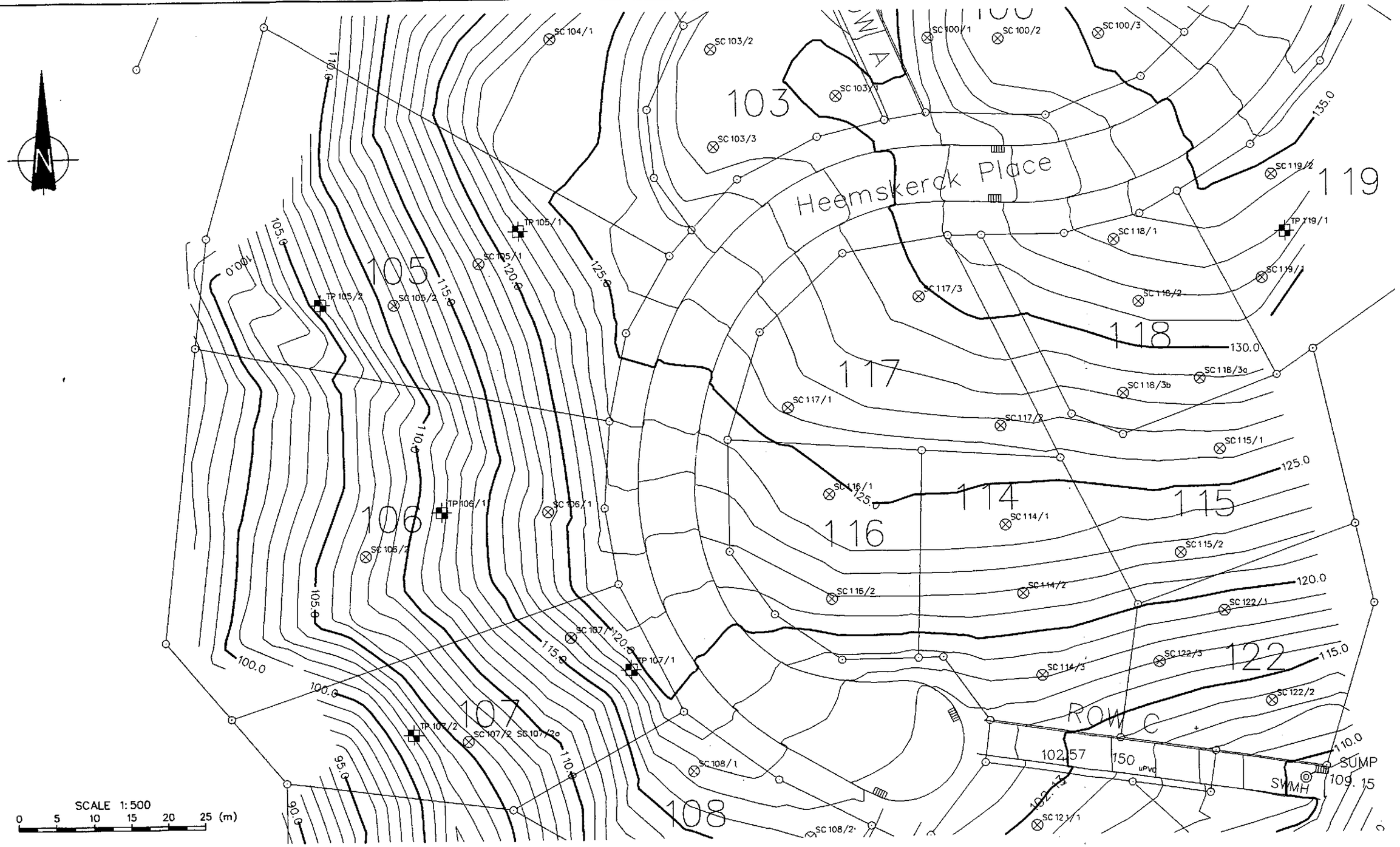

SCALE 1:500

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Legend

TP 1 — Tonkin & Taylor Test Pit, Oct–Nov 2003

SC98/1 — Tonkin & Taylor Scala Penetrometer, Oct–Nov 2003

Base Plan Supplied by Staig & Smith Ltd, Ref. Dwg 7371AH, dated 29.10.03

Tonkin & Taylor
Environmental & Engineering Consultants
Auckland, Hamilton, Wellington, Nelson, Christchurch, Whangarei

DRAWN	AJL	Oct 03
DRAFTING CHECKED	MRF	12/03
APPROVED	MRF	12/03
CADFILE: L:\81069.008\Fig 20		
SCALES (AT A3 SIZE) 1:500		
PROJECT No. 81069.008		

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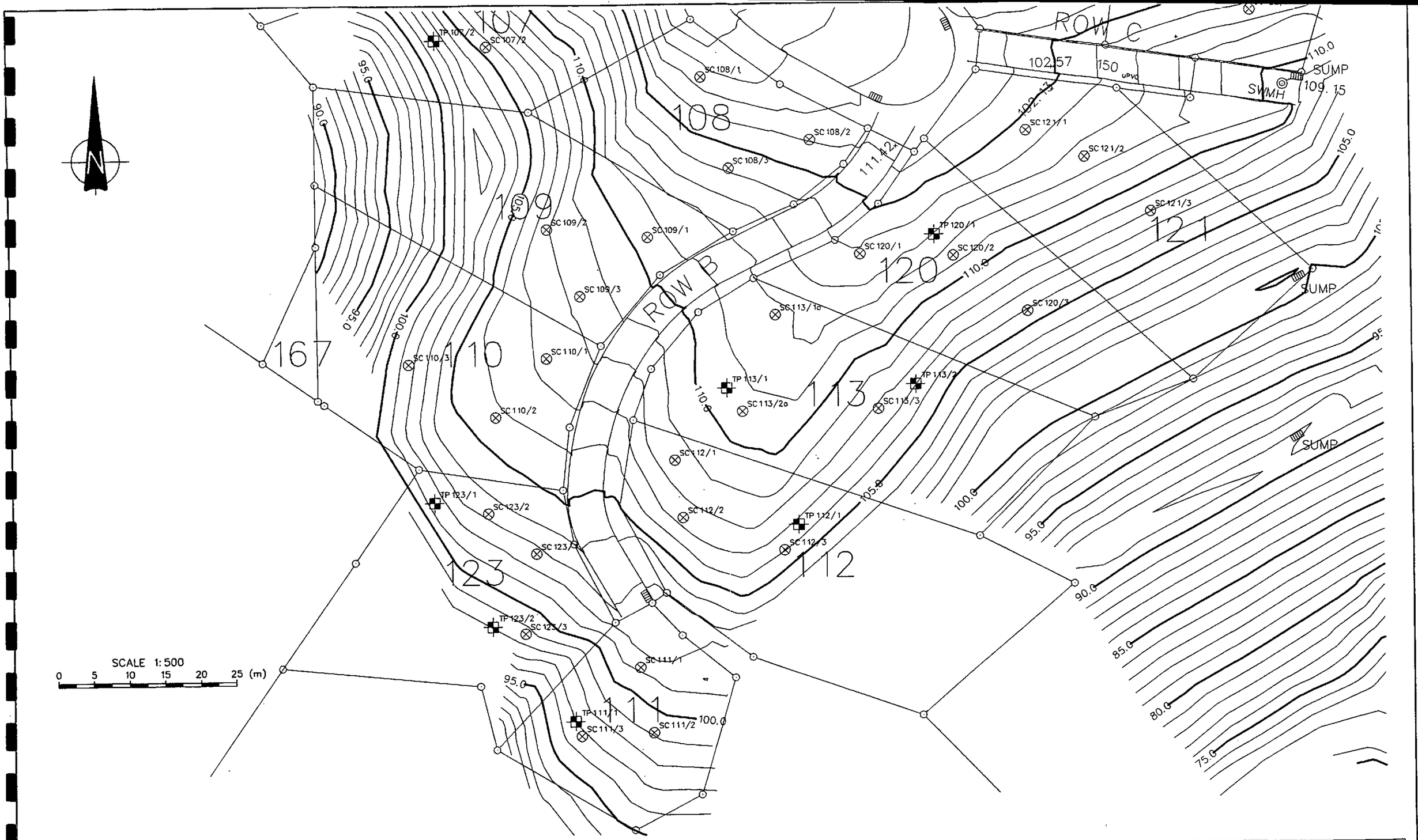
MAIRE RIDGE, TASMAN HEIGHTS

Site Investigation Plan– Site Certification

FIG. No. 81069.008–21

REV. 0



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TP 1 — Tonkin & Taylor Test Pit, Oct–Nov 2003

SC98/1 — Tonkin & Taylor Scala Penetrometer, Oct–Nov 2003

Base Plan Supplied by Staig & Smith Ltd, Ref. Dwg 7371AH, dated 29.10.03

Tonkin & Taylor
Environmental & Engineering Consultants
Auckland, Hamilton, Nelson, Wellington, Christchurch, Whangarei

DRAWN	AJL	Oct 03
DRAFTING CHECKED	MCF	12/03
APPROVED	MCF	12/03
CADFILE : L:\81069.008\Fig 20		
SCALES (AT A3 SIZE) 1:500		
PROJECT No. 81069.008		

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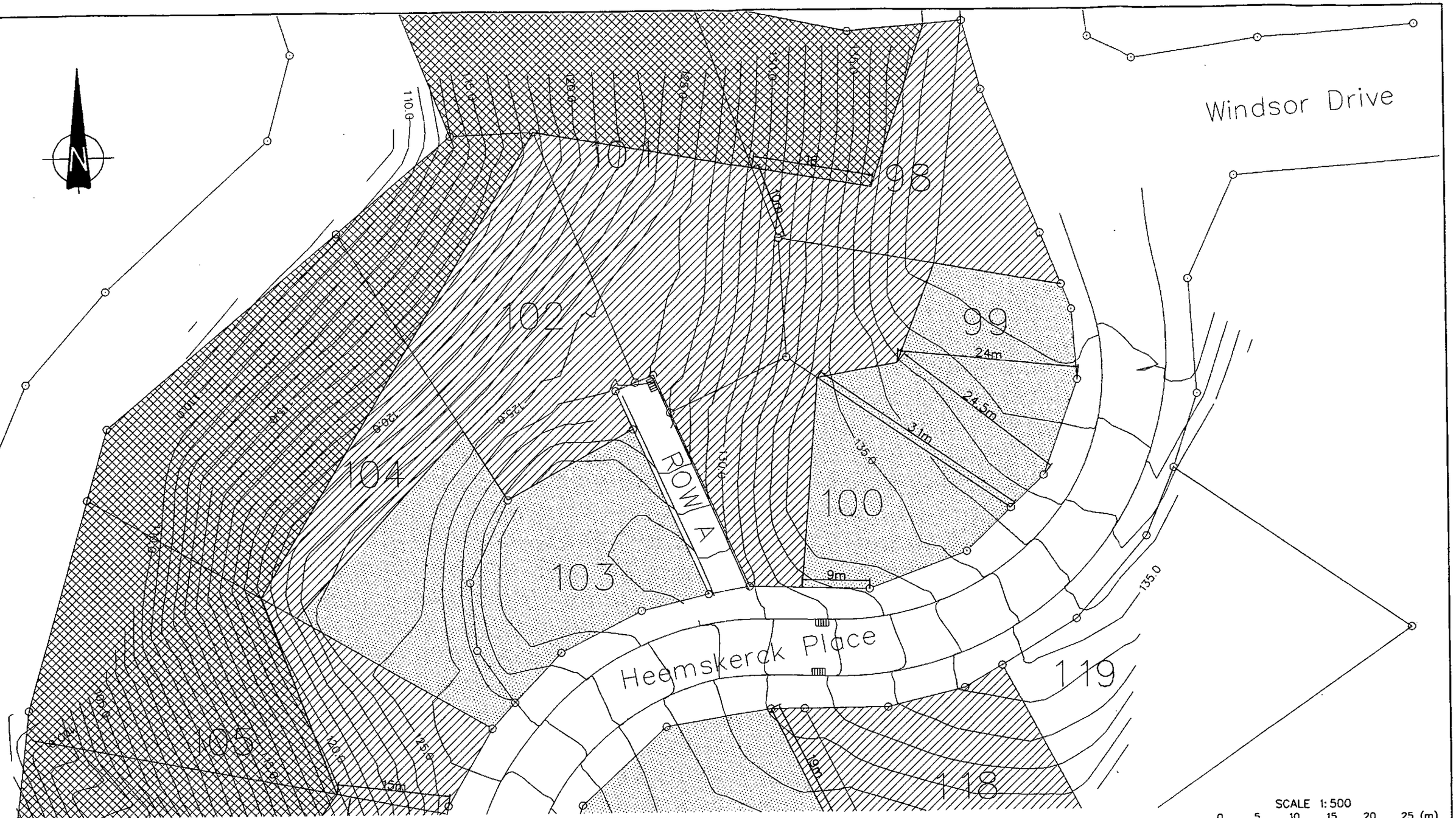
MAIRE RIDGE, TASMAN HEIGHTS

Site Investigation Plan – Site Certification

FIG. No. 81069.008-22

REV. 0



Legend

- Generally Suitable for Development in Accordance with NZS 3604
- Specific Investigation and Design Area
- Restricted Building Area
- Area Not Included in This Certification

Base Plan Supplied by Staig & Smith Ltd, Ref. Dwg 7371AH, dated 29.10.03

Tonkin & Taylor
Environmental & Engineering Consultants
Auckland, Hamilton, Nelson, Wellington, Christchurch, Whangarei

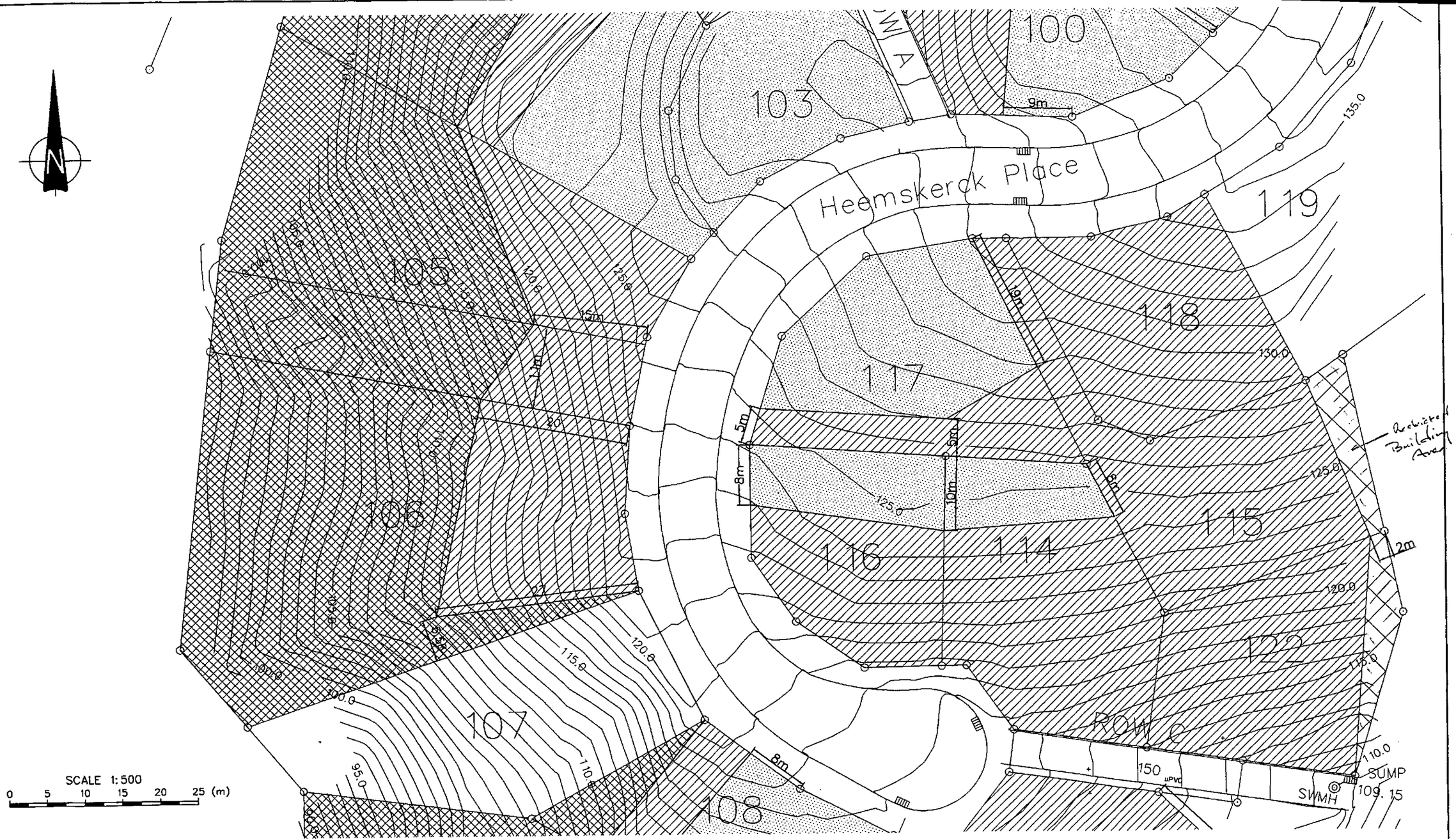
DRAWN	AJL	Oct 03
DRAFTING CHECKED	MJF	12/03
APPROVED		
CADFILE : L:\8 1069.008\Fig 23		
SCALES (AT A3 SIZE) 1:500		
PROJECT No. 8 1069.008		

KB QUARRIES LTD

MAIRE RIDGE, TASMAN HEIGHTS

Site Certification – Recommended Building Areas

FIG. No. 8 1069.008–23 REV. 0



Legend

- Generally Suitable for Development in Accordance with NZS 3604
- Specific Investigation and Design Area
- Restricted Building Area
- Area Not Included in This Certification

Base Plan Supplied by Staig & Smith Ltd, Ref. Dwg 7371AH, dated 29.10.03

Tonkin & Taylor
Environmental & Engineering Consultants
Nelson
Auckland, Christchurch, Hamilton, Wellington, Whangarei

DRAWN	AJL	Oct. 03
DRAFTING CHECKED	MRF	12/03
APPROVED	MRF	12/03
CADFILE : L:\81069.008\Fig 23		
SCALES (AT A3 SIZE) 1:500		
PROJECT No. 81069.008		

KB QUARRIES
MAIRE RIDGE, TASMAN HEIGHTS
Site Certification – Recommended Building Areas

FIG. No. 81069.008-24 REV. 0

Base Plan Supplied by Staig & Smith Ltd, Ref. Dwg 7371AH, dated 29.10.03

Tonkin & Taylor
Environmental & Engineering Consultants
Nelson
Auckland, Hamilton, Wellington, Christchurch, Whangarei

DRAWN	AJL	Oct. 03
DRAFTING CHECKED	MRF	12.03
APPROVED	MRF	12/03
CADFILE : L:\81069.008\Fig 23		
SCALES (AT A3 SIZE) 1:500		
PROJECT No. 81069.008		

KB QUARRIES
MAIRE RIDGE, TASMAN HEIGHTS
Site Certification – Recommended Building Areas

FIG. No. 81069.008-25 REV. 0

APPENDIX E

CERTIFICATION INVESTIGATIONS:

SCALA PENETROMETER TEST RESULTS
TEST PIT LOGS

TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP 98/1
SHEET OF

PROJECT: MAIRE RIDGE | LOCATION: TASMAN HEIGHTS NELSON | JOB NO: 81069.008

CO-ORDINATES: SEE SITE PLAN | EXPOSURE TYPE: T·P | HOLE STARTED: 03.12.03

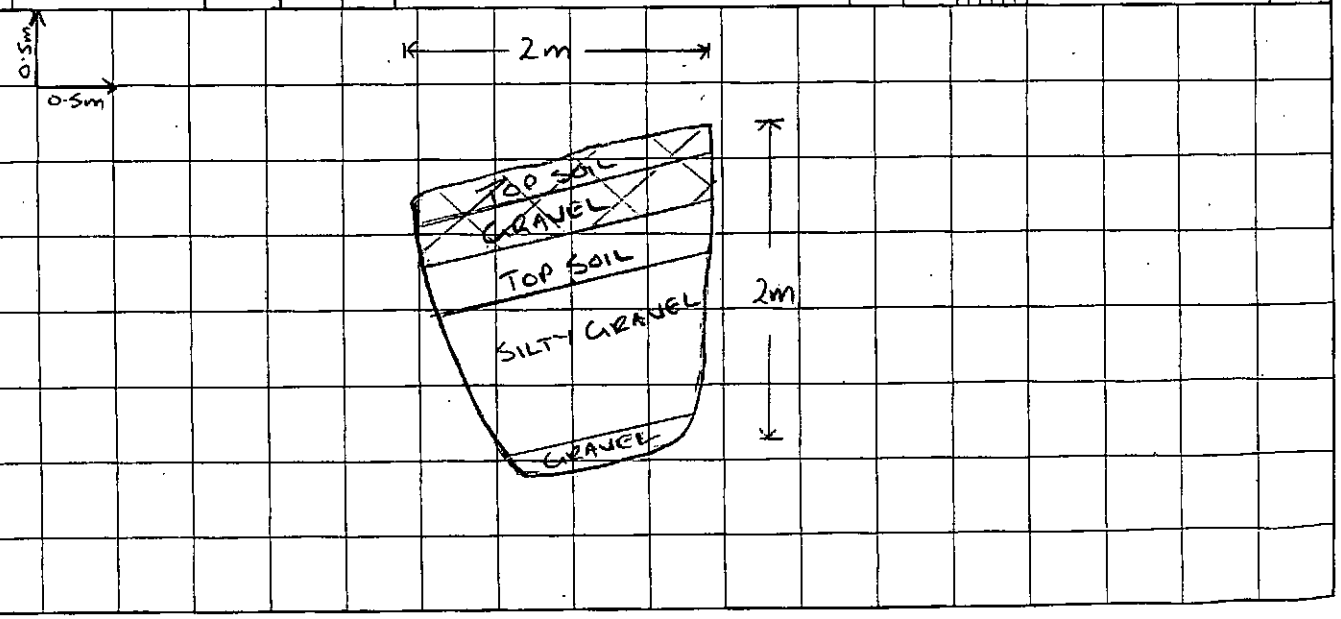
RL: | EQUIPMENT: 3T | HOLE FINISHED:

DATUM: | OPERATOR: MARK MEYER | LOGGED BY: JXWW

EXCAVATION DIMENSIONS: — | CHECKED BY: [illegible] 11/12

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 10 20 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			PP-50			OL	SILT, NON PLASTIC, BLACK ORGANICS	M	VS F		TOPSOIL	
			PP-50-100	0.5			GRAVEL, NON PLASTIC CLASTS TO 50MM. ROUNDED IN SILTY MATRIX	D	St		PORT HILLS GRAVEL (FILL)	
						OL	SILT, NON PLASTIC, BLACK ORGANICS	M	F		TOPSOIL	
				1.0		GC	SILTY GRAVEL, NON PLASTIC MINOR SL PLASTIC CLAY IN MATRIX. SPONGY ORANGE	M	St		PORT HILLS GRAVEL (COLLUVIUM)	
			PP > 450	1.5		GM	GRAVEL WITH SILT	M	D		PORT HILLS GRAVEL	
				2.0			E.O.H. SUFFICIENT INFORMATION					

SKETCH



TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP 102/1
SHEET OF

PROJECT: MAIRE RIDGE
LOCATION: TASMAN HEIGHTS NELSON
JOB NO: 81069-008

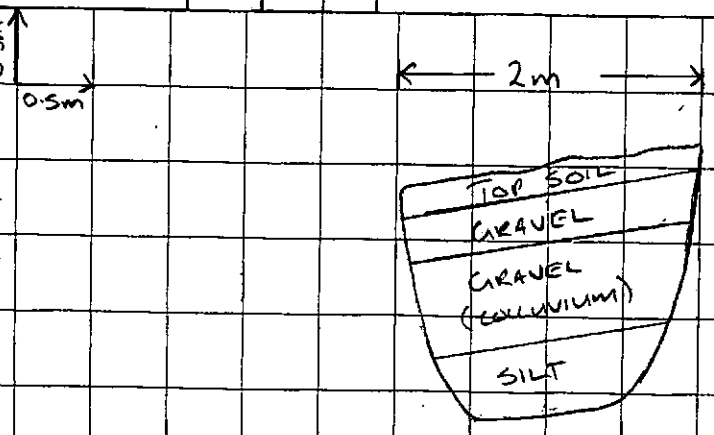
CO-ORDINATES: SEE SITE PLAN
RL:
DATUM:

EXPOSURE TYPE: TP
EQUIPMENT: 3T
OPERATOR: MARK MEYER
EXCAVATION DIMENSIONS: —

HOLE STARTED: 03.12.03
HOLE FINISHED:
LOGGED BY: JXWW
CHECKED BY: F 11/12

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 10 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			PP-200			OL	SILT, NON PLASTIC, BLACK ORGANICS	D	VSt		TOP SOIL	
			PP-150	0.5		GM	GRAVEL, ORANGE, SR CLASTS TO 200mm IN SILTY MATRIX	D	VSt		PORT HILLS GRAVEL COLLUVIUM	
			PP-250-400	1.0		GM	GRAVEL, SILTY MATRIX SUPPORTING CLASTS TO 40mm ORGANICS AT BASE	M	H		PORT HILLS GRAVEL (COLLUVIUM)	
			PP->400	1.5		GL	SILT WITH SOME CLAY AND MINOR GRAVEL, SL PLASTIC CREAMY YELLOW	D	H		PORT HILLS GRAVEL (COLLUVIUM)	
				2.0			E.O.H SUFFICIENT INFORMATION					

SKETCH



TONKIN & TAYLOR LTD.

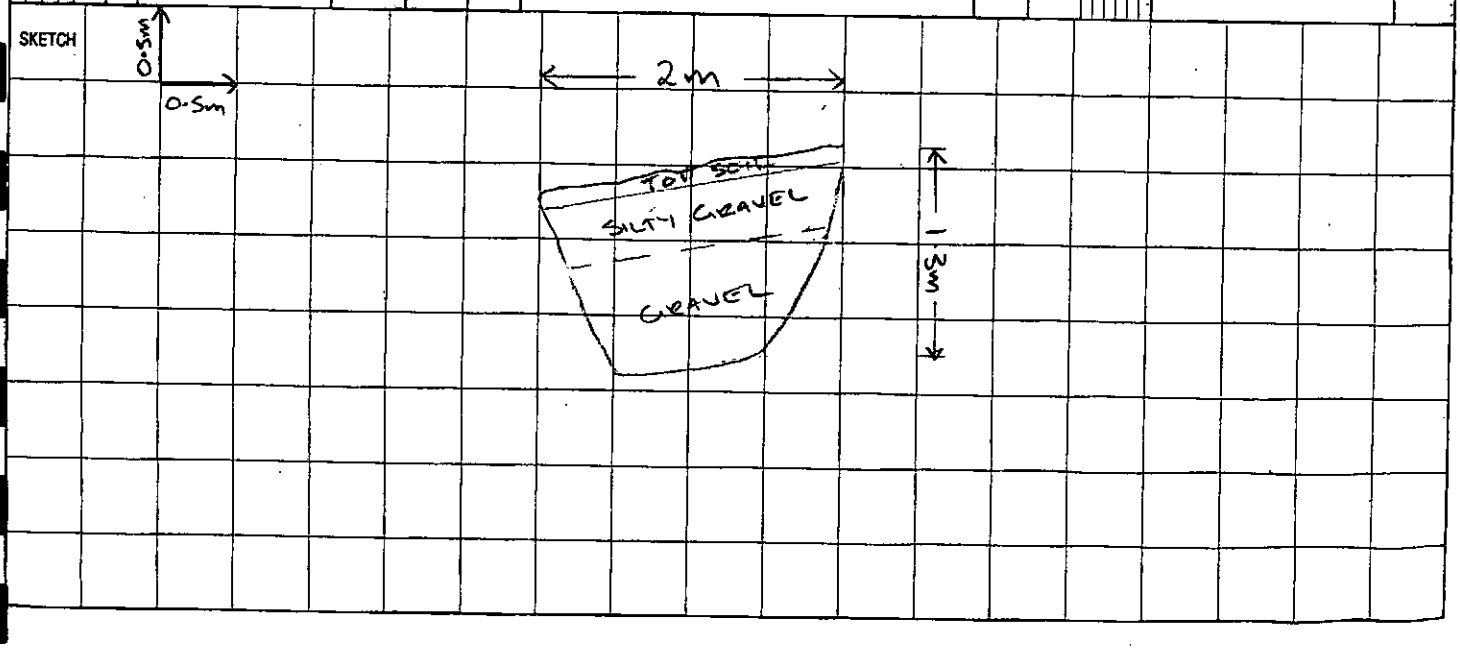
EXCAVATION LOG

EXCAVATION NO: 105/1
SHEET OF

PROJECT: MAIRE RIDGE
LOCATION: TASMAN HEIGHTS NELSON
JOB NO: 81069-008
CO-ORDINATES: SEE SITE PLAN
EXPOSURE TYPE: TP
EQUIPMENT: 3T
OPERATOR: MARK MEYER
HOLE STARTED: 03.12.03
HOLE FINISHED:
RL:
DATUM:
LOGGED BY: JXWW
CHECKED BY: 11/12.
EXCAVATION DIMENSIONS: —

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 20 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
						OL	SILT, NON PLASTIC, BLACK ORGANIC	D	VSt		TOP SOIL	
			PP 150-300	0.5		GM	GRAVEL, NON PLASTIC, SILTY, R CLASTS UP TO 150mm (HW) BROWN - ORANGE	D	VSt		PORT HILLS GRAVEL	
			PP 200-400	1.0			MORE SILTY AT TOP BECOMES MOIST @ 600mm	D				
								M	D			
				1.5			E.O.H SUFFICIENT INFORMATION					

SKETCH



TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP 105/2
SHEET OF

PROJECT: MAIRE RIDGE
LOCATION: TASMAN HEIGHTS NELSON
JOB NO: 81069-008

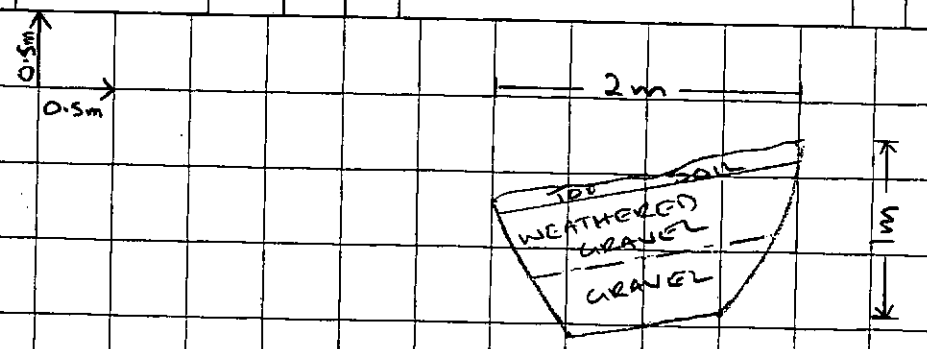
CO-ORDINATES: SEE SITE PLAN
RL:
DATUM:

EXPOSURE TYPE: TP
EQUIPMENT: 3T
OPERATOR: MARK MEYER
EXCAVATION DIMENSIONS: 2000 x 1000 x 900

HOLE STARTED: 03.12.03
HOLE FINISHED:
LOGGED BY: JKWW
CHECKED BY: 12/12

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 12.5 25 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
				0		OL	SILT, NON PLASTIC, BLACK ORGANIC	D	VSt		TOP SOIL	
			100-150	0.5		GC	GRAVEL, SL PLASTIC, SILTY MATRIX WITH SOME CLAY CONTENT HIGHLY WEATHERED CLASTS ORANGE + CREAM.	M	VSt		PORT HILLS GRAVEL (WEATHERED - COLLUVIUM)	
						GM	GRAVEL, CREAMY, LESS-WEATHERED	M	D		LESS WEATHERED	
				1.0			E.O.H SUFFICIENT INFORMATION					
				1.5								

SKETCH



TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP 106/1
SHEET OF

PROJECT: MAIRE RIDGE
LOCATION: TASMAN HEIGHTS NELSON
JOB NO: 61069-008

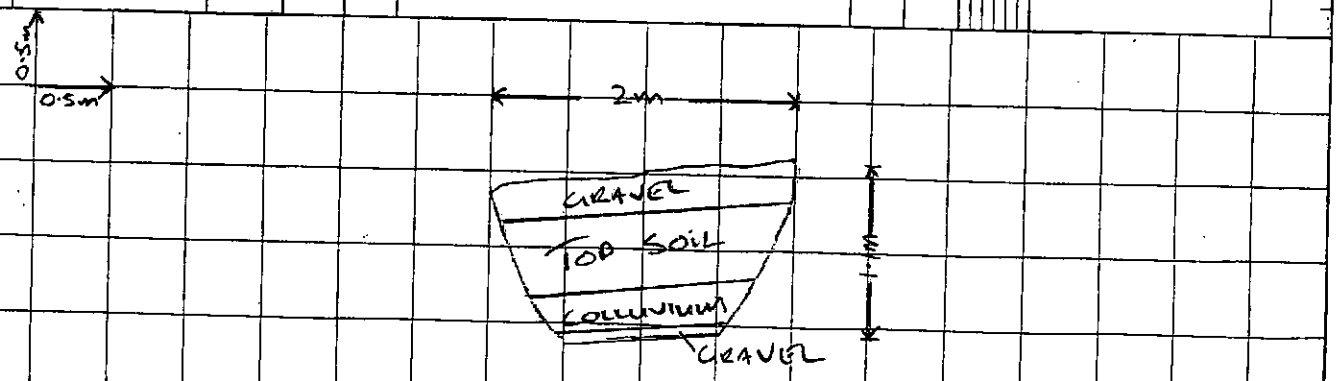
CO-ORDINATES: SEE SITE PLAN
RL:
DATUM:

EXPOSURE TYPE: TP
EQUIPMENT: 3T
OPERATOR: MARK MEYER.
EXCAVATION DIMENSIONS: —

HOLE STARTED: 03-12-03
HOLE FINISHED:
LOGGED BY: JX.WW
CHECKED BY: [illegible] 12/12

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 10 25 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
						GM	GRAVEL, NON PLASTIC, SILT MATRIX CONTAINS R CLASTS TO 200mm	D	St		PORT HILLS GRAVEL	
			150-250	0.5		OL	SILT, NON PLASTIC, BLACK ORGANIC	M	St		TOP SOIL	
				1.0		CL	CLAYING SILT, SLIGHTLY PLASTIC, OLIVE + CREAM	M	VSt		PORT HILLS GRAVEL (COLLUVIUM)	
							GRAVEL	D	D		PORT HILLS GRAVEL	
				1.5			E.O.H. SUFFICIENT INFORMATION.					

SKETCH



TONKIN & TAYLOR LTD.

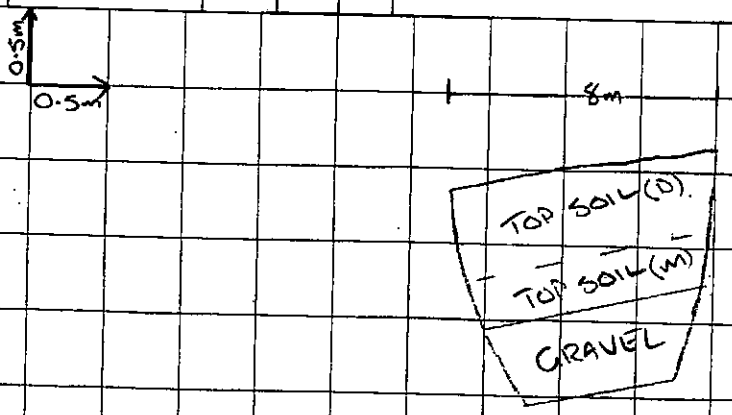
EXCAVATION LOG

EXCAVATION NO: TP 107/1
SHEET OF

PROJECT: MAIRE RIDGE
LOCATION: TASMAN HEIGHTS
JOB NO: 81069-008
CO-ORDINATES: SEE SITE PLAN
EXPOSURE TYPE: TP
HOLE STARTED: 03.12.03
RL:
EQUIPMENT: 3T
HOLE FINISHED:
DATUM:
OPERATOR: MARK MEYER
LOGGED BY: JXWW
EXCAVATION DIMENSIONS: 800 x 1500 x 900
CHECKED BY: 12/12

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			PP 175	0.0								
			150	0.5		OL	SILT, NON PLASTIC, GREY, ORGANICS (ROOTS), MINOR CLASTS TO 10mm	D	VSF		TOP SOIL	
							SILT, BLACK	M	VSF			
			400-450	1.0		GL	GRAVEL; SL PLASTIC, HW CLASTS 60-150mm IN SILT MATRIX WITH MINOR CLAY COMPONENT	M	H		PORT HILLS GRAVEL	
				1.5			E.O.14 SUFFICIENT INFORMATION					
				2.0								

SKETCH



TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: 107/2
SHEET 1 OF

PROJECT: MAIKE RIDGE
LOCATION: TASMAN HEIGHTS NELSON
JOB NO: 51069-006

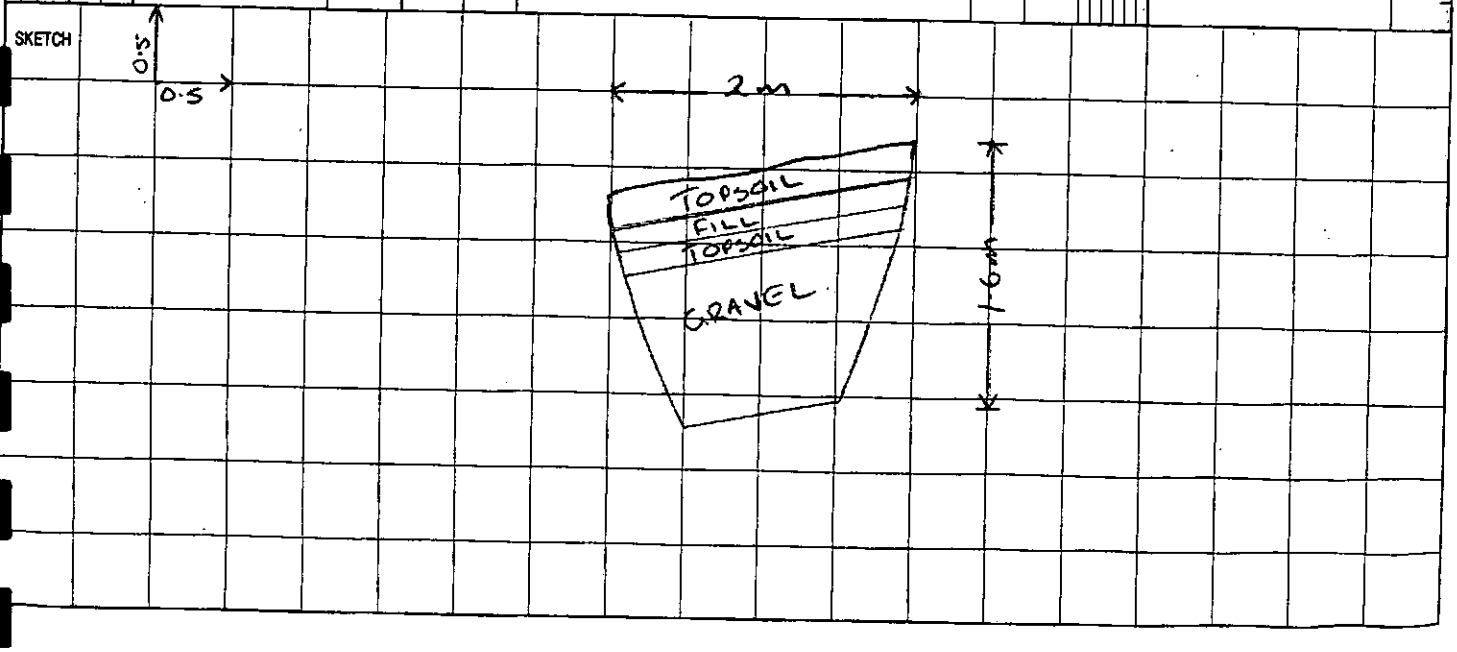
CO-ORDINATES: SEE SITE PLAN
RL:
DATUM:

EXPOSURE TYPE: TP
EQUIPMENT: 3T
OPERATOR: MARK MEYER
EXCAVATION DIMENSIONS: 2000 x 1500 x 900

HOLE STARTED: 03-12-03
HOLE FINISHED:
LOGGED BY: JXWW
CHECKED BY: 4 12/7

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 10 25 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			PP 200			OL	SILT, NON PLASTIC, CLASTS TO 15mm BLACK, ORGANICS	M	VSt		TOP SOIL	
			200			GM	SILTY GRAVEL NON PLASTIC, CLASTS TO 60mm, ORANGE-BROWN	M	VSt		PHG FILL	
			350	0.5		OL	SILT, NON PLASTIC, BLACK ORGANIC	M	H		TOP SOIL	
			300-375	1.0		GC	SILTY GRAVEL, SL PLASTIC, HW CLASTS TO 100mm WITH MINOR CLAY	M	H		PORT HILLS GRAVEL	
				1.5			E.O.H SUFFICIENT INFORMATION					
				2.0								

SKETCH



TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP 111/1
SHEET OF

PROJECT: MAIRE RIDGE
LOCATION: TASMAN HEIGHTS
JOB NO: 81069-008

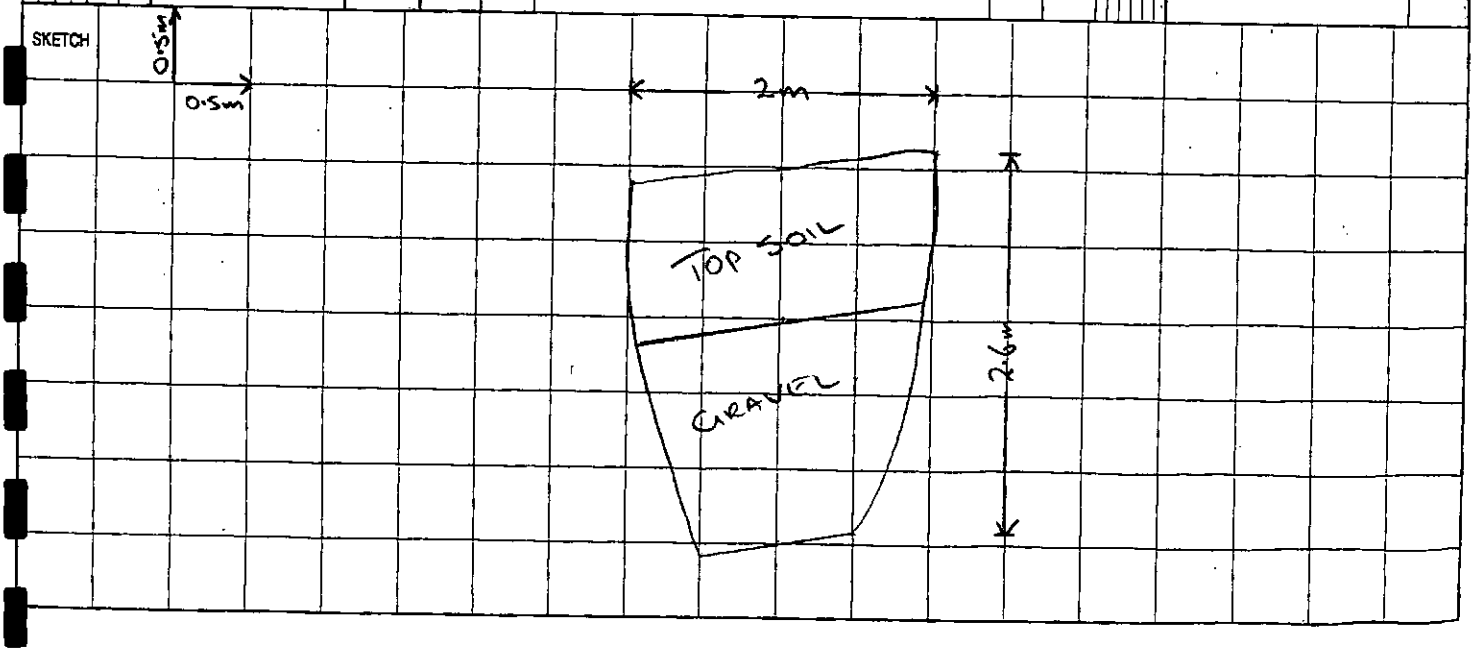
CO-ORDINATES: SEE SITE PLAN
RL:
DATUM:

EXPOSURE TYPE: TP
EQUIPMENT: 3T
OPERATOR: MARK MEYER
EXCAVATION DIMENSIONS:

HOLE STARTED: 03.12.03
HOLE FINISHED:
LOGGED BY: JXWW
CHECKED BY: 12/12.

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 10 25 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			PP 200	0.5		OL	SILT, NON PLASTIC, BLACK, ORGANICS (ROOTS) AND OCCASIONAL GRAVEL	M	VSF		TOP SOIL	
			250-300	1.0		GC	SILTY-GRAVEL, SL PLASTIC MW CLASTS TO 200mm ORANGE-L BROWN, MINOR CLAY COARSENS + BECOMES DENSER WITH DEPTH	M	H-VD		PORT HILLS GRAVEL	
			300-350	1.5								
				2.0		GM						
				2.5								
							E.O.H SUFFICIENT INFORMATION					

SKETCH



TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP 112/1
SHEET OF

PROJECT: MAIRE RIDGE
LOCATION: TASMAN HEIGHTS
JOB NO: 810691-008

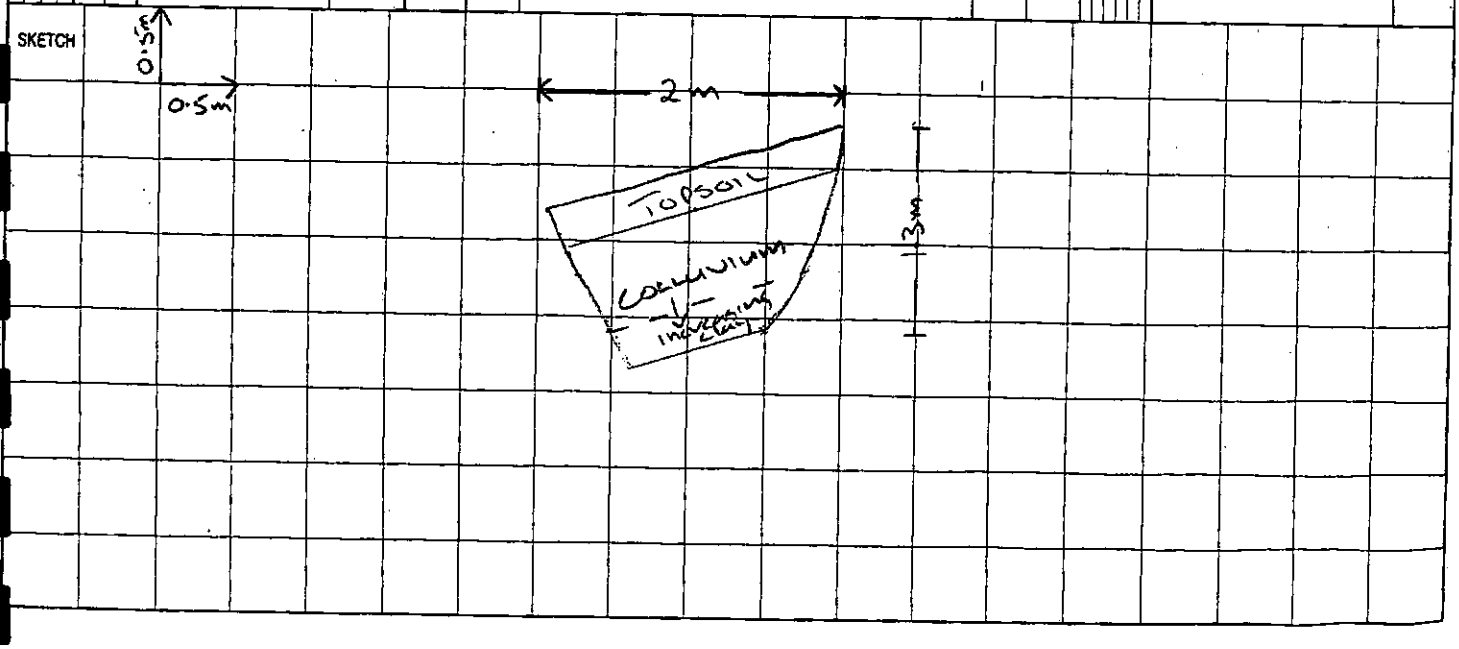
CO-ORDINATES: SEE SITE PLAN
RL:
DATUM:

EXPOSURE TYPE: TP
EQUIPMENT: 3T
OPERATOR: MARK MEYER
EXCAVATION DIMENSIONS:

HOLE STARTED: 03-12-03
HOLE FINISHED:
LOGGED BY: JXWW
CHECKED BY: ✓ 8/12

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa (10 25 50 100 200)	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			PP 200			OL	SILT, NON PLASTIC, BLACK ORGANIC (MINOR ROOTS)	M	VSf		TOP SOIL	
			250-350	0.5		GM	SILT, NON PLASTIC, CLASTS TO 40mm LIGHT BROWN, V MINOR CLAY CONTENT	M	H		PORT HILLS GRAVEL (COLLUVIUM)	
			150-275	1.0		GC	ABOVE COARSENS DOWNWARDS WITH INCREASING CLAY & MOISTURE CONTENT SL PLASTIC	M ↓	VSf ↓ H		HIGHER CLAY CONTENT.	
				1.5			E.O.H SUFFICIENT INFORMATION					

SKETCH



TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP 113/1
SHEET OF

PROJECT: MAIKE RIDGE
LOCATION: TASMAN HEIGHTS
JOB NO: 51069-008

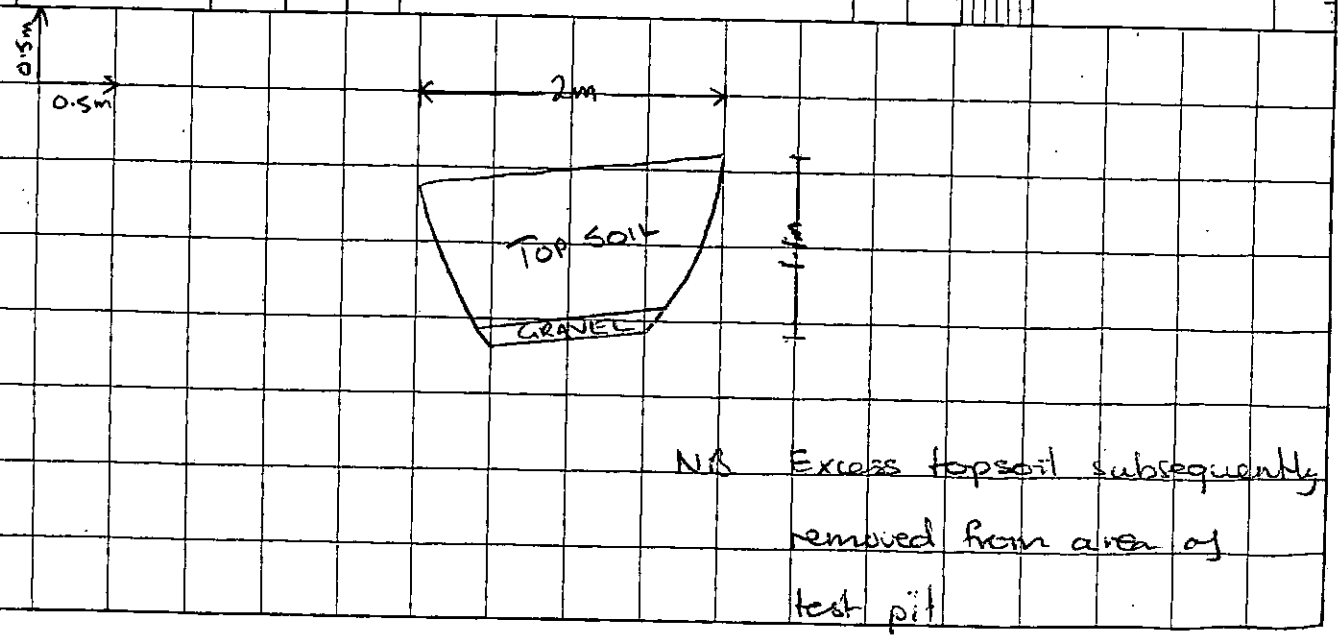
CO-ORDINATES: SEE SITE PLAN
RL:
DATUM:

EXPOSURE TYPE: TP
EQUIPMENT: 3T
OPERATOR: MARK MEYER
EXCAVATION DIMENSIONS:

HOLE STARTED: 03-12-03
HOLE FINISHED:
LOGGED BY: JXWW
CHECKED BY: T 12/12

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			PP. 200-250	0.5		OL	SILT, NOT PLASTIC, BLACK, ORGANICS (MINOR ROOTS) OCCASIONAL CLASTS TO 60mm	M	H		TOP SOIL	
			250-300	1.0		GL	GRAVEL: SL PLASTIC, ORANGE IN SILT WITH MINOR CLAY	M	H		PORT HILLS GRAVEL	
				1.5			E.O.H SUFFICIENT INFORMATION					

SKETCH



N.B. Excess topsoil subsequently removed from area of test pit

TONKIN & TAYLOR LTD.

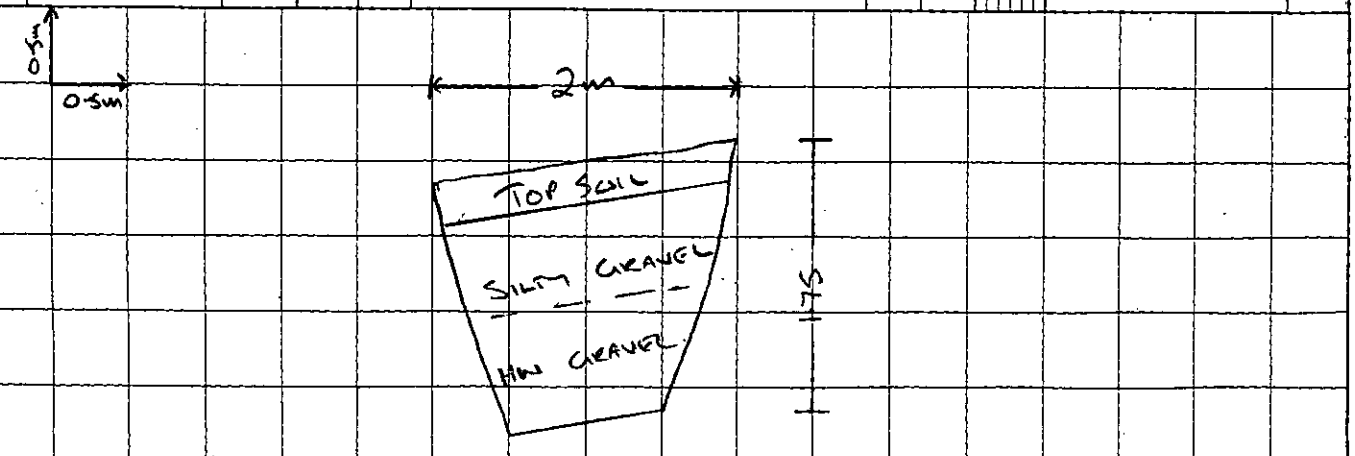
EXCAVATION LOG

EXCAVATION NO: TP 113/2
SHEET OF

PROJECT: MAIRE RIDGE | LOCATION: TASMAN HEIGHTS | JOB NO: 81069-008
CO-ORDINATES: SEE SITE PLAN | EXPOSURE TYPE: TP | HOLE STARTED: 03-12-03
RL: | EQUIPMENT: 3T | HOLE FINISHED:
DATUM: | OPERATOR: MARK MEYER | LOGGED BY: JXNW
EXCAVATION DIMENSIONS: | CHECKED BY: T 12/12

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION					GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 12 25 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			P.P 250-300			ML	SILT, SL PLASTIC, BROWN-YELLOW WITH MW CLASTS TO 20mm & V MINOR CLAY COMPONENT	M	VSF		TOP SOIL (COLLUVIAL)	
			250	0.5		GrC	SILTY-GRAVEL, SL PLASTIC, CLASTS TO 60mm ORANGE & CREAM	M >	VSF		PORT HILLS GRAVEL	
			250-350	1.0		GM	HIGHLY WEATHERED CLASTS		VSF ↓ MD			
				1.5			E.O.H SUFFICIENT INFORMATION					
				2.0								

SKETCH



TONKIN & TAYLOR LTD.

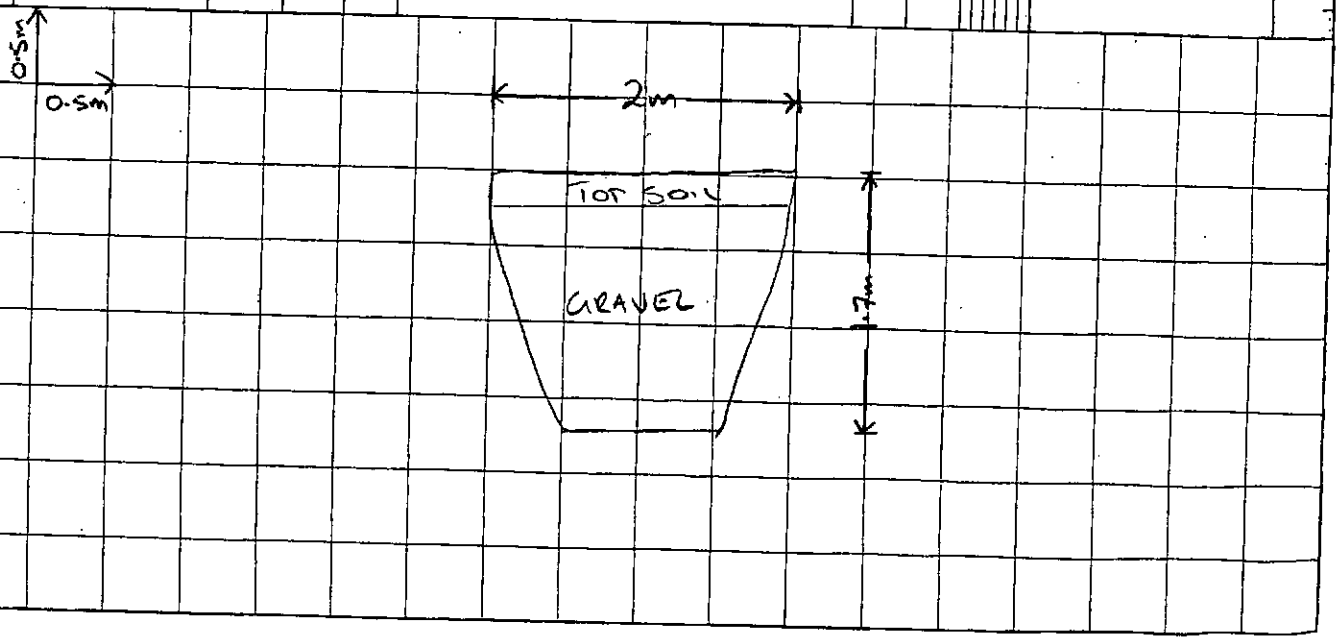
EXCAVATION LOG

EXCAVATION NO: TP 119/1
SHEET OF

PROJECT: MAIRE RIDGE
LOCATION: TASMAN HEIGHTS
JOB NO: 81069.006
CO-ORDINATES:
EXPOSURE TYPE: TP
EQUIPMENT: 3T
HOLE STARTED: 03.12.03
RL:
DATUM:
OPERATOR: MARK MEYER
HOLE FINISHED:
LOGGED BY: JXWW
EXCAVATION DIMENSIONS:
CHECKED BY: f 12/12

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 10 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			PP 250			OL	SILT, NON PLASTIC, BLACK ORGANICS	M	VSF		TOP SOIL	
			200-350	0.5		GM	GRAVEL, NON PLASTIC, MW-CLASTS TO 200mm IN SILT MATRIX, V MINOR CLAY COMPONENT	M	D		PORT HILLS GRAVEL	
				1.0								
				1.5								
				2.0			E.O.H SUFFICIENT INFORMATION					

SKETCH



TONKIN & TAYLOR LTD.

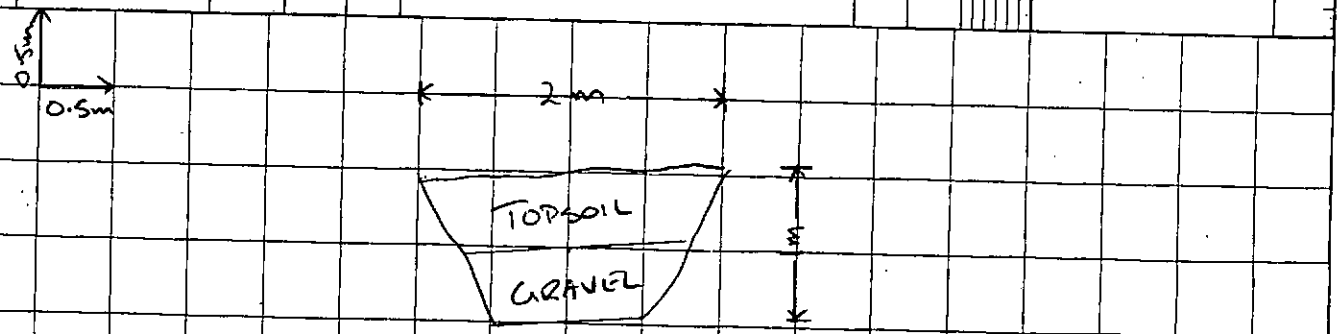
EXCAVATION LOG

EXCAVATION NO: TP 120/1
SHEET OF

PROJECT: MAIRE RIDGE
LOCATION: TASMAN HEIGHTS
JOB NO: 81069-008
CO-ORDINATES:
EXPOSURE TYPE: TP
HOLE STARTED: 03.12.03
EQUIPMENT: 3T
RL:
OPERATOR: MARK MEYER
HOLE FINISHED:
DATUM:
EXCAVATION DIMENSIONS:
LOGGED BY: JX MW
CHECKED BY: JX 12/12

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 10 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			PP. 150-300	0.0		OL	SILT, NON PLASTIC, OCCASIONAL CLASTS TO 70mm, GREY -> BLACK ORGANICS	D → M	SF → VSF		TOPSOIL	
			250-400	0.5		GM	GRAVEL, NON PLASTIC, MW CLASTS TO 175mm (Sub-rounded) ORANGE + CREAM V LOW CLAY COMPONENT	M	D		PORT HILLS GRAVEL FILL	
				1.0			E.O.H SUFFICIENT INFORMATION					
				1.5								

SKETCH



TONKIN & TAYLOR LTD.

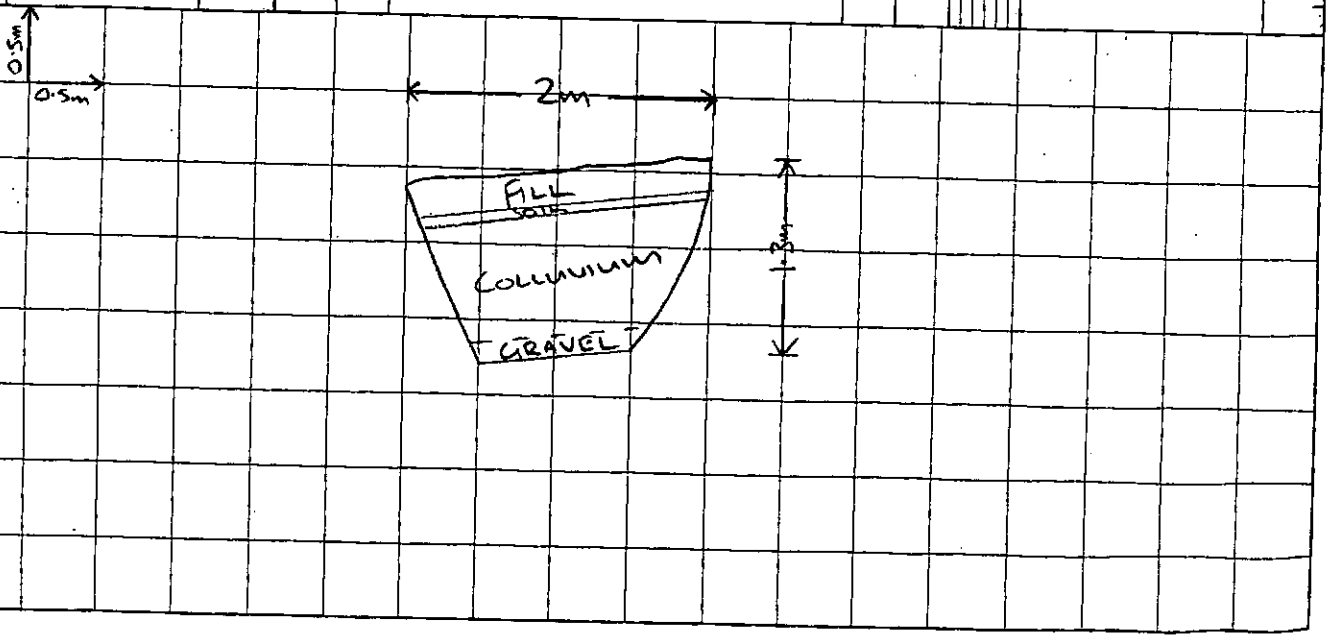
EXCAVATION LOG

EXCAVATION NO: TP 123/1
SHEET OF

PROJECT: MAIRE RIDGE
LOCATION: TASMAN HEIGHTS
JOB NO: 51069-008
CO-ORDINATES: SEE SITE PLAN
EXPOSURE TYPE: TP
EQUIPMENT: 3T
HOLE STARTED: 03.12.03
RL:
OPERATOR: MARK MAYER
HOLE FINISHED:
DATUM:
EXCAVATION DIMENSIONS:
LOGGED BY: JXWW
CHECKED BY: 4 12/12

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			D.P. 250-350			CL	SILTY CLAY, SL PLASTIC, WITH HW CLASTS TO 30mm YELLOWY-BROWN.	M	VSt		FILL (non certified	
			150-200			OL	SILT, NON PLASTIC, BLACK ORGANICS	M	St		TOP SOIL	
			250-350	0.5		GM	GRAVELLY SILT, NON PLASTIC CLASTS TO 50mm, COARSENING DOWNWARD, ORANGE + CREAM MINOR CLAY COMPONENT	M	VSt		PORT HILLS GRAVEL (COLLUVIUM)	
			>400	1.0		GW	GRAVEL WITH SILT MATRIX ORANGE + CREAM	M	D		(GRAVEL)	
				1.5			E.O.H SUFFICIENT INFORMATION.					

SKETCH



TONKIN & TAYLOR LTD.

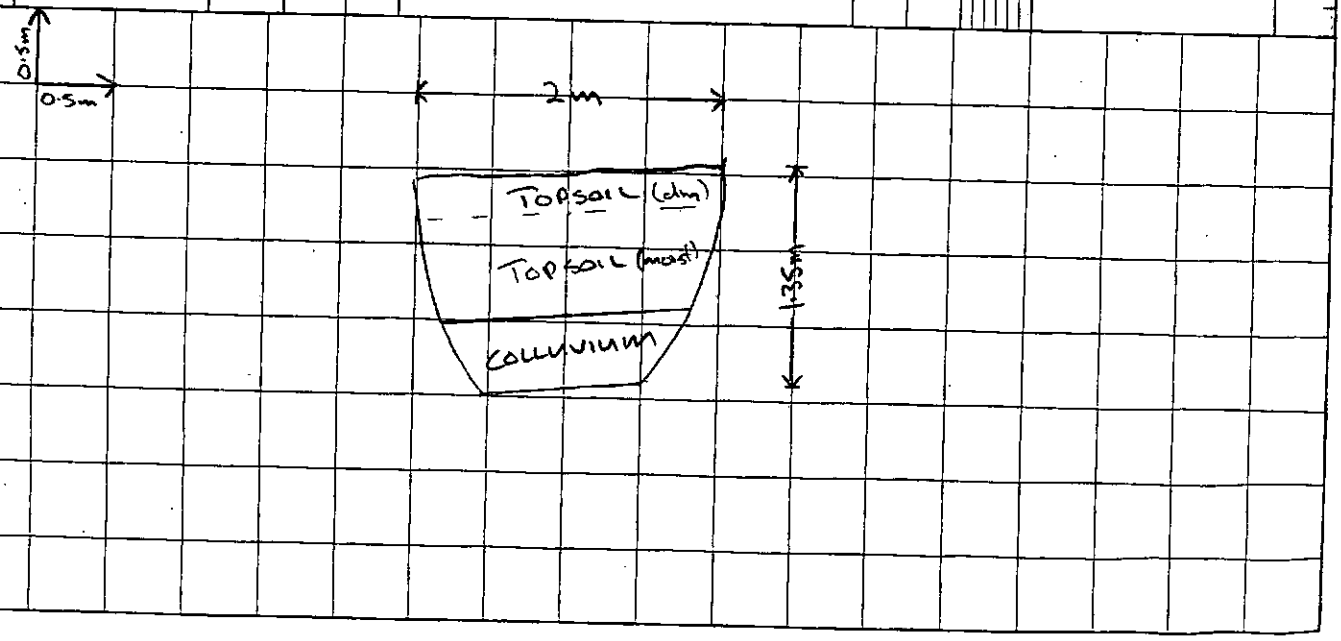
EXCAVATION LOG

EXCAVATION NO: TP 123/2
SHEET OF

PROJECT: MAIKE RIDGE
LOCATION: TASMAN HEIGHTS
JOB NO: 81069-005
CO-ORDINATES: SEE SITE PLAN
EXPOSURE TYPE: TP
EQUIPMENT: 3T
OPERATOR: MARK MEYER
EXCAVATION DIMENSIONS: —
HOLE STARTED: 03.12.03
HOLE FINISHED:
LOGGED BY: JXWW
CHECKED BY: 12/12
RL:
DATUM:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			PP 100-200	0.5		OL	SILT, NON PLASTIC GREY-BLACK ORGANICS (ROOTS)	D M	Sf Sf		TOPSOIL	
			300-350	1.0		GC	SILTY GRAVEL, SL PLASTIC, HW CLASTS TO 200mm CLAY IN MATRIX MATERIAL	M	VSf ↓ D		PORT HILLS GRAVEL (COLLUVIUM)	
				1.5			E.O.H SUFFICIENT INFORMATION					

SKETCH



TONKIN & TAYLOR
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NELSON
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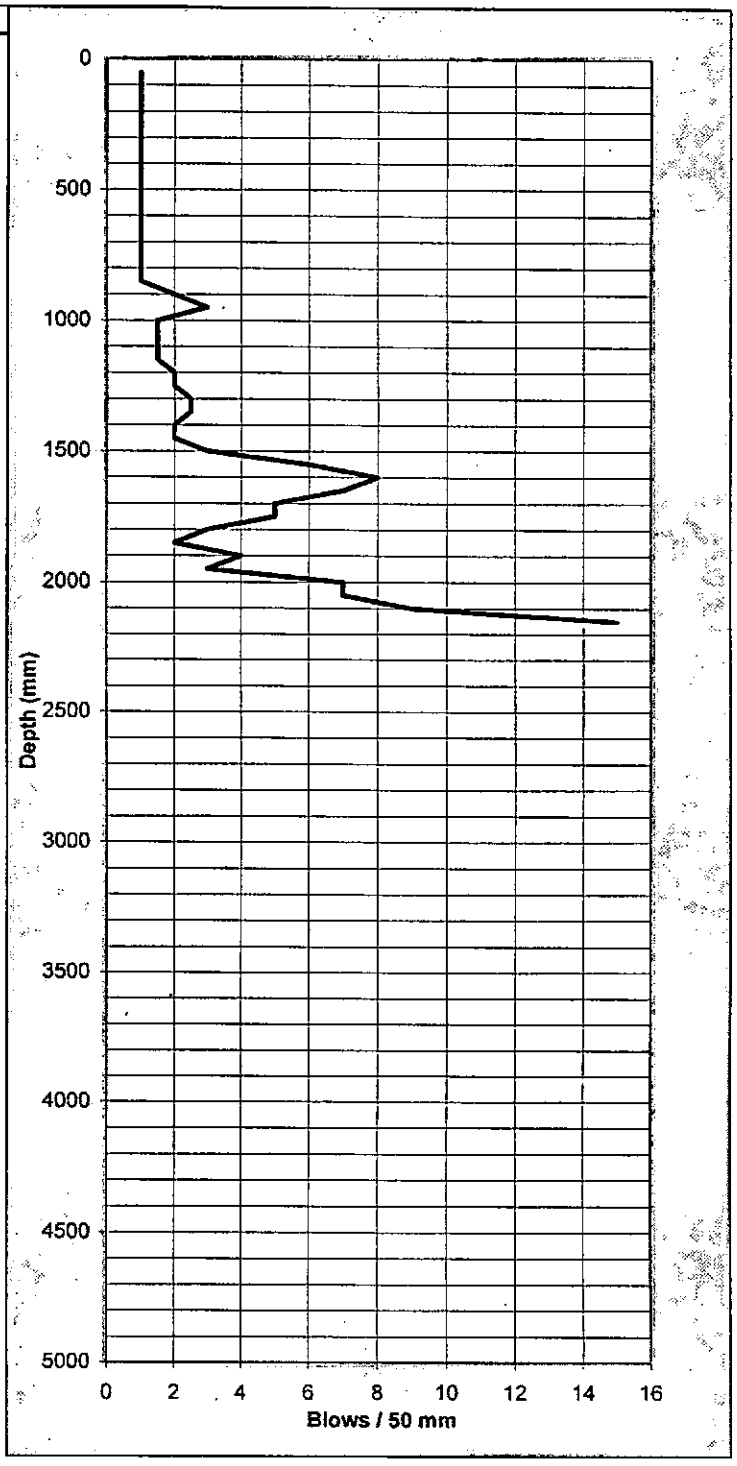
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	**Test No.** *98/1*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	**Sheet** *1*
Level:	-	Checked by: *8/12*	**of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	1	2650	
200	1	2700	
250	1	2750	
300	1	2800	
350	1	2850	
400	1	2900	
450	1	2950	
500	1	3000	
550	1	3050	
600	1	3100	
650	1	3150	
700	1	3200	
750	1	3250	
800	1	3300	
850	1	3350	
900	2	3400	
950	3	3450	
1000	1.5	3500	
1050	1.5	3550	
1100	1.5	3600	
1150	1.5	3650	
1200	2	3700	
1250	2	3750	
1300	2.5	3800	
1350	2.5	3850	
1400	2	3900	
1450	2	3950	
1500	3	4000	
1550	6	4050	
1600	8	4100	
1650	7	4150	
1700	5	4200	
1750	5	4250	
1800	3	4300	
1850	2	4350	
1900	4	4400	
1950	3	4450	
2000	7	4500	
2050	7	4550	
2100	9	4600	
2150	15	4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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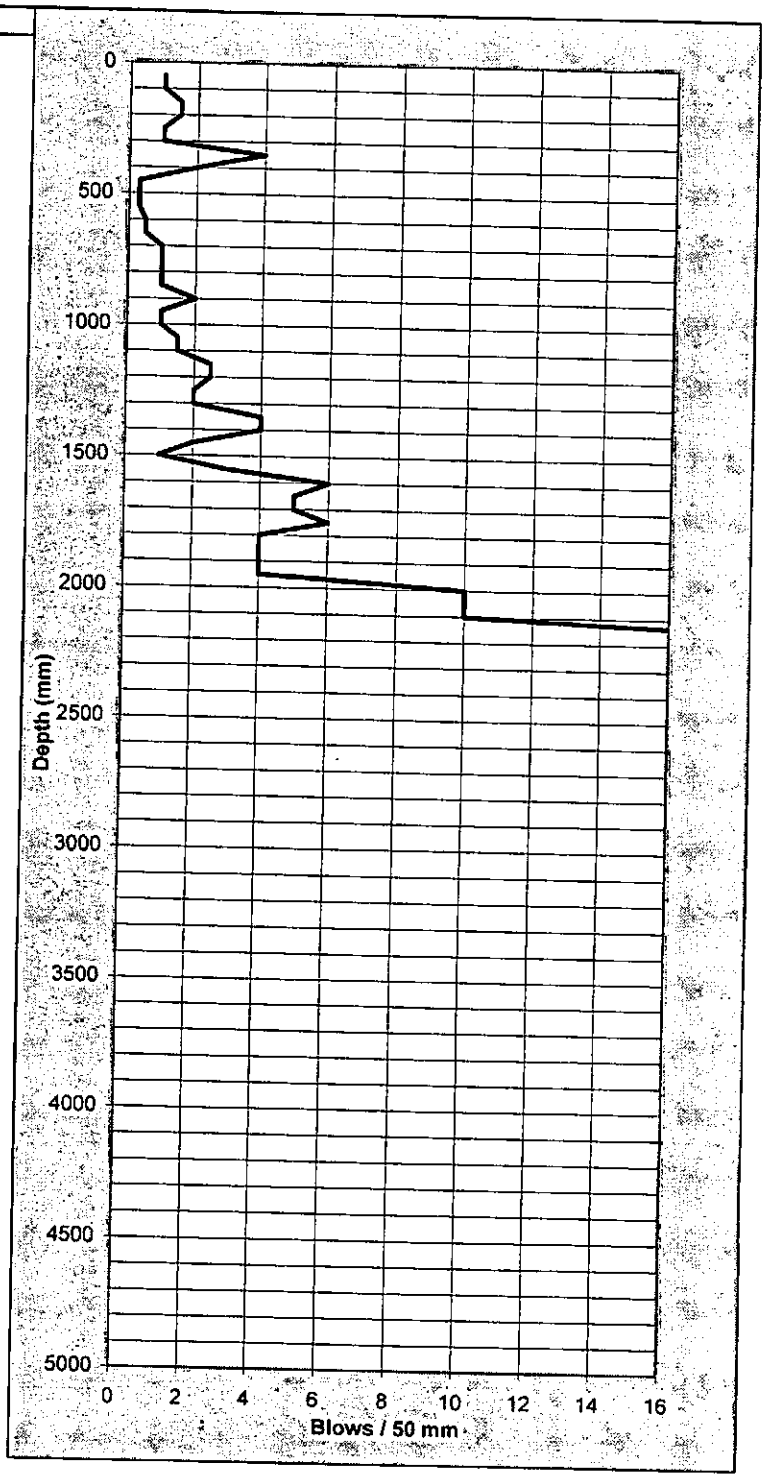
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *28/11/2003*
Operated by: *John*
Logged by: *SCWW*
Checked by: *8/12*

Test No. *98/1a*
Sheet *1* of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	1.5	2650	
200	1.5	2700	
250	1	2750	
300	1	2800	
350	4	2850	
400	2	2900	
450	0.3	2950	
500	0.3	3000	
550	0.3	3050	
600	0.5	3100	
650	0.5	3150	
700	1	3200	
750	1	3250	
800	1	3300	
850	1	3350	
900	2	3400	
950	1	3450	
1000	1	3500	
1050	1.5	3550	
1100	1.5	3600	
1150	2.5	3650	
1200	2.5	3700	
1250	2	3750	
1300	2	3800	
1350	4	3850	
1400	4	3900	
1450	2	3950	
1500	1	4000	
1550	3	4050	
1600	6	4100	
1650	5	4150	
1700	5	4200	
1750	6	4250	
1800	4	4300	
1850	4	4350	
1900	4	4400	
1950	4	4450	
2000	10	4500	
2050	10	4550	
2100	10	4600	
2150	19	4650	
2200	18	4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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44 Halifax Street
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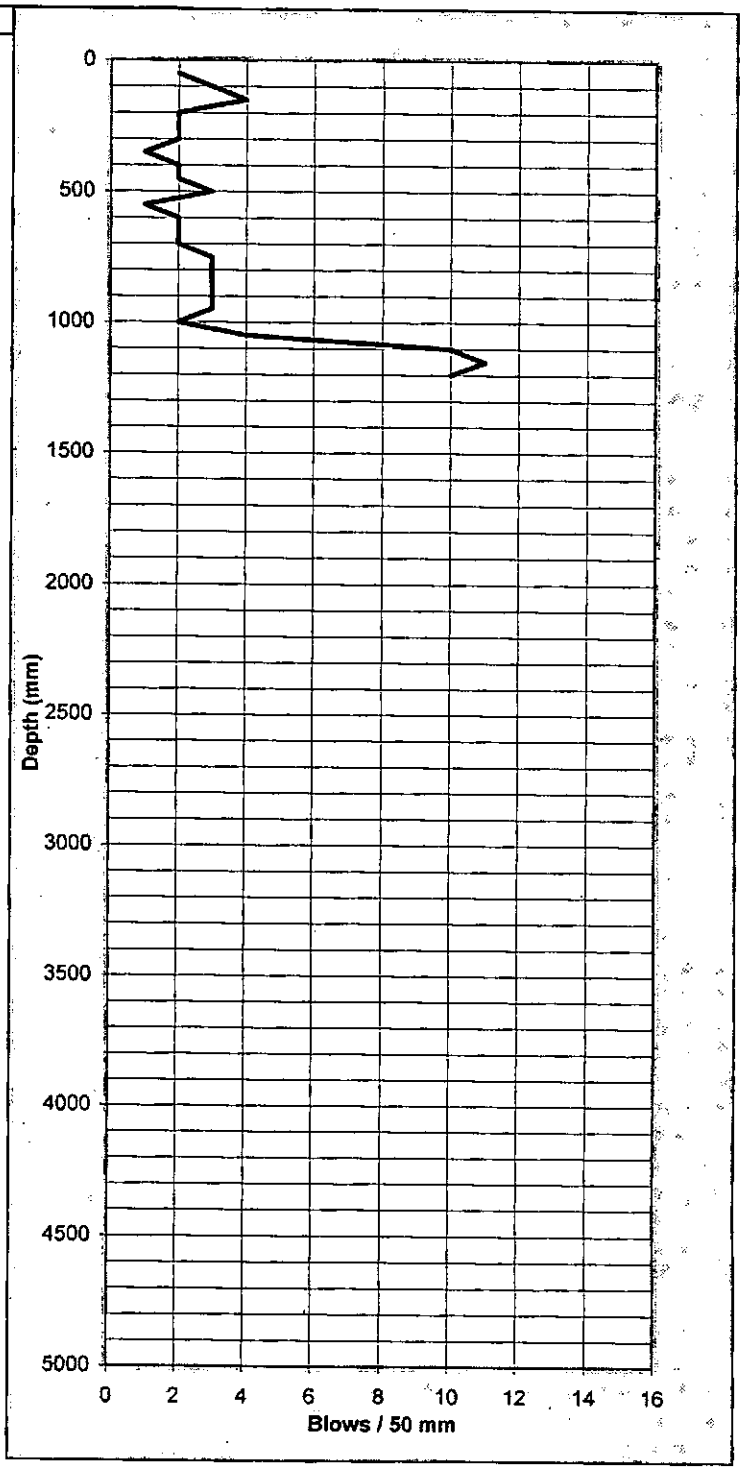
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	**Test No.** ***98/2***
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	**Sheet** ***1***
Level:	-	Checked by: *f 8/12*	**of** ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	3	2600	
150	4	2650	
200	2	2700	
250	2	2750	
300	2	2800	
350	1	2850	
400	2	2900	
450	2	2950	
500	3	3000	
550	1	3050	
600	2	3100	
650	2	3150	
700	2	3200	
750	3	3250	
800	3	3300	
850	3	3350	
900	3	3400	
950	3	3450	
1000	2	3500	
1050	4	3550	
1100	10	3600	
1150	11	3650	
1200	10	3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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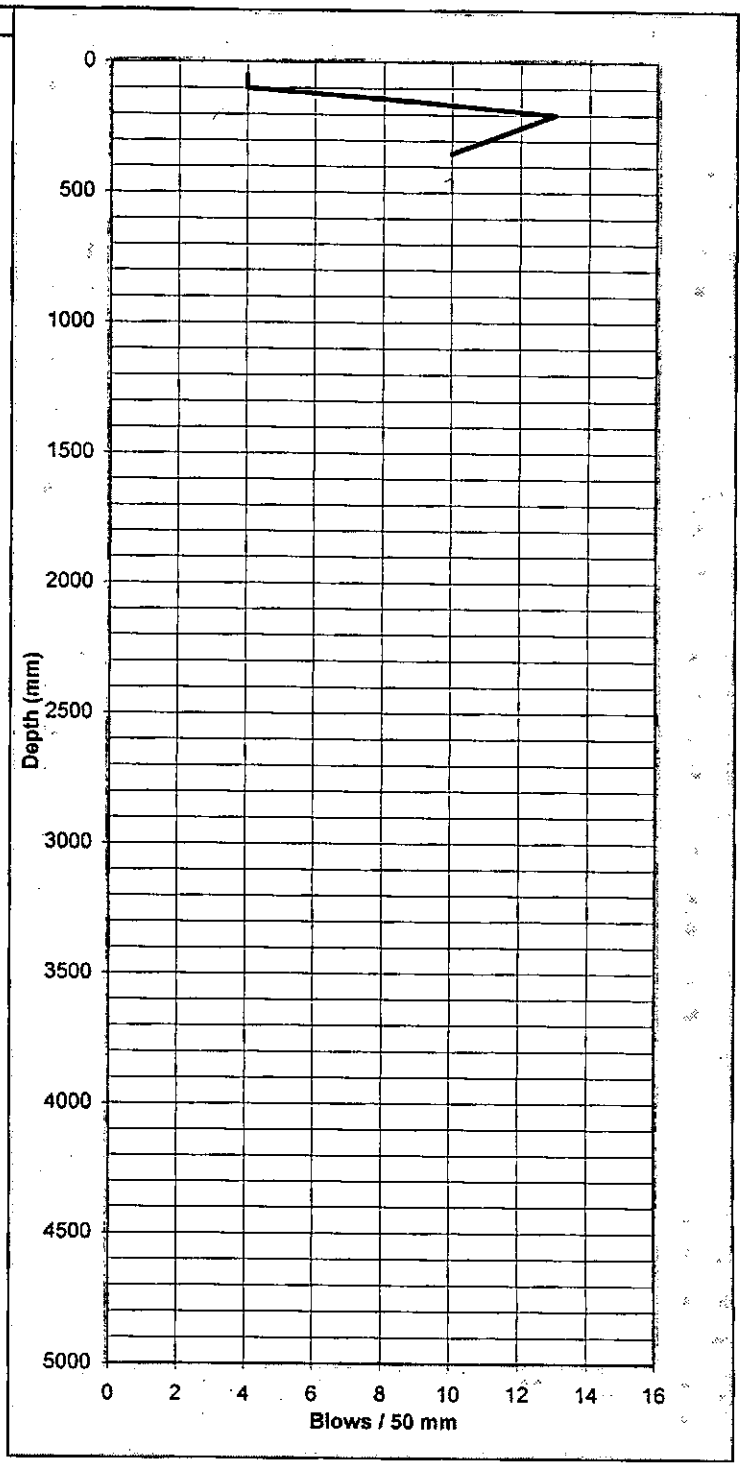
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *f 8/12*

Test No. *98/3*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	4	2550	
100	4	2600	
150	9	2650	
200	13	2700	
250	12	2750	
300	11	2800	
350	10	2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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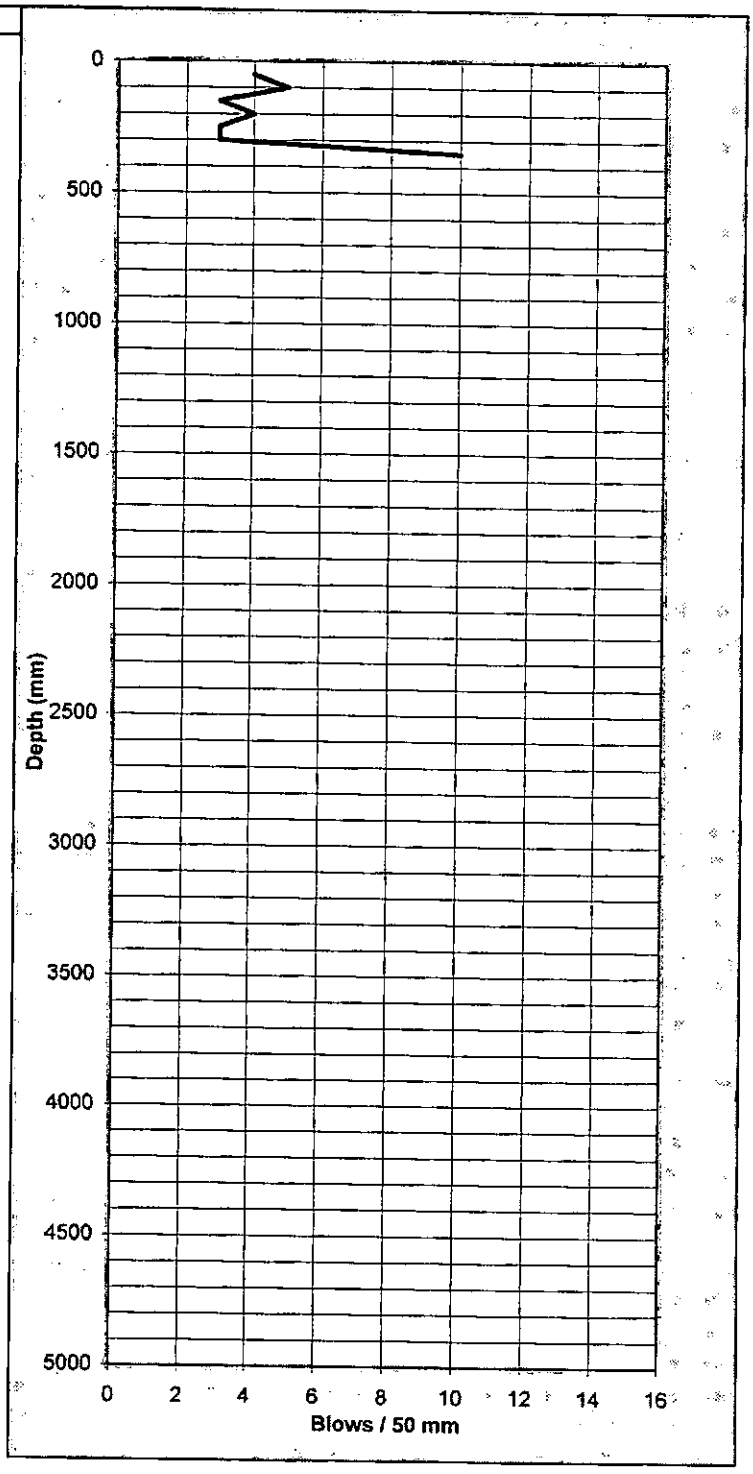
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *[illegible] 8/12*

Test No. *99/1*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	4	2550	
100	5	2600	
150	3	2650	
200	4	2700	
250	3	2750	
300	3	2800	
350	10	2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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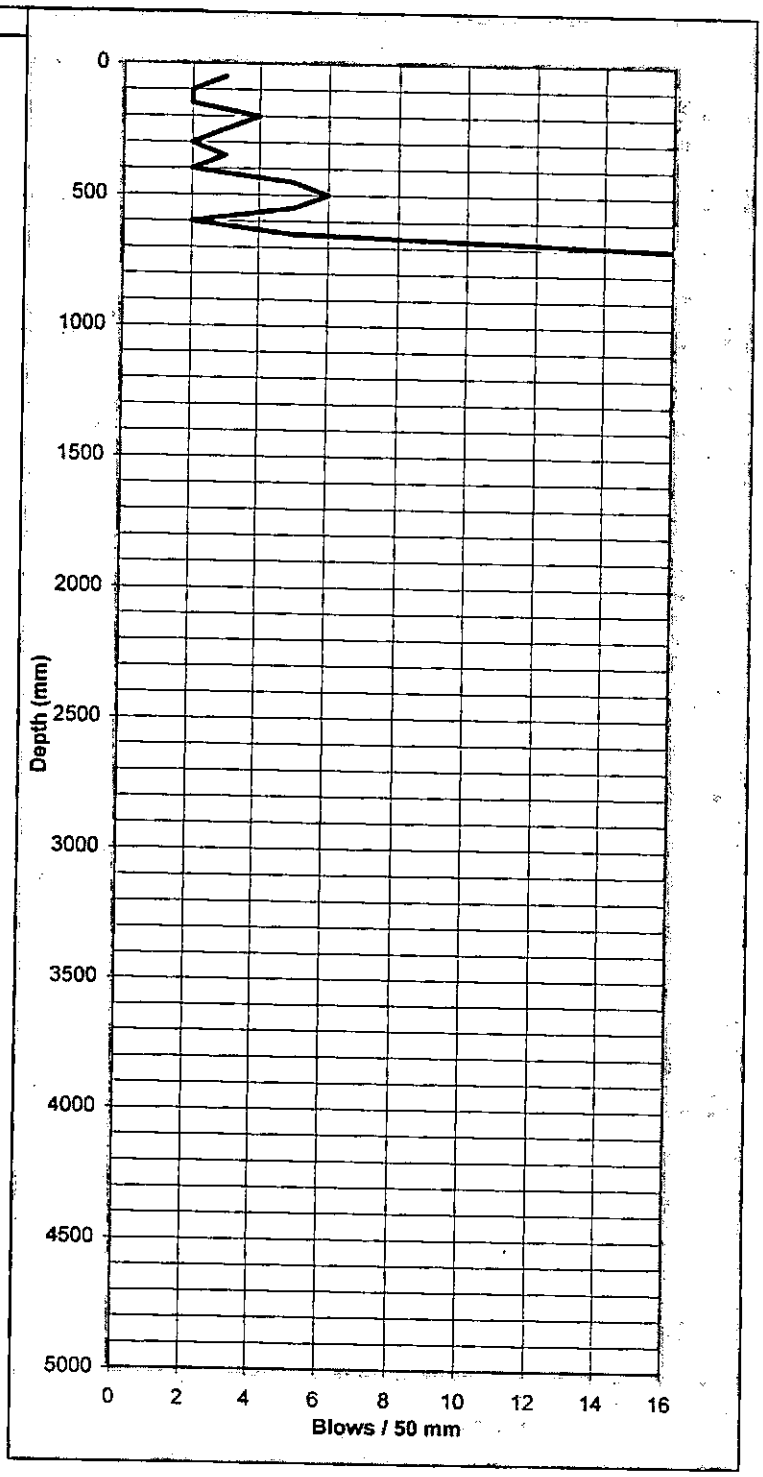
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *[illegible] 8/12*

Test No. *99/2*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	2	2600	
150	2	2650	
200	4	2700	
250	3	2750	
300	2	2800	
350	3	2850	
400	2	2900	
450	5	2950	
500	6	3000	
550	5	3050	
600	2	3100	
650	5	3150	
700	16	3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

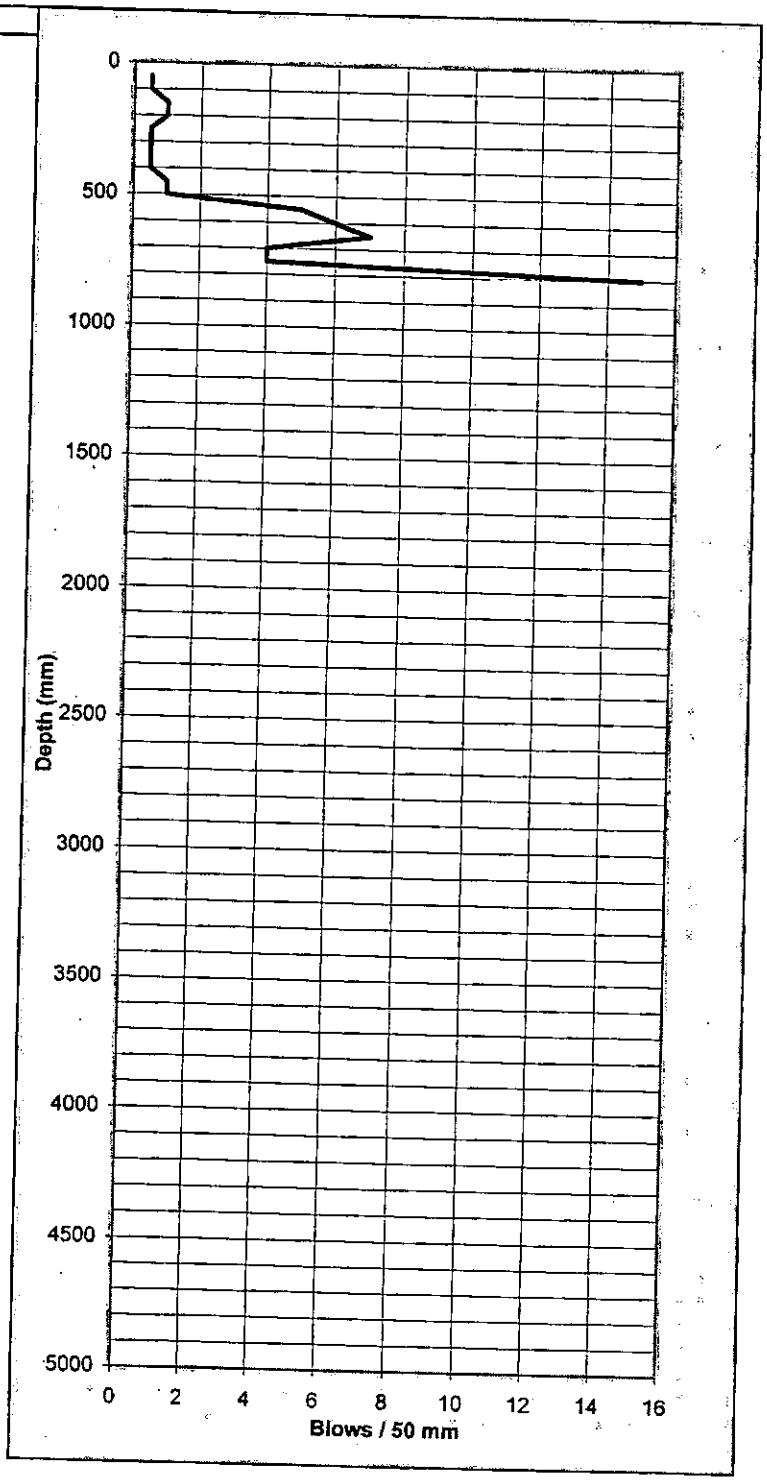
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *f 8/12*

Test No. *99/3*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	0.5	2550	
100	0.5	2600	
150	1	2650	
200	1	2700	
250	0.5	2750	
300	0.5	2800	
350	0.5	2850	
400	0.5	2900	
450	1	2950	
500	1	3000	
550	5	3050	
600	6	3100	
650	7	3150	
700	4	3200	
750	4	3250	
800	15	3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
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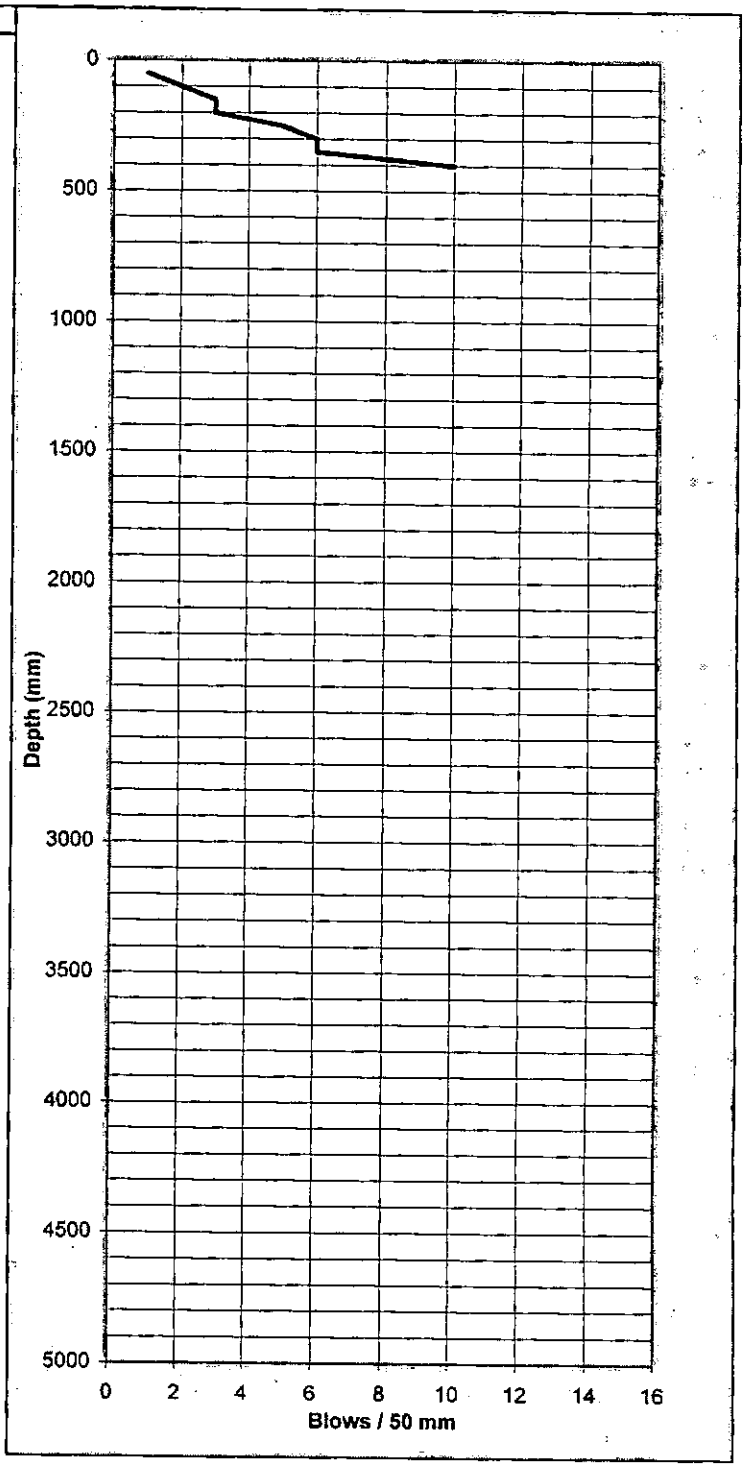
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	**Test No.** *100/1*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	**Sheet** *1*
Level:	-	Checked by: *f 8/12*	**of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	2	2600	
150	3	2650	
200	3	2700	
250	5	2750	
300	6	2800	
350	6	2850	
400	10	2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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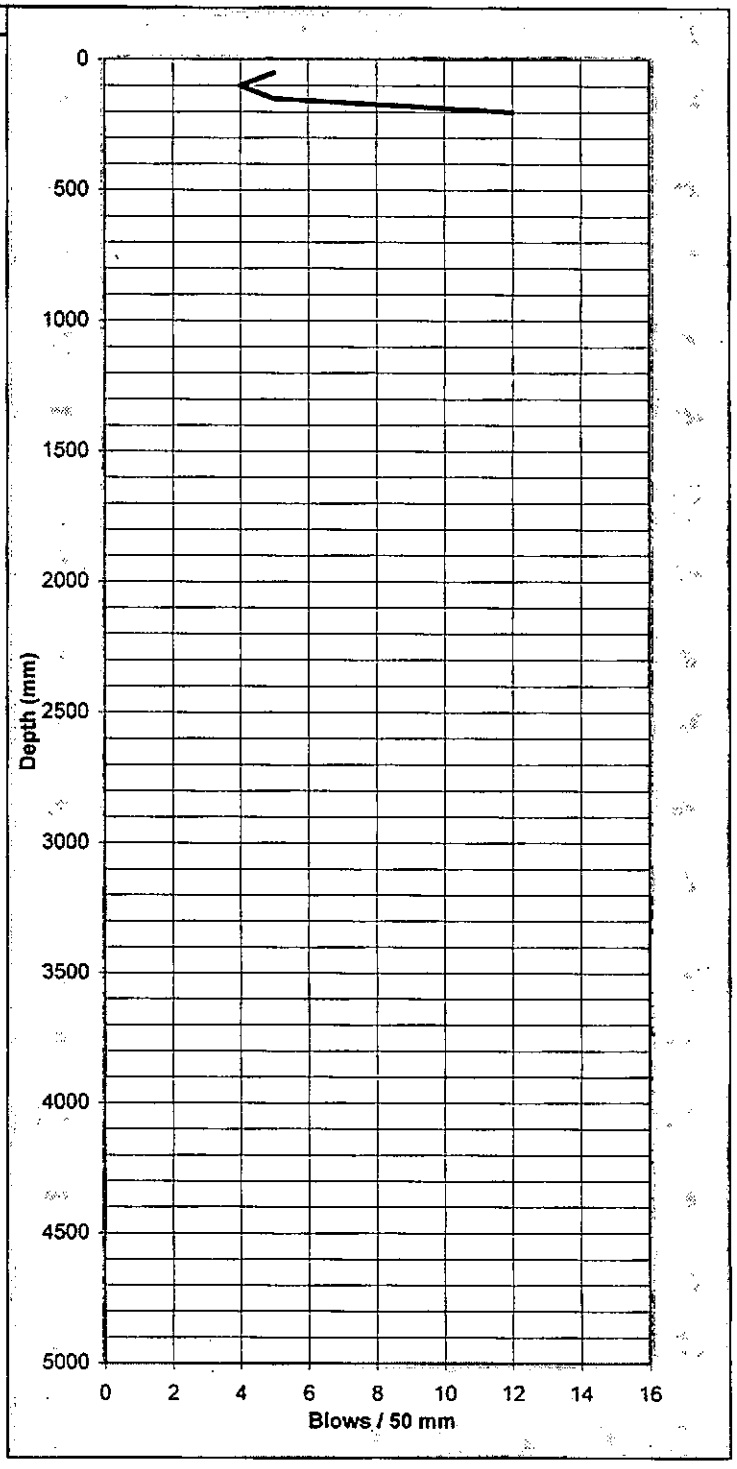
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	**Test No.** *100/2*
Project:	*Maire Ridge*	Operated by: *SCWW*	**Sheet** *1*
Location:	*Refer Site Plan*	Logged by: *SCWW*	**of** *1*
Level:	-	Checked by: *[illegible] 8/12*	

mm Driven	No. of Blows	mm Driven	No. of Blows
50	5	2550	
100	4	2600	
150	5	2650	
200	12	2700	
250		2750	
300		2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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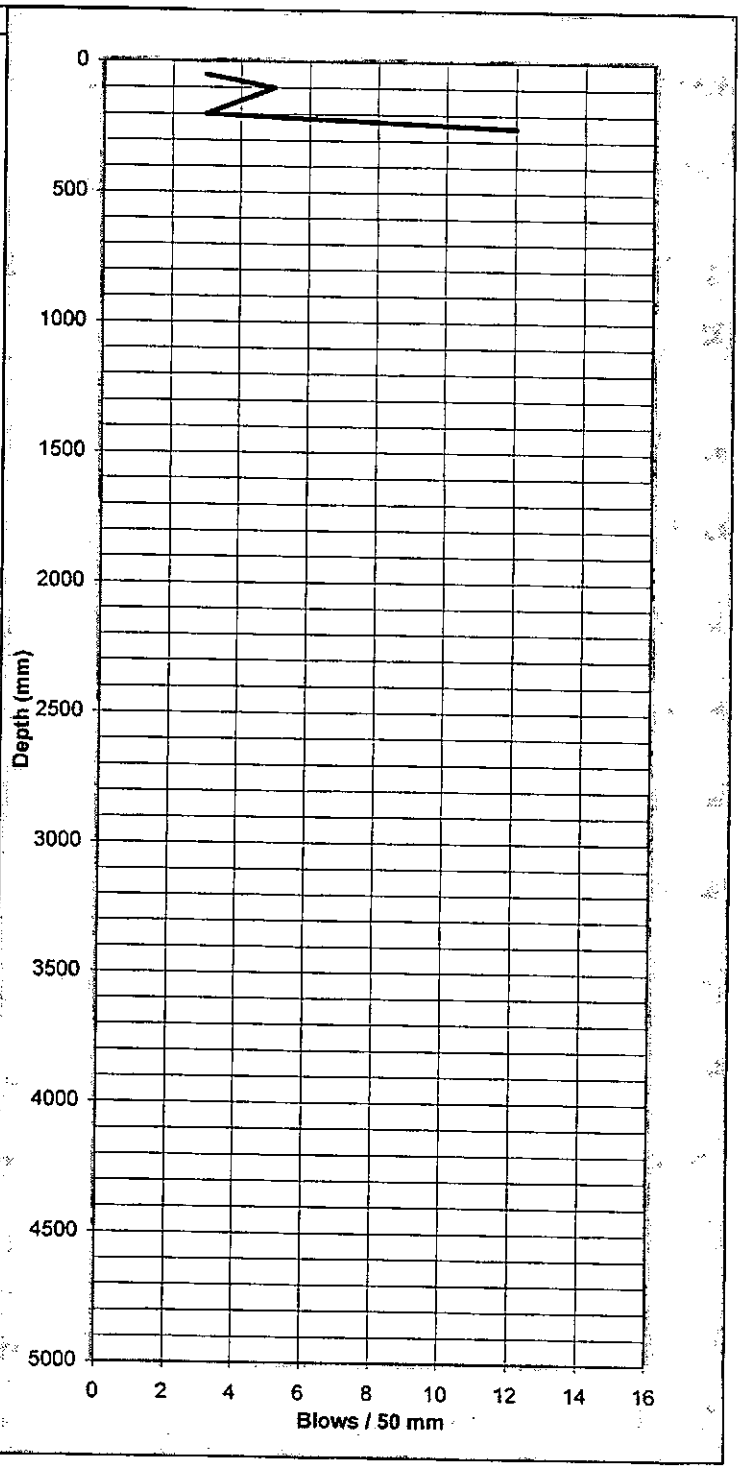
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	Test No. *100/3*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	Sheet *1*
Level:	-	Checked by: *F 8/12*	of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	5	2600	
150	4	2650	
200	3	2700	
250	12	2750	
300		2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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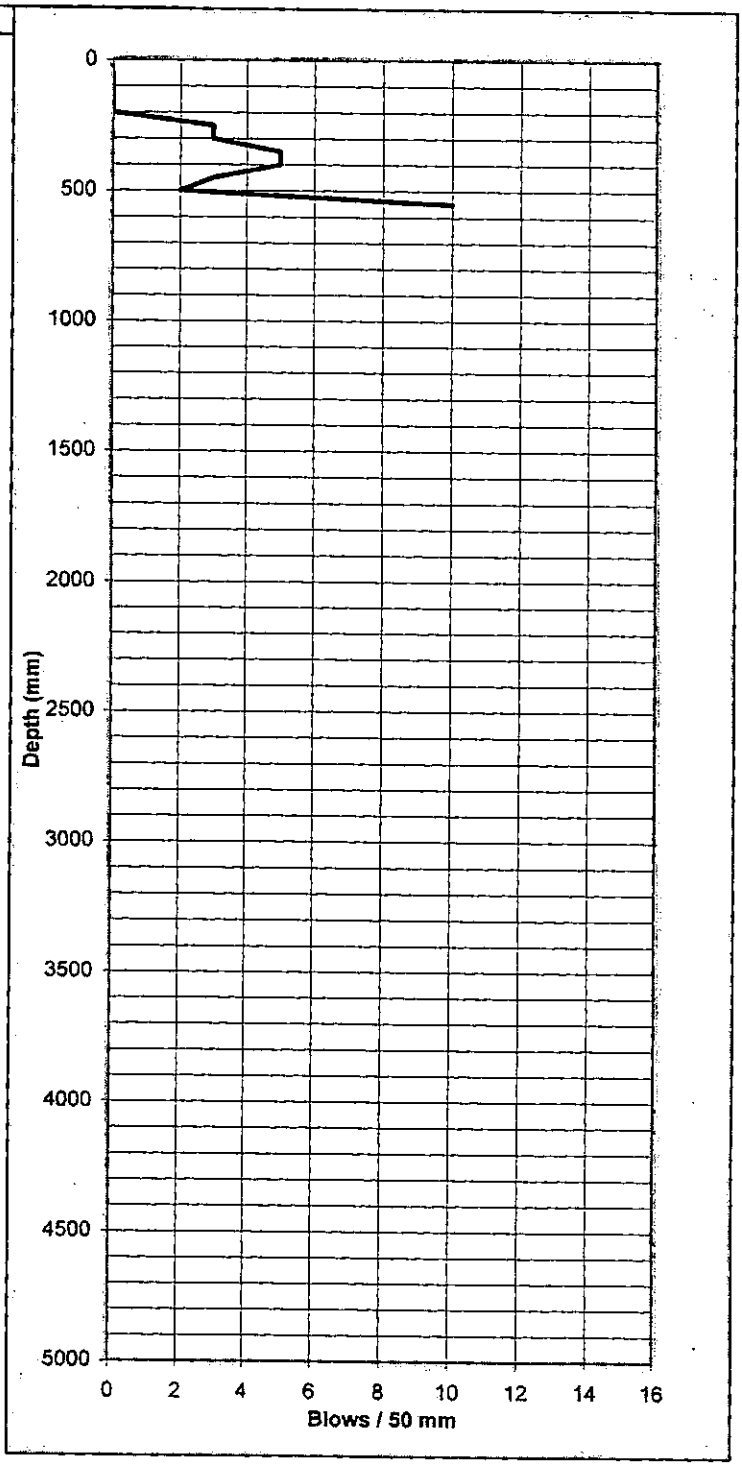
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/09/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *[illegible] 8/12*

Test No. *101/1*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*0*	2550	
100	*0*	2600	
150	*0*	2650	
200	*0*	2700	
250	*3*	2750	
300	*3*	2800	
350	*5*	2850	
400	*5*	2900	
450	*3*	2950	
500	*2*	3000	
550	*10*	3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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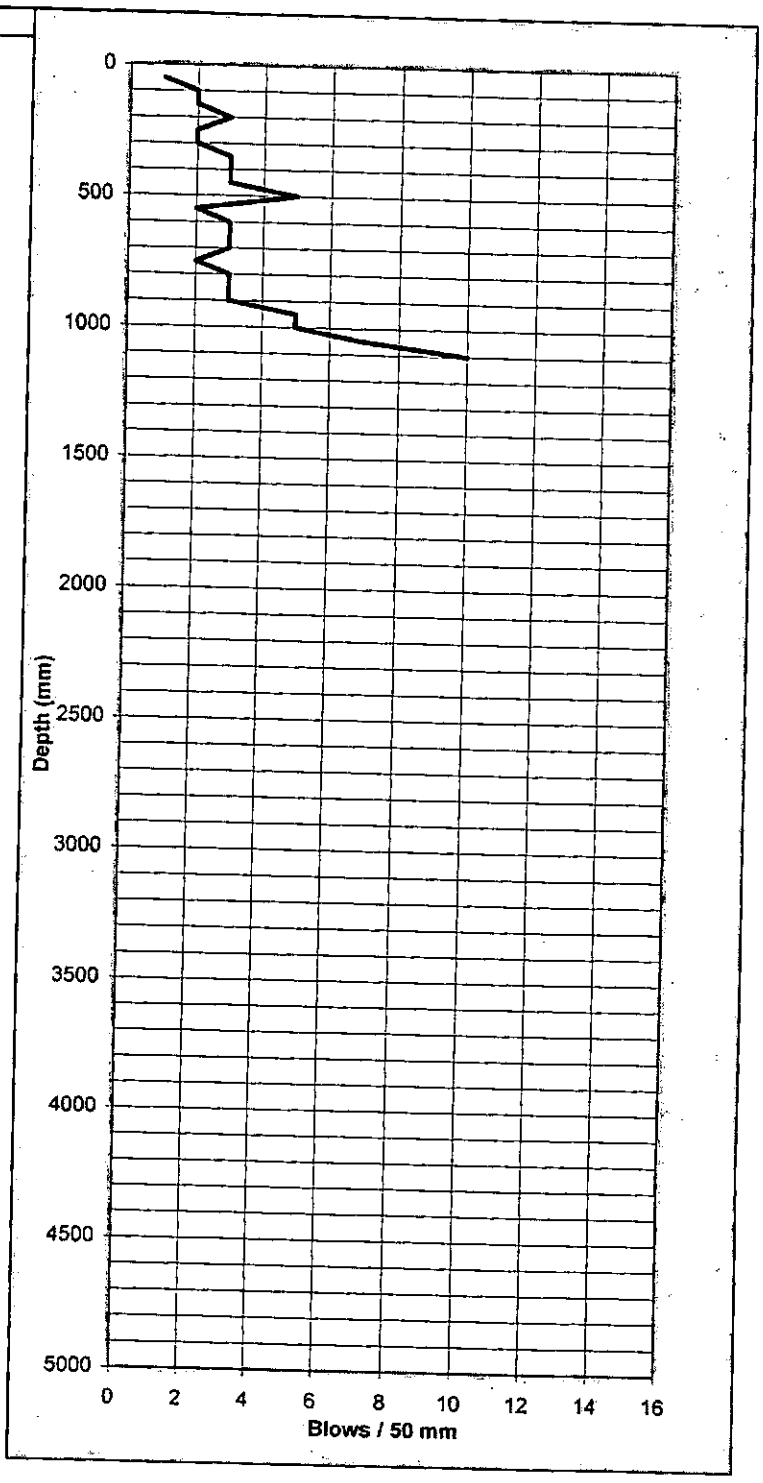
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/09/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *F 8/12*

Test No. *101/2*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	2	2600	
150	2	2650	
200	3	2700	
250	2	2750	
300	2	2800	
350	3	2850	
400	3	2900	
450	3	2950	
500	5	3000	
550	2	3050	
600	3	3100	
650	3	3150	
700	3	3200	
750	2	3250	
800	3	3300	
850	3	3350	
900	3	3400	
950	5	3450	
1000	5	3500	
1050	7	3550	
1100	10	3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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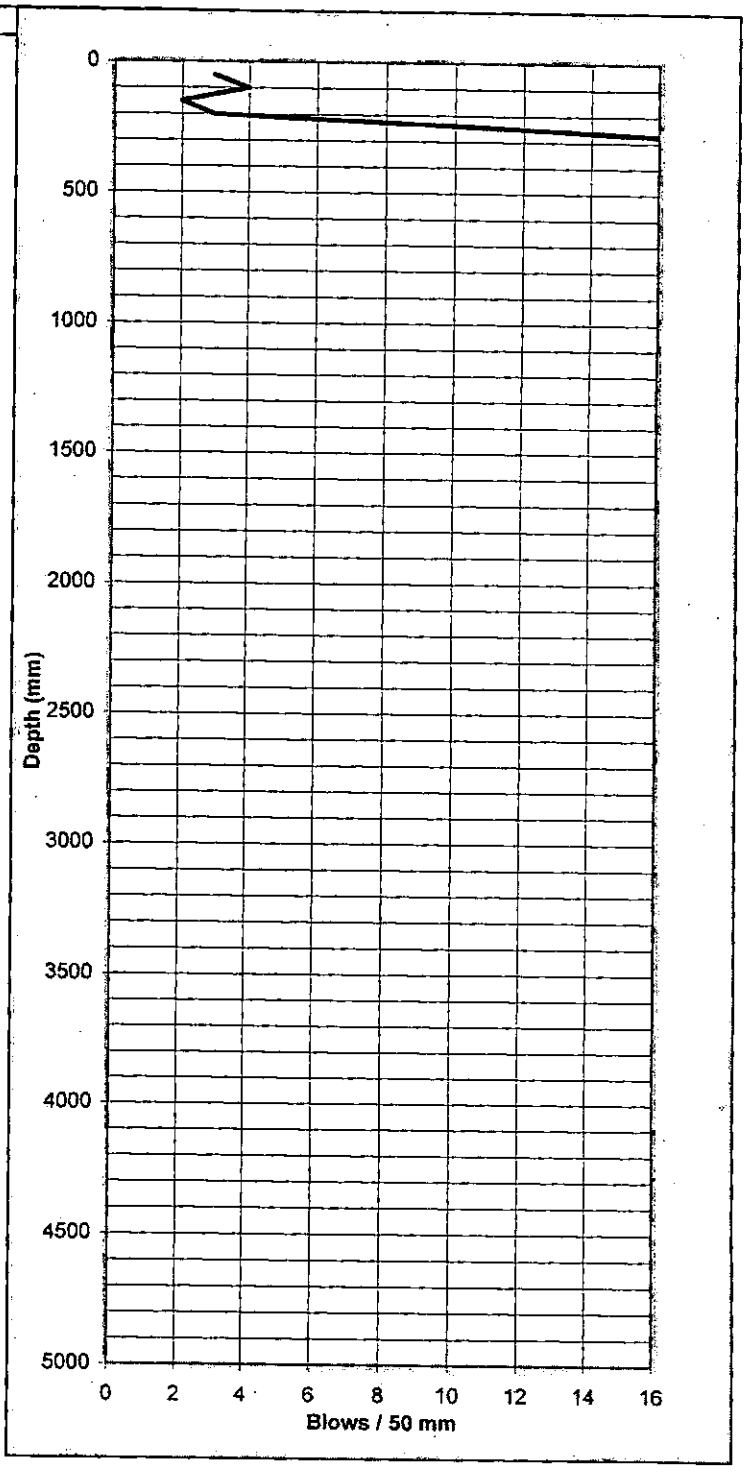
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *F 8/12*

Test No. ***101/3***
Sheet ***1*** **of** ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	4	2600	
150	2	2650	
200	3	2700	
250	12	2750	
300	20	2800	
350	20	2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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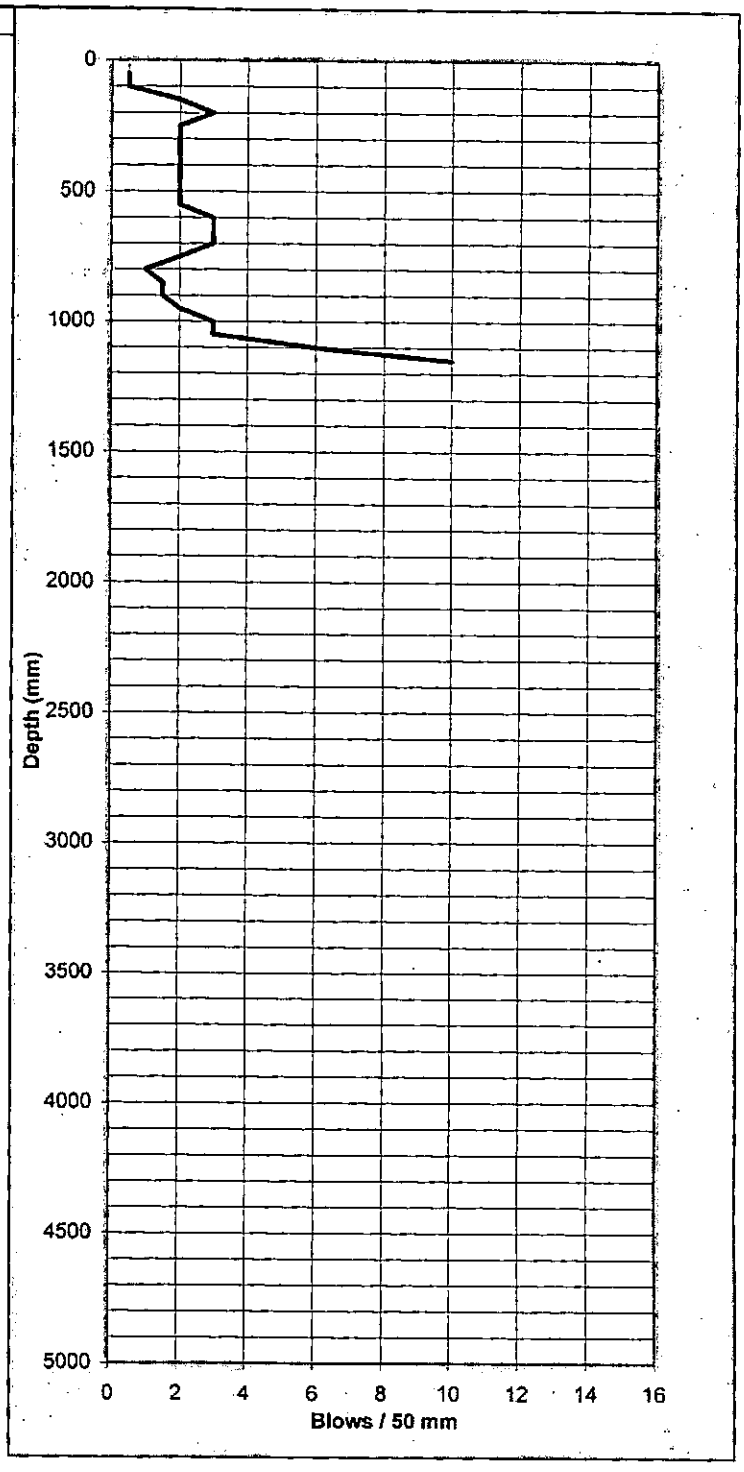
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	Test No. *102/1*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	Sheet *1*
Level:	-	Checked by: *8/12*	of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*0.5*	2550	
100	*0.5*	2600	
150	*2*	2650	
200	*3*	2700	
250	*2*	2750	
300	*2*	2800	
350	*2*	2850	
400	*2*	2900	
450	*2*	2950	
500	*2*	3000	
550	*2*	3050	
600	*3*	3100	
650	*3*	3150	
700	*3*	3200	
750	*2*	3250	
800	*1*	3300	
850	*1.5*	3350	
900	*1.5*	3400	
950	*2*	3450	
1000	*3*	3500	
1050	*3*	3550	
1100	*6*	3600	
1150	*10*	3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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P O Box 1009
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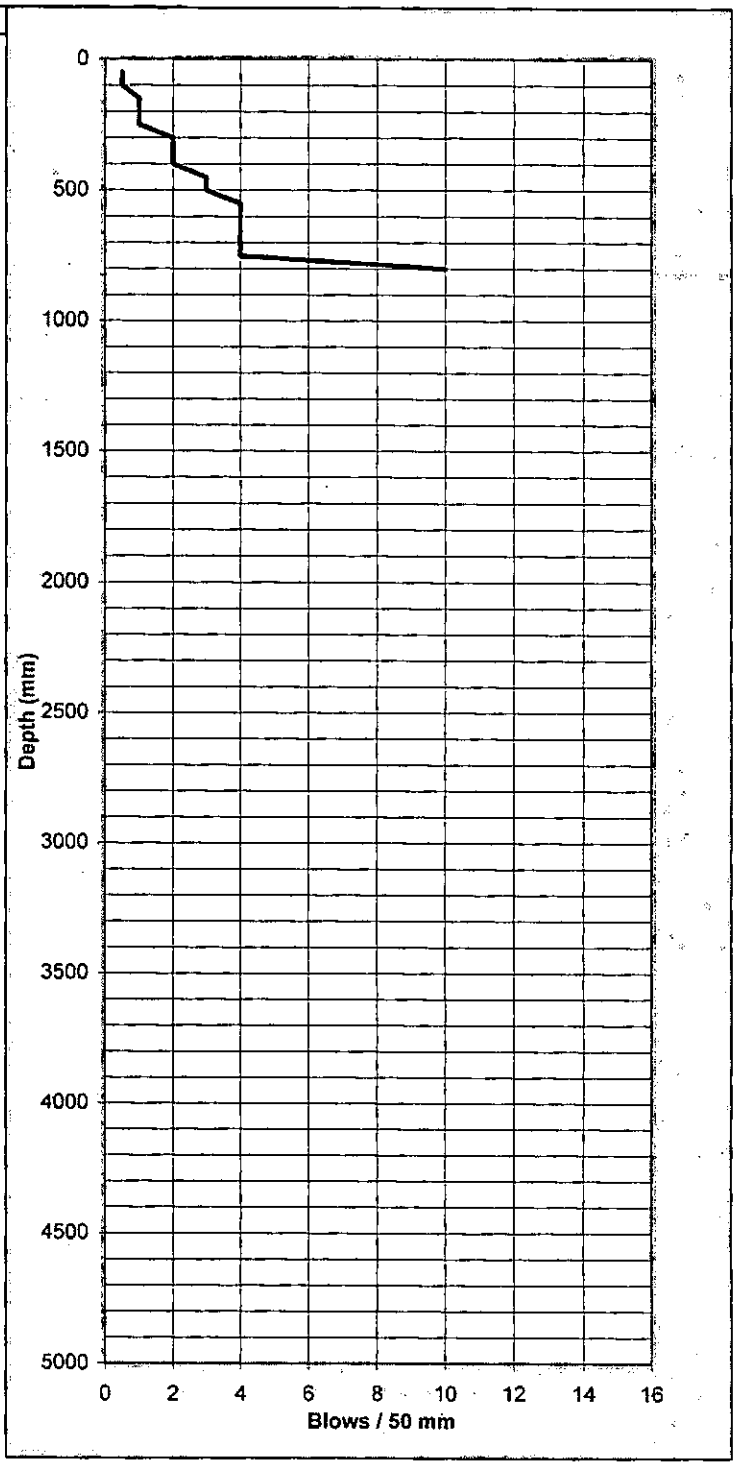
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	**Test No.** *102/2*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	**Sheet** *1*
Level:	-	Checked by: *[illegible]*	**of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*0.5*	2550	
100	*0.5*	2600	
150	*1*	2650	
200	*1*	2700	
250	*1*	2750	
300	*2*	2800	
350	*2*	2850	
400	*2*	2900	
450	*3*	2950	
500	*3*	3000	
550	*4*	3050	
600	*4*	3100	
650	*4*	3150	
700	*4*	3200	
750	*4*	3250	
800	*10*	3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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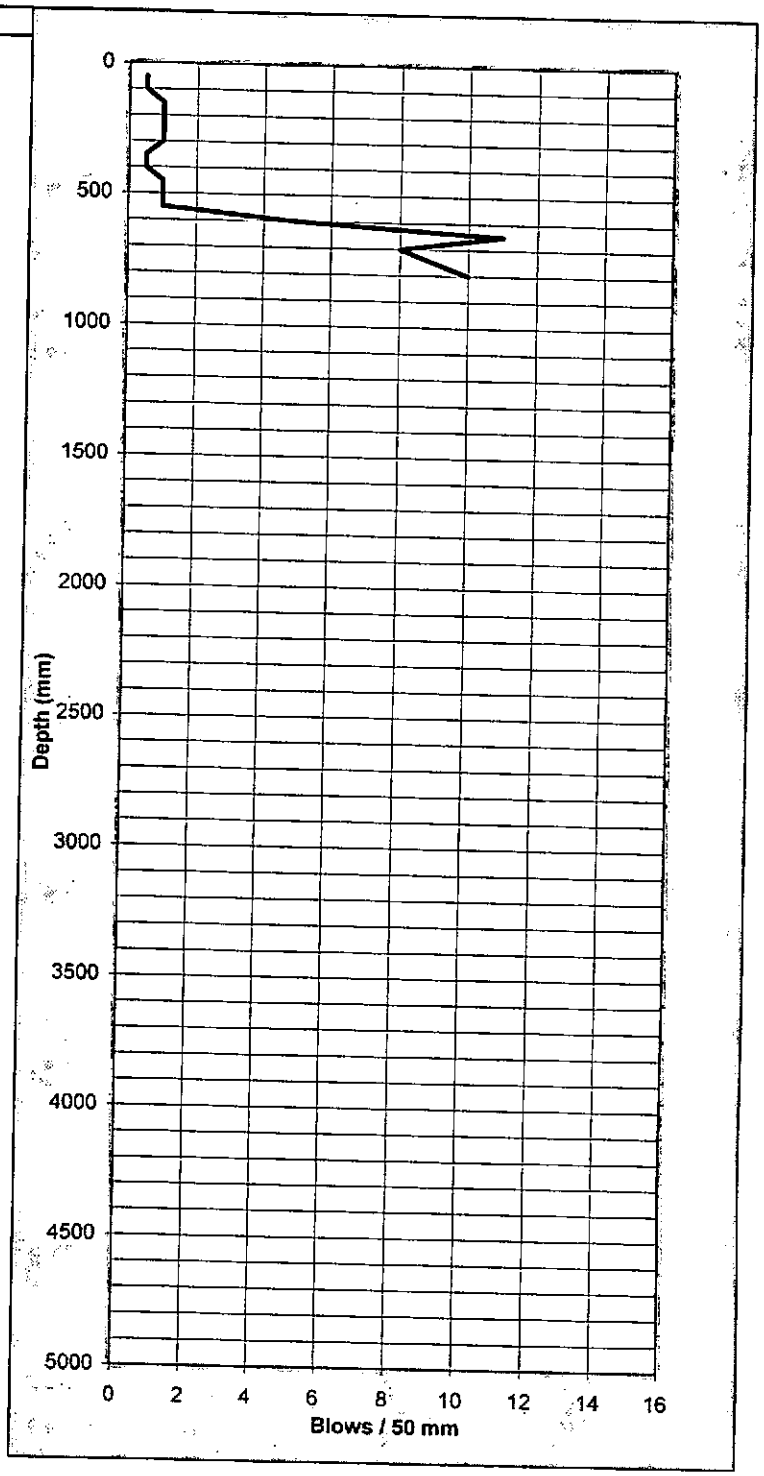
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *8/12*

Test No. *102/3*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	0.5	2550	
100	0.5	2600	
150	1	2650	
200	1	2700	
250	1	2750	
300	1	2800	
350	0.5	2850	
400	0.5	2900	
450	1	2950	
500	1	3000	
550	1	3050	
600	5	3100	
650	11	3150	
700	8	3200	
750	9	3250	
800	10	3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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NELSON
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Fax: (03) 546 7619

SCALA PENETROMETER LOG

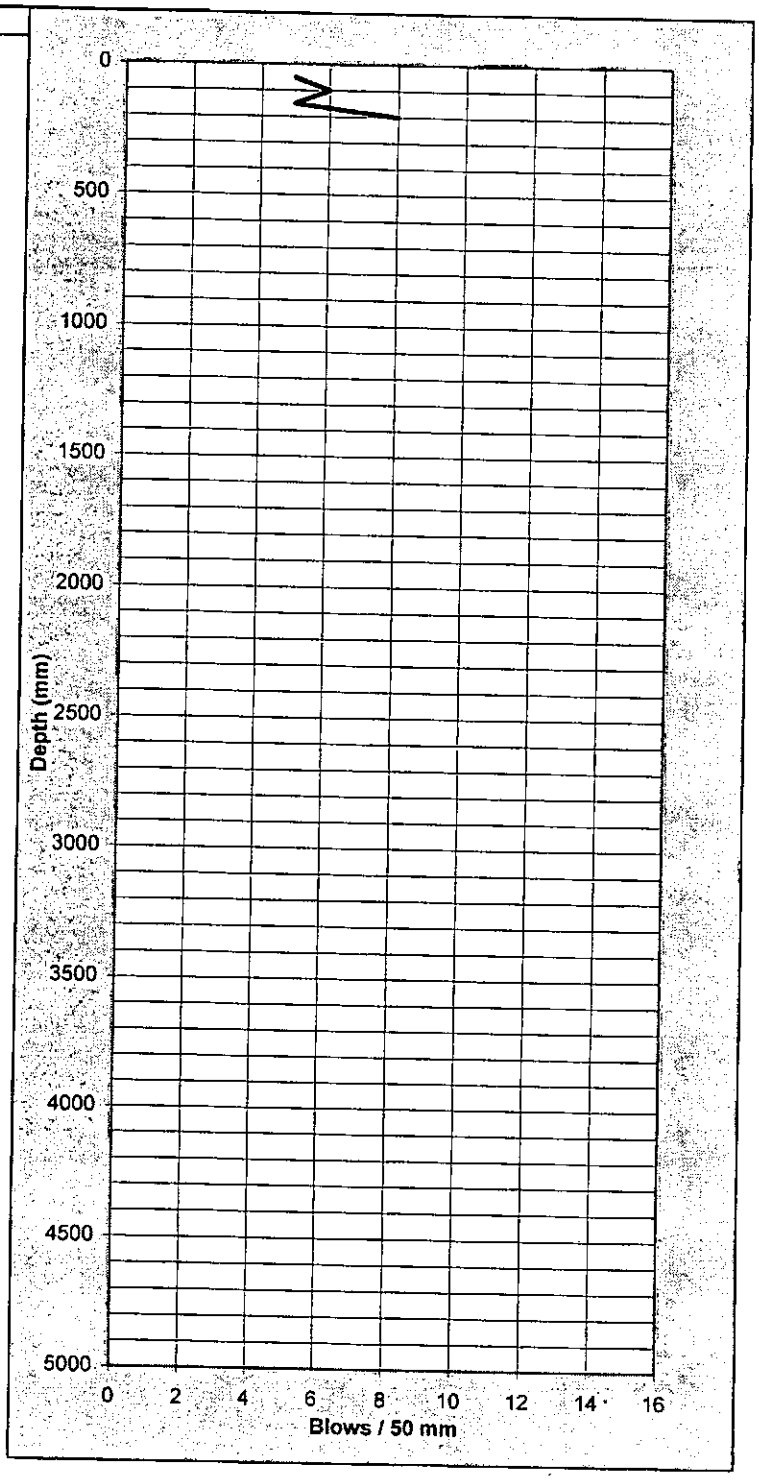
Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *Y 8/12*

Test No. *103/1*
Sheet *1* **of** *1*

mm Driven	No. of Blows
50	5
100	6
150	5
200	8
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	
1050	
1100	
1150	
1200	
1250	
1300	
1350	
1400	
1450	
1500	
1550	
1600	
1650	
1700	
1750	
1800	
1850	
1900	
1950	
2000	
2050	
2100	
2150	
2200	
2250	
2300	
2350	
2400	
2450	
2500	

mm Driven	No. of Blows
2550	
2600	
2650	
2700	
2750	
2800	
2850	
2900	
2950	
3000	
3050	
3100	
3150	
3200	
3250	
3300	
3350	
3400	
3450	
3500	
3550	
3600	
3650	
3700	
3750	
3800	
3850	
3900	
3950	
4000	
4050	
4100	
4150	
4200	
4250	
4300	
4350	
4400	
4450	
4500	
4550	
4600	
4650	
4700	
4750	
4800	
4850	
4900	
4950	
5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *[illegible] 8/12*

Test No. *103/2*
Sheet *1* **of** *1*

mm Driven	No. of Blows
50	3
100	4
150	5
200	4
250	5
300	3
350	11
400	10
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	
1050	
1100	
1150	
1200	
1250	
1300	
1350	
1400	
1450	
1500	
1550	
1600	
1650	
1700	
1750	
1800	
1850	
1900	
1950	
2000	
2050	
2100	
2150	
2200	
2250	
2300	
2350	
2400	
2450	
2500	

mm Driven	No. of Blows
2550	
2600	
2650	
2700	
2750	
2800	
2850	
2900	
2950	
3000	
3050	
3100	
3150	
3200	
3250	
3300	
3350	
3400	
3450	
3500	
3550	
3600	
3650	
3700	
3750	
3800	
3850	
3900	
3950	
4000	
4050	
4100	
4150	
4200	
4250	
4300	
4350	
4400	
4450	
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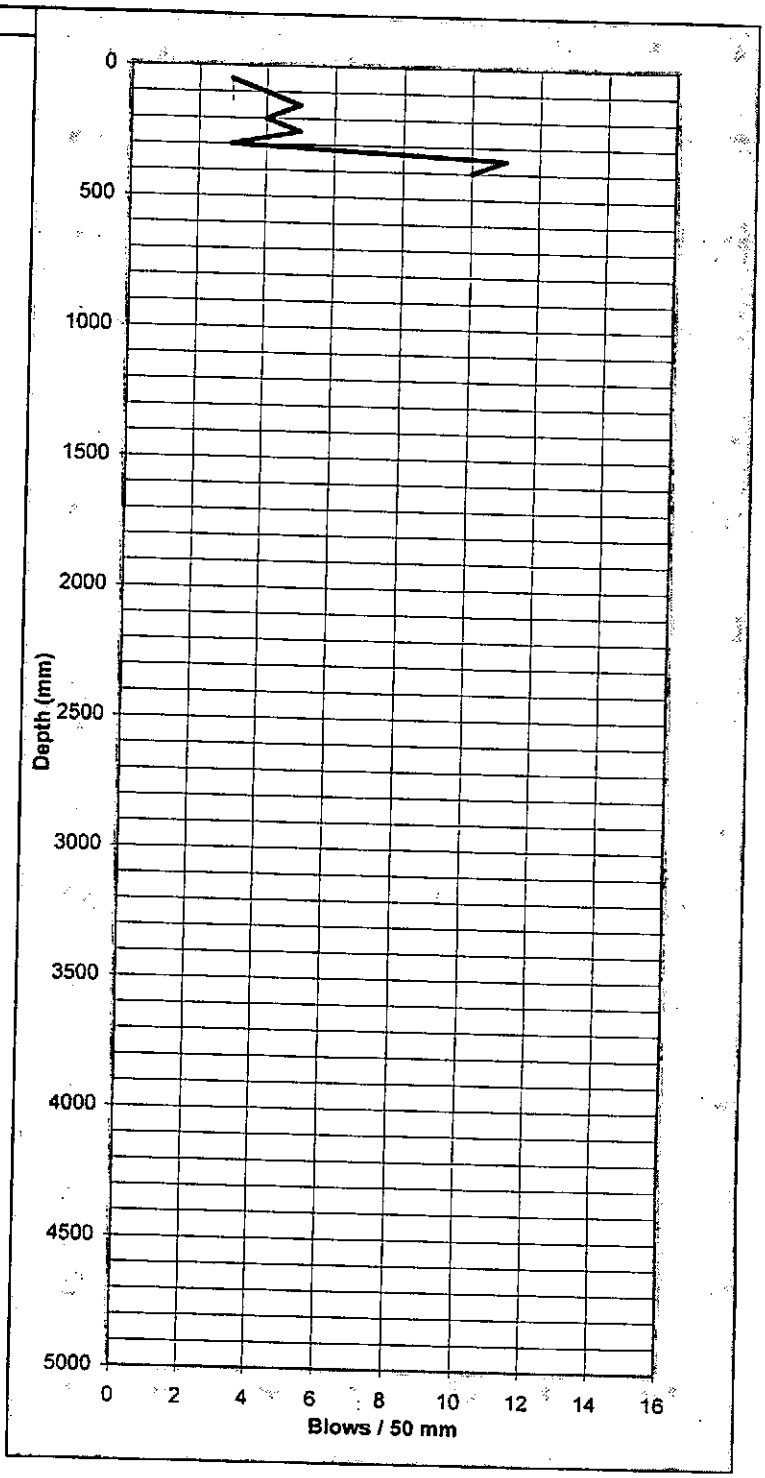
4550	
4600	
4650	
4700	
4750	
4800	
4850	
4900	
4950	
5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

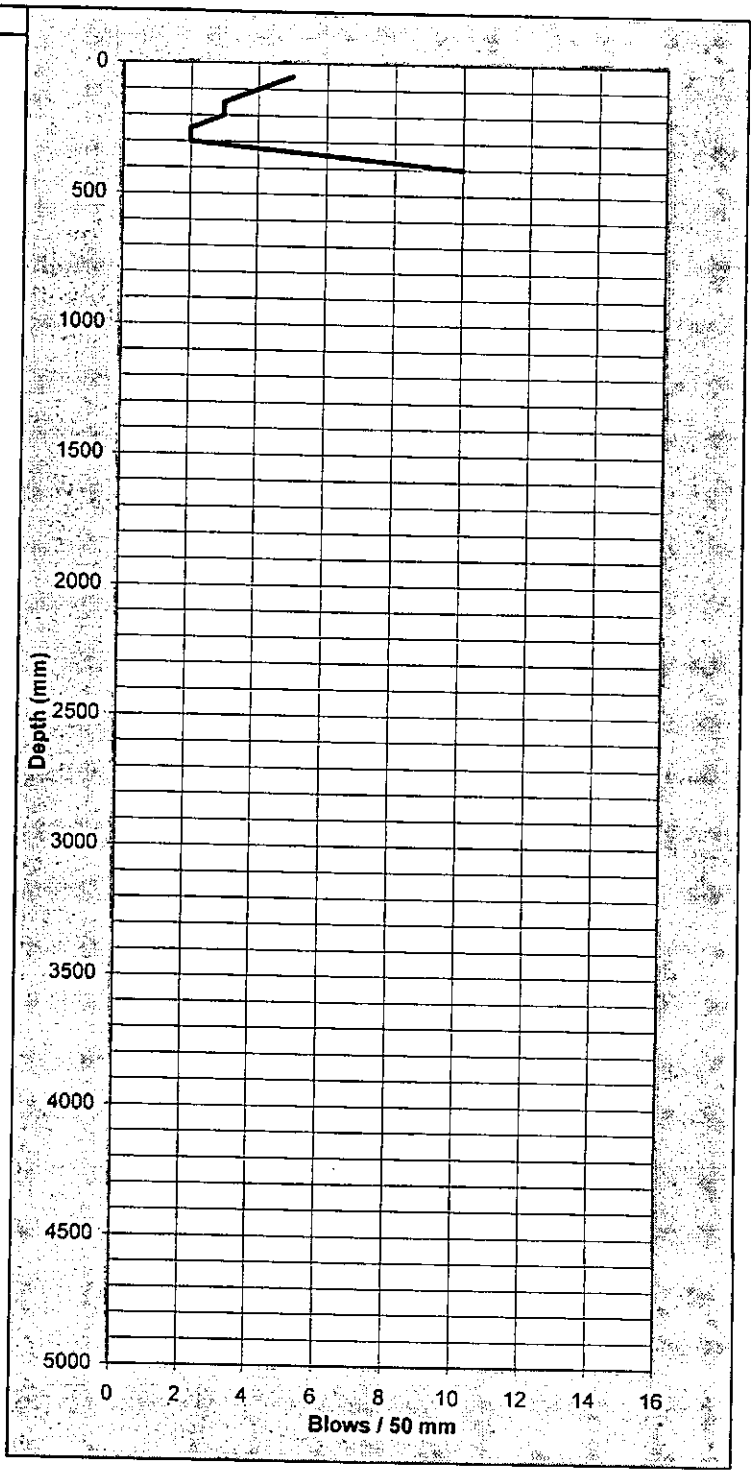
Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *8/12*

Test No. *103/3*
Sheet *1* **of** *1*

mm Driven	No. of Blows
50	5
100	4
150	3
200	3
250	2
300	2
350	6
400	10
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	
1050	
1100	
1150	
1200	
1250	
1300	
1350	
1400	
1450	
1500	
1550	
1600	
1650	
1700	
1750	
1800	
1850	
1900	
1950	
2000	
2050	
2100	
2150	
2200	
2250	
2300	
2350	
2400	
2450	
2500	

mm Driven	No. of Blows
2550	
2600	
2650	
2700	
2750	
2800	
2850	
2900	
2950	
3000	
3050	
3100	
3150	
3200	
3250	
3300	
3350	
3400	
3450	
3500	
3550	
3600	
3650	
3700	
3750	
3800	
3850	
3900	
3950	
4000	
4050	
4100	
4150	
4200	
4250	
4300	
4350	
4400	
4450	
4500	
4550	
4600	
4650	
4700	
4750	
4800	
4850	
4900	
4950	
5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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44 Halifax Street
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Tel: (03) 546 6339
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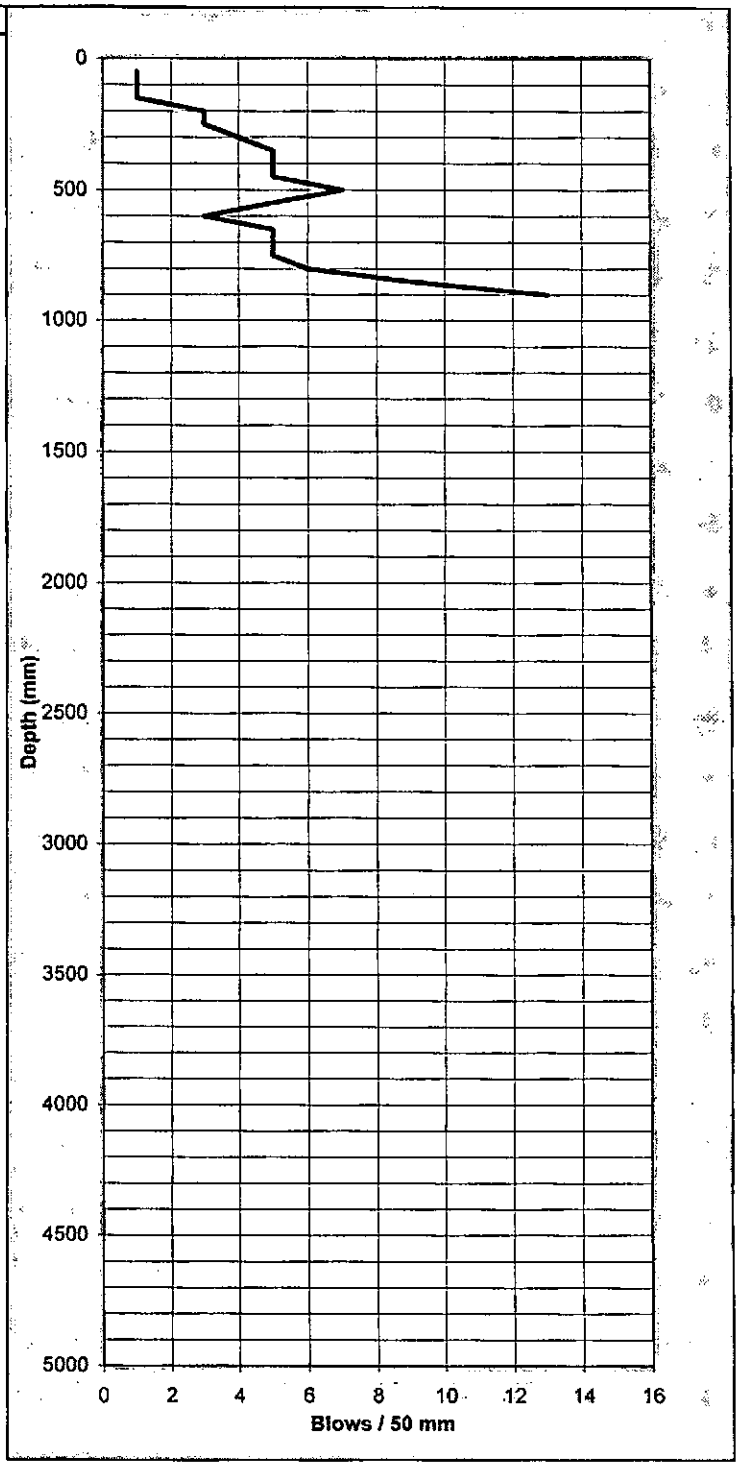
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date:	*29/07/2003*	**Test No.**	***104/1***
Project:	*Maire Ridge*	Operated by:	*SCWW*		
Location:	*Refer Site Plan*	Logged by:	*SCWW*	**Sheet**	***1***
Level:	-	Checked by:	*[illegible] 8/12*	**of**	***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	1	2650	
200	3	2700	
250	3	2750	
300	4	2800	
350	5	2850	
400	5	2900	
450	5	2950	
500	7	3000	
550	5	3050	
600	3	3100	
650	5	3150	
700	5	3200	
750	5	3250	
800	6	3300	
850	9	3350	
900	13	3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
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NELSON
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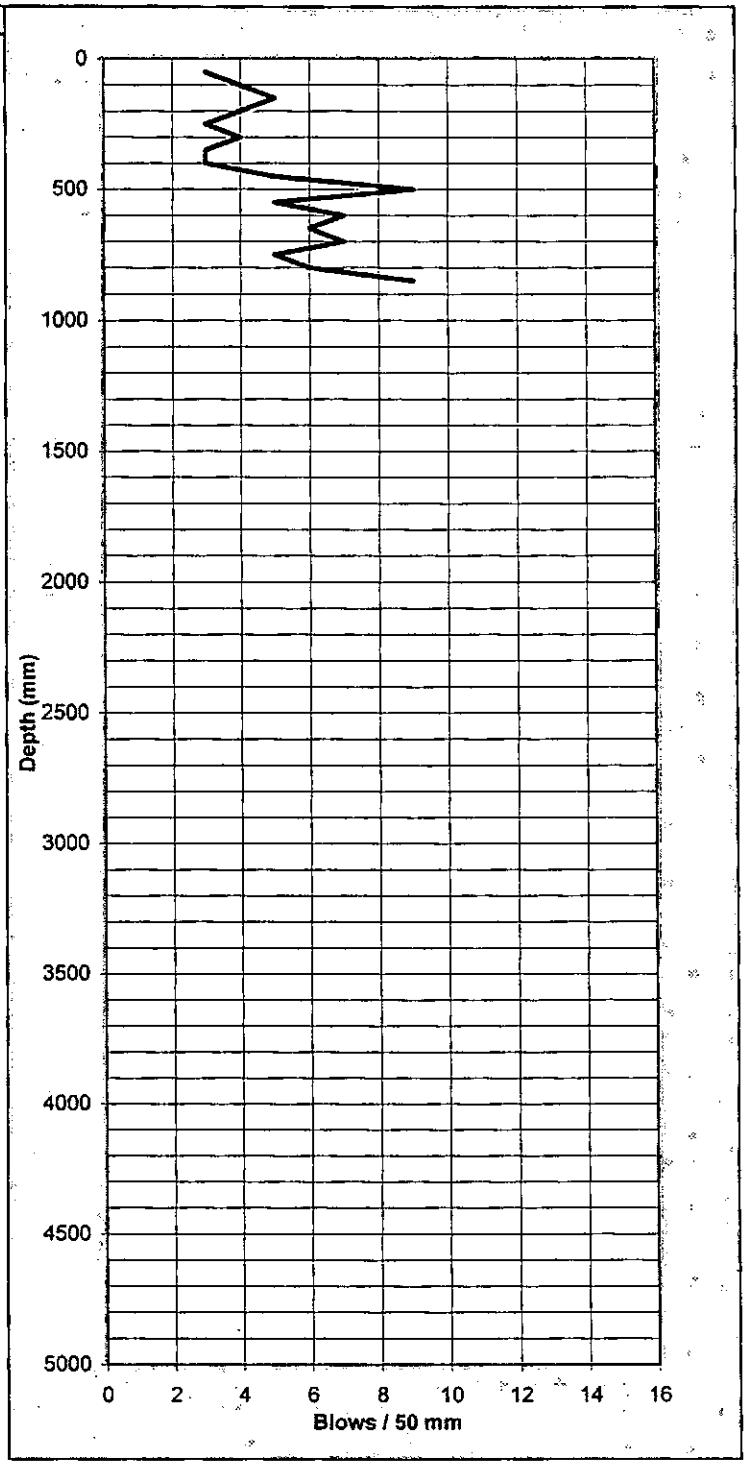
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *29/07/2003*	**Test No.** *104/2*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	**Sheet** *1*
Level:	-	Checked by: *[illegible] 8/12*	**of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	4	2600	
150	5	2650	
200	4	2700	
250	3	2750	
300	4	2800	
350	3	2850	
400	3	2900	
450	5	2950	
500	9	3000	
550	5	3050	
600	7	3100	
650	6	3150	
700	7	3200	
750	5	3250	
800	6	3300	
850	9	3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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44 Halifax Street
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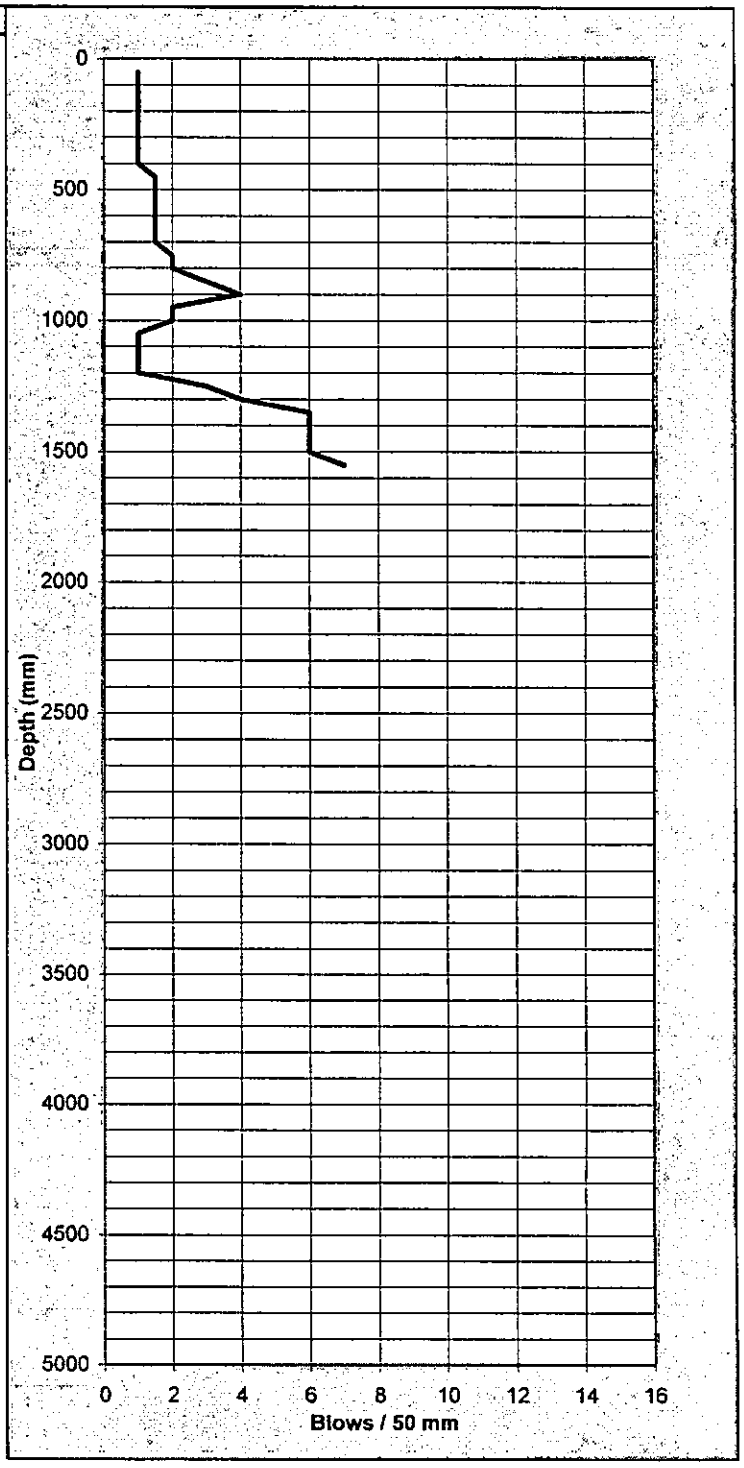
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date:	*29/07/2003*	Test No.	*105/1*
Project:	*Maire Ridge*	Operated by:	*SCWW*		
Location:	*Refer Site Plan*	Logged by:	*SCWW*	Sheet	*1*
Level:	-	Checked by:	*[illegible] 8/12*	of	*1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	1	2650	
200	1	2700	
250	1	2750	
300	1	2800	
350	1	2850	
400	1	2900	
450	1.5	2950	
500	1.5	3000	
550	1.5	3050	
600	1.5	3100	
650	1.5	3150	
700	1.5	3200	
750	2	3250	
800	2	3300	
850	3	3350	
900	4	3400	
950	2	3450	
1000	2	3500	
1050	1	3550	
1100	1	3600	
1150	1	3650	
1200	1	3700	
1250	3	3750	
1300	4	3800	
1350	6	3850	
1400	6	3900	
1450	6	3950	
1500	6	4000	
1550	7	4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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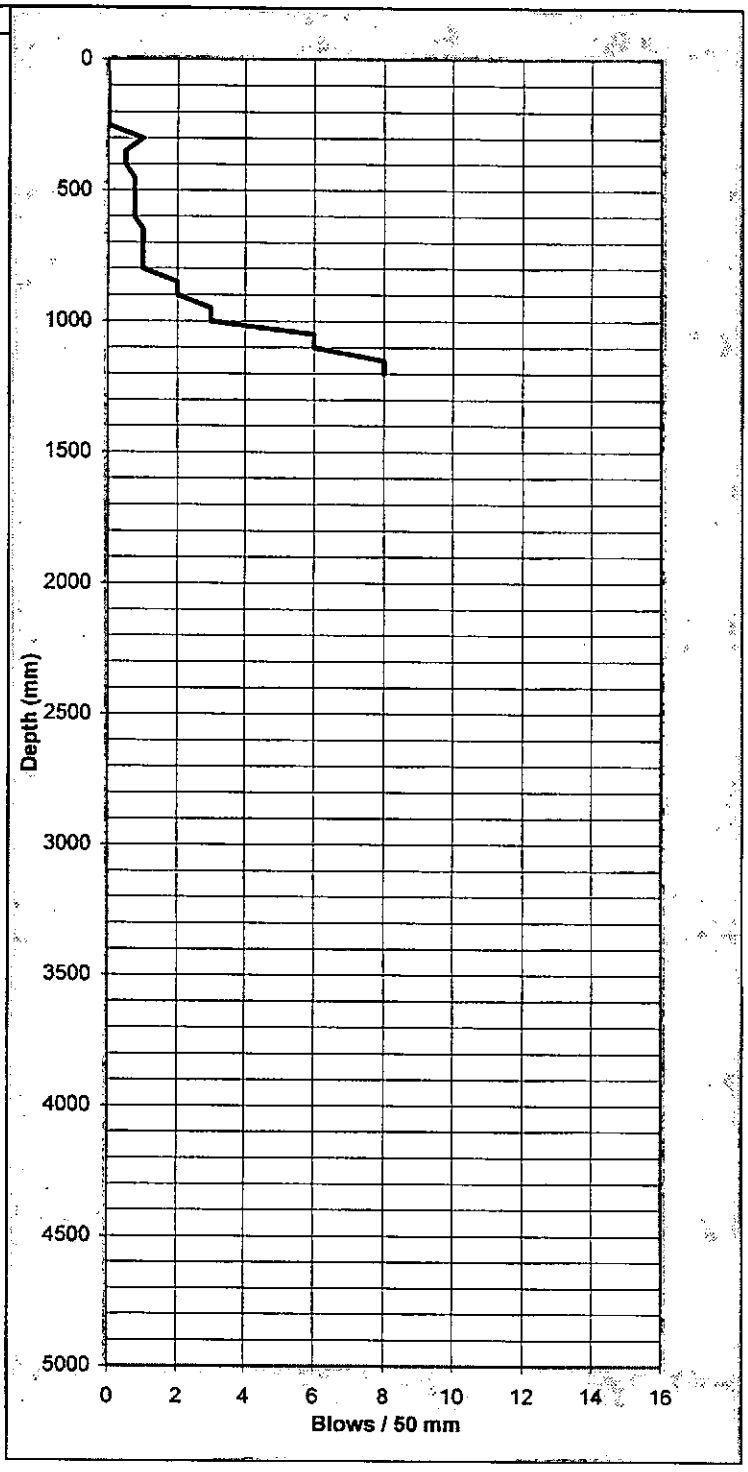
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date:	*29/07/2003*	**Test No.**	***105/2***
Project:	*Maire Ridge*	Operated by:	*SCWW*		
Location:	*Refer Site Plan*	Logged by:	*SCWW*	**Sheet**	***1***
Level:	-	Checked by:	*Y 8/12*	**of**	***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*0*	2550	
100	*0*	2600	
150	*0*	2650	
200	*0*	2700	
250	*0*	2750	
300	*1*	2800	
350	*0.5*	2850	
400	*0.5*	2900	
450	*0.75*	2950	
500	*0.75*	3000	
550	*0.75*	3050	
600	*0.75*	3100	
650	*1*	3150	
700	*1*	3200	
750	*1*	3250	
800	*1*	3300	
850	*2*	3350	
900	*2*	3400	
950	*3*	3450	
1000	*3*	3500	
1050	*6*	3550	
1100	*6*	3600	
1150	*8*	3650	
1200	*8*	3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
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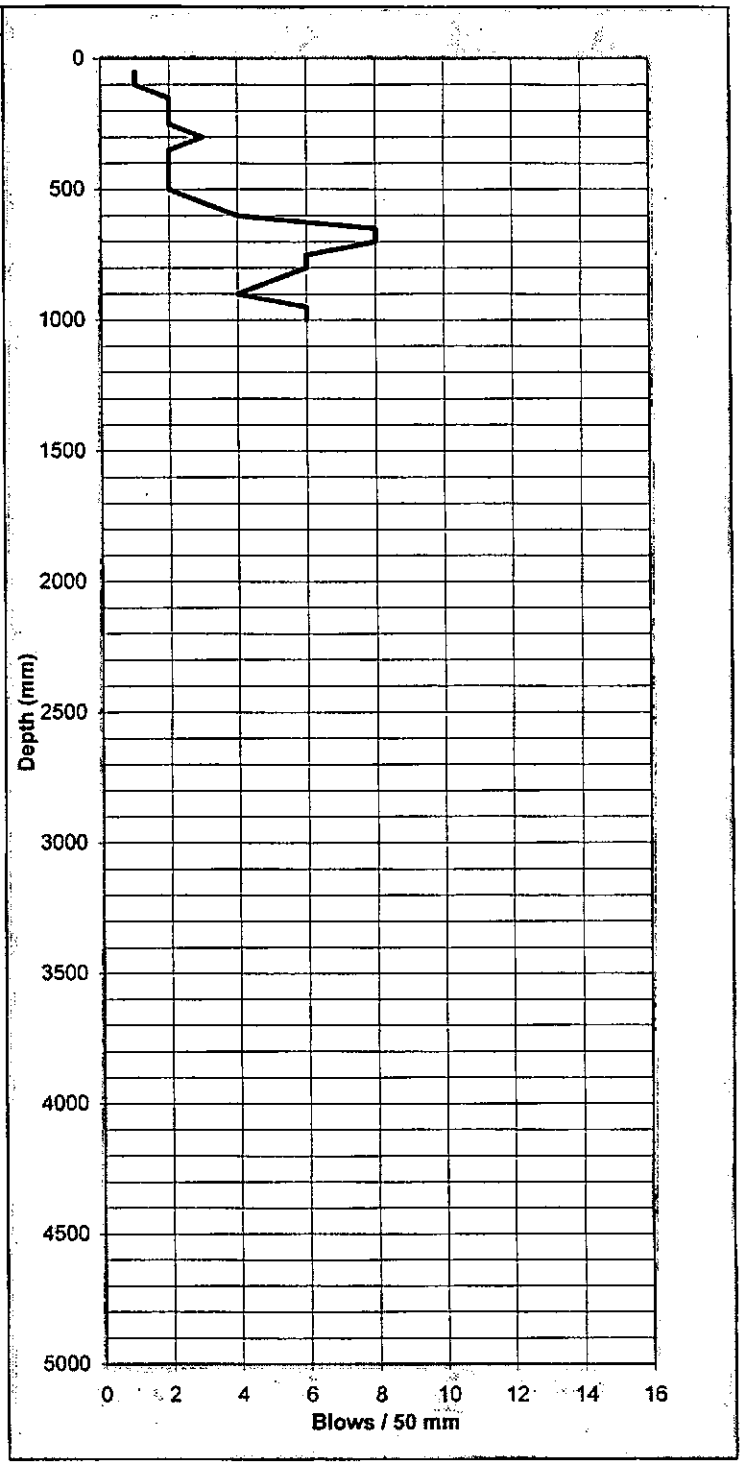
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date:	*29/07/2003*	**Test No.**	***106/1***
Project:	*Maire Ridge*	Operated by:	*SCWW*		
Location:	*Refer Site Plan*	Logged by:	*SCWW*	**Sheet**	***1***
Level:	-	Checked by:	*8/12*	**of**	***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	2	2650	
200	2	2700	
250	2	2750	
300	3	2800	
350	2	2850	
400	2	2900	
450	2	2950	
500	2	3000	
550	3	3050	
600	4	3100	
650	8	3150	
700	8	3200	
750	6	3250	
800	6	3300	
850	5	3350	
900	4	3400	
950	6	3450	
1000	6	3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



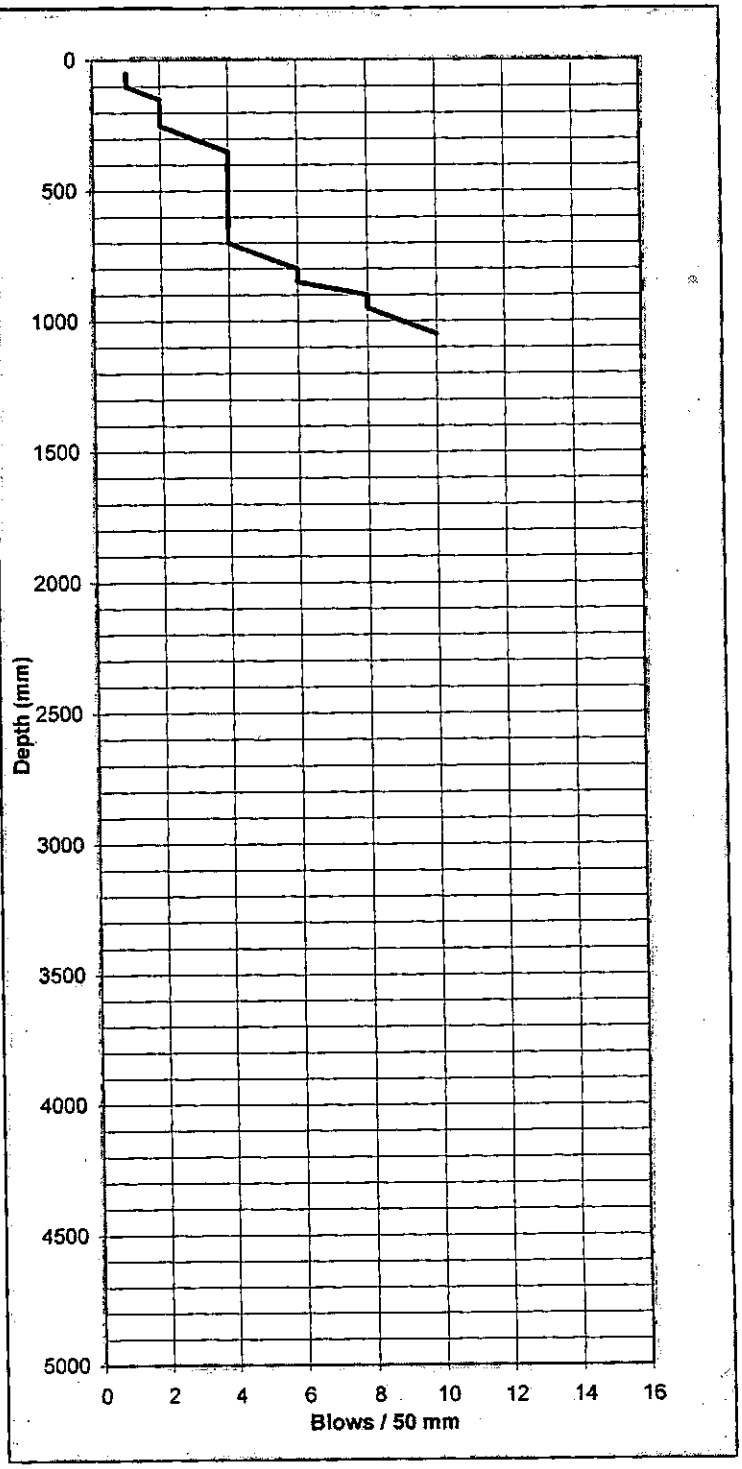
Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *29/07/2003*	Test No. *106/2*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	Sheet *1*
Level:	-	Checked by: *4/8/12*	of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	2	2650	
200	2	2700	
250	2	2750	
300	3	2800	
350	4	2850	
400	4	2900	
450	4	2950	
500	4	3000	
550	4	3050	
600	4	3100	
650	4	3150	
700	4	3200	
750	5	3250	
800	6	3300	
850	6	3350	
900	8	3400	
950	8	3450	
1000	9	3500	
1050	10	3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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P O Box 1009
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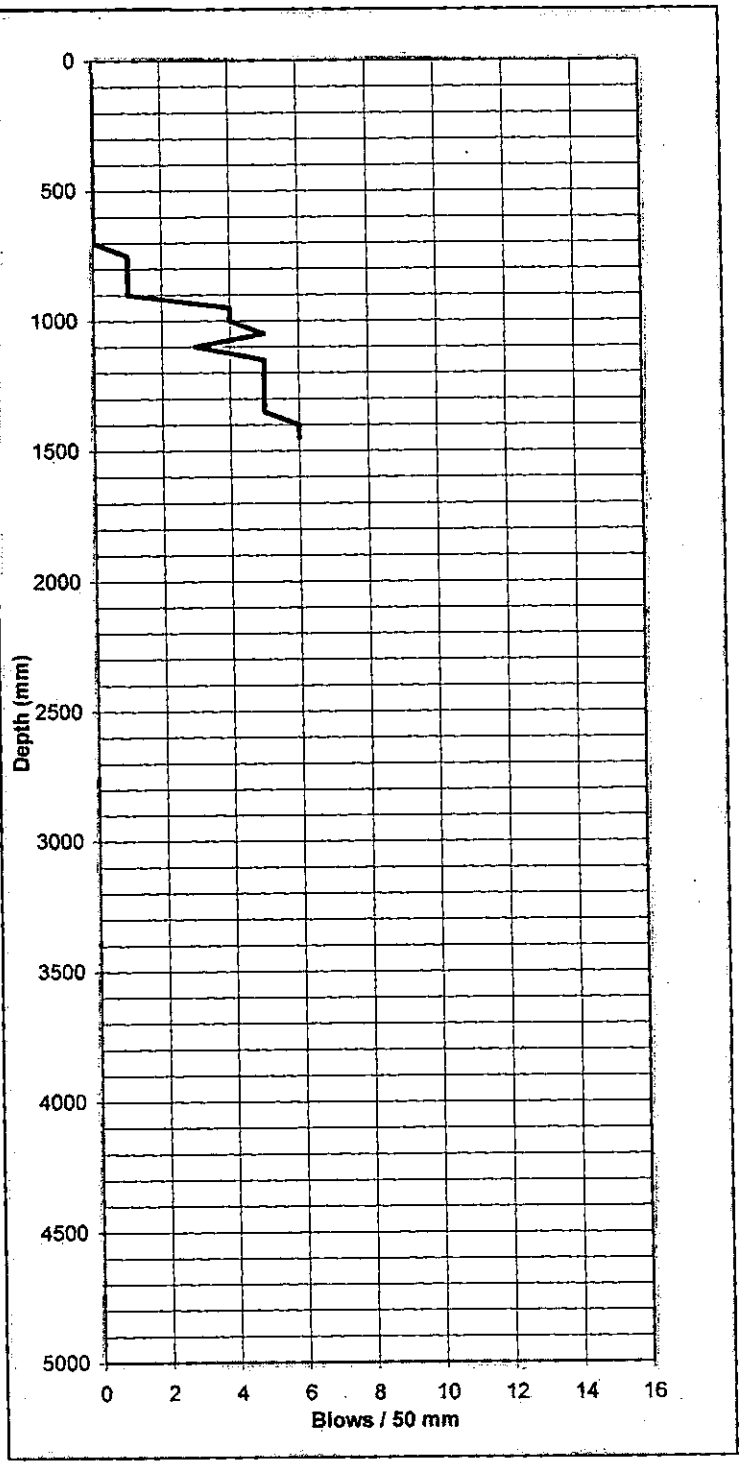
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date:	*29/07/2003*	Test No.	*107/1*
Project:	*Maire Ridge*	Operated by:	*SCWW*		
Location:	*Refer Site Plan*	Logged by:	*SCWW*	Sheet	*1*
Level:	-	Checked by:	*[illegible] 8/12*	of	*1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	0	2550	
100	0	2600	
150	0	2650	
200	0	2700	
250	0	2750	
300	0	2800	
350	0	2850	
400	0	2900	
450	0	2950	
500	0	3000	
550	0	3050	
600	0	3100	
650	0	3150	
700	0	3200	
750	1	3250	
800	1	3300	
850	1	3350	
900	1	3400	
950	4	3450	
1000	4	3500	
1050	5	3550	
1100	3	3600	
1150	5	3650	
1200	5	3700	
1250	5	3750	
1300	5	3800	
1350	5	3850	
1400	6	3900	
1450	6	3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
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Fax: (03) 546 7619

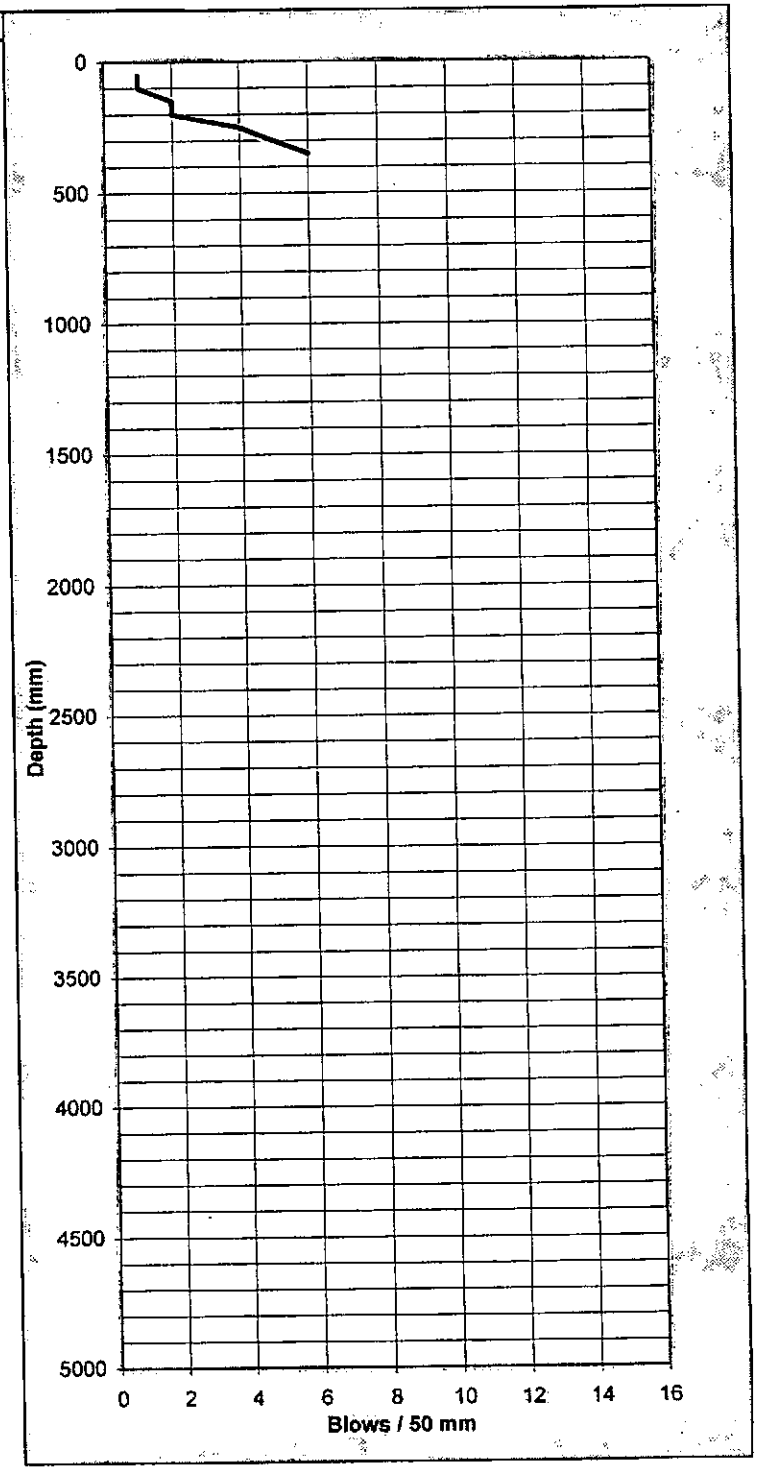
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *29/07/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *J 8/12*

Test No. *107/2*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	2	2650	
200	2	2700	
250	4	2750	
300	5	2800	
350	6	2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



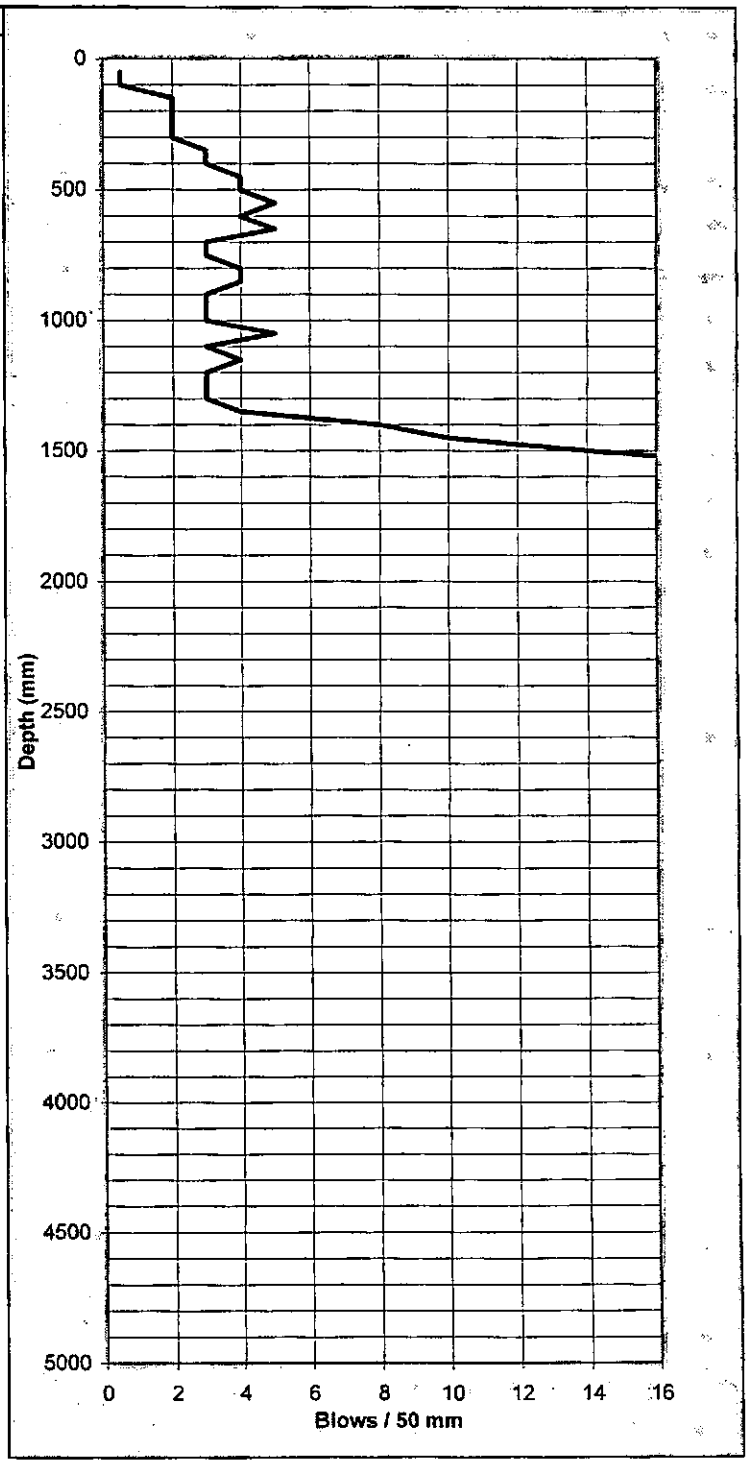
Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *28/11/2003*	Test No. *107/2a*
Project:	*Maire Ridge*	Operated by: *John*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	Sheet *1*
Level:	-	Checked by: *1 8/12*	of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*0.5*	2550	
100	*0.5*	2600	
150	*2*	2650	
200	*2*	2700	
250	*2*	2750	
300	*2*	2800	
350	*3*	2850	
400	*3*	2900	
450	*4*	2950	
500	*4*	3000	
550	*5*	3050	
600	*4*	3100	
650	*5*	3150	
700	*3*	3200	
750	*3*	3250	
800	*4*	3300	
850	*4*	3350	
900	*3*	3400	
950	*3*	3450	
1000	*3*	3500	
1050	*5*	3550	
1100	*3*	3600	
1150	*4*	3650	
1200	*3*	3700	
1250	*3*	3750	
1300	*3*	3800	
1350	*4*	3850	
1400	*6*	3900	
1450	*10*	3950	
1500	*14*	4000	
1550	*19*	4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



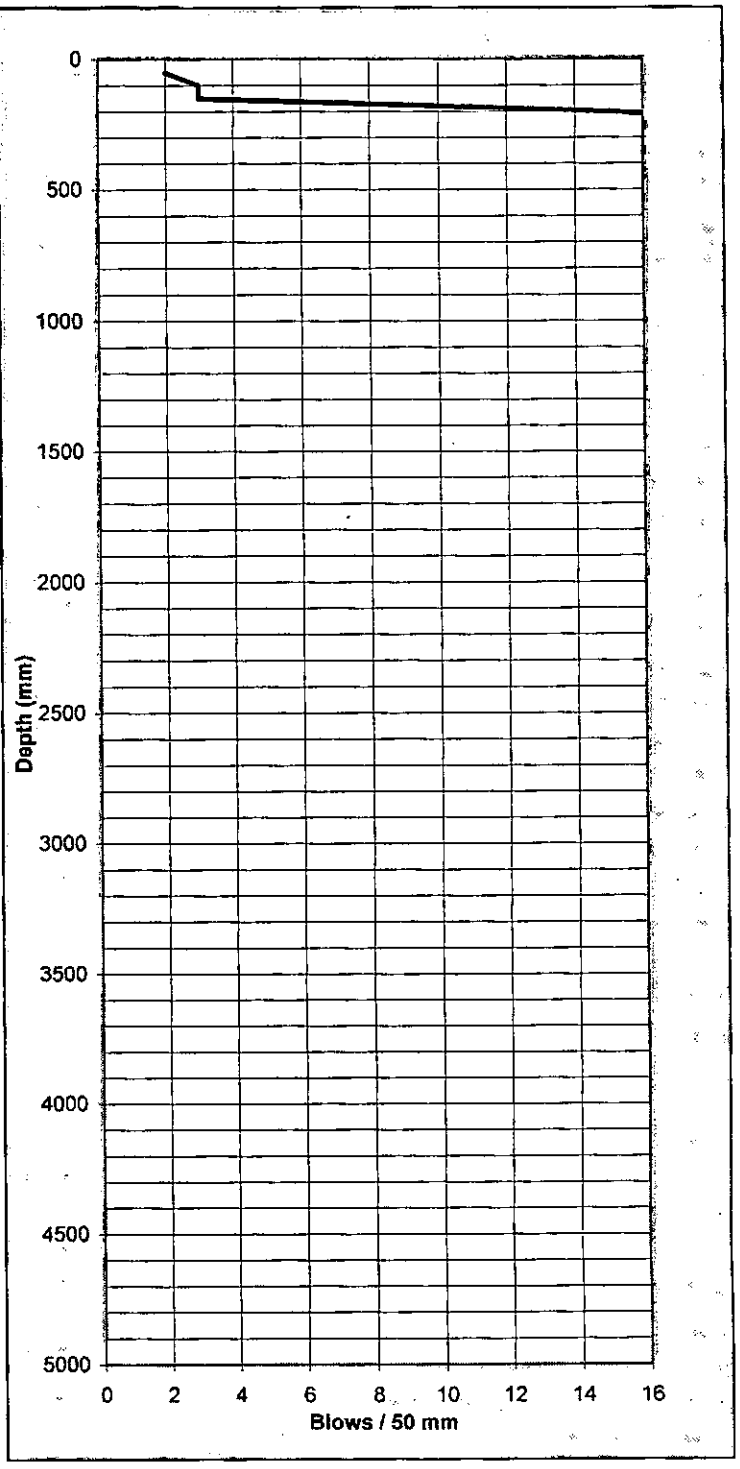
Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No:	*81069.008*	Date:	*17/11/2003*	Test No.	*108/1*
Project:	*Maire Ridge*	Operated by:	*SCWW*		
Location:	*Refer Site Plan*	Logged by:	*SCWW*	Sheet	*1*
Level:	-	Checked by:	*8/12*	of	*1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	3	2600	
150	3	2650	
200	15	2700	
250	21	2750	
300	26	2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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P O Box 1009
NELSON
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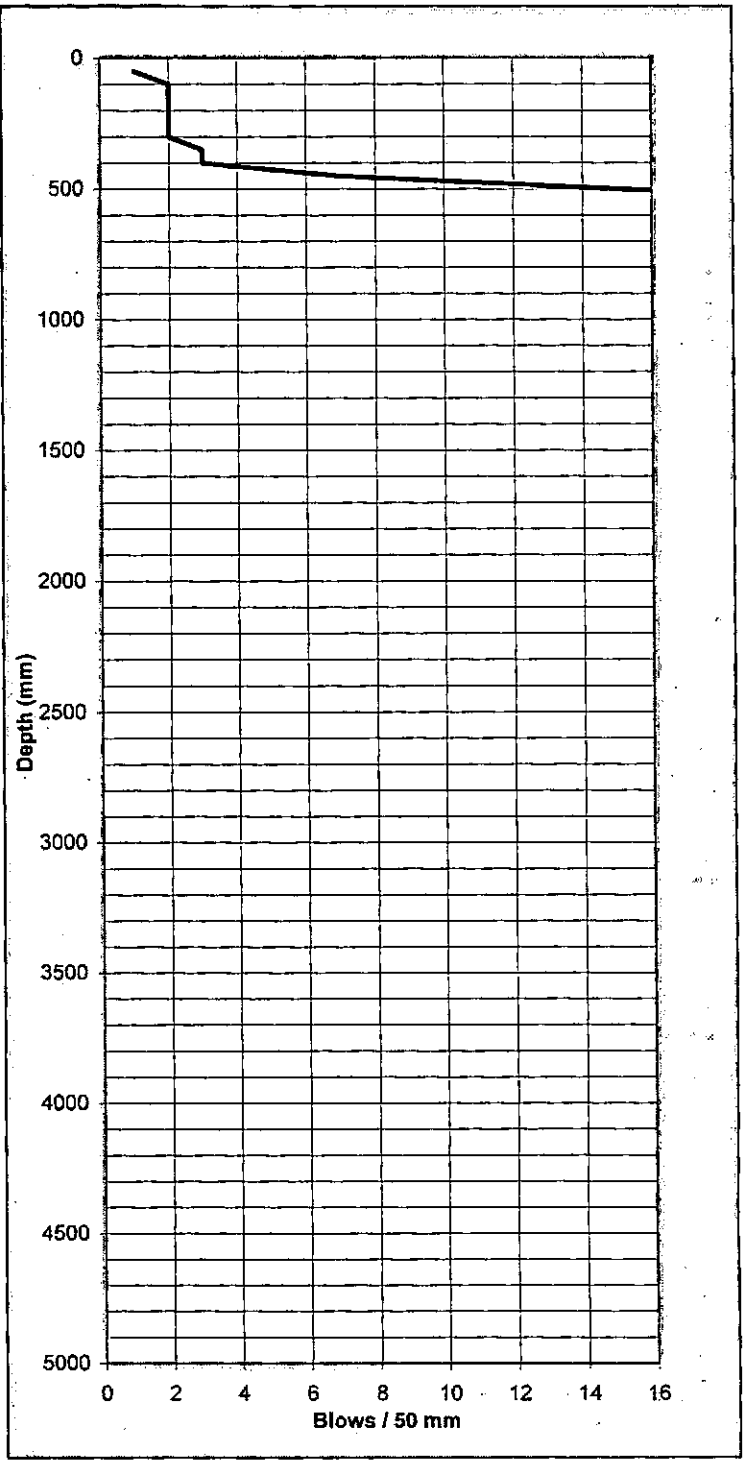
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date:	*17/11/2003*	**Test No.**	***108/2***
Project:	*Maire Ridge*	Operated by:	*SCWW*		
Location:	*Refer Site Plan*	Logged by:	*SCWW*	**Sheet**	***1***
Level:	-	Checked by:	*8/12*	**of**	***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	2	2600	
150	2	2650	
200	2	2700	
250	2	2750	
300	2	2800	
350	3	2850	
400	3	2900	
450	7	2950	
500	15	3000	
550	26	3050	
600	25	3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
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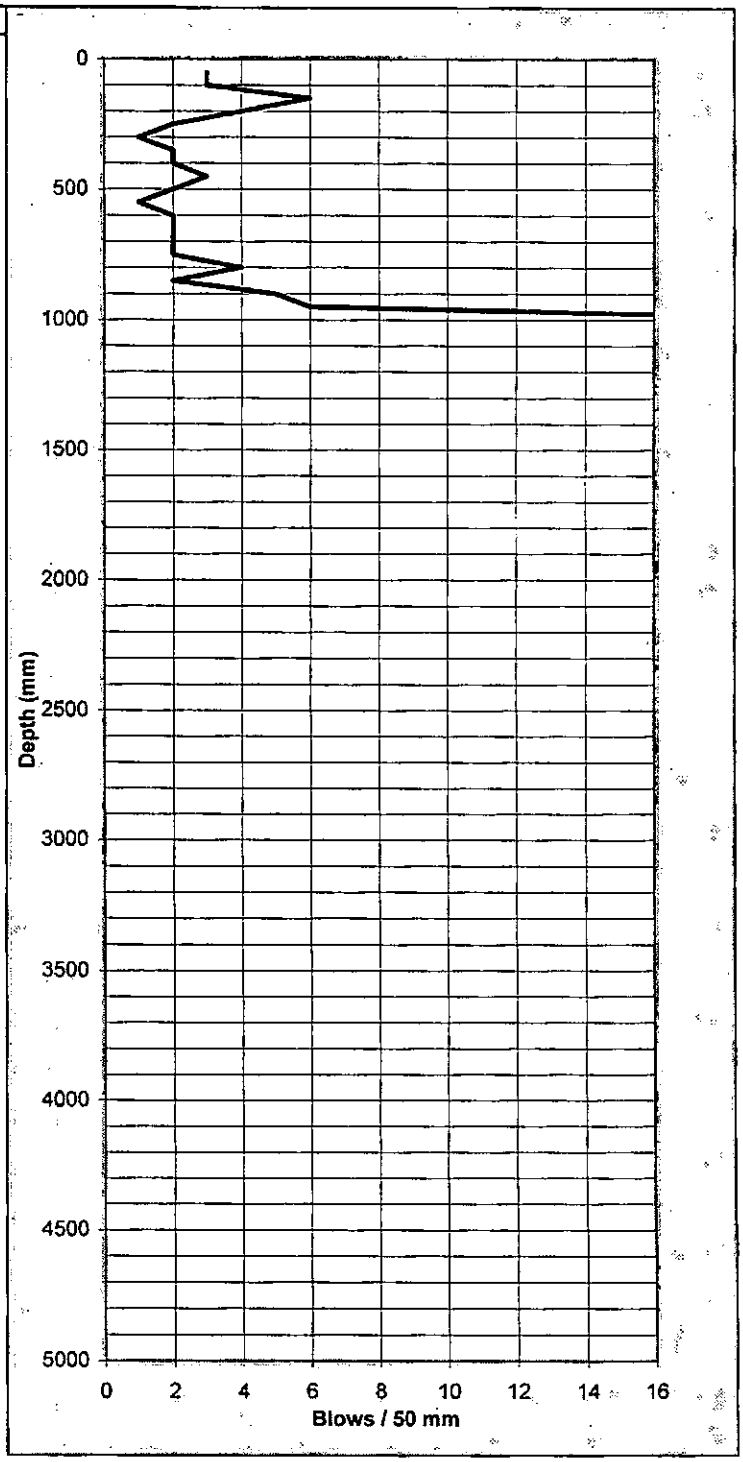
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	**Test No.** *108/3*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	**Sheet** *1*
Level:	-	Checked by: *7 8/12*	**of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	3	2600	
150	6	2650	
200	4	2700	
250	2	2750	
300	1	2800	
350	2	2850	
400	2	2900	
450	3	2950	
500	2	3000	
550	1	3050	
600	2	3100	
650	2	3150	
700	2	3200	
750	2	3250	
800	4	3300	
850	2	3350	
900	5	3400	
950	6	3450	
1000	25	3500	
1050	24	3550	
1100	28	3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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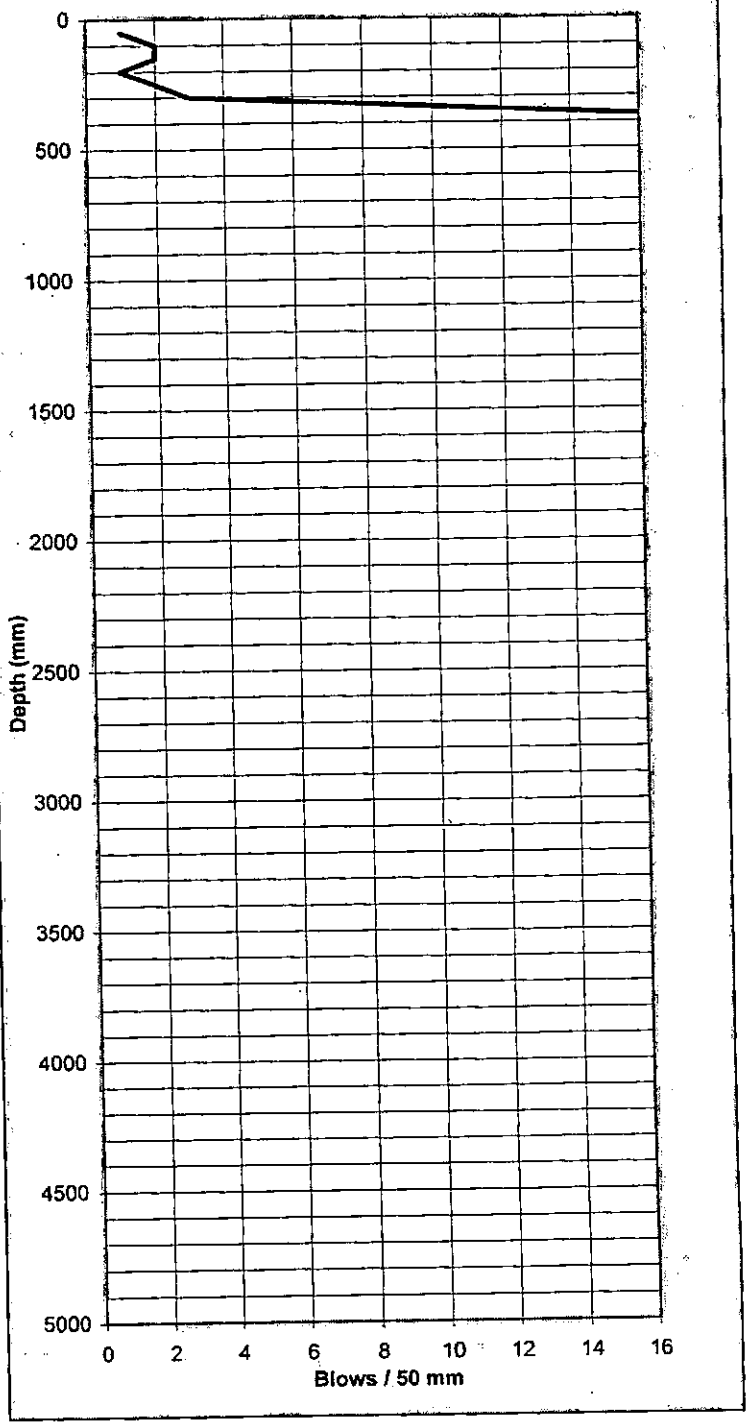
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	Test No. *109/1*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	Sheet *1*
Level:	-	Checked by: *4 8/12*	of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*1*	2550	
100	*2*	2600	
150	*2*	2650	
200	*1*	2700	
250	*2*	2750	
300	*3*	2800	
350	*12*	2850	
400	*21*	2900	
450	*25*	2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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44 Halifax Street
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NELSON
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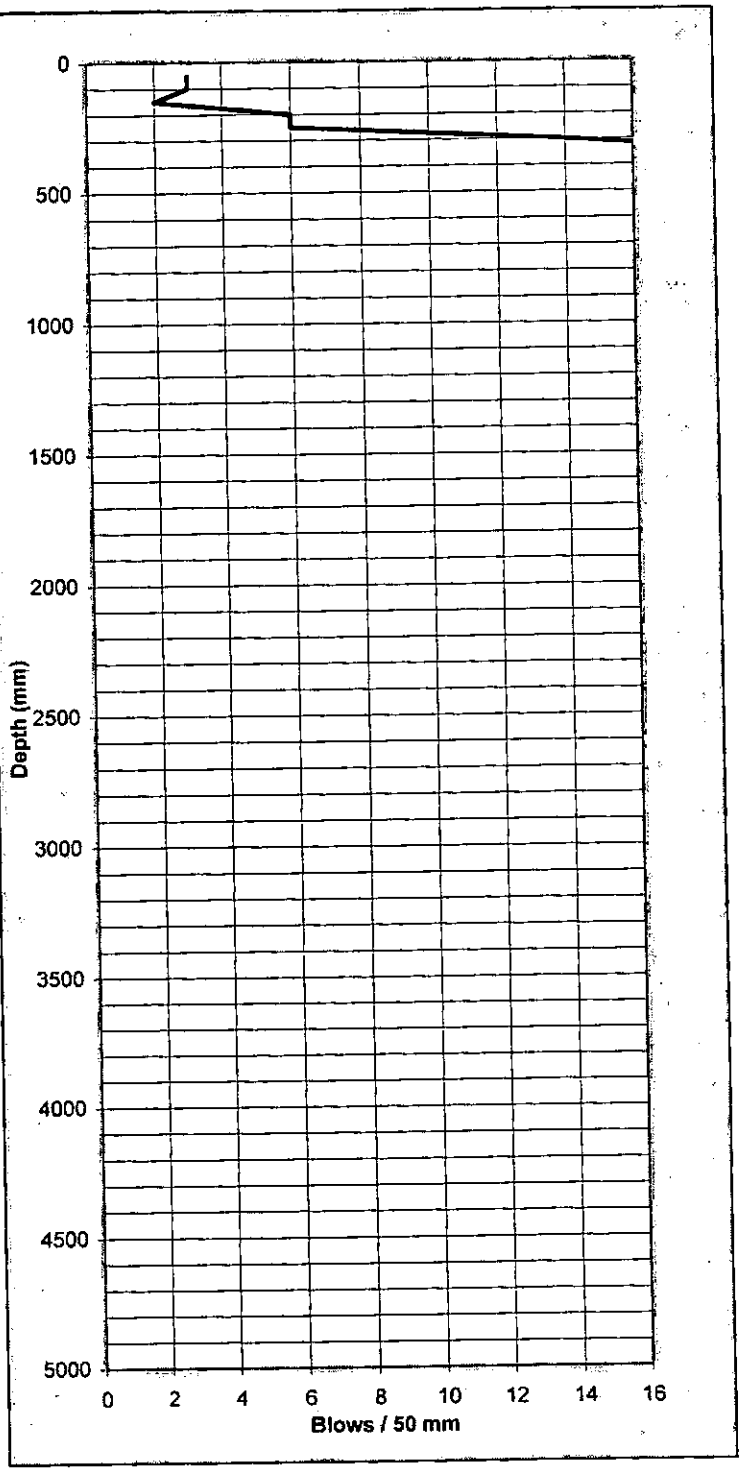
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	**Test No.** *109/2*
Project:	*Maire Ridge*	Operated by: *SCWW*	**Sheet** *1*
Location:	*Refer Site Plan*	Logged by: *SCWW*	**of** *1*
Level:	-	Checked by: *F 8/12*	

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	3	2600	
150	2	2650	
200	6	2700	
250	6	2750	
300	14	2800	
350	20	2850	
400	26	2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



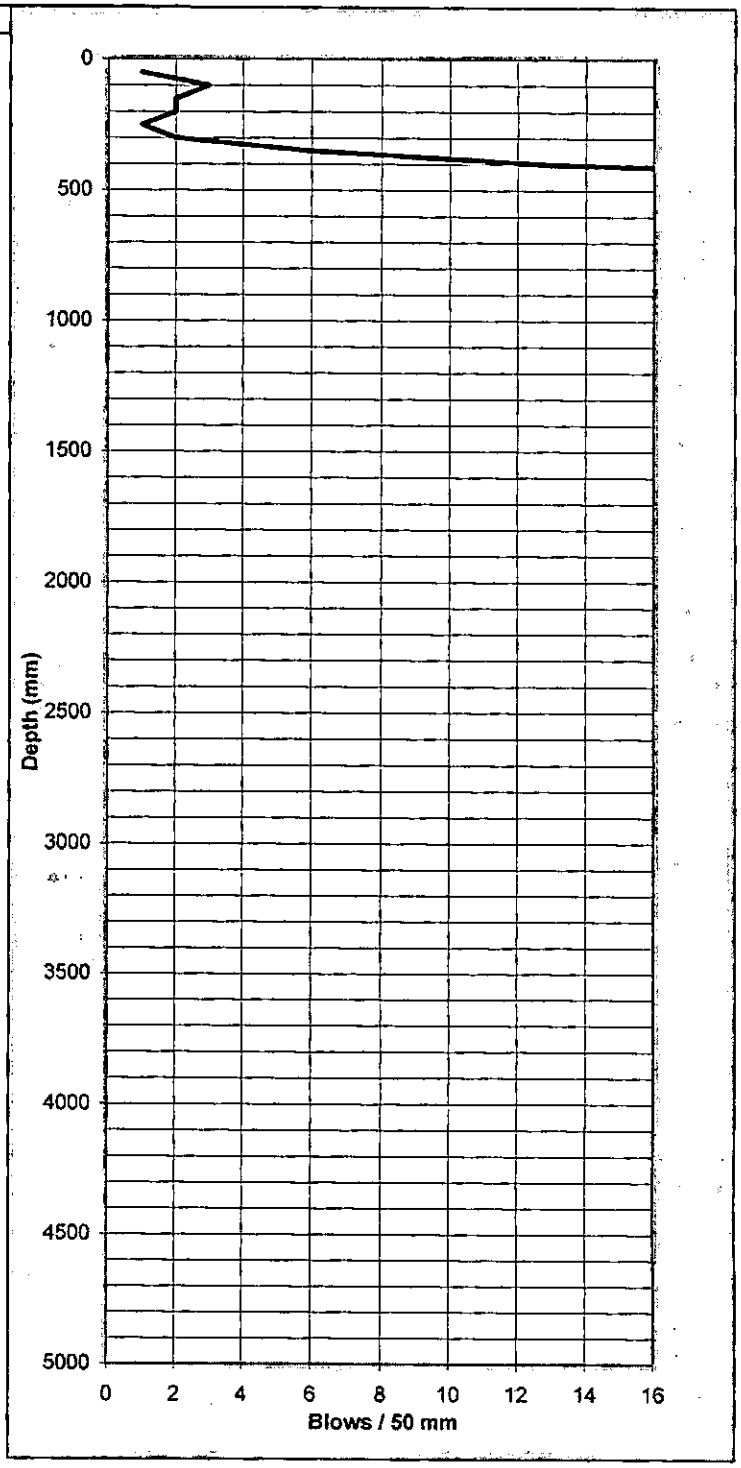
Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	Test No. *109/3*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	Sheet *1*
Level:	-	Checked by: *4 8/12*	of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*1*	2550	
100	*3*	2600	
150	*2*	2650	
200	*2*	2700	
250	*1*	2750	
300	*2*	2800	
350	*6*	2850	
400	*13*	2900	
450	*28*	2950	
500	*30*	3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

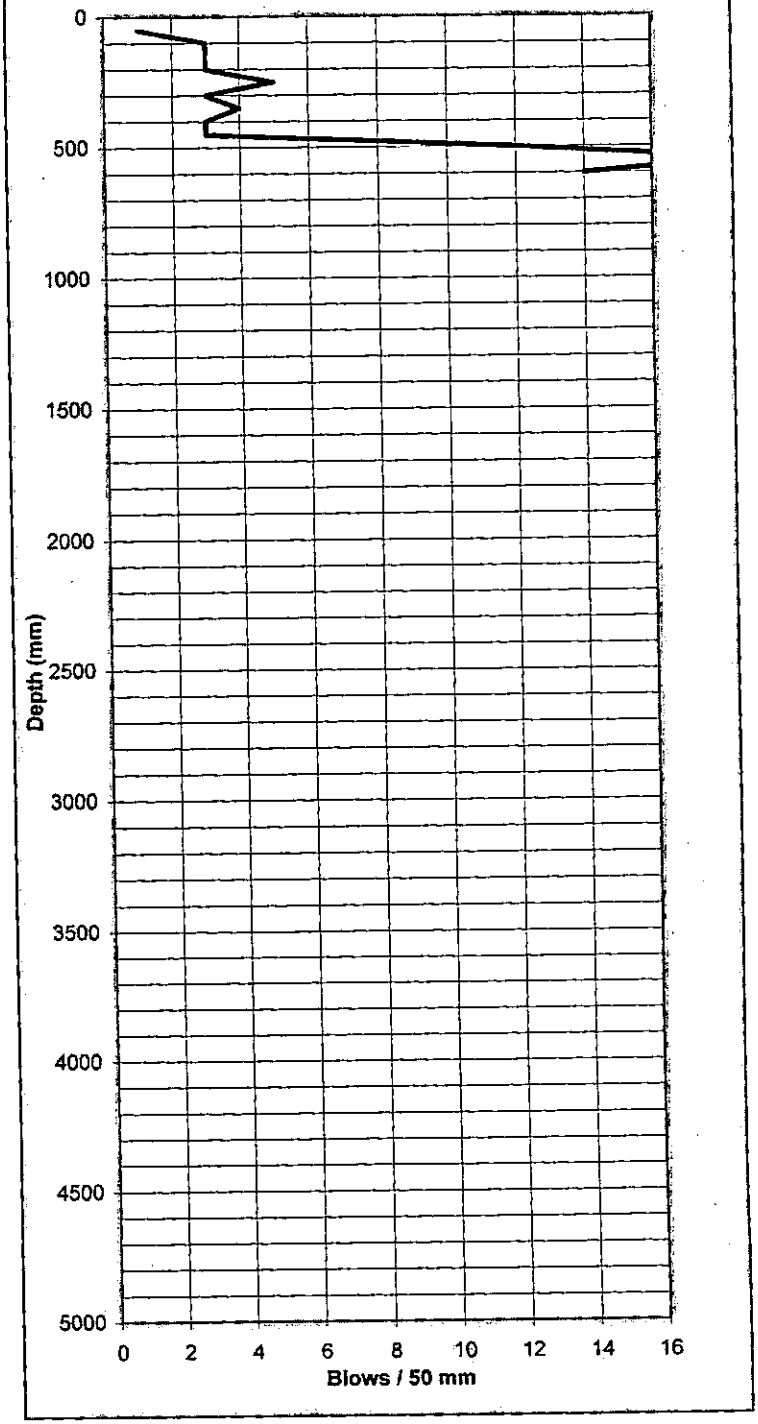
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *F 8/12*

Test No. *110/1*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*1*	2550	
100	*3*	2600	
150	*3*	2650	
200	*3*	2700	
250	*5*	2750	
300	*3*	2800	
350	*4*	2850	
400	*3*	2900	
450	*3*	2950	
500	*12*	3000	
550	*19*	3050	
600	*14*	3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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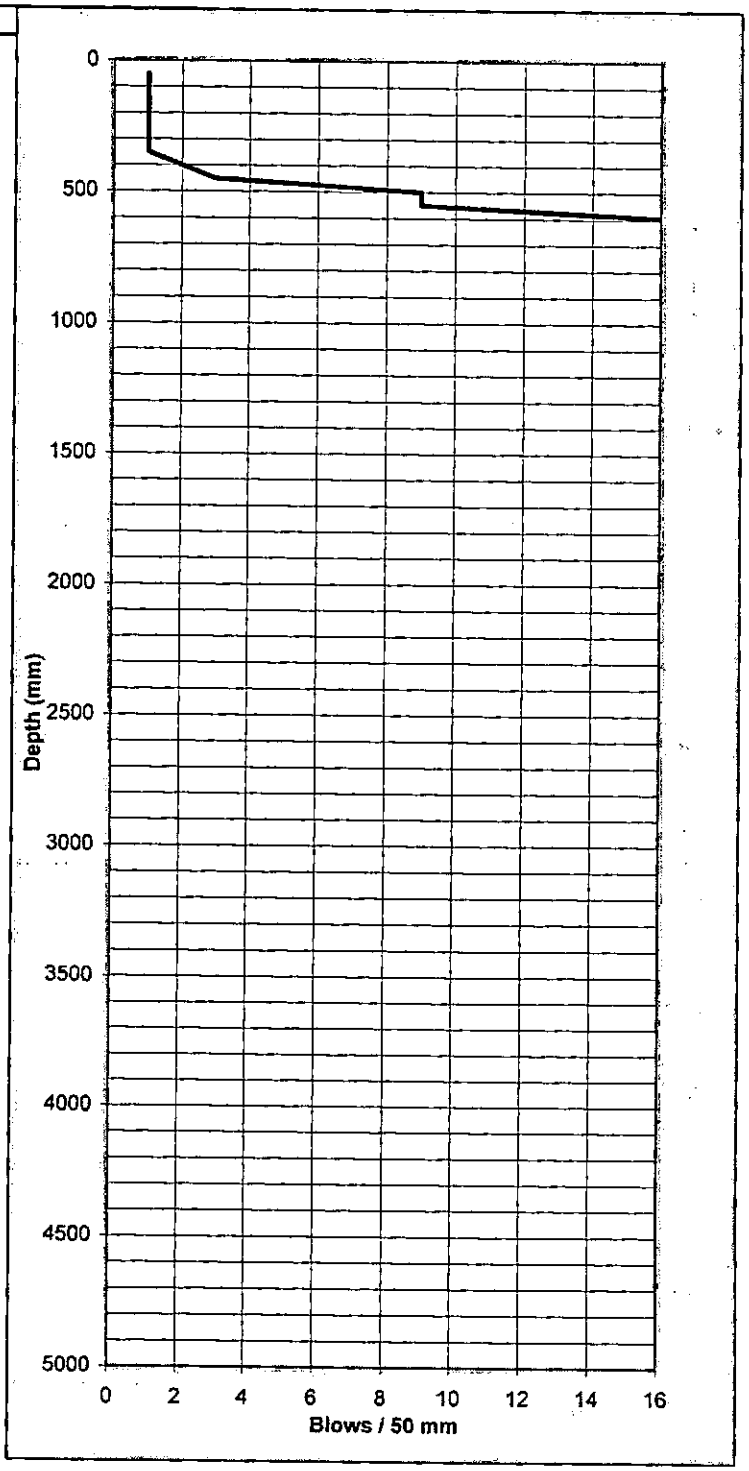
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	Test No. *110/2*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	Sheet *1*
Level:	-	Checked by: *[illegible] 8/12*	of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	1	2650	
200	1	2700	
250	1	2750	
300	1	2800	
350	1	2850	
400	2	2900	
450	3	2950	
500	9	3000	
550	9	3050	
600	17	3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

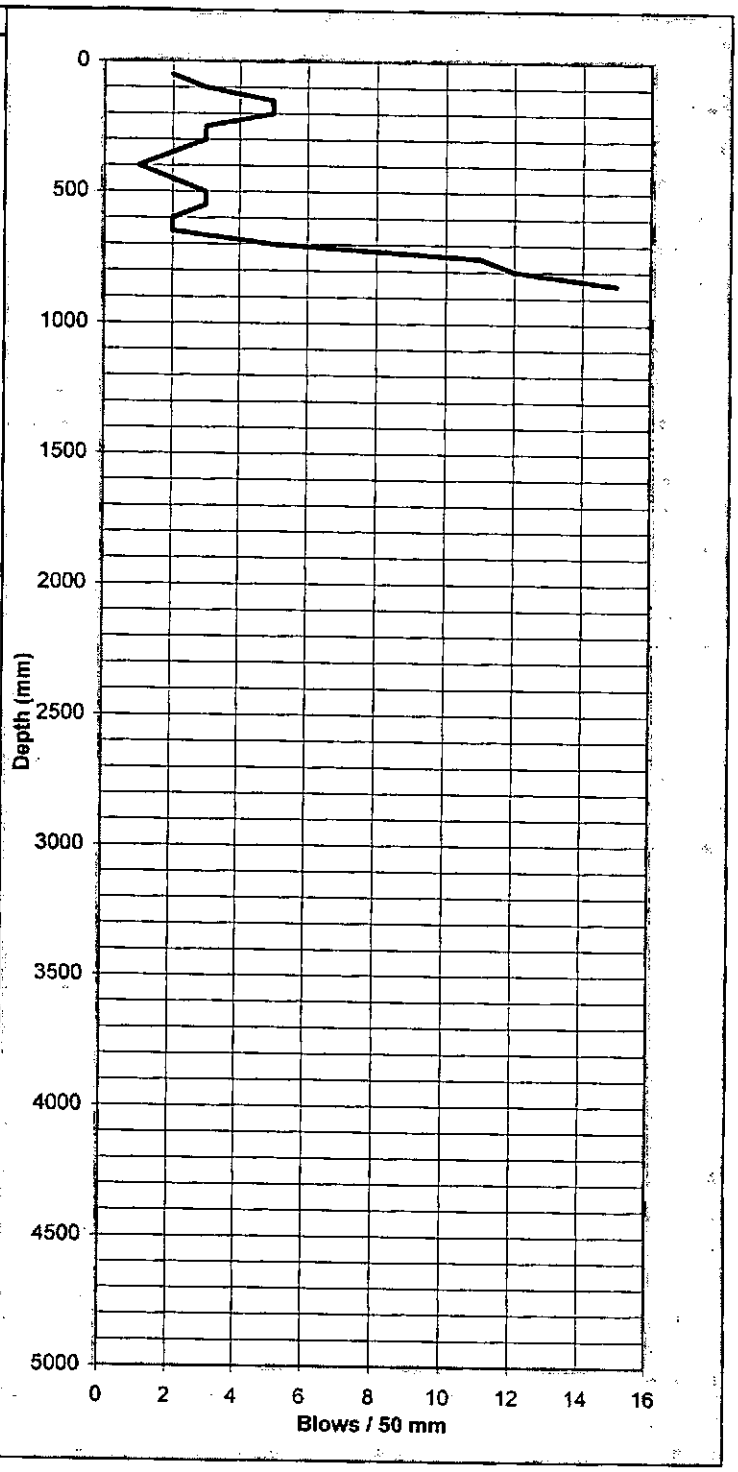
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *f 8/12*

Test No. *110/3*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	3	2600	
150	5	2650	
200	5	2700	
250	3	2750	
300	3	2800	
350	2	2850	
400	1	2900	
450	2	2950	
500	3	3000	
550	3	3050	
600	2	3100	
650	2	3150	
700	5	3200	
750	11	3250	
800	12	3300	
850	15	3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

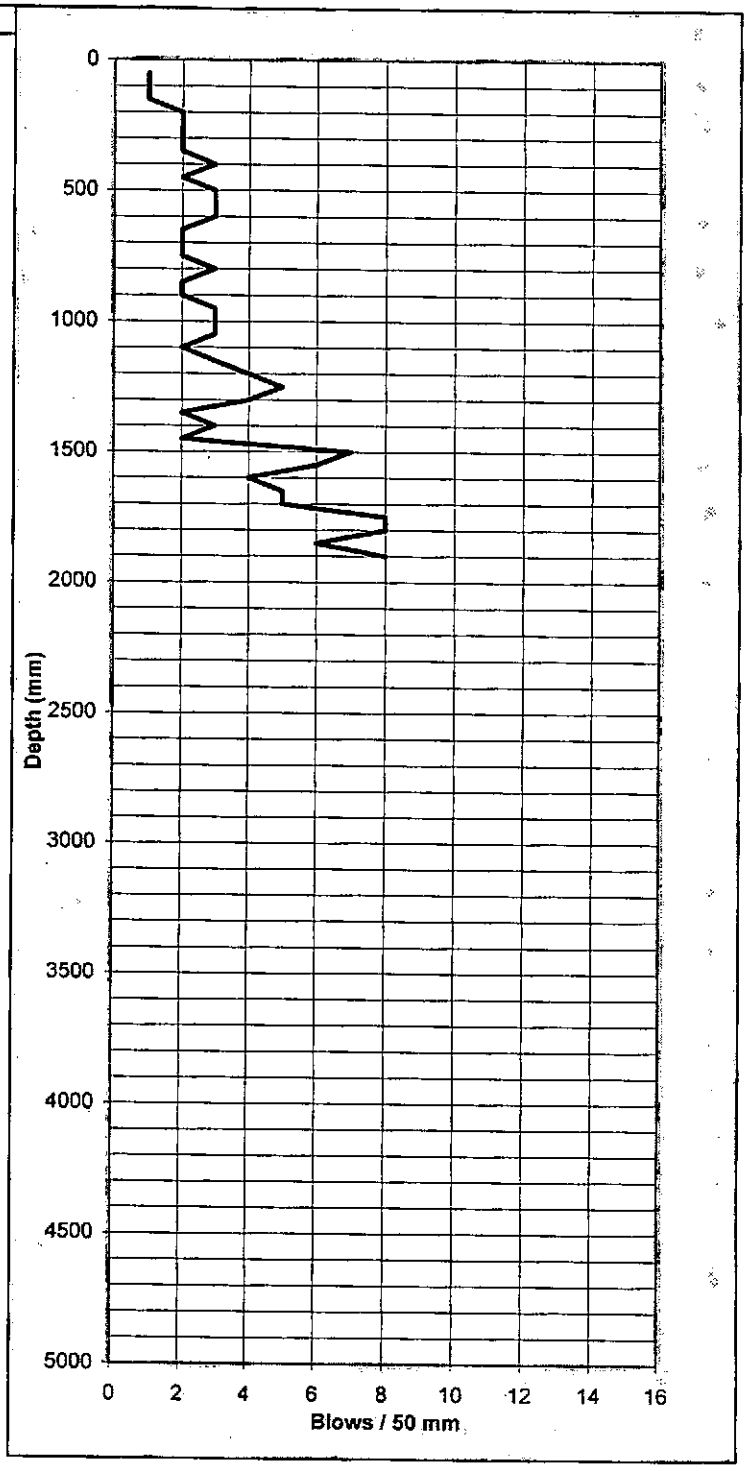
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *[illegible] 8/12*

Test No. *111/1*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	1	2650	
200	2	2700	
250	2	2750	
300	2	2800	
350	2	2850	
400	3	2900	
450	2	2950	
500	3	3000	
550	3	3050	
600	3	3100	
650	2	3150	
700	2	3200	
750	2	3250	
800	3	3300	
850	2	3350	
900	2	3400	
950	3	3450	
1000	3	3500	
1050	3	3550	
1100	2	3600	
1150	3	3650	
1200	4	3700	
1250	5	3750	
1300	4	3800	
1350	2	3850	
1400	3	3900	
1450	2	3950	
1500	7	4000	
1550	6	4050	
1600	4	4100	
1650	5	4150	
1700	5	4200	
1750	8	4250	
1800	8	4300	
1850	6	4350	
1900	8	4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
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Tel: (03) 546 6339
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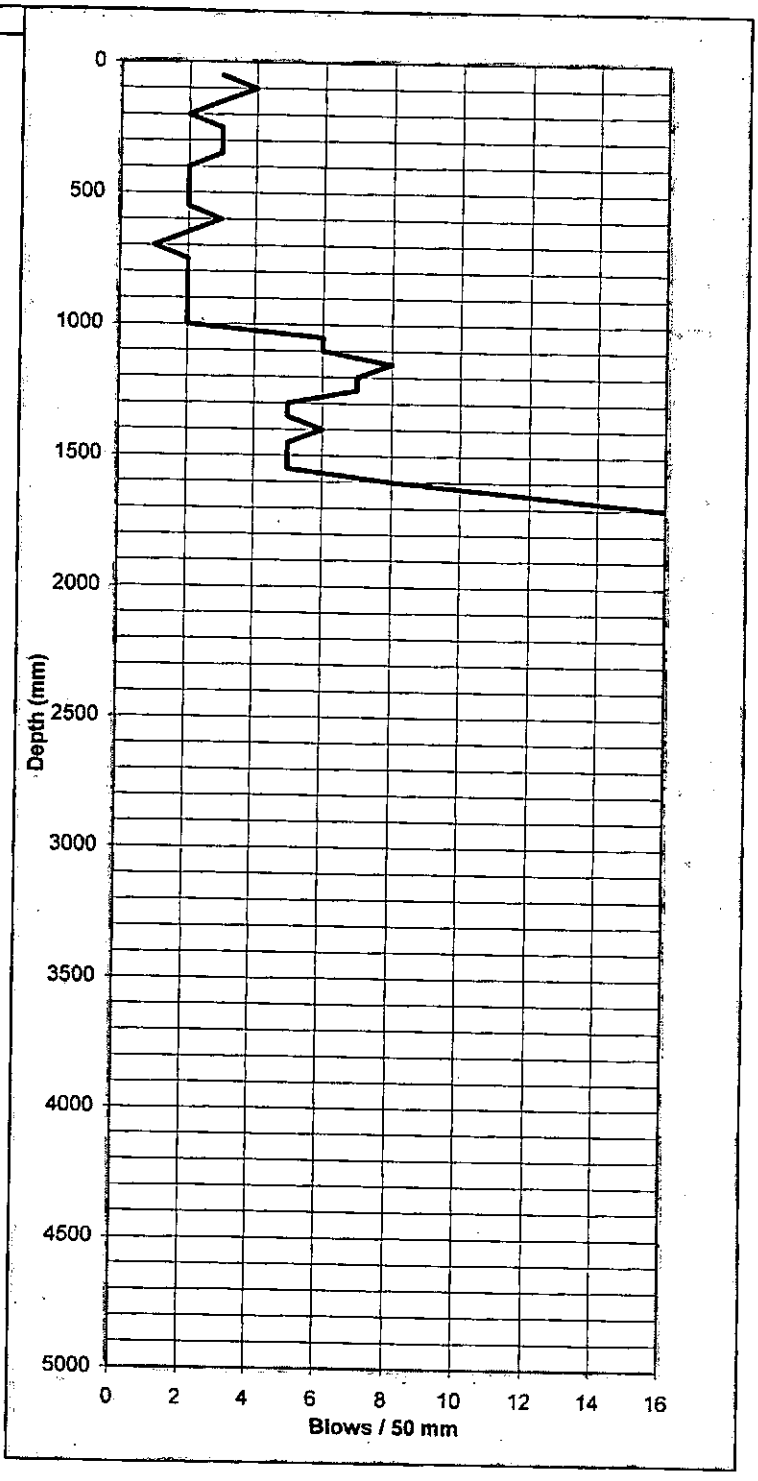
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *J 8/12*

Test No. *111/2*
Sheet *1* of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	4	2600	
150	3	2650	
200	2	2700	
250	3	2750	
300	3	2800	
350	3	2850	
400	2	2900	
450	2	2950	
500	2	3000	
550	2	3050	
600	3	3100	
650	2	3150	
700	1	3200	
750	2	3250	
800	2	3300	
850	2	3350	
900	2	3400	
950	2	3450	
1000	2	3500	
1050	6	3550	
1100	6	3600	
1150	8	3650	
1200	7	3700	
1250	7	3750	
1300	5	3800	
1350	5	3850	
1400	6	3900	
1450	5	3950	
1500	5	4000	
1550	5	4050	
1600	8	4100	
1650	12	4150	
1700	16	4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Hallfax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
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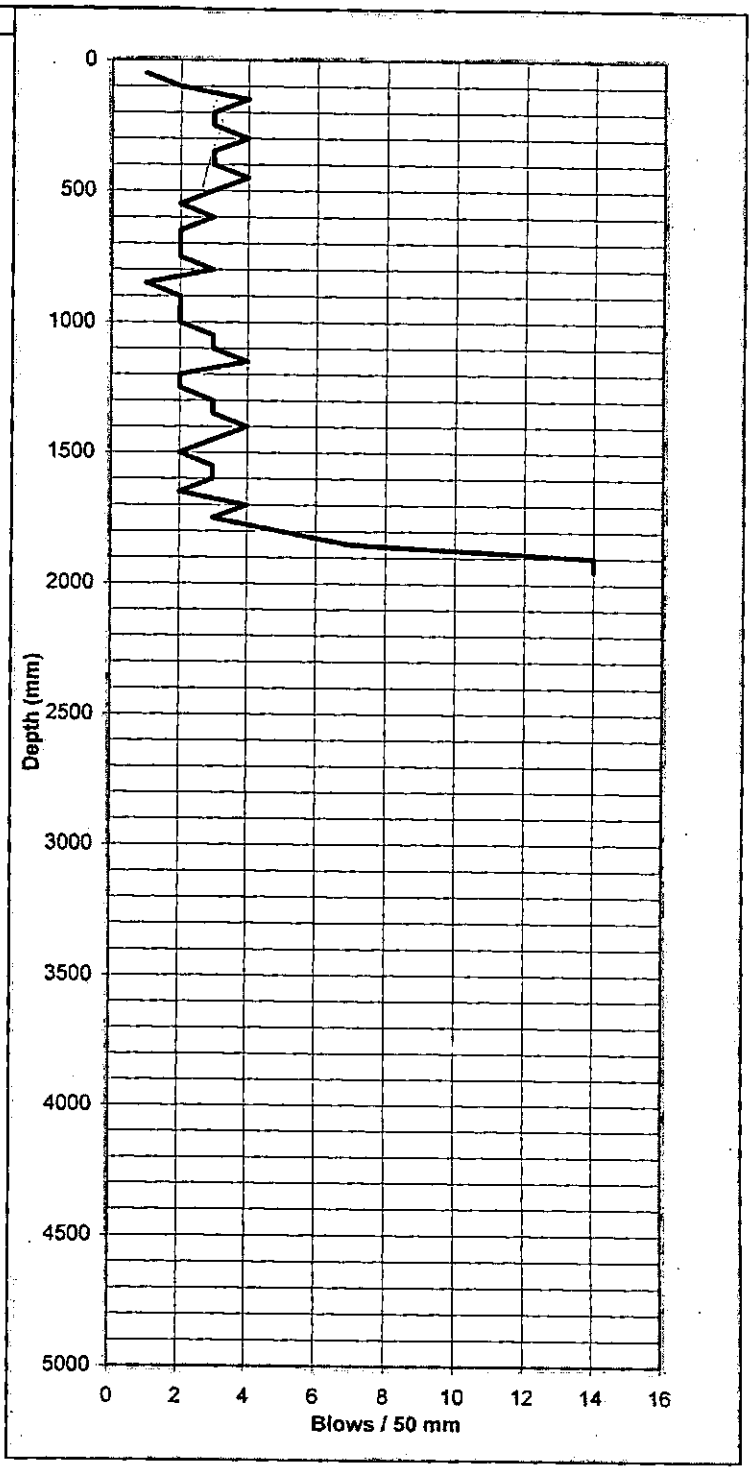
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *7 8/12*

Test No. *111/3*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	2	2600	
150	4	2650	
200	3	2700	
250	3	2750	
300	4	2800	
350	3	2850	
400	3	2900	
450	4	2950	
500	3	3000	
550	2	3050	
600	3	3100	
650	2	3150	
700	2	3200	
750	2	3250	
800	3	3300	
850	1	3350	
900	2	3400	
950	2	3450	
1000	2	3500	
1050	3	3550	
1100	3	3600	
1150	4	3650	
1200	2	3700	
1250	2	3750	
1300	3	3800	
1350	3	3850	
1400	4	3900	
1450	3	3950	
1500	2	4000	
1550	3	4050	
1600	3	4100	
1650	2	4150	
1700	4	4200	
1750	3	4250	
1800	5	4300	
1850	7	4350	
1900	14	4400	
1950	14	4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
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Tel: (03) 546 6339
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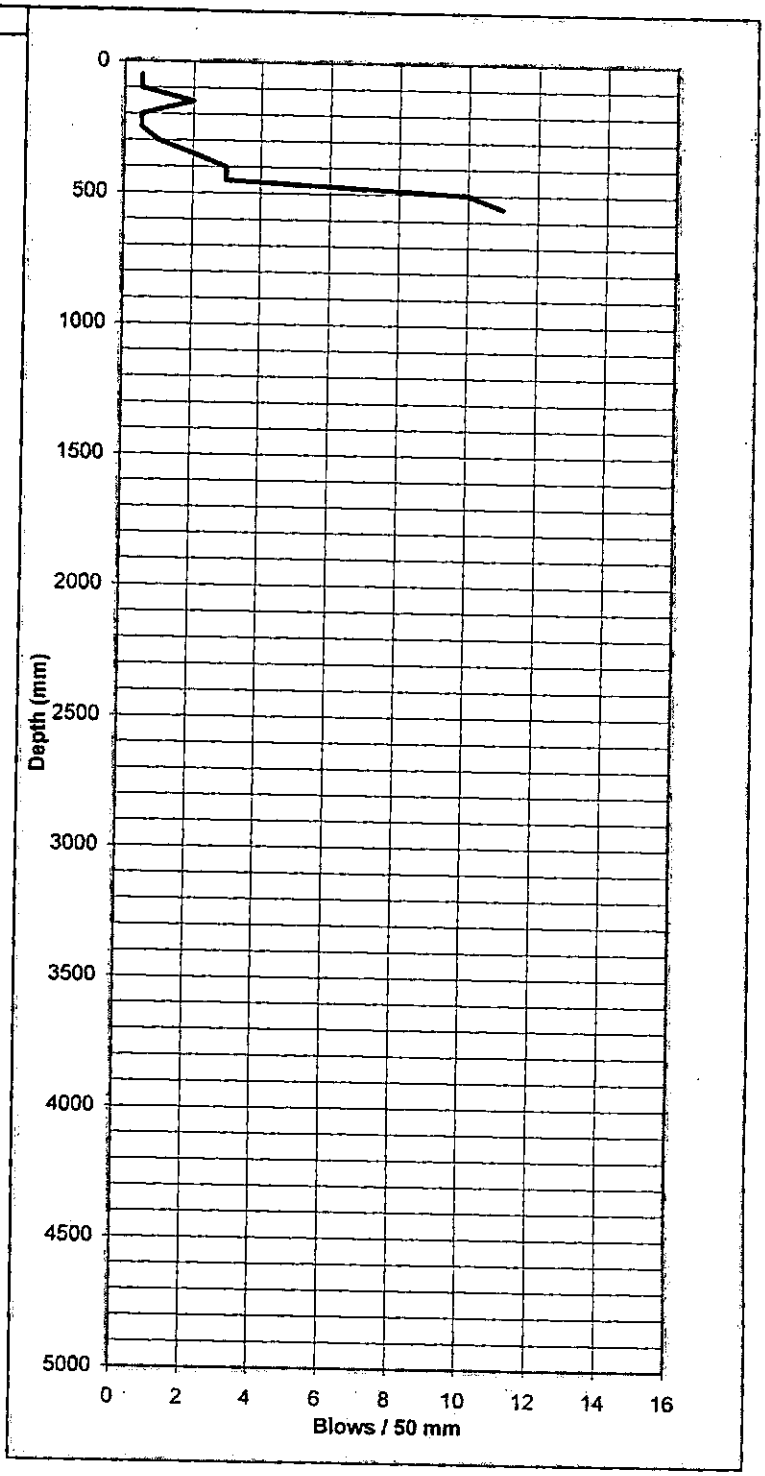
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *4 8/12*

Test No. *112/1*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	0.5	2550	
100	0.5	2600	
150	2	2650	
200	0.5	2700	
250	0.5	2750	
300	1	2800	
350	2	2850	
400	3	2900	
450	3	2950	
500	10	3000	
550	11	3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
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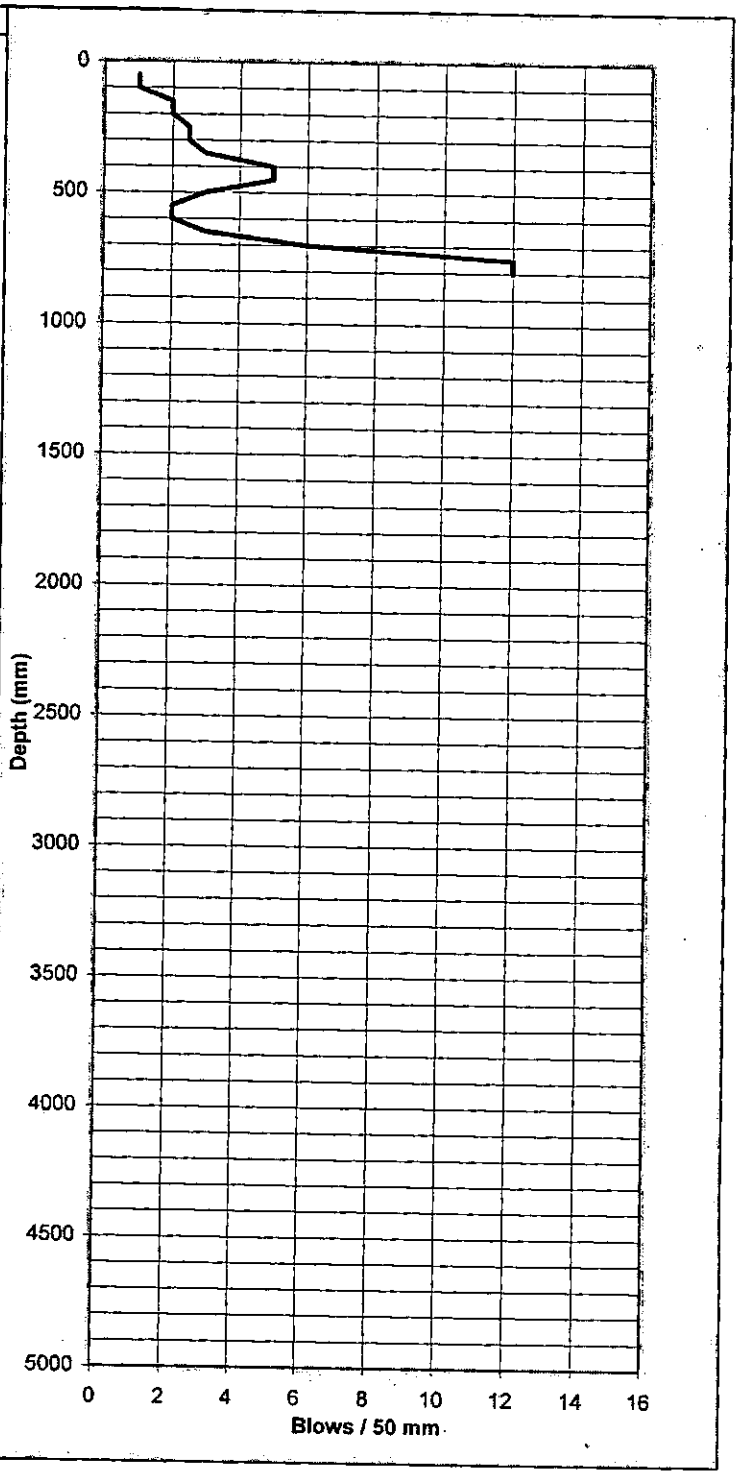
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *[illegible] 8/12*

Test No. *112/2*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	2	2650	
200	2	2700	
250	2.5	2750	
300	2.5	2800	
350	3	2850	
400	5	2900	
450	5	2950	
500	3	3000	
550	2	3050	
600	2	3100	
650	3	3150	
700	6	3200	
750	12	3250	
800	12	3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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44 Halifax Street
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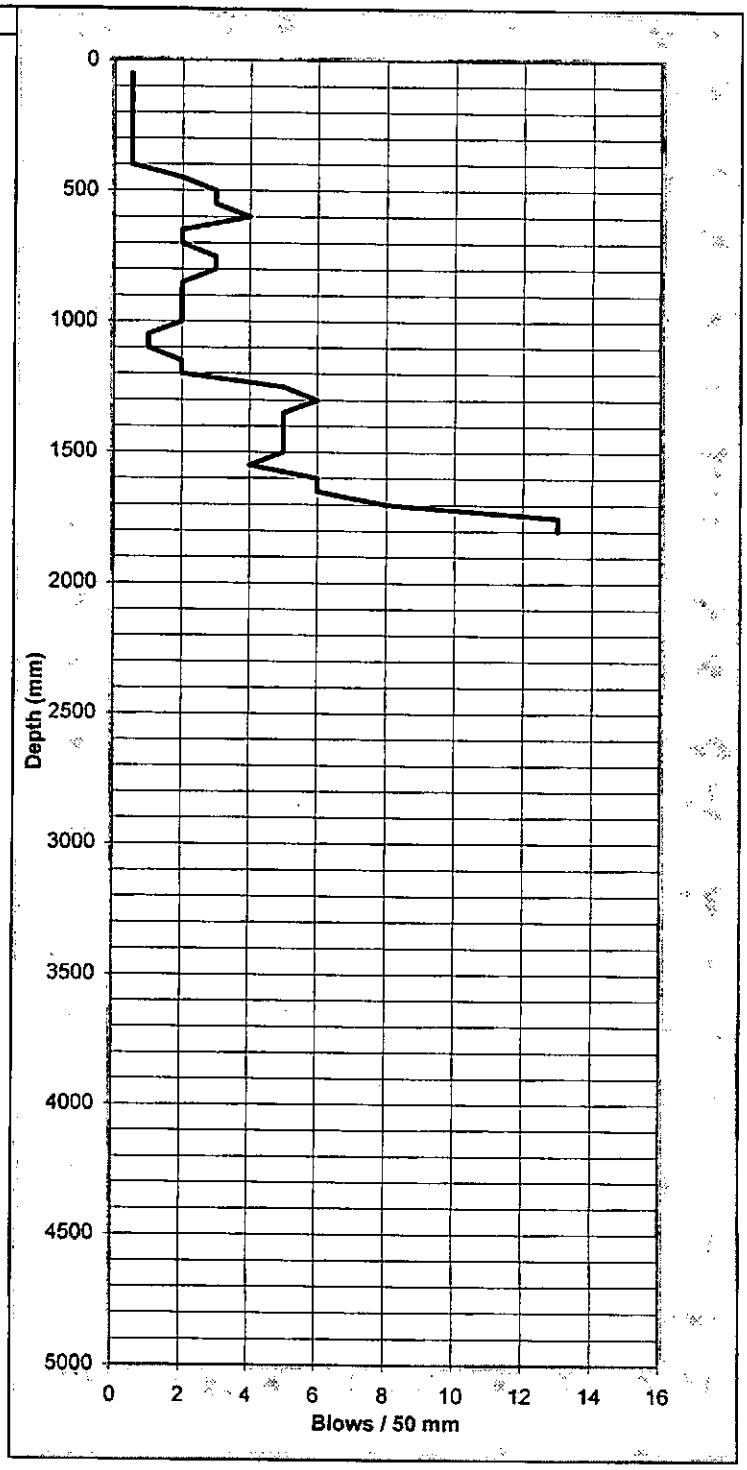
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date:	*17/11/2003*	Test No.	*112/3*
Project:	*Maire Ridge*	Operated by:	*SCWW*		
Location:	*Refer Site Plan*	Logged by:	*SCWW*	Sheet	*1*
Level:	-	Checked by:	*4 8/12*	of	*1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	0.5	2550	
100	0.5	2600	
150	0.5	2650	
200	0.5	2700	
250	0.5	2750	
300	0.5	2800	
350	0.5	2850	
400	0.5	2900	
450	2	2950	
500	3	3000	
550	3	3050	
600	4	3100	
650	2	3150	
700	2	3200	
750	3	3250	
800	3	3300	
850	2	3350	
900	2	3400	
950	2	3450	
1000	2	3500	
1050	1	3550	
1100	1	3600	
1150	2	3650	
1200	2	3700	
1250	5	3750	
1300	6	3800	
1350	5	3850	
1400	5	3900	
1450	5	3950	
1500	5	4000	
1550	4	4050	
1600	6	4100	
1650	6	4150	
1700	8	4200	
1750	13	4250	
1800	13	4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
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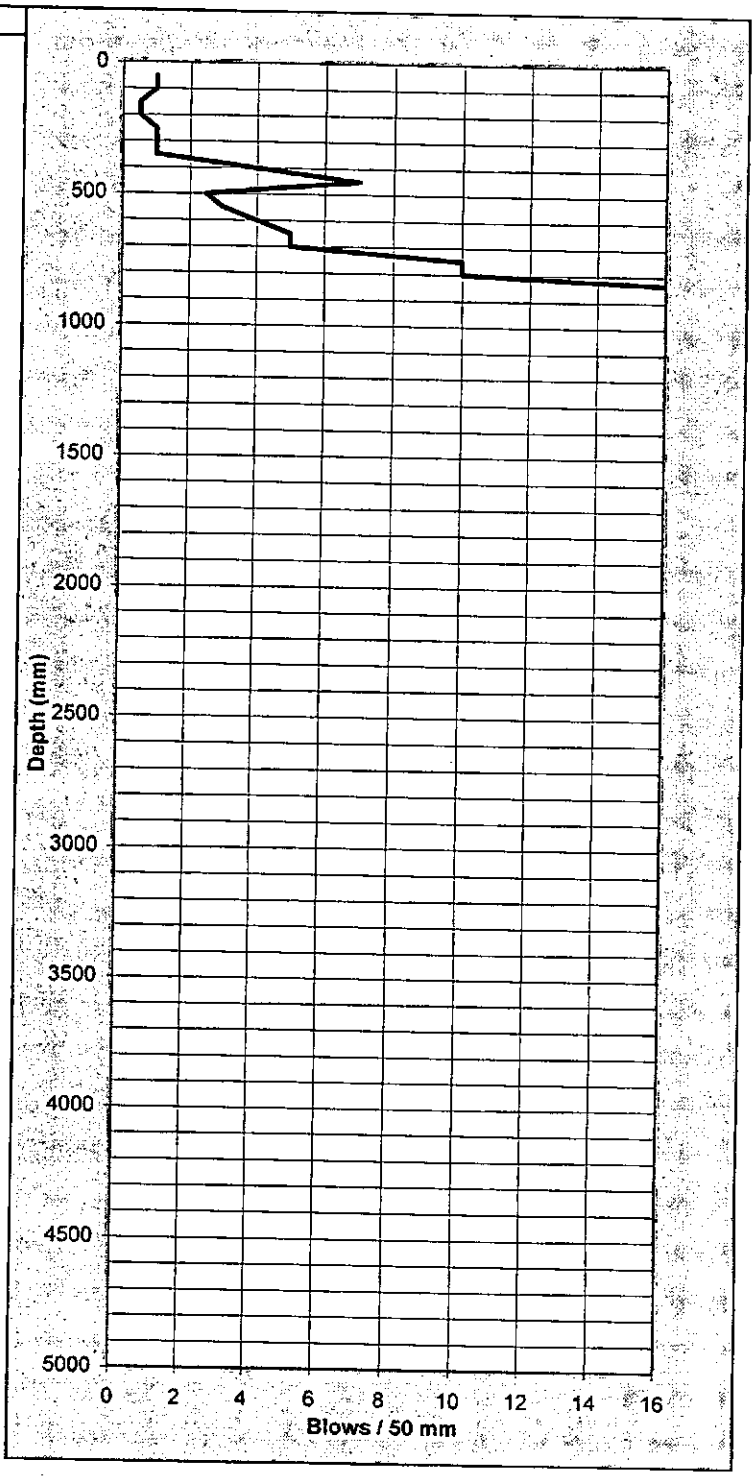
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	Test No. *113/1*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	Sheet *1*
Level:	-	Checked by: *J 8/12*	of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	0.5	2650	
200	0.5	2700	
250	1	2750	
300	1	2800	
350	1	2850	
400	4	2900	
450	7	2950	
500	2.5	3000	
550	3	3050	
600	4	3100	
650	5	3150	
700	5	3200	
750	10	3250	
800	10	3300	
850	19	3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
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SCALA PENETROMETER LOG

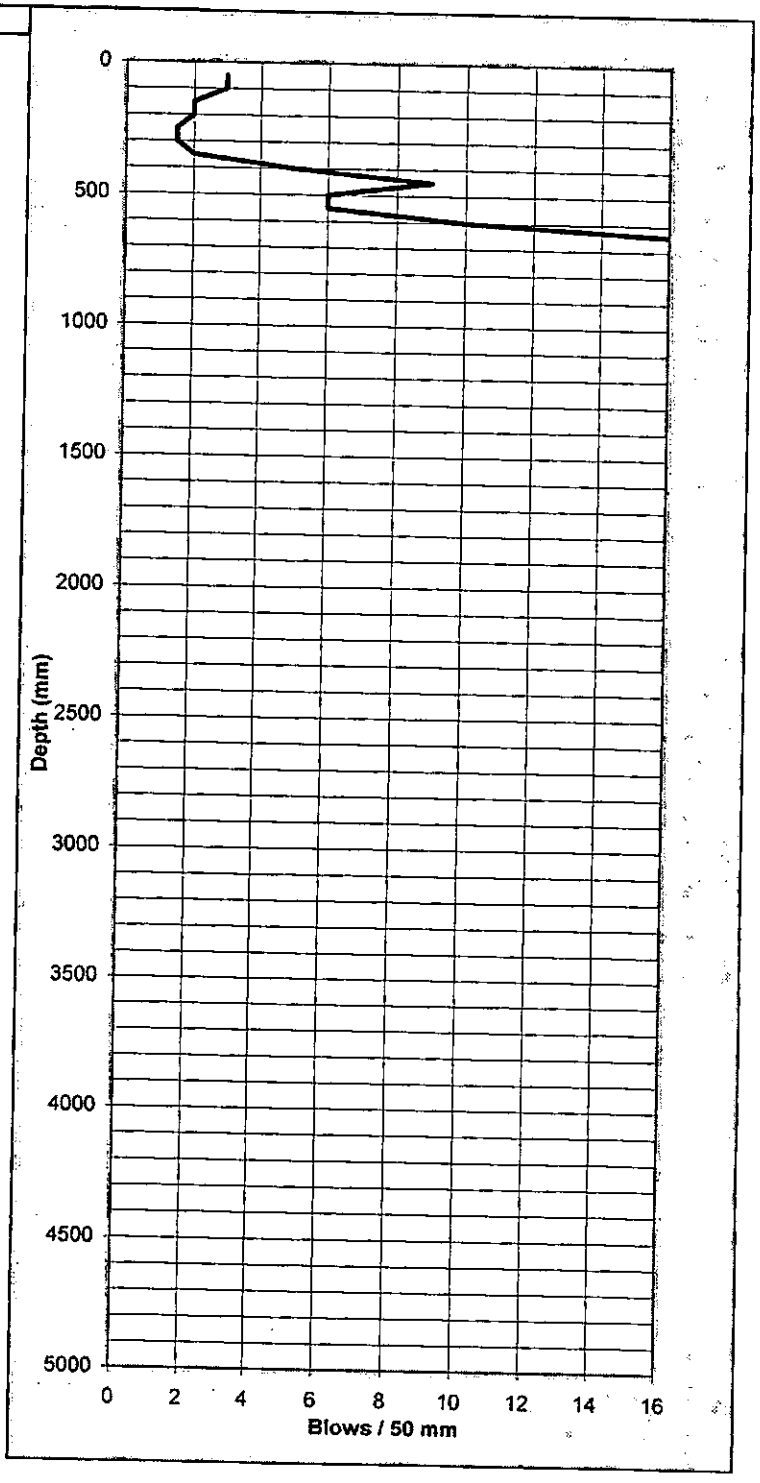
Job No: *81069.008*
Project: *Maire ridge Lot 113*
Location: *Refer Site Plan*
Level: -

Date: *04.12.03*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: 4/8/12

Test No. ***SC 113/1a***

Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	3	2600	
150	2	2650	
200	2	2700	
250	1.5	2750	
300	1.5	2800	
350	2	2850	
400	5	2900	
450	9	2950	
500	6	3000	
550	6	3050	
600	10	3100	
650	17	3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

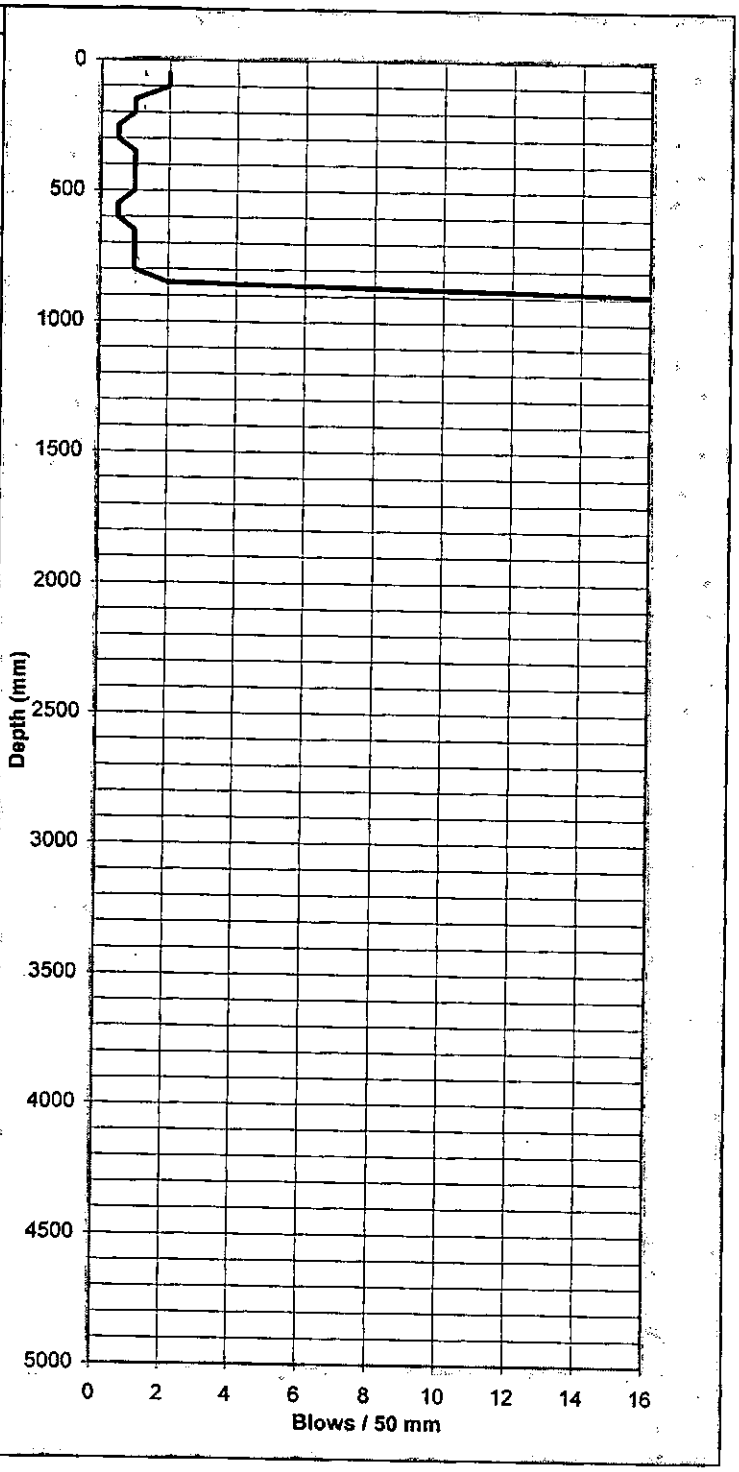
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *7 8/12*

Test No. *113/2*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	2	2600	
150	1	2650	
200	1	2700	
250	0.5	2750	
300	0.5	2800	
350	1	2850	
400	1	2900	
450	1	2950	
500	1	3000	
550	0.5	3050	
600	0.5	3100	
650	1	3150	
700	1	3200	
750	1	3250	
800	1	3300	
850	2	3350	
900	20	3400	
950	16	3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

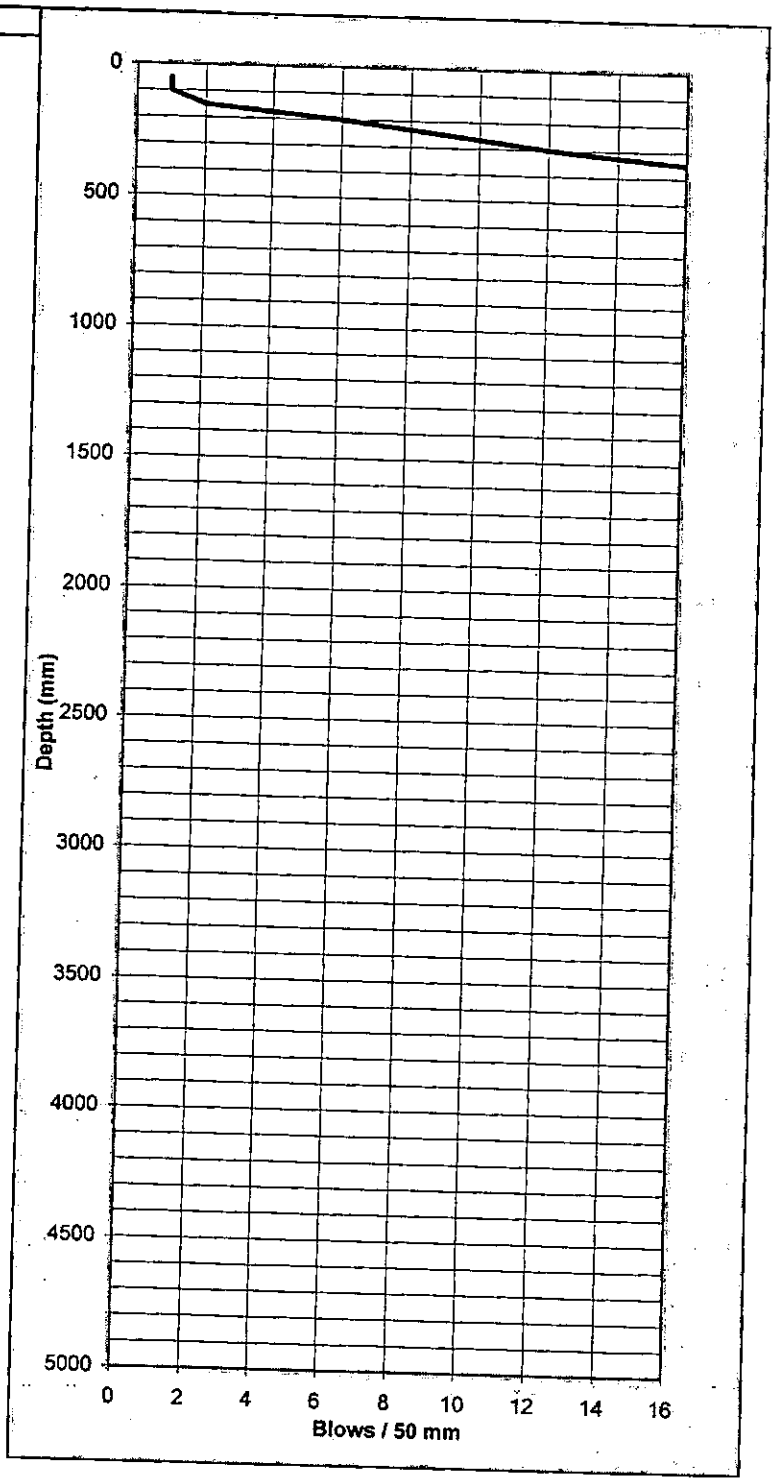
Job No: *81069.008*
Project: *Maire ridge Lot 113*
Location: *Refer Site Plan*
Level: -

Date: *04.12.03*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *[illegible] 8/12*

Test No. ***SC 113/2a***

Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*1*	2550	
100	*1*	2600	
150	*2*	2650	
200	*6*	2700	
250	*9*	2750	
300	*12*	2800	
350	*16*	2850	
400	*17*	2900	
450	*19*	2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

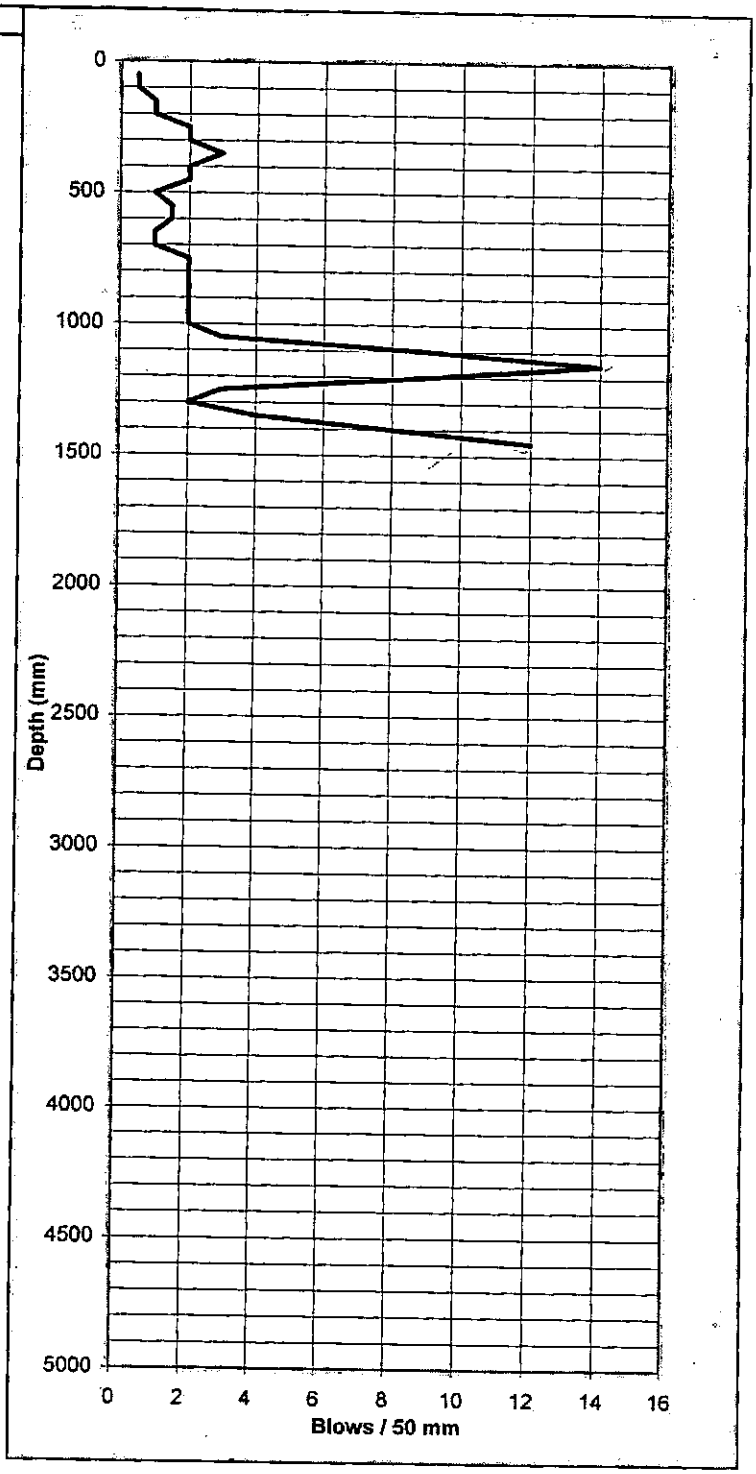
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *[illegible] 8/12*

Test No. *113/3*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	0.5	2550	
100	0.5	2600	
150	1	2650	
200	1	2700	
250	2	2750	
300	2	2800	
350	3	2850	
400	2	2900	
450	2	2950	
500	1	3000	
550	1.5	3050	
600	1.5	3100	
650	1	3150	
700	1	3200	
750	2	3250	
800	2	3300	
850	2	3350	
900	2	3400	
950	2	3450	
1000	2	3500	
1050	3	3550	
1100	9	3600	
1150	14	3650	
1200	9	3700	
1250	3	3750	
1300	2	3800	
1350	4	3850	
1400	8	3900	
1450	12	3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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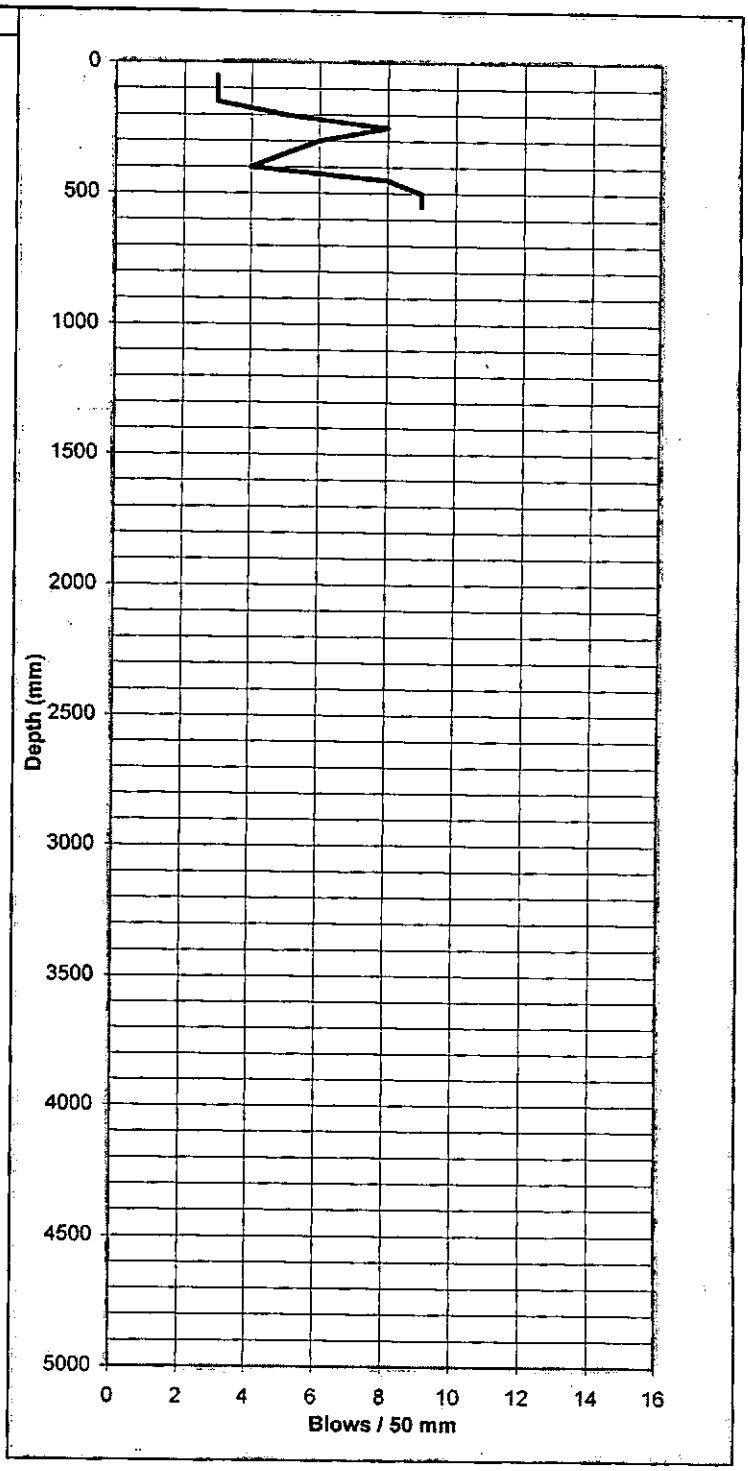
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *7 8/12*

Test No. *114/1*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	3	2600	
150	3	2650	
200	5	2700	
250	8	2750	
300	6	2800	
350	5	2850	
400	4	2900	
450	8	2950	
500	9	3000	
550	9	3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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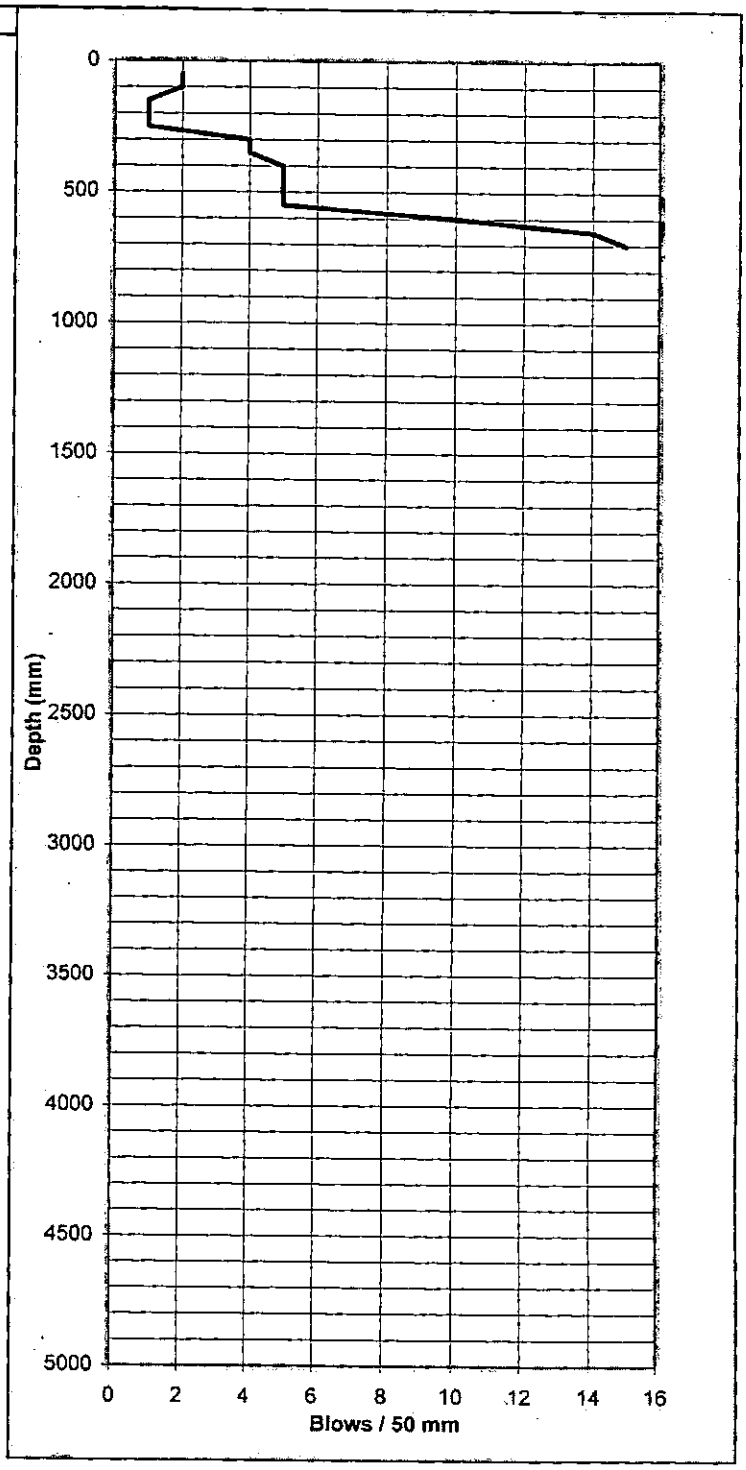
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *4/8/12*

Test No. *114/2*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	2	2600	
150	1	2650	
200	1	2700	
250	1	2750	
300	4	2800	
350	4	2850	
400	5	2900	
450	5	2950	
500	5	3000	
550	5	3050	
600	10	3100	
650	14	3150	
700	15	3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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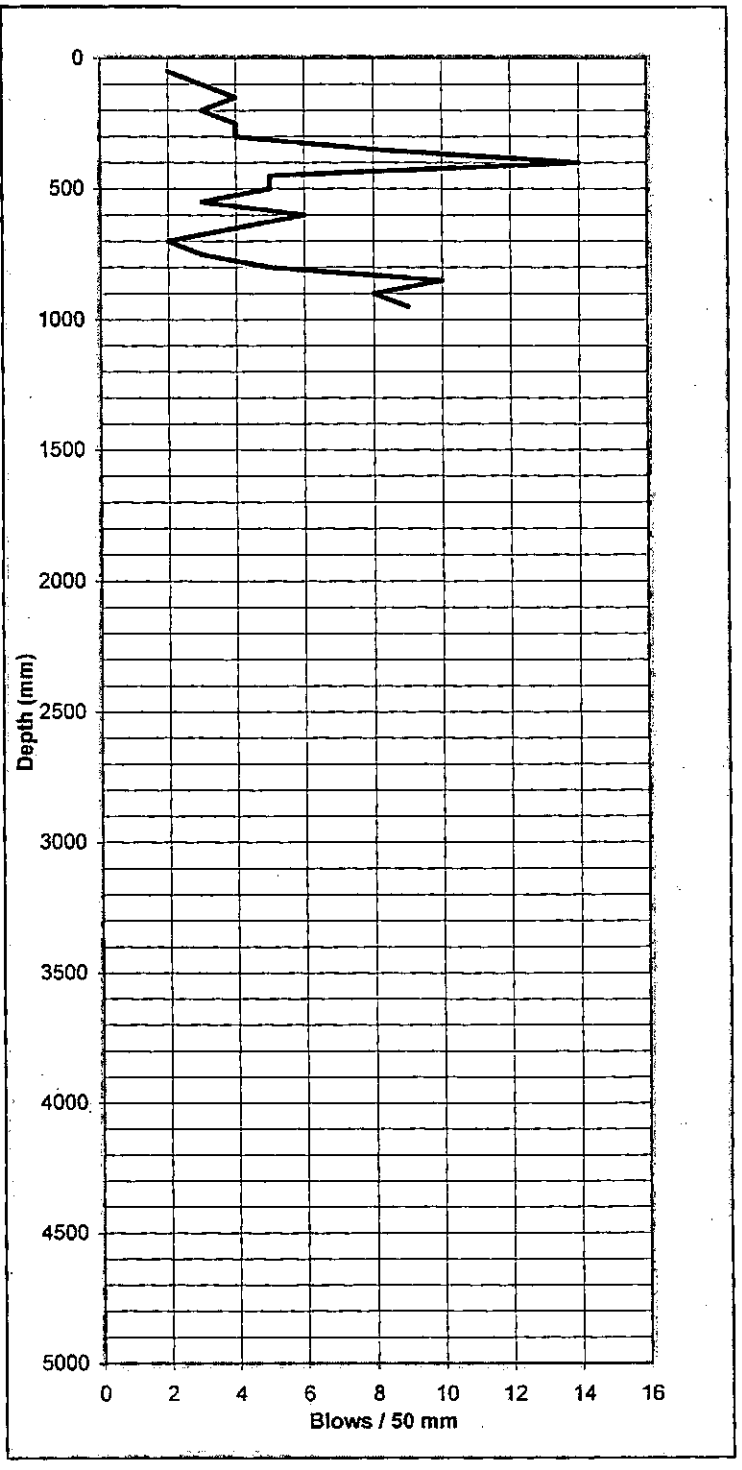
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date:	*17/11/2003*	Test No.	*114/3*
Project:	*Maire Ridge*	Operated by:	*SCWW*		
Location:	*Refer Site Plan*	Logged by:	*SCWW*	Sheet	*1*
Level:	-	Checked by:	*J 8/12*	of	*1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	3	2600	
150	4	2650	
200	3	2700	
250	4	2750	
300	4	2800	
350	8	2850	
400	14	2900	
450	5	2950	
500	5	3000	
550	3	3050	
600	6	3100	
650	4	3150	
700	2	3200	
750	3	3250	
800	5	3300	
850	10	3350	
900	8	3400	
950	9	3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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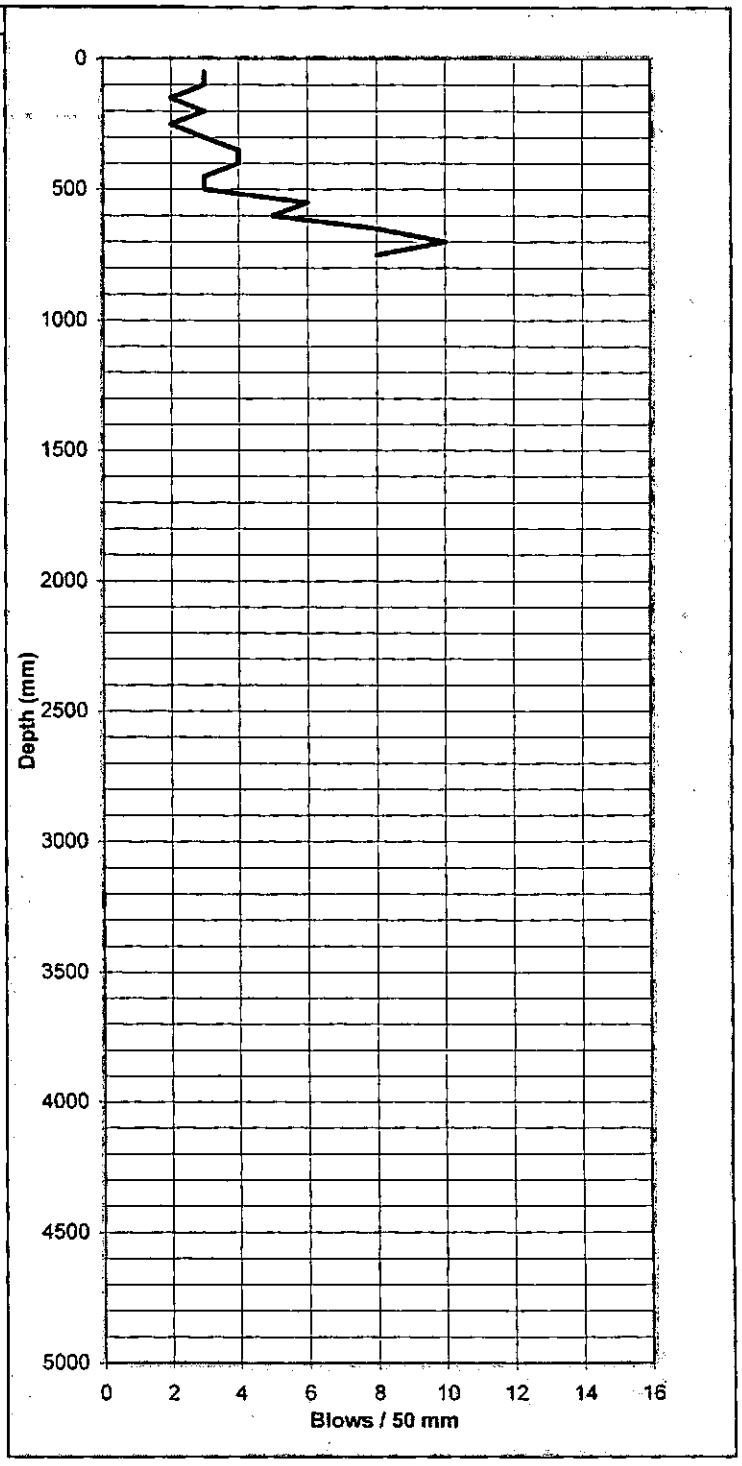
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	**Test No.** *115/1*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	**Sheet** *1*
Level:	-	Checked by: *7 8/12*	**of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	3	2600	
150	2	2650	
200	3	2700	
250	2	2750	
300	3	2800	
350	4	2850	
400	4	2900	
450	3	2950	
500	3	3000	
550	6	3050	
600	5	3100	
650	8	3150	
700	10	3200	
750	8	3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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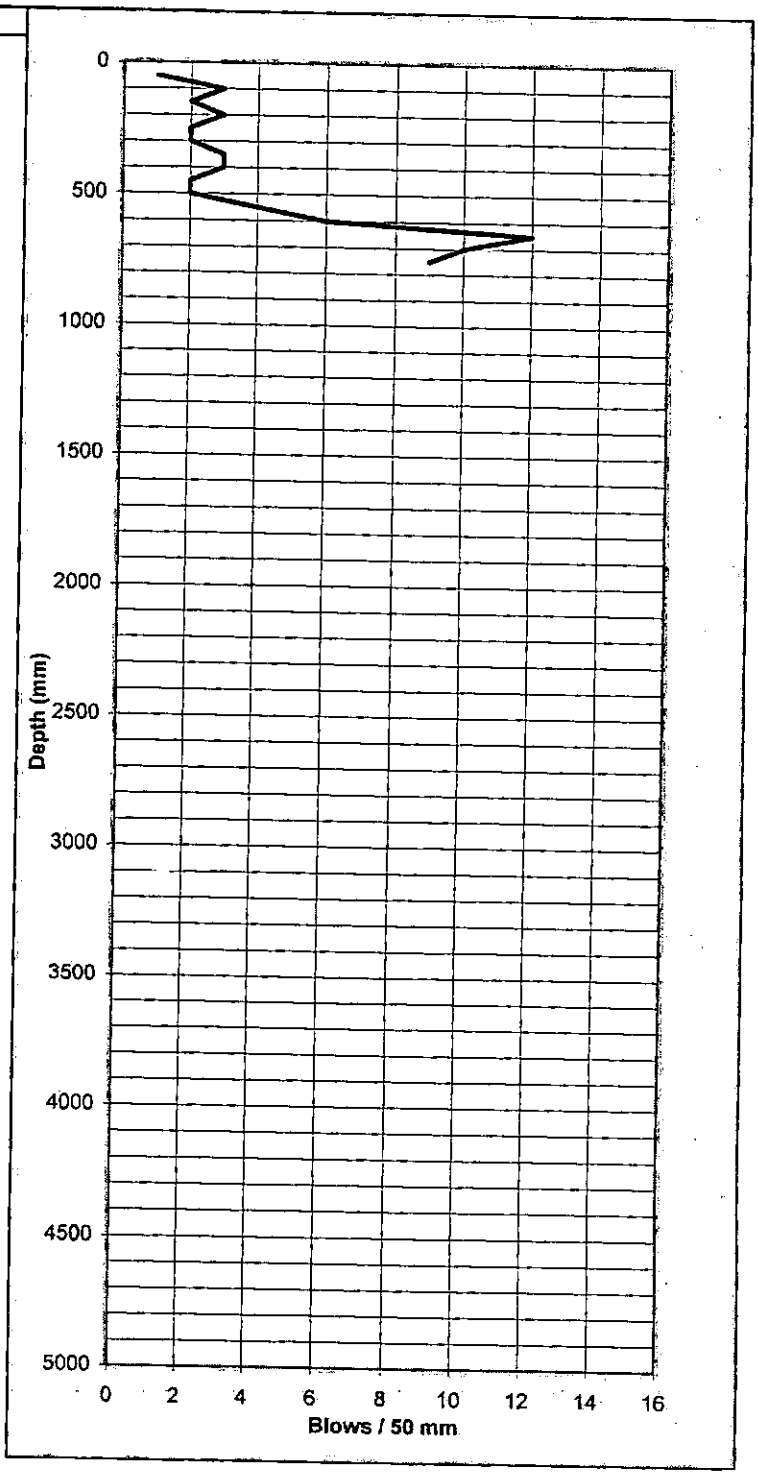
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *7 8/12*

Test No. *115/2*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	3	2600	
150	2	2650	
200	3	2700	
250	2	2750	
300	2	2800	
350	3	2850	
400	3	2900	
450	2	2950	
500	2	3000	
550	4	3050	
600	6	3100	
650	12	3150	
700	10	3200	
750	9	3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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44 Halifax Street
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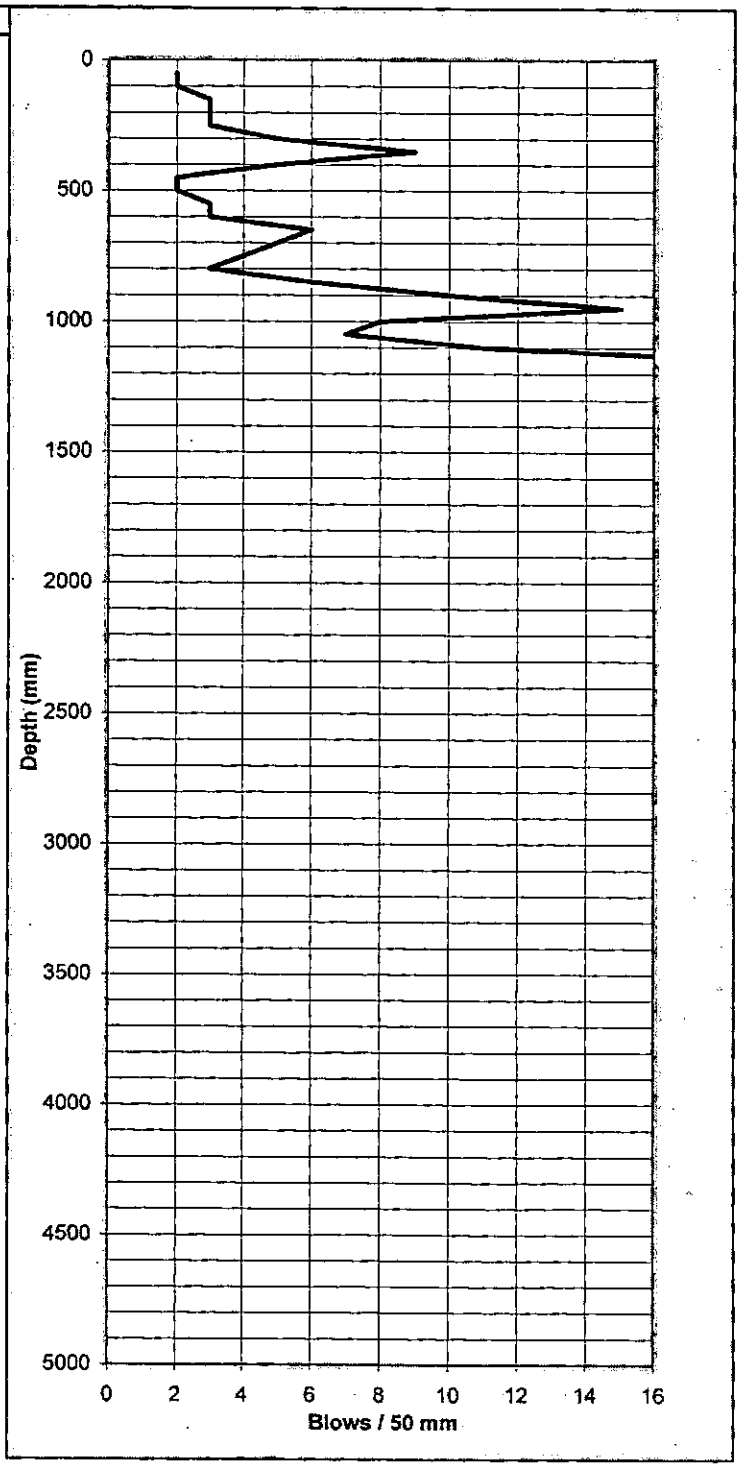
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No:	*81069.008*	Date:	*17/11/2003*	Test No.	*116/1*
Project:	*Maire Ridge*	Operated by:	*SCWW*		
Location:	*Refer Site Plan*	Logged by:	*SCWW*	Sheet	*1*
Level:	-	Checked by:	7/8/12	of	*1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	2	2600	
150	3	2650	
200	3	2700	
250	3	2750	
300	5	2800	
350	9	2850	
400	5	2900	
450	2	2950	
500	2	3000	
550	3	3050	
600	3	3100	
650	6	3150	
700	5	3200	
750	4	3250	
800	3	3300	
850	6	3350	
900	10	3400	
950	15	3450	
1000	8	3500	
1050	7	3550	
1100	11	3600	
1150	20	3650	
1200	20	3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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NELSON
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SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	**Test No.** *116/2*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	**Sheet** *1*
Level:	-	Checked by: *J 8/12*	**of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	3	2600	
150	1	2650	
200	2	2700	
250	2	2750	
300	2	2800	
350	1	2850	
400	1	2900	
450	2	2950	
500	4	3000	
550	5	3050	
600	5	3100	
650	17	3150	
700	20	3200	
750	20	3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
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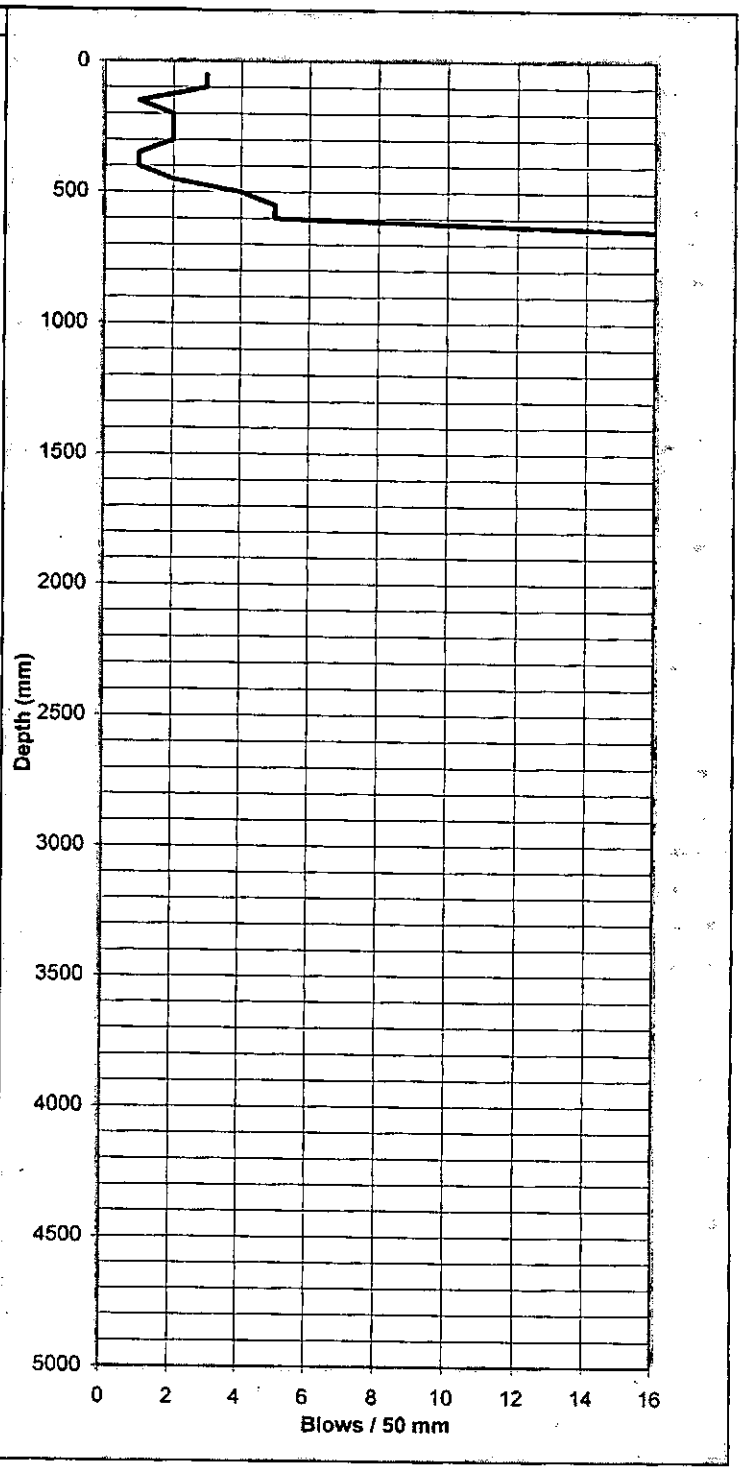
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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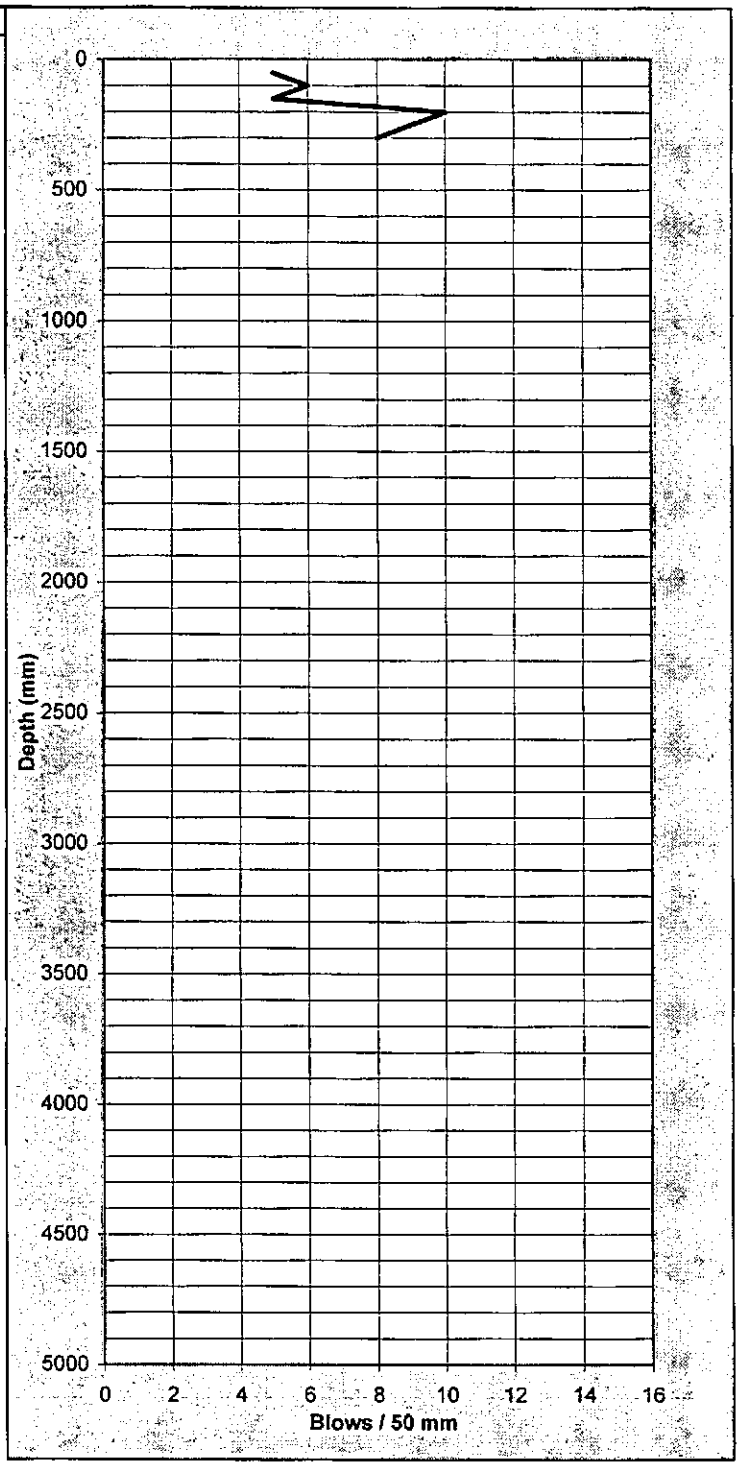
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date:	*17/11/2003*	**Test No.**	***117/1***
Project:	*Maire Ridge*	Operated by:	*SCWW*		
Location:	*Refer Site Plan*	Logged by:	*SCWW*	**Sheet**	***1***
Level:	-	Checked by:	*4 8/12*	**of**	***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	5	2550	
100	6	2600	
150	5	2650	
200	10	2700	
250	9	2750	
300	8	2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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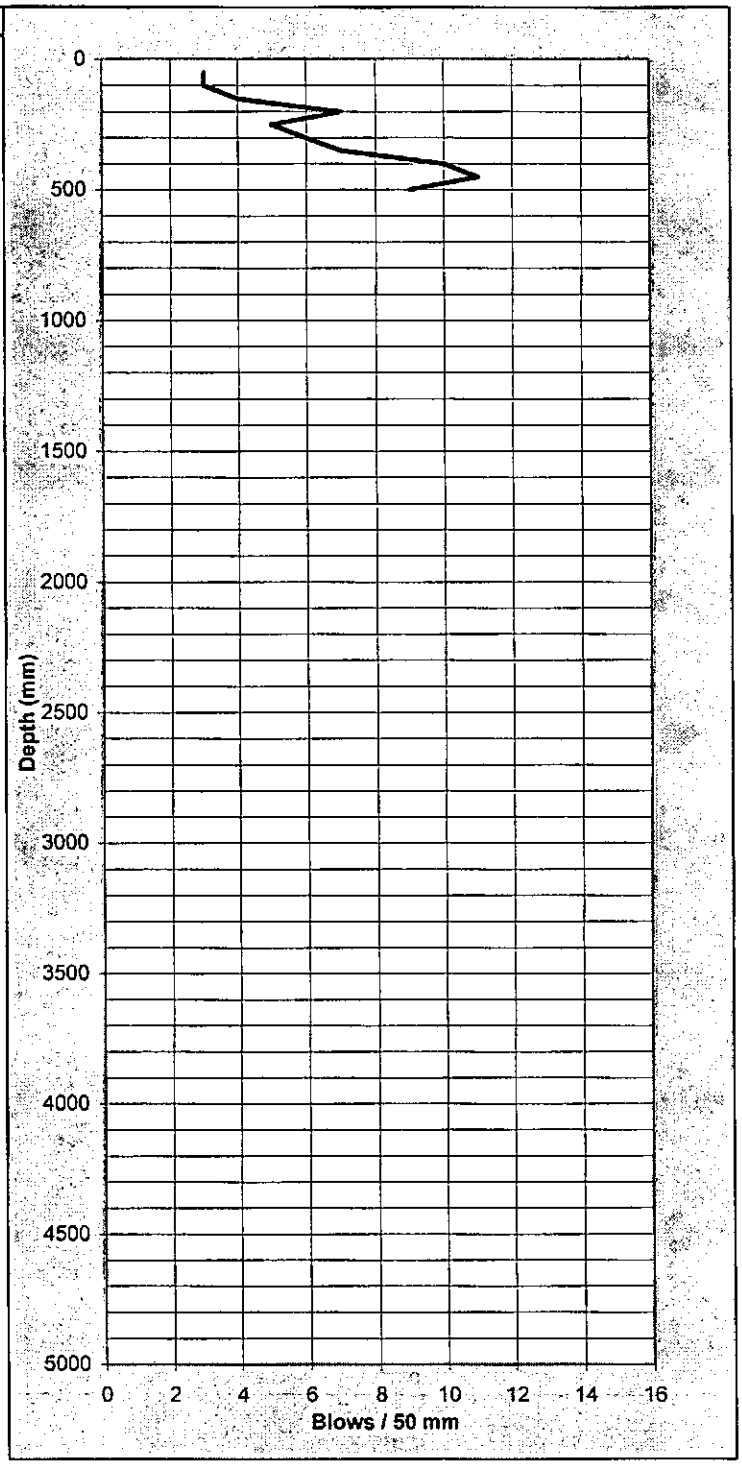
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date:	*17/11/2003*	**Test No.**	***117/2***
Project:	*Maire Ridge*	Operated by:	*SCWW*		
Location:	*Refer Site Plan*	Logged by:	*SCWW*	**Sheet**	***1***
Level:	-	Checked by:	7 8/12	**of**	***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	3	2600	
150	4	2650	
200	7	2700	
250	5	2750	
300	6	2800	
350	7	2850	
400	10	2900	
450	11	2950	
500	9	3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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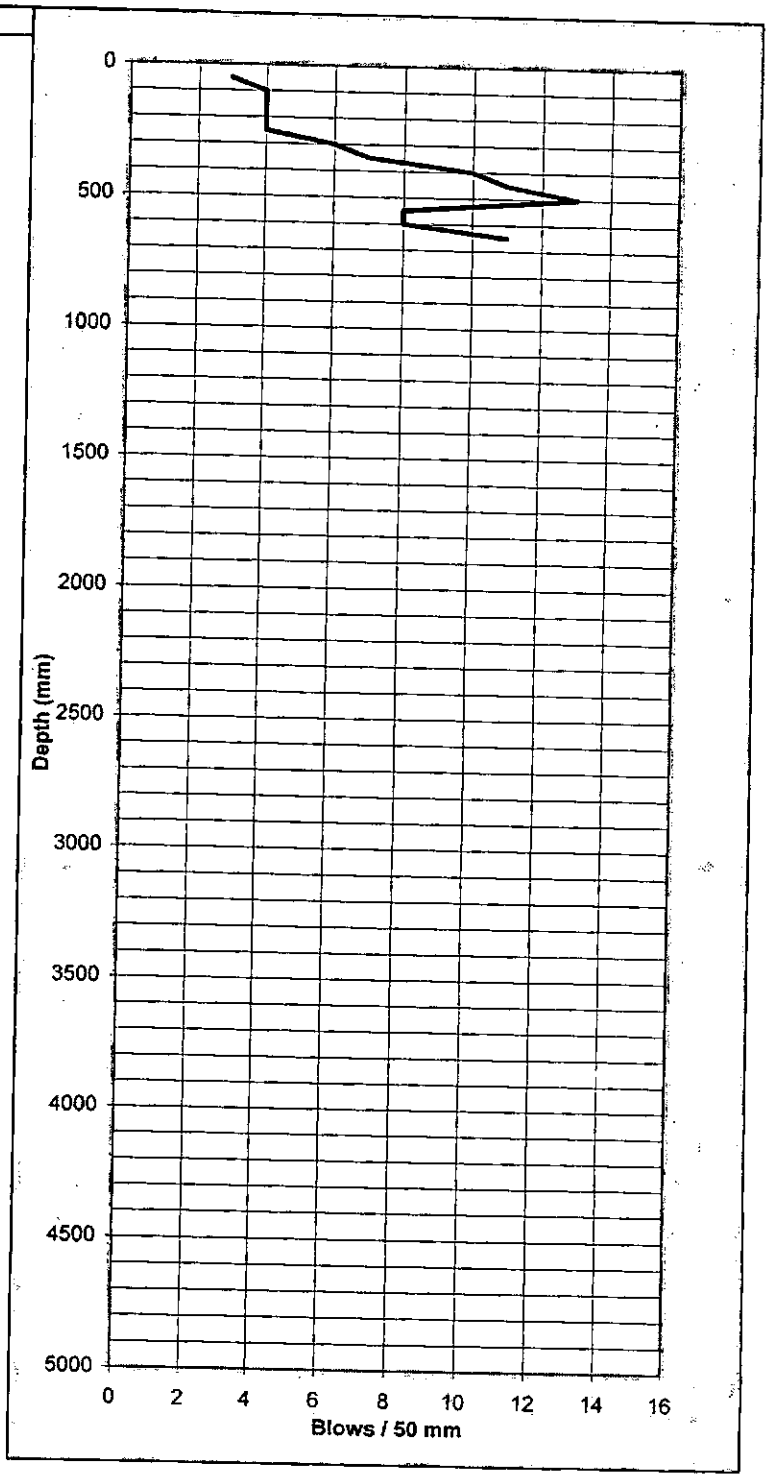
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *28/11/2003*
Operated by: *John*
Logged by: *SCWW*
Checked by: 7/8/12

Test No. *117/2a*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	4	2600	
150	4	2650	
200	4	2700	
250	4	2750	
300	6	2800	
350	7	2850	
400	10	2900	
450	11	2950	
500	13	3000	
550	8	3050	
600	8	3100	
650	11	3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

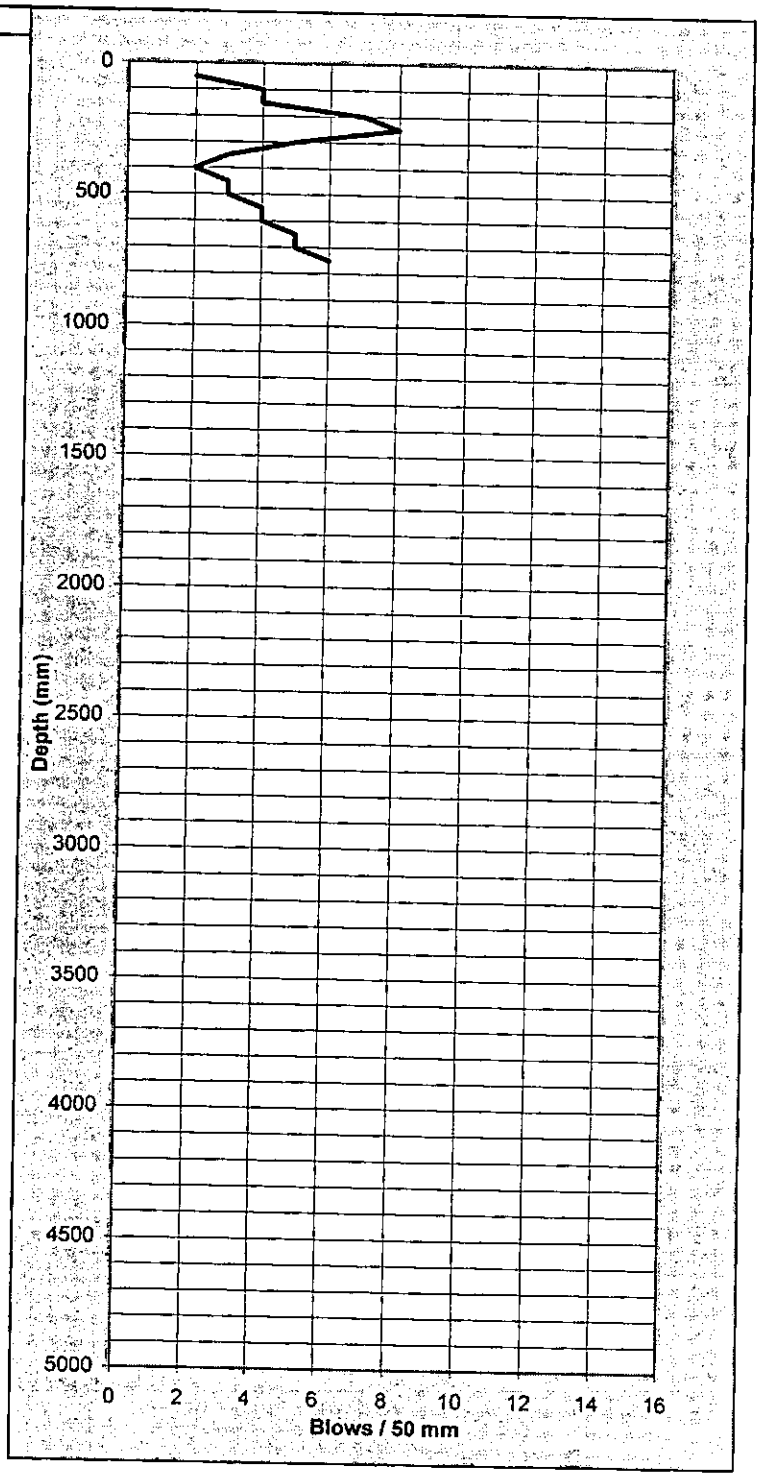
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *7 8/12*

Test No. *117/3*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	4	2600	
150	4	2650	
200	7	2700	
250	8	2750	
300	5	2800	
350	3	2850	
400	2	2900	
450	3	2950	
500	3	3000	
550	4	3050	
600	4	3100	
650	5	3150	
700	5	3200	
750	6	3250	
800	1	3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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44 Halifax Street
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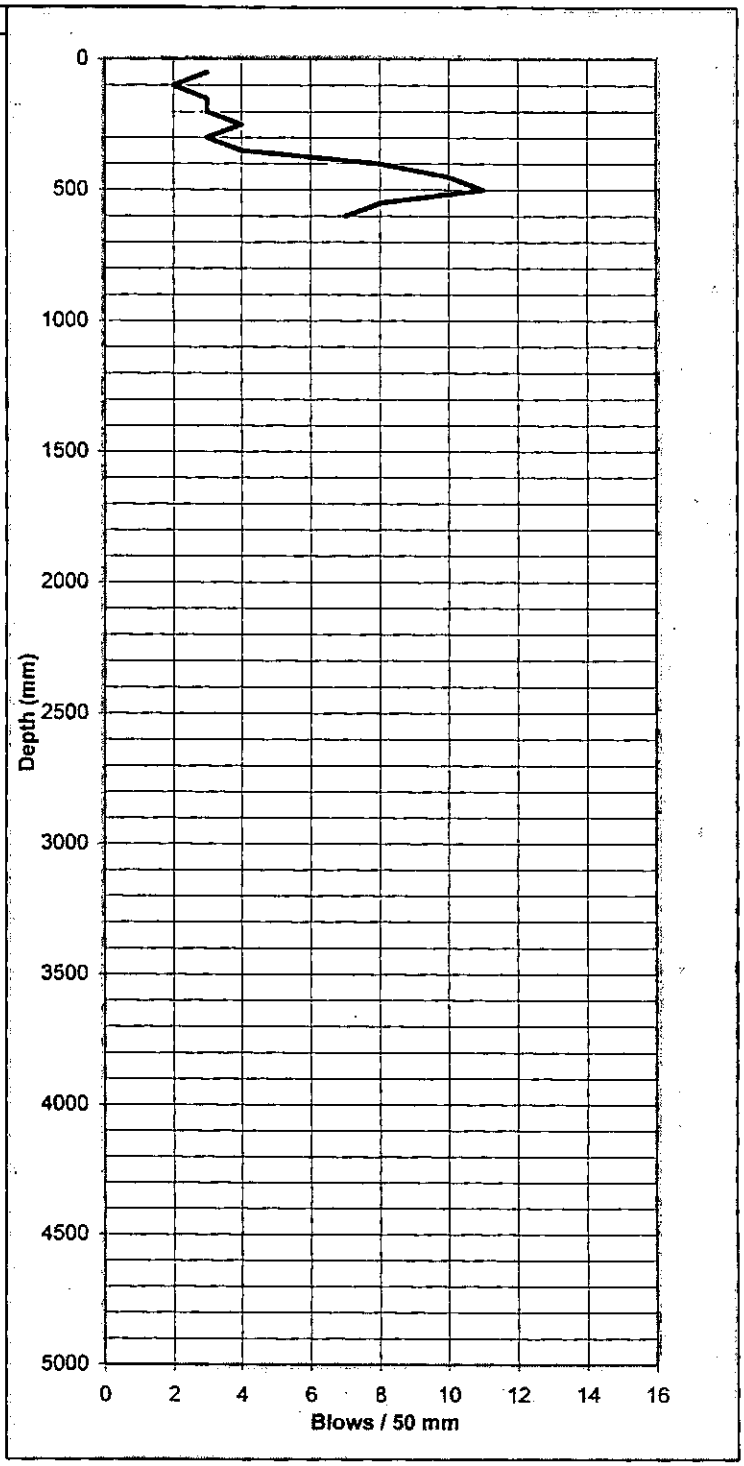
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	Test No. *118/1*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	Sheet *1*
Level:	-	Checked by: *4 8/12*	of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	2	2600	
150	3	2650	
200	3	2700	
250	4	2750	
300	3	2800	
350	4	2850	
400	8	2900	
450	10	2950	
500	11	3000	
550	8	3050	
600	7	3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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SCALA PENETROMETER LOG

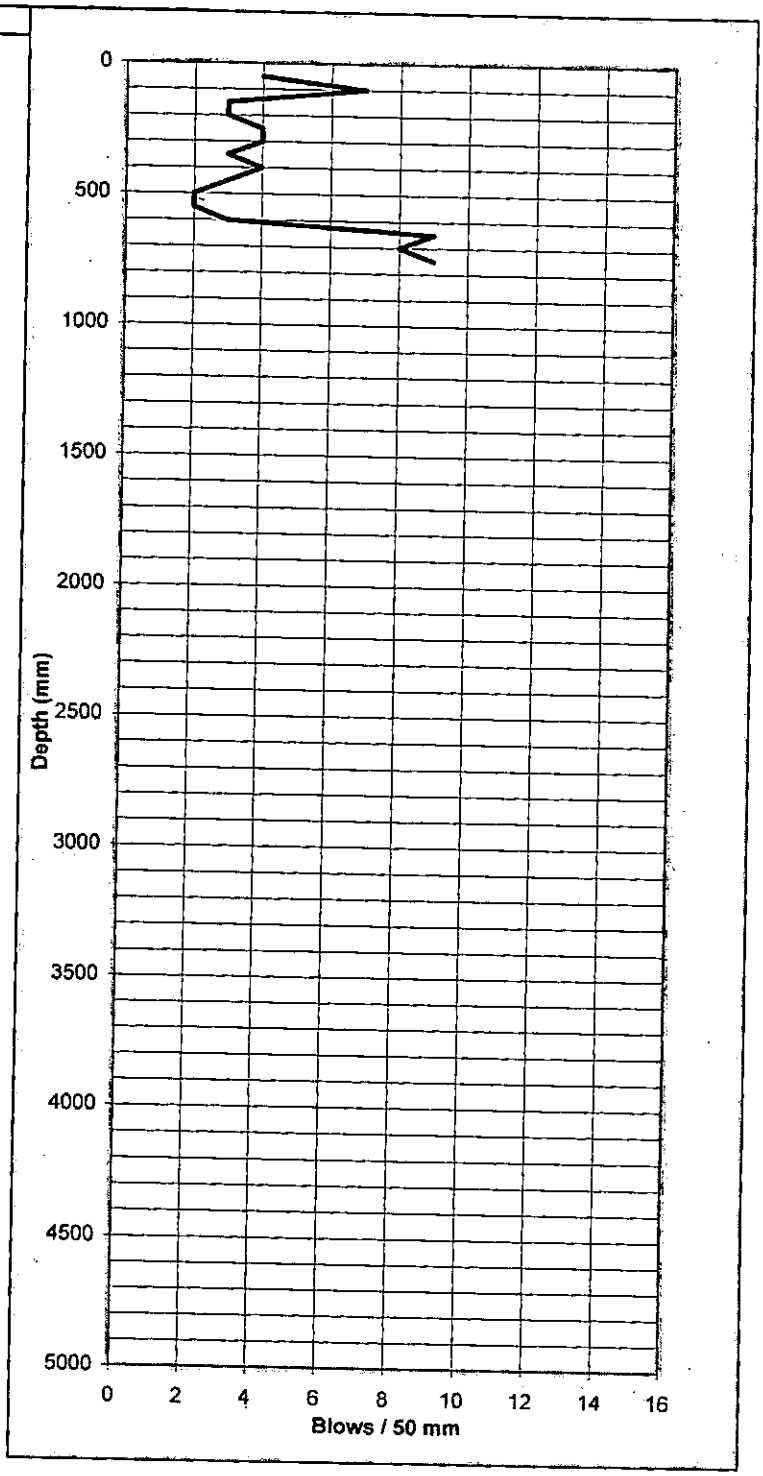
Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *Y 8/12*

Test No. *118/2*
Sheet *1* **of** *1*

mm Driven	No. of Blows
50	4
100	7
150	3
200	3
250	4
300	4
350	3
400	4
450	3
500	2
550	2
600	3
650	9
700	8
750	9
800	
850	
900	
950	
1000	
1050	
1100	
1150	
1200	
1250	
1300	
1350	
1400	
1450	
1500	
1550	
1600	
1650	
1700	
1750	
1800	
1850	
1900	
1950	
2000	
2050	
2100	
2150	
2200	
2250	
2300	
2350	
2400	
2450	
2500	

mm Driven	No. of Blows
2550	
2600	
2650	
2700	
2750	
2800	
2850	
2900	
2950	
3000	
3050	
3100	
3150	
3200	
3250	
3300	
3350	
3400	
3450	
3500	
3550	
3600	
3650	
3700	
3750	
3800	
3850	
3900	
3950	
4000	
4050	
4100	
4150	
4200	
4250	
4300	
4350	
4400	
4450	
4500	
4550	
4600	
4650	
4700	
4750	
4800	
4850	
4900	
4950	
5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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Fax: (03) 546 7619

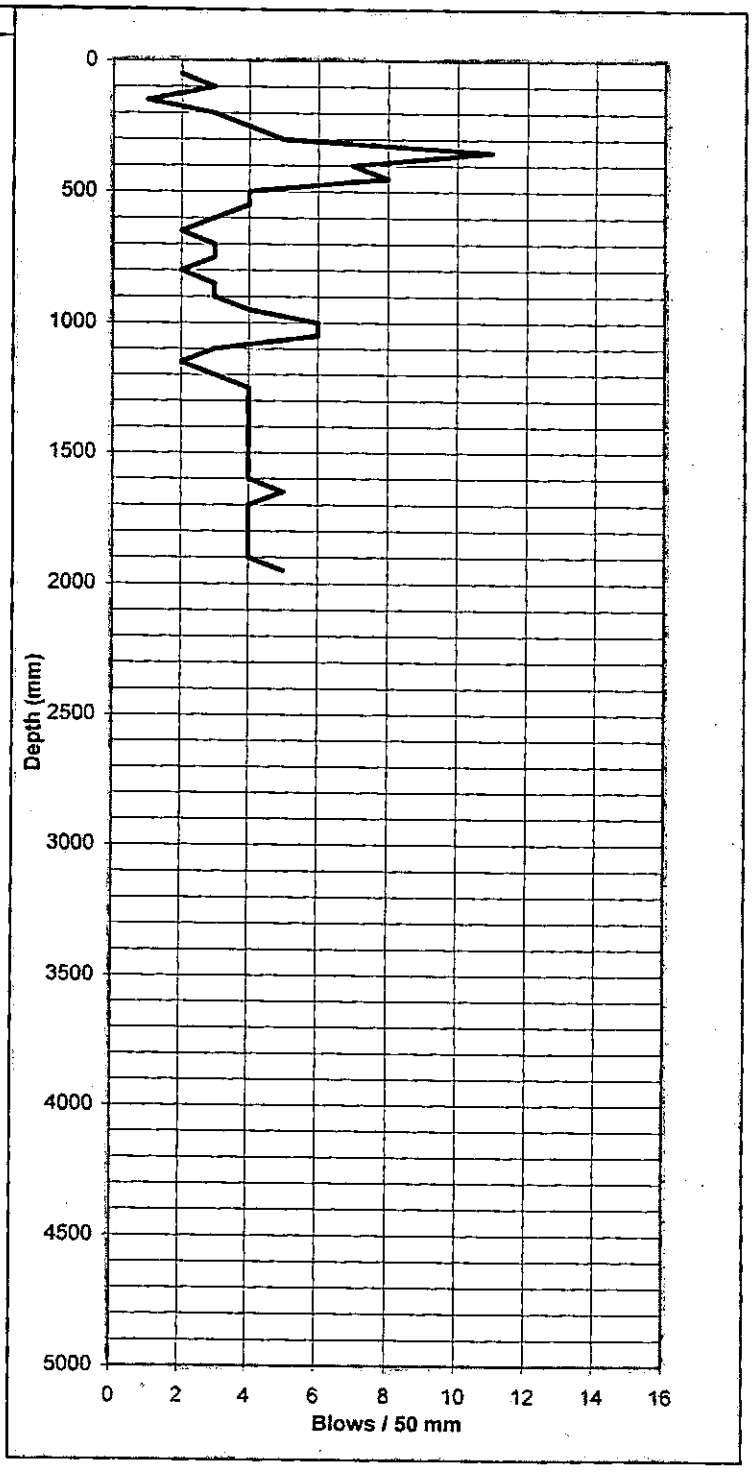
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: 7-8/12

Test No. ***118/3a***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	3	2600	
150	1	2650	
200	3	2700	
250	4	2750	
300	5	2800	
350	11	2850	
400	7	2900	
450	8	2950	
500	4	3000	
550	4	3050	
600	3	3100	
650	2	3150	
700	3	3200	
750	3	3250	
800	2	3300	
850	3	3350	
900	3	3400	
950	4	3450	
1000	6	3500	
1050	6	3550	
1100	3	3600	
1150	2	3650	
1200	3	3700	
1250	4	3750	
1300	4	3800	
1350	4	3850	
1400	4	3900	
1450	4	3950	
1500	4	4000	
1550	4	4050	
1600	4	4100	
1650	5	4150	
1700	4	4200	
1750	4	4250	
1800	4	4300	
1850	4	4350	
1900	4	4400	
1950	5	4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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44 Halifax Street
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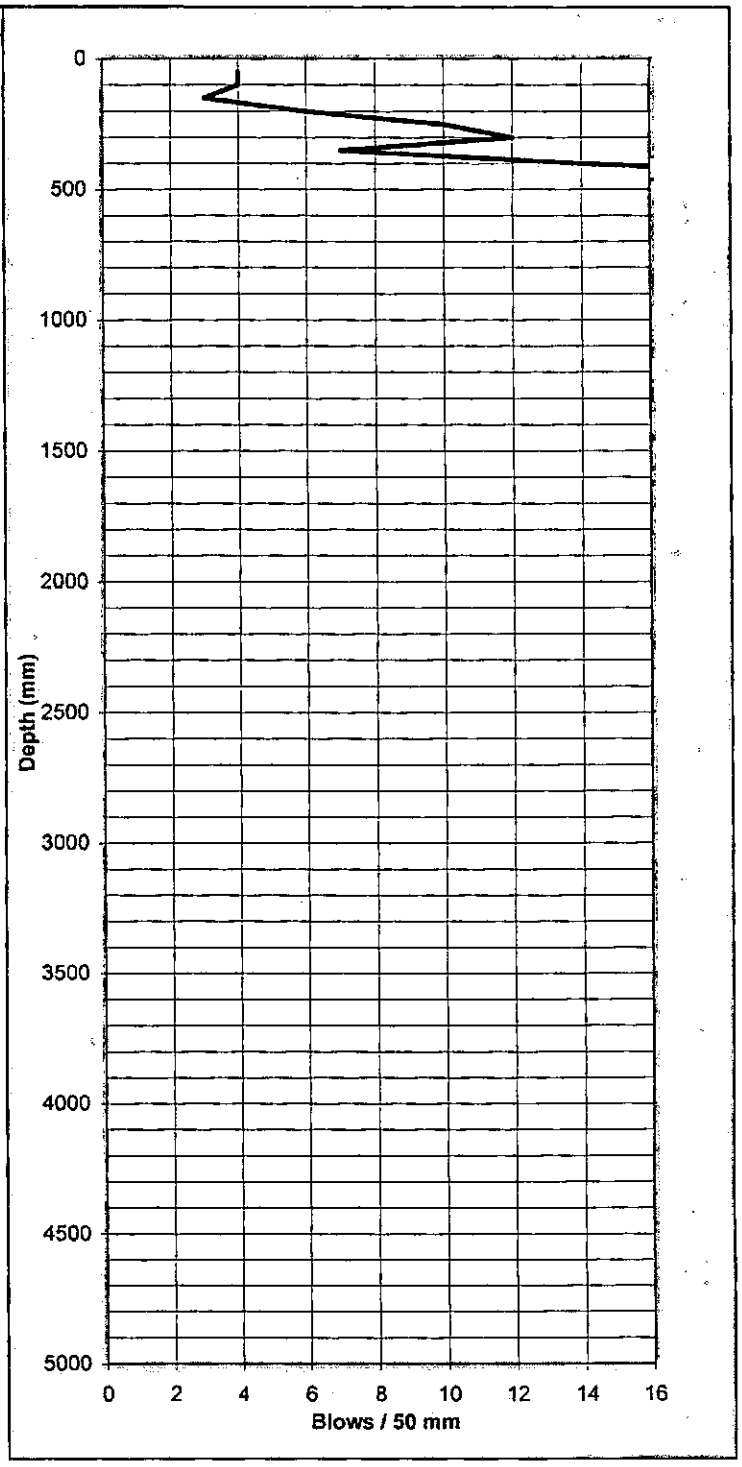
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	**Test No.** *118/3b*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	**Sheet** *1*
Level:	-	Checked by: *J 8/12*	**of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*4*	2550	
100	*4*	2600	
150	*3*	2650	
200	*6*	2700	
250	*10*	2750	
300	*12*	2800	
350	*7*	2850	
400	*14*	2900	
450	*23*	2950	
500	*16*	3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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44 Halifax Street
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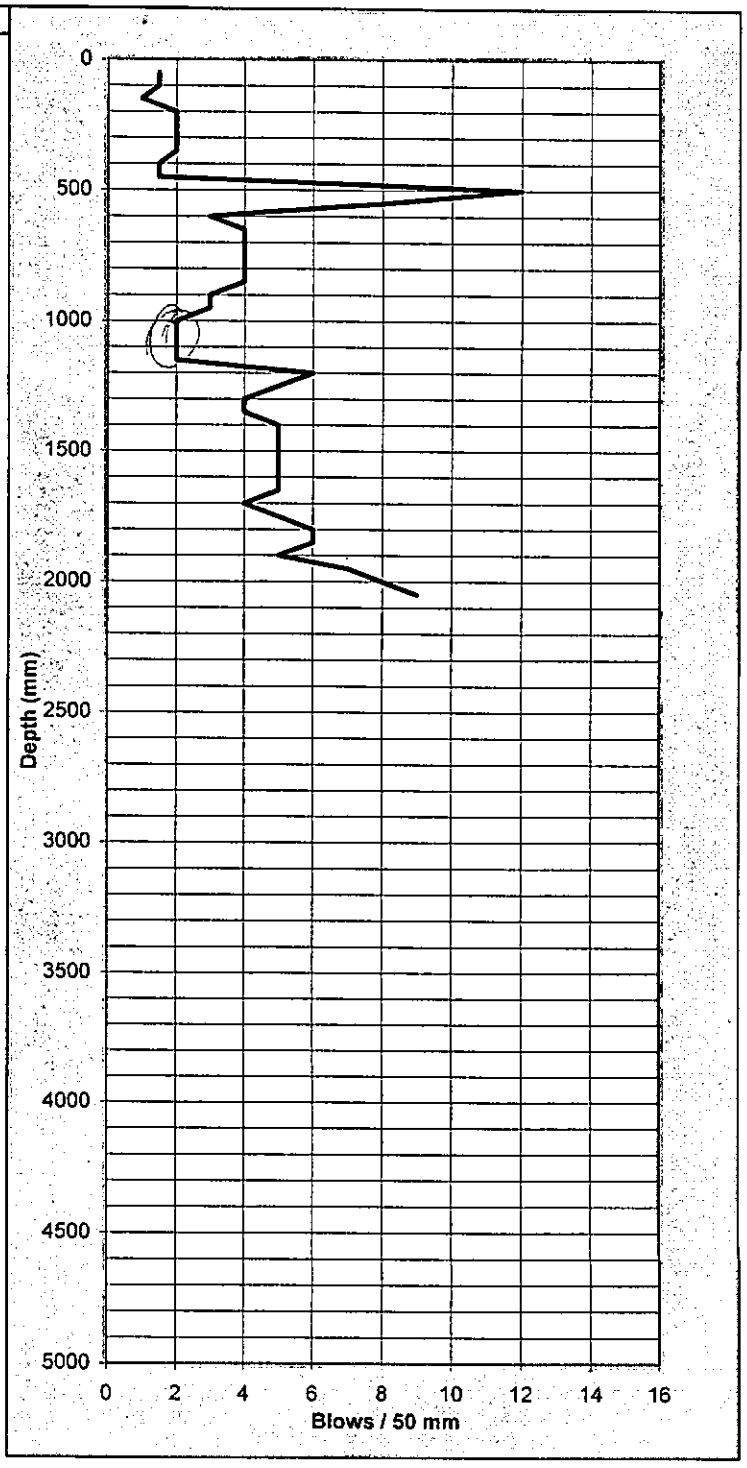
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: 4/8/12

Test No. *119/1*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1.5	2550	
100	1.5	2600	
150	1	2650	
200	2	2700	
250	2	2750	
300	2	2800	
350	2	2850	
400	1.5	2900	
450	1.5	2950	
500	12	3000	
550	8	3050	
600	3	3100	
650	4	3150	
700	4	3200	
750	4	3250	
800	4	3300	
850	4	3350	
900	3	3400	
950	3	3450	
1000	2	3500	
1050	2	3550	
1100	2	3600	
1150	2	3650	
1200	6	3700	
1250	5	3750	
1300	4	3800	
1350	4	3850	
1400	5	3900	
1450	5	3950	
1500	5	4000	
1550	5	4050	
1600	5	4100	
1650	5	4150	
1700	4	4200	
1750	5	4250	
1800	6	4300	
1850	6	4350	
1900	5	4400	
1950	7	4450	
2000	8	4500	
2050	9	4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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44 Halifax Street
P O Box 1009
NELSON
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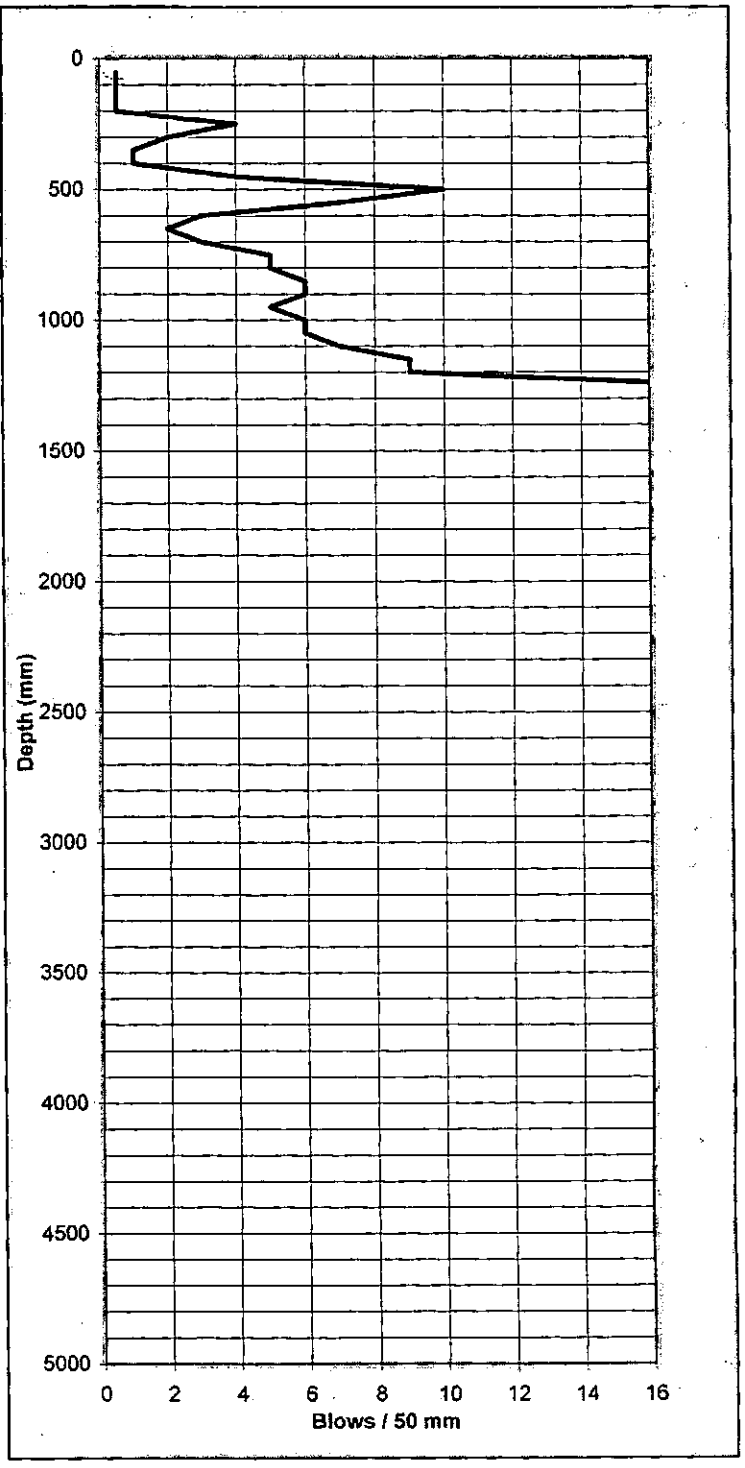
SCALA PENETROMETER LOG

Job No:	*81069.008*	Date:	*17/11/2003*	Test No.	*119/2*
Project:	*Maire Ridge*	Operated by:	*SCWW*		
Location:	*Refer Site Plan*	Logged by:	*SCWW*	Sheet	*1*
Level:	-	Checked by:	*7 8/12*	of	*1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	0.5	2550	
100	0.5	2600	
150	0.5	2650	
200	0.5	2700	
250	4	2750	
300	2	2800	
350	1	2850	
400	1	2900	
450	4	2950	
500	10	3000	
550	7	3050	
600	3	3100	
650	2	3150	
700	3	3200	
750	5	3250	
800	5	3300	
850	6	3350	
900	6	3400	
950	5	3450	
1000	6	3500	
1050	6	3550	
1100	7	3600	
1150	9	3650	
1200	9	3700	
1250	18	3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
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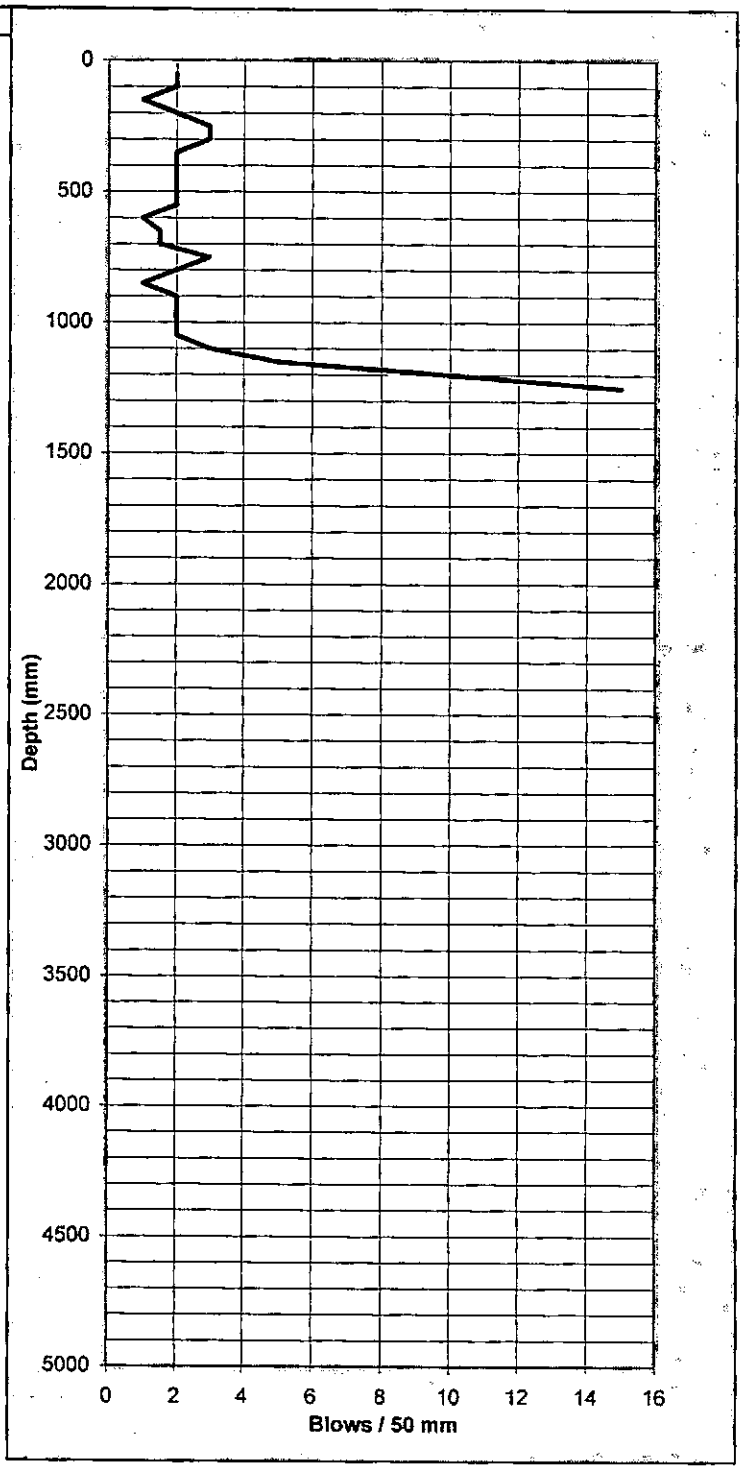
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *7 8/12*

Test No. *120/1*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	2	2600	
150	1	2650	
200	2	2700	
250	3	2750	
300	3	2800	
350	2	2850	
400	2	2900	
450	2	2950	
500	2	3000	
550	2	3050	
600	1	3100	
650	1.5	3150	
700	1.5	3200	
750	3	3250	
800	2	3300	
850	1	3350	
900	2	3400	
950	2	3450	
1000	2	3500	
1050	2	3550	
1100	3	3600	
1150	5	3650	
1200	10	3700	
1250	15	3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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Fax: (03) 546 7619

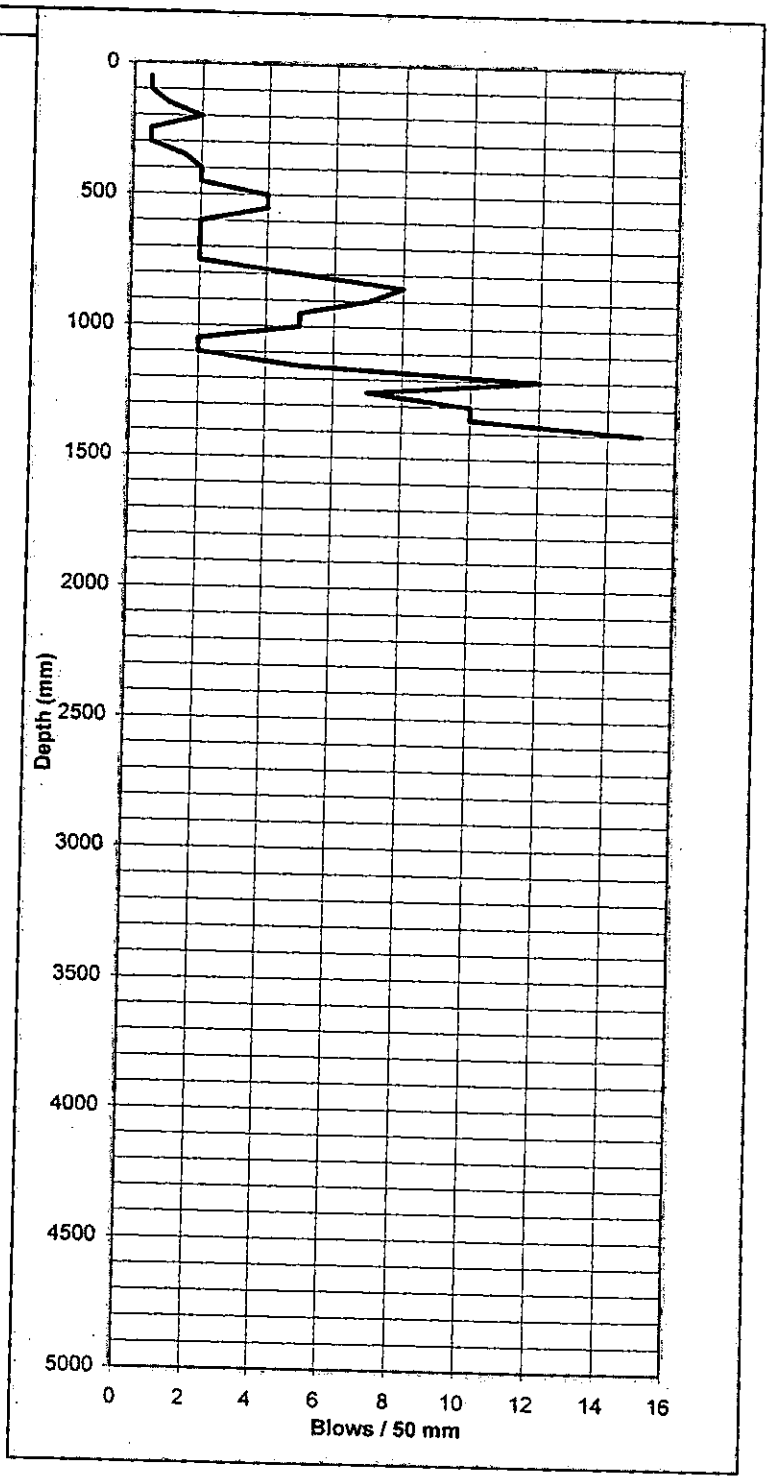
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *7 8/12*

Test No. *120/2*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	0.5	2550	
100	0.5	2600	
150	1	2650	
200	2	2700	
250	0.5	2750	
300	0.5	2800	
350	1.5	2850	
400	2	2900	
450	2	2950	
500	4	3000	
550	4	3050	
600	2	3100	
650	2	3150	
700	2	3200	
750	2	3250	
800	5	3300	
850	8	3350	
900	7	3400	
950	5	3450	
1000	5	3500	
1050	2	3550	
1100	2	3600	
1150	5	3650	
1200	12	3700	
1250	7	3750	
1300	10	3800	
1350	10	3850	
1400	15	3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	Test No. *120/3*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	Sheet *1*
Level:	-	Checked by: *7 8/12*	of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	1	2650	
200	3	2700	
250	2	2750	
300	3	2800	
350	3	2850	
400	5	2900	
450	3	2950	
500	2	3000	
550	3	3050	
600	3	3100	
650	5	3150	
700	11	3200	
750	8	3250	
800	10	3300	
850	14	3350	
900	11	3400	
950	9	3450	
1000	9	3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
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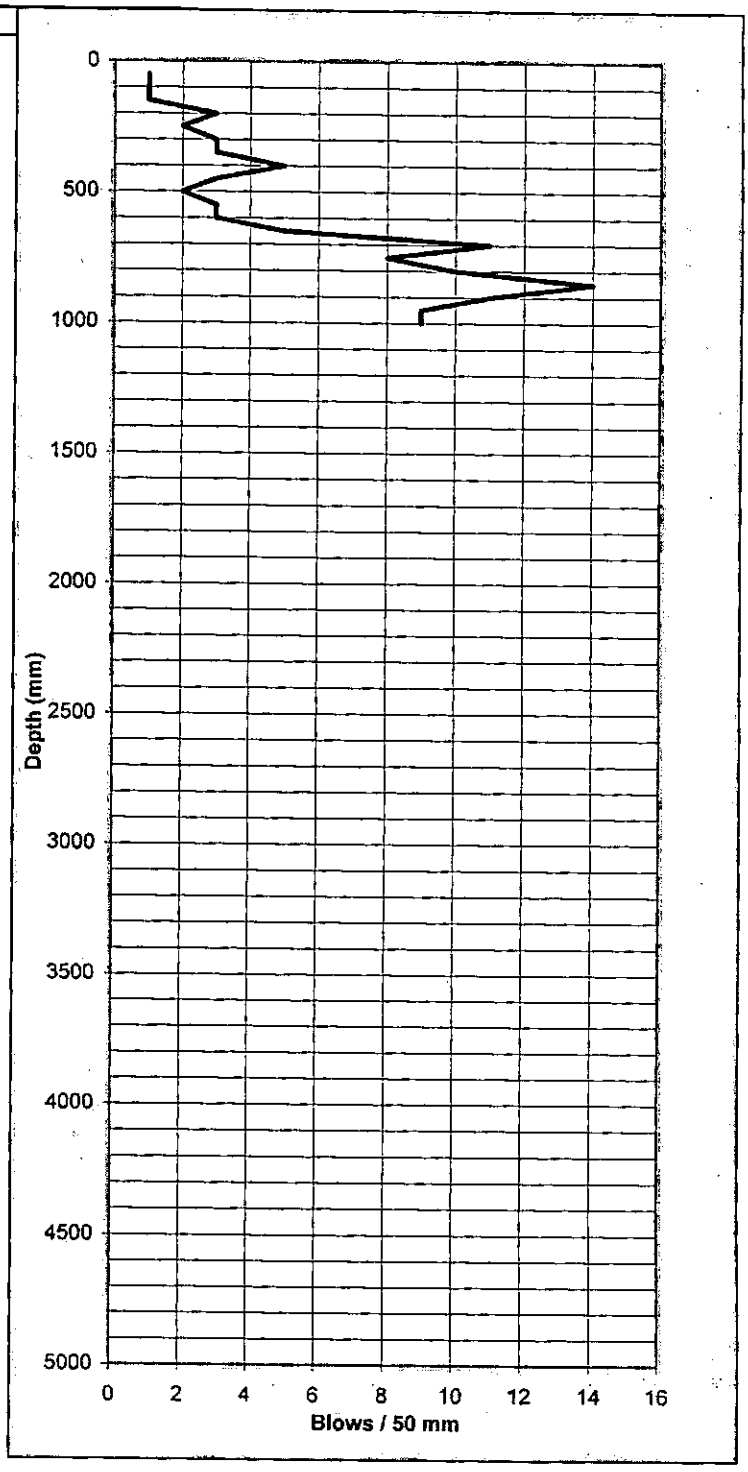
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Hallfax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	**Test No.** *121/1*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	**Sheet** *1*
Level:	-	Checked by: *J 8/12*	**of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	1	2600	
150	1	2650	
200	1	2700	
250	1	2750	
300	1	2800	
350	1	2850	
400	1	2900	
450	2	2950	
500	0.5	3000	
550	0.5	3050	
600	1	3100	
650	2	3150	
700	4	3200	
750	6	3250	
800	3	3300	
850	2	3350	
900	3	3400	
950	2	3450	
1000	9	3500	
1050	5	3550	
1100	13	3600	
1150	9	3650	
1200	5	3700	
1250	6	3750	
1300	8	3800	
1350	8	3850	
1400	9	3900	
1450	25	3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
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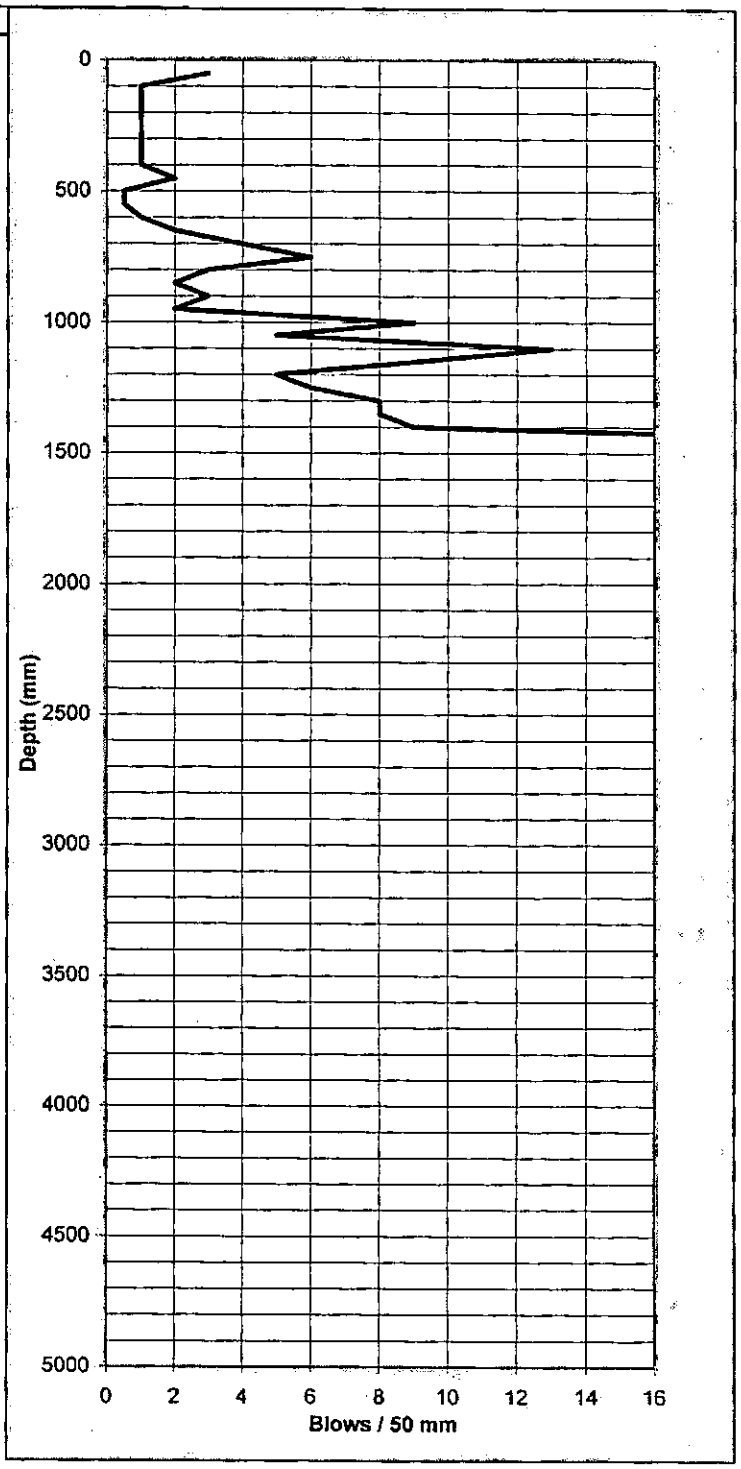
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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44 Halifax Street
P O Box 1009
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Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *17/11/2003*	Test No. *121/2*
Project:	*Maire Ridge*	Operated by: *SCWW*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	Sheet *1*
Level:	-	Checked by: *T 8/12*	of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1.5	2550	
100	1.5	2600	
150	2	2650	
200	3	2700	
250	2	2750	
300	1	2800	
350	2	2850	
400	2	2900	
450	2	2950	
500	3	3000	
550	4	3050	
600	6	3100	
650	6	3150	
700	6	3200	
750	5	3250	
800	5	3300	
850	5	3350	
900	5	3400	
950	5	3450	
1000	9	3500	
1050	8	3550	
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1200	6	3700	
1250	6	3750	
1300	6	3800	
1350	7	3850	
1400	6	3900	
1450	8	3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
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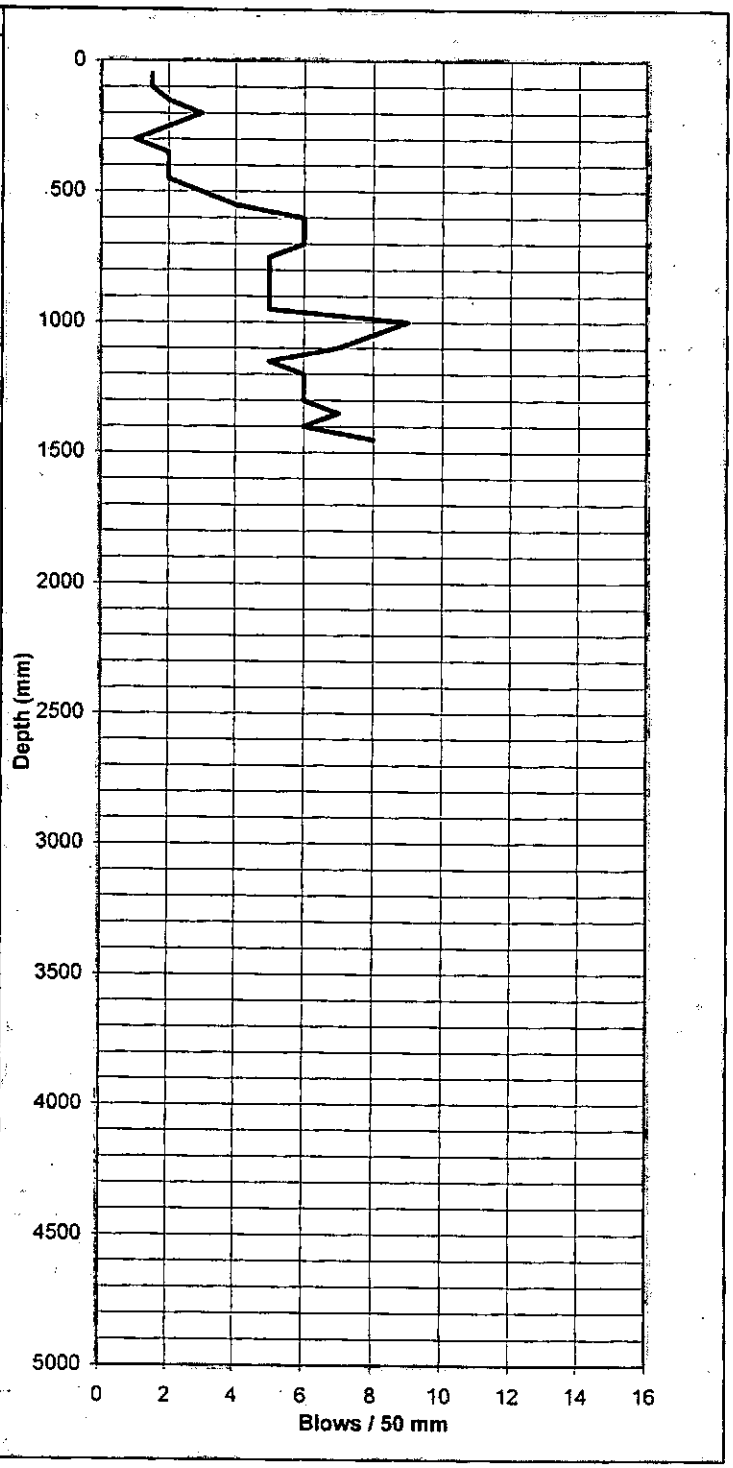
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

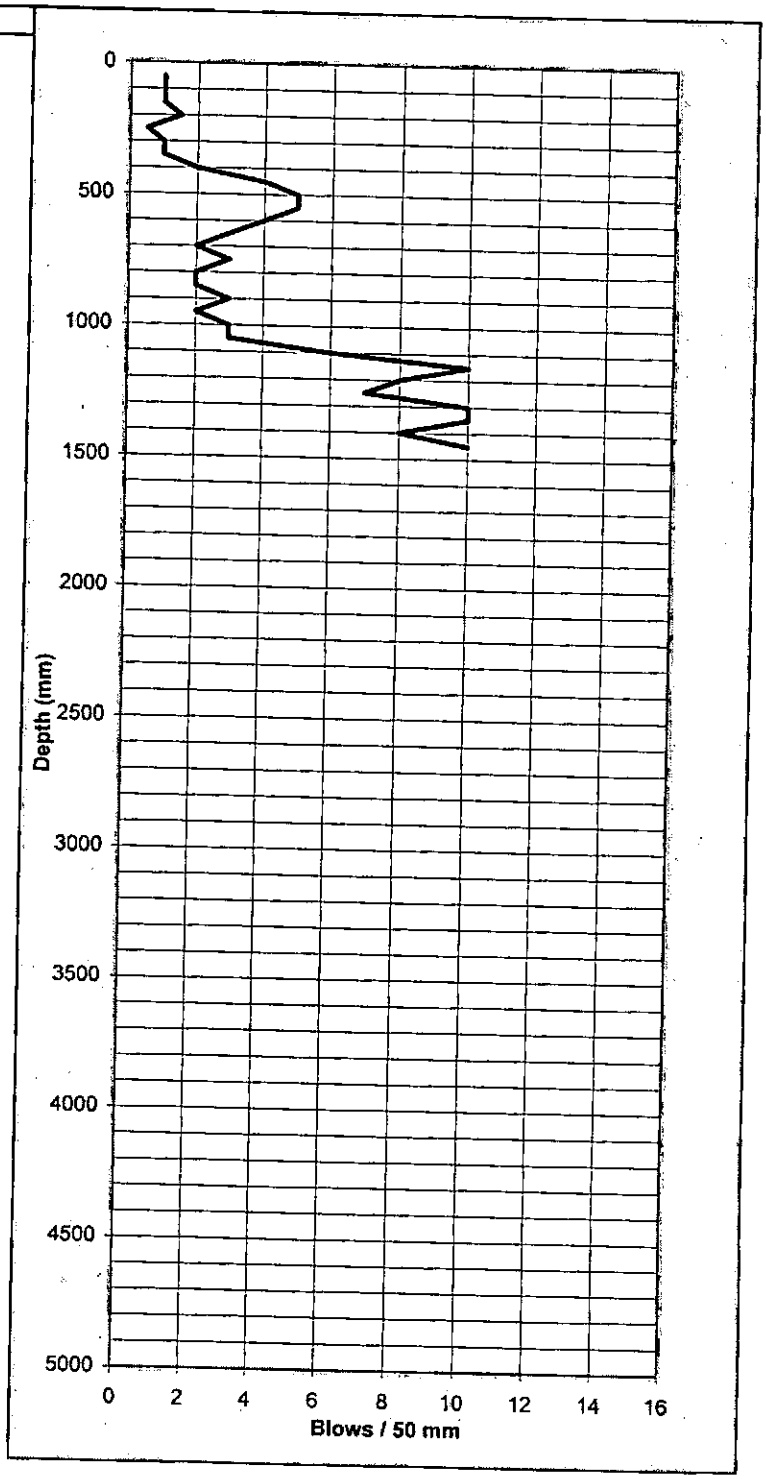
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *7 8/12*

Test No. *121/3*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	1	2650	
200	1.5	2700	
250	0.5	2750	
300	1	2800	
350	1	2850	
400	2	2900	
450	4	2950	
500	5	3000	
550	5	3050	
600	4	3100	
650	3	3150	
700	2	3200	
750	3	3250	
800	2	3300	
850	2	3350	
900	3	3400	
950	2	3450	
1000	3	3500	
1050	3	3550	
1100	6	3600	
1150	10	3650	
1200	8	3700	
1250	7	3750	
1300	10	3800	
1350	10	3850	
1400	8	3900	
1450	10	3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No:	*81069.008*	Date:	*17/11/2003*	**Test No.**	***122/1***
Project:	*Maire Ridge*	Operated by:	*SCWW*		
Location:	*Refer Site Plan*	Logged by:	*SCWW*	**Sheet**	***1***
Level:	-	Checked by:	*F 8/12*	**of**	***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	1	2650	
200	1	2700	
250	1	2750	
300	1	2800	
350	0.5	2850	
400	0.5	2900	
450	1	2950	
500	0.5	3000	
550	0.5	3050	
600	1	3100	
650	0.5	3150	
700	0.5	3200	
750	1	3250	
800	4	3300	
850	2	3350	
900	2	3400	
950	1	3450	
1000	2	3500	
1050	1.5	3550	
1100	1.5	3600	
1150	2	3650	
1200	4	3700	
1250	2	3750	
1300	2	3800	
1350	2	3850	
1400	2	3900	
1450	4	3950	
1500	3	4000	
1550	5	4050	
1600	6	4100	
1650	5	4150	
1700	3	4200	
1750	6	4250	
1800	6	4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
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2400		4900	
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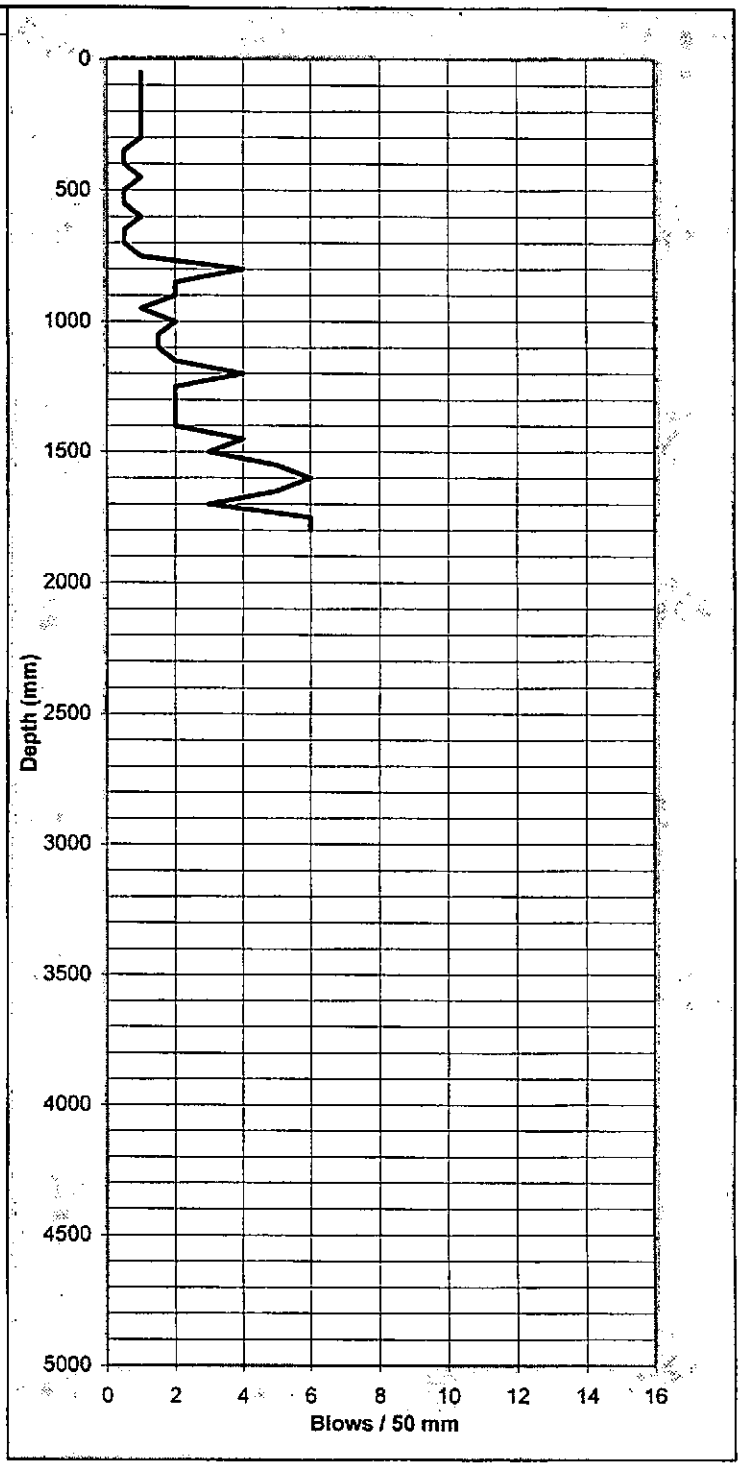
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

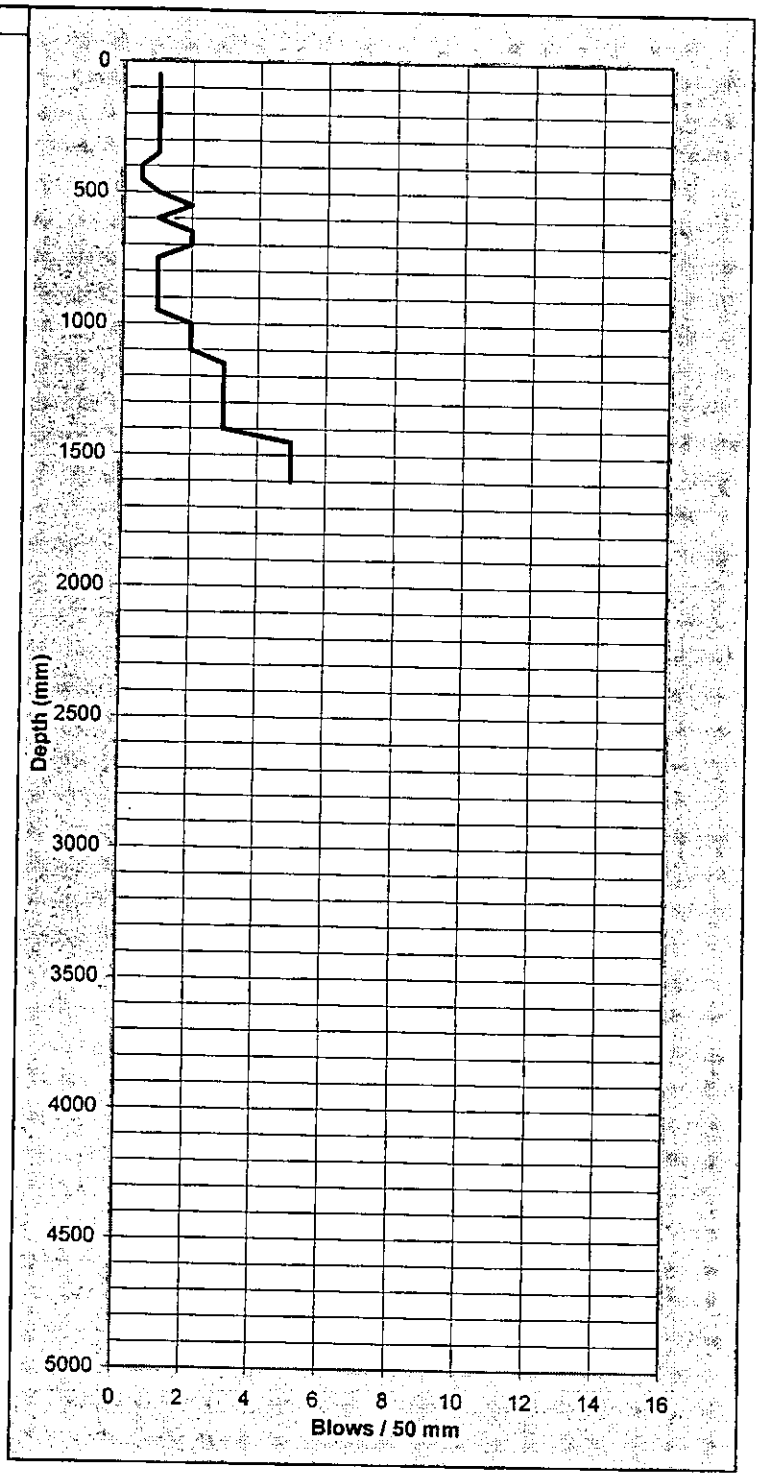
SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *I 8/12*

Test No. *122/2*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	1	2650	
200	1	2700	
250	1	2750	
300	1	2800	
350	1	2850	
400	0.5	2900	
450	0.5	2950	
500	1	3000	
550	2	3050	
600	1	3100	
650	2	3150	
700	2	3200	
750	1	3250	
800	1	3300	
850	1	3350	
900	1	3400	
950	1	3450	
1000	2	3500	
1050	2	3550	
1100	2	3600	
1150	3	3650	
1200	3	3700	
1250	3	3750	
1300	3	3800	
1350	3	3850	
1400	3	3900	
1450	5	3950	
1500	5	4000	
1550	5	4050	
1600	5	4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No:	*81069.008*	Date: *28/11/2003*	**Test No.** *122/3*
Project:	*Maire Ridge*	Operated by: *John*	
Location:	*Refer Site Plan*	Logged by: *SCWW*	**Sheet** *1*
Level:	-	Checked by: *F 8/12*	**of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	2	2600	
150	2	2650	
200	2	2700	
250	2	2750	
300	3	2800	
350	4	2850	
400	2	2900	
450	2	2950	
500	3	3000	
550	3	3050	
600	4	3100	
650	4	3150	
700	3	3200	
750	3	3250	
800	3	3300	
850	2	3350	
900	6	3400	
950	9	3450	
1000	6	3500	
1050	3	3550	
1100	4	3600	
1150	2	3650	
1200	3	3700	
1250	5	3750	
1300	8	3800	
1350	8	3850	
1400	7	3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
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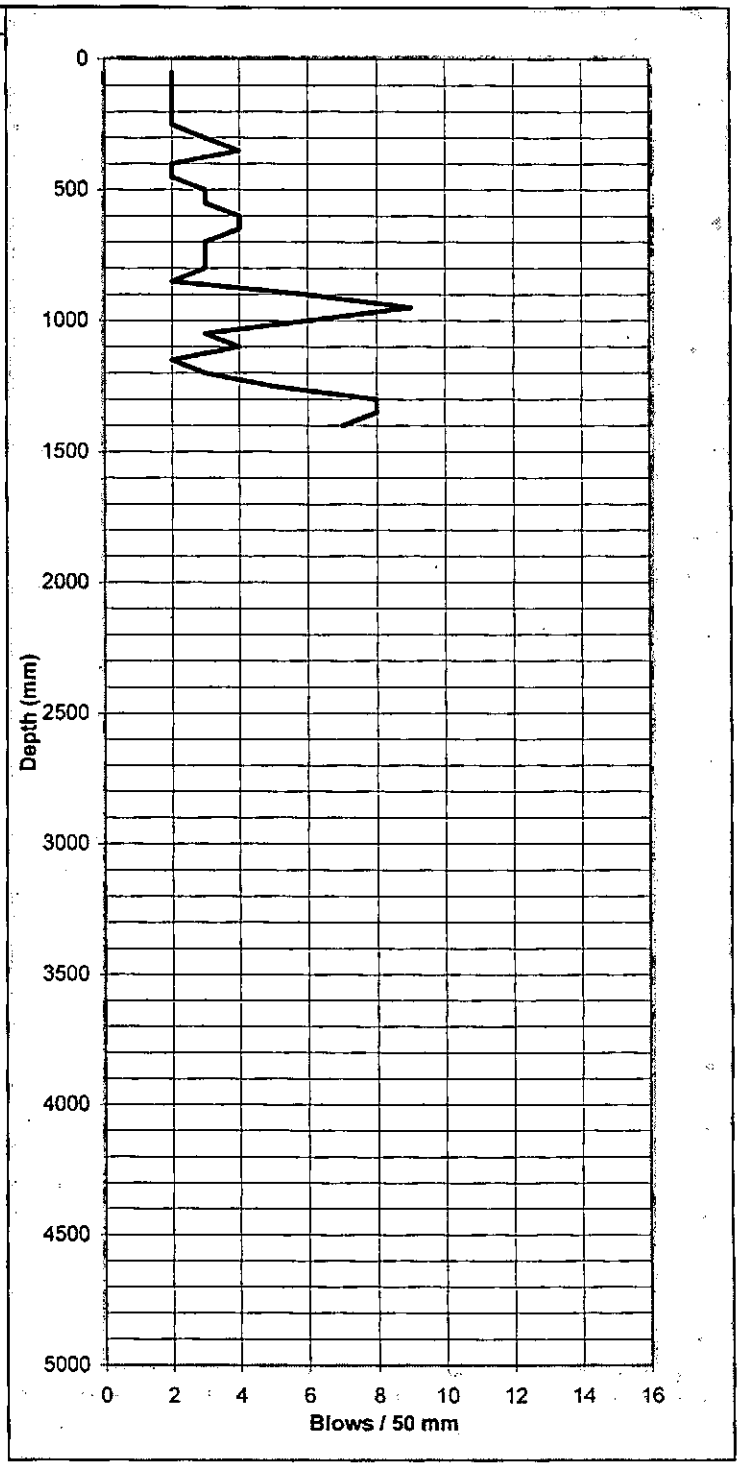
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *8/12*

Test No. *123/1*
Sheet *1* **of** *1*

mm Driven	No. of Blows
50	1
100	1
150	1
200	1
250	1
300	1
350	2
400	2
450	2
500	1
550	1
600	1
650	2
700	2
750	2
800	1
850	1
900	1
950	1
1000	1
1050	1
1100	1
1150	2
1200	2
1250	2
1300	2
1350	2
1400	4
1450	5
1500	8
1550	6
1600	5
1650	5
1700	4
1750	6
1800	13
1850	10
1900	12
1950	
2000	
2050	
2100	
2150	
2200	
2250	
2300	
2350	
2400	
2450	
2500	

mm Driven	No. of Blows
2550	
2600	
2650	
2700	
2750	
2800	
2850	
2900	
2950	
3000	
3050	
3100	
3150	
3200	
3250	
3300	
3350	
3400	
3450	
3500	
3550	
3600	
3650	
3700	
3750	
3800	
3850	
3900	
3950	
4000	
4050	
4100	
4150	
4200	
4250	
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4350	
4400	
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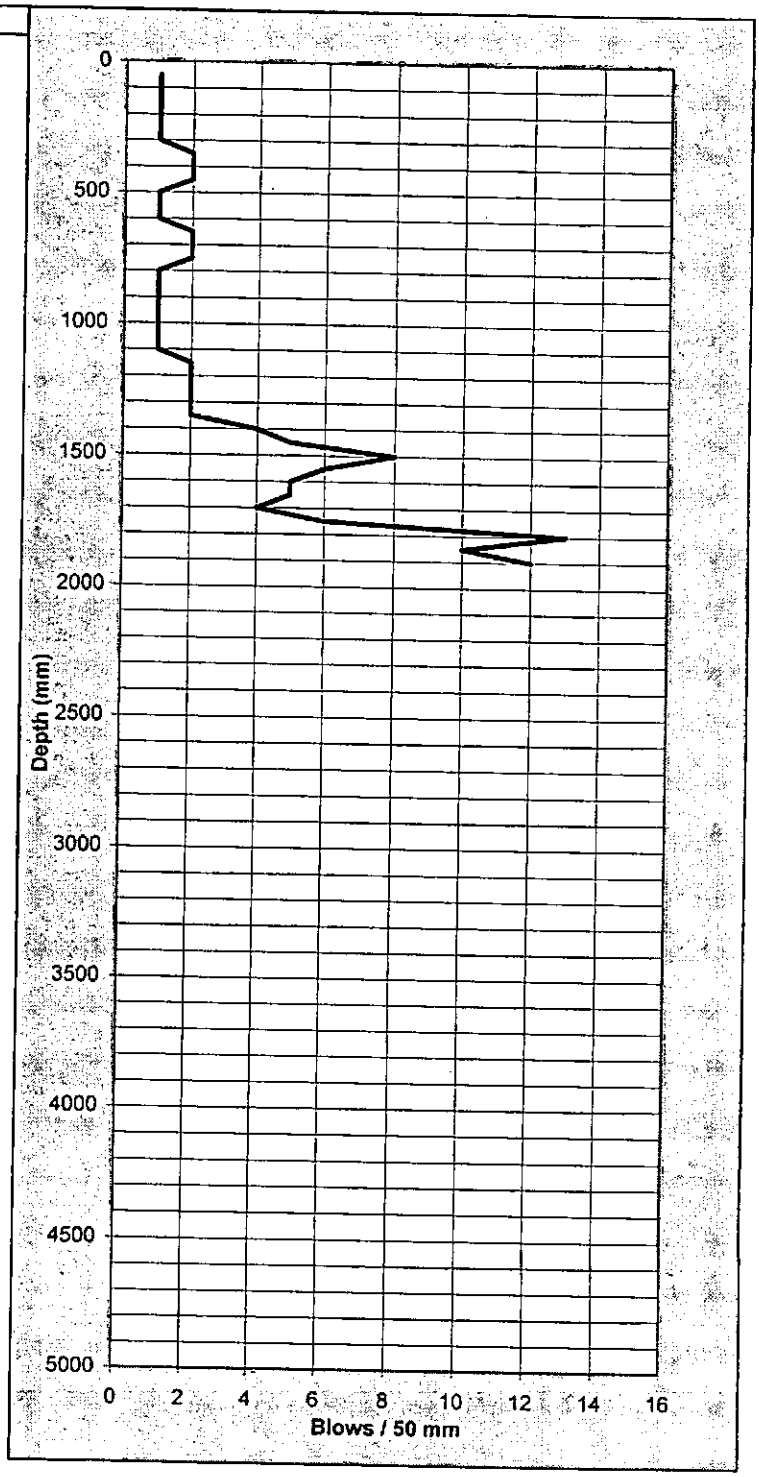

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No:	*81069.008*	Date:	*17/11/2003*	Test No.	*123/2*
Project:	*Maire Ridge*	Operated by:	*SCWW*		
Location:	*Refer Site Plan*	Logged by:	*SCWW*	Sheet	*1*
Level:	-	Checked by:	*J 8/12*	of	*1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	4	2550	
100	4	2600	
150	2	2650	
200	2	2700	
250	2	2750	
300	3	2800	
350	3	2850	
400	3	2900	
450	4	2950	
500	3	3000	
550	1	3050	
600	1	3100	
650	2	3150	
700	1	3200	
750	2	3250	
800	2	3300	
850	2	3350	
900	2	3400	
950	2	3450	
1000	2	3500	
1050	2	3550	
1100	1	3600	
1150	4	3650	
1200	5	3700	
1250	5	3750	
1300	5	3800	
1350	5	3850	
1400	9	3900	
1450	8	3950	
1500	9	4000	
1550	11	4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
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2350		4850	
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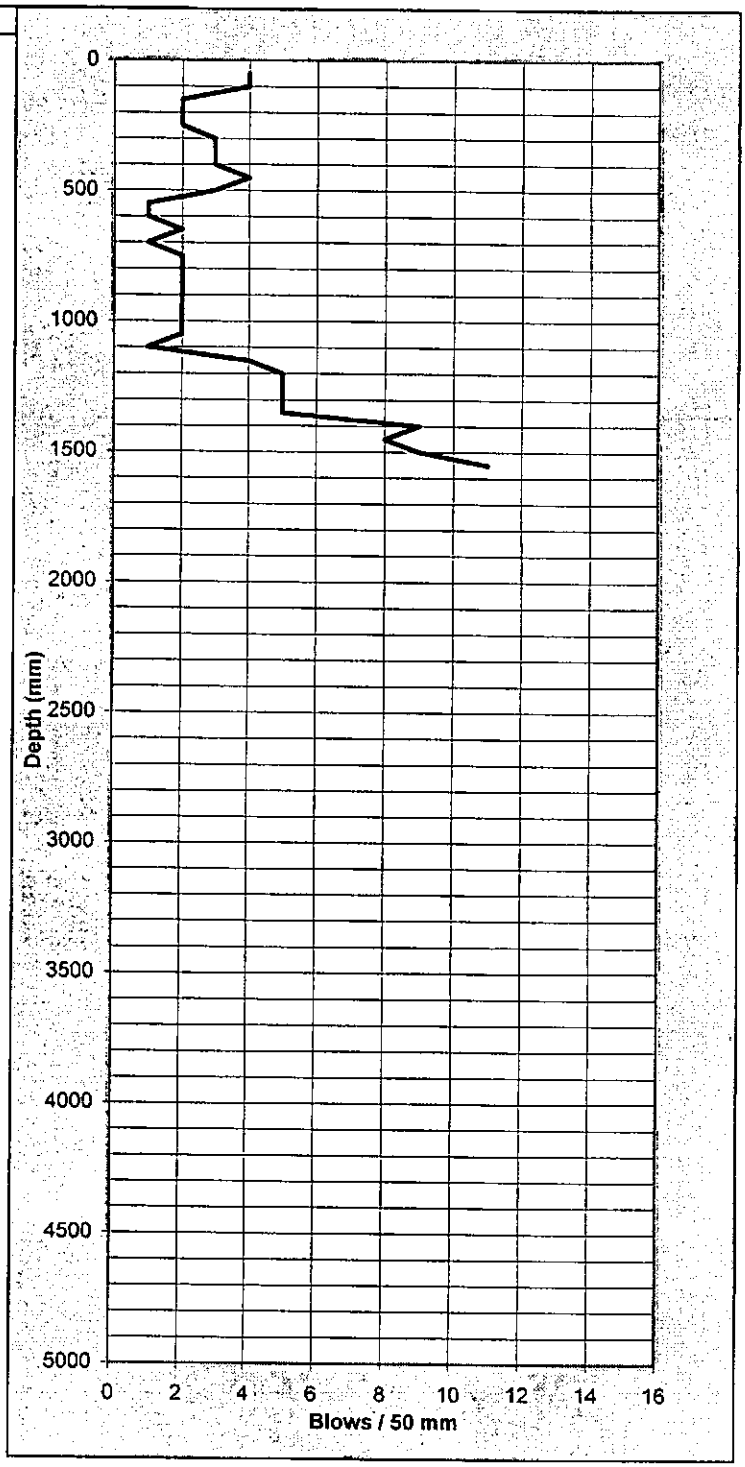
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No: *81069.008*
Project: *Maire Ridge*
Location: *Refer Site Plan*
Level: -

Date: *17/11/2003*
Operated by: *SCWW*
Logged by: *SCWW*
Checked by: *F 8/12*

Test No. *123/3*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	2	2600	
150	2	2650	
200	1	2700	
250	1	2750	
300	2	2800	
350	2	2850	
400	1	2900	
450	1	2950	
500	1	3000	
550	2	3050	
600	2	3100	
650	1	3150	
700	1	3200	
750	1	3250	
800	1	3300	
850	1	3350	
900	1	3400	
950	1	3450	
1000	1	3500	
1050	1	3550	
1100	1	3600	
1150	2	3650	
1200	2	3700	
1250	2	3750	
1300	2	3800	
1350	2	3850	
1400	2	3900	
1450	4	3950	
1500	10	4000	
1550	8	4050	
1600	8	4100	
1650	8	4150	
1700	7	4200	
1750	7	4250	
1800	10	4300	
1850	7	4350	
1900	12	4400	
1950	14	4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
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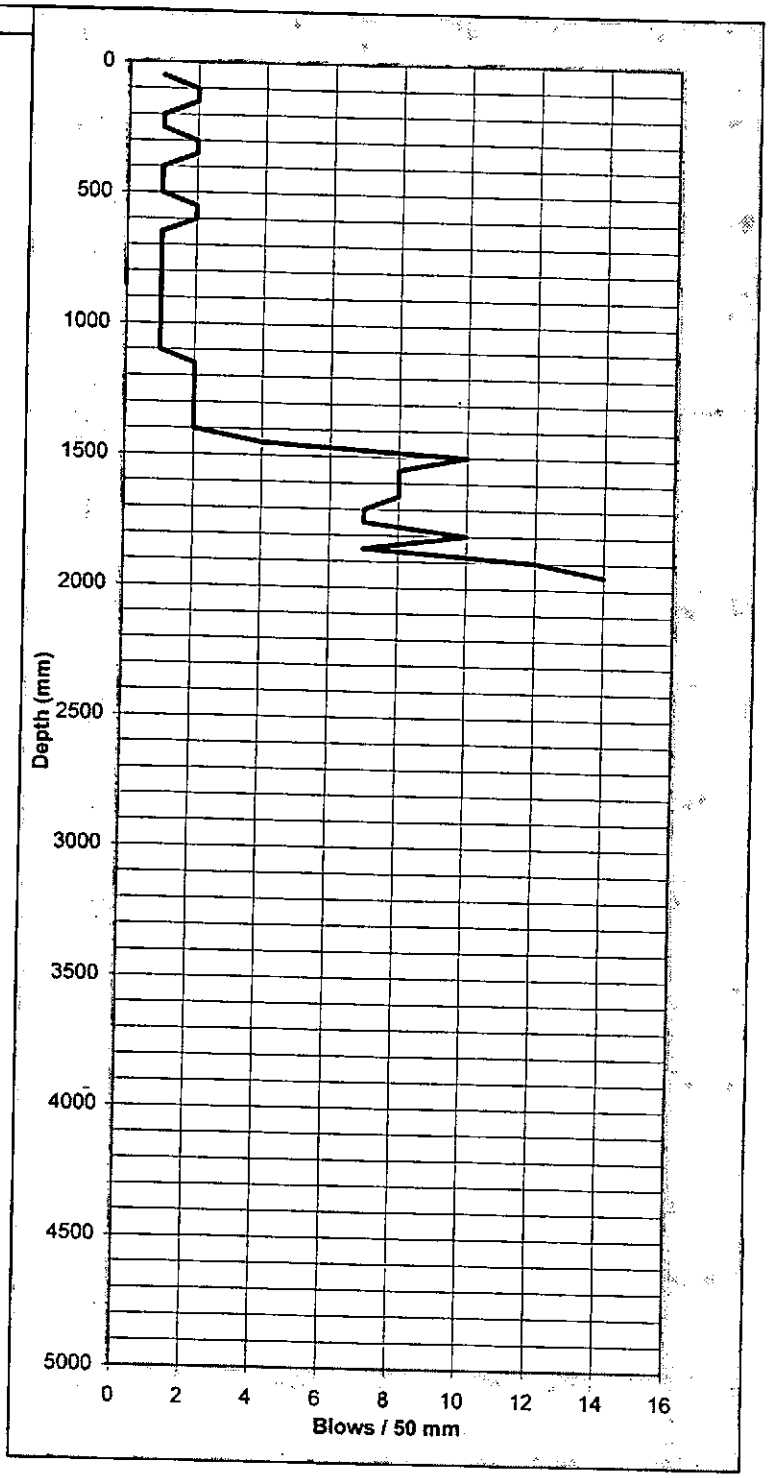


Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

APPENDIX F

REMEDIAL WORKS LIST
AND FIGURE 1

Maire Ridge, Tasman Heights Subdivison
Minor Defects and Omissions List

A list of minor works, which will need to be completed on site in order for T&T to complete the earthworks and building site certification of this stage of the subdivision, is outlined below.

1) Reserve below Lot 121: An outlet needs to be constructed for the subsoil drain which currently discharges onto the batter.

2) The stormwater pipes at the base of the batter slope below Lot 121 require stabilisation.

3) In conjunction with the remedial works for Item 2) above, topsoil and grassing of the adjacent area is required to stabilise the slopes.

4) The riprap downstream of the outlet structure remains in a non-complying state.

5) The silt pond at the base of ROW A will need to be decommissioned, undercut and filled with certified fill.

6) There are several areas within the Southfill Gully where erosion and slumping have occurred. These will require remediation to stabilise the slopes and prevent further failures.

7) Secondary Flood path on Lot 111 needs to be formed to ensure overland flow is directed away from the building site.

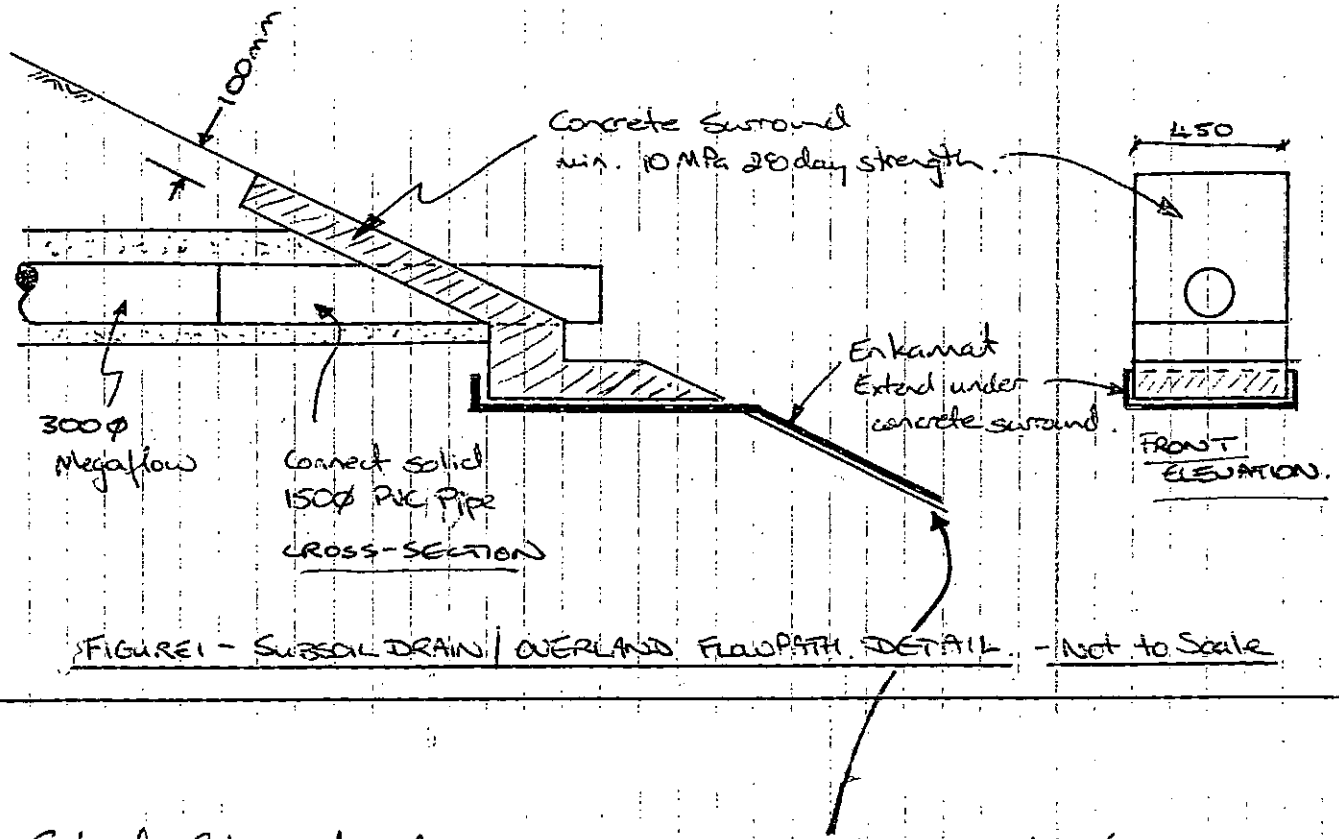


FIGURE 1 - SUBSOIL DRAIN / OVERLAND FLOWPATH DETAIL. - Not to Scale

Extend Enkamat downslope in a shallow swale (as per Atkinson Block). Pipe under access track at base of slope to discharge into stormwater pond.

APPENDIX G

FILL CERTIFICATE

SUBSOIL DRAINS & FINISHED CONTOURS PLAN DWG737AH
EARTHWORKS ISO-CONTOUR PLAN DWG737AI

Tonkin & Taylor

Our Ref: 81069.008
01 November 2003

The Chief Executive Officer
Nelson City Council
P.O. Box 645
NELSON

Attention: Mr Viesturs Altments

Dear Sir

Statement of Suitability of Earthworks for Residential Development, Maire Ridge, Tasman Heights Subdivision, Observatory Hill, Nelson

This certificate is furnished to the Nelson City Council for certification of earthworks in accordance with NZS 4431:1989. The cut and fill extents and depths are shown on Staig and Smiths (S&S) plan titled 'Earthworks Iso-contours Ref. DWG 737AI' dated 13 October 2003. The finished contours and subsoil drain locations are shown on Staig & Smith Ltd (S&S) plan titled 'Subsoil Drains and Finished Contours Ref. DWG 737AH' dated 29 October 2003.

This certificate should be read in conjunction with Tonkin and Taylor Ltd's (T&T) report titled 'Earthworks and Building Site Certification Report, Maire Ridge, Tasman Heights Subdivision, Observatory Hill, Nelson', dated December 2003, Ref. 81069.008. The above report details the subdivision development, design philosophy, scope of works and testing results.

This work has been done at the request of Mr K Blair who is the developer of the subdivision.

Earthworks design was prepared by T&T and S&S, with T&T providing geotechnical input to the design and an earthworks specification. The earthworks were carried out between January 2003 and May 2003. Due to inaccuracies in interpolation of survey data it must be recognised that actual fill depths and extent shown on S&S 'Earthworks Iso-contours' drawing are indicative only and the extent and depth of fill may vary from the Contours shown.

1.0 NZS 4431 Fill

I, Mr Mark Foley of Tonkin & Taylor Limited, PO Box 1009, Nelson, confirm that:

a) I am qualified on the basis of my experience and qualifications to fulfil the role of Inspecting Engineer as defined in NZS 4431.

Tonkin & Taylor Ltd - Environmental & Engineering Consultants, 44 Halifax St, Nelson, New Zealand
PO Box 1009, Nelson, Ph: 64-3-546 6339, Fax: 64-3-546 7619, Email: nel@tonkin.co.nz, Website: www.tonkin.co.nz

b) Inspection and observation of the works have been carried out by staff of T&T under my direction.

c) The extent of investigations and fill test results are described in T&T's report Ref. 81069.008 dated December 2003.

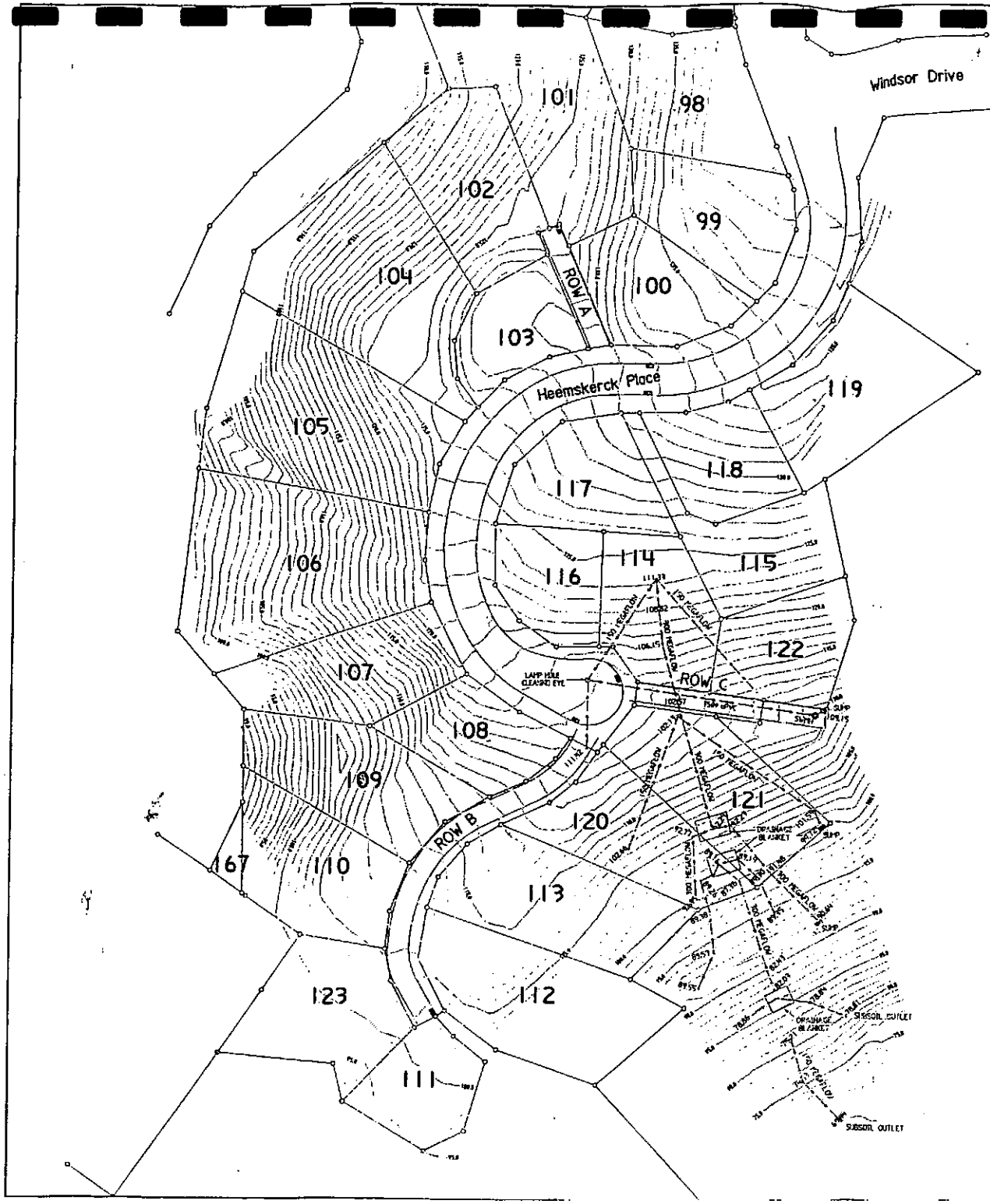
d) In my professional opinion, not to be construed as a guarantee, I consider that:

- The Earthfill defined by the Fill Contours on S&S drawing 'Earthworks Iso-contours' dated 13 October 2003 and included as Appendix B of T&T's report Ref. 810069.008 dated October 2003 has been generally placed in compliance with NZS 4431:1989 'Earthfill for Residential Development'.
- This certification does not remove the necessity for the normal inspection and design of foundations as would be made in natural ground. Further to this confirmatory soil testing should be undertaken as specified in NZS 4431 and particularly where the fill is less than 1.0m in depth as shown on the Earthworks plan.
- Development proposed on any fill areas shall also be subject to the conditions and recommendations outlined in T&T's report Ref. 81069.008 dated December 2003.

Yours faithfully
TONKIN & TAYLOR LTD

Mark Foley
Inspecting Engineer

Attachments: Staig and Smith plans: 'Earthworks Iso-contours',
Ref. DWG 737AI' dated 13 October 2003
'Subsoil Drains and Finished Contours',
Ref. DWG 737AH' dated 29 October 2003.



LEGEND

- SUBSOIL DRAIN & DIRECTION OF FLOW
- SUBSOIL DRAIN INVERT
- SUMP

(2) DO NOT SCALE FROM DRAWING.
(1) THE ASBUILT CONTOURS INCLUDE UP TO 0.1M OF TOPSOIL.

No	Amendment	Date

NELSON OFFICE
STEVE G SMITH LIMITED
RESOURCE MANAGEMENT
SURVEYING PLANNING ENGINEERING

Manager Infrastructural Assets (NCC) Date

Design	M. Standish
Drawn	M. Standish
Checked	
Approved	
Date	29/10/09

Job Title

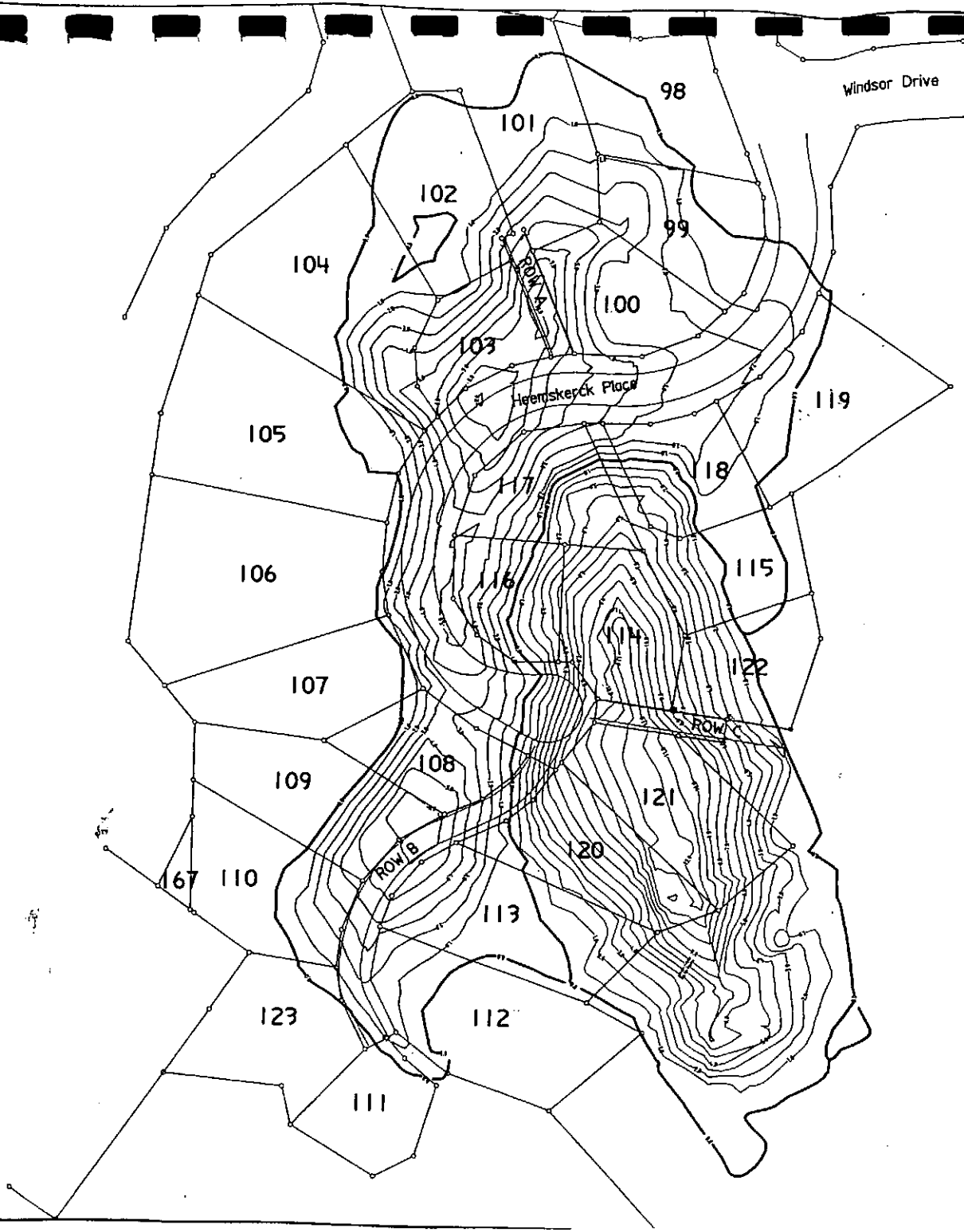
Tasman Heights Heemskerck Place

NCC RM005140

Drawing Title

Subsoil Drains and Finished Contours

Scale: 1:500 at A1	DWG737AH
Job No: 7371-AB	Sheet 1 of 2



Fill Contours

Cut/Fill 0.0m Contour

Cut Contours

THIS ISO-CONTOUR PLAN HAS BEEN PREPARED BY COMPARING THE NATURAL CONTOURS OF THE SITE AS OF OCTOBER 2002 AND THE ASBUILT CONTOUR PLAN AS OF SEPTEMBER 2003.

THE NATURAL CONTOUR PLAN IS LIMITED BY ACCURACY DUE TO THE EXTENSIVE SCRUB AND GORSE COVER.

THE NATURAL CONTOUR PLAN IS OF THE NATURAL GROUND BEFORE STRIPPING, EXCEPT IN THE FILL AREA WERE THE UNDERCUT SURFACE CONTOURS HAVE BEEN USED. THERE WAS TOPSOIL DEPTH OF UP TO 0.5?1 IN PARTS OF THE SITE.

THE NATURAL CONTOUR PLAN IS OF THE SITE AT THE DATE MENTIONED ABOVE, IT DOES NOT SHOW THE EXTENT OF ANY EARTHWORKS CARRIED OUT PRIOR TO THE SURVEY DATE.

THE AS-BUILT CONTOURS INCLUDE UP TO 0.3M OF TOPSOIL.

(2) DO NOT SCALE FROM DRAWING.

No	Amendment	Date

NELSON OFFICE

STEPHENSON & SMITH LIMITED

SURVEYING PLANNING ENGINEERING RESOURCE MANAGEMENT

Manager Infrastructural Assets (WCC) Date

Design	M. Standish
Drawn	M. Standish
Checked	
Approved	
Date	13/10/03

Job Title

Tasman Heights
Heemskerck Place

NCC RM005140

Drawing Title

Earthworks
Iso - Contours

Scale:	1:500 at A1	DWG737A1
Job No:	737.1-AP	Sheet of

RM 005141

DP 380751

Tonkin & Taylor

RECEIVED
13 JUL 2007
NCC

T&T job no: 81069.010
13 July 2007

Consents Department
Nelson City Council
PO Box 645
Nelson

DP 380751

Attention: Mike Johnston

Dear Mike

Geotechnical Certificate - Proposed Building Sites, Lots 120 to 126 ROW T, Tasman Heights, Nelson

This certificate defines an area suitable for the erection of a residential dwelling on Lots 120 to 126 inclusive of the above subdivision, and the geotechnical conditions, which should be applied to any development on the lots.

We have carried out an investigation in accordance with sound engineering principles and practice on the above property on behalf of KB Quarries Ltd. The soils investigation on which this certificate is based on are documented in Tonkin & Taylor Ltd's report "Earthworks and Building Site Certificate Report, ROW T, Tasman Heights Subdivision, Princes Drive, Nelson" Ref. 81069.010 dated March 2007. This certificate should be read in conjunction with this report.

It is our professional opinion, not to be construed as a guarantee that the lots are suitable for residential development and, subject to the recommendations and conditions outlined below; a building site exists on each lot which is unlikely to be affected by slope instability arising from high frequency rainfall or seismic events. The certified building areas are shown on Tonkin and Taylor Ltd's Drawing 81069.010 -02 titled 'Building Site Certification Plan' (attached). This certification is conditional upon the following recommendations being applied to any development of the certified building areas.

Building development conditions are as follows:

General building development recommendations are as follows:

✓1. Buildings shall be within the areas designated as *Generally Suitable for Development in Accordance with NZS 3604* and/or *Specific Investigation and Design Area* as shown on Tonkin & Taylor Drawing 81069.010-02, titled 'Building Site Certification Plan' dated March 2007.

Tonkin & Taylor Ltd - Environmental & Engineering Consultants, 43 Halifax St, Nelson, New Zealand
PO Box 1009, Nelson 7040, Ph: 64-3-546 6339, Fax: 64-3-546 7619, Email: nel@tonkin.co.nz, Website: www.tonkin.co.nz

2. No earthworks or buildings other than minor non-habitable structures such as garden sheds or gazebos that can be easily relocated, shall be undertaken within the area designated *Restricted Building Area* shown on Tonkin & Taylor Drawing 81069.010-02 'Building Site Certification Plan' ' dated March 2007.

3. Foundations for all buildings shall extend through topsoil, and be founded on "Good Ground" as defined by the New Zealand Building Code.

4. The NZS 3604 Areas comprise cut and filled ground which is suitable for shallow foundations constructed in accordance with NZS 3604:1999 - *Timber Framed Buildings.* Foundations for all buildings not meeting NZS 3604 and requiring an ultimate bearing capacity greater than 300kPa shall be specifically investigated and designed by a Chartered Professional Engineer experienced in foundation design.

5. Within the Specific Investigation and Design Area, foundations shall be investigated, designed and constructed by a Chartered Professional Engineer practising in geotechnical engineering.

6. Where foundations straddle the boundary between NZS 3604 Zone and the Specific Investigation and Design Zone the entire structure shall be specifically designed by a charted professional engineer practising in geotechnical engineering.

7. Within the Specific Investigation and Design Area all temporary or permanent cuts greater than 0.8 m in height or greater than 1.2 m in the NZS 3604 area shall be specifically investigated by a Chartered Professional Engineer practising in geotechnical engineering or an experienced Engineering Geologist. No existing slopes inclined on a grade steeper than 2.5 (horizontal) to 1 (vertical) shall be steepened by unretained cutting.

8. Within the Specific Investigation and Design Area of Lot 120 all foundations shall extend below any weak soil or subsurface topsoil layers. Intermittent groundwater seepages have been identified as approximately shown on the Site Investigation and Earthworks Plan. As part of any development within the zone these and possibly other seepages shall be investigated by a chartered professional engineer practising in geotechnical engineering and if assessed as necessary appropriate subsoil drainage measures be designed and constructed under the supervision of the chartered professional engineer. .

9. Fill greater than 0.8 m thick, and all fill proposed to be beneath structures (including hardstanding areas), shall meet the requirements of NZS 4431:1989 - Code of Practice for Earthfill for Residential Development, and shall include adequate stripping, benching, and underdrainage. All fills within the Specific Investigation and Design Area greater than 1.0 m thickness shall be investigated and designed by a Chartered Professional Engineer practising in geotechnical engineering. No unretained fill shall be placed on ground sloping greater than 2.5H:1V.

10. In the Specific Investigation and Design Zone, retaining walls shall be specifically investigated and designed by a Chartered Professional Engineer practising in geotechnical engineering. All walls shall be adequately drained.

11. The subsoil drain outlets to sumps shall be kept clear. The maintenance and inspection of the sumps and the stormwater system will be carried out in accordance with routine Council maintenance procedures.

12. All stormwater from roofs, hard standing or impermeable areas, retaining wall drainage, surface drains and subsoil drains and from standing water such as swimming pools and ponds shall be collected and discharged in a controlled manner to the Nelson City Council stormwater system.

✓ 13. Sloping areas within the lots shall be maintained in a vegetation cover that enhances slope stability with emphasis on deep-rooted trees and shrubs.

✓ 14. The building site certification relates to the general suitability of the site; it does not remove the need for specific site investigation, design and inspection as required by the Building Code, NZS 3604 1999 and NZS 4431 1989.

This certificate is furnished to the Nelson City Council alone. It is acknowledged that the Nelson City Council is entitled to provide information contained in this certificate pursuant to Section 31 of the Building Act 2004 and Section 44A of the Local Government Official Information and Meeting Act 1987.

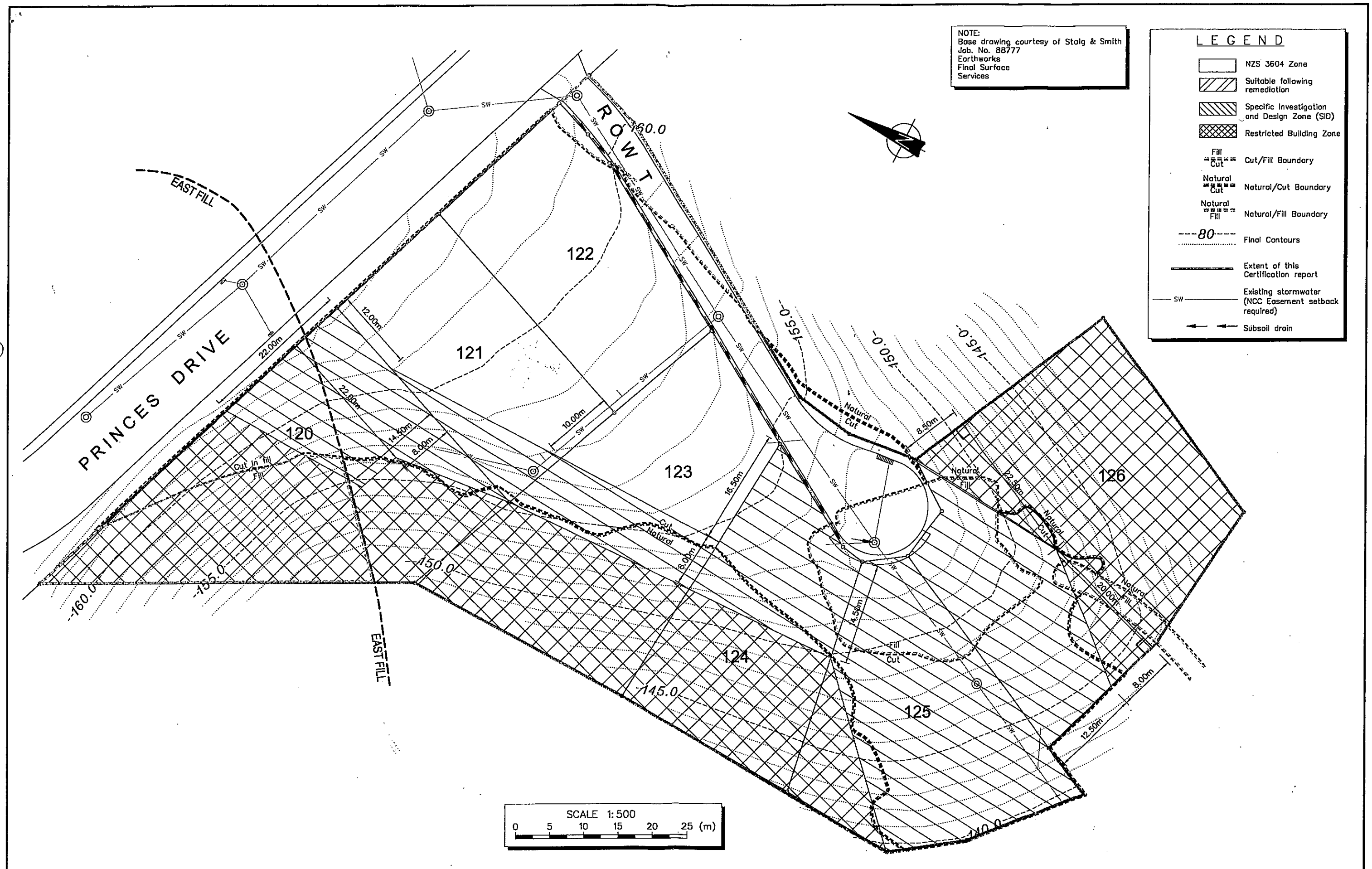
Yours sincerely

Mark Foley
Project Co-ordinator

Prepared by Mark Dawson

Attachment: Drawing 81069.010-02 'Building Site Certification Plan'

13-Jul-07
p:\81069\81069.010 back ridge\lots 120 -126 princes drive\certification report\mpd 13-07-2007 certletterfnl.doc



0	First Issue		
REVISION DESCRIPTION		BY	DATE

DESIGNED :	JXWW	Mar.07
DRAWN :	EVL	Mar.07
DESIGN CHECKED :	WPD	Mar 07
DRAFTING CHECKED :	DNV	03/07
CADFILE : \\81069-02.dwg		
APPROVED : NOT FOR CONSTRUCTION		

This drawing is not to be used for construction purposes unless signed as approved

COPYRIGHT ON THIS DRAWING IS RESERVED

NOTES :
1. All dimensions are in millimetres unless noted otherwise.

REFERENCE :

Tonkin & Taylor
Environmental & Engineering Consultants
Nelson 43 Halifax St
Tel. (03) 546 6339 Fax. (03) 546 7619
Email : nel@tonkin.co.nz
Auckland Wellington Christchurch Hamilton Whangarei

CLIENT, PROJECT
TASMAN HEIGHTS
PRINCES DRIVE, NELSON

TITLE
ROW T
Building Site Certification Plan

SCALES (AT A3 SIZE)	DWG. No.	REV.
AS SHOWN	81069.010-02	0

RM 005141
June 06

REPORT

KB QUARRIES LTD

Earthworks and Building Site Certification Report
Istana Place Subdivision, Tasman Heights, Nelson

Report prepared for:
KB QUARRIES LTD

Report prepared by:
TONKIN & TAYLOR LTD

Distribution:

KB QUARRIES LTD	4 copies
TONKIN & TAYLOR LTD (FILE)	1 copy

June 2006

Job no: 81069.010/Rev 1

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Appendix A: **Tonkin & Taylor Drawings**

Appendix B: **Staig & Smith Ltd As-built drawings**

Appendix C: **Building site certification investigations**

1 Introduction

This report relates to the Istana Place subdivision (Lots 4 to 7 and 25 to 34) located at Tasman Heights, Nelson. Land Solutions Ltd and Staig & Smith Ltd (S&S) designed the subdivision. Tonkin & Taylor Ltd (T&T) were engaged as geotechnical consultant.

This report covers:

- Certifying building sites for Lots 4 to 7 and 25 to 34;
- Review of bulk earthworks, carried out from late 1989 to September 2004 on Istana Place, including Lots 4-7and 25-34 inclusive.

T&T were also responsible for the following:

- Preparation of a Soil Erosion and Sediment Control Plan (SESCP) and compliance monitoring;
- Monitoring of the bulk earthworks (post East Fill construction) including subsoil drainage design and installation;
- Provide geotechnical advice to the Engineer to the Contract on request during construction;
- Geotechnical modelling/analysis and design review of the earthworks;
- Design of East Fill remediation works.

Earthworks construction monitoring was carried out to level CM4 in the ACENZ/IPENZ document "The Briefing and Engagement of Consultants", July 1997.

The subdivision was constructed according to engineering plans prepared by Staig & Smith (Ref 7972) and approved by Nelson City Council (NCC Plan No 36-1341).

2 Site description

2.1 Location

The site is located at the southern end of Princes Drive, Observatory Hill, Nelson.

2.2 Topography

Prior to earthworks commencing, Istana Place consisted of a large knoll (Observatory Hill) located on a northwest - southeast trending ridge separated from previous and future stages of the Tasman Heights Subdivision by deep gullies to the northeast and southwest. Natural slopes were inclined between 20 to 40 degrees.

The site is now a small knoll, centred on Lot 30, with a gently sloping central area and steeper side slopes around the edge of the subdivision. The central area slopes gently (5 to 10 degrees) off a local high spot on Lot 30. Surrounding the relatively flat central section the ground slopes off moderately steeply (20 to 30 degrees) down to Istana Place and Princess Drive.

2.3 Geology

The "Geology of Nelson Urban Area" scale 1:25,000 shows the site to be underlain by 'Port Hills Gravel Formation'. This Formation is described as consisting of clay-bound gravels containing well rounded gravel, cobbles and boulders.

Borehole and test pit excavations undertaken at the site prior to and during development encountered up to 4.0 m of colluvium soils overlying Port Hill Gravels (PHG). The colluvial soils generally consist of firm to stiff/gravelly silts or loose to medium dense silty gravels. PHG generally consists of orange-brown, dense to very dense silty gravels

3 Subdivisional earthworks

3.1 East Fill

Bulk earthworks construction started in late 1989 with the construction of the East Fill estimated to be up to 12 m thick. These earthworks were part of an earlier plan to develop the Tasman Heights area of Nelson. The principle earthworks contractor for this stage of the project was Tasman Howley Ltd, and construction supervision was carried out by Worseldine and Wells Ltd (W&W).

Following East Fill construction, the land under development was sold to K.B. Quarries Ltd. In 1999 T&T were contracted by KB Quarries to investigate the East Fill area to assess the fill's compliance with NZS 4431. T&T conducted a number of investigations into the East Fill area and determined that the fill was non compliant with NZS 4431. As a result of these investigations and at the clients request T&T devised a remediation plan for the fill area consisting of buttressing the toe of the fill, and replacing non-functioning subsoil drains. (T&T report ref: 81069 dated 5 May 1999).

3.2 Istana Place Earthworks

Subdivision bulk earthworks were carried out by KB Quarries Ltd from 1990 to September 2004. T&T were engaged by Staig & Smith Ltd on behalf of K.B. Quarries and have been involved in the project since 1999.

Post 1999 earthworks undertaken by KB Quarries comprised forming a cut up to 9m deep across the subdivision area and construction of Istana Place and connecting right-of-ways R and S. The 9 m cut included down cutting the East Fill by up to 3 m.

Staig & Smith was responsible for preparation of the earthworks as-built drawings (Job Number 7972), which are presented in Appendix B. The extent of the cutting can be seen on Earthworks Iso-Contours Drawing Ref DWG797AG, Appendix B. Stormwater and sewer drains were installed at the locations shown on the S&S drawings titled 'As-built - Stormwater '(Ref. DWGAB-SW, dated December 2005) and 'As-built - Sewer ' (Ref. DWGAB-SS, dated December 2005).

The approximate extent of the cuts and fills are shown on the T&T Drawing "Geotechnical Investigations and Earthworks Location Plan" (Ref: 81069.010-01, dated March 2006) included in Appendix A. Subsoil drains were installed at the locations shown on the S&S Drawing titled 'As-built Stormwater' noted as 100 mm Draincoil and shown on T&T's "Building Site Certification Plan" (Drawing 81069.010-02 Rev 1, Appendix A).

3.3 Final inspection and confirmatory testing

Confirmatory testing has been conducted on each of the recommended building sites and consists of up to six Scala penetrometer tests on each lot. The test locations are shown on Drawing 81069.010-01, titled 'Geotechnical Investigations and Earthworks Location Plan - Appendix A. Test results are included in Appendix C.

A final inspection of the site development was carried out in March 2006.

4 Conclusions and recommendations

Recommendations and opinions expressed in this report are based on a review of previous work related to the site, earthworks construction observations and testing, certification Scala penetrometer testing and three Test pit excavations. The nature and continuity of subsurface conditions away from test locations are inferred and it must be appreciated that actual conditions may vary from the assumed model.

4.1 Building site certification

We have investigated each of the 14 residential lots (Lots 4 to 7 and 25 to 34 inclusive) shown on T&T Drawing 81069.010-01. Based on the results of our field observations, geological appraisal and field investigations described herein we are of the opinion that a stable building site exists on each of the lots investigated, which is unlikely to be affected by land instability arising from high frequency rainfall or seismic events, provided the recommendations made in Section 4.3 of this report are followed.

In terms of suitability for development we have subdivided the lots into three areas, as shown on Drawing 81069.010-02 Rev 1. These are:

- NZS3604

Foundation conditions are suitable for design in accordance with NZS 3604:1999. Areas generally suitable for residential buildings with foundation ground conditions generally complying with the definition of *"Good Ground"* as defined by NZS 3604:1999. Because of the natural variation of the soil, good ground conditions should be confirmed by means of Scala penetrometer and/or other appropriate soil testing. In Lots 29 and 30 specific attention should be given to verify the presence of cut/fill boundaries where the boundaries may occur under or in close proximity to buildings where weaker ground and groundwater seepage may occur.

- Specific Investigation and Design Area

These areas include moderately inclined excavated and filled slopes where there may be a risk of slope instability if development is not carefully planned. These are the SID areas defined on Lots 4 to 7 and 31 and part of lots 25 to 30, 32 and 34. Also areas in the vicinity of the cut and fill boundaries where weaker ground and groundwater seepage may occur (Lot 31).

Development works involving building or earthworks should be investigated and designed by a chartered professional engineer practising in geotechnical engineering.

- Restricted Building Areas

Building is not recommended in these areas for the following reason:

  - the presence of underground services,

The extent of these areas for each lot are shown on Drawing 81069.010-02 Rev 1. We recommend building in NZS 3604 areas in preference to SID which in turn is in preference to RBA sites. The ground conditions and building development recommendations are summarised in Table 1 below.

Table 1: Ground Conditions and Building Development Conditions

Lot #	Topography	Subsurface Conditions	Building Development Recommendations
4	Gently inclined south facing slope.	Filled ground (East Fill). Weak soils to 0.65 m in TP3 including buried topsoil.	Specific Investigation and Design (SID) for all foundations, cuts and fills.
5	Gently to moderately inclined south and west facing slopes.	Filled ground (East Fill). Variable depth to good ground. Weak soils to 0.65 m in SC5/1.	Specific Investigation and Design (SID) for all foundations, cuts and fills.
6	Gently to moderately inclined south and south west facing slopes.	Filled ground (East Fill). Variable depth to good ground. Weak soils to 0.6 m in SC6/3.	Specific Investigation and Design (SID) for all foundations, cuts and fills.
7	Gently to moderately inclined south west facing slopes.	Filled ground (East Fill). Variable depth to good ground. Weak soils to 0.6 m in SC7/1.	Specific Investigation and Design (SID) for all foundations, cuts and fills.

Table 1: Ground Conditions and Building Development Conditions

Lot #	Topography	Subsurface Conditions	Building Development Recommendations
25	Gently to moderately inclined east facing slopes.	Mostly cut and some natural ground (NG). Good ground indicated at shallow depths (≤0.4 m).	NZS3604 and SID for all foundations, cuts and fills along moderately inclined northeastern area of lot. Restricted area above underground services along the western boundary.
26	Gently to moderately inclined east facing slopes.	Cut ground. Good ground indicated at shallow depths (≤0.45 m).	NZS 3604 and SID for all foundations, cuts and fills along moderately inclined eastern strip of lot.
27	Gently to steeply inclined east facing slopes.	Cut ground. Good ground indicated at shallow depths (≤0.3 m).	NZS 3604 and SID for all foundations, cuts and fills along moderately inclined eastern strip of lot.
28	Gently to moderately inclined north and north east facing slopes.	Cut ground. Dense ground below 0.35 m depth.	NZS 3604 and SID for all foundations, cuts and fills along moderately inclined northeastern strip of lot.
29	Gently to moderately inclined east facing slopes.	Cut and filled ground(East Fill). Good ground indicated at shallow depths.	NZS 3604 and SID for all foundations, cuts and fills along on southern boundary. Verify location of and check for variations in soil strength at cut/fill boundaries.
30	Gently inclined slopes.	Cut and filled ground (East Fill). Good ground indicated at shallow depths.	NZS 3604 and SID for all foundations, cuts and fills along on south western boundary. Verify location of and check for variations in soil strength at cut/fill boundary.
31	Gently to moderately inclined south facing slopes.	Cut and filled ground (East Fill). Variable depth to good ground. Weak soils to 1.0 m in SC31/5.	SID for all foundations, cuts and fills along moderately inclined southern strip of lot and cut/fill boundary. Verify location of and check for variations in soil strength at cut/fill boundary.
32	Gently to moderately inclined south facing slopes.	Mainly cut ground. Good ground indicated at shallow depths. East Fill beneath south west corner of site.	NZS 3604 and SID for all foundations, cuts and fills along moderately inclined southern strip of lot and cut/fill boundary. Verify location of and check for variations in soil strength at cut/fill boundary.

Table 1: Ground Conditions and Building Development Conditions

Lot #	Topography	Subsurface Conditions	Building Development Recommendations
33	Gently to moderately inclined south facing slopes.	Cut ground. Good ground indicated at shallow depths (≤0.45 m).	NZS 3604 and Restricted area above underground services along the south and eastern boundaries.
34	Gently to moderately inclined southeast facing slopes.	Cut ground. Good ground indicated at shallow depths (≤0.45 m).	NZS 3604 and SID for all foundations, cuts and fills along within fill area in southeastern corner of lot. Restricted area above underground services along the south and eastern boundaries.

Notes: SID = specific investigation and design
NG = natural ground

4.2 East Fill certification

The Inspecting Engineer has reviewed elements of design, and has periodically inspected the site. We have previously reviewed the construction monitoring files for the East Fill and conducted a geotechnical assessment of it. We are not in a position to be able to certify the East Fill in accordance with NZS 4431 but it is our professional opinion that the remedial works outlined in Section 3.1 of this report have improved the stability of the fill and it is unlikely to be subject to deep seated land slippage under high frequency rainfall or seismic events.

4.3 Building site development recommendations

The recommended building areas for each lot are shown on Drawing 81069.010-02, titled 'Building Site Certification Plan' in Appendix A. Building development conditions are as follows:

1. Buildings shall be within the areas designated as *Generally Suitable for Development in Accordance with NZS 3604* and/or *Specific Investigation and Design Area* as shown on Tonkin & Taylor Drawing 81069.010-02 Rev 1, titled 'Building Site Certification Plan' dated June 2006.
2. No earthworks or buildings other than minor non-habitable structures such as garden sheds or gazebos that can be easily relocated, shall be undertaken within the area designated *Restricted Building Area* shown on Tonkin & Taylor Drawing 81069.010-02 Rev 1,
   'Building Site Certification Plan' ' dated June 2006.
3. Foundations for all buildings shall extend through topsoil, and be founded on "Good Ground" as defined by the New Zealand Building Code.
4. The NZS 3604 Areas comprise cut and filled ground which is suitable for shallow foundations constructed in accordance with NZS 3604:1999 – *Timber Framed Buildings*. Foundations for all buildings not meeting NZS 3604 and requiring an

ultimate bearing capacity greater than 300kPa shall be specifically investigated and designed by a Chartered Professional Engineer experienced in foundation design. Specific attention should be given to verify the presence of cut/fill boundaries in Lots 29 and 30 where they may occur under or in close proximity to buildings. Bearing capacity of house foundations straddling cut/fill/natural boundaries shall be verified by a Chartered Professional Engineer experienced in foundation design.

5. Within the Specific Investigation and Design Area, foundations shall be investigated, designed and constructed by a Chartered Professional Engineer practising in geotechnical engineering. Specific attention should be given to verify the presence of cut/fill boundary in Lot 31 where it may occur under or in close proximity to buildings.
6. Within the Specific Investigation and Design Area all temporary or permanent cuts greater than 0.8 m in height shall be specifically investigated by a Chartered Professional Engineer practising in geotechnical engineering or an experienced Engineering Geologist. No existing slopes inclined on a grade steeper than 2.5 (horizontal) to 1 (vertical) shall be steepened by unretained cutting.
7. Fill greater than 0.8 m thick, and all fill proposed to be beneath structures (including hardstanding areas), shall meet the requirements of NZS 4431:1989 - Code of Practice for Earthfill for Residential Development, and shall include adequate stripping, benching, and underdrainage. All fills within the Specific Investigation and Design Area greater than 1.0 m thickness shall be investigated and designed by a Chartered Professional Engineer practising in geotechnical engineering. No unretained fill shall be placed on ground sloping greater than 2.5H:1V.
8. In the Specific Investigation and Design Zone, retaining walls shall be specifically investigated and designed by a Chartered Professional Engineer practising in geotechnical engineering. All walls shall be adequately drained.
9. The subsoil drain outlets to sumps shall be kept clear. The maintenance and inspection of the sumps and the stormwater system will be carried out in accordance with routine Council maintenance procedures.
10. All stormwater from roofs, hard standing or impermeable areas, retaining wall drainage, surface drains and subsoil drains and from standing water such as swimming pools and ponds shall be collected and discharged in a controlled manner to the Nelson City Council stormwater system.
11. Sloping areas within the lots shall be maintained in a vegetation cover that enhances slope stability with emphasis on deep-rooted trees and shrubs.
12. The building site certification relates to the general suitability of the site; it does not remove the need for specific site investigation, design and inspection as required by the Building Code, NZS 3604 1999 and NZS 4431 1989.

5 Applicability

This report has been prepared for the benefit of KB Quarries 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.

Please refer any further enquiries or correspondence to Mr Mark Dawson of the Tonkin & Taylor Nelson Office.

TONKIN & TAYLOR LTD

Environmental and Engineering Consultants

Report prepared by:	Authorised for Tonkin & Taylor by:
Mark Dawson	Mark Foley
Geotechnical Engineer	Project Co-ordinator

jxww

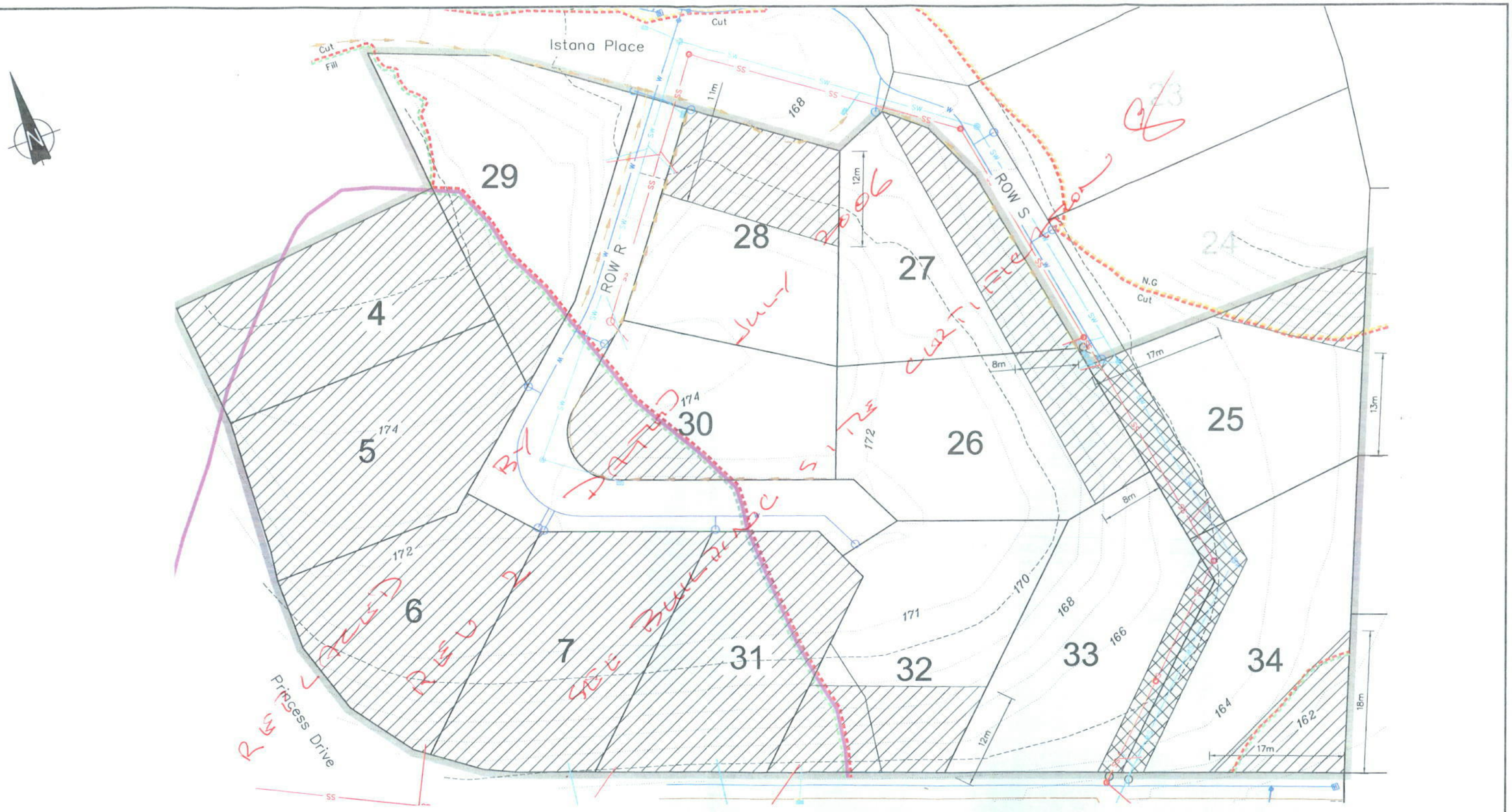
P:\81069\81069.010 Back Ridge\Istana Pl\jxww 210606 Rpt Rev 1 final.doc

Appendix A: Tonkin & Taylor Drawings

- **DWG 81069.010-01 – Geotechnical Investigation and Earthworks Location Plan**
- **DWG 81069.010-02 Rev 1 – Building Site Certification Plan**

T

see Rev 2
July 2006



LEGEND

- Boundary of Cut/Fill (Cut / Fill)
- Boundary of Fill/Natural Ground (Fill / N.G)
- Boundary of Cut/Natural Ground (Cut / N.G)
- Indicative extent of historic east fill
- 3604 Area
- Area Requiring Specific Investigation and Design (SID)
- Restricted Building Area (Easement required for services)
- Sanitary Sewer Pipeline (SS)
- Stormwater Pipeline (SW)
- Watermain (W)
- Subsoil Drains
- Final Contours (175)
- Extent of this certification report

Base Plan Supplied By Staig & Smith
File entitled 7972CUR.DXF
Dated 18-02-2006
As built Contours and Services
Locations sourced from ISTANA.dxf
Dated 31/03/2006

SCALE 1:500
0 5 10 15 20 25 (m)

REV.	REVISION DESCRIPTION	BY	DATE
1	Second Issue		
0	First Issue	Timc	Apr.06

DESIGNED : JXWW Mar.06
DRAWN : SXT Mar.06
DESIGN CHECKED : 6/06
DRAFTING CHECKED : 6/06
CADFILE : P:\...\8 1069.0 10-02.dwg
APPROVED :
NOT FOR CONSTRUCTION
This drawing is not to be used for construction purposes unless signed as approved
COPYRIGHT ON THIS DRAWING IS RESERVED

NOTES :
1. All dimensions are in metres unless noted otherwise.

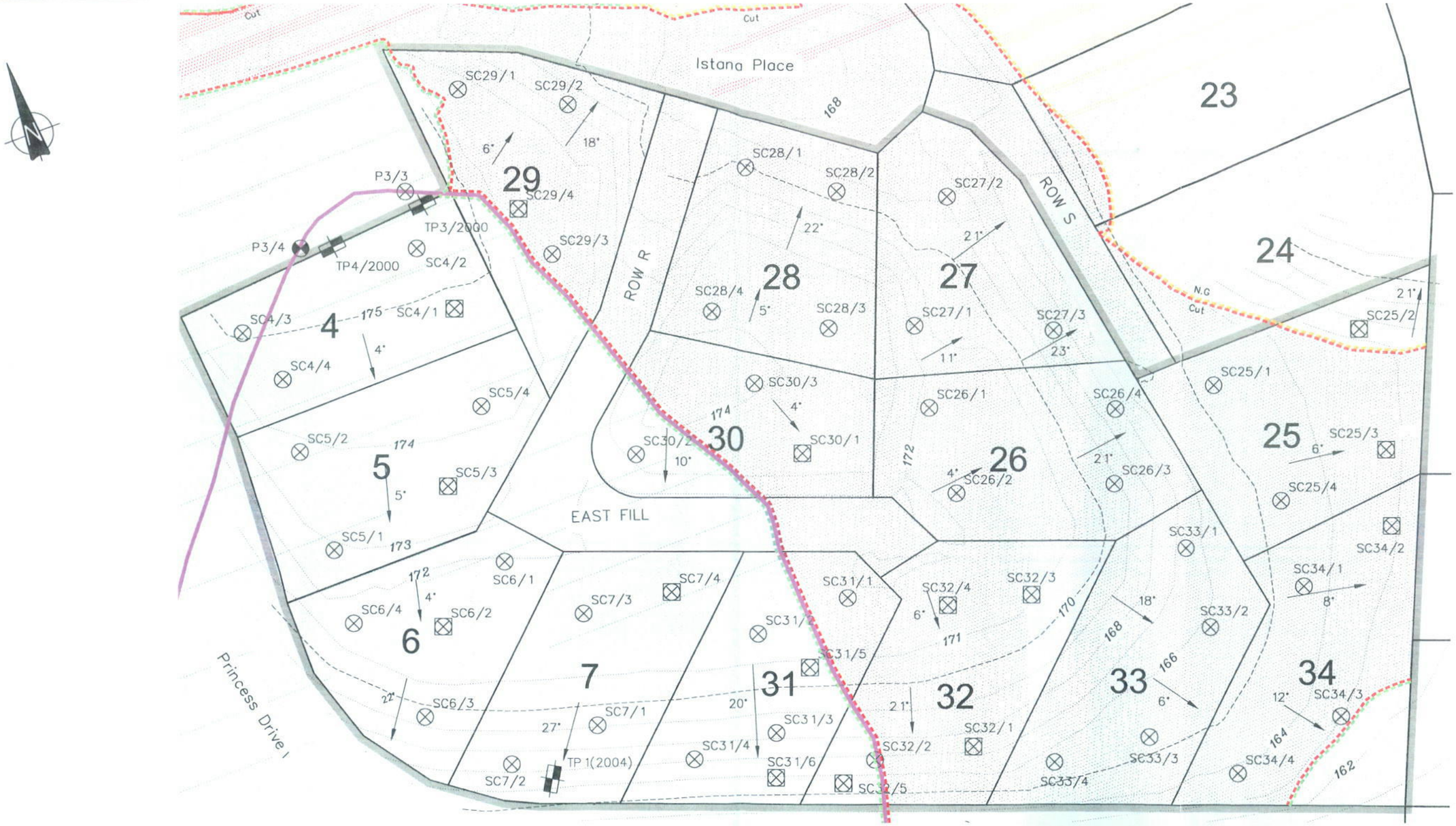
REFERENCE :

Tonkin & Taylor
Environmental & Engineering Consultants
Nelson 43 Halifax St
Tel. (03) 546 6339 Fax. (03) 546 7619
Email : nel@tonkin.co.nz
Auckland Wellington Christchurch Hamilton Whangarei

CLIENT, PROJECT
KB QUARRIES LTD
ISTANA PLACE, NELSON

TITLE
Building Site Certification Plan

SCALES (AT A3 SIZE) 1:500
DWG. No. 8 1069.0 10-02
REV. 1



LEGEND

175 — Final Contours	TP 1 — Tonkin and Taylor test pit location		Area of Cut
SC4/2 — Tonkin and Taylor Scala Penetrometer Location (Feb 06)	15° — Slope angle		Area of Fill
SC29/4 — Tonkin and Taylor Re Test Scala Penetrometer Location (Mar 06)	Extent of this certification report		Natural Ground
P3/4 — Tonkin and Taylor Scala Penetrometer (2000)	Indicative extent of historic East Fill		

Base Plan Supplied By Stoig & Smith
File entitled 7972CUR.DXF
Dated 18-02-2006

SCALE 1:500
0 5 10 15 20 25 (m)

DESIGNED :	JXWW	Mar.05	
DRAWN :	SXT	Mar.05	
DESIGN CHECKED :	TC	4/06	
DRAFTING CHECKED :	TC	4/06	
CADFILE : \\8 1069.0 10-0 1.dwg			
APPROVED :			

NOT FOR CONSTRUCTION
This drawing is not to be used for construction purposes unless signed as approved
COPYRIGHT ON THIS DRAWING IS RESERVED

REVISION	DESCRIPTION	BY	DATE
0	First Issue	TC	4/06

NOTES :
1. All dimensions are in millimetres unless noted otherwise.

REFERENCE :

Tonkin & Taylor
Environmental & Engineering Consultants
Nelson 43 Halifax St
Tel. (03) 546 6339 Fax. (03) 546 7619
Email : nel@tonkin.co.nz
Auckland Wellington Christchurch Hamilton Whangarei

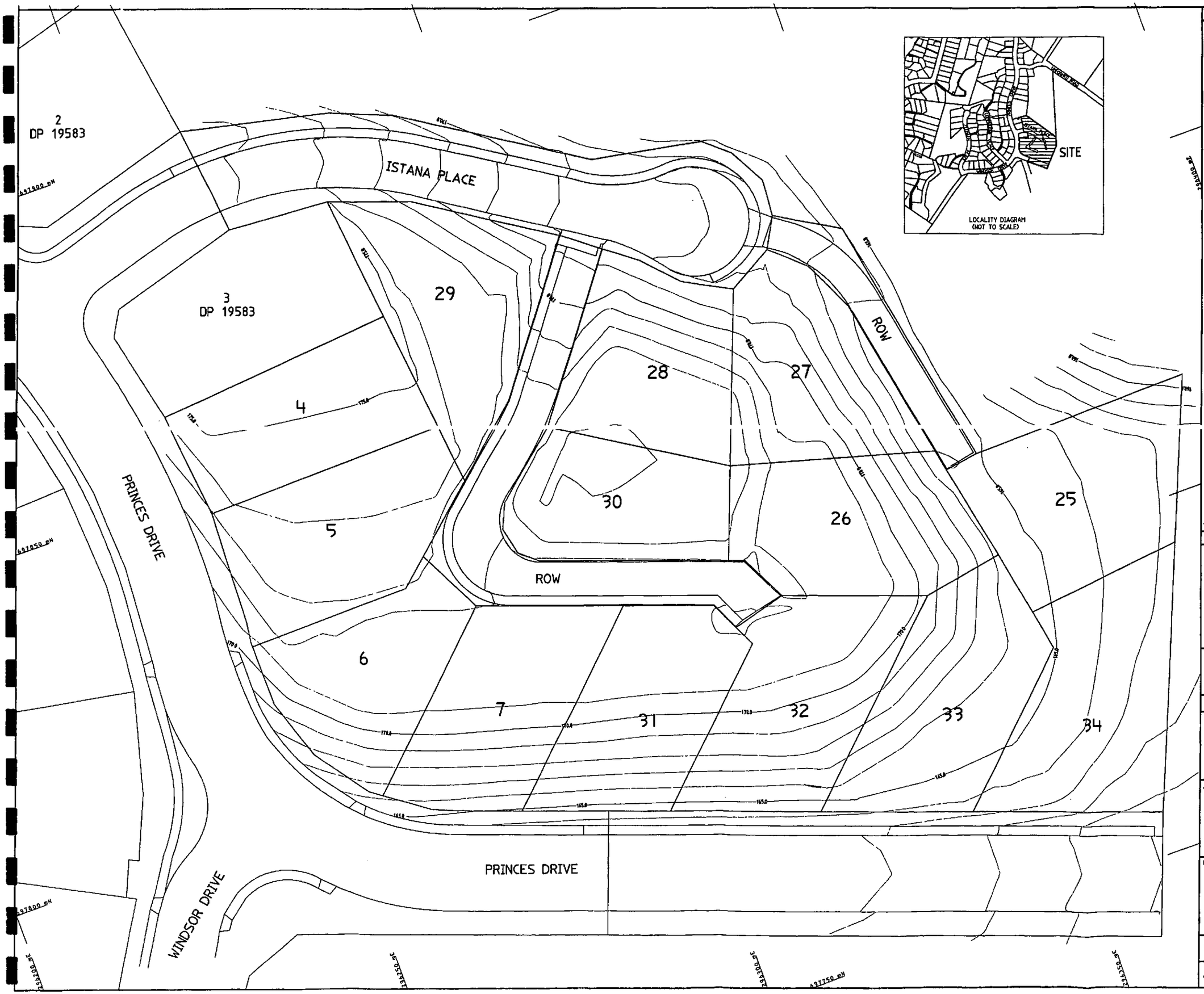
CLIENT, PROJECT
KB QUARRIES LTD
ISTANA PLACE, NELSON

TITLE
GEOTECHNICAL INVESTIGATIONS AND EARTHWORKS
Location Plan

SCALES (AT A3 SIZE)	DWG. No.	REV.
1:500	8 1069.0 10-0 1	0

Appendix B: Staig & Smith Ltd As-built drawings

- Final Surface (as at December 2005) DWG797AF
- Earthworks Iso-contour Plan DWG797AG
- Asbuilt Sewer DWGAB-SS
- Asbuilt Stormwater DWGAB-SW
- Asbuilt Water & Benchmark Location DWGABWAT
- Original Surface (as at July 1999) DWG797AE



Notes

(1) VERIFY ALL DIMENSIONS ON SITE
(2) DO NOT SCALE FROM DRAWING.

No	Amendment	Date

STAIG&SMITH
81 Selwyn Place
PO Box 913 Nelson
Ph: 03 548 4422
Fax: 03 548 4427
e-mail: enquiries@staigsmith.co.nz
SURVEYING-PLANNING-ENGINEERING-RESOURCE MANAGEMENT

28 MAR 2006
MANAGER INFRASTRUCTURAL ASSETS (NCC) DATE

NCC DWG NO. 36-1341

DESIGN	M. STANDISH
DRAWN	M. STANDISH
CHECKED	
APPROVED	
DATE	DECEMBER 2005

JOB TITLE

Istana Place Subdivision
Tasman Heights
NCC RM005141

DRAWING TITLE

Final Surface
(as at December 2005)

Scale: 1:250 at A1	DWG797AF
Job No: 7972	Sheet 1 of 5

Fill Contours
Cut/Fill 0.0m Contour
Cut Contours

THIS ISO-CONTOUR PLAN HAS BEEN PREPARED BY COMPARING THE NATURAL SURFACE CONTOURS OF THE SITE AS OF JULY 1999 AND THE FINISHED SURFACE CONTOUR PLAN AS OF DECEMBER 2005.

THE NATURAL CONTOUR PLAN IS OF THE SITE AT THE DATE MENTIONED ABOVE IT DOES NOT SHOW THE EXTENT OF ANY EARTHWORKS CARRIED OUT PRIOR TO THE SURVEY DATE

THE FINISHED SURFACE CONTOURS INCLUDE UP TO 0.3M OF TOPSOIL

2
DP 19583

3
DP 19583

4

5

6

7

29

28

27

30

26

25

31

32

33

34

FILL

CUT

FILL

ISTANA PLACE

ROW

ROW

PRINCES DRIVE

PRINCES DRIVE

WINDSOR DRIVE

FILL

Notes

(1) VERIFY ALL DIMENSIONS ON SITE
(2) DO NOT SCALE FROM DRAWING

No	Amendment	Date

STAIG&SMITH

61 Selwyn Place
PO Box 913 Nelson

Ph 03 548 4422
Fax 03 548 4427
e-mail: enquiries@staigsmith.co.nz

SURVEYING-PLANNING-ENGINEERING-RESOURCE MANAGEMENT

28 MAR 2006
MANAGER INFRASTRUCTURAL ASSETS (NCC) DATE

NCC DWG NO. 36-1341

DESIGN	M STANDISH
DRAWN	M. STANDISH
CHECKED	
APPROVED	
DATE	DECEMBER 2005

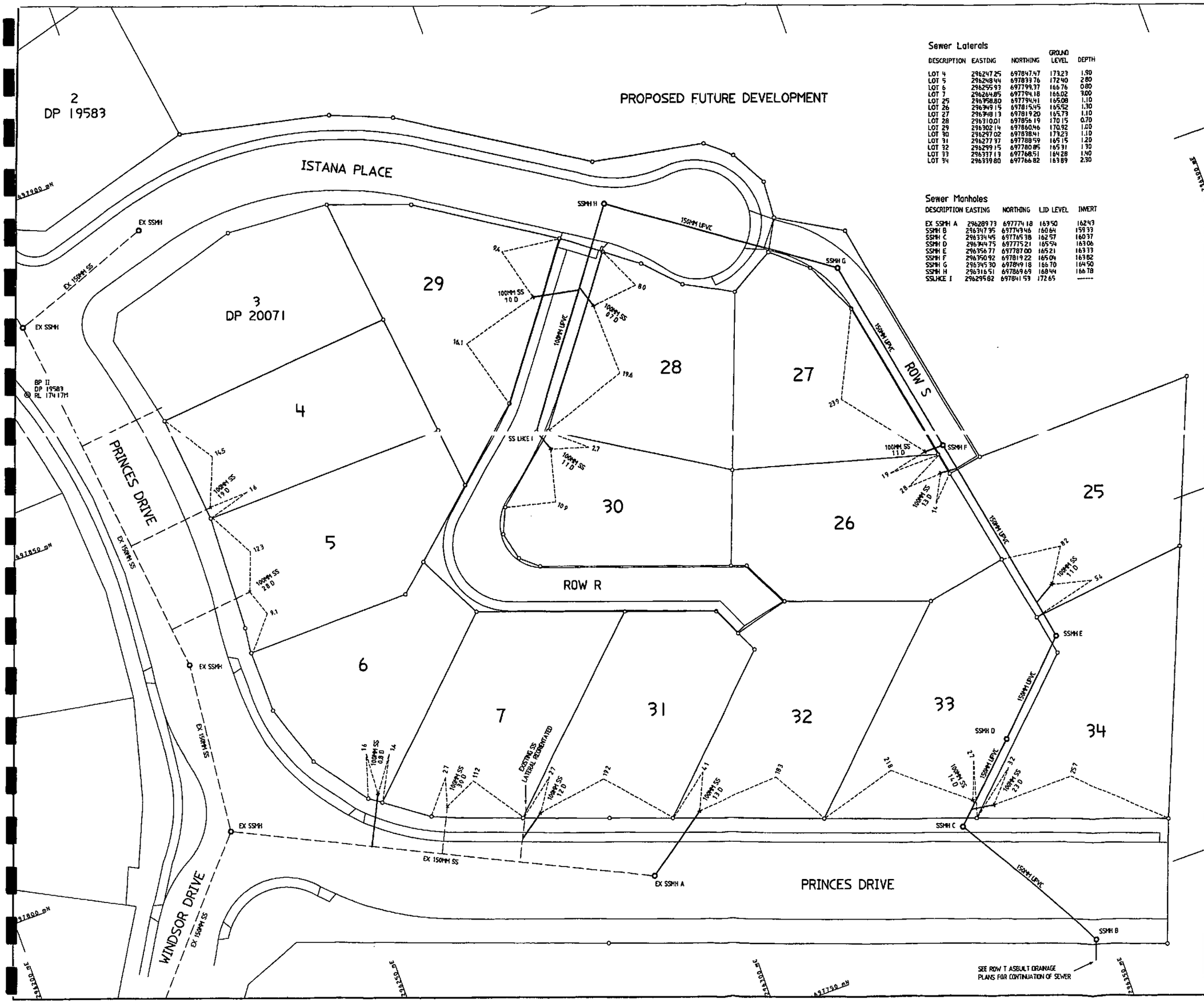
JOB TITLE

Istana Place Subdivision
Tasman Heights
NCC RM005141

DRAWING TITLE

Earthworks
Iso-Contours

Scale: 1:250 at A1	DWG797AG
Job No: 7972	Sheet 2 of 5



Sewer Laterals

DESCRIPTION	EASTING	NORTHING	GROUND LEVEL	DEPTH
LOT 4	296247.25	697847.47	173.23	1.90
LOT 5	296248.44	697833.76	172.40	2.80
LOT 6	296255.93	697799.37	166.76	0.80
LOT 7	296264.85	697794.18	166.02	3.00
LOT 25	296358.80	697794.41	165.08	1.10
LOT 26	296349.15	697815.45	165.52	1.30
LOT 27	296348.13	697819.20	165.73	1.10
LOT 28	296310.01	697856.19	170.15	0.70
LOT 29	296302.14	697860.46	170.92	1.00
LOT 30	296297.02	697838.41	173.23	1.10
LOT 31	296277.37	697788.59	165.15	1.20
LOT 32	296299.15	697780.85	165.31	1.30
LOT 33	296337.13	697768.51	164.28	1.40
LOT 34	296339.80	697766.82	163.89	2.30

Sewer Manholes

DESCRIPTION	EASTING	NORTHING	LID LEVEL	INVERT
EX SSMH A	296289.73	697774.18	163.50	162.43
SSMH B	296347.35	697743.46	160.64	159.33
SSMH C	296334.45	697765.38	162.57	160.37
SSMH D	296344.75	697775.21	165.54	163.06
SSMH E	296356.77	697787.00	165.21	163.33
SSMH F	296350.92	697819.22	165.04	163.82
SSMH G	296345.30	697849.18	166.70	164.50
SSMH H	296316.51	697869.69	168.44	166.78
SSLHCE I	296295.82	697841.53	172.65	------

Notes

(1) LEVELS ARE IN TERMS OF NCC HEIGHT DATUM BPII DP19583 RL 174.17M
(2) COORDINATES ARE IN TERMS OF NZGD 1949
(3) ALL HOUSE CONNECTIONS ARE 100MM UPVC.

No	Amendment	Date

STAIG&SMITH
81 Selwyn Place
PO Box 913 Nelson
Ph 03 548 4422
Fax. 03 548 4427
e-mail. enquiries@staigsmith.co.nz
SURVEYING-PLANNING-ENGINEERING-RESOURCE MANAGEMENT

2 8 MAR 2008
MANAGER INFRASTRUCTURAL ASSETS (NCC) DATE

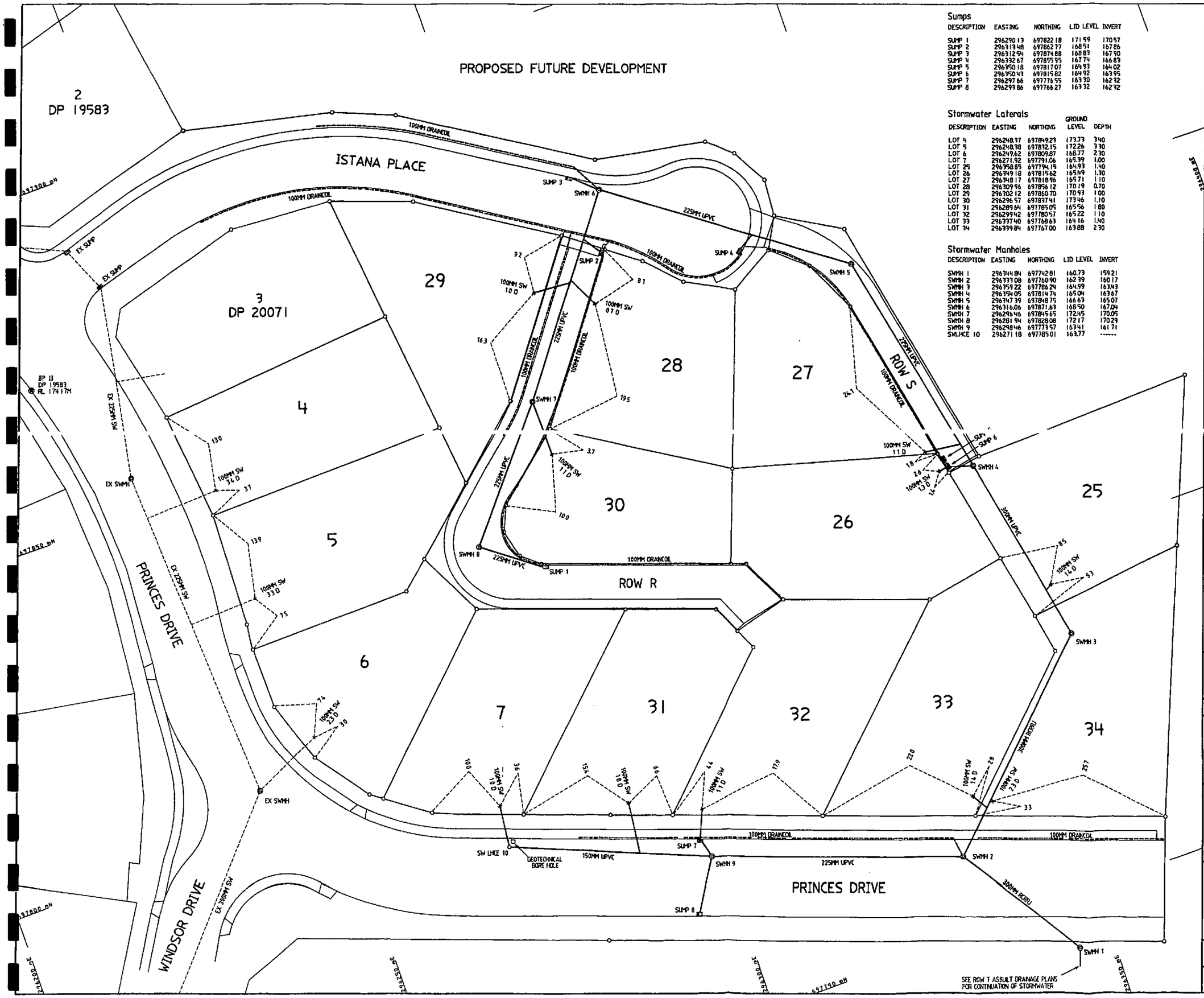
NCC DWG NO. 36-1341

DESIGN M. STANDISH
DRAWN M. STANDISH
CHECKED
APPROVED
DATE DECEMBER 2005

JOB TITLE
Istana Place Subdivision
Tasman Heights
NCC RM005141

DRAWING TITLE
Asbuilt Sewer

Scale: 1:250 at A1 | DWGAB-SS
Job No: 7972 | Sheet 3 of 5



Sumps

DESCRIPTION	EASTING	NORTHING	LID LEVEL	INVERT
SUMP 1	296290 13	697822 18	171 59	170 57
SUMP 2	296313 48	697862 77	168 51	167 86
SUMP 3	296312 54	697874 88	168 83	167 90
SUMP 4	296332 67	697855 95	167 74	166 83
SUMP 5	296350 18	697817 07	164 93	164 02
SUMP 6	296350 43	697815 82	164 92	163 95
SUMP 7	296297 66	697776 55	163 30	162 32
SUMP 8	296293 86	697766 27	163 32	162 32

Stormwater Laterals

DESCRIPTION	EASTING	NORTHING	GROUND LEVEL	DEPTH
LOT 4	296248.37	697849.23	173.73	3 40
LOT 5	296248.38	697832.15	172.26	3 30
LOT 6	296249.62	697809.87	168.77	2 30
LOT 7	296271.92	697791.06	165.39	1.00
LOT 25	296358.85	697794.15	164.93	1.40
LOT 26	296349 18	697815 62	165.49	1.30
LOT 27	296348 17	697818 96	165 71	1 10
LOT 28	296309 96	697856 12	170 19	0.70
LOT 29	296302 12	697860 70	170 93	1 00
LOT 30	296296 57	697837 41	173 46	1.10
LOT 31	296289 64	697785 05	165 56	1 80
LOT 32	296299 42	697780 57	165 22	1 10
LOT 33	296337 40	697768 63	164 16	1.40
LOT 34	296339 84	697767 00	163 88	2 30

Stormwater Manholes

DESCRIPTION	EASTING	NORTHING	LID LEVEL	INVERT
SWMH 1	296344 84	697742 81	160.73	159 21
SWMH 2	296333 08	697760 90	162 39	160 17
SWMH 3	296359 22	697786 24	164.99	163.43
SWMH 4	296354 05	697814 74	165 04	163 67
SWMH 5	296347 39	697848 75	166 63	165 07
SWMH 6	296316.06	697871.63	168 50	167.04
SWMH 7	296296 46	697845 65	172.45	170.05
SWMH 8	296281 94	697828 08	172 17	170 29
SWMH 9	296298 46	697773 57	163 41	161 71
SWLHCE 10	296271 18	697785 01	163.77	------

Notes

(1) LEVELS ARE IN TERMS OF NCC HEIGHT DATUM BPII DP19583 RL 174 17M
(2) COORDINATES ARE IN TERMS OF NZGD 1949
(3) ALL HOUSE CONNECTIONS ARE 100MM UPVC.
(4) UNLESS OTHERWISE STATED ALL SUMP CONNECTIONS ARE 225MM UPVC

No	Amendment	Date

STAIG&SMITH
81 Selwyn Place
PO Box 913 Nelson
Ph 03 548 4422
Fax 03 548 4427
e-mail enquiries@staigsmith.co.nz
SURVEYING-PLANNING-ENGINEERING-RESOURCE MANAGEMENT

2 8 MAR 2006
MANAGER INFRASTRUCTURAL ASSETS (NCC) DATE

NCC DWG NO. 36-1341

DESIGN M. STANDISH
DRAWN M. STANDISH
CHECKED
APPROVED
DATE DECEMBER 2005

JOB TITLE
Istana Place Subdivision
Tasman Heights
NCC RM005141

DRAWING TITLE
Asbuilt Stormwater

Scale: 1:250 at A1 | DWGAB-SW
Job No: 7972 | Sheet 4 of 5

PROPOSED FUTURE DEVELOPMENT

LOT 3

2
DP 19583

3
DP 20071

4

5

6

7

25

26

27

28

29

30

31

32

33

34

ISTANA PLACE

PRINCES DRIVE

ROW R

ROW S

WINDSOR DRIVE

150MM UPVC

50MM HDPE

200MM UPVC WATERMAIN

25MM HDPE

40MM HDPE

METER

VALVE CHAMBER CONTAINING AVK SWING CHECK VALVE

WMC 1

WMC 2

BP 1

BP 2

BP 3

EXISTING FIRE HYDRANT REMOVED

HYDRANT 1

HYDRANT 2

VALVE 1

VALVE 2

VALVE 3

EXISTING METER

EXISTING METER REMOVED

EXISTING 100MM WATERMAIN

EXISTING 200MM WATERMAIN

EX 100MM WATERMAIN

EXISTING HYDRANT

EXISTING WATERMAN REMOVED

BLANK END 1

BLANK END 2

BP II
DP 19583
@ RL 174.17M

BP III
DP 19583
RL 166.03M

697900 mN

697850 mN

697800 mN

2326000 mE

2326050 mE

2326100 mE

2326150 mE

2326200 mE

2326250 mE

2326300 mE

2326350 mE

2326400 mE

2326450 mE

2326500 mE

2326550 mE

2326600 mE

2326650 mE

2326700 mE

2326750 mE

2326800 mE

2326850 mE

2326900 mE

2326950 mE

2327000 mE

2327050 mE

2327100 mE

2327150 mE

2327200 mE

2327250 mE

2327300 mE

2327350 mE

2327400 mE

2327450 mE

2327500 mE

2327550 mE

2327600 mE

2327650 mE

2327700 mE

2327750 mE

2327800 mE

2327850 mE

2327900 mE

2327950 mE

2328000 mE

Benchmarks

FEATURE	EASTING	NORTHING	LEVEL	DESCRIPTION
BP I	296258.92	697894.94	174.60	NCC BENCHMARK
BP II	296335.97	697863.44	167.96	NCC BENCHMARK
BP III	296326.65	697754.12	162.67	NCC BENCHMARK

Water Meters

LOT NO	EASTING	NORTHING	LEVEL	DESCRIPTION
LOT 3	296336.68	697869.52	167.58	METER
LOT 3	296336.33	697869.99	167.55	METER
LOT 3	296300.73	697886.11	170.24	METER
LOT 3	296299.41	697887.11	170.38	METER
LOT 3	296266.11	697899.75	174.39	METER
LOT 3	296265.46	697899.72	174.33	METER
LOT 3	296349.11	697847.34	166.41	METER
LOT 3	296351.85	697833.30	165.46	METER
LOT 4	296246.06	697848.40	173.05	METER
LOT 5	296288.49	697837.35	172.72	METER
LOT 6	296278.49	697820.22	172.06	METER
LOT 7	296279.05	697819.64	172.05	METER
LOT 25	296352.10	697815.85	164.98	METER
LOT 26	296350.54	697818.01	164.98	METER
LOT 27	296336.13	697859.76	167.95	METER
LOT 28	296314.45	697863.07	168.53	METER
LOT 29	296308.45	697867.70	168.93	METER
LOT 30	296294.21	697839.14	172.71	METER
LOT 31	296299.39	697812.32	171.89	METER
LOT 32	296315.23	697804.53	172.05	METER
LOT 33	296335.11	697765.96	163.16	METER
LOT 34	296337.36	697764.80	162.94	METER

Water Valves

FEATURE	EASTING	NORTHING	LEVEL	DESCRIPTION
VALVE 1	296318.37	697874.85	168.54	VALVE
VALVE 2	296316.78	697874.16	168.64	VALVE
VALVE 3	296353.79	697757.38	160.77	VALVE
BLANK END 1	296301.66	697761.04	---	BLANK END
BLANK END 2	296345.99	697742.37	159.83	BLANK END
VALVE CHAMBER	296257.31	697896.82	174.60	MANHOLE LID
ONE WAY VALVE	296257.41	697896.83	173.56	AVK SWING CHECK VALVE

Fire Hydrants

FEATURE	EASTING	NORTHING	LEVEL	DESCRIPTION
HYDRANT 1	296314.77	697875.79	168.90	FIRE HYDRANT
HYDRANT 2	296361.50	697754.93	160.16	FIRE HYDRANT

Watermain Connections

FEATURE	EASTING	NORTHING	LEVEL	DESCRIPTION
WMC 1	296255.14	697896.59	-----	WATERMAIN CONNECTION
WMC 2	296282.54	697784.22	----	WATERMAIN CONNECTION

Notes

(1) LEVELS ARE IN TERMS OF NCC HEIGHT DATUM
BPII DP19583 RL 174.17M
(2) COORDINATES ARE IN TERMS OF NZGD 1949.
(3) ALL PIPE SIZES SHOWN ARE INTERNAL DIAMETER.

No	Amendment	Date

STAIG&SMITH LTD
81 Selwyn Place
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Fax. 03 548 4427
e-mail: enquiries@staigsmith.co.nz
SURVEYING-PLANNING-ENGINEERING-RESOURCE MANAGEMENT

28 MAR 2006
MANAGER INFRASTRUCTURAL ASSETS (NCC) DATE

NCC DWG NO. 36-1341

DESIGN	M STANDISH
DRAWN	M STANDISH
CHECKED	
APPROVED	
DATE	DECEMBER 2005

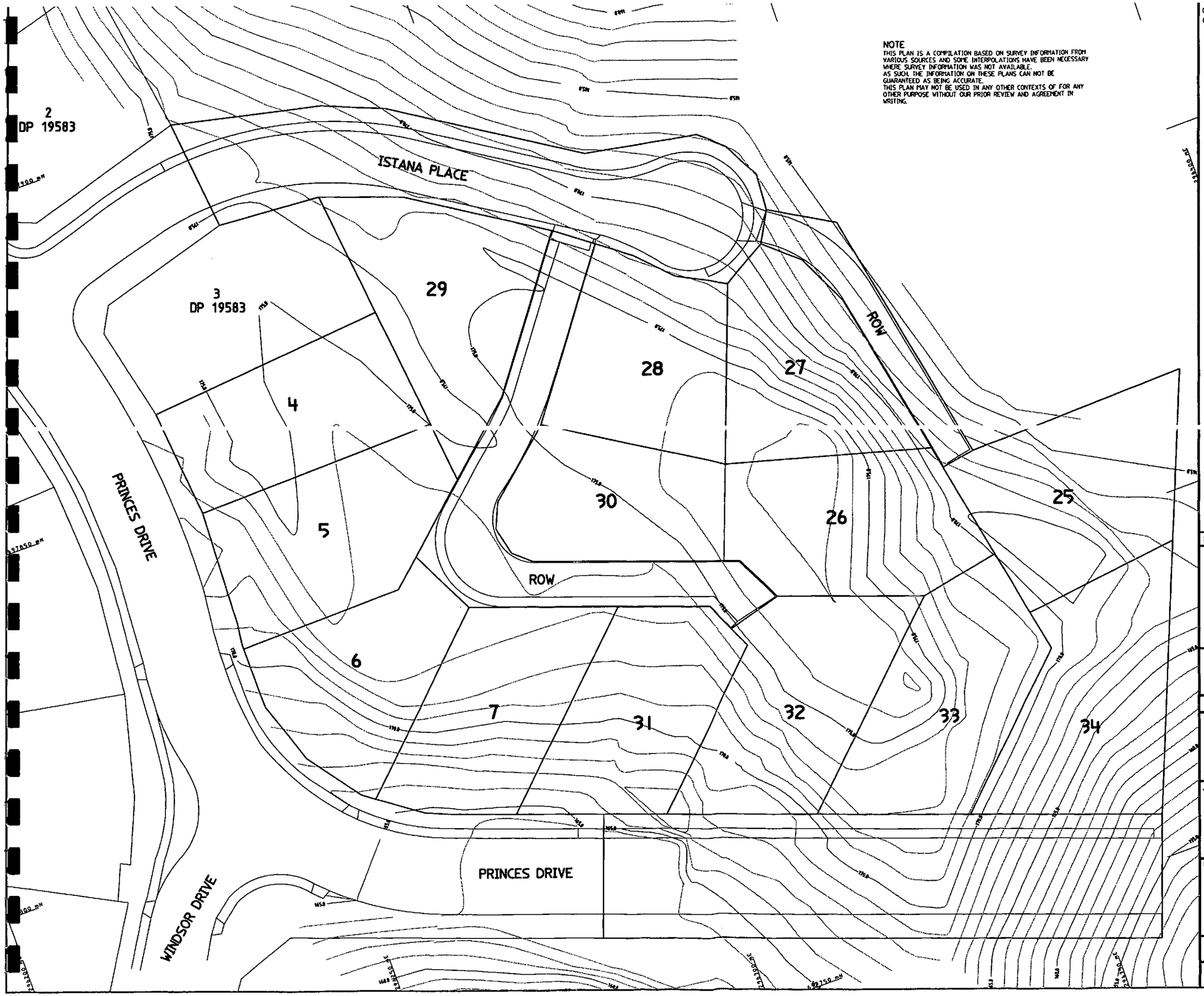
JOB TITLE

Istana Place Subdivision
Tasman Heights
NCC RM005141

DRAWING TITLE

Asbuilt Water &
Benchmark Location

Scale:	1:250 of A1	DWGABWAT
Job No:	7972	Sheet 5 of 5



NOTE
THIS PLAN IS A COMPILATION BASED ON SURVEY INFORMATION FROM VARIOUS SOURCES AND SOME INTERPOLATIONS HAVE BEEN NECESSARY WHERE SURVEY INFORMATION WAS NOT AVAILABLE.
AS SUCH, THE INFORMATION ON THESE PLANS CAN NOT BE GUARANTEED AS BEING ACCURATE.
THIS PLAN MAY NOT BE USED IN ANY OTHER CONTEXTS OF FOR ANY OTHER PURPOSE WITHOUT OUR PRIOR REVIEW AND AGREEMENT IN WRITING.

(1) VERIFY ALL DIMENSIONS ON SITE.
(2) DO NOT SCALE FROM DRAWING.

No	Amendment	Date

Designed by:
NELSON OFFICE
Mitre House
16 Peru Peru Road
PO Box 913 Nelson
Ph 03 548 4422
Fax 03 548 4427
e-mail enquiries@staigsmith.co.nz
STAIG & SMITH LIMITED
RESOURCE MANAGEMENT
SURVEYING PLANNING ENGINEERING

MANAGER INFRASTRUCTURAL ASSETS (NCC) DATE

NCC DWG NO.

DESIGN:	M. STANDISH
DRAWN:	M. STANDISH
CHECKED:	
APPROVED:	
DATE:	DECEMBER 2005

JOB TITLE
Istana Place Subdivision
Tasman Heights
NCC RM005141

DRAWING TITLE
Original Surface
(as at July 1999)

Scale: 1:250 at A1		DWG797AE
Job No: 7972		Sheet 6 of 6

Appendix C: Building site certification investigations

- Scala Penetrometer tests – P3-P4 dated May 2000
- Scala Penetrometer tests – SC1jw dated April 2004
- Scala Penetrometer tests – SC4-SC7, SC25-34 dated January 2005
- Test pit logs - TP3-TP4 dated May 2000
- Test pit logs - TP1jw dated April 2004
- Engineering Terminology Log

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

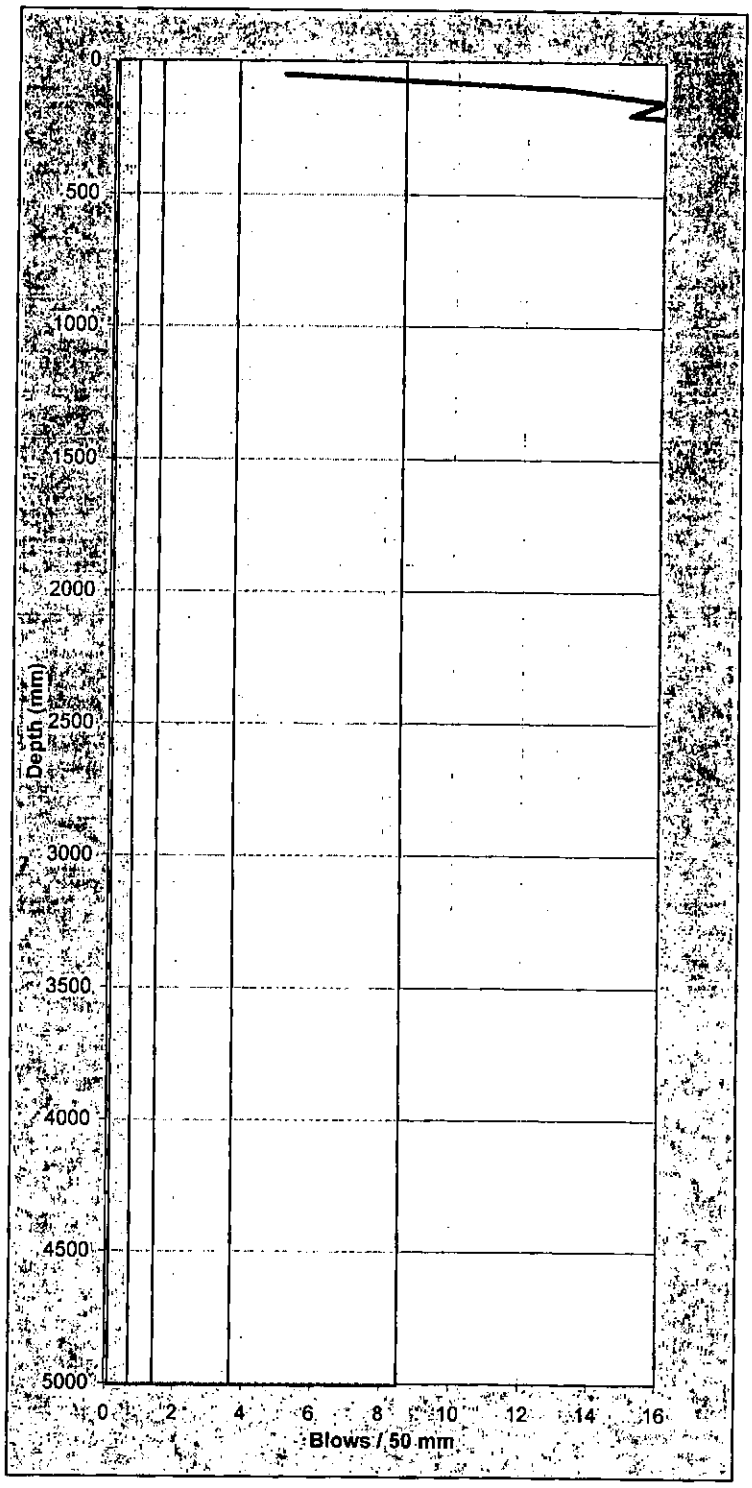
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 4 Istana Place, Nelson*
Position: *Refer site plan*

Date: *26/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: *TC*

Test No. *SC4/1*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	5	2550	
100	13	2600	
150	16	2650	
200	15	2700	
250	21	2750	
300	refusal	2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

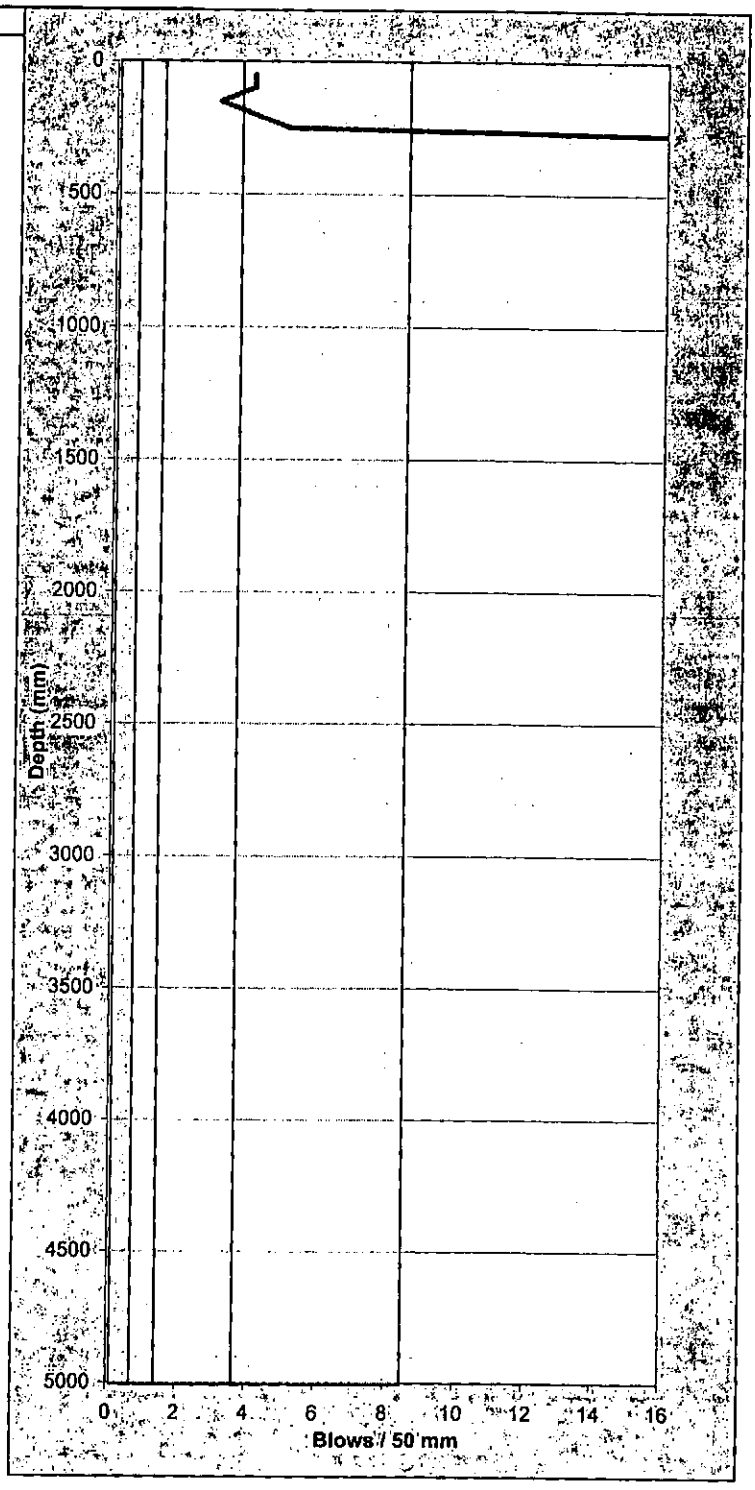
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 4 Istana Place, Nelson*
Position: *Refer site plan*

Date: *26/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. *SC4/2*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	4	2550	
100	4	2600	
150	3	2650	
200	4	2700	
250	5	2750	
300	27	2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

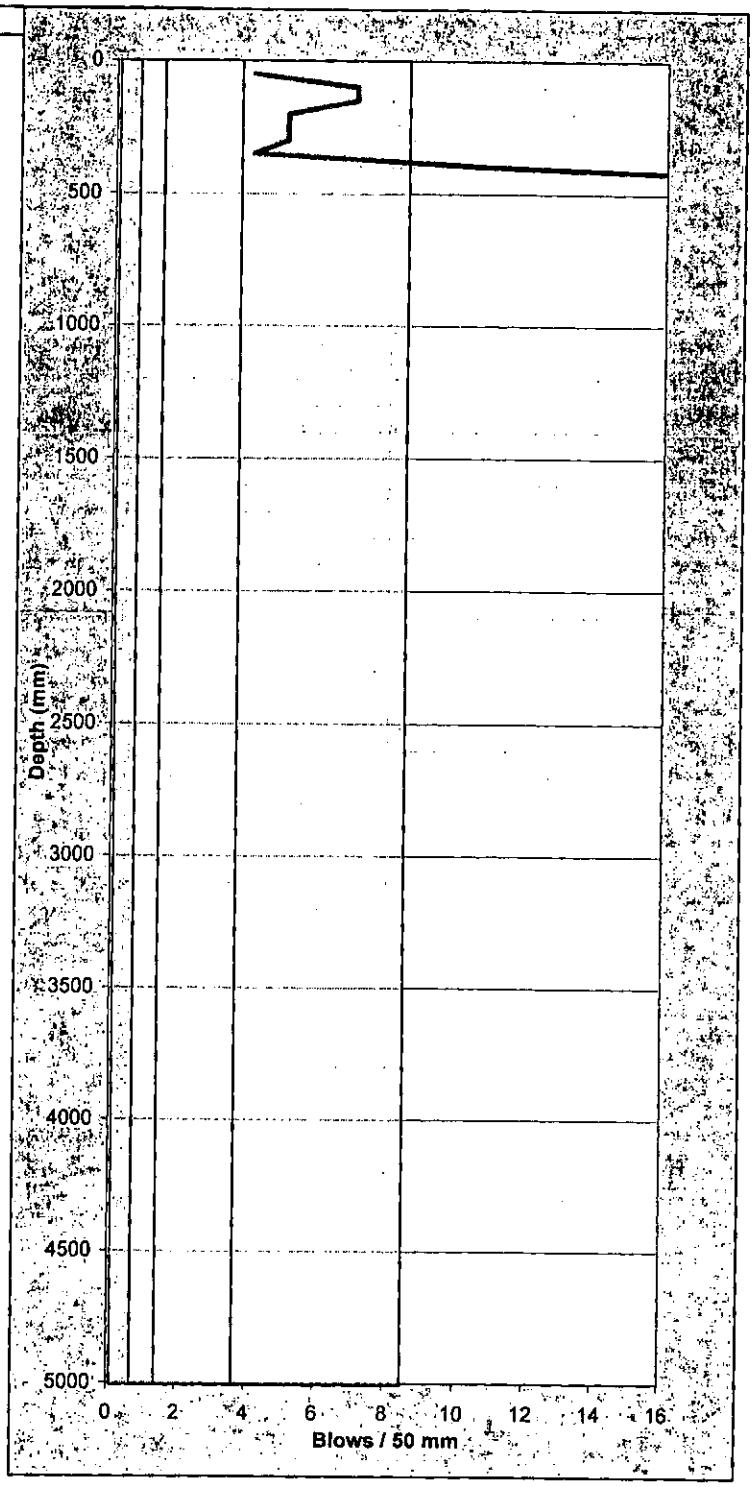
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 4 Istana Place, Nelson*
Position: *Refer site plan*

Date: *26/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: *I—C*

Test No. *SC4/3*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	4	2550	
100	7	2600	
150	7	2650	
200	5	2700	
250	5	2750	
300	5	2800	
350	4	2850	
400	11	2900	
450	23	2950	
500	refusal	3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
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Tel: (03) 546 6339
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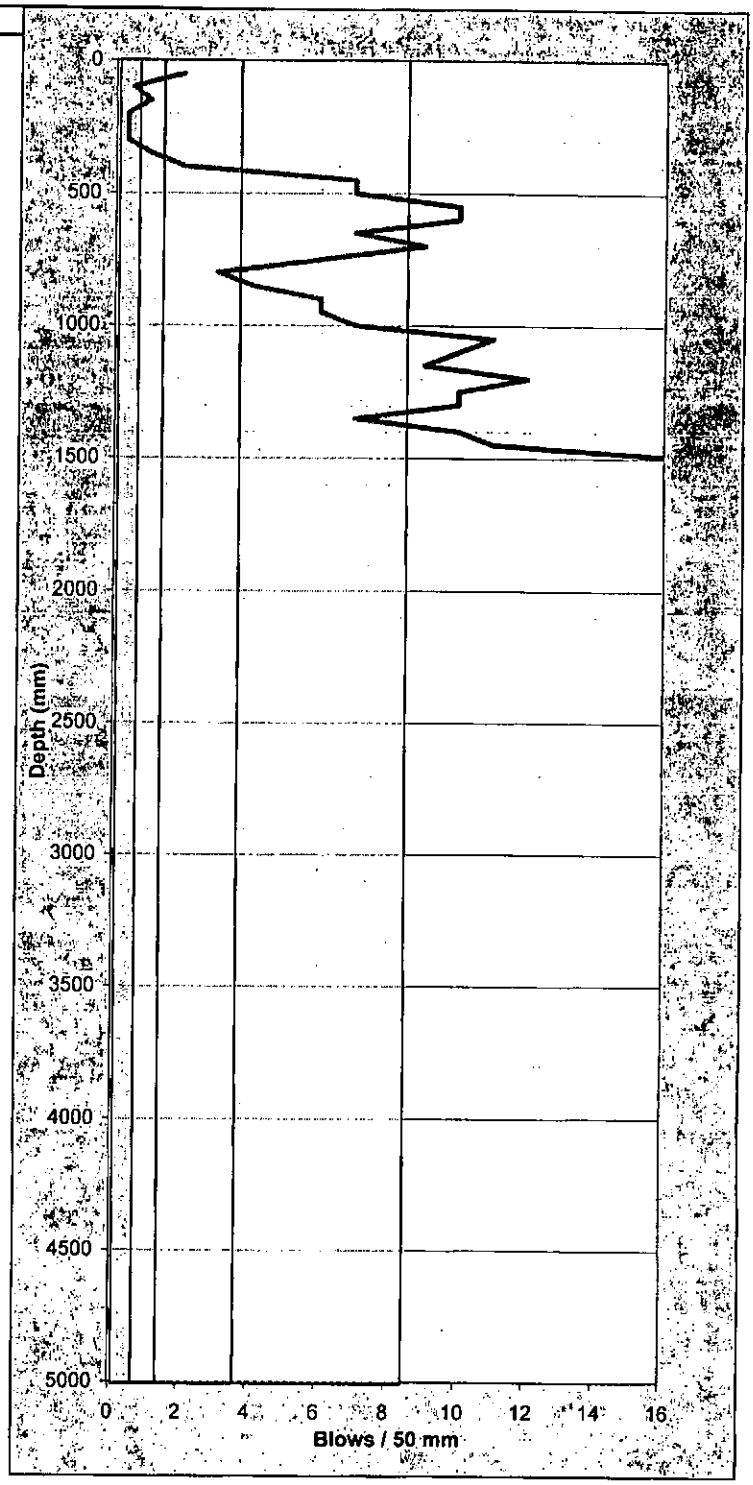
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 4 Istana Place, Nelson*
Position: *Refer site plan*

Date: *26/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. *SC4/4*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	0.5	2600	
150	1	2650	
200	0.33	2700	
250	0.33	2750	
300	0.33	2800	
350	1	2850	
400	2	2900	
450	7	2950	
500	7	3000	
550	10	3050	
600	10	3100	
650	7	3150	
700	9	3200	
750	6	3250	
800	3	3300	
850	4	3350	
900	6	3400	
950	6	3450	
1000	7	3500	
1050	11	3550	
1100	10	3600	
1150	9	3650	
1200	12	3700	
1250	10	3750	
1300	10	3800	
1350	7	3850	
1400	10	3900	
1450	11	3950	
1500	17	4000	
1550	refusal	4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
P O Box 1009
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Tel: (03) 546 6339
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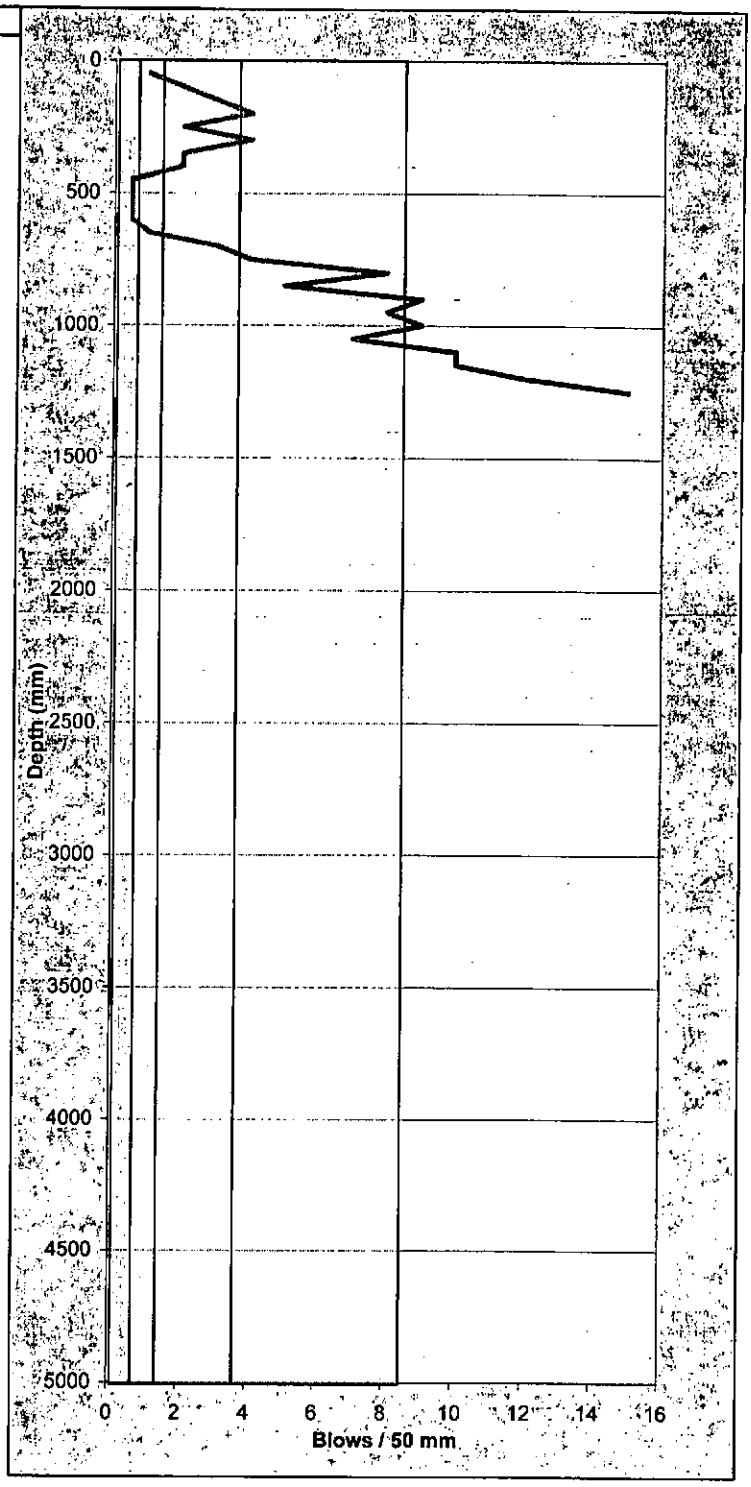
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 5 Istana Place, Nelson*
Position: *Refer Site Plan*

Date: *26/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. *SC5/1*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	2	2600	
150	3	2650	
200	4	2700	
250	2	2750	
300	4	2800	
350	2	2850	
400	2	2900	
450	0.5	2950	
500	0.5	3000	
550	0.5	3050	
600	0.5	3100	
650	1	3150	
700	3	3200	
750	4	3250	
800	8	3300	
850	5	3350	
900	9	3400	
950	8	3450	
1000	9	3500	
1050	7	3550	
1100	10	3600	
1150	10	3650	
1200	12	3700	
1250	15	3750	
1300	refusal	3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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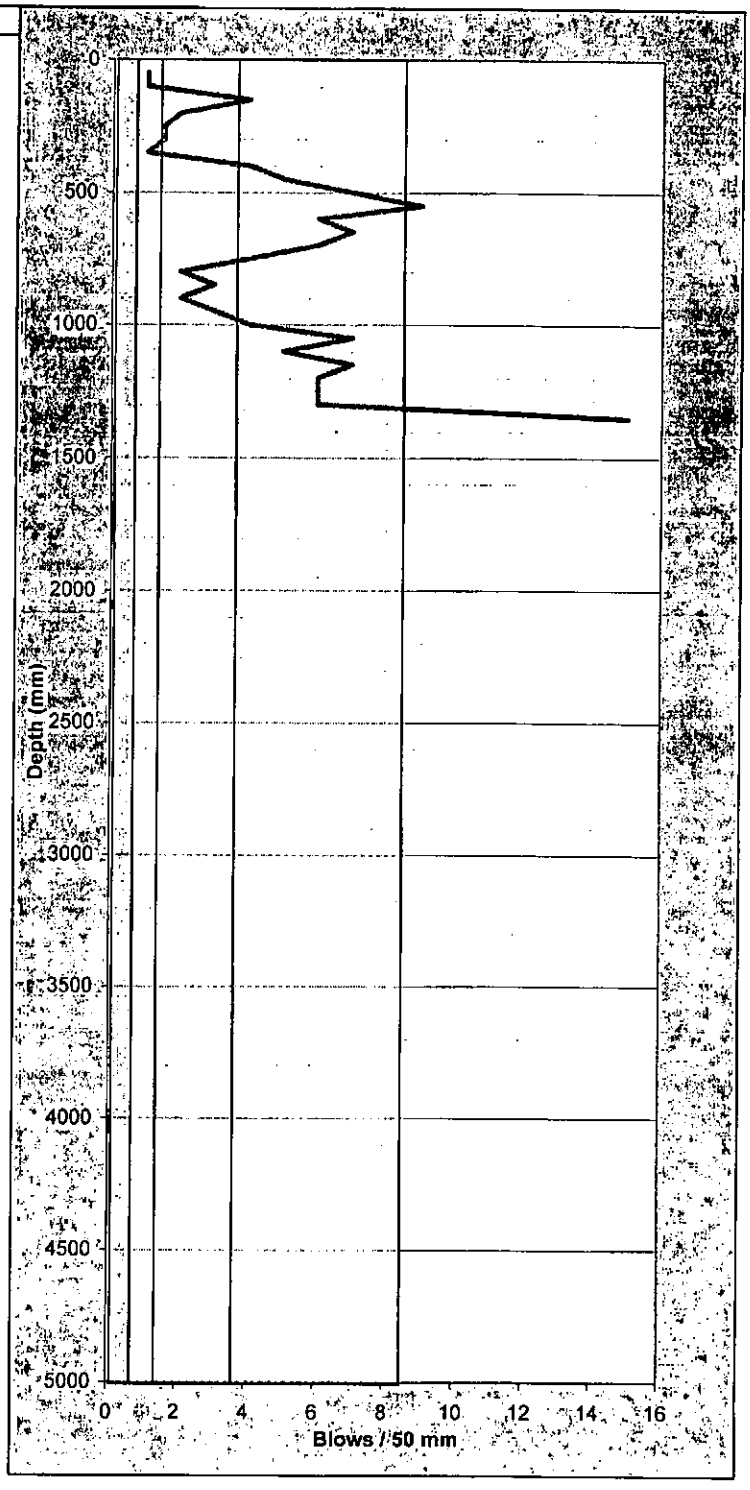
SCALA PENETROMETER LOG

Job No:	*81069.010*	Date:	*26/01/2006*	Test No.	*SC5/2*
Project:	*Tasman Heights BRJV*	Operated by:	*CJWH*		
Location:	*Lot 5 Istana Place, Nelson*	Logged by:	*CJWH*	Sheet	*1*
Position:	*Refer Site Plan*	Checked by:		of	*1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	4	2650	
200	2	2700	
250	1.5	2750	
300	1.5	2800	
350	1	2850	
400	4	2900	
450	5	2950	
500	7	3000	
550	9	3050	
600	6	3100	
650	7	3150	
700	6	3200	
750	4	3250	
800	2	3300	
850	3	3350	
900	2	3400	
950	3	3450	
1000	4	3500	
1050	7	3550	
1100	5	3600	
1150	7	3650	
1200	6	3700	
1250	6	3750	
1300	6	3800	
1350	15	3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
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Fax: (03) 546 7619

SCALA PENETROMETER LOG

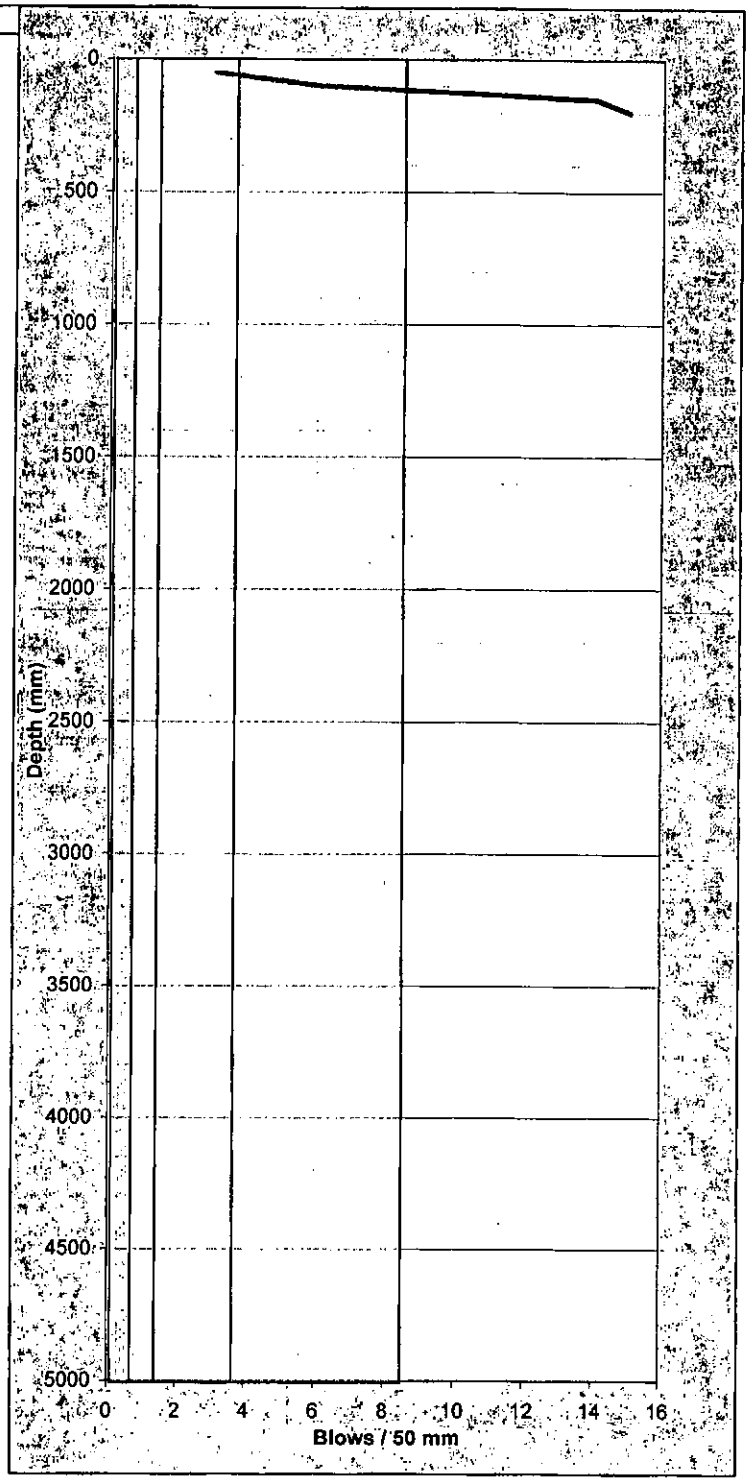
Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 5 Istana Place, Nelson*
Position: *Refer Site Plan*

Date: *26/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: *T C*

Test No. *SC5/3*
Sheet *1*
of *1*

mm Driven	No. of Blows
50	3
100	6
150	14
200	15
250	refusal
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	
1050	
1100	
1150	
1200	
1250	
1300	
1350	
1400	
1450	
1500	
1550	
1600	
1650	
1700	
1750	
1800	
1850	
1900	
1950	
2000	
2050	
2100	
2150	
2200	
2250	
2300	
2350	
2400	
2450	
2500	

mm Driven	No. of Blows
2550	
2600	
2650	
2700	
2750	
2800	
2850	
2900	
2950	
3000	
3050	
3100	
3150	
3200	
3250	
3300	
3350	
3400	
3450	
3500	
3550	
3600	
3650	
3700	
3750	
3800	
3850	
3900	
3950	
4000	
4050	
4100	
4150	
4200	
4250	
4300	
4350	
4400	
4450	
4500	
4550	
4600	
4650	
4700	
4750	
4800	
4850	
4900	
4950	
5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

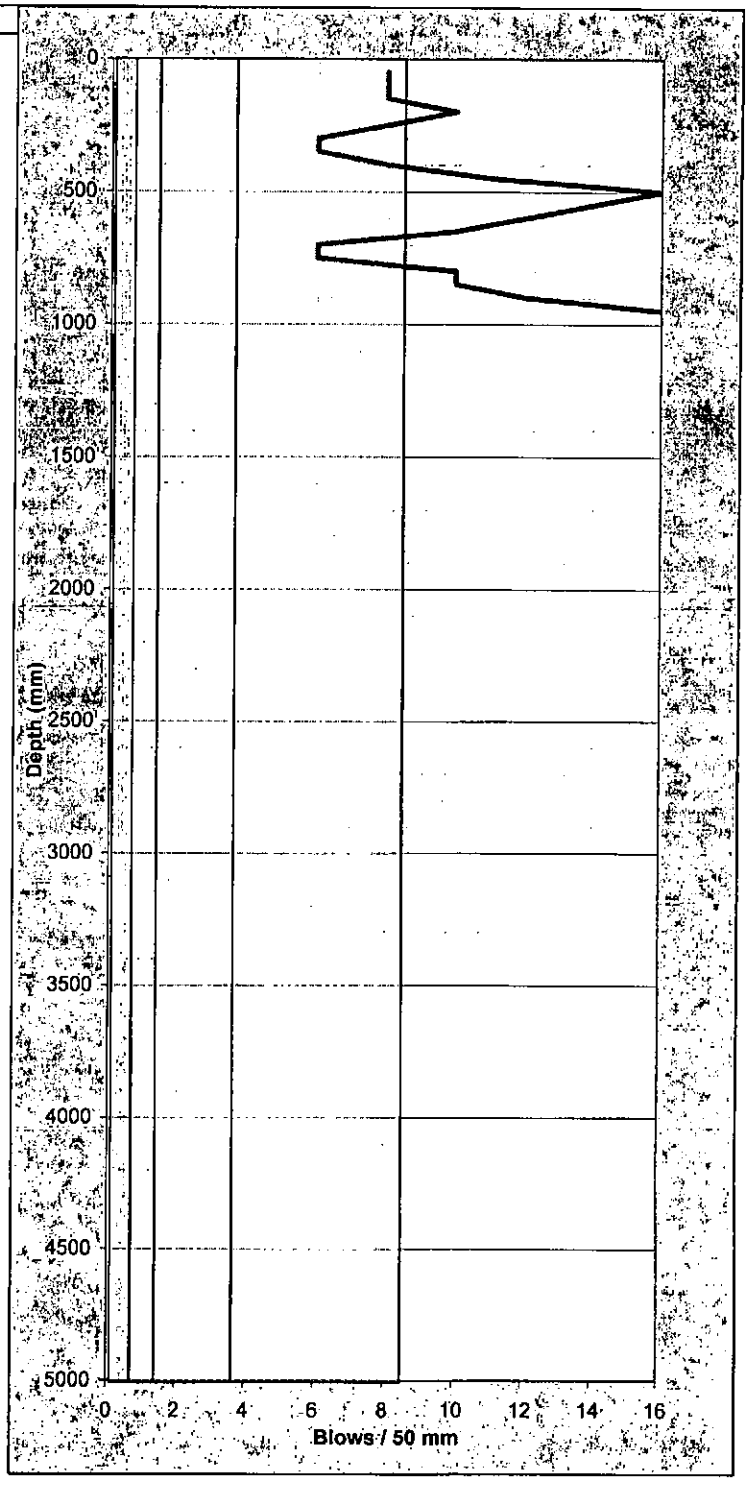
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 5 Istana Place, Nelson*
Position: *Refer Site Plan*

Date: *28.02.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: TC

Test No. *SC5/3a*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	8	2550	
100	8	2600	
150	8	2650	
200	10	2700	
250	8	2750	
300	6	2800	
350	6	2850	
400	8	2900	
450	11	2950	
500	16	3000	
550	14	3050	
600	12	3100	
650	10	3150	
700	6	3200	
750	6	3250	
800	10	3300	
850	10	3350	
900	12	3400	
950	16	3450	
1000	Refusal	3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

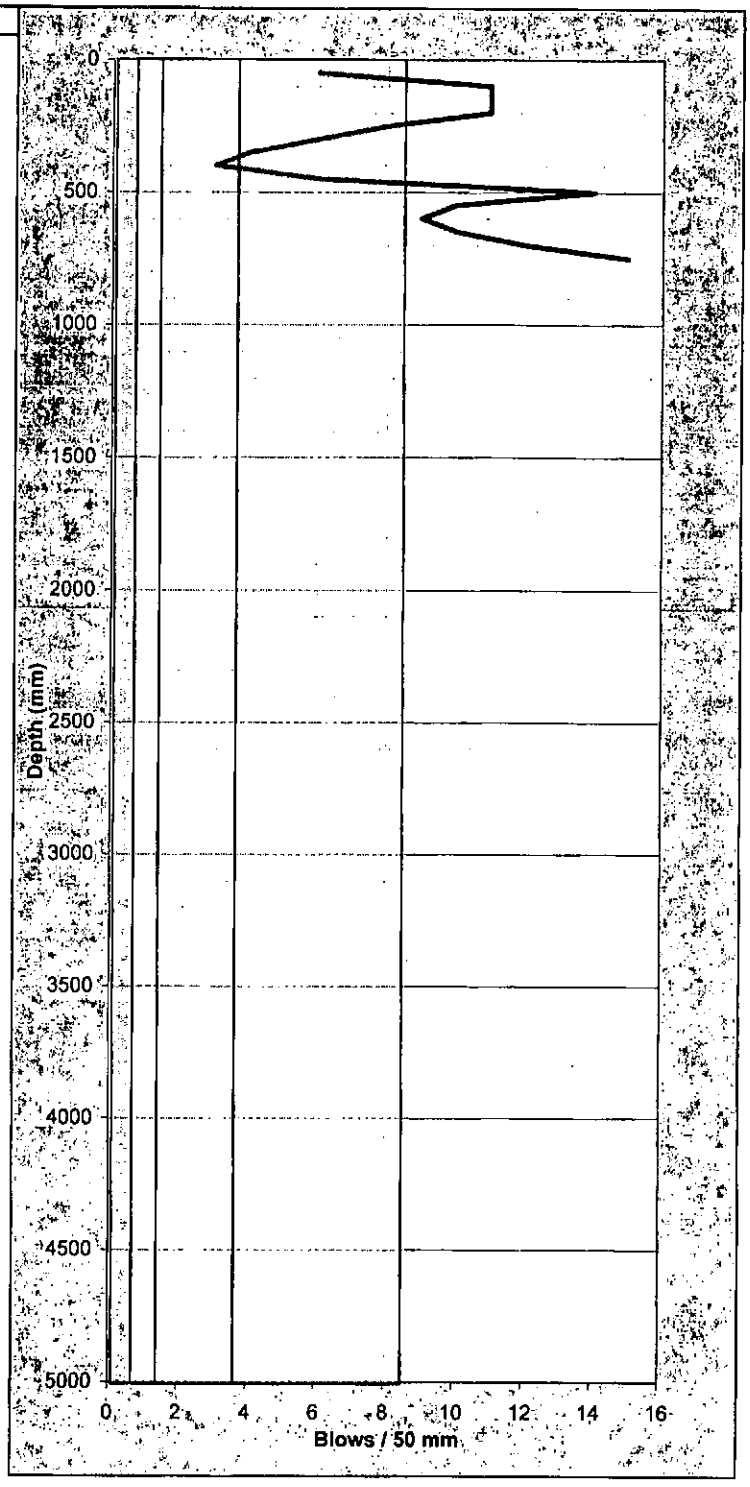
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 5 Istana Place, Nelson*
Position: *Refer Site Plan*

Date: *26/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC5/4***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	6	2550	
100	11	2600	
150	11	2650	
200	11	2700	
250	8	2750	
300	6	2800	
350	4	2850	
400	3	2900	
450	6	2950	
500	14	3000	
550	10	3050	
600	9	3100	
650	10	3150	
700	12	3200	
750	15	3250	
800	refusal	3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

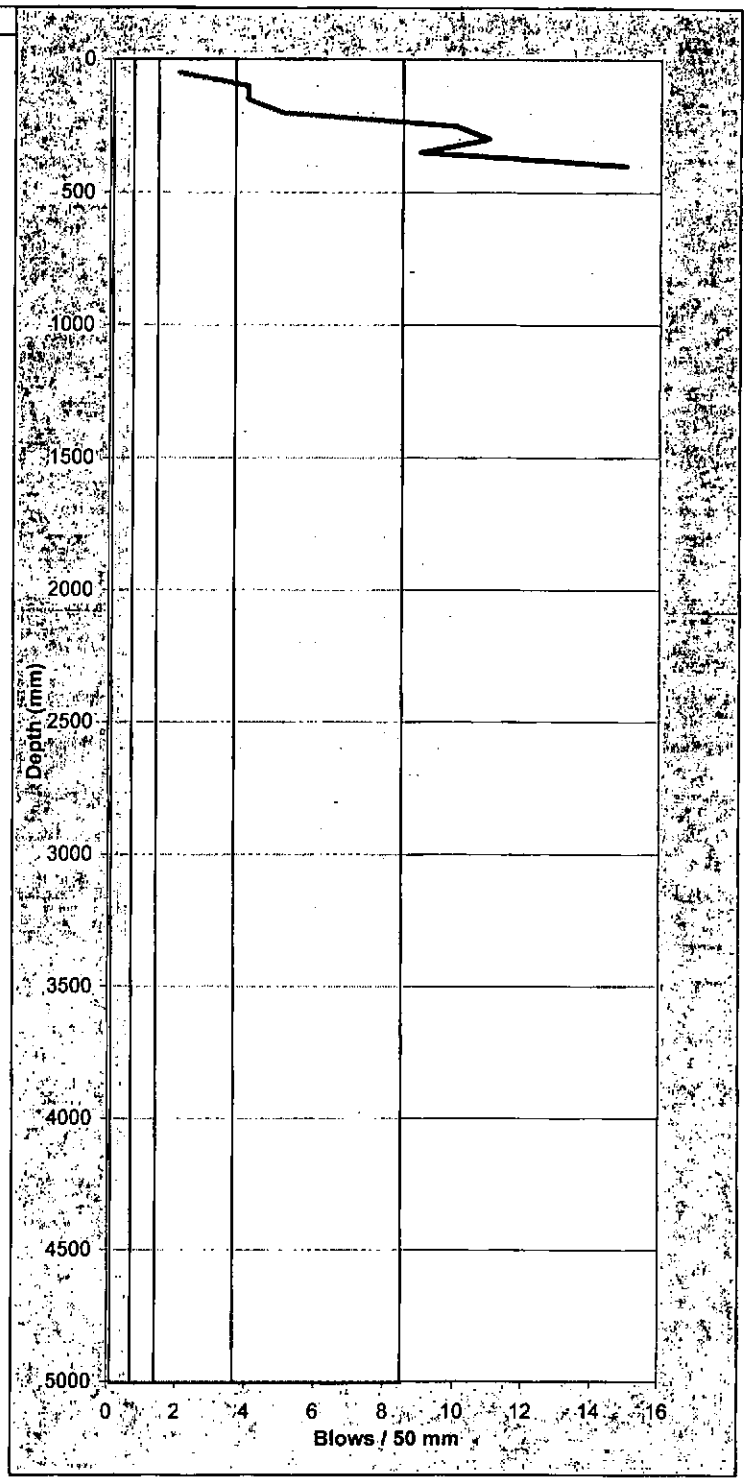
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 6 Istana Place, Nelson*
Position: *Refer Site Plan*

Date: *26/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: *[illegible]*

Test No. ***SC6/1***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	4	2600	
150	4	2650	
200	5	2700	
250	10	2750	
300	11	2800	
350	9	2850	
400	15	2900	
450	refusal	2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
P O Box 1009
NELSON
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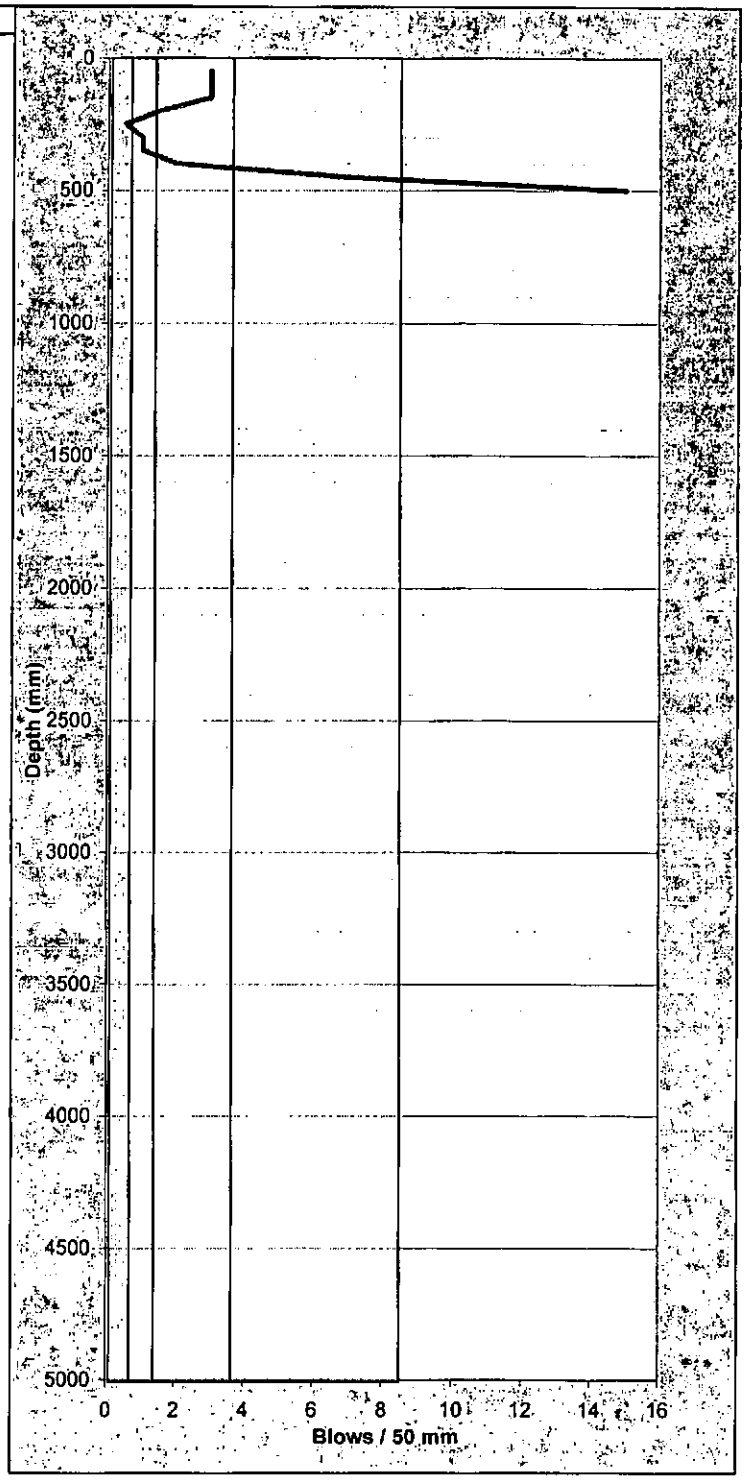
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No:	*81069.010*	Date:	*26/01/2006*	Test No.	*SC6/2*
Project:	*Tasman Heights BRJV*	Operated by:	*CJWH*		
Location:	*Lot 6 Istana Place, Nelson*	Logged by:	*CJWH*	Sheet	*1*
Position:	*Refer Site Plan*	Checked by:		of	*1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	3	2600	
150	3	2650	
200	1.5	2700	
250	0.5	2750	
300	1	2800	
350	1	2850	
400	2	2900	
450	7	2950	
500	15	3000	
550	refusal	3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

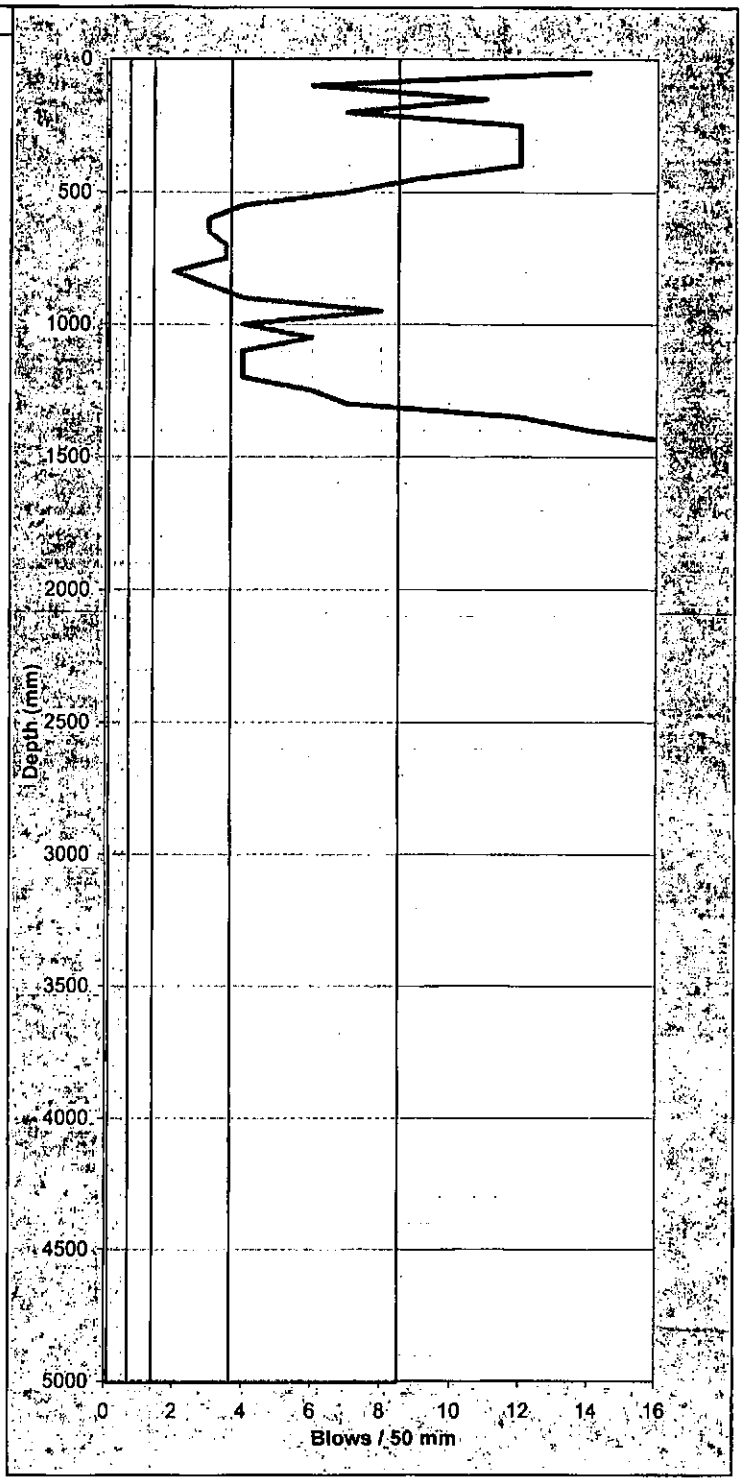
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 6 Istana Place, Nelson*
Position: *Refer Site Plan*

Date: *28.02.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *I—C*

Test No. *SC6/2a*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	14	2550	
100	6	2600	
150	11	2650	
200	7	2700	
250	12	2750	
300	12	2800	
350	12	2850	
400	12	2900	
450	9	2950	
500	7	3000	
550	4	3050	
600	3	3100	
650	3	3150	
700	3.5	3200	
750	3.5	3250	
800	2	3300	
850	3	3350	
900	4	3400	
950	8	3450	
1000	4	3500	
1050	6	3550	
1100	4	3600	
1150	4	3650	
1200	4	3700	
1250	6	3750	
1300	7	3800	
1350	12	3850	
1400	14	3900	
1450	17	3950	
1500	Refusal	4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
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SCALA PENETROMETER LOG

Job No:	*81069.010*	Date:	*26/01/2006*	**Test No.**	***SC6/3***
Project:	*Tasman Heights BRJV*	Operated by:	*CJWH*		
Location:	*Lot 6 Istana Place, Nelson*	Logged by:	*CJWH*	**Sheet**	***1***
Position:	*Refer Site Plan*	Checked by:		**of**	***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	4	2600	
150	2	2650	
200	2	2700	
250	1	2750	
300	1	2800	
350	1	2850	
400	1	2900	
450	0.33	2950	
500	0.33	3000	
550	0.33	3050	
600	1	3100	
650	6	3150	
700	15	3200	
750	refusal	3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
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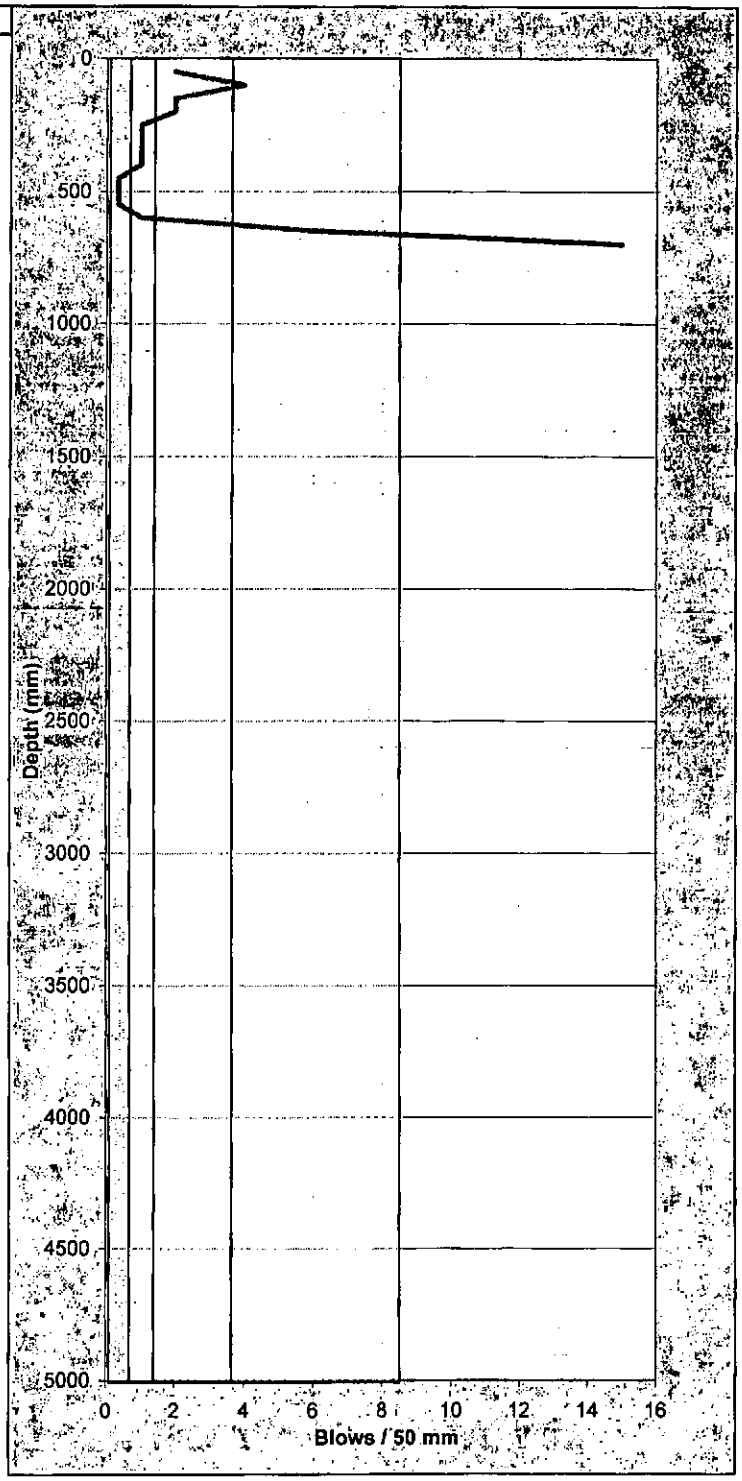
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 6 Istana Place, Nelson*
Position: *Refer Site Plan*

Date: *26/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. *SC6/4*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*1*	2550	
100	*0.33*	2600	
150	*0.33*	2650	
200	*0.33*	2700	
250	*0.33*	2750	
300	*0.33*	2800	
350	*0.33*	2850	
400	*2*	2900	
450	*5*	2950	
500	*5*	3000	
550	*10*	3050	
600	*15*	3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
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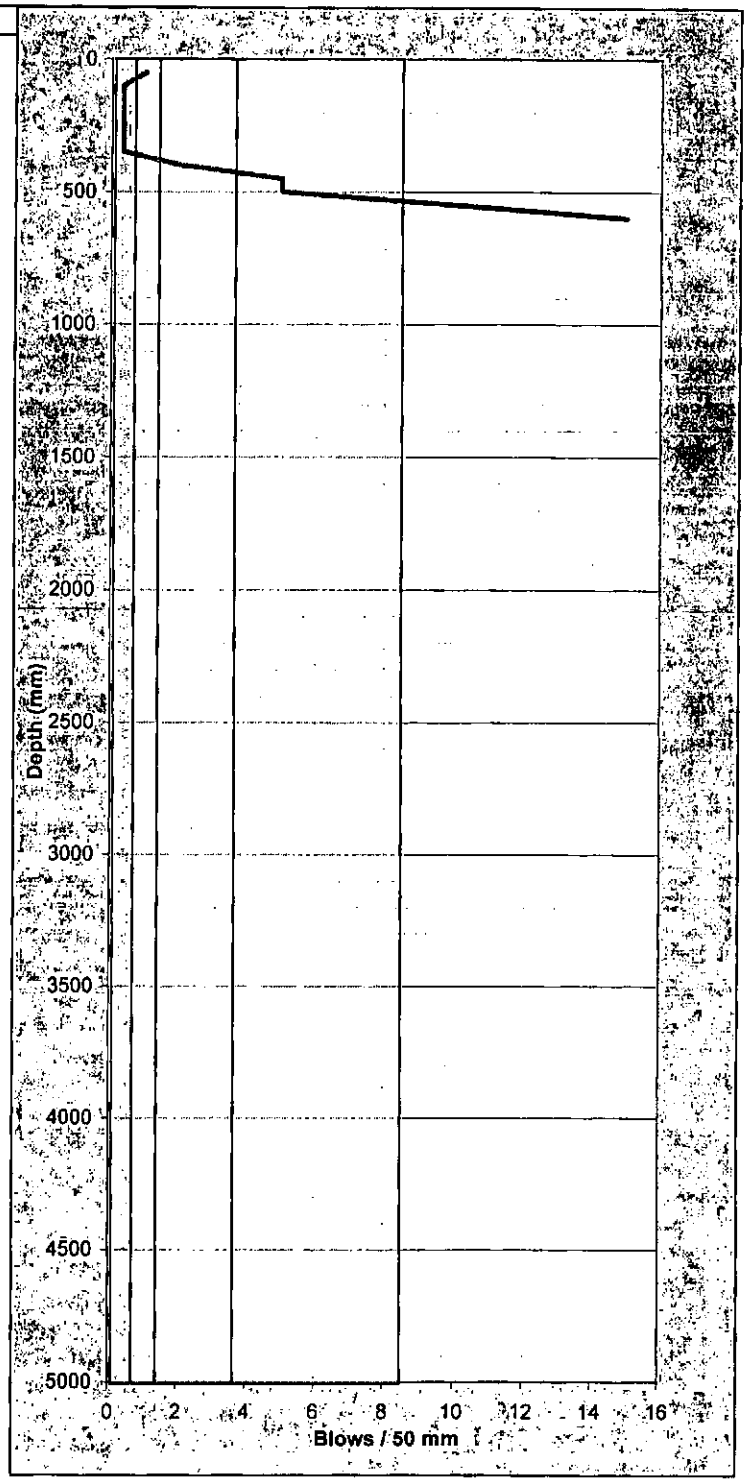
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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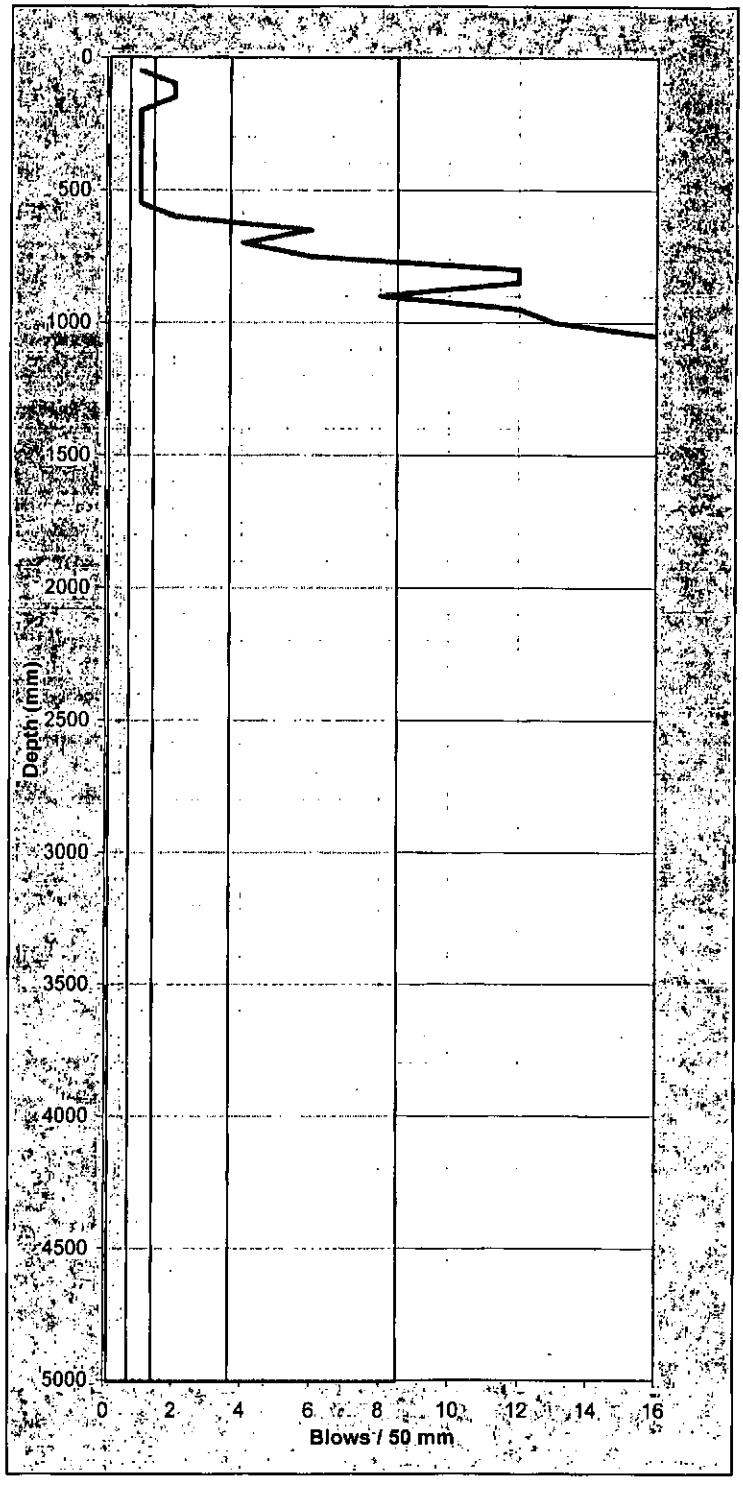
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 7 Istana Place, Nelson*
Position: *Refer site plan*

Date: *25/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: *I —C*

Test No. *SC7/1*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	2	2600	
150	2	2650	
200	1	2700	
250	1	2750	
300	1	2800	
350	1	2850	
400	1	2900	
450	1	2950	
500	1	3000	
550	1	3050	
600	2	3100	
650	6	3150	
700	4	3200	
750	6	3250	
800	12	3300	
850	12	3350	
900	8	3400	
950	12	3450	
1000	13	3500	
1050	16	3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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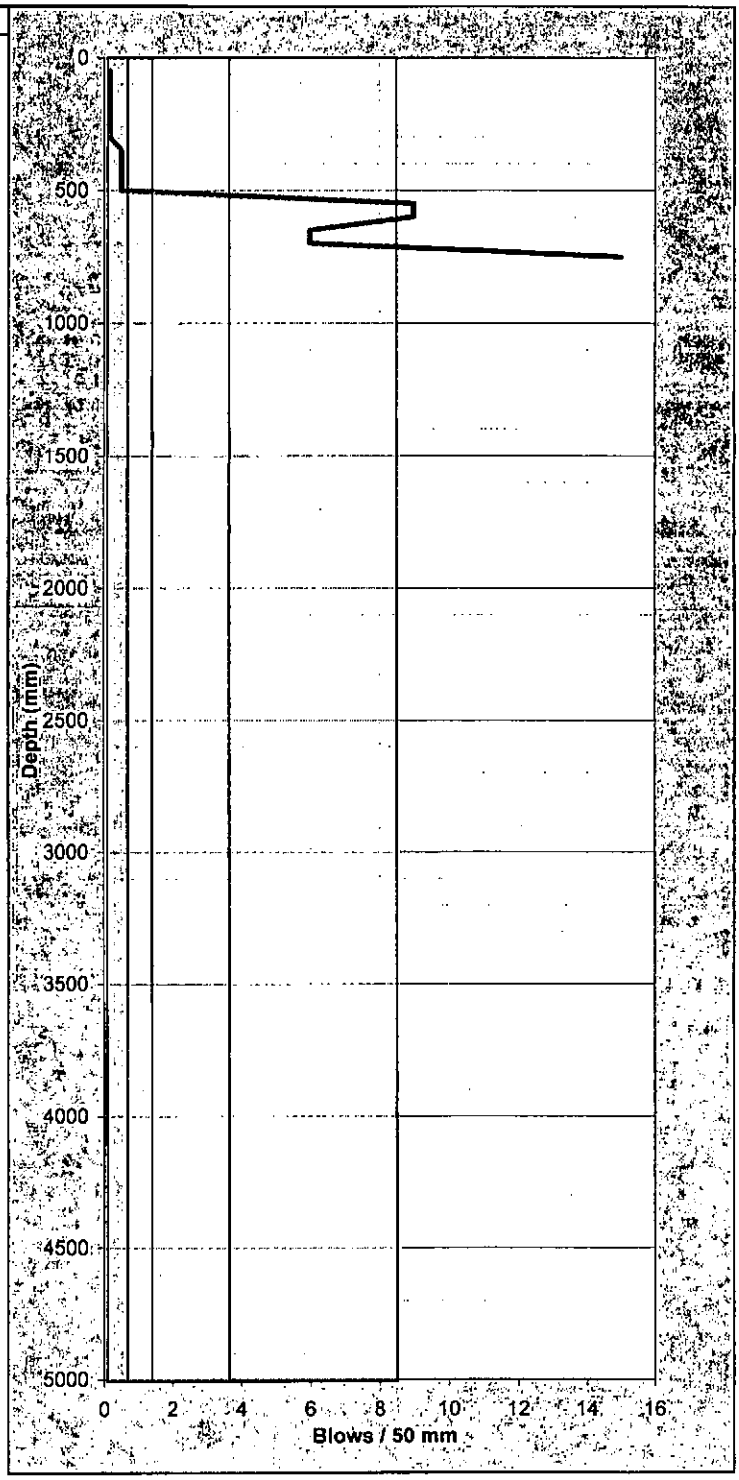
SCALA PENETROMETER LOG

Job No:	*81069.010*	Date:	*25/01/2006*	**Test No.**	***SC7/2***
Project:	*Tasman Heights BRJV*	Operated by:	*CJWH*		
Location:	*Lot 7 Istana Place, Nelson*	Logged by:	*CJWH*	**Sheet**	***1***
Position:	*Refer site plan*	Checked by:		**of**	***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*0.17*	2550	
100	*0.17*	2600	
150	*0.17*	2650	
200	*0.17*	2700	
250	*0.17*	2750	
300	*0.17*	2800	
350	*0.5*	2850	
400	*0.5*	2900	
450	*0.5*	2950	
500	*0.5*	3000	
550	*9*	3050	
600	*9*	3100	
650	*6*	3150	
700	*6*	3200	
750	*15*	3250	
800	refusal	3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

Top 300mm: very moist clayey silt

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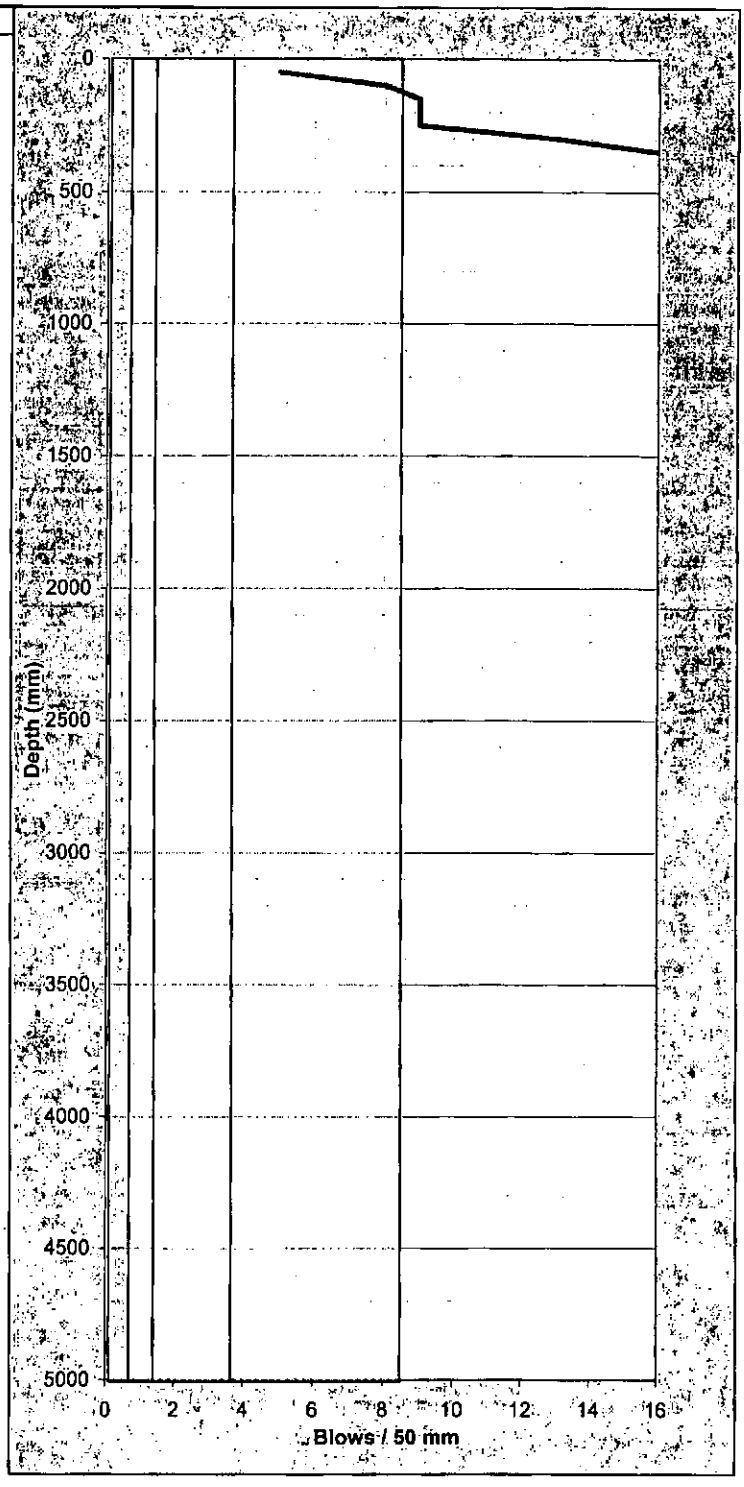
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 7 Istana Place, Nelson*
Position: *Refer site plan*

Date: *25/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC7/3***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	5	2550	
100	8	2600	
150	9	2650	
200	9	2700	
250	9	2750	
300	13	2800	
350	16	2850	
400	refusal	2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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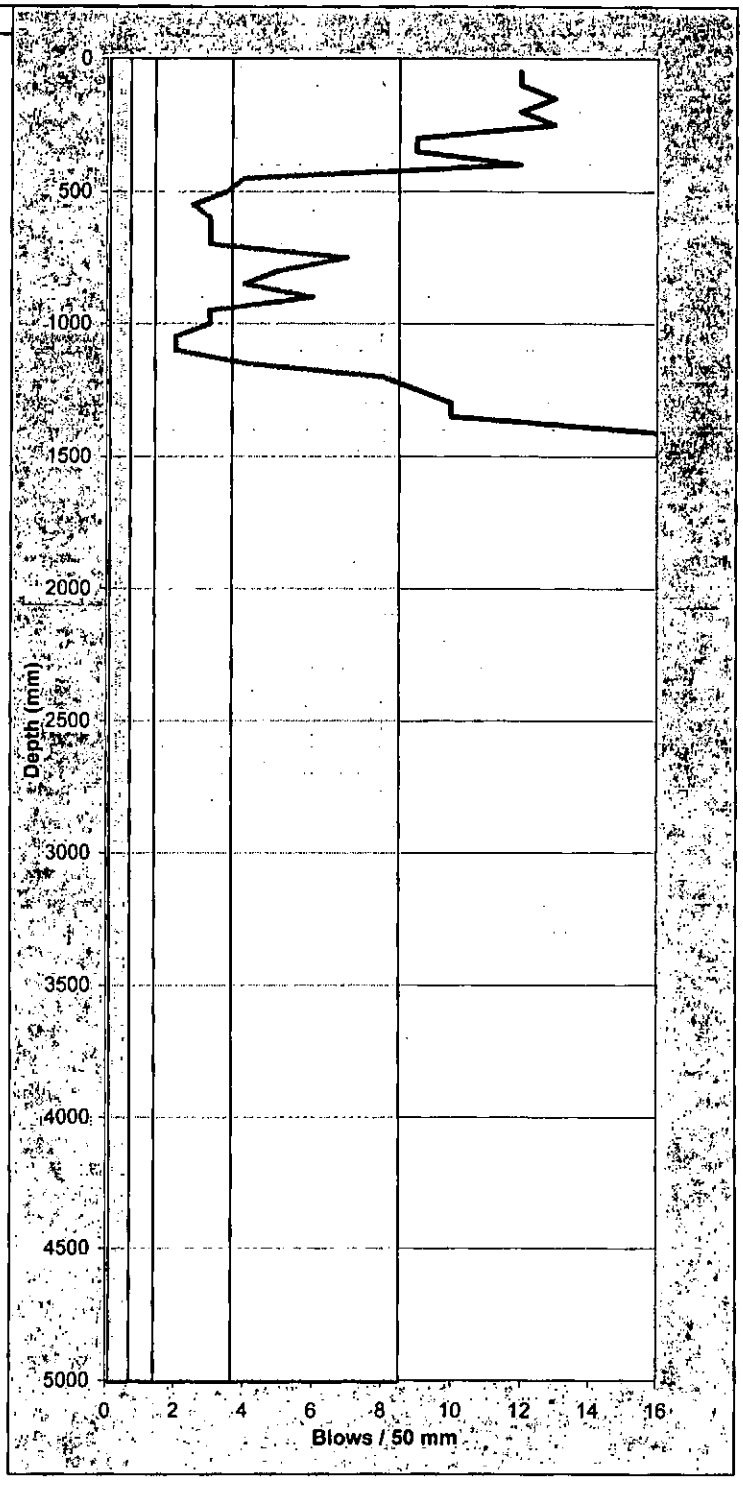
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 7 Istana Place, Nelson*
Position: *Refer site plan*

Date: *28.02.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: T—C

Test No. *SC7/4*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	12	2550	
100	12	2600	
150	13	2650	
200	12	2700	
250	13	2750	
300	9	2800	
350	9	2850	
400	12	2900	
450	4	2950	
500	3.5	3000	
550	2.5	3050	
600	3	3100	
650	3	3150	
700	3	3200	
750	7	3250	
800	5	3300	
850	4	3350	
900	6	3400	
950	3	3450	
1000	3	3500	
1050	2	3550	
1100	2	3600	
1150	4	3650	
1200	8	3700	
1250	9	3750	
1300	10	3800	
1350	10	3850	
1400	15	3900	
1450	20	3950	
1500	Refusal	4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
P O Box 1009
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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 7 Istana Place, Nelson*
Position: *Refer site plan*

Date: *25/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: *T—C*

Test No. ***SC7/4a***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	4	2550	
100	11	2600	
150	22	2650	
200	refusal	2700	
250		2750	
300		2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
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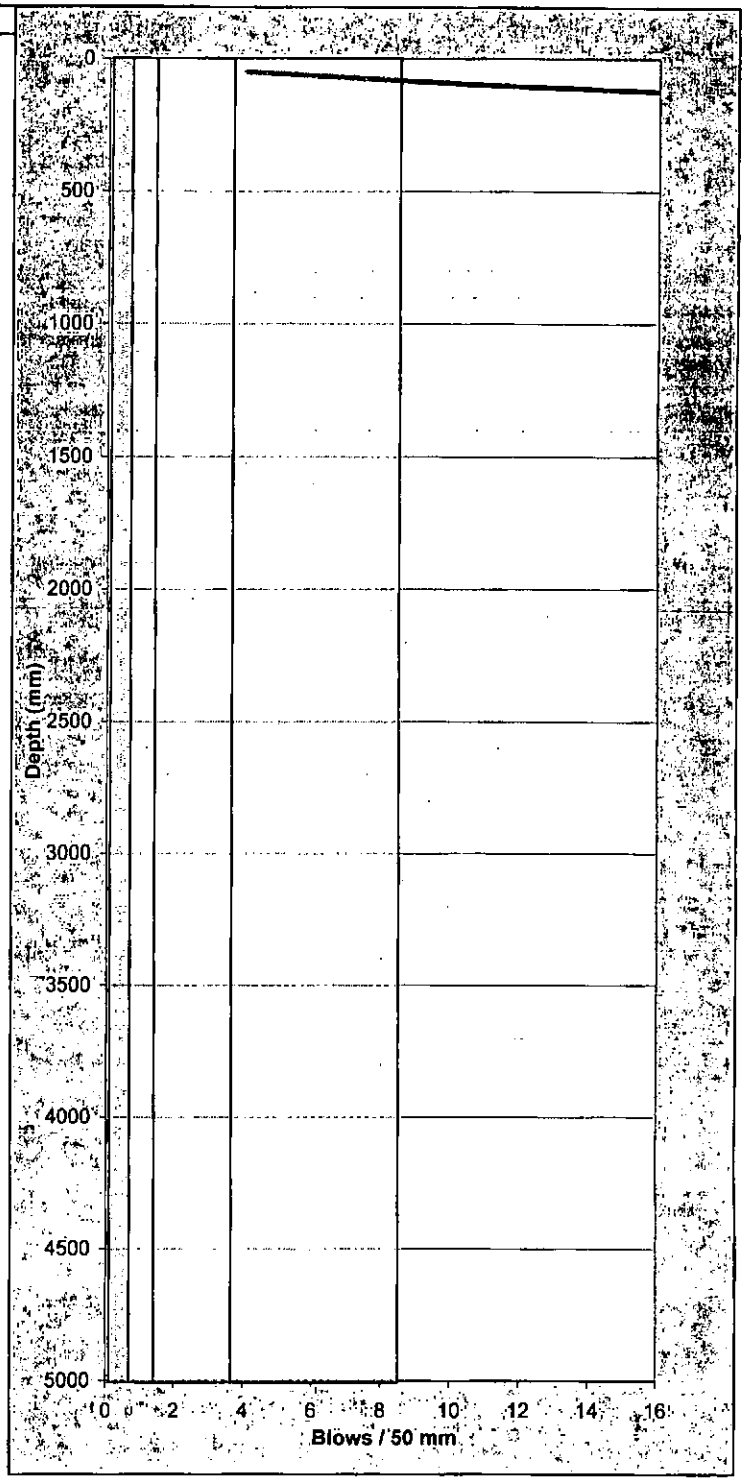
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 25 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC25/1***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*1*	2550	
100	*2*	2600	
150	*6*	2650	
200	*8*	2700	
250	*14*	2750	
300	*15*	2800	
350	refusal	2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
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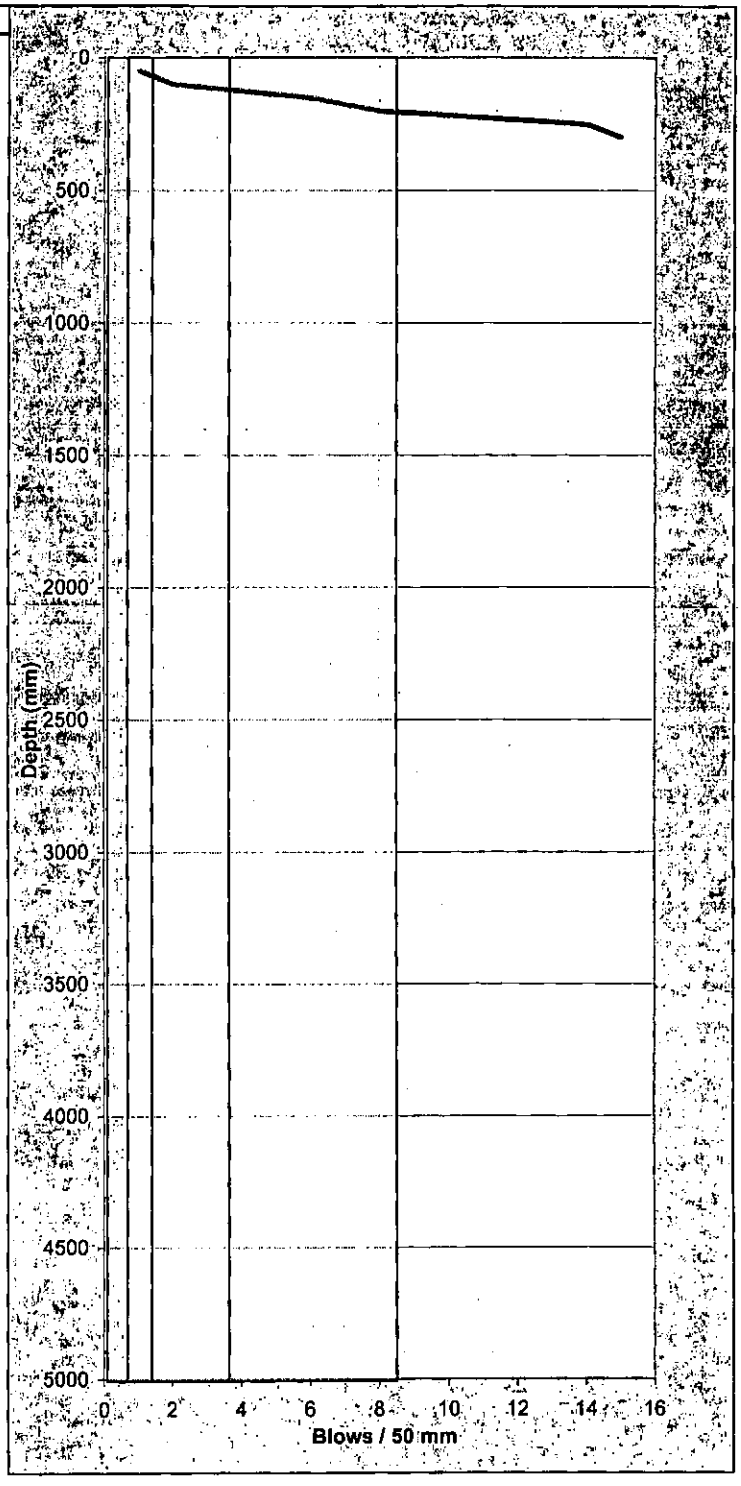
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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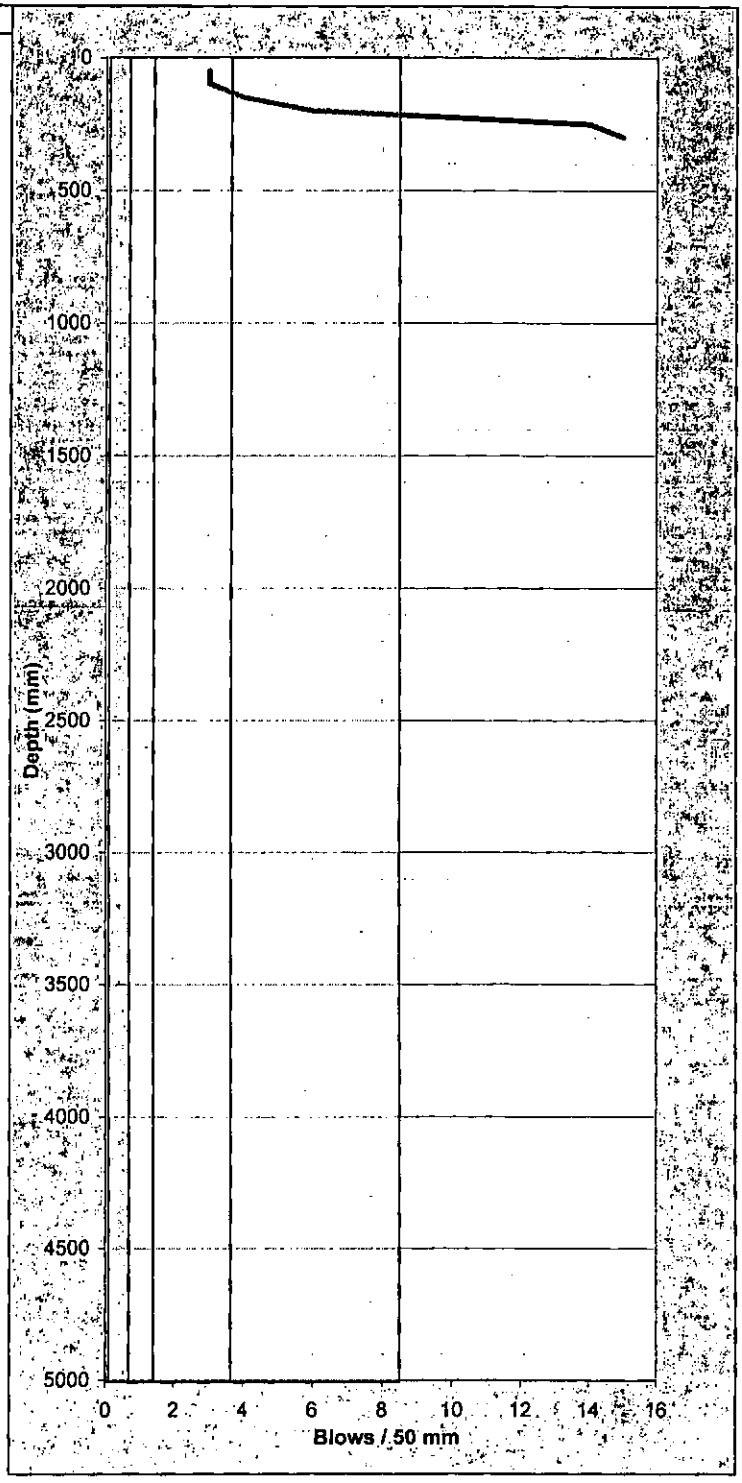
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 25 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: *[illegible]*

Test No. ***SC25/2***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	3	2600	
150	4	2650	
200	6	2700	
250	14	2750	
300	15	2800	
350	refusal	2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

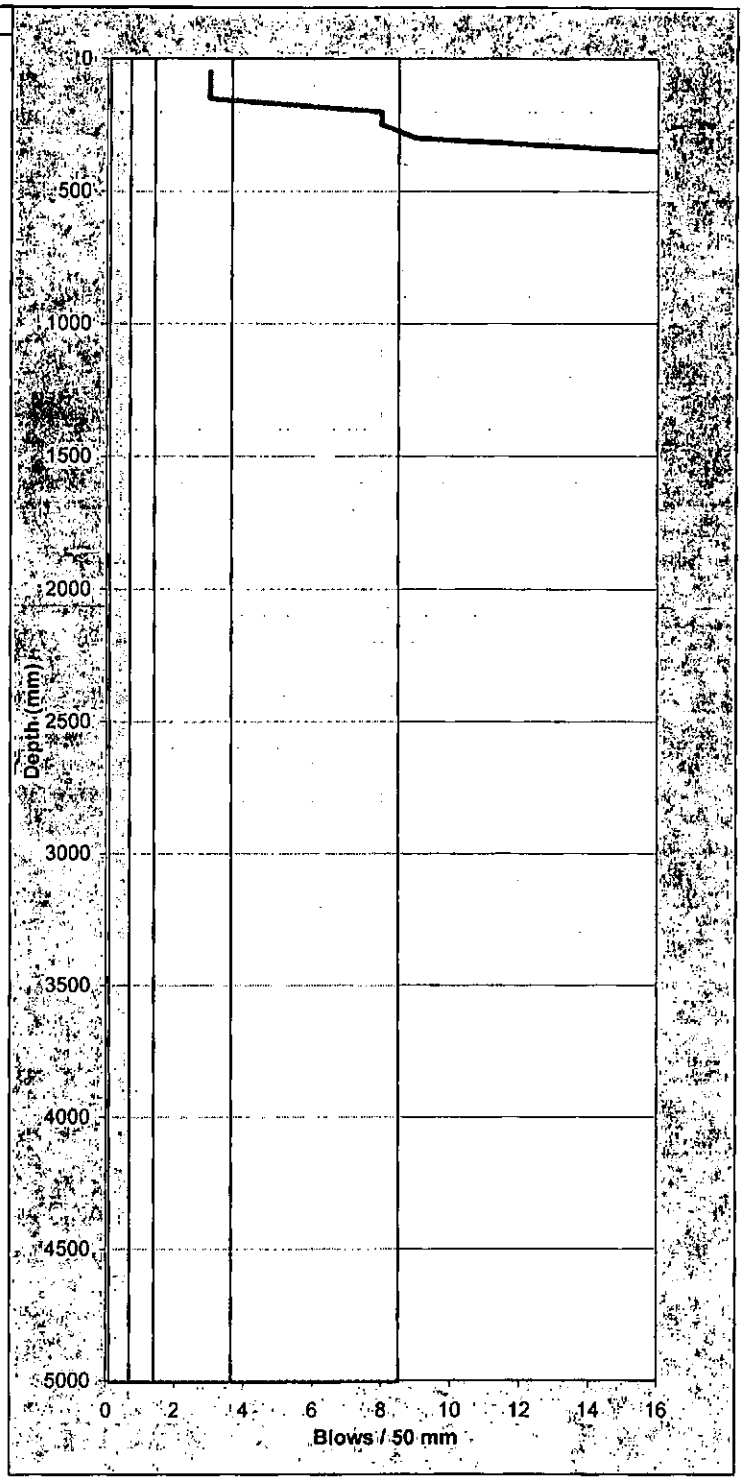
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 25 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *28.02.06*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by:

Test No. ***SC25/2a***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	3	2600	
150	3	2650	
200	8	2700	
250	8	2750	
300	9	2800	
350	16	2850	
400	refusal	2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 25 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: *\— C*

Test No. ***SC25/3***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	3	2600	
150	2.5	2650	
200	2.5	2700	
250	3	2750	
300	2	2800	
350	2	2850	
400	3	2900	
450	17	2950	
500	refusal	3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
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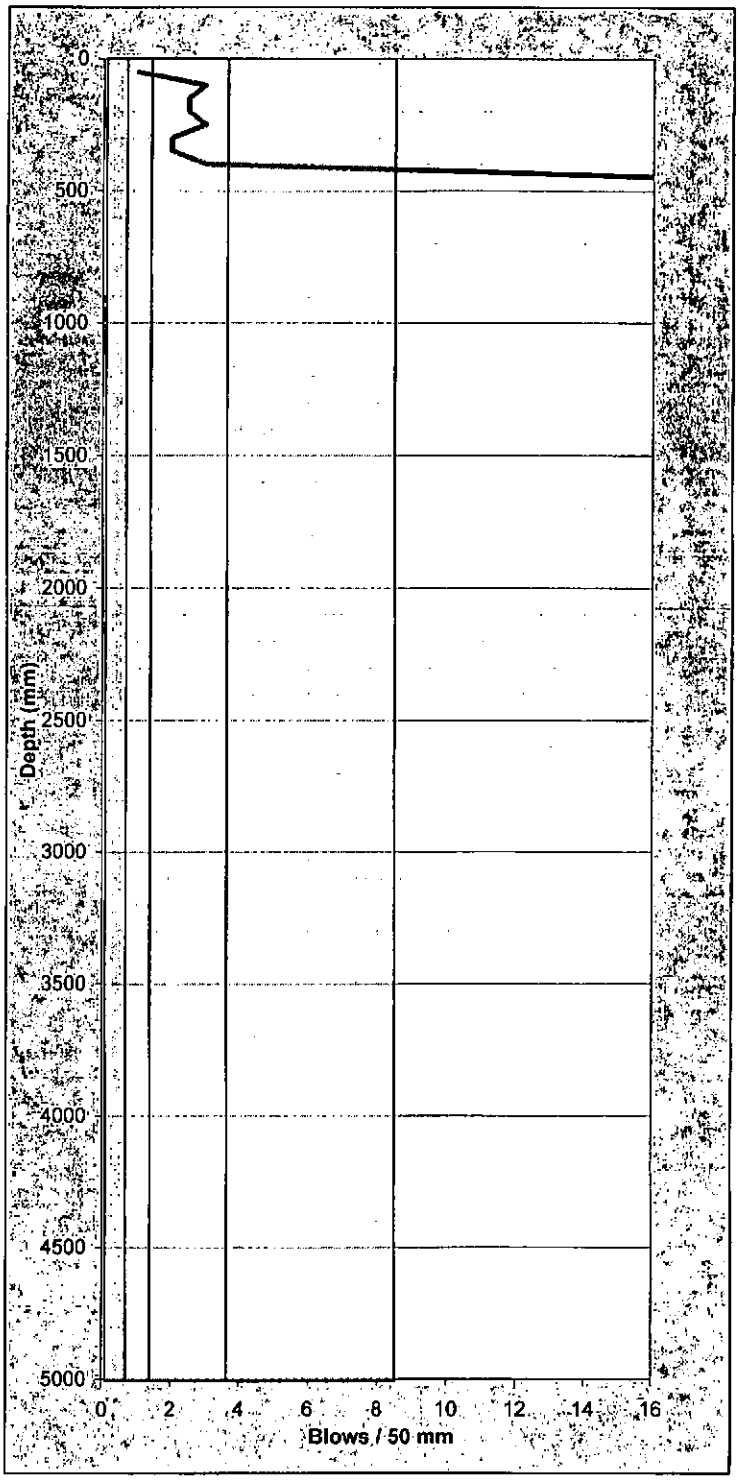
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 25 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *28.02.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by:

Test No. ***SC25/3a***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	1	2600	
150	1	2650	
200	2	2700	
250	1	2750	
300	1	2800	
350	11	2850	
400	16	2900	
450	18	2950	
500	16	3000	
550	refusal	3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
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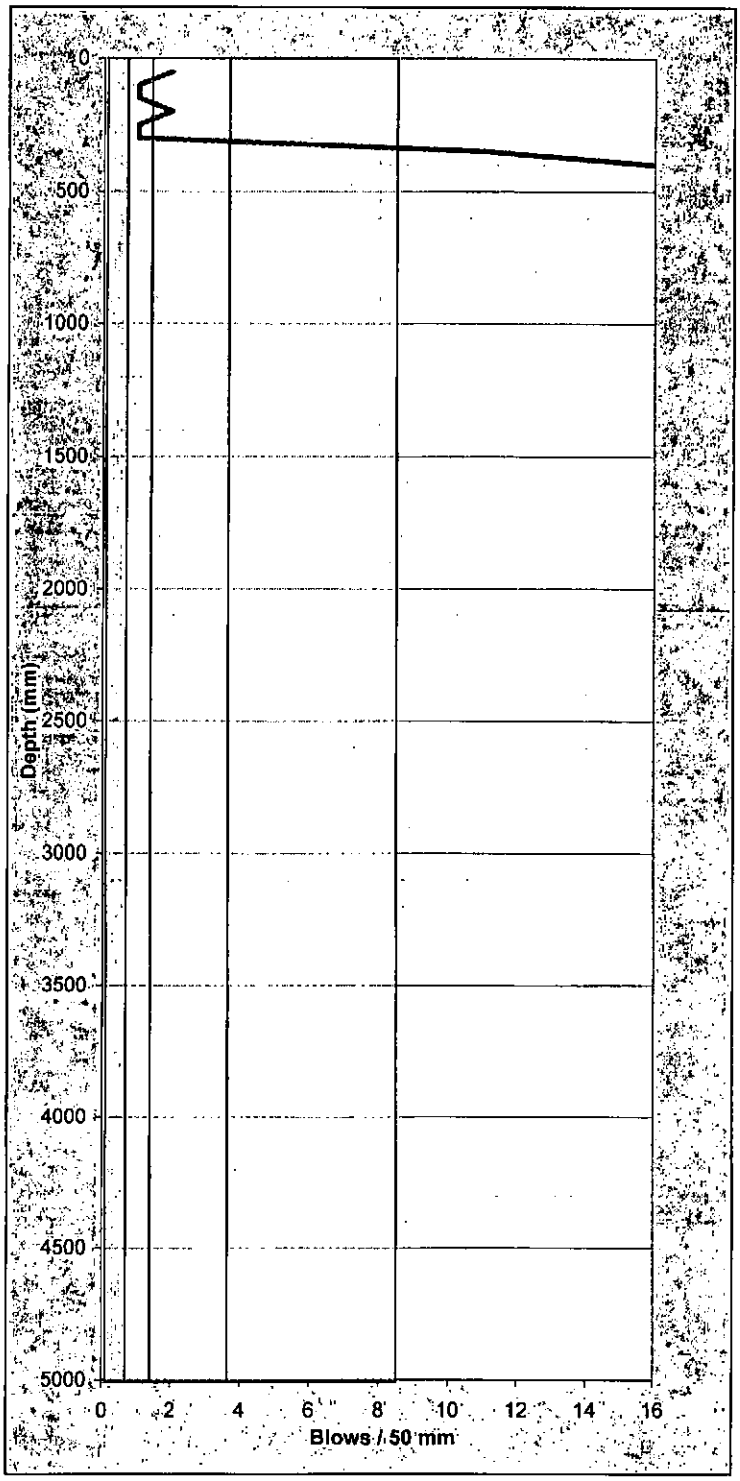
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
P O Box 1009
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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 25 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC25/4***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*1*	2550	
100	*1*	2600	
150	*1*	2650	
200	*1*	2700	
250	*3*	2750	
300	*8*	2800	
350	*9*	2850	
400	*21*	2900	
450	refusal	2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
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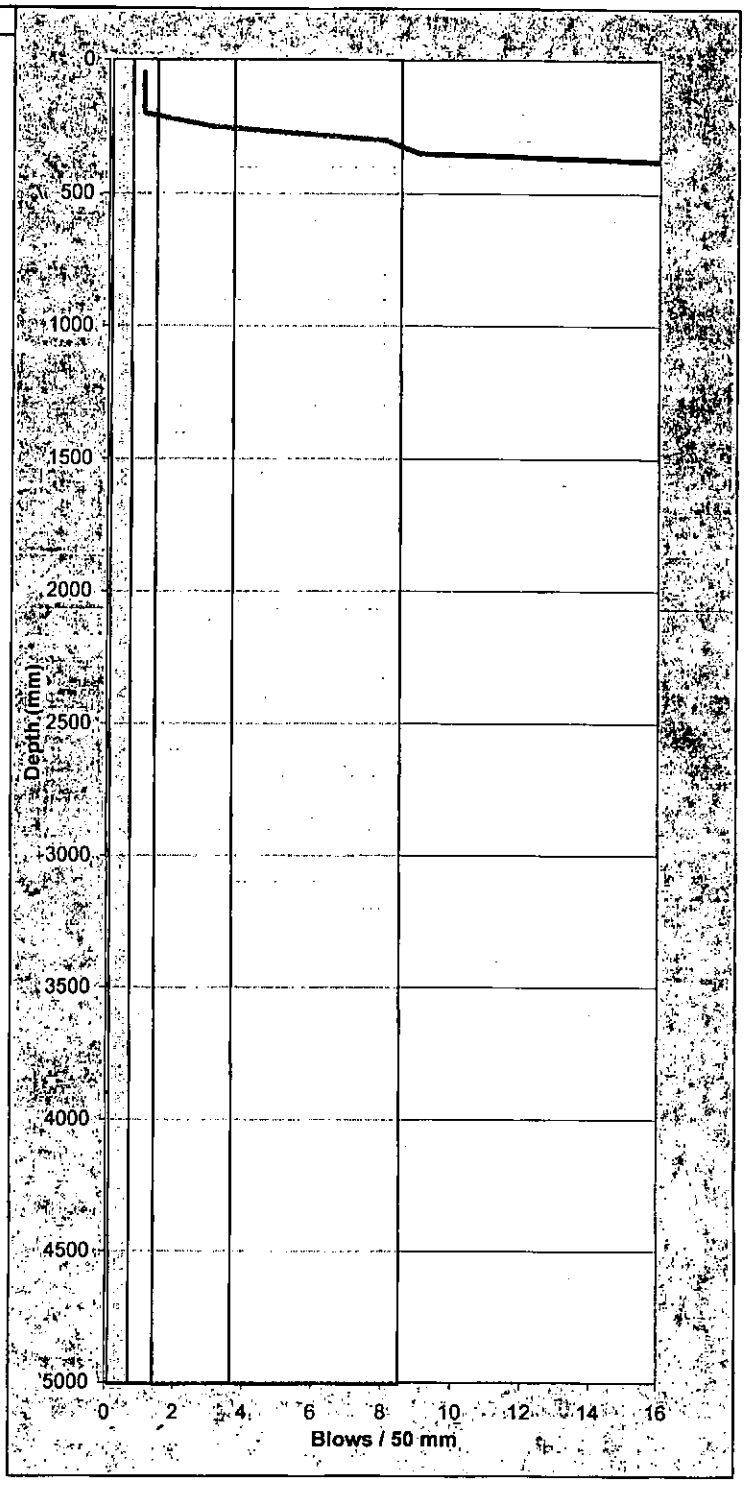
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
P O Box 1009
NELSON
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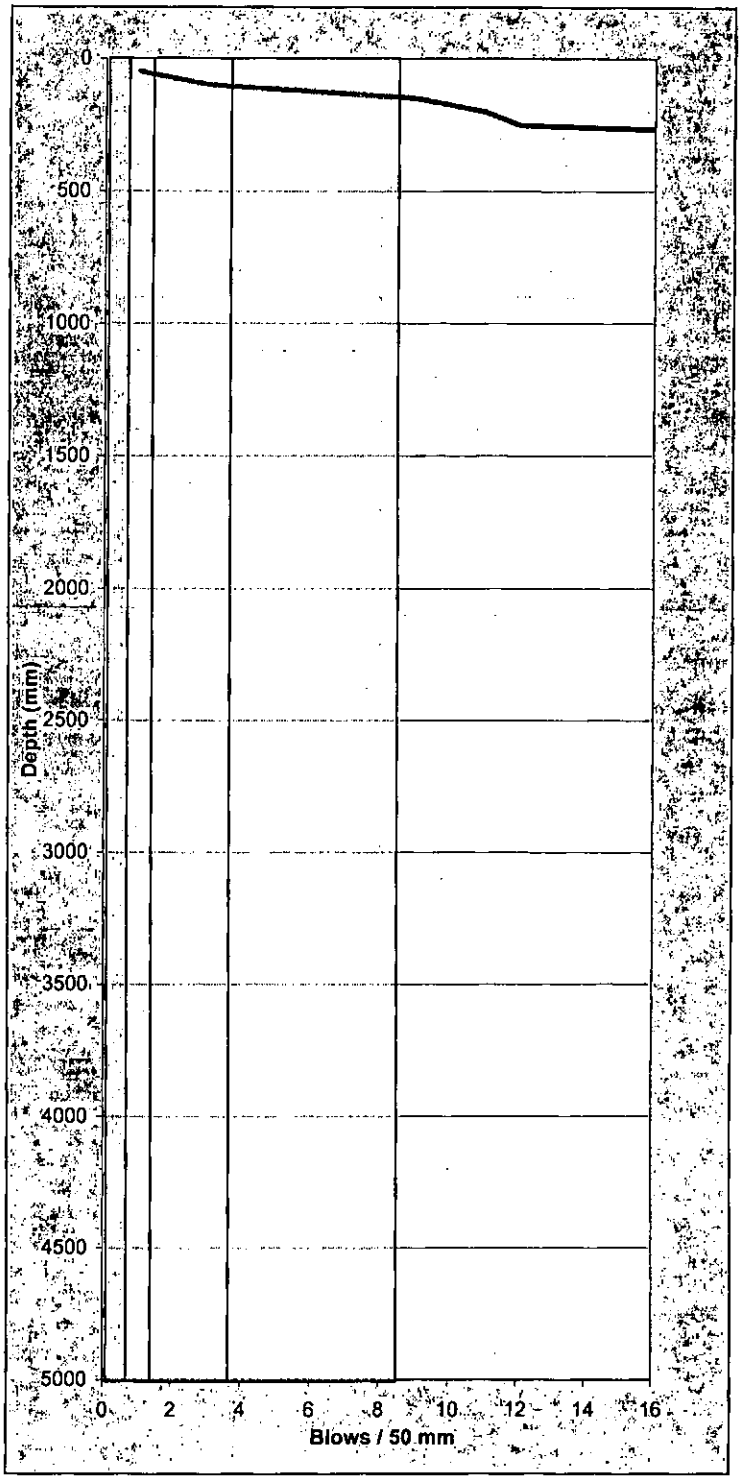
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 26 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: *[illegible]*

Test No. *SC26/1*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	3	2600	
150	9	2650	
200	11	2700	
250	12	2750	
300	24	2800	
350	refusal	2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
P O Box 1009
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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 26 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC26/2***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	2	2650	
200	1	2700	
250	1	2750	
300	2	2800	
350	2.5	2850	
400	3.5	2900	
450	7	2950	
500	20	3000	
550	refusal	3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
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1300		3800	
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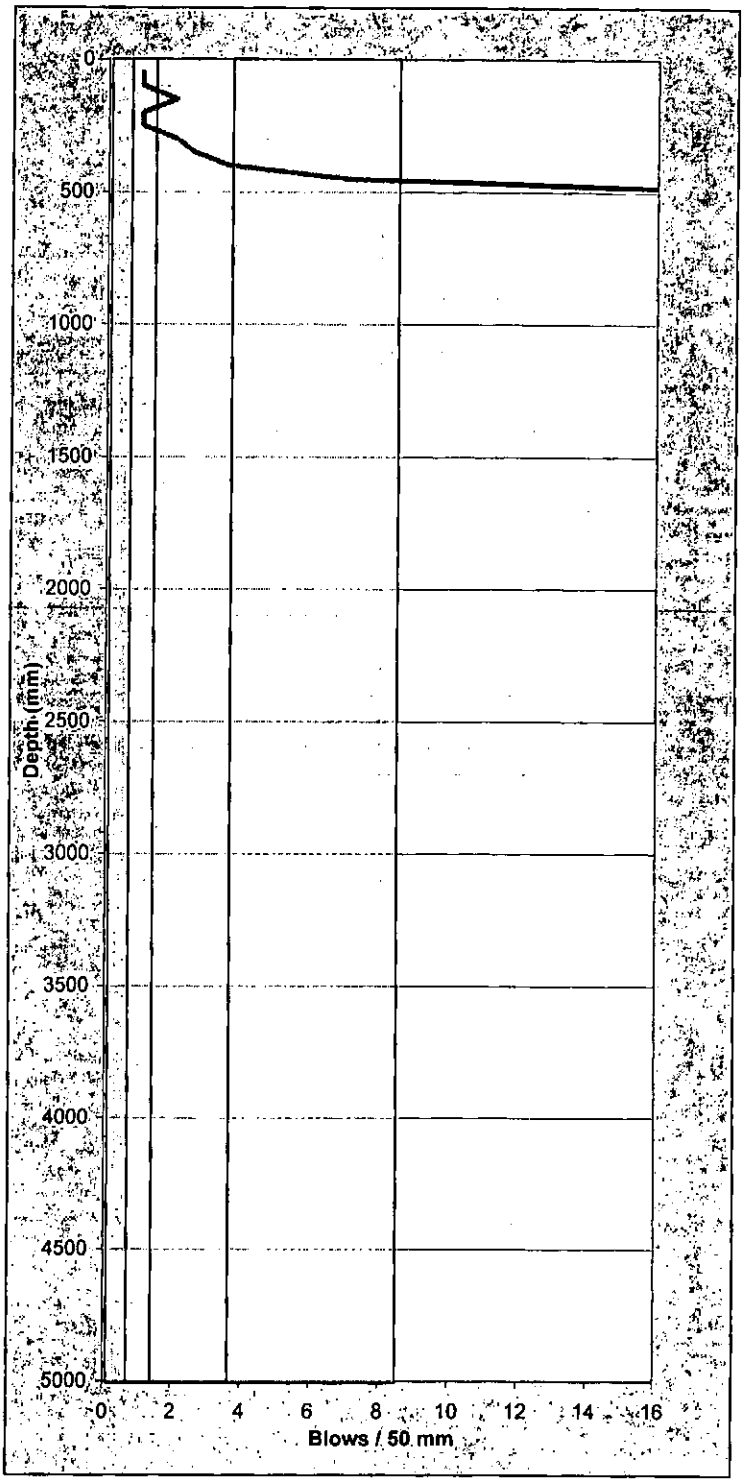
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P.O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

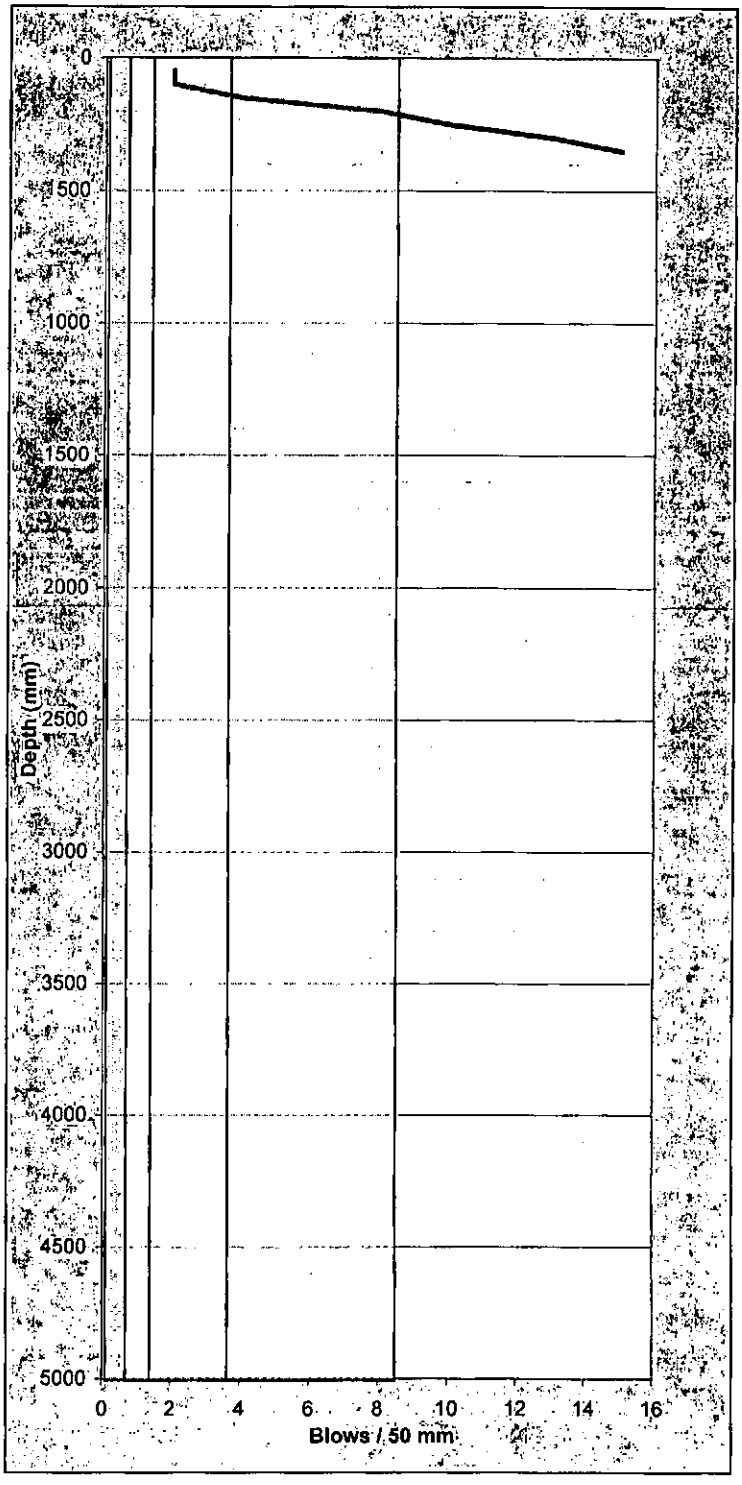
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 26 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: *I—C*

Test No. ***SC26/3***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	2	2600	
150	4	2650	
200	8	2700	
250	10	2750	
300	13	2800	
350	15	2850	
400	refusal	2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 26 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC26/4***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*1*	2550	
100	*2*	2600	
150	*2*	2650	
200	*4*	2700	
250	*4*	2750	
300	*5*	2800	
350	*5*	2850	
400	*5*	2900	
450	*10*	2950	
500	*16*	3000	
550	refusal	3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
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1200		3700	
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1300		3800	
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1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
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1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
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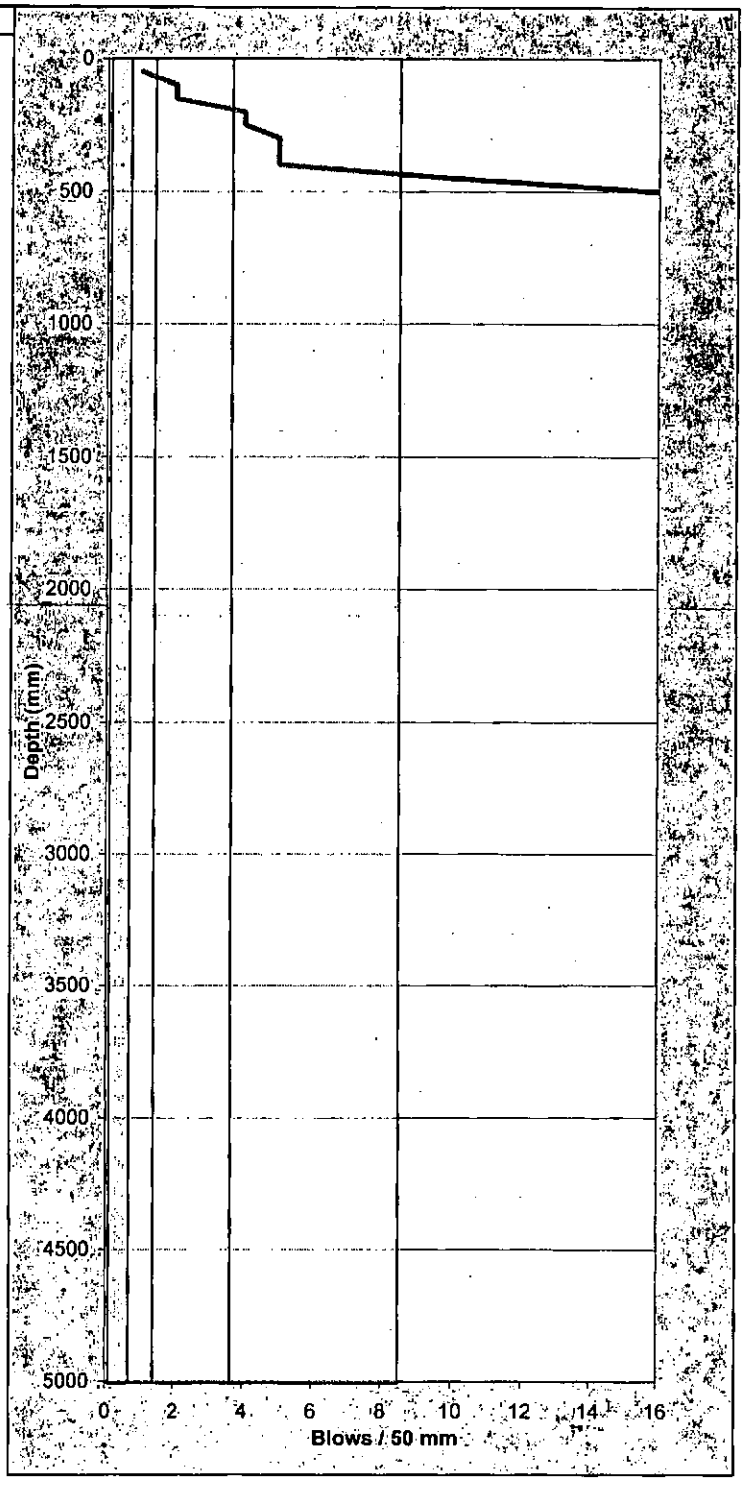
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

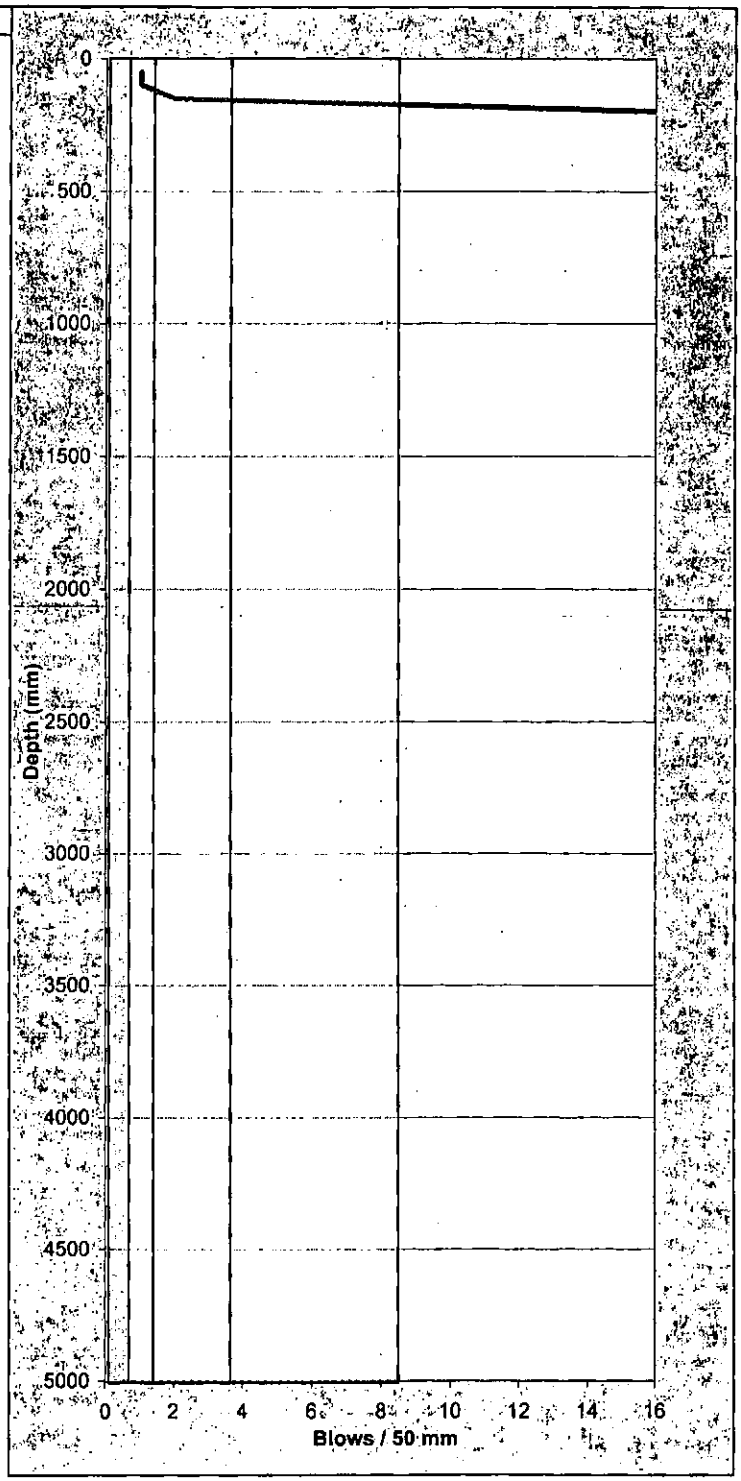
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 27 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: *RC*

Test No. ***SC27/1***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*1*	2550	
100	*1*	2600	
150	*2*	2650	
200	*17*	2700	
250	*20*	2750	
300	refusal	2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
P O Box 1009
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Tel: (03) 546 6339
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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 27 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: *TC*

Test No. ***SC27/2***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*0*	2550	
100	*0*	2600	
150	*2*	2650	
200	*1*	2700	
250	*1*	2750	
300	*5.5*	2800	
350	*10*	2850	
400	*14*	2900	
450	*16*	2950	
500	refusal	3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
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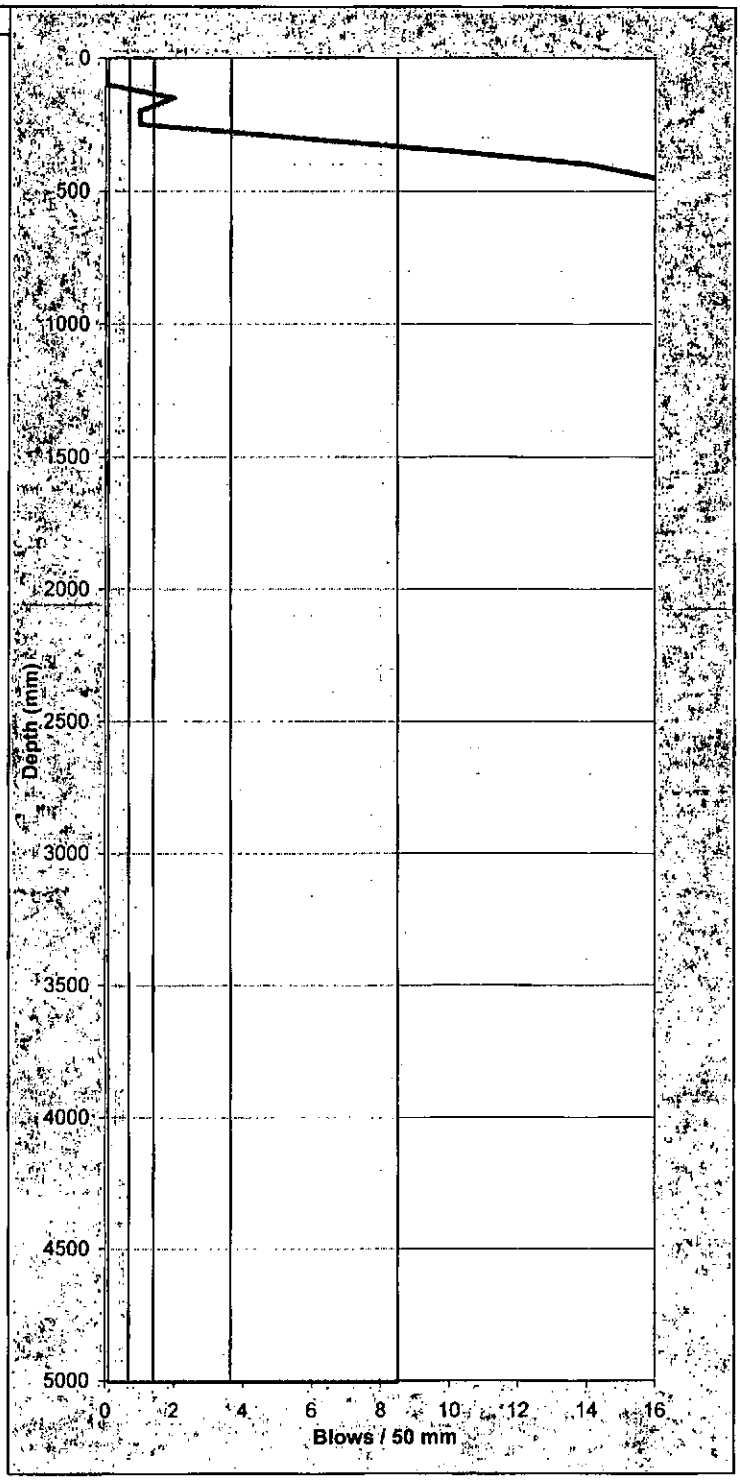
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

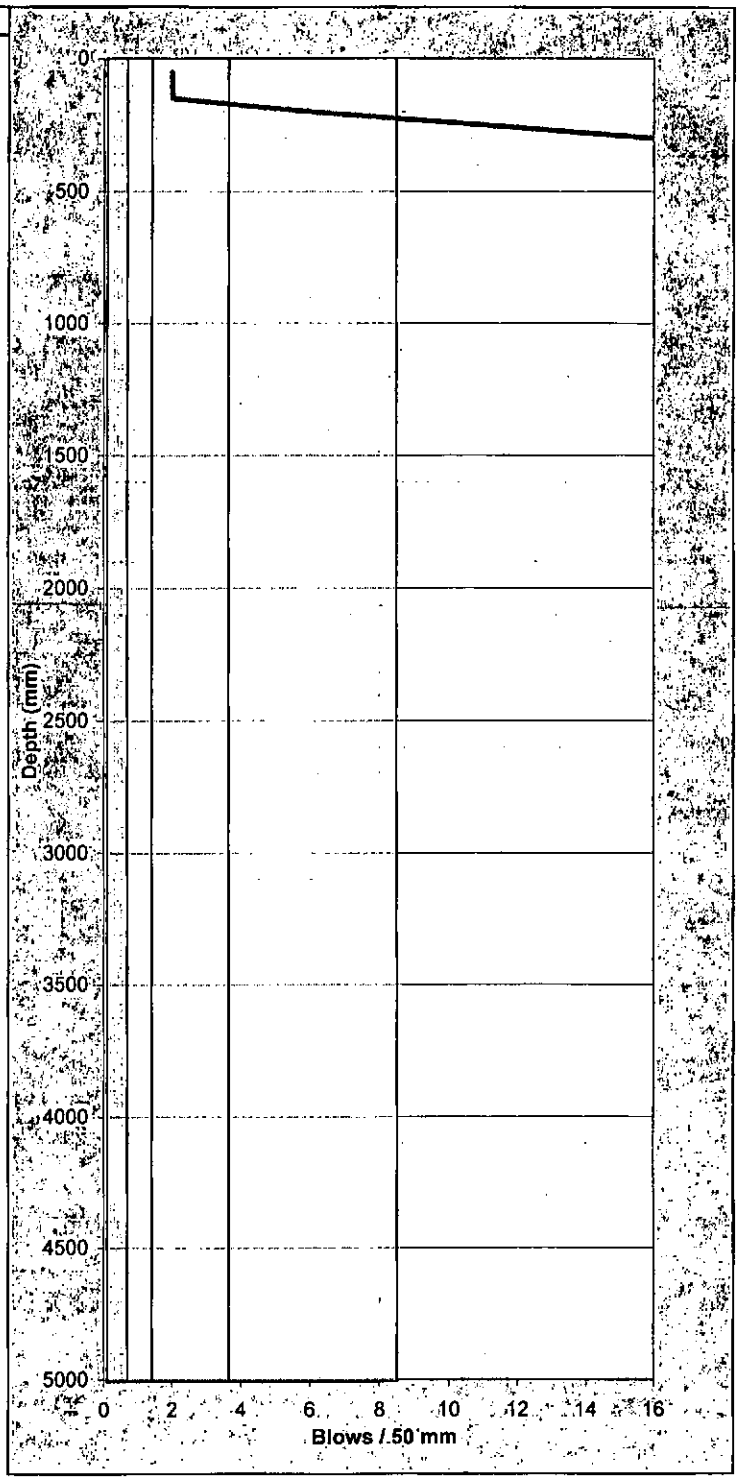
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 27 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: *TC*

Test No. ***SC27/3***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	2	2600	
150	2	2650	
200	6	2700	
250	11	2750	
300	16	2800	
350	refusal	2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 28 Istana Place, Nelson*
Position: *Refer site plan*

Date: *23/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC28/1***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*0.5*	2550	
100	*0.5*	2600	
150	*2*	2650	
200	*3*	2700	
250	*4*	2750	
300	*5*	2800	
350	*7*	2850	
400	*17*	2900	
450	refusal	2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
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2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
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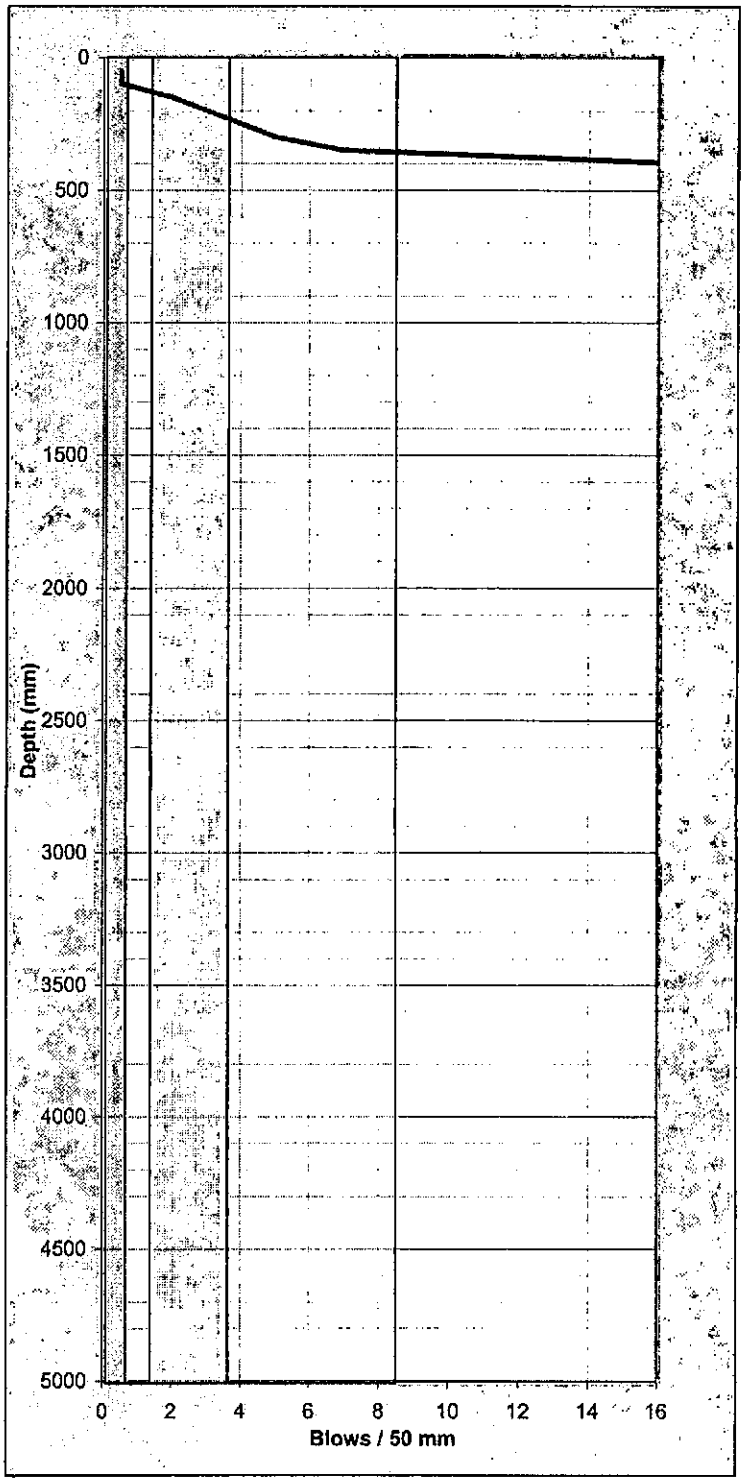
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 28 Istana Place, Nelson*
Position: *Refer site plan*

Date: *23/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: T C

Test No. ***SC28/2***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*1*	2550	
100	*2*	2600	
150	*2*	2650	
200	*2*	2700	
250	*2*	2750	
300	*4*	2800	
350	*23*	2850	
400	refusal	2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
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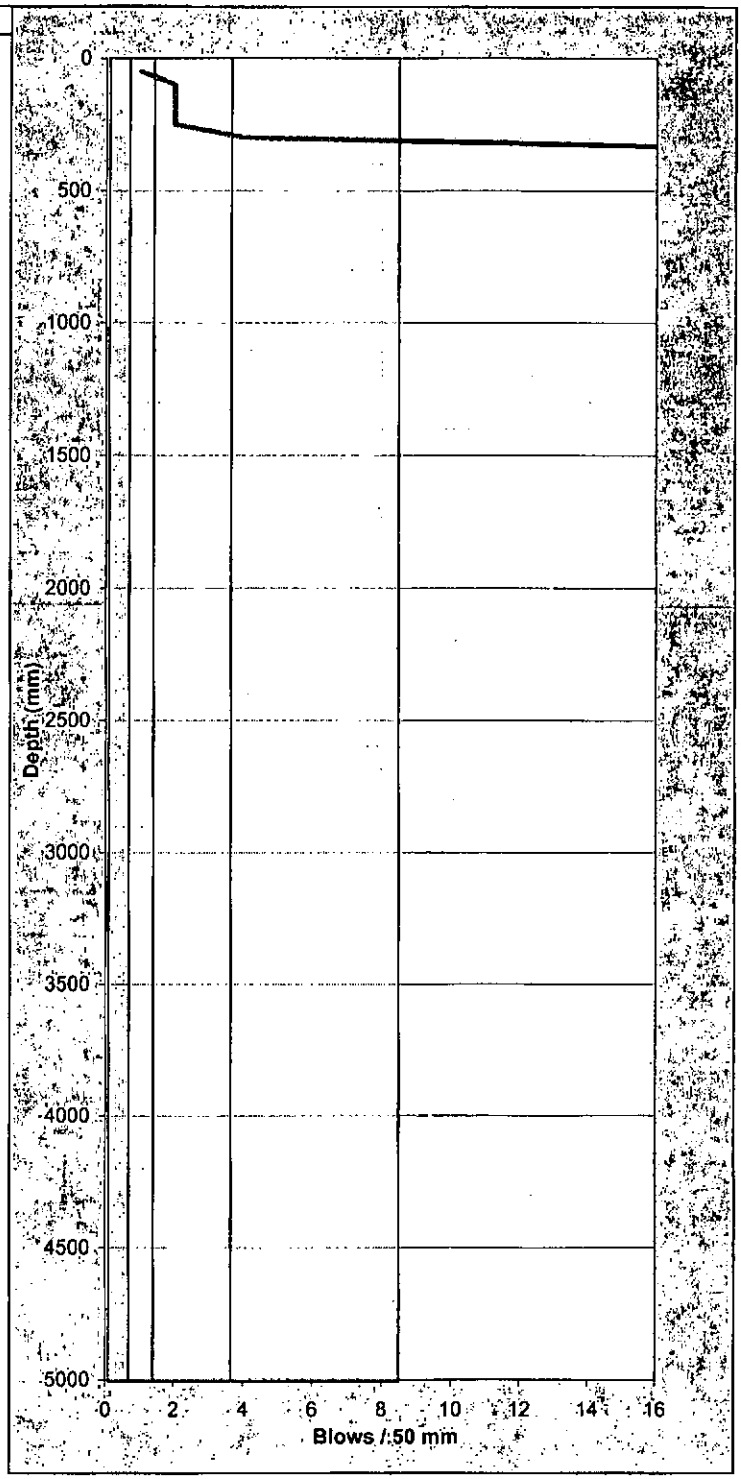
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 28 Istana Place, Nelson*
Position: *Refer site plan*

Date: *23/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC28/3***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*10*	2550	
100	*10*	2600	
150	*12*	2650	
200	*15*	2700	
250	*12*	2750	
300	*17*	2800	
350	refusal	2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
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1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
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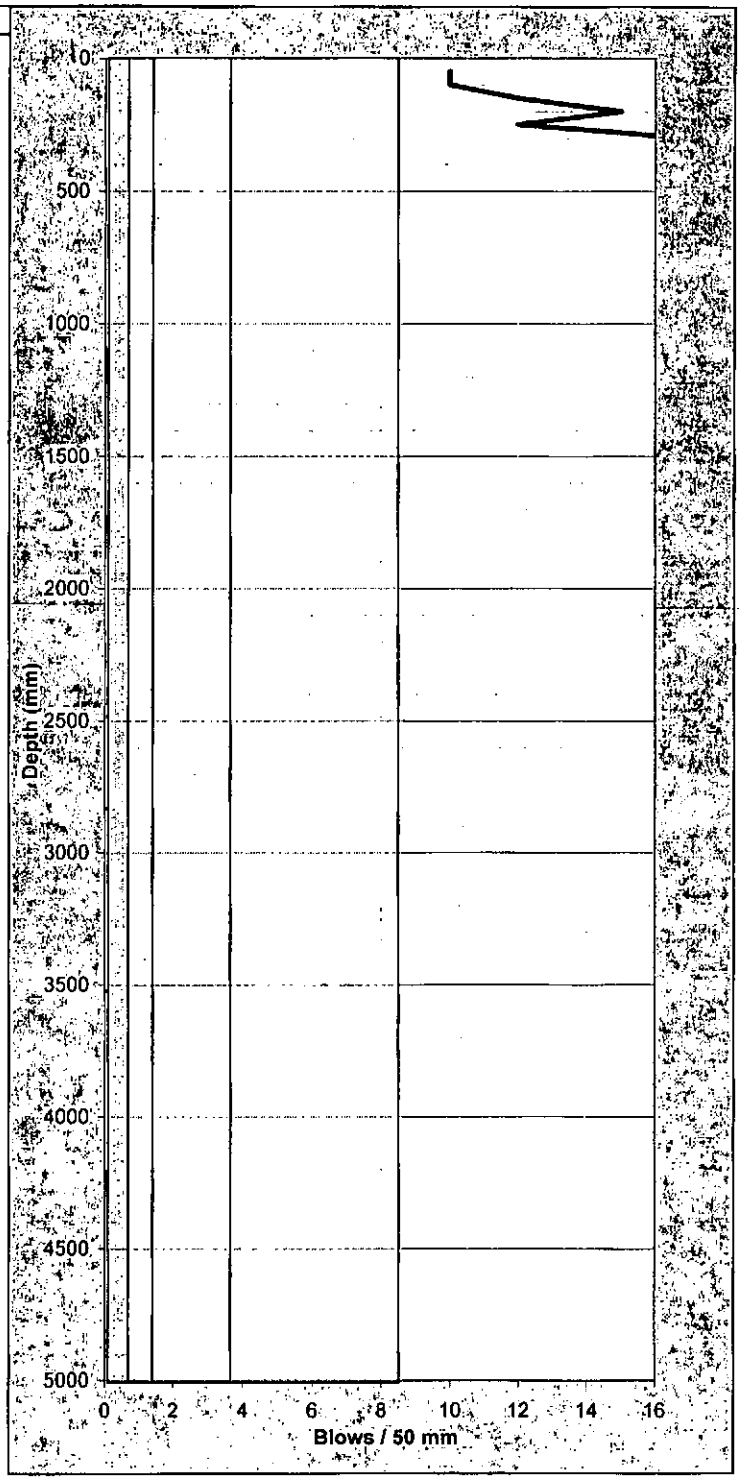
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 28 Istana Place, Nelson*
Position: *Refer site plan*

Date: *23/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. *SC28/4*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	15	2550	
100	10	2600	
150	12	2650	
200	11	2700	
250	9	2750	
300	13	2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
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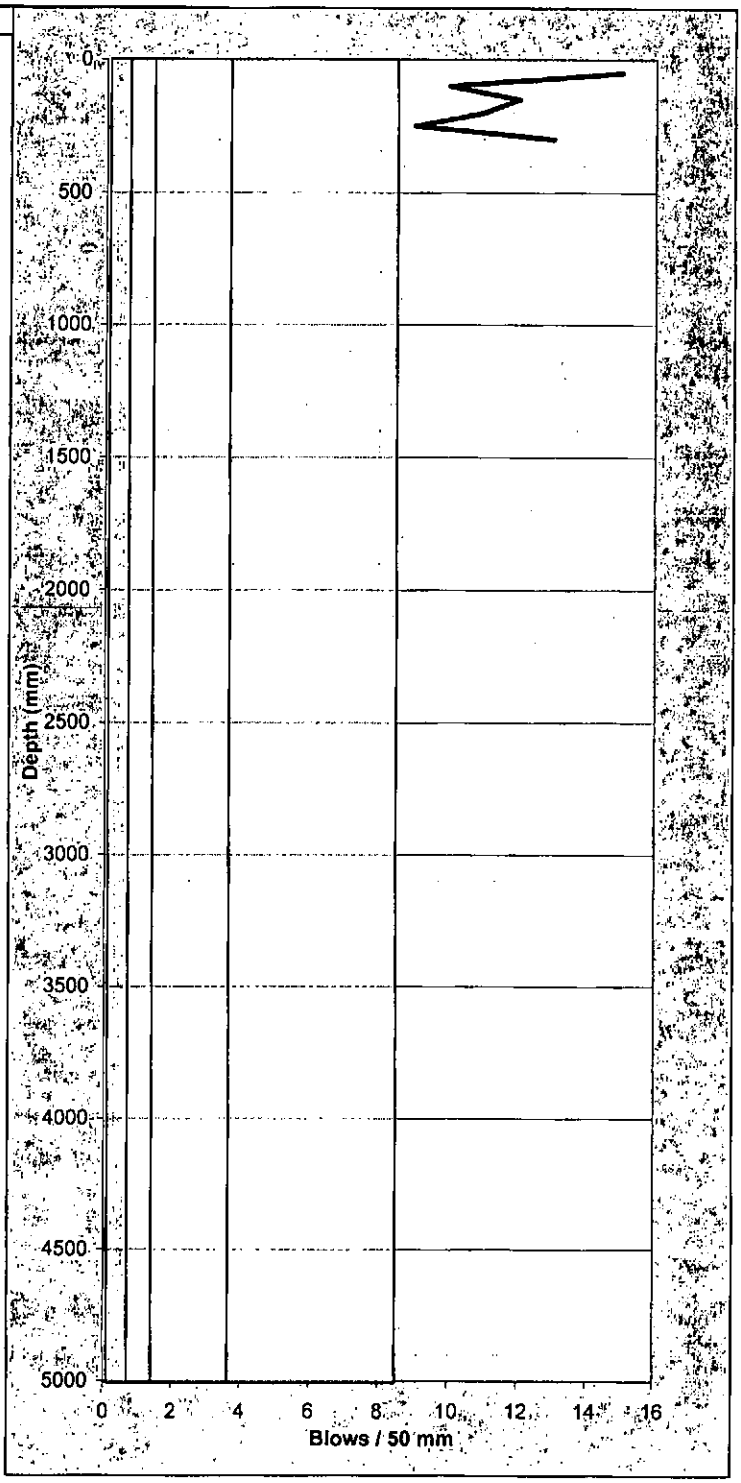
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 29 Istana Place, Nelson.*
Position: *Refer site plan*

Date: *23/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC29/1***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*1.5*	2550	
100	*1.5*	2600	
150	*2*	2650	
200	*4*	2700	
250	*19*	2750	
300	refusal	2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
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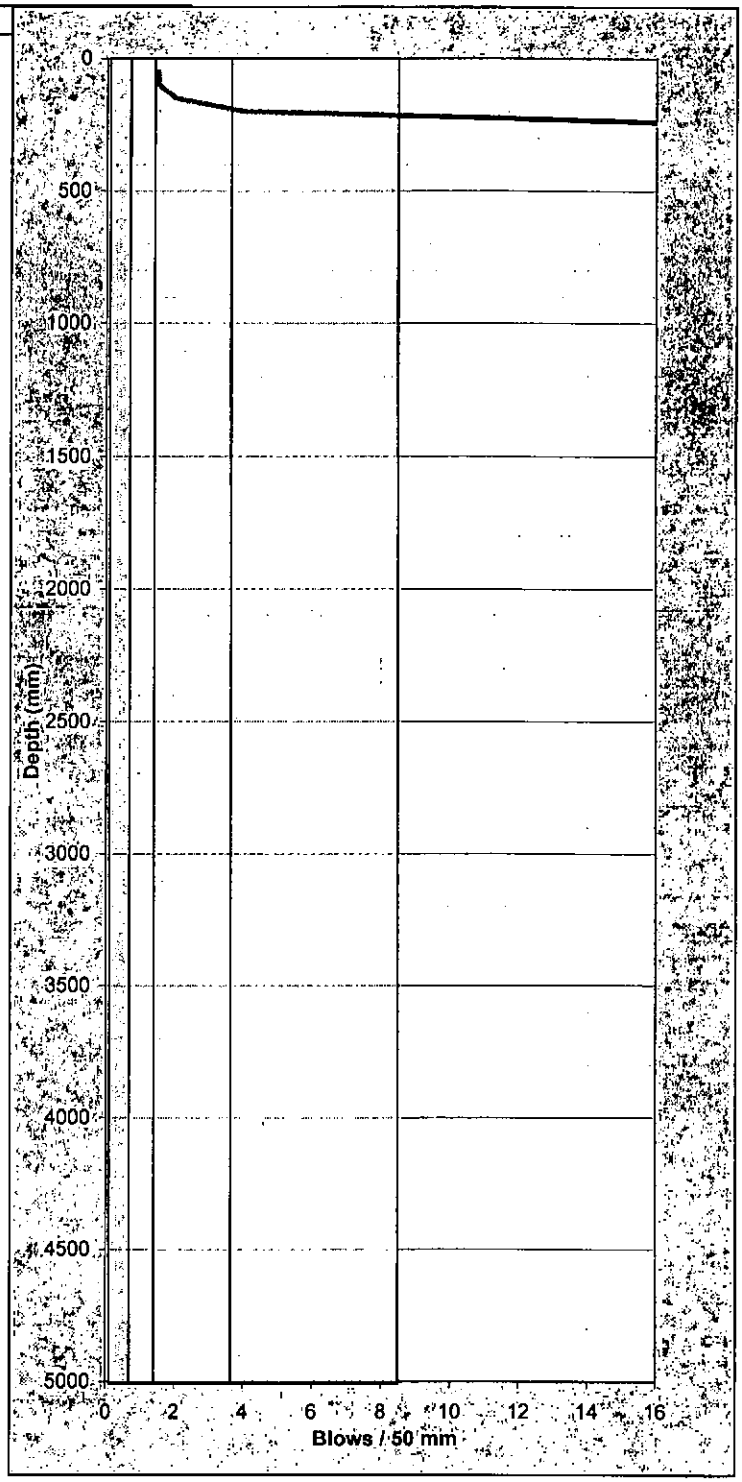
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

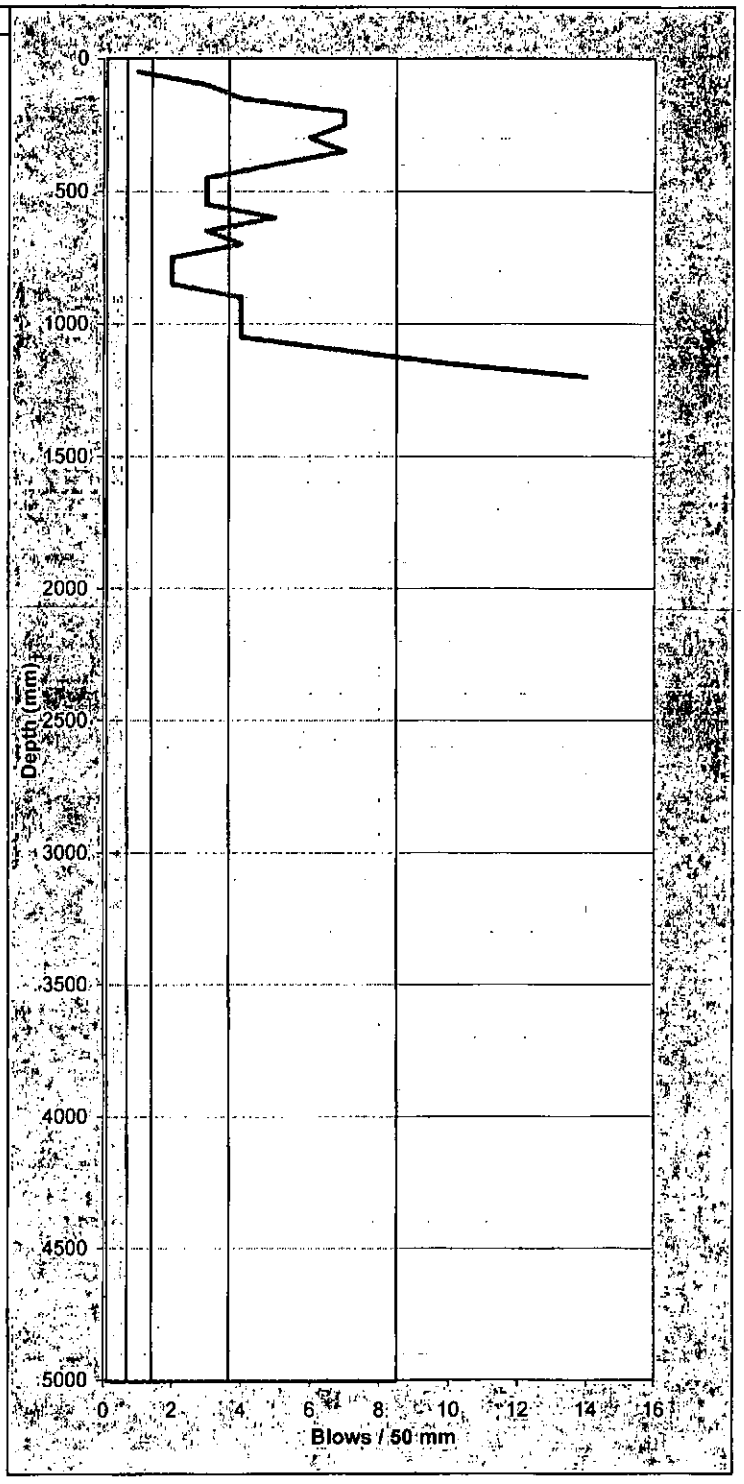
SCALA PENETROMETER LOG

Job No: 81069.010
Project: Tasman Hieghts BRJV
Location: Lot 29 Istana Place, Nelson.
Position: Refer site plan

Date: 23/01/2006
Operated by: CJWH
Logged by: CJWH
Checked by: T—C.

Test No. SC29/2
Sheet 1
of 1

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	3	2600	
150	4	2650	
200	7	2700	
250	7	2750	
300	6	2800	
350	7	2850	
400	5	2900	
450	3	2950	
500	3	3000	
550	3	3050	
600	5	3100	
650	3	3150	
700	4	3200	
750	2	3250	
800	2	3300	
850	2	3350	
900	4	3400	
950	4	3450	
1000	4	3500	
1050	4	3550	
1100	7	3600	
1150	10	3650	
1200	14	3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 29 Istana Place, Nelson.*
Position: *Refer site plan*

Date: *23/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC29/3***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*10*	2550	
100	*17*	2600	
150	*8*	2650	
200	*10*	2700	
250	*10*	2750	
300	*12*	2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
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1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
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1750		4250	
1800		4300	
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1900		4400	
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2000		4500	
2050		4550	
2100		4600	
2150		4650	
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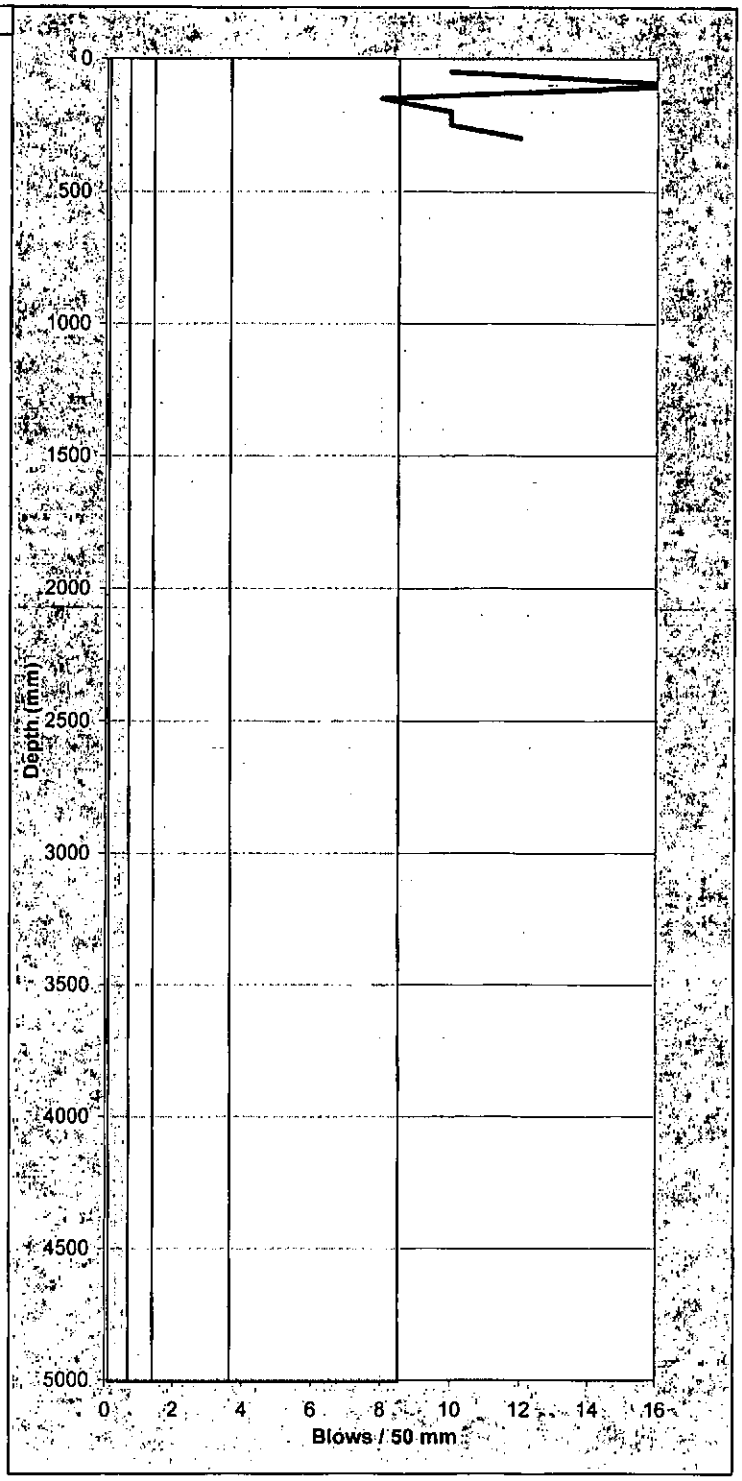
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

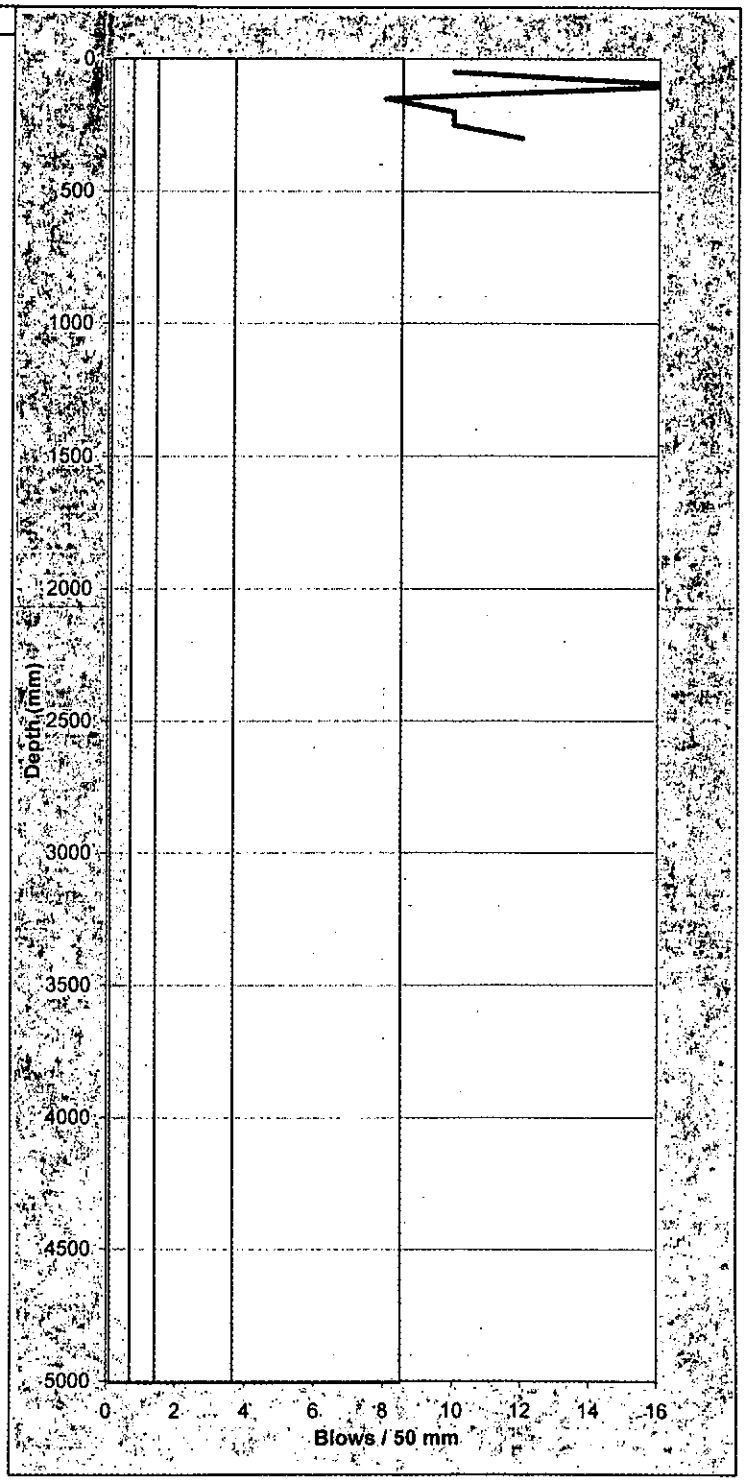
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 29 Istana Place, Nelson.*
Position: *Refer site plan*

Date: *28.02.06*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *L—C*

Test No. ***SC29/4***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*10*	2550	
100	*17*	2600	
150	*8*	2650	
200	*10*	2700	
250	*10*	2750	
300	*12*	2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

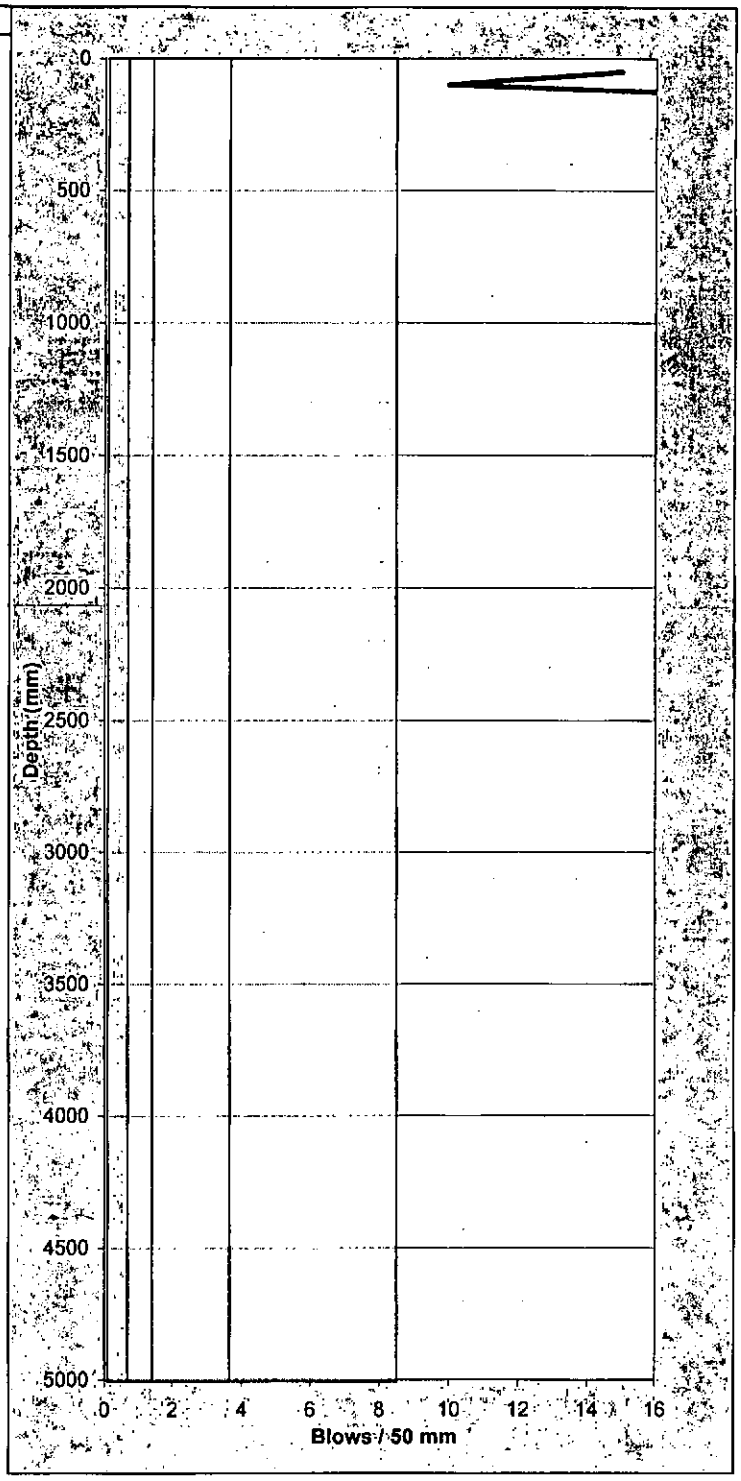
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 30 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC30/1***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*15*	2550	
100	*10*	2600	
150	*22*	2650	
200	refusal	2700	
250		2750	
300		2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

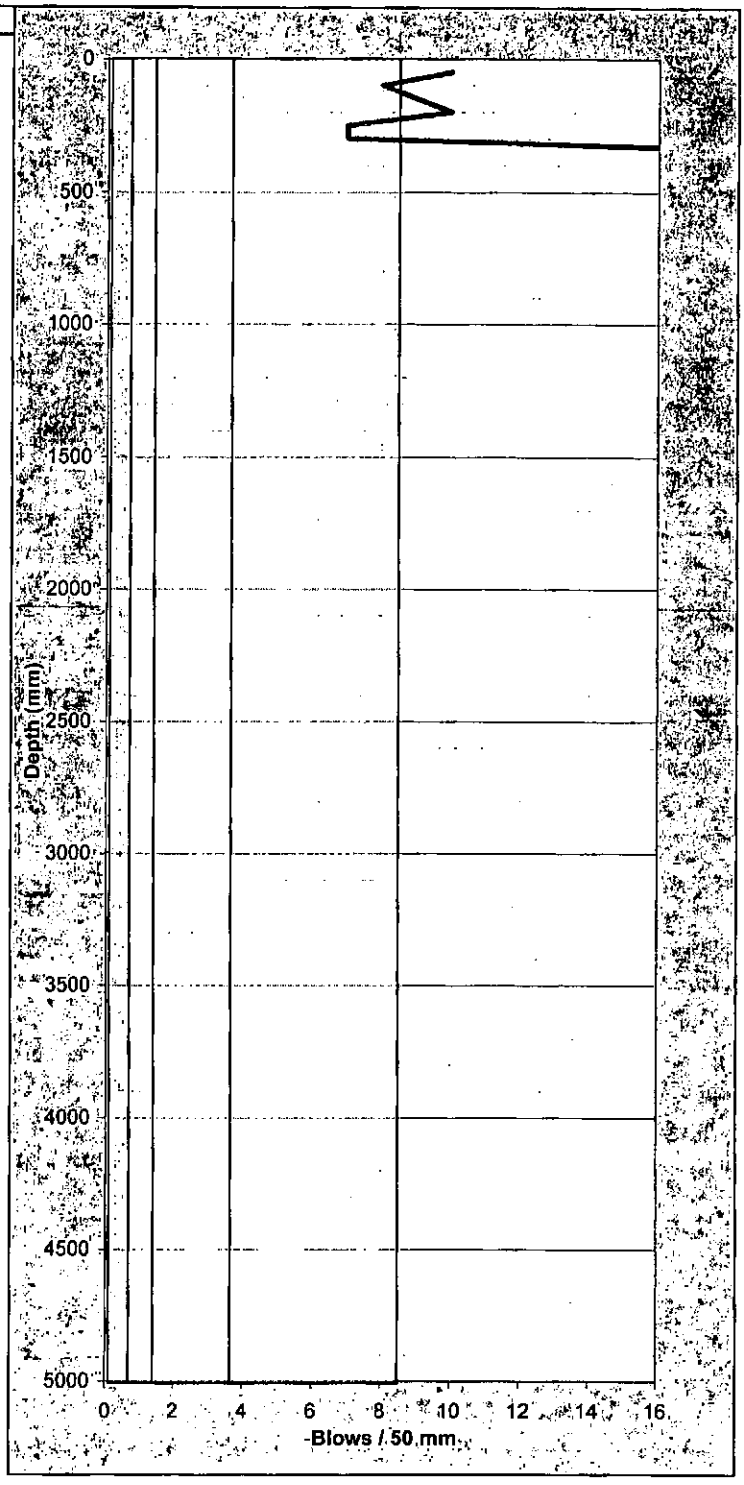
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 30 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: [signature]

Test No. *SC30/2*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*10*	2550	
100	*8*	2600	
150	*9*	2650	
200	*10*	2700	
250	*7*	2750	
300	*7*	2800	
350	*22*	2850	
400	refusal	2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
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Tel: (03) 546 6339
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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 30 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC30/3***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*12*	2550	
100	*12*	2600	
150	*15*	2650	
200	*13*	2700	
250	*16*	2750	
300	*18*	2800	
350	refusal	2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
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1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
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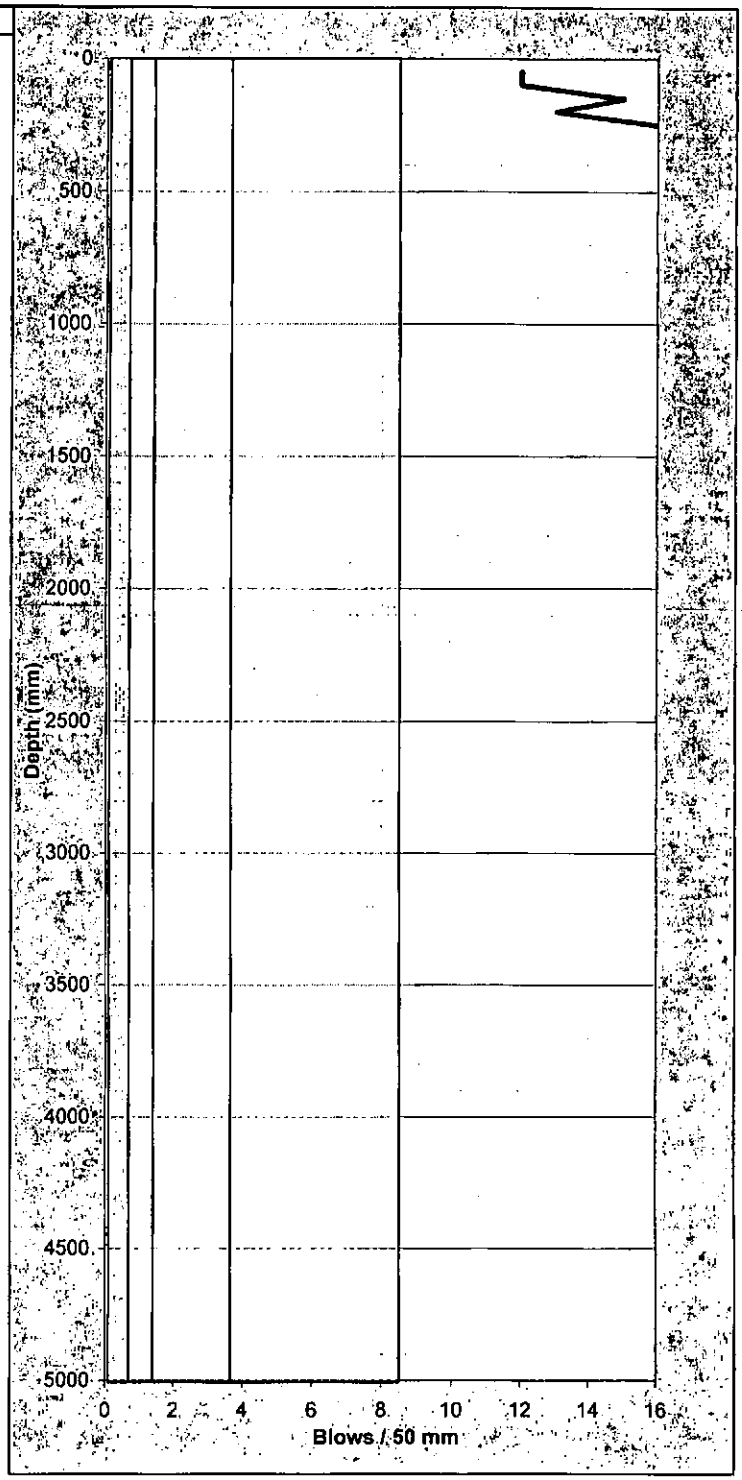
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 31 Istana Place, Nelson*
Position: *Refer site plan*

Date: *25/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC31/1***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	5	2600	
150	11	2650	
200	17	2700	
250	refusal	2750	
300		2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
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1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
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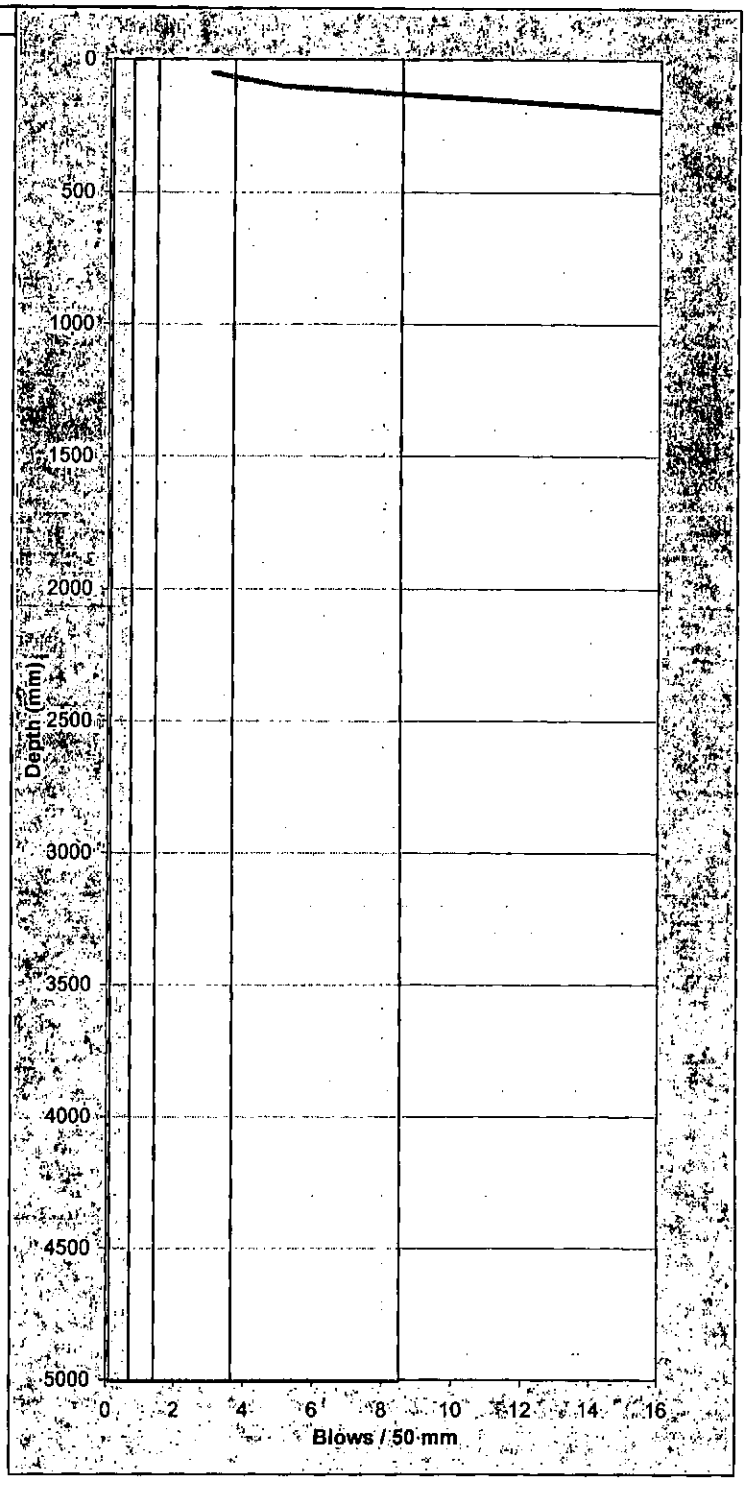
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 31 Istana Place, Nelson*
Position: *Refer site plan*

Date: *25/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC31/2***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	4	2600	
150	6	2650	
200	6	2700	
250	11	2750	
300	11	2800	
350	13	2850	
400	13	2900	
450	13	2950	
500	16	3000	
550	refusal	3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
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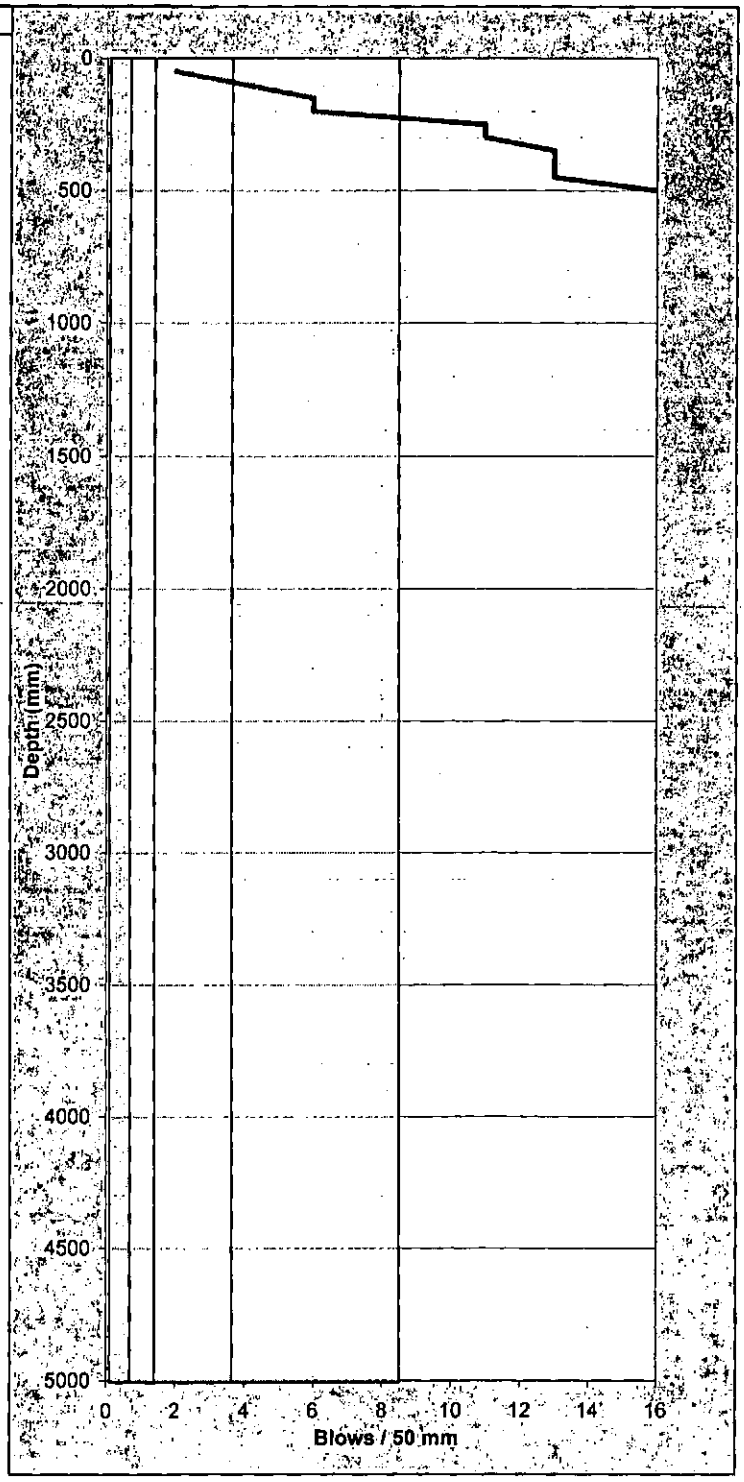
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 31 Istana Place, Nelson*
Position: *Refer site plan*

Date: *25/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC31/3***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*1*	2550	
100	*4*	2600	
150	*5*	2650	
200	*7*	2700	
250	*11*	2750	
300	*15*	2800	
350	refusal	2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
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1750		4250	
1800		4300	
1850		4350	
1900		4400	
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2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
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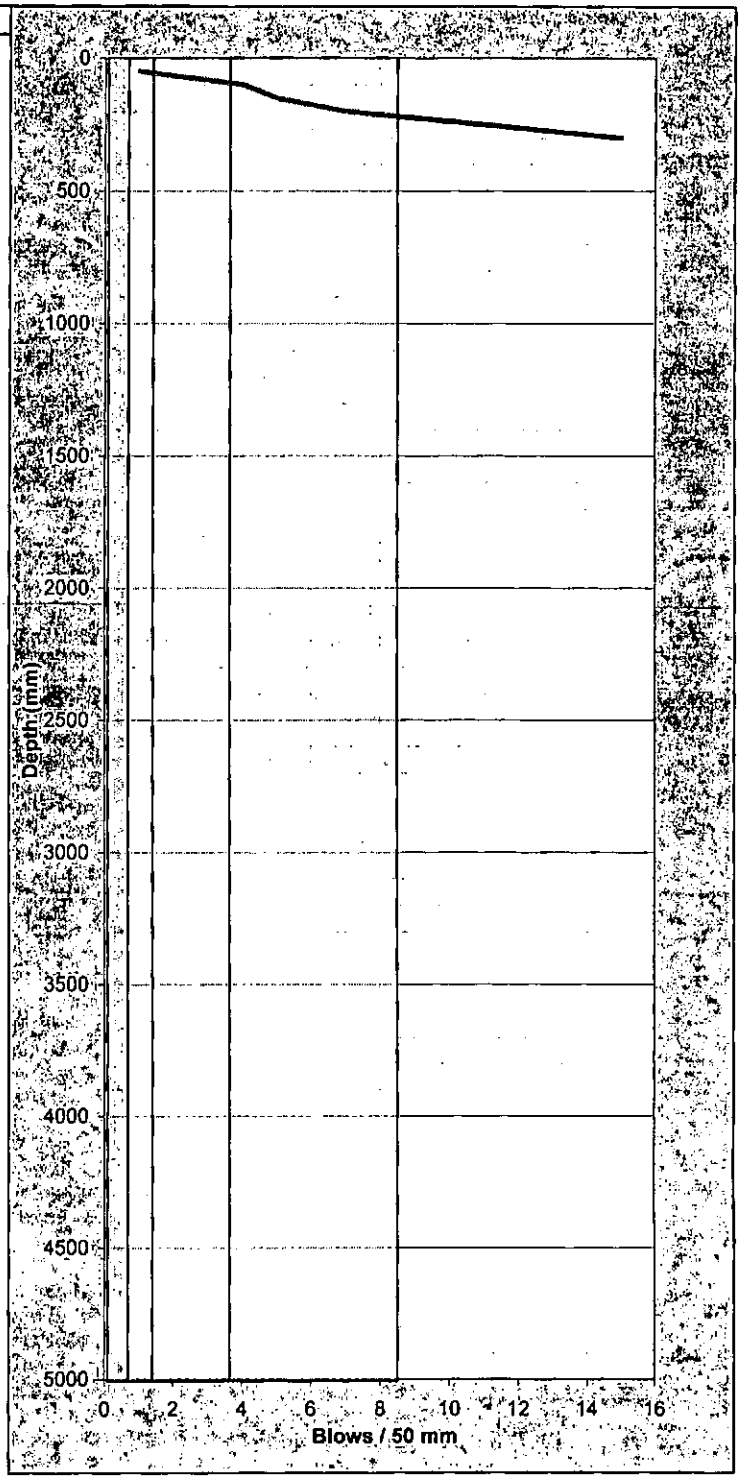
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
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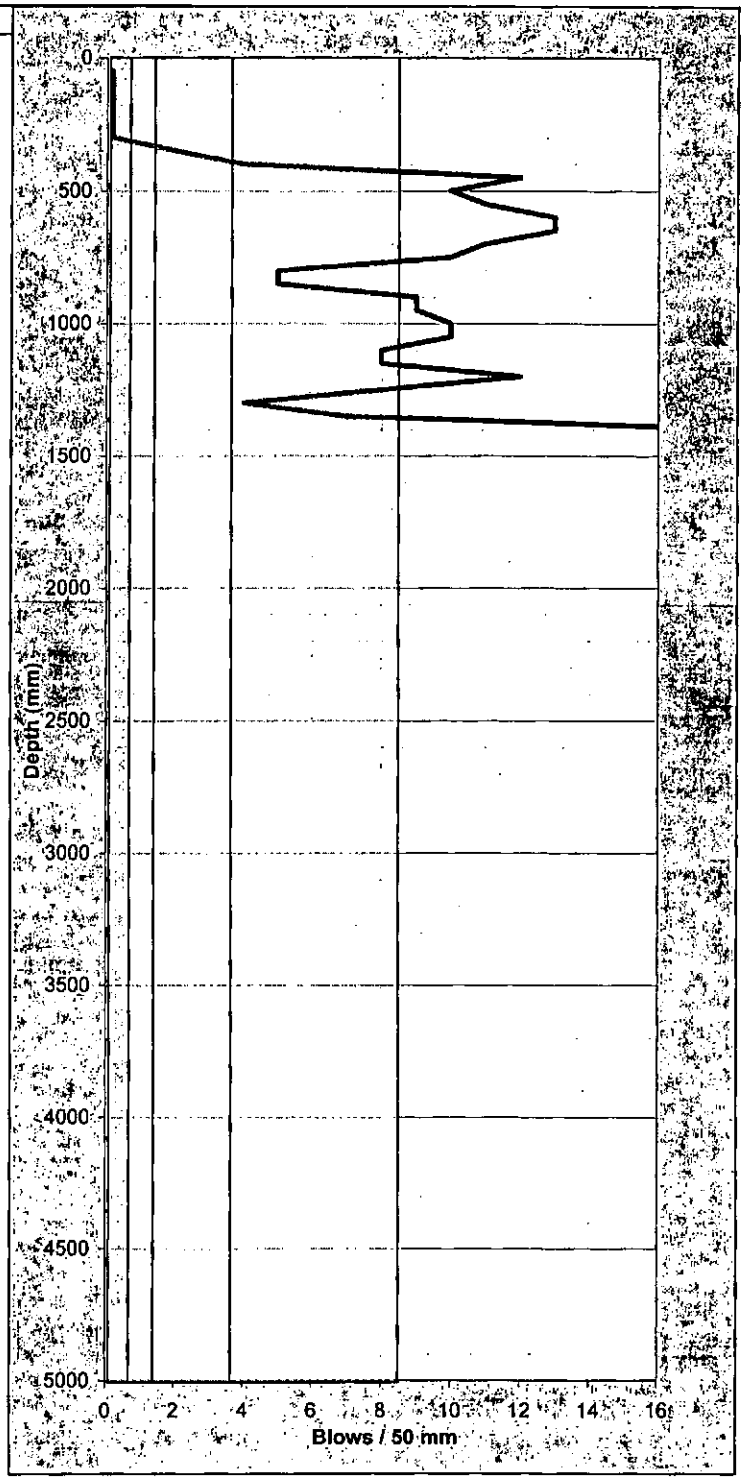
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 31 Istana Place, Nelson*
Position: *Refer site plan*

Date: *25/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC31/4***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	0.17	2550	
100	0.17	2600	
150	0.17	2650	
200	0.17	2700	
250	0.17	2750	
300	0.17	2800	
350	2	2850	
400	4	2900	
450	12	2950	
500	10	3000	
550	11	3050	
600	13	3100	
650	13	3150	
700	11	3200	
750	10	3250	
800	5	3300	
850	5	3350	
900	9	3400	
950	9	3450	
1000	10	3500	
1050	10	3550	
1100	8	3600	
1150	8	3650	
1200	12	3700	
1250	8	3750	
1300	4	3800	
1350	7	3850	
1400	19	3900	
1450	refusal	3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

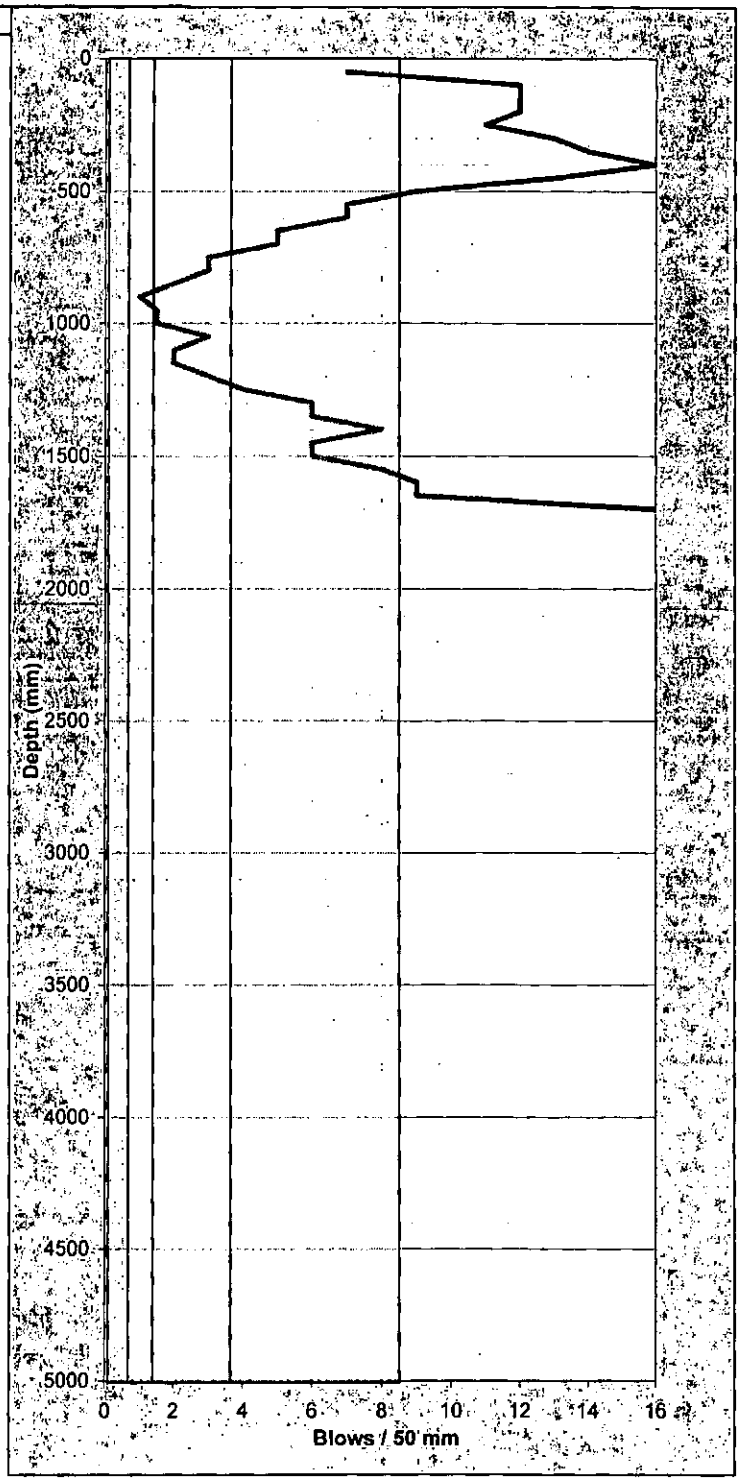
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 31 Istana Place, Nelson*
Position: *Refer site plan*

Date: *28.02.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by:

Test No. ***SC31/5***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	7	2550	
100	12	2600	
150	12	2650	
200	12	2700	
250	11	2750	
300	13	2800	
350	14	2850	
400	16	2900	
450	13	2950	
500	9	3000	
550	7	3050	
600	7	3100	
650	5	3150	
700	5	3200	
750	3	3250	
800	3	3300	
850	2	3350	
900	1	3400	
950	1.5	3450	
1000	1.5	3500	
1050	3	3550	
1100	2	3600	
1150	2	3650	
1200	3	3700	
1250	4	3750	
1300	6	3800	
1350	6	3850	
1400	8	3900	
1450	6	3950	
1500	6	4000	
1550	8	4050	
1600	9	4100	
1650	9	4150	
1700	16	4200	
1750	Refusal	4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

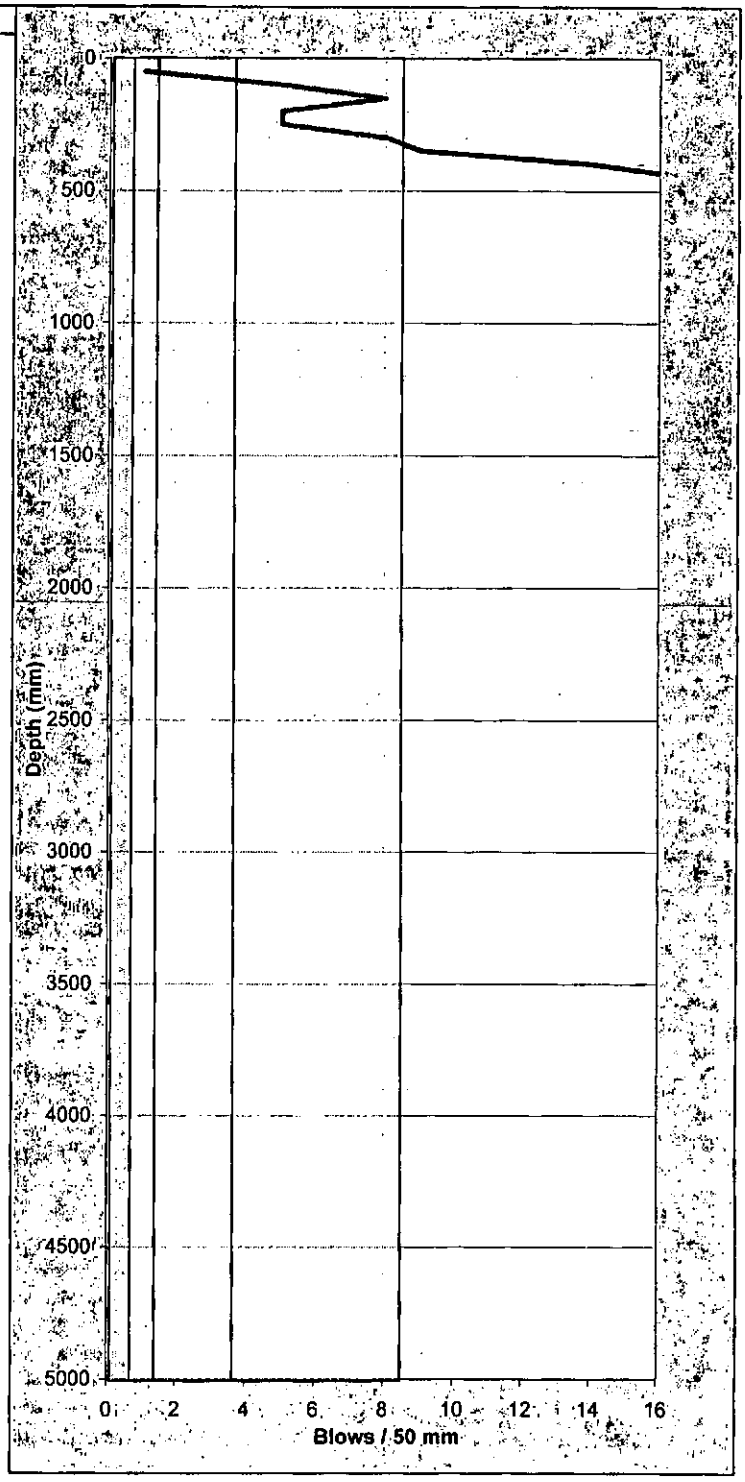
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 31 Istana Place, Nelson*
Position: *Refer site plan*

Date: *28.02.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by:

Test No. ***SC31/6***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*1*	2550	
100	*5*	2600	
150	*8*	2650	
200	*5*	2700	
250	*5*	2750	
300	*8*	2800	
350	*9*	2850	
400	*14*	2900	
450	*17*	2950	
500	Refusal	3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

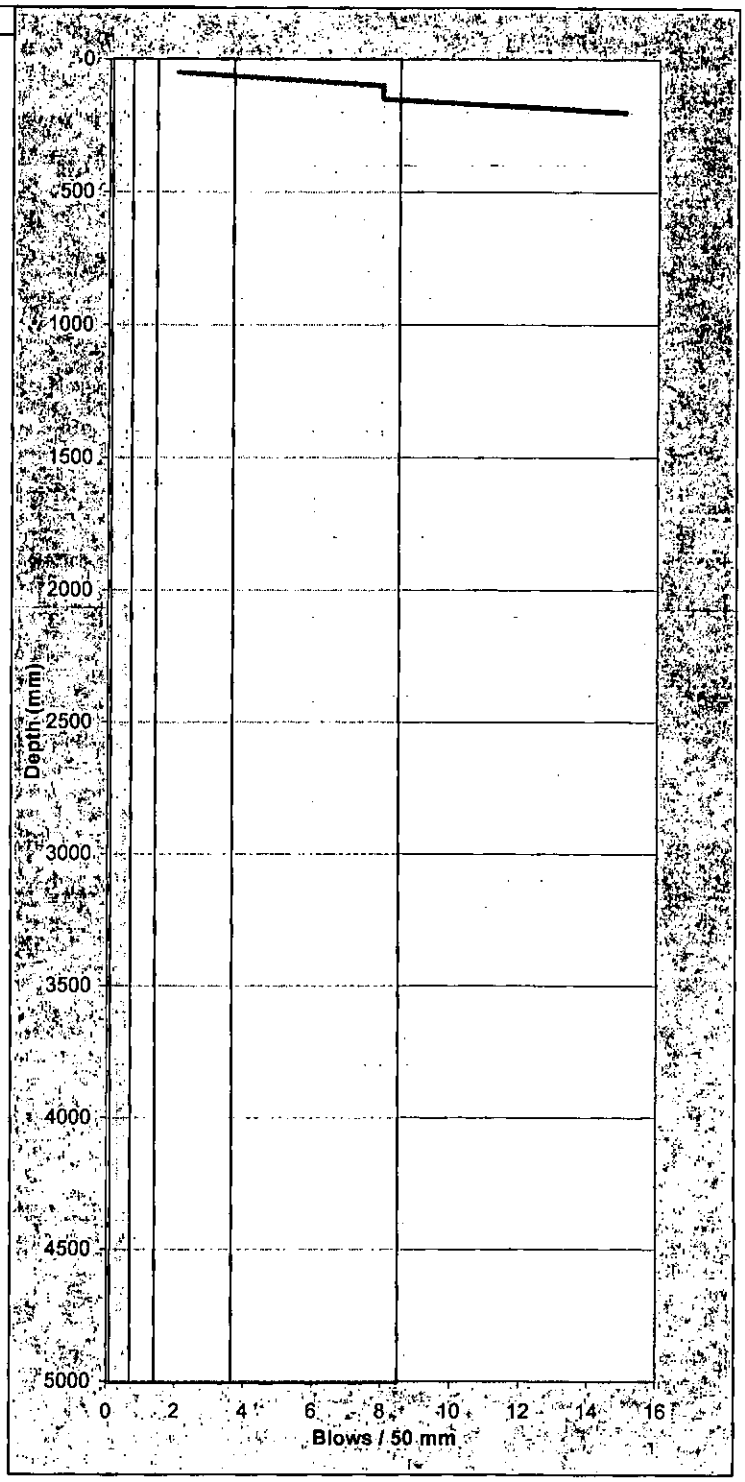
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 32 Istana Place, Nelson*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC32/1***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	8	2600	
150	8	2650	
200	15	2700	
250	refusal	2750	
300		2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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P O Box 1009
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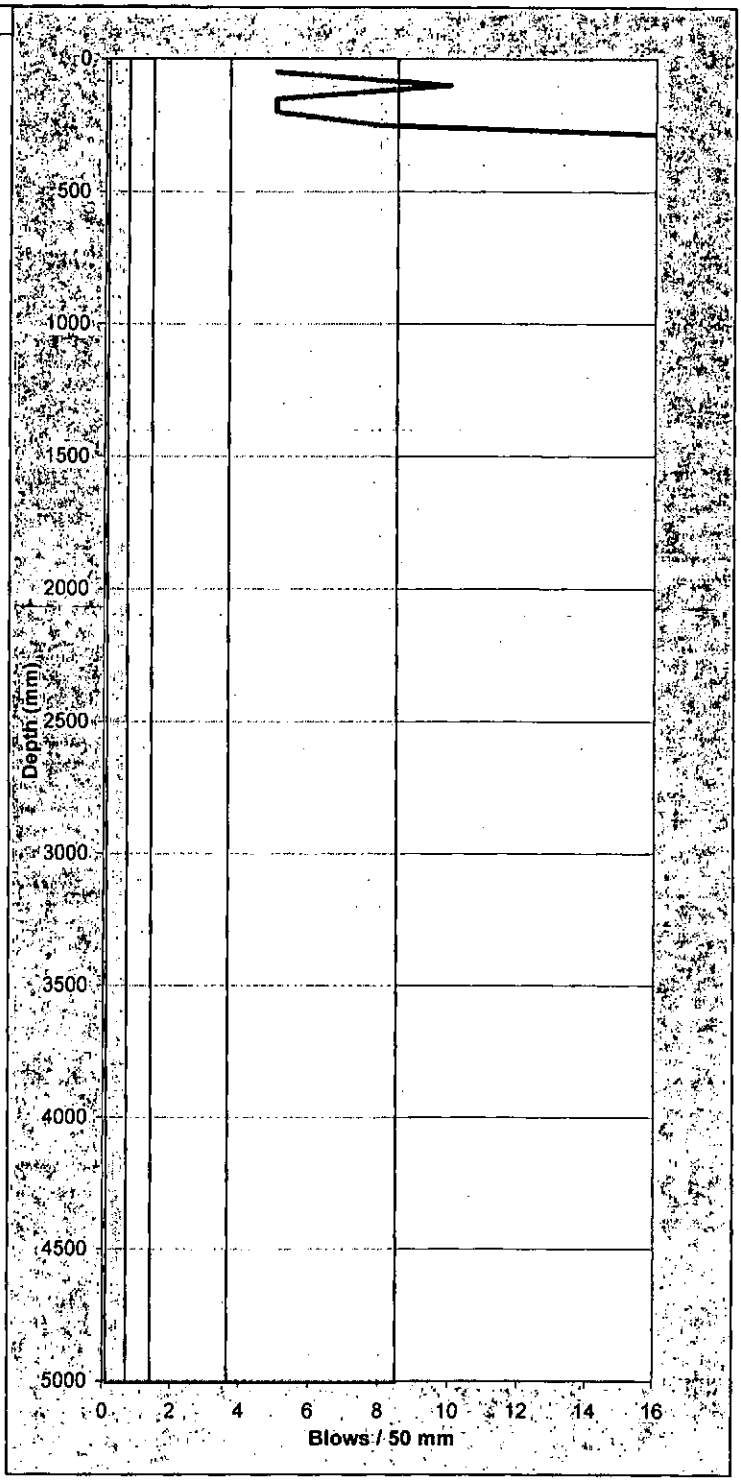
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 32 Istana Place, Nelson*
Position: *Refer to site plan*

Date: *28.02.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by:

Test No. ***SC32/1a***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	5	2550	
100	10	2600	
150	5	2650	
200	5	2700	
250	8	2750	
300	20	2800	
350	Refusal	2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

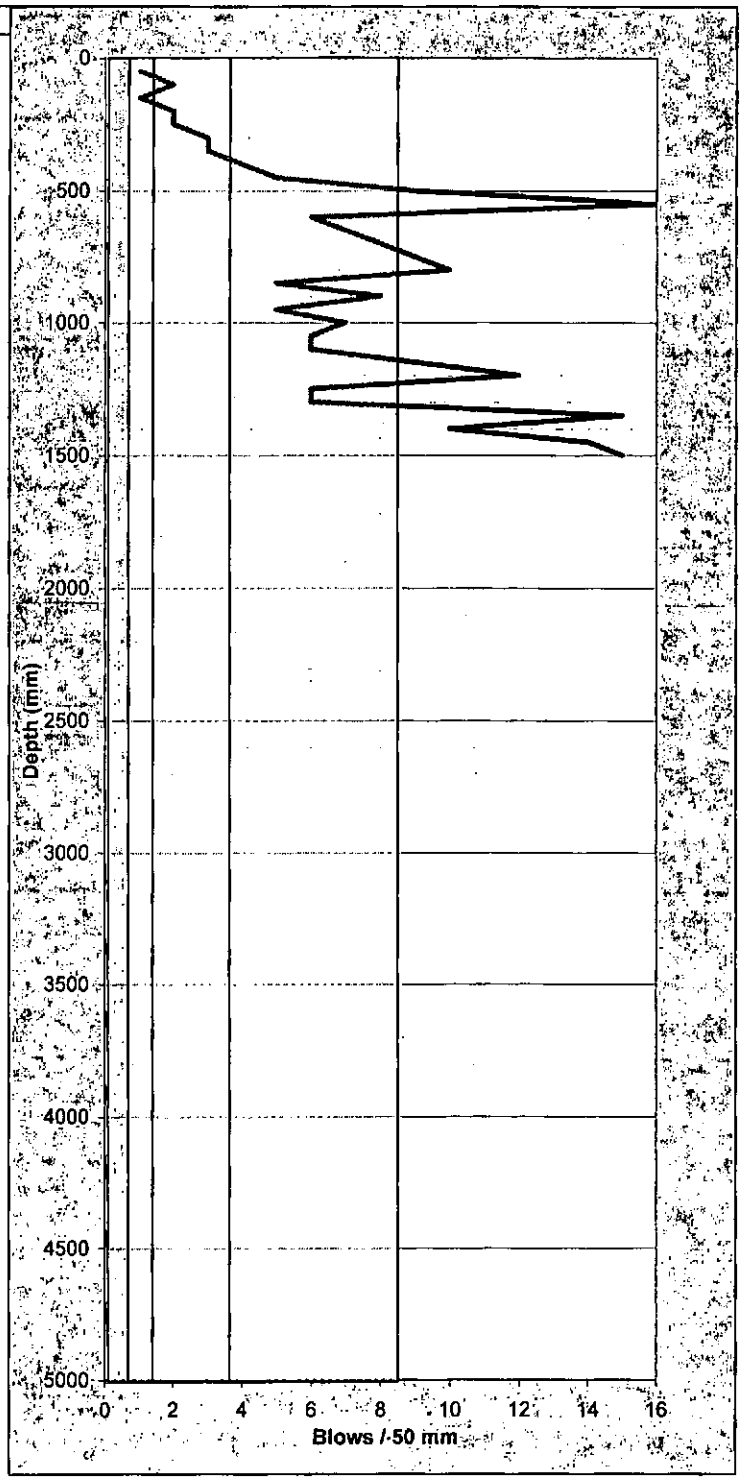
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 32 Istana Place, Nelson*
Position: *Refer site plan*

Date: *25/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC32/2***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	2	2600	
150	1	2650	
200	2	2700	
250	2	2750	
300	3	2800	
350	3	2850	
400	4	2900	
450	5	2950	
500	9	3000	
550	16	3050	
600	6	3100	
650	7	3150	
700	8	3200	
750	9	3250	
800	10	3300	
850	5	3350	
900	8	3400	
950	5	3450	
1000	7	3500	
1050	6	3550	
1100	6	3600	
1150	9	3650	
1200	12	3700	
1250	6	3750	
1300	6	3800	
1350	15	3850	
1400	10	3900	
1450	14	3950	
1500	15	4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
P O Box 1009
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Tel: (03) 546 6339
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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 32 Istana Place, Nelson*
Position: *Refer site plan*

Date: *25/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC32/3***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	2	2650	
200	2	2700	
250	8	2750	
300	15	2800	
350	refusal	2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
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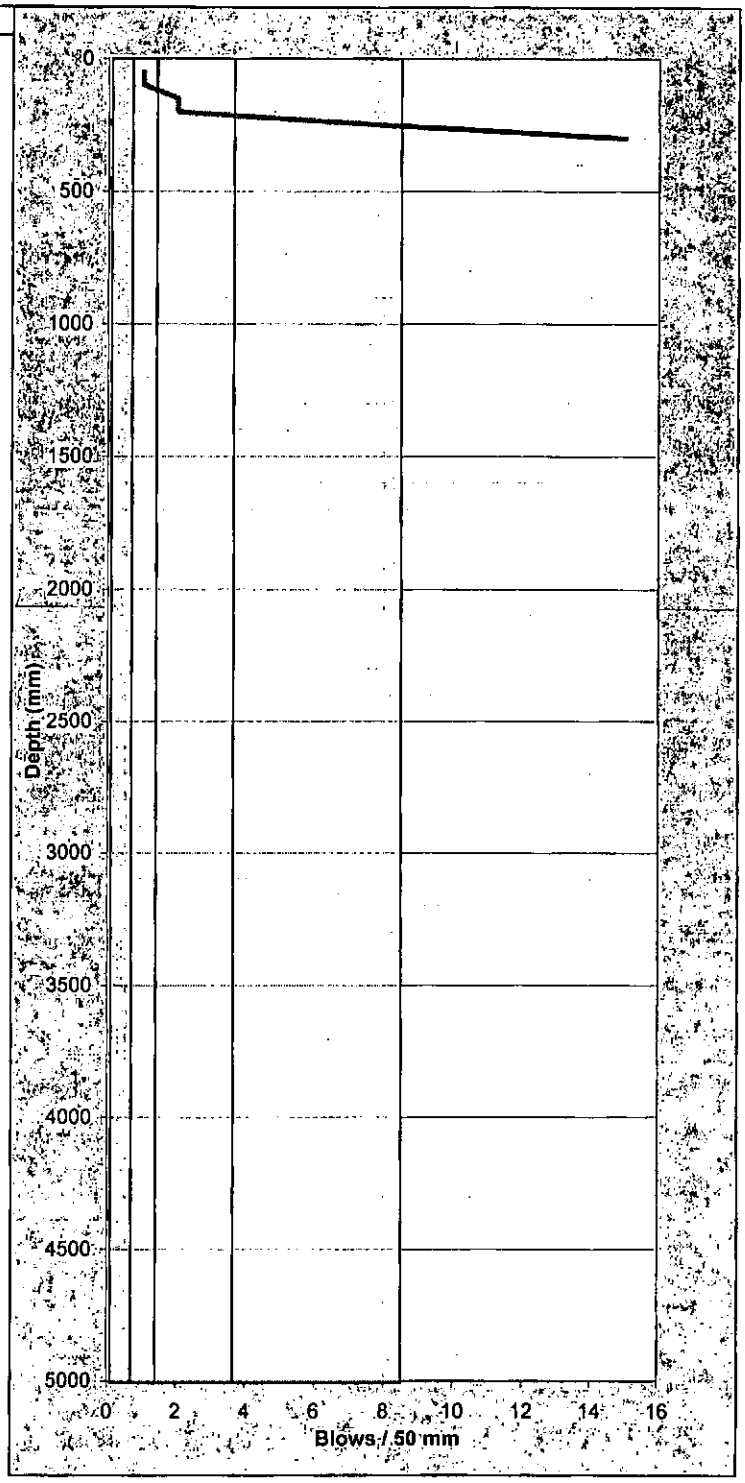
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
P O Box 1009
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Tel: (03) 546 6339
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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 32 Istana Place, Nelson*
Position: *Refer to site plan*

Date: *28.02.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by:

Test No. ***SC32/3a***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	3	2600	
150	4	2650	
200	3	2700	
250	2	2750	
300	4	2800	
350	3	2850	
400	7	2900	
450	7	2950	
500	16	3000	
550	20	3050	
600	Refusal	3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
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1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
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2300		4800	
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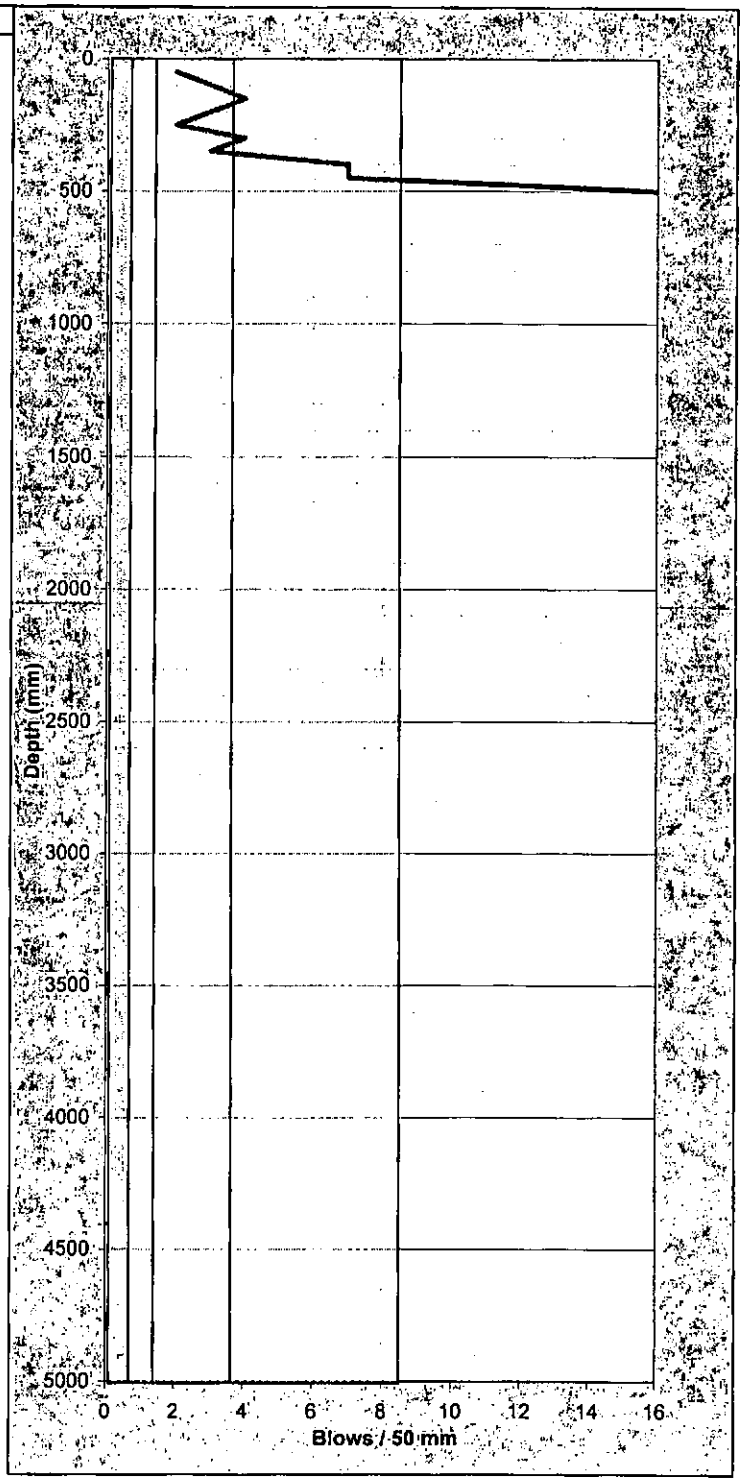
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Heights BRJV*
Location: *Lot 32 Istana Place, Nelson*
Position: *Refer site plan*

Date: *25/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: *TC*

Test No. ***SC32/4***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*1*	2550	
100	*8*	2600	
150	*13*	2650	
200	*18*	2700	
250	refusal	2750	
300		2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
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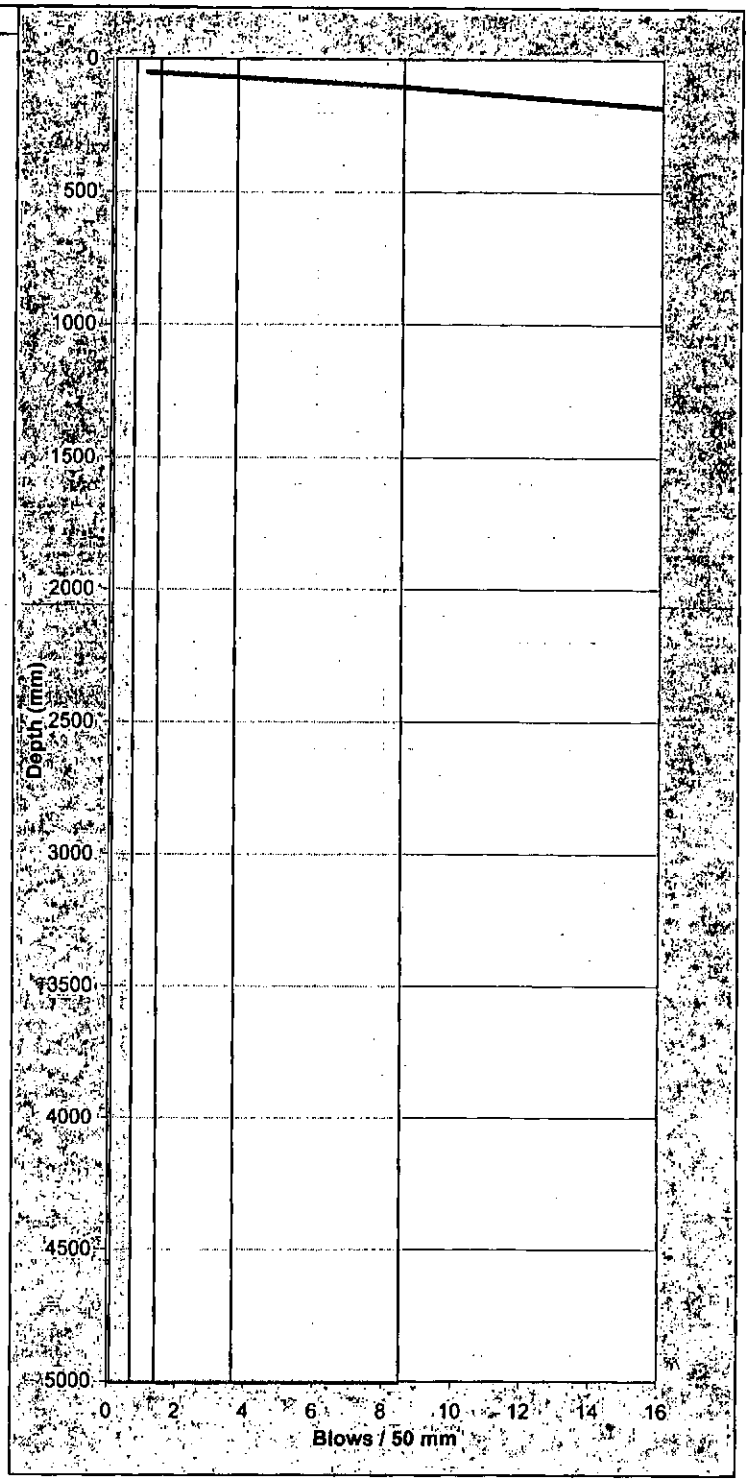
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 32 Istana Place, Nelson*
Position: *Refer to site plan*

Date: *28.02.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by:

Test No. ***SC32/4a***
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*9*	2550	
100	*12*	2600	
150	*12*	2650	
200	*14*	2700	
250	*16*	2750	
300	*15*	2800	
350	*20*	2850	
400	Refusal	2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
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2300		4800	
2350		4850	
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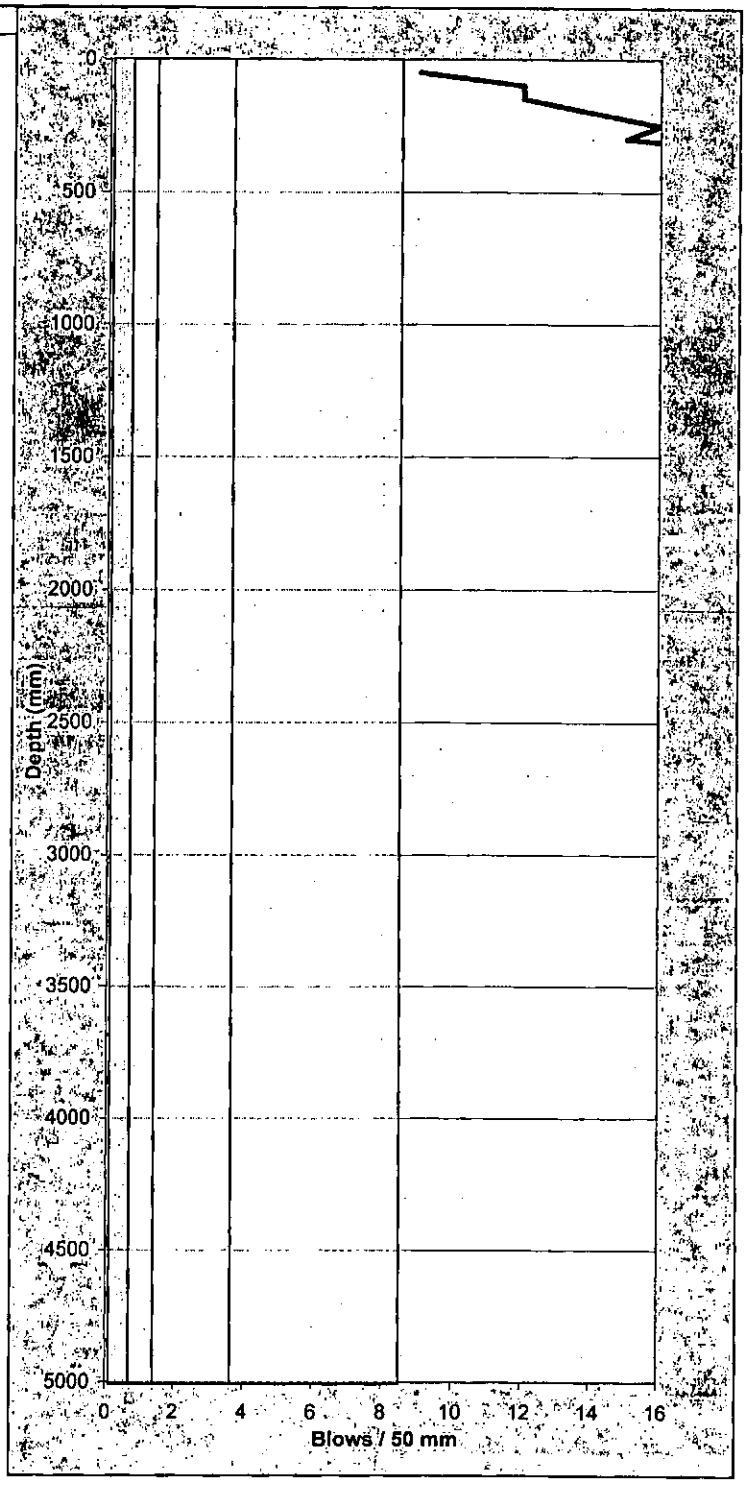
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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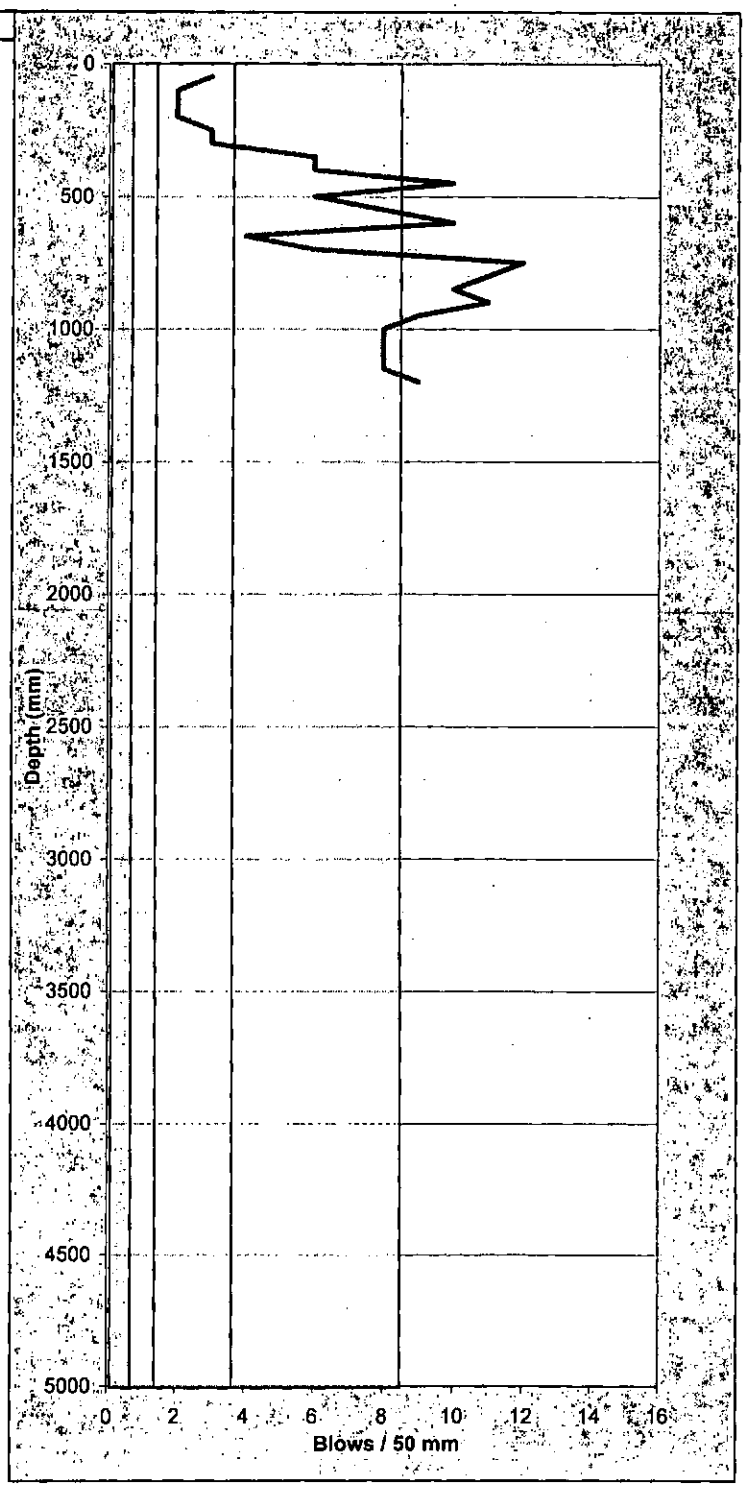
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 32 Istana Place, Nelson*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. *SC32/5*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	2	2600	
150	2	2650	
200	2	2700	
250	3	2750	
300	3	2800	
350	6	2850	
400	6	2900	
450	10	2950	
500	6	3000	
550	8	3050	
600	10	3100	
650	4	3150	
700	6	3200	
750	12	3250	
800	11	3300	
850	10	3350	
900	11	3400	
950	9	3450	
1000	8	3500	
1050	8	3550	
1100	8	3600	
1150	8	3650	
1200	9	3700	
1250	Refusal	3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 33 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: *TC*

Test No. *SC33/1*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	1	2650	
200	1	2700	
250	2	2750	
300	7	2800	
350	6	2850	
400	8	2900	
450	9	2950	
500	16	3000	
550	refusal	3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
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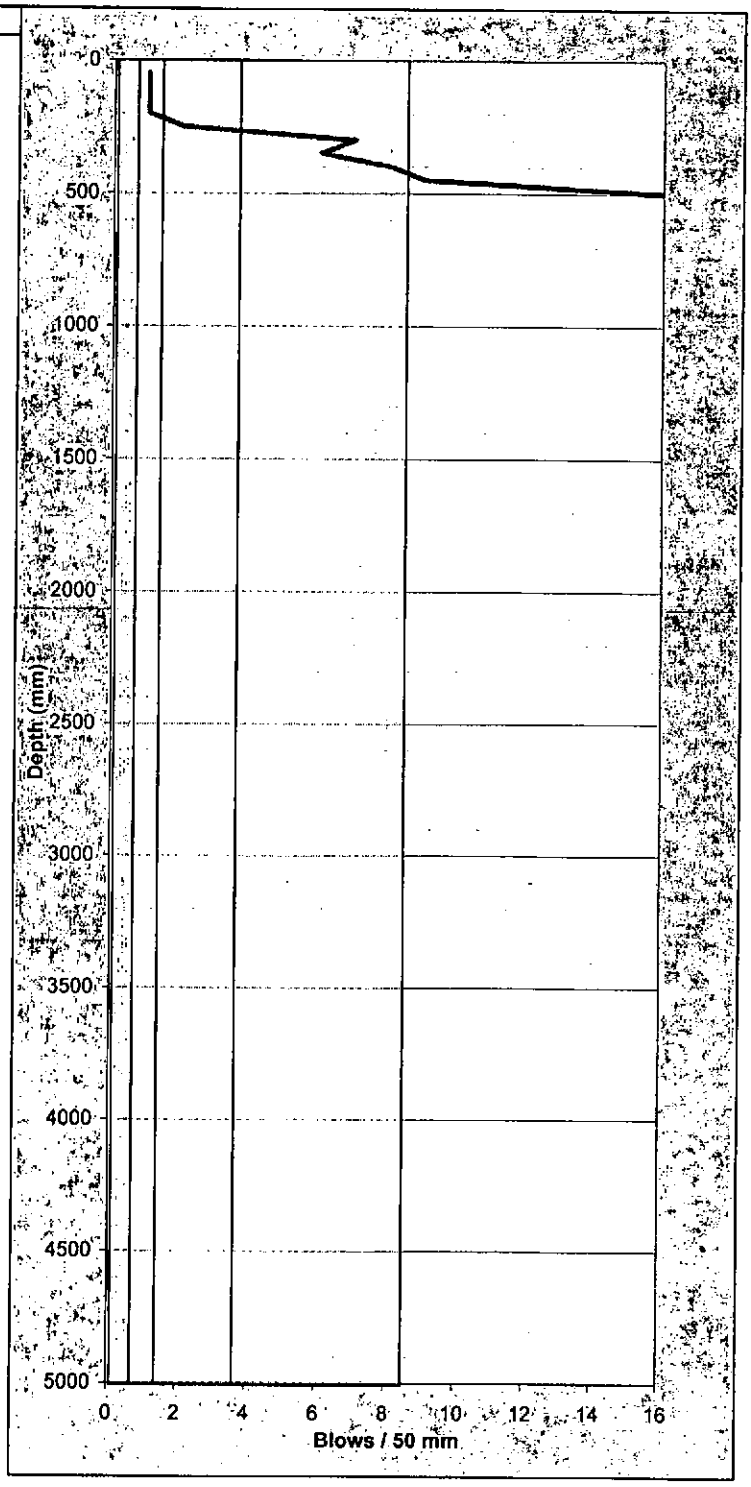
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 33 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: *TC*

Test No. *SC33/2*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1.5	2550	
100	1.5	2600	
150	2	2650	
200	1	2700	
250	2	2750	
300	3	2800	
350	4	2850	
400	15	2900	
450	refusal	2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
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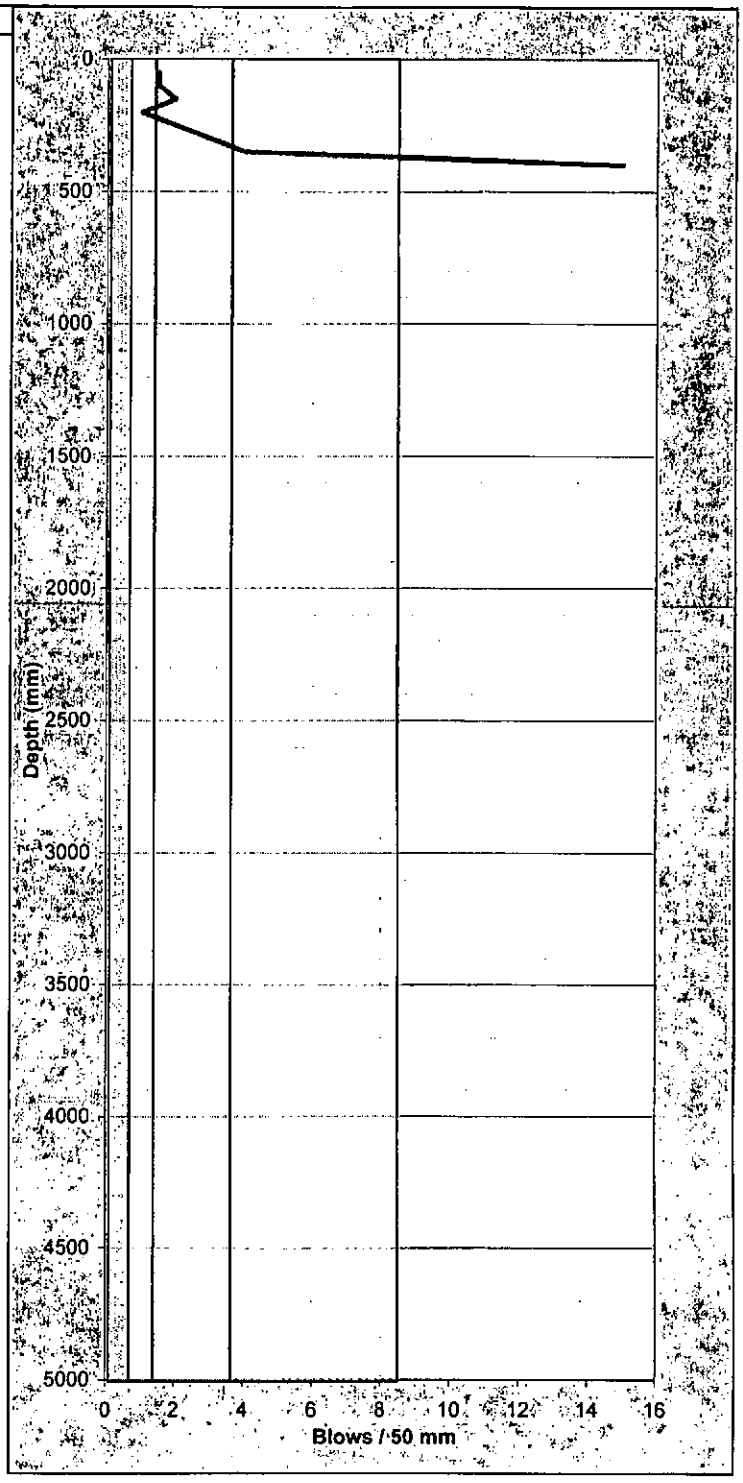
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 33 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC33/3***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	2	2600	
150	10	2650	
200	20	2700	
250	refusal	2750	
300		2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
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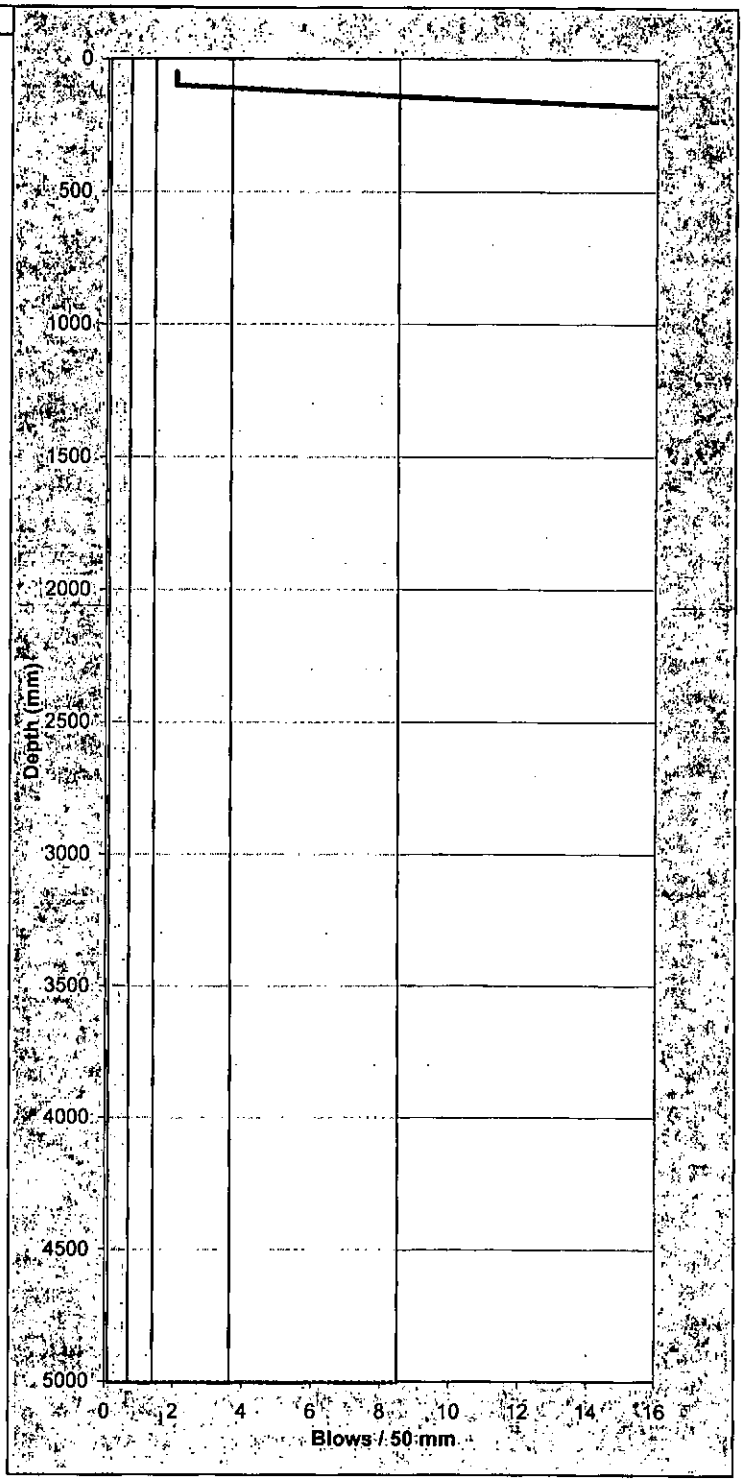
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 33 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by: *TMC*

Test No. *SC33/4*
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	5	2600	
150	3	2650	
200	2	2700	
250	3	2750	
300	10	2800	
350	15	2850	
400	refusal	2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
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1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
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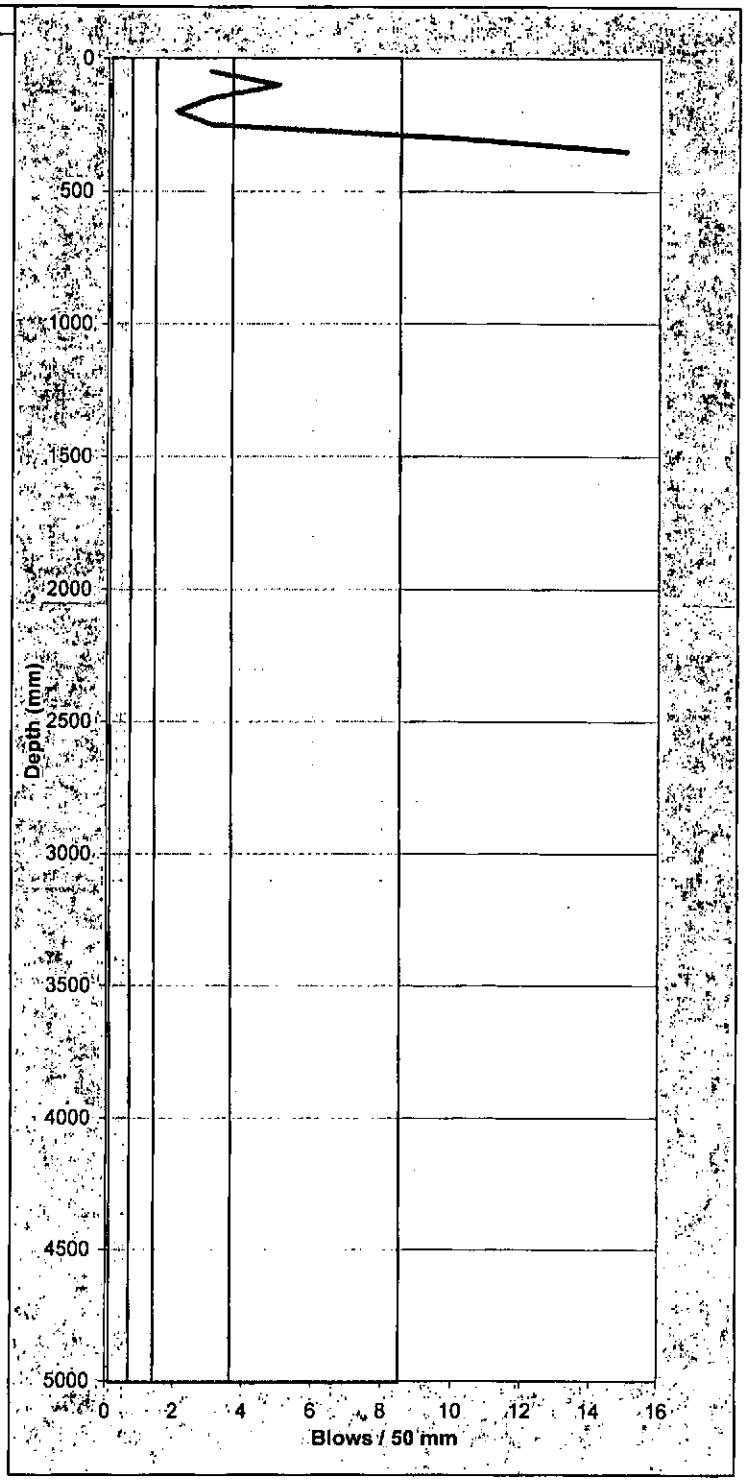
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

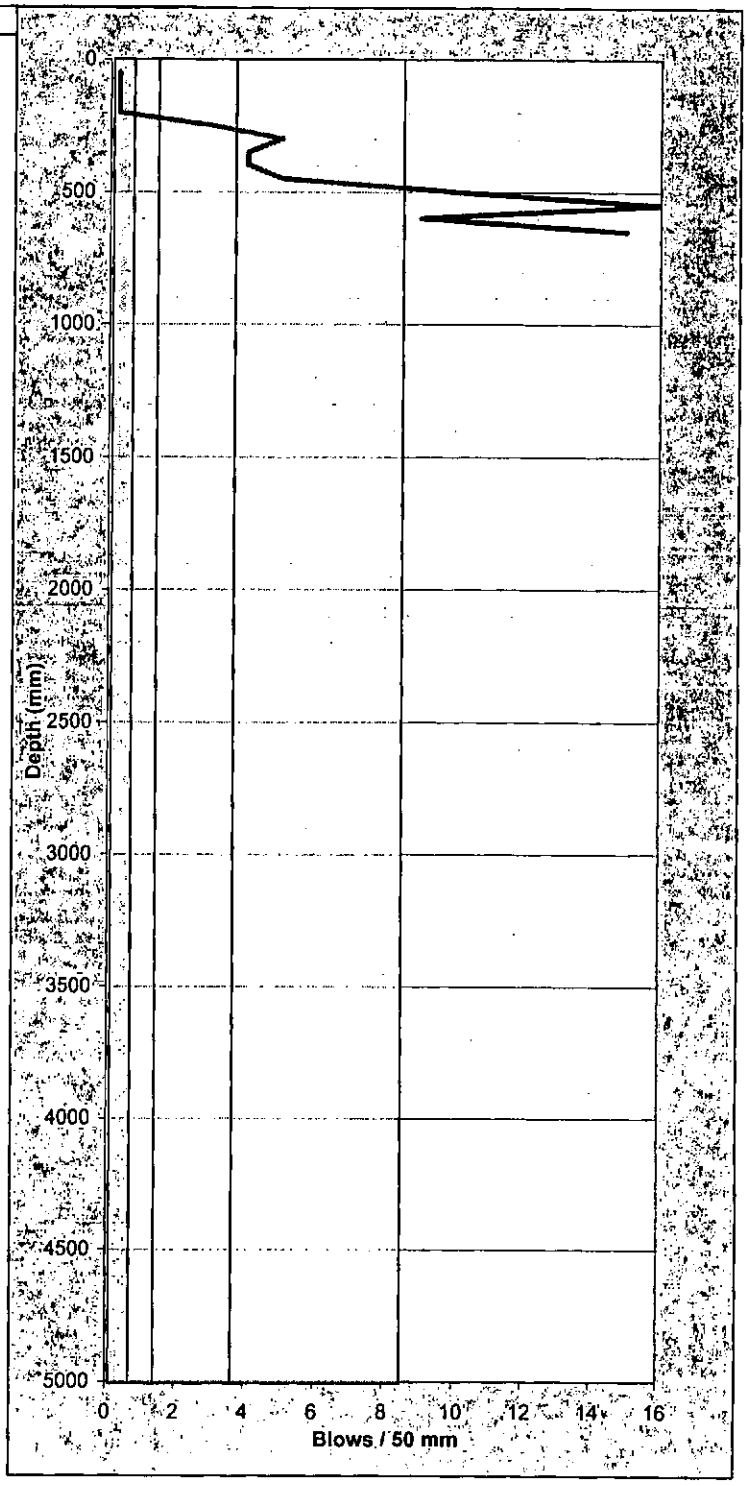
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 34 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC34/1***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	0.25	2550	
100	0.25	2600	
150	0.25	2650	
200	0.25	2700	
250	3	2750	
300	5	2800	
350	4	2850	
400	4	2900	
450	5	2950	
500	10	3000	
550	16	3050	
600	9	3100	
650	15	3150	
700	refusal	3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

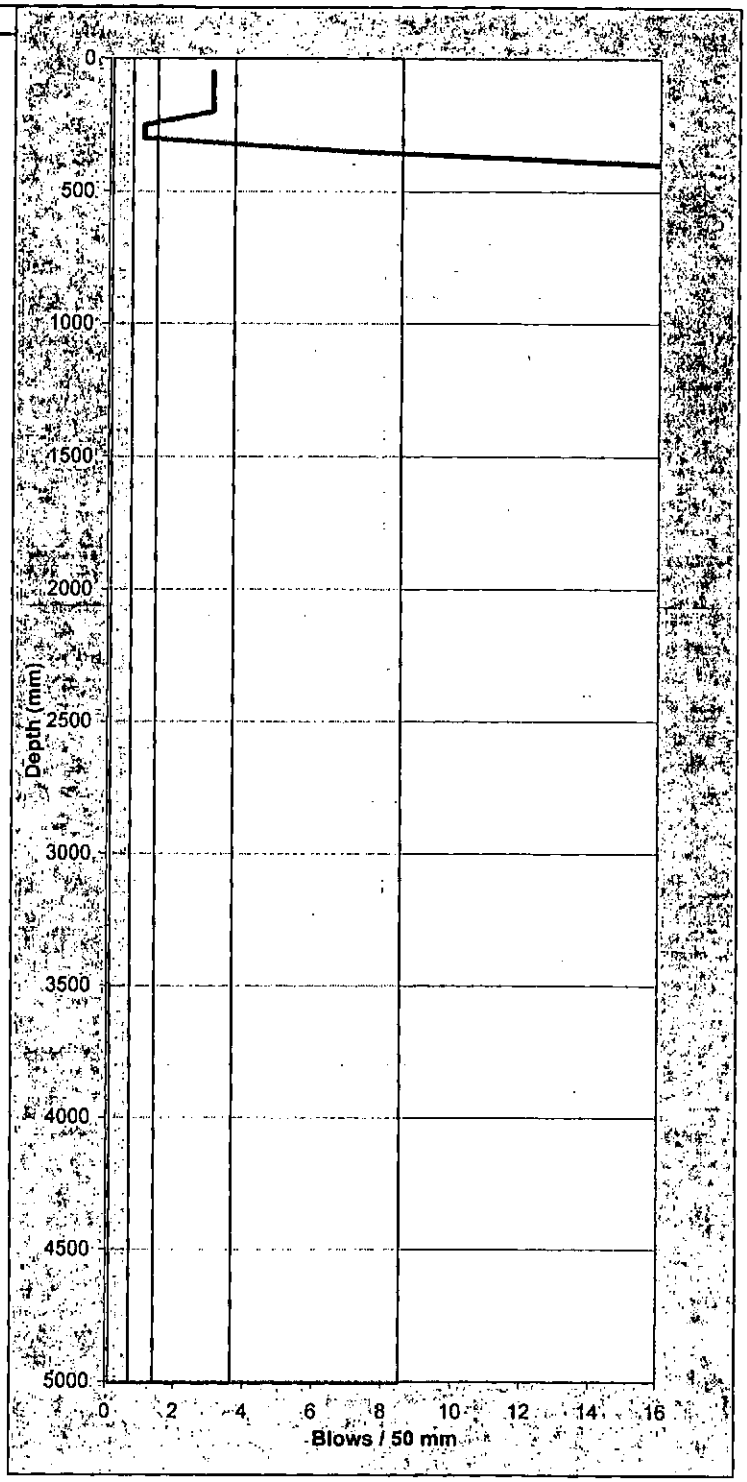
SCALA PENETROMETER LOG

Job No: 81069.010
Project: Tasman Hieghts BRJV
Location: Lot 34 Istana Place, Nelson.
Position: Refer to site plan

Date: 24/01/2006
Operated by: CJWH
Logged by: CJWH
Checked by:

Test No. SC34/2
Sheet 1
of 1

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	3	2600	
150	3	2650	
200	3	2700	
250	1	2750	
300	1	2800	
350	7	2850	
400	16	2900	
450	refusal	2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

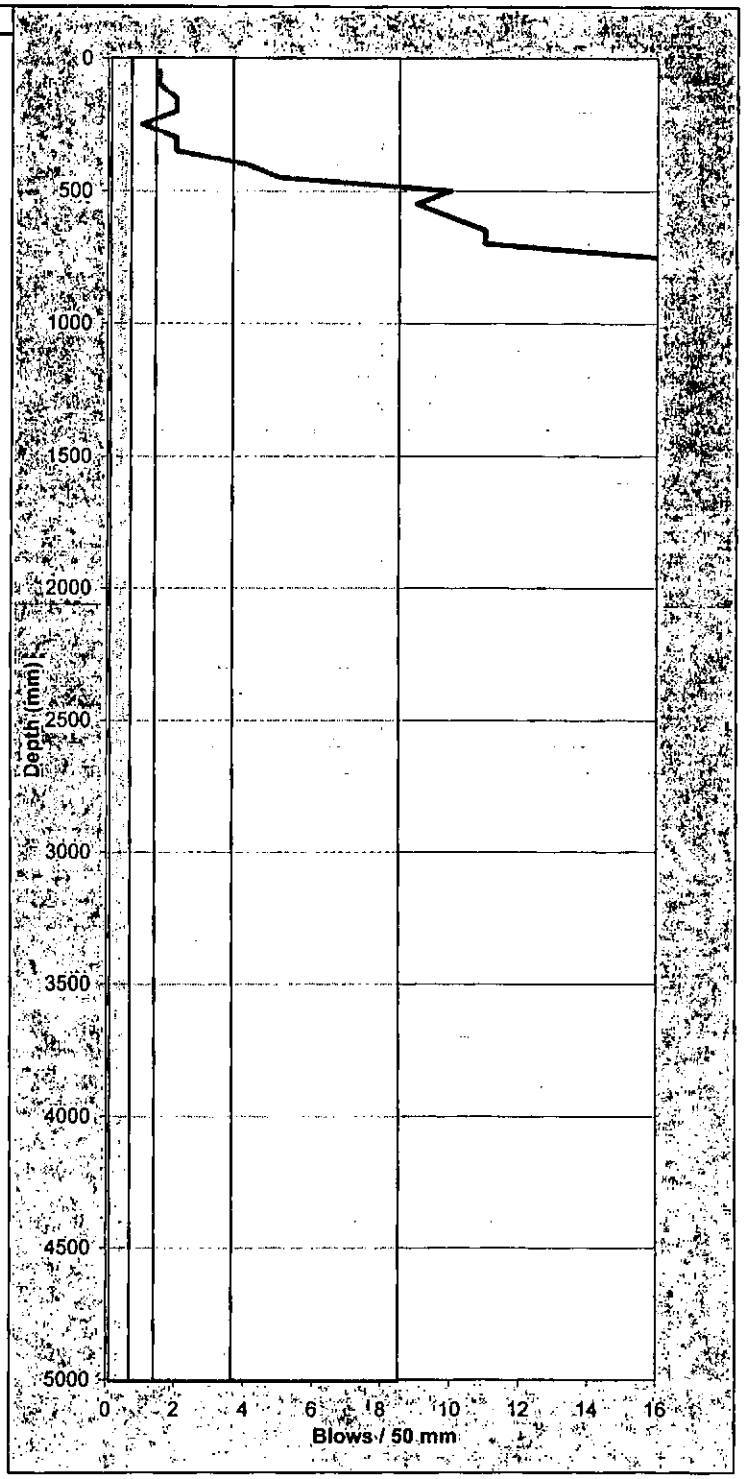
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 34 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC34/3***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1.5	2550	
100	1.5	2600	
150	2	2650	
200	2	2700	
250	1	2750	
300	2	2800	
350	2	2850	
400	4	2900	
450	5	2950	
500	10	3000	
550	9	3050	
600	10	3100	
650	11	3150	
700	11	3200	
750	16	3250	
800	refusal	3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
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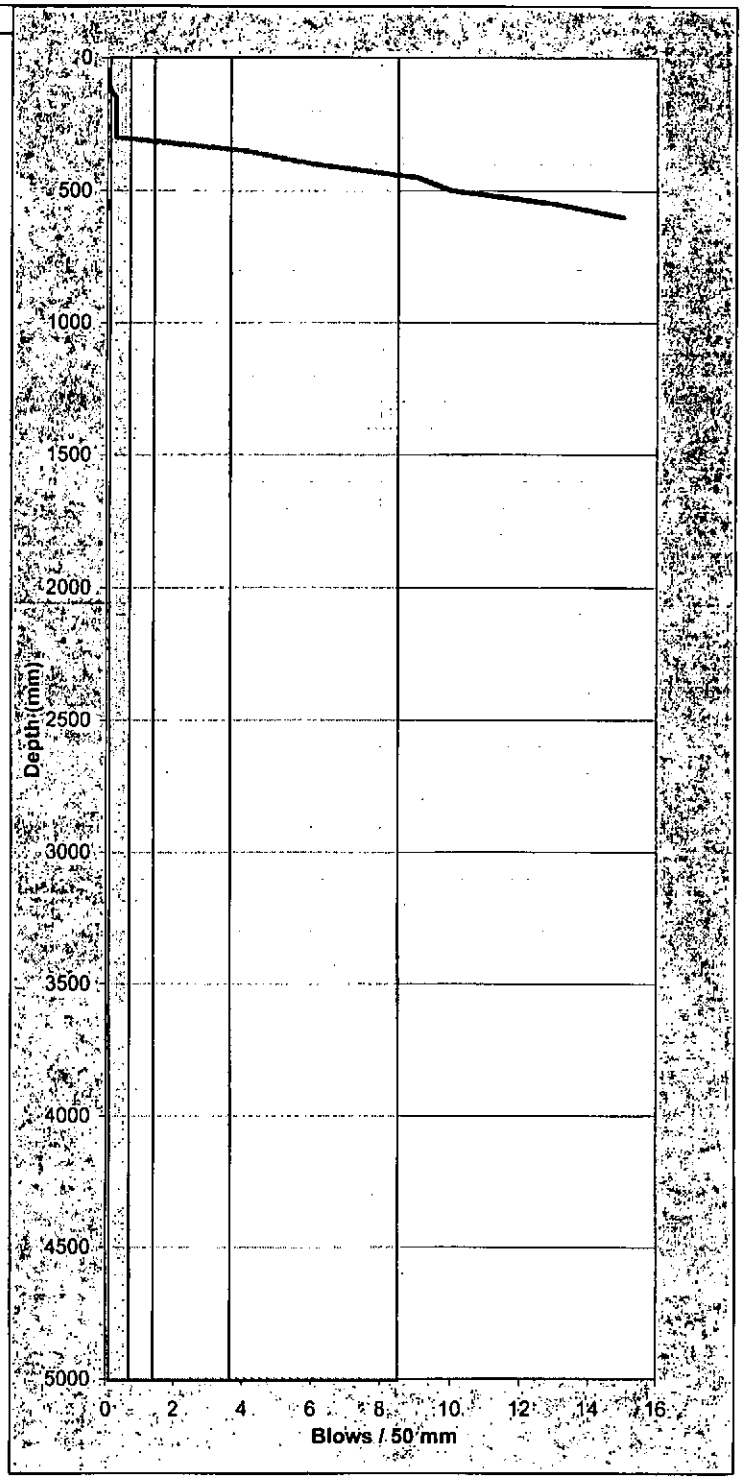
SCALA PENETROMETER LOG

Job No: *81069.010*
Project: *Tasman Hieghts BRJV*
Location: *Lot 34 Istana Place, Nelson.*
Position: *Refer to site plan*

Date: *24/01/2006*
Operated by: *CJWH*
Logged by: *CJWH*
Checked by:

Test No. ***SC34/4***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*0*	2550	
100	*0*	2600	
150	*0.25*	2650	
200	*0.25*	2700	
250	*0.25*	2750	
300	*0.25*	2800	
350	*4*	2850	
400	*6*	2900	
450	*9*	2950	
500	*10*	3000	
550	*13*	3050	
600	*15*	3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 HALIFAX STREET
PO BOX 1009
NELSON

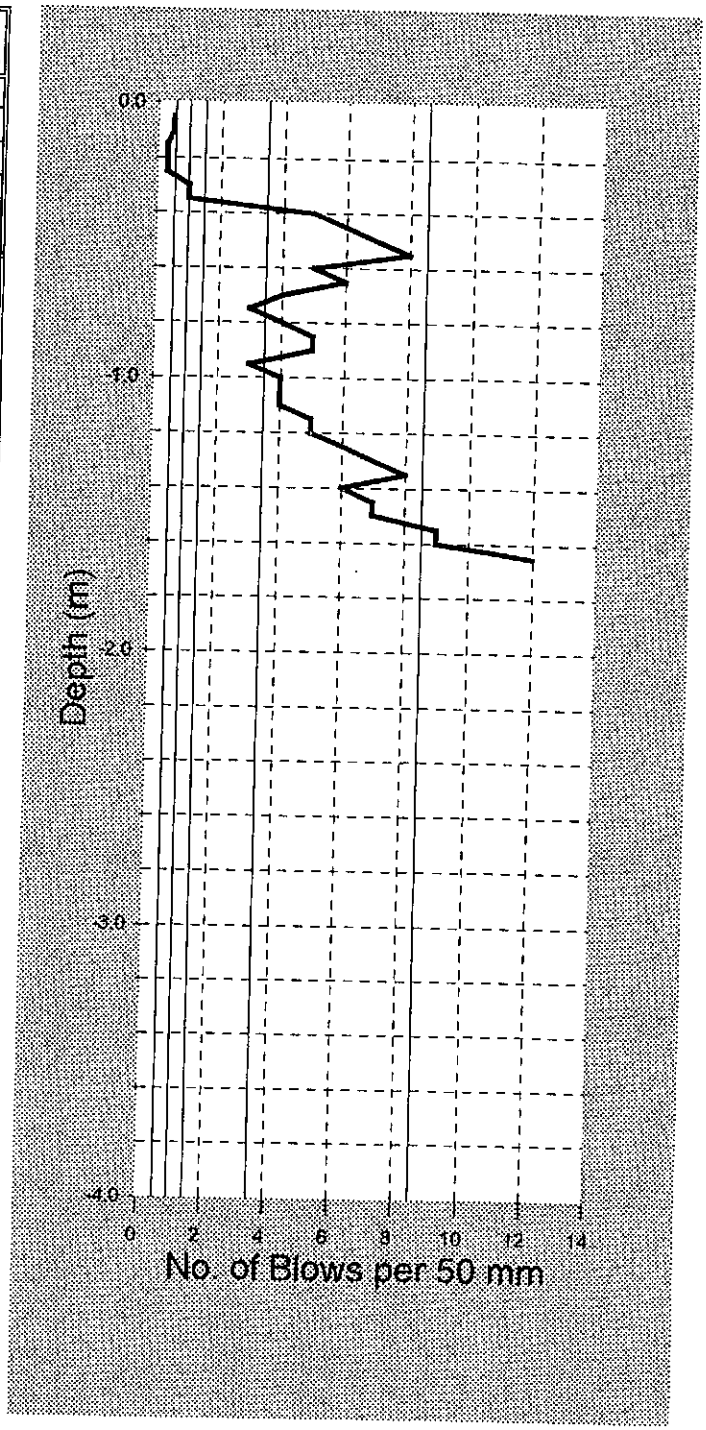
Test No.	P3
Sheet	1
of	1

Date: 24/05/2000
Job No: 81069
Operated by: DWR
Logged by: DWR
Checked by:

Site: Lot 3 Tasman Heights
Location: Refer Site Plan
Ground Surface RL:
Depth from Ground RL to Excavated Surface:

mm DRIVEN	No. of BLOWS
50	0.5
100	0.5
150	0.3
200	0.3
250	0.3
300	1
350	1
400	5
450	6
500	7
550	8
600	5
650	6
700	4
750	3
800	4
850	5
900	5
950	3
1000	4
1050	4
1100	4
1150	5
1200	5
1250	6
1300	7
1350	8
1400	6
1450	7
1500	7
1550	9
1600	9
1650	12
1700	
1750	
1800	
1850	
1900	
1950	
2000	

mm DRIVEN	No. of BLOWS
2050	
2100	
2150	
2200	
2250	
2300	
2350	
2400	
2450	
2500	
2550	
2600	
2650	
2700	
2750	
2800	
2850	
2900	
2950	
3000	
3050	
3100	
3150	
3200	
3250	
3300	
3350	
3400	
3450	
3500	
3550	
3600	
3650	
3700	
3750	
3800	
3850	
3900	
3950	
4000	



Test Method Used : NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 HALIFAX STREET
PO BOX 1009
NELSON

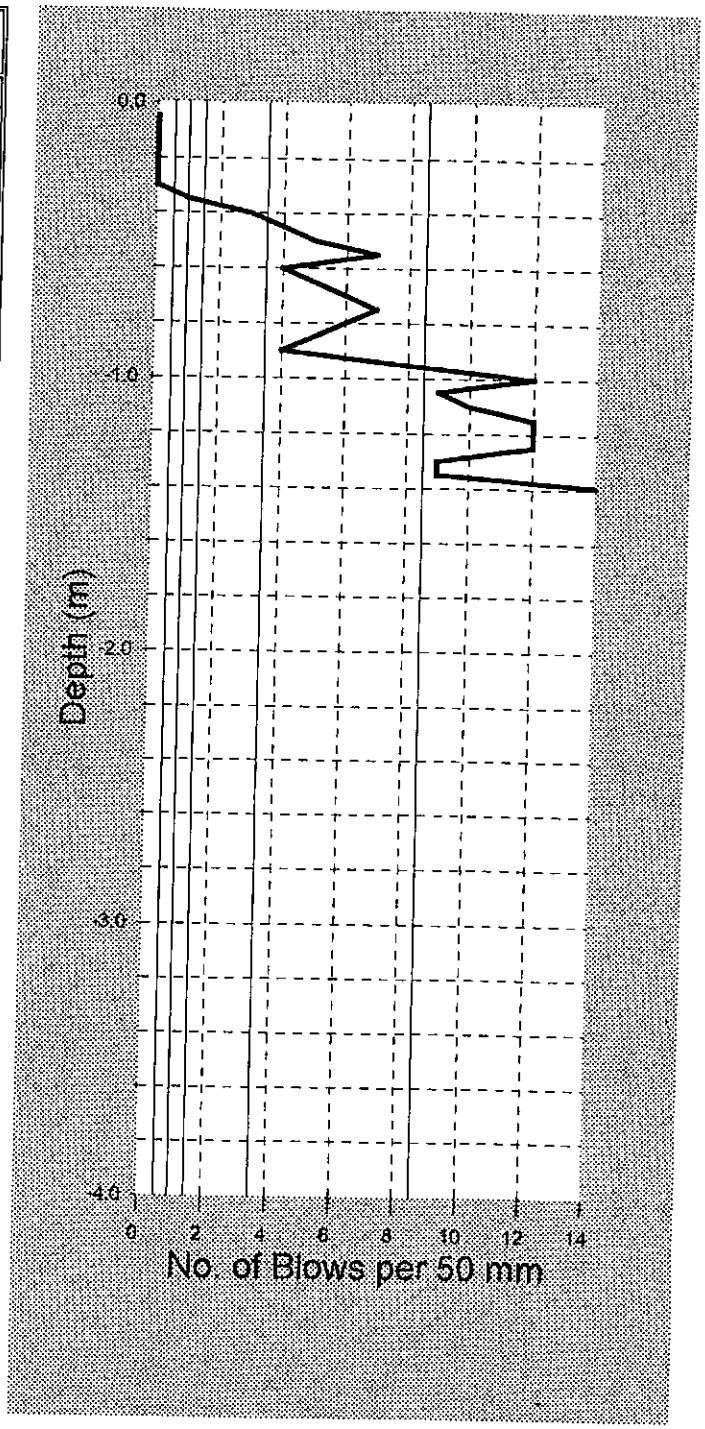
Test No.	P4
Sheet	1
of	1

Date: 24/05/2000
Job No: 81069
Operated by: DWR
Logged by: DWR
Checked by:

Site: Lot 3 Tasman Heights
Location: Refer Site Plan
Ground Surface RL:
Depth from Ground RL to Excavated Surface:

mm DRIVEN	No. of BLOWS
50	0
100	0
150	0
200	0
250	0
300	0
350	1
400	3
450	4
500	5
550	7
600	4
650	5
700	6
750	7
800	6
850	5
900	4
950	8
1000	12
1050	9
1100	10
1150	12
1200	12
1250	12
1300	9
1350	9
1400	15
1450	UTP
1500	
1550	
1600	
1650	
1700	
1750	
1800	
1850	
1900	
1950	
2000	

mm DRIVEN	No. of BLOWS
2050	
2100	
2150	
2200	
2250	
2300	
2350	
2400	
2450	
2500	
2550	
2600	
2650	
2700	
2750	
2800	
2850	
2900	
2950	
3000	
3050	
3100	
3150	
3200	
3250	
3300	
3350	
3400	
3450	
3500	
3550	
3600	
3650	
3700	
3750	
3800	
3850	
3900	
3950	
4000	



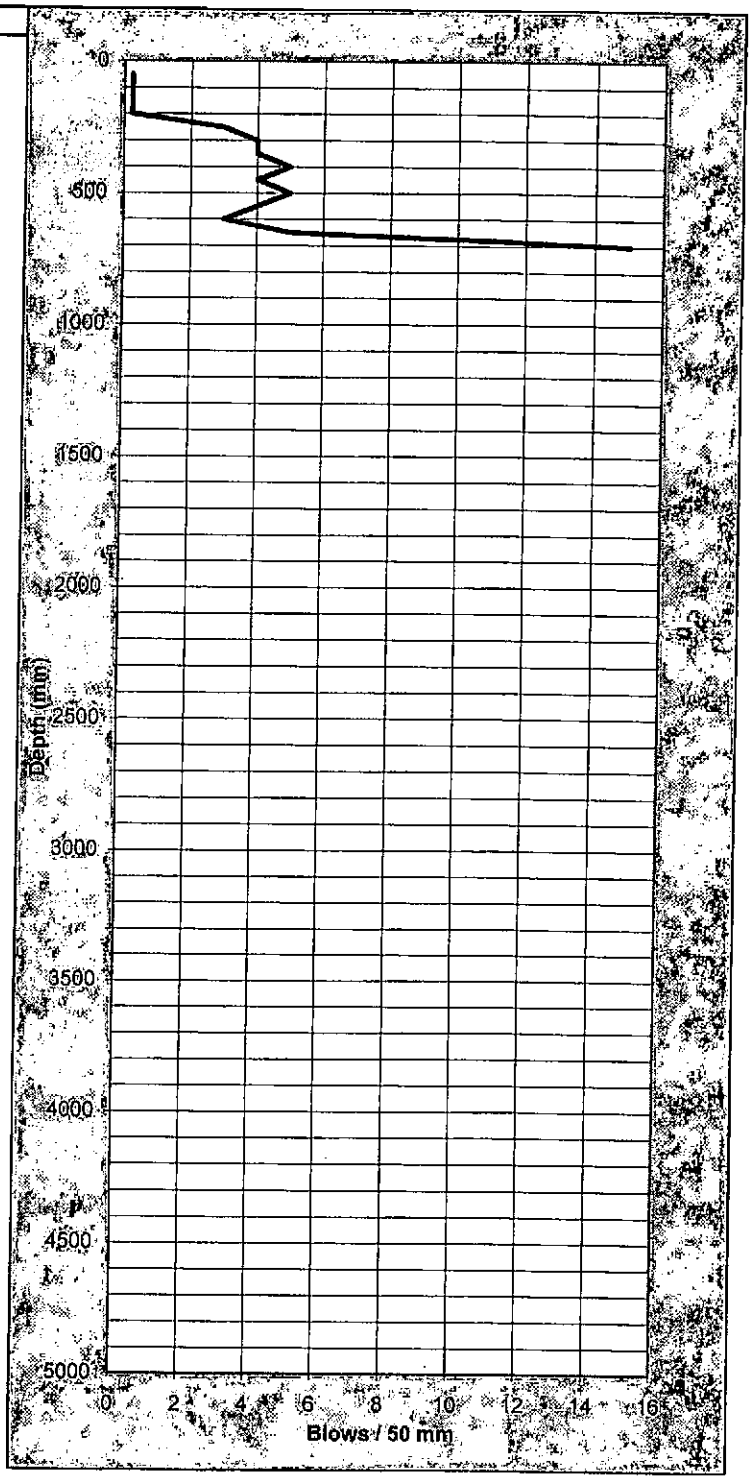
Test Method Used : NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No:	*81069.01*	Date:	*29.04.04*	**Test No.**	***SC 1jw***
Project:	*BRJV*	Operated by:	*JXWW*		
Location:	*Refer Site Plan*	Logged by:	*JXWW*	**Sheet**	***1***
Level:	*Adjacent TP1jw*	Checked by:		**of**	***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*0.25*	2550	
100	*0.25*	2600	
150	*0.25*	2650	
200	*0.25*	2700	
250	*3*	2750	
300	*4*	2800	
350	*4*	2850	
400	*5*	2900	
450	*4*	2950	
500	*5*	3000	
550	*4*	3050	
600	*3*	3100	
650	*5*	3150	
700	*15*	3200	
750	Refusal	3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
44 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

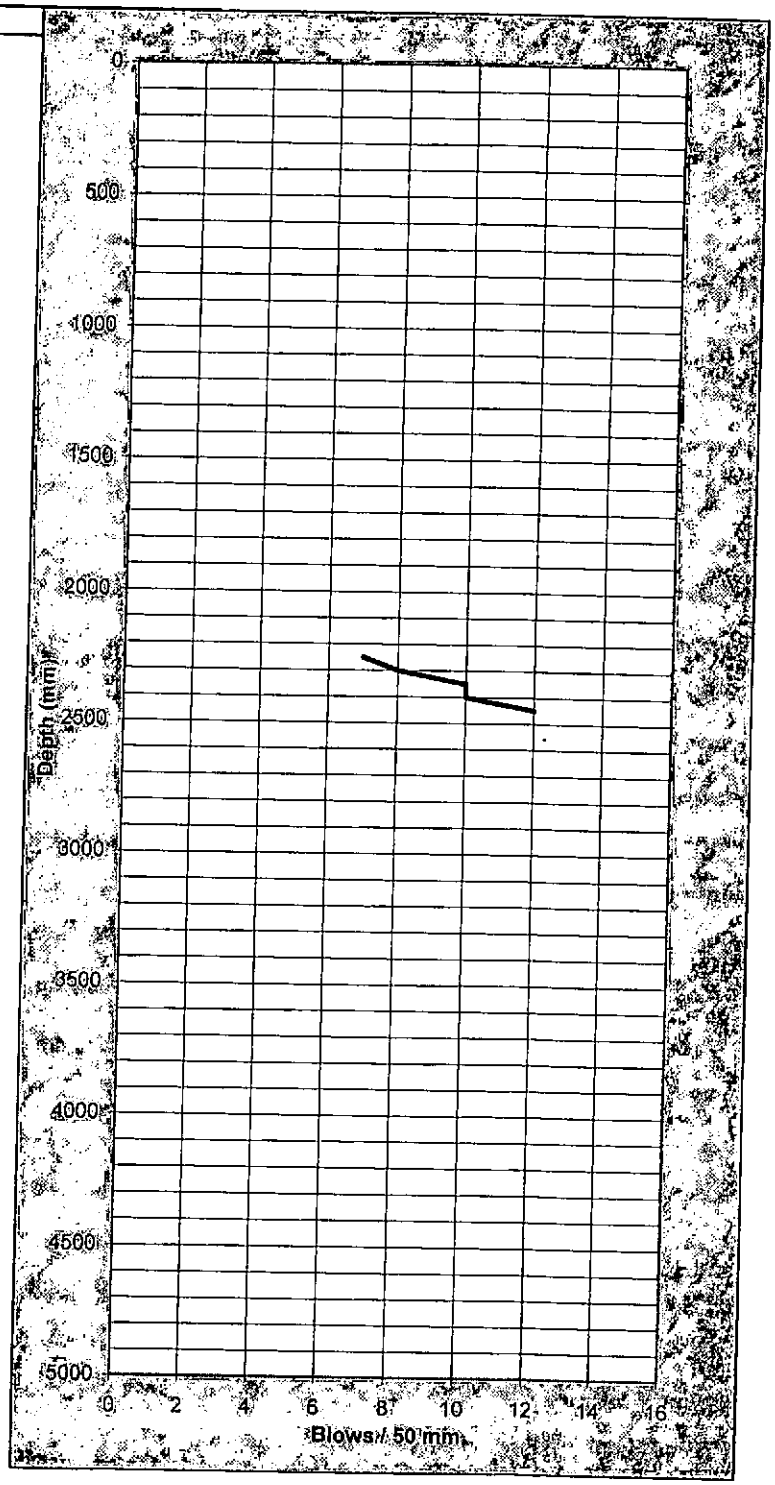
SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *BRJV*
Location: *Refer Site Plan*
Level: *in TP1jw*

Date: *29.04.04*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by:

Test No. ***SC 1ajw***
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50		2550	
100		2600	
150		2650	
200		2700	
250		2750	
300		2800	
350		2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250	7	4750	
2300	8	4800	
2350	10	4850	
2400	10	4900	
2450	12	4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP3

SHEET 1 OF 1

PROJECT: TASMAN HEIGHTS — LOCATION: LOT 3 — JOB NO: 21069

CO-ORDINATES: — EXPOSURE TYPE: TRIAL PIT — HOLE STARTED: 24/5/00

RL: — EQUIPMENT: EX 22 HYDRAULIC EXCAVATOR — HOLE FINISHED: 24/5/00

DATUM: — OPERATOR: MARK — LOGGED BY: BWR

EXCAVATION DIMENSIONS: 0.5 x 2.5 x 1.1 — CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DEFECTS, STRUCTURE	UNIT
	NIL	NIL	SCALA PROBE P3/3			OL	CLAYEY SILT : ORGANIC BLACK	M	F		TOPSOIL	
						ML	SANDY SILT SOME CLAY : BROWN MINOR GRAVELS	W	VST		FILL (CASTFILL)	
						OL	CLAYEY SILT : SOME GRAVEL, ORGANIC	D	VST		TOPSOIL (BURIED)	
				1.0		ML	CLAYEY SILT : LOW TO MEDIUM PLASTICITY, LIGHT BROWN WITH GREY AND ORANGE STREAKS	D TO M	H		COLLUVIUM	
							END OF TRIAL PIT AT 1.1m					

SKETCH

SCALE 1:50

FILL DEPTH INCREASES TO WEST INTO BODY OF EGGSY FILL

TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP 4

SHEET 1 OF 1

PROJECT: TASMAN HEIGHT — LOCATION: LOT 3 — JOB NO: 81069

CO-ORDINATES:

RL:

DATUM:

EXPOSURE TYPE: TRIAL PIT

EQUIPMENT: EX 22 HYDRAULIC EXCAVATOR

OPERATOR: MARK

EXCAVATION DIMENSIONS:

HOLE STARTED: 24/5/00.

HOLE FINISHED: 24/5/00

LOGGED BY: DLWR

CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
	NIL	NIL	SCALA PROBE P3/4			OL	CLAYEY SILT BLACK ORGANIC	M			TOPSOIL	
				0.5		ML	GRAVELLY SILT : SOME SAND, ORANGE BROWN	W	ST		FILL (RECENT)	
						GP	SANDY GRAVEL : SOME SILT, BROWN ORANGE RARE TOPSOIL MOTTLES AT INTERFACE	M	MD		FILL (EASTFILL)	
				1.0		CH	SILTY CLAY : RARE GRAVEL BROWN WITH GREY CLAY FILLED FISSURES AND FINE ROOTLET INCLUSIONS MEDIUM TO HIGH PLASTICITY		H		COLLUVIUM	
				1.5			END OF TRIAL PIT AT 1.4m UNABLE TO PENETRATE FURTHER					

SKETCH

TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP1 JW

SHEET 1 OF 1

PROJECT: BRSW

LOCATION: EAST FILL LOT 7

JOB NO: 81069-010

CO-ORDINATES: REFER SITE PLAN

RL:

DATUM:

EXPOSURE TYPE: TP

EQUIPMENT: 3t

OPERATOR: MARK MEYER

EXCAVATION DIMENSIONS: 2700×2700×650

HOLE STARTED: 29-04-04

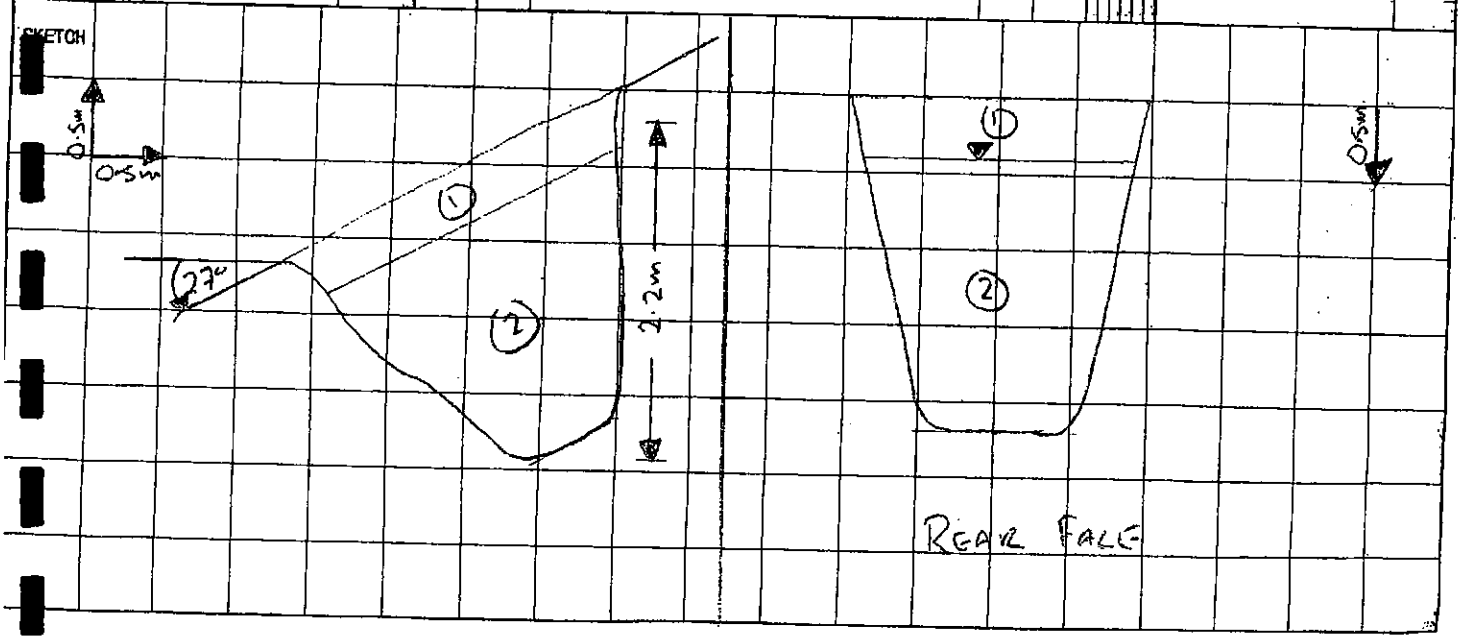
HOLE FINISHED: 29-04-04

LOGGED BY: JXWW

CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS PP = Pocket Penetrometer q_u kPa SV = Shear Vane Corrected kPa	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa (Pocket Pen / Shear Vane)	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			PP 100 75 seep 50	0		OL	SILT, low plasticity, black organic, rootlets with minor clay content	M W	F V S		TOPSOIL	(1)
			100 200 350	0.5		GM	SILTY GRAVEL, with clay orange-brown rounded-subangular, granitic, poorly graded, coarse gravel	W	L V VD		FILL (Port Hills Gravel: derived)	(2)
	L		300	1.0			Matrix, silt with clay low plasticity,	M				
			450	1.5								
			> 450					M	VD			
			> 450	2.0								
			> 450 slough	2.5								

SKETCH



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EXCAVATION LOG

EXCAVATION NO: TP3
SHEET 1 OF 1

PROJECT: TASMAN HEIGHTS — LOCATION: LOT 3 — JOB NO: 21069
CO-ORDINATES: — EXPOSURE TYPE: TRIAL PIT — HOLE STARTED: 24/5/00
RL: — EQUIPMENT: EX 22 HYDRAULIC EXCAVATOR — HOLE FINISHED: 24/5/00
DATUM: — OPERATOR: MARK — LOGGED BY: CWR
EXCAVATION DIMENSIONS: 0.5 x 2.5 x 1.1 — CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa	ORIGIN TYPE, MINERAL COMPOSITION, DEFECTS, STRUCTURE	UNIT
	NIL	NIL	SCALA PROBE P3/3			OL	CLAYEY SILT : ORGANIC BLACK	M	FT		TOPSOIL	
						ML	SANDY SILT SOME CLAY : BROWN MINOR GRAVELS	W	VST		FILL (CUT FILL)	
						OL	CLAYEY SILT : SOME GRAVEL, ORGANIC	D	VST		TOPSOIL (BURIED)	
				1.0		ML	CLAYEY SILT : LOW TO MEDIUM PLASTICITY, LIGHT BROWN WITH GREY AND ORANGE STREAKS	D TO M	H		COLLUVIUM	
							END OF TRIAL PIT AT 1.1m					

SKETCH

SCALE 1:50

FILL DEPTH INCREASE TO WEST INTO BODY OF EXIST FILL

TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP 4

SHEET 1 OF 1

PROJECT: TASMAN HEIGHT
LOCATION: LOT 3
JOB NO: 81069

CO-ORDINATES:
EXPOSURE TYPE: TRIAL PIT
HOLE STARTED: 24/5/00

RL:
EQUIPMENT: EX 22 HYDRAULIC EXCAVATOR
HOLE FINISHED: 24/5/00

DATUM:
OPERATOR: MARK
LOGGED BY: DWR

EXCAVATION DIMENSIONS:
CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION							GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
	NIL	NIL	SCALA PROBE P3/4			OL	CLAYEY SILT & BLACK ORGANIC	M			TOPSOIL	
				0.5		ML	GRAVELLY SILT : SOME SAND, ORANGE BROWN	W	ST		FILL (RECENT)	
						GP	SANDY GRAVEL : SOME SILT, BROWN ORANGE RARE TOPSOIL MOTTLES AT INTERFACE	M	MD		FILL (EASTFILL)	
				1.0		CH	SILTY CLAY : RARE GRAVEL BROWN WITH GREY CLAY FILLED FISSURES AND FINE ROOTLET INCLUSIONS MEDIUM TO HIGH PLASTICITY		H		COLLUVIUM	
				1.5			END OF TRIAL PIT AT 1.4m UNABLE TO PENETRATE FURTHER					

SKETCH

TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP1 JW

SHEET 1 OF 1

PROJECT: BRJV

LOCATION: EAST FILL LOT 7

JOB NO: 81069-010

CO-ORDINATES: REFER SITE PLAN

RL:

DATUM:

EXPOSURE TYPE: TP

EQUIPMENT: 3t

OPERATOR: MARK MEYER

EXCAVATION DIMENSIONS: 2700 x 2700 x 600

HOLE STARTED: 29-04-04

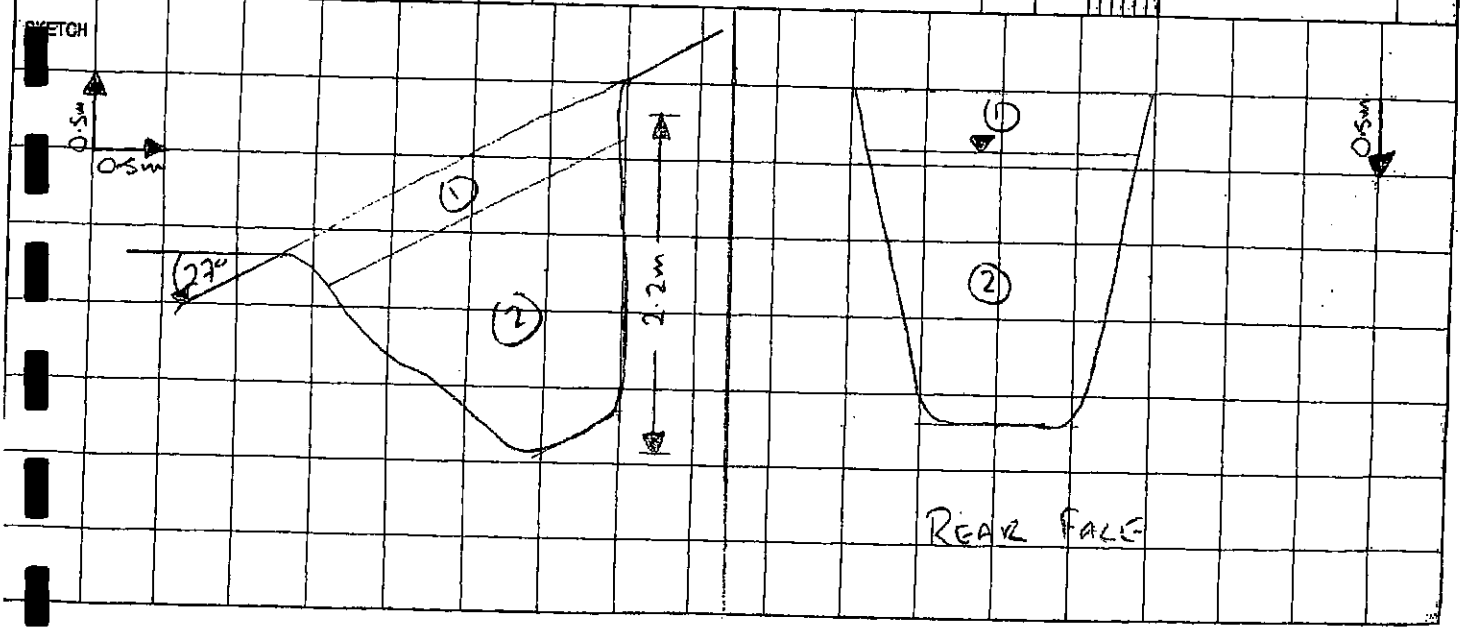
HOLE FINISHED: 29-04-04

LOGGED BY: JXWW

CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS PP = Pocket Penetrometer q_u kPa SV = Shear Vane Corrected kPa	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa	ORIGIN TYPE, MINERAL COMPOSITION, DEFECTS, STRUCTURE	UNIT
			PP 100 75 Seep 50 100 200 350 300 450 > 450 > 450 > 450 sticky	0.5 1.0 1.5 2.0 2.5		OL GM	SILT, low plasticity, black organic, rootlets with minor clay content SILTY GRAVEL, with clay Orange-brown rounded-subangular, granitic, poorly graded, coarse gravel Matrix, silt with clay low plasticity	M W W M M	F L VD VD		TOPSOIL FILL (Port Hills Gravel : derived)	1 2

SKETCH



U.T.P = Unable to Penetrate.

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ENGINEERING LOG TERMINOLOGY

DRILLING OR EXCAVATION

WATER

- Water level on date shown
- Water Inflow
- Water Outflow

CORE RECOVERY

Core recovered expressed as percentage of the length of the core run

METHOD/CASING

Shows drilling method and depth of casing

Common types:
- OB – open barrel
- W – wash
- HQ3 – HQ triple tube coring
- PQ3 – PQ triple tube coring

SAMPLE TYPE

(The length of the sample is indicated by the length of symbol)

- OPEN BARREL
- DOUBLE OR TRIPLE TUBE
- STANDARD PENETRATION TEST
- LARGE DIA. THIN WALLED TUBE
- SMALL DIA. THIN WALLED TUBE
- BULK SAMPLE

GRAPHIC LOG

The graphic log shows soil and rock substances, significant defects, and core loss. Soil and rock substances represented clear contrasting symbols consistent for each project.

TYPICAL SYMBOLS:

- ORGANIC MATERIAL
- CLAY
- SILT
- SAND
- GRAVEL
- MUDSTONE
- SILTSTONE
- SANDSTONE
- VOLCANIC ROCK
- NO CORE

TESTS

- N=22 – SPT uncorrected blow count for 300mm
- • 75kPa – Undrained shear strength as measured by field vane
- ⊠ – Pressuremeter Test
- * – Laboratory test(s) carried out:

Common types:
- LV – Laboratory vane
- AL – Atterburg limits
- UU – Undrained triaxial
- PSD – Particle size
- C' Ø' – Effective stress
- CONS – Consolidation
- DS – Direct Shear
- COMP – Compaction
- UN – Unconfined Compression
- IS – Point Load

SOIL DESCRIPTIONS

CLASSIFICATION SYMBOL

Based on USBR Unified Soil Classification System Visual Method for field identification. Classification symbols based on Laboratory Method may differ.

Soil and rock descriptions generally follow the "Guidelines for the field descriptions of Soils and Rocks in Engineering Use" by the NZ Geomechanics Society (1985). Particular in-house abbreviations are given below.

MOISTURE CONTENT

- D – Dry, looks and feels dry
- M – Moist, no free water on hand when remoulding
- W – Wet, free water on hand when remoulding

Moisture content may be compared to the plastic limit (PL) eg M > PL = moist, moisture content greater than the plastic limit

UNDRAINED SHEAR STRENGTH

		Cu (kPa)
VS	Very Soft	<10
S	Soft	10 to 25
F	Firm	25 to 50
St	Stiff	50 to 100
VSt	Very Stiff	100 to 200
H	Hard	>200
Fb	Friable	

RELATIVE DENSITY

		SPT – Uncorrected
VL	Very Loose	0 to 4
L	Loose	4 to 10
MD	Medium Dense	10 to 30
D	Dense	30 to 50
VD	Very Dense	>50

ROCK DESCRIPTIONS

WEATHERING

UW	Unweathered
SW	Slightly Weathered
MW	Moderately Weathered
HW	Highly Weathered
CW	Completely/Extr. Weathered
RW	Residual Soil

FIELD STRENGTH

		UCS (MPa)	Point Load Index (MPa)
R0	Extremely Weak	0.25–1	N/A
R1	Very Weak	1 to 5	N/A
R2	Weak	5 to 25	N/A
R3	Moderately Strong	25 to 50	1–2
R4	Strong	50 to 100	2–4
R5	Very Strong	100 to 250	4–10
R6	Extremely Strong	>250	

P.T.O.

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ENGINEERING LOG TERMINOLOGY

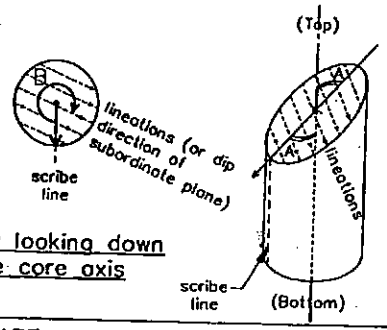
ROCK DESCRIPTIONS

(Continued)

DEFECTS

Significant defects are shown graphically

B	BEDDING
J	JOINT
SZ	SHEARED ZONE
CZ	CRUSHED SEAM/ZONE
IF	INFILLED SEAM/ZONE
XD	EXTREMELY WEATHERED SEAM



View looking down the core axis

CODING

Typical Example:

2J60°, PL, SL, T, CV, stiff green CLAY

- 2 — No. in defect set
- J — Type
- 60° — Angle to core axis
- PL — Shape
- SL — Roughness
- T — Apeture
- CV — Infilling/Coating Type
- stiff green CLAY — Infilling Description (as per Soil Description)

Where possible, the relative angle between the defect and the bedding (B) is given, where B = angle from the dip direction of the bedding, to the dip direction of the defect, in a clockwise direction when looking down the core axis.

SHAPE

TERM	CODE
Planar	PL
Slightly curved	SC
Curved	CV
Irregular	IR
Stepped	ST
Wavy	WV

ROUGHNESS

DESCRIPTION OF JOINT SURFACE	CODE
Slickensided	SL
Smooth	SM
Defined Ridges	DR
Small Steps	ST
Rough	R
Very Rough	VR

After Piteau (1973)

APERTURE

TERM	SYMBOL	DESCRIPTION (Separation)
Very Tight	VT	less than 0.1mm
Tight	T	0.1mm to 1.0mm
Open	O	1.0mm to 10.0mm
Very Open	VO	more than 10mm

After Bienawski (1973)

INFILLINGS AND COATINGS

Clay Gouge	CG	Joints have openings between opposing faces of intact rock substance in excess of 1mm filled with clay gouge. Clay is generally described in terms of soil properties.
Clay Veneers	CV	Joints contain clay coating whose maximum thickness does not exceed 1mm. Note: Describe clay in terms of soil properties.
Penetrative Limonite	PL	Joint traces are marked in terms of well defined zones of slightly to moderately weathered ferruginised rock-substance within the adjacent rock.
Limonite Stained	FeSt	Joint surfaces are stained or coated with limonite, although the rock substance immediately adjacent to the joints is fresh.
Coated	CT SC	Joints exhibit Coatings other than clay or limonite, eg. Carbonate (CT) or silica (SC).
Cemented	CL CS CC	Joints are cemented with limonite (CL), silica (CS), or carbonates (CC).
Clean	CN	Joint surfaces show no trace of clay, limonite, or other coatings.

Rm 005141
March 07

REPORT

KB QUARRIES LTD

Earthworks and Building Site Certification Report ROW T, Tasman Heights Subdivision, Princes Drive, Nelson

RECEIVED
- 3 APR 2007
NCC

Report prepared for:

KB QUARRIES LTD

Report prepared by:

TONKIN & TAYLOR LTD

Distribution:

KB QUARRIES LTD	4 copies
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March 2007

Job no: 81069.010

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Appendix A:	**Tonkin & Taylor Drawings**
Appendix B:	**Staig & Smith Ltd As-built drawings**
Appendix C:	**Building site certification investigations**
Appendix D:	**Earthfill Certificate**

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1 Introduction

This report relates to the ROW T subdivision (Lots 120 to 126) located off Princes Drive at Tasman Heights, Nelson. Land Solutions Ltd and Staig & Smith Ltd (S&S) designed the subdivision. Tonkin & Taylor Ltd (T&T) were engaged as geotechnical consultant.

This report covers:

- Certifying building sites for Lots 120 to 126;
- Review of bulk earthworks carried out on the site.

As part of the subdivision development T&T have:

- Monitored earthfill that has been placed on Lots 125 and 126;
- Provide geotechnical advice regarding the development of the lots;
- Design of ground improvement works.

The subdivision was constructed according to engineering plans prepared by Staig & Smith (Ref 8877) and approved by Nelson City Council (NCC Plan No 36-1374).

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2 Site description

2.1 Location

The site is located at the southern end of Princes Drive, Observatory Hill, Nelson.

2.2 Topography

Prior to earthworks commencing the site was located on a narrow north-south trending ridge which sloped at 10 to 12 degrees to the south. From the main ridge the ground fell away steeply to the east and west into gullies located on either side of the main ridge.

During the earthworks the ridge was cut down by up to 6 m. This has created a wider more gently sloping ridge area on which most of the proposed lots are sited. The ground still falls away to the gullies on either side of the ridge.

The central ridge area now slopes gently (7 to 10 degrees) from the high spot on Princes Drive towards the end of the ROW T cul-de-sac. Surrounding the relatively flat central area the ground slopes off moderately steeply (18 to 25 degrees) down to the two gullies and off the end of the ridge.

2.3 Geology

The "Geology of Nelson Urban Area" scale 1:25,000 shows the site to be underlain by 'Port Hills Gravel Formation'. This Formation is described as consisting of clay-bound gravels containing well rounded gravel, cobbles and boulders.

Test pit excavations undertaken at the site prior to and during development encountered up to 2.0 m of colluvium soils overlying Port Hill Gravels (PHG). The colluvial soils generally consist of firm to stiff/gravelly silts or loose to medium dense silty gravels. PHG generally consists of orange-brown, dense to very dense silty gravels.

3 Subdivisional earthworks

3.1 East Fill

Bulk earthworks construction started on the north western edge of the site in late 1989 with the construction of the East Fill estimated to be up to 12 m thick. These earthworks were part of an earlier plan to develop the Tasman Heights area of Nelson. The principle earthworks contractor for this stage of the project was Tasman Howley Ltd, and construction supervision was carried out by Worseldine and Wells Ltd (W&W).

Following East Fill construction, the land under development was sold to KB Quarries Ltd. In 1999 T&T were contracted by KB Quarries to investigate the East Fill area to assess the fill's compliance with NZS 4431. T&T conducted a number of investigations into the East Fill area and determined that the fill was non compliant with NZS 4431. As a result of these investigations and at the clients request T&T devised a remediation plan for the fill area consisting of buttressing the toe of the fill, and replacing non-functioning subsoil drains. (T&T report ref: 81069 dated 5 May 1999).

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3.2 ROW T Earthworks

The main subdivision bulk earthworks were carried out by KB Quarries Ltd from September 2003 to December 2006 and with some minor earthworks in March 2007. T&T were engaged by Staig & Smith Ltd on behalf of KB Quarries.

The earthworks undertaken by KB Quarries comprised forming a cut up to 6 m deep across the subdivision area and construction of ROW T off Princes Drive. The 6 m cut included down cutting the East Fill by up to 1 m.

Design and construction supervision of the ROW was carried out by Staig & Smith.

Engineered fill was placed on Lots 125 and 126 in accordance with Tonkin & Taylor's earthwork specification.

Staig & Smith was responsible for preparation of the earthworks as-built drawings (Job Number 8877), which are presented in Appendix B. The extent of the cutting can be seen on Earthworks Iso-Contours Drawing (Ref DWG8877L Rev A dated 29 March 2007), Appendix B. Stormwater and sewer drains were installed at the locations shown on the S&S drawings titled 'As-built - Stormwater '(Ref. DWG8877I, dated 30 January 2007) and 'As-built - Sewer ' (Ref. DWG8877J, dated 28 March 2007).

The approximate extent of the cuts and fills are shown on the T&T Drawing "Site Investigation and Earthworks Plan" (Dwg 81069.010-01, dated March 2007) included in Appendix A. Subsoil drains were installed at the locations shown on the S&S Drawing titled 'As-built Stormwater' noted as 110 mm Subsoil Drain and shown on T&T's 'Building Site Certification Plan' (Dwg 81069.010-02, Appendix A).

3.3 Final inspection and confirmatory testing

Confirmatory testing has been conducted on each of the recommended building sites and consists of up to four Scala penetrometer tests on each lot. The test locations are shown on Drawing 81069.010-01 titled 'Site Investigations and Earthworks Plan' - Appendix A. Test results are included in Appendix C.

A final inspection of the site development was carried out in March 2007.

4 Conclusions and recommendations

Recommendations and opinions expressed in this report are based on a review of previous work related to the site, earthworks construction observations and testing, certification Scala penetrometer testing and six Test pit excavations. The nature and continuity of subsurface conditions away from test locations are inferred and it must be appreciated that actual conditions may vary from the assumed model.

4.1 Building site certification

We have investigated each of the 7 residential lots (Lots 120 to 126 inclusive) shown on T&T Drawing 81069.010-01. Based on the results of our field observations, geological appraisal and field investigations described herein we are of the opinion that a stable building site exists on each of the lots investigated, which is unlikely to be affected by land instability arising from high frequency rainfall or seismic events, provided the recommendations made in Section 4.3 of this report are followed.

In terms of suitability for development we have subdivided the lots into three areas, as shown on Figure 2. These are:

- NZS3604

  Foundation conditions are suitable for design in accordance with NZS 3604:1999. Areas generally suitable for residential buildings with foundation ground conditions generally complying with the definition of *"Good Ground"* as defined by NZS 3604:1999. Because of the natural variation of the soil, good ground conditions should be confirmed by means of Scala penetrometer and/or other appropriate soil testing.

- Specific Investigation and Design Area

  These areas include moderately inclined excavated and un-certified filled slopes where there may be a risk of slope instability or excessive settlements if development is not carefully planned, Lot 120. Also areas in the vicinity of the cut and fill boundaries where weaker ground and groundwater seepage may occur.

  Development works involving building or earthworks should be investigated and designed by a chartered professional engineer practising in geotechnical engineering.

- Restricted Building Areas

  Building is not recommended in these areas for the following reason:

  - steep natural ground where there is a risk of slope instability

The extent of these areas for each lot are shown on Drawing 81069.010-02. We recommend building in NZS 3604 areas in preference to SID and finally the RBA sites. The ground conditions and building development recommendations are summarised in Table 1 below.

Table 1: Ground Conditions and Building Development Conditions

Lot #	Topography	Subsurface Conditions	Building Development Recommendations
120	Moderately inclined south and south west facing slopes.	Filled ground (East Fill) with 1m cut through the East Fill. Weak soils to 1.5m including buried topsoil. Groundwater seepages.	Specific Investigation and Design (SID) for all foundations, cuts and fills. Restricted along western and southern boundaries.
121	Gently inclined south facing slope.	Cut ground. Variable depth to good ground. Weak soils to 1 m in SC121/1.	NZS 3604 on upper gently sloping area. Specific Investigation and Design (SID) for all foundations, cuts and fills in south west corner of lot.
122	Gently inclined south facing slope.	Cut ground. Variable depth to good ground. Weak soils to 0.5m in SC122/3.	NZS 3604
123	Gently inclined south facing slope and moderately inclined south west facing slopes.	Cut ground on gently sloping area. NG on moderately inclined south west facing slopes. Good ground indicated at shallow depths (≤0.4 m).	NZS 3604 on upper gently sloping area. Restricted building area along western lot boundary and Specific Investigation and Design (SID) for all foundations, cuts and fills along cut/natural

Lot #	Topography	Subsurface Conditions	Building Development Recommendations
			boundary.
124	Gently inclined south facing slope and moderately inclined south west facing slopes.	Cut ground NG on moderately inclined south west facing slopes. Fill in south eastern corner <0.5m thick. Variable depth to good ground. Weak soils to 0.6 m in SC124/4.	SID for all foundations, cuts and fills on moderately inclined northeastern section of lot. Restricted area on lower moderately inclined western section of lot.
125	Moderately inclined south facing slopes.	Cut ground with NG in south western corner of site and fill approx 1m thick on north eastern section of lot. Variable depth to good ground. Weak soils to 1 m in SC125/2.	SID for all foundations, cuts and fills. Restricted in lower western corner of lot.
126	Moderately inclined south and south east facing slopes.	Cut ground with fill approx 1m thick on north western section of lot and natural ground on lower eastern side of lot. Variable depth to good ground. Weak soils to 1.2 m in SC126/4 and 1m in SC126/1.	SID for all foundations, cuts and fills on upper eastern section of lot. Restricted in lower western section of lot.

Notes: SID = specific investigation and design
NG = natural ground

4.2 Fill certification

4.2.1 East fill

The Inspecting Engineer has reviewed elements of design, and has periodically inspected the site. We have previously reviewed the construction monitoring files for the East Fill and conducted a geotechnical assessment of it. We are not in a position to be able to certify the East Fill in accordance with NZS 4431 but it is our professional opinion that the remedial works outlined in Section 3.1 of this report have improved the stability of the fill and it is unlikely to be subject to deep seated land slippage under high frequency rainfall or seismic events.

4.2.2 Fill on Lots 124 to 126

A fill certificate for fill placed on part of Lots 124, 125 and 126 is provided in Appendix D.

4.3 Building site development recommendations

The recommended building areas for each lot are shown on Drawing 81069.010-02, titled 'Building Site Certification Plan' in Appendix A. Building development conditions are as follows:

✓1. Buildings shall be within the areas designated as *Generally Suitable for Development in Accordance with NZS 3604* and/or *Specific Investigation and Design Area* as shown on Tonkin & Taylor Drawing 81069.010-02, titled 'Building Site Certification Plan' dated March 2007.

✓2. No earthworks or buildings other than minor non-habitable structures such as garden sheds or gazebos that can be easily relocated, shall be undertaken within

the area designated *Restricted Building Area* shown on Tonkin & Taylor Drawing 81069.010-02 'Building Site Certification Plan' ' dated March 2007.

3. Foundations for all buildings shall extend through topsoil, and be founded on "Good Ground" as defined by the New Zealand Building Code.

4. The NZS 3604 Areas comprise cut and filled ground which is suitable for shallow foundations constructed in accordance with NZS 3604:1999 - *Timber Framed Buildings*. Foundations for all buildings not meeting NZS 3604 and requiring an ultimate bearing capacity greater than 300kPa shall be specifically investigated and designed by a Chartered Professional Engineer experienced in foundation design. Bearing capacity of house foundations straddling cut/fill/natural boundaries shall be verified by a Chartered Professional Engineer experienced in foundation design.

5. Within the Specific Investigation and Design Area, foundations shall be investigated, designed and constructed by a Chartered Professional Engineer practising in geotechnical engineering.

6. Within the Specific Investigation and Design Area all temporary or permanent cuts greater than 0.8 m in height shall be specifically investigated by a Chartered Professional Engineer practising in geotechnical engineering or an experienced Engineering Geologist. No existing slopes inclined on a grade steeper than 2.5 (horizontal) to 1 (vertical) shall be steepened by unretained cutting.

7. Within the Specific Investigation and Design Area of Lot 120 all foundations shall extend below any weak soil or subsurface topsoil layers. Groundwater seepages identified during certification shall be investigated and appropriate subsoil drainage measures be designed by a Chartered Professional Engineer practising in geotechnical engineering.

8. Fill greater than 0.8 m thick, and all fill proposed to be beneath structures (including hardstanding areas), shall meet the requirements of NZS 4431:1989 - Code of Practice for Earthfill for Residential Development, and shall include adequate stripping, benching, and underdrainage. All fills within the Specific Investigation and Design Area greater than 1.0 m thickness shall be investigated and designed by a Chartered Professional Engineer practising in geotechnical engineering. No unretained fill shall be placed on ground sloping greater than 2.5H:1V.

9. In the Specific Investigation and Design Zone, retaining walls shall be specifically investigated and designed by a Chartered Professional Engineer practising in geotechnical engineering. All walls shall be adequately drained.

10. The subsoil drain outlets to sumps shall be kept clear. The maintenance and inspection of the sumps and the stormwater system will be carried out in accordance with routine Council maintenance procedures.

11. All stormwater from roofs, hard standing or impermeable areas, retaining wall drainage, surface drains and subsoil drains and from standing water such as swimming pools and ponds shall be collected and discharged in a controlled manner to the Nelson City Council stormwater system.

12. Sloping areas within the lots shall be maintained in a vegetation cover that enhances slope stability with emphasis on deep-rooted trees and shrubs.

13. The building site certification relates to the general suitability of the site; it does not remove the need for specific site investigation, design and inspection as required by the Building Code, NZS 3604 1999 and NZS 4431 1989.

5 Applicability

This report has been prepared for the benefit of KB Quarries 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.

Please refer any further enquiries or correspondence to Mr Mark Dawson of the Tonkin & Taylor Nelson Office.

TONKIN & TAYLOR LTD

Environmental and Engineering Consultants

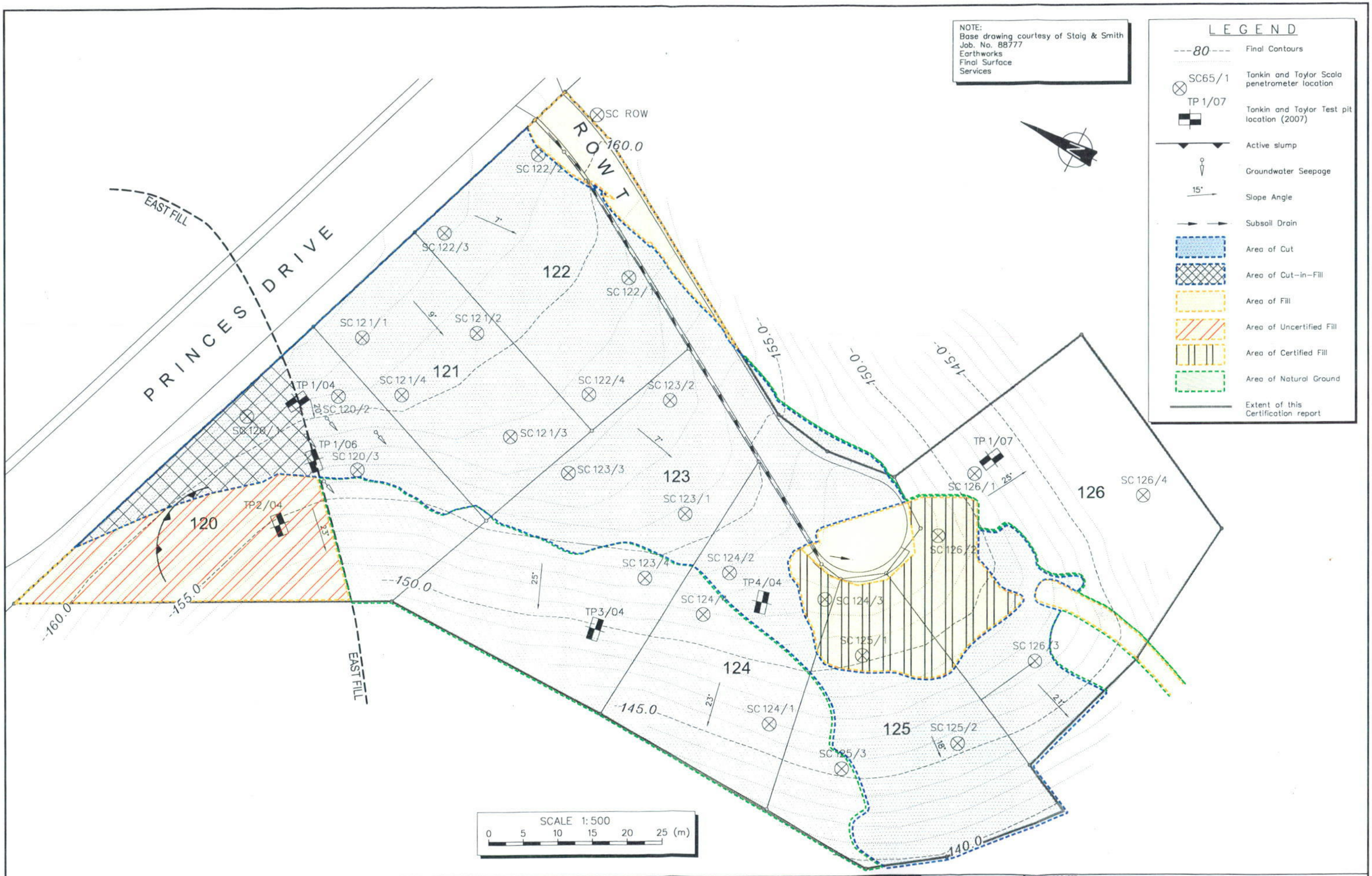
Report prepared by:	Authorised for Tonkin & Taylor by:
Mark Dawson	Mark Foley
Geotechnical Engineer	Project Co-ordinator

mpd

P:\81069\81069.010 Back Ridge\Lots 120 -126 Princes Drive\Certification report\mpd 2.3.2007 ROWT Rpt fnl.doc

Appendix A: Tonkin & Taylor Drawings

- **DWG 81069.010-01 – Site Investigation and Earthworks Plan**
- **DWG 81069.010-02 – Building Site Certification Plan**



0	First Issue		
REVISION DESCRIPTION		BY	DATE

DESIGNED :	JXWW	Mar.07
DRAWN :	EVL	Mar.07
DESIGN CHECKED :	MPD	Mar-'07
DRAFTING CHECKED :	DNN	03/07
CADFILE : \\81069-01.dwg		
APPROVED : NOT FOR CONSTRUCTION		

This drawing is not to be used for construction purposes unless signed as approved

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NOTES :
1. All dimensions are in millimetres unless noted otherwise.

REFERENCE :

Tonkin & Taylor
Environmental & Engineering Consultants
Nelson 43 Halifax St
Tel. (03) 546 6339 Fax. (03) 546 7619
Email : nel@tonkin.co.nz
Auckland Wellington Christchurch Hamilton Whangarei

CLIENT, PROJECT
TASMAN HEIGHTS
PRINCES DRIVE, NELSON

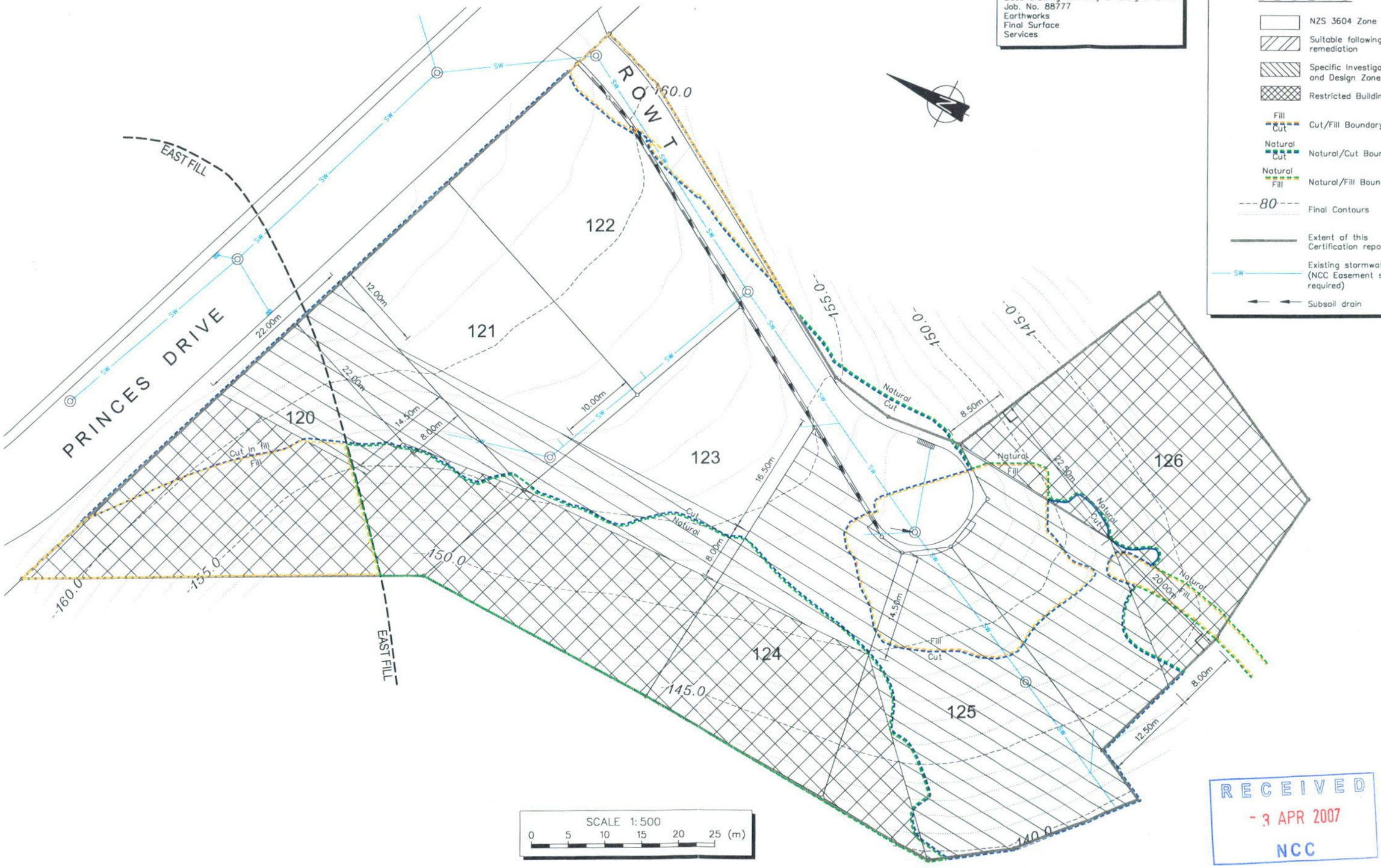
TITLE
ROW T
Site Investigation and Earthworks Plan

SCALES (AT A3 SIZE)	DWG. No.	REV.
AS SHOWN	81069.010-01	0

NOTE:
Base drawing courtesy of Staig & Smith
Job. No. 88777
Earthworks
Final Surface
Services

LEGEND

- NZS 3604 Zone
- Suitable following remediation
- Specific Investigation and Design Zone (SID)
- Restricted Building Zone
- Fill / Cut — Cut/Fill Boundary
- Natural / Cut — Natural/Cut Boundary
- Natural / Fill — Natural/Fill Boundary
- 80 — Final Contours
- Extent of this Certification report
- SW — Existing stormwater (NCC Easement setback required)
- Subsoil drain



SCALE 1:500
0 5 10 15 20 25 (m)

RECEIVED
- 3 APR 2007
NCC

DESIGNED :	JXWW	Mar.07	
DRAWN :	EVL	Mar.07	
DESIGN CHECKED :	MRD	Mar 07	
DRAFTING CHECKED :	DNV	03/07	
CADFILE : \\81069-02.dwg			
APPROVED : NOT FOR CONSTRUCTION			

This drawing is not to be used for construction purposes unless signed as approved

COPYRIGHT ON THIS DRAWING IS RESERVED

REVISION	DESCRIPTION	BY	DATE
0	First Issue		

NOTES :
1. All dimensions are in millimetres unless noted otherwise.

REFERENCE :

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Environmental & Engineering Consultants
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Email : nel@tonkin.co.nz
Auckland Wellington Christchurch Hamilton Whangarei

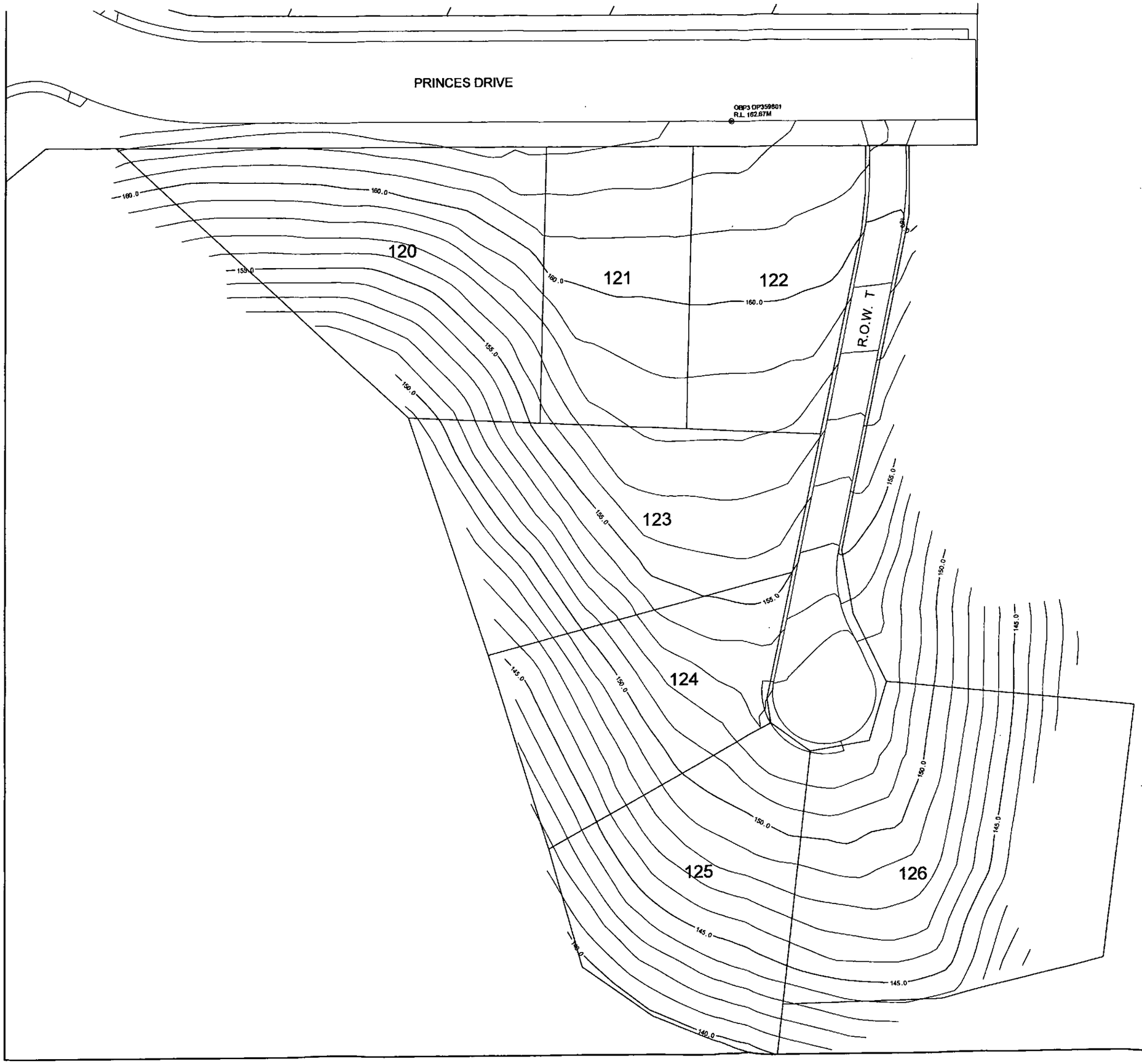
CLIENT, PROJECT
TASMAN HEIGHTS
PRINCES DRIVE, NELSON

TITLE
ROW T
Building Site Certification Plan

SCALES (AT A3 SIZE)	DWG. No.	REV.
AS SHOWN	81069.010-02	0

Appendix B: Staig & Smith Ltd As-built drawings

- **Final Surface Contours (as at December 2006) DWG8877K**
- **Earthworks Iso-contour Plan DWG8877L Rev A**
- **Asbuilt Sewer DWG8877J**
- **Asbuilt Stormwater DWG8877I**
- **Original Surface (as at September 2003) DWG8877M**



Notes

(1) LEVELS ARE IN TERMS OF NCC HEIGHT DATUM.
(2) COORDINATES ARE IN TERMS OF NZGD 1949.

No	Amendment	Date

STAIG&SMITH™
81 Selwyn Place
PO Box 913 Nelson
Ph: 03 548 4122
Fax: 03 548 4127
e-mail: enquiries@staigsmith.co.nz
SURVEYING-PLANNING-ENGINEERING-RESOURCE MANAGEMENT

MANAGER INFRASTRUCTURAL ASSETS (NCC) DATE

NCC DWG NO.

DESIGN: M. STANDISH
DRAWN: M. STANDISH
CHECKED:
APPROVED:
DATE: 30/01/2007

JOB TITLE

Tasman Heights
Princes Drive
ROW T
NCC RM005141

DRAWING TITLE

Final Surface Contours
(As at December 2006)

Scale: 1:250 at A1	DWG8877K
Job No: 8877	Sheet 4 of 4

PRINCES DRIVE

CUT

FILL

120

121

122

123

124

125

126

R.O.W.T

FILL AREA DIAGRAM

— 2.0 — Fill Contours

Cut/Fill 0.0m Contour

-2.0 — Cut Contours

THIS ISO-CONTOUR PLAN HAS BEEN PREPARED BY COMPARING THE ORIGINAL SURFACE CONTOUR PLAN OF THE SITE AS OF SEPTEMBER 2003 AND THE FINAL SURFACE CONTOUR PLAN AS OF DECEMBER 2006.
THIS ISO-CONTOUR PLAN DOES NOT SHOW THE EXTENT OF ANY EARTHWORKS CARRIED OUT PRIOR TO THE SURVEY DATE.
THE ORIGINAL AND FINISHED SURFACE CONTOURS INCLUDE UP TO 0.3M OF TOPSOIL.

SEE DIAGRAM SHOWING AN AREA OF FILL THAT WAS CONSTRUCTED AFTER THE INITIAL EARTHWORKS WAS COMPLETED.

THIS ISO-CONTOUR PLAN HAS BEEN PREPARED BY COMPARING THE EARTHWORKED SURFACE CONTOURS OF THE SITE AS OF MARCH 2006 AND THE FINAL SURFACE CONTOUR PLAN OF MARCH 2007. THE FINAL SURFACE INCLUDES UP TO 0.3M OF TOPSOIL.

Notes

No	Amendment	Date
A	FILL AREA DIAGRAM AMENDED DUE TO FURTHER EARTHWORKS IN AREA.	29-3-07

STAIG & SMITH LTD

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SURVEYING-PLANNING-ENGINEERING-RESOURCE MANAGEMENT

MANAGER INFRASTRUCTURAL ASSETS (NCC) DATE

NCC DWG NO.

DESIGN: M. STANDISH
DRAWN: M. STANDISH
CHECKED:
APPROVED:
DATE: 29/03/2007

JOB TITLE

Tasman Heights
Princes Drive
ROW T
NCC RM005141

DRAWING TITLE

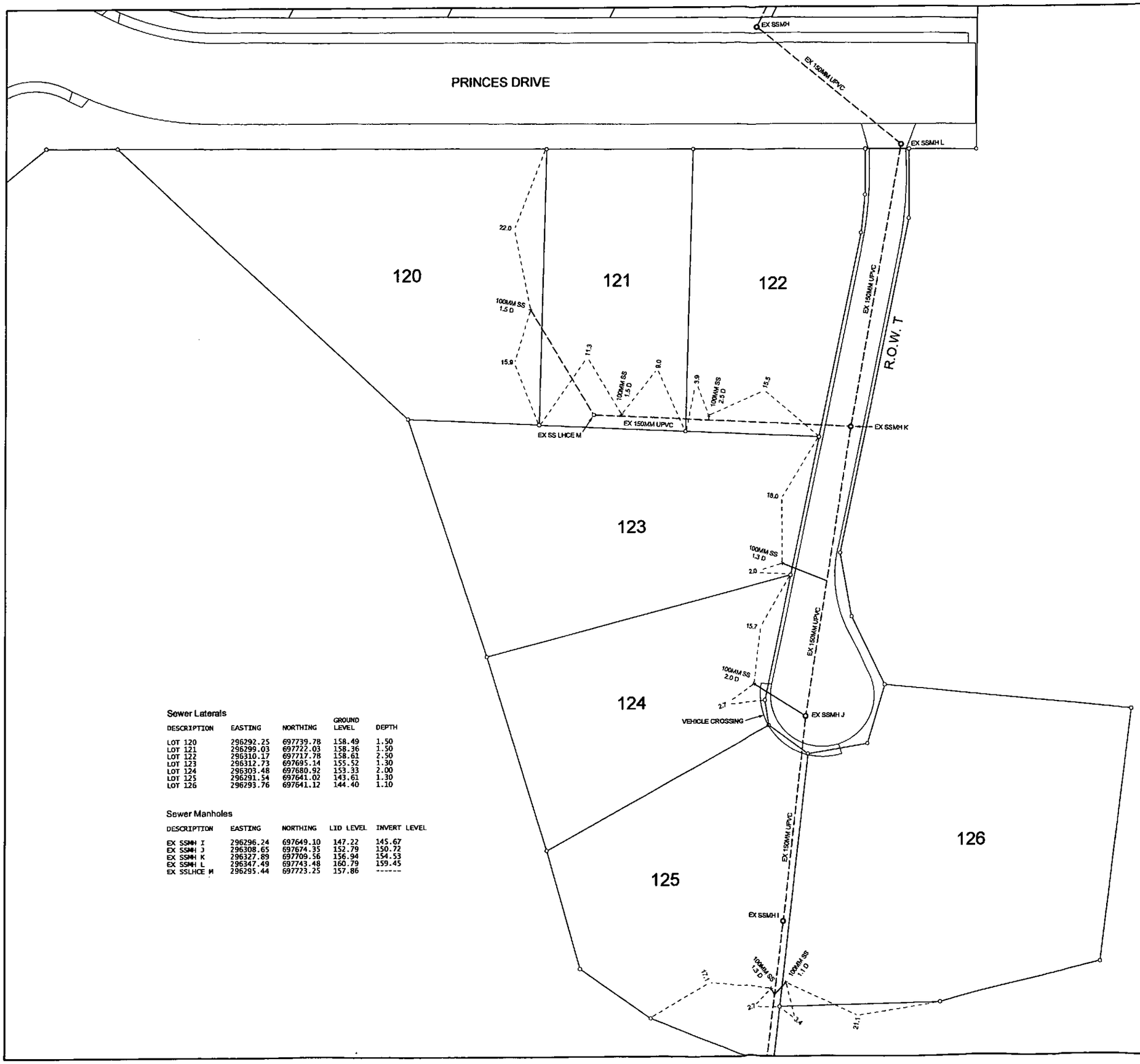
Earthworks
Iso-Contours

Scale: 1:250 at A1

DWG8877L A

Job No: 8877

Sheet 5 of



Sewer Laterals

DESCRIPTION	EASTING	NORTHING	GROUND LEVEL	DEPTH
LOT 120	296292.25	697739.78	158.49	1.50
LOT 121	296299.03	697722.03	158.36	1.50
LOT 122	296310.17	697717.78	158.61	2.50
LOT 123	296312.73	697695.14	155.52	1.30
LOT 124	296303.48	697680.92	153.33	2.00
LOT 125	296291.54	697641.02	143.61	1.30
LOT 126	296293.76	697641.12	144.40	1.10

Sewer Manholes

DESCRIPTION	EASTING	NORTHING	LID LEVEL	INVERT LEVEL
EX SSMH I	296296.24	697649.10	147.22	145.67
EX SSMH J	296308.65	697674.35	152.79	150.72
EX SSMH K	296327.89	697709.56	156.94	154.53
EX SSMH L	296347.49	697743.48	160.79	159.45
EX SSLHCE M	296295.44	697723.25	157.86	------

Notes

(1) LEVELS ARE IN TERMS OF NCC HEIGHT DATUM.
(2) COORDINATES ARE IN TERMS OF NZGD 1949.
(3) ALL PIPES ARE UPVC.

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No	Amendment	Date

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MANAGER INFRASTRUCTURAL ASSETS (NCC) ..... DATE .....

NCC DWG NO.

DESIGN: M. STANDISH
DRAWN: M. STANDISH
CHECKED:
APPROVED:
DATE: 28/03/2007

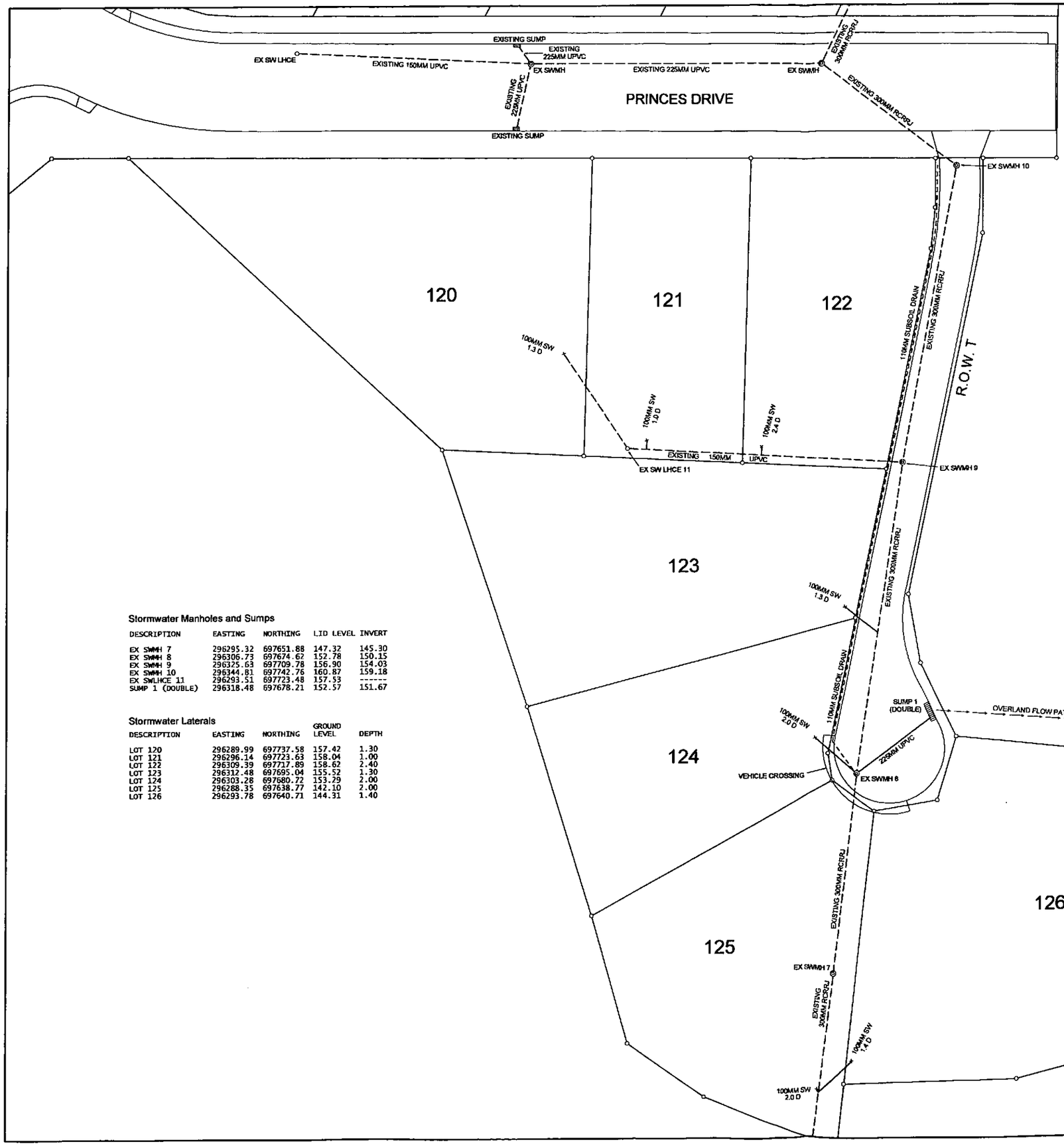
JOB TITLE

Tasman Heights
Princes Drive
ROW T
NCC RM005141

DRAWING TITLE

Asbuilt Sewer

Scale: 1:250 at A1	DWG8877J
Job No: 8877	Sheet 3 of 4



Stormwater Manholes and Sumps

DESCRIPTION	EASTING	NORTHING	LID LEVEL	INVERT
EX SWMH 7	296295.32	697651.88	147.32	145.30
EX SWMH 8	296306.73	697674.62	152.78	150.15
EX SWMH 9	296325.63	697709.78	156.90	154.03
EX SWMH 10	296344.81	697742.76	160.87	159.18
EX SWLHCE 11	296293.51	697723.48	157.53	------
SUMP 1 (DOUBLE)	296318.48	697678.21	152.57	151.67

Stormwater Laterals

DESCRIPTION	EASTING	NORTHING	GROUND LEVEL	DEPTH
LOT 120	296289.99	697737.58	157.42	1.30
LOT 121	296296.14	697723.63	158.04	1.00
LOT 122	296309.39	697717.89	158.62	2.40
LOT 123	296312.48	697695.04	155.52	1.30
LOT 124	296303.28	697680.72	153.29	2.00
LOT 125	296288.35	697638.77	142.10	2.00
LOT 126	296293.78	697640.71	144.31	1.40

Notes

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DRAWN:	M. STANDISH
CHECKED:	
APPROVED:	
DATE:	30/01/2007

JOB TITLE

Tasman Heights
Princes Drive
ROW T
NCC RM005141

DRAWING TITLE

Asbuilt Stormwater

Scale: 1:250 at A1	DWG8877I
Job No: 8877	Sheet 2 of 4

PRINCES DRIVE

120

121

122

123

124

125

126

R.O.W T

Notes

(1) LEVELS ARE IN TERMS OF NCC HEIGHT DATUM.
(2) COORDINATES ARE IN TERMS OF NZGD 1949.
(3) THIS PLAN IS A COMPILATION BASED ON SURVEY INFORMATION FROM VARIOUS SOURCES AND SOME INTERPOLATIONS HAVE BEEN NECESSARY WHERE SURVEY INFORMATION WAS NOT AVAILABLE. AS SUCH, THE INFORMATION ON THESE PLANS CAN NOT BE GUARANTEED AS BEING ACCURATE.
THIS PLAN MAY NOT BE USED IN ANY OTHER CONTEXTS OR FOR ANY OTHER PURPOSE WITHOUT OUR PRIOR REVIEW AND AGREEMENT IN WRITING.
SURFACE CONTOURS INCLUDE UP TO 0.3M OF TOPSOIL.

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DESIGN:	M. STANDISH
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APPROVED:	
DATE:	30/01/2007

JOB TITLE

Tasman Heights
Princes Drive
ROW T
NCC RM005141

DRAWING TITLE

Original Surface Contours
(As at September 2003)

Scale: 1:250 at A1	DWG8877M
Job No: 8877	Sheet 6 of

Appendix C: Building site certification investigations

- Scala Penetrometer tests – SC122 to SC126 dated November 2006 & March 2007
- Scala Penetrometer tests – SC120 to SC121 dated January 2007
- Scala Penetrometer test – Fill certification Lots 124 to 126 & SC ROW dated March/April 2007
- Test pit logs – TP1-TP4 dated May 2004
- Test pit log - TP126/1 dated November 2006
- Test pit log - TP1/06 dated November 2006
- Engineering Terminology Log

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43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

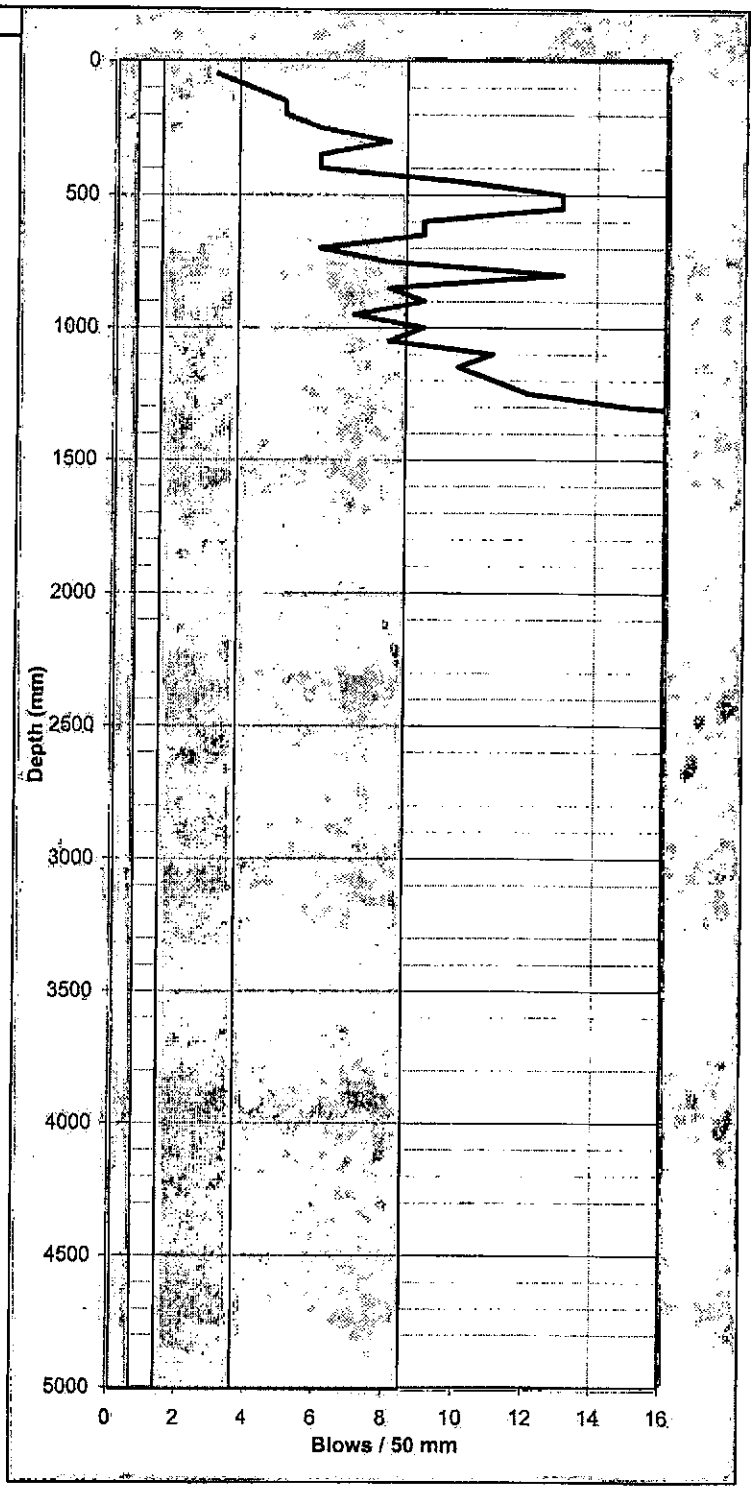
SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *19.01.07*
Operated by: *RRG*
Logged by: *RRG*
Checked by: *MPD*

Test No. ***SC120/1***
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	4	2600	
150	5	2650	
200	5	2700	
250	6	2750	
300	8	2800	
350	6	2850	
400	6	2900	
450	10	2950	
500	13	3000	
550	13	3050	
600	9	3100	
650	9	3150	
700	6	3200	
750	8	3250	
800	13	3300	
850	8	3350	
900	9	3400	
950	7	3450	
1000	9	3500	
1050	8	3550	
1100	11	3600	
1150	10	3650	
1200	11	3700	
1250	12	3750	
1300	15	3800	
1350	20	3850	
1400	Refusal	3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *19.01.07*
Operated by: *RRG*
Logged by: *RRG*
Checked by: *MPD*

Test No. ***SC120/2***
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	2	2600	
150	4	2650	
200	5	2700	
250	10	2750	
300	14	2800	
350	7	2850	
400	6	2900	
450	6	2950	
500	9	3000	
550	11	3050	
600	6	3100	
650	7	3150	
700	10	3200	
750	11	3250	
800	11	3300	
850	7	3350	
900	7	3400	
950	4	3450	
1000	6	3500	
1050	8	3550	
1100	8	3600	
1150	10	3650	
1200	15	3700	
1250	20	3750	
1300	Refusal	3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
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2300		4800	
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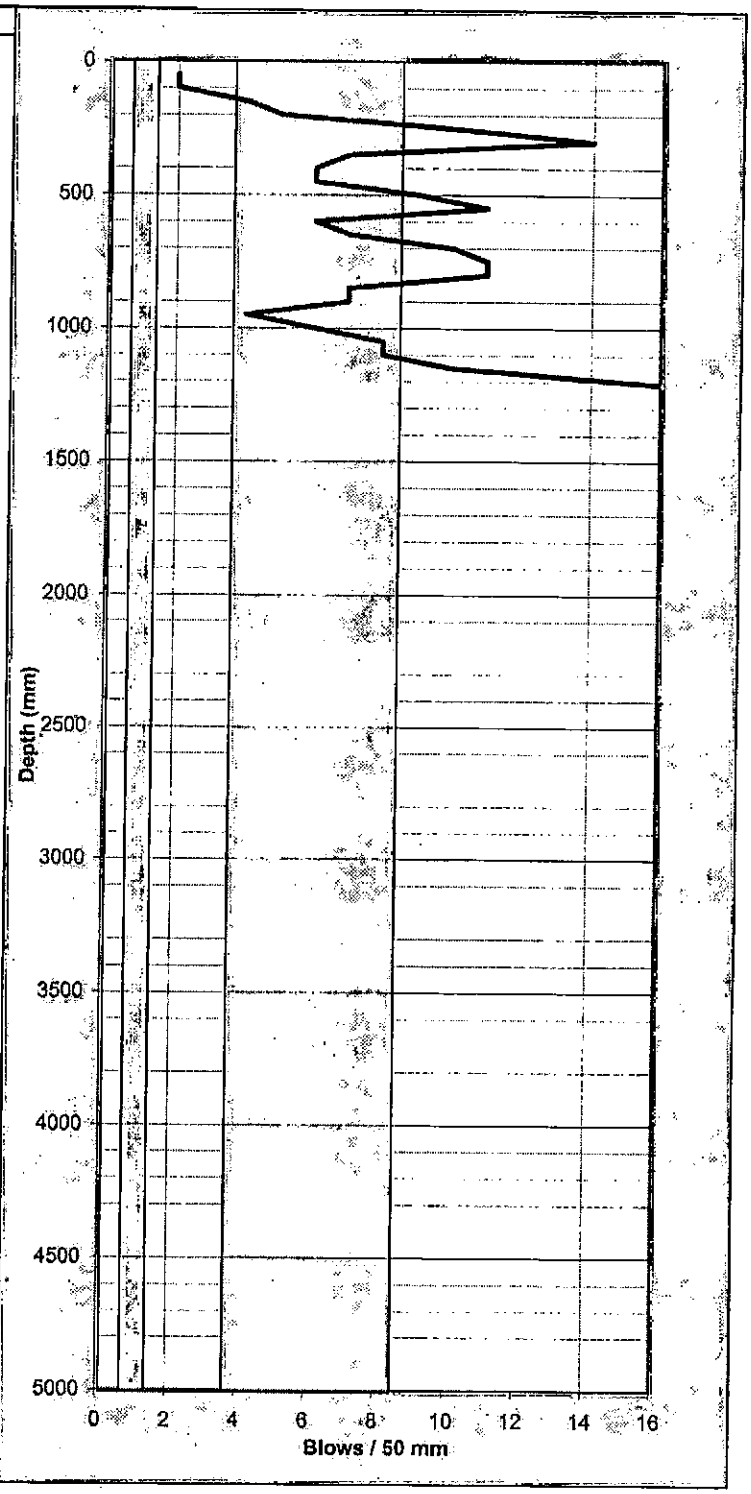

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *19.01.07*
Operated by: *RRG*
Logged by: *RRG*
Checked by: *MPD*

Test No. *SC120/3*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	0.5	2550	
100	0.5	2600	
150	1	2650	
200	1	2700	
250	2	2750	
300	5	2800	
350	4	2850	
400	4	2900	
450	6	2950	
500	12	3000	
550	10	3050	
600	7	3100	
650	4	3150	
700	4	3200	
750	4	3250	
800	5	3300	
850	9	3350	
900	13	3400	
950	15	3450	
1000	20	3500	
1050	Refusal	3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
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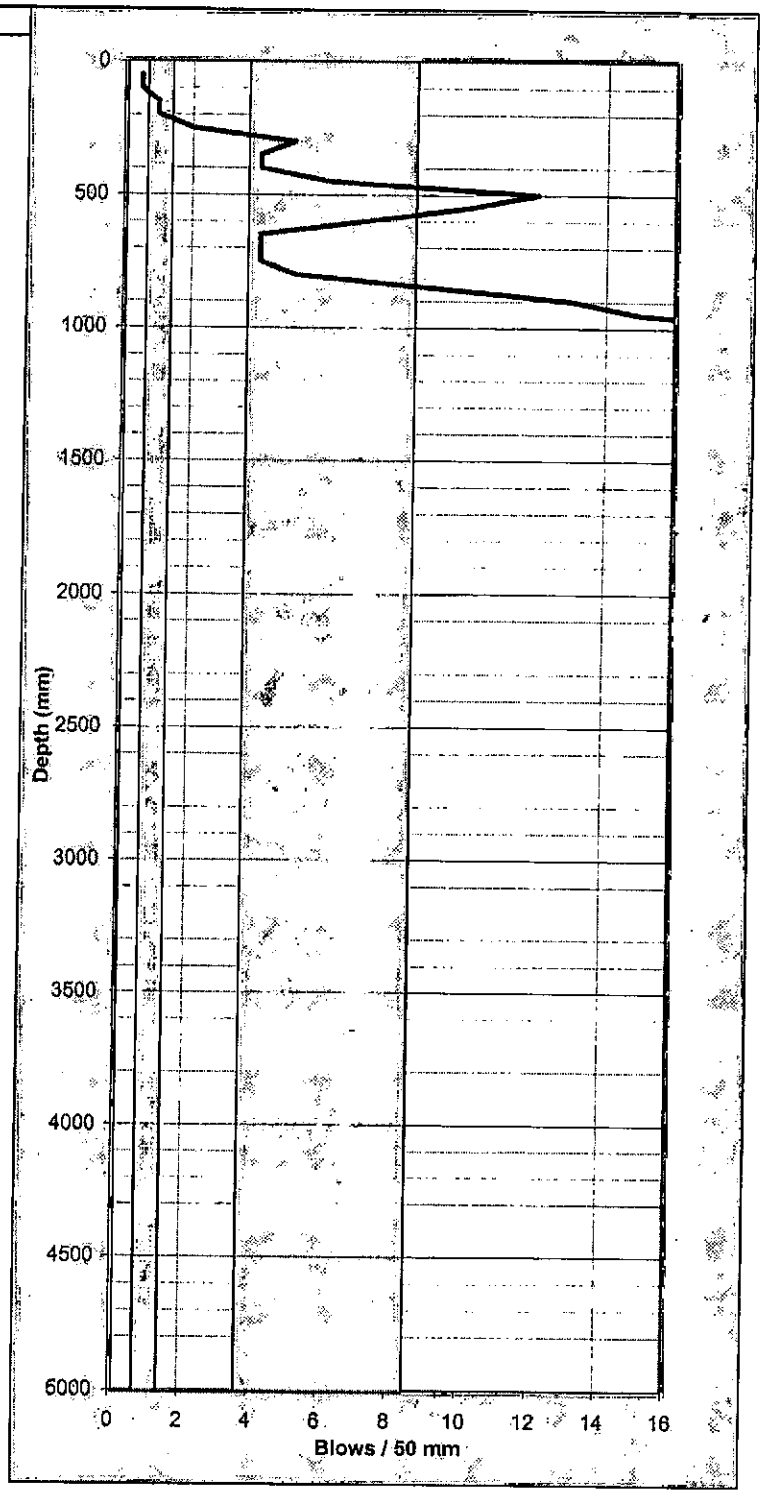

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *19.01.07*
Operated by: *RRG*
Logged by: *RRG*
Checked by: *MPD*

Test No. ***SC121/1***
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2	2550	
100	2	2600	
150	2	2650	
200	2	2700	
250	2	2750	
300	1	2800	
350	2	2850	
400	3	2900	
450	2	2950	
500	1.5	3000	
550	1.5	3050	
600	2.5	3100	
650	2.5	3150	
700	2	3200	
750	2	3250	
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850	2	3350	
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950	1.5	3450	
1000	3	3500	
1050	3	3550	
1100	4	3600	
1150	4	3650	
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1400	4	3900	
1450	4	3950	
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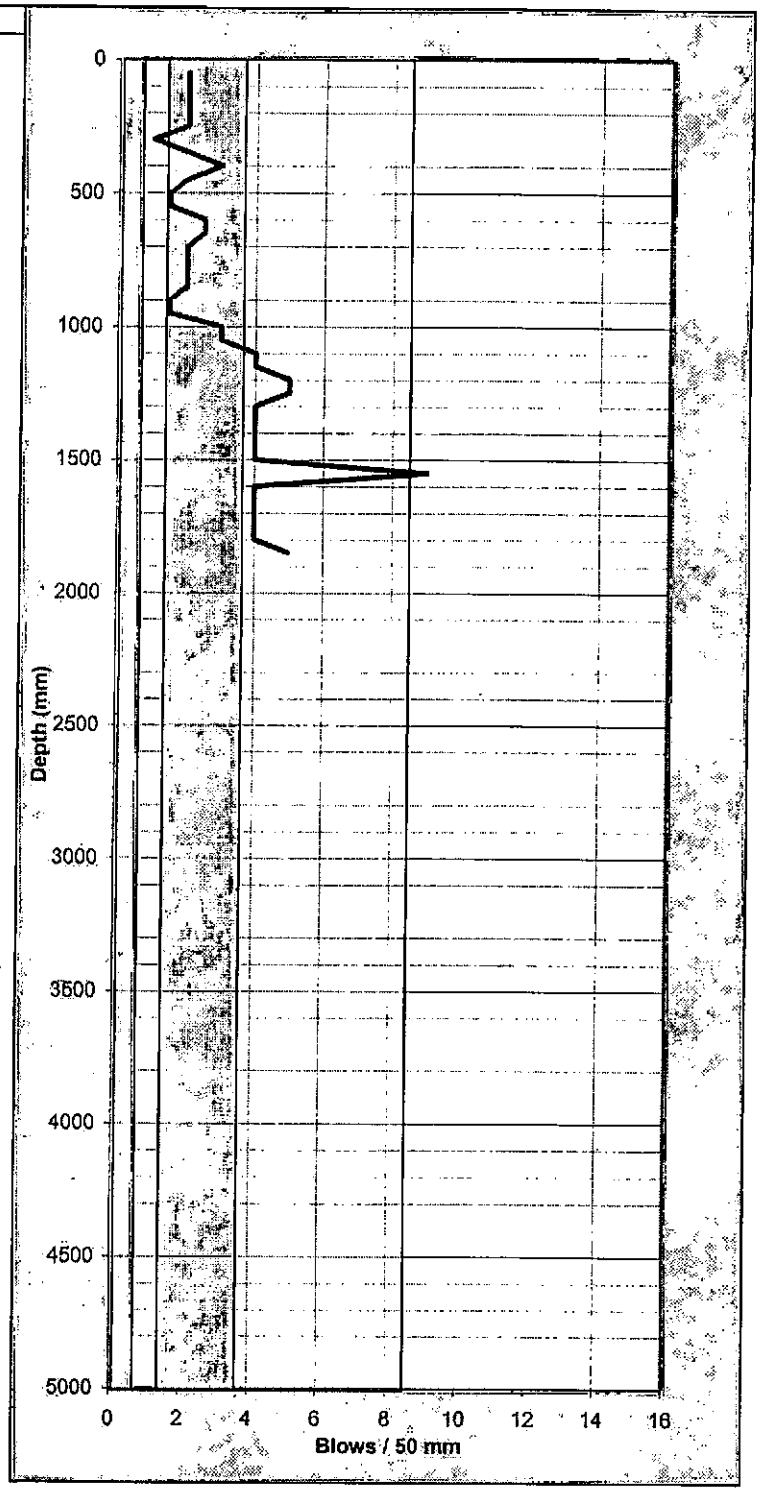

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *19.01.07*
Operated by: *RRG*
Logged by: *RRG*
Checked by: *MPD*

Test No. *SC121/2*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
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100	1	2600	
150	1	2650	
200	2	2700	
250	3	2750	
300	3	2800	
350	3	2850	
400	5	2900	
450	10	2950	
500	20	3000	
550	Refusal	3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
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1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
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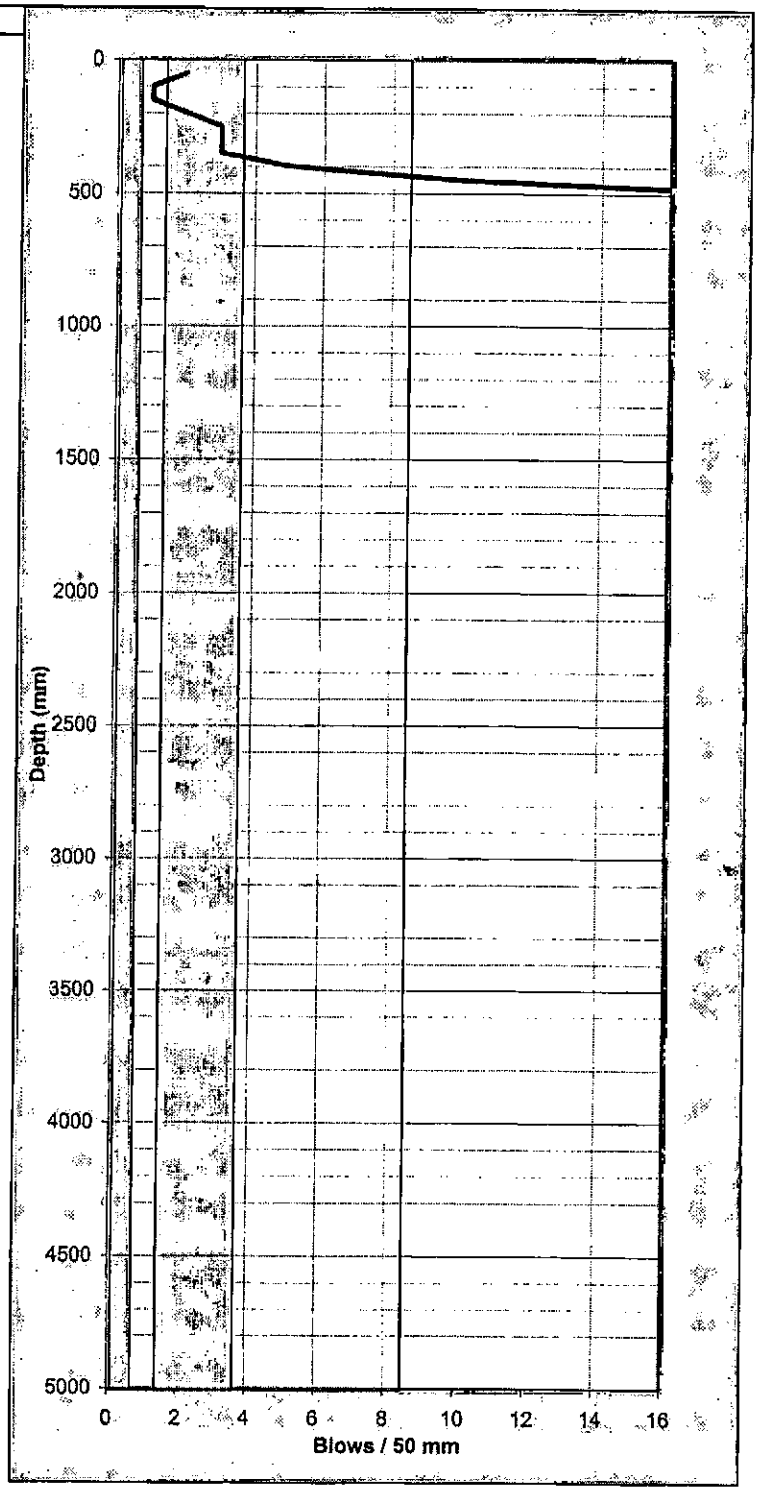

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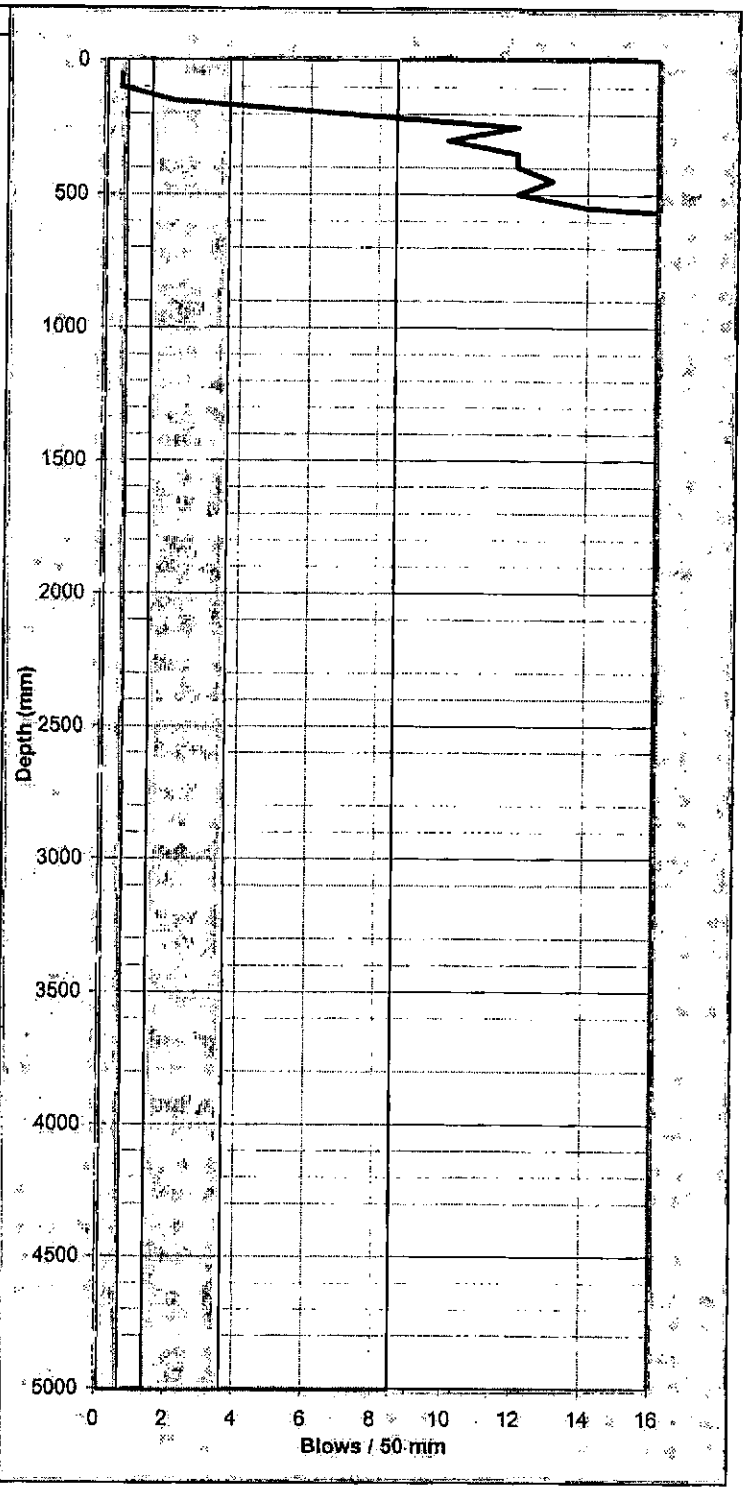
Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *19.01.07*
Operated by: *RRG*
Logged by: *RRG*
Checked by: *MPD*

Test No. *SC121/3*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*0.5*	2550	
100	*0.5*	2600	
150	*2*	2650	
200	*7*	2700	
250	*12*	2750	
300	*10*	2800	
350	*12*	2850	
400	*12*	2900	
450	*13*	2950	
500	*12*	3000	
550	*14*	3050	
600	*20*	3100	
650	Refusal	3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

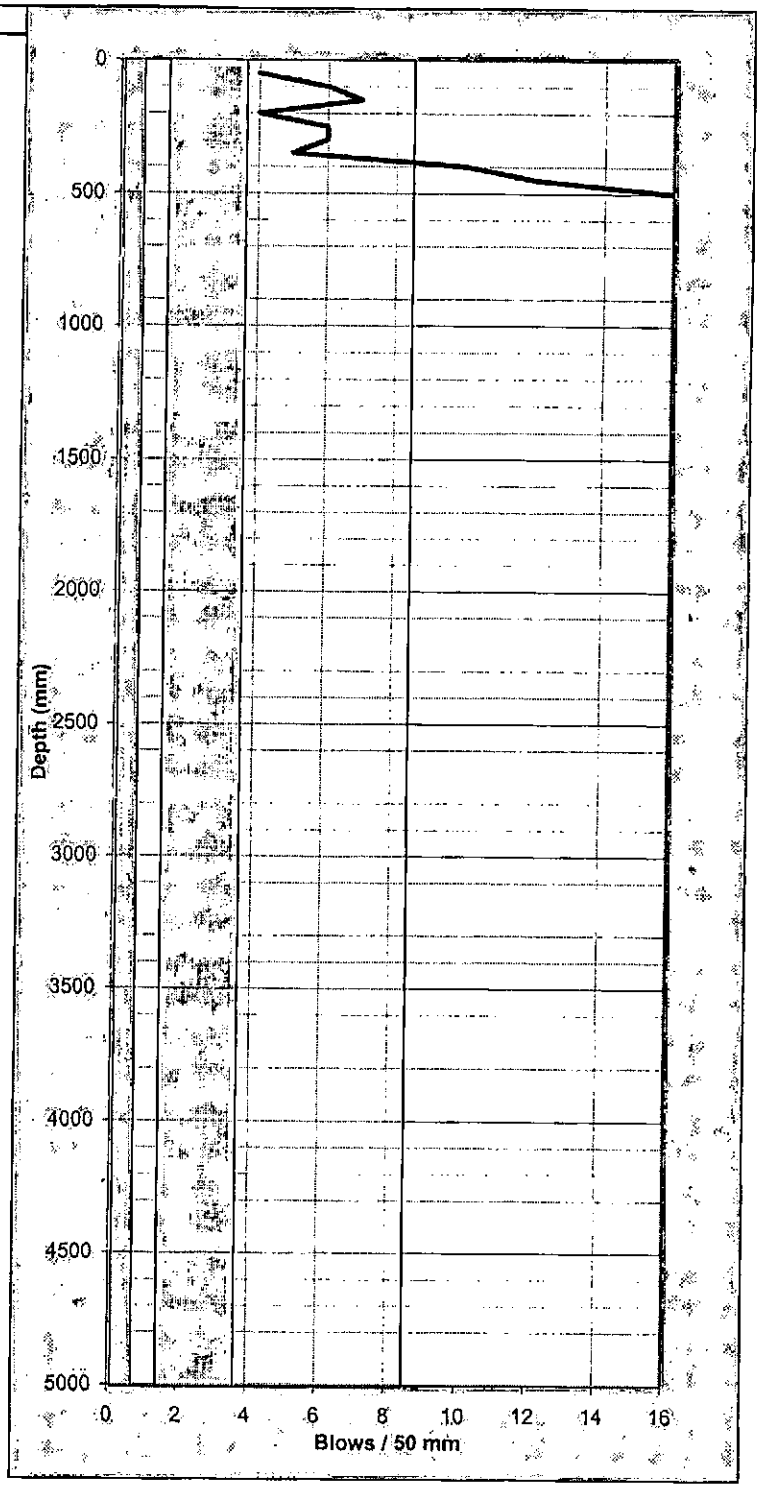
SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *02.04.07*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *MPO*

Test No. ***SC121/4***
Sheet ***1*** **of** ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	4	2550	
100	6	2600	
150	7	2650	
200	4	2700	
250	6	2750	
300	6	2800	
350	5	2850	
400	10	2900	
450	12	2950	
500	16	3000	
550	Refusal	3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
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Tel: (03) 546 6339
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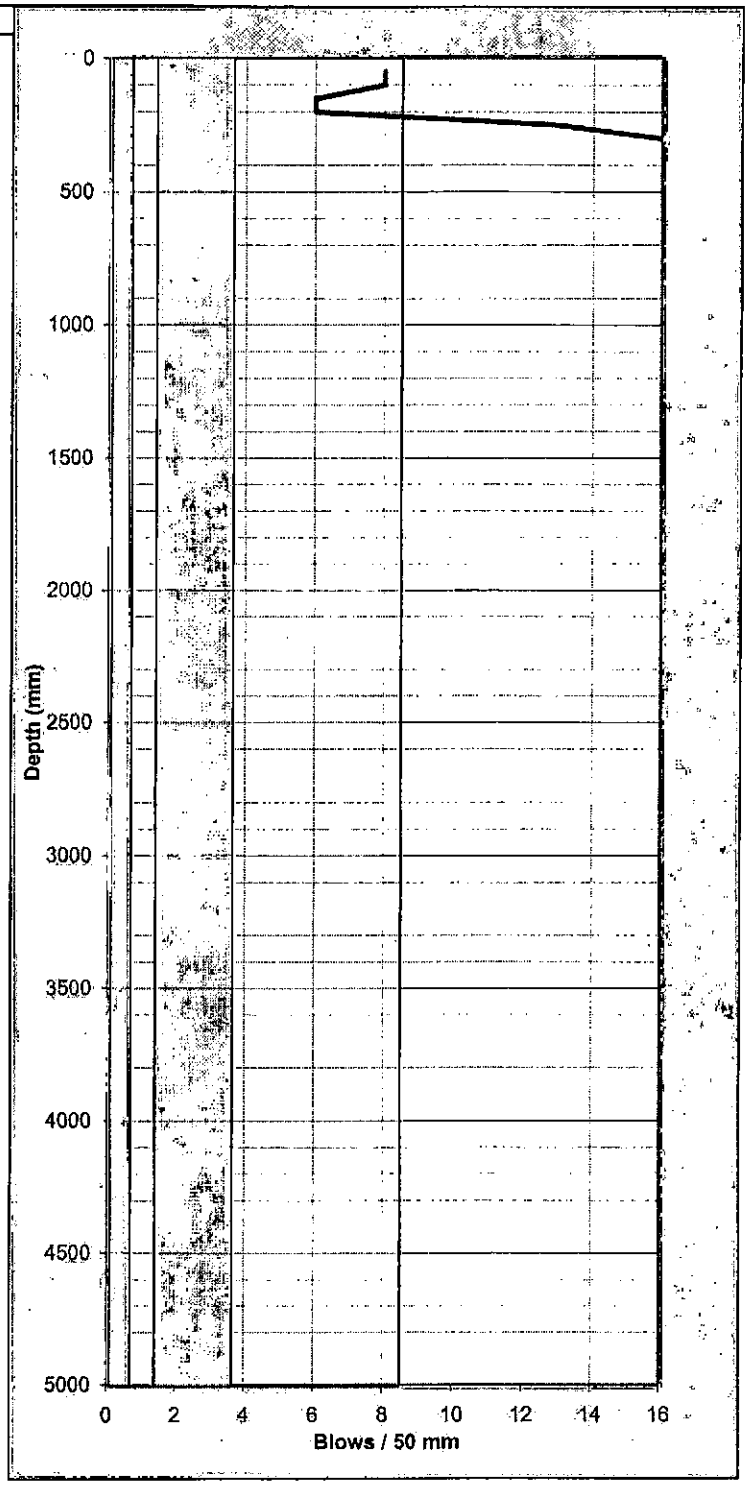
SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *29.11.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *MPD*

Test No. ***SC122/1***
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*8*	2550	
100	*8*	2600	
150	*6*	2650	
200	*6*	2700	
250	*13*	2750	
300	*16*	2800	
350	Refusal	2850	
400		2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
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Tel: (03) 546 6339
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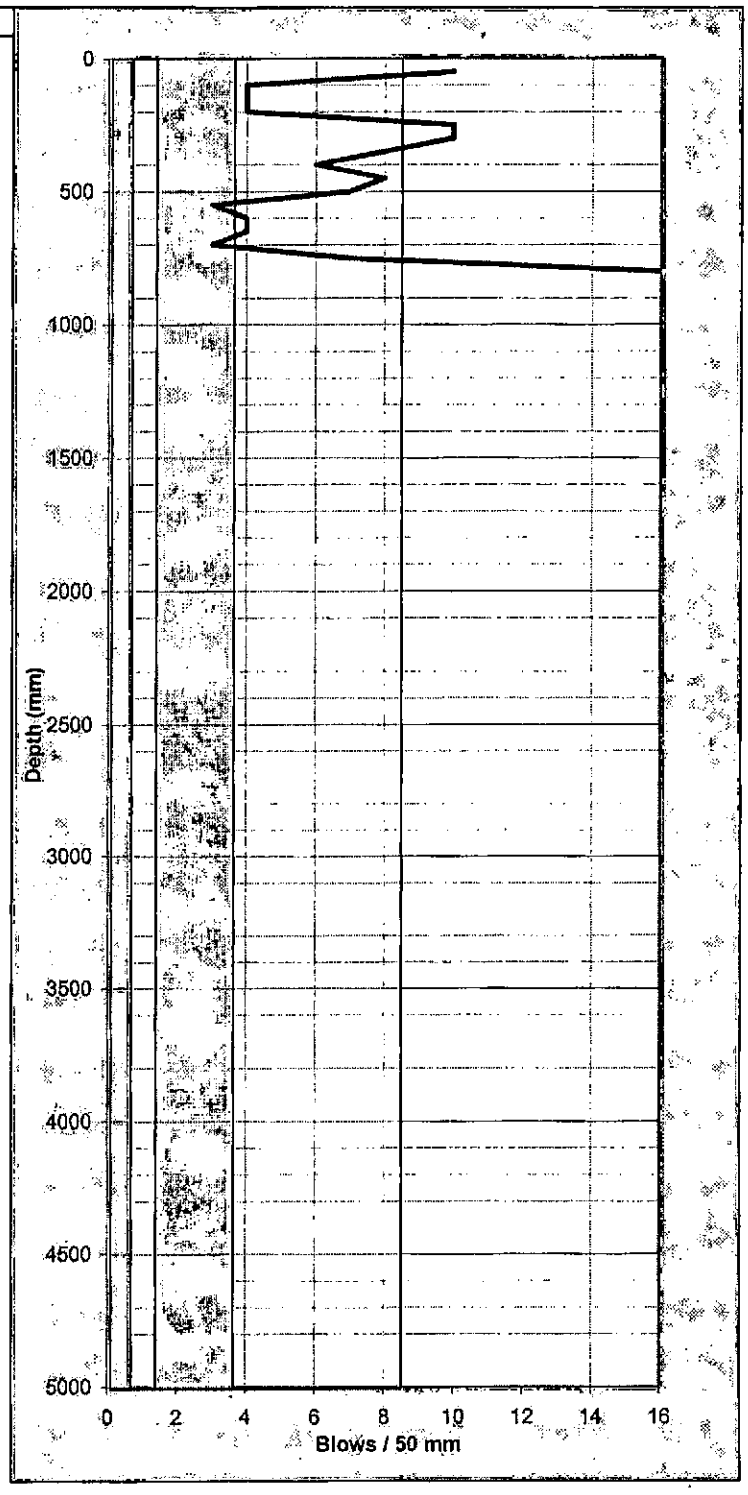
SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *29.11.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *MPD*

Test No. ***SC122/2***
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*10*	2550	
100	*4*	2600	
150	*4*	2650	
200	*4*	2700	
250	*10*	2750	
300	*10*	2800	
350	*8*	2850	
400	*6*	2900	
450	*8*	2950	
500	*7*	3000	
550	*3*	3050	
600	*4*	3100	
650	*4*	3150	
700	*3*	3200	
750	*7*	3250	
800	*16*	3300	
850	Refusal	3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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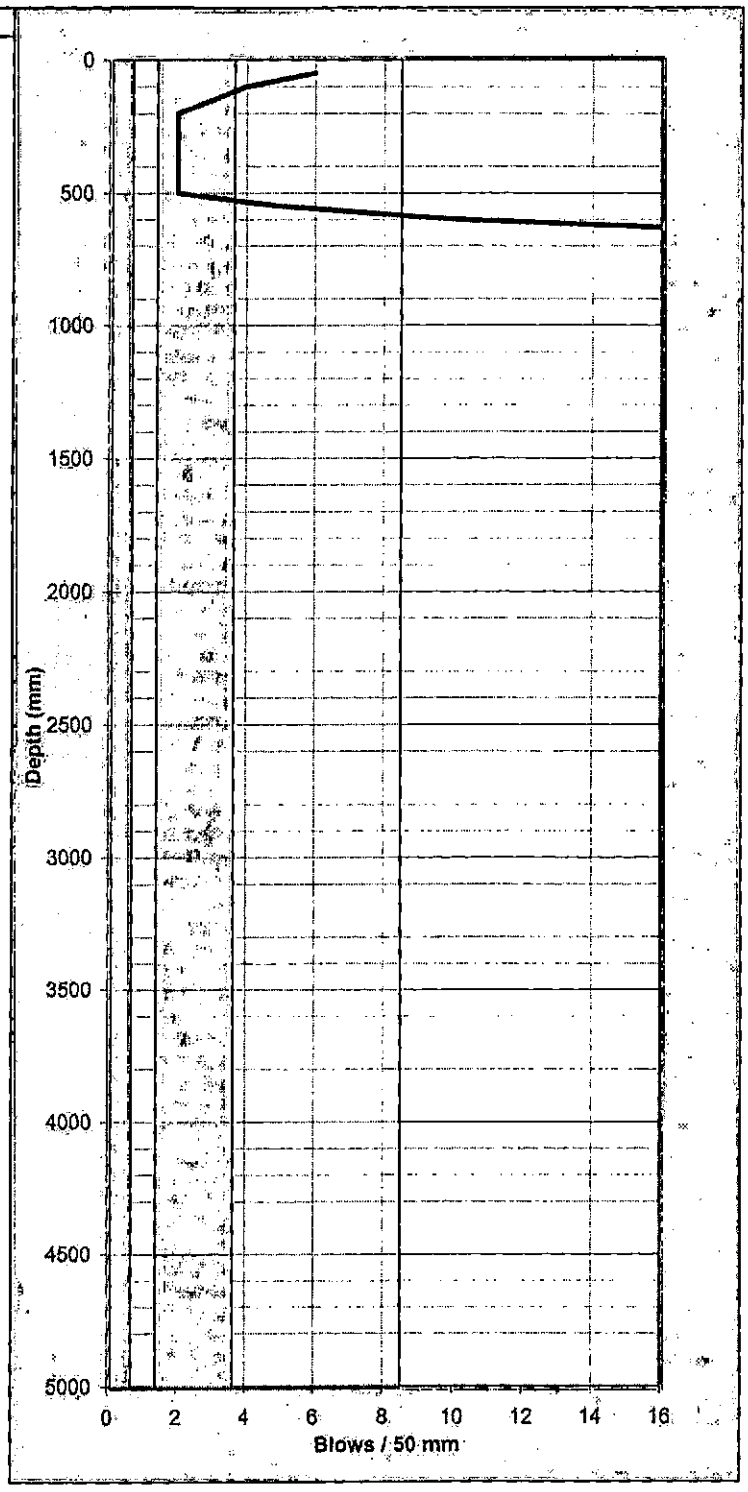
SCALA PENETROMETER LOG

Job No:	*81069.01*	Date: *29.11.2006*	**Test No.** ***SC122/3***
Project:	*Back Ridge Joint Venture*	Operated by: *JXWW*	
Location:	*ROW T*	Logged by: *JXWW*	**Sheet** *1*
Position:	*Refer to site plan*	Checked by: *MPD*	**of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	6	2550	
100	4	2600	
150	3	2650	
200	2	2700	
250	2	2750	
300	2	2800	
350	2	2850	
400	2	2900	
450	2	2950	
500	2	3000	
550	5	3050	
600	10	3100	
650	20	3150	
700	Refusal	3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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SCALA PENETROMETER LOG

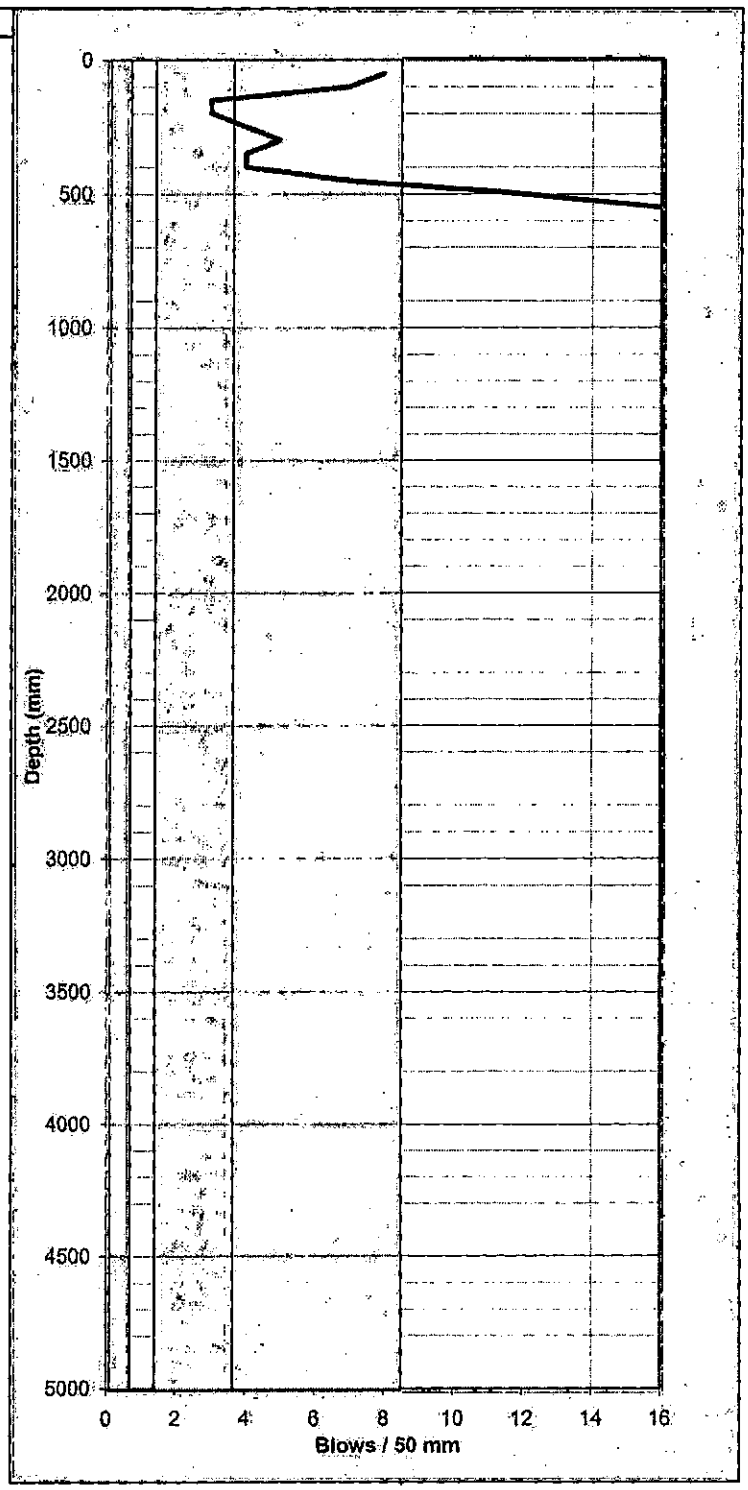
Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *29.11.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *MPD*

Test No. ***SC122/4***

Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	8	2550	
100	7	2600	
150	3	2650	
200	3	2700	
250	4	2750	
300	5	2800	
350	4	2850	
400	4	2900	
450	7	2950	
500	12	3000	
550	16	3050	
600	Refusal	3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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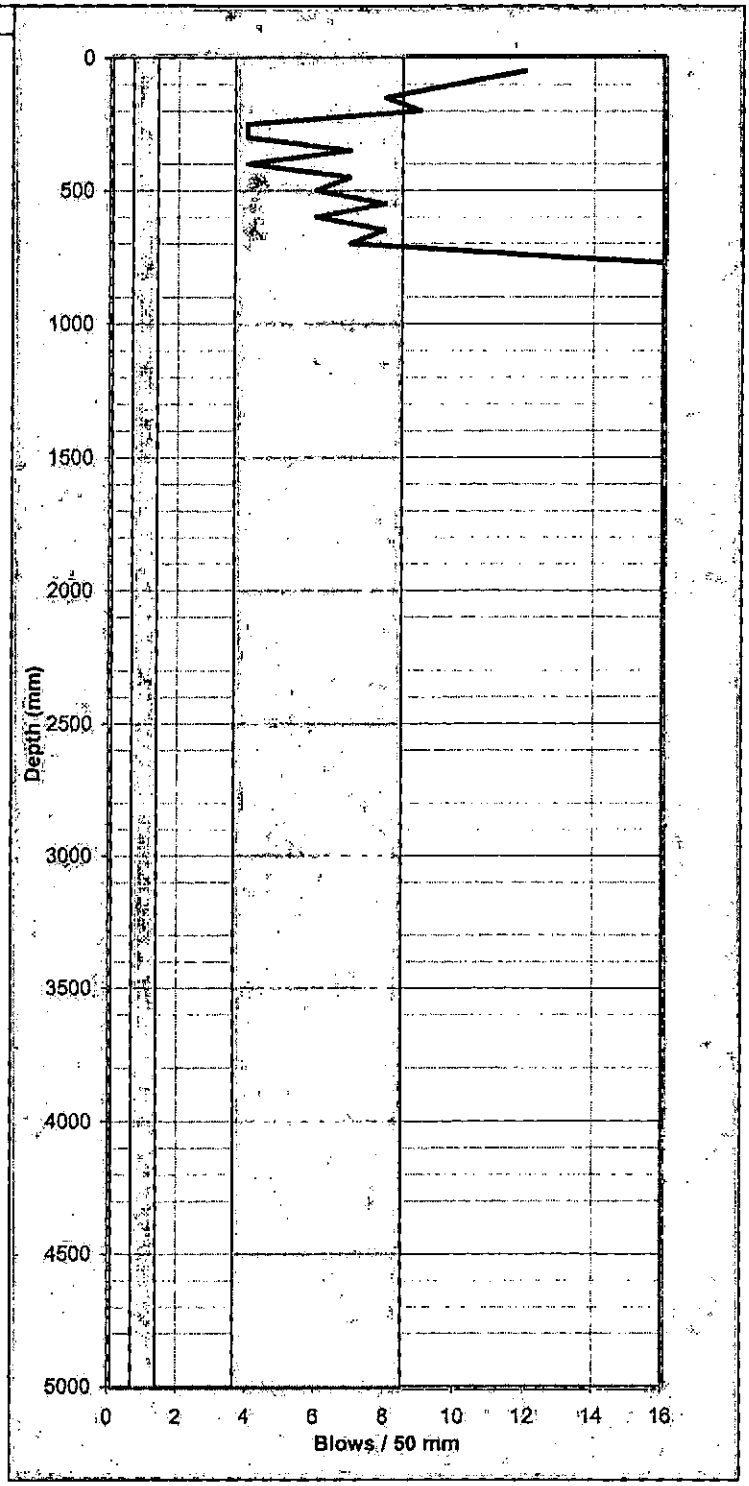
SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *29.11.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *MPD*

Test No. ***SC123/1***
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	12	2550	
100	10	2600	
150	8	2650	
200	9	2700	
250	4	2750	
300	4	2800	
350	7	2850	
400	4	2900	
450	7	2950	
500	6	3000	
550	8	3050	
600	6	3100	
650	8	3150	
700	7	3200	
750	13	3250	
800	20	3300	
850	Refusal	3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
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Tel: (03) 546 6339
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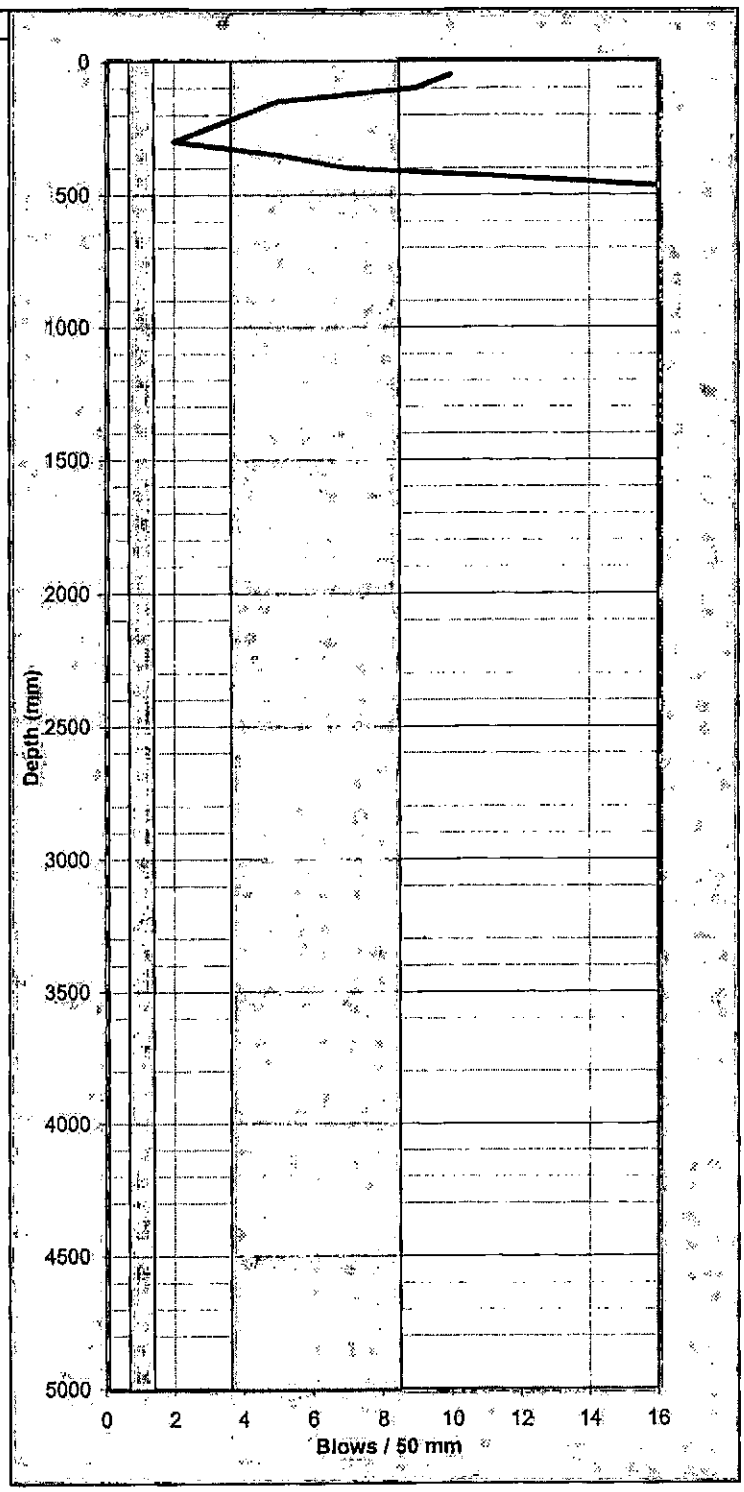
SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *29.11.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *MPD*

Test No. ***SC123/2***
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*10*	2550	
100	*9*	2600	
150	*5*	2650	
200	*4*	2700	
250	*3*	2750	
300	*2*	2800	
350	*5*	2850	
400	*7*	2900	
450	*14*	2950	
500	*20*	3000	
550	Refusal	3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *29.11.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *MPO*

Test No. *SC123/3*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	8	2550	
100	5	2600	
150	3	2650	
200	4	2700	
250	5	2750	
300	10	2800	
350	12	2850	
400	12	2900	
450	9	2950	
500	15	3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
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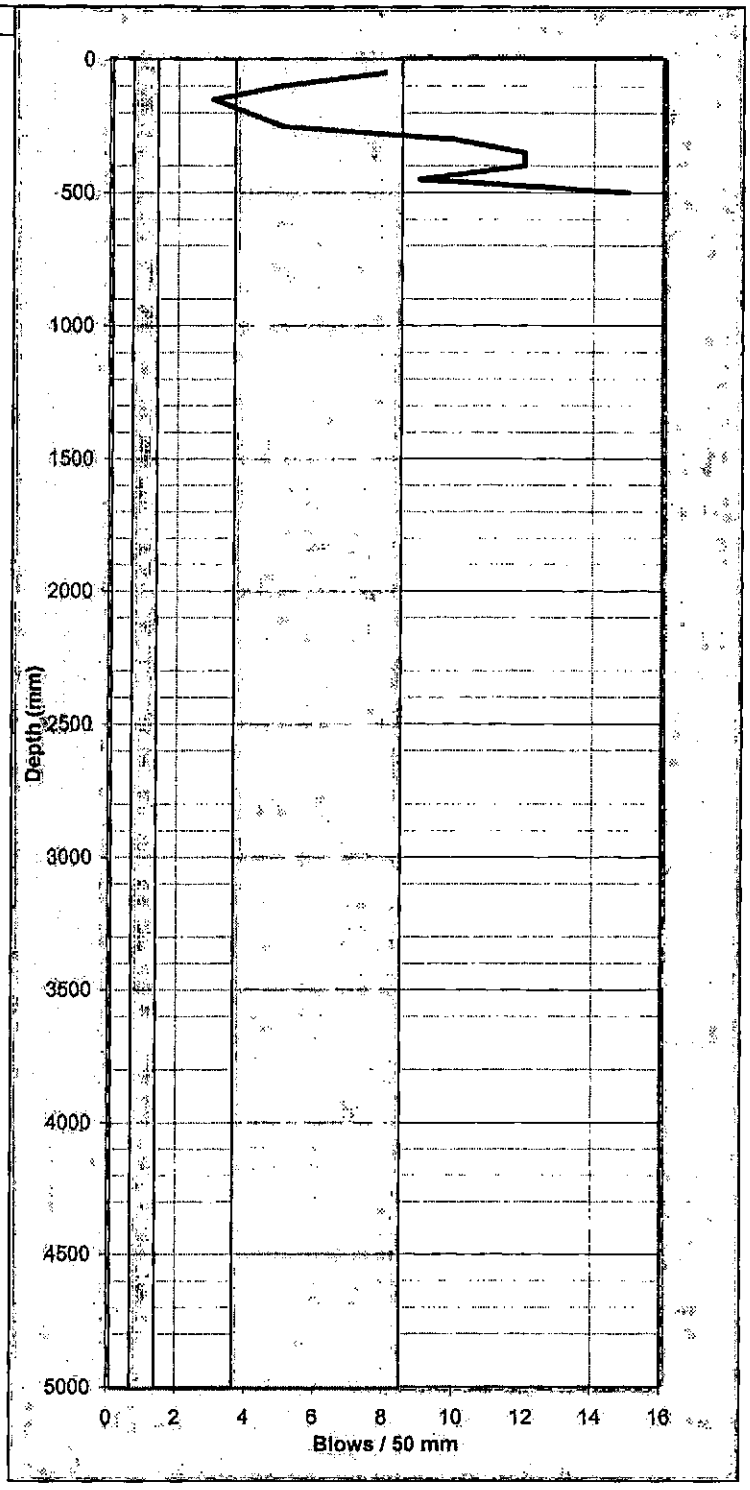
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
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NELSON
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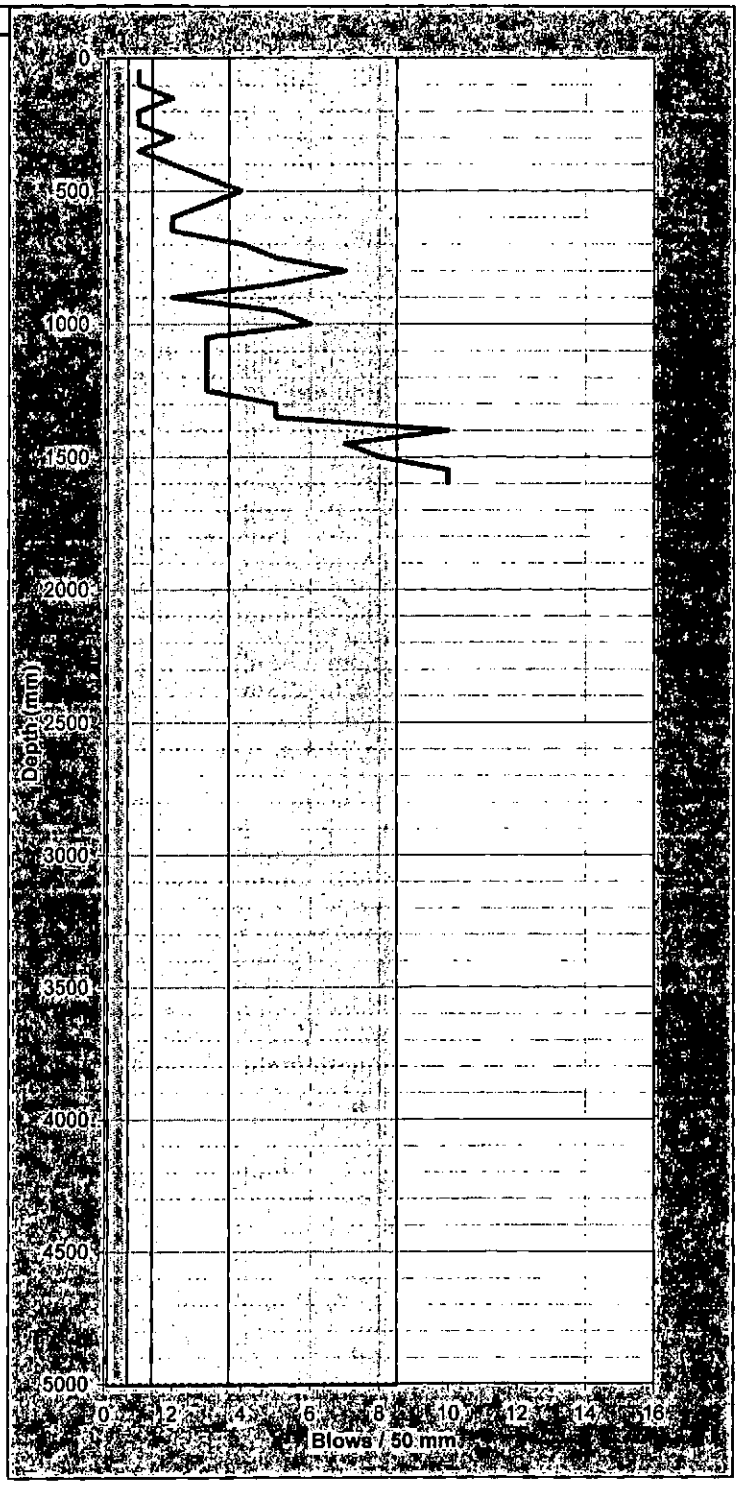
SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *29.11.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *MPO*

Test No. ***SC123/4***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	2	2650	
200	1	2700	
250	1	2750	
300	2	2800	
350	1	2850	
400	2	2900	
450	3	2950	
500	4	3000	
550	3	3050	
600	2	3100	
650	2	3150	
700	4	3200	
750	5	3250	
800	7	3300	
850	5	3350	
900	2	3400	
950	5	3450	
1000	6	3500	
1050	3	3550	
1100	3	3600	
1150	3	3650	
1200	3	3700	
1250	3	3750	
1300	5	3800	
1350	5	3850	
1400	10	3900	
1450	7	3950	
1500	8	4000	
1550	10	4050	
1600	10	4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
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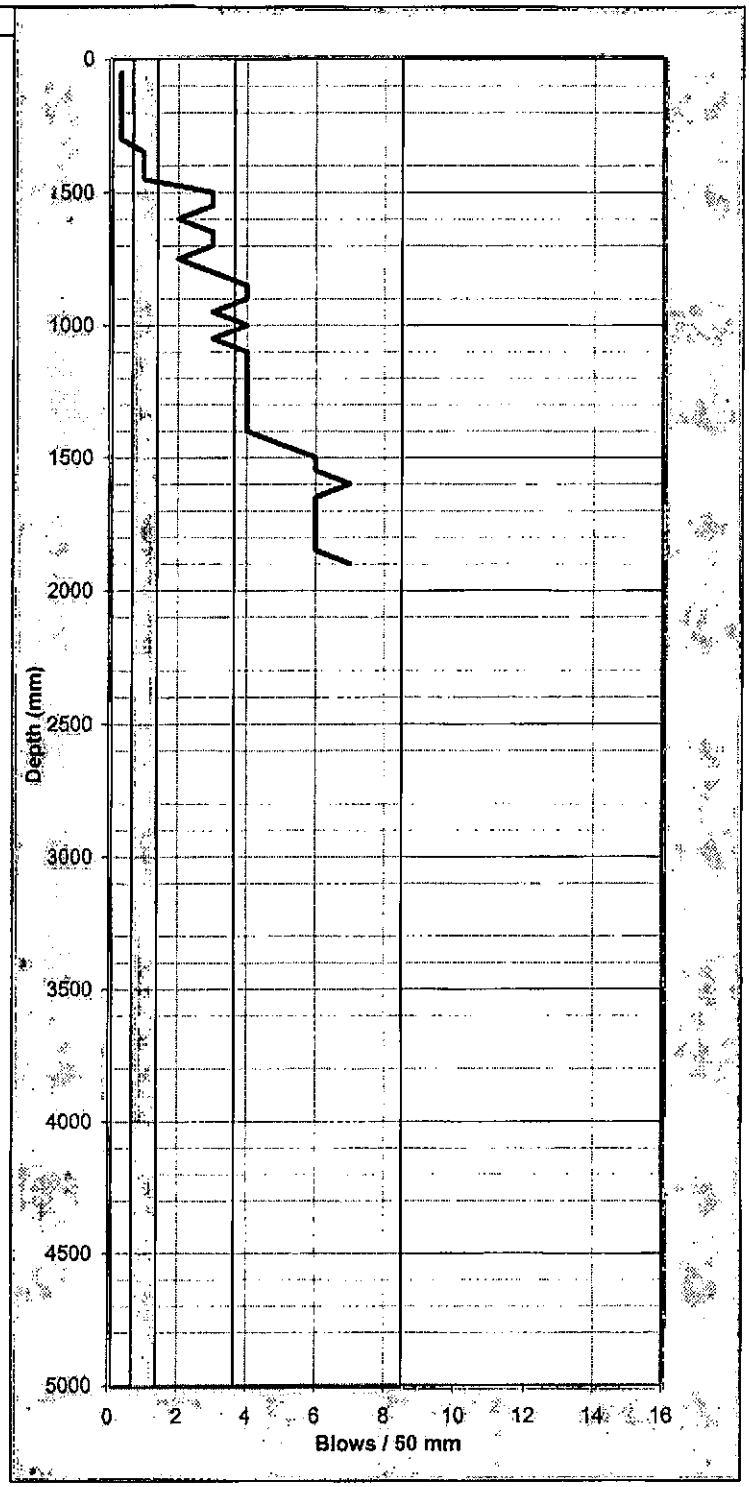
SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *27.11.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *MPO*

Test No. ***SC124/1***
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	0.33	2550	
100	0.33	2600	
150	0.33	2650	
200	0.33	2700	
250	0.33	2750	
300	0.33	2800	
350	1	2850	
400	1	2900	
450	1	2950	
500	3	3000	
550	3	3050	
600	2	3100	
650	3	3150	
700	3	3200	
750	2	3250	
800	3	3300	
850	4	3350	
900	4	3400	
950	3	3450	
1000	4	3500	
1050	3	3550	
1100	4	3600	
1150	4	3650	
1200	4	3700	
1250	4	3750	
1300	4	3800	
1350	4	3850	
1400	4	3900	
1450	5	3950	
1500	6	4000	
1550	6	4050	
1600	7	4100	
1650	6	4150	
1700	6	4200	
1750	6	4250	
1800	6	4300	
1850	6	4350	
1900	7	4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



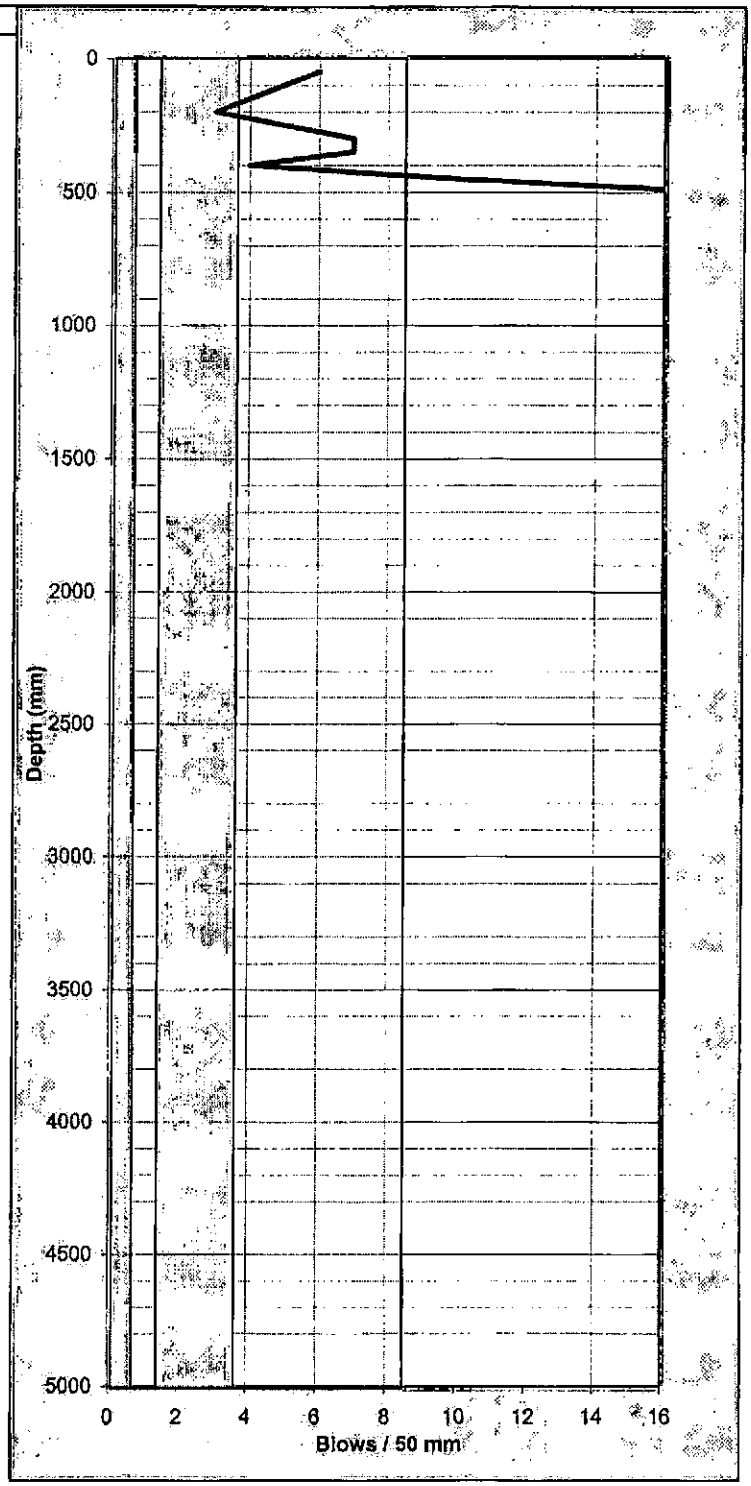
Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No:	*81069.01*	Date:	*29.11.2006*	Test No.	*SC124/2*
Project:	*Back Ridge Joint Venture*	Operated by:	*JXWW*		
Location:	*ROW T*	Logged by:	*JXWW*	Sheet	*1*
Position:	*Refer to site plan*	Checked by:	*MPD*	of	*1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	6	2550	
100	5	2600	
150	4	2650	
200	3	2700	
250	5	2750	
300	7	2800	
350	7	2850	
400	4	2900	
450	10	2950	
500	18	3000	
550	Refusal	3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

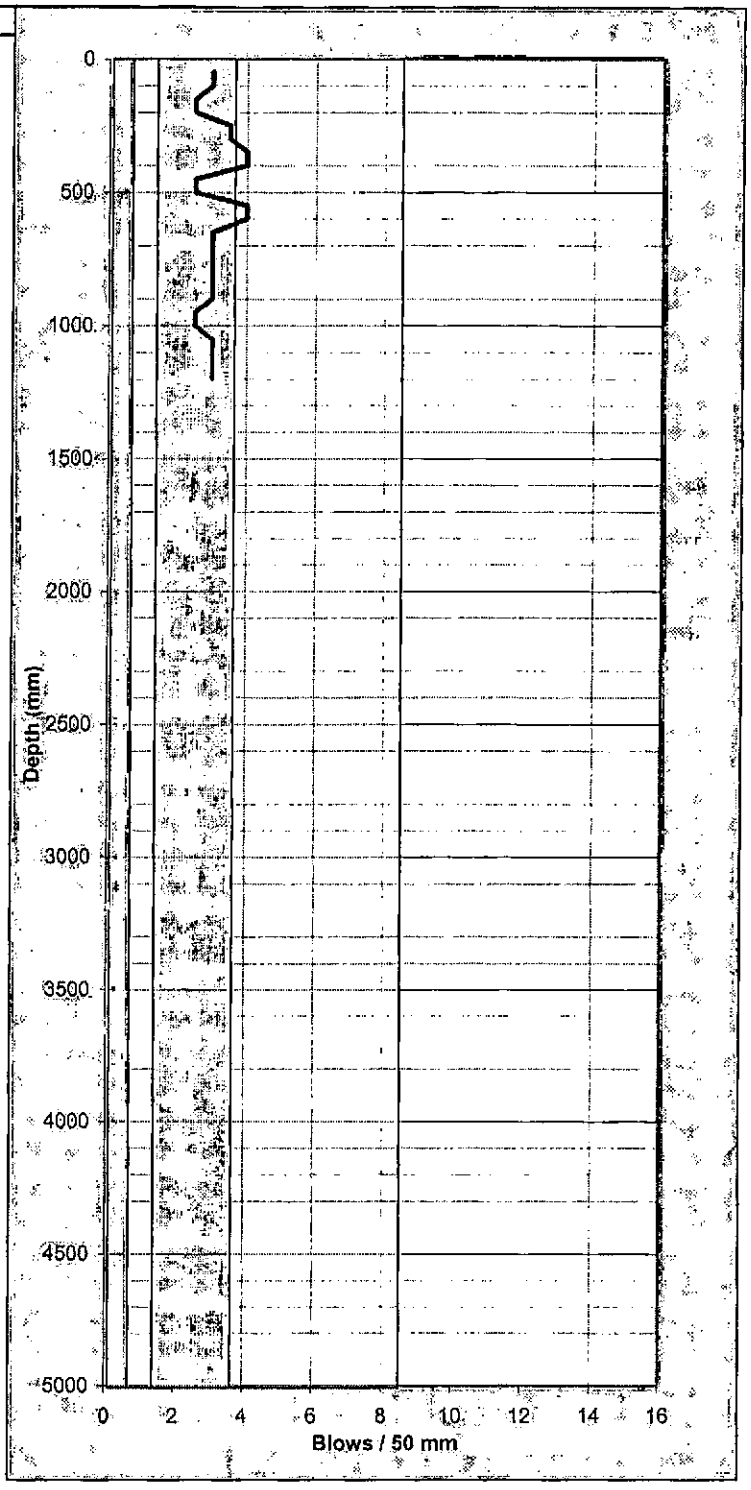
SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *23.03.2007*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *MPD*

Test No. ***SC124/3***
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	3	2550	
100	3	2600	
150	2.5	2650	
200	2.5	2700	
250	3.5	2750	
300	3.5	2800	
350	4	2850	
400	4	2900	
450	2.5	2950	
500	2.5	3000	
550	4	3050	
600	4	3100	
650	3	3150	
700	3	3200	
750	3	3250	
800	3	3300	
850	3	3350	
900	3	3400	
950	2.5	3450	
1000	2.5	3500	
1050	3	3550	
1100	3	3600	
1150	3	3650	
1200	3	3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
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Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

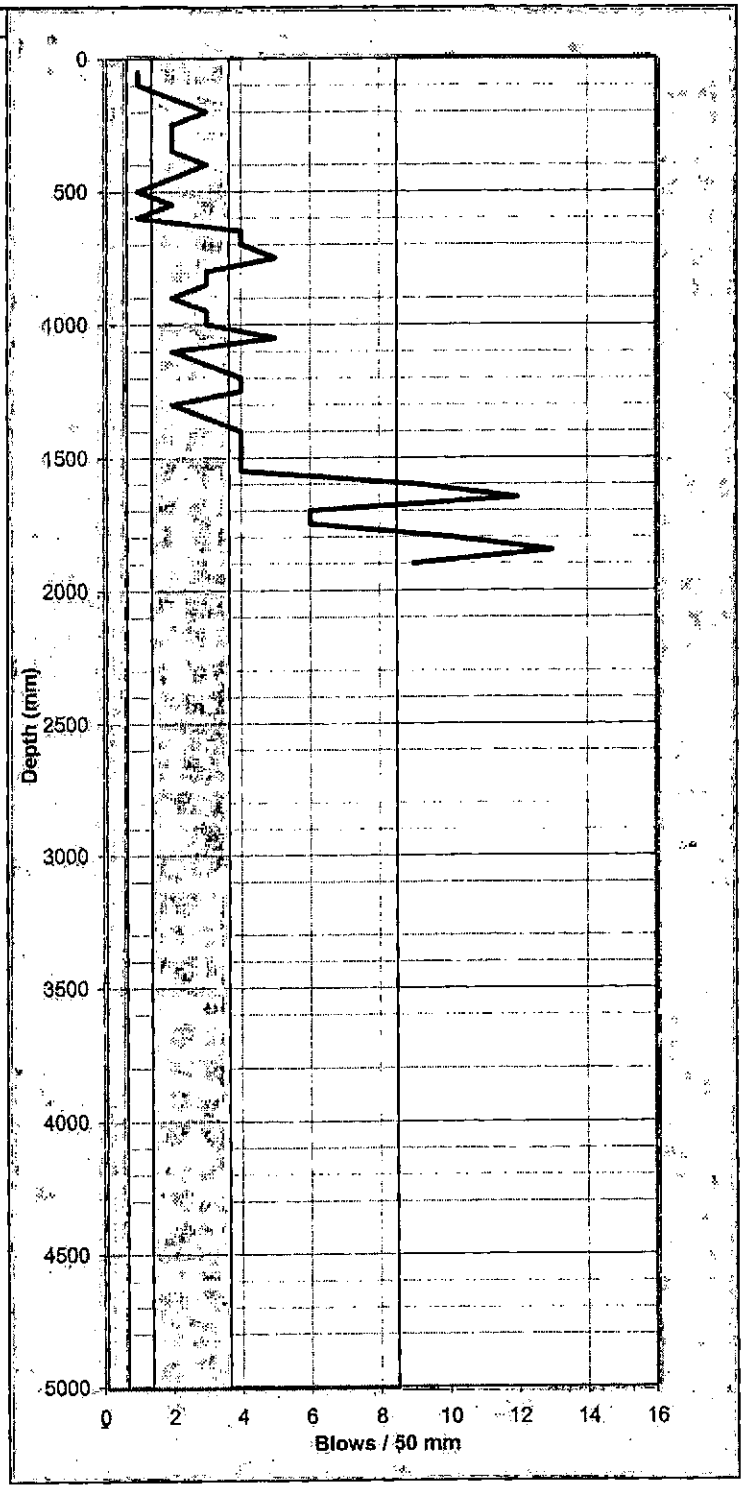
Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *29.11.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *MRD*

Test No. ***SC124/4***

Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	2	2650	
200	3	2700	
250	2	2750	
300	2	2800	
350	2	2850	
400	3	2900	
450	2	2950	
500	1	3000	
550	2	3050	
600	1	3100	
650	4	3150	
700	4	3200	
750	5	3250	
800	3	3300	
850	3	3350	
900	2	3400	
950	3	3450	
1000	3	3500	
1050	5	3550	
1100	2	3600	
1150	3	3650	
1200	4	3700	
1250	4	3750	
1300	2	3800	
1350	3	3850	
1400	4	3900	
1450	4	3950	
1500	4	4000	
1550	4	4050	
1600	9	4100	
1650	12	4150	
1700	6	4200	
1750	6	4250	
1800	10	4300	
1850	13	4350	
1900	9	4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

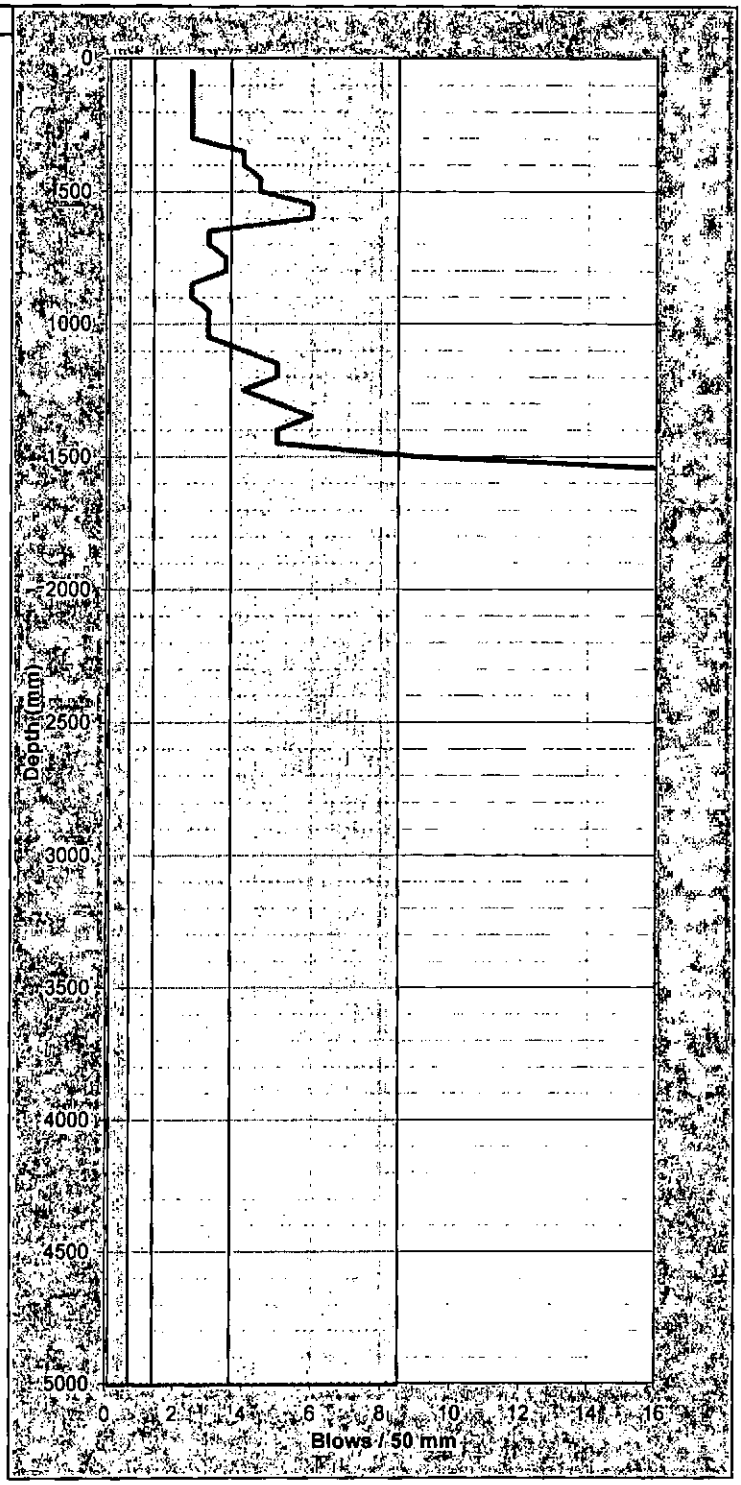
SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *23.03.2007*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *MPD*

Test No. ***SC125/1***
Sheet ***1***
of ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2.5	2550	
100	2.5	2600	
150	2.5	2650	
200	2.5	2700	
250	2.5	2750	
300	2.5	2800	
350	4	2850	
400	4	2900	
450	4.5	2950	
500	4.5	3000	
550	6	3050	
600	6	3100	
650	3	3150	
700	3	3200	
750	3.5	3250	
800	3.5	3300	
850	2.5	3350	
900	2.5	3400	
950	3	3450	
1000	3	3500	
1050	3	3550	
1100	4	3600	
1150	5	3650	
1200	5	3700	
1250	4	3750	
1300	5	3800	
1350	6	3850	
1400	5	3900	
1450	5	3950	
1500	9	4000	
1550	17	4050	
1600	Refusal	4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
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SCALA PENETROMETER LOG

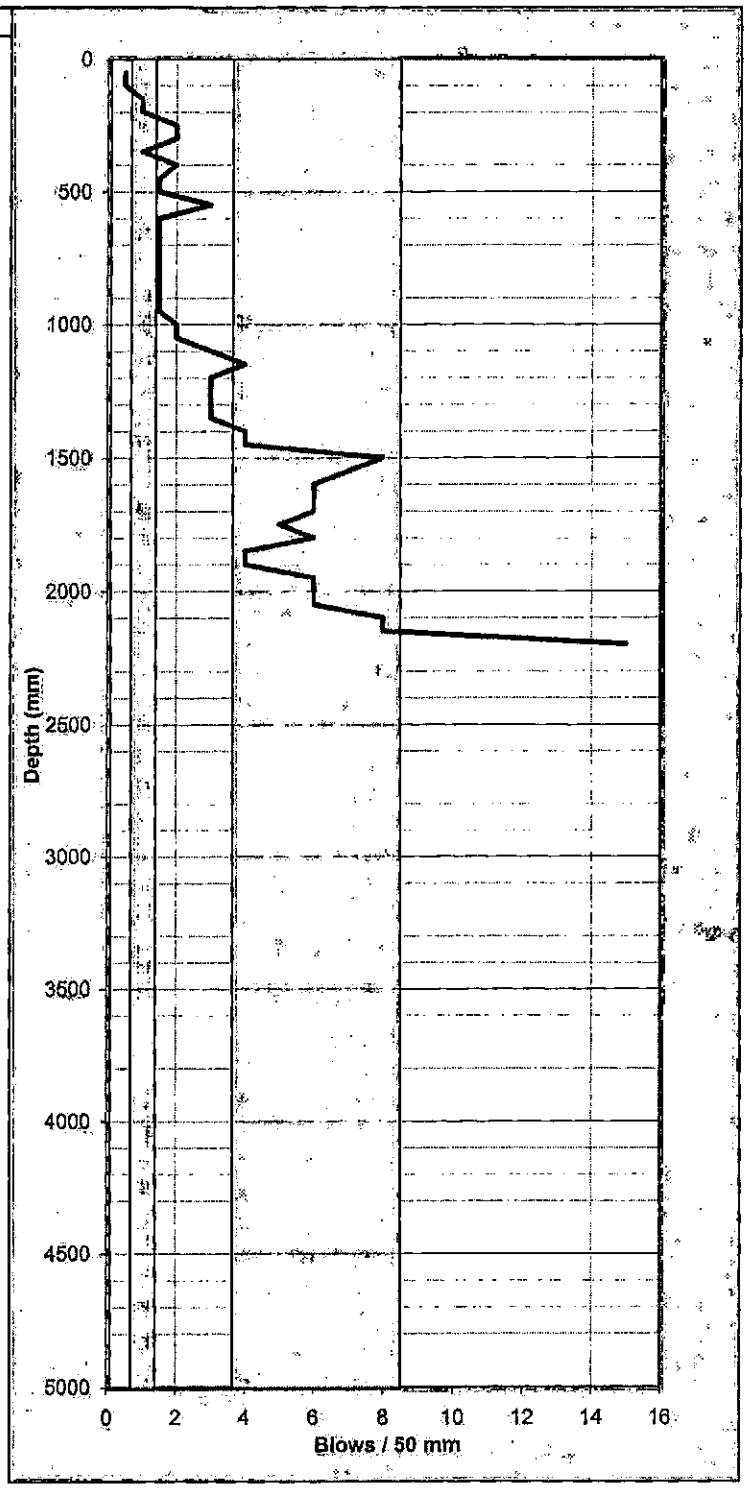
Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *27.11.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *MPD*

Test No. ***SC125/2***

Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	0.5	2550	
100	0.5	2600	
150	1	2650	
200	1	2700	
250	2	2750	
300	2	2800	
350	1	2850	
400	2	2900	
450	1.5	2950	
500	1.5	3000	
550	3	3050	
600	1.5	3100	
650	1.5	3150	
700	1.5	3200	
750	1.5	3250	
800	1.5	3300	
850	1.5	3350	
900	1.5	3400	
950	1.5	3450	
1000	2	3500	
1050	2	3550	
1100	3	3600	
1150	4	3650	
1200	3	3700	
1250	3	3750	
1300	3	3800	
1350	3	3850	
1400	4	3900	
1450	4	3950	
1500	8	4000	
1550	7	4050	
1600	6	4100	
1650	6	4150	
1700	6	4200	
1750	5	4250	
1800	6	4300	
1850	4	4350	
1900	4	4400	
1950	6	4450	
2000	6	4500	
2050	6	4550	
2100	8	4600	
2150	8	4650	
2200	15	4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
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NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

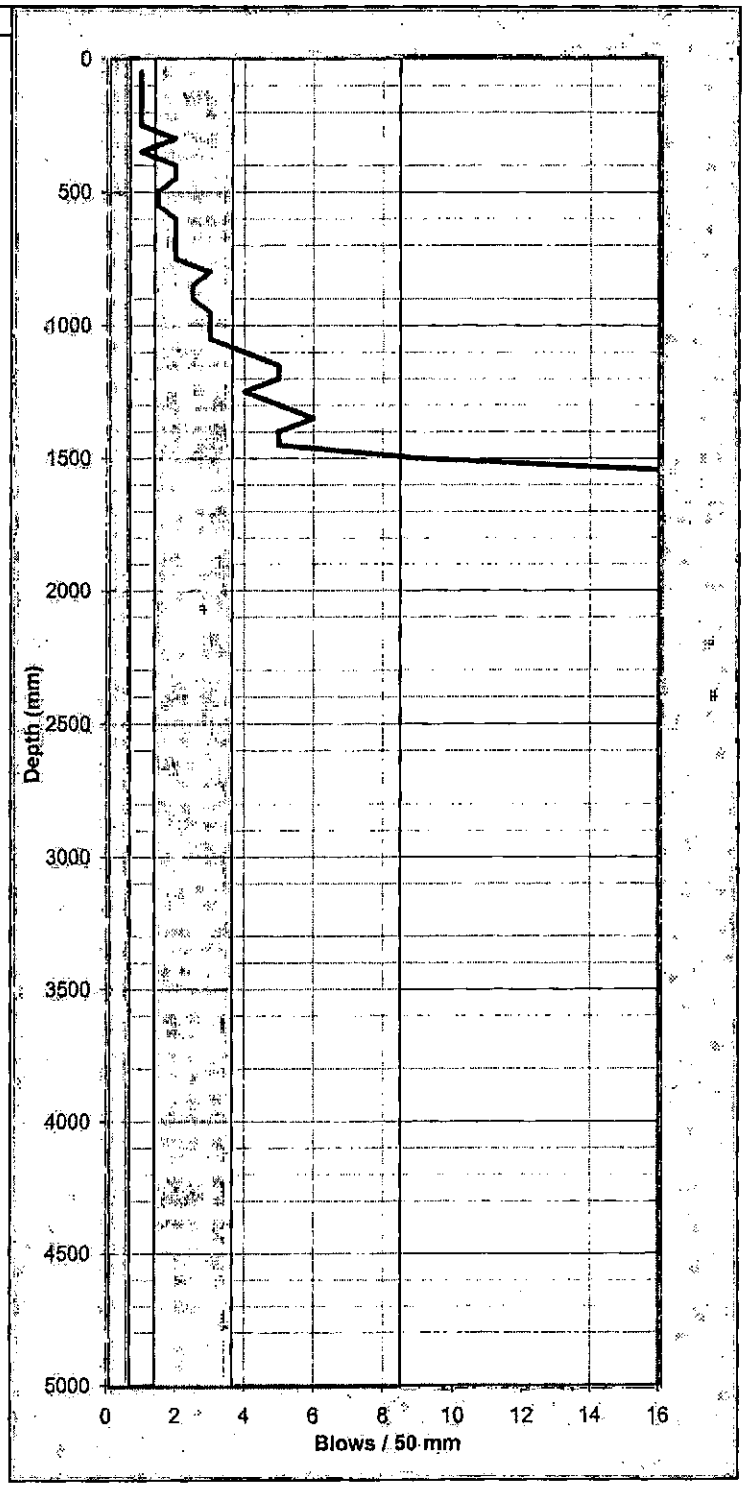
Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *29.11.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *OMPD*

Test No. ***SC125/3***

Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	1	2650	
200	1	2700	
250	1	2750	
300	2	2800	
350	1	2850	
400	2	2900	
450	2	2950	
500	1.5	3000	
550	1.5	3050	
600	2	3100	
650	2	3150	
700	2	3200	
750	2	3250	
800	3	3300	
850	2.5	3350	
900	2.5	3400	
950	3	3450	
1000	3	3500	
1050	3	3550	
1100	4	3600	
1150	5	3650	
1200	5	3700	
1250	4	3750	
1300	5	3800	
1350	6	3850	
1400	5	3900	
1450	5	3950	
1500	9	4000	
1550	17	4050	
1600	Refusal	4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

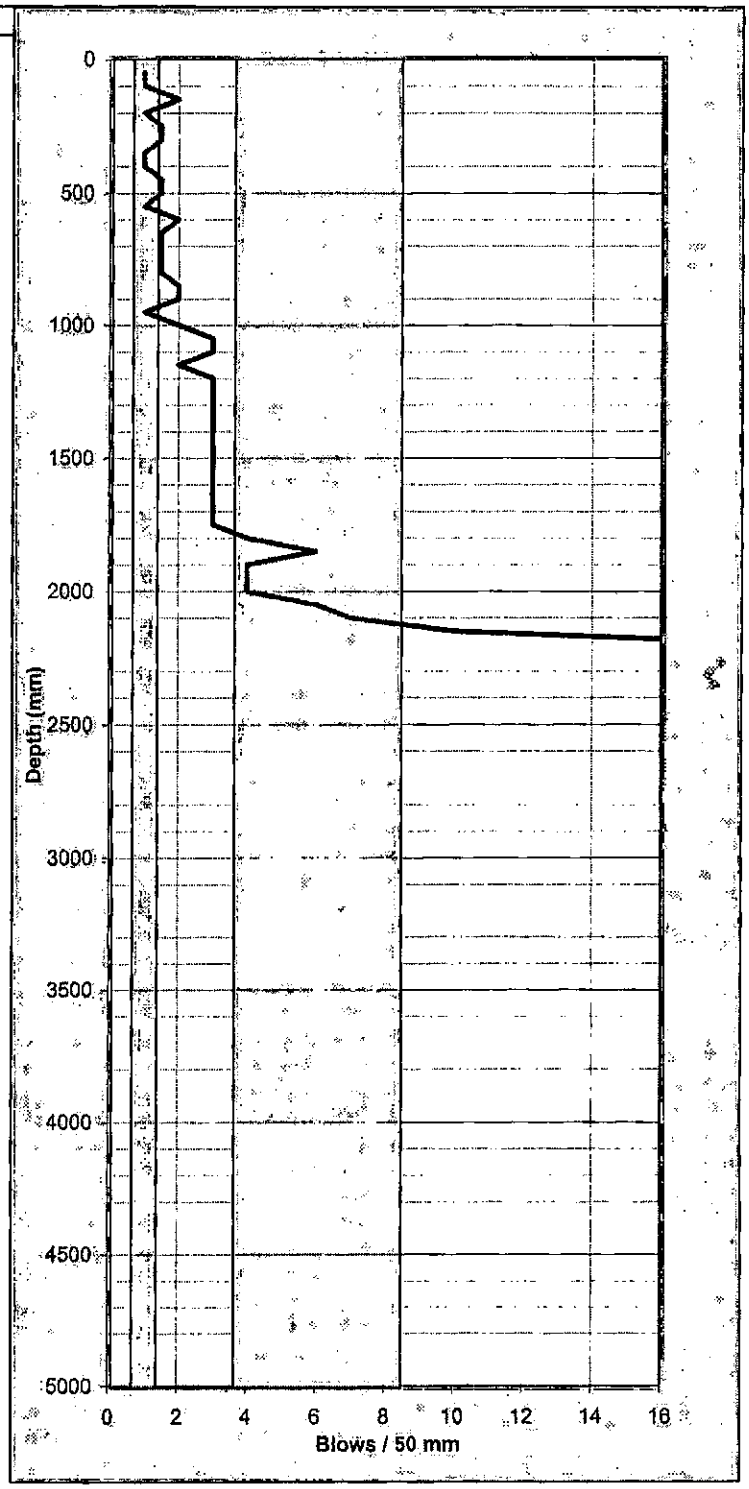
Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *28.11.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *0MPD*

Test No. ***SC126/1***

Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	1	2550	
100	1	2600	
150	2	2650	
200	1	2700	
250	1.5	2750	
300	1.5	2800	
350	1	2850	
400	1	2900	
450	1.5	2950	
500	1.5	3000	
550	1	3050	
600	2	3100	
650	1.5	3150	
700	1.5	3200	
750	1.5	3250	
800	1.5	3300	
850	2	3350	
900	2	3400	
950	1	3450	
1000	2	3500	
1050	3	3550	
1100	3	3600	
1150	2	3650	
1200	3	3700	
1250	3	3750	
1300	3	3800	
1350	3	3850	
1400	3	3900	
1450	3	3950	
1500	3	4000	
1550	3	4050	
1600	3	4100	
1650	3	4150	
1700	3	4200	
1750	3	4250	
1800	4	4300	
1850	6	4350	
1900	4	4400	
1950	4	4450	
2000	4	4500	
2050	6	4550	
2100	7	4600	
2150	10	4650	
2200	20	4700	
2250	Refusal	4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

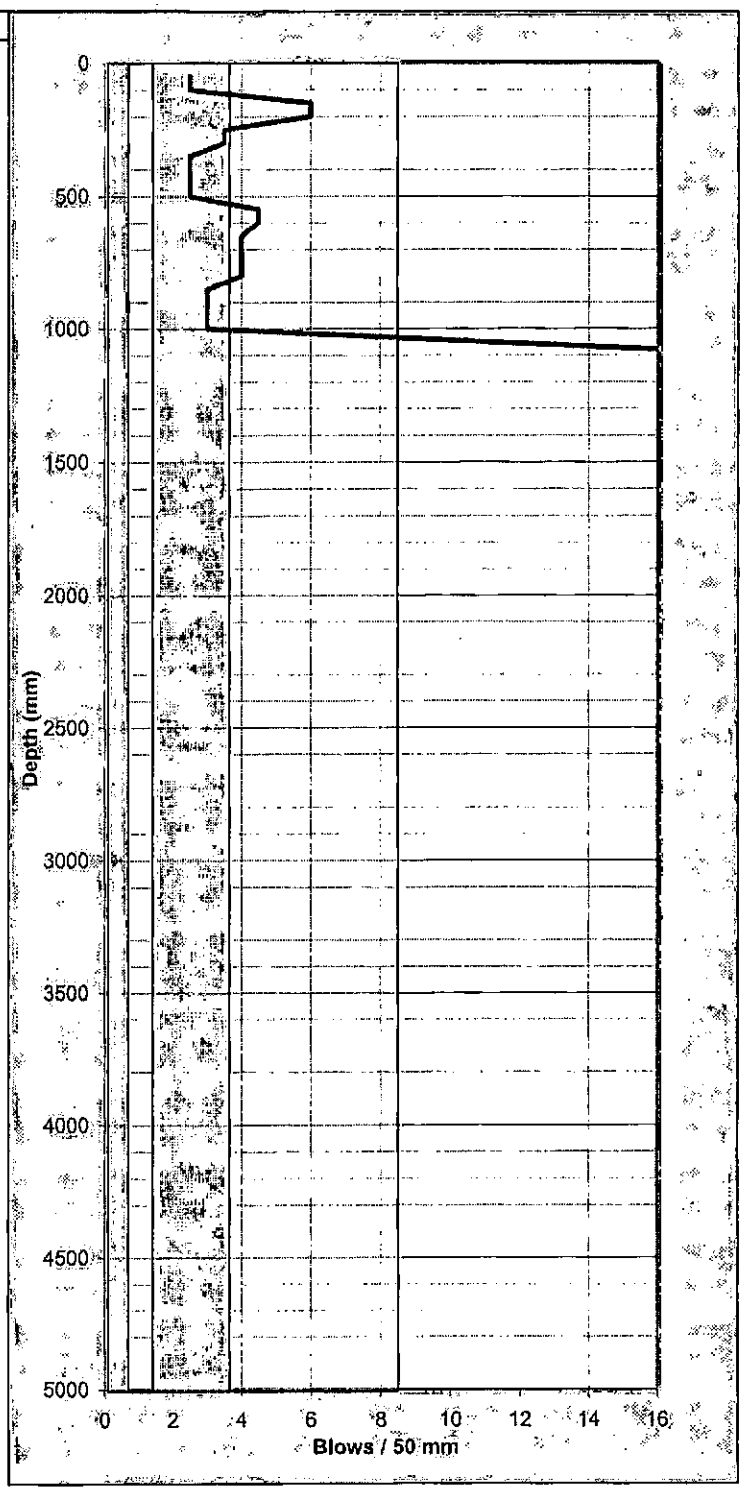
SCALA PENETROMETER LOG

Job No:	*81069.01*	Date:	*23.03.07*
Project:	*Back Ridge Joint Venture*	Operated by:	*JXWW*
Location:	*ROW T*	Logged by:	*JXWW*
Position:	*Refer to site plan*	Checked by:	*MPO*

Test No. ***SC126/2***

Sheet ***1*** **of** ***1***

mm Driven	No. of Blows	mm Driven	No. of Blows
50	2.5	2550	
100	2.5	2600	
150	6	2650	
200	6	2700	
250	3.5	2750	
300	3.5	2800	
350	2.5	2850	
400	2.5	2900	
450	2.5	2950	
500	2.5	3000	
550	4.5	3050	
600	4.5	3100	
650	4	3150	
700	4	3200	
750	4	3250	
800	4	3300	
850	3	3350	
900	3	3400	
950	3	3450	
1000	3	3500	
1050	11	3550	
1100	20	3600	
1150	Refusal	3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

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43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
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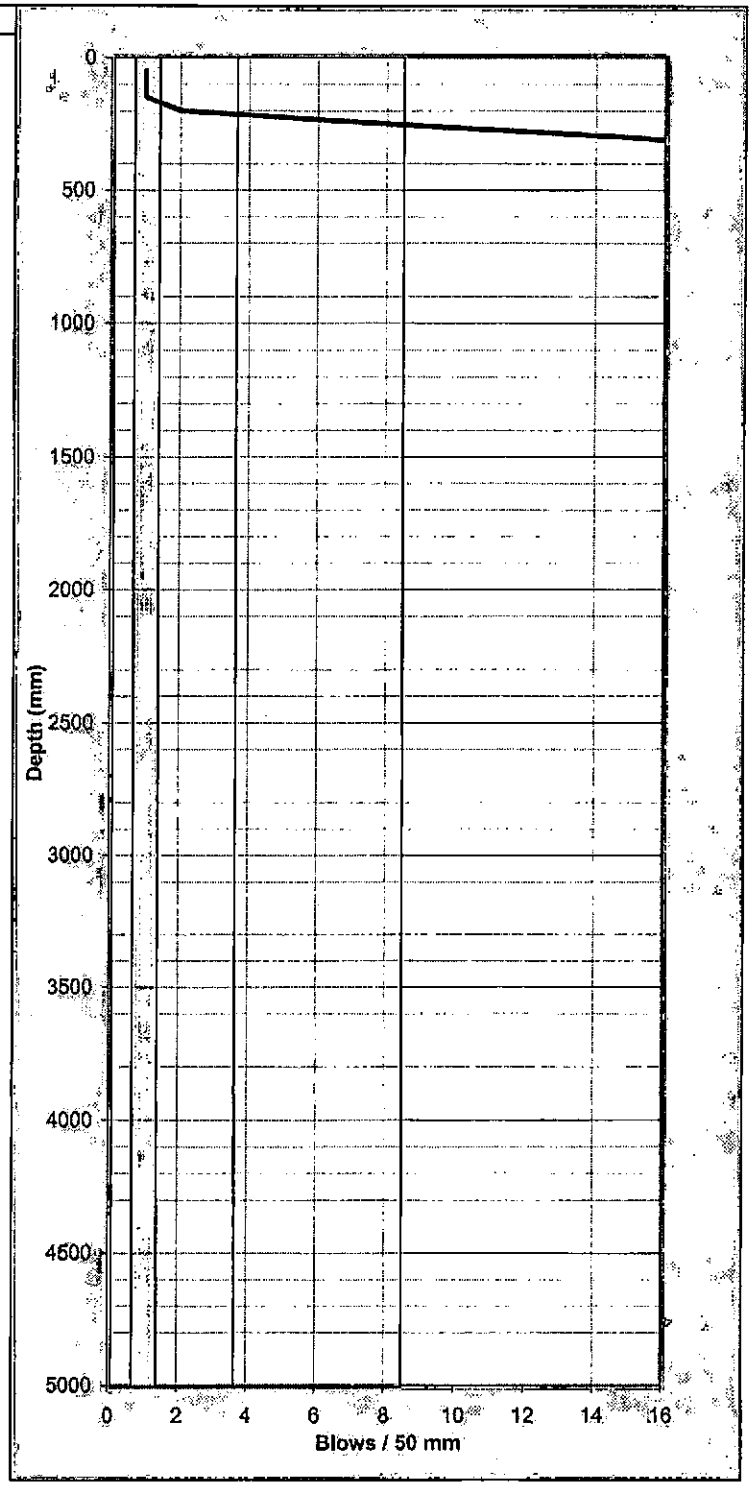
SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *28.11.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *0 MPD*

Test No. *SC126/3*
Sheet *1* **of** *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	*1*	2550	
100	*1*	2600	
150	*1*	2650	
200	*2*	2700	
250	*8*	2750	
300	*15*	2800	
350	*20*	2850	
400	Refusal	2900	
450		2950	
500		3000	
550		3050	
600		3100	
650		3150	
700		3200	
750		3250	
800		3300	
850		3350	
900		3400	
950		3450	
1000		3500	
1050		3550	
1100		3600	
1150		3650	
1200		3700	
1250		3750	
1300		3800	
1350		3850	
1400		3900	
1450		3950	
1500		4000	
1550		4050	
1600		4100	
1650		4150	
1700		4200	
1750		4250	
1800		4300	
1850		4350	
1900		4400	
1950		4450	
2000		4500	
2050		4550	
2100		4600	
2150		4650	
2200		4700	
2250		4750	
2300		4800	
2350		4850	
2400		4900	
2450		4950	
2500		5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

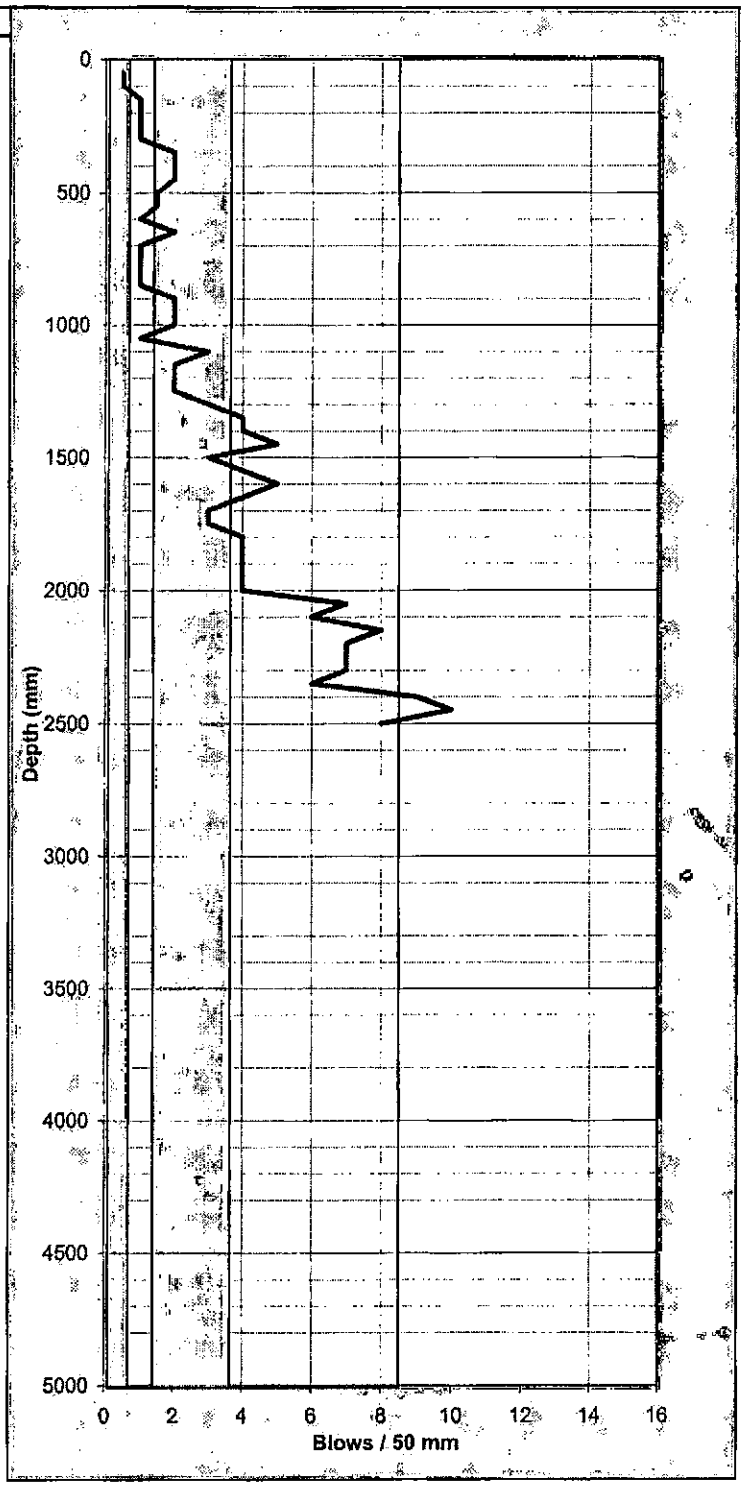
SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

Date: *28.11.2006*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *MRD*

Test No. ***SC126/4***
Sheet *1*
of *1*

mm Driven	No. of Blows	mm Driven	No. of Blows
50	0.5	2550	
100	0.5	2600	
150	1	2650	
200	1	2700	
250	1	2750	
300	1	2800	
350	2	2850	
400	2	2900	
450	2	2950	
500	1.5	3000	
550	1.5	3050	
600	1	3100	
650	2	3150	
700	1	3200	
750	1	3250	
800	1	3300	
850	1	3350	
900	2	3400	
950	2	3450	
1000	2	3500	
1050	1	3550	
1100	3	3600	
1150	2	3650	
1200	2	3700	
1250	2	3750	
1300	3	3800	
1350	4	3850	
1400	4	3900	
1450	5	3950	
1500	3	4000	
1550	4	4050	
1600	5	4100	
1650	4	4150	
1700	3	4200	
1750	3	4250	
1800	4	4300	
1850	4	4350	
1900	4	4400	
1950	4	4450	
2000	4	4500	
2050	7	4550	
2100	6	4600	
2150	8	4650	
2200	7	4700	
2250	7	4750	
2300	7	4800	
2350	6	4850	
2400	9	4900	
2450	10	4950	
2500	8	5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR
43 Halifax Street
P O Box 1009
NELSON
Tel: (03) 546 6339
Fax: (03) 546 7619

SCALA PENETROMETER LOG

Job No: *81069.01*
Project: *Back Ridge Joint Venture*
Location: *ROW T*
Position: *Refer to site plan*

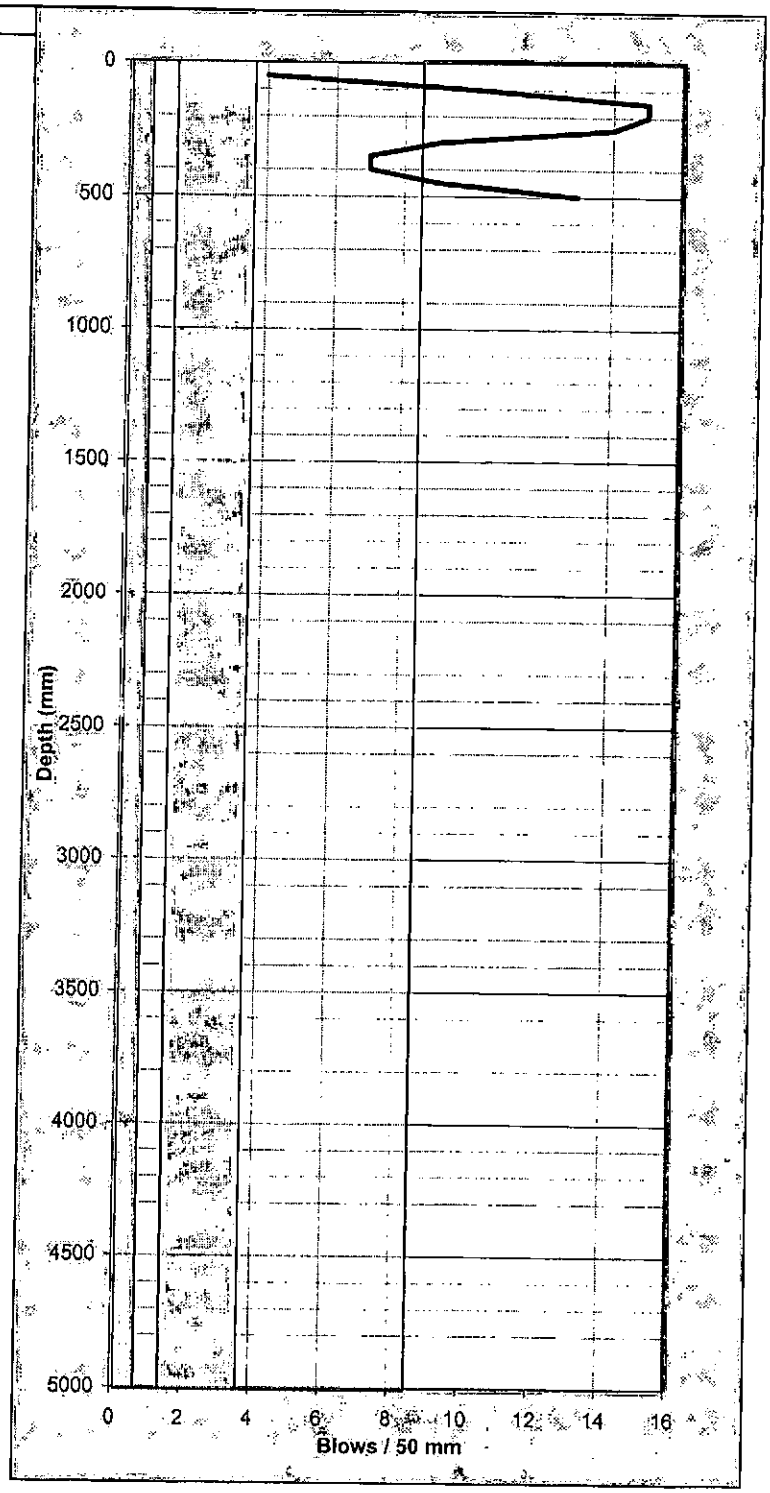
Date: *02.04.07*
Operated by: *JXWW*
Logged by: *JXWW*
Checked by: *MPD*

Test No. ***SCROW***

Sheet *1*
of *1*

mm Driven	No. of Blows
50	4
100	10
150	15
200	15
250	14
300	9
350	7
400	7
450	9
500	13
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	
1050	
1100	
1150	
1200	
1250	
1300	
1350	
1400	
1450	
1500	
1550	
1600	
1650	
1700	
1750	
1800	
1850	
1900	
1950	
2000	
2050	
2100	
2150	
2200	
2250	
2300	
2350	
2400	
2450	
2500	

mm Driven	No. of Blows
2550	
2600	
2650	
2700	
2750	
2800	
2850	
2900	
2950	
3000	
3050	
3100	
3150	
3200	
3250	
3300	
3350	
3400	
3450	
3500	
3550	
3600	
3650	
3700	
3750	
3800	
3850	
3900	
3950	
4000	
4050	
4100	
4150	
4200	
4250	
4300	
4350	
4400	
4450	
4500	
4550	
4600	
4650	
4700	
4750	
4800	
4850	
4900	
4950	
5000	



Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP1

SHEET 1 OF 1

PROJECT: BRJV | LOCATION: Lot 120 | JOB NO: 51069.010

CO-ORDINATES: REFER SITE PLAN | EXPOSURE TYPE: TP | HOLE STARTED: 20.05.04

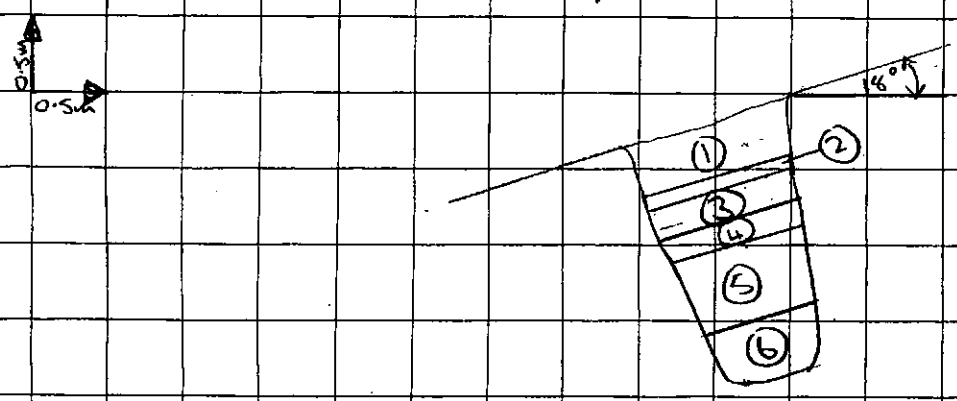
RL: | EQUIPMENT: 20t | HOLE FINISHED: 20.05.04

DATUM: | OPERATOR: MIKE (K.B.S) | LOGGED BY: JxWW

EXCAVATION DIMENSIONS: 1800 x 1300 x 3900 | CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS (PP = Pocket Penetrometer q_u kPa; SV = Shear Vane Corrected kPa)	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			From finger pressure.			GM	SILTY GRAVEL, orange-brown & black, fine-coarse, MW-HW sub-rounded-rounded granitic clasts. With tree roots & branches to 50mm	M	MD		FILL	(1)
			"			OL	SILT, low plasticity, black, organic (grass at top contact).	M	F		PLACED TOPSOIL	(2)
			Indented with finger nail	0.5		GM	SILTY GRAVEL, orange-brown to dark brown, fine-medium, subrounded, MW clasts with occassional organic lenses.	M	L MD		FILL	(3)
			"			OL-GM	GRAVELLY SILT, dark brown, rootlets, non plastic, MW-medium gravel clasts with subrounded,	M	VSt		REMNANT TOPSOIL	(4)
			Easily removed with hammer	1.0			SILTY, CLAYEY GRAVEL, low plasticity, matrix, medium-coarse, MW-HW gravels with occassional lenses of organic silt.				FILL.	
						GM	As above no organic silts.	M	D		RESIDUALLY WEATHERED P.H.G.	(5)
			"	1.5		GM	SILTY GRAVEL, orange-brown, medium-coarse, MW-HW, subrounded-rounded, with minor clay	M	D ↓ VD		PORT HILLS GRAVEL.	(6)
				2.0			E.O.H 1.8m Sufficient information.					

SKETCH



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EXCAVATION LOG

EXCAVATION NO: TP 2

SHEET 1 OF 1

PROJECT: BRJV | LOCATION: Adjacent N.W boundary LOT 120 | JOB NO: 51069-010

CO-ORDINATES: REFER SITE PLAN | EXPOSURE TYPE: TP | HOLE STARTED: 20-05-04

EQUIPMENT: 20t | HOLE FINISHED: 20-05-04

RL: | OPERATOR: MIKE (KBJ) | LOGGED BY: JKWW

DATUM: | EXCAVATION DIMENSIONS: 2600×4300×1500 | CHECKED BY: JG

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS PP = Pocket Penetrometer q_u kPa SV = Shear Vane Corrected kPa	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			Indented with slight finger pressure	0.0		OL-G	GRAVELLY SILT, low plasticity, black fine-medium, subrounded - rounded granitic clasts with tree roots to 50mm in diameter	W M	S		FILL (Top soil derived) Sides caving	①
			"	1.0		ML	GRAVELLY SILT, low plasticity, dark brown with rootlets & fine-medium, subrounded - rounded gravels.	M	VL ↓ L (S)		FILL	②
			"			OL	SILT, low plasticity, black, organic (rootlets).	W	S		REMNANT BURIED TOPSOIL	③
			firm	1.5		GM	SILTY GRAVEL, light to sandy brown with	W ↓ M	L ↓ MD ↓ D		FILL	④
	1 in 2	1 in 2	Easily dislodged with hammer	2.0		GM	coarse, subrounded to rounded HW granitic clasts. * NB. LOWER 2 UNITS COULD NOT BE LOGGED IN SUFFICIENT DETAIL DUE TO COLLAPSING SIDES				PORT HILLS GRAVEL.	⑤
				2.5			E.O.H 2.6m Sufficient information					
				3.0								

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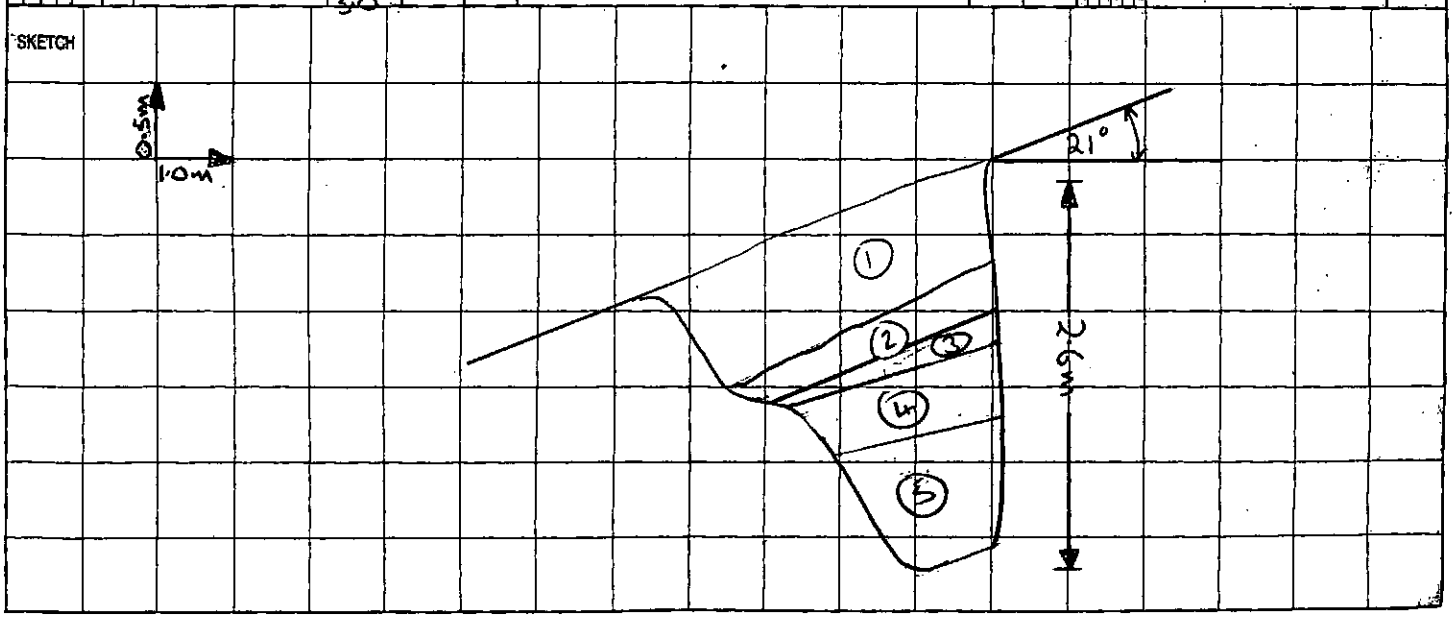

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EXCAVATION LOG

EXCAVATION NO: TP3

SHEET 1 OF 1

PROJECT: BRJV | LOCATION: Boundary Lots 120-121 | JOB NO: 81069-010

CO-ORDINATES: REFER SITE PLAN | EXPOSURE TYPE: TP | HOLE STARTED: 20-05-04

EQUIPMENT: 20t | HOLE FINISHED: 20-05-04

RL: | OPERATOR: MIKE (KB's) | LOGGED BY: JxWW

DATUM: | EXCAVATION DIMENSIONS: 2000 x 1000 x 1300 | CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS PP = Pocket Penetrometer q_u kPa SV = Shear Vane Corrected kPa	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			Easily indented with finger			OLG	GRAVELLY SILT, low plasticity, black, organic, with fine-medium gravel	M	S		(TOPSOIL)	
						CIM	SILTY GRAVEL, orange-brown, fine-medium, subrounded-rounded, HW clasts	M	VL		FILL (Overmature gravels)	1
			Indented with strong finger pressure	0.5		OLG	GRAVELLY SILT, non plastic, black, organic, with medium to coarse gravels & rootlets to 50mm	M	F-St		BURIED TOPSOIL	2
			Indented with finger nail	1.0		MLG	GRAVELLY SILT WITH CLAY, no-low plasticity, orange-brown with MW-HW, subrounded-rounded medium-coarse gap graded gravels occasional organics	M	VSt		LANDSLIDE DEBRIS	3
			Removed with 1 blow of hammer	1.5		GM	SILTY GRAVEL WITH CLAY, HW, rounded-subrounded medium-coarse, gap graded gravels	M	H/L MD D		RESIDUALLY WEATHERED P.H.G.	4
				2.0		GM	As ABOVE, less clay & occasional siltstone boulders.	M	D		PORT HILLS GRAVEL	5
				2.5			E.O.H 2.0m Sufficient information					

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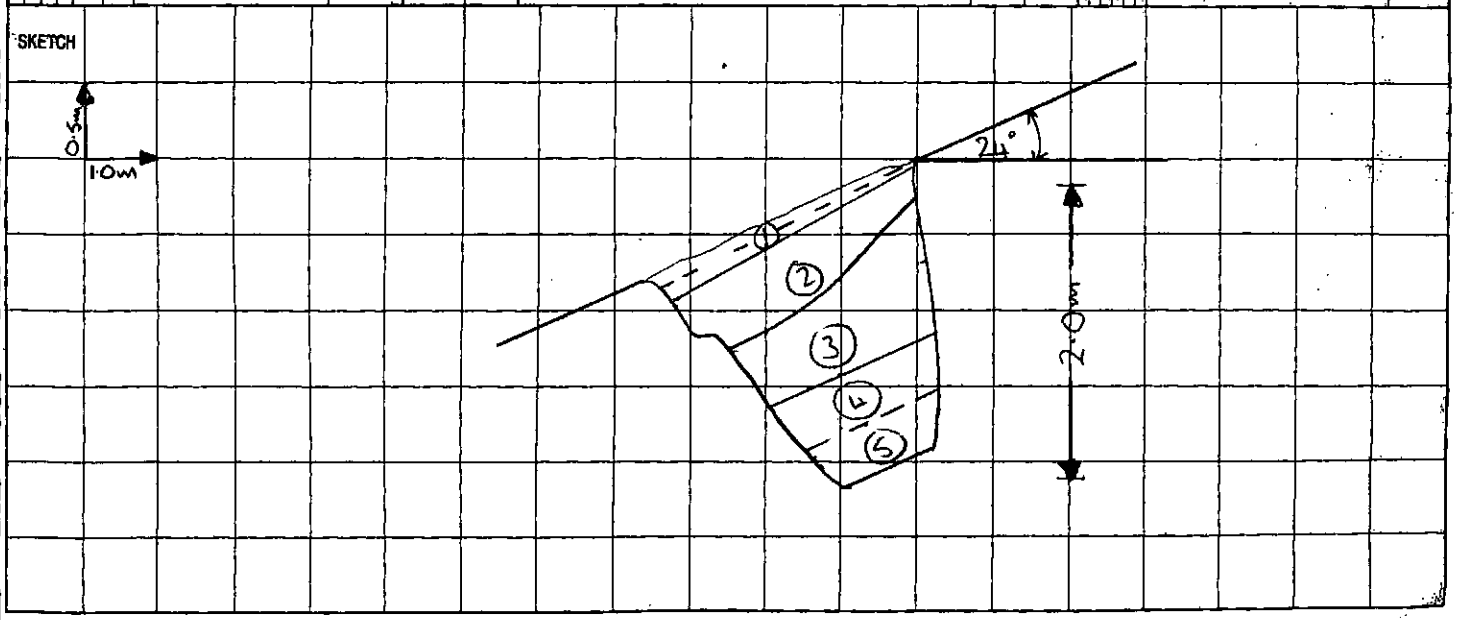

TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP 4
SHEET 1 OF 1

PROJECT: BRJV
LOCATION: Boundary LOTS 122-123
JOB NO: 81069-010
CO-ORDINATES: REFER SITE PLAN
EXPOSURE TYPE: TP
HOLE STARTED: 20·05·04
EQUIPMENT: 20t
HOLE FINISHED: 20·05·04
RL:
OPERATOR: MIKE (KB's)
LOGGED BY: JXWW
DATUM:
EXCAVATION DIMENSIONS: 2800 × 4000 × 1500
CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS; PP = Pocket Penetrometer q_u kPa; SV = Shear Vane Corrected kPa	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			Indents with soft finger pressure.			OL	SILT, non plastic; black; organic	M	S		TOPSOIL	(1)
			Indents with firm finger pressure	0.5		MI-C	GRAVELLY SILT WITH CLAY non plastic, orange brown, with HW, subrounded-rounded fine-medium granitic gravels & abundant rootlets to comm & other assorted woody debris (chaotic structure)	M	St F VSt		COLLUVIUM	(2)
			Collapsing	1.0								
	Nil	Nil	Indents with finger nail	1.5								
			Chips out with 1 blow of hammer	2.0		GM	SILTY GRAVEL, dark brown, HW-MW, subrounded to rounded, medium-coarse (gap graded) granitic clasts to 300mm.	M	D		PORT HILLS GRAVEL	(3)
				2.5								
				3.0			E.O.H 2.8m Sufficient information					

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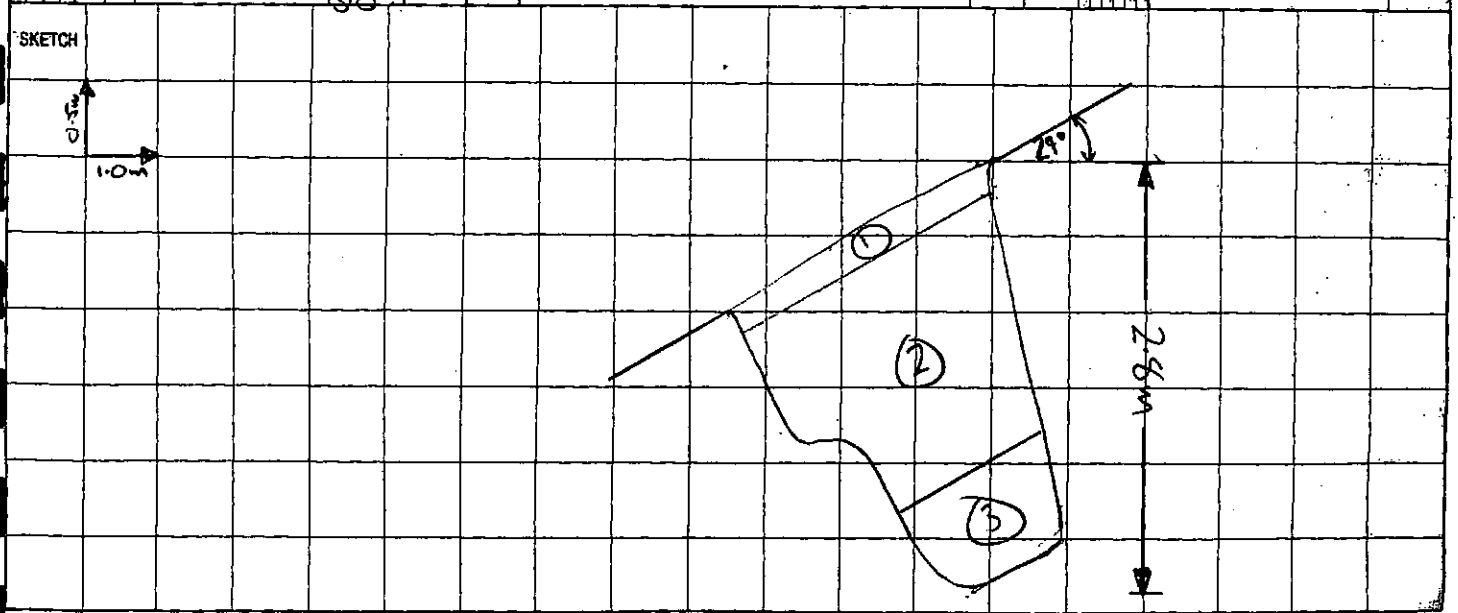

TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP 126/1

SHEET 1 OF 1

PROJECT: BRJV - ROW T SUB | LOCATION: TASMAN HEIGHTS, NELSON | JOB NO: 51069-010

CO-ORDINATES: REFER SITE PLAN | EXPOSURE TYPE: TP | HOLE STARTED: 27-11-2006

RL: | EQUIPMENT: 30t | HOLE FINISHED: 27-11-2006

DATUM: LOT 126 | OPERATOR: KB QUARRIES LTD | LOGGED BY: JKWW

EXCAVATION DIMENSIONS: 1500 x 4900 x 2400 | CHECKED BY: MPD

EXCAVATION AND TESTS						ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS (PP = Pocket Penetrometer q_u kPa; SV = Shear Vane Corrected kPa)		RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			SV	PP				SILT, low plasticity, dark grey, organic with roots to 150mm thick	M	S		TOPSOIL	(1)
			98/34	350	0.5		CL-ML	CLAYEY SILT, low plasticity, orange-brown mottled grey, with some HW, subrounded-rounded cobble size abundant rootlets. Fairly open structure	M	St		COLLUVIUM	(2)
				350			ML-CL	SILTY CLAY, low plasticity, orange-brown mottled grey, with CW-HW cobbles & coarse gravel.	M	St		COLLUVIUM	(3)
			103/37	375	1.0			Pockets of organic silt @ basal surface.					
				250									
	NIL	NIL		300									
				425	1.5		GC	CLAYEY GRAVEL, tightly packed, orange-brown mottled grey, gap graded, predominantly, coarse to cobble, HW.	M			(PHG) PORT HILLS GRAVEL FORMATION	(4)
				425	2.0			Has a discontinuous grey low plasticity clay seam @ basal contact, grades into.					
				450			GC	CLAYEY GRAVEL, very tightly packed, orange brown, HW gap graded, coarse to cobble	M	D		PHG	(5)
					2.5			E.O.H. 2.4m INSITU PHG					

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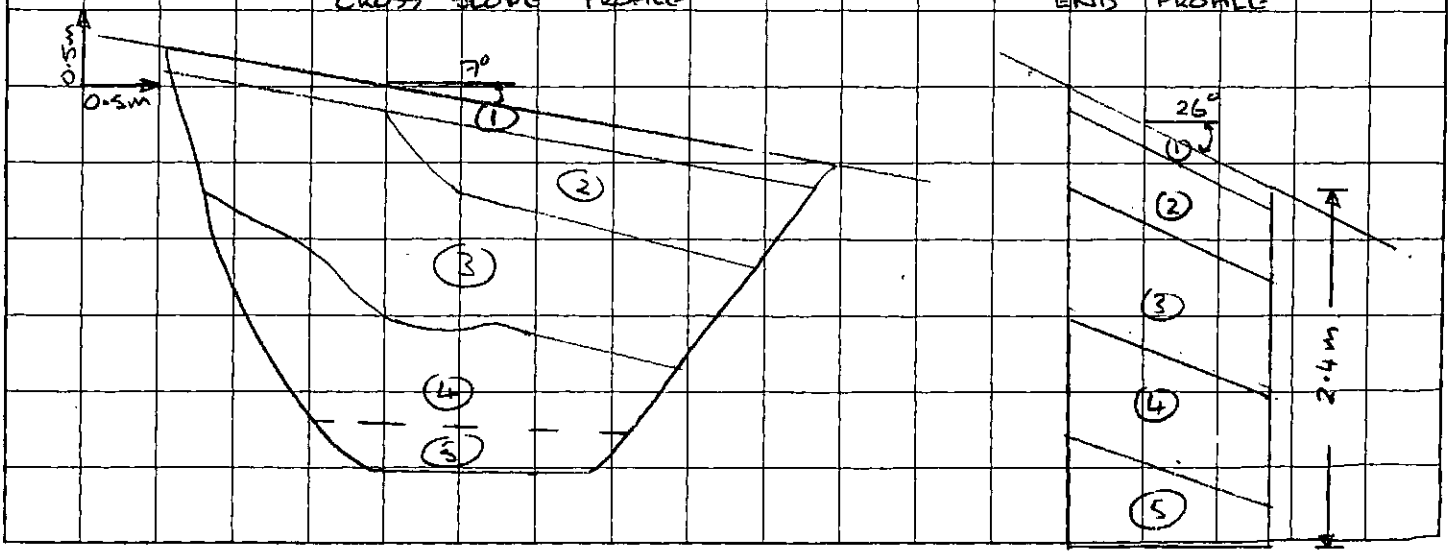

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EXCAVATION LOG

EXCAVATION NO: TP1/06

SHEET 1 OF 1

PROJECT: BRJV LOT 120 LOCATION: TASMAN HEIGHTS JOB NO: 81069-010

CO-ORDINATES: REFER SITE PLAN EXPOSURE TYPE: TP HOLE STARTED: 14-02-06

EQUIPMENT: 30 tonne HOLE FINISHED: 14-02-06

RL: OPERATOR: KB Quarries (Mike Yates) LOGGED BY: JKMW

DATUM: EXCAVATION DIMENSIONS: 1300 × 3900 × 2350 CHECKED BY: TMC

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS PP = Pocket Penetrometer q_u kPa SV = Shear Vane Corrected kPa	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			Can insert finger			OL-ML	SILT, low plasticity, dark brown high % organics, with gravel & minor clay, abundant rootlets, open structure	M	S		PLACED TOPSOIL	(1)
			Indents easily	0.5		CL-ML	CLAYEY SILT, low plasticity, dark brown - orange brown mottled, with HW, rounded, cobbles & coarse gravel, occ boulders, rootlets, chaotic appearance	M-W	F		FILL	(2)
	1/2 1/2		Indents with thumbnail easily removed with hammer	1.0 1.5		GM	SILTY GRAVEL, orange brown with occasional dark brown speckles. HW, rounded, granitic, predominantly coarse - cobble with clay. In low plasticity clayey silt matrix. smooth displacement surfaces & a localised topsoil horizon @ basal contact. rootlets.	M	MD		COLLUVIUM	(3)
			chips out with hammer	2.0		GM	SILTY GRAVEL, orange brown, HW, rounded, medium to cobble gravel in a low plasticity clayey silt matrix	M	D		RESIDUAL-1 WEATHERED PORT HILL GRAVEL	(4)
				2.5			E-O-H 2.35m (insitu PHG)					

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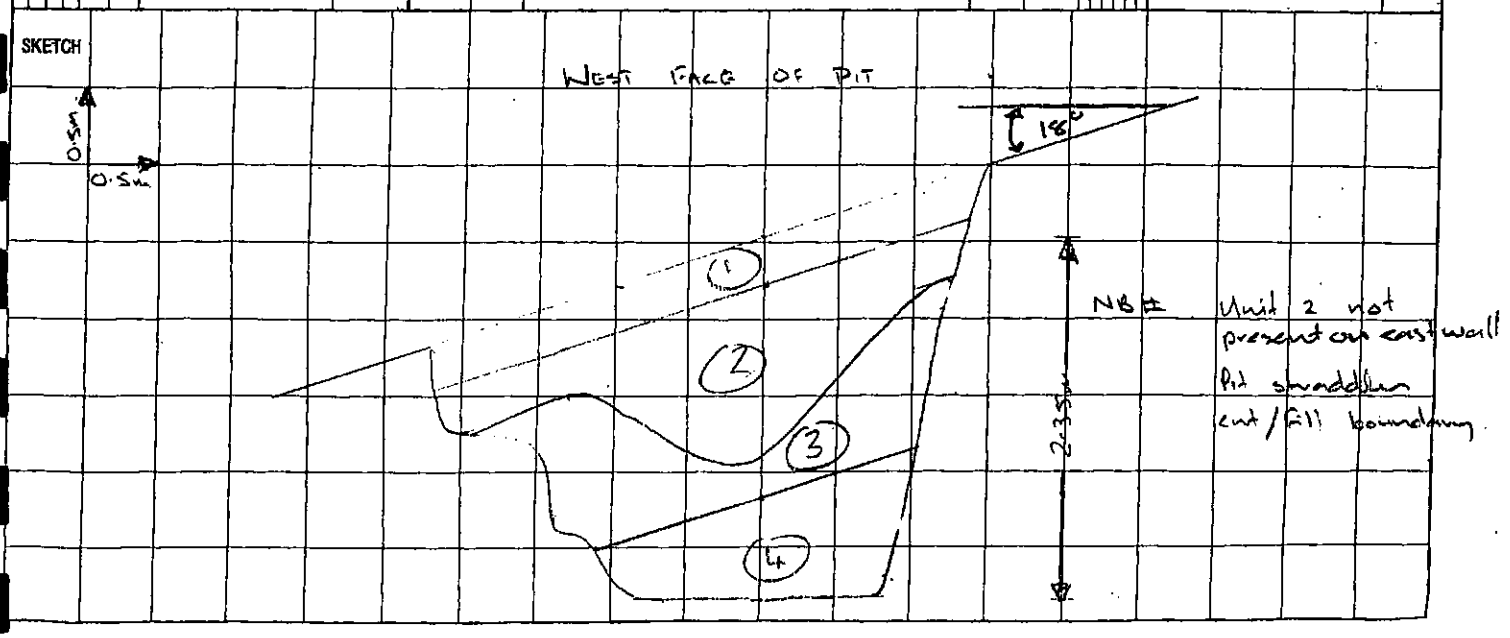

U.T.P = Unable to Penetrate

TONKIN & TAYLOR LTD.
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ENGINEERING LOG TERMINOLOGY

DRILLING OR EXCAVATION

WATER

- Water level on date shown
- Water Inflow
- Water Outflow

CORE RECOVERY

Core recovered expressed as percentage of the length of the core run

METHOD/CASING

Shows drilling method and depth of casing

Common types:
- OB – open barrel
- W – wash
- HQ3 – HQ triple tube coring
- PQ3 – PQ triple tube coring

SAMPLE TYPE

(The length of the sample is indicated by the length of symbol)

- OPEN BARREL
- DOUBLE OR TRIPLE TUBE
- STANDARD PENETRATION TEST
- LARGE DIA. THIN WALLED TUBE
- SMALL DIA. THIN WALLED TUBE
- BULK SAMPLE

GRAPHIC LOG

The graphic log shows soil and rock substances, significant defects, and core loss. Soil and rock substances represented clear contrasting symbols consistent for each project.

TYPICAL SYMBOLS:

- ORGANIC MATERIAL
- CLAY
- SILT
- SAND
- GRAVEL
- MUDSTONE
- SILTSTONE
- SANDSTONE
- VOLCANIC ROCK
- NO CORE

TESTS

- N=22 — SPT uncorrected blow count for 300mm
- • 75kPa — Undrained shear strength as measured by field vane
- ⊠ — Pressuremeter Test
- * — Laboratory test(s) carried out:

Common types:
- LV – Laboratory vane
- AL – Atterburg limits
- UU – Undrained trioxial
- PSD – Particle size
- C' Ø' – Effective stress
- CONS – Consolidation
- DS – Direct Shear
- COMP – Compaction
- UN – Unconfined Compression
- IS – Point Load

SOIL DESCRIPTIONS

CLASSIFICATION SYMBOL

Based on USBR Unified Soil Classification System Visual Method for field identification. Classification symbols based on Laboratory Method may differ.

Soil and rock descriptions generally follow the "Guidelines for the field descriptions of Soils and Rocks in Engineering Use" by the NZ Geomechanics Society (1985). Particular in-house abbreviations are given below.

MOISTURE CONTENT

- D – Dry, looks and feels dry
- M – Moist, no free water on hand when remoulding
- W – Wet, free water on hand when remoulding

Moisture content may be compared to the plastic limit (PL) eg M > PL = moist, moisture content greater than the plastic limit

UNDRAINED SHEAR STRENGTH

		Cu (kPa)
VS	Very Soft	<10
S	Soft	10 to 25
F	Firm	25 to 50
St	Stiff	50 to 100
VSt	Very Stiff	100 to 200
H	Hard	>200
Fb	Friable	

RELATIVE DENSITY

		SPT – Uncorrected
VL	Very Loose	0 to 4
L	Loose	4 to 10
MD	Medium Dense	10 to 30
D	Dense	30 to 50
VD	Very Dense	>50

ROCK DESCRIPTIONS

WEATHERING

UW	Unweathered
SW	Slightly Weathered
MW	Moderately Weathered
HW	Highly Weathered
CW	Completely/Extr. Weathered
RW	Residual Soil

FIELD STRENGTH

		UCS (MPa)	Point Load Index (MPa)
R0	Extremely Weak	0.25–1	N/A
R1	Very Weak	1 to 5	N/A
R2	Weak	5 to 25	N/A
R3	Moderately Strong	25 to 50	1–2
R4	Strong	50 to 100	2–4
R5	Very Strong	100 to 250	4–10
R6	Extremely Strong	>250	

P.T.O.

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ENGINEERING LOG TERMINOLOGY

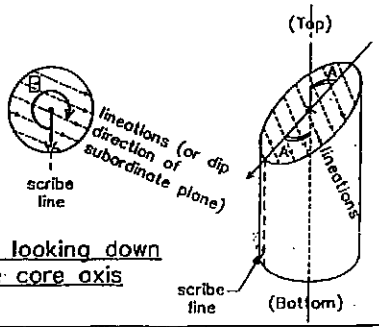
ROCK DESCRIPTIONS

(Continued)

DEFECTS

Significant defects are shown graphically

B	BEDDING
J	JOINT
SZ	SHEARED ZONE
CZ	CRUSHED SEAM/ZONE
IF	INFILLED SEAM/ZONE
XD	EXTREMELY WEATHERED SEAM



View looking down the core axis

CODING

Typical Example:

2J60°, PL, SL, T, CV, stiff green CLAY

- No. in defect set
- Type
- Angle to core axis
- Shape
- Roughness
- Apeture
- Infilling/Coating Type
- Infilling Description (as per Soil Description)

Where possible, the relative angle between the defect and the bedding (B) is given, where B = angle from the dip direction of the bedding, to the dip direction of the defect, in a clockwise direction when looking down the core axis.

SHAPE

TERM	CODE
Planar	PL
Slightly curved	SC
Curved	CV
Irregular	IR
Stepped	ST
Wavy	WV

ROUGHNESS

DESCRIPTION OF JOINT SURFACE	CODE
Slickensided	SL
Smooth	SM
Defined Ridges	DR
Small Steps	ST
Rough	R
Very Rough	VR

After Piteau (1973)

APERTURE

TERM	SYMBOL	DESCRIPTION (Separation)
Very Tight	VT	less than 0.1mm
Tight	T	0.1mm to 1.0mm
Open	O	1.0mm to 10.0mm
Very Open	VO	more than 10mm

After Bienowski (1973)

INFILLINGS AND COATINGS

Clay Gouge	CG	Joints have openings between opposing faces of intact rock substance in excess of 1mm filled with clay gouge. Clay is generally described in terms of soil properties.
Clay Veneers	CV	Joints contain clay coating whose maximum thickness does not exceed 1mm. Note: Describe clay in terms of soil properties.
Penetrative Limonite	PL	Joint traces are marked in terms of well defined zones of slightly to moderately weathered ferruginised rock-substance within the adjacent rock.
Limonite Stained	FeSt	Joint surfaces are stained or coated with limonite, although the rock substance immediately adjacent to the joints is fresh.
Coated	CT SC	Joints exhibit Coatings other than clay or limonite, eg. Carbonate (CT) or silica (SC).
Cemented	CL CS CC	Joints are cemented with limonite (CL), silica (CS), or carbonates (CC).
Clean	CN	Joint surfaces show no trace of clay, limonite, or other coatings.

Appendix D: Earthfill Certificate

Tonkin & Taylor

T&T job no: 81069.010
30 March 2007

Consents Department
Nelson City Council
PO Box 645
Nelson

Attention: Manager of Consents

Dear Sir

Statement of suitability of earthfill for residential development, ROW T, Tasman Heights Subdivision, Princes Drive, Nelson

This certificate is furnished to the Nelson City Council for certification of fill in accordance with NZS 4431:1989. The layouts of the fills are shown on Tonkin & Taylor Ltd's Drawing 81069.010-01 titled 'Site Investigation and Earthworks Plan' dated March 2007 (attached). The fill extent and depth is shown on Staig & Smith Ltd drawing titled 'Earthworks Iso-Contours', dated 29 March 2007 (DWG8877L Rev A, attached). The subsoil drain locations are shown on Staig & Smith Ltd drawings titled ' Asbuilt Stormwater' dated 30 January 2007 (DWG8877I) and 'Asbuilt Sewer' dated 28 March 2007(DWG8877J), both attached.

This certificate should be read in conjunction with Tonkin & Taylor Ltd's report titled 'Earthworks and Building Site Certification Report - ROW T, Tasman Heights Subdivision, Princes Drive, Nelson', dated March 2007, Ref. 81069.010. The above report details the subdivision development, scope of works and earthworks testing results.

This work has been done at the request of KB Quarries Ltd who is the developer.

Tonkin & Taylor Ltd provided an earthwork specification. The bulk earthworks were carried out between September 2003 and November 2006 with minor earthworks in March 2007. Minor earthworks for the ROW were carried out in December 2006 and earthfill was placed on Lots 124, 125 and 126 in March 2007.

Earthworks were carried out by KB Quarries Ltd the principal contractor for the works. Tonkin & Taylor carried out the bulk earthworks control testing of the fill materials.

NZS 4431 Earth Fill Certification

I, Mr Mark Foley of Tonkin & Taylor Limited, PO Box 1009, Nelson, confirm that:

On the basis of my experience and qualifications, I am competent to design and supervise earth fill construction, and have been retained by the Owner/Developer as the Inspecting Engineer for the site preparation works of the Tasman Heights Subdivision, Princes Drive, Nelson. Inspection and observation of the works have been carried out during construction by staff acting under my direction.

The extents of investigations are described in Tonkin & Taylor Ltd's report Ref. No. 81069.010 dated March 2007. Site observations during the work, and records of soil testing carried out by ourselves and the Contractor to check the quality of the fill, are held on Tonkin & Taylor's files.

In my professional opinion, not be construed as a guarantee, I consider that:

a) The Certified Fill areas shown on Tonkin & Taylor Ltd's Drawing 81069.010-01 titled 'Site Investigation and Earthworks Plan' dated March 2007, have been generally placed in compliance with NZS 4431:1989 "Earthfill for Residential Development".

b) Localised areas of non-conforming fill may be present, particularly on the margins of filled areas, and in the vicinity of the cut/fill interface, and where the fill is M<0.6 m thick.

c) Confirmatory soil testing should be undertaken as specified in NZS: 4431, and particularly where the fill is less than 1.0 m in depth, as shown on Staig & Smith drawing DWG8877L A, and where foundations will be taken down to found within 0.6 m of the cut/fill interface.

d) Development proposed on any fill areas shall be subject to the Conclusions and Recommendations outlined in Tonkin & Taylor Ltd's report Ref. No. 81069.010, dated March 2007.

Yours faithfully

pp MP Foley

Mark Foley
Inspecting Engineer
Attached: Tonkin & Taylor Ltd's Drawing 81069.010-01 titled 'Site Investigation and Earthworks Plan'
Staig & Smith drawing titled 'Earthworks Iso-Contours' dated March 2007 (DWG8877L Rev A)
Staig & Smith drawing titled 'Asbuilt Sewer' dated March 2007 (DWG8877J)
Staig & Smith drawing titled 'Asbuilt Stormwater' dated January 2007 (DWG8877I)

RM 005141
DP 380751

Tonkin & Taylor

T&T job no: 81069.010
30 March 2007

Consents Department
Nelson City Council
PO Box 645
Nelson

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Earthworks were carried out by KB Quarries Ltd the principal contractor for the works. Tonkin & Taylor carried out the bulk earthworks control testing of the fill materials.

RECEIVED
- 3 APR 2007
NCC

Tonkin & Taylor Ltd - Environmental & Engineering Consultants, 43 Halifax St, Nelson, New Zealand
PO Box 1009, Nelson 7040, Ph: 64-3-546 6339, Fax: 64-3-546 7619, Email: nel@tonkin.co.nz, Website: www.tonkin.co.nz

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pp MP Foley

Mark Foley
Inspecting Engineer
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Staig & Smith drawing titled 'Asbuilt Sewer' dated March 2007 (DWG8877J)
Staig & Smith drawing titled 'Asbuilt Stormwater' dated January 2007 (DWG8877I)

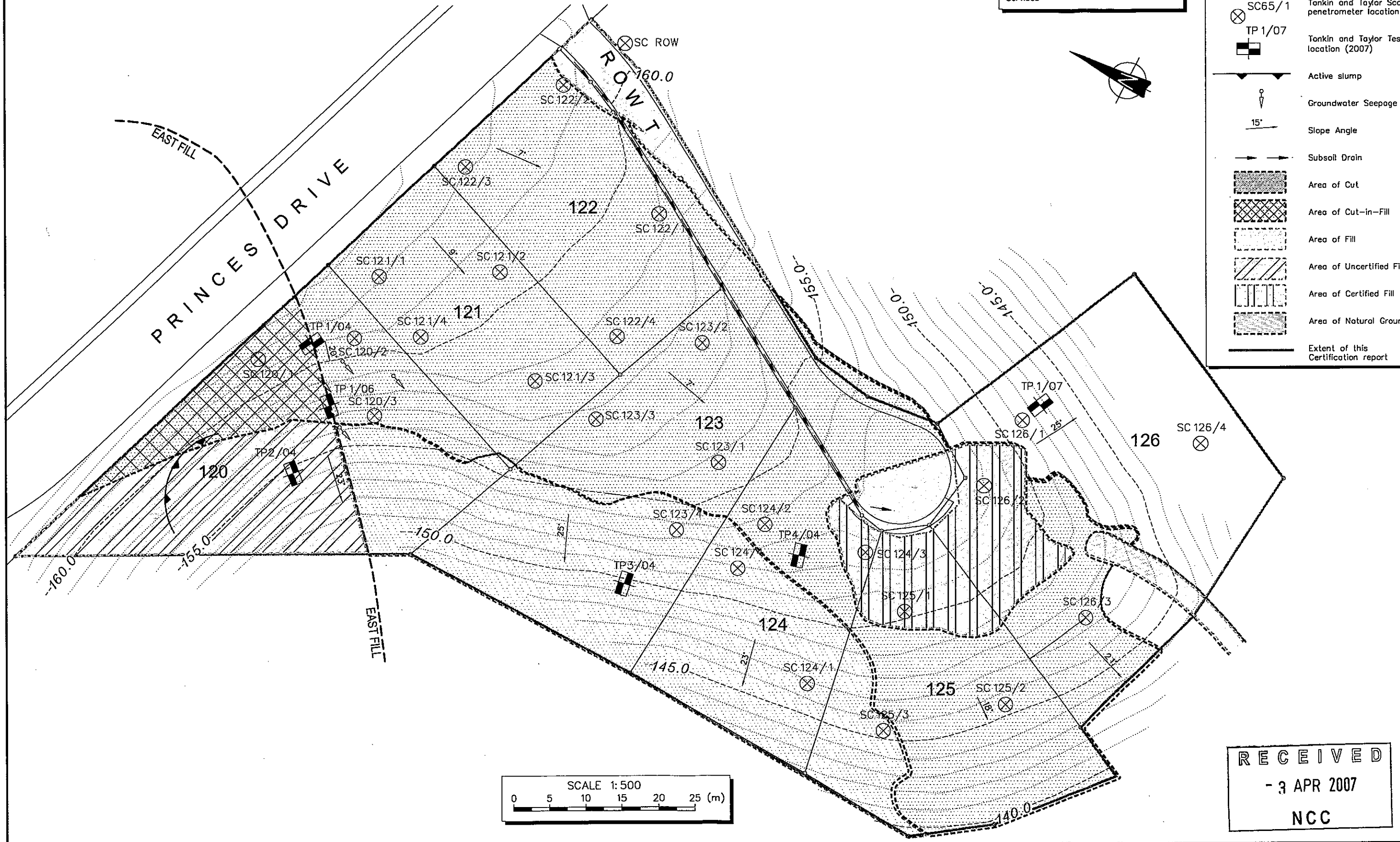
2-Apr-07
p:\81069\81069.010 back ridge\lots 120 -126 princes drive\certification report\mpd 300307 rowt fillcert.doc

RECEIVED
- 3 APR 2007
NCC

NOTE:
Base drawing courtesy of Staig & Smith
Job. No. 88777
Earthworks
Final Surface
Services

LEGEND

- ---80--- Final Contours
- SC65/1 Tonkin and Taylor Scala penetrometer location
- TP 1/07 Tonkin and Taylor Test pit location (2007)
- Active slump
- Groundwater Seepage
- 15° Slope Angle
- Subsoil Drain
- Area of Cut
- Area of Cut-in-Fill
- Area of Fill
- Area of Uncertified Fill
- Area of Certified Fill
- Area of Natural Ground
- Extent of this Certification report



SCALE 1:500
0 5 10 15 20 25 (m)

RECEIVED
- 3 APR 2007
NCC

REVISION	DESCRIPTION	BY	DATE
0	First Issue		

DESIGNED :	JXWW	Mar.07
DRAWN :	EVL	Mar.07
DESIGN CHECKED :	MD	Mar-07
DRAFTING CHECKED :	DMJ	03/07
CADFILE : \\81069-01.dwg		
APPROVED : NOT FOR CONSTRUCTION		

This drawing is not to be used for construction purposes unless signed as approved

COPYRIGHT ON THIS DRAWING IS RESERVED

NOTES :
1. All dimensions are in millimetres unless noted otherwise.

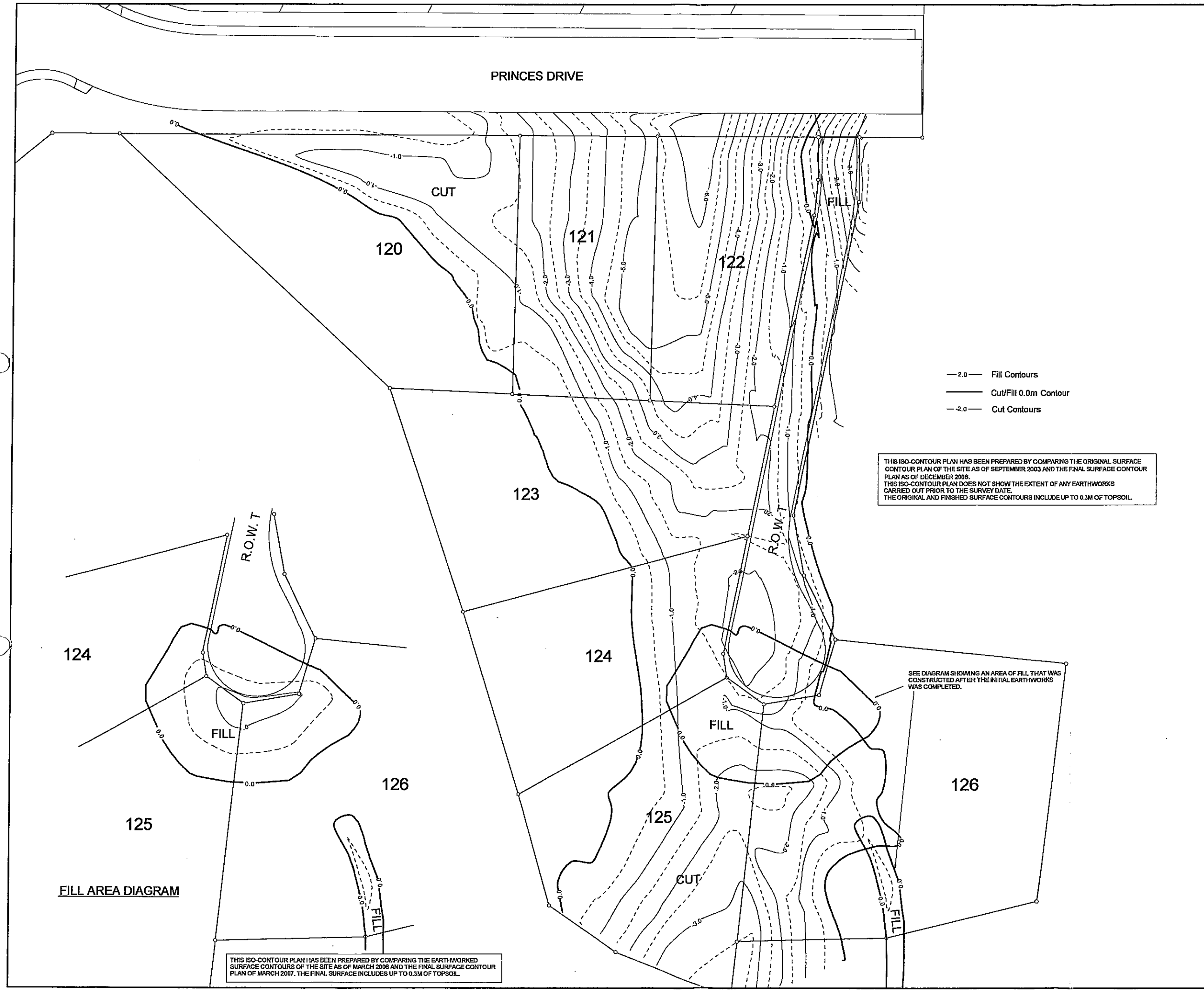
REFERENCE :

Tonkin & Taylor
Environmental & Engineering Consultants
Nelson 43 Halifax St
Tel. (03) 546 6339 Fax. (03) 546 7619
Email : nel@tonkin.co.nz
Auckland Wellington Christchurch Hamilton Whangarei

CLIENT, PROJECT
TASMAN HEIGHTS
PRINCES DRIVE, NELSON

TITLE
ROW T
Site Investigation and Earthworks Plan

SCALES (AT A3 SIZE) AS SHOWN
DWG. No. 81069.010-01
REV. 0



THIS ISO-CONTOUR PLAN HAS BEEN PREPARED BY COMPARING THE ORIGINAL SURFACE CONTOUR PLAN OF THE SITE AS OF SEPTEMBER 2003 AND THE FINAL SURFACE CONTOUR PLAN AS OF DECEMBER 2006.
THIS ISO-CONTOUR PLAN DOES NOT SHOW THE EXTENT OF ANY EARTHWORKS CARRIED OUT PRIOR TO THE SURVEY DATE.
THE ORIGINAL AND FINISHED SURFACE CONTOURS INCLUDE UP TO 0.3M OF TOPSOIL.

FILL AREA DIAGRAM

THIS ISO-CONTOUR PLAN HAS BEEN PREPARED BY COMPARING THE EARTHWORKED SURFACE CONTOURS OF THE SITE AS OF MARCH 2006 AND THE FINAL SURFACE CONTOUR PLAN OF MARCH 2007. THE FINAL SURFACE INCLUDES UP TO 0.3M OF TOPSOIL.

Notes

RECEIVED
- 3 APR 2007
NCC

No	Amendment	Date
A	FILL AREA DIAGRAM AMENDED DUE TO FURTHER EARTHWORKS IN AREA.	29-3-07

STAIG & SMITH™
81 Selwyn Place
PO Box 913 Nelson
Ph: 03 548 4422
Fax: 03 548 4427
e-mail: enquiries@staigsmith.co.nz
SURVEYING-PLANNING-ENGINEERING-RESOURCE MANAGEMENT

MANAGER INFRASTRUCTURAL ASSETS (NCC) DATE

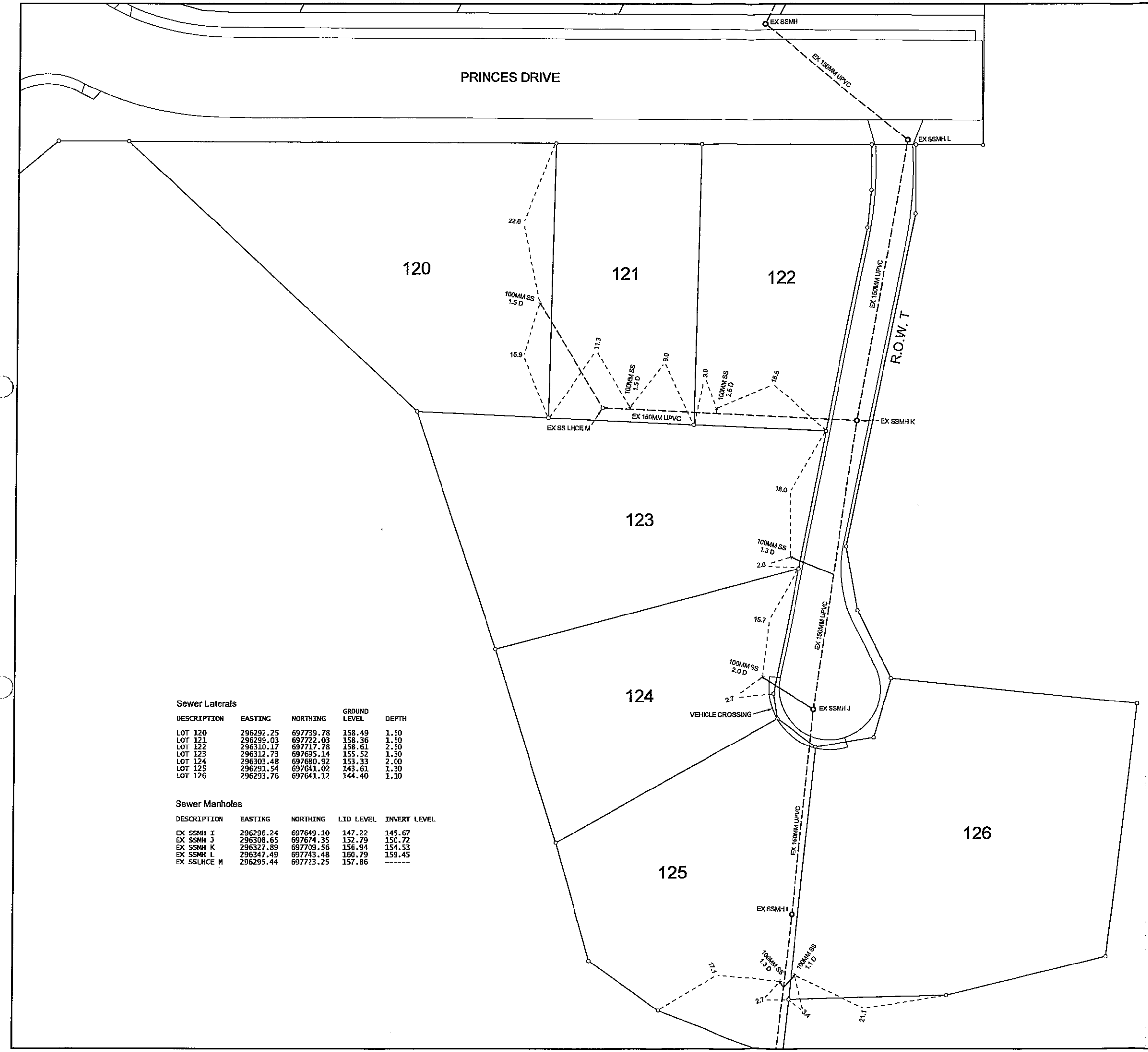
NCC DWG NO.

DESIGN: M. STANDISH
DRAWN: M. STANDISH
CHECKED:
APPROVED:
DATE: 29/03/2007

JOB TITLE
Tasman Heights
Princes Drive
ROW T
NCC RM005141

DRAWING TITLE
Earthworks
Iso-Contours

Scale: 1:250 at A1 | DWG8877L | A
Job No: 8877 | Sheet 5 of



Sewer Laterals

DESCRIPTION	EASTING	NORTHING	GROUND LEVEL	DEPTH
LOT 120	296292.25	697739.78	158.49	1.50
LOT 121	296299.03	697722.03	158.36	1.50
LOT 122	296310.17	697717.78	158.61	2.50
LOT 123	296312.73	697695.14	155.52	1.30
LOT 124	296303.48	697680.92	153.33	2.00
LOT 125	296291.54	697641.02	143.61	1.30
LOT 126	296293.76	697641.12	144.40	1.10

Sewer Manholes

DESCRIPTION	EASTING	NORTHING	LID LEVEL	INVERT LEVEL
EX SSMH I	296296.24	697649.10	147.22	145.67
EX SSMH J	296308.65	697674.35	152.79	150.72
EX SSMH K	296327.89	697709.56	156.94	154.53
EX SSMH L	296347.49	697743.48	160.79	159.45
EX SSLHCE M	296295.44	697723.25	157.86	------

Notes

(1) LEVELS ARE IN TERMS OF NCC HEIGHT DATUM.
(2) COORDINATES ARE IN TERMS OF NZGD 1949.
(3) ALL PIPES ARE UPVC.

RECEIVED
- 3 APR 2007
NCC

No	Amendment	Date

STAIG & SMITH™
81 Selwyn Place
PO Box 913 Nelson
Ph: 03 548 4422
Fax: 03 548 4427
e-mail: enquiries@staigsmith.co.nz
SURVEYING-PLANNING-ENGINEERING-RESOURCE MANAGEMENT

MANAGER INFRASTRUCTURAL ASSETS (NCC) DATE

NCC DWG NO.

DESIGN: M. STANDISH
DRAWN: M. STANDISH
CHECKED:
APPROVED:
DATE: 28/03/2007

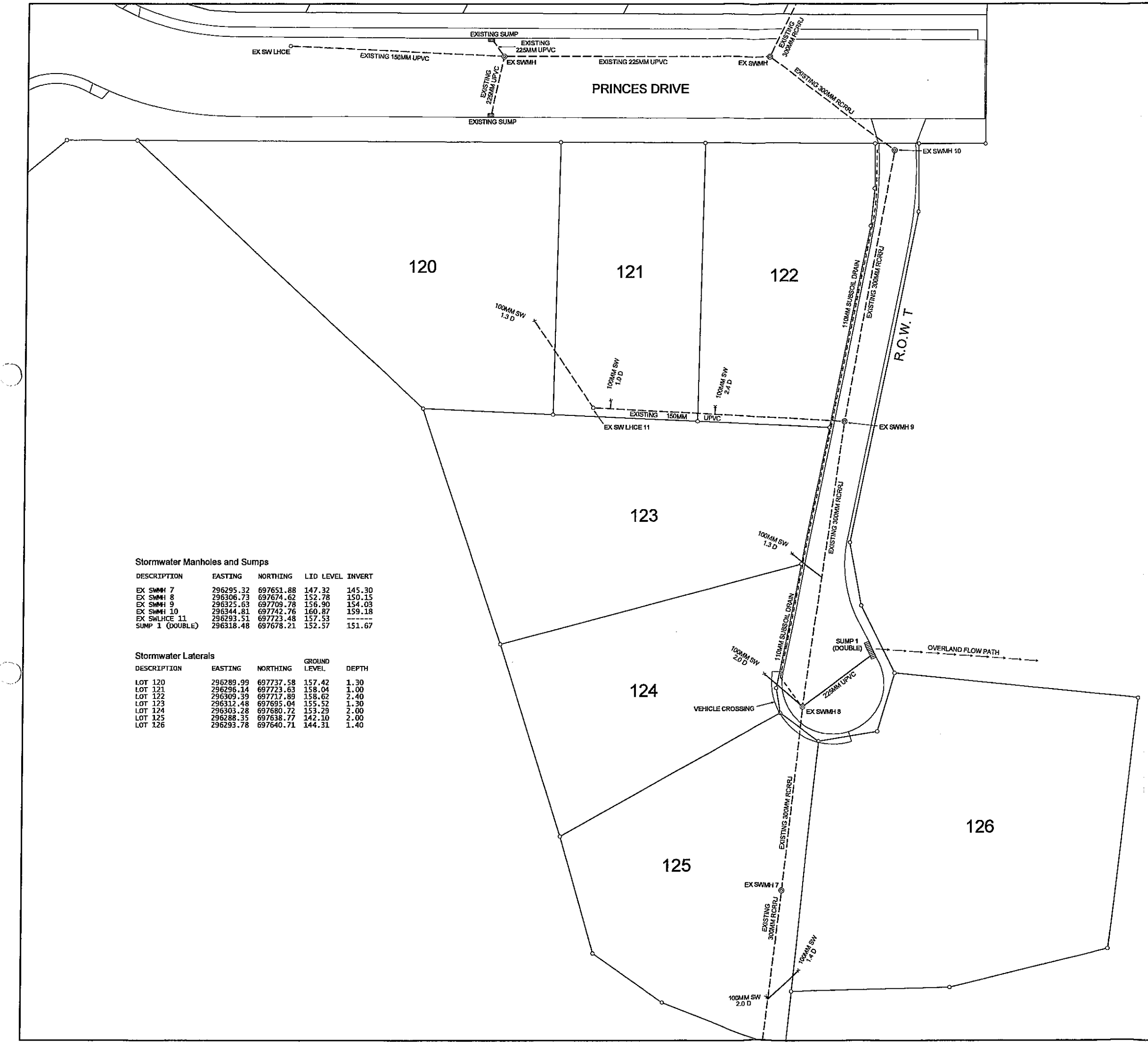
JOB TITLE

Tasman Heights
Princes Drive
ROW T
NCC RM005141

DRAWING TITLE

Asbuilt Sewer

Scale: 1:250 at A1 | DWG8877J
Job No: 8877 | Sheet 3 of 4



Stormwater Manholes and Sumps

DESCRIPTION	EASTING	NORTHING	LID LEVEL	INVERT
EX SWMH 7	296295.32	697651.88	147.32	145.30
EX SWMH 8	296306.73	697674.62	152.78	150.15
EX SWMH 9	296325.63	697709.78	156.90	154.03
EX SWMH 10	296344.81	697742.76	160.87	159.18
EX SWLHCE 11	296293.51	697723.48	157.53	------
SUMP 1 (DOUBLE)	296318.48	697678.21	152.57	151.67

Stormwater Laterals

DESCRIPTION	EASTING	NORTHING	GROUND LEVEL	DEPTH
LOT 120	296289.99	697737.58	157.42	1.30
LOT 121	296296.14	697723.63	158.04	1.00
LOT 122	296309.39	697717.89	158.62	2.40
LOT 123	296312.48	697695.04	155.52	1.30
LOT 124	296303.28	697680.72	153.29	2.00
LOT 125	296288.35	697638.77	142.10	2.00
LOT 126	296293.78	697640.71	144.31	1.40

Notes

(1) LEVELS ARE IN TERMS OF NCC HEIGHT DATUM.
(2) COORDINATES ARE IN TERMS OF NZGD 1949.

RECEIVED
- 3 APR 2007
NCC

No	Amendment	Date

STAIG&SMITH™
81 Selwyn Place
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Fax: 03 548 4427
e-mail: enquiries@staigsmith.co.nz
SURVEYING-PLANNING-ENGINEERING-RESOURCE MANAGEMENT

MANAGER INFRASTRUCTURAL ASSETS (NCC) ..... DATE .....

NCC DWG NO.

DESIGN: M. STANDISH
DRAWN: M. STANDISH
CHECKED:
APPROVED:
DATE: 30/01/2007

JOB TITLE

Tasman Heights
Princes Drive
ROW T
NCC RM005141

DRAWING TITLE

Asbuilt Stormwater

Scale: 1:250 at A1 | DWG8877I

Job No: 8877 | Sheet 2 of 4

PPR 125200
125201
125202

NELSON CITY COUNCIL

PO BOX 645 NELSON NEW ZEALAND PHONE 03-546 0200 FAX 03-546 0239

GST REG No. 10-730-295
CUST No. RM985372

24/12/98

KB Quarries Ltd
C/- Staig & Smith Ltd
P O Box 913
Nelson 7015

TAX INVOICE 30050

QTY	DESCRIPTION	RATE	AMOUNT
	349 PRINCES DR		
	Undertake earthworks in excess of 1.2m in depth & erect various temporary silt control measures		
	Evaluating Resource Consents		
0.70	Consents Administrator	40.00	28.00
4.80	Water & Soil Resource Officer	65.00	312.00
	Monitoring Fee		40.00
	Insurance		8.89
	SUB TOTAL		388.89
	GST		48.61
	TOTAL		$437.50

KB Quarries Ltd 24/12/98 RM985372 /30050 437.50

PROCESSED

Dan B

RESOURCE CONSENT MONITORING

LOCATION: 349 Princes Drive

RESOURCE CONSENT NUMBER: 985372 DATE GRANTED: 28-11-98

APPLICANT: K.B. Quarries Ltd.

OWNER: _____ CONTACT NUMBER: _____

INSPECTION DUE: _____

BUILDING CONSENT ISSUED: YES/NO DATE ISSUED: _____

CONDITIONS COMPLETED: YES ☐ NO ☐

FURTHER INSPECTION REQUIRED: YES ☐ NO ☐

FURTHER INSPECTION DUE: 1.2.2000

DETAILS OF SITE INSPECTION:

Earthworks + Sediment control.

Earthworks ongoing. Conditions of consent being met, although some minor sediment control problems experienced from time to time. 2.8.99

- Monitor on complaint.

Don Ballagh - for your file

NELSON CITY COUNCIL

FACSIMILE TRANSMISSION

Ph: 0064 3 546 0200, Fax: 0064 3 546 0239
P O Box 645, NELSON, New Zealand

Date:	13 May 1999
Our Ref:	995316
To:	**John Bannock**
Fax No.:	548 4427
From:	**Shane Overend**
Phone No:	03 546 0303
Subject:	**TASMAN HEIGHTS: DETENTION DAM**

No. of Pages (including this page): 1

The information contained in this facsimile message is confidential and intended only for the use of the addressee named on this sheet. Unless you are the intended recipient any disclosure, photocopying, distribution or use of this faxed information is prohibited. If you have received this document in error please notify us immediately by telephone and destroy the original message.

John,

Following a site visit with Dugald Ley today to the Dam site, we have observed a number of concerns:

1. Has Staig and Smith considered where the access will be created for vehicles to gain access to the bottom of the dam for maintenance purposes? This access should be wet weather surfaced at a maximum grade of 1 in 8.

2. The primary intake structure and grill is a Hume's design. This intake at the bottom of the dam should be as per NCC standard detail 21/203 sheet 1. ~~The~~ This standard grill design operates well in vegetated catchments where the possible total or partial blockage is increased.

3. The flush grill on top of the secondary intake should be changed to NCC standard detail 21/203 sheet 4, for the reasons outlined above.

We understand that the completion of the Dam works before the onsite of the winter months is of high importance. We hope that you will be able to provide the final detailed plans of the detention dam soon, so that we will be able to comment fully on other possible concerns on the design and or layout, before works progress too far.

Regards

S.M. Overend

Shane Overend
Engineering Consents Officer

NELSON CITY COUNCIL

Memo To: FILE NOTE

Date: 9.7.99

File: K. B. Quarries 985372

Bring Up: Yes No

From: O. Gallagh

Bring Up Date:

Subject: Earth works Certification

South fill earthworks certification received from Staig - Smith and confirmed by Tonkin + Taylor.

Original reports on subdivision file.

PLEASE RETURN WHEN COMPLETED

Nelson Bays Print

K.B. QUARRIES LTD

STAGE 1: TASMAN HEIGHTS SUBDIVISION, OBSERVATORY HILL, NELSON BUILDING SITE REPORT

REFERENCE NUMBER: 81069

JULY 1999

REPORT PREPARED FOR:
STAIG & SMITH LTD

REPORT PREPARED BY:
TONKIN & TAYLOR LTD

DISTRIBUTION:

STAIG & SMITH LTD	2 COPIES
NELSON CITY COUNCIL	2 COPIES
K B QUARRIES LTD	1 COPY
TONKIN & TAYLOR LTD (FILE)	1 COPY

Periodic inspections were made at the request of the Contractor and the Engineer to advise on stripping, benching, underdrainage, compaction control and surface water control.

Testing of the fill material in the existing East fill, which encroaches on the east (road) boundary of Lots 10, 11 and 12 (Windsor Court), identified substandard fill on Lots 11 and 12. This was removed and replaced by engineered fill in February 1999. The extent of rework and certification of the fill is detailed in Staig & Smith's fill certificate for Lots 11 and 12 (Ref. 3).

4.3 Final Inspection & Testing

A final inspection of the completed works was made on 29 March 1999. The bulk earthworks had been completed at this stage with the exception of minor levelling on Lots 1 and 2 and topsoil spreading on these lots and Lots 36 to 39. This work has subsequently been satisfactorily completed.

Confirmatory testing involving 2 to 3 Scala probes were carried out on each lot. The test results are presented in Appendix A and the test locations are shown on Figure 1. These Scala probes were put down prior to topsoiling. Topsoil was applied up to 300mm depth but may be locally deeper particularly at changes in grade.

4.4 Review of Earthworks Testing & Certification

Staig & Smith's "Report and Certification South Fill" Vols. 1 to 3, presents the "as built" details and control test results for the filled ground in Stage 1.

A review of the documentation shows:

- that the subgrade soils were stripped and benched prior to filling;

- that subsoil drains were installed in the axis of the gully and at regular intervals on the valley sides;

- that the fill which comprised a range of silty clay and clay-gravel Port Hills Gravels soils were compacted to the specified standard.

On the basis of this documentation and certification and Tonkin & Taylor's independent inspections, we confirm that the filling has been carried out to a satisfactory standard and in accordance with NZS 4431:1989 "Earthfill for Residential Development".

5.0 Conclusions & Recommendations

Recommendations and opinions in this report are based on the information described in Section 4.0 of this report. The nature and continuity of subsoil away from test locations are inferred but it must be appreciated that actual conditions could vary from the assumed model.

5.1 Building Sites

We consider that the lots in Stage 1 are unlikely to be affected by instability and are suitable for development in terms of NZS 3604:1990. There are no restricted building areas on any of the lots on geotechnical grounds.

Ground conditions and specific and general conditions applying to the development on the lots are detailed in Table 1 and described below.

PROCESSED

Ref: 985372
K B Quarries – Princes Dr
Please Ask for: Don Ballagh
Phone No: (03) 546 0275
E-Mail: dballagh@ncc.govt.nz
Ref: DB:kg

NELSON CITY COUNCIL

PO BOX 645 NELSON NEW ZEALAND PHONE 03-546 0200 FAX 03-546 0239

4 December

K B Quarries Ltd
c/o Staig & Smith
P O Box 913
NELSON

Attention: J Bannock

Dear Sir

Notice of Decision - Resource Consent Application : 985372
Section 88 of the Resource Management Act 1991

Applicant:	**K B Quarries Ltd**
Owner:	**K B Quarries Ltd and Bishopdale Potteries Ltd**
Controlled Activity:	**Earthworks: Rule REr.60 Proposed Nelson Resource Management Plan**
Discretionary Activity:	**Divert and Discharge Stormwater: Section 14 Resource Management Act 1991**

Your application for resource consent to:

a) undertake earthworks comprising excavation and filling in excess of 1.2 metres in depth;

b) divert, dam and discharge stormwater to Maire Stream;

was considered by the Resource Officer (Soil & Water) acting under delegated authority on 26 November 1998.

This application was not publicly notified pursuant to Section 94 of the Act because the written consent of those persons considered to be adversely affected was obtained, and because the effect on the environment was considered to be minor.

Consent was granted pursuant to Sections 104 and 105 of the Act subject to the following conditions imposed pursuant to Section 108 of the Act:

a) The activity shall be carried out strictly in accordance with the application and the plans submitted with the application, with the exception of any changes imposed by conditions of consent.

b) Earthworks shall comply with the following standards:

- Nelson City Council Engineering Standards 1992 (Section V16 to 8 : Earthworks)
- New Zealand Standard 4404:1981 Code of Practice for urban land subdivision
- New Zealand Standard 4431 : 1989 Code of Practice for earthfill to residential development

On completion of the earthworks the inspecting engineer shall submit written certification to the Nelson City Council that the earthworks have been carried out in compliance with the terms of the above standards.

c) Land and vegetation disturbance shall be limited to those areas of 'cut and fill' shown on plan 'Staig & Smith 5935/1', dated August 1998.

d) Prior to the disturbance of vegetation or soil on any designated earthwork area, all stormwater and sediment control measures shall be installed:

- in accordance with the Nelson City Council 'Guidelines for Silt Control Associated with Mass Earthworks'; and
- as described in the application for resource consent.

The Council reserves the right to require additional stormwater and/or sediment control measures to be installed, if necessary in the opinion of Council's Resource Officer (Soil & Water)

e) All stormwater and sediment control structures shall be regularly monitored and maintained in effective operational order at all times. Sediment control structures may be progressively decommissioned as bare soil surfaces are revegetated, or otherwise, protected from soil erosion.

f) Appropriate measures shall be implemented at all times to prevent dust from the site adversely affecting neighbouring persons or property.

g) At the completion of each earthwork stage, topsoil shall be respread immediately over those areas not designated for road or footpath construction, and sown in a seed mix to the satisfaction of Council's Resource Officer (Soil & Water). If climatic conditions are unfavourable for the establishment of vegetative cover, Council may require other measures to be taken by the consent holder to minimise erosion of bare soil surfaces.

h) The stormwater detention pond shall be designed and constructed to ensure that the maximum peak discharge from the pond for storm events up to and including a 1 in 50 year event is limited to approximately the peak pre-development discharge from the catchment hatched in red on the attached plan, for storm events of equivalent frequency.

A spillway shall be incorporated into the pond structure of appropriate dimensions to pass probable maximum flood discharge with 400mm freeboard to the crest of the pond.

Refer to R/C 995129 (Extension of time)

i) The stormwater detention pond shall be completed prior to the 31 March 1999 or prior to the diversion of stormwater from other catchments to the pond, which ever is the earlier.

j) The consent holder shall ensure that any spillage of fuel, oil or other construction related substance does not contaminate water or is left or deposited in a position where it may contaminate water. A contingency plan to control and dispose of such contaminants shall be submitted to Council's Resource Officer (Soil & Water) for approval prior to work commencing.

k) The holder of this consent shall ensure that all construction activities are so designed and conducted that noise shall not exceed the limits specified in Table 1 below.

The measurement of noise shall be made outside any building occupied by any person who is, or may be, affected by the noise (in accordance with clause 3.2.1 of NZS 6803).

Table 1 Noise limits" for construction

7.30am – 6.00pm Monday to Friday inclusive, and 9.00am – 6.00pm	55dBA L 95 85 dBA L max 70 dBA L 10
At all other times	45 dBA L 10 75 dBA L max

Note to Table 1: Noise limits in this table are 5 dBA more stringent than the recommended upper limits specified in Table 1 of NZS 6803P:1984 having been adjusted in accordance with the provisions of clause 6.1.2 of the Standard to take into account that the construction period will be in excess of 18 weeks duration.

l) Subject to the express provisions of this condition, construction noise shall be measured and assessed in accordance with, NZS 6803P:1984 *The measurement and assessment of noise from construction, maintenance, and demolition work.* Construction noise shall be deemed to include noise barrier construction and removal, including any necessary scrub clearance, topsoil removal, or drainage work to facilitate barrier construction.

Provided that the noise limits shall not apply to:

1. Residential Properties which by written arrangement with the occupiers, are not occupied during site working hours.

2. The noise from the construction, maintenance or demolition activities of mitigation measures required by the Resource Consent and the Management Plans between the hours of 0730 and 1800 Monday to Friday and 0900 to 1800 Saturday, subject to approval by the Engineer (ie. the site engineer for the contract).

3. Emergency works at any time, subject to approval by the Engineer. This includes, but is not limited to, such activities as maintaining and cleaning stormwater drains, sediment ponds and mitigating the effects of stormwater runoff during, and immediately after, heavy rainfall events and dust suppression activities during hot, dry periods.

m) Monitoring *of* noise limits associated with exercise of this consent shall be undertaken in accordance with the requirements set out below. The cost of such monitoring shall be met by the consent holder.

Measurement Locations

i) Microphone locations

ii) In the event of complaints by a resident about construction noise, the affected residential site shall be periodically monitored for construction noise intrusion after any initial investigation of the complaint.

iii) Noise measurements and reporting shall be under the direction of a person qualified and experienced in environmental noise measurements.

n) Should *the* results of monitoring indicate non-compliance with the stated noise limits, the following steps shall be taken by the Contractor to reduce noise from the site:

(i) Immediate remedial action (noise reduction) by the Contractor or alternatively the removal of the noise source from the site; and

(ii) A written report from the Contractor to Nelson City Council within two days from notification of exceeding noise limits. The report is to state the source(s) identified, the remedial action taken, and any further steps taken to ensure there is no repeat occurrence.

o) Council's Resource Officer shall have the right to inspect the construction site at all reasonable times and to suspend immediately any operations that are causing or likely to cause unacceptable soil erosion or deposits into water courses, or dust emission from the site. Remedial works shall be carried out as and when Council's Resource Officer (Soil & Water) so directs.

Your status as applicant for this resource consent provides you with certain rights with regard to the Council's decision.

For your general guidance, Sections 120, 127 and 357 of the Resource Management Act 1991 provide rights with respect to:

1) **Objection to certain decisions and requirements of consent authorities. (Section 357)**

If your consent was not publicly notified, or was notified and no submissions were received or any submissions received were withdrawn, you have the right to object to all or part of this decision. An objection must be lodged with the Council within 15 working days of your receipt (or receipt by the person who filed the application on your behalf) of the Council's formal decision. Reconsideration of the decision will require further assessment of costs incurred in accordance with Council processing charges.

2) **Application for change or cancellation of consent conditions. (Section 127)**

An application to change or cancel a consent condition can be made to the Council at any time. Such an application is treated in a similar manner to a resource consent application incurring normal Council processing charges. If the consent condition(s) you wish to have deleted or changed resulted from a resource consent application that was publicly notified, you should first obtain written consent from all those persons who made a submission on this application.

3) **Right of Appeal. (Section 120)**

This requires that a "Notice of Appeal" be lodged with the Registrar of the Environment Court and with the Council within 15 working days of your receipt (or receipt by the person who filed the application on your behalf) of the Council's formal decision.

The address of the Environment Court is PO Box 5027, Lambton Quay, Wellington. An appeal must be lodged on Form 7 prescribed by the Resource Management Forms Regulations 1991 and must be accompanied by a filing fee of $55 (GST inclusive) as specified in those Regulations under Part VI, Section 28(3).

If you are intending to exercise your legal rights regarding the Council's decision and you are in any doubt as to how to proceed, it is strongly recommended that you consult your Agent/Lawyer.

You should note that a resource consent lapses on the expiry of **two years** after the date of commencement of that consent, unless the consent is given effect to, or after the expiry of such a shorter/longer period as is expressly provided for in the consent. Section 125 of the Resource Management Act 1991 details matters relating to the extension of consent duration.

Please find enclosed an invoice of the costs incurred in processing this application. If your invoice shows a refund due to you, a cheque will be sent out under a separate cover.

Where conditions of consent which require monitoring have been imposed a monitoring charge has been included in your invoice. This charge covers one visit to monitor compliance with consent conditions. Where additional monitoring visits are required to determine that conditions have been met these will be charged at the rate of $45 (exclusive of GST) for each additional visit.

If you have any enquiries please contact Don Ballagh on (03) 546 0275.

Yours faithfully

J S Pattison
Development Planner

RESOURCE MANAGEMENT DIRECTORATE

APPLICANT: K. B. Quarries

FILE REFERENCE: 985 372.

PROPERTY: Observatory Hill / Princes Drive.

This application for discretionary ~~and/or non-complying~~ activity consents to:

1) Undertake earthworks

2) Dam, divert and discharge stormwater

is considered to have no more than a minor effect on the environment because

1) The earthworks will be supervised by experienced engineers who are required to certify to Council on the completion of works that the earthworks comply with NZ Standards.

2) The stormwater discharge authorised by consent 985 372 will be detained to ensure post development discharge to main stream will not exceed predevelopment discharge.

and the written approval has been obtained from every person whom, in the opinion of the Nelson City Council, may be potentially adversely affected by the granting of this resource consent.

In terms of Section 94 of the Resource Management Act 1991, and under the Authority delegated to Officers, it is decided that this application, as presented, does not need to be publicly notified.

DATED this 24th day of December 1998

Development Planner / ~~Director of Resource Management / Chief Executive~~

NELSON CITY COUNCIL

Memo To: File note Date: 2.12.98.

File: 985372.

Bring Up: Yes No

From:

Bring Up Date:

Subject:

Still awaiting signed approval forms from S. Slack and Bishopdale Potteries.

PLEASE RETURN WHEN COMPLETED

Nelson Boys Print

RESOURCE
MANAGEMENT
CONSULTANTS

STAIG & SMITH
LIMITED

Ref: 5540

21 December 1998

RECEIVED
22 DEC 1998
Nelson City Council

Resource Consents Team
Nelson City Council
P O Box 645
NELSON

Attention: D Ballagh

Dear Sir,

RE: K B QUARRIES - EARTHWORKS CONSENT

Further to our letter dated 3 December 1998 forwarding the signed consent form from Stewart Slack please find attached the signed consent form from C. Gibbons Holdings Ltd.

We trust that this is now sufficient to complete the earthworks application.

If you have any further questions regarding this matter please contact the writer.

Yours faithfully,
STAIG AND SMITH LTD

A J Bannock

NELSON OFFICE
MAITAI HOUSE
16 PARU PARU RD
PO BOX 913 NELSON
PHONE 0-3-548 4422
FAX 0-3-548 4427

RICHMOND OFFICE
186 QUEEN ST
RICHMOND
PHONE 0-3-544 6625
FAX 0-3-544 6625

MOTUEKA OFFICE
24 TUDOR ST
PO BOX 278
MOTUEKA
PHONE 0-3-528 7089
FAX 0-3-528 7086

Nelson City Council
Written Approval Form
(Person(s) likely to be adversely affected)

Part A - to be completed by applicant

Applicant's Name ..... K B QUARRIES LTD

I have applied to the Nelson City Council for a resource consent to: (*Describe activity*)

CARRY OUT EARTHWORKS INVOLVING CUTS & FILLS FOR THE PURPOSE OF CREATING RESIDENTUAL SECTIONS IN THE AREA SHADED 'YELLOW' ON THE ATTACHED PLAN.

CARRY OUT EARTHWORKS TO CONSTRUCT A DETENTION POND

The property to which this application relates is: (*street address; legal description*)

SEE ATTACHED PLAN

Part B - to be completed by person or organisation giving approval

Name of person or organisation giving approval

Full name Bishopsdale Potteries Ltd

Position if applicable Property Manager - House Cuildoors

Contact address P O Box 7004

daytime telephone

I am the Owner ☑ Occupier ☐

of address

Legal description

I hereby acknowledge:

1. I have been **shown a copy of the above application, and assessment of effects on the environment**; and
2. I have been shown and **have signed a copy of the site plan**, or other relevant plan or drawing; and
3. I do not oppose the proposed development and give my written approval in terms of the provisions of the Resource Management Act 1991; and
4. I authorise the applicant to give this written approval to the Nelson City Council; and
5. **I understand** that in considering the application the Council will not take into account any actual or potential effect on my interests with respect to this proposal.

IT IS NOT APPROPRIATE TO IMPOSE CONDITIONS ON THIS FORM

IF YOU ARE UNCERTAIN - DO NOT SIGN - CONTACT THE PLANNING AND CONSENTS DIVISION (03) 546-0200

Signed: .... Date: 16.12.98.

Signed: .... Date:

Signed: .... Date:

NOTE: All owners of the property must sign

RESOURCE
MANAGEMENT
CONSULTANTS

STAIG & SMITH
LIMITED

File Ref: 5540

3 December 1998

Attention of	A	I	Initials	Date
Don B				

- 4 DEC 1998

NELSON CITY COUNCIL	File: Consent			

Consents Team
Nelson City Council
P O Box 645
NELSON

Attention: D Bellagh

Dear Sir,

RE: EARTHWORKS CONSENT – K B QUARRIES LTD

Further to your request for further information please find attached the signed consent form from Mr Stuart Slack.

We are still waiting on the signed consent from Bishopdale Potteries, but do not envisage a problem. We will forward this as soon as we receive it.

Also, in confirmation of verbal advice, we wish to remove the earthworks relating to the possible access to Maire Street at this time.

If you require any further assistance please contact the writer.

Yours faithfully,
STAIG AND SMITH LTD

A J Bannock

NELSON OFFICE
MAITAI HOUSE
16 PARU PARU RD
PO BOX 913 NELSON
PHONE 0-3-548 4422
FAX 0-3-548 4427

RICHMOND OFFICE
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RICHMOND
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FAX 0-3-544 6625

MOTUEKA OFFICE
24 TUDOR ST
PO BOX 278
MOTUEKA
PHONE 0-3-528 7089
FAX 0-3-528 7086

Nelson City Council
Written Approval Form
(Person(s) likely to be adversely affected)

Part A - to be completed by applicant

Applicant's Name ..... K B QUARRIES LTD

I have applied to the Nelson City Council for a resource consent to: (*Describe activity*)

CARRY OUT EARTHWORKS INVOLVING CUTS & FILLS FOR THE PURPOSE OF CREATING RESIDENTUAL SECTIONS IN THE AREA SHADED 'YELLOW' IN THE ATTACHED PLAN.

EARTHWORKS WILL BE NEEDED ALSO FOR THE CONSTRUCTION OF A DETENTION POND.

The property to which this application relates is: (*street address; legal description*)

SEE ATTACHED PLAN

Part B - to be completed by person or organisation giving approval

Name of person or organisation giving approval

Full name STUART CADBY SLACK

Position if applicable

Contact address 65 DOUGLAS RD NELSON

daytime telephone 5486210

I am the Owner ☑ Occupier ☐

of address 65 DOUGLAS RD

Legal description LOT 2 PT SEC 18 SUBURBAN SOUTH DIST.

I hereby acknowledge:

1. I have been **shown a copy of the above application, and assessment of effects on the environment**; and
2. I have been shown and **have signed a copy of the site plan**, or other relevant plan or drawing; and
3. I do not oppose the proposed development and give my written approval in terms of the provisions of the Resource Management Act 1991; and
4. I authorise the applicant to give this written approval to the Nelson City Council; and
5. **I understand** that in considering the application the Council will not take into account any actual or potential effect on my interests with respect to this proposal.

IT IS NOT APPROPRIATE TO IMPOSE CONDITIONS ON THIS FORM

IF YOU ARE UNCERTAIN - DO NOT SIGN - CONTACT THE PLANNING AND CONSENTS DIVISION (03) 546-0200

Signed: Stuart Cadby Slack .... Date: 28-11-98

Signed: .... Date:

Signed: .... Date:

NOTE: All owners of the property must sign

NOTES

Key of Plan:

Tasman Heights Concept Area

- Stage 1 Boundary
- Stage 2 Boundary
- Stage 3 Boundary
- Stage 4 Boundary
- Indicative Layout Stages 5 Plus
- Roads
- Foothpath
- Indicative Walkways
- Finished Contours
- Grassed Areas

Tasdale Development

- Indicative Lot Layout
- Proposed Walkways
- Grassed Areas
- Proposed Reserve Areas
- Exist. Contour
- Finished Contours

Warning

THIS PLAN HAS BEEN PREPARED FOR THE PURPOSE OF A RESOURCE CONSENT APPLICATION ONLY. IT IS NOT A PRECISE SURVEY PLAN. AS AREAS AND DIMENSIONS ARE LIKELY TO VARY UPON SURVEY IT SHOULD NOT BE ATTACHED TO SALES & PURCHASE AGREEMENTS WITHOUT AN APPROPRIATE CONDITION TO COVER SUCH VARIATIONS.

JOINT VENTURE EARTHWORKS

Cut:	
BRJV1	23'700 m3
BRJV2	58'200 m3
CRJV	4'400 m3
MJV	43'600 m3
TOTAL	129'900 m3

Fill:	
BRJV FILL	23'200 m3
DAM FILL	4'400 m3
MJV FILL	10'100m3
PLAYGROUND & POND FILL	24'900 m3
TOTAL	62'600 m3

NOTE:
Final Contours in area of Lot 17-35 yet to be determined. Subject to removal of stockpile and topsoil.

No	Amendment	Date

NELSON OFFICE
Maitai House
16 Paru Paru
PO Box 913
NELSON
Ph: 03 548 4422
Fax: 03 548 4427

RICHMOND OFFICE
186a Queen Street
PO Box
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Ph: 03 544 6625
Fax: 03 544 6625

STAIG & SMITH LIMITED
SURVEYORS PLANNERS ENGINEERS RESOURCE MANAGEMENT CONSULTANTS

Design	C.Y.Grant
Drawn	CADUnlimited MG
Checked	
Approved	
Date	August 1998

job title
TASMAN HEIGHTS & TASDALE JOINT VENTURE

drawing title
OVERALL CONCEPT PLAN

scale Approx. 1:1500 (0m 10 20 30 40 50m)

Issue 1

job No 5935

sheet 1of 1

COPYRIGHT

Locality Diagrams
NTS

JOINT VENTURE EARTHWORKS

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No	Amendment	Date

NELSON OFFICE
Maitai House
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PO Box 913
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Ph: 03 548 4422
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RICHMOND OFFICE
186a Queen Street
PO Box
RICHMOND
Ph: 03 544 6625
Fax: 03 544 6625

STAIG & SMITH
LIMITED
SURVEYORS PLANNERS ENGINEERS RESOURCE MANAGEMENT CONSULTANTS

Design	C.Y.Grant
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Checked	
Approved	
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job title
TASMAN HEIGHTS
&
TASDALE JOINT VENTURE

drawing title
OVERALL CONCEPT PLAN

scale Approx. 1:1500 (0m 10 20 30 40 50m)	Issue 1
job No 5935	sheet 1of 1

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RM 950361
352 Princes Dr.

TONKIN & TAYLOR LTD. ENVIRONMENTAL & ENGINEERING CONSULTANTS
109 FEATHERSTON STREET WELLINGTON NEW ZEALAND
PO BOX 12 152 WELLINGTON NEW ZEALAND
PH 64-4-472 6997 FAX 64-4-472 6977

OBSERVATORY HILL SYNDICATE
PRINCES DRIVE DEVELOPMENT
GEOTECHNICAL INVESTIGATION
PRINCES DRIVE, NELSON

Ref: 80627
May 1995

Report prepared for:

Observatory Hill Syndicate
% Staig & Smith Ltd
P O Box 913
NELSON

Distribution:

Staig & Smith Ltd	- 2 copies
Tonkin & Taylor Ltd (Auck)	- 1 copy
Tonkin & Taylor Ltd (Wgtn)	- 1 copy

ACENZ

Observatory Hill Syndicate
Princes Drive Development
Geotechnical Investigation
Princes Drive, Nelson

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Drawing: 80627-1 Site Plan

Appendix A Inspection Pit Logs No.1 to 20

REPORT

1.0 INTRODUCTION

This report presents the results of a geotechnical investigation for concept plan earthworks for a proposed staged subdivisional development at Observatory Hill, Nelson. The investigation has been undertaken at the request of Mr C Grant of Staig & Smith Ltd acting on behalf of Observatory Hill Syndicate.

The scope of work and the terms and conditions of the engagement are set out in Tonkin & Taylor's letter of engagement Ref. 80627 dated 19 January 1995.

We have received the following documentation to assist us in our work:

- Staig & Smith drawing No. 3663, dated October 1994 entitled "Observatory Hill Subdivision Stage 3, Concept Plan Earthworks"
- Staig & Smith drawing No. 3663, dated October 1994 entitled "Observatory Hill Subdivision Stage 3 Concept Plan"
- Staig & Smith drawing No. 3663 "Observatory Hill Cross Sections"

2.0 INVESTIGATIONS

The investigation work has involved:

- a review of published geological maps of the area;
- a review of previous geotechnical reports for earlier subdivisional developments in the vicinity of the site;
- an examination of aerial photographs of the site as follows:

18-8-63 Ref. 138-139	Aerial Surveys, Nelson
27-5-88 Ref. 106251 & 106252 1:8000	Aerial Surveys, Nelson
7-6-64 Ref. 2178-2179 1:5000	Aerial Surveys, Nelson

- Excavation, sampling and logging of twenty (20) test pits by a soil engineer on 30-31 March 1995.
- Geological and geomorphic mapping.

The test pits were excavated to depths of between 1.7 and 4.2 metres below existing ground level. The pit logs are presented in Appendix A along with an explanatory sheet outlining the terms and symbols used.

The test pit locations are shown on the site plan Ref. 80627-1 along with the prominent features of the site. The ground levels shown on the test pit logs are based on survey data prepared by Staig & Smith Ltd. In-situ testing was confined to hand-held shear vane tests. No laboratory testing has been carried out.

3.0 SITE CONDITIONS

3.1 Site Description

The site is located on Observatory Hill at the southern end of Princes Drive. The prominent features of the site are shown and labelled on the site plan and described below:

- The site is located on the ridge top at the southern end of the Princes Drive.
- Two secondary ridges extend westward from the main north-south trending ridge line. One secondary ridge extends eastward.
- The ridges are separated by relatively steep, gorse and bush covered valleys.
- There has been some existing earthworks on the site. On the ridge crest, there has been some levelling and a steep cut bank has been formed just to the south of Princes Drive. An engineered fill has been placed in a valley directly to the south of Princes Drive. Topsoil from this valley has been placed on the hilltop and on the East Ridge.

3.2 Soil and Rock Conditions

The geology of the site has been mapped and described in the "Geology of the Nelson Urban Area" by M R Johnston. The geology comprises granular soils of the Port Hills Gravel Formation, underlying a variable depth of weathered soil.

The investigation confirmed that the hillslopes are underlain with variable weathered sands and gravels of the Port Hills Gravel Formation.

Subsoil conditions encountered in areas of cut and fill are described separately as follows:

Cut Areas. Cut areas are divided into five areas as shown on the site plan and detailed below.

- East Ridge (TPs 18 and 19). At the points explored, TPs 18 and 19 encountered 1.4 metres of topsoil underlain with weathered colluvium and Port Hills Gravel.
- Hilltop Cut Area (TPs 10 to 17 and TP20). The cut area includes the knob above Princes Drive. Test pits put down in the knob encountered a variable "capping" layer of topsoil which ranges in depth from 1.1 metre (TP11) to greater than 4.2 metres (TP15) below existing ground level. All test pits on

the knob with the exception of TP15 were terminated in Port Hills Gravel. TP20 put down in the northernmost part of this cut area encountered Port Hills Gravel at 1.0m depth.

- Road Ridge Cut (TPs 7, 8 and 9). Test pits put down on the ridge encountered Port Hill Gravel at relatively shallow depths. The depth ranges from 0.7m in TP7 to 1.8m in TP9 i.e. increasing in depth upslope.

- West Ridge (TPs 1 and 4). Test pits put down in this area encountered Port Hills Gravel existing beneath fine-grained colluvial soil (TP1) and gravelly topsoil (TP4) at 1.2m depth.

- South Ridge (TP 17). This is a small cut area at the southern end of the main ridge. Port Hills Gravel was encountered at 1.9m depth in this area.

Fill Areas. Two main fill areas are proposed in Southern Fill and Western Fill as follows:

- Southern Fill. (TPs 5 and 6) TP6 put down towards the head of the Southern Fill encountered a colluvial layer 1.2 metres thick overlying a thin layer of rootlets in clay. Port Hills Gravel was encountered beneath the rootlets in clay material at 1.4m depth.

  TP5 put down in the main body of the southern fill encountered 1.2 metres of topsoil underlain in turn by the stiff clay and Port Hills Gravel at 1.8m depth.

  No free water was encountered in these pits but zones within the colluvial soil were wet.

- Western Fill. (TPs 2 and 3) TP2 put down towards the head of the fill area encountered Port Hills Gravel at a depth of 1.8 metres below ground level, beneath stiff colluvial soil.

  TP3 under the main body of this fill, encountered Port Hills Gravel at a depth of 1.2 metres below ground level beneath a layer of very stiff silt material. Conditions were wet in TP2 at the head of the gully.

No groundwater was observed in the test pits during the short time they remained open. Soils were generally dry or moist on the hilltop and ridges. Wet soil conditions were encountered in some pits in the gullies i.e. TP2, TP5 and TP6.

4.0 EXISTING SLOPE INSTABILITY

Examination of historical aerial photographs shows that there have been several small to moderate-sized shallow soil slides (tens to hundreds of square metre) on the steep valley sides within the subdivision. These slides are most frequent in the Western Fill valley particularly on the south side.

Two soil slide scars were also observed in the Southern Fill valley, both are of moderate size. Elsewhere in the subdivision, there is no evidence of recent slides but some older slide scars can be seen. The size and frequency of soil slides within the subdivision is similar or less than on other undeveloped slopes elsewhere in the Princes Drive area.

5.0 CONCLUSIONS & RECOMMENDATIONS

Recommendations and opinions in this report are based on data from twenty (20) test pits. The nature and continuity of subsoil away from the test locations are inferred but it must be appreciated that actual conditions could vary from the assumed model.

The proposed earthworks design will have an overall beneficial effect on the stability of the area. Provided construction is in accordance with NZS 4431 and adequate provision is made for subsoil drainage and stormwater control, the following batter angles are appropriate:

Material Type	Maximum Batter Angle H:V	Recommended Batter Angle H:V	Comments
In-situ Port Hills Gravel	2:1	≤3:1	Batter slopes higher than 6m vertical and steeper than 2.5H:1V will require site specific investigation and may require remedial measures or changes to design depending on conditions.
Competent Weathered Colluvium	3:1	≤3:1	Batters on wet or weak colluvium may require special treatment.
Fill Batters	2:1	≤3:1	Batters steeper than 2.5H:1V should include 2m width contour benches at not more than 6m vertical intervals.

The earthworks proposed on the "Concept Plan Earthworks" comply with these guidelines.

Earthworks is planned over at least four construction seasons beginning with Phase 1 in 1995-1996. The following sections of the report refer to the construction Phases shown on Staig & Smith drawing 3663 "Concept Plan Earthworks" October 1994. Detailed comments are made on the earthworks and building sites on Phase 1 and more general comments on Phases 2 to 6.

5.1 Phase 1

5.1.1 Proposed Earthworks

Phase 1 earthworks involves removal of the top of the hill and the southern ridge to a maximum depth of 11m. The area on the south side of the knoll on the hilltop (TP12 to 15) is a topsoil stockpile and this material will be unsuitable as structural

fill. The balance of colluvial soils and in-situ Port Hills Gravel from the Phase 1 cut are suitable for the Phase 1 filling.

There have been several soil slides on the flanks of the southern gully. Deposits of slip debris were encountered in TP5 and TP6 in the floor of the gully. This material will need to be removed to a depth of between 1 and 2m. Most can be reworked into the fill. The average depth of stripping on the sides of the valley is expected to be less than 1m.

Subsoil drainage should comprise a central drain in the valley floor with regular feeder drains following the contours on the valley sides and picking up any springs encountered in the excavation.

The crest of fill should be graded and sealed at the end of the season and stormwater diversion channels installed in natural ground around the top of the fill and at regular intervals on the batter, to control surface erosion.

5.1.2 Building Sites

All building sites within the proposed Phase 1 cut and fill areas will have building sites. The only provisions envisaged at this stage are that buildings on lots which straddle cut/fill boundaries will require specific design to compensate for differential settlement.

Building sites on steep natural slopes i.e. the first two lots on the west side of Princes Drive and all the lots east of R-O-W A and north of the proposed road will require site specific investigations and design.

5.2 Phase 2

Phase 2 comprises cut on the East Ridge to a maximum of 8m depth and completion of the Southern Fill. The East Ridge is overlain by about 1.5m of topsoil fill. This material is probably strippings from the adjoining fill area and is unsuitable as structural fill. The balance of fill material is suitable for the Phase 2 filling.

The comments on subsoil drainage and stormwater control made in Section 5.1.1 also apply to completion of the Southern Fill.

Building lots identified in the cut area contains suitable building sites and lots on the fill area have the same provision when building over cut/fill boundaries as stated in Section 5.1.2.

5.3 Phase 3

Phase 3 will comprise cutting the area between the hilltop cut and the southern fill and beginning filling in the western gully. However, we recommend a modification to this cut area and the adjoining Phase 4, 5 and 6 filling. The proposal is to extend the fill batter upslope of the proposed west access road at between 3.1 and 4H:1V to about the RL 164m contour and to reduce the batter slope at the northern side of the Phase 3 cut to match. The benefits of this modification will be to improve the stability of the lots on the Phase 3 cut and buttress the natural slopes

west of Princes Drive. These measures will reduce the required conditions on these lots.

The comments made in Section 5.1.1 regarding the depth of stripping, subsoil drainage and stormwater control also apply to the Western Fill.

The proposed earthworks should result in stable building sites in the areas of cut and fill.

5.4 Phases 4, 5 and 6

These Phases will comprise cutting on the Road Ridge to a maximum depth of 7m, cutting the West Ridge to a maximum depth of 11m and completion of the Western Fill. Test pits on the ridges indicate nominal stripping of topsoil is required to a depth of up to 0.5m. The balance of weathered soils and in-situ Port Hills Gravels will provide suitable bulk filling. The western fill batters comply with our general recommendations. We recommend you consider a modification on the southern boundary of the fill where the batter is locally steepened to 2H:1V. This would involve altering the Road Ridge cut and Southern Fill above the RL 138m contour so they merge and create a 3H:1V batter in this area.

6.0 APPLICABILITY

This report has been prepared solely for the benefit of you as our client with respect to the particular brief given to us and data or opinions contained in it may not be used in other contexts or for any other purpose without our prior review and agreement.

During excavation and construction, the site should be examined by an engineer competent to judge whether the exposed subsoils are compatible with the inferred conditions on which the report has been based. We would be pleased to provide this service to you and believe your project would benefit from the continuity. However, it is important that we be contacted if there is any variation in subsoil conditions from those described in the report.

TONKIN & TAYLOR LTD
Environmental & Engineering Consultants

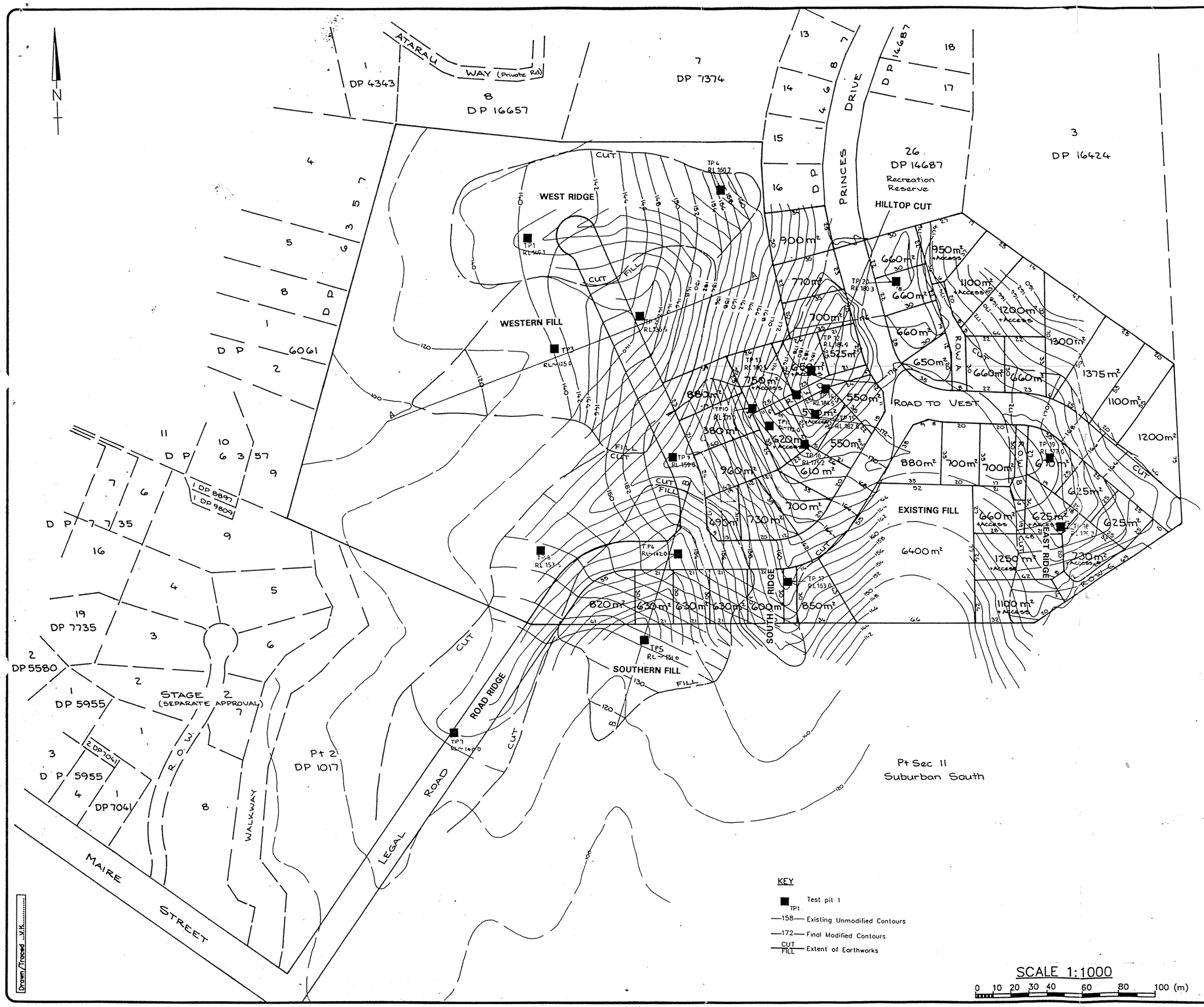
D J E Malan
GROUP MANAGER, WELLINGTON

Report prepared by: Roy Davidge/Gary Smith

Attachments: Drawing 80627-1 - Site Plan
Inspection Pits Logs 1 to 20

DJEM:RJD:GS:js 80627\princes.rpt

DRAWING 80627-1 - SITE PLAN



NOTES:

0	First Issue		
REVISION		CHECKED Initial	Date
Drawing Checked			

APPROVED

This drawing is not to be used for construction purposes unless signed as approved

REFERENCE

Staig & Smith plan No 3663 entitled 'CONCEPT PLAN' dated October 1994

TONKIN & TAYLOR
ENVIRONMENTAL & ENGINEERING CONSULTANTS
☐ AUCKLAND 19 MORGAN ST NEWMARKET
■ WELLINGTON 109 FEATHERSTON ST
☐ WHANGAREI 7 HUNT ST

TITLE

OBSERVATORY HILL SYNDICATE

SUBDIVISIONAL DEVELOPMENT
PRINCES DRIVE, NELSON

Investigation Location Plan

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ORIGINAL SCALES 1:1000

DRAWING No. 80627-1

DATE MAY 1995

Revision 0

Drawn/Traced ..V.K.....

INSPECTION PIT LOGS 1 TO 20

TONKIN & TAYLOR LTD.

ENGINEERING LOG TERMINOLOGY

DRILLING OR EXCAVATION

FLUID LOSS	WATER	CORE RECOVERY	METHOD/CASING	PENETRATION
NO LOSS	WATER LEVEL ON DATE SHOWN	Core recovered expressed as percentage of the length of the core run.	Shows drilling method and depth of casing.	1 2 3 NO RESISTANCE RANGING TO REFUSAL
PARTIAL LOSS	WATER INFLOW			
COMPLETE LOSS	WATER OUTFLOW			

SAMPLES AND TESTS

SAMPLE TYPE	TESTS	GRAPHIC LOG	TYPICAL SYMBOLS
OPEN BARREL	N = 22 SPT. UNCORRECTED BLOW COUNT FOR 300MM	The Graphic Log shows soil and rock substances, significant defects, and core loss. Soil and rock substances represented by clear contrasting symbols consistent for each project.	CLAY
DOUBLE OR TRIPLE TUBE	●75kPa UNDRAINED SHEAR STRENGTH AS MEASURED BY FIELD VANE		SILT
STANDARD PENETRATION TEST	☒ PRESSUREMETER TEST		SAND
LARGE DIAMETER THIN WALLED TUBE	✳ LABORATORY TEST(S) CARRIED OUT — UNSPECIFIED OR SPECIFIED AS BELOW		GRAVEL
SMALL DIAMETER THIN WALLED TUBE	LV - LABORATORY VANE; AL - ATTERBERG LIMITS		ORGANIC MATERIAL
BULK SAMPLE	UU - UNDRAINED TRIAXIAL; PSD - PARTICLE SIZE		MUDSTONE
Length of sample indicated by length of symbol.	C'Ø' - EFFECTIVE STRESS; CONS - CONSOLIDATION		SANDSTONE
	DS - DIRECT SHEAR; COMP - COMPACTION		BASALT
	UC - UNCONFINED COMPRESSION; IS - POINT LOAD		NO CORE

SOIL DESCRIPTION

CLASSIFICATION SYMBOL	MOISTURE CONTENT	UNDRAINED SHEAR STRENGTH		RELATIVE DENSITY	
Based on USBR Unified Soil Classification System Visual Method for field identification. Classification symbols based on Laboratory Method may differ.	D - DRY, LOOKS AND FEEL DRY		Cu (kPa)		SPT-UNCORRECTED N VALUE
	M - MOIST, NO FREE WATER ON HAND WHEN REMOULDING	VS - VERY SOFT	< 10		
	W - WET, FREE WATER ON HAND WHEN REMOULDING	S - SOFT	10 to 25	VL - VERY LOOSE	0 to 4
	Moisture content may be compared to the plastic limit (PL) eg M > PL = moist, moisture content greater than the plastic limit	F - FIRM	25 to 50	L - LOOSE	4 to 10
		St - STIFF	50 to 100	MD - MEDIUM DENSE	10 to 30
		VSt - VERY STIFF	100 to 200	D - DENSE	30 to 50
		H - HARD	> 200	VD - VERY DENSE	> 50
		Fb - FRIABLE			

ROCK DESCRIPTION

WEATHERING	ROCK STRENGTH		SIGNIFICANT DEFECTS
Fr - FRESH		UCS (MPa)	SIGNIFICANT DEFECTS SHOWN GRAPHICALLY
SW - SLIGHTLY WEATHERED	EXTREMELY LOW	< 2	JOINT
HW - HIGHLY WEATHERED	VERY LOW	2 to 6	SHEARED ZONE
EW - EXTREMELY WEATHERED	LOW	6 to 20	CRUSHED SEAM
	MODERATE	20 to 60	INFILL SEAM
	HIGH	60 to 200	EXTREMELY WEATHERED SEAM
	VERY HIGH	> 200	

TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP1
SHEET 1 OF 1

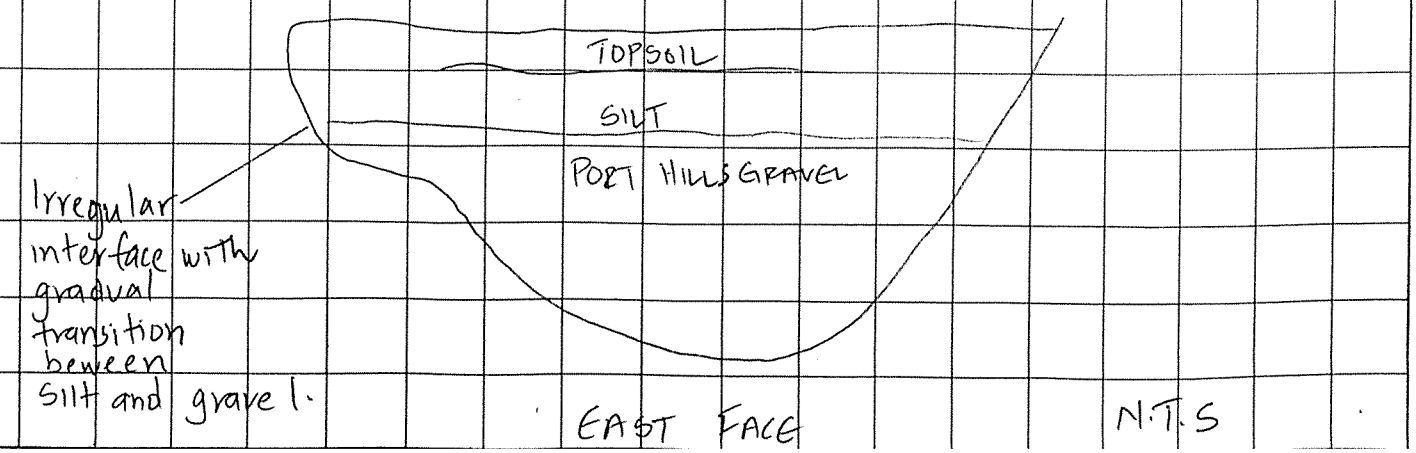
PROJECT: OBSERVATORY HILL SYND. LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627
CO-ORDINATES: SEE SITE PLAN
RL: ~ 149.1m*
DATUM: N.C.D.
EXPOSURE TYPE: TEST PIT PROFILE
EQUIPMENT: HITACHI EXC
OPERATOR: GRAEME WALLACE CONTR.
EXCAVATION DIMENSIONS: 2.5 x 0.6 x 2.2m
HOLE STARTED: 30-3-95
HOLE FINISHED: 30-3-95
LOGGED BY: RJD
CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa	ORIGIN TYPE, MINERAL COMPOSITION, DEFECTS, STRUCTURE	UNIT
	NONE	NIL	• 125 kPa				TOPSOIL	D	L			
						ML	SILT, Sandy, very stiff, yellow brown. - Occ mottles.	m	VSt		COLLUVIUM Low plasticity	
				1.0		SM	SAND, (med to coarse), slightly gravelly, mod-dense, mottled, yellow brown. - pockets silty sand.	D ↓ m	MD		PORT HILLS GRAVEL - sandstone (1) fragments and variably weathered granite clasts in sparse sand matrix.	
				2.0		GW	GRAVEL, (med to very coarse), sandy, dense, mottled yellow brown. - Occ. cobbles - fragments of sandstone	D ↓ m	D			
				3.0			Testpit terminated @ 2.2m.					
				4.0			(1) Sandstone varies fresh to highly weathered & friable.					

* Pit elevations interpolated from Craig & Smith Concept Plan No 3663 dated Oct 1994.

SKETCH

Approx North/South alignment of testpit.



TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP2

SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND. LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627

CO-ORDINATES: SEE SITE PLAN

RL: 136.5m

DATUM: N.C.D

EXPOSURE TYPE: TEST PIT PROFILE

EQUIPMENT: HITACHI EXC

OPERATOR: GRAEME WALLACE CONTR.

EXCAVATION DIMENSIONS: 2.5x0.6x2.3m

HOLE STARTED: 30-3-95

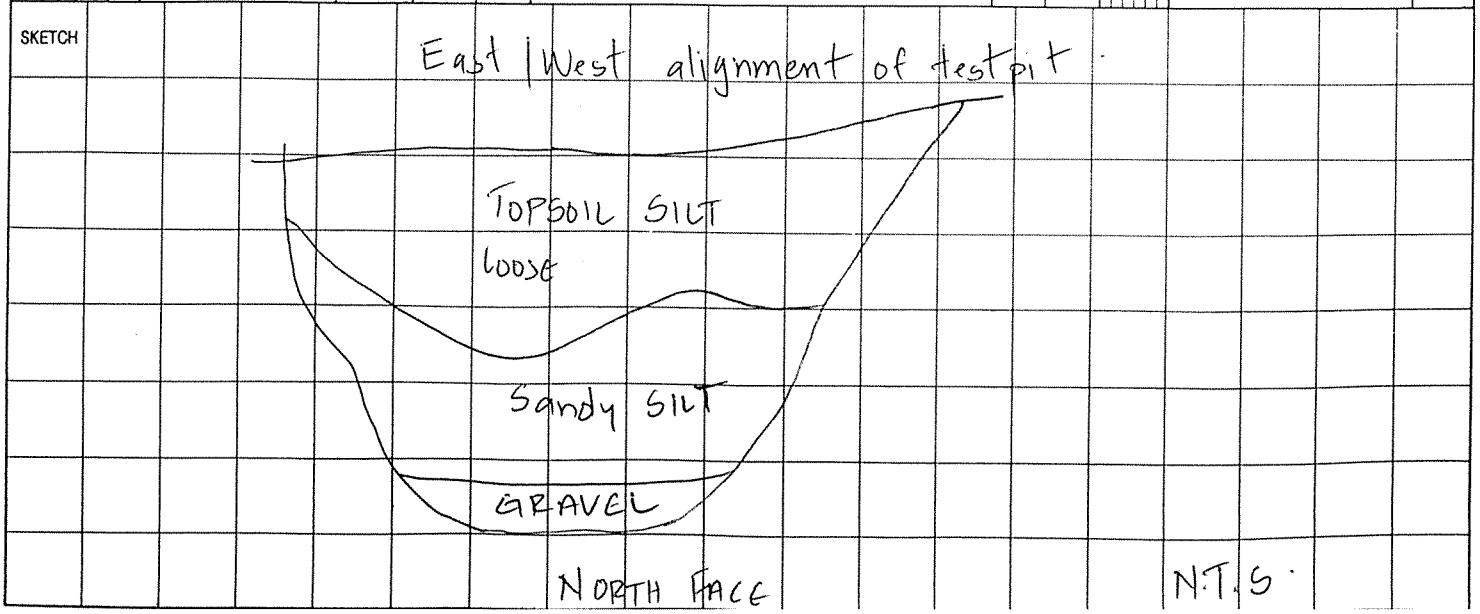
HOLE FINISHED: 30-3-95

LOGGED BY: RJD

CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
	NONE	NIL	• 111 k Pa • 142 k Pa	0			TOPSOIL: brown - occ. gravel, pockets sand.	D	L			
				1.0		ML	SILT, gravelly, stiff, mottled grey/brown - rootlets	m w	st		COLLUVIUM low plasticity	
						mL	SILT, sandy, very stiff, mottled red brown/grey - occ. gravel, pockets sand - silty.	w	Vst		Intermixed colluvium some alluvium low plasticity	
				2.0		GP	SILT, sandy, stiff, light grey. - pockets sandy	w	st			
				3.0			GRAVEL, (med to very coarse), silty, dense, grey brown.	m	D		PORT HILLS GRAVEL	
				4.0			Test pit terminated @ 2.3m					

SKETCH



TONKIN & TAYLOR LTD.

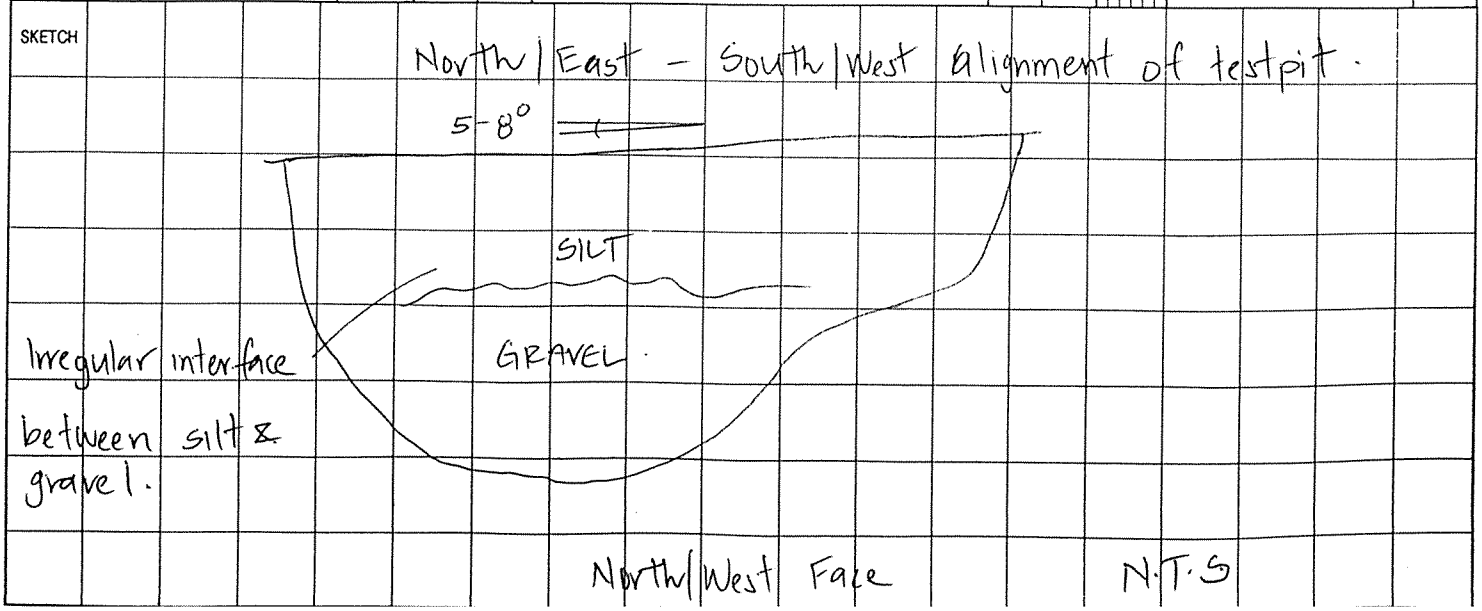
EXCAVATION LOG

EXCAVATION NO: TP3
SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND. LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627
CO-ORDINATES: SEE SITE PLAN EXPOSURE TYPE: TEST PIT PROFILE HOLE STARTED: 30-3-95
EQUIPMENT: HITACHI EXC HOLE FINISHED: 30-3-95
RL: ~ 125.0m OPERATOR: GRAEME WALLACE CONTR LOGGED BY: RJD
DATUM: N.C.D EXCAVATION DIMENSIONS: 3.0x0.6x3.0m CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
					TS		TOPSOIL	D	L			
	NONE	NIL	• 149 kPa • 162 kPa • 173 kPa • 146-189 kPa	1.0	x x x x	ML	SILT, slightly sandy, very stiff, light yellow brown - orange brown. - pockets silty clay - occ rootlets and gravel fragments white - patches green/grey	M	VSt		Weathered insitu PORT HILLS GRAVEL low plasticity	
				2.0		GP	GRAVEL, (med to very coarse), sand - silty, dense, yellow brown.	M	D		PORT HILLS GRAVEL	
				3.0			Test pit terminated @ 3.0m.					

SKETCH



TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP4

SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND. LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627

CO-ORDINATES: SEE SITE PLAN

EXPOSURE TYPE: TEST PIT PROFILE HOLE STARTED: 30-3-95

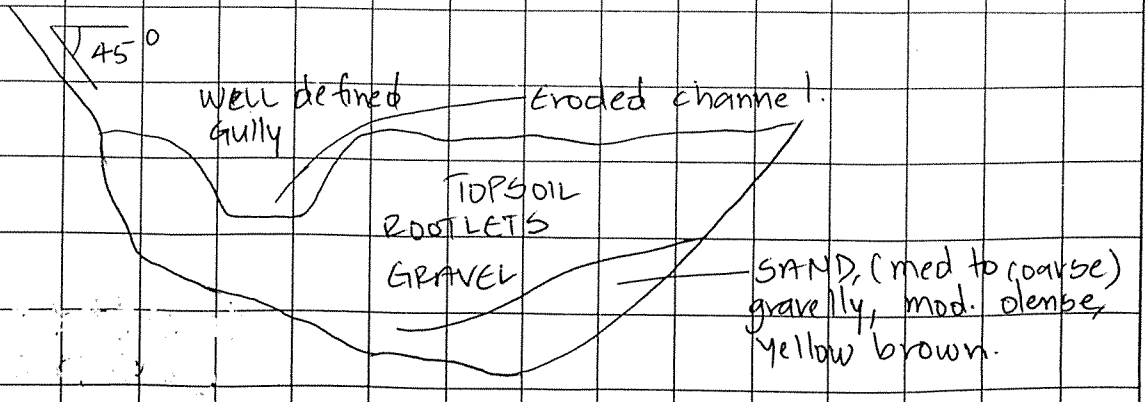
EQUIPMENT: HITACHI EXC HOLE FINISHED: 30-3-95

RL: 160.7m OPERATOR: GRAEME WALLACE CONTR LOGGED BY: RJD

DATUM: N.C.D EXCAVATION DIMENSIONS: 2.0 x 0.6 x 1.7m CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
	NONE	NIL		1.0			TOPSOIL, GRAVELLY, loose, dark brown.	D	L		FILL	
				2.0		GP	GRAVEL, (very coarse), cobbles, - boulders, slightly sandy, very dense, brown.	D	VD		PORT HILLS GRAVEL sub-rounded clasts in sand matrix	
				3.0			Test pit terminated @ 1.7m.					

SKETCH



TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP5

SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND. LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627

CO-ORDINATES: SEE SITE PLAN EXPOSURE TYPE: TEST PIT PROFILE HOLE STARTED: 30-3-95

EQUIPMENT: HITACHI EXC HOLE FINISHED: 30-3-95

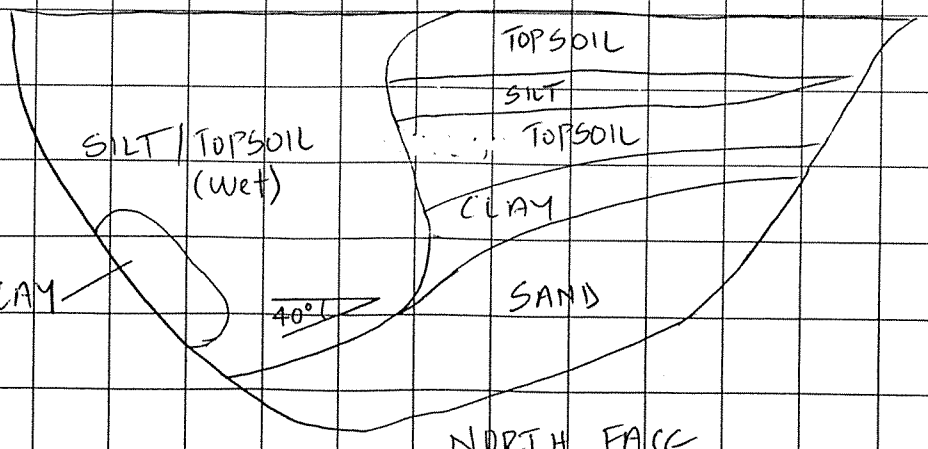
RL: ~131.0m OPERATOR: GRAEME WALLACE CONTR LOGGED BY: RJD

DATUM: N.C.D EXCAVATION DIMENSIONS: 3.5x0.6x3.7m CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 10 25 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
	NONE	NIL	• 154 kPa • 127 kPa	1.0			TOPSOIL	D	L			
						ML	SILT, gravelly, stiff, yellow brown.	m	St		COLLUVIUM low plasticity	
							TOPSOIL, SAND, loose, yellow brown - black.	D	L			
				2.0		CL	CLAY, silty, very stiff, mottled yellow brown/grey	m	VSt		COLLUVIUM low plasticity	
				3.0		SM	SAND, (med to coarse), gravelly, mod. dense, yellow brown. - pockets light grey sand	m w	MD		PORT HILLS GRAVEL Rounded Granite clasts & sandstone fragments up to 150mm in sand matrix	
				4.0			Test pit terminated @ 3.7m.					

SKETCH

East/West alignment of test pit



N.T.S.

TONKIN & TAYLOR LTD.

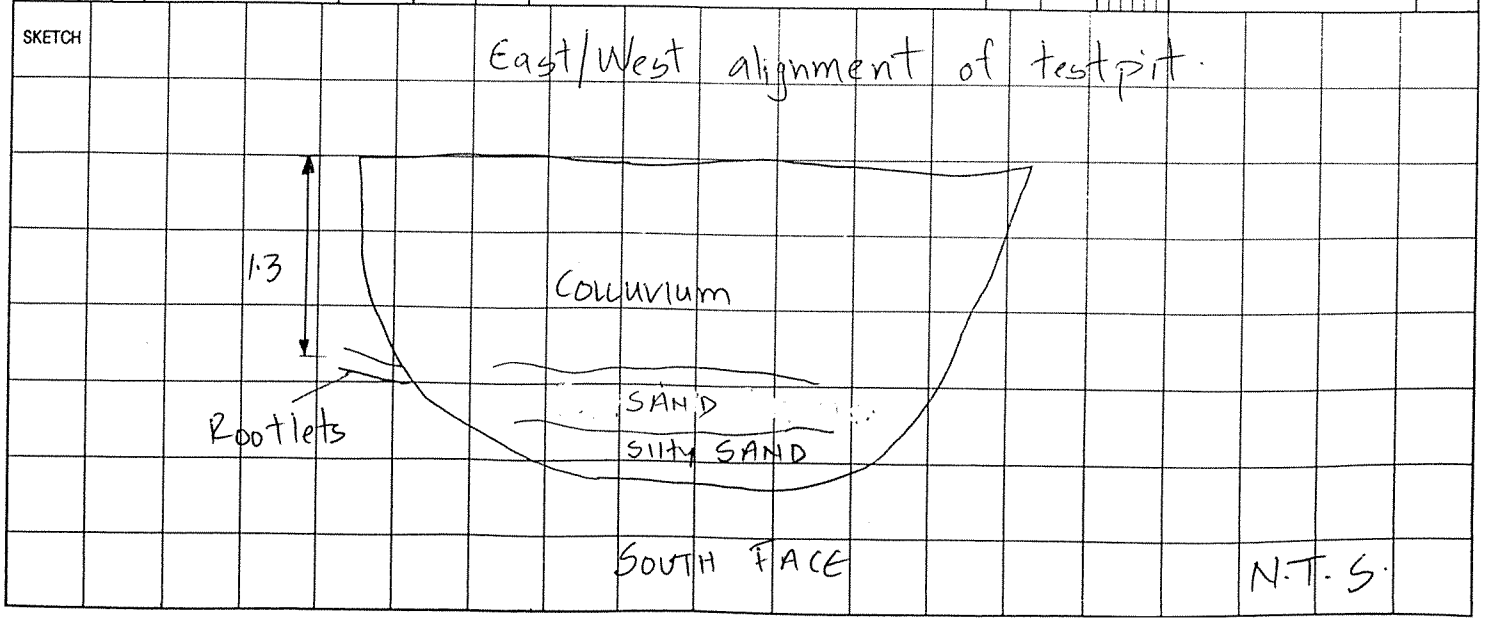
EXCAVATION LOG

EXCAVATION NO: TP6
SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND. LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627
CO-ORDINATES: SEE SITE PLAN EXPOSURE TYPE: TEST PIT PROFILE HOLE STARTED: 30-3-95
EQUIPMENT: HITACHI EXC HOLE FINISHED: 30-3-95
RL: ~ 142.0m OPERATOR: GRAEME WALLACE CONTR. LOGGED BY: RJD
DATUM: N.C.D EXCAVATION DIMENSIONS: 2.0X0.6X1.1m CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			• 119 kPa • 95 kPa				TOPSOIL	D	L			
	NONE	NIL		1.0		ML	SILT, clayey, stiff, - very stiff, mottled light grey patches grey. occ. gravel. - grades mottled yellow brown / light grey & friable	W	St ↓ VSt		COLLUVIUM. low plasticity	
			• 29 kPa • 127 kPa			ML SW						
				2.0		SM	SILT - SILTSTONE, very stiff friable, mottled light grey red brown. - grades light grey hard & friable	M	VSt		low plasticity	
				3.0			Rootlets in clay. grey.	M	St			
							SAND, (med. to coarse), very dense, (weakly cemented), brown.	D	VD		PORT HILLS GRAVEL	
							SAND, silty, (weakly cemented), some gravel.	D	VD			
							Test pit terminated @ 2.6m.					

SKETCH



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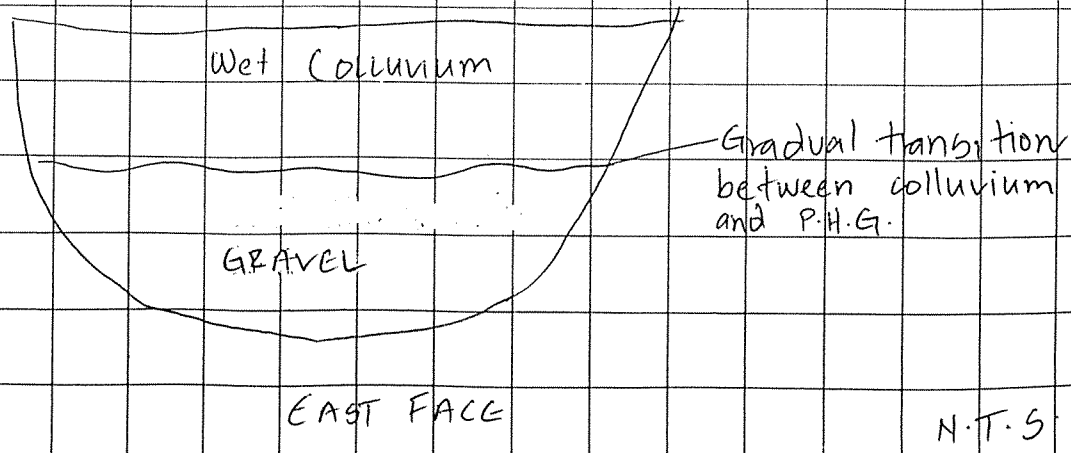
EXCAVATION LOG

EXCAVATION NO: TP7
SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND. LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627
CO-ORDINATES: SEE SITE PLAN
EXPOSURE TYPE: TEST PIT PROFILE
HOLE STARTED: 30-3-95
EQUIPMENT: HITACHI EXC
HOLE FINISHED: 30-3-95
RL: ~ 140.0m
OPERATOR: GRAEME WALLACE CONTR
LOGGED BY: RJD
DATUM: N.C.D
EXCAVATION DIMENSIONS: 2.5x0.6x2.6m
CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa (10, 25, 50, 100, 200)	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
							TOPSOIL	D	L			
	NONE	HIL		1.0		ML	SILT, clayey, stiff, (occ. rootlets), yellow brown, some rounded gravel, grey mottled. Patches SAND, silty, grey.	W	St		COLLUVIUM - some rounded & angular gravels in clay silt matrix. low plasticity.	
				2.0		GP	GRAVEL, (med to very coarse), sandy, dense, mottled yellow brown-grey brown.	D ↓ M	VD		PORT HILLS GRAVEL - siltstone fragments variably weathered some intact some friable with granite clast (rounded) in sparse sand matrix	
				3.0			Test pit terminated @ 2.6m.					

SKETCH



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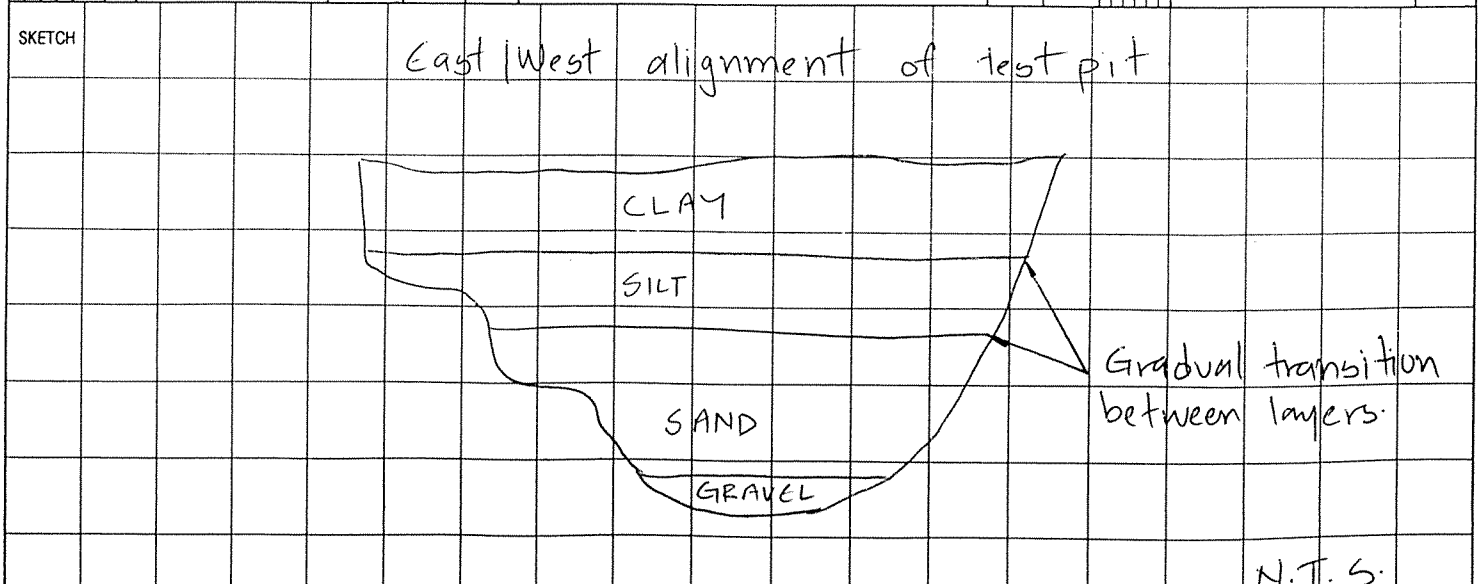
EXCAVATION LOG

EXCAVATION NO: TP8
SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND. LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627
CO-ORDINATES: SEE SITE PLAN EXPOSURE TYPE: TEST PIT PROFILE HOLE STARTED: 31-3-95
EQUIPMENT: HITACHI EXC HOLE FINISHED: 31-3-95
RL: 153.5m OPERATOR: GRAEME WALLACE CONTR LOGGED BY: RJD
DATUM: N.C.D EXCAVATION DIMENSIONS: 3.0x0.6x3.0m CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa (10, 50, 100, 200)	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
					W		TOPSOIL	D	L			
	NONE	NIL	• 178 kPa • 186 kPa • 189+ kPa			CL	CLAY, silty, low to medium plasticity, very stiff, mottled yellow brown light grey - pockets light grey/ orange sand.	M	VSt		COLLUVIUM low plasticity.	
				1.0		ML						
				2.0		SM	SILT, sandy, very stiff, mottled light grey/ brown -occ. rootlets. some gravel. -Pockets of grey plastic clay	M	VSt		COLLUVIUM low plasticity	
				3.0		GP	SAND, (med to coarse), gravelly, dense, yellow brown. - occ. boulders - pockets sandy SILT	M	D		PORT HILLS GRAVEL Weathered friable fragments of silt stone & variably weathered granite clasts in sand matrix	
							GRAVEL, sandy, dense	M	D			
							Test pit terminated @ 3.0m.					

SKETCH



TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP9

SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND. LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627

CO-ORDINATES: SEE SITE PLAN EXPOSURE TYPE: TEST PIT PROFILE HOLE STARTED: 31-3-95

EQUIPMENT: HITACHI EXC HOLE FINISHED: 31-3-95

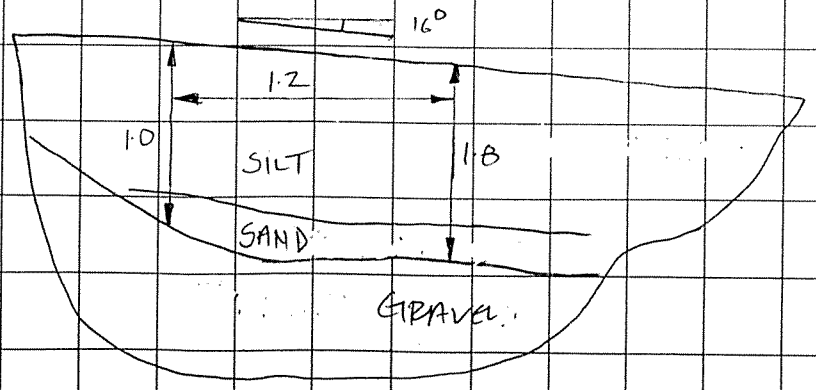
RL: 159.0m. OPERATOR: GRAEME WALLACE CONTR LOGGED BY: RJD

DATUM: N.C.D EXCAVATION DIMENSIONS: 3.0 x 0.6 x 3.1m CHECKED BY:

EXCAVATION AND TESTS						ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 10 25 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
			• 156 kPa • 162 kPa			TS		TOPSOIL	D	L			
	NONE	NIL				x x x x	ML	SILT, very stiff, light grey brown. - occ. rootlets friable - pockets plastic	M	VST		INFERRED COLLUVIUM. low plasticity.	
					1.0	x - x	ML						
						x x	SP	SILT, some clay, very stiff, mottled orange brown/ light grey. - pockets grey clay. - occ. rootlets	M	VST		low plasticity	
					2.0	. . . . .	SP						
					3.0	0.0 0.0	GP	SAND, (med), slightly silty, mod. dense, mottled grey orange brown	M	MD		RESIDUAL SOIL	
								SAND, (med), gravelly, mod. dense to dense, mottled orange brown grey	M	MD ↓ D		PORT HILLS GRAVEL Very coarse clasts variably weathered and sandstone fragments	
								GRAVEL, (very coarse), sandy, dense, yellow brown	M	D			
								Test pit terminated @ 3.1m.					

SKETCH

East | West alignment of test pit



SOUTH FACE

N.T.S

TONKIN & TAYLOR LTD.

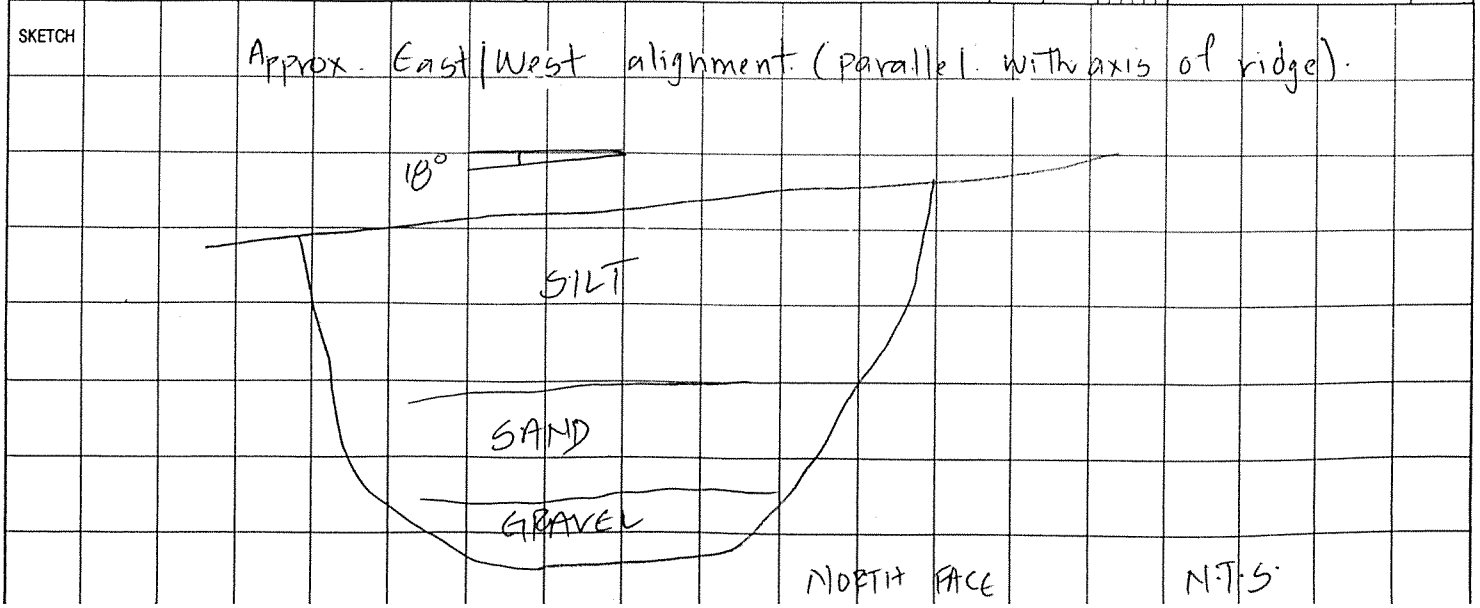
EXCAVATION LOG

EXCAVATION NO: TP10
SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND. LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627
CO-ORDINATES: SEE SITE PLAN EXPOSURE TYPE: TEST PIT PROFILE HOLE STARTED: 31-3-95
EQUIPMENT: HITACHI EXC HOLE FINISHED: 31-3-95
RL: 171.0m OPERATOR: GRAEME WALLACE CONTR. LOGGED BY: RJD
DATUM: N.C.D EXCAVATION DIMENSIONS: 2.5x0.6x2.3m CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa (10, 25, 50, 100, 200)	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
					W W		TOPSOIL	D	L			
	NONE	NIL	• 149 kPa • 186 kPa • 152 kPa.		X . X . X .	ML	SILT, slightly sandy, very stiff, light grey brown. Friable -occ. rootlets and gravel	m	VSt		COLLUVIUM low plasticity	
				1.0	. . . D . D . D .	SW	SAND (med), gravelly, dense, mottled orange brown / light grey. -pockets silt. occ. boulders	m	D		PORT HILLS GRAVEL. Rounded Granite clasts and sand stone fragments in silt-sand matrix.	
				2.0	D . D . D .	GP						
				3.0			GRAVEL, (coarse & very coarse), sandy, very dense, yellow brown	m	VD			
							Test pit terminated @ 2.3m					

SKETCH



TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP 11

SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND. LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627

CO-ORDINATES: SEE SITE PLAN EXPOSURE TYPE: TEST PIT PROFILE HOLE STARTED: 31-3-95

EQUIPMENT: HITACHI EXC HOLE FINISHED: 31-3-95

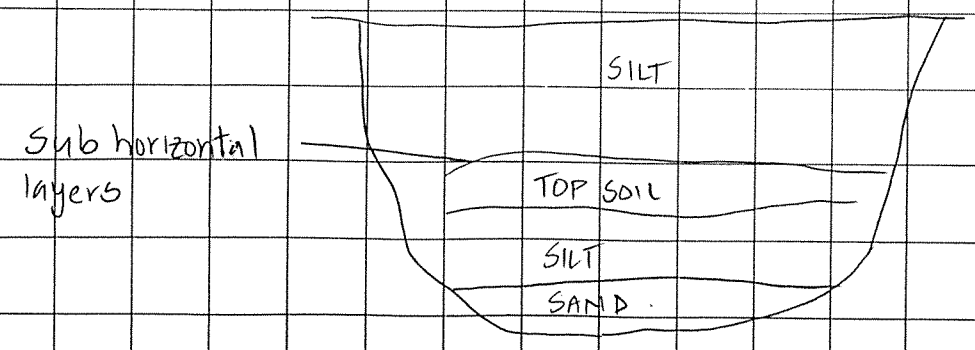
RL: ~ 172.0m OPERATOR: GRAEME WALLACE CONTR LOGGED BY: RJD

DATUM: N.C.D EXCAVATION DIMENSIONS: 2.5x0.6x1.9m CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 10 20 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
	NONE	NIL		1.0	x x x	ML	SILT, very stiff, light brown. - many rootlets	D	Vst		FILL low plasticity	
					w w		TOPSOIL	D	L		TOPSOIL	
					x x	ML	SILT, slightly sandy, very stiff, light brown. - gravelly	D ↓ M	Vst		COLLUVIUM low plasticity	
				2.0	o o	SP	SAND (med. to coarse), gravelly, dense, yellow brown.	M	D		PORT HILLS GRAVEL	
							Test pit terminated @ 1.9m					

SKETCH

North / South alignment of test pit



EAST FACE.

N.T.S

TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP12

SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND. LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627

CO-ORDINATES: SEE SITE PLAN EXPOSURE TYPE: TEST PIT PROFILE HOLE STARTED: 31-3-95

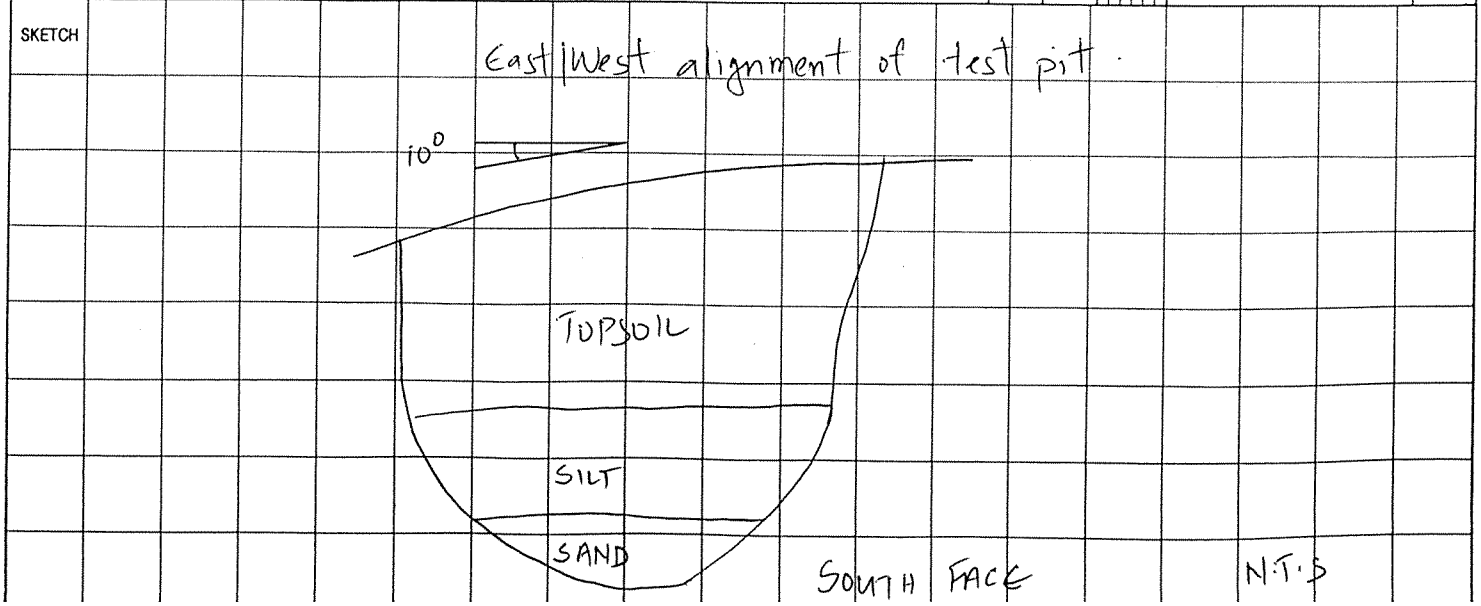
EQUIPMENT: HITACHI EXC HOLE FINISHED: 31-3-95

RL: 184.9m OPERATOR: GRAEME WALLACE CONTR. LOGGED BY: RJD

DATUM: N.C.D. EXCAVATION DIMENSIONS: 2.5 x 0.6 x 2.3m CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 10 25 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
	NONE	NIL		1.0			TOPSOIL, loose, brown-black. - some gravel.	D	L		FILLING	
				2.0		ML	SILT, very stiff, light brown. - friable.	M	VST		COLLUVIUM	
						SP	SAND, some gravel, mod. dense, mottled yellow brown. - pockets grey clay.	M	M-D		PORT HILLS GRAVEL sparse weathered Gravels in silt-Sand matrix	
							Test pit terminated @ 2.3m.					

SKETCH



TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP13

SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND. LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627

CO-ORDINATES: SEE SITE PLAN EXPOSURE TYPE: TEST PIT PROFILE HOLE STARTED: 31-3-95

EQUIPMENT: HITACHI EXC HOLE FINISHED: 31-3-95

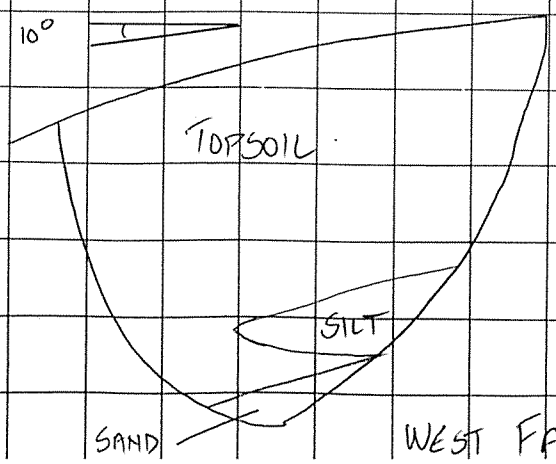
RL: 180.5m OPERATOR: GRAEME WALLACE CONTR LOGGED BY: RJD

DATUM: N.G.D EXCAVATION DIMENSIONS: 3.0 X 0.6 X 3.3m CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 10 20 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
	NONE	NIL		1.0	W		TOPSOIL, brown loose. - some gravel.	D	L		FILLING	
				2.0	W							
				3.0	X	MH	SILT, firm, black.	m	F		low plasticity	
					∴	SP	SAND, (med to coarse), gravelly, dense, mottled yellow brown.	m	D		PORT HILLS GRAVEL.	
							Test pit terminated @ 3.3m					

SKETCH

North / South alignment of test pit



TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP14

SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND. LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627

CO-ORDINATES: SEE SITE PLAN EXPOSURE TYPE: TEST PIT PROFILE HOLE STARTED: 31-3-95

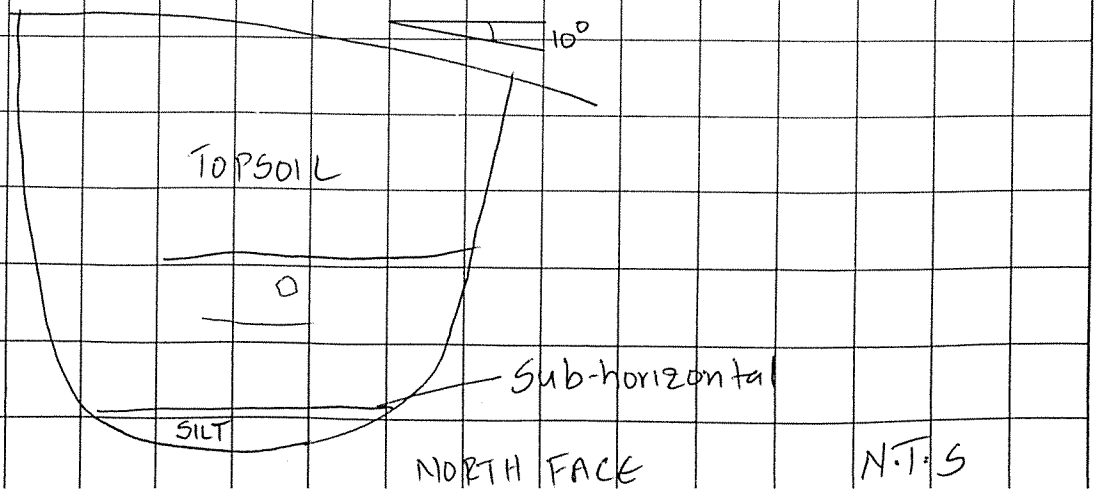
EQUIPMENT: HITACHI EXC HOLE FINISHED: 31-3-95

RL: 184.5m OPERATOR: GRAEME WALLACE CONTR. LOGGED BY: RJD

DATUM: N.C.D EXCAVATION DIMENSIONS: 3.0 x 0.6 x 4.2m CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION					GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
	NONE	NIL		1.0			TOPSOIL, loose. - black silt. - some gravel. - timber debris.	D M	L		FILLING low plasticity	
				2.0								
				3.0								
				4.0	X X	ML	SILT, slightly sandy, very stiff, mottled brown grey	M	VSt		INFERRED COLLUVIUM low plasticity	
							Test pit terminated @ 4.2m					

SKETCH



TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP15

SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND. LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627

CO-ORDINATES: SEE SITE PLAN EXPOSURE TYPE: TEST PIT PROFILE HOLE STARTED: 31-3-95

EQUIPMENT: HITACHI EX HOLE FINISHED: 31-3-95

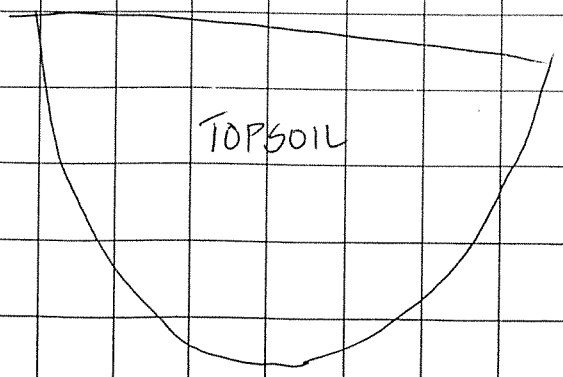
RL: 182.8m OPERATOR: GRAEME WALLACE CONTR LOGGED BY: RJD

DATUM: N.C.D EXCAVATION DIMENSIONS: 3.5x0.6x4.2m CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 10 25 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
	NONE	NIL		1.0	W		TOPSOIL / SILT, loose, dark brown. - rootlets, decayed branches	D	L		FILLING. low plasticity	
				2.0	W			m				
				3.0	W		- pockets clay silt, black - occ. boulders	D				
				4.0	W							
							Testpit terminated @ 4.2m (limit of excavator reach).					

SKETCH

East / West alignment of test pit.



N.T.S

TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP16

SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND, LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627

CO-ORDINATES: SEE SITE PLAN EXPOSURE TYPE: TEST PIT PROFILE HOLE STARTED: 31-3-95

EQUIPMENT: HITACHI EXC HOLE FINISHED: 31-3-95

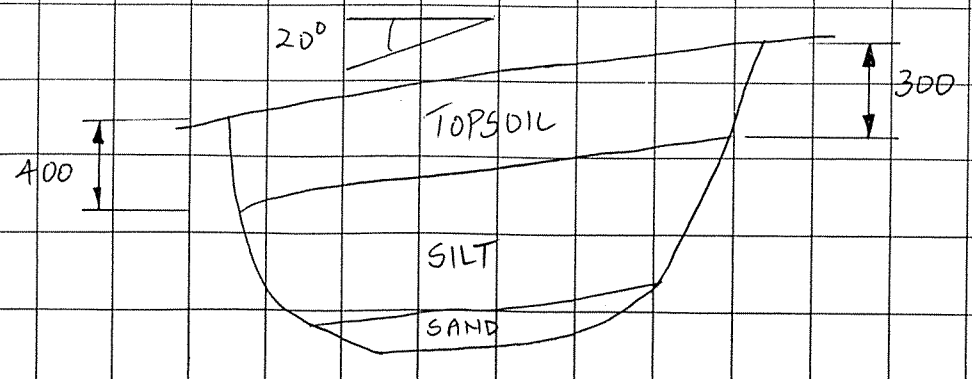
RL: 175.2m OPERATOR: GRAEME WALLACE CONTR LOGGED BY: RJD

DATUM: N.C.D EXCAVATION DIMENSIONS: 2.0x0.6x1.4m CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 10 25 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
					w w		TOPSOIL	D	L			
	NONE	NIL			x x x	ML	SILT, slightly sandy, very stiff, yellow brown. - some rootlets	D	vst		COLLUVIUM low plasticity	
				1.0		SW	SAND, (med), gravelly, dense, mottled yellow orange brown.	D	D		PORT HILLS GRAVEL Fragments of sandstone clast & granite in silt-sand matrix	
				2.0			Test pit terminated @ 1.4m.					

SKETCH

North / South alignment of test pit.



WEST FACE

N.T.S.

TONKIN & TAYLOR LTD.

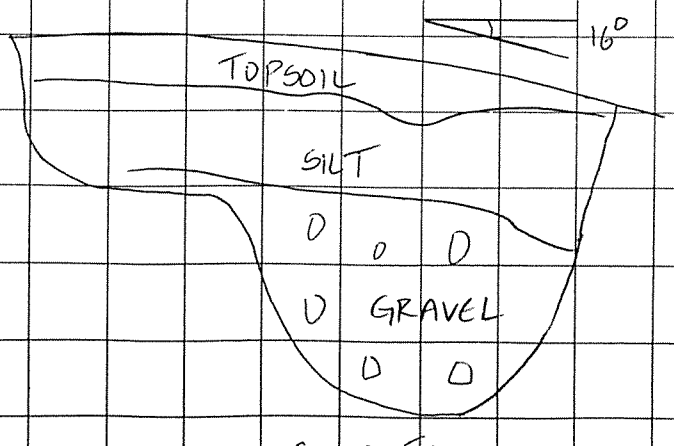
EXCAVATION LOG

EXCAVATION NO: TP17
SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND
LOCATION: PRINCES DRIVE, NELSON
JOB NO: 80627
CO-ORDINATES: SEE SITE PLAN
EXPOSURE TYPE: TEST PIT PROFILE
HOLE STARTED: 31-3-95
EQUIPMENT: HITACHI EXC
HOLE FINISHED: 31-3-95
RL: 163.0m
OPERATOR: GRAEME WALLACE CONTR
LOGGED BY: RJD
DATUM: N.C.D
EXCAVATION DIMENSIONS: 3.0x0.6x2.9m
CHECKED BY:

EXCAVATION AND TESTS						ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 10 25 50 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
						W		TOPSOIL	D	L			
	NONE	NIL	• 164 kPa • 176 kPa • 180 kPa		1.0	x x x x	ML	SILT, clayey, very stiff, light brown. - friable. - grades sandy.	M	VST		INFERRED COLLUVIUM low plasticity	
							SW	SAND, gravelly, mod. dense, yellow brown. mottled	D	MD		PORT HILLS GRAVEL.	
					2.0		GW ↓ GP	GRAVEL, (coarse to very coarse), sandy, dense, mottled brown yellow orange. - pockets SAND pockets sandy silt patches hard grey silt.	D	D		weakly cemented gravel clasts in silt-sand matrix	
					3.0			Test pit terminated @ 2.9m.					

SKETCH



TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP1B

SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND. LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627

CO-ORDINATES: SEE SITE PLAN EXPOSURE TYPE: TEST PIT PROFILE HOLE STARTED: 31-3-95

EQUIPMENT: HITACHI EXC HOLE FINISHED: 31-3-95

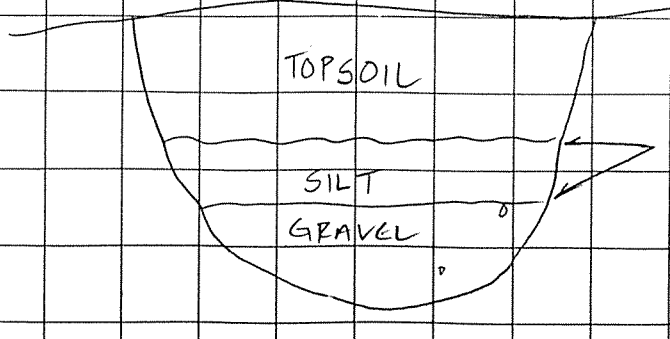
RL: 175.2m. OPERATOR: GRAEME WALLACE CONTR LOGGED BY: RJD

DATUM: N.C.D EXCAVATION DIMENSIONS: 3.0x0.6x3.3m CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa 10 33 100 200	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
	NONE	NIL		1.0			TOPSOIL - SILT, and hard, dark grey. - some gravel.	D	L		FILLING	
				2.0		ML	SILT, slightly sandy, very stiff, yellow brown. - friable	m	VSt		INFERRED RESIDUAL SOIL low plasticity	
				3.0		GM	GRAVEL, (coarse to very coarse), silty, dense, yellow brown. - sandstone fragments & granite clasts in silt-sand matrix	m	D		PORT HILLS GRAVEL	
							Test pit terminated @ 3.3m.					

SKETCH

North / South alignment of test pit



N.T.S.

TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP19

SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND. LOCATION: PRINCES DRIVE, NELSON JOB NO: 80627

CO-ORDINATES: SEE SITE PLAN EXPOSURE TYPE: TEST PIT PROFILE HOLE STARTED: 31-3-95

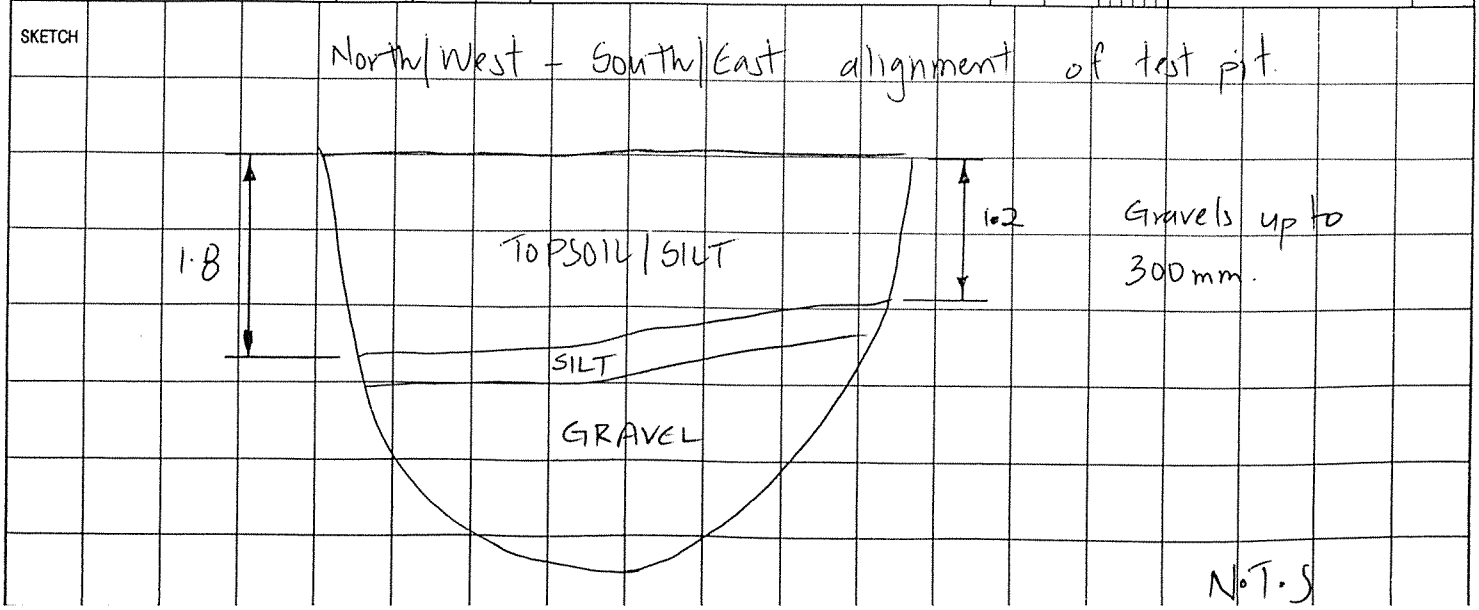
EQUIPMENT: HITACHI EXC HOLE FINISHED: 31-3-95

RL: 177.0m OPERATOR: GRAEME WALLACE CONTR LOGGED BY: RJD

DATUM: N.C.D EXCAVATION DIMENSIONS: 3.0X0.6X3.3m CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION					GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa	ORIGIN TYPE, MINERAL COMPOSITION, DEFECTS, STRUCTURE	UNIT
	NONE	NIL		1.0			TOPSOIL / SILT, loose, dark grey	m	L		FILL	
				2.0		ML	SILT, slightly sandy, stiff, brown. - occ. gravels.	m	st		COLLUVIUM low plasticity.	
				3.0		GW	GRAVEL, (coarse to cobble size), sandy, very dense, mottled yellow brown. - pockets silt. and mottled med. SAND	D ↓ m	VD		PORT HILLS GRAVEL - angular siltstone fragments variably weathered with granite clasts.	
							Test pit terminated @ 3.3m.					

SKETCH



TONKIN & TAYLOR LTD.

EXCAVATION LOG

EXCAVATION NO: TP20

SHEET 1 OF 1

PROJECT: OBSERVATORY HILL SYND | LOCATION: PRINCES DRIVE, NELSON | JOB NO: 80627

CO-ORDINATES: SEE SITE PLAN | EXPOSURE TYPE: TEST PIT PROFILE | HOLE STARTED: 31-3-95

EQUIPMENT: HITACHI EXC | HOLE FINISHED: 31-3-95

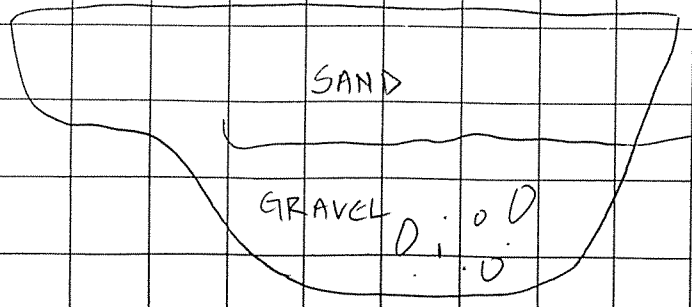
RL: 180.3m | OPERATOR: GRAEME WALLACE CONTR | LOGGED BY: RJD

DATUM: N.C.D | EXCAVATION DIMENSIONS: 2.5x0.6x2.0m | CHECKED BY:

EXCAVATION AND TESTS					ENGINEERING DESCRIPTION						GEOLOGICAL	
PENETRATION 1 2 3	SUPPORT	WATER	SAMPLES, TESTS	RL (m) DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	SOIL NAME, PLASTICITY OR PARTICLE SIZE CHARACTERISTICS, COLOUR, SECONDARY AND MINOR COMPONENTS	MOISTURE CONDITION	SHEAR STRENGTH OR RELATIVE DENSITY	ESTIMATED SHEAR STRENGTH, kPa	ORIGIN TYPE, MINERAL COMPOSITION, DETECTS, STRUCTURE	UNIT
	NONE	NIL		0			TOPSOIL	D	L			
						SP	SAND, (fine), silty, loose to mod. dense, yellow brown. - gravelly - pockets silt.	m	L ↓ MD		COLLUVIUM.	
				1.0		GM	GRAVEL, (coarse to very coarse), sandy, dense, mottled yellow brown. - intense iron staining on some broken faces.	m	D		PORT HILLS GRAVEL variably weathered sandstone fragments and granite clasts in silt-sand matrix.	
				2.0			Test pit terminated @ 2.0m.					

SKETCH

North/South alignment of test pit.



Gradual transition between layers

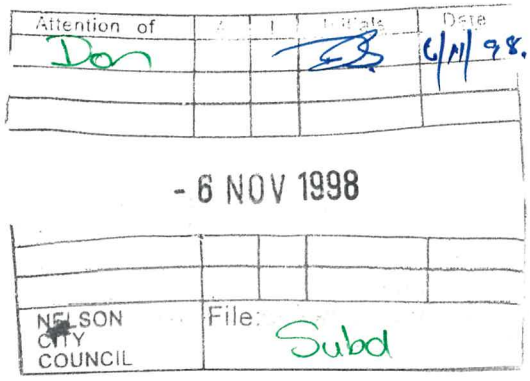
N.T.S

RESOURCE
MANAGEMENT
CONSULTANTS

STAIG & SMITH
LIMITED

Ref: 5540

4 November 1998



Nelson City Council
P O Box 645
NELSON

Attention: Don Ballagh

Dear Sir,

RE: FLOOD DAMAGE CLAIMS & ON-GOING MAINTENANCE, TASMAN HEIGHTS – K B QUARRIES LTD

We are in receipt of a copy of a letter from Ms Lynley Burn of 57a Douglas Road. The writer has discussed this matter with Mr Kevin Blair of K B Quarries and will settle this letter.

However Mr Blair feels that due to the amount of repairs and cleaning of Council's services that he has carried out since his arrival in Nelson that ongoing and additional demands to maintain these services or the compensate as a result of failure of these services is overly onerous.

The majority of the maintenance/servicing is the result of the extreme rainfall events over the winter period, principally July.

The following are points / comments relating to the site regarding the past winter.

- The events were of a greater magnitude than those previously recorded in Nelson. The volumes of water exceeded the capacity of several of the Council's storm-water systems throughout Nelson.

- There were numerous large slips all around the Nelson City Council area

- All care was taken on-site to ensure that both storm-water and sediment control was kept in accordance with the Resource Consent. At times, due to the extreme nature of the event these controls were sometimes compromised.

- Several naturally occurring slips occurred in the area around the Tasman Heights development. These slips were not triggered by the diversion of storm-waters within the contract works. (eg Greer property off Ata Rau Way). Some of these natural slips caused blockage of culverts in both Maire Street and Douglas Road.

In the interest of both professionalism and in public relations K B Quarries

- Maintained day and night watches for culverts off Maire Street and Chamberlain Street. These watches and subsequent maintenance was carried out for every heavy rain event for the duration of the winter.

- Repaired the end of Maire Street (damage caused by the blocking of the culverts and then water scouring down the kerb and channel).

- Paid for the clearance of several silt traps.

The cost of all, to date, has be borne by K B Quarries Ltd

Whilst it is accepted that some of the more extreme events caused quantities of silt to run off from the site K B Quarries does not expect or see it reasonable that they are solely responsible for the maintenance of, what is, essentially Council property. It should be noted here that this is not an admission either of negligence, fault or liability.

K B Quarries wish to have it noted that, from their perspective, the Council was fortunate to have a team of experienced workmen available 24 hours a day to look after a portion of Nelson during a time when the Councils resources were under heavy demand.

In consultation with Insurance assessors immediately after the July event it was thought that the Council were, in part, liable for a portion of the repair and maintenance of works carried out by K B Quarries in Council land. The value of this portion was suggested to be 50% Council / 50% K B Quarries.

K B Quarries have endeavoured to be responsible and to engender a 'good neighbour' approach to the development and its effects on the surrounding properties. It appears that this approach is in danger of being abused.

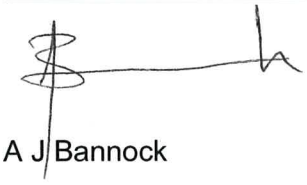
K B Quarries wish to continue being a responsible contractor and a 'good neighbour'. However, it is felt that, if continual pressure to maintain other parties property occurs, then maintenance work may be carried out on a more formal basis with the cost being apportioned amongst those receiving the benefit.

Regarding the letter from 57a Douglas Road, it is felt that the cause of the damage was due principally to flooding. The private bridge immediately upstream has a willow (?) tree partially blocking the watercourse. This appears to have restricted the capacity of the stream causing the flow to overtop the bridge and, due to the local landscaping, divert through the property. The fact that there was silt within the water appears immaterial as the damage was principally water based. The Earthquake Commission insurers against damage due to earth movement, including slips. Mr Stewart Slack of Douglas Road made a claim with the Earthquake Commission due to water borne sediment around his property and this claim, to the writer's knowledge, has been honoured.

It is felt, in the interest of an ongoing constructive relationship with the Council and other neighbouring parties, and in keeping with the 'good neighbour' desire of K B Quarries, that the K B Quarries will assist Ms Lynley Burn on a no liability, no admission of fault basis. To this end please find enclosed a cheque for the sum of $161.17.

If you have any questions relating to this matter please contact the writer.

Yours faithfully,
STAIG AND SMITH LTD



A J Bannock

Cc: K B Quarries Ltd
P O Box 19 746
CHRISTCHURCH

Attention: Kevin Blair

RESOURCE
MANAGEMENT
CONSULTANTS

STAIG & SMITH
LIMITED

Ref: 5540

2 November 1998

RECEIVED
- 3 NOV 1998
Nelson City Council

Soil and Water
The Nelson City Council
P O Box 645
NELSON

Attention: Mr D Ballagh

Dear Sir,

RE: K B QUARRIES – RESOURCE CONSENT APPLICATION

Further to your letter dated 16 September 1998 requesting further information for the processing of the application please find the attached plan and following comments (numbers as used in your letter).

1. OK. Shown on attached plan.

2. OK. Shown on attached plan. As can be appreciated it is proposed to divert all water through the detention pond area. This detention pond will be constructed soon (this summer) and is a requirement for the Tasman Heights Development. The program of construction for the balance has yet to be sorted out but is likely to be carried out from the top down. This means that the detention pond will be the major silt trap for the majority of the development

   There may be occasions where additional protection measures will be needed and we will install these as required in conjunction with notification to the Council.

3. This requirement is currently been clarified by yourself.

4. The consent form will be forwarded to Mr S Slack. The completed form will be returned to the Council as soon as possible.

I trust that the above and attached is sufficient for the continued processing of the application.

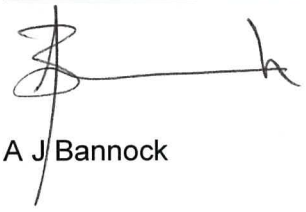
NELSON OFFICE
MAITAI HOUSE
16 PARU PARU RD
PO BOX 913 NELSON
PHONE 0-3-548 4422
FAX 0-3-548 4427

RICHMOND OFFICE
186 QUEEN ST
RICHMOND
PHONE 0-3-544 6625
FAX 0-3-544 6625

MOTUEKA OFFICE
24 TUDOR ST
PO BOX 278
MOTUEKA
PHONE 0-3-528 7089
FAX 0-3-528 7086

If you have any further questions relating to this matter please contact the writer.

Yours faithfully
STAIG AND SMITH LTD



A J Bannock

Ref: 352 Princes Drive
Please Ask for: Don Ballagh
Phone No: (03) 546 0275
E-Mail: dballagh@ncc.govt.nz
Ref: DB:kg

NELSON CITY COUNCIL

PO BOX 645 NELSON NEW ZEALAND PHONE 03-546 0200 FAX 03-546 0239

16 September 1998

Mr C Grant
Staig and Smith Ltd
PO Box 913
NELSON

Dear Sir

K B Quarries - Resource Consent Application

I wish to acknowledge your application for resource consent made on behalf of KB Quarries Ltd to extend earthworks at Observatory Hill.

The following additional information is required before your application can be processed.

1. A plan showing more precisely the extent of cut and fill activities. I am unable to locate the cut and fill boundaries on the plan, submitted with the application.

2. Show on a plan how your client proposes to control stormwater from exposed soil surfaces and where it will be directed and discharged. If you anticipate flow direction or points of discharge will change as earthworks progress, please indicate on the plan.

3. A geotechnical report or statement which addresses land stability issues relating to your client's proposed earthworks. Any potential problems identified in that report must be dealt with by way of variation to your application.

4. The written consent of Mr S Slack and any other person with an interest in land affected by your clients proposal.

Yours faithfully

D Ballagh
Resource Officer (Soil and Water)

STAIG AND SMITH

K B QUARRIES

OBSERVATORY HILL SUBDIVISION

This is the second newsletter letting you know about the progress at the Observatory Hill subdivision.

Since the last newsletter at the end of June there has been good progress with the development.

The protracted and heavy periods of wet weather during July caused large delays and some minor damage to the earthworks being constructed and to neighbouring property. It is interesting to note that the rainfall in July was finally recorded at being 294.4mm, which is 235% above the average July rainfall of 87.9mm. One downpour was in excess of a 1:100 year event for the site and the silt protection measures were tested to the limit.

No substantial progress in construction at the site occurred during July with the few fine periods principally devoted to cleaning up the site and securing the stormwater control measures in readiness for the next big downpour.

A positive aspect of the rainstorms was that the philosophy and integrity of the earthworks was tested and proven.

K B Quarries Ltd and the Engineer would like to extend our thanks to those people directly affected by operations on the site during this extreme weather event.

Since the end of July work has been concentrated on the construction of the West Fill (off Champion Street) and shaping the top of the development for the proposed Stage I. To date approximately 20,000m^3 has been placed in the West Fill raising the gully approximately 25m. Excellent progress during August and early September means that the time lost during July has been made up.

The original consent for the development allowed for 45 lots, but due to the type of earthworks being carried out by K B Quarries the original location of these 45 Lots needed to be varied to suit the new site. A consent for the variation of the original consent has been sought from the Nelson City Council and is going through the final stages of approval. Further consents will be applied for, for the remainder of the development.

At this stage it is hoped that the bulk of the earthworks for the whole site will be completed by the end of 1998 allowing 1999 for the construction of roading and services for the first stage of the development with sections available for sale around Easter 1999.

Again Kevin and the Engineers appreciate the support and patience of the neighbours and will keep you posted of further developments.

If you have any questions regarding the development please contact John Bannock at Staig and Smith Ltd, Nelson - Phone (03) 548 4422

RM 985372
No dep.

Attention of	A	I	Initials	Date
Don				

24 AUG 1998

NELSON CITY COUNCIL | File: Site file

RESOURCE MANAGEMENT CONSULTANTS

STAIG & SMITH LIMITED

Ref 5540

21 August 1998

Mr Don Ballagh
Nelson City Council
P O Box 645
NELSON

Dear Don

RE ADDITIONAL EARTHWORKS - OBSERVATORY HILL
KB QUARRIES LTD

Please find an application for Resource Consent under Section 88 of the Act, to extend the earthworks at Observatory Hill for the Tasman Heights Subdivision.

REPORT

As discussed with you recently the property has changed hands and the new owners, KB Quarries Ltd, wish to undertake additional earthworks over and above that originally proposed by the syndicate when the Resource Consent for subdivision was issued in 1995. The additional earthworks more or less involves the extension of earthworks on the ridge tops to generate additional land suitable for subdivision and placing the additional cut material in new fills. The purpose of the additional earthworks is to increase the amount of land available for residential sections and to provide for a comprehensive development of both KB Quarries land at Observatory Hill and the adjoining property owned by Bishopdale Potteries Ltd plus create access to the detention dam and possibly Marie Street Another significant advantage is the ability to improve the roading pattern over that originally shown which was being largely dictated by property boundaries and gain the maximum usage of the land for subdivisional purposes.

The earthworks sequencing will be as follows:

NELSON OFFICE
MAITAI HOUSE
16 PARU PARU RD
PO BOX 913 NELSON
PHONE 0-3-548 4422
FAX 0-3-548 4427

RICHMOND OFFICE
186 QUEEN ST
RICHMOND
PHONE 0-3-544 6625
FAX 0-3-544 6625

MOTUEKA OFFICE
24 TUDOR ST
PO BOX 278
MOTUEKA
PHONE 0-3-528 7089
FAX 0-3-528 7086

1. Installation of silt control measures in the lower part of the gully which is being filled. Some of these measures are in place now as part of the current earthworks.
2. Clearing of vegetation on an ongoing basis over areas to be earthworked.
3. Stripping of topsoil to stockpile on a progressive basis.
4. Preparation of the gully to receive the fill. This will include removal of unsuitable material, installation of sub soil drains and benching into the existing hillside.
5. Cut to fill operations which will involve cutting material from the upper ridge tops and placing and compacting in the gullies in terms of a specification prepared by Tonkin & Taylor Ltd.
6. Respreading topsoil on completed surface and grassing down.

The earthworks are to be carried out in accordance with NZS 4431: 1989 Code of Practice for Earth Fill for Residential Development under the overall monitoring of Tonkin & Taylor who will be retained to ultimately issue certificates that the land is suitable for residential development. Earthworks is under control of Mr J. Bannock, Registered Engineer, Staig & Smith Ltd.

There is adequate scope for erosion, soil and silt control measures in each of the gullies and within the earthworks areas themselves. Where necessary a more detailed plan will be developed for each portion of this site as construction proceeds. However the features will be designed to:

- Planning of the Earthworks Process in a sequential manner so that exposed stripped areas are minimised.
- Where appropriate Cut-off Drains should be excavated to divert surface runoff from the construction area.
- The installation of Silt Retention Ponds downstream of the construction area which will be replaced at the end of the construction by a permanent stormwater flood detention dam.
- Use of erosion control measures such as Brush Fences, Straw Bales to act as immediate silt traps and reduce runoff velocity.
- Tonkin & Taylor are being retained to complement to the services offered by Staig and Smith Limited to design Silt Control Ponds and Silt Control measures, with a requirement that the measures will be in place at the commencement of Earthworks.
- The quality of the earthfill will be monitored by Staig & Smith Ltd in terms of a specification to be prepared by Tonkin & Taylor Limited.
- A permanent detention dam be constructed below the southern facing fills.

The total additional earthworks involves some 150,000 cubic metres of cut to fill. The earthworks will be constructed in progressive stages. When the West Fill (existing consent) is completed the likely sequence is:

CUTS

Complete West Part Hilltop Cut
& West Ridge Cut
MJV Cut 1 & 2
BRJV Cut 1 (part)

East Part Hilltop Cut
BRJV Cut 1 & 2 (remainder)

FILLS

MJV Fill 1
MJV Fill 2
Dam Fill
Pond Fill
Playground Fill (part)
BRJV Fill
Playground Fill (complete)

ASSESSMENT OF EFFECTS

There will be visual impacts of the Earthworks during construction. To minimise these the Earthworks is being staged so that the site when viewed from the Tahunanui area will not be visible until virtually the works are completed. The Eastern portion will be lower than the ridge front when viewed from Tahunanui, minimising the visual impact from that direction. When viewed form Stoke both sites will be visible however there is little than can be done to avoid this. It is perhaps fortunate that these planned works will coincide with works on the Greenhill subdivision which adjoin.

Runoff will be contained into the two gullies which head to Douglas Road and the downstream owner has been approached and formal arrangements are in place with them for the work. One gully which falls towards Tahunanui will be controlled on the existing track.

Our clients would like to proceed with the works immediately once the West Fill is complete and any urgency that you can give in processing the application would be greatly appreciated.

Should you require anything further, please do not hesitate to contact the writer.

Yours faithfully
STAIG & SMITH LTD

Charlie Grant
5540230let

RESOURCE MANAGEMENT ACT 1991

APPLICATION FOR RESOURCE CONSENT UNDER SECTION 88 OF THE ACT

To:	Nelson City Council P O Box 645 NELSON
Applicant:	KB Quarries Ltd
Proposal:	To extend the earthworks approved as part of subdivision consent 950361 and shown on Plan 3663 Issue 1 Sheet 2 of 3 to the layout shown on the Concept Plan attached 5A. The earthworks will be undertaken between 1 September 1998 and 1 September 2000.
Location:	Princes Drive, Observatory Hill, Nelson.
Resource Consents:	To undertake Earthworks in excess of 1.2 metres in depth. To erect various temporary silt control measures in watercourse as part of Erosion and Silt Control Plan and a permanent Stormwater Detention Dam (yet to be finally designed) as generally shown on the attached plan.
Information Attached:	The following information is submitted with this application: Copy of Concept Plan overlain with Earthwork Locations. Report / Assessment of Effects
Application Fee:	Please invoice on completion.

.....

Dated this 18 th day of August 1998

Address for Service Staig & Smith Limited
P O Box 913
NELSON

Phone: 548 4422
Fax: 548 4427

5540435.DOC

PPR 125200
125201
125202

NELSON CITY COUNCIL

PO BOX 645 NELSON NEW ZEALAND PHONE 03-546 0200 FAX 03-546 0239

GST REG No. 10-730-295
Cust No. RM995129

20/10/99

KB Quarries
C/- Staig & Smith Ltd
P O Box 913
Nelson 7015

Tax Invoice 53386

Qty	Description	Rate	Amount
	349 PRINCES DR Extend the time frame for the completion of the detention pond for consent 985372		
	Processing Resource Consent		
0.70	Consents Administrator	40.00	28.00
2.80	Resources Officer - Soil & Water	65.00	182.00
	Monitoring Fee		57.78
	Insurance		8.89
	Sub Total		276.67
	GST		34.58
	Total		$311.25

KB Quarries 20/10/99 RM995129 /53386 311.25

* See Don

PROCESSED

RESOURCE CONSENT MONITORING

LOCATION: 349 Princes

RESOURCE CONSENT NUMBER: 995129 DATE GRANTED: 14/10/99

APPLICANT: KB Quarries

OWNER: CONTACT NO:

INSPECTION DUE: 1/01

BUILDING CONSENT ISSUED: YES/NO BC No:

Extend the time frame for the completion of the detention pond for consent 985372

CONDITIONS COMPLETED:	YES	☑	NO	☐
FURTHER INSPECTION REQUIRED:	YES	☐	NO	☑

FURTHER INSPECTION DUE:

COMPLETED

DETAILS OF SITE INSPECTION:

Checked with Don Ballagh. All conditions met.

1/12/00

Signed: J R Higgs Date: 1/12/00

CONDITIONS COMPLETED: YES ☐ NO ☐

FURTHER INSPECTION REQUIRED: YES ☐ NO ☐

FURTHER INSPECTION DUE: _____

DETAILS OF SITE INSPECTION:

_____

_____

_____

_____

_____

_____

CONDITIONS COMPLETED: YES ☐ NO ☐

FURTHER INSPECTION REQUIRED: YES ☐ NO ☐

FURTHER INSPECTION DUE: _____

DETAILS OF SITE INSPECTION:

_____

_____

_____

_____

_____

Signed: _____ Date: _____

Conditions
imposed pursuant to Section 108 of the Act:
a) The activity shall be carried out in accordance with the application, the plans submitted with the application.
Reasons for Decision
Although this consent is granted retrospectively the applicant had consulted regularly with Council during the construction period April to August 1999 and has implemented all measures necessary to mitigate potential adverse effects to Council's satisfaction.
The effects of the change to condition (i) are considered to be negligible.
This letter deals with certain Resource Management aspects of this proposal only and in no way indicates that the application satisfies the requirements of the Building Act 1991 with respect to drainage, retaining walls or any other structure subject to a consent pursuant to the Building Act 1991.
If a building consent is required and you have not already done so, you should now apply for a building consent and await confirmation or otherwise that your proposal meets building code requirements.
If you already have a building consent and have been issued a Section 35 notice under the Building Act 1991, please check with a Consents Administrator to see if you may begin work on your
use up + down arrow keys X to return to main enquiry

Resource Consent	985372
Applicant	KB Quarries Ltd : RM985372 Bal $ 0.00
Address	C/- Staig & Smith Ltd : P O Box 913 : Ne
Phone	5484422 : Fax 5484427
Consultant	
Type(s) & overseer(s)	DI : LAND USE : DISTURBANCE DON BALLAGH

Notified?	N Hearing reqd? N
Proposal	Undertake earthworks in excess of 1.2m in depth & erect various temporary silt control measures
New LT/DP(s)	BC
Valuation No	1970015228 Parcel No 125200 3-linKs
Owner	K B QUARRIES LTD
Location	349 PRINCES DR
Legal	LOT 2 DP18187
Plan/Zone	Appeal exp
Status	DECISION NOTIFIED 29/12/98 8/02/99
Status Note	S/C
Decision	GRANTED BY DON BALLAGH 26/11/98
Conditions?	Y Monitoring? Y Process Days 10

<enter> to exit or O for Options

File Ref: 995129
Bishopdale Properties
When calling
Please ask for: D Ballagh
Direct Dial Phone: 03 546 0275
Email: dballagh@ncc.govt.nz

NELSON CITY COUNCIL

PO BOX 645 NELSON NEW ZEALAND PHONE 03-546 0200 FAX 03-546 0239

15 October 1999

K B Quarries
C/- Staig & Smith Ltd
P O Box 913
NELSON

Attention: J Bannock

Dear Sir

Notice of Decision - Resource Consent Application : 995129
Section 88 of the Resource Management Act 1991

Applicant: **K B Quarries Ltd**

Owner: **Bishopdale Potteries Ltd**

Property: **PT Section 11 Suburban South contained within CT 3C/594**

Land Use Consent: **(Discretionary Activity)**

This application to change constitution (i) of Resource Consent 985372 to extend the date of completion of the stormwater detention pond to 30 August 1999 was not publicly notified because the written consent of those persons considered to be potentially adversely affected was obtained, and any adverse effects on the environment were considered to be minor.

On **14 October** the Resource Officer (Soil & Water), acting under delegated authority, **GRANTED** consent to your application pursuant to Sections 104 and 105 of the Act.

This application is granted subject to the following conditions imposed pursuant to Section 108 of the Act:

a) The activity shall be carried out in accordance with the application, the plans submitted with the application.

Reasons for Decision

Although this consent is granted retrospectively the applicant had consulted regularly with Council during the construction period April to August 1999 and has implemented all measures necessary to mitigate potential adverse effects to Council's satisfaction.

The effects of the change to condition (i) are considered to be negligible.

This letter deals with certain Resource Management aspects of this proposal only and in no way indicates that the application satisfies the requirements of the Building Act 1991 with respect to

drainage, retaining walls or any other structure subject to a consent pursuant to the Building Act 1991.

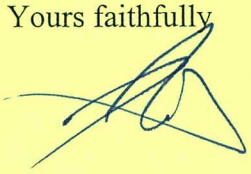
If a building consent is required and you have not already done so, you should now apply for a building consent and await confirmation or otherwise that your proposal meets building code requirements. If you already have a building consent and have been issued a Section 35 notice under the Building Act 1991, please check with a Consents Administrator to see if you may begin work on your proposal.

Please find enclosed an invoice of the costs incurred in processing this application. If your invoice shows a refund due to you, a cheque will be sent out under a separate cover.

A monitoring charge has been included in your invoice as conditions of consent requiring monitoring have been imposed. This charge covers one visit to monitor compliance with consent conditions. This visit will be conducted at the end of the timeframe stated in Condition (b) of this consent. Where additional monitoring visits are required to determine that conditions have been met these will be charged at the rate of $45 (inclusive of GST) for each additional visit.

If you have any enquiries please contact Don Ballagh - Resource Officer on (03) 546 0275.

Yours faithfully



for J S Pattison
Applications Supervisor

Planning And Consents Division

Applicant: K. B. Quarries Ltd.

Resource Consent No: 995129

Property: Pt Section 11 Suburban South CT 3C/594

This resource consent application _____ (discretionary / non-complying activity) relates to:

Varying condition (1) of Resource Consent 985372 to extend the date of completion of the Stormwater detention pond

Report on the Non-notification of this application:

The provisions of Section 93 and 94 of the Resource Management Act 1991 were considered with regard to the public notification of this application. It was determined that public notification was not necessary for the following reasons:

- The adverse effects on the environment from the granting of this consent were deemed to be minor.
- The applicant liased closely with Council and undertook all measures necessary to avoid/remedy potential adverse effects while the dam was under construction.
- No written approvals were required by the Council (as Consent Authority) as no persons were identified as being adversely affected by the granting of this resource consent.
- Written approvals were obtained from all those persons who may be adversely affected by the granting of this consent. No account was taken of the adverse effects on these persons (pursuant to section 94(4) of the Resource Management Act 1991).

DATED this 19th day of October 1999

Applications Supervisor / ~~Divisional Manager Planning & Consents~~ / ~~Chief Executive~~

WITH COMPLIMENTS:

Resource Consents
Nelson City Council
PO Box 645
Nelson

Attention: D. Ballagh.

12/10/99
5540

RECEIVED
13 OCT 1999
Nelson City Council

RESOURCE MANAGEMENT CONSULTANTS

STAIG & SMITH LIMITED

Don,

Please find attached the consent from Bishopdale Potteries Ltd for the extension of the earthworks consent.

Will forward Stacks as soon as able.

P.S. Stacks just given this to me - also attached.

NELSON OFFICE
MAITAI HOUSE
16 PARU PARU RD
PO BOX 913 NELSON
PHONE 0-3-548 4422
FAX 0-3-548 4427

MOTUEKA OFFICE
24 TUDOR ST
PO BOX 278
MOTUEKA
PHONE 0-3-528 7089
FAX 0-3-528 7086

SURVEYORS · PLANNERS · ENGINEERS · MANAGERS

Nelson City Council
Written Approval Form
(Person(s) likely to be affected)

K B Quarries Ltd (Applicants Name) has applied to the Nelson City Council for a resource consent to extend the time to complete the detention pond as located and detailed in the attached plans. Full details of the proposal were attached in original consent.

To be completed by person or organisation giving consent

Full name	Bishopdale Potteries Ltd			
Position	Property Manager – Louise Gibbons			
Contact Address	P O Box 7004 Nelson			
Daytime telephone				
I am the	Owner	☑	Occupier	☐
Legal Description				

I hereby acknowledge:

1. I have been **shown a copy of the above application, and assessment of the effects on the environment**; and
2. I have been shown and **have signed a copy of the site plan**, or other relevant plan or drawing; and
3. I do not oppose the proposed development and give my written approval in terms of the provisions of the Resource Management Act 1991; and
4. I authorise the applicant to give this written approval to the Nelson City Council; and
5. **I understand** that in considering the application the Council will not take into account any actual or potential effect on my interest with respect to this proposal

IT IS NOT APPROPRIATE TO IMPOSE CONDITIONS ON THIS FORM.

IF YOU ARE UNCERTAIN – DO NOT SIGN – CONTACT THE PLANNING AND CONSENTS DIVISION (03) 546 0200

Signed: _____ Date: 11.10.99

Signed: _____ Date: _____

Signed: _____ Date: _____

Nelson City Council
Written Approval Form
(Person(s) likely to be affected)

K B Quarries Ltd (Applicants Name) has applied to the Nelson City Council for a resource consent to extend the time to complete the detention pond as located and detailed in the attached plans. Full details of the proposal were attached in original consent.

To be completed by person or organisation giving consent

Full name	Stuart Cadby Slack
Contact Address	65 Douglas Road Nelson
Daytime telephone	(03) 548 6210
I am the	Owner ☑ Occupier ☐
Legal Description	Lot 2 Pt Sec 18 Suburban South District

I hereby acknowledge:

1. I have been **shown a copy of the above application, and assessment of the effects on the environment**; and
2. I have been shown and **have signed a copy of the site plan**, or other relevant plan or drawing; and
3. I do not oppose the proposed development and give my written approval in terms of the provisions of the Resource Management Act 1991; and
4. I authorise the applicant to give this written approval to the Nelson City Council; and
5. **I understand** that in considering the application the Council will not take into account any actual or potential effect on my interest with respect to this proposal

IT IS NOT APPROPRIATE TO IMPOSE CONDITIONS ON THIS FORM.

IF YOU ARE UNCERTAIN – DO NOT SIGN – CONTACT THE PLANNING AND CONSENTS DIVISION (03) 546 0200

Signed: Stuart Cadby Slack Date: 10-10-99

Signed: _____ Date: _____

Signed: _____ Date: _____

Don Ballagh

From: Rod Witte
Sent: Wednesday, 28 July 1999 18:21
To: Robin Frengley
Cc: John Pattison; Michael Schruer; Ian Wheeler; Don Ballagh
Subject: KB Quarries - 224 certificate

Spoke with Steve Odinot, Staig and Smith. Explained that s224 RMA requires me or other authorised officer to certify to the DLR (District Land Registrar) that all condition have been met or bonds are in place to cover them. As the condition re piping clearly has not been met, I'm not about to lie to the DLR and so they don't get their 224 until either the work is done or a bond is in place.

Steve will be applying for a bond tomorrow, when in place and all other conditions met we issue the 224, they will then in due course apply under s127 RMA for a change or cancellation of the condition.

It is very important for all subdivision and especially these big ones with potential major effects if there are dam or stormwater failures that everything is completely in order in terms of documentation.

CITY ENGINEER'S DEPT.
NELSON
CALCULATION SHEET

Title .....

Job No .....
Calc'd By .....
Check'd By .....

Page No. .....
Date .....
Date .....

12-7-99

KB Quarries - ~~Detention~~ Dam

Don

Dugald

Can you please have a look at this T+T report and jot down any concerns or questions.
I would like to get back to Sts/T+T by the end of week (I will set up a meeting for us 3 on Friday?)
Any else you think should have input please let me know ASAP

1. Spillway scour protection
2. Rock slope stability
3. Access to clean sediment.

Thanks

Shane

(For your file) Don Ballagh 9853/6

TONKIN & TAYLOR LTD. ENVIRONMENTAL & ENGINEERING CONSULTANTS

☐ AUCKLAND PO BOX 5271 19 MORGAN ST NEWMARKET	PH 64-9-355 6000	FAX 64-9-307 0265
☐ CHRISTCHURCH PO BOX 13 055 155 KILMORE ST	PH 64-3-353 4400	FAX 64-3-353 4401
☐ HAMILTON PO BOX 9544 26 LIVERPOOL STREET	PH 64-7-834 1238	FAX 64-7-834 1229
☑ WELLINGTON PO BOX 12 152 109 FEATHERSTON STREET	PH 64-4-470 5700	FAX 64-4-472 6977
☐ WHANGAREI PO BOX 1261 30 RUST AVENUE	PH 64-9-438 9055	FAX 64-9-430 0436

TELEFAX

TO:	Nelson City Council	YOUR FAX NO:	03 546 0239
ATTENTION:	Mike Schruer	OUR REF:	81069
FROM:	Bruce Symmans	REPLY FAX NO:	64-4-472-6977
PAGE 1 OF 6		DATE:	8 Jul 1999
CC:			

IF YOU DO NOT RECEIVE ALL PAGES CONTACT US IMMEDIATELY

Tasman Heights Subdivivson Detention Dam

Mike

Please find attached Design Statement and signed Construction drawings for the tasman Heights Subdivision detention dam. Originals and supporting calculations will be couriered to you tomorrow.

If you have any queries please contact the under signed.

Thanks

Bruce Symmans

All the information in this message is confidential, intended only for the above named person(s). If you are not the intended recipient, you may not use any material in this message nor pass it on to others. Please notify us promptly of your having received this message in error. (Call collect to the person and number above) and destroy the original message. Thank you.

08/07 '99 17:09 FAX 64 4 4993552 TONKIN & TAYLOR LTD WGTN 001/006

TONKIN & TAYLOR LTD. ENVIRONMENTAL & ENGINEERING CONSULTANTS
44 HALIFAX STREET NELSON NEW ZEALAND
PO BOX 1009 NELSON NEW ZEALAND
PH 64-3-546 6339 FAX 64-3-546 7618

Our Ref: 81069
08 July 1999

Staig & Smith Ltd
P O Box 913
NELSON

Attention: Mr John Bannock

Dear Mr Bannock

TASMAN HEIGHTS SUBDIVISION, STORMWATER DETENTION DAM

1.0 Introduction

Please find attached a signed set of construction drawings and calculations for the above detention dam.

Tonkin & Taylor Ltd have designed the dam structure and associated hydraulic structures. The design of the stilling basin and pipe work downstream of the dam is to be completed by others.

Tonkin & Taylor Ltd have not specifically investigated the stability in the event of rapid drawdown of the slopes in the storage area. The consequences of any slope movement in the storage area following rapid drawdown is considered to be minor.

2.0 Design Philosophy

The detention dam is designed to throttle flow and limit the outflow to less than the critical peak flow for the pre-development catchment for 5, 15 and 50-year return period storms.

The critical pre-development peak flow for the catchment for each return period is calculated using the storm duration that approximately equates to the time of concentration for the catchment. For this catchment, the pre-development time of concentration is calculated to be 40 minutes.

The detention dam is designed with the additional storage capacity to take the redirected flow from the catchment to the east. This is to allow for the future development of the eastern

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catchment. If in the future the flow from the eastern catchment is diverted, the inlet sizes to the hydraulic structures will need to be modified accordingly.

The dam will have 1.0 m freeboard in a 50-year return period storm.

The emergency overland spillway is designed to take a Probable Maximum Flood from both catchments without overtopping the dam. Such a safety margin is unusual for a small dam of this magnitude.

3.0 Construction

Tonkin & Taylor Ltd will inspect the foundation conditions. Staig & Smith will be responsible for the compaction testing of the dam fill and construction observation of the pipe work. The fill placement and compaction specification is to be the same as that used for the Tasman Heights Stage 1 subdivision (T&T ref 81069).

Tonkin & Taylor Ltd shall confirm the spillway location and batter gradients on site following assessment of ground conditions during excavation.

If you have any queries, please contact Mr Mark Foley or Mr Bruce Symmans from our Nelson and Wellington offices respectively.

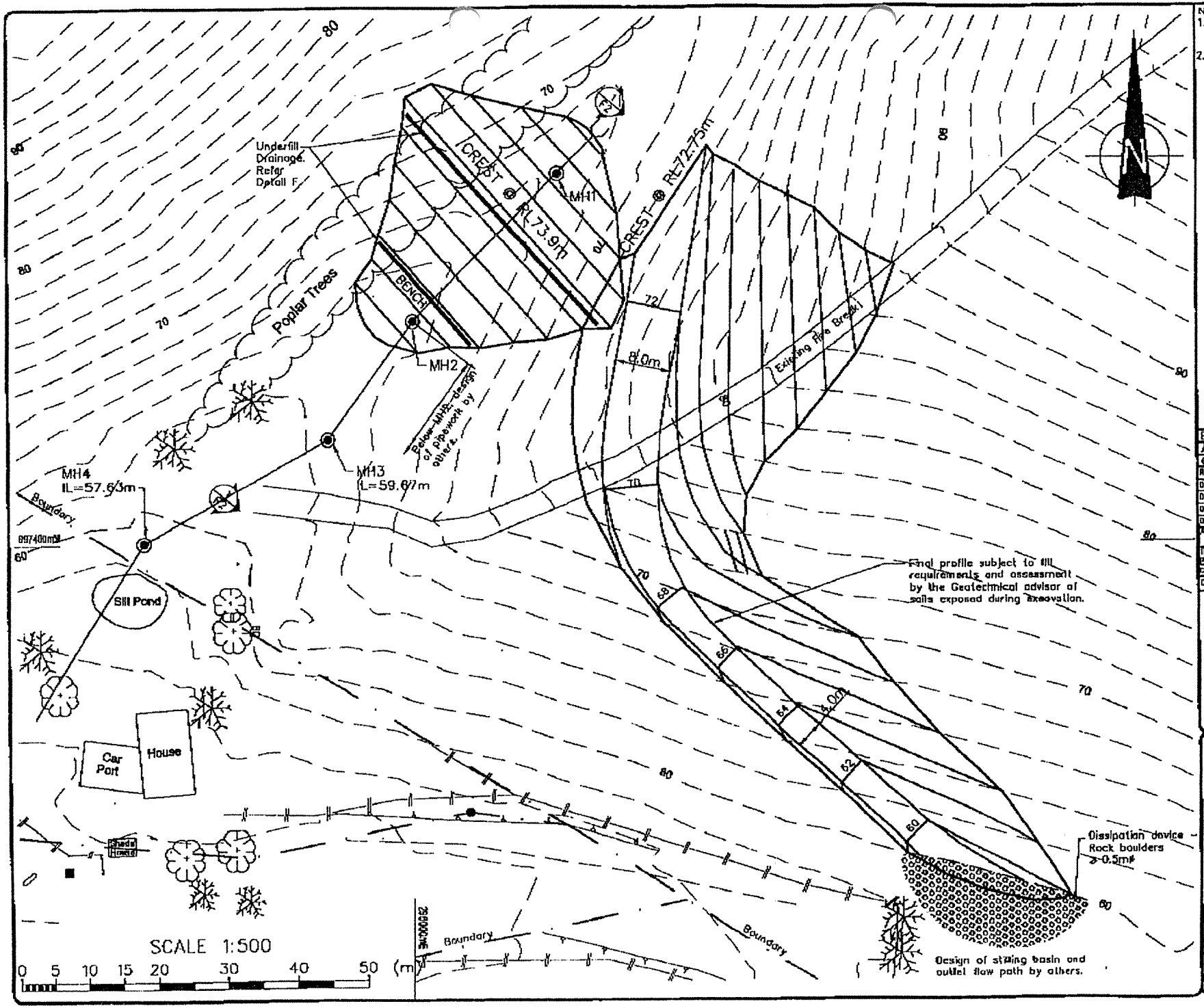
Yours faithfully
TONKIN & TAYLOR LTD

Gary Smith
Project Coordinator

Prepared by: Bruce Symmans

Attachments: Construction Drawing
Hydraulic & Stability Calculations

8-Jul-99
GS:BS:jsmp
\\TTW\VOL1\USERS\TYPE\81069\DetDam.doc



NOTES :
1. All dimensions are in millimetres U.N.O.
2. Design of stilling basin and outlet flow path by others.

REVISION DESCRIPTION	BY	DATE
B Various notes.	BS	7/99
A Construction Issue	BS	6/99
0 First Issue		
DESIGNED	BSS	4/99
DRAWN	DS	5/99
DESIGN CHECKED	[illegible]	[illegible]
DRAFTING CHECKED	[illegible]	[illegible]
APPROVED	[illegible]	

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CAD FILE : 81069001

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ENVIRONMENTAL & ENGINEERING CONSULTANTS
WELLINGTON 109 FEATHERSTON ST
AUCKLAND HAMILTON
CHRISTCHURCH WHANGAREI

STAIG & SMITH

STORMWATER DETENTION DAM

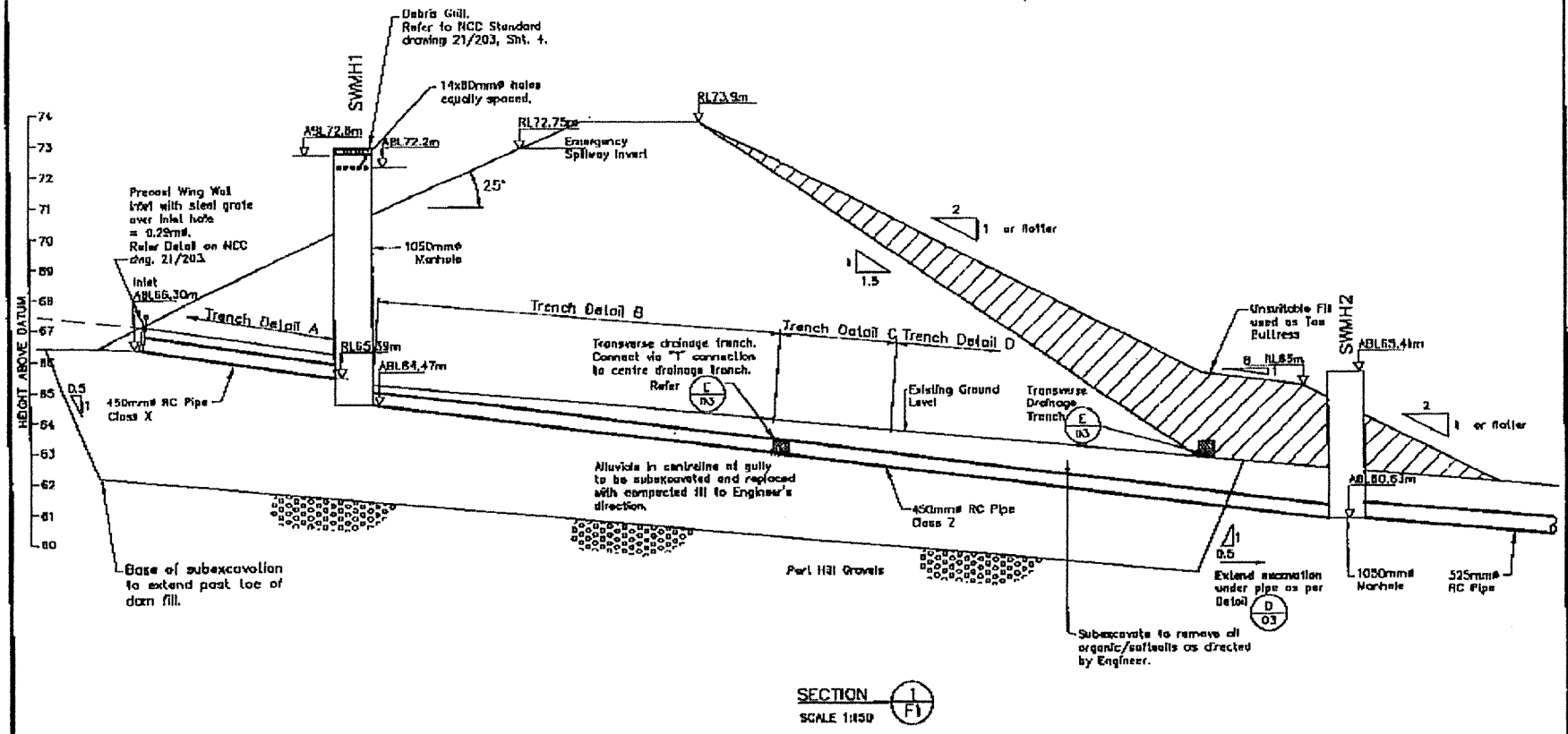
TASMAN HEIGHTS SUBDIVISION
NELSON

Site Location Plan

SCALES (AT A3 SIZE) 1:500
DWG. No. 81069.01
REV. B

08/07 99 17:10 FAX 64 4 4993552 TONKIN & TAYLOR LTD WGTN 004/006

005/006
TONKIN & TAYLOR LTD WGTN
04 499 0002 FAX 04 499 0001 17:10 08/07/98



SECTION 1/F1

SCALE 1:150

SCALE 1: 150

0 1.5 3 4.5 6 9 12 15 (m)

NOTES :
1. All dimensions are in millimetres U.N.O.
2. ABL = As Built Level
3. For details of the earthworks subsoil drainage, and pipework, refer to Tasman Heights Stage 1 Specifications.

REVISION	DESCRIPTION	BY	DATE
B	Crest level & notes	BS	7/98
A	Construction issue	BS	6/98
0	First issue		
DESIGNED		BS	4/98
DRAWN		DS	6/98
DESIGN CHECKED		[illegible]	[illegible]
DRAFTING CHECKED		[illegible]	[illegible]
APPROVED			

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WELLINGTON 108 FEATHERSTON ST
AUCKLAND HAMILTON
CHRISTCHURCH WHANGAREI

STAIG & SMITH

STORMWATER DETENTION DAM

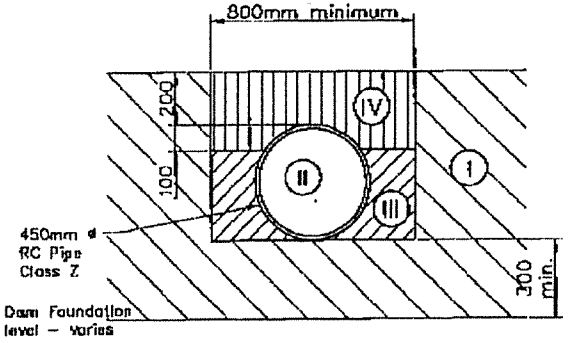
TASMAN HEIGHTS SUBDIVISION
NELSON

Cross Section A–A

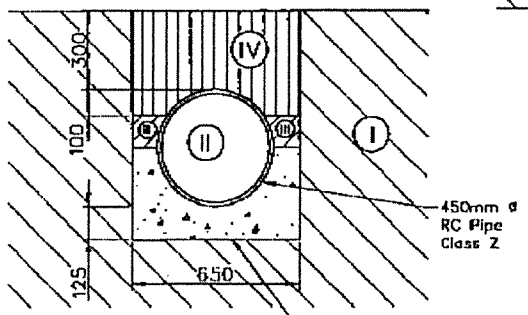
SCALES (A1 AS SIZE)
1:150

DWG. No. 81069.02

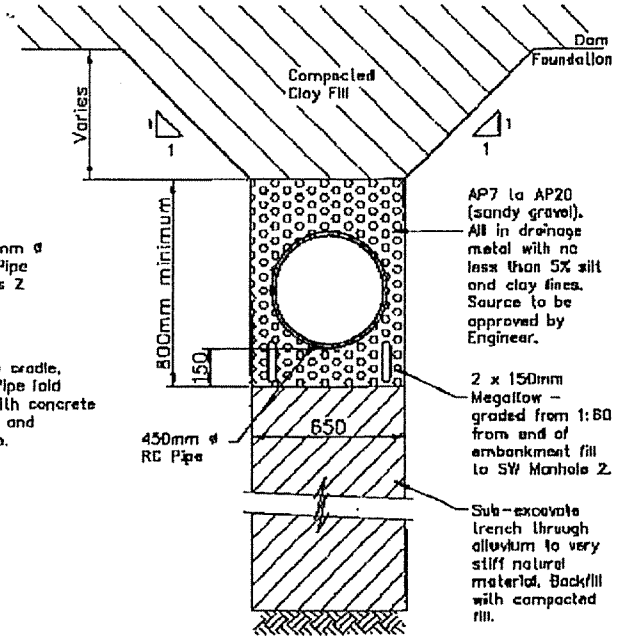
REV. B



CENTRE TRENCH
DETAIL A/F2
SCALE 1:20



CENTRE TRENCH
DETAIL B/F2
SCALE 1:20



CENTRE TRENCH
DETAIL D/F2
SCALE 1:20

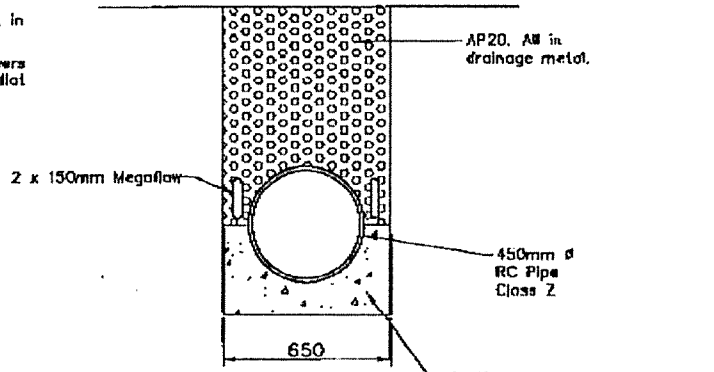
CONSTRUCTION SEQUENCE :

(I) Strip vegetation and compact dam embankment up to 200mm above crown of pipe.

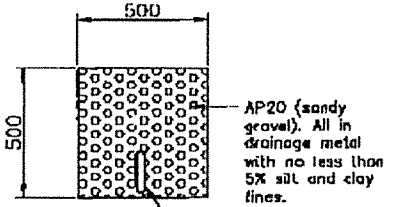
(II) Excavate pipe trench to bedding level, if additional bedding is required use compacted clay fill. Lay pipe at grades shown on drawings.

(III) Place fill around pipe and hand tamp to compact, in layers no greater than 100mm.

(IV) Fill trench. Fill to be placed and compacted in layers no greater than 150mm, and compacted using a flat vibrating plate compactor or roller.



CENTRE TRENCH
DETAIL C/F2
SCALE 1:20



SECTION E/F2
SCALE 1:20

SCALE 1:20
0 0.2 0.4 0.6 0.8 1.2 1.6 2.0 (m)

NOTES :
1. All dimensions are in millimetres U.N.O.

REVISION DESCRIPTION	BY	DATE
A Construction Issue		5/99
0 First Issue		
DESIGNED	BSS	4/98
DRAWN	DS	5/98
DESIGN CHECKED		
DRAFTING CHECKED		
APPROVED		

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WELLINGTON 108 FEATHERSTON ST
AUCKLAND HAMILTON
CHRISTCHURCH TAURANGA

STAIG & SMITH

STORMWATER DETENTION DAM

TASMAN HEIGHTS SUBDIVISION
NELSON

Trench Details

SCALES (AT A3 SIZE)
1:20
DWG. No. B1069.03
REV. A

TONKIN & TAYLOR LTD. ENVIRONMENTAL & ENGINEERING CONSULTANTS
44 HALIFAX STREET NELSON NEW ZEALAND
PO BOX 1009 NELSON NEW ZEALAND
PH 64-3-546 6339 FAX 64-3-546 7619

Our Ref: 81069
08 July 1999

Staig & Smith Ltd
P O Box 913
NELSON

Attention: Mr John Bannock

Dear Mr Bannock

TASMAN HEIGHTS SUBDIVISION, STORMWATER DETENTION DAM

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REDOC REGISTERED SUPPLIER ISO 9001

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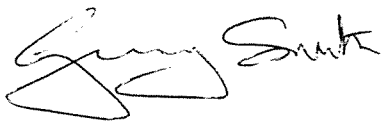
Yours faithfully
TONKIN & TAYLOR LTD



Gary Smith
Project Coordinator

Prepared by: Bruce Symmans

Attachments: Construction Drawing
Hydraulic & Stability Calculations

8-Jul-99
GS:BS:js:ap
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TASMAN HEIGHTS SUBDIVISION

STORMWATER DETENTION DAM SUPPORTING CALCULATIONS

REFERENCE NUMBER: 81069

APRIL 1999

CALCULATIONS PREPARED BY: BS
TONKIN & TAYLOR LTD

CONTENTS

SECTION			page
1	.....	Design Requirements	1
2	.....	Catchment/Hydrology Calculations.....	3
3	.....	Pond Storage Calculations	8
4	.....	Inflow Calculations	10
5	.....	Storage Modelling & Orifice Sizing.....	12
6	.....	Pipe Size Calculations	19
7	.....	Overland Spillway Calculations.....	21
8	.....	Stability Calculations	25

DESIGN REQUIREMENTS

In summary, therefore, the previous subdivision of 25 lots, together with this application of 49 residential lots, will give a credit of 12 lots to develop before a further water contribution will be imposed.

At the date of the original application (of 28 August 1998), a contribution of $1,580/lot, after the 12 lot credit is used up, would be imposed at a future subdivision application. This will be increased by the CCI Index current at that time.

5. **Sewer**

Full sewer reticulation, complete with any necessary manholes and a connection to each lot shall be provided.

The layout of sewers across filled land will require specific design to ensure the pipes do not suffer settlement. Across any fill, it should be laid on a bench to allow for future maintenance.

6. **Stormwater**

Full stormwater reticulation, complete with all necessary manholes, sumps, inlets, connections to each lot, and discharging to an approved system shall be provided.

Kerb entries are not permitted.

The proposal will increase the runoff in Maire Stream through two mechanisms:

- runoff from developed urban land is more intense than rural land
- stormwater is being diverted out of its natural catchment into the stream

The developer shall be required to assess the adequacy of the Maire Stream to carry, without damage, a 15 year return period flow from the developed catchment with 400mm freeboard and carry out upgrading work to meeting this standard. As a minimum the following shall be considered.

- adequate channel area and culvert sizes
- flow velocities and erosion potential
- air entrainment
- super elevation on curves
- increased erosion potential at culvert inlets, outlets and on curves

Requirements

The alternative is to construct a detention dam with sufficient storage to provide 800mm freeboard and restrict the 5 year and 15 year runoff from the developed catchment to the same discharge rate that occurred prior to development.

The spillway shall be sized to safely pass the Probable Maximum Flood for the catchment.

Vehicle access would be required to the intake for maintenance purposes.

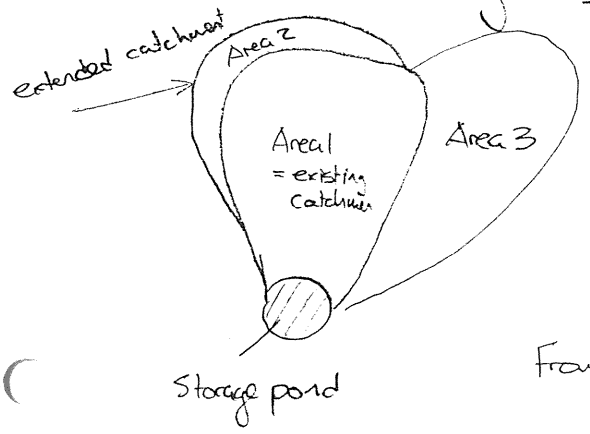
Engineer's Certificate of Design and Construction Standards.

Stormwater shall be piped through Lot 3, DP14084, and down the road reserve until it enters private property at 57 Douglas Road.

CATCHMENT/HYDROLOGY CALCULATIONS

Storm water detention Dam

Catchment Analysis Plan



Area 1 = Existing Catchment
Area 2 = Extended Catchment due to development 1999
Area 3 = future developable catchment

From Survey Plan Area (1) = 121,000 m²
Area (2) = 67,000 m²
Area (3) = 83,200 m²

Time of Concentration (TC)

$$Tc = \frac{107\, n^2 \sqrt{L}}{5\sqrt{S}} \quad \text{mins}$$

where Tc = time of travel
n = Hortons values for surface
L = length of flow in metres
S = slope of surface as %

Due to differing grades down the catchment - break into 3 sections

A) L_{Horz} = 270m @ 10.9° = 19.25%
$L = \frac{270}{\cos 10.9}$ = 275m
L_A = 255 @ 19.25%

B) Gradient = $\frac{30}{70.5}$ = 42.5% = 23°
$L = \frac{70.5}{\cos 23}$ = 76.6m
L_B = 76.6 @ 42.5%

C) Gradient = $\frac{14}{129}$ = 10.8% = 6.2°
$L = \frac{129}{\cos 6.2}$ = 130m
L_C = 130m @ 10.8%

Hortons Value ⇒ use n = 0.035 - poorly grassed surface

→ will not be greatly affected by development as majority of the flow path will be through gully which will not be lined or piped.

$$T_{C_A} = \frac{107 \times 0.035 \times \sqrt[3]{275}}{\sqrt[5]{19.25}} = 13.5 \text{ mins}$$

$$T_{C_B} = \frac{107 \times 0.035 \times \sqrt[3]{76.6}}{\sqrt[5]{42.5}} = 7.51 \text{ mins}$$

$$T_{C_C} = \frac{107 \times 0.035 \times \sqrt[3]{130}}{\sqrt[5]{10.8}} = 18.97 \text{ mins}$$

$\therefore T_C = 13.5 + 7.51 + 19$

$= 40 \text{ mins}$

Calculate Allowable Flow Rates

From NCC development manual ~~sketch~~ 21/201 attached

$T_C = 40 \text{ mins}$

15 year Return period = 58 mm/hr

5 year Return period = 40.6 mm/hr

50 year Return Period = 69 mm/hr

Use $C = 0.5$ for undeveloped catchment with 5-15 years return period and $C = 0.6$ for 50 return period because due to initial ground saturation in larger intensity more flow runs off & less % of ponding will occur

a Use $C = 0.7$ for [illegible]

$\therefore$ Pre development flows

Existing catchment Area (1)

Existing flows Area (1)

$A = 121{,}000\ m^2$

$\therefore$ 5 year $Q = \frac{0.5 \times 40.6 \times 121\,000}{1000 \times 3600} = 0.68\ m^3/s$ $Q_{(1)\,5yr} = 0.68\ m^3/s$

15 year $Q = \frac{0.5 \times 58 \times 121000}{1000 \times 3600} = 0.97\ m^3/s$ $Q_{(1)\,15yr} = 0.97\ m^3/s$

50 year $Q = \frac{0.6 \times 69 \times 121000}{1000 \times 3600} = 1.4\ m^3/s$ $Q_{(1)\,50yr} = 1.4\ m^3/s$

Existing flows from future developable catchment Area (3)

5 year $Q = \frac{0.5 \times 40.6 \times 83200}{1000 \times 3600} = 0.47\ m^3/s$ $Q_{(3)\,5yr} = 0.47\ m^3/s$

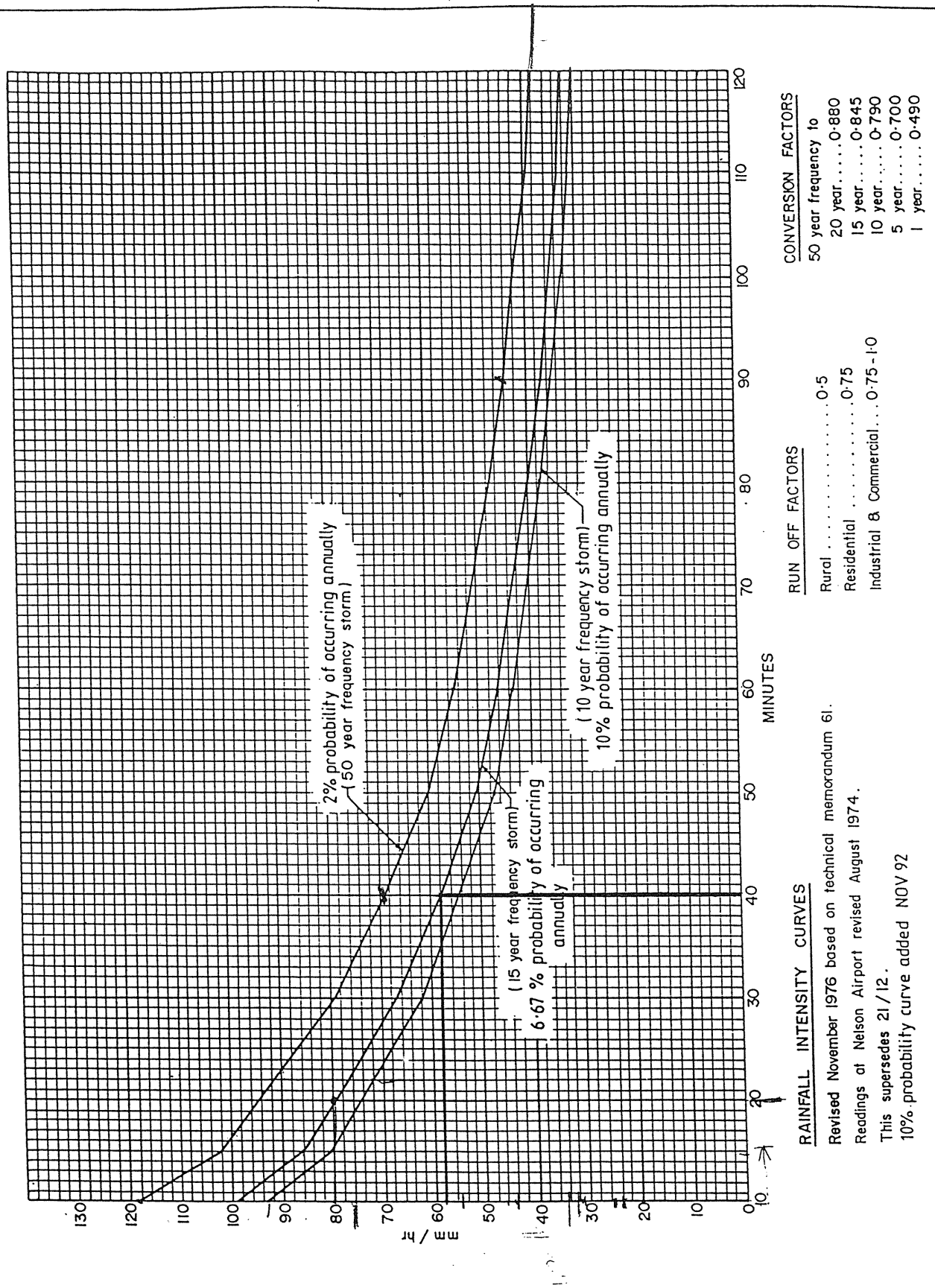
15 year $Q = \frac{0.5 \times 58 \times 83200}{1000 \times 3600} = 0.67\ m^3/s$ $Q_{(3)\,15yr} = 0.67\ m^3/s$

50 year $Q = \frac{0.6 \times 69 \times 83200}{1000 \times 3600} = 0.96\ m^3/s$ $Q_{(3)\,50yr} = 0.96\ m^3/s$

$\therefore$ for fully developed catchment Areas (1)(2) & (3)

allowable Q = 5 year = $0.68 + 0.47 = 1.15\ m^3/s$
15 year = $0.97 + 0.67 = 1.64\ m^3/s$
50 year = $1.4 + 0.96 = 2.36\ m^3/s$

Tasman Heights Extn. Ref 01016



CONVERSION FACTORS

50 year frequency to

20 year..... 0·880
15 year..... 0·845
10 year..... 0·790
5 year..... 0·700
1 year..... 0·490

RUN OFF FACTORS

Rural ..... 0·5
Residential ..... 0·75
Industrial & Commercial... 0·75-1·0

RAINFALL INTENSITY CURVES

Revised November 1976 based on technical memorandum 61.
Readings at Nelson Airport revised August 1974.
This supersedes 21/12.
10% probability curve added NOV 92

NELSON CITY COUNCIL

RAINFALL INTENSITY CURVE

WORKS & SERVICES DEPARTMENT

APPROVED

Galloway 24-8-93

WORKS ENGINEER DATE

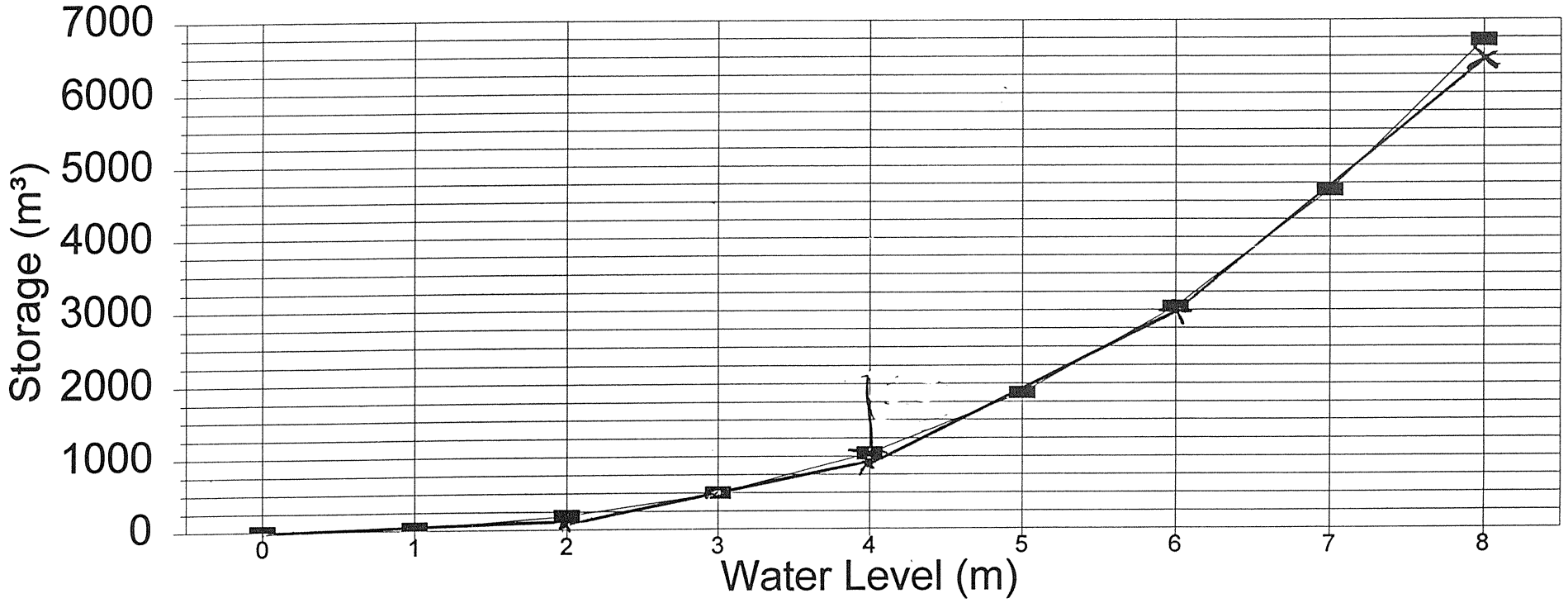
NCC PLAN N°

21/201

POND STORAGE CALCULATIONS

Tasman Heights Detention Dam

Dam Storage



INFLOW CALCULATIONS

Inflow Calculations

areas	1	121000	
	2	67000	
	3	83200	

coefficents	undeveloped 5	0.5
	50year	0.6
	developed	0.75

duration	intensity mm		
Minutes	50 year	15year	5year
60	55	46.475	38.5
90	44	37.18	30.8
120	38	32.11	26.6
150	35	29.575	24.5
180	33	27.885	23.1

inflows m^3/s

area 1&2

undeveloped			developed		
50	15	5	50	15	5
1.11	0.78	0.65	2.15	1.82	1.51
0.89	0.62	0.52	1.72	1.46	1.21
0.77	0.54	0.45	1.49	1.26	1.04
0.71	0.50	0.41	1.37	1.16	0.96
0.67	0.47	0.39	1.29	1.09	0.90

Area ① & ② only

Area1,2&3

undeveloped			developed		
50	15	5	50	15	5
1.87	1.32	1.09	3.11	2.63	2.18
1.50	1.05	0.87	2.49	2.10	1.74
1.29	0.91	0.75	2.15	1.81	1.50
1.19	0.84	0.69	1.98	1.67	1.38
1.12	0.79	0.66	1.86	1.58	1.31

Area ①, ② & ③

STORAGE MODELLING
&
ORIFICE SIZING

DAM STORAGE CALCULATION

Job Ref	81069	Clac	BS
Job Name	Tasman Heights	Date	6-Apr-99

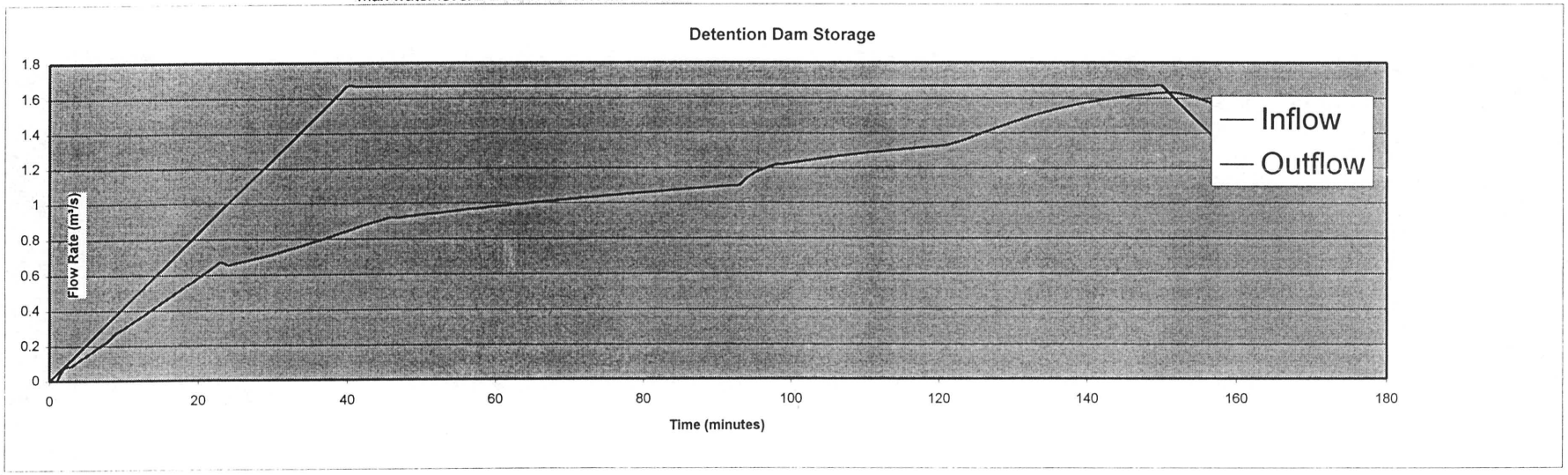
Discription 15 Year Storm , 150 minute duration extended catchment

			Oriface#1		Oriface#2		Wier	
time step	1	mins	D	0.37 m	D	0.3 m	Crest diameter	1.05 m
TD	150	mins	A	0.107521 m²	A	0.070686 m²	effective width	2.638938 m
TC	40	mins	invert level	0 m	invert level	5.9 m	crest level	6.3 m
peak inflow	1.67	m³/s	Cd	0.95	Cd	0.95		

max out flow #1	1.15 m³/s
max out flow #2	0.22 m³/s
max weir flow	0.26 m³/s
Max total outflow	1.63 m³/s
max storage	3871 m³/s
max water level	6.45 m

STORAGE PROPERTIES OF RESERVOIR

Points on Storage Curve	Water Level (m)	Storage (m³)
1	0	0
2	2	190
3	4	1041
4	6	3050
5	8	6717



DAM STORAGE CALCULATION

Job Ref	81069	Clac	BS
Job Name	Tasman Heights	Date	6-Apr-99

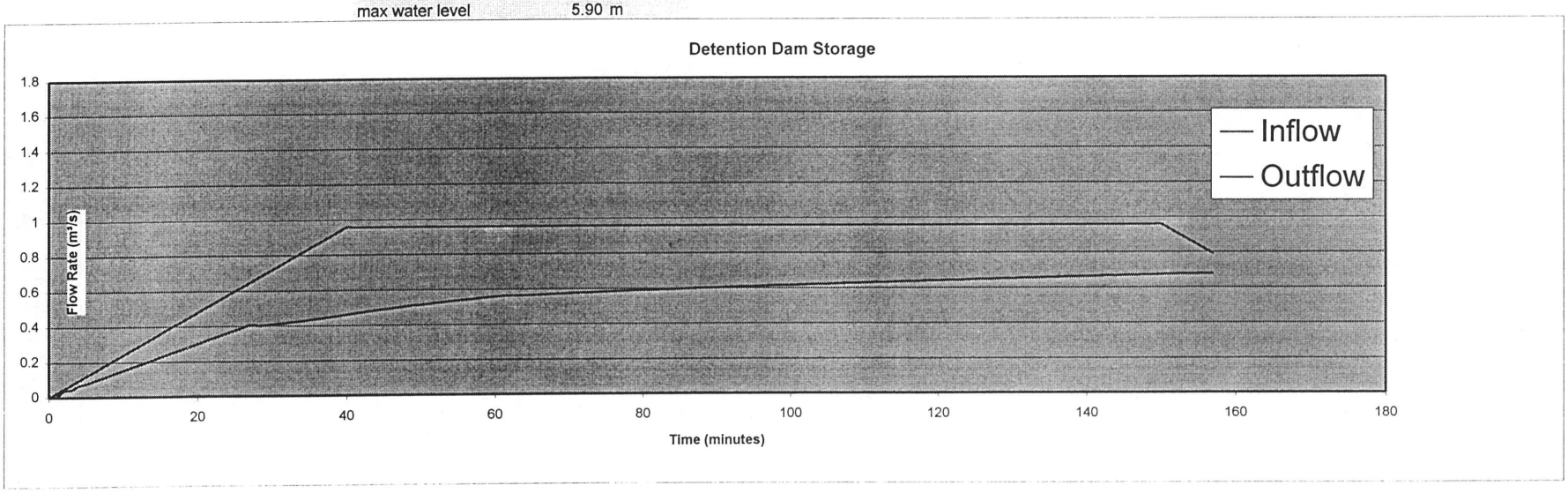
Discription 5 Year Storm , 150 minute duration with high spillway @ 6.3 m

		Oriface#1		Oriface#2		Wier			
time step	1 mins	D	0.29 m	D	0.3 m	Crest diameter	1.05 m		
TD	150 mins	A	0.066052 m²	A	0.070686 m²	effective width	2.638938 m		
TC	40 mins	invert level	0 m	invert level	5.9 m	crest level	6.3 m		
peak inflow	0.959 m³/s	Cd	0.95	Cd	0.95				

max out flow #1	0.68 m³/s
max out flow #2	0.00 m³/s
max weir flow	0.00 m³/s
Max total outflow	0.68 m³/s
max storage	2948 m³/s
max water level	5.90 m

STORAGE PROPERTIES OF RESERVOIR

Points on Storage Curve	Water Level (m)	Storage (m³)
1	0	0
2	2	190
3	4	1041
4	6	3050
5	8	6717



ref 81069

4

DAM STORAGE CALCULATION

Job Ref 81069 Clac BS
Job Name Tasman Heights Date 6-Apr-99

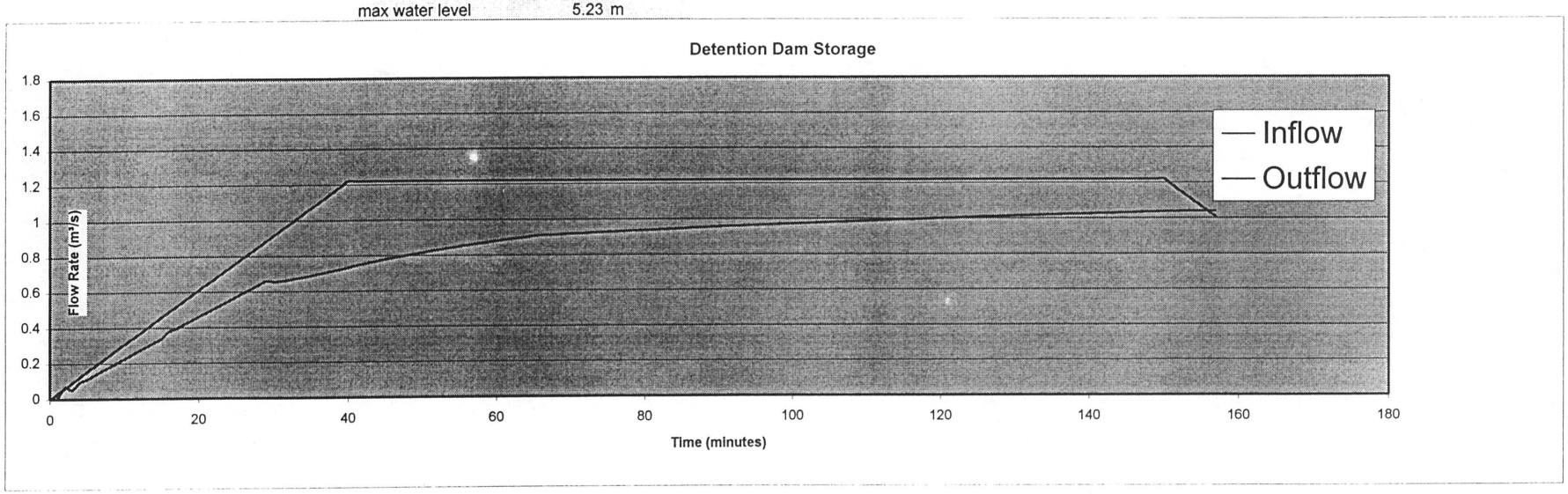
Discription 5 Year Storm , 150 minute duration extended catchment

			Oriface#1		Oriface#2		Wier	
time step	1	mins	D	0.37 m	D	0.3 m	Crest diameter	1.05 m
TD	150	mins	A	0.107521 m²	A	0.070686 m²	effective width	2.638938 m
TC	40	mins	invert level	0 m	invert level	5.9 m	crest level	6.3 m
peak inflow	1.22	m³/s	Cd	0.95	Cd	0.95		

max out flow #1	1.04 m³/s
max out flow #2	0.00 m³/s
max weir flow	0.00 m³/s
Max total outflow	1.04 m³/s
max storage	2277 m³/s
max water level	5.23 m

STORAGE PROPERTIES OF RESERVOIR

Points on Storage Curve	Water Level (m)	Storage (m³)
1	0	0
2	2	190
3	4	1041
4	6	3050
5	8	6717



DAM STORAGE CALCULATION

Job Ref 81069 Clac BS
Job Name Tasman Heights Date 6-Apr-99

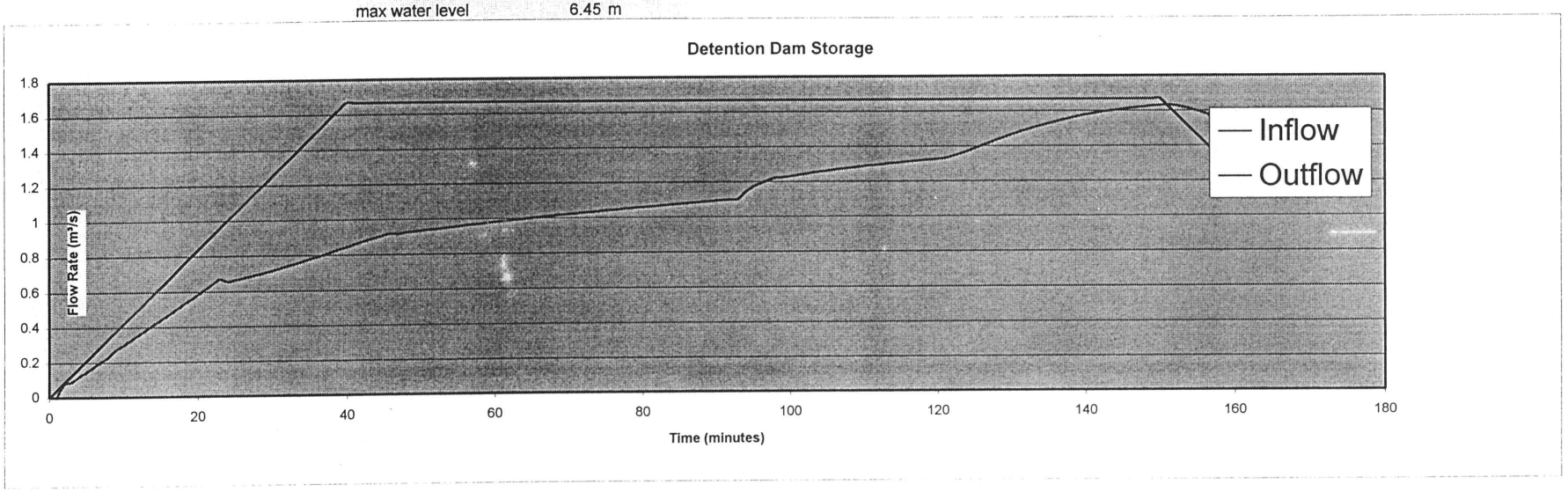
Discription 15 Year Storm , 150 minute duration extended catchment

			Oriface#1		Oriface#2		Wier	
time step	1 mins	D	0.37 m	D	0.3 m	Crest diameter	1.05 m
TD	150 mins	A	0.107521 m²	A	0.070686 m²	effective width	2.638938 m
TC	40 mins	invert level	0 m	invert level	5.9 m	crest level	6.3 m
peak inflow	1.67 m³/s	Cd	0.95	Cd	0.95		

max out flow #1	1.15 m³/s
max out flow #2	0.22 m³/s
max weir flow	0.26 m³/s
Max total outflow	1.63 m³/s
max storage	3871 m³/s
max water level	6.45 m

STORAGE PROPERTIES OF RESERVOIR

Points on Storage Curve	Water Level (m)	Storage (m³)
1	0	0
2	2	190
3	4	1041
4	6	3050
5	8	6717



81069

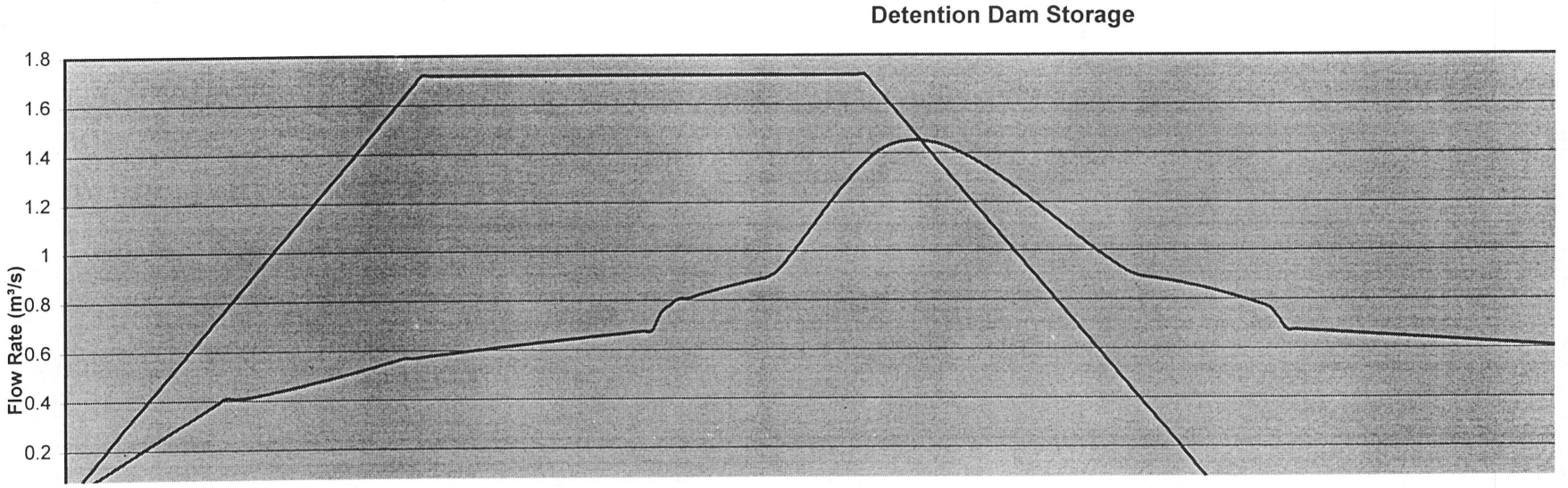
DAM STORAGE CALCULATION

Job Ref 81069 Clac BS
Job Name Tasman Heights Date 6-Apr-99

Discription 50 Year Storm , 150 minute duration with high spillway @ 6.3 m

			Oriface#1		Oriface#2		Wier	
time step	1	mins	D	0.29 m	D	0.3 m	Crest diam	1.05
TD	90	mins	A	0.066052 m²	A	0.070686 m²	effective w	2.638938
TC	40	mins	invert level	0 m	invert level	5.9 m	crest level	6.3
peak inflo	1.72	m³/s	Cd	0.95	Cd	0.95		

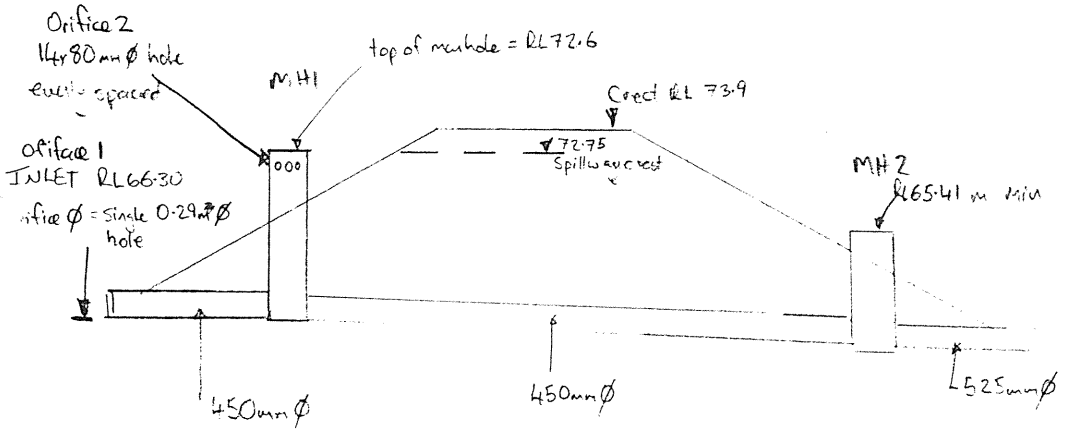
max out flow #1	0.71	m³/s
max out flow #2	0.24	m³/s
max weir flow	0.50	m³/s
Max total outflow	1.45	m³/s
max storage	4057	m³/s
max water level	6.55	m



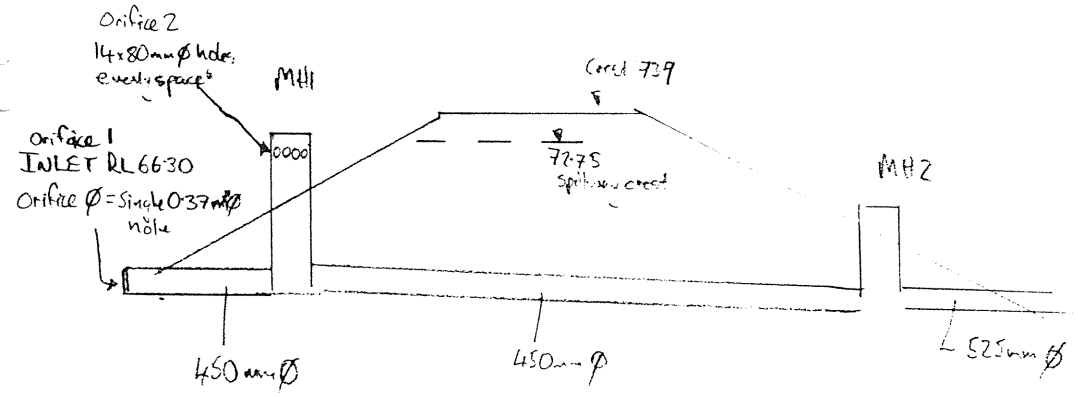
Summary of Hydraulic Modelling

Requirements for Inlet structures & Pipe spillways

Initial Catchment (schematic only not to scale)



Combined Catchment



Conclusion

For extended catchment the orifice on the low inlet/wing wall (ie Orifice 1) needs to be opened up to 0.37 m diameter.

PIPE SIZE CALCULATIONS

Job Nos:	81069
Project:	Tasman Heights Storage Dam
Calc: BS	Date: June 1999
Check:	Date:

Description *Reinforced Cocrete pipes - underlying and down stream of dam* Sheet No: 1

Pipe 1 = Down stream of MH2, Pipe 2 = Between MH1 and MH2, Pipe 3 = Upstream of MH1

Colebrook-White Flow Equation.

Pipe Data			Pipe 1	Pipe 2	Pipe 3
Dia	D	(m)	0.457	0.457	0.533
Rough	K	(mm)	0.60	0.06	0.60
Area	A	(m2)	0.16	0.16	0.22
R Ratio	K/D		0.001313	0.000131	0.001126

Flow Data			Pipe 1	Pipe 2	Pipe 3
Density	R	kg/m3	1000	1000	1000
Fluid Viscos		kgms-1	1E-06	1E-06	1E-06
Flow	Q	m3/s	1.150	1.64	1.64
Mean Velocity		m/s	7.01	10.00	7.35
Reynolds Nos		Re	3E+06	5E+06	4E+06

Friction Factor			Pipe 1	Pipe 2	Pipe 3
f'	Estimate		0.00527	0.00324	0.00507
f	Calculated		0.005268	0.003235	0.005069

Compare With				
f=16/Re	Laminar	5E-06	4E-06	4E-06
f=0.079/Re^.25	Blasius	0.0019	0.0017	0.0018

Head Loss in Pipe			hf=4fl/d * v2/2g Pipe 1	Pipe 2	Pipe 3
Length	l	(m)	7.5	32	20
H Loss		(m)	0.866314	4.61656	2.094837
Grad't		1 :	8.657372	6.931569	9.547282
		OR	11.55%	14.43%	10.47%
Inlet loss coieficent			0.1	0.1	0.1
Inlet Loss			0.25	0.51	0.28
Exit L coeificent			1.00	1.00	0.20
Exit L			2.51	5.10	0.55
Tot Loss			3.62	10.22	2.92

← well rounded inlets

← See Hydraulic Grade Section below

∴ @ Peak flow = 1.64 m³/s - using pipe as the throttle

Hydraulic Grade line

Hydraulic Gradient (RLm)	72.81	62.59	59.67
Manhole lid level (RL m)	72.1	64.35	62.27
Freeboard (m)	MH1 - fully flooded WL = 72.81 ∴ OK.	1.76	no flooding of MH3
	MH1	MH2	MH3

OVERLAND SPILLWAY CALCULATIONS

SPILLWAY for NCC PMF

10 mins = 380 mm/hr
30 mins = 270 mm/hr
360 mins = 80 mm/hr

Size spillway to take PMF flood from developed catchment without overtopping.

PMF flood = 250 mm/hr Intensity for 40 min TC

Conservatively assume detention dam reservoir is full and the low level outlet is running full = 1.64 m^3/s

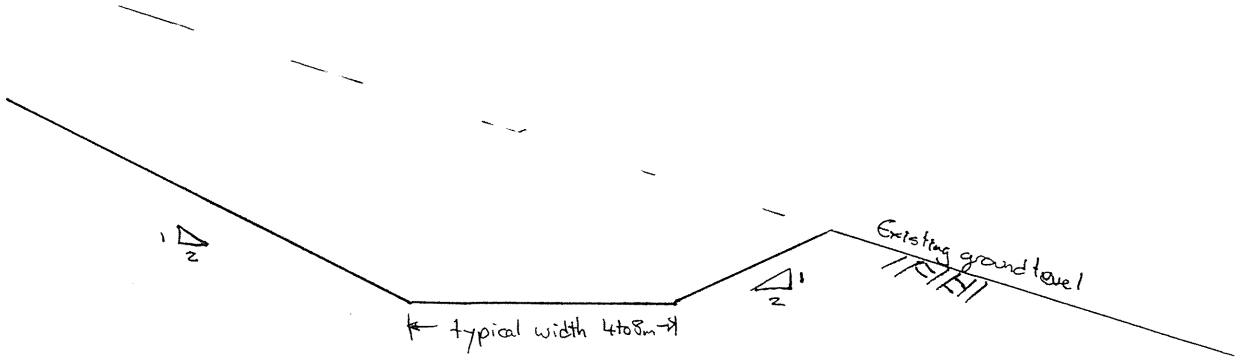
developed catchment = 271,200 m^2

$Q = CIA$

$Q = (0.75 \times 250 \times 271.200) - 1.64$

$= 14 - 1.64$

$= 12.5\ m^3/s$

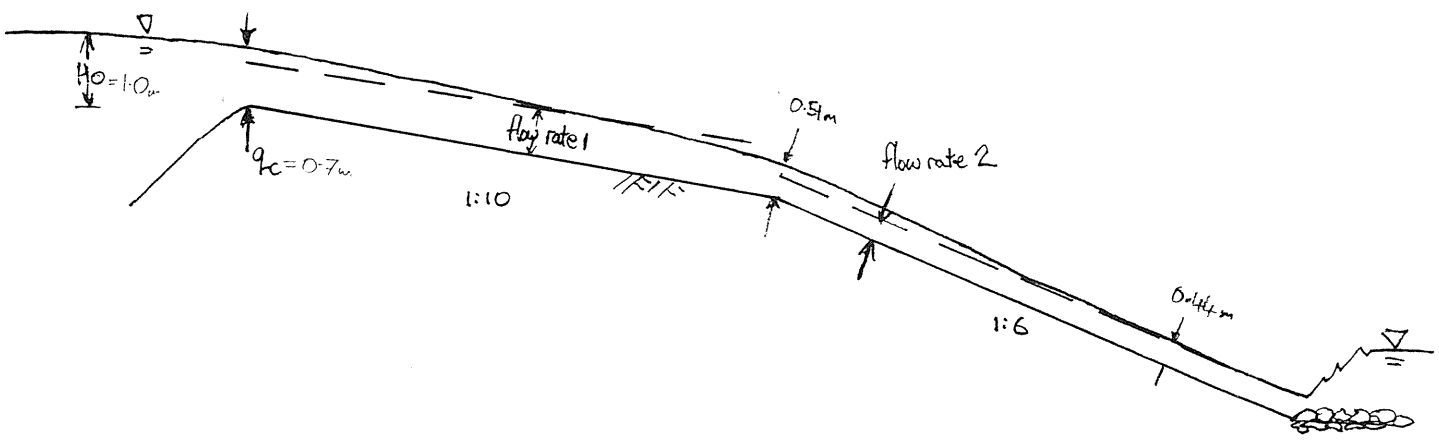


WEIR EQUATION

weir length	8	m
flow depth H_o =	1	m
Flow Q (m³/s)	13.64	m³/s
critical depth	q_c = 0.7	m
critical velocity	2.6	m/s

Mannings Equation $v=(1/n)m^{(2/3)}*i^{1/2}$ where: n = mannings n; m = hydraulic radius (A/P); i = Hydraulic gradient/bed slope

Flow	Hydrauli Gradient	Valley Width	Flow Depth	Valley Slopes	Flow Area	Manning n	Wetted Per'r	Hydrauli Radius	Flow Velocity	Flow Rate
m3/s	1:	m	m	1:	m2		m		m/s	m3/s
Flow Rate 1 initial section										
	10	4	0.51	2	2.56	0.035	6.28	0.41	4.97	12.717
Flow Rate 2 steep section										
	6	4	0.44	2	2.15	0.035	5.97	0.36	5.90	12.670

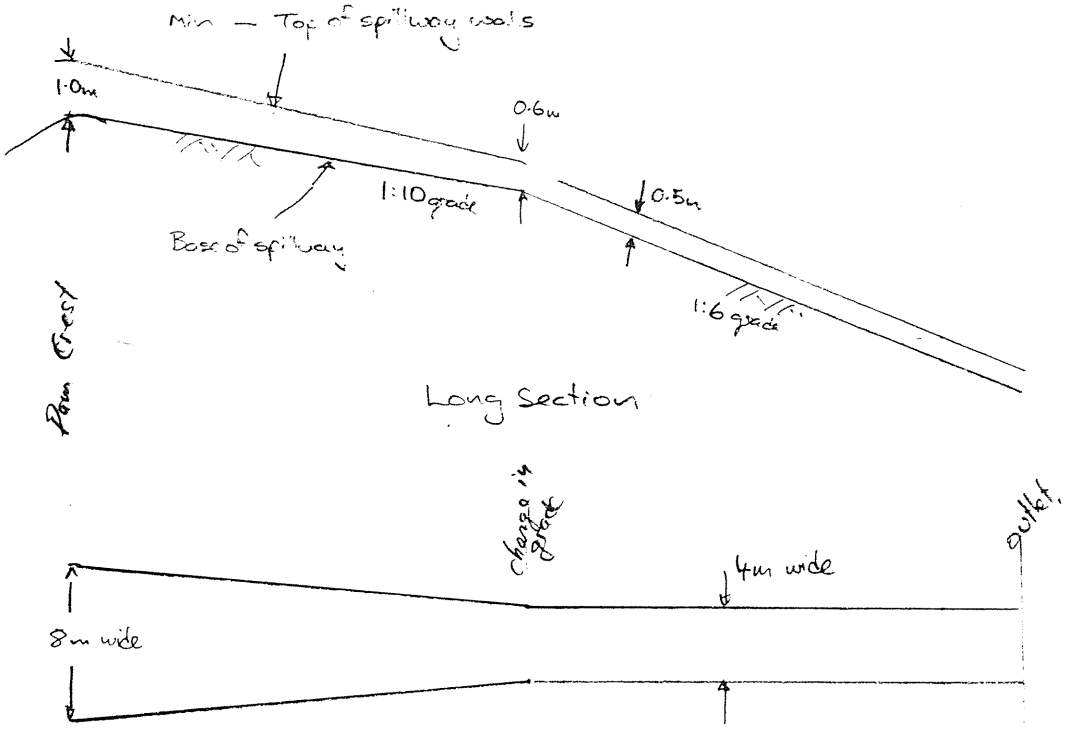


SPILL WAY

N.T.S

SPILL WAY → DESIGN SUMMARY

- Dam crest is required to be 1.0m above the spillway crest
- Spillway is to be 8.0m wide at the crest decreasing linearly with distance to 4.0m wide at the change in grade from 1:10 to 1:6. 4.0m wide thereafter
- Side slopes are 1:2 unless specified otherwise by engineer onsite.
- Spill way is to be 1.0m deep @ crest, decreasing to 0.6m deep at the change in grade and 0.5m deep thereafter.



STABILITY CALCULATIONS

Stability Calculations

Stability analysis has been undertaken utilising the Slope W software package. Minimum factors of safety for design and the results of analysis are as shown below:

Description	Minimum Factor of Safety	Calculated Factor of Safety
Up stream face following rapid drawdown of reservoir	1.2	1.26
Down stream face with reservoir full	1.5	1.58

All Soils
Soil 1 — Soil parameters. — 81069
Water
Soil Model No Strength
Unit Weight 9.807
Piezometric Line # 1
Pore-Air Pressure 0

Soil 2
Unsuitable Fill
Soil Model Mohr-Coulomb
Unit Weight 18
Cohesion 5
Phi 29
Piezometric Line # 1
Pore-Air Pressure 0

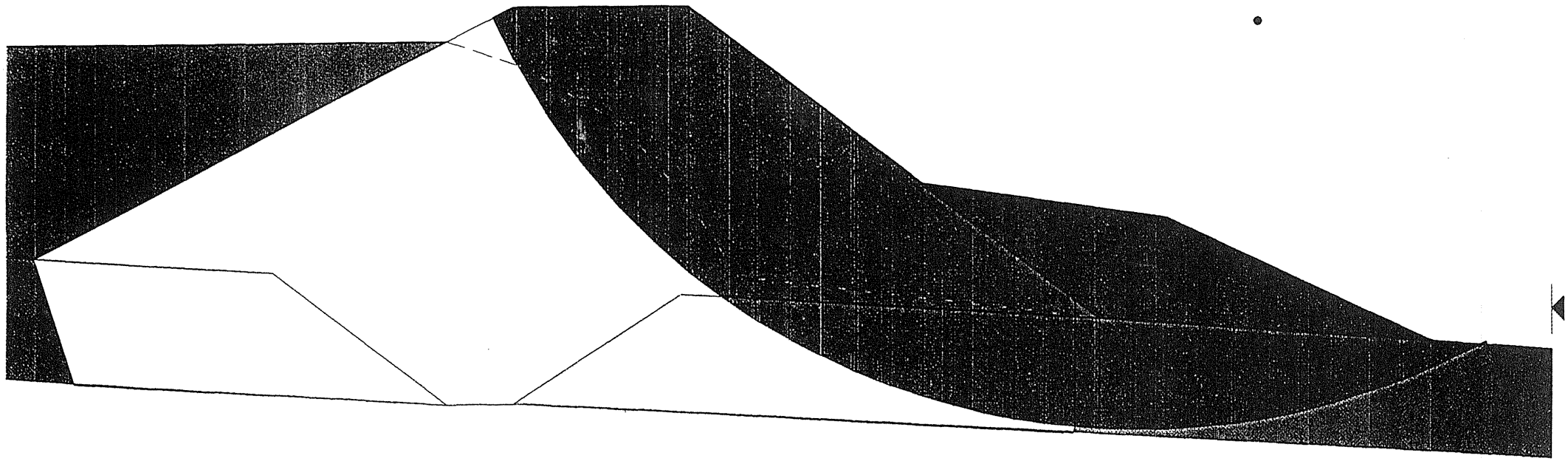
Soil 3
DAm Fill → Fort hills gravels = Dense sandy gravel some silt.
Soil Model Mohr-Coulomb
Unit Weight 18
Cohesion 6
Phi 32
Piezometric Line # 1
Pore-Air Pressure 0

Soil 4
Alluvium
Soil Model Mohr-Coulomb
Unit Weight 17
Cohesion 5
Phi 28
Piezometric Line # 1
Pore-Air Pressure 0

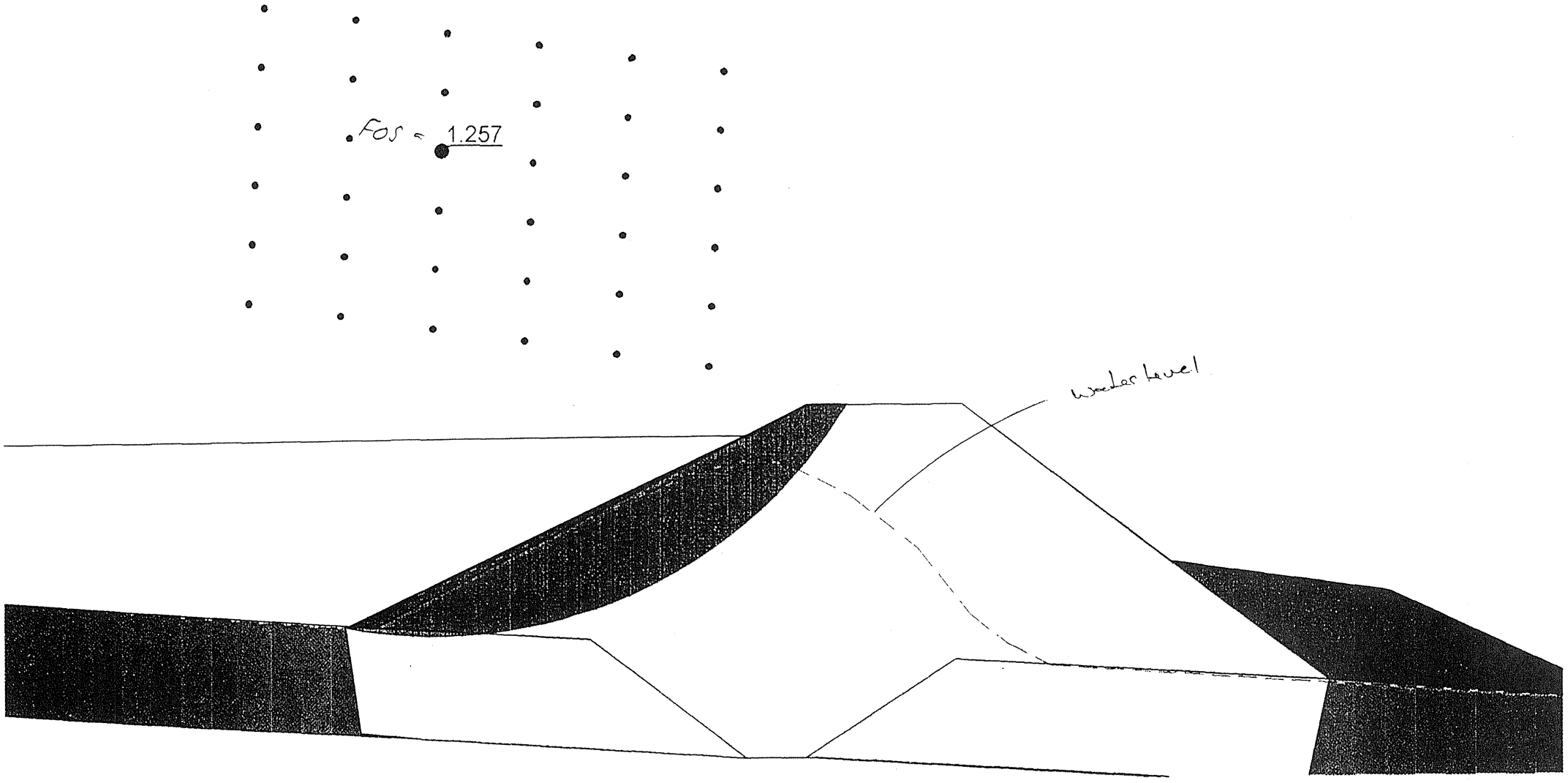
Soil 5
Bedrock
Soil Model Bedrock
Piezometric Line # 1
Pore-Air Pressure 0

Algorithym = Spencer.

FOS= 1.582



full reservoir.



Rapid draw down

File Ref: 985372
DB:mw

When calling
please ask for: Don Ballagh
Direct Dial Phone: (03) 5460275
Email: dballagh@ncc.govt.nz

NELSON CITY COUNCIL

PO BOX 645 NELSON NEW ZEALAND PHONE 03-546 0200 FAX 03-546 0239

13 April 1999

Staig & Smith Ltd
PO Box 913
NELSON

Dear Sir

APPLICATION TO CHANGE RESOURCE CONSENT & CONDITION 985372

Your application on behalf of K B Quarries Ltd to change Condition (i) of Resource Consent 985372 is acknowledged.

The following ~~conditional~~ additional information is required to enable Council to process your application.

1. Mr S Slack's written approval if you wish the application to proceed on a non-notified basis.

2. Written verification (and supporting calculations) from Tonkin & Taylor that the detention dam and associated spillway will perform in accordance with Condition (h) of Resource Consent 985372.

3. Show on a site plan the point of discharge from the pipe draining the dam to Maire Stream.

Yours faithfully

Don Ballagh
Resource Officer (Soils/Water)

No deposit
RM 995129

RESOURCE MANAGEMENT CONSULTANTS

STAIG & SMITH LIMITED

Ref: 5540

7 April 1999

RECEIVED
- 8 APR 1999
Nelson City Coun.

Mr Don Ballagh
Nelson City Council
P O Box 645
NELSON

Dear Sir

RE: RESOURCE CONSENT 985372
KB QUARRIES LIMITED – TASMAN HEIGHTS

We refer to the Resource Consent issued on 4 December 1998 and in particular Condition I of that Consent.

We wish to apply for an extension to the time for completion of the detention pond as it has not been possible for the works to be completed before the 31st March 1999. To date the dam has been designed and a copy of the schematic outline is attached for your information. Discussions are underway with Council Officers for the Asset Management side.

Materials are being ordered and it is hoped that as soon as this wet weather period passes that construction will get underway immediately and given fare weather it is expected that construction could be completed within a two week period.

Accordingly we ask for an extension on this condition on the basis that substantial progress has been made and that the main reason for not being able to commence work sooner was that the Contractor has had resources tided up in installing long term

NELSON OFFICE
MAITAI HOUSE
16 PARU PARU RD
PO BOX 913 NELSON
PHONE 0-3-548 4422
FAX 0-3-548 4427

RICHMOND OFFICE
186 QUEEN ST
RICHMOND
PHONE 0-3-544 6625
FAX 0-3-544 6625

MOTUEKA OFFICE
24 TUDOR ST
PO BOX 278
MOTUEKA
PHONE 0-3-528 7089
FAX 0-3-528 7086

erosion control measures on the south fill face plus reworking to repair storm damage from July last year has taken considerably longer than originally planned.

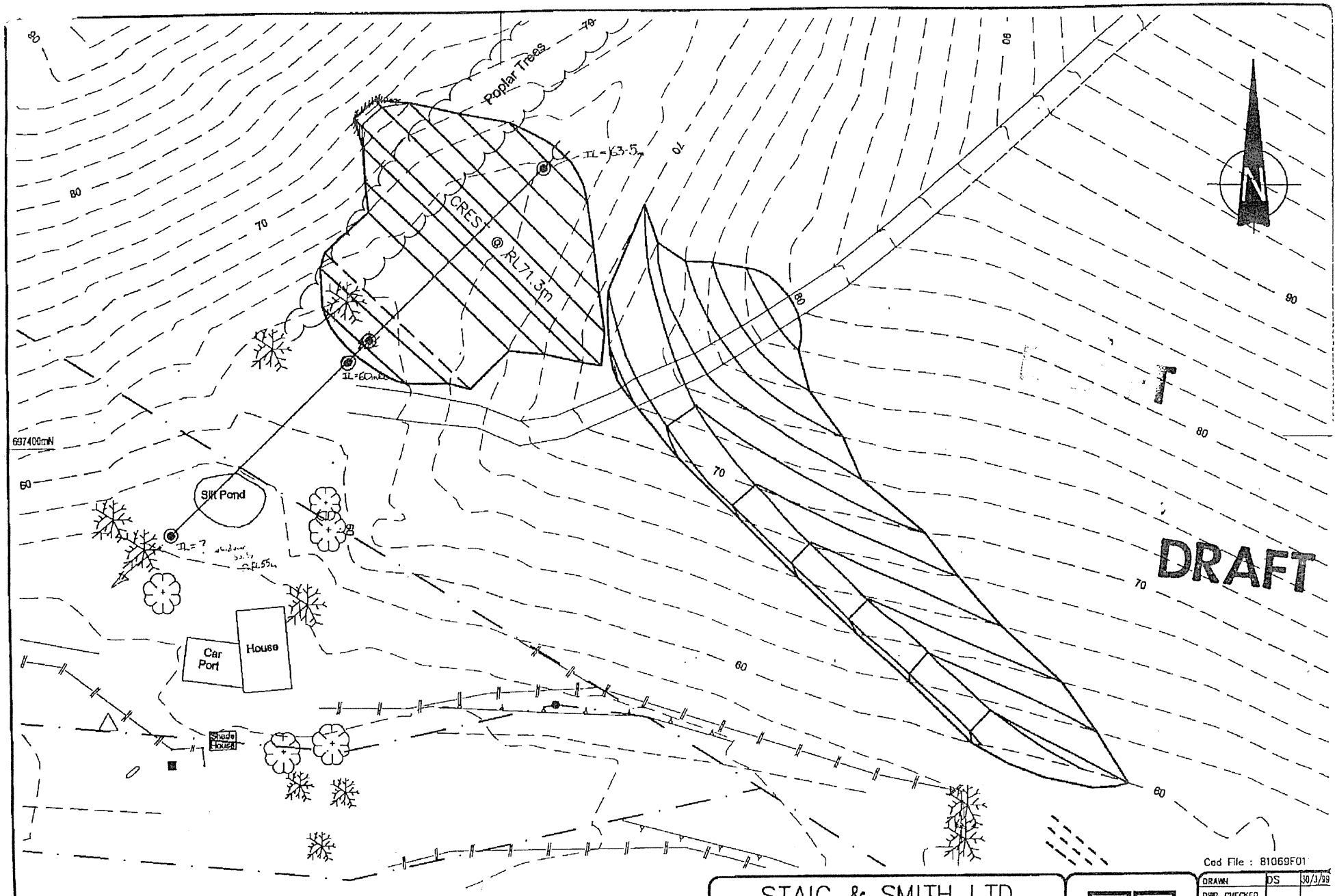
Should you require anything further please do not hesitate to contact the writer.

Yours faithfully
STAIG & SMITH LTD

Charlie Grant

Charlie/5540097.let3

30/03 '99 15:11 FAX 64 4 4993552 TONKIN & TAYLOR LTD WGTN → NELSON 001/002



SCALE 1:500

0 5 10 15 20 30 40 50 (m)

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION PURPOSES

STAIG & SMITH LTD

STORMWATER DETENTION DAM

TASMAN HEIGHTS SUBDIVISION, NELSON

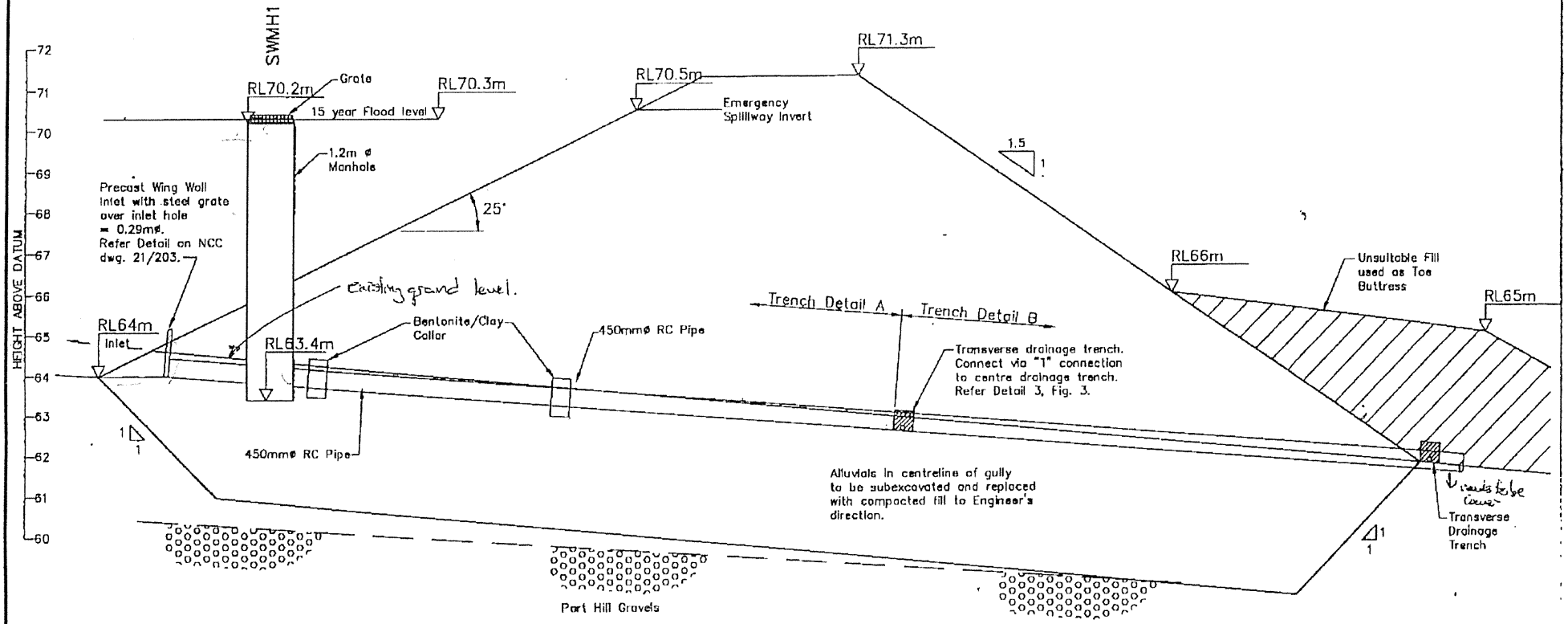
Site Location Plan

TONKIN & TAYLOR LTD.
ENVIRONMENTAL & ENGINEERING CONSULTANTS

Cad File : 81069F01

DRAWN	DS	30/3/99
DWG. CHECKED		
APPROVED		
JOB No.	SCALES (A3)	
81069	1:500	
FIG. No.	REV.	
FIG 1	0	

002/002
TONKIN & TAYLOR LTD WGTN → NELSON
30/03 '99 15:12 FAX 64 4 4993552



SECTION A F1

SCALE 1 : 100

DRAFT

SCALE 1: 100

0 1 2 3 4 6 8 10 (m)

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION PURPOSES

Cad File : 81069F02

STAIG & SMITH LTD
STORMWATER DETENTION DAM
TASMAN HEIGHTS SUBDIVISION, NELSON
Cross Section A–A

TONKIN & TAYLOR LTD.
ENVIRONMENTAL & ENGINEERING CONSULTANTS

DRAWN	DS	29/3/99
DSG. CHECKED		
APPROVED		
JOB No.	SCALES (A3)	
81069	1:100	
FIG. No.	REV.	
FIG 2	0	

Alternative.

DRAFT

DAM STORAGE CALCULATION

Job Ref	81069	Clac	BS
Job Name	Tasman Heights	Date	26-Mar-99

Discription 15 Year Storm , 150 minute duration with high spillway @ 6.1 m

time step	4	mins
TD	150	mins
TC	40	mins
peak inflow	1.15	m³/s

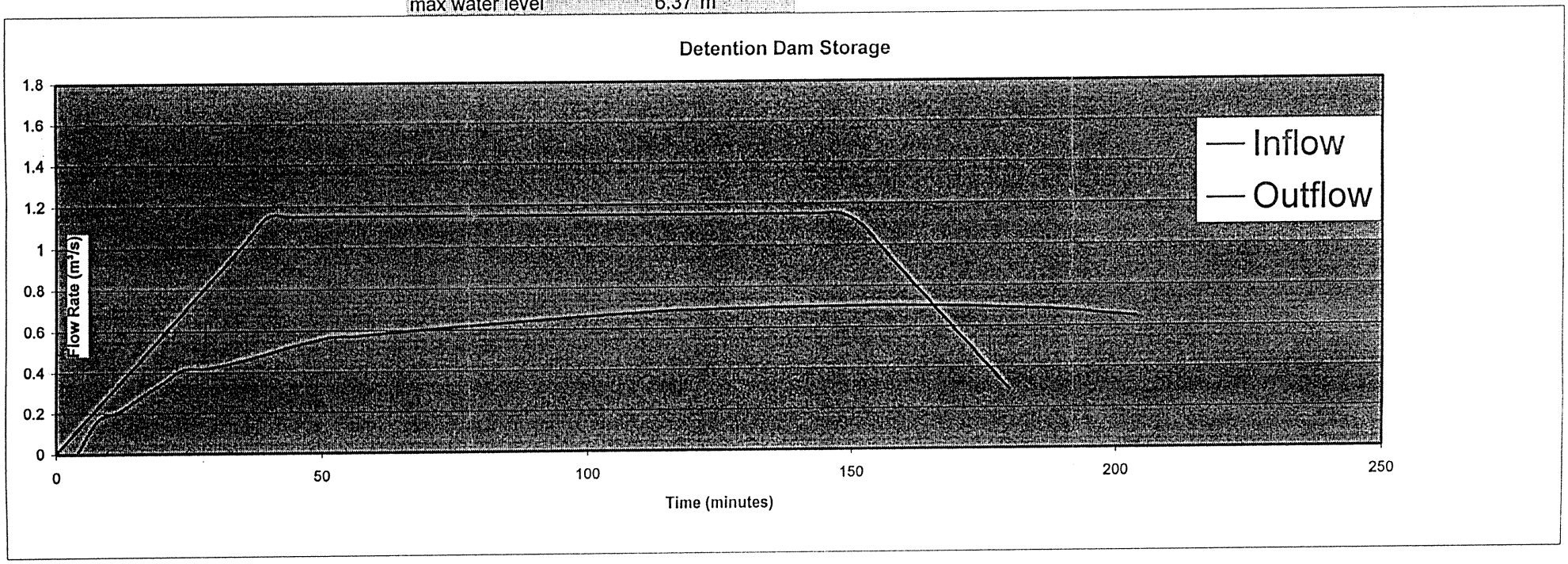
oriface#1		
D	0.29	m
A	0.066052	m²
height	0	m
Cd	0.95	

max out flow #1	0.71 m³/s
max out flow #2	0.28 m³/s
Max total outflow	0.98 m³/s
max storage	3717 m³/s
max water level	6.37 m

Oriface#2		
D	0.4	m
A	0.125664	m²
height	6.1	m
Cd	0.95	

STORAGE PROPERTIES OF RESERVOIR

Points on Storage Curve	Water Level (m)	Storage (m³)
1	0	0
2	2	186
3	4	1041
4	6	3041
5	8	6717



DRAFT

DAM STORAGE CALCULATION

Job Ref	81069	Clac	BS
Job Name	Tasman Heights	Date	26-Mar-99

Discription 5 Year Storm , 150 minute duration

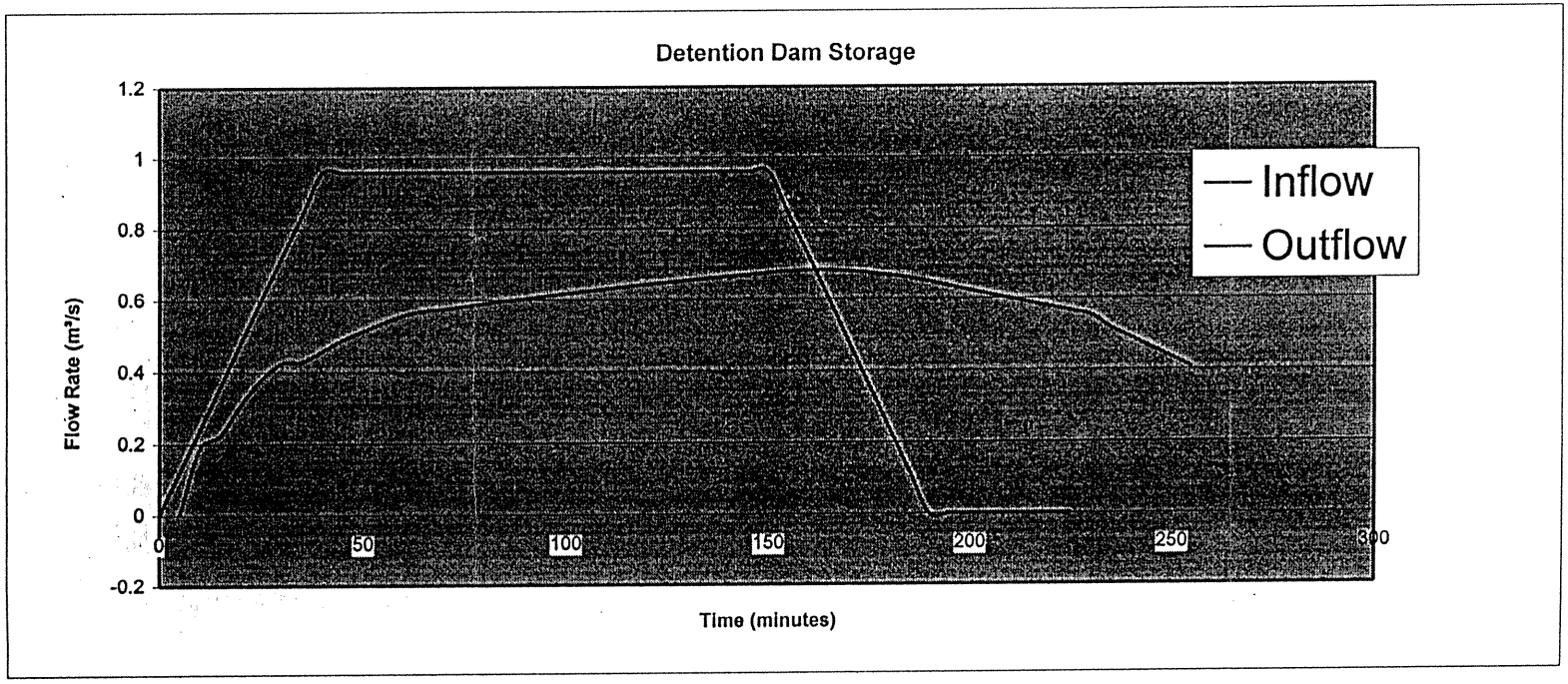
time step	5	mins
TD	150	mins
TC	40	mins
peak inflow	0.959	m³/s

oriface#1	D	0.29	m
	A	0.066052	m²
	height	0	m
	Cd	0.95	

max out flow	0.68	m³/s
max storage	2959	m³
max water level	5.92	m

STORAGE PROPERTIES OF RESERVOIR

Points on Storage Curve	Water Level (m)	Storage (m³)
1	0	0
2	2	186
3	4	1041
4	6	3041
5	8	6717



PROCESSED

Ref: 985372
K B Quarries – Princes Dr
Please Ask for: Don Ballagh
Phone No: (03) 546 0275
E-Mail: dballagh@ncc.govt.nz
Ref: DB:kg

NELSON CITY COUNCIL

PO BOX 645 NELSON NEW ZEALAND PHONE 03-546 0200 FAX 03-546 0239

4 December

K B Quarries Ltd
c/o Staig & Smith
P O Box 913
NELSON

Attention: J Bannock

Dear Sir

Notice of Decision - Resource Consent Application : 985372
Section 88 of the Resource Management Act 1991

Applicant:	**K B Quarries Ltd**
Owner:	**K B Quarries Ltd and Bishopdale Potteries Ltd**
Controlled Activity:	**Earthworks: Rule REr.60 Proposed Nelson Resource Management Plan**
Discretionary Activity:	**Divert and Discharge Stormwater: Section 14 Resource Management Act 1991**

Your application for resource consent to:

a) undertake earthworks comprising excavation and filling in excess of 1.2 metres in depth;

b) divert, dam and discharge stormwater to Maire Stream:

was considered by the Resource Officer (Soil & Water) acting under delegated authority on 26 November 1998.

This application was not publicly notified pursuant to Section 94 of the Act because the written consent of those persons considered to be adversely affected was obtained, and because the effect on the environment was considered to be minor.

Consent was granted pursuant to Sections 104 and 105 of the Act subject to the following conditions imposed pursuant to Section 108 of the Act:

a) The activity shall be carried out strictly in accordance with the application and the plans submitted with the application, with the exception of any changes imposed by conditions of consent.

b) Earthworks shall comply with the following standards:

- Nelson City Council Engineering Standards 1992 (Section V16 to 8 : Earthworks)
- New Zealand Standard 4404:1981 Code of Practice for urban land subdivision
- New Zealand Standard 4431 : 1989 Code of Practice for earthfill to residential development

On completion of the earthworks the inspecting engineer shall submit written certification to the Nelson City Council that the earthworks have been carried out in compliance with the terms of the above standards.

c) Land and vegetation disturbance shall be limited to those areas of 'cut and fill' shown on plan 'Staig & Smith 5935/1', dated August 1998.

d) Prior to the disturbance of vegetation or soil on any designated earthwork area, all stormwater and sediment control measures shall be installed:

- in accordance with the Nelson City Council 'Guidelines for Silt Control Associated with Mass Earthworks'; and
- as described in the application for resource consent.

The Council reserves the right to require additional stormwater and/or sediment control measures to be installed, if necessary in the opinion of Council's Resource Officer (Soil & Water)

e) All stormwater and sediment control structures shall be regularly monitored and maintained in effective operational order at all times. Sediment control structures may be progressively decommissioned as bare soil surfaces are revegetated, or otherwise, protected from soil erosion.

f) Appropriate measures shall be implemented at all times to prevent dust from the site adversely affecting neighbouring persons or property.

g) At the completion of each earthwork stage, topsoil shall be respread immediately over those areas not designated for road or footpath construction, and sown in a seed mix to the satisfaction of Council's Resource Officer (Soil & Water). If climatic conditions are unfavourable for the establishment of vegetative cover, Council may require other measures to be taken by the consent holder to minimise erosion of bare soil surfaces.

h) The stormwater detention pond shall be designed and constructed to ensure that the maximum peak discharge from the pond for storm events up to and including a 1 in 50 year event is limited to approximately the peak pre-development discharge from the catchment hatched in red on the attached plan, for storm events of equivalent frequency.

A spillway shall be incorporated into the pond structure of appropriate dimensions to pass probable maximum flood discharge with 400mm freeboard to the crest of the pond.

i) The stormwater detention pond shall be completed prior to the 31 March 1999 or prior to the diversion of stormwater from other catchments to the pond, which ever is the earlier.

j) The consent holder shall ensure that any spillage of fuel, oil or other construction related substance does not contaminate water or is left or deposited in a position where it may contaminate water. A contingency plan to control and dispose of such contaminants shall be submitted to Council's Resource Officer (Soil & Water) for approval prior to work commencing.

k) The holder of this consent shall ensure that all construction activities are so designed and conducted that noise shall not exceed the limits specified in Table 1 below.

The measurement of noise shall be made outside any building occupied by any person who is, or may be, affected by the noise (in accordance with clause 3.2.1 of NZS 6803).

Table 1 Noise limits" for construction

7.30am – 6.00pm Monday to Friday inclusive, and 9.00am – 6.00pm	55dBA L 95 85 dBA L max 70 dBA L 10
At all other times	45 dBA L 10 75 dBA L max

Note to Table 1: Noise limits in this table are 5 dBA more stringent than the recommended upper limits specified in Table 1 of NZS 6803P:1984 having been adjusted in accordance with the provisions of clause 6.1.2 of the Standard to take into account that the construction period will be in excess of 18 weeks duration.

l) Subject to the express provisions of this condition, construction noise shall be measured and assessed in accordance with, NZS 6803P:1984 *The measurement and assessment of noise from construction, maintenance, and demolition work.* Construction noise shall be deemed to include noise barrier construction and removal, including any necessary scrub clearance, topsoil removal, or drainage work to facilitate barrier construction.

Provided that the noise limits shall not apply to:

1. Residential Properties which by written arrangement with the occupiers, are not occupied during site working hours.

2. The noise from the construction, maintenance or demolition activities of mitigation measures required by the Resource Consent and the Management Plans between the hours of 0730 and 1800 Monday to Friday and 0900 to 1800 Saturday, subject to approval by the Engineer (ie. the site engineer for the contract).

3. Emergency works at any time, subject to approval by the Engineer. This includes, but is not limited to, such activities as maintaining and cleaning stormwater drains, sediment ponds and mitigating the effects of stormwater runoff during, and immediately after, heavy rainfall events and dust suppression activities during hot, dry periods.

m) Monitoring *of* noise limits associated with exercise of this consent shall be undertaken in accordance with the requirements set out below. The cost of such monitoring shall be met by the consent holder.

Measurement Locations

i) Microphone locations

ii) In the event of complaints by a resident about construction noise, the affected residential site shall be periodically monitored for construction noise intrusion after any initial investigation of the complaint.

iii) Noise measurements and reporting shall be under the direction of a person qualified and experienced in environmental noise measurements.

n) Should *the* results of monitoring indicate non-compliance with the stated noise limits, the following steps shall be taken by the Contractor to reduce noise from the site:

(i) Immediate remedial action (noise reduction) by the Contractor or alternatively the removal of the noise source from the site; and

(ii) A written report from the Contractor to Nelson City Council within two days from notification of exceeding noise limits. The report is to state the source(s) identified, the remedial action taken, and any further steps taken to ensure there is no repeat occurrence.

o) Council's Resource Officer shall have the right to inspect the construction site at all reasonable times and to suspend immediately any operations that are causing or likely to cause unacceptable soil erosion or deposits into water courses, or dust emission from the site. Remedial works shall be carried out as and when Council's Resource Officer (Soil & Water) so directs.

Your status as applicant for this resource consent provides you with certain rights with regard to the Council's decision.

For your general guidance, Sections 120, 127 and 357 of the Resource Management Act 1991 provide rights with respect to:

1) **Objection to certain decisions and requirements of consent authorities. (Section 357)**
If your consent was not publicly notified, or was notified and no submissions were received or any submissions received were withdrawn, you have the right to object to all or part of this decision. An objection must be lodged with the Council within 15 working days of your receipt (or receipt by the person who filed the application on your behalf) of the Council's formal decision. Reconsideration of the decision will require further assessment of costs incurred in accordance with Council processing charges.

2) **Application for change or cancellation of consent conditions. (Section 127)**
An application to change or cancel a consent condition can be made to the Council at any time. Such an application is treated in a similar manner to a resource consent application incurring normal Council processing charges. If the consent condition(s) you wish to have deleted or changed resulted from a resource consent application that was publicly notified, you should first obtain written consent from all those persons who made a submission on this application.

3) **Right of Appeal. (Section 120)**
This requires that a "Notice of Appeal" be lodged with the Registrar of the Environment Court and with the Council within 15 working days of your receipt (or receipt by the person who filed the application on your behalf) of the Council's formal decision.

The address of the Environment Court is PO Box 5027, Lambton Quay, Wellington. An appeal must be lodged on Form 7 prescribed by the Resource Management Forms Regulations 1991 and must be accompanied by a filing fee of $55 (GST inclusive) as specified in those Regulations under Part VI, Section 28(3).

If you are intending to exercise your legal rights regarding the Council's decision and you are in any doubt as to how to proceed, it is strongly recommended that you consult your Agent/Lawyer.

You should note that a rent lapses on the expiry of **two years** after the date of commencement of that consent consent is given effect to, or after the expiry of such a shorter/longer period as is provided for in the consent. Section 125 of the Resource Management Act 1991 detailing to the extension of consent duration.

Please find enclosed an invoice for costs incurred in processing this application. If your invoice shows a refund due a cheque will be sent out under a separate cover.

Where conditions of consent re monitoring have been imposed a monitoring charge has been included in your charge covers one visit to monitor compliance with consent conditions. Where additional monitoring visits are required to determine that conditions have been met these will be charged at the rate of $45 (exclusive of GST) for each additional visit.

If you have any enquiries please contact Ballagh on (03) 546 0275.

Yours faithfully

J S Pattison
Development Planner

18 June 2018

PO Box 645 Nelson 7040
Phone: 03 546 0200
Fax: 03 546 0239

KB Quarries Limited
C/- Mark Lile
Landmark Lile Ltd
PO Box 343
Nelson 7040

Resource Consent Number: 155190V2
Contact: Jennifer Lancashire
DD:546 0385
Email:Jennifer.lancashire@ncc.govt.nz
www.nelson.govt.nz

Dear Mark

RM155190V2 DECISION ON NON-NOTIFIED RESOURCE CONSENT

Pursuant to Section 114 of the Resource Management Act 1991 ("the Act"), please find enclosed a copy of the Council's decision on your application for resource consent referred to above.

Section 120 of the Act provides you with the right to lodge an appeal with the Environment Court in respect of this decision and/or any associated conditions. Section 121 of the Act requires that any such appeal must be made in the prescribed form, must state the reasons for the appeals, the relief sought, state any matters required by regulations and must be lodged with both the environment Court and the Council within 15 working days of receiving this letter.

You may commence your activity immediately unless you lodge an appeal to this decision. However, it is important that you check the conditions of your consent carefully as some of them may require you to provide information and/or plans to the Council before you may commence your activity. In addition, in some cases you may also require other permits or building consents for your activity and these must be obtained before you can commence your activity.

Please note that under Section 125 of the Act, your consent will lapse on **11 February 2021** unless you have given effect to it before then. In the case of subdivisions, the consent is given effect to when you have submitted a survey plan to the Council for the subdivision under Section 223 of the Act. Once the survey plan has been approved by the Council under Section 223 of the Act, the consent lapses three years thereafter unless it has been deposited with the District Land Registrar as outlined in Section 224 of the Act.

Invoicing: Once the final processing costs are determined an invoice will be sent out or you will be contacted if there is a refund of any fees.

Please feel free to contact me if you have any questions regarding any aspect of your consent or its conditions. My contact details are listed at the top of this letter.

Yours faithfully

Jennifer Lancashire
Team Leader Resource Consents

Making Nelson an even better place
Nelson City Council
te kaunihera o whakatū

DECISION ON APPLICATION TO CHANGE CONSENT CONDITIONS

Resource Consent number: RM155190V2

Pursuant to Sections 104B and 127 of the Resource Management Act 1991 ("the Act"), the Nelson City Council ("the Council") hereby **grants** the application to change conditions of resource consent to the Consent Holder being:

KB Quarries Limited

The activity to which this decision relates:

Change conditions 1 & 3 and add conditions 3a and 3b into Resource Consent RM155190 (as varied by RM155190V1) to allow a further 12 months to complete bulk earthworks.

Note: *this decision should be read in conjunction with RM155189V1*

Location details:

Location:	Tasman Heights / Greenhill
Legal description:	Lot 67 DP464769, Lot 66 DP464769, Lot 65 DP464769, SO1210 Part Section 18, Section 151-153 Suburban South District and paper roads
Certificate of title:	619453, 619452, 619451, 3621739, 2D/1259

CONDITIONS

The application to change conditions 1 and 3 and add conditions 3a and 3b into RM155190 (as varied by RM155190V1) is granted as follows:

Condition 1 is changed from:

1. The activity shall be carried out in general accordance with the application lodged with Council on 22 June 2015, as varied by the application received by the Council on 12 February 2018, the attached plans labelled RM155190 A – K and M-S (earthworks) RM155190 T-X (comprehensive housing development), RM155190 L and Z - EE (intersection with Waimea Road) including plans RM155190V1 A-D, RM155190 FF (ecology plan defining gullys) and the following conditions of consent.

Where there is any apparent conflict between the application and consent conditions, the consent conditions shall prevail

To:

1. The activity shall be carried out in general accordance with the application lodged with Council on 22 June 2015, as varied by the application received by the Council on 12 February 2018, **and 16 March 2018** the attached plans labelled RM155190 A – K and M-S (earthworks) RM155190 T-X (comprehensive housing development), RM155190 L and Z - EE (intersection with Waimea Road) including plans RM155190V1 A-D, RM155190 FF (ecology plan defining gullys) and the following conditions of consent.

Where there is any apparent conflict between the application and consent conditions, the consent conditions shall prevail

Condition 3 is changed from:

3. Once commenced, the earthworks authorised by this consent shall be completed within 2 years and 3 months.

***Advice note**:*

The applicant has requested a further three months in order to complete the earthworks to allow for any unforeseen circumstances, such as adverse climatic conditions. This is considered to be reasonable.

To:

3. Once commenced, the earthworks authorised by this consent shall be completed within ~~2~~ **3** years and 3 months.

~~***Advice note**:*~~

~~*The applicant has requested a further three months in order to complete the earthworks to allow for any unforeseen circumstances, such as adverse climatic conditions. This is considered to be reasonable.*~~

New conditions (3a and 3b) are to be added as follows:

3a. Vehicle movements within the green (stabilised), orange (undergoing stabilisation) and red (access roads not yet stabilised) areas as shown on the Tonkin and Taylor Plan referenced 81069.0180-F1 received on 29 May 2018 associated with the earthworks authorised by this consent shall be limited to:

- A maximum of one excavator per day for the purpose of dosing sediment ponds 7, 2 and 5 with flocculent; and / or
- A maximum of one excavator per day for the purpose of maintaining diversion bunds and channels; and / or
- Vehicle movements associated with the decommissioning (filling) of the sediment ponds.

Construction vehicle storage and transit between these areas and the yellow (stage 6) and pink (stage 7) earthworks area shall otherwise not be permitted.

***Note:** The purpose of this condition is to reduce the frequency of vehicle movements on the western side of the site to the minimum required for maintaining and / or decommissioning the sediment and erosion control measures in order to reduce the construction effects on the neighbours at Highview Drive and Princes Drive.*

3b. A dust cart shall be on site and used during and following the decommissioning of the sediment ponds until such time that those areas have been permanently stabilised in order to reduce the risk of dust effects occurring beyond the boundaries of the site.

***Note:** This is not a discharge permit. In the event of any unanticipated dust, erosion or sediment effects occurring beyond the boundaries of the site, all earthworks will need to cease until the breach has been remedied to the satisfaction of the Council's Monitoring Officer.*

Note: *For the purposes of this condition 'permanently stabilised' shall mean planting, seeding, mulching or otherwise covering any exposed ground so as to minimise the risk of dust, erosion and sedimentation.*

A full updated copy of the resource consent conditions are attached to this decision as ***APPENDIX A***

ADVICE NOTES

1. This is not a building consent, and the Consent Holder shall meet the requirements of Council with regard to all Building and Health Bylaws, Regulations and Acts.
2. It is possible that the activity could trigger the need for an archaeological authority (permit) under the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA 2014).

   Section 42 of the HNZPTA 2014 requires an authority be sought where the modification or destruction of an archaeological site is proposed (this includes a place that is reasonably suspected to be an archaeological site).

   An archaeological site is essentially defined as any place in New Zealand (including any building/structure, or part of a building/structure) that was associated with pre-1900 human activity and may provide historical evidence through archaeological investigation.

   It is important to determine whether or not the proposed work requires an authority prior to physical works commencing; if in doubt the applicant is advised to contact Heritage New Zealand Pouhere Taonga (Central Regional Office, Wellington). The HNZPTA 2014 contains penalties for unauthorised site damage.

3. This resource consent authorises only the activity described above. Any matters or activities not referred to in this consent or covered by the conditions above must either:

   (a) comply with all the criteria of a relevant permitted activity in the Nelson Resource Management Plan (NRMP); or

   (b) be allowed by the Resource Management Act 1991; or

   (c) be authorised by a separate resource consent.

4. This consent is granted to the abovementioned Consent Holder, but Section 134 of the Act states that such land use consent "attach to the land", and accordingly, may be enjoyed by any subsequent owners and occupiers of the land. Therefore, any reference to "Consent Holder" in the new conditions shall mean the current owners and occupiers of the subject land. Any new owners or occupiers should therefore familiarise themselves with the conditions of this consent, as there may be conditions that are required to be complied with on an ongoing basis.

5. The Consent Holder should note that this resource consent does not override any registered interest on the property title.

BACKGROUND AND PROPOSAL

This application is for a variation to RM155190 (as varied by RM155190V1) to allow a further 12 months to complete the bulk earthworks associated with the construction of a retirement village and associated infrastructure.

PLAN RULES AFFECTED

According to the Nelson Resource Management Plan, the following apply to the subject property:

Zoning: Residential

Overlays: Riparian Overlay, Services Overlay and Landscape Overlay

Rules	Activity Status	Description
REr.20 Non residential activities	Discretionary	The retirement village provides ancillary on-site facilities such as a café for guests and visitors, administrative offices, medical facilities, library, gym, theatre, lounges and communal dining areas etc.
REr.22 Comprehensive Housing Development	Discretionary	The comprehensive housing development is located within the standard density residential zone (and not the higher density residential zone).
REr.27 Outdoor Living Courts	Discretionary	The retirement village provides for a variety of different residential units, each with different sizes of outdoor living court, not all of which will meet the permitted standards.
REr.32 Maximum Building Height	Discretionary	The proposed 'boat club' (communal on site recreational facility) will measure 9.5 metres in height, the care center will measure 8.2 metres in height and the pavilion will measure 7.56 metres in height and the remainder of buildings will measure either 4.9 metres – 6.5 metres in height. The permitted height for buildings in the residential zone is 7.5 metres.
REr.49 Aerials	Discretionary	This rule permits 3 aerials per site. The retirement village will be located within one site (on one title) and residents may choose to have their own dish / antennae.
REr.61 Earthworks	Restricted Discretionary	This application includes bulk earthworks with cuts / fill exceeding 4 metres in height / depth.

Status: Discretionary Activity in accordance with Section 127(3)(a) of the Act.

REASONS FOR THE DECISION

1. The majority of the earthworks have been completed with large areas towards the western end of the site having been grassed and or stabilised. The area towards the western end of the site adjacent to Highview Drive has been topsoiled and grassed and sediment ponds 3 and 4 have been decommissioned. This means that construction activity in those areas closest to those residential areas will significantly lessen.

2. Sediment ponds 2 and 3 and 6 and 7 (see Tonkin and Taylor plan 81069.0180 dated 29 May 2018) will be decommissioned as soon as the grass has established above those areas. Vehicle movements to and from these ponds and any associated works to the ponds will then cease.

3. Bulk earthworks are now only required towards the eastern end of the site (closest to Waimea Road). The construction effects on those neighbours on Highview Drive, Beatson Road, Scotia Street and Princes Drive will consequently lessen as the works move away from the western side of the site.

4. No further excavation or significant movement of soil close to the neighbours to the west is proposed and therefore dust and noise is not expected to cause an a significant on-going nuisance.

5. Only one excavator movement per day will occur across the site to sediment ponds 2, 5 and 7 when it's required to shock dose the ponds with flocculent and this will only occur after a rainfall event of more than 20mm of rainfall per hour. In addition an excavator might need to maintain the associated diversion bunds. If this was required it would only occur once in any day. The construction effects associated with these activities is considered to be infrequent and considerably less detrimental in comparison to the large scale earthworks that have been undertaken in this area for the preceding two years.

6. Sediment pond 3 will be decommissioned within the next 3 weeks which will further lessen any vehicle movements in this area.

7. Decommissioning the sediment ponds does require discreet and targeted filling with material taken from the cut 6 area (see Land Dimensions plan 10657 received with the application). Sediment ponds 1 and 7 require 800m^3 of fill, which equates to approximately 50 excavator movements. However this work will be completed within 3-4 days. Sediment ponds 2, 3, 5 and 6 will require 400m^3 of fill which equates to 25 excavator movements. The filling of these ponds will take 2 or 3 days to complete. In order to mitigate any dust effects associated with the last of the earthworks in this area the applicant will have a dust cart on site to dampen down the soil if dust is anticipated.

8. The bulk of the remaining earthworks will be undertaken towards the eastern end of the site closer to the properties on Waimea Road and the top / eastern end of Beatson Road. However these neighbours have to some degree been relatively 'sheltered' from the effects of the earthworks that have been undertaken for the previous two years. These properties are located on the southern side of Tasman Heights and at a lower level. The earthworks have not been undertaken in direct view of these neighbouring properties and they have not been exposed to the same degree of noise and general disruption as the properties have been that are located at a similar elevation.

9. The earthworks have been carried out in a staged manner and progressively developed from the west of the site to the east. The effects of the earthworks will become more discernible to the neighbours to the east over the next 12 months. However the earthworks were always proposed and had already been approved in this location. This application only delays the period whereby the earthworks on this side of the site were expected to commence.

10. Taking the above matters into consideration the Council considers that the adverse effects of the activity on the environment will be no more than minor and there are no persons adversely affected by this proposal.

11. The activity is considered to be consistent with the relevant objectives and policies contained in the Nelson Resource Management Plan and the Nelson Regional Policy Statement.

12. The Council has taken into account the relevant principles outlined in sections 6, 7 and 8 of the Act and it is considered that granting this resource consent achieves the purpose of the Act as set out in section 5.

This application to change and add conditions is **granted** on 18 June 2018 under delegated authority from Nelson City Council by:

Mandy Bishop
Manager Consents and Compliance

Mandy Bishop
Manager
Consents and Compliance
Nelson City Council
(Authorised Officer
Pursuant to Delegation)

APPENDIX A

Full and Updated Conditions for Resource Consent RM155190 dated 11 February 2016 as varied by RM155190V1 dated 9 May 2018 and RM155190V2 dated 18 June 2018

1. The activity shall be carried out in general accordance with the application lodged with Council on 22 June 2015, as varied by the application received by the Council on 12 February 2018, and 16 March 2018, the attached plans labelled RM155190 A – K and M-S (earthworks) RM155190 T-X (comprehensive housing development), RM155190 L and Z - EE (intersection with Waimea Road) including plans RM155190V1 A-D, RM155190 FF (ecology plan defining gullys) and the following conditions of consent.

   Where there is any apparent conflict between the application and consent conditions, the consent conditions shall prevail.

2. The consent holder shall advise the Council's Monitoring Officer in writing, at least 3 working days prior to works commencing on site, so that monitoring of the conditions of this consent can be undertaken. Please advise the consent number, RM155190.

   Advice Note:

   Failure to notify the Council as stated in the above condition may result in enforcement action.

3. Once commenced, the earthworks authorised by this consent shall be completed within 3 years and 3 months.

3a. Vehicle movements within the green (stabilised), orange (undergoing stabilisation) and red (access roads not yet stabilised) areas as shown on the Tonkin and Taylor Plan referenced 81069.0180-F1 received on 29 May 2018 associated with the earthworks authorised by this consent shall be limited to:

- A maximum of one excavator per day for the purpose of dosing sediment ponds 7, 2 and 5 with flocculent; and / or
- A maximum of one excavator per day for the purpose of maintaining diversion bunds and channels; and / or
- Vehicle movements associated with the decommissioning (filling) of the sediment ponds.

Construction vehicle storage and transit between these areas and the yellow (stage 6) and pink (stage 7) earthworks area shall otherwise not be permitted.

Note: *The purpose of this condition is to reduce the frequency of vehicle movements on the western side of the site to the minimum required for maintaining and / or decommissioning the sediment and erosion control measures in order to reduce the construction effects on the neighbours at Highview Drive and Princes Drive.*

3b. A dust cart shall be on site and used during and following the decommissioning of the sediment ponds until such time that those areas have been permanently stabilised in order to reduce the risk of dust effects occurring beyond the boundaries of the site.

Note: *This is not a discharge permit. In the event of any unanticipated dust, erosion or sediment effects occurring beyond the boundaries of the site, all earthworks will need to*

cease until the breach has been remedied to the satisfaction of the Council's Monitoring Officer.

Note: *For the purposes of this condition 'permanently stabilised' shall mean planting, seeding, mulching or otherwise covering any exposed ground so as to minimise the risk of dust, erosion and sedimentation.*

4. At no time during the works, including backfilling and drainage, shall the works encroach onto any other property.

Advice note:

The works authorised by this consent will also take place within road reserve, paper roads and on land which is within the ownership of the New Zealand Transport Agency (NZTA). For the purposes of condition 4 'any other property' means any property which is not included within the site which has been identified on the plans which accompany this resource consent application.

Design & Methodology

5. Earthworks, including drainage shall be implemented and inspected during construction under the supervision of a chartered professional engineer practising in geotechnical engineering or an experienced engineering geologist with experience in foundation design ('the geotechnical engineer').
6. Prior to works commencing on site the consent holder shall forward from the geotechnical engineer a letter of engagement confirming availability to undertake the geotechnical supervision, reviews and inspections required during the implementation of this consent. The geotechnical engineer shall prepare a construction methodology for the works and the consent holder shall ensure that it is adhered to by the contractor undertaking the earthworks.
7. No earthworks shall commence without the prior approval of the geotechnical engineer referred to in condition 5.
8. Retaining walls and settlement ponds shall be specifically investigated, designed and inspected during construction by or under the direction of a chartered professional engineer practising in civil or geotechnical engineering. The engineering design shall be reviewed by the geotechnical engineer who shall also confirm to the supervising engineer that the ground conditions are suitable for the works proposed.
9. Any fill placement shall be certified in accordance with NZS 4431:1989 – *Code of Practice for Earth Fill for Residential Development* unless otherwise deemed not necessary by the geotechnical engineer.
10. The design and specification of the earthworks shall be reviewed by the geotechnical engineer prior to earthworks commencing on site. The geotechnical engineer shall specify the design standards for both static and seismic loading cases that shall be applied for all cuts and fills.
11. Prior to earthworks taking place on site, specific geotechnical investigation shall be carried out by the geotechnical engineer who shall assess the geotechnical risks and advise the contractor undertaking the earthworks on any specific risks that need to be mitigated as part of the design process.

12. The investigation, layout and design of all fill foundations in excess of 1 metre shall include an assessment of the fill's effect on the global stability of the site and adjacent sites.

13. If at any stage in the implementation of this consent earthworks reveal adverse ground conditions, such as the presence of soft and/or water saturated ground, or layers of plastic clay; or evidence of slope movement is observed, all works shall be ceased immediately and the services of the geotechnical engineer shall be obtained. Subsequent works shall follow the recommendations made by the geotechnical engineer.

Hours of Operation

14. Hours of operation shall be limited to between 7.00am to 6.00pm Monday to Friday and 8:00am to 5:00pm on Saturdays. No work shall take place on Sundays or Public Holidays.

15. Notwithstanding the requirements of condition 14, works involving heavy machinery in association with 'deep rock bed ripping / breaking' at the site may only be undertaken between the hours of 8.00am and 5.30pm Monday to Friday or between 9.00am and 2.00pm on Saturday.

16. Construction noise shall not exceed the following noise levels as measured at, or within, the boundary of any site within the Residential Zone, being:

    i) Leq: 85 dBA
    Lmax: 90 dBA

    Between the hours of 9 am – 3:30 pm Monday to Saturday inclusive;

    ii) Leq: 75 dBA

    iii) Lmax: 90 dBA

    Between the hours of 7 am – 9 am, and 3:30pm – 7 am Monday to Saturday inclusive.
    All measurements and assessments shall be in accordance with NZS 6803:1999.

    Advice note:

    The above noise levels are the NZS 6803:1999 recommended upper limits for construction noise received in residential zones.

17. Noise producing plant operating at the site shall be fitted with silencers and noise insulation as required in order to achieve the noise levels required in condition 16.

18. The consent holder shall nominate a representative responsible for liaison with neighbouring residents in respect of noise emissions. The name of the nominated representative and their contact details shall be clearly displayed on signage at the construction site throughout the duration of the earthworks. The consent holder shall keep a record of any complaints received, which shall be made available to the Council's Monitoring Officer on request.

19. The consent holder shall prepare a traffic management plan for all temporary access arrangements which shall be provided to the Council's Monitoring Officer for the certification of the Manager Consents and Compliance prior to the intersection with Waimea Road being first brought into use. The traffic management plan shall be certified

if it outlines the controls and exclusions that will be implemented to adequately manage potential adverse traffic effects. The consent holder shall ensure that the certified traffic management plan shall be implemented during the exercise of this consent.

Ecology

20. The consent holder shall engage an expert freshwater ecologist ('the ecologist') who shall visit the site and brief the contractors undertaking the works on methods that must be employed to minimise adverse effects on aquatic life at the commencement of works within gully 1 (as shown on approved plan RM155190 FF).

21. No in stream works (which includes the ecological restoration planting referred to in condition 51) shall be undertaken during the periods of 1 April to 15 August (in koaro and kokopu spawning areas) unless the ecologist determines that no spawning habitats for the stated species exist, or that ambient levels of sediment will not pose a risk to any spawning area.

22. The consent holder shall ensure that the works are carried out in such a manner as to minimise sedimentation and contamination of Maire Stream and Jenkins Stream.

23. Notwithstanding any other condition of this consent, the consent holder shall not cause any of the following effects in Maire Stream or Jenkins Stream (or any other downstream watercourse) in the opinion of the Council's Monitoring Officer:

    i) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;

    ii) any conspicuous change in colour or visual clarity that is not typical of ambient background levels at that time;

    iii) any emission of objectionable odour; or

    iv) any significant adverse effects on aquatic life.

24. All machinery on the work site shall be refuelled at least 20 metres away from any open watercourse. Refuelling and maintenance work shall be undertaken in such a manner as to prevent contamination of land and surface water. If spillage of any contaminants into any watercourse or onto land occurs, this shall be adequately cleaned up so that no residual potential for contamination of land and surface water runoff from the site occurs. If a spill of more than 20 litres of fuel or other hazardous substances occurs, the consent holder shall immediately inform the Council's Monitoring Officer.

Erosion and Sedimentation Control

25. All practical measures shall be taken to prevent any sediment, erosion, or dust effects beyond the boundaries of the site. In case of a dust, erosion or sediment breach all earthworks activities shall cease until the breach has been remedied.

26. Earthworks shall be carried out in general accordance with the Erosion and Sedimentation Control Plan prepared by Tonkin and Taylor and included in attachment H of the application.

27. Prior to any earthworks taking place under this consent, a further detailed dust, erosion and sedimentation control plan (DESCP) shall be prepared by or reviewed by the geotechnical engineer and provided to the Council's Monitoring Officer. This plan shall be in general accordance with the Land Development Manual 2010. The DESCP shall specifically address:

    a) How the staging of the earthworks will minimise the extent of exposed soil at any given time; and

    b) The sediment and erosion control measures to be used to minimise sediment entering Maire Stream and Jenkins Stream;

    c) The sediment and erosion control measures to be used to minimise sediment, soil, dust and gravel (etc) from tracking onto the railway reserve; and

    d) The measures to be taken to prevent any sediment, soil, dust effects beyond the boundaries of the site in order to achieve the requirements of condition 25.

    The control measures contained in the DESCP shall be implemented prior to earthworks commencing and shall be maintained throughout the duration of the earthworks.

    Advice note:

    The detailed DESCP may be reviewed and modified by the geotechnical engineer at any time during the implementation of this consent to ensure the requirements of condition 25 are met.

28. No earthworks resulting in cut or fill faces shall be undertaken in any location which has not been addressed by the DESCP (referred to in condition 27) if rain is forecast in the period before measures can be implemented to secure the ground from the effects of overland flows.

Drainage

29. All excavations and their backfilling shall be carried out in a manner that minimises infiltration into the adjacent ground.

30. The works shall be graded and/or appropriate drainage put in place to prevent ponding and to divert water away from foundation elements and potential slope failure areas.

31. The earthworks shall not detrimentally alter surface drainage of the site or of neighbouring properties in the opinion of the geotechnical engineer.

32. Drainage from retaining walls and any seepages encountered shall be conveyed in a controlled manner to the Nelson City Council Stormwater System unless otherwise not deemed necessary by the geotechnical engineer.

33. All drainage pipes shall have inspection points to allow future inspection and monitoring.

34. The layout and design of the comprehensive housing development (retirement village) shall provide adequate secondary flood paths and discharge points which shall be shown on design engineering plans for the certification of the Group Manager Infrastructure.

Water Supply

35. A water supply connection shall be provided through Lot 2 to Greenhill within one month following the completion of the comprehensive housing development (retirement village) unless otherwise not deemed necessary by the Council's Group Manager Infrastructure.

    In the event that the Council's Group Manager Infrastructure deems a water connection to be necessary the final design shall be shown on engineering plans which shall be certified by the Council's Group Manager Infrastructure prior to installation. The water supply connection shall thereafter be installed in accordance with the certified engineering plans to the satisfaction of the Council's Group Manager Infrastructure.

Subsoil Drains

36. If a subsoil drainage system is used it shall be designed so as to not require monitoring and maintenance on an ongoing basis.

37. Subsoil drains shall be designed and constructed in a way that allows them to be CCTV inspected.

38. No subsoil drains other than those permitted by the Land Development Manual 2010 shall be located beneath road to be vested in Council without the prior written approval of Council's Group Manager Infrastructure. Unless otherwise agreed by the Group Manager Infrastructure any subsoil drain outlet points on land to be vested in Council (e.g. road reserve) shall be connected into a reticulated stormwater system, e.g. at a manhole, and not be discharged to the ground surface.

Monitoring of Flocculent

39. Where flocculent is used in sedimentation ponds, daily monitoring of PH levels shall be undertaken and the results be made available to Council Officers if requested.

40. No contaminant shall be present in any water discharged from a sediment treatment pond or impoundment area.

41. The DESCP referred to in condition 27 shall describe the methods proposed for the disposal of material removed from a sedimentation pond or impoundment area where flocculent has been used.

Cabling

42. Live telephone and electric power connections shall be provided to the boundary of the comprehensive housing development (retirement village on proposed lot 1) and all wiring shall be to the standard required by the supply authority.

43. Confirmation of the above from the supply authority and a copy of the service provider's Certificate of Compliance shall be provided to the Council's Monitoring Officer within one month following the completion of the retirement village.

After Construction

44. Prior to the issue of 224(c) certificate for the associated subdivision (RM155189) the consent holder shall forward to the Council's Monitoring Officer documentation from the geotechnical engineer confirming that the works authorised by this consent, including drainage, have been satisfactorily completed. The documentation shall include:

    a) An 'as built' plan showing the layout of the earthworks, including the location of all fill, the status of that fill, retaining structures and drainage (including subsoil drains if used);

    b) Certification that all fill was placed in accordance with NZS 4431:1989 – *Code of Practice for Earth Fill for Residential Development;*

    c) A Statement of Professional Opinion as to suitability of the land for building construction;

    d) Any recommendations for the building development on the lots;

    e) A statement that surface drainage, including the disposal of stormwater to land has not detrimentally altered surface drainage of the site (including stormwater flow paths); and

    f) A statement as to whether subsoil drainage requires ongoing monitoring and / or maintenance.

Advice note:

If ongoing monitoring and maintenance is required then a covenant on the certificate of title will need to be registered and a variation to conditions 36 and 44 of this consent will be required

45. Prior to the issue of 224(c) certificate for the associated subdivision (RM155189) subsoil drains shall be CCTV inspected and a copy provided to the Council's Monitoring Officer with a report provided by the geotechnical engineer confirming that the subsoil drains have been satisfactorily installed.

Advice Note:

Section 224(c) Certificate for the associated subdivision consent (RM155189) will not be issued until the information required by conditions 44 and 45 have been provided to the Council.

Landscaping

46. Prior to any planting being carried out, the consent holder shall provide a final planting master plan which shall be prepared by a suitably qualified landscape architect and submitted to the Council's Monitoring Officer. The final planting master plan shall, as a minimum, address the implementation of the planting in relation to the stages of the earthworks and the construction of the retirement village, how the site will be rehabilitated in the long term, the density, species (particularly those species to be used in the biodiversity enhancement corridor and for bank and erosion control) and ongoing maintenance. The final planting master plan shall take account of the Development

Master Plans prepared by Canopy Landscape Architecture and included in attachment E of the application. All planting shall thereafter be carried out in accordance with the final planting master plan.

47. The consent holder shall, on completion of the bulk earthworks and as soon as it is possible to do so, mass plant or otherwise cover any exposed ground so as to minimise erosion and enhance slope stability in accordance with the final planting master plan.

    Note: *Section 224(c) Certificate for the associated subdivision (RM155189) will not be issued until the mass planting required by this condition has been carried out.*

48. Long term rehabilitation planting shall be carried out across the site in general accordance with the development master plans prepared by Canopy Landscape Architecture and included in attachment E of the application and the final planting master plan. The rehabilitation planting shall be carried out as soon as it is possible to do so following the completion of the earthworks in the corresponding area.

49. Landscape planting shall be carried out within the retirement village (shown as lot one on the associated subdivision consent – approved plan RM155189 A) in accordance with the final planting master plan and in general accordance with the development master development master plans prepared by Canopy Landscape Architecture (attachment E of the application) and in particular the plans labelled:

    - Master Plan B02;
    - Street Tree Plan B04;
    - Amenity Tree Plan B05; and
    - Amenity Planting B06.

    The landscape planting shall be carried out within the first planting season (being 1 May – 30 September) following the substantial completion of each construction stage of the comprehensive housing development.

50. The species used in the landscape planting areas shall be the same as or similar to those shown in the 'Coastal View Design Statement & Guide 2015' plans D14-D21 prepared by Canopy Landscape Architecture (attachment E of the application).

    Advice note*:*

    For the purposes of conditions 50 and 51 'similar' means species that are closely related in terms of size and character, i.e. same genus with different species.

51. Ecological enhancement planting shall be carried out in the biodiversity enhancement / restoration corridor (shown on approved plan RM155190 FF) within the first planting season following the substantial completion of the earthworks. The species used in the biodiversity enhancement / restoration corridor shall be the same as or similar to those shown in the final planting master plan and the Ecological Planting plan (D14) prepared by Canopy Landscape Architecture and included in attachment E of the application. The final layout of the ecological restoration planting shall be first approved by the Council's Group Manager Infrastructure.

Advice note:

The layout of the ecological enhancement planting shall be designed with consideration to potential future access requirements to the water main and walking tracks within this area.

52. Exposed areas of earthworks shall be battered back to marry into existing contours as soon as is practical to do so following the completion of the earthworks in the corresponding area.

Intersection design /construction

53. The consent holder shall construct the intersection with Waimea Road in general accordance with the approved concept plans RM155190 L, Z-CC and RM155190V1 A-D prior to the first building consent being lodged for the retirement village.

Advice note:

The applicant has been able to demonstrate, in its concept intersection design plans (approved concept plans RM155190 X-CC and RM155190V1 A-D) that the intersection in Waimea Road can be constructed within the road reserve and without adversely affecting the vehicle crossings / break-over angles of those properties fronting Waimea Road. This consent does not authorise any works on those properties fronting Waimea Road (or any other property not included within the application site). Should the detailed or final design plans of the intersection (as required by conditions 56 and 57) demonstrate that the intersection cannot be built in general accordance with the approved concept plans or cannot be built without works being carried out across the property boundaries the Consent Holder will be required to apply to the Council for a change of conditions.

54. A preliminary modelling of the traffic signals operation report using 'Sidra6' shall be submitted to Councils' Group Manager Infrastructure for certification prior to works commencing on the intersection and as part of the audit procedure required by condition 55. The modelling and traffic signal operation report shall show that the intersection layout can operate with a level C service on Waimea Road, a level D service on Princess Drive, for the full development scenario (the comprehensive housing development and the development potential of the balance lots on Tasman Heights) and 2022 forecast traffic flows.

55. The concept design shall be subject to a concept design safety audit which shall be undertaken by an independent qualified transport professional, and the modelling report provided in condition 54 shall be subject to a peer review undertaken by an experienced independent traffic signal design professional to provide a basis for the ongoing detailed design (required by condition 56). The audit, concept design and modelling report shall be submitted to the Group Manager Infrastructure for certification prior to any ongoing detailed design work being carried out on the intersection.

56. A detailed design of the intersection (including the traffic signal design and layout) shall be undertaken by a suitably qualified transport professional and shall be first shown on 'preliminary design engineering drawings' to be submitted to the Council's Group Manager Infrastructure for an independent design safety audit and certification.

57. All traffic signal work, equipment and installation shall comply with the New Zealand Transport Authority (NZTA) *P43 Specification for Traffic Signals* and certified by the Councils Group Manager Infrastructure.

Advice note:

Hardware specifications will include an Eclipse controller and cabinet and a CCTV camera such as an AXIS Q6044-E Network Camera or equivalent.

58. The final detailed design of the intersection shall be submitted to Council's Group Manager Infrastructure for certification prior to works commencing within Waimea Road. The intersection shall thereafter be constructed in accordance with the certified design engineering drawings and the certified electronic signal design.

59. The consent holder shall prepare a Traffic Management Plan (TMP) and a construction plan and programme (CPP) for the prior certification of the Group Manager Infrastructure. The certified TMP and CPP shall thereafter be implemented and adhered to for the duration of the works being carried out in Waimea Road.

Advice note:

Construction of the intersection with Waimea Road will have a significant impact on traffic flows on Waimea Road. The applicant is encouraged to liaise with Nelson City Council in advance of works starting within the road reserve to achieve a coordinated construction plan programme.

Advice note:

All costs associated with conditions 53-59 including any land acquisition required to achieve the approved intersection and traffic signal design shall be met by the consent holder.

General

60. For the purposes of, and pursuant to Section 128 of the Resource Management Act 1991, the Council reserves the right to review this consent annually commencing 12 months from the date this consent is granted, for any of the following purposes:

    (a) To modify existing conditions of consent relating to the effects of the activity on the environment.

    (b) To require the Consent Holder to adopt the best practicable option to mitigate any adverse effect upon the environment, arising from the generated effects of the activity.

    (c) If the Council deems that it is necessary to do so in order to deal with any adverse effect on the environment which may arise from the exercise of this consent, and which is appropriate to deal with at a later date.

ADVICE NOTE(S)

1. This is not a building consent, and the Consent Holder shall meet the requirements of the Council for all Bylaws, Regulations and Acts.

2. This resource consent authorises only the activity described above. Any matters or activities not consented to by this consent or covered by the conditions above must either:

    (d) comply with all the criteria of a relevant permitted activity in the Nelson Resource Management Plan (NRMP); or

(e) be allowed by the Resource Management Act 1991; or

(f) be authorised by a separate resource consent.

3. This consent is granted to the Consent Holder, but Section 134 of the Act states that such land use consent "attach to the land", and accordingly, may be enjoyed by any subsequent owners and occupiers of the land. Therefore, any reference to "Consent Holder" in any conditions shall mean the current owners and occupiers of the subject land. Any new owners or occupiers should therefore familiarise themselves with the conditions of this consent, as there may be conditions that are required to be complied with on an ongoing basis.
4. The Consent Holder should note that this resource consent does not override any registered interest on the property title.

landmark lile ltd
RESOURCE MANAGEMENT

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Application for Resource Consent

to the Nelson City Council

Under Sections 88 of the Resource Management Act 1991

APPLICANT:	**KB Quarries Ltd**
LOCATION:	**Tasman Heights & Greenhill** Involving Lot 67 DP 464769 (Identifier 619453), Lot 66 DP 464769 (Identifier 619452), and Lot 65 DP 464769 (Identifier 619451).
CONSENTS SOUGHT AND DESCRIPTION OF ACTIVITIES	**Discharge Permit** To discharge sediment-laden water to land where it may enter water, and to discharge sediment-laden water to the Council's stormwater infrastructure. (A detailed description of this activity is contained within Attachment A – *Assessment of Environmental Effects*).
ASSESSMENT OF EFFECTS	Attached is an assessment of the environmental effects that the proposed activity may have on the environment in accordance with Sections 88 and the Fourth Schedule of the Resource Management Act 1991. Consideration has been given to the Nelson Resource Management Plan.

Signed for and on behalf of KB Quarries Ltd on 29 June 2018.

Mark Lile
Landmark Lile Limited
Resource Management Consultancy

ATTACHMENT A.

ASSESSMENT OF ENVIRONMENTAL EFFECTS

Prepared in accordance with Sections 88 and the Fourth Schedule
of the Resource Management Act 1991

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A. Assessment of Environmental Effects

B. Certificates of Title

C. Approved Earthworks Consent: RM155090V2

D. Plan of Current and Proposed Earthworks (Figure 871069.0180-F1)

E. Current Erosion & Sediment Control Plan (including Figure 81069.0180F1)

F. Description of current management practices (Tonkin & Taylor Limited, 27 June 2018)

1.0 Introduction

1.1. The purpose of this report

The purpose of this report is to provide a description of the proposed development and an analysis of the adverse effects on the environment from the granting of this consent. This report has been prepared in accordance with Section 88 and the Fourth Schedule of the Resource Management Act 1991 and forms an integral part of this resource consent application (discharge permit).

2.0 Description of Activity

2.1. The Site and Background

2.1.1. This application for resource consent involves three separate but contiguous certificates of title, described below. These titles are owned by Gibair Developments Limited ('GDL').

2.1.2. Recent copies of the existing titles are provided within **Attachment B** of this application. In a broad sense, the three titles have a combined area of 57-hectares, extending over the area bounded generally by Highview subdivision in the west, Beatson Road to the south-west, the Tasman Heights subdivision to the north, and the Railway Reserve alongside Waimea Road to the east.

2.1.3. The western title is described within Certificate of Title 619543 as Lot 67 Deposited Plan 464769. As shown in **Figures 1**, and **2** below, this 16.5-hectare title contains a large section of the end of the Port Hills formation.

2.1.4. Within **Figure 3**, Lot 67 is generally identified in yellow while the adjoining title of Lot 66 is generally identified in red.

Figure 1: Certificate of Title 619543 (Lot 67 Deposited Plan 464769). Note: Aerial Photo taken prior to bulk earthworks

Figure 2: Lot 67 Deposited Plan 464769 (yellow) & Lot 66 Deposited Plan 464769 (red). Note: Photo taken prior to bulk earthworks

2.1.5. The red site identified above is Lot 66 Deposited Plan 464769 described within Certificate of Title 619452. The southern boundary of this allotment cuts across the valley and spur contours to adjoin Lot 67. This title contains a majority of the valley floor to the north of proposed Lots 1 and 2, south of Princes Drive.

Figure 3: Certificate of Title 619452 (Lot 66 Deposited Plan 464769)

2.1.6. To the north and east of lot 66 is Certificate of Title 619451 which contains Lot 65 Deposited Plan 464769 (Refer to Figure 4). This title contains an area of 30.4040 hectares that also includes much of the land that has been consented for subdivision (RM115160V1, Varied May

2013) and therefore adjoins the developed part of Tasman Heights. This title also extends further north around the eastern facing slopes and to the west of Ariesdale Terrace. The south-eastern side of Lot 65 is generally shown in Figure 15 below.

Figure 4: Certificate of Title 619451 (Lot 65 Deposited Plan 464769)

2.1.7. The zoning and other planning map attributes are identified on Planning Maps 23 (Zoning and Area) and A2.1. Zoning Map 23 locates the site within the *Residential Zone* and within the *Landscape Overlay*. Area Map 23 identifies the site as within the *Services Overlay,* the position of *Proposed Road to be Stopped* and also the *Proposed Road Alignments* (the Southern Link Corridor). See Figures 5 and 6 below.

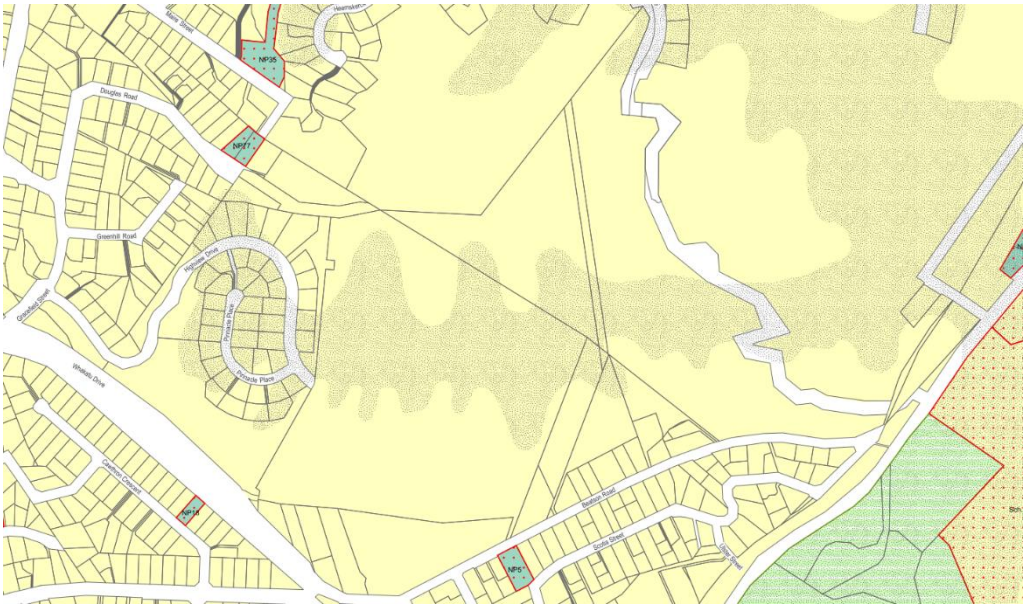


Figure 5: Planning Map 23 (Zoning)

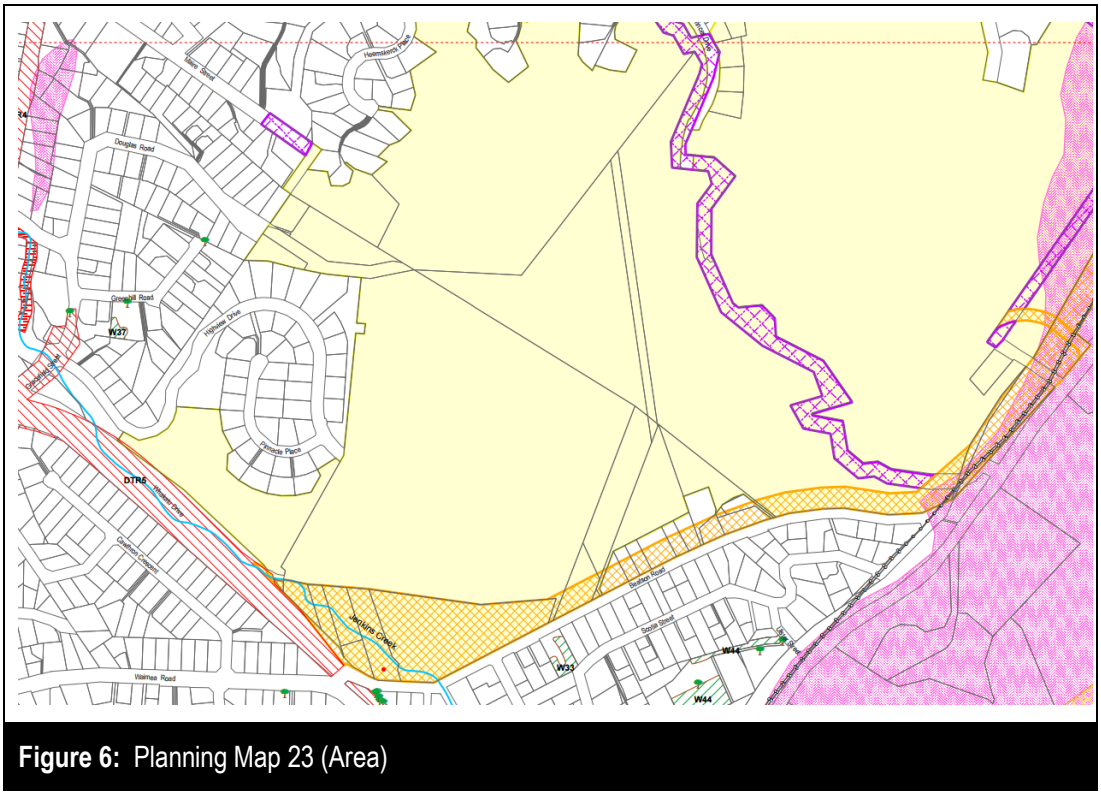


Figure 6: Planning Map 23 (Area)

2.1.8. Area Map 23 also identifies Jenkins Stream to the southwest of the site as being part of the Riparian Overlay. There are no Riparian Overlays within the subject site. The central gully does however drain west into the Maire Stream Catchment.

2.1.9. As a matter of background, the subject site is currently being developed for residential purposes with the bulk earthworks completed over a majority of the site (western side), with works moving toward to the land adjacent Waimea Road. The current consents are listed and described below:

- **RM155189**: 6 lot subdivision in relation to the construction of a comprehensive housing development (retirement village). Issued 11 February 2016.
- **RM155190**: Land use consent to undertake bulk earthworks as part of a 6 Lot subdivision and to undertake a create a comprehensive housing development (retirement village) with associated non-residential facilities. Issued 11 February 2016.

2.1.10. Changes/variations have subsequently been granted to the above consents as follows:

- **RM155189V1**: To change the gradient of the road at the eastern end of the site. Issued 9 May 2018.
- **RM155190V1**: To change the gradient of the road at the eastern end of the site. Issued 9 May 2018.
- **RM155190V2**: An extension of time was granted to enable to bulk earthworks to be completed. Issued 18 June 2018.

2.1.11. As the earthworks consent has particular relevance to this application, a copy of RM155190V2 is provided within **Attachment C** of this application.

2.1.12. As noted above, the bulk earthworks within the Maire catchment / western side of the site have been substantially completed. Refer to **Attachment D** for a plan showing the areas completed and in the process of stabilisation. As will become apparent within section 2.2 below, the western side of the site has substantially been stabilised with grass establishment progressing well in most of this area. See Figure 7 & 8 below. Once grass is fully established then the sediment control ponds will be decommissioned and stablished (grassed). It is at that point that these would be no discharge of sediment laden water to land over and above normal background levels.

Figure 7: Stabilisation, including the recent top-soiling of the haul road.

Figure 8: Stabilisation of the northern face, with a treatment pond which will also be removed and stabilised in the next few months

2.1.13. The following part of this site description documents that current receiving environment and the associated relationship to local watercourses and the Council's stormwater drainage network.

The Maire Catchment

2.1.14. The plans provided within Attachments D and E locate the consented earthworks in relation to the Maire catchment. Located toward the bottom/western boundary of the site is the Maire Stream. Discharges from the completed earthworks and remaining treatment ponds are to land, being the valley floor, which may eventually enter freshwater at the bottom of the site.

The York Catchment

2.1.15. The eastern side of the site is located within the York Catchment, above Waimea Road. The boundary between the western (Maire) and eastern (York) catchment is identified in **Attachment D**. The works within the eastern/York catchment is identified in a pink colour.

2.1.16. The works within the York catchment are not located in close proximity to a 'river' although there is a surface water drain that form a part of the Council's stormwater infrastructure in close proximity . As described in Section 2.2 below, the sediment-laden water of this part of the site would discharge to land or to the Council's stormwater drainage network.

2.2. Proposal

2.2.1. As described as a part of RM155190V2, the bulk earthworks on the western side of the site have now been completed with a significant majority of the site now top-soiled and grassed / seeded. As a result, the initial sediment treatment ponds are in the process of being decommissioned. The stormwater runoff from the stabilised site may still contain some sediment however this diffuse discharge to land would typically comply with FWr.25.1(d). This is because runoff from the stabilised areas would be equivalent to background levels of runoff from the wider catchment. Notwithstanding this, consent is sought to cover the period that it takes for the grass / stabilisation to fully establish.

2.2.2. Treatment ponds 5 and 1 will remain in use within this western side of the site until this is no longer required to treat stormwater from the eastern end of the bulk earthworks, and this area has been stabilised. FWr.25.1(e) is of relevance to this remaining discharge activity as it is from a sediment treatment pond onto land where is may enter a surface water body. This permitted activity standard is however subject to there being no point source discharge of any contaminants into a water body, and water not discharged onto adjoining properties. Neither of these situations arise. Water from the treatment pond is discharged to the valley floor, well above Maire Stream.

2.2.3. These treatment ponds have also been established and are operated in accordance with the Land Development Manual 2010. As such, the discharge from these ponds minimise and, as far as possible, avoid the potential for contamination of surface water bodies (see FWr.25.5). The Plan does not require there to be no sediment laden water discharged to land. As the rule clearly provides, it also enables this discharge to land where it may enter water.

2.2.4. Moving over to the eastern side of the site where earthworks are consented within the Waimea Road / York catchment, Rule FWr.25.1(g) is relevant as the discharge will be (under normal conditions) directly to the Council's stormwater infrastructure. This is also considered to be a permitted activity as the activity is designed to comply with the LDM. The current management practices to control sediment discharge are described in the Tonkin & Taylor letter provided within **Attachment F**.

Figure 10: Council's Stormwater drain infrastructure, and approximately location of proposed treatment pond (refer to Tonkin & Taylor ESCP for accurate positioning)

2.2.5. In combination, the information provided within **Attachments D-F** provide further description of the nature and location of the discharge activity associated with the consent earthworks. Importantly, the consent conditions attached to RM155090V2 also involve a comprehensive set of requirements that require the professional design and supervision of sediment control measures. The relevant conditions, which form an important part of this proposal, are located under the following subheadings:

- Design and Methodology;
- Ecology;
- Erosion and Sedimentation Control;
- Drainage; and
- Monitoring of Flocculant.

2.2.6. The ESCP provided within **Attachment D** is in fact that required by these conditions and provided to the environmental monitoring officer in December 2017.

3.0 Status of Application

The following table identifies the relevant rules of the Plan for the purpose of determining the status of this application under the Resource Management Act 1991:

3.1. The Nelson Resource Management Plan

Rule	Status	Reason
Freshwater Rule		
FWr.25 *General discharges too land where it may enter water*	**Discretionary**	**FWr.25.1(d)** provides for, as a permitted activity, the discharge of sediment laden water to land, subject to compliance with a number of performance standards. For example, the discharge to land cannot result in contaminated water entering a surface water body, nor involve a direct discharge to a surface water body (being a river, lake or wetland). 'River' is then defined in the Plan. During rain events untreated sediment-laden water (from un-stabilised earthworks) would typically overflow to land and may subsequently make its way downhill to a river. Whether in the Maire or York catchments, these circumstances cannot be avoided entirely and therefore a discharge permit has been sought. **FWr.25.1(e)** also provides for, as a permitted activity, the discharge of water from a sediment treatment pond or impoundment area onto land where it may enter a surface water body, subject to there being no point source discharge of any contaminants into any water body, and no water being discharged onto adjoining properties. This provision (e) specially enables the discharge of sediment laden water to a surface water body if that discharge is from a treatment pond which has first discharged to land. The current discharges in the Maire catchment operate in this manner. There is no direct / point source discharge to a river in that catchment. Nor is there any direct or point source discharge from the York catchment into a river. Sediment-laden water from the treatment pond will only discharge to land in rainfall events that exceed the design capacity of the pond. If that occurs the discharge would also be onto an adjoining property, being the Railway Reserve land. Consent is therefore sought to cover these potential discharges. During normal operation, the discharge will be direct to the stormwater infrastructure which is provided for a permitted activity under clause (g) which is addressed below. Clause FWr.25.1**(g)** provides for, as a permitted activity, discharges into the Council's stormwater infrastructure subject to compliance with the listed standards. The rule refers specifically and directly to Section 9.3 of the LDM which is in the '*Earthworks*' chapter and relates to '*Erosion and Sediment Control*'. Discharges directly into Council's stormwater infrastructure, while complying with section 9.3, is a permitted activity. This has particular relevance to the proposed discharge from the sediment treatment pond in the York catchment, which has been designed to comply with the LDM. Note: there is no Stormwater Bylaw.

3.2. Summary

This application must be considered as a **Discretionary Activity** under the Nelson Resource Management Plan.

4.0 Actual or Potential Effects on the Environment

The following assessment has been prepared after having regard to the scale and significance of the actual or potential effects (s88(2)(b)) and has been prepared in accordance with the Fourth Schedule to the Act. The 'actual or potential effects' have been identified from the relevant assessment criteria accompanying FWr.25 of the Plan.

4.1. Location and area of discharge

4.1.1. The earthworks being undertaken in accordance with RM055090V2 involves two catchment areas. The works within the larger Maire catchment is almost complete and the stabilisation of that land is in the final phases. The works within the York catchment are about to start.

4.2. The risk of contamination

4.2.1. The risks associated with adverse contaminant discharges in the Maire catchment are now significantly reduced as the works are nearing completion. It is only during extreme rainfall events that risks now remain. The applicant is however managing the site in accordance with the ESCP and LDM. Good communication with the Council's Monitoring Officer and Tonkin & Taylor is paramount to ensure the site is managed in accordance with best practice. The risks of contamination during normal conditions is considered to be low.

4.2.2. There are a range of methods employed to ensure that there works within the York catchment do not result in significant contamination of the receiving environment. These measures are set out in detail in the ESCP (submitted in December 2017), but also summarised in the letter from Tonkin & Taylor provided within **Attachment F** of this application.

4.3. Degree of compliance with the LDM

4.3.1. As set out in **Attachment F**, the applicant is undertaking these earthworks and managing the erosion and sediment control in accordance with the LDM.

4.4. Best Practicable Options

4.4.1. The BPO have been adopted within the ESCP. The ESCP is however an iterative document and so improvements would be made to deal with circumstances that may arise.

4.5. Section 107

4.5.1. Section 107(a) of the Act sets out restrictions as to when a consent authority shall not grant a discharge permit. Section 107(2) then sets out the exceptions to Section 107(1), those being when the Consent Authority is satisfied that:

> *(a) that exceptional circumstances justify the granting of the permit; or*
>
> *(b) that the discharge is of a temporary nature; or*
>
> *(c) that the discharge is associated with necessary maintenance work –*
>
> *And that it is consistent with the purpose of this Act to do so.*

4.5.2. For the described discharges in the Maire catchment with bulk earthworks nearing completion and with the site stabilisation well advanced, the discharge of sediment-laden water to land is being undertaken in accordance with the ECSP and Land Development Manual. The

discharges are also temporary in nature. In normal conditions, the discharge from the remaining treatment ponds should not exceed background runoff levels. During extreme/exceptional rain events, when the capacity of the treatment ponds is exceeded, the discharge(s) would also be temporary but cannot reasonably be avoided. The best practical measures have however been put in place to avoid suspended material from entering the Maire Stream. FWr.25 fully recognises these practicalities.

4.5.3. The above assessment applies equally to the discharge(s) proposed within the York catchment. The current earthworks consent requires the professional design and management of the ESCP, with the ESCP submitted to the Council in December 2017.

4.5.4. During normal conditions the discharge from the York catchment will be from the proposed treatment pond, direct to the Council's stormwater infrastructure. Water from this treatment pond will be treated in accordance with the LDM and approved ESCP. This is provided for as a permitted activity.

4.5.5. During times of rainfall events when the capacity of the treatment pond are exceeded, there would be exceptional and temporary periods that sediment laden water would be discharged to land and to land where it may enter water that contain elevated suspended materials.

4.5.6. I summary, Section 107 does not restrict the grant of this application for discharge permit.

5.0 Lapse, Duration and Conditions

5.1. Lapse and Duration

5.1.1. The applicant has already completed most of the earthworks within the Maire Catchment and so has, effectively, already given effect to the discharge permits sought here as a matter of caution.

5.1.2. For the York Catchment, the bulk earthworks have yet to be started with the current site works only involving the setup of silt fences, securing fencing and preparing for the establishment of the sediment treatment pond as described in the ESCP attached.

5.1.3. The applicant proposes to give effect to these consents immediately.

5.2. Expiry

5.2.1. As regional consents it is also necessary to address appropriate expiry periods. In essence, the expiry of these consents should align with the consented timeframe to complete the earthworks, following by a reasonable timeframe for the stabilisation of the site.

5.3. Review of Conditions

5.3.1. Review conditions are commonplace and are anticipated.

5.4. Volunteered Conditions

5.4.1. The following conditions are volunteered:

Ecology

- The consent holder shall engage an expert freshwater ecologist ('the ecologist') who shall visit the site and brief the contractors undertaking the works on methods that must be employed to minimise adverse effects on aquatic life.

- The consent holder shall ensure that the works are carried out in such a manner as to minimise sedimentation / contamination of Maire Stream and Jenkins Stream.

- Notwithstanding any other condition of this consent, the consent holder shall not cause any of the following effects in Maire Stream or York Stream (or any other downstream watercourse) in the opinion of the Councils Monitoring Officer:

    - the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;

    - any conspicuous change in colour or visual clarity that is not typical of ambient background levels at that time;

    - any emission of objectionable odour; or

    - any significant adverse effects on aquatic life.

- All machinery on the work site shall be refuelled at least 20 metres away from any open watercourse. Refuelling and maintenance work shall be undertaken in such a manner as to prevent contamination of land and surface water. If spillage of any contaminants into any watercourse or onto land occurs, this shall be adequately cleaned up so that no residual potential for contamination of land and surface water runoff from the site occurs. If a spill of more than 20 litres of fuel or other hazardous substances occurs, the consent holder shall immediately inform the Council's Monitoring Officer.

Erosion and Sedimentation Control

- All practical measures shall be taken to prevent any sediment, erosion, or dust effects beyond the boundaries of the site. In case of a dust, erosion or sediment breach all earthworks activities shall cease until the breach has been remedied.

- Earthworks shall be carried out in general accordance with the Erosion and Sedimentation Control Plan prepared by Tonkin and Taylor and attached to consent RM155190.

- Prior to discharge taking place under this consent, a further detailed dust, erosion and sedimentation control plan (DESCP) shall be prepared by or reviewed by the geotechnical engineer and provided to the Council's Monitoring Officer. This plan shall be in general accordance with the Land Development Manual 2010. The

DESCP shall specifically address:

- How the staging of the earthworks will minimise the extent of exposed soil at any given time; and
- The sediment and erosion control measures to be used to minimise sediment entering Maire Stream and Jenkins Stream;

6.0 Processing pathway

6.1. Public Notification

6.1.1. Section 95 requires public notification only if the consent authority decides that the proposed activity will have or is likely to have adverse effects on the environment that are more than minor. 95D provides the methodology for determining those effects.

6.1.2. The proposed discharge is temporary while the bulk earthworks are completed for the greater development of the site. Best practice measures have been adopted to ensure the effects are mitigated. The effects are not considered to be more than minor due to the management practices and temporary nature of the discharge.

6.2. Limited Notification

6.2.1. Section 95E provides the methodology for determining whether a person is an affected party or not:

> *(1) A consent authority must decide that a person is an affected person, in relation to an activity, if the activity's adverse effects on the person are minor or more than minor (but are not less than minor).*

6.2.2. The proposed discharges are not considered to adversely affect any neighbouring property.

7.0 Assessment of relevant objectives and policies

7.1. Nelson Resource Management Plan

Discharges to Freshwater and Freshwater Quality

7.1.1. District objective DO19.1 requires all surface water bodies contain the highest practicable water quality. The proposed sediment control measures include clean water cutoff drains and bunds to prevent water from moving through the earthworks area. Sediment ponds are established to remove, as far as practicable, the sediment and fine particles from the water prior to discharge. The best management practices are adopted in the ESCP to ensure the water quality of the Maire Stream and York Stream is not significantly affected.

7.1.2. In accordance with Policy DO19.1.1 the York Stream has a water classification of class D outlined in AP28.4. The proposed management practices have been designed in accordance with the LDM to ensure sediment laden water is not discharged into York Stream (via the

stormwater drainage network) during normal conditions.

7.1.3. Policy DO19.1.5 recognises water bodies with a classification of less than Class C which are listed as a first priority for improvement. York stream is a ranked as a Second priority for improvement under AP28.4 and the applicant ensures that best practice management techniques are adopted to maintain the quality of this waterbody.

7.1.4. Policy DO19.1.7 seeks to control land use activities which have potential to adversely affect surface water quality and to encourage land use activities that minimise and filter contaminants entering water bodies. The surrounding earthworks and discharge is a temporary activity while the site preparation works are untaken. On completion of the earthworks stabilisation the discharge of sediment laden water would return to background levels. The applicant has adopted practices to mitigate the effects of the discharge during the site preparation stage.

7.1.5. The proposed discharge is treated stormwater from the sediment laden ponds, flocculant is added to the pond to remove the sediment from the water and ensure no sediment laden water is not discharged in normal conditions. Monitoring conditions are adopted on the earthworks consent to ensure the sediment ponds are appropriately managed (Policy DO19.1.8).

7.1.6. The adoption of best practice management techniques has been applied to maintain the existing water quality. The cleanwater cuttoff drains have been installed to minimise the volume of water moving through the site and reducing the point source discharge of stormwater from the sediment ponds. This management practice is considered to align with the aspirations of policy DO19.1.10.

7.2. Nelson Regional Policy Statement 1997

Water

7.2.1. Objective WA1.2.1 seeks the maintenance and enhancement of the quality of inland water to protect the life support capacity of aquatic ecosystems. The proposed discharge adopts best practice to ensure the water quality of the stream is maintained (Policy WA1.3.2). Appropriate conditions to manage the discharge are volunteered as condition of consent (Policy WA1.3.3).

7.3. National Policy Statement for Freshwater Management 2014 (Updated August 2017)

A. Water Quality

7.3.1. Objective A1 seeks to safeguard the ecosystem processes of freshwater and the health of people and communities. The proposed management plans provide mitigation practices to maintain the current ecosystem values.

7.3.2. Objective A2 requires the overall quality of freshwater unit to be maintained or improved. The proposed discharge is temporary and the applicant has adopted practices to ensure the surrounding water quality is maintained from the temporary discharges. Policy A3 allows regional council to impose conditions of discharge permits to achieve the objectives of Policy A1 & A2. It is recognised that conditions will be imposed on the discharge permit to ensure best practice is complied with.

8.0 Assessment of Part 2 (RM Act 1991)

8.1.1. Section 6 sets out the matters of national importance.

> *In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to—*
>
> *(a) the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:*

8.1.2. The proposed discharge will maintain the natural functioning of the streams and their margins.

8.1.3. Section 7 sets out other matters for consideration:

> *In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to—*
>
> *(c) the maintenance and enhancement of amenity values:*

8.1.4. Amenity values of the surrounding environment and streams will be maintained by the adoption of the best practice management techniques.

8.1.5. There are no inconsistencies with the Treaty of Waitangi principles as outlined in Section 8.

9.0 Overall Assessment

9.1.1. This application for resource consent (discharge permit) is sought to ensure any potential discharge of sediment-laden water from the site, resulting from the works being undertaken in accordance RM055090V2, are appropriately consented. Some of the discharges proposed are permitted by FWr.25.1 however this application seeks to canvass all discharges as a matter of caution.

9.1.2. The earthworks within the Maire catchment are well advanced and so too is the stabilisation of the finished platform and side slopes. As such the risks of adverse contamination is now low. The works will continue to be managed in accordance with the ESCP, LDM and the current consent conditions.

9.1.3. The earthworks within the York catchment are just about to start. The applicant has, as required by RM055090V2, submitted an ESCP and plans to manage these works also in accordance with the LDM.

9.1.4. Overall the activities are consistent with Part 2 and Section 5 of the Resource Management Act and achieve the sustainable management of natural and physical resources.

Attachment B:

Certificates of Title

Attachment C:

Approved Earthworks Consent: RM155090V2

Attachment D:

Plan of Current and Proposed Earthworks (Figure 871069.0180-F1)

Attachment E:

Current Erosion & Sediment Control Plan (including Figure 81069.0180F1)

Attachment F:

Description of current management practices (Tonkin & Taylor Limited, 27 June 2018)

COMPUTER FREEHOLD REGISTER UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General of Land

Identifier	**619451**
Land Registration District	**Nelson**
Date Issued	12 December 2013

Prior References
599280 NL121/60

Estate	Fee Simple
Area	30.4040 hectares more or less
Legal Description	Lot 65 Deposited Plan 464769

Proprietors
K B Quarries Limited

Interests

Appurtenant hereto is a right to take and convey water created by Deed of Easement 41276 (51/204) - 15.4.1915 at 10:35 am

K2903 Building Line Restriction - 26.6.1953 at 11:30 am (affects part formerly Lot 6 DP 451692)

Subject to a right (in gross) to convey electricity over part marked AI on DP 464769 in favour of Telecom New Zealand Limited created by Transfer 400039.1 - 15.8.2000 at 2:10 pm

8269208.4 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 11.9.2009 at 2:56 pm (affects part formerly Lot 6 DP 451692)

Subject to a right (in gross) to drain sewage over parts marked N, P, R, AJ & AL on DP 464769 in favour of the Nelson City Council created by Easement Instrument 8269208.8 - 11.9.2009 at 2:56 pm

The easements created by Easement Instrument 8269208.8 are subject to Section 243(a) Resource Management Act 1991

Appurtenant to part (formerly Lot 6 DP 451692) is a right of way, a right to drain water and sewage and a right to convey water, electricity, telecommunications and computer media created by Easement Instrument 8269208.9 - 11.9.2009 at 2:56 pm

The easements created by Easement Instrument 8269208.9 are subject to Section 243(a) Resource Management Act 1991

Subject to a right to drain water over parts marked M, P, AJ & AK and sewage over parts marked P & AL on DP 464769 created by Easement Instrument 8269208.10 - 11.9.2009 at 2:56 pm

The easements created by Easement Instrument 8269208.10 are subject to Section 243(a) Resource Management Act 1991

Subject to a right to drain water over part marked A on DP 464769 created by Easement Instrument 8872318.4 - 22.11.2011 at 11:20 am

Land Covenant in Easement Instrument 8872318.5 - 22.11.2011 at 11:20 am (affects part formerly Lot 6 DP 451692)

Appurtenant to part (formerly Lot 6 DP 451692) is a right to drain water and sewage created by Easement Instrument 9356118.10 - 12.4.2013 at 3:57 pm

The easements created by Easement Instrument 9356118.10 are subject to Section 243(a) Resource Management Act 1991

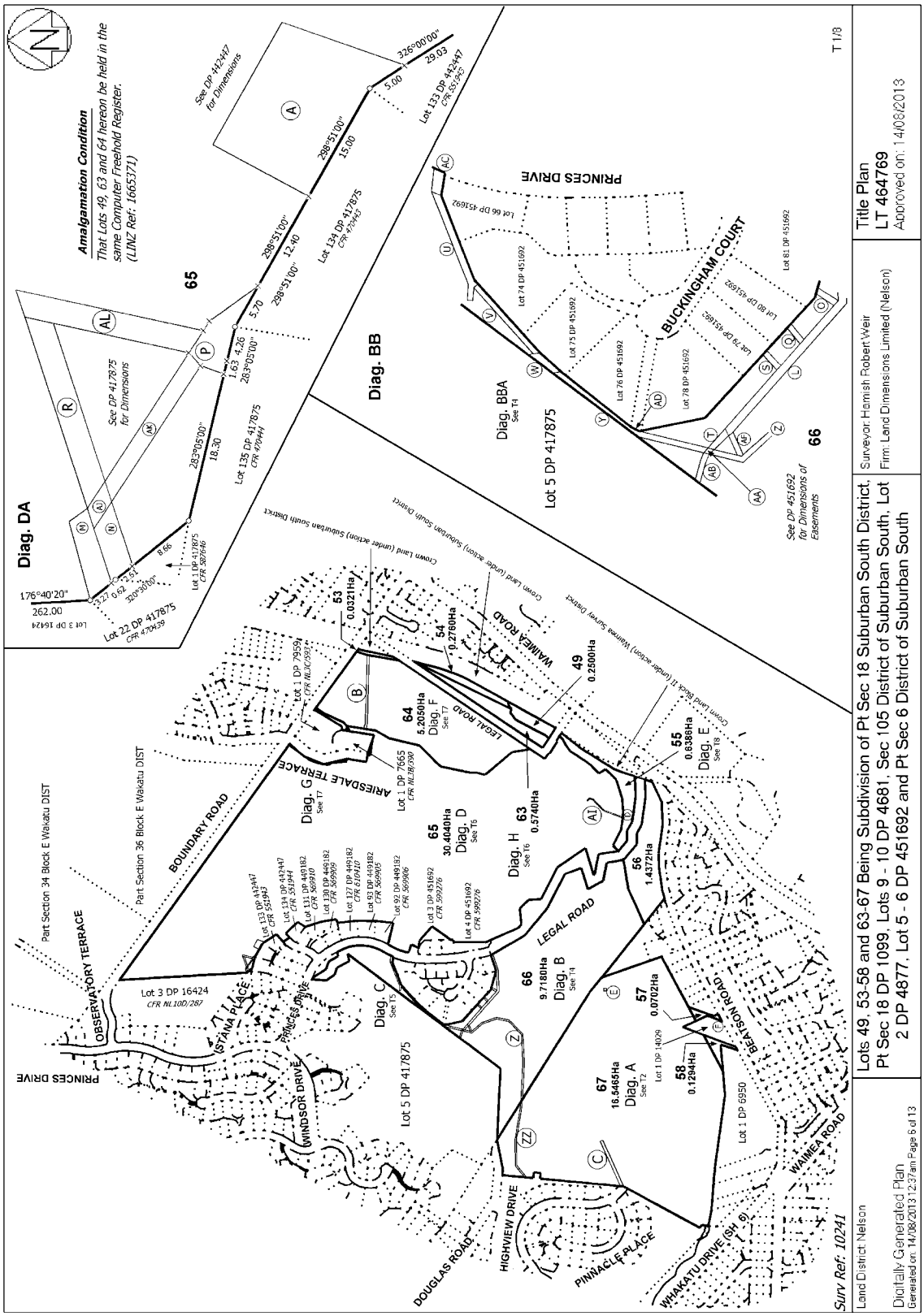
Land Covenant in Easement Instrument 9356118.11 - 12.4.2013 at 3:57 pm (affects part formerly Lot 6 DP 451692)

9435451.1 Compensation Certificate pursuant to Section 19 Public Works Act 1981 by Nelson City Council - 19.6.2013 at 4:15 pm (affects part formerly Lot 6 DP 451692)

Identifier **619451**

10117158.1 Bond pursuant to Section 108(2)(b) Resource Management Act 1991 - 7.7.2015 at 2:36 pm

Subject to a right (in gross) to convey electricity, telecommunications and computer media over part marked A on DP 507255 in favour of Network Tasman Limited created by Easement Instrument 10789160.2 - 8.6.2017 at 11:31 am


Amalgamation Condition
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Diag. BB
Diag. BBA
See T4
Diag. C
See T5
Diag. D
See T5
Diag. E
See T8
Diag. F
See T7
Diag. G
See T7
Diag. H
See T6
Diag. A
See T2
Diag. B
See T4
Lot 5 DP 417875
Lot 3 DP 16424
Lot 22 DP 417875
Lot 1 DP 7665
Lot 1 DP 7959
Lot 1 DP 14029
Lot 1 DP 6950
PRINCES DRIVE
BUCKINGHAM COURT
WAIMEA ROAD
LEGAL ROAD
ARIESDALE TERRACE
BOUNDARY ROAD
OBSERVATORY TERRACE
ISTANA PLACE
WINDSOR DRIVE
BEATSON ROAD
DOUGLAS ROAD
HIGHVIEW DRIVE
PINNACLE PLACE
WHAKATU DRIVE (SH 6)
Part Section 34 Block E Wakatu DIST
Part Section 36 Block E Wakatu DIST
Crown Land (under action) Suburban South District
Crown Land Block II (under action) Waimea Survey District
See DP 412447 for Dimensions
See DP 417875 for Dimensions
See DP 451692 for Dimensions of Easements
Surv Ref: 10241
Land District: Nelson
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Generated on: 14/08/2013 12:37am Page 6 of 13
Lots 49, 53-58 and 63-67 Being Subdivision of Pt Sec 18 Suburban South District, Pt Sec 18 DP 1099, Lots 9 - 10 DP 4681, Sec 105 District of Suburban South, Lot 2 DP 4877, Lot 5 - 6 DP 451692 and Pt Sec 6 District of Suburban South
Surveyor: Hamish Robert Weir
Firm: Land Dimensions Limited (Nelson)
Title Plan
LT 464769
Approved on: 14/08/2013
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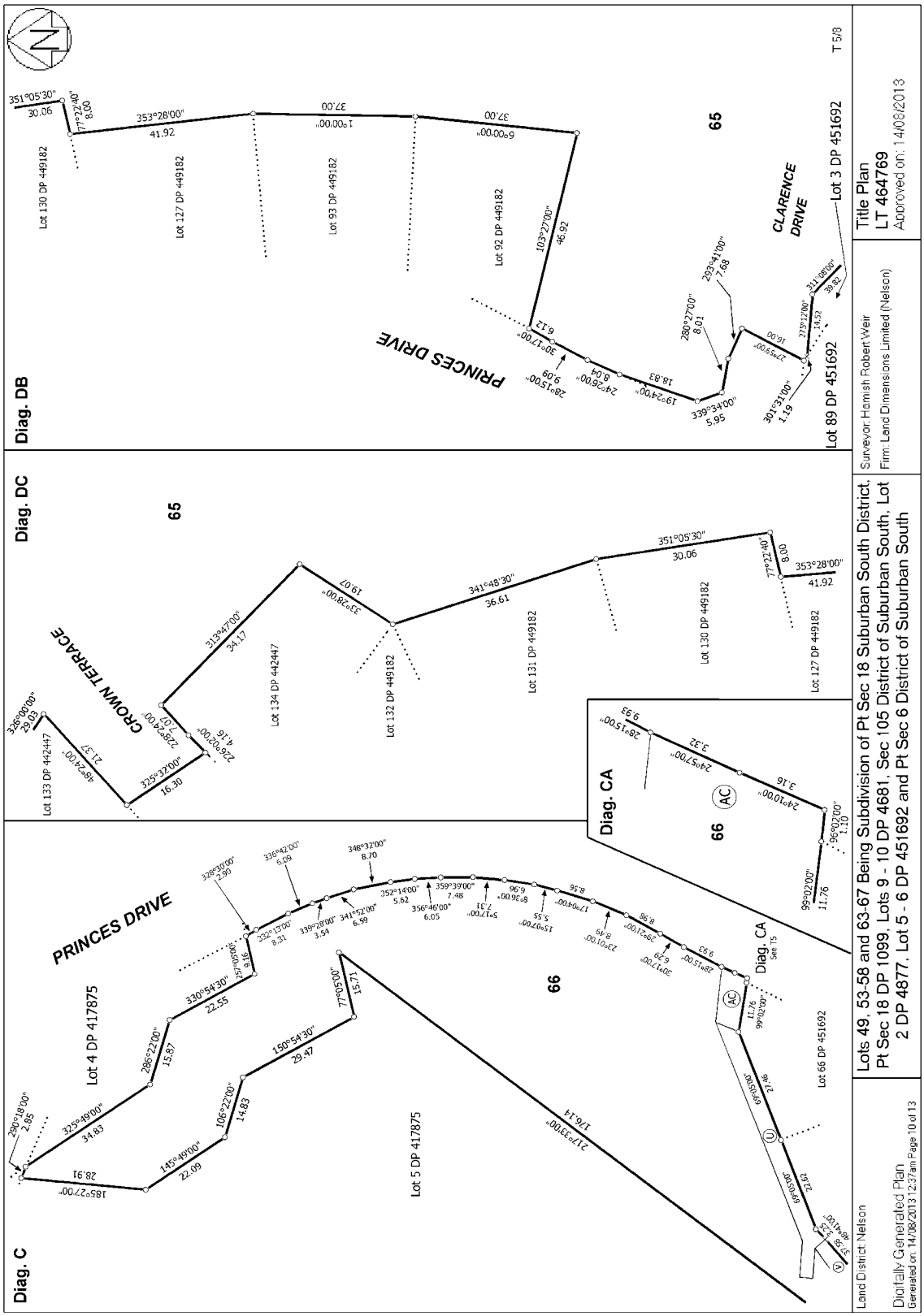
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Lot 93 DP 449182
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Lot 134 DP 442447
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Lot 131 DP 449182
Lot 4 DP 417875
Lot 5 DP 417875
Lot 66 DP 451692
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LT 464769
Approved on: 14/08/2013
Surveyor: Hamish Robert Weir
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Land District: Nelson
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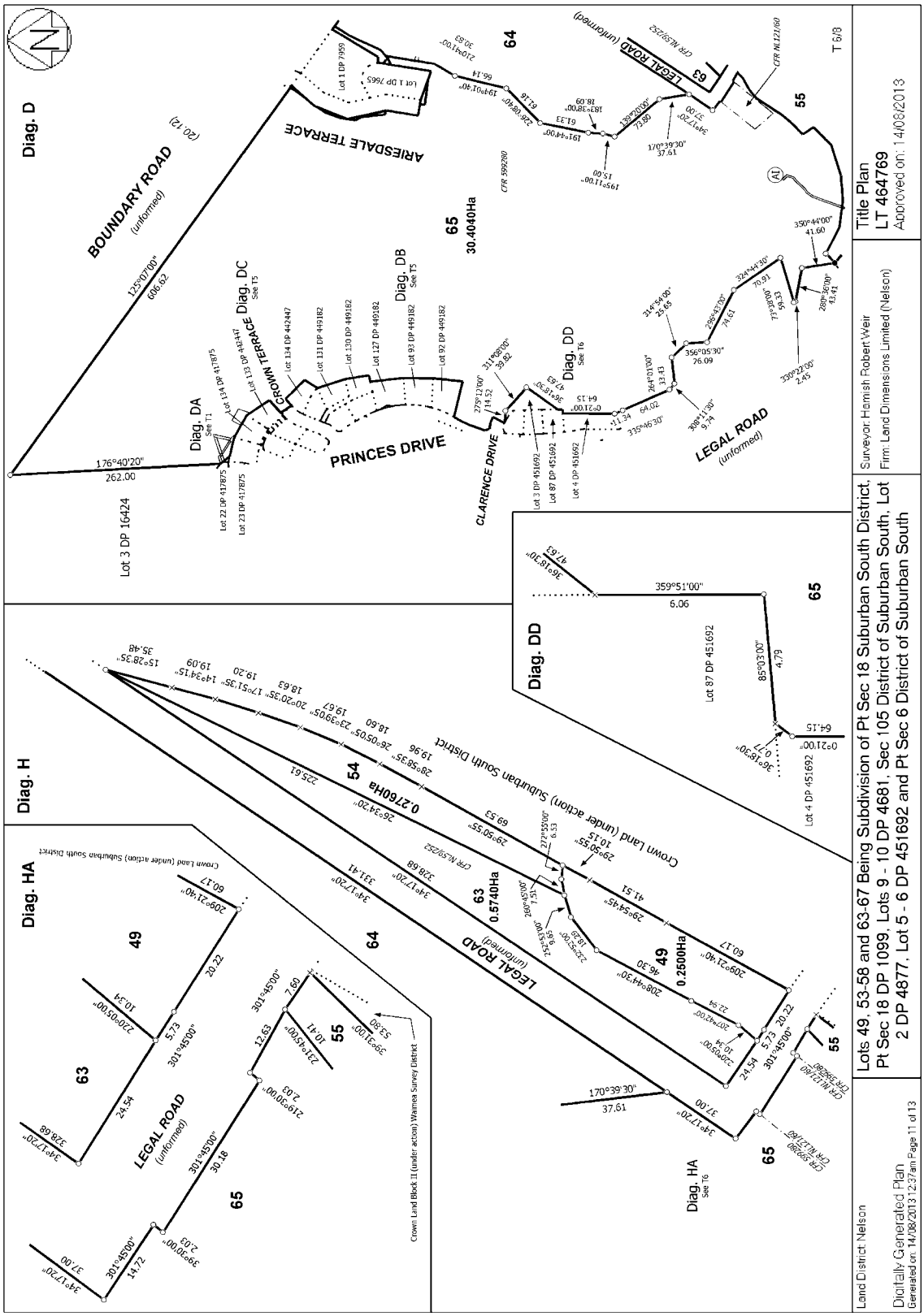
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Approved on: 14/08/2013
Surveyor: Hamish Robert Weir
Firm: Land Dimensions Limited (Nelson)
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Land District: Nelson
Digitally Generated Plan
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BOUNDARY ROAD (unformed)
ARIESDALE TERRACE
CROWN TERRACE
PRINCES DRIVE
CLARENCE DRIVE
LEGAL ROAD (unformed)
LEGAL ROAD (unformed)
LEGAL ROAD (unformed)
Crown Land (under action) Suburban South District
Crown Land Block II (under action) Waimea Survey District
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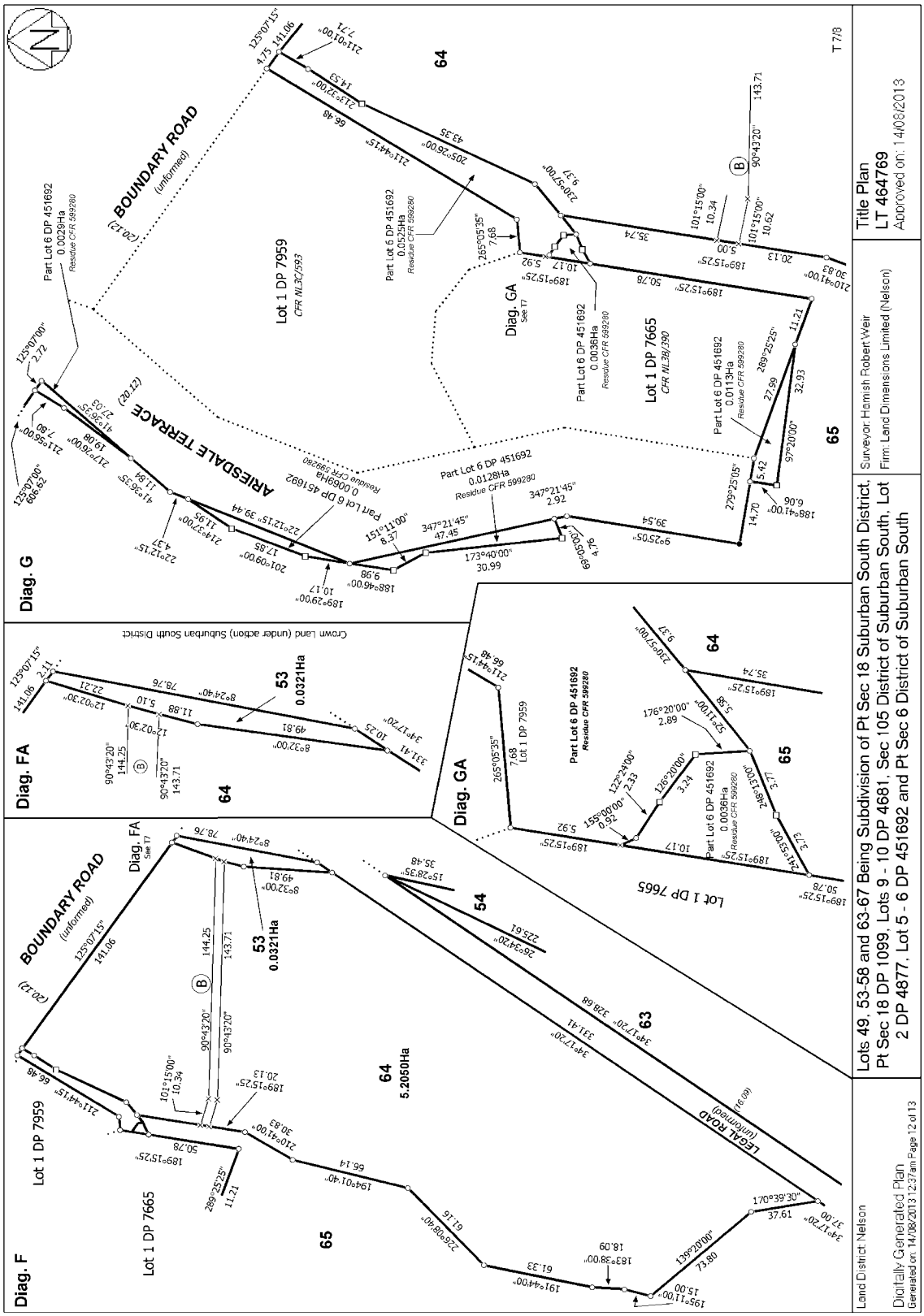
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LT 464769
Approved on: 14/08/2013
Surveyor: Hamish Robert Weir
Firm: Land Dimensions Limited (Nelson)
Land District: Nelson
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Diag. FA
Diag. GA
Diag. F
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(unformed)
ARIESDALE TERRACE
LEGAL ROAD
(unformed)
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CFR NL3C/593
Lot 1 DP 7665
CFR NL3B/390
Part Lot 6 DP 451692
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Residue CFR 599280
Part Lot 6 DP 451692
0.0525Ha
Residue CFR 599280
Part Lot 6 DP 451692
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Residue CFR 599280
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Residue CFR 599280
Part Lot 6 DP 451692
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Residue CFR 599280
Part Lot 6 DP 451692
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Crown Land (under action) Suburban South District
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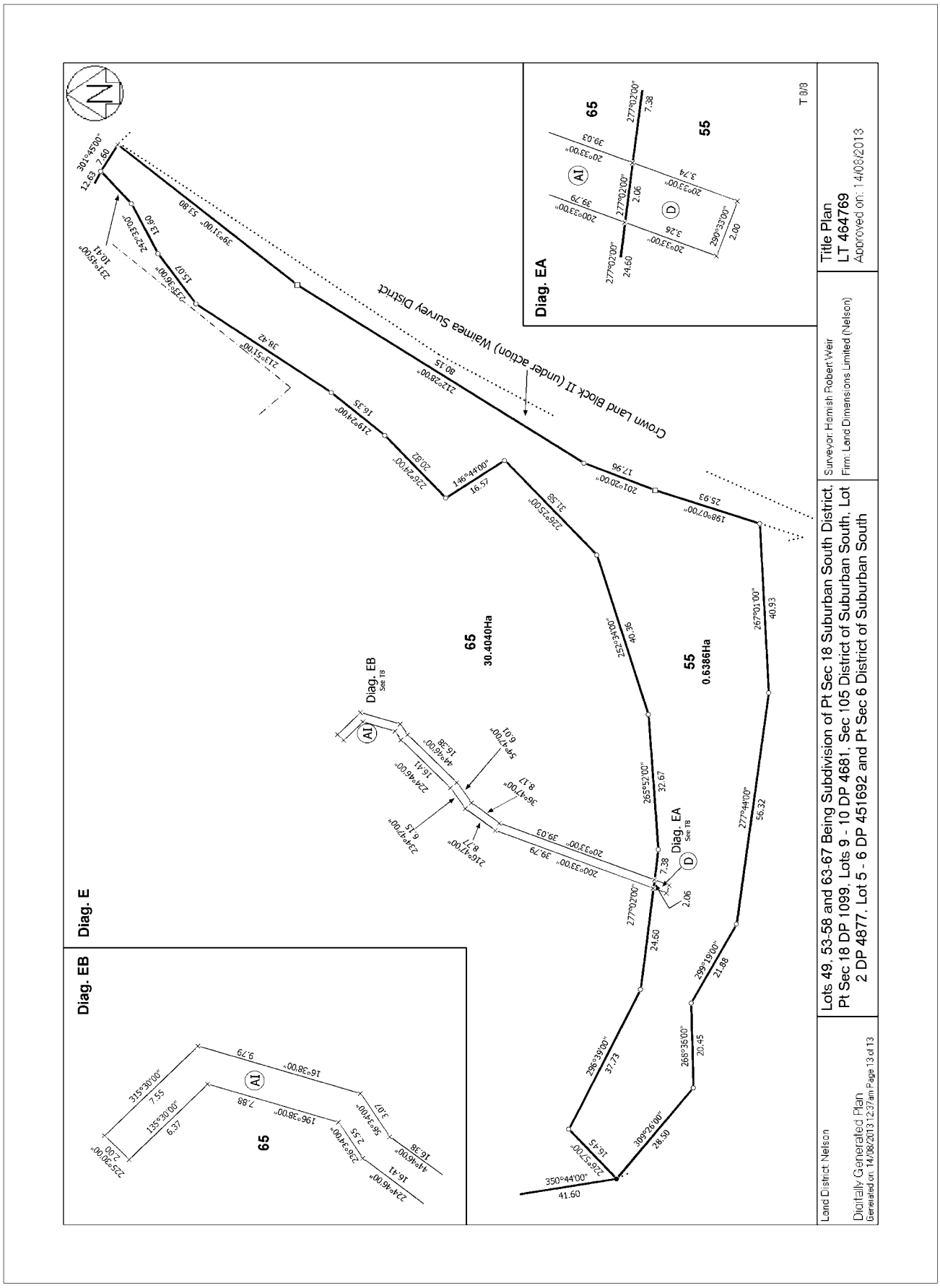
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Land District: Nelson
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Diag. EA
Diag. EB
Diag. E
Crown Land Block II (under action) Waimea Survey District
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30.4040Ha
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0.6386Ha
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COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**619453**
Land Registration District	**Nelson**
Date Issued	12 December 2013

Prior References
NL115/181 NL51/253 NL8C/873

Estate	Fee Simple
Area	16.5465 hectares more or less
Legal Description	Lot 67 Deposited Plan 464769

Proprietors
K B Quarries Limited

Interests

Subject to Section 59 Land Act 1948 (affects parts formerly Sec 105 Dist of Subrbn South & Lot 10 DP 4681)

Subject to Section 8 Coal Mines Amendment Act 1950 (affects parts formerly Sec 105 Dist of Subrbn South & Lot 10 DP 4681)

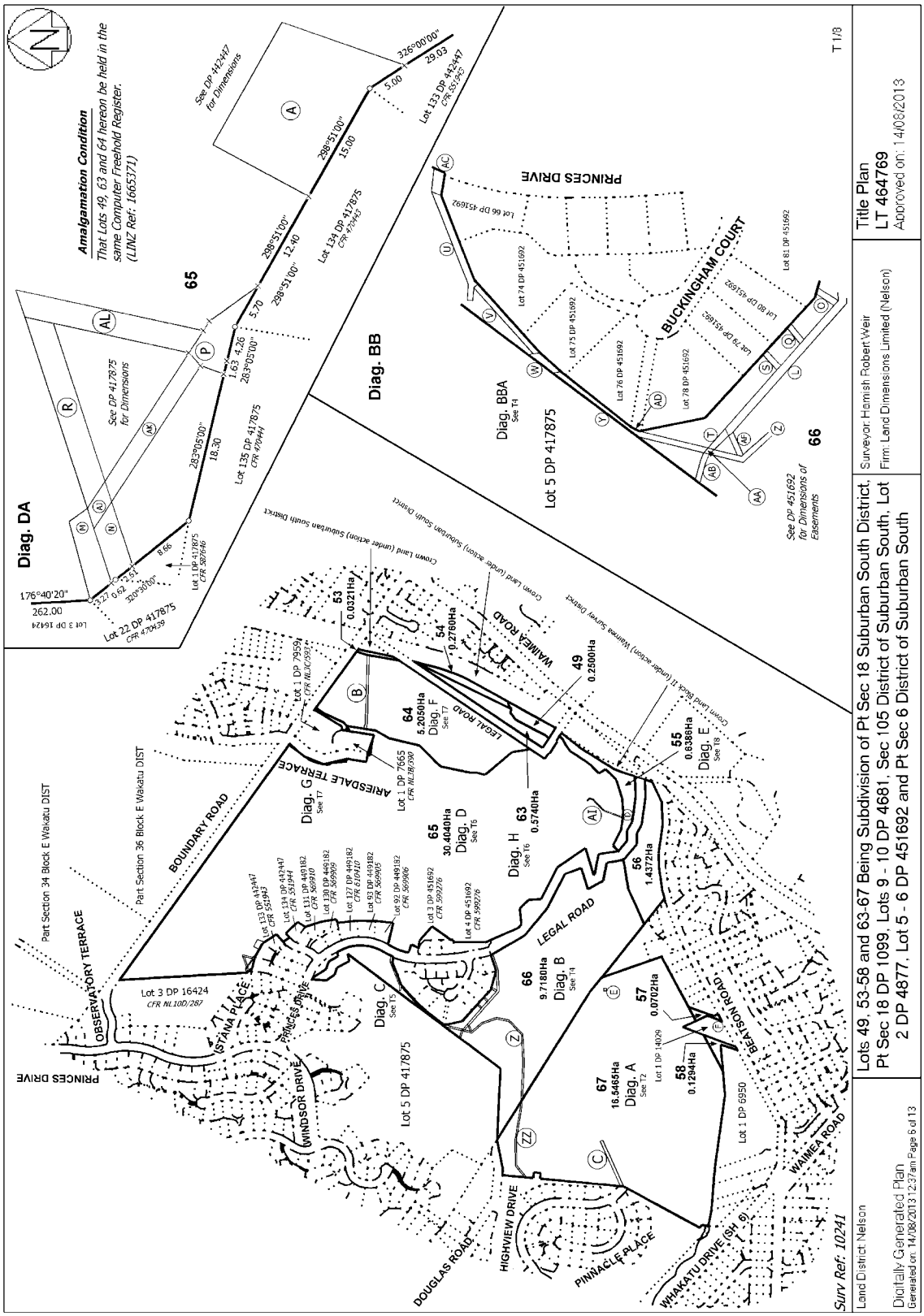
Subject to a right (in gross) to transmit electricity and/or any other signals, impulses or electronic data over part marked C on DP 464769 in favour of Network Tasman Limited created by Transfer 381632.1 - 2.11.1998 at 9:25 am

Subject to a right (in gross) to drain sewage over part marked ZZ on DP 464769 in favour of the Nelson City Council created by Easement Instrument 8269208.8 - 11.9.2009 at 2:56 pm

The easements created by Easement Instrument 8269208.8 are subject to Section 243(a) Resource Management Act 1991

Subject to a right (in gross) to convey electricity, telecommunications and computer media over part marked E on DP 464769 in favour of Network Tasman Limited created by Easement Instrument 9169965.1 - 20.9.2012 at 10:02 am

Subject to a right (in gross) to convey electricity, telecommunications and computer media over part marked D on DP 507255 in favour of Network Tasman Limited created by Easement Instrument 10789160.2 - 8.6.2017 at 11:31 am


Amalgamation Condition
That Lots 49, 63 and 64 hereon be held in the same Computer Freehold Register.
(LINZ Ref: 1665371)
Diag. DA
Diag. BB
Diag. BBA
See T4
Lot 5 DP 417875
PRINCES DRIVE
BUCKINGHAM COURT
See DP 451692 for Dimensions of Easements
Lot 22 DP 417875
CFR 470439
Lot 135 DP 417875
CFR 470444
Lot 134 DP 417875
CFR 470443
Lot 133 DP 442447
CFR 551943
See DP 417875 for Dimensions
See DP 442447 for Dimensions
Lot 3 DP 16424
CFR NL10D/287
Part Section 34 Block E Wakatu DIST
Part Section 36 Block E Wakatu DIST
OBSERVATORY TERRACE
BOUNDARY ROAD
ARIESDALE TERRACE
WAIMEA ROAD
LEGAL ROAD
BEATSON ROAD
WINDSOR DRIVE
DOUGLAS ROAD
HIGHVIEW DRIVE
PINNACLE PLACE
WHAKATU DRIVE (SH 6)
Lot 1 DP 6950
Lot 1 DP 14029
Lot 1 DP 7665
CFR NL3B/390
Lot 1 DP 7959
CFR NL3C/393
Crown Land (under action) Suburban South District
Crown Land Block II (under action) Waimea Survey District
Diag. A
See T2
Diag. B
See T4
Diag. C
See T5
Diag. D
See T6
Diag. E
See T8
Diag. F
See T7
Diag. G
See T7
Diag. H
See T6
Surv Ref: 10241
Land District: Nelson
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Lots 49, 53-58 and 63-67 Being Subdivision of Pt Sec 18 Suburban South District, Pt Sec 18 DP 1099, Lots 9 - 10 DP 4681, Sec 105 District of Suburban South, Lot 2 DP 4877, Lot 5 - 6 DP 451692 and Pt Sec 6 District of Suburban South
Surveyor: Hamish Robert Weir
Firm: Land Dimensions Limited (Nelson)
Title Plan
LT 464769
Approved on: 14/08/2013
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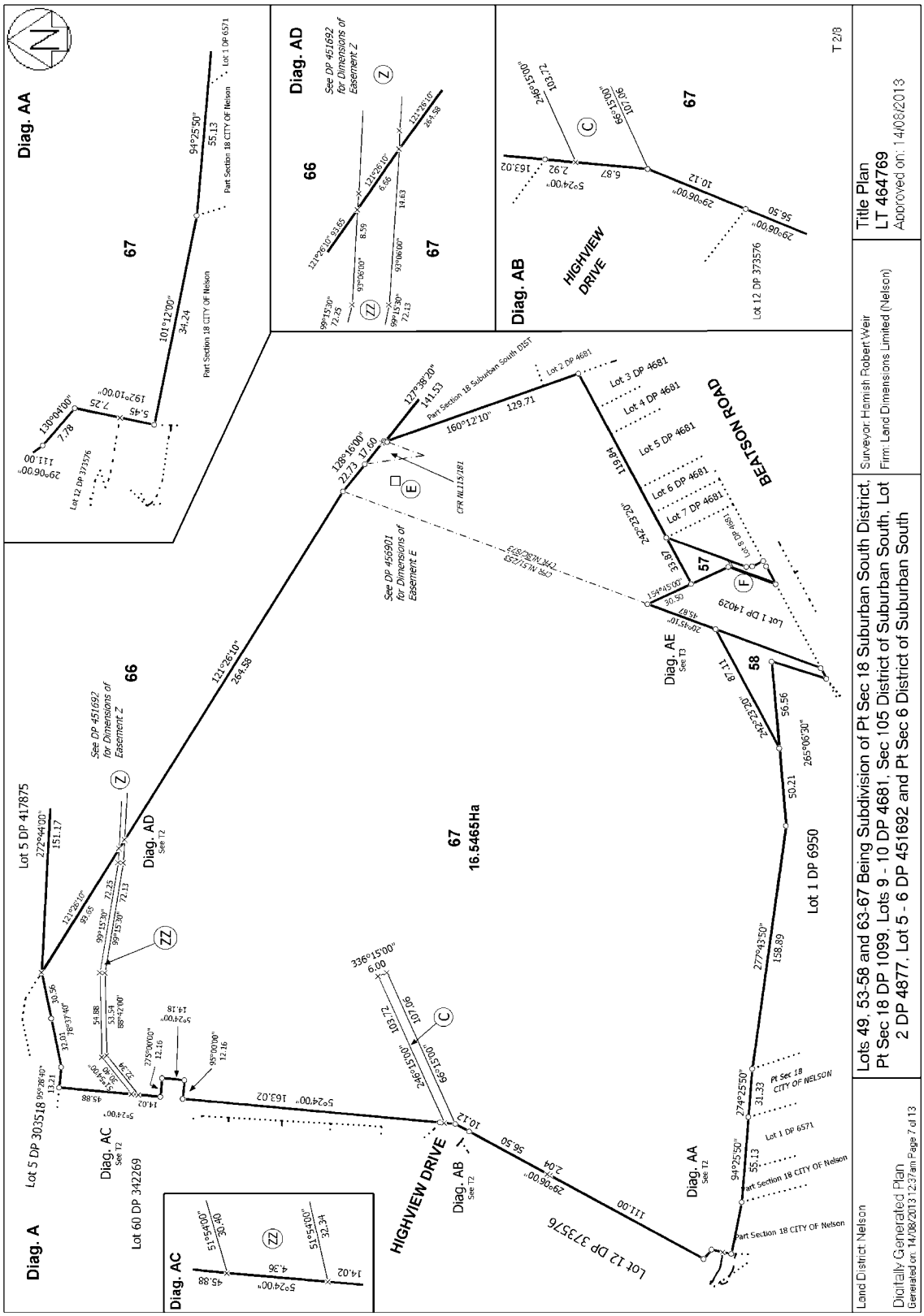
Diag. AA
Diag. AD
Diag. AB
Diag. A
Diag. AC
Diag. AE
HIGHVIEW DRIVE
BEATSON ROAD
Lot 1 DP 6950
16.5465Ha
Lot 12 DP 373576
Lot 5 DP 417875
Lot 60 DP 342269
Lot 5 DP 303518
Part Section 18 CITY OF Nelson
Lot 1 DP 6571
Lot 2 DP 4681
Lot 3 DP 4681
Lot 4 DP 4681
Lot 5 DP 4681
Lot 6 DP 4681
Lot 7 DP 4681
Lot 1 DP 14029
Pt Sec 18 CITY OF NELSON
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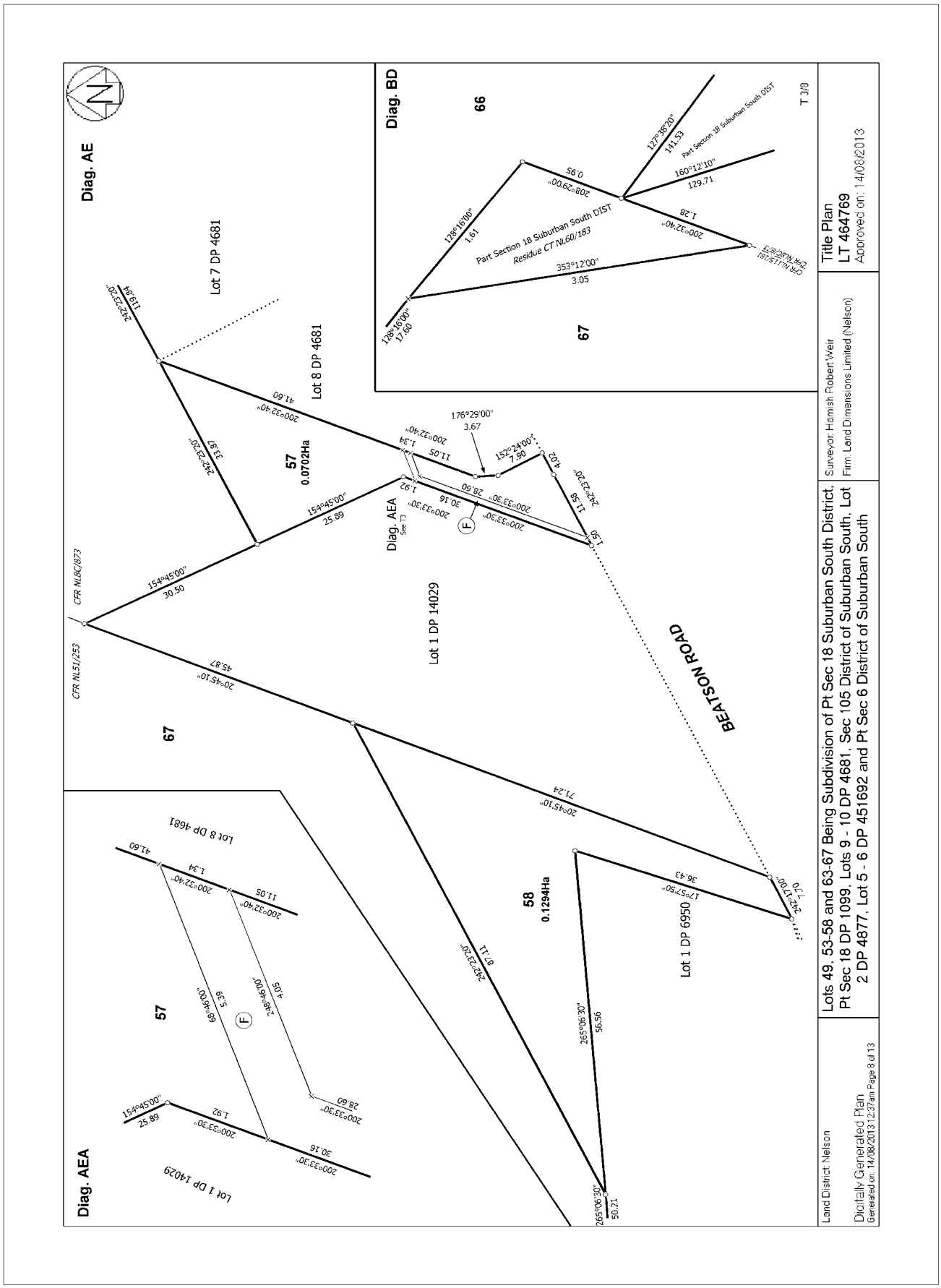
Diag. AE
Diag. BD
Diag. AEA
Lot 7 DP 4681
Lot 8 DP 4681
Lot 1 DP 14029
Lot 1 DP 6950
Lot 8 DP 4681
Lot 1 DP 14029
57
0.0702Ha
58
0.1294Ha
67
66
BEATSON ROAD
CFR NL51/253
CFR NL8C/873
Part Section 18 Suburban South DIST
Residue CT NL60/183
Lots 49, 53-58 and 63-67 Being Subdivision of Pt Sec 18 Suburban South District, Pt Sec 18 DP 1099, Lots 9 - 10 DP 4681, Sec 105 District of Suburban South, Lot 2 DP 4877, Lot 5 - 6 DP 451692 and Pt Sec 6 District of Suburban South
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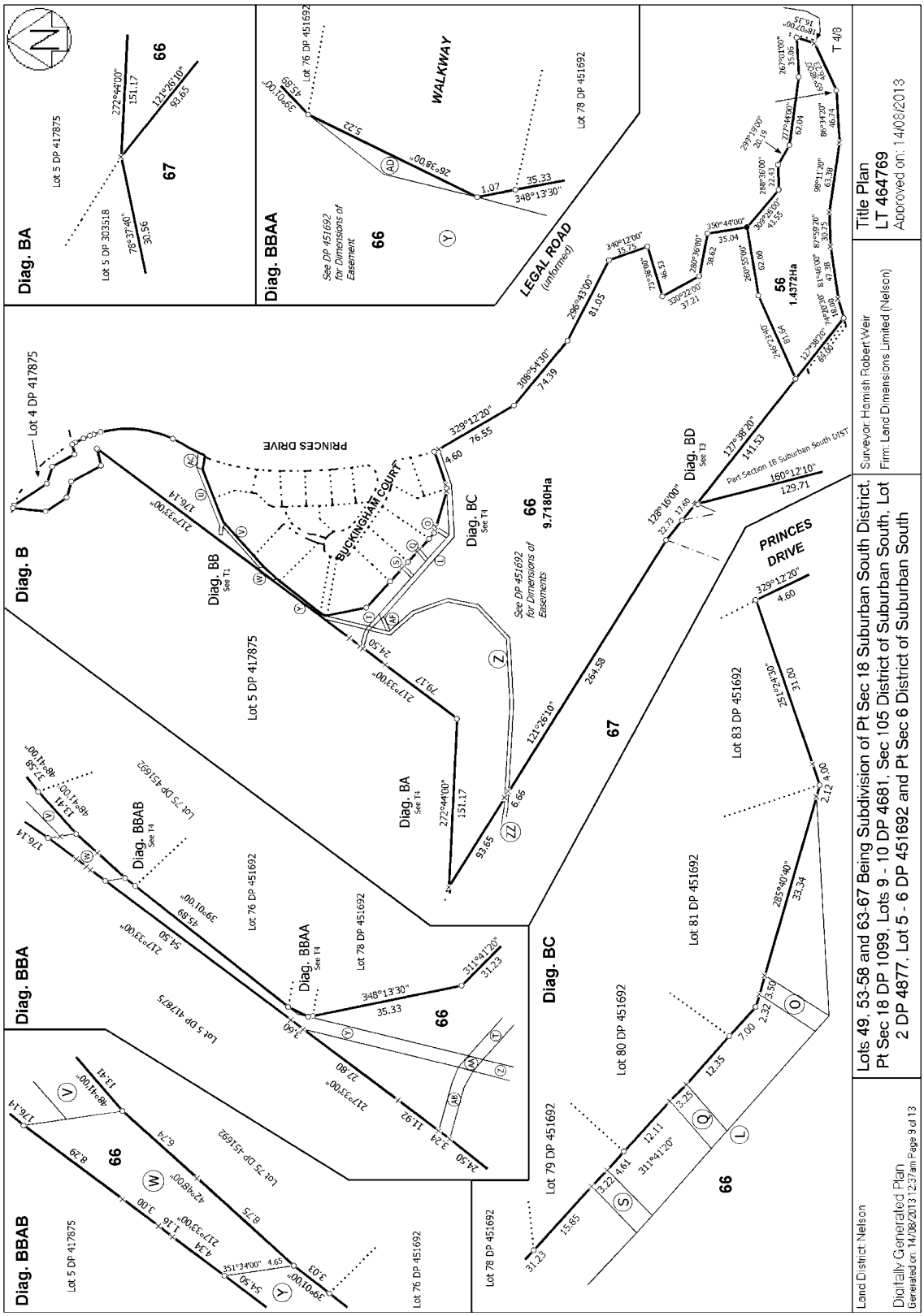
Diag. BA
Diag. BBAA
WALKWAY
LEGAL ROAD
(unformed)
Diag. B
PRINCES DRIVE
BUCKINGHAM COURT
Diag. BB
Diag. BC
Diag. BD
Diag. BA
Diag. BBAA
Diag. BBAB
Diag. BC
PRINCES DRIVE
Lot 4 DP 417875
Lot 5 DP 417875
Lot 5 DP 303518
Lot 76 DP 451692
Lot 78 DP 451692
Lot 79 DP 451692
Lot 80 DP 451692
Lot 81 DP 451692
Lot 83 DP 451692
66
67
56
1.4372Ha
9.7180Ha
Part Section 18 Suburban South DIST
Lots 49, 53-58 and 63-67 Being Subdivision of Pt Sec 18 Suburban South District, Pt Sec 18 DP 1099, Lots 9 - 10 DP 4681, Sec 105 District of Suburban South, Lot 2 DP 4877, Lot 5 - 6 DP 451692 and Pt Sec 6 District of Suburban South
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Firm: Land Dimensions Limited (Nelson)
Title Plan
LT 464769
Approved on: 14/08/2013
T 4/3

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**619452**
Land Registration District	**Nelson**
Date Issued	12 December 2013

Prior References
599276

Estate	Fee Simple
Area	9.7180 hectares more or less
Legal Description	Lot 66 Deposited Plan 464769

Proprietors
K B Quarries Limited

Interests

Appurtenant hereto is a right to take and convey water created by Deed of Easement 41276 (51/204) - 15.4.1915 at 10:35 am

Subject to rights (in gross) to drain sewage over parts marked U, V, W, Y, Z & AA and water over part marked U on DP 464769 in favour of the Nelson City Council created by Easement Instrument 8269208.8 - 11.9.2009 at 2:56 pm

The easements created by Easement Instrument 8269208.8 are subject to Section 243(a) Resource Management Act 1991

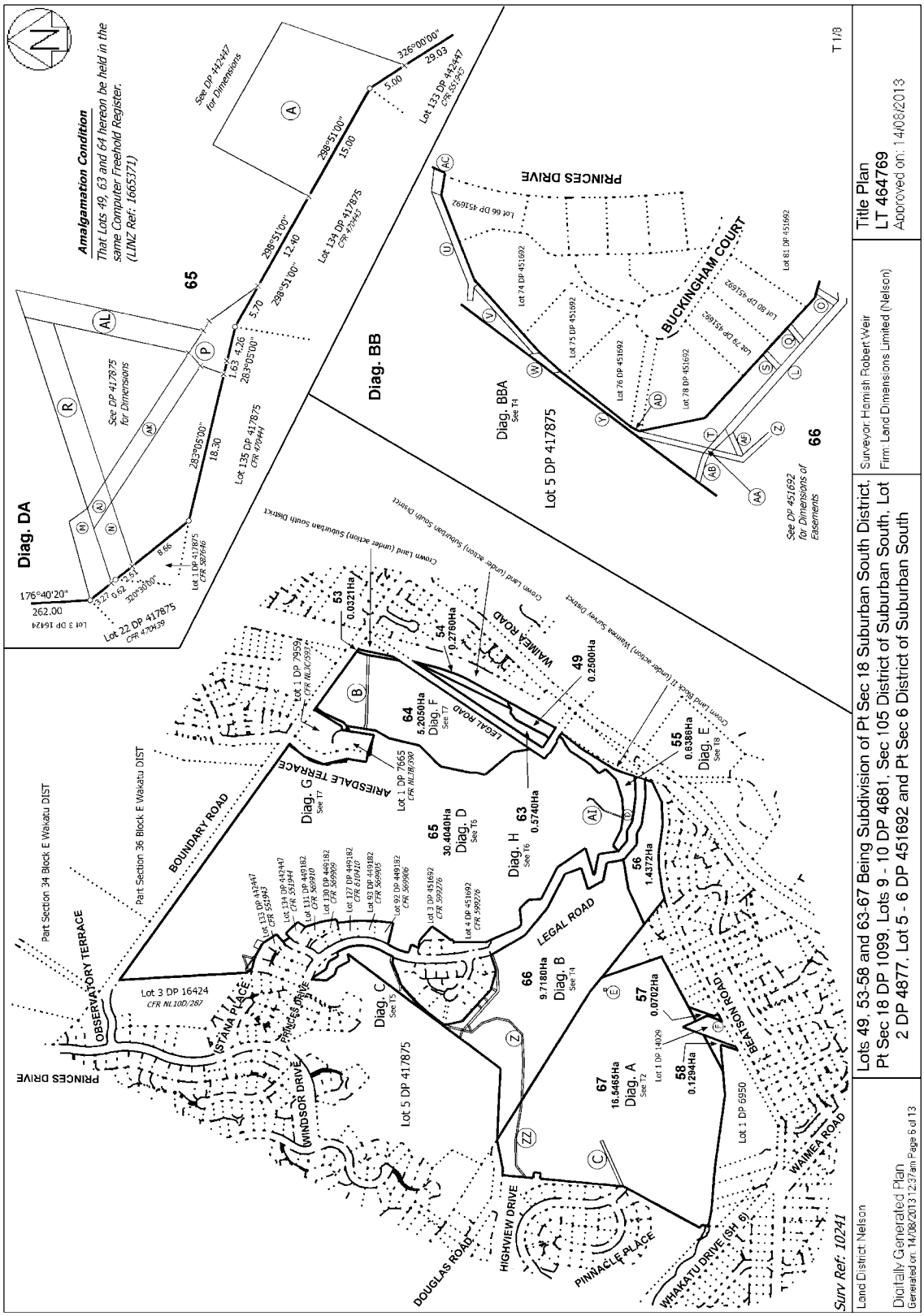
Subject to rights (in gross) to drain sewage over part marked AF, water over parts marked T, V, W, Y, AA & AB and sewage and water over parts marked L, AC &AD on DP 464769 in favour of the Nelson City Council created by Easement Instrument 9356118.9 - 12.4.2013 at 3:57 pm

The easements created by Easement Instrument 9356118.9 are subject to Section 243(a) Resource Management Act 1991

Subject to a right drain sewage and water over parts marked O, Q & S on DP 464769 created by Easement Instrument 9356118.10 - 12.4.2013 at 3:57 pm

The easements created by Easement Instrument 9356118.10 are subject to Section 243(a) Resource Management Act 1991

Subject to a right (in gross) to convey electricity, telecommunications and computer media over part marked B on DP 507255 in favour of Network Tasman Limited created by Easement Instrument 10789160.2 - 8.6.2017 at 11:31 am


Amalgamation Condition
That Lots 49, 63 and 64 hereon be held in the same Computer Freehold Register. (LINZ Ref: 1665371)
Diag. DA
Diag. BB
Diag. BBA
See T4
Lot 5 DP 417875
PRINCES DRIVE
BUCKINGHAM COURT
See DP 417875 for Dimensions
See DP 451692 for Dimensions of Easements
Lot 22 DP 417875
Lot 135 DP 417875
Lot 134 DP 417875
Lot 133 DP 442447
Lot 3 DP 16424
Lot 1 DP 6950
Lot 1 DP 14029
Lot 1 DP 7665
Lot 1 DP 7959
Part Section 34 Block E Wakatu DIST
Part Section 36 Block E Wakatu DIST
BOUNDARY ROAD
ARIESDALE TERRACE
LEGAL ROAD
WAIMEA ROAD
OBSERVATORY TERRACE
STANA PLACE
WINDSOR DRIVE
DOUGLAS ROAD
HIGHVIEW DRIVE
PINNACLE PLACE
WHAKATU DRIVE (SH 6)
BEATSON ROAD
Diag. A
Diag. B
Diag. C
Diag. D
Diag. E
Diag. F
Diag. G
Diag. H
Surv Ref: 10241
Land District: Nelson
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Surveyor: Hamish Robert Weir
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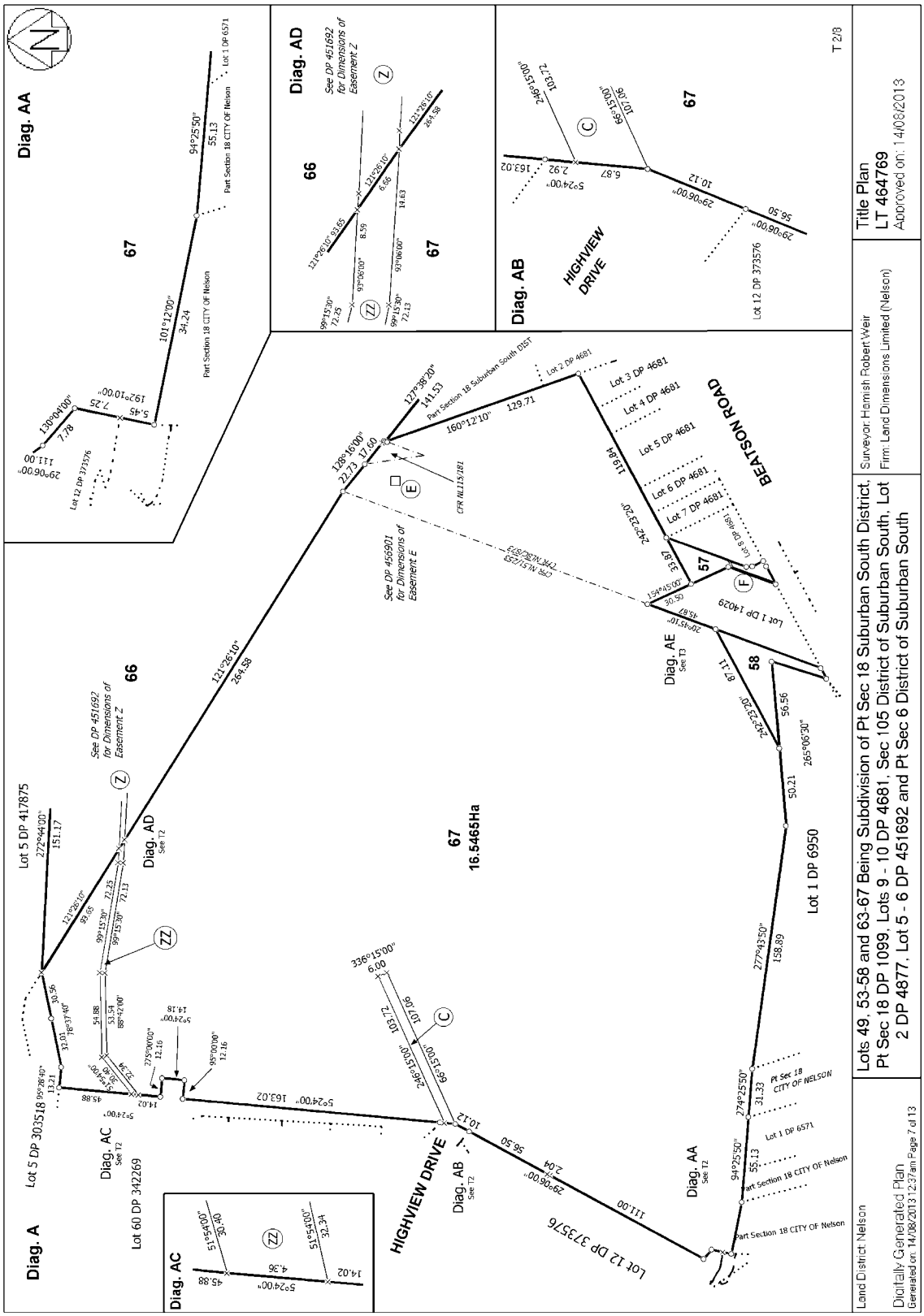
Diag. A
Diag. AA
Diag. AB
Diag. AC
Diag. AD
Diag. AE
HIGHVIEW DRIVE
BEATSON ROAD
Lot 1 DP 6950
16.5465Ha
Lot 12 DP 373576
Lot 60 DP 342269
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Lot 5 DP 303518
Part Section 18 CITY OF Nelson
Lot 1 DP 6571
Lot 1 DP 14029
Lot 2 DP 4681
Lot 3 DP 4681
Lot 4 DP 4681
Lot 5 DP 4681
Lot 6 DP 4681
Lot 7 DP 4681
Part Section 18 Suburban South DIST
CFR NL115/181
See DP 451692 for Dimensions of Easement Z
See DP 453901 for Dimensions of Easement E
Pt Sec 18 CITY OF NELSON
Land District: Nelson
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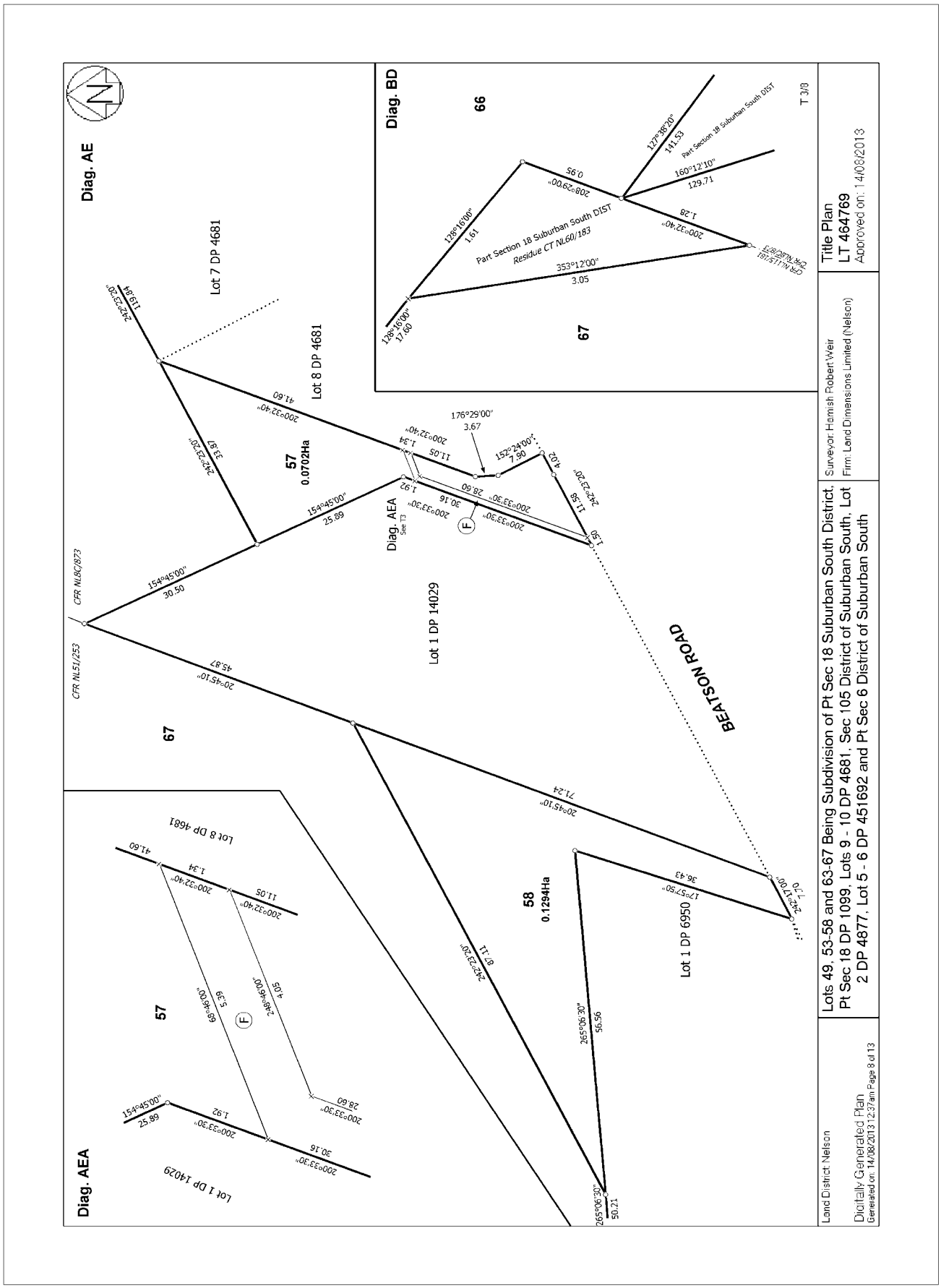
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Lot 8 DP 4681
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Lot 1 DP 6950
Lot 8 DP 4681
Lot 1 DP 14029
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CFR NL8C/873
CFR NL11/151/181
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0.0702Ha
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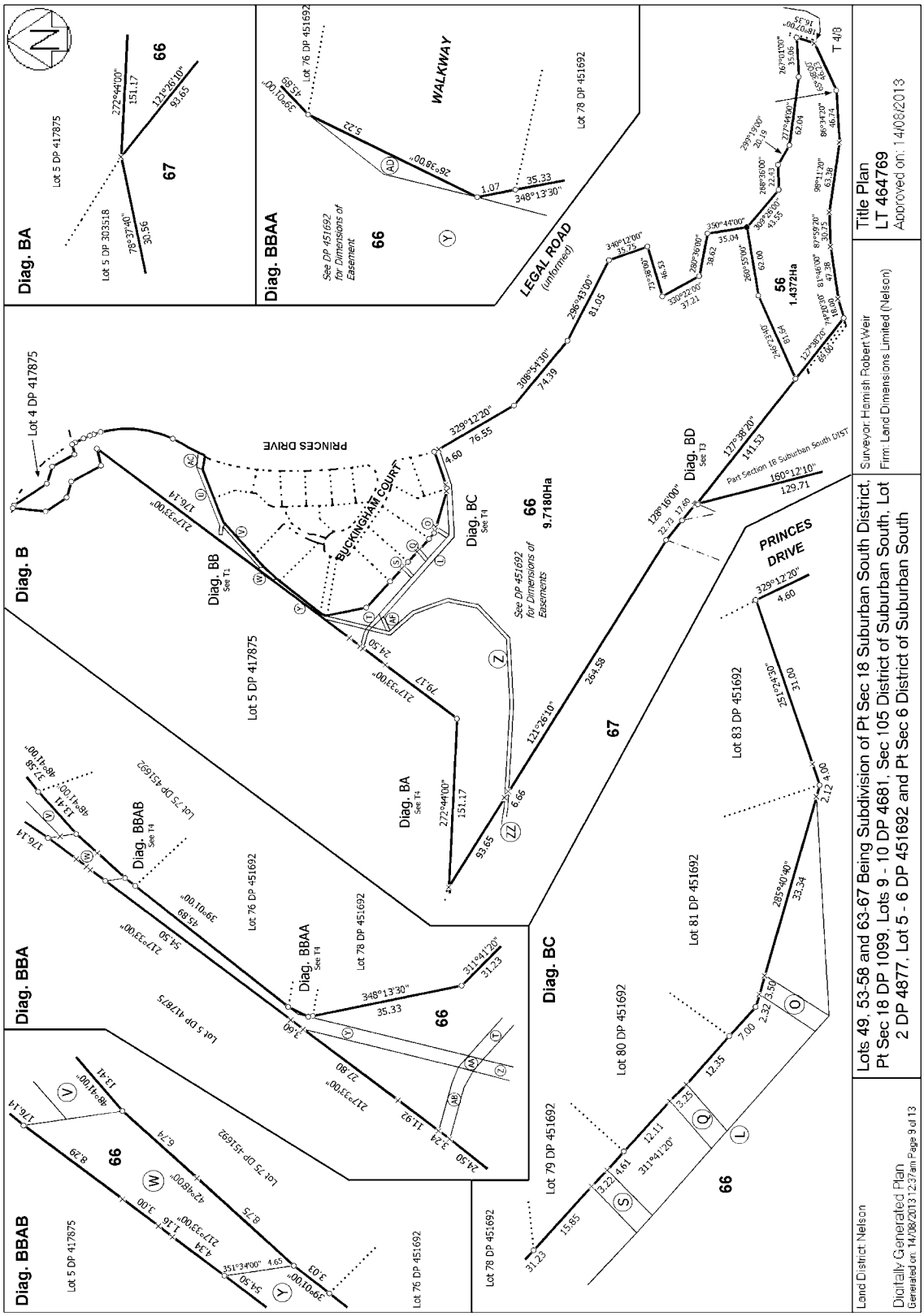
Diag. BA
Diag. BBAA
Diag. B
Diag. BB
Diag. BC
Diag. BD
Diag. BBA
Diag. BBAB
WALKWAY
LEGAL ROAD
(unformed)
PRINCES DRIVE
BUCKINGHAM COURT
Lot 4 DP 417875
Lot 5 DP 417875
Lot 5 DP 303518
Lot 76 DP 451692
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Lot 79 DP 451692
Lot 80 DP 451692
Lot 81 DP 451692
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Land District: Nelson
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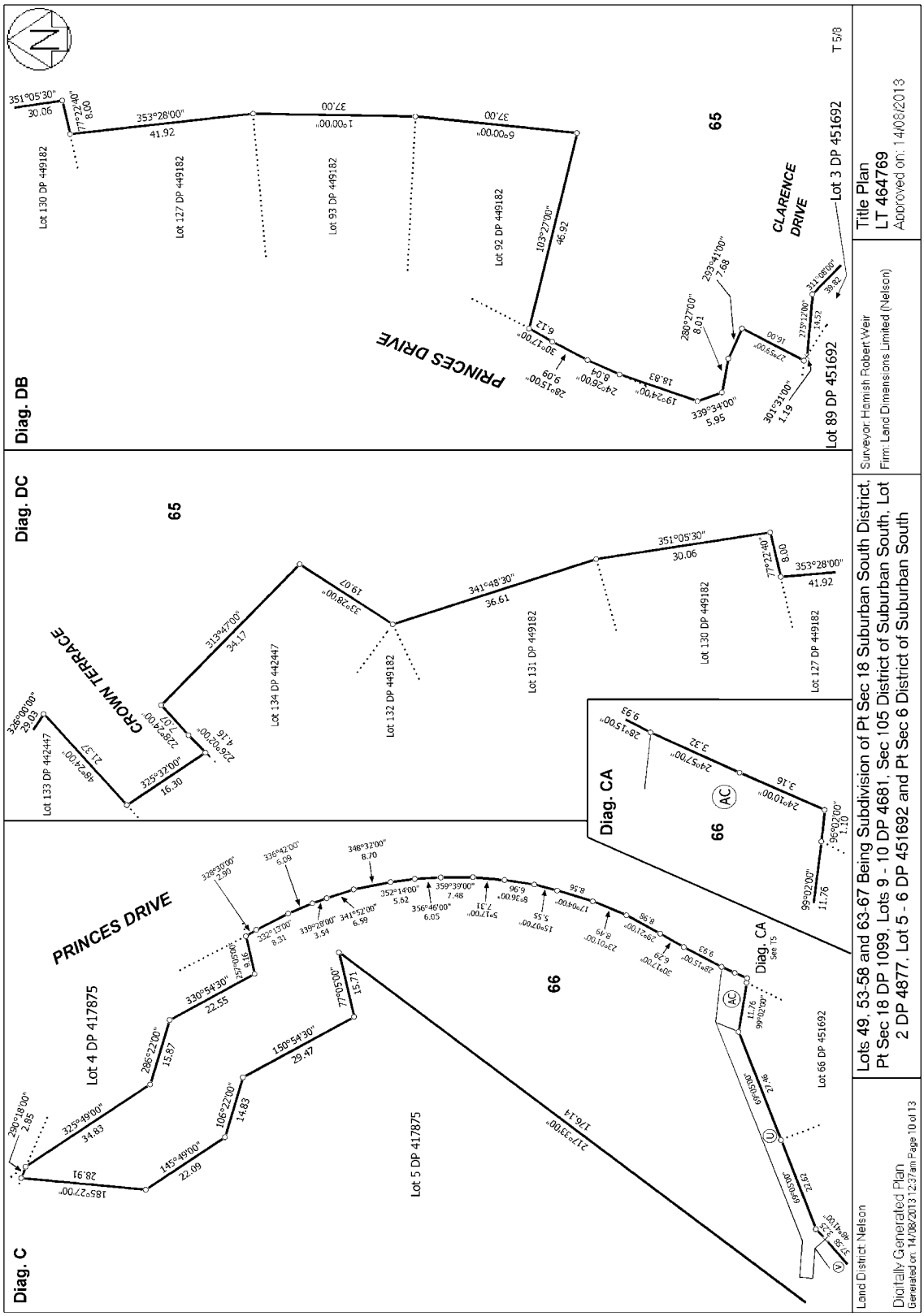
Diag. DB
Diag. DC
Diag. C
Diag. CA
PRINCES DRIVE
CROWN TERRACE
CLARENCE DRIVE
65
66
Lot 89 DP 451692
Lot 3 DP 451692
Lot 130 DP 449182
Lot 127 DP 449182
Lot 93 DP 449182
Lot 92 DP 449182
Lot 134 DP 442447
Lot 133 DP 442447
Lot 132 DP 449182
Lot 131 DP 449182
Lot 4 DP 417875
Lot 5 DP 417875
Lot 66 DP 451692
Title Plan
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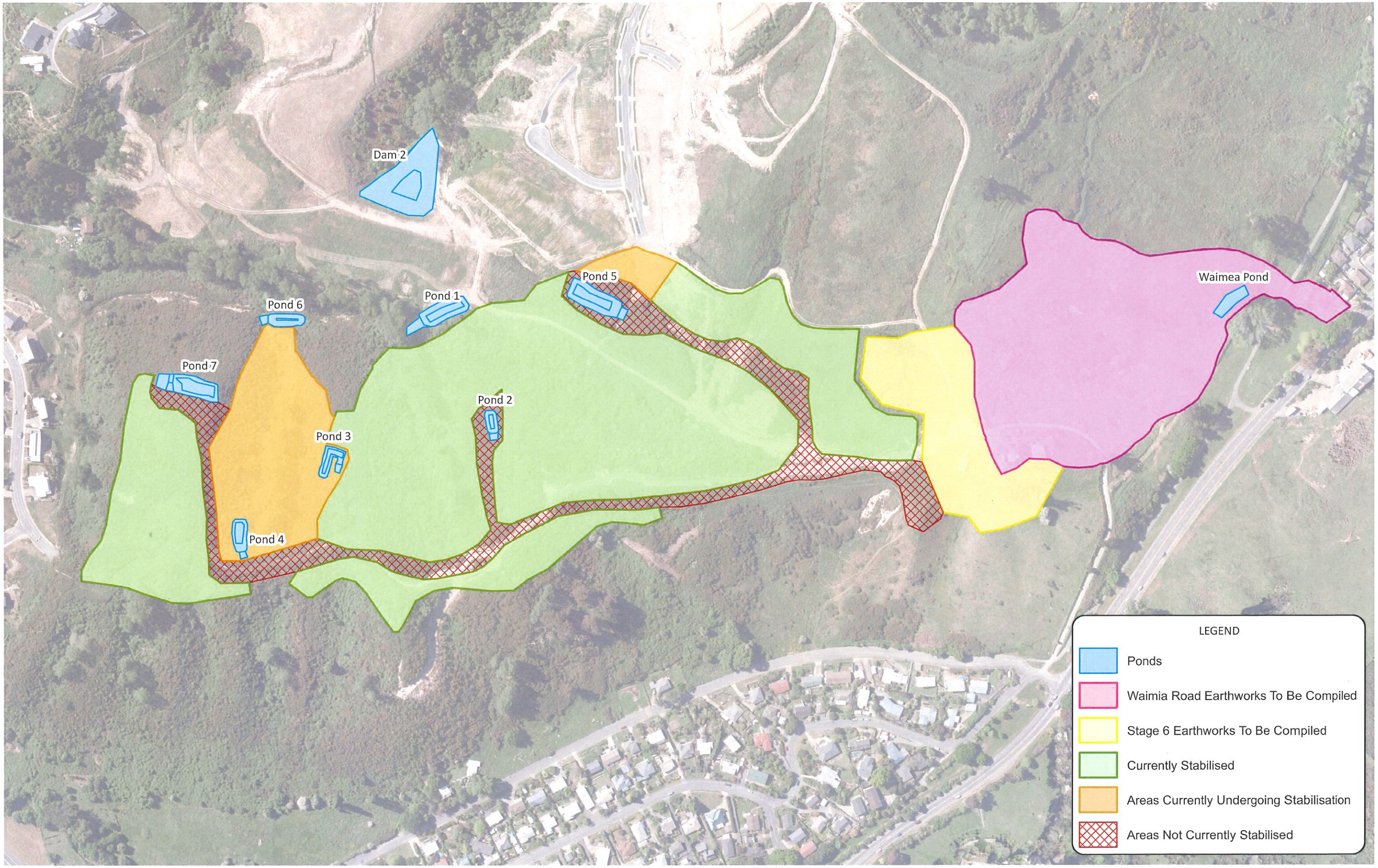
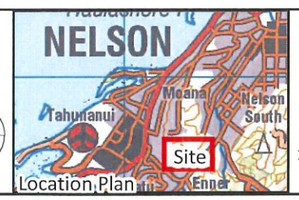


Notes: Aerial photograph sourced from Top of the South Maps and licensed by LINZ, CC by 3.0 NZ.
Extent of stabalised areas and locations of existing ponds provided by KB Contracts LTD.

A3 SCALE 1:3,000

0 0.03 0.06 0.09 0.12 0.15 (km)



Tonkin+Taylor
105 Carlton Gore Rd, Newmarket, Auckland
www.tonkintaylor.co.nz

DRAWN	MRF	May.18
CHECKED	OJA	5/18
APPROVED		
ARCFILE	81069.mxd	
SCALE (AT A3 SIZE)	1:3,000	
PROJECT No.	81069.0180	

KB QUARRIES LTD

COASTAL VIEW LIFESTYLE VILLAGE EARTHWORKS
TASMAN HEIGHTS, NELSON

Current Earthworks and Proposed Earthworks

FIGURE No. 81069.0180-F1 Rev. 0

Path: T:\Nelson\Projects\81069\81069.0180\WorkingMaterial\RC Extension\81069.mxd Date: 28/05/2018 Time: 3:50:59 p.m.

Job No: 81069.0180
05 December 2017

Nelson City Council
PO Box 645
Nelson 7040

Attention: Ryno Botha

Dear Sir/Madam

Dust, Erosion and Sediment Control Plan, York Catchment Earthworks, Tasman Heights, Nelson (RM 155190)

1 Introduction

Resource Consent No RM155190, condition 27 states that the consent holder shall submit a dust, erosion and sedimentation control plan (DESCP) to the Nelson City Council's Monitoring Officer prior to any earthworks taking place under the consent.

This DESCP has been prepared for proposed earthworks within the upper York Stream Catchment. This DESCP relates to work that is independent of the existing DESCP for works in the Maire Stream Catchment.

We recommend that reviews are carried out monthly and that this plan is updated if required in line with the Contractor's work programme.

2 Responsible parties

Client: KB Quarries Ltd
PO Box 19746
Woolston
Christchurch 8241
Attention: Kevin Blair

Contractor: KB Quarries Ltd
PO Box 19746
Woolston
Christchurch 8241
Attention: Kenny Star

Consultant: Tonkin & Taylor Ltd
PO Box 1009
Nelson 7040
Attention: Mark Foley

Tonkin & Taylor Ltd | Lucas House, Level 1, 51 Halifax Street, Nelson 7010, New Zealand | PO Box 1009, Nelson 7040
P +64-3-546 6339 F +64-9-307 0265 E nel@tonkintaylor.co.nz

3 Site details

The site is located adjacent to existing areas of earthworks in the Maire Catchment to the west and extends down to the Railway Reserve to the East as shown on T+T Figure 81069.1080-F1 (Appendix A).

4 Proposed works

The extent of earthworks covered by this DESCP is shown on T+T Figure 81069.0180-F1. The current earthworks mainly involve:

- Cut and fill for the formation of a road platform.

Proposed works will include vegetation clearance, topsoil stripping, stockpiling and respreading, excavation and filling and compaction.

5 Dust, Erosion and Sediment control measures

The dust, erosion and sediment control measures for the proposed earthworks have been designed in accordance with the principles set out in Section 9.2.2 of the Nelson City Council (NCC) Land Development Manual (LDM), 2010. In particular, the plan aims to (where possible):

- Minimise disturbance to land by retaining vegetation and minimising the extent of stripped and exposed surfaces;
- Limiting the total volume of runoff requiring treatment through the use of cleanwater cutoff drains and bunds;
- Stabilising completed earthworks surfaces with topsoil and grass seed (or mulch on steeper slopes) as soon as practicable;
- Limit flow velocities to minimise scour potential;
- The existing entrance to the site, which is via Beatson Road, will be maintained.

The DESCP measures are proposed to manage discharges from the earthworks site into the York Stream catchment. The activity is not in a sensitive area based on clause 9.3.1(b) in NCC LDM. The maximum slope of disturbed land for any period of the activity is 45˚. The maximum area of disturbed land is approximately three hectares. To reduce the potential for sediment generation and to reflect the areal extent and distribution of work areas, bunding, channels and natural topography have been utilised to divide the site into a series of sub-catchments varying from 0.3 to 2.2 hectares.

The key features of this DESCP are shown on T+T Figure 81069.0180-F1 and are described below.

5.1 Sedimentation pond

A sediment pond is to be constructed along the proposed road alignment. The sediment pond will be cut into the original ground in stages with material from the cut being placed upslope of the pond in a fill area. This ensures a functioning pond throughout the stages of construction. The pond has a capacity of approximately 500 m^3 and a contributing catchment of 2.2 ha, which is less than 200 m long and has a slope less than 47%.

The sediment pond is designed in accordance with the requirements of the NCC LDM.

Flocculant is to be added to sediment ponds as necessary to ensure sediment laden water is not discharged into York Stream so as to discolour the stream above the levels observed in adjacent Nelson streams.

Earthworks will be required to construct the sedimentation pond. During this phase the disturbed area will be restricted to 3,000 m^2 and works will be undertaken when fine weather is forecast for at least seven (7) days. Silt fences will be placed downslope of the disturbed areas during this initial phase.

5.2 Clean water cut-offs

The existing NCC watermain bench at approximately RL 130 m will be utilised to divert clean water from the works area. Earthworks above this bench will be completed in the last stage of works.

A second clean water cut-off will be established between approximately RL 112 m and RL 100 m. Earthworks upslope of this will be completed once some of the land has been stabilised. Intercepted clean water will be piped to the channel alongside the railway reserve walkway.

5.3 Diversion bunds

A diversion bund will be formed along the south-western side of the earthworks to direct flow into the sediment pond.

5.4 Minimising of exposed soil

Earthworks areas are to be managed to:

- Minimise exposed bare ground by limiting the upslope extent of topsoil stripping.
- Progressively topsoiling and sow grass on completed fill batters.

5.5 Programme

This plan is operative as of its date of issue. The plan will need to be reviewed once works commence beyond the area identified as current catchments in T+T Figure 81069.1080-F1.

5.6 Dust control

Sources of dust production on site will include the fill areas and material stockpiles. The Contractor should be required to water dust production areas as required. This would typically be done with water carts, and with sprinklers in the instance of stockpiles and channel slopes.

6 Monitoring and maintenance responsibilities

The success of the treatment measures will depend on regular monitoring and maintenance of the works. We recommend the following:

- Weekly walkover inspection of all erosion mitigation items by the client representative, including completion of the Inspection Checklist in Appendix C. Records of all inspections should be held by KB Quarries, and copied to NCC and T+T.
- KB Quarries representative to arrange a joint walkover with a T+T representative once a month during the construction period.
- Inspection by the client representative during or immediately following rainfall events (rainfall > 25 mm in 24 hours or > 10 mm per hour) at no less than 14 hour intervals.
- Confirmed contractor and plant availability with one hour mobilisation when heavy rainfall is forecast.

If at any time monitoring/inspections identify that contingency measures are to be put in place (in accordance with the Inspection Checklist in Appendix C) the frequency of monitoring for those items shall be increased to weekly, and the Engineer shall be copied the relevant inspection records.

7 Applicability

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

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:	Authorised for Tonkin & Taylor Ltd by:
Alex Evans	Mark Foley
Natural Resources Engineer	Project Director

AAJE
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cc. KB Quarries Ltd, Attention: Michael Blair
KB Quarries Ltd, Attention: Kerry Starr
KB Quarries Ltd, Attention: Kevin Blair

Appendix A: T+T Figure

- Figure 81096.0180-F1 – Dust, Erosion and Sediment Control Plan dated December 2017

Clean Water Catchment 1 = 2.2 ha

Clean Water Catchment 2 = 0.8 ha

Stage 2 Catchment = 0.7 ha

Stage 1 Pond Catchment = 2.2 ha

Sediment Pond

Preliminary Stage < 0.3 ha

Remaining Catchment = 1.5 ha

Clean Water Collection Sump

EARTHWORKS TO FINISH

EARTHWORKS TO FINISH

WAIMEA ROAD

LEGEND

- Earthworks to Finish
- Clean Water Bund
- Clean Water Cut Off
- Clean Water Pipe
- Catchment Boundaries
- Property Boundaries

Notes: Aerial photograph sourced from Top of the South Maps and licensed by LINZ, CC by 3.0 NZ.
Contours and Proposed alignment as per Land Dimesions Earthworks Plan dated 9 November 2017.

A3 SCALE 1:1,750

0 20 40 60 80 100 Meters

N

Location Plan

Tonkin+Taylor

Lucas House, 51 Halifax Street, Nelson
www.tonkintaylor.co.nz

DRAWN	AAJE	Dec.17
CHECKED	DJA	12/17
APPROVED		12/17
ARCFILE	81069.0180-F1.mxd	
SCALE (AT A3 SIZE)	1:1,750	
PROJECT No.	81069.0180	

KB QUARRIES LTD

COASTAL VIEW LIFESTYLE VILLAGE EARTHWORKS
TASMAN HEIGHTS, NELSON

DESCP York Catchment Earthworks

FIGURE No. 81069.0180-F1

Rev. 0

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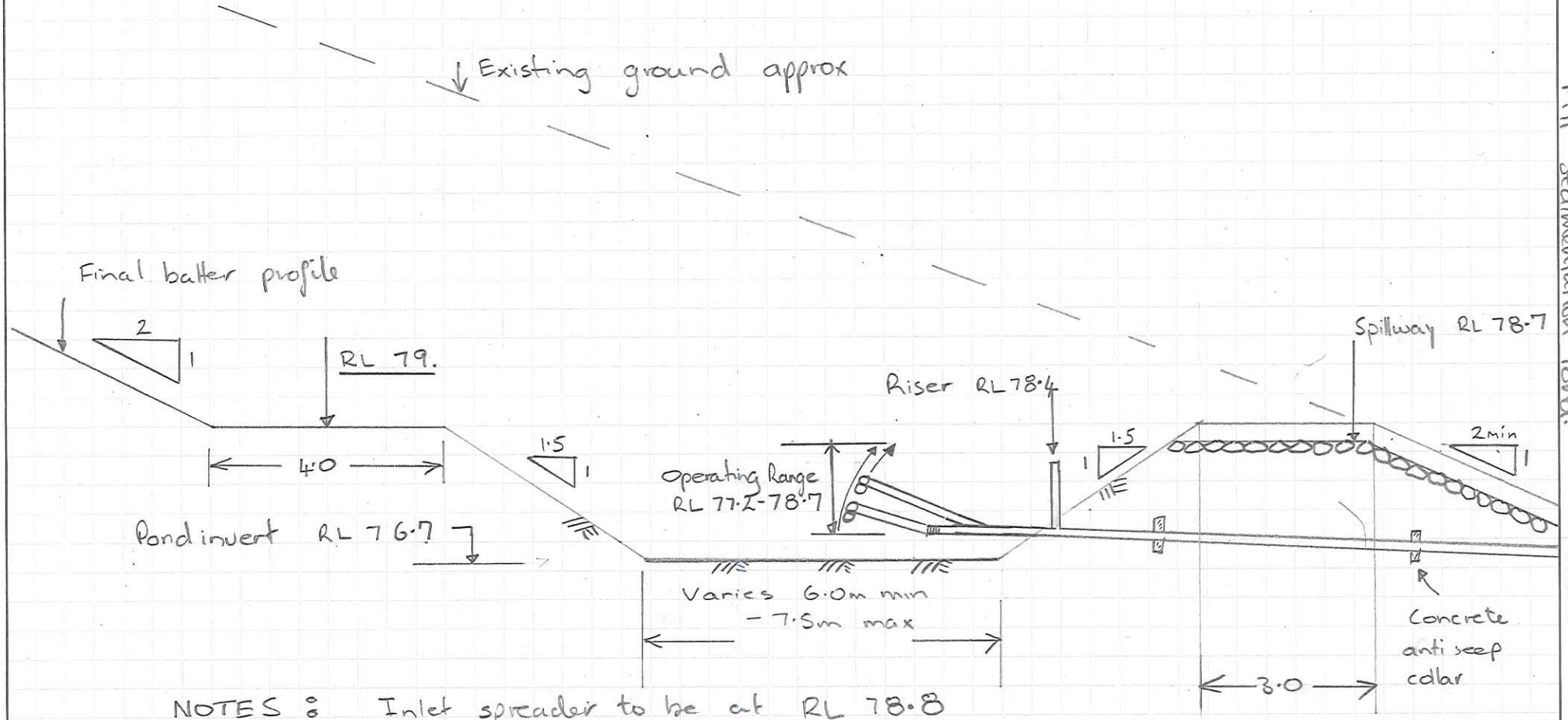
Appendix B: Typical Details and Relevant Nelson City Council Drawings

- T+T Sketch 1 – Typical Detail Waimea Road Fill Sedimentation Pond
- T+T Sketch 2 – Typical Details – DESCP Update December 2017
- NCC SD 901 – Clearwater Runoff Diversion Bund
- NCC SD 907 – Sediment Retention Pond
- NCC SD 908 – Decant Detail
- NCC SD 909 – Level Spreader
- NCC SD 911 – Sediment Retention Pond For Catchments Between 1.5ha and 3ha
- NCC SD 913 – Silt Fence



NOTES :

Inlet spreader to be at RL 78.8

Refer NCC LDM Drawing SD911

Spillway Width to be no less than 6.0m

Spillway to be 150-300mm hard, angular rip rap placed ove Bidim A29 Filter cloth.

Spillway armouring to extend to RL 76.5

Pond setout to be confirmed on site by Contractor and approved by T+T.

Tonkin+Taylor

Description: Typical Detail Wainui Road Fill Sedimentation Pond.

Project: 81069.018

Computed: MRF 1/12 2017
Checked: AJE 5/12 2017
Revised: 20
Checked: 20

Office:
Job No:
File: 81069.018
Sheet No. 1.

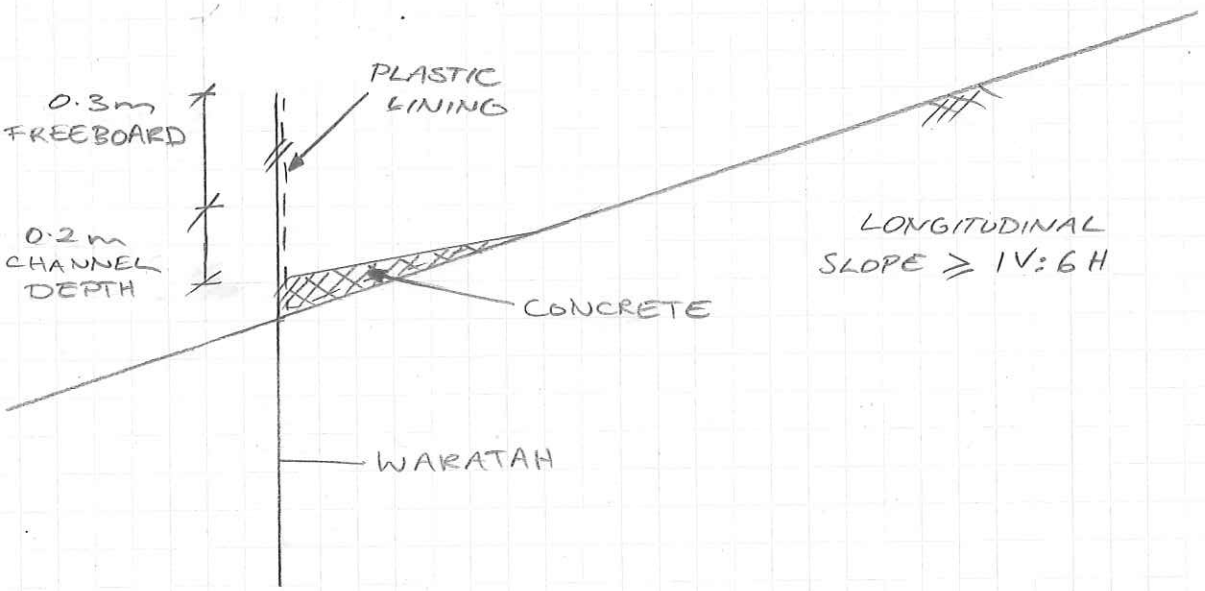
Tonkin+Taylor

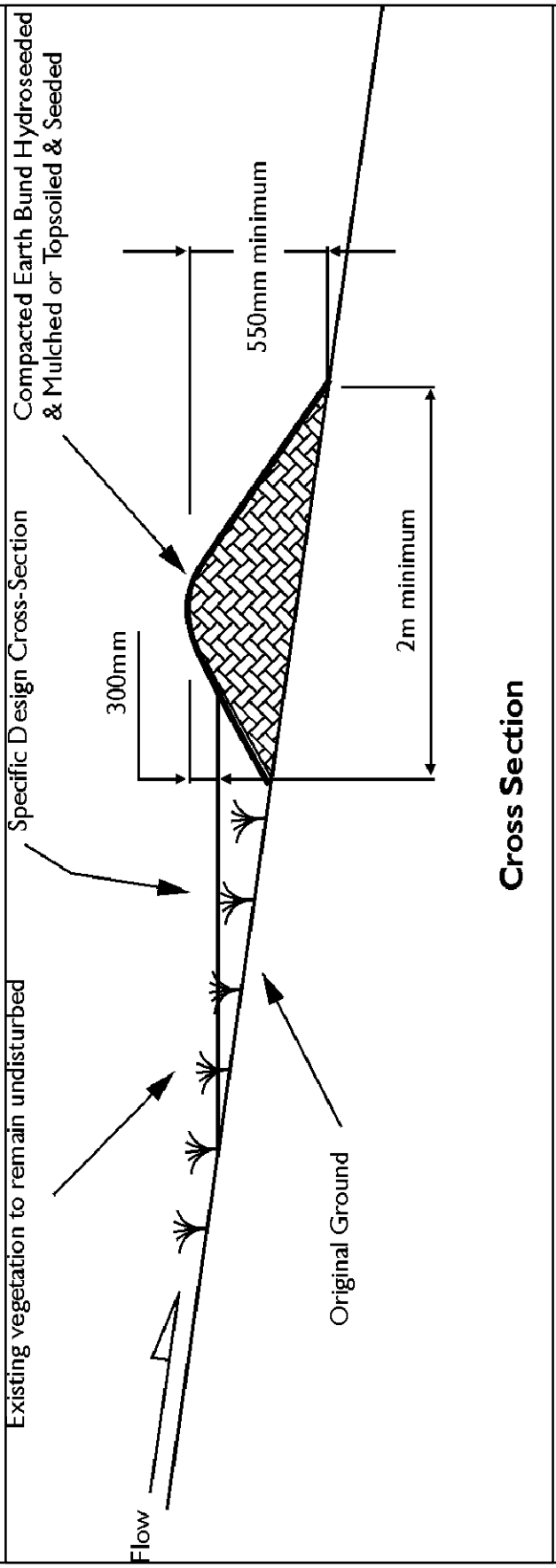
Project: TASMAN HEIGHTS

Description: TYPICAL DETAILS – DESCP UPDATE DECEMBER 2017

Computed: AAJE	4/12	2017	Office: NELSON
Checked: Y	5/12	2017	Job No: 81069
Revised:		20	File: 0180
Checked:		20	Sheet No.

TYPICAL CLEAN WATER CUT OFF DETAIL





NELSON CITY COUNCIL

CLEARWATER RUNOFF DIVERSION BUND

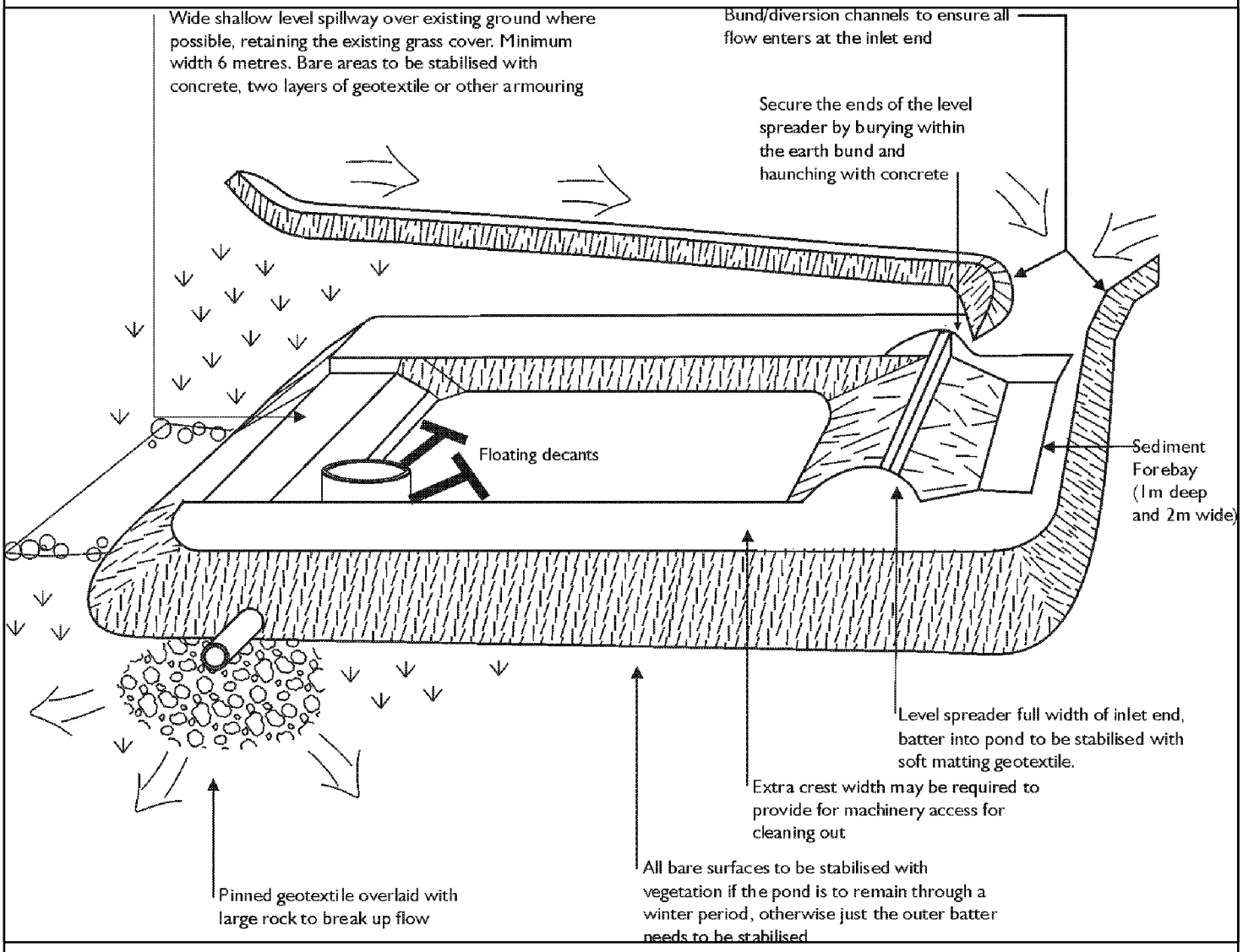
INFRASTRUCTURAL ASSETS

APPROVED

29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE — DATE

SD 901



NELSON CITY COUNCIL

SEDIMENT RETENTION POND

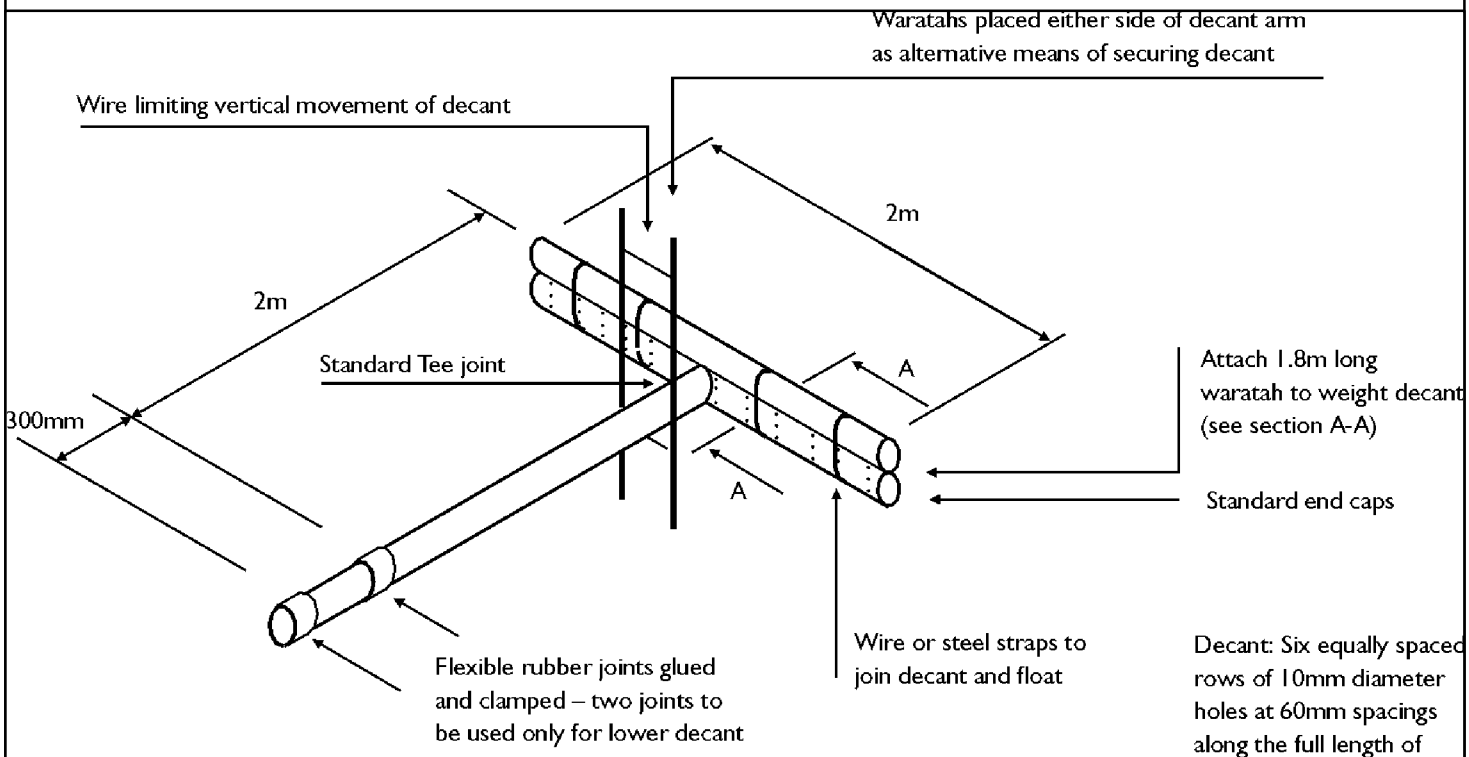
INFRASTRUCTURAL ASSETS

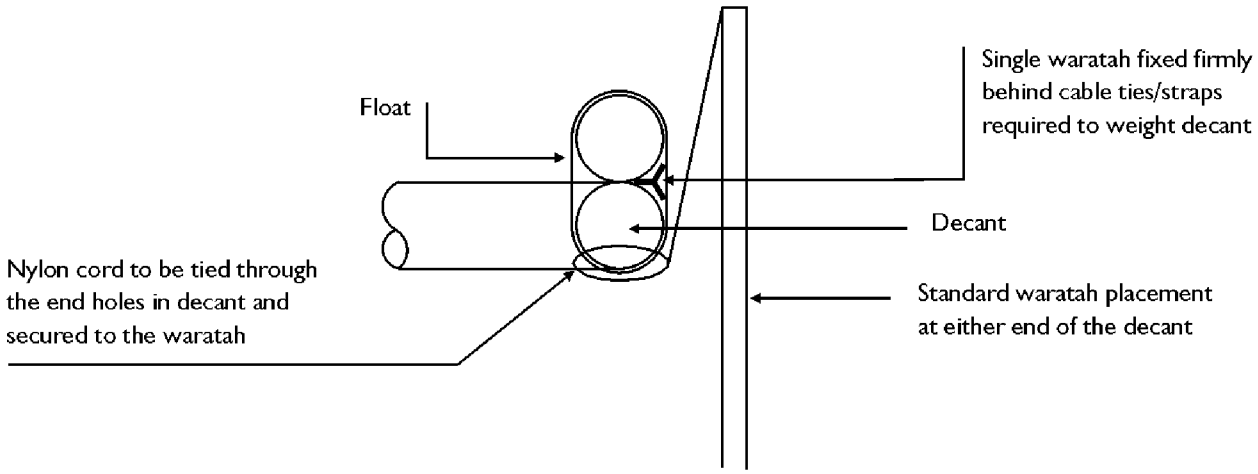
APPROVED

29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE — DATE

SD 907





Section A-A

NELSON CITY COUNCIL

DECANT DETAIL

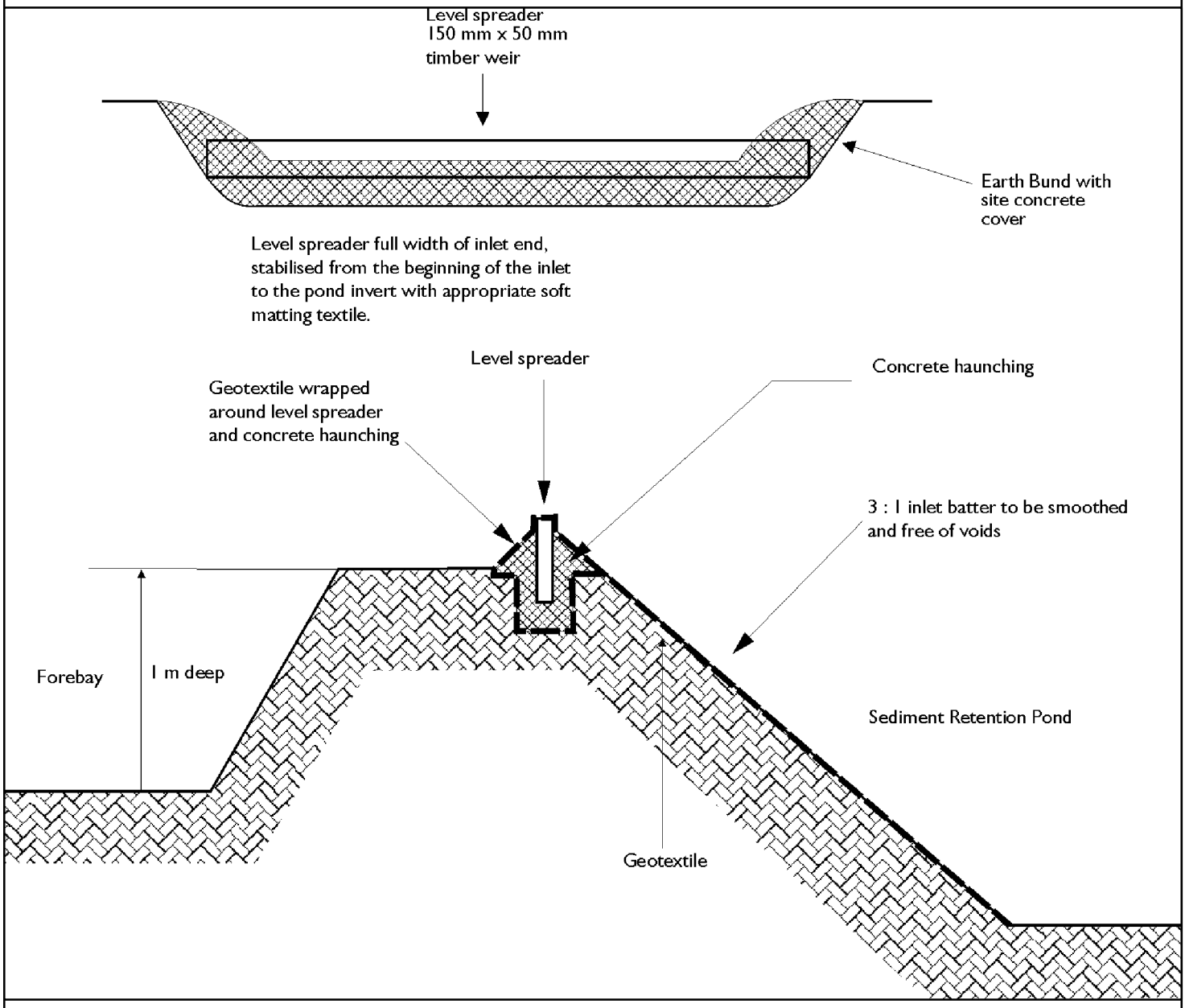
INFRASTRUCTURAL ASSETS

APPROVED

29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE — DATE

SD 908



NELSON CITY COUNCIL

LEVEL SPREADER

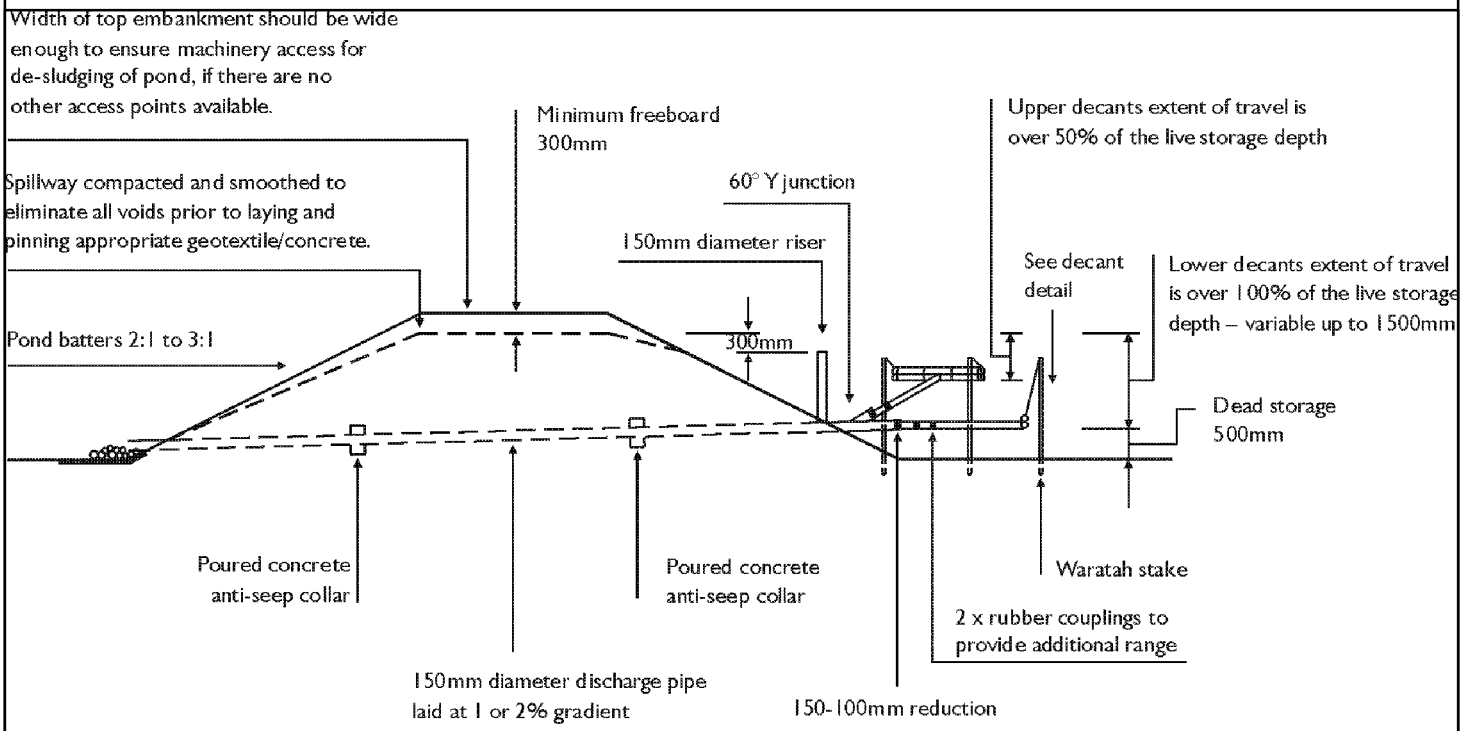
INFRASTRUCTURAL ASSETS

APPROVED

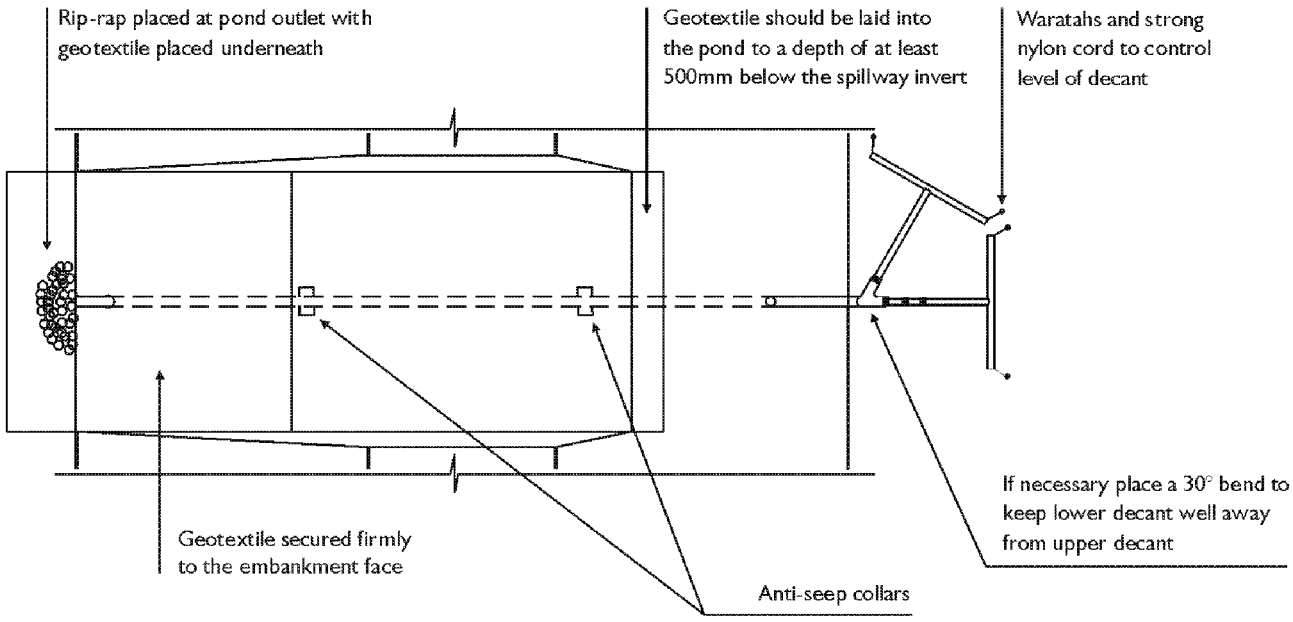
29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE — DATE

SD 909



Cross Section



Plan

NELSON CITY COUNCIL

SEDIMENT RETENTION POND FOR CATCHMENTS BETWEEN 1.5ha and 3ha

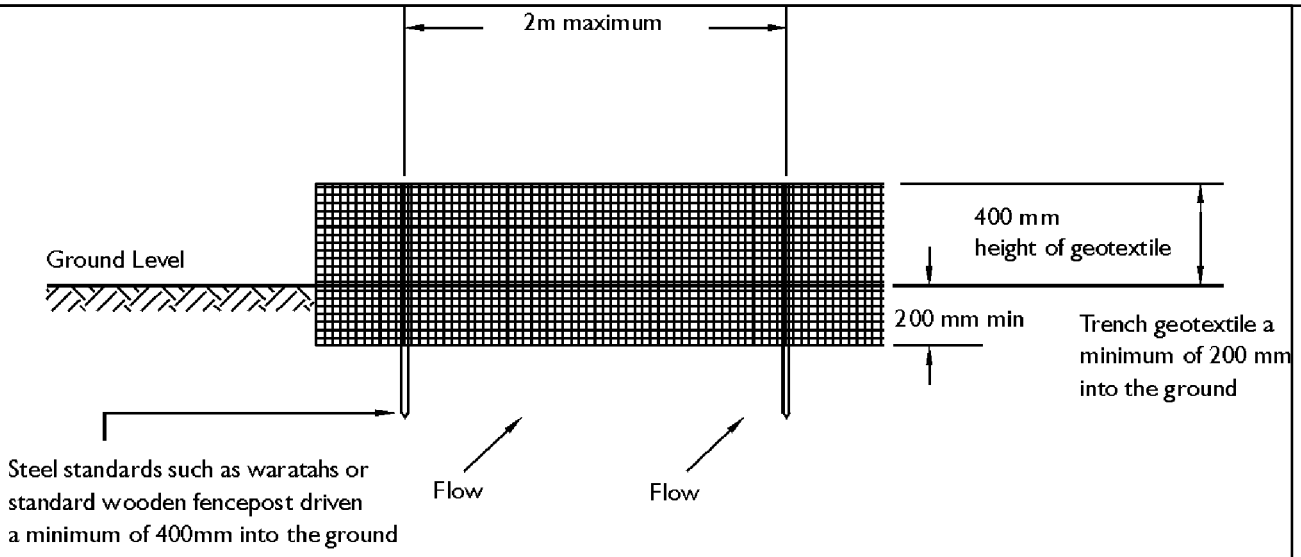
INFRASTRUCTURAL ASSETS

APPROVED

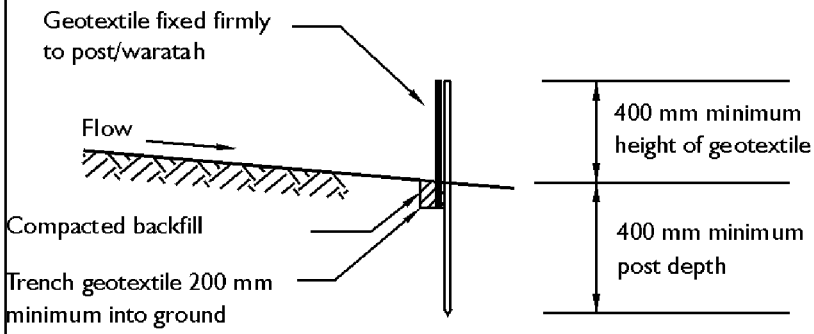
29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE — DATE

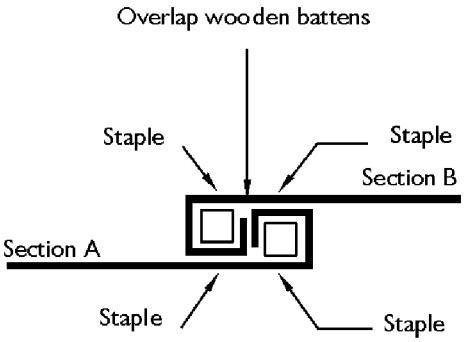
SD 911



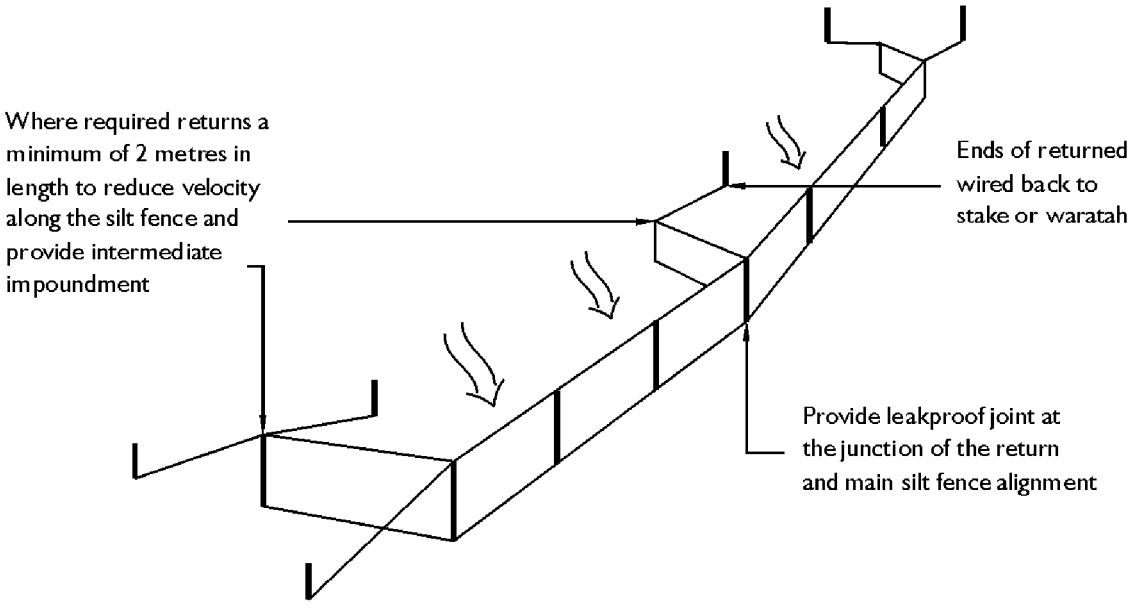
Elevation



Cross Section



Standard Fabric Joint



Perspective View

NELSON CITY COUNCIL

SILT FENCE

INFRASTRUCTURAL ASSETS

APPROVED

SENIOR EXECUTIVE INFRASTRUCTURE

29/07/2010

DATE

SD 913

Appendix C: DESCP Inspection Schedule

Site Inspection Checklist

Site:	York Catchment Earthworks, Tasman Heights, Nelson	T&T Ref:	81069.0180
Inspected by:		Date:	
Distribution:	Nelson City Council, Tonkin & Taylor Ltd		
For period:	to		
Weather for period:			

Item	Description	Comments
1	• Check that all clean water cut-offs are intact, unblocked and functional. Inspect for signs of erosion and any need for additional check dams/linings. • Check that all runoff from above the site is being diverted around the earthworks area. • Inspect stabilised outlets for erosion or sediment build up. • Check that Pond remains operational (including outlet and spillway) and sediment build up < 300 mm. <u>Pond</u> • Check inlet channel, forbay, level spreader decants, spillway. Is any maintenance required? If so specify over page. • Inspect bench slopes for signs of erosion. • Inspect silt fencing. • Check all cut and fill surfaces for signs of rilling and/or erosion, particularly on steep slopes. • Check all stock piles for evidence of erosion/material loss. • Check that potential sources of dust are being controlled. • If heavy rain is forecast, check that plant/staff are available to mobilise if required.	
Additional Observations		

	Additional notes, including any erosion/scour issues, and any other maintenance required:	

SUPERSEDED REFER 9 AUGUST

Clean Water Catchment 1 = 2.2 ha

Clean Water Catchment 2 = 0.8 ha

Stage 2 Catchment = 0.7 ha

Stage 1 Pond Catchment = 2.2 ha

Sediment Pond

Preliminary Stage < 0.3 ha

Clean Water Collection Sump

Remaining Catchment = 1.5 ha

EARTHWORKS TO FINISH

EARTHWORKS TO FINISH

WAIMEA ROAD

LEGEND

- Earthworks to Finish
- Clean Water Bund
- Clean Water Cut Off
- Clean Water Pipe
- Catchment Boundaries
- Property Boundaries

Notes: Aerial photograph sourced from Top of the South Maps and licensed by LINZ, CC by 3.0 NZ.
Contours and Proposed alignment as per Land Dimesions Earthworks Plan dated 9 November 2017.

A3 SCALE 1:1,750

0 20 40 60 80 100 Meters

N

Location Plan

Tonkin+Taylor

Lucas House, 51 Halifax Street, Nelson
www.tonkintaylor.co.nz

DRAWN	AAJE	Dec.17
CHECKED	DJA	12/17
APPROVED		12/17
ARCFILE	81069.0180-F1.mxd	
SCALE (AT A3 SIZE)	1:1,750	
PROJECT No.	81069.0180	

KB QUARRIES LTD

COASTAL VIEW LIFESTYLE VILLAGE EARTHWORKS
TASMAN HEIGHTS, NELSON

DESCP York Catchment Earthworks

FIGURE No. 81069.0180-F1

Rev. 0

Path: P:\81069\81069.0180\WorkingMaterial\ESCP\December 2017\81069.0180-F1.mxd Date: 5/12/2017 Time: 9:17:27 a.m.

Tonkin+Taylor

Job No: 81069.0180
27 June 2018

Landmark Lile Ltd
PO Box 343
Nelson 7040

Attention: Mark Lile

Dear Mark

Discharge Consent Application
KB Quarries Ltd - Earthworks, Tasman Heights Subdivision, Nelson

You have asked Tonkin & Taylor Ltd (T+T) to provide a letter detailing the current management practices to control sediment discharge from the earthworks related to the KB Quarries Ltd earthworks at Tasman Heights, Nelson.

As with any ongoing earthworks project, ground conditions at the site are constantly changing due to excavation, filling, and progressive stabilisation works. The dust erosion and sediment control plan (DESCP) for the site is a living document and is updated weekly in consultation between KB Contracting and Quarries (KBC) staff and Nelson City Council (NCC) Environmental Officers. Site plans of which areas are open, in the process of stabilisation, or already stabilised are updated once a month.

Southern Skies Environmental Ltd (SSE) visited the site on 7 November 2017 to inspect erosion and sediment control devices at the site. As a result of their site visit SSE made six recommendations to improve erosion and sediment control at the site. We note that all recommendations have been implemented or addressed with NCC.

At this time the sediment control devices used to manage erosion and sediment in active earth worked areas include sediment detention ponds, cuttoff drains and bunds, and silt fences. These devices have been constructed in accordance with the NCC Land Development Manual (LDM).

We have been provided with as-built details that show in all cases the sediment pond capacity exceeds the design capacity with respect to contributing catchment areas. Large areas that are currently top soiled and grassed have been isolated from the active ponds as they have been progressively stabilised. These ponds are also chemically treated with flow activated flocculent systems to stimulate sedimentation. Ponds 1 and 5 have liquid flocculent dosing and the remaining ponds are treated with floc socks.

Sediment retention ponds are designed to comply with Section 9.3 of the Nelson LDM and are *"designed so that larger run off events will receive partial treatment, while smaller events will receive a high level of treatment*[1]*."* During a rain event which exceeds the capacity of the pond, sediment

[1] Section 9.3.4.1 of the Nelson City Council Land Development Manual

Tonkin & Taylor Ltd | Lucas House, Level 1, 51 Halifax Street, Nelson 7010, New Zealand | PO Box 1009, Nelson 7040
P +64-3-546 6339 F +64-9-307 0265 E nel@tonkintaylor.co.nz

laden water will be inevitably be discharged. Following a rain event, the decants are lifted to allow shock dosing with flocculant. Once sediment has settled the decants are lowered to release treated water.

Cut-off drains and bunds, and silt fences are inspected following rain events and maintained as required.

Stabilisation of open areas is completed as soon as reasonably practicable once earthworks have been completed in accordance with the plans and specification. Stabilisation generally consists of the spreading of topsoil and sowing of grass. All non-essential traffic is excluded from areas undergoing stabilisation. Grass strike is monitored weekly. If 50% grass strike is not achieved with 6 weeks or 80% grass strike within 8 weeks the services of a landscape contractor is sought.

In our own dealings with site staff we have found them to be willing to receive feedback and are willing to implement suggestions to achieve good outcomes.

Yours sincerely

Mark Foley
Project Director

Prepared by: Alex Evans, Natural Resources Engineer

27-Jun-18
p:\81069\81069.0180\issueddocuments\aaje.20180627.dischargeconsentletter-kbquarries.docx

29 June 2018

Lucas House, 51 Halifax Street, Nelson
PO Box 343, Nelson 7040
Phone: 03 539 0330
Mobile: 027 244 3388
Email: mark@landmarklile.co.nz
www.landmarklile.co.nz

Nelson City Council
Attn: Jennifer Lancashire
Email: Jennifer.lancashire@ncc.govt.nz

Dear Jennifer,

KB Quarries Limited: Application for Resource Consent
Discharge Permit (sediment-laden water)

Please find attached an application for resource consent (discharge permit) from KB Quarries Limited. This application seeks consent for potential discharges of sediment-laden water to land where it may enter water and to Council's reticulated stormwater system. This application relates directly to FWr.25 of the Nelson Resource Management Plan, being the specific rule that provides for such discharges.

The required deposit will be paid via internet banking.

Please contact me if you have any queries.

Yours faithfully

Mark Lile
Landmark Lile Limited
Resource Management Consultancy

Civic House
110 Trafalgar Street
PO Box 645
Nelson 7040

Phone (03) 546-0200
Fax (03) 546-0239
E-mail customer.service@ncc.govt.nz

Kb Quarries Limited
C/- Landmark Lile Ltd
PO Box 343
Nelson 7040

FILE COPY

GST Reg No: 10-730-295
Invoice Date: 3/10/18
Customer No: RM185224
Order No.

Tax Invoice 54102

Quantity	Description	Rate	Amount
	Highview Drive, Nelson		
	Discharge Permit to discharge sediment laden water and residue flocculent to land within the Maire and York Stream		
	Processing Resource Consent		
9.25	Resource Consent Staff Charge	130.43	1,206.48
0.75	Senior Eng / Section Head	130.43	97.82
	Includes a 3% discount for late processing		
	Late processing discount		39.13
	Insurance		26.09
	Monitoring Fee		130.43
	LESS DEPOSIT (Including GST)		1,300.00CR*
		BEFORE GST	369.52
		(* Includes GST) GST	55.41
		Total incl. GST	$424.93

Due Date: 20 NOV 18

Page 1

REMITTANCE ADVICE

Customer No: RM185224
Kb Quarries Limited

Invoice No: 54102

PO Box 645
Nelson 7040

Office Hours
Monday, Tuesday, Wednesday and Friday
8:30am to 5:00pm
Thursday
9.00am to 5.00pm

To request a change of postal address for any accounts you have with Nelson City Council please complete the online change of address form on our website at www.nelsoncitycouncil.co.nz/change-of-address-form/
☐ or tick this box and we will send you a change of address form in the post for you to complete.

Total Due: $424.93

Amount Enclosed:

Electronic payments can be made to bank account 030703 0325055 00 and please quote customer number as the reference.

Job Detail: RM185224

Kb Quarries Limited Discharge Permit to discharge sediment laden water and

Jump to Practice invoice - chargeable by date - since last invoice Go from July 2018 to October 2018 for job

RM185224 Go

Practice invoice - chargeable by date - since last invoice viewed at 10.30 on 3/10/18 Transactions found 07/2018 to 10/2018. Selected months from 07/2018 to 10/2018.

Click here to load to Excel (.csv)

**** This is not a Tax Invoice ****

Highview Drive, Nelson
RM185224
Kb Quarries Limited
C/- Landmark Lile Ltd
PO Box 343
Nelson
Discharge Permit to discharge sediment laden water and
residue flocculent to land within the Maire and York Stream
catchments where it may enter water and to the Councils

Date	Who	Type	Item	Quantity	Value	Retail	Detail
Resource Consent Enquiries							
17/07/18	MTB	L	LPR	0.50	61.16		Resource Consent Staff Charge
30/07/18	MTB	L	LPR	1.50	183.48		Resource Consent Staff Charge
06/09/18	MTB	L	LPR	1.50	183.44		Resource Consent Staff Charge
02/10/18	TLW	L	LPR	0.50	29.65		Resource Consent Staff Charge
02/10/18	TLW	D	DET			_	Objective file review/ follow up with Mark
Processing Resource Consent							
02/07/18	TLW	L	LPR	1.00	64.57	130.43	Resource Consent Staff Charge
02/07/18	TLW	D	IR01			_	Lodge application and set up file .
11/07/18	MTB	L	LPR	1.00	122.30	130.43	Resource Consent Staff Charge
17/07/18	MTB	L	LPR	0.50	61.16	65.22	Resource Consent Staff Charge
17/07/18	MTB	D	IR16			_	Review/Assessment of application .
30/07/18	MTB	L	LPR	0.75	91.72	97.82	Resource Consent Staff Charge
22/08/18	MTB	L	LPR	1.50	183.46	195.65	Resource Consent Staff Charge
23/08/18	MTB	L	LPR	0.75	91.72	97.82	Resource Consent Staff Charge
24/08/18	MTB	L	LPR	1.00	122.30	130.43	Resource Consent Staff Charge
06/09/18	MTB	L	LPR	1.75	214.02	228.25	Resource Consent Staff Charge
02/10/18	TLW	L	LPR	0.50	29.65	65.22	Resource Consent Staff Charge
02/10/18	TLW	D	IR02			_	Invoice and close off file .
Resource Consent							
17/07/18	SWO	L	LTES	0.75	77.30	61.50	T: Senior Eng / Section Head
17/07/18	SWO	D	DET			_	check application for Mark Buckley
			TOT			1202.77	Total Value (Excluding GST)
			COST		1515.93		Total Costs (Excluding GST)

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+.50 - PEER REVIEW REPORTS

.25 - STAFF

.75 - ENGINEER

1304.30 → LESS 33%

39.13

L

Job Detail: RM185224

Kb Quarries Limited Discharge Permit to discharge sediment laden water and

Jump to Practice invoice - chargeable by date - since last invoice Go from July 2018 to September 2018 for job

RM185224 Go

Practice invoice - chargeable by date - since last invoice viewed at 16.09 on 2/10/18 Transactions found 07/2018 to 09/2018. Selected months from 07/2018 to 09/2018.

Click here to load to Excel (.csv)

**** This is not a Tax Invoice ****

Highview Drive, Nelson
RM185224
Kb Quarries Limited
C/- Landmark Lile Ltd
PO Box 343
Nelson
Discharge Permit to discharge sediment laden water and
residue flocculent to land within the Maire and York Stream
catchments where it may enter water and to the Councils

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Processing Resource Consent							
02/07/18	TLW	L	LPR	1.00	64.57	130.43	Resource Consent Staff Charge
02/07/18	TLW	D	IR01			_	Lodge application and set up file .
11/07/18	MTB	L	LPR	1.00	122.30	130.43	Resource Consent Staff Charge
17/07/18	MTB	L	LPR	0.50	61.16	65.22	Resource Consent Staff Charge
17/07/18	MTB	D	IR16			_	Review/Assessment of application .
30/07/18	MTB	L	LPR	0.75	91.72	97.82	Resource Consent Staff Charge
22/08/18	MTB	L	LPR	1.50	183.46	195.65	Resource Consent Staff Charge
23/08/18	MTB	L	LPR	0.75	91.72	97.82	Resource Consent Staff Charge
24/08/18	MTB	L	LPR	1.00	122.30	130.43	Resource Consent Staff Charge
06/09/18	MTB	L	LPR	1.75	214.02	228.25	Resource Consent Staff Charge
Resource Consent							
17/07/18	SWO	L	LTES	0.75	77.30	61.50	T: Senior Eng / Section Head
17/07/18	SWO	D	DET			_	check application for Mark Buckley
			TOT			1137.55	Total Value (Excluding GST)
			COST		1456.63		Total Costs (Excluding GST)

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RM APPLICATION – PROCESSING CHECKLIST – PLEASE COMPLETE

CONSENT NO 185224 **Date lodged** 2.7.18 **Formally rec'd** _____ **Fee Paid**_____

Stage	Date	T/Hrs	Stage	Date	T/S Hrs
Sec 88 check Acc/Ack Reject			Application on hold / suspended / withdrawn Application re-activated		
Assessment of applic			s.92/95 check Notification? YES/NO		
Site visit	30 ~~25~~/7		s.92/95 peer reviewed		
S.92 request	25/7		Notified due to further information not provided		
S.92 info rec'd, assessed			Drafting Decision letter		
s.91 letter			Decision Peer reviewed		6/9
Additional consent/s rec'd			**DECISION** Granted / notified Declined		
Commissioning of report under S.92(2)					

NZTA SENT? **N/A**	Expiry		Monitoring ReQ ~~NO~~ YES	Related BConsent?	

Additional Timesheet Entries – INTERNAL, CONSULTANT, GEOTECHS, COMMISSIONERS ETC

Details	Date	T/S Hrs
~~Resolution~~ Decision rept has been emailed		
no consultants		
Jennifer reviewed.		
DISCOUNT APPLIES - 3 DAYS OVER		

HAIL SITE YES / NO	**PSI / DSI / NA**	**DETAILS**
REVIEW OUTCOME		
HAIL ADMIN INFORMED YES / NO		

Non-Notification Decision Report

Sections 92 & 95 – Resource Management Act 1991 (amended 2009, 2013, 2017)

Details of the Application	
Resource Consent Number	185224
Applicant (Consent Holder)	Kb Quarries Limited
Property to which the consent relates	Highview Drive and Waimea Road, Nelson
Rules and Activity Status	FWr.25 Discretionary
Activity Description	Discharge sediment laden stormwater and residual flocculent to land where it may enter water

Matters for Consideration – 95A Public Notification

1. S.95A (1) (2) (3) Public notification of consent application(s)

a. Has the applicant requested that the application be notified? – 95A (3)(a)

☒ No .....**Go to** Question 1b

☐ Yes .....Application to be **publicly notified**. State below how applicant advised Council, then **go to** Question 9

Comment:

b. Has a request for further information (92(1)) or commissioning of a report (92(2)(b)) been made and there has been no decision to publicly notify or limited notify the application? – 95C(1)(a)

☐ No ..... **Go to** Question 1d

☒ Yes ..... **Go to** Question 1c

c. Has the applicant failed to respond by the deadline specified or refused to provide the information or refused to agree to the commissioning of a report? – 95C(1)(b)

☒ No ..... **Go to** Question 1d

☐ Yes ..... Application to be **publicly notified** in accordance with section 95A(3)(b). **Go to** Question 9

d. Has the application been made jointly with an application to exchange recreation reserve land under section 15AA of the Reserves Act 1997? – 95A(3)(c)

☒ No ..... **Go to** Question 2a

☐ Yes ..... Application to be **publicly notified**. **Go to** Question 9

---

2. S.95A (4) (5) Public notification precluded in certain circumstances

a. Is the application for a resource consent for 1 or more activity and each activity is subject to a rule or National Environmental Standard (NES) that **precludes notification**? - 95A(5)(a)

☒ No ..... **Go to** Question 2b

☐ Yes ..... Provide details below. **Go to** Question 4

Rule / NES:

b. Is the application for a resource consent for 1 or more of the following activities (but no other activities) – 95A (5)(b):

(i) A Controlled activity; or

(ii) A restricted discretionary activity or discretionary activity and the activity is a **subdivision** (see87(b)) or a **residential activity** (see 95A(6)); or

(iii) A restricted discretionary activity or discretionary activity and the activity is a **boundary activity** (see 87AAB); or

(iv) A prescribed activity (see 360H (1)(a)(i)).

☒ No ..... Provide details and then **Go to** question 3

☐ Yes .....Provide details and then **Go to** Question 4

---

3. S.95A (7) (8) Public notification required in certain circumstances

a. Is the application for a resource consent for 1 or more activity and any of those activities is subject to a rule or NES that requires public notification – 95A(8)(a)

☒ No ..... **Go to** question 3b

☐ Yes ..... Provide details below. Application to be **publicly notified**. **Go to** Question 9

Rule / NES:

b. Will the activity have adverse effects on the environment that will be, or are likely to be, more than minor in accordance with section 95D – 95A(8)(b)

☒ No ..... State reasons below, then **go to** Question 4

☐ Yes ..... State reasons below. Application to be **publicly notified**. **Go to** Question 9

Reasons:

The environmental effects from the proposed discharge of sediment laden water and residual flocculent to land from the sediment retention ponds will be no more than minor. The sediment retention ponds at 430m^3 capacity, will treat up to 2.4ha of earthworks area, discharging at a rate of up to 27 litres per second associated with a Q50 year event. The sediment in the pond will be treated using a poly aluminium chloride flocculent that is applied 8mg/l using a flow activated dosing system.

Water quality in the tributaries of the York Stream is reasonably good, with background sediment concentrations around 5 g/m^3. While the main stream may not have particularly good water quality with respect to sediment, due to the quarry and cement works operations, the effect of the residual sediment from the earthworks site is still likely to be less than what presently discharges in the stream at up to 45 g/m^3 outside of storm events.

Short fin and Long fin eels are most common within the reach of the York Stream at the point that the tributary joins the main branch. Both fish are relatively resilient with respect to water quality, although the Long fin eel is on the threatened species list as declining. Further down the catchment Redfin bully and Koura have been recorded, their presence in the catchment indicates reasonably stable habitat in the area they were recorded.

Bearing in mind that the discharge from the sediment retention ponds is likely to only occur during rainfall events, that flocculent will be used to further reduce any sediment in the discharge and that the water will flow across a grassed area prior to reaching the confined drain under the railway reserve, the potential impacts upon the environment, given compliance with consent conditions will be no more than minor.

---

4. S.95A (9) Public notification in special circumstances

a. Is it considered that special circumstances exist in relation to the application that warrant the application be publicly notified? – s95A(9)

☒ No ..... State reasons below. **Go to** Question 5

☐ Yes ..... State reasons below. Application to be **publicly notified**. **Go to** Question 9

Reasons:

I understand that 'special circumstances' in an RMA context mean those which are unusual, abnormal or exceptional but may be less than extraordinary or unique. Among other matters, contributors to special circumstances may include:

- degree of deviation from the NRMP;
- the nature, scale and extent of potential adverse effects to arise from the proposed activity; or
- the contentiousness or public interest in a proposal.

In my view, there are no special circumstances relevant to this proposal that give rise to a need for public notification.

Matters for Consideration – 95B Limited Notification

5. S.95B (1-4) Limited notification of consent applications

a. Are there any affected protected customary rights groups or customary marine title groups - 95B (2)(a)(b)

☐ Yes ..... details:

Serve notice on affected groups even if a rule or NES precludes public or limited notification

☒ No ..... **Go to** Question 5b

b. Is the proposed activity on or adjacent to, or may affect land that is the subject of a statutory acknowledgement made in accordance with an Act specified in Schedule 11 – 95B (3)(a)

☐ Yes ..... Provide details below. **Go to** question 5c

☐ No ..... **Go to** Question 6

Details:

c. Is the person to whom the statutory acknowledgment is made an affected person under section 95E – 95B(3)(b)

☐ Yes ..... Provide details below. **Serve notice on affected persons even if a rule or NES precludes public or limited notification**

☒ No ..... **Go to** Question 6

Details:

The site is on the edge of the Maitai River and Tributaries Statutory Acknowledgement area. The proposed discharge from the sediment retention pond to land is intended to minimise the discharge of sediment laden stormwater from the earthworks area into the tributary of the York Stream through the use of flocculent. The flocculent is poly aluminium chloride, commonly used to control sediment from earthworks sites and is relatively inert at neutral to alkaline pH levels.

The customary values associated with the Maitai River and Tributaries identify the argillite at the head of the Maitai catchment as being important for trade by local iwi, as well as the river and associated catchments being important for mahinga kai, rongoā, weaving and building materials. The discharge from the sediment retention pond will not

adversely affect the traditional values of the Maitai River and tributaries given the present state of development.

6. S.95B (5) (6) Limited notification precluded in certain circumstances

a. Is the application for a resource consent for 1 or more activity and each activity is subject to a rule or national environmental standard that precludes limited notification – 95B (6)(a)

☐ Yes ..... details:_____ **Go to** Question 8

☒ No ..... **Go to** Question 6b

b. Is the application for a resource consent for either or both of the following (but no other activities) – 95B(6)(b)

(i) A controlled activity that requires consent under a district plan (other than a subdivision)

☐ Yes..... details _____ **Go to** question 8

☒ No ..... **Go to (ii)**

(ii) a prescribed activity (see section 360H (1)(a)(ii))

☐ Yes ..... details _____ **Go to** Question 8

☒ No ..... **Go to** Question 7

7. S.95B (7)(8)(9) Certain other affected persons must be notified

a. A person is not affected if the person has given written approval and has not withdrawn the approval before the notification decision is made – 95E(3)(a). Has any person provided written approval?

☐ Yes ..... Complete the table below, then **Go to** Question 7b

☒ No ..... **Go to** Question 7b

Person:	**Address:**

b. Are the following persons affected persons – 95B(7)

(i) In the case of a **boundary activity**, an owner of an allotment with an infringed boundary **AND** affected under s95E

☐ Yes ..... Provide reasons below. **Serve notice on those persons**

☐ No ..... **Go to** Question **(ii)**

☒ N/A ..... **Go to** Question **(ii)**

Reasons:

(ii) In the case of an activity prescribed under section 360H(1)(b), a prescribed person in respect of the proposed activity **AND** affected under s95E

☐ Yes ..... Provide details below. **Serve notice on those persons**

☐ No ..... **Go to** Question 7c

☒ N/A .....**Go to** Question 7c

Details:

c. For the purpose of giving limited notification of an application for a resource consent under section 95B(4) and (9) a person is an affected person if the adverse effects of the activity on the person are minor or more than minor but not less than minor – 95E(1).

Are any persons (other than those who have given written approval) affected?

☐ Yes ..... Provide reasons and complete table below. **Serve notice on those persons**

☒ No ..... Provide reasons below then **go to** Question 9

Reasons:

Copies of the resource consent applications are given to Tiakina Te Taiao for comment and for them to identify any areas that are culturally significant. While water quality and the health of aquatic ecosystems are important to iwi, Tiakina Te Taiao has not specifically identified the activity associated with this application as being significant to them and the iwi groups they represent.

Person:	**Address:**

8. S.95B (10) Further notification in special circumstances

a. Do special circumstances exist in relation to the application that warrant notification of the application to any persons not already determined to be eligible for limited notification (excluding persons assessed under section 95E as not being affected persons) – 95B(10)

☐ Yes..... State reasons below and **serve notice those persons**

☐ No..... State reasons why below then **go to** Question 9

Reasons:

9. Advice to Third Parties

a. Is the site/building on the New Zealand Heritage List?

☒ No.....**Go to** Question 9b

☐ Yes.....advise Heritage New Zealand

b. Is this site/building within a Pre-1900 settlement area of Nelson?

☒ No.....**Go to** Question 9c

☐ Yes.....advise Heritage New Zealand

c. Does the proposal involve removing a Heritage Building or Protected Tree?

☒ No.....**Go to** Question 9d

☐ Yes.....Ensure the Planning Advisor is advised

d. Is the site designated in the NRMP?

☒ No.....**Go to** Question 9f

☐ Yes.....**Go to** Question 9e

e. Is the Requiring Authority the applicant?

☐ No – has the Requiring Authority given written consent?

☐ Yes – has an amended outline plan been supplied?

f. Is it a cross-lease site?

☒ No

☐ Yes – all registered owners need to be the applicant, or should provide written approval

Decision

It is decided that this application be processed on a Non-notified basis

Reporting Officer: Mark Buckley Position: Principal Planner

Signed _____ Date: 6th September 2018

Authorised by: Jennifer Lancashire Position: Team Leader Resource Consents

Signed _____ Date: 6th September 2018

9 August 2018

landmark lile ltd
RESOURCE MANAGEMENT

Lucas House, 51 Halifax Street, Nelson
PO Box 343, Nelson 7040
Phone: 03 539 0330
Mobile: 027 244 3388
Email: mark@landmarklile.co.nz
www.landmarklile.co.nz

Nelson City Council
Attn: Mark Buckley
Email: mark.buckley@ncc.govt.nz

Dear Mark,

KB Quarries Limited: s92 Response
Discharge Permit (sediment-laden water)

In response to your s92 request of 25 July 2018, I have attached a letter from Tonkin & Taylor which addresses the outstanding information. I also summarise this below.

1. Discharge Rate

The York Pond is designed to comply with the Land Development Manual for catchments 1.5 - 3ha in size. The outlet pipe is designed to discharge at a rate of 29l/s.

The pond has been designed in accordance with NCC LDM Section 9.3 and TP90.

2. Flocculant Used

The flocculant to be used is the same as the western side, it is called PAC (poly aluminium chloride) and the dosing rate is 8mg/L (or 1.25L of PAC to treat $10m^3$ storm water) as per testing performed by RST in May 2018.

The dosing mechanism to be used is an electronic dosing device which is a flow activated system that doses storm water as it enters the sediment pond forebay.

In terms of the residual concentration, the applicant has obtained this information from RST Environmental Solutions. Refer to email dated 30 July 2018 attached.

3. Erosion and Sediment Control Plan

The ESCP has been amended (now dated August 2018) to include the additional information sought. This is attached to the T&T letter dated 7 August 2018.

4. Discharge Pathway

Please refer to the attached letter from Tonkin & Taylor.

Please contact me if you have any queries.

Yours faithfully

Mark Lile
Landmark Lile Limited
Resource Management Consultancy

PO Box 645 Nelson 7040
Phone: 03 546 0200
Fax: 03 546 0239

6 September 2018

Resource Consent Number: RM185224
Contact: Mark Buckley
DD: 03 265 6227
Email: mark.buckley@ncc.govt.nz
www.nelson.govt.nz

Kb Quarries Limited
C/- Landmark Lile Ltd
PO Box 343
Nelson 7040

Dear Mr Lile

RM185224: DECISION ON NON-NOTIFIED RESOURCE CONSENT

Pursuant to Section 114 of the Resource Management Act 1991 ("the Act"), please find enclosed a copy of the Council's decision on your application for resource consent.

Section 357A of the Act provides you with the right to lodge an objection with the Council in respect of this decision and/or any associated conditions. Any such objection must be made in writing setting out the reasons for the objection and must be lodged with the Council, together with a fixed fee of $255.00 (GST inclusive), within 15 working days of receiving this letter.

In addition Section 120 of the Act provides you with the right to lodge an appeal with the Environment Court in respect of this decision and/or any associated conditions. Section 121 of the Act requires that any such appeal must be made in the prescribed form, must state the reasons for the appeal, the relief sought, state any matters required by regulations and must be lodged with both the Environment Court and the Council within 15 working days of receiving this letter. A copy of your appeal must also be served on all persons who made a submission on the consent application within five working days of your appeal being lodged with the Environment Court.

You may commence your activity immediately unless you lodge an objection or appeal to this decision. However, it is important that you check the conditions of your consent carefully as some of them may require you to carry out specific actions before you may commence your activity. In some cases you may also require other permits or building consents for your activity and these must be obtained before you can commence your activity.

Please note that under Section 125 of the Act, your consent will lapse in five years unless you have given effect to it before then. Please feel free to contact me if you have any questions regarding any aspect of your consent or its conditions. My contact details are listed at the top of this letter.

Yours faithfully

Mark Buckley
Principal Planner

Making Nelson an **even better** place
Nelson City Council
te kaunihera o whakatū

RESOURCE CONSENT DECISION

Resource Consent number: RM185224

Pursuant to section 104B of the Resource Management Act 1991 ("the Act"), the Nelson City Council ("the Council") hereby **grants** resource consent to:

Kb Quarries Limited

The activity to which this decision relates:

Discharge Permit to discharge sediment laden water and residue flocculent to land within the Maire and York Stream catchments where it may enter water and to the Councils stormwater system.

Location details:

Address of property:	Highview Drive and Waimea Road, Nelson
Legal description:	Lots 65, 66 and 67 DP 464769,
Certificate of title:	619451, 619542, 619643
Location co-ordinates:	Easting 1621984
	Northing 5428146 (NZ Transverse Mercator)

Expiry/Duration: This consent shall expire on 30 May 2020

Discharge to Land & Water

Primary Type: Stormwater – Flocculent and Sediment Laden Water

Point Source: No

Receiving Water Classification: York Stream 'D' and Mairie Stream

Contaminants: Flocculent and Sediment Laden Water

CONDITIONS

Pursuant to Section 108 of the Act, this consent is issued subject to the following conditions:

1. The activity shall be carried out in accordance with the application lodged with Council on 5 July 2018, the further information received on 9 August 2018, the attached RM185224 Plans A to L and the following conditions of consent.

Where there is any apparent conflict between the application and consent conditions, the consent conditions shall prevail.

2. The consent holder shall advise the Council's Monitoring Officer in writing, at least 5 working days prior to works commencing on site, so that monitoring of the conditions of this consent can be undertaken. Please email regulatory@ncc.govt.nz and advise the consent number, RM185224.

   Note: *Failure to notify the Council as stated in the above condition may result in enforcement action.*

   Note: *A monitoring charge of $150 has been included in your invoice, as conditions of consent requiring monitoring have been imposed. This charge covers the costs involved in the first hour of monitoring compliance with the consent conditions. Where additional monitoring costs are required to determine that conditions have been met, these will be charged as provided in the Council's Fees and Charges Schedule.*

3. For the purposes of, and pursuant to Section 128 of the Resource Management Act 1991, the Council reserves the right to review this consent annually commencing 12 months from the date this consent is granted, for any of the following purposes:

   (a) To modify existing conditions of consent relating to the effects of the activity on the environment.

   (b) To require the Consent Holder to adopt the best practicable option to mitigate any adverse effect upon the environment, arising from the generated effects of the activity.

   (c) If the Council deems that it is necessary to do so in order to deal with any adverse effect on the environment which may arise from the exercise of this consent, and which is appropriate to deal with at a later date.

4. All erosion and sediment control devices implemented within the Waimea Road earthworks area authorised under land use consent RM155190V2 (and shown on RM185224 Approved Plan A) shall be designed, constructed and maintained in accordance with the Nelson City Council Land Development Manual 2010 (LDM), unless a consent condition requires a higher standard, in which case the higher standard shall apply.

5. Within two months of the granting of this consent, a Chemical Treatment Management Plan (CTMP) shall be submitted and certified by (see condition 8) the Council's Monitoring Officer. The plan shall detail the rainfall activated treatment system to be adopted and shall include:

   Specific design details of the chemical treatment dosing system based on a rainfall activated methodology for the sites sediment retention pond;

   a) Details of optimum dosage (including assumptions);

   b) Results of initial chemical treatment trial;

   c) Monitoring, maintenance (including post storm) and contingency programme (including a record sheet) including:

      i. Maintaining the sediment retention pond discharge with a pH range of 6.5 to 7.9;

      ii. a monitoring programme to test pH including upstream of the chemical

application point, within the pond and downstream of the pond;

iii. procedures for buffering the pond if required to maintain the discharge within the 6.5 to 8.0 range.

d) Confirmation of bunding around the flocculation shed;

e) Hazchem signage;

f) A spill contingency plan;

g) Details of the person who will hold responsibility for the operation and maintenance of the chemical treatment system and the organisational structure which will support this system.

6. Earthworks for Stage 2 as identified in Plan RM185224 Plan B shall not commence until the area identified as preliminary stabilisation has been stabilised.

7. Prior to the commencing of the earthworks within the Waimea Road Earthworks area of the site, and authorised under the associated land use consent RM155190V2, the consent holder shall hold a pre-start meeting that:

- is located on the subject site;
- is scheduled **not less than five days** before the anticipated commencement of earthworks;
- includes Council's Monitoring Officer and other relevant staff; and
- includes representation from the contractors who will undertake the works.

The following information shall be made available at the pre-start meeting:

- Timeframes for key stages of the works authorised under this consent;
- Resource consent conditions;
- Erosion and Sediment Control Plan; and
- Chemical Treatment Management Plan (required by Condition 5).

8. The sediment retention pond within the Waimea Road Earthworks area (and shown in RM185224 Approved Plan A) shall be treated in accordance with the approved Chemical Treatment Management Plan (CTMP) as required by Condition 5. Any amendments to the CTMP shall be submitted in writing to the Council's Monitoring Officer for written certification prior to implementation.

9. The operational effectiveness and efficiency of all erosion and sediment control measures specifically required as a condition of consent or by the Erosion and Sediment Control Plan (ESCP) provided with the application, and the CTMP required by Condition 5, shall be maintained throughout the duration of the earthworks activity until the catchment area of any given sediment control device is permanently stabilised against erosion.

10. The sizing and construction of the sediment retention pond (as shown on RM185224 Approved Plans C and D) and diversion channels to service the earthworks area (as shown on RM185224 Approved Plan E) shall be confirmed through an as-built plan,

the as-built plans shall be provided to the Team Leader Resource Consents for certification within one month of starting earthworks at the site.

11. The Consent Holder shall provide all weather access to the sediment retention ponds to allow the removal of accumulated sediment.

12. The Consent Holder shall monitor the sediment retention ponds weekly and immediately after any rain event, where the rainfall is greater than 25mm in 24 hours or greater than 10mm per hours.

13. The Consent Holder shall clean out the sediment retention ponds before the volume of accumulated sediment reaches 20% of the total sediment retention pond volume.

14. The consent Holder shall ensure that a copy of the earthworks consent (RM155190V2) and discharge permit (RM185224) and the relevant ESCP are kept on site at all times and presented to any Nelson City Council Officer on request.

15. The discharge from the sediment retention pond as authorised under condition 1 shall not result in any scour at the outlet from the pond.

16. Any discharge to York Stream shall not, after reasonable mixing, give rise to any of the following effects:

    - The production of any conspicuous oil or grease films, scums or foams,
    - any conspicuous change in the colour or visual clarity beyond the mixing zone,
    - any emission of objectionable odour,
    - any detrimental effects on aquatic life such as smothering of macrophytes.

17. Notwithstanding the requirements of any other condition of this consent, the Consent Holder shall at all times take all practicable measures to prevent flocculants or suspended solid content discharges into York Stream.

18. The consent holder shall ensure that the stockpile area for sediment from the sediment retention pond is stored in the area identified on RM185224 Plan A in a manner that ensures that remobilisation of sediment during rainfall events is avoided outside of the detention area.

19. The decommissioning of the sediment retention pond shall only occur once the contributing catchment is fully stabilised or alternative appropriate sediment retention devices have been installed.

ADVICE NOTES

1. This resource consent authorises only the activity described above. Any matters or activities not consented to by this consent or covered by the conditions above must either:

(a) comply with all the criteria of a relevant permitted activity in the Nelson Resource Management Plan (NRMP); or

(b) be allowed by the Resource Management Act 1991; or

(c) be authorised by a separate resource consent.

2. This consent is granted to the Consent Holder, but Section 134 of the Act states that such land use consent "attach to the land", and accordingly, may be enjoyed by any subsequent owners and occupiers of the land. Therefore, any reference to "Consent Holder" in any conditions shall mean the current owners and occupiers of the subject land. Any new owners or occupiers should therefore familiarise themselves with the conditions of this consent, as there may be conditions that are required to be complied with on an ongoing basis.

   This discharge permit is granted to the above mentioned Consent Holder, and relates to a particular location. Section 137 of the Act states that the Consent Holder may apply to the Council to transfer the whole or part of the Consent Holder's interest in the permit to any owner or occupier of the site in respect of which the permit is granted; or a local authority; but not to another site unless the consent or a rule in the Nelson Resource Management Plan expressly provides otherwise.

3. The Consent Holder should note that this resource consent does not override any registered interest on the property title.

4. The zone of reasonable mixing as referred to in condition 15 is defined as being at the point where the York Stream exits the culvert under Waimea Road at or about the coordinates of 1622411E and 5428604N (NZTM).

SITE DESCRIPTION

The site is located on the north western side of Waimea Road, Bishopdale. The site is presently farmland, is of a moderate slope of up to 28% and covers approximately 3ha in area. The proposed earthworks is covered under the RM155190V2, this is a consent for the discharge of sediment laden stormwater and residual flocculent from the sediment retention pond at the base of the earthworks catchment.

The site sits within the landscape, services and land management overlays. None of these are affected by the resource consent for this activity.

While some of the earthworks area, the soil and sediment storage area near the existing site office, is within the Maire Stream catchment, there is no discharge directly into the stream as a result of the works. The storage area is located within an area of the site that while mostly stabilised, still contains its sediment retention ponds at the lower end of the catchment. The storage area will be bunded and any sediment laden stormwater will go to ground soakage.

DESCRIPTION OF PROPOSAL

The Applicant is proposing to undertake earthworks across a 3ha site, for the purpose of development. This area of earthworks is the last part of a wider development across a large number of hectares. A sediment retention pond with a capacity of 480m^3 will be constructed at the base of the earthworks catchment. A range of sediment and erosion control devices will be employed to minimise sediment laden stormwater being generated on site. There will be some staging of works onsite, with the sediment retention pond and the lower area identified as preliminary stabilisation being undertaken first. Future

staging of works will include cut 1 above the pond being undertake, then stage 1 and cuts 2 and 3 following. The preliminary stabilisation area will be sown with grass seed and allowed to establish prior to starting stage 2 and cut 4 starting.

The sediment retention pond has been sized for a 2% catchment area based on slope angles being between 10 to 47% as per LDM design requirements. As the catchment area for the pond will not be greater than 2.4ha at any one time the pond size is 480m^3. Given the catchment area of the pond, a runoff coefficient of 0.6 and a storm event of 68.4mm/hr, giving a runoff volume of 0.24 m^3/s. In combination with clean water cut off drains, silt fencing and contour drains, the sediment concentration within stormwater should be reduced onsite prior to entering the pond.

The environmental effects from the proposed discharge of sediment laden water and residual flocculent to land from the sediment retention ponds will be no more than minor. The sediment retention ponds at 430m^3 capacity, will treat up to 2.4ha of earthworks area, discharging at a rate of up to 27 litres per second associated with a Q50 year event. The sediment in the pond will be treated using a poly aluminium chloride flocculent that is applied 8mg/l using a flow activated dosing system.

PLAN RULES AFFECTED

According to the Nelson Resource Management Plan, the following apply to the subject property:

Zoning: Residential

Overlays: Landscape, Services and Land Management

Rules: FWr.25

Overall Status: Discretionary

REASONS FOR THE DECISION

1. The Council considers that the adverse effects of the activity on the environment will be no more than minor and there are no persons adversely affected by this proposal.

2. The activity is considered to be consistent with the relevant objectives and policies contained in the Nelson Resource Management Plan and the Nelson Regional Policy Statement.

3. Objective DO19.1 and policies DO19.1.1 and 19.1.5 of the NRMP recognise York Stream as a class D water body and requires that consideration be given to improving water quality. In the case of the application, the use of flocculent will reduce the potential for sediment within the stream and ensure any effects on water quality do not have a lasting effect on the aquatic ecosystem.

4. Policies DO19.1.7, DO19.1.8 and DO19.1.10 of the NRMP require consideration is given to controlling the effects of land use activities and their associated stormwater on water quality. The use of a range of sediment control devices across the earthworks site and flocculent in the sediment retention pond, meets the intent of the policies.

5. The proposed activity contravenes section 15 of the Act, and therefore the Council has also had regard to the matters outlined in sections 105 and 107 of the Act. Section 107 of the RMA has been considered and conditions relating to after reasonable mixing, the contaminant or water discharged (either by itself or in combination with the same, similar, or other contaminants or water), is likely to give rise to all or any of the following effects in the receiving waters:

(a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials:
(b) any conspicuous change in the colour or visual clarity:
(c) any emission of objectionable odour:
(d) the rendering of fresh water unsuitable for consumption by farm animals:
(e) any significant adverse effects on aquatic life.

6. The Council has taken into account the relevant principles outlined in sections 6, 7 and 8 of the Act and it is considered that granting this resource consent achieves the purpose of the Act as set out in section 5.

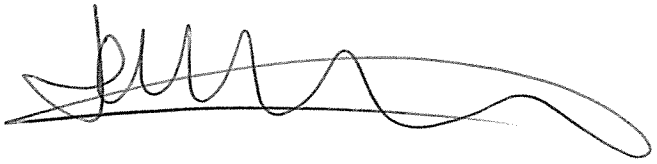
7. Council has taken into consideration the objectives and policies of the National Freshwater Management Policy Statement (2014). In particular:

    a) Objective A1 safeguarding the life-supporting capacity, ecosystems, through managing use and development of land and of the discharge of contaminants, by requiring all practicable sediment control measures to be used.

    b) Policy A3 is met by imposing limits and using best practicable options to minimise environmental effects of the activity.

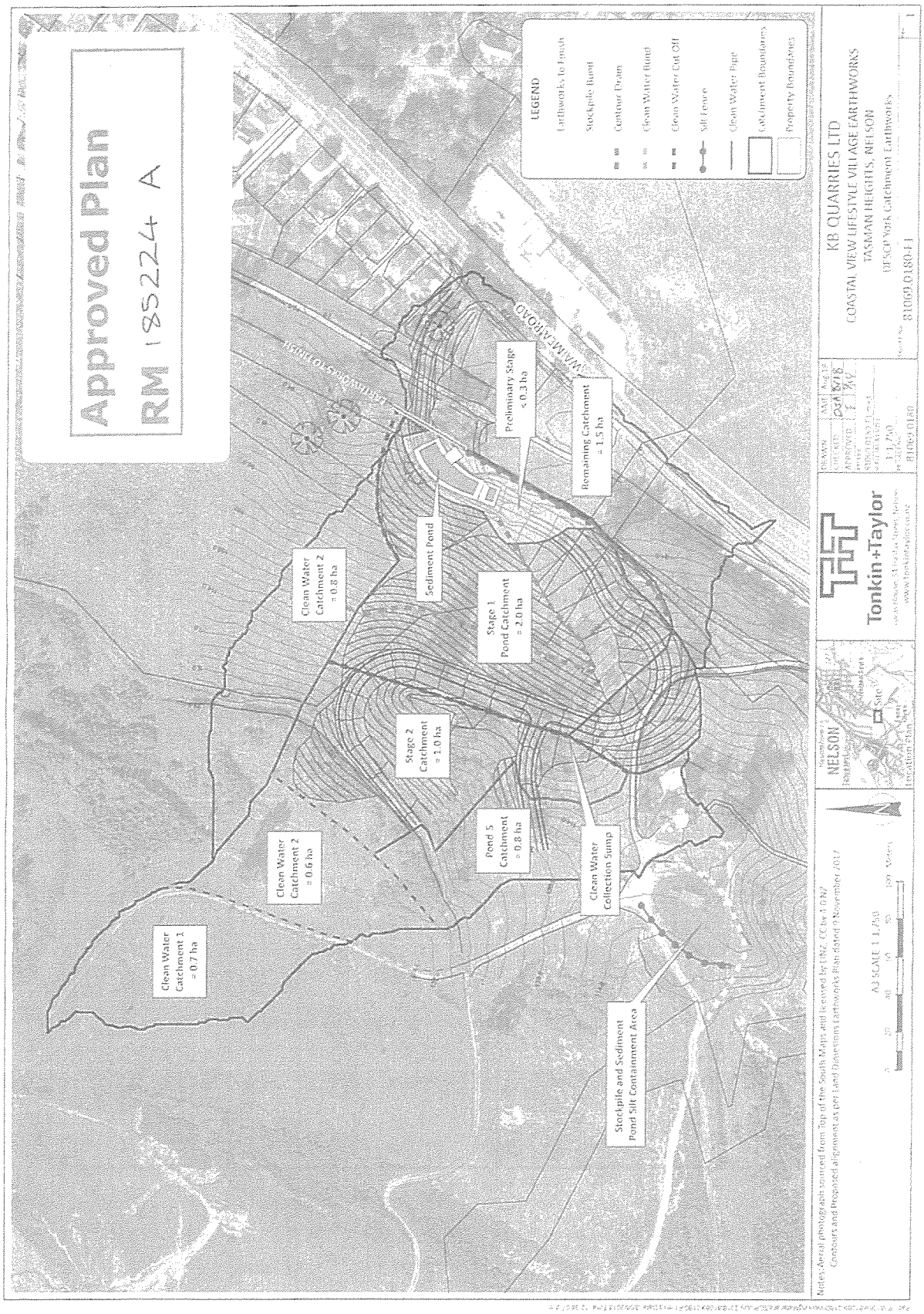
8. The environmental effects of the discharge will be minor given that the use of poly aluminium chloride is commonly used as a flocculent for treating sedimentation in sediment retention ponds in New Zealand and considered best practice, and under neutral to alkaline conditions is relatively inert within water.

This resource consent is **granted** on 6 September 2018 under delegated authority from Nelson City Council by:

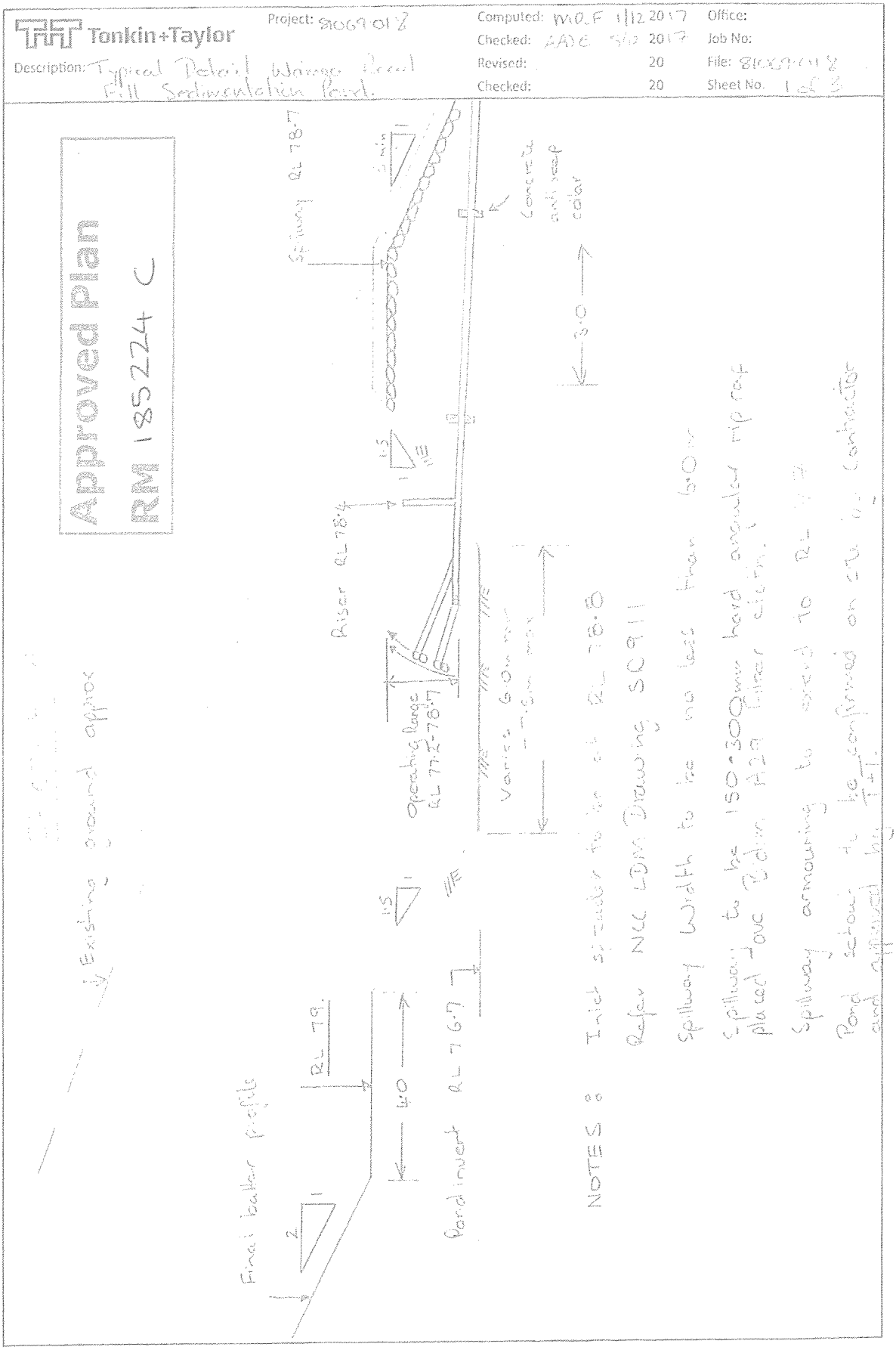


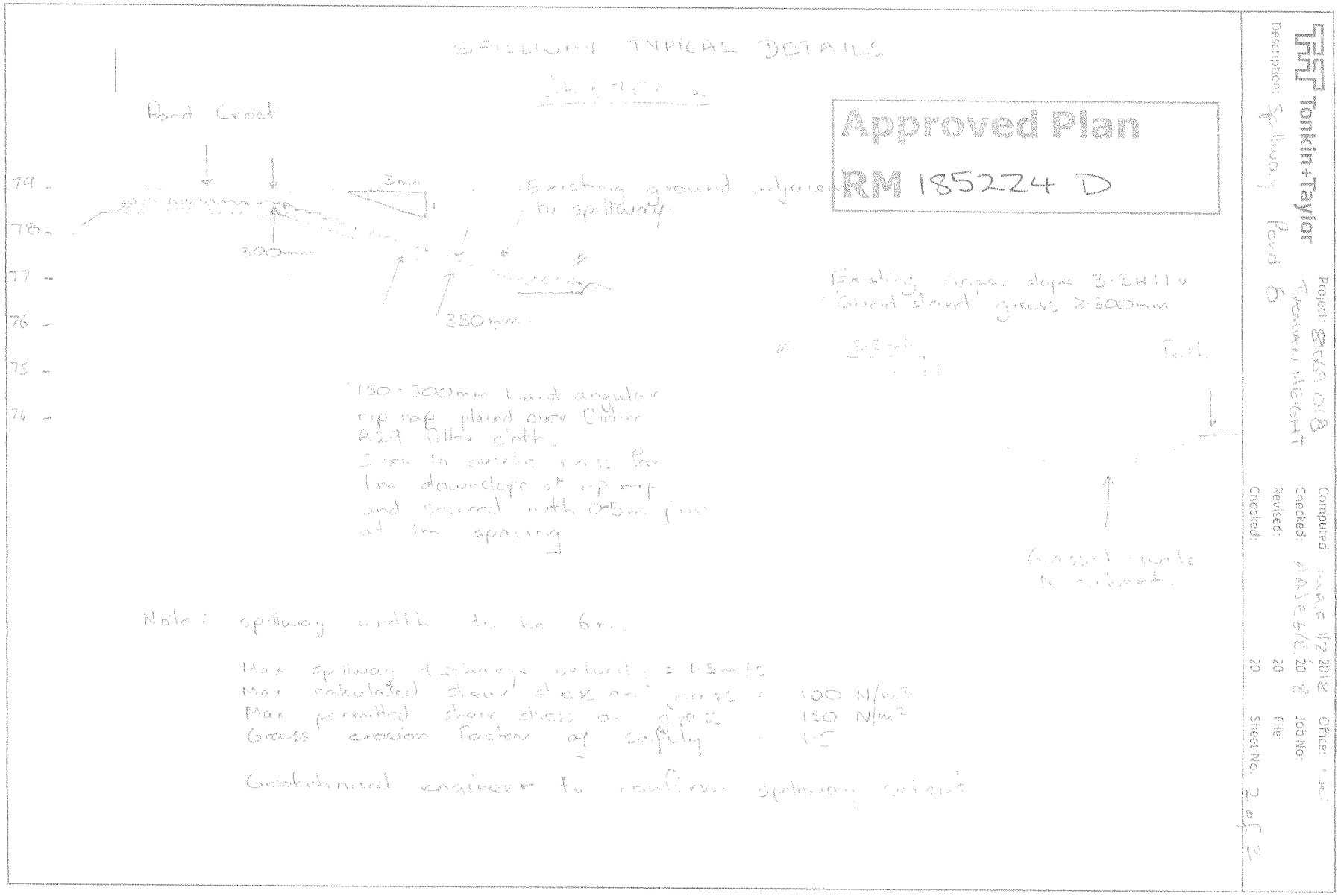
Jennifer Lancashire
Resource Consents Unit
Nelson City Council
(Authorised Officer Pursuant to Delegation)

Jennifer Lancashire
Team Leader Resource Consents


Approved Plan
RM 185224 A
LEGEND
Earthworks to Finish
Stockpile Bund
Contour Drain
Clean Water Bund
Clean Water Cut Off
Silt Fence
Clean Water Pipe
Catchment Boundaries
Property Boundaries
WAIMEA ROAD
Preliminary Stage
< 0.3 ha
Remaining Catchment
= 1.5 ha
Sediment Pond
Clean Water
Catchment 2
= 0.8 ha
Stage 1
Pond Catchment
= 2.0 ha
Stage 2
Catchment
= 1.0 ha
Pond 5
Catchment
= 0.8 ha
Clean Water
Collection Sump
Clean Water
Catchment 2
= 0.6 ha
Clean Water
Catchment 1
= 0.7 ha
Stockpile and Sediment
Pond Silt Containment Area
KB QUARRIES LTD
COASTAL VIEW LIFESTYLE VILLAGE EARTHWORKS
TASMAN HEIGHTS, NELSON
DESCP York Catchment Earthworks
81069.0180-F1
Tonkin+Taylor
NELSON
Site
Location Plan
A3 SCALE 1:1,750
Notes: Aerial photograph sourced from Top of the South Maps and licensed by LINZ. CC by 4.0 NZ
Contours and Proposed alignment as per Land Dimensions Earthworks Plan dated 9 November 2017

Approved Plan
RM 185224 B
Construction and Stabilisation Staging
1 Preliminary stage to construct sediment Pond
2 Cut 1
3 Stage 1 Fill + Cut 2 and Cut 3
4 Stabilise preliminary area 0.7 ha (red)
HOLD POINT - to allow stabilisation to become established
5 Stage 2 Fill + Cut 4
Remove clean water cutoff between stages 1 and 2
Add cut-off drain around preliminary stabilised area
6 Stabilise Stage 1 (yellow)
7 Stabilise Stage 2 (blue)
LEGEND
Contour Drain
Clean Water Bund
Clean Water Cut Off
Clean Water Pipe
Cut
Catchment Boundaries
Property Boundaries
Stabilisation Staging
Preliminary
Stage 1
Stage 2
Sediment Pond
Cut 1
Cut 2
Cut 3
Cut 4
Stage 1
Stage 2
Preliminary Stabilisation
WAKATU ROAD
NELSON
Site
Location Plan
Tonkin+Taylor
KB QUARRIES LTD
COASTAL VIEW LIFESTYLE VILLAGE EARTHWORKS
TASMAN HEIGHTS, NELSON
01 SCP York Catchment Earthworks
81069.0180 F2


Tonkin+Taylor
Project: 81069018
Computed: MDF 1/12 2017
Office:
Checked: AADE 5/12 2017
Job No:
Description: Typical Detail Wainga Road Fill Sedimentation Pond.
Revised: 20
File: 81069018
Checked: 20
Sheet No. 1 of 3
Approved Plan
RM 185224 C
Spillway RL 78.7
Concrete anti seep collar
3.0
Riser RL 78.4
Operating Range RL 77.2-78.7
Varies 6.0m min
Existing ground approx
Final batter profile
RL 79.
4.0
Pond invert RL 76.7
NOTES:
Inlet spreader to be at RL 78.8
Refer NCC LDM Drawing SD911
Spillway Width to be no less than 6.0m
Spillway to be 150-300mm hard angular rip rap placed over Bidim A29 filter cloth.
Spillway armouring to extend to RL
Pond setout to be confirmed on site by contractor and approved by T+T.


Tonkin+Taylor
Description: Spillway Pond 8
Project: 87069.018 Tromans HEIGHT
Computed: MAR 1/2 2018
Checked: ANJ 6/8 20 8
Revised: 20
Checked: 20
Office:
Job No:
File:
Sheet No. 2 of 3
SPILLWAY TYPICAL DETAILS
Approved Plan
RM 185224 D
Pond Crest
3mm
300mm
350mm
Existing ground adjacent to spillway
Existing grass slope 3.3H:1V
Good stand grass ≥300mm
Toe
Grassed swale to culvert
150-300mm hard angular rip rap placed over Bidim A29 filter cloth.
Note: spillway width to be 6m.
Max spillway discharge velocity = 1.5m/s
Max calculated shear stress on grass = 100 N/m²
Max permitted shear stress on grass 150 N/m²
Grass erosion factor of safety 1.5
Geotechnical engineer to confirm spillway extent

Tonkin+Taylor

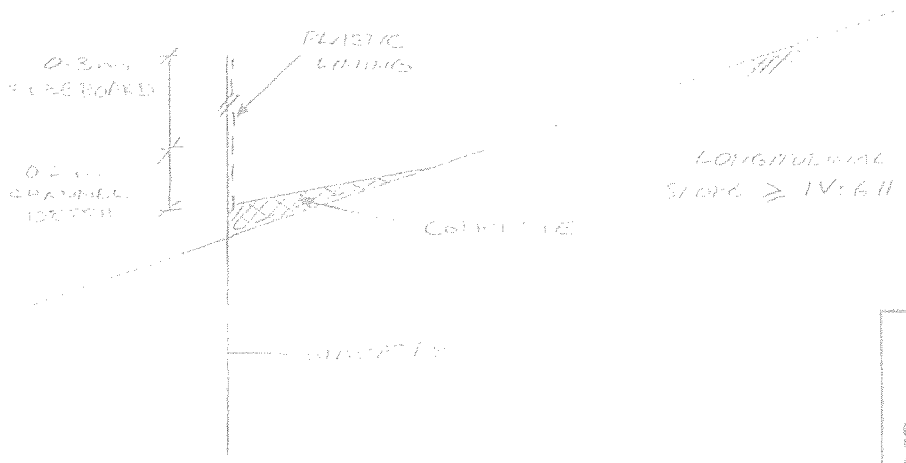
Project: TASMAN HEIGHTS

Description: TYPICAL DETAILS – DESCP UPDATE DECEMBER 2017

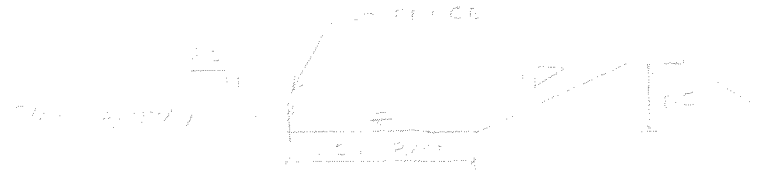
Computed: [illegible] 4/12 2017 | Office: NELSON
Checked: [illegible] 5/12 2017 | Job No: 81069
Revised: [illegible] 20[illegible] | File: 0180
Checked: [illegible] 20[illegible] | Sheet No. [illegible]

SKETCH 3

TYPICAL CLEAN WATER CUT OFF DETAIL



TYPICAL DETAIL

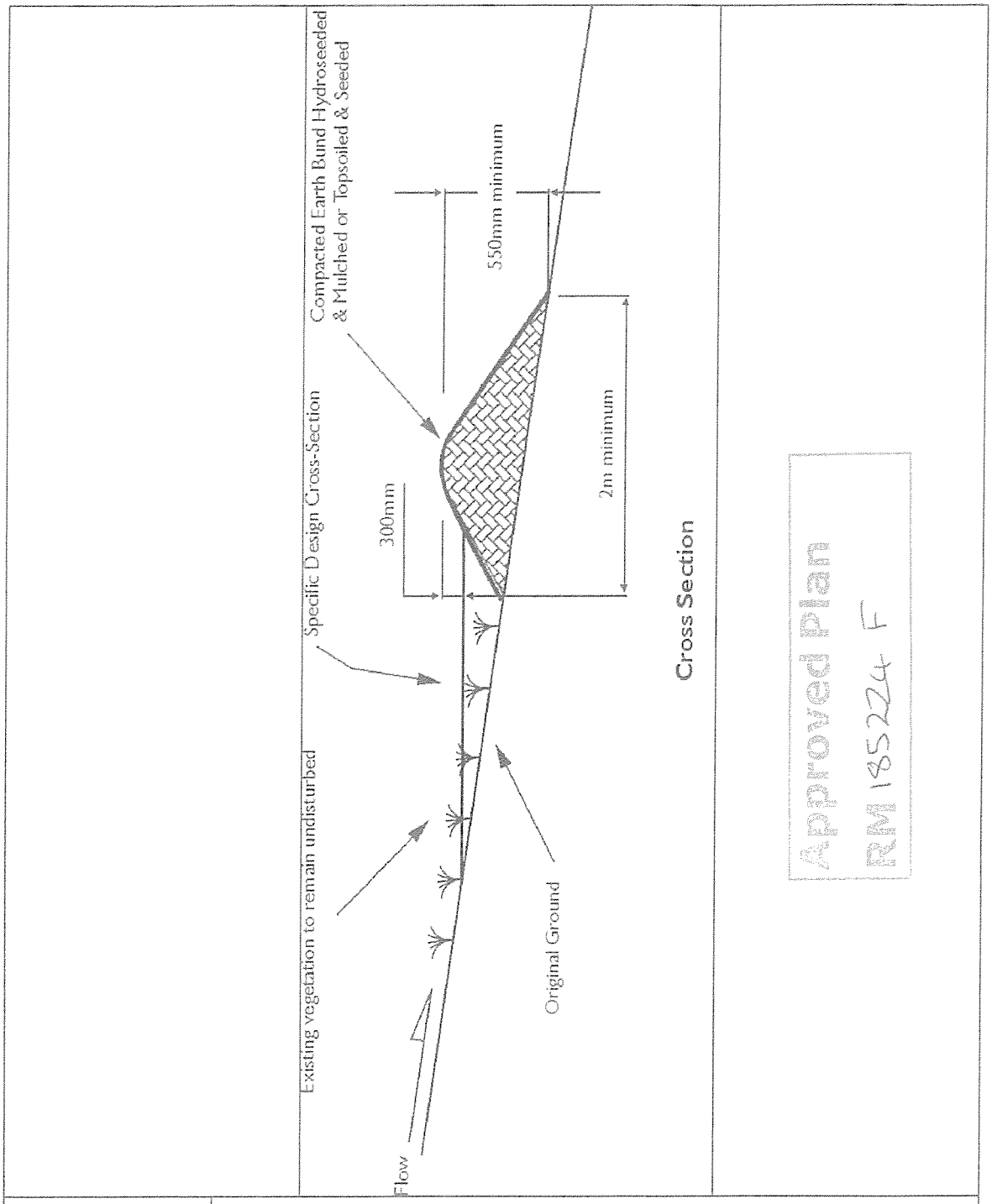


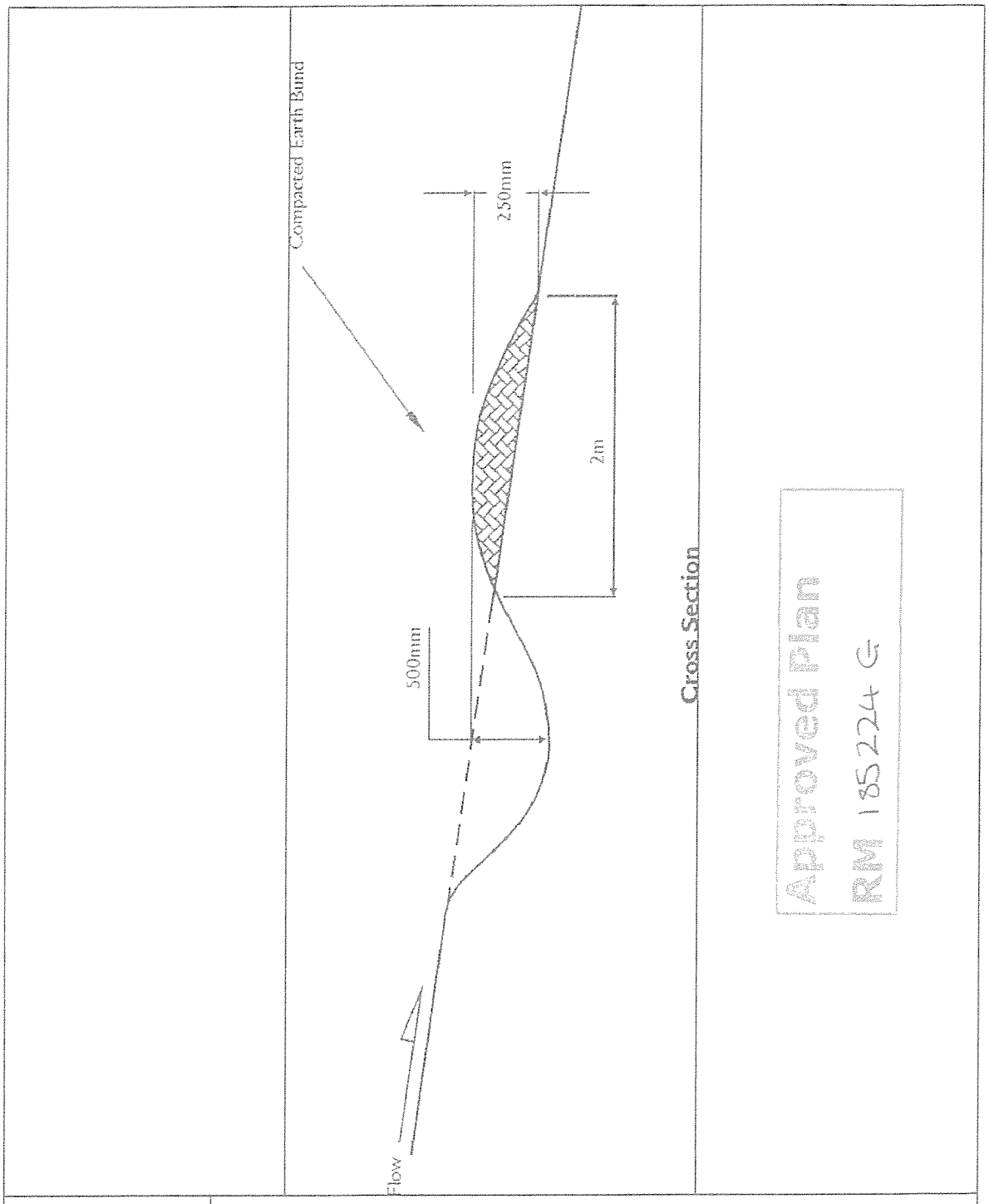
[illegible]

[illegible] Slope = [illegible]
Water Level = [illegible]
[illegible]

Channel required to be [illegible] to prevent [illegible]
[illegible]
and regular [illegible] equivalent

Approved Plan
RM 185224 E


Compacted Earth Bund Hydroseeded & Mulched or Topsoiled & Seeded
550mm minimum
2m minimum
300mm
Specific Design Cross-Section
Existing vegetation to remain undisturbed
Original Ground
Flow
Cross Section
Approved Plan
RM 185224 F
NELSON CITY COUNCIL
CLEARWATER RUNOFF DIVERSION BUND
INFRASTRUCTURAL ASSETS
APPROVED
29/07/2010
SENIOR EXECUTIVE INFRASTRUCTURE
DATE
SD 901



NELSON CITY COUNCIL

CONTOUR DRAIN

INFRASTRUCTURAL ASSETS

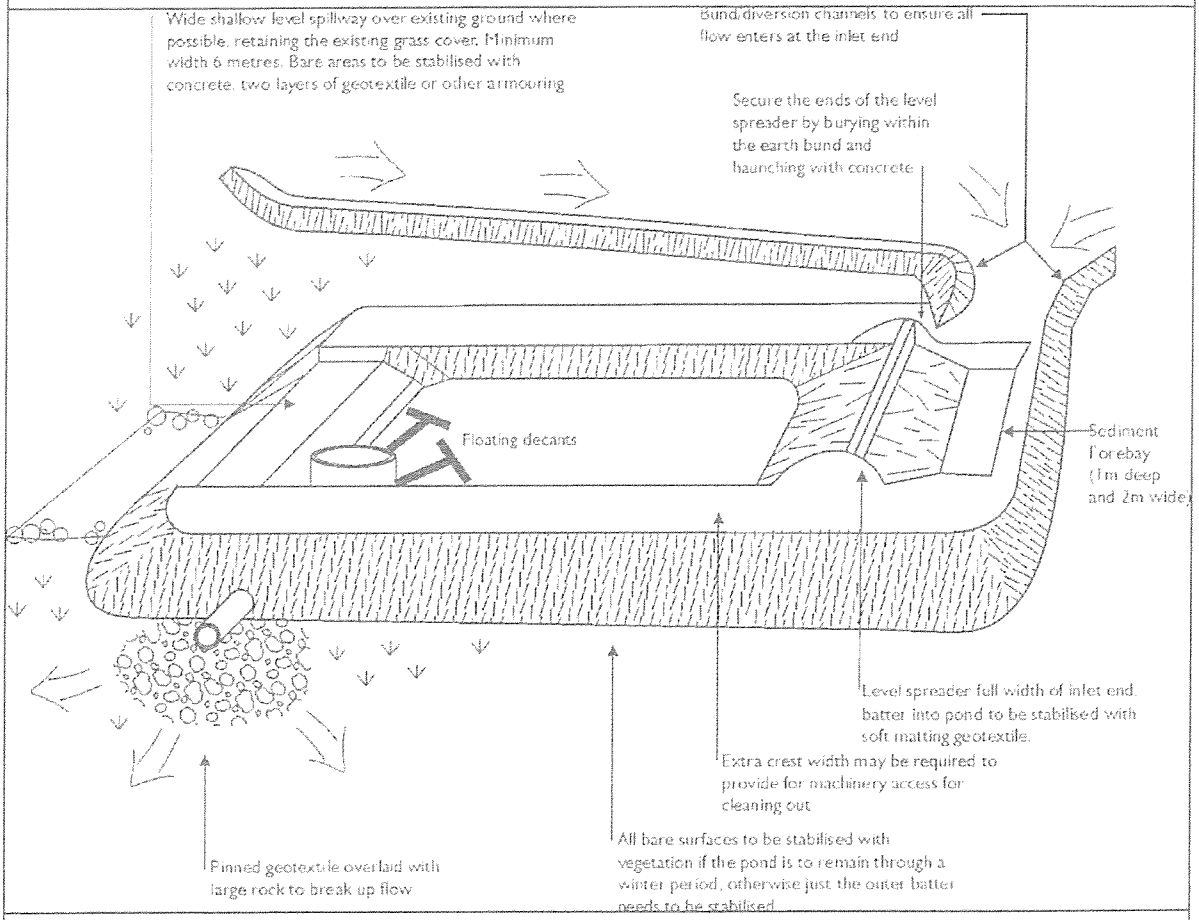
APPROVED 29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE DATE

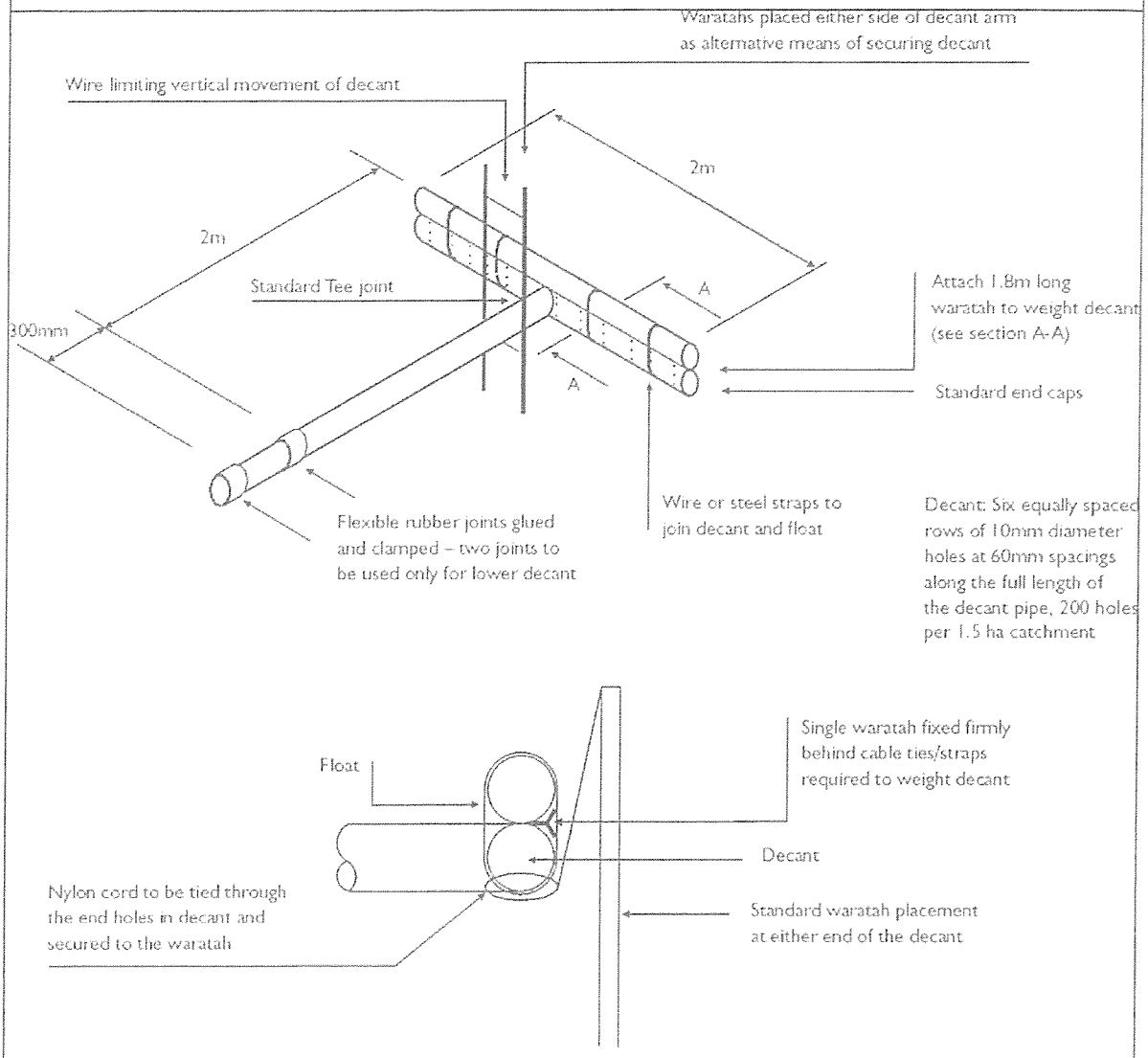
SD 903

Approved Plan

RM 185224 H



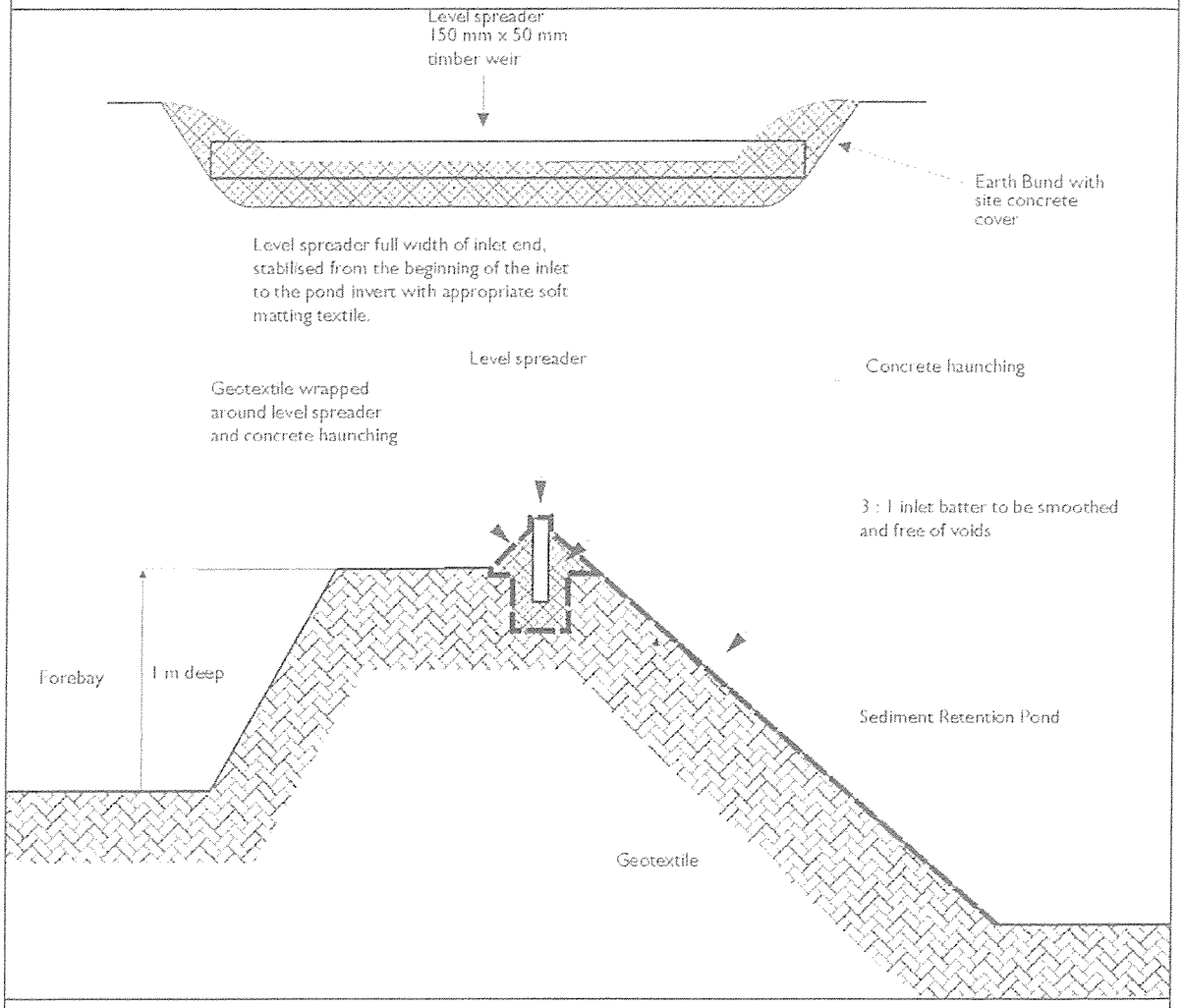
NELSON CITY COUNCIL	SEDIMENT RETENTION POND	
	INFRASTRUCTURAL ASSETS APPROVED 29/07/2010 SENIOR EXECUTIVE INFRASTRUCTURE DATE	SD 907



Section A-A

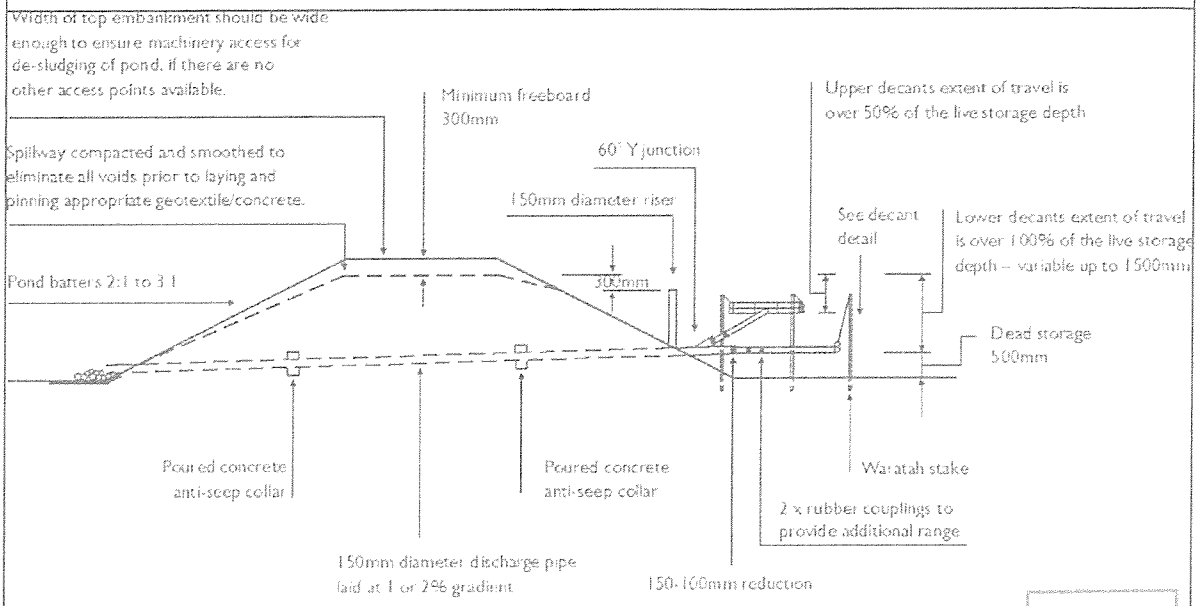
Approved Plan
RM 185224 I

NELSON CITY COUNCIL	DECANT DETAIL	
	INFRASTRUCTURAL ASSETS APPROVED ..... 29/07/2010 SENIOR EXECUTIVE INFRASTRUCTURE ..... DATE	SD 908

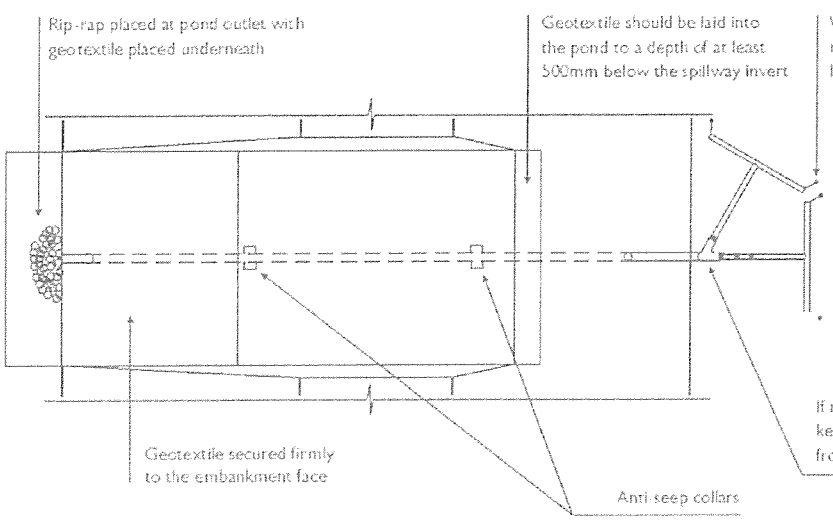


Approved Plan
RM 185224 J

NELSON CITY COUNCIL	LEVEL SPREADER	
	INFRASTRUCTURAL ASSETS APPROVED 29/07/2010 SENIOR EXECUTIVE INFRASTRUCTURE DATE	SD 909



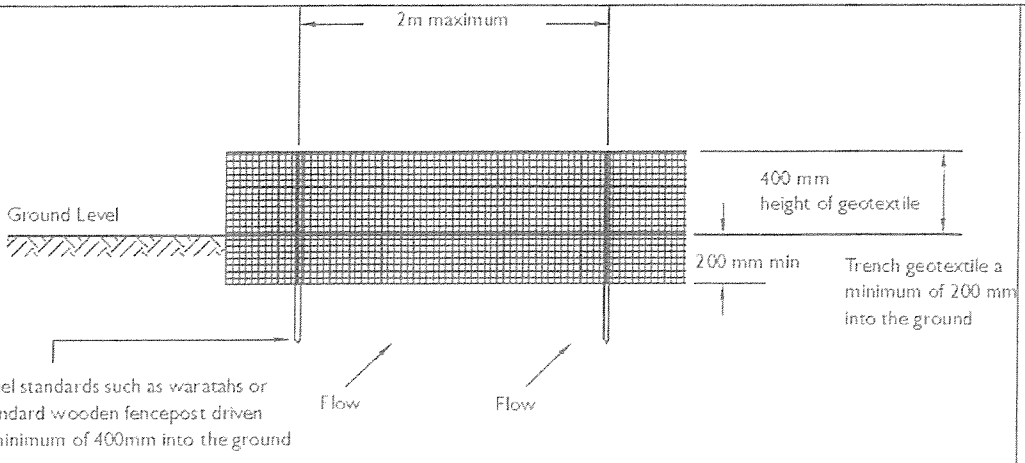
Cross Section



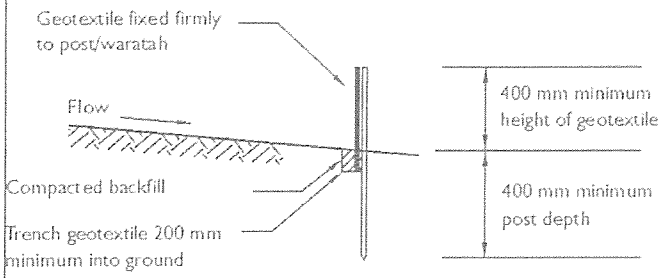
Plan

Approved Plan RM 185224 K

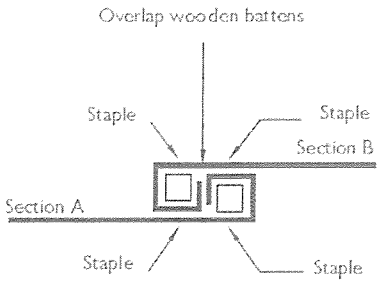
NELSON CITY COUNCIL	SEDIMENT RETENTION POND FOR CATCHMENTS BETWEEN 1.5ha and 3ha	
	INFRASTRUCTURAL ASSETS APPROVED 29/07/2010 SENIOR EXECUTIVE INFRASTRUCTURE DATE	SD 911



Elevation

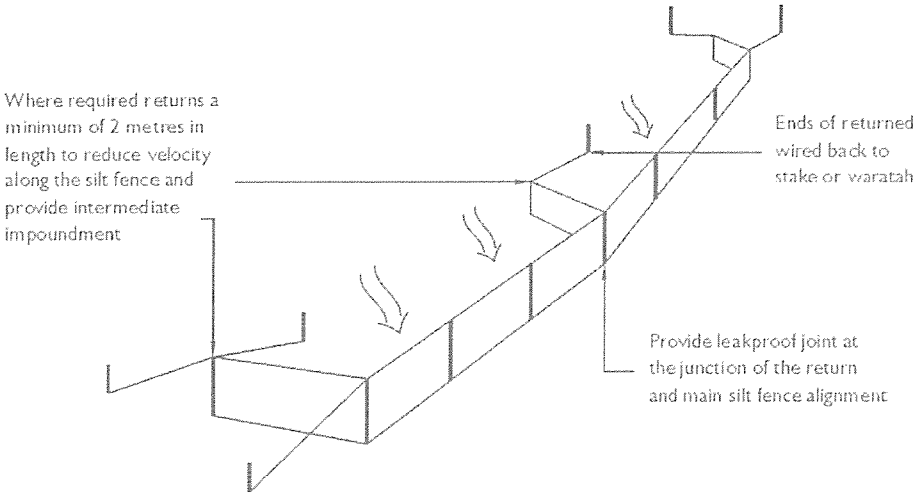


Cross Section



Standard Fabric Joint

Approved Plan
RM185224 L



Perspective View

NELSON CITY COUNCIL	SILT FENCE	
	INFRASTRUCTURAL ASSETS APPROVED 29/07/2010 SENIOR EXECUTIVE INFRASTRUCTURE DATE	SD 913

25 July 2018

PO Box 645 Nelson 7040
Phone: 03 546 0200
Fax: 03 546 0239

Kb Quarries Limited
C/- Mark Lile
Landmark Lile Ltd
PO Box 343
Nelson 7040

Resource Consent Number: 185224
Contact: Mark Buckley
DD:03 265 6227
Email: mark.bucklety@ncc.govt.nz
www.nelsoncitycouncil.co.nz

Dear Mr Lile

RESOURCE CONSENT APPLICATION – ACCEPTED AS COMPLETE

Resource Consent No:	RM185224
Applicant:	Kb Quarries Limited
Location:	Highview Drive, Nelson
Proposal:	Discharge Permit to discharge sediment laden water to land within the Maire catchment where it may enter water and to the Councils stormwater system.

Planner processing your application: Mark Buckley

Thank you for your resource consent application, which was lodged with the Council on 5 July 2018.

Your application has been checked for completeness under Section 88 of the Resource Management Act 1991 (the Act). I confirm that your application is complete and has been formally received.

Next Steps

The next step will be to make a more detailed assessment of your application. Sometimes we may need additional information or clarification even where applications are broadly complete when they are lodged. I will contact you as soon as possible if this is the case.

I will also be visiting the site in the next few days and may contact you beforehand in case there are any obstacles or animals which I should be aware of.

The Act requires the Council to decide whether or not an application should be notified. Notification is necessary where any adverse effects of the proposal on the environment are more than minor or when other persons are affected. I will contact you if this is the case.

Making Nelson an **even better** place
Nelson City Council
te kaunihera o whakatū

If the application is not notified, you should receive the Council's decision within 20 working days of the date of when the application was lodged, although this can take longer if further information is needed.

Processing fees

Thank you for your initial payment (deposit) of $1,300. Please be aware that the total cost of processing consent applications depends on the staff time required which varies according to the complexity and scale of the proposal, and the level of information provided or required. Where the final processing costs exceed the initial payment, a further invoice will be sent when the decision is issued.

My contact details are at the top of the page. Please contact me directly if you have any questions relating to your application.

Yours faithfully

Mark Buckley
Principal Planner

Tonkin+Taylor

Job No: 81069.0180
7 August 2018

Landmark Lile Ltd
Lucas House
51 Halifax Street
Nelson 7010

Attention: Mark Lile

Dear Mark

KB Quarries Ltd, Nelson Discharge Permit
Response to Section 92 Request

We have reviewed the Section 92 request, (NCC letter "Request for further information – Resource consent 185224 dated 25 July) and offer our response below. The responses have previously been discussed with Mr Buckley at your office on 27 July 2018.

We use the same numbering as per the RFI.

1. *Please provide the discharge rate from the treatment pond to give the expected design period storm event.*

The pond is designed as per the requirement of the LDM. We have previously requested NCC to advise on what is the design based event for the ponds. We received the following response:

> *"There is nothing specific within the Sediment Retention Pond section of the LDM (Section 9.3.4) which stipulates the storm duration or ARI to use.*
> *I suspect that guidance on the design of the capacity would be within ARC Technical Publications 90 (TP90) specified in Table 9-1 of the earthworks section of the LDM.*
>
> *Therefore, the pond capacity should have been designed to comply with the requirements of Auckland Regional Council's TP90"*

Neither the LDM or Auckland City Council's TP 90 provide a design storm event or ARI to use. The LDM (clause 9.3.4.1 (t) does state that an emergency spillway must be installed and be designed for a Q50, and the design does allow for this.

Our calculations for the pond detail provided in the LDM have indicated a discharge rate via the pipe outlet of 29l/s. The spillway Q 50 design discharge is 250l/s. There is no specific design period storm event.

2. *Please supply information regarding the type of flocculant to be used*

KB Quarries have engaged a specialist flocculant specialist and they will provide a response to this question.

3. *Please provide an updated erosion and sedimentation plan….*

Tonkin & Taylor Ltd | Lucas House, Level 1, 51 Halifax Street, Nelson 7010, New Zealand | PO Box 1009, Nelson 7040
P +64-3-546 6339 F +64-9-307 0265 E nel@tonkintaylor.co.nz

An updated erosion and sedimentation control plan is attached. This includes details on the following items that have been requested.

- Staging programme
- Programmed stabilisation
- Design details for pond and associated runoff and detention calculations
- Location of silt fences across the site
- The location and stabilisation of sediment cleaned from the pond

4. *Please provide a plan showing the discharge pathway up to the point it enters the council stormwater system and the protection mechanisms used to ensure that any discharge from the ponds does not result in additional scour prior to entering the stormwater system*

The ESCP provides advice on the location of discharges from the pipe and emergency spillway. These are to be kept separate from the existing small channel that enters the NCC stormwater system. The channel will continue to cater for clean water flows.

Both pipe and spillway flows will be restricted to less than 1.5 m/s velocity and nominally 30 mm flow depth. The discharge pathway will be via lush grass vegetation to a wide swale that discharges to the culvert at the start of the NCC stormwater system. This is shown on Figure 1 and Photo 1 below. Shear stresses from the flowing water are calculated to be well below the threshold level for erosion on the grassed slope and further scour is not anticipated. The ESCP provides a cross section that shows the detail for the spillway. Pipe discharge will be as per the LDM and include a rock diffusion zone to spread concentrated flows.

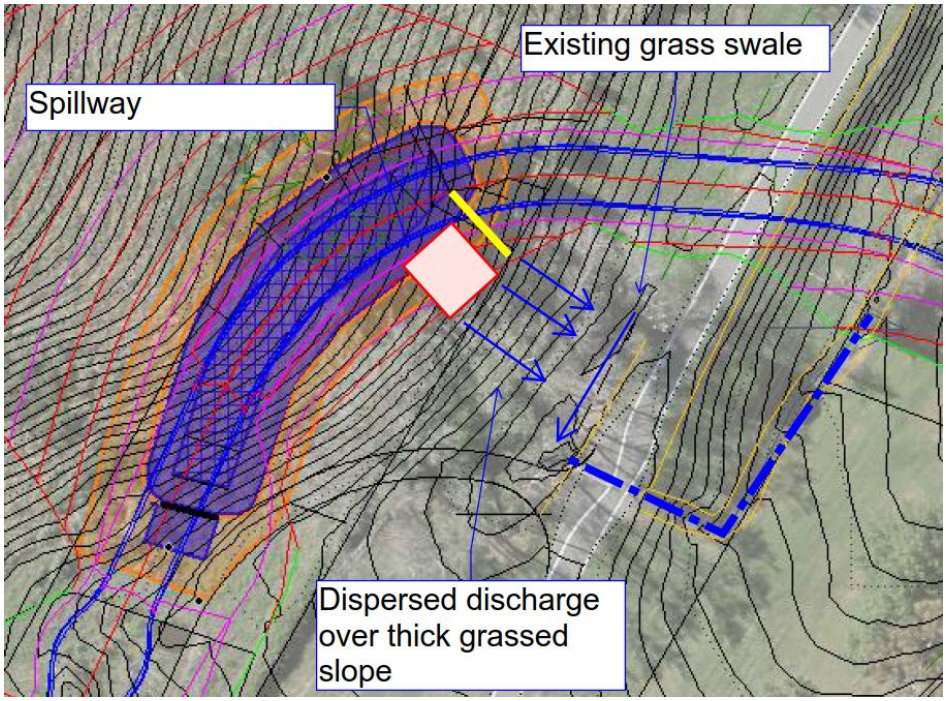


Figure 1: Location of flow path from pond to stormwater system.

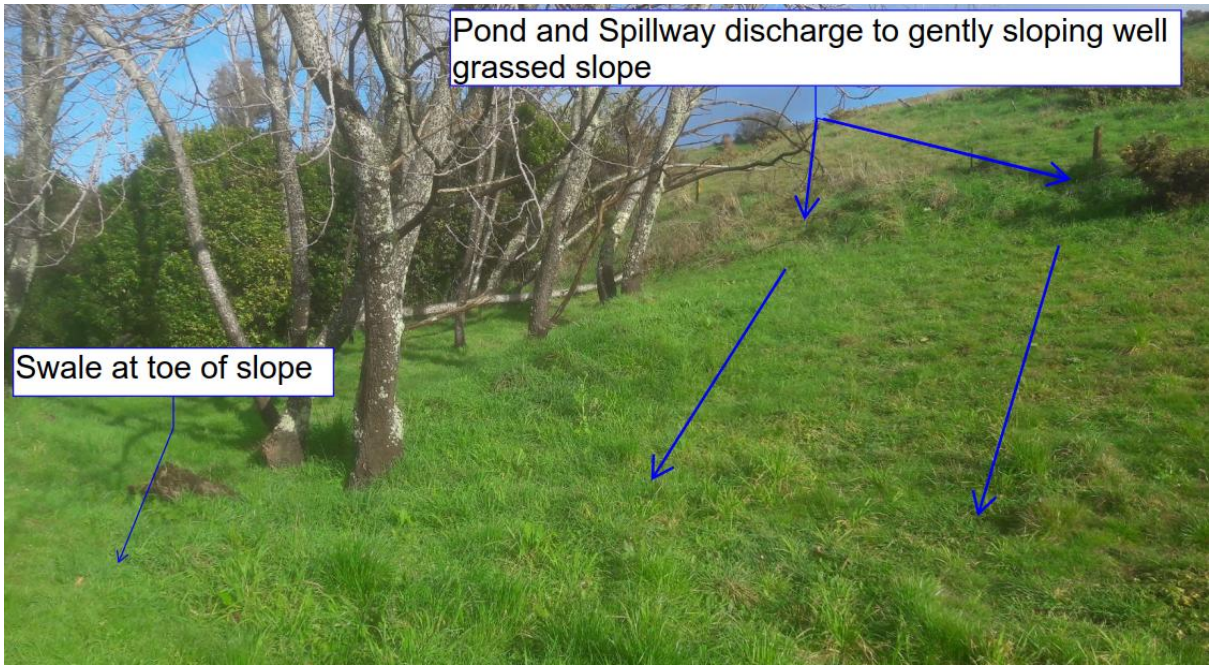


Photo1: Grass slope and swale below dispersed pond discharge point.

1 Applicability

This report has been prepared for the exclusive use of our client KB Quarries 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, or by any person other than our client, without our prior written agreement.

Yours sincerely

Mark Foley
Project Director

p:\81069\81069.0180\issueddocuments\escp aug 2018 update\20180806mrf rfi response.docx

Appendix A: Dust Erosion and Sedimentation Plan – Update August 2018

Job No: 81069.0180
06 August 2018

Nelson City Council
PO Box 645
Nelson 7040

Attention: Ryno Botha

Dear Ryno

Dust, Erosion and Sediment Control Plan - Update August 2018
York Catchment Earthworks, Tasman Heights, Nelson (RM 155190)

1 Introduction

Resource Consent No RM155190, Condition 27 states that the consent holder shall submit a dust, erosion and sedimentation control plan (DESCP) to the Nelson City Council's Monitoring Officer prior to any earthworks taking place under the consent.

This DESCP has been prepared for proposed earthworks within the upper York Stream Catchment. This DESCP relates to work that is independent of the existing DESCP for works in the Maire Stream Catchment.

We recommend that reviews are carried out monthly and that this plan is updated if required in line with the Contractor's work programme.

2 Responsible parties

Client: KB Quarries Ltd
PO Box 19746
Woolston
Christchurch 8241
Attention: Kevin Blair

Contractor: KB Quarries Ltd
PO Box 19746
Woolston
Christchurch 8241
Attention: Kenny Star

Consultant: Tonkin & Taylor Ltd
PO Box 1009
Nelson 7040
Attention: Mark Foley

Tonkin & Taylor Ltd | Lucas House, Level 1, 51 Halifax Street, Nelson 7010, New Zealand | PO Box 1009, Nelson 7040
P +64-3-546 6339 F +64-9-307 0265 E nel@tonkintaylor.co.nz

3 Site details

The site is located adjacent to existing areas of earthworks in the Maire Catchment to the west and extends down to the Railway Reserve to the East as shown on Tonkin & Taylor Ltd (T+T) Figure 81069.0180-F1 (Appendix A).

4 Proposed works

The extent of earthworks covered by this DESCP is shown on T+T Figures 81069.0180-F1 and 81069.0180-F2. The current earthworks mainly involve:

- Cut and fill for the formation of a road platform.

Proposed works will include vegetation clearance, topsoil stripping, stockpiling and respreading, excavation and filling and compaction.

5 Dust, Erosion and Sediment control measures

The dust, erosion and sediment control measures for the proposed earthworks have been designed in accordance with the principles set out in Section 9.2.2 of the Nelson City Council (NCC) Land Development Manual (LDM), 2010. In particular, the plan aims to (where possible):

- Minimise disturbance to land by retaining vegetation and minimising the extent of stripped and exposed surfaces;
- Limiting the total volume of runoff requiring treatment through the use of clean water cut-off, drains and bunds;
- Stabilising completed earthworks surfaces with topsoil and grass seed (or mulch on steeper slopes) as soon as practicable;
- Limit flow velocities to minimise scour potential;
- The existing entrance to the site, which is via Beatson Road, will be maintained.

The DESCP measures are proposed to manage discharges from the earthworks site into the York Stream catchment. The activity is not in a sensitive area based on Clause 9.3.1(b) in NCC LDM. The maximum slope of disturbed land for any period of the activity is 45˚. The maximum area of disturbed land is approximately three hectares. To reduce the potential for sediment generation and to reflect the areal extent and distribution of work areas, bunding, channels and natural topography have been utilised to divide the site into a series of sub-catchments varying from 0.3 to 2.0 hectares.

The key features of this DESCP are shown on T+T Figures 81069.0180-F1 and 81069.0180-F2, they are also described below.

5.1 Sedimentation pond

A sediment pond is to be constructed along the proposed road alignment. The sediment pond will be cut into the original ground in stages with material from the cut being placed upslope of the pond in a fill area. This ensures a functioning pond throughout the stages of construction. The pond has a capacity of approximately 500 m^3 and will have a contributing catchment of up to 2.5 ha, which is greater than 200 m long and has a slope less than 47%.

The sediment pond is designed in accordance with the requirements of the NCC LDM. Please refer to Appendix D for sediment pond sizing calculations and design.

Flocculant is to be added to sediment ponds as necessary to ensure sediment laden water is not discharged so as to discolour the stream above the levels observed in adjacent Nelson streams.

Earthworks will be required to construct the sedimentation pond. During this phase the disturbed area will be restricted to 3,000 m^2 and works will be undertaken when fine weather is forecast for at least seven (7) days. Silt fences will be placed downslope of the disturbed areas during this initial phase.

The sediment pond pipe discharge is to be at the northern end of the pond. Pipe discharge will be slowed and dispersed by large rock placed over geotextile as per NCC drawing SD907. The emergency spillway discharge is shown on T+T Figure 81069.018-F1 and details are shown on T+T Sketch 2 (Appendix B). Discharge will be to a well grassed gently inclined slope and into a broad swale. Discharge velocities will be less than 1.5 m/s so as to not to induce erosion in the grassed slope.

5.2 Stockpile area

Temporary stockpiles (including silt from the sediment pond) will be located on an existing cut platform at the head of the Maire Stream catchment. Existing bunds will be retained to direct runoff towards Pond 5. Silt fences will be used as primary sediment control in the stockpile area.

5.3 Clean water cut-offs

The existing access track in the top of the catchment will be utilised to divert clean water from the works area. A second diversion will be constructed directly upslope of the earthworks.

A temporary clean water cut-off will be established between approximately RL 112 m and RL 100 m. Intercepted clean water will be piped to the channel alongside the railway reserve walkway. Earthworks upslope of this will be completed once the preliminary stage has been stabilised.

5.4 Diversion bunds

A diversion bund will be formed along the south-western side of the earthworks to direct flow into the sediment pond.

5.5 Contour Drain

A contour drain will be constructed along a proposed bench with rock check dams to break up the slope and reduce velocity build-up. Refer to T+T Figure 81069.0180-F1.

5.6 Minimising of exposed soil

Earthworks areas are to be managed to:

- Minimise exposed bare ground by limiting the upslope extent of topsoil stripping.
- Staged progressive topsoiling and sowing grass on completed earthworks, please refer to T+T Figure 81069.0180-F2 for proposed staging of stabilisation.

5.7 Programme

This plan is operative as of its date of issue. The plan will need to be updated monthly and reviewed once works commence beyond the area identified as current catchments in T+T Figure 81069.0180-F1.

5.8 Dust control

Sources of dust production on site will include the fill areas and material stockpiles. The Contractor should be required to water dust production areas as required. This would typically be done with water carts, and with sprinklers in the instance of stockpiles and channel slopes.

5.9 Stabilisation

The works are to be staged to allow the progressive stabilisation of completed earthworks. The stabilisation staging plan is shown in T+T Figure 81069.0180-F2. The Contractor should ensure completed earthwork areas are topsoiled and grassed as soon as is reasonably practical to do so and should update the stabilisation plan monthly as works progress. Key elements of the stabilisation are as follows

- As part of each monthly update the Contractor should outline the stabilisation techniques proposed for each area with reference to the LDM Paragraph 9.3.3.3 and highlight these on the drawings.
- The Contractor should give the Geotechnical Engineer notice at least 48 hours in advance of requiring an inspection to confirm bulk earthworks have been satisfactory completed in any area in advance of commencement of stabilisation.
- Stabilisation should consist initially of spreading topsoil and sowing grass as soon as is reasonably practical once, in the opinion of the Geotechnical Engineer, earthworks in any area have been completed in accordance with the plans and specification. .
- Topsoil moisture levels should be monitored at least weekly by the Contractor between the months of 15 October and 15 March using a soil moisture probe (the NDM probe can be used). Ideally soil moisture should be no dryer than Optimum moisture content -5%. The soil should be irrigated when soil moisture falls below this level.
- If grass sowing is proposed after 30 May and before 15 August, topsoil temperature should be monitored at least one day per week at 10am, 2.00pm and 5.00pm. If the average soil temperature is below 8° C grass growth is limited therefore alternative techniques of stabilisation should be adopted. This may include mulching.
- All non-essential traffic should be excluded from areas that are undergoing stabilisation.
- Grass sowing should be to a specification prepared by a specialist landscaping contractor and should include applying fertiliser in conjunction with seed if deemed appropriate.
- Grass strike should monitored. The services of a landscape contractor should be sought if 50% grass strike is not achieved within six (6) weeks or 80% grass strike is not achieved within eight (8) weeks of sowing.

6 Monitoring and maintenance responsibilities

The success of the treatment measures will depend on regular monitoring and maintenance of the works. We recommend the following:

- Weekly walkover inspection of all erosion mitigation items by the client representative, including completion of the Inspection Checklist in Appendix C. Records of all inspections should be held by KB Quarries Ltd, and copied to NCC and T+T.
- KB Quarries Ltd's representative to arrange a joint walkover with a T+T representative once a month during the construction period.
- Inspection by the client representative during or immediately following rainfall events (rainfall > 25 mm in 24 hours or > 10 mm per hour) at no less than 14 hour intervals.
- Confirmed contractor and plant availability with one hour mobilisation when heavy rainfall is forecast.

If at any time monitoring/inspections identify that contingency measures are to be put in place (in accordance with the Inspection Checklist in Appendix C) the frequency of monitoring for those items shall be increased to weekly, and the Engineer shall be copied the relevant inspection records.

7 Applicability

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

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:	Authorised for Tonkin & Taylor Ltd by:
.....	.....
Alex Evans	Mark Foley
Natural Resources Engineer	Project Director

AAJE
p:\81069\81069.0180\issueddocuments\escp aug 2018 update\aaje.20180806.escp.waimeardearthworks.docx

cc. KB Quarries Ltd, Attention: Michael Blair
KB Quarries Ltd, Attention: Kerry Starr
KB Quarries Ltd, Attention: Kevin Blair

Appendix A: T+T Figures

- Figure 81096.0180-F1 – Dust, Erosion and Sediment Control Plan York Catchment Earthworks dated July 2018
- Figure 81096.0180-F2 – Dust, Erosion and Sediment Control Plan York Catchment Earthworks dated July 2018

APPROVED PLAN A

Clean Water Catchment 1 = 0.7 ha

Clean Water Catchment 2 = 0.6 ha

Clean Water Catchment 2 = 0.8 ha

Stage 2 Catchment = 1.0 ha

Sediment Pond

EARTHWORKS TO FINISH

Pond 5 Catchment = 0.8 ha

Stage 1 Pond Catchment = 2.0 ha

Preliminary Stage < 0.3 ha

WAIMEA ROAD

Clean Water Collection Sump

Remaining Catchment = 1.5 ha

Stockpile and Sediment Pond Silt Containment Area

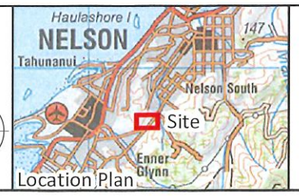
LEGEND

- Earthworks to Finish
- Stockpile Bund
- Contour Drain
- Clean Water Bund
- Clean Water Cut Off
- Silt Fence
- Clean Water Pipe
- Catchment Boundaries
- Property Boundaries

Notes: Aerial photograph sourced from Top of the South Maps and licensed by LINZ, CC by 4.0 NZ.
Contours and Proposed alignment as per Land Dimesions Earthworks Plan dated 9 November 2017.

A3 SCALE 1:1,750

0 20 40 60 80 100 Meters



Tonkin+Taylor
Lucas House, 51 Halifax Street, Nelson
www.tonkintaylor.co.nz

DRAWN	AAJE	Aug.18
CHECKED	DSA	8/18
APPROVED	F	8/18
ARCFILE	81069.0180-F1.mxd	
SCALE (AT A3 SIZE)	1:1,750	
PROJECT No.	81069.0180	

KB QUARRIES LTD
COASTAL VIEW LIFESTYLE VILLAGE EARTHWORKS
TASMAN HEIGHTS, NELSON
DESCP York Catchment Earthworks

FIGURE No. 81069.0180-F1 Rev. 1

Path: P:\81069\81069.0180\WorkingMaterial\ESCP\July 2018\81069.0180-F1.mxd Date: 3/08/2018 Time: 12:38:07 p.m.

APPROVED PLAN B

Construction and Stabilisation Staging

1. Preliminary stage to construct sediment Pond
2. Cut 1
3. Stage 1 Fill + Cut 2 and Cut 3
4. Stabilise preliminary area 0.7 ha (red)
   HOLD POINT - to allow stabilisation to become established
5. Stage 2 Fill + Cut 4
   Remove clean water cutoff between stages 1 and 2
   Add cut-off drain around preliminary stabilised area
6. Stabilise Stage 1 (yellow)
7. Stabilise Stage 2 (blue)

Cut 4
Stage 2
Cut 1
Sediment Pond
Stage 1
Preliminary Stabilisation
WAIMEA ROAD
Cut 3
Cut 2

LEGEND

- Contour Drain
- Clean Water Bund
- Clean Water Cut Off
- Clean Water Pipe
- Cut
- Catchment Boundaries
- Property Boundaries

Stabilisation Staging

- Preliminary
- Stage 1
- Stage 2

Notes: Aerial photograph sourced from Top of the South Maps and licensed by LINZ, CC by 4.0 NZ.
Contours and Proposed alignment as per Land Dimesions Earthworks Plan dated 9 November 2017.

A3 SCALE 1:1,750
0 20 40 60 80 100 Meters

Location Plan: Haulashore I, NELSON, Tahunanui, Nelson South, Site, Enner Glynn, 147

Tonkin+Taylor
Lucas House, 51 Halifax Street, Nelson
www.tonkintaylor.co.nz

DRAWN	AAJE	Aug.18
CHECKED	DJA	8/18
APPROVED		8/18
ARCFILE	81069.0180-F2.mxd	
SCALE (AT A3 SIZE)	1:1,750	
PROJECT No.	81069.0180	

KB QUARRIES LTD
COASTAL VIEW LIFESTYLE VILLAGE EARTHWORKS
TASMAN HEIGHTS, NELSON
DESCP York Catchment Earthworks

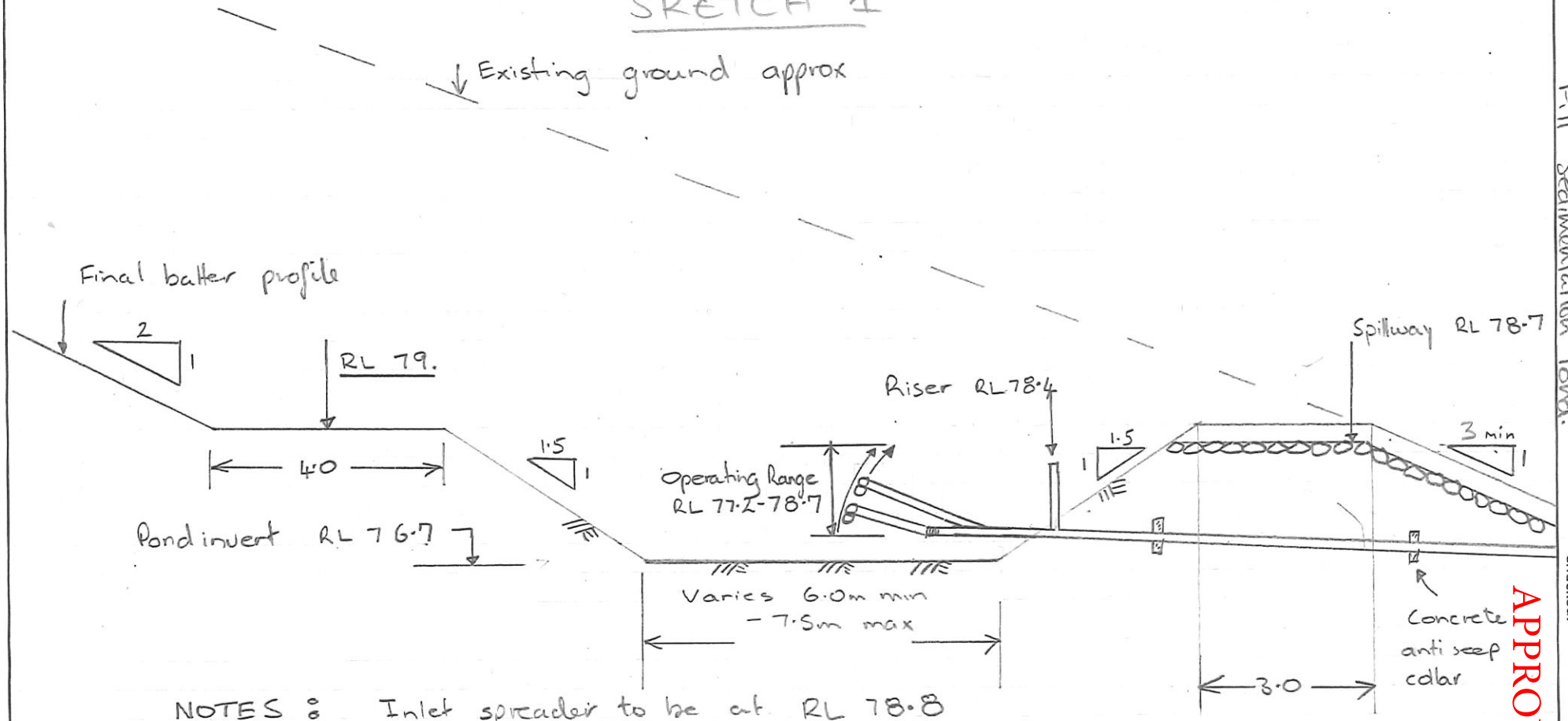
FIGURE No. 81069.0180-F2 Rev. 0

Path: P:\81069\81069.0180\WorkingMaterial\ESCP\July 2018\81069.0180-F2.mxd Date: 2/08/2018 Time: 4:36:45 p.m.

Appendix B: Typical Details and Relevant Nelson City Council Drawings

- T+T Sketch 1 – Typical Detail Waimea Road Fill Sedimentation Pond
- T+T Sketch 2 – Sedimentation Pond Spillway Typical Details
- T+T Sketch 3 – Typical Details – DESCP Update December 2017
- NCC SD 901 – Clearwater Runoff Diversion Bund
- NCC SD 903 – Contour Drain
- NCC SD 907 – Sediment Retention Pond
- NCC SD 908 – Decant Detail
- NCC SD 909 – Level Spreader
- NCC SD 911 – Sediment Retention Pond For Catchments Between 1.5ha and 3ha
- NCC SD 913 – Silt Fence

SKETCH 1



NOTES :

Inlet spreader to be at RL 78.8

Refer NCC LDM Drawing SD911

Spillway Width to be no less than 6.0m

Spillway to be 150-300mm hard, angular rip rap placed ove Bidim A29 Filter cloth.

Spillway armouring to extend to RL 77

Pond setout to be confirmed on site by Contractor and approved by T+T.

APPROVED PLAN C

Tonkin+Taylor

Description: Typical Detail Wainui Road Full Sedimentation Pond.

Project: 81069.018

Computed: MRF 1/12 2017 Office:

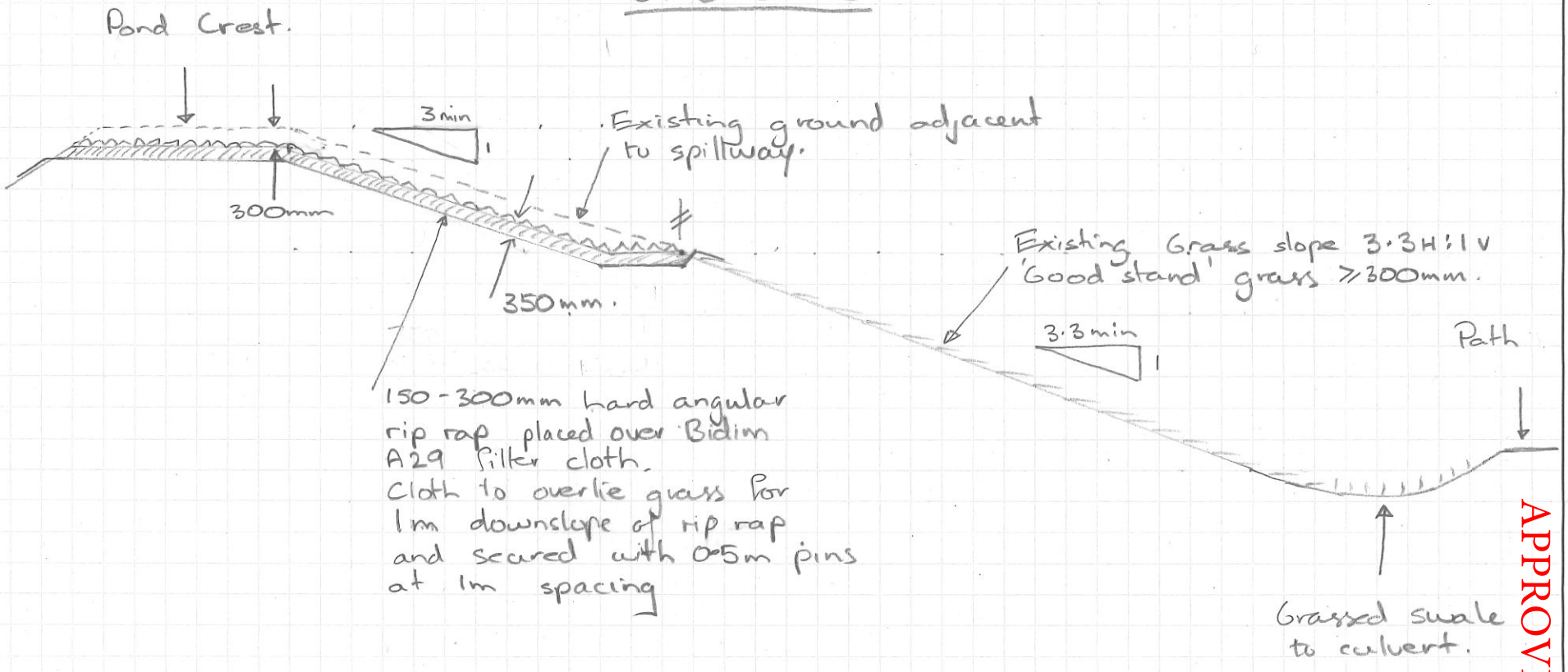
Checked: ADE 5/12 2017 Job No:

Revised: 20 File: 81069.018

Checked: 20 Sheet No. 1 of 3

SPILLWAY TYPICAL DETAILS

SKETCH 2



Note: spillway width to be 6m.

Max spillway discharge velocity = 1.5m/s
Max calculated shear stress on grass = 100 N/m²
Max permitted shear stress on grass = 150 N/m²
Grass erosion factor of safety = 1.5

Geotechnical engineer to confirm spillway setout

APPROVED PLAN D

Tonkin+Taylor

Description: Spillway Pond 8

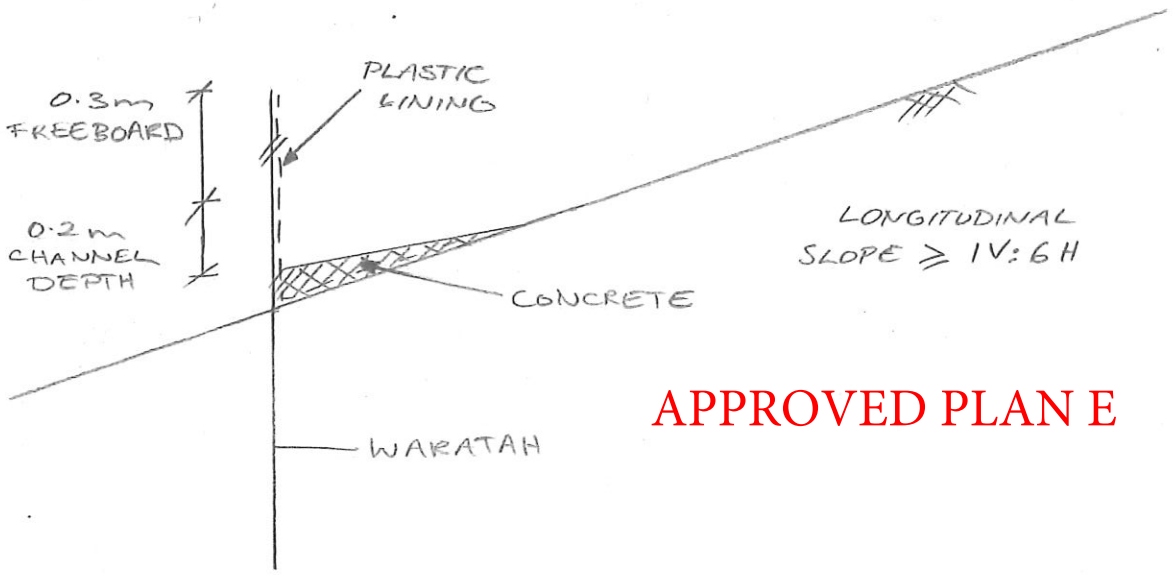
Project: 51069.018 TASMAN HEIGHT

Computed: MAE 1/8/2018
Checked: AAE 6/8/2018
Revised:
Checked:

Office: Nel
Job No:
File:
Sheet No. 2 of 3

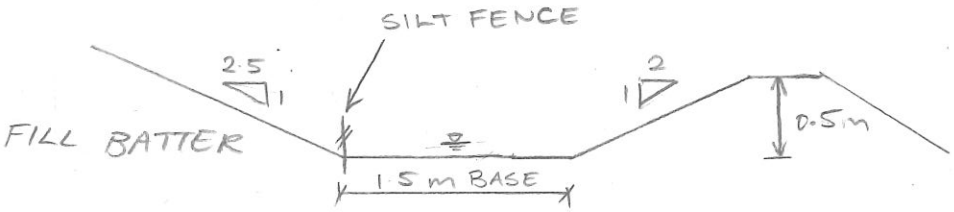
SKETCH 3

TYPICAL CLEAN WATER CUT OFF DETAIL



APPROVED PLAN E

CHANNEL DETAIL

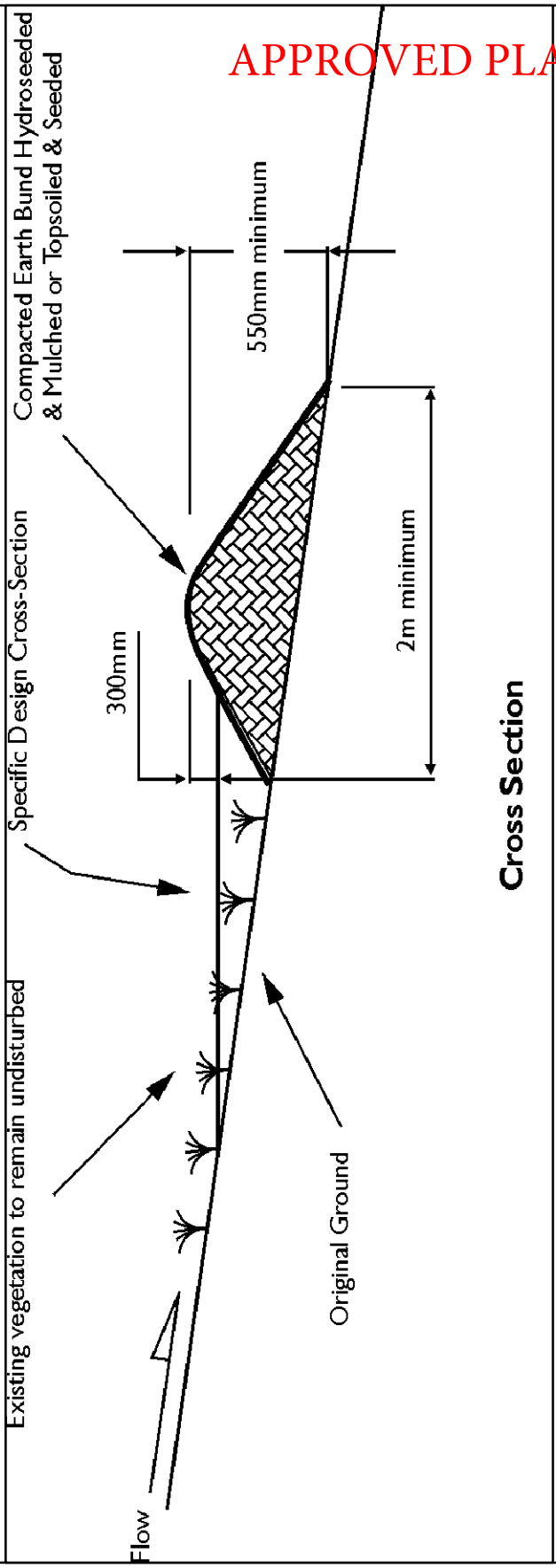


$Q_{15} = CiA$
$= 0.6 \times 49\ mm/h \times 2.4\ ha$
$= 0.2\ m^3/s$

Channel Slope = 0.125 m/m
Water Level = 60mm
Velocity = 2 m/s
Shear Stress = 74 N/m^2

Channel required to be lined to prevent erosion
Lining to consist of filter fabric pinned to channel and regular rock check dams or equivilent

APPROVED PLAN F



NELSON CITY COUNCIL

CLEARWATER RUNOFF DIVERSION BUND

INFRASTRUCTURAL ASSETS

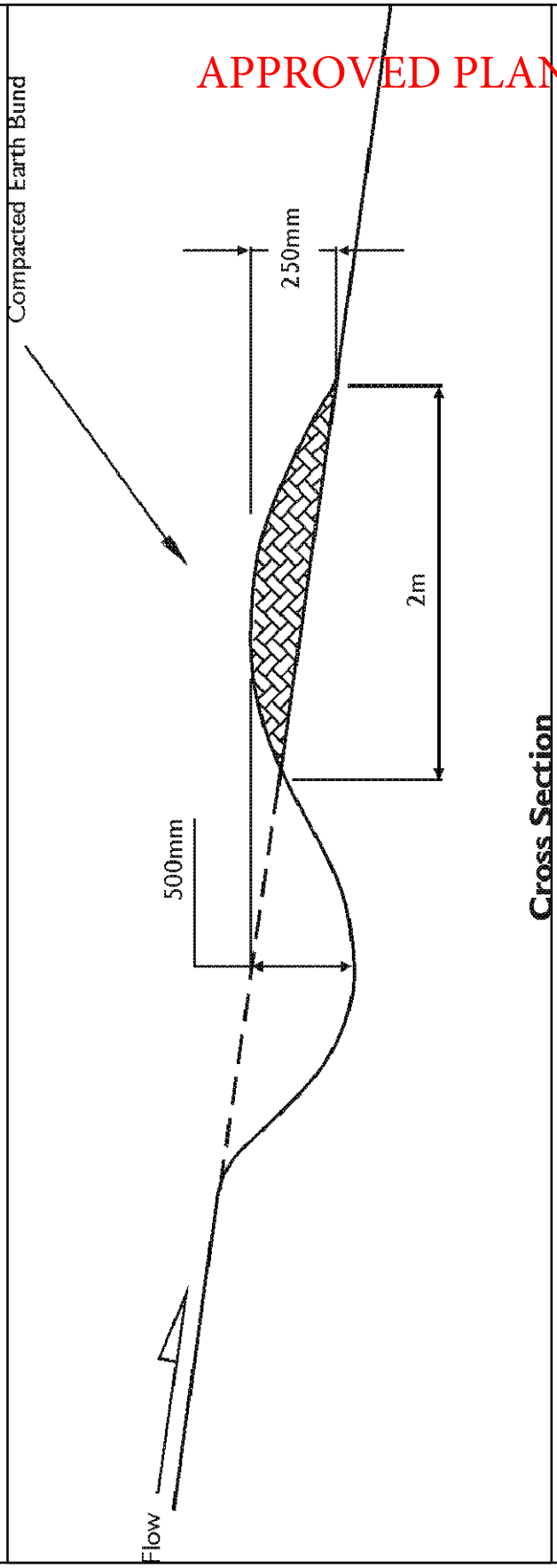
APPROVED

29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE — DATE

SD 901

APPROVED PLAN G



NELSON CITY COUNCIL

CONTOUR DRAIN

INFRASTRUCTURAL ASSETS

APPROVED

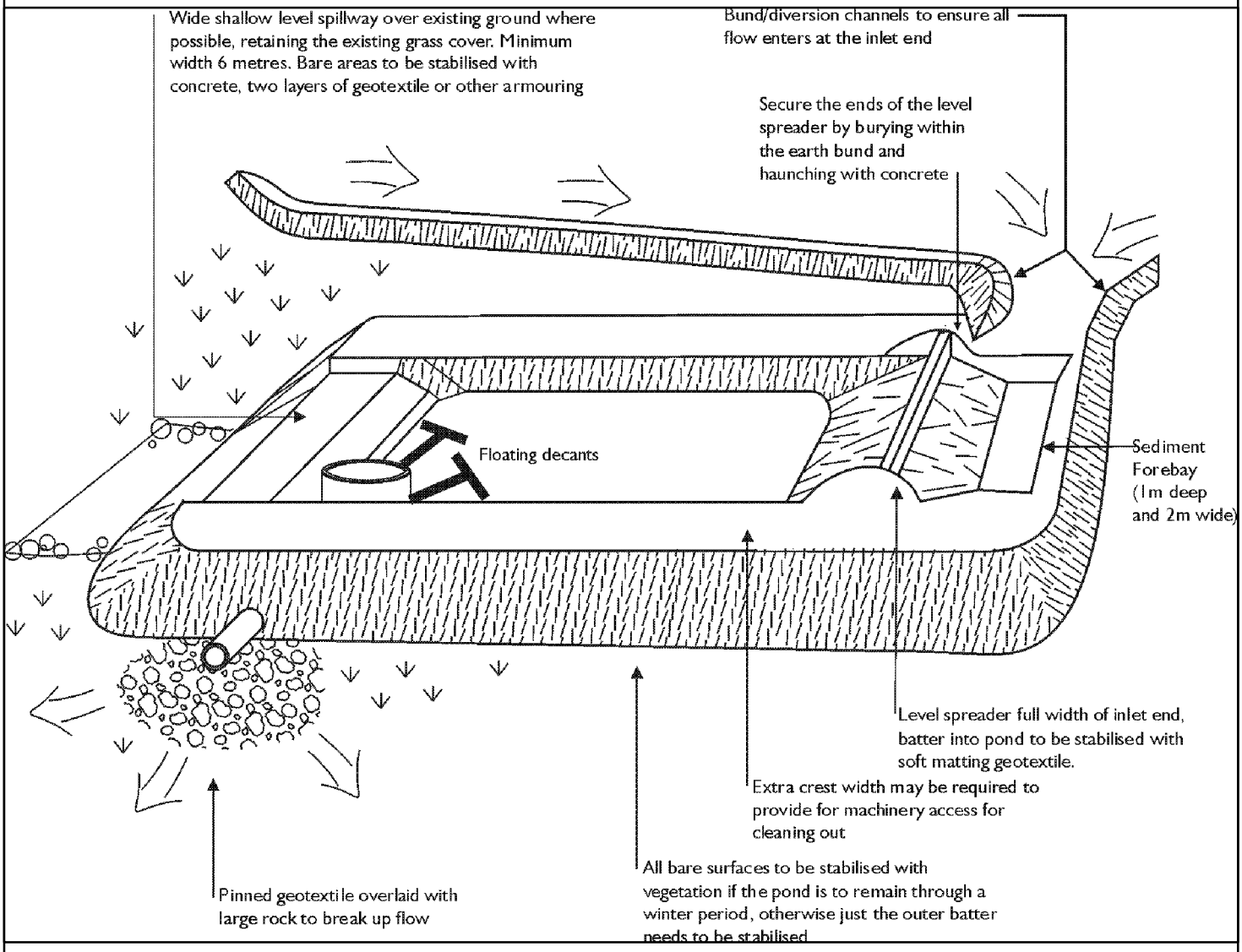
SENIOR EXECUTIVE INFRASTRUCTURE

29/07/2010

DATE

SD 903

APPROVED PLAN H



NELSON CITY COUNCIL

SEDIMENT RETENTION POND

INFRASTRUCTURAL ASSETS

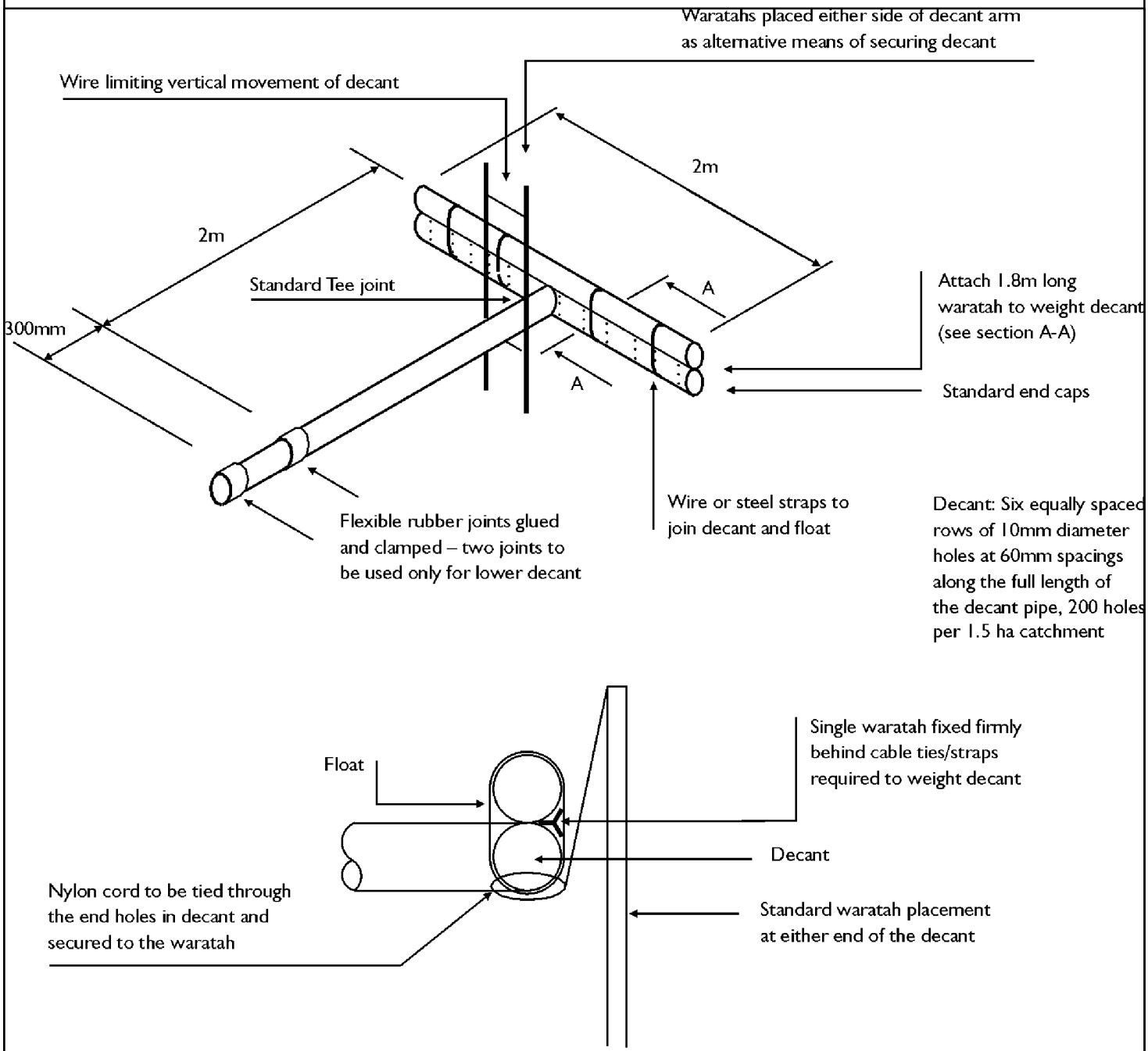
APPROVED

29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE — DATE

SD 907

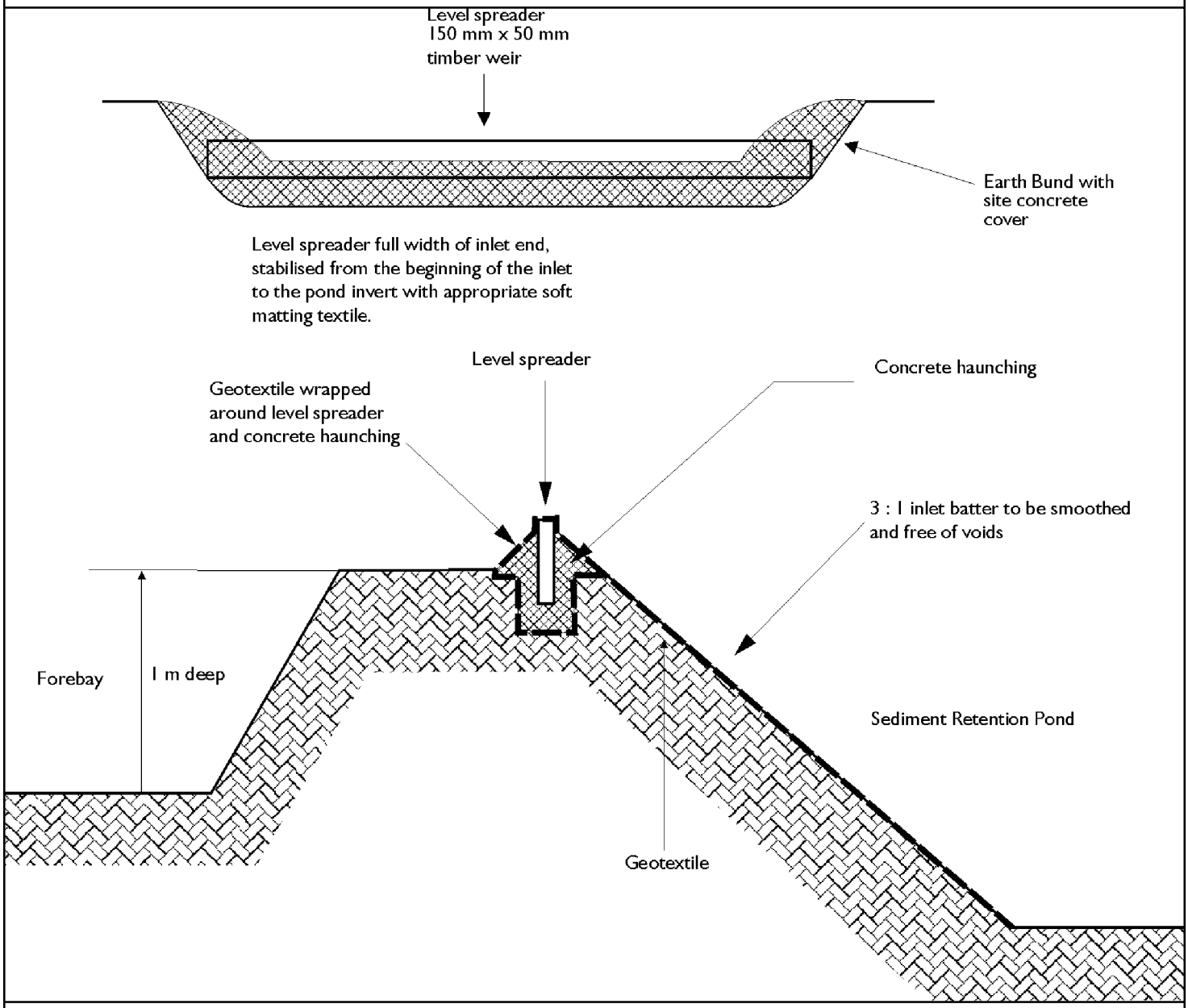
APPROVED PLAN I



Section A-A

NELSON CITY COUNCIL	DECANT DETAIL	
	INFRASTRUCTURAL ASSETS APPROVED SENIOR EXECUTIVE INFRASTRUCTURE	29/07/2010 DATE
		SD 908

APPROVED PLAN J



NELSON CITY COUNCIL

LEVEL SPREADER

INFRASTRUCTURAL ASSETS

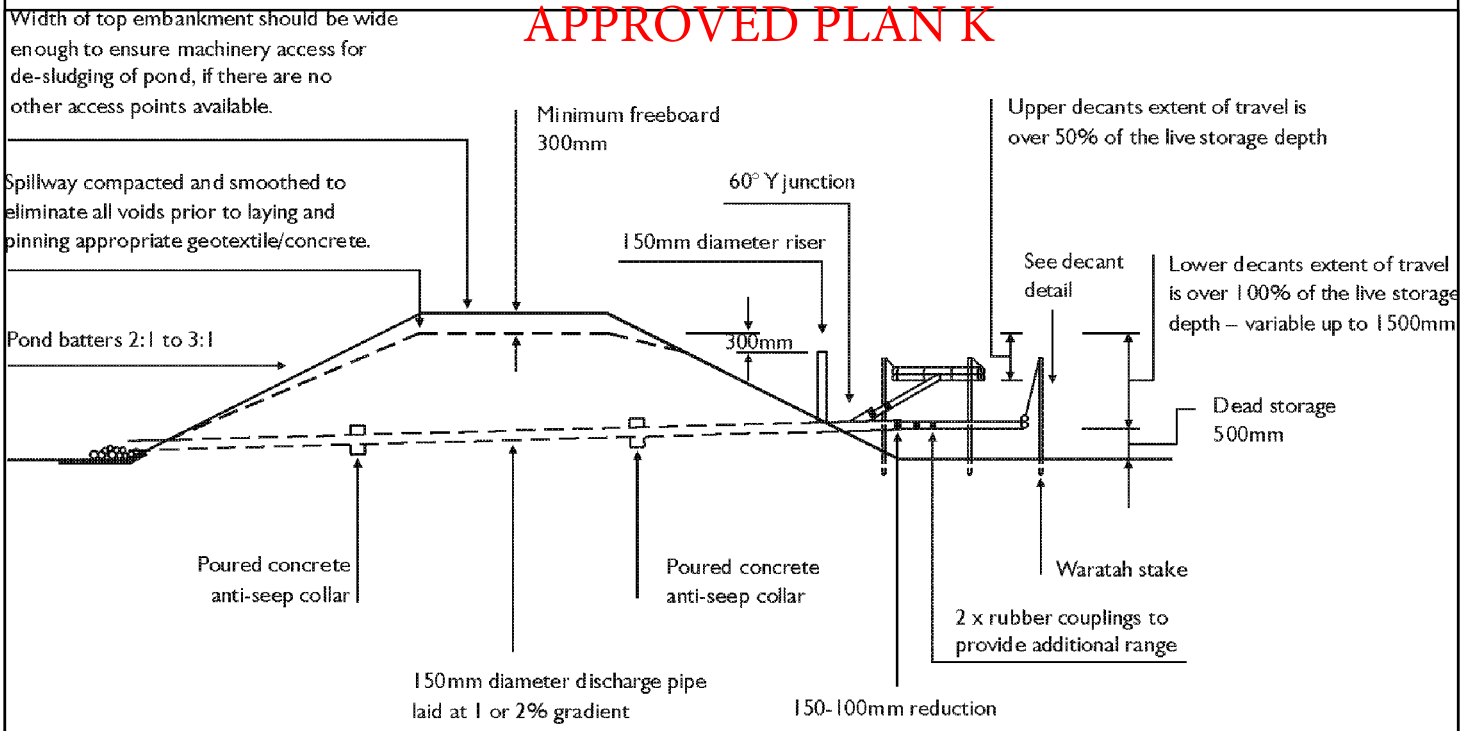
APPROVED

29/07/2010

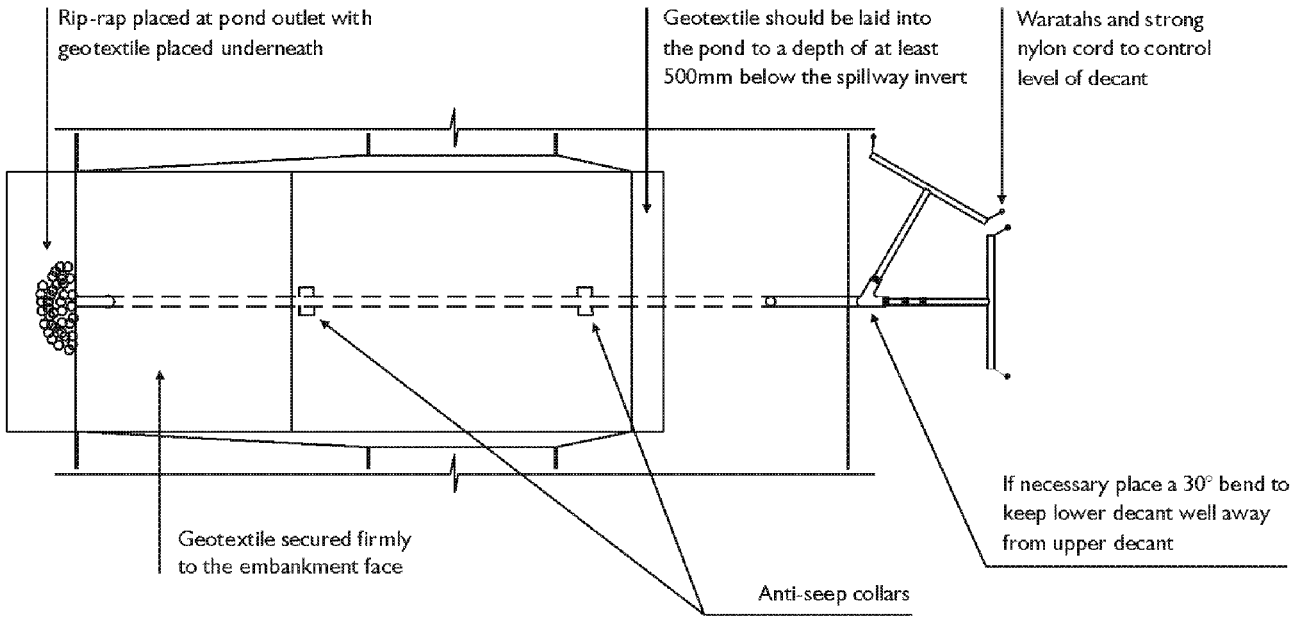
SENIOR EXECUTIVE INFRASTRUCTURE — DATE

SD 909

APPROVED PLAN K



Cross Section



Plan

NELSON CITY COUNCIL

SEDIMENT RETENTION POND FOR CATCHMENTS BETWEEN 1.5ha and 3ha

INFRASTRUCTURAL ASSETS

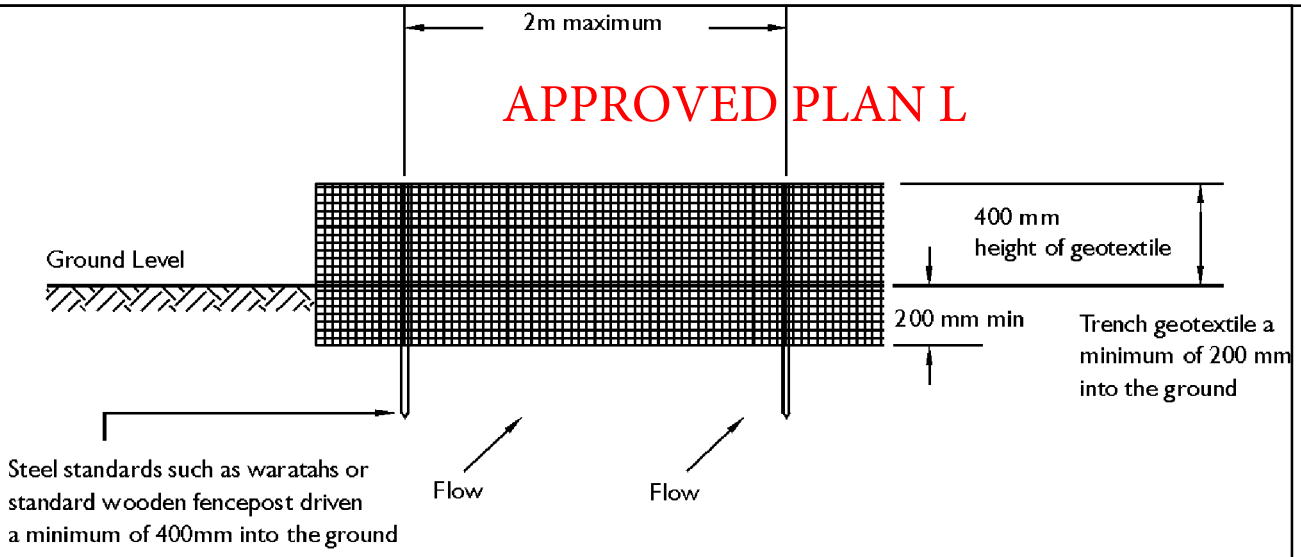
APPROVED

29/07/2010

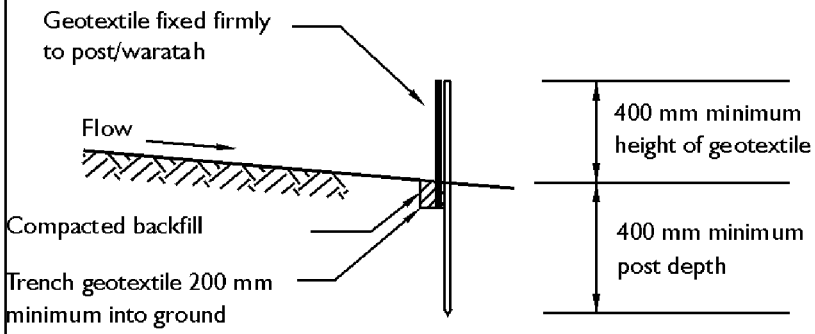
SENIOR EXECUTIVE INFRASTRUCTURE — DATE

SD 911

APPROVED PLAN L



Elevation



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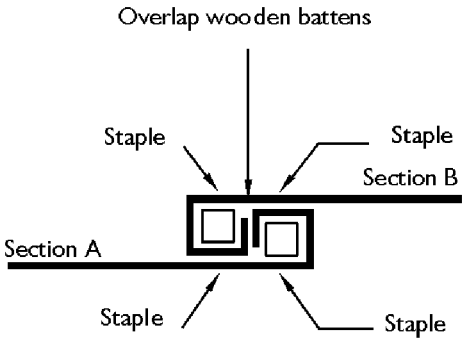
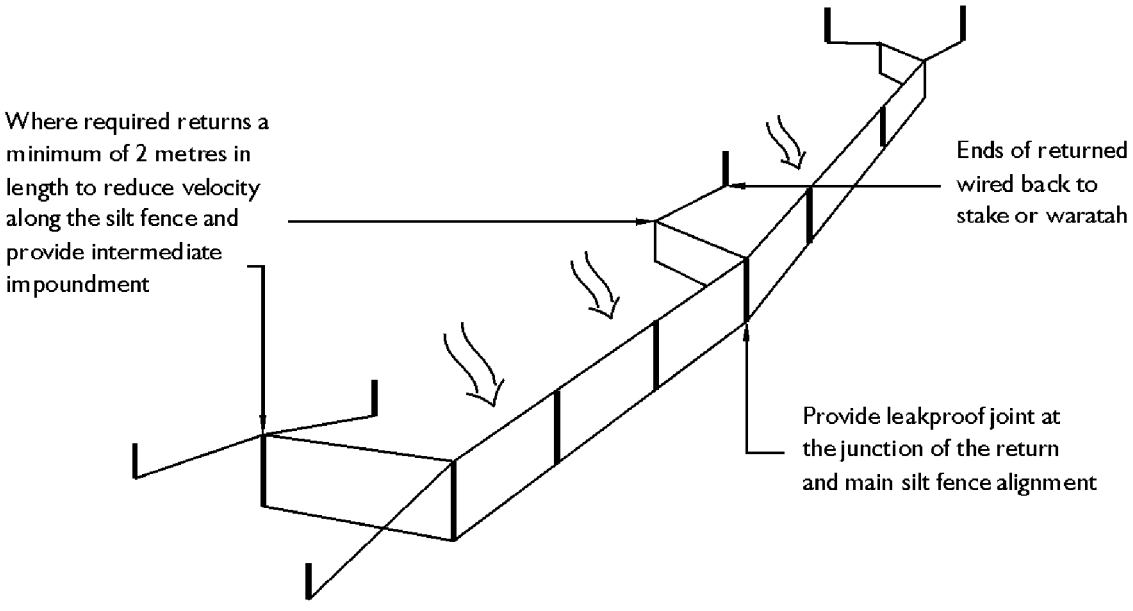


Standard Fabric Joint



Perspective View

NELSON CITY COUNCIL

SILT FENCE

INFRASTRUCTURAL ASSETS

APPROVED

29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE — DATE

SD 913

Appendix C: DESCP Inspection Schedule

Site Inspection Checklist

Site:	York Catchment Earthworks, Tasman Heights, Nelson	T&T Ref:	81069.0180
Inspected by:		Date:	
Distribution:	Nelson City Council, Tonkin & Taylor Ltd		
For period:	to		
Weather for period:			

Item	Description	Comments
1	• Check that all clean water cut-offs are intact, unblocked and functional. Inspect for signs of erosion and any need for additional check dams/linings. • Check that all runoff from above the site is being diverted around the earthworks area. • Inspect stabilised outlets for erosion or sediment build up. • Check that Pond remains operational (including outlet and spillway) and sediment build up < 300 mm. <u>Pond</u> • Check inlet channel, forbay, level spreader decants, spillway. Is any maintenance required? If so specify over page. • Inspect bench slopes for signs of erosion. • Inspect silt fencing. • Check all cut and fill surfaces for signs of rilling and/or erosion, particularly on steep slopes. • Check all stock piles for evidence of erosion/material loss. • Check that potential sources of dust are being controlled. • If heavy rain is forecast, check that plant/staff are available to mobilise if required.	

Additional Observations		
	Additional notes, including any erosion/scour issues, and any other maintenance required:	

Appendix D: Calculations

- Sediment pond design
- Channel sizing

Sediment pond design

As per Nelson City Council Land Development Manual 2010

Section 9.3.4 – Sediment retention pond

Maximum contributing catchment = 2.4 ha (Stage 1 and 2, with preliminary stabilised area removed)

Slope length > 200 m

Slope greater than 10% but less than 47%

Therefore, as per Section 9.3.4.1.e, pond meets 2% criteria

Required Pond Volume = 2% x 2.4 ha

= 480 m^3

$Q_{50, POND}$ = CiA

C = 0.6 (bare soil, medium soakage)

i = 68.4 mm/h (tc = 37 minutes)

A = 2.4 ha

= 0.27 m^3/s

Please refer to T+T Sediment Pond Sketches 1 and 2 (Attached in Appendix B) for additional details along with NCC SD 907-SD 909 and SD 911 (Attached in Appendix B)

Channel sizing

As per Nelson City Council Land Development Manual 2010

Section 9.3.3.1 – Diversion channel or bund

Q_{15} = CiA

= 0.6 x 49 mm/h x 2.4 ha

= 0.2 m^3/s

Manning Formula Uniform Trapezoidal Channel Flow at Given Slope and Depth

Can you help me translate, program, or host these calculators? [Hide this request]

Channel Sizing

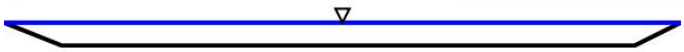
Tasman Heights

Set units: m | mm | ft | in

Bottom width	1.5	m
Side slope 1 (horiz./vert.)	2.5	
Side slope 2 (horiz./vert.)	2	
Manning roughness, n ?	0.025	
Channel slope	0.125	rise/run
Flow depth	0.06	m
Bend Angle? (for riprap sizing)		
Stone specific gravity (2.65)		

Results

Flow area	0.10	m^2
Wetted perimeter	1.80	m
Hydraulic radius	0.05	m
Velocity, v	2.04	m/s
Flow, Q	0.20	m^3/s
Velocity head, h_v	0.21	m
Top width, T	1.77	m
Froude number, F	2.77	
Shear stress (tractive force), tau	73.55	N/m^2
Implied riprap size based on n	0.02	m
Required bottom angular riprap size, D50, Maricopa County	0.08	m
Required side slope 1 angular riprap size, D50, Maricopa County	0.08	m
Required side slope 2 angular riprap size, D50, Maricopa County	0.08	m
Required angular riprap size, D50, per Maynord, Ruff, and Abt (1989)	NaN	m
Required angular riprap size, D50, per Searcy (1967)	0.09	m



Please also refer to T+T Sketch 3 (Attached in Appendix B).

6/10/81

PPR 125200
125201
125202

PROCESSED

NOTIFIED APPLICATION

206A0/108

OBSER

349 - Pt Lot 1

HILL N HILL/BY PRECISION

Rent Mkge & Related

ARGE TO: [illegible] E. Eng - 2C 83 Wilkes St Wm Rocks

NER [illegible] PO Box 580 N/ADDRESS:

CREDIT — GENERAL	FEE CHARGED	V	$	c.
sits — Other	Dep. Eng./Bldg. Works incl. R.O.W.			
	Deposit in Lieu of Bond			
ivision Reserves Contribution	Reserve Fund Contribution			
	Scheme Plan/Scheme Final Plan			
Planning—Subdivision Fees	Release Final Plans			
—Conditional Use	Conditional Use (Withdrawn)			
—S30 B	Specified Departure S.30 B (Applic)		220	00
	Conditional Use/Specified Departure			
ing	Payment in Lieu of Offstreet Parking			
ing Inspections	Search Fees			
s & Services — Printing/Stationery	Plan Printing			
(specify)				
	AMOUNT PAYABLE		220	00

.C. Plan No.: 182

1.

2.

Application satisfactory to proceed Yes ☒ date. 21/11/80.

Amendments satisfactory to proceed Yes No date

3 PUBLIC NOTIFICATION by date 6/12/80. ACTUAL DATE 30/12/80.
within 14 days of receipt of applic or subsequent information

OBJECTIONS CLOSE - DATE stated in Public Notice DATE 24/12/80
not less than 21 days after actual date of Pub. Notification

HEARING DATE

TOWN PLANNING CHECK.

4 Index card, Book entry ☐
street number ☐
conditions Book [Nil] Entry No

Attach Costing Sheet ☐
Search ☐
Copy of title ☐

5 PUBLIC NOTIFICATION for Mail Office ✓
copies also for T.C's Advert Bk, letter book
1 for each TC's, TP's Applic File. TOTAL No 5.

6 APPLICANT (a) Acknowledgement letter (c) Extract from Regs 37,38 covering costs ☑
(b) Notice of Application (form H.) TOTAL 3 papers.

7 PERSONS WITH GREATER INTEREST - Com. of W, Dist. Com of W, Persons resulting from search - each to be sent:- ☑
Notice of Application, Copy of application, Objection form J.

8 ADMINISTRATION OFFICER - Copy of Acknowledgement letter

9 COPIES of FORMS & letters. Acknowledgement letter (TC, TP file, applec, AO - (4))
Notice of application:- TC, TP file, applic + Per w.q. Int (3) +
Objection form J. All Per w.q. int. - varies.
Application - TCs, TP file, All per. w.q Int. (2) + ☐

10 OBJECTIONS RECEIVED 1. etc

11 OBJECTIONS ACKNOWLEDGED. 1. etc.

12 REPORT WRITTEN Copy TC, TP Applic file ☐
Advance Copy to Applicant & CE
1 copy file 7/2/2.

13 RETURN TC's FILE 15 days prior to HEARING DATE by
Notice of Hearing in hands of applicant & objectors at least 14 days prior to hearing. HEARING DATE.

14 DECISION recorded - CARDS, BOOK. Copy on TP's file. ☐

15 COMPLETE COSTING SHEET ACCOUNT forwarded.

16 APPEAL against COUNCIL DECISION by within 1 month of receipt of decision.

17 APPEALS RECEIVED Yes ☐ No. ☐

Application received date:- 21/11/80 Special Subdivision Area Zone RZd. ?

TOWN and COUNTRY PLANNING ACT 1977 and REGULATIONS 1978

NOTIFIED APPLICATIONS - PROCEDURE SHEET

No.

1. ~~CONDITIONAL USE:- Sec. 72 ; Sec 73 (carrying out certain works)~~
SPECIFIED DEPARTURE:- Sec 74 ; ~~WORK CONTRARY TO PROPOSED CHANGE: Sec 75~~

PROPERTY Lots 1 & 2 D.P. 7374 OBSERVATORY HILL OFF PRINCES DRIVE.

APPLICANT F.R. FRY, R.E. WILKINSON, W.M.L. WHEELER.

2. SOLICITOR/AGENT P.C. GILBERT. FIRM ROUT, MILNER & FITCHETT TELE. 80-063

ADDRESS FOR SERVICE 167 HARDY ST P.O. BOX 580
NELSON.

PROPOSAL CARRY OUT NECESSARY EARTHWORKS FOR THE SUBDIVISION OF LOTS 1 & 2 D.P 7374 AND FOR CONSENT TO REMOVE SOIL THEREFROM AND FILL VARIOUS RECLAMATION AREAS. AS REQUIRED.

CONSENT / REFUSAL / WITHDRAWAL - DATE APPEAL DATE by
APPEAL LODGED.

Application satisfactory to proceed Yes ☒ date. 21/11/80.

Amendments satisfactory to proceed Yes No date —

3 PUBLIC NOTIFICATION by date 6/12/80. ACTUAL DATE 3/12/80.
within 14 days of receipt of applic or subsequent information

OBJECTIONS CLOSE - DATE stated in Public Notice DATE 24/12/80
not less than 21 days after actual date of Pub. Notification

HEARING DATE —

TOWN PLANNING CHECK.

4 Index card, Book entry ☐
street number ☐
Conditions Book [Nil] Entry No —

Attach Costing Sheet ☐
Search ☐
Copy of title ☐

5 PUBLIC NOTIFICATION for Mail Office ✓
copies also for T.C's Advert Bk, letter book
1 for each TC's, TP's Applic File. TOTAL No 5.

6 APPLICANT (a) Acknowledgement letter (c) Extract from Regs 37, 38 covering costs ☑
(b) Notice of Application (form H.) TOTAL 3 papers.

7 PERSONS WITH GREATER INTEREST - Com. of W, Dist. Com of W, Persons resulting from search - each to be sent:- ☑
Notice of Application, Copy of application, Objection form J.

8 ADMINISTRATION OFFICER - Copy of Acknowledgement letter

9 COPIES of FORMS & letters. Acknowledgement letter (TC, TP file, applec, AO - (4).
Notice of application:- - TC, TP file, applic & Per w.q. Int (3) +
Objection form J. All Per w.q. int. - varies.
Application - TCs, TP file, All per. w.q Int. (2) + ☐

10 OBJECTIONS RECEIVED 1. etc

11 OBJECTIONS ACKNOWLEDGED. 1. etc.

12 REPORT WRITTEN — Copy TC, TP Applic file
Advance Copy to Applicant & CE ☐
1 copy file 7/2/2.

13 RETURN TC's FILE 15 days prior to HEARING DATE by —
Notice of hearing in hands of applicant & objectors
at least 14 days prior to hearing. HEARING DATE. —

14 DECISION recorded - CARDS, BOOK. Copy on TP's file. ☐

15 COMPLETE COSTING SHEET — ACCOUNT forwarded. —

16 APPEAL against COUNCIL DECISION by —
within 1 month of receipt of decision.

17 APPEALS RECEIVED Yes ☐ No. ☐

~~Subdivision file~~ end of 320 Princes Dr. (Piper Park.)

RECOMMENDED BY COMMITTEE : 7 APR 1987

RECEIVED

CONSIDERED BY COUNCIL : 14 APR 1987

44 OBSERVATORY HILL DEVELOPMENT

The meeting was preceded by an inspection of the Observatory Hill area by Councillors and some of the land owners, together with Mr Fagan of Staig and Smith.

The Chairman then took the Committee through the proposals outlined in the letter from Staig and Smith dated 29 July 1986.

The Committee then turned its attention to the City Manager's report (No.1174) dated 1 April 1987 which discussed the Staig and Smith proposals.

There was agreement that the deferral on the land in the western catchment of Observatory Hill could be removed in view of the substantial upgrading in the sewage and stormwater facilities in the Tahuna area.

There was concern however regarding any intensification of runoff in the York Stream catchment area and the meeting recognised that the York Stream is the limiting factor to any development on the eastern catchment.

Mr Fagan maintained that the proposed rural residential development would not create any significant intensity in this runoff. He suggested that any problem that may arise could be controlled by the means of small dams in the gullies and a requirement for the gullies to be planted.

The proposal that sewage for this rural residential area could be disposed of by means of septic tanks was questioned by the City Engineer. He pointed out that the land in question is predominantly covered in a weathered mantle of Port Hill gravel about a metre thick. Septic tanks would not be suitable in these conditions.

Mr Fagan agreed that there was clearly a need for percolation tests to be done before any decision could be made.

Resolved THAT it be a recommendation to Council that the deferment on the land in the western catchment of Observatory Hill be lifted.

Resolved THAT permission be given for a concept plan to be drawn up and brought back to the Planning Committee which would then give sympathetic consideration to the rural residential proposal with a lesser standard of feeder roading.

E.V. Stewart

Site File
Notified appln
206/40/108

10 August 1983

Messrs Rout, Milner & Fitchett,
Solicitors,
P.O. Box 580,
NELSON.

ATTENTION: Mr P. Gilbert

Dear Sir,

MESSRS FRY, WILKINSON & WHEELER - VIA PRINCES DRIVE -
OBSERVATORY HILL DEVELOPMENT

The notified application under Section 74 Town & Country Planning Act, lodged 21 November 1980, and publically notified 6 December 1980, was deferred at a hearing 7 April 1981. In a subsequent meeting with you and telephone conversation 9 April 1981, the matter of Council readvertising the application because of a technical point in setting the closing date for objections for the application, was discussed.

You indicated there was no rush and that you were awaiting instructions from your clients and that the application may be withdrawn.

Over two years has lapsed and although no official withdrawal has been received, it would seem the matter of the deposit with the application should be settled.

Deposit $220, paid 24 November 1980, receipt No. 5802.	
Public notice - 6.12.80 - exceeded the maximum charge to you under the Act (i.e.)	$20.00
To preparation, consultations and production of the 19 page report and 5 page summary of objections, procedures and notifications to date	200.00
	220.00

i.e. there is no refund.

The Council would like to clear the entry against this application and await your comments.

Yours faithfully,
A.C. Alley
CITY PLANNER
EVS:SF

Per: E.V. Stewart

Miss E. V. Stewart

206/40/108

6 October 1981

Mrs H. MacPherson
Secretary
Tahunanui Ratepayers & Citizens
Action Committee
12 Waikane Street
TAHUNANUI

Dear Mrs MacPherson

OBSERVATORY HILL/PRINCES DRIVE

Your letter of 17 September 1981 concerning the hearing under Section 74 & 75 of the Town and Country Planning Act 1977, Fry Wilkinson & Wheeler - Observatory Hill case is to hand.

You may recall that the Town Planning Committee Chairman advised those present that there had been a technical omission which was in breach of the provisions for advertising contained in the statutes.

It was pointed out that if the hearing proceeded the proceedings could be ruled a nullity at a later stage. The applicants were invited to amend the application so that it could be readvertised but to date they have chosen not to do so.

The application therefore lies until such time the necessary alterations are made. If it were readvertised, all persons affected, and most certainly any objections, would be advised of the new applications.

At this stage it appears that the application will not proceed.

Yours faithfully
A.C. Alley
CITY PLANNER
EVS:VK

Per: E V Stewart

3084

TAHUNANUI RATEPAYERS AND CITIZENS ACTION COMMITTEE

RECEIVED
18 SEP 1981
NELSON CITY COUNCIL

12 Waikare Street,
Tahunanui,
17th. September, 1981

Assembly of	Initials	Date
1. CP	AC	25/9
3.		
4.		
5.		
BRING UP YES/NO		

Mr. L. G. Ardell
Manager-Town Clerk,
City Council
NELSON

Dear Sir,

Set File

for attention of Chairman of Town Planning Committee
re Observatory Hill subdivision & removal of soil from its apex

It is now five months since a hearing was called to give Objectors an opportunity to put forward their submissions to the above scheme.
The interested residents are becoming restless because of the long silence on the part of the Planning Committee and feel that some objective decision or compromise should have been reached by now.
Through my Committee as you know a sub-committee was formed to speak on behalf of these residents.
We would be pleased to receive any information which is available relevant to the above subject of Observatory Hill.

Yours sincerely,
(Mrs) Helen Macpherson,
secretary,

RECEIVED
29 SEP 1981
TOWN PLANNING
DEPARTMENT

Miss Stewart.

File Note. - Observatory Hill.

Phoned Mr Peter Gilbert 9-4-81
Advised - Preparing to readvertise application & notify objectors
(Not in form suggested by Doogue)
Asked that he re-date application (to avoid further technicalities) and consider amendments esp. in full names of applicants

He said not to rush into matter he was having a job getting instructions from his clients - She had got feeling that application may be withdrawn. He would get back to us as quickly as possible and not to do anything in meantime

Hadley

9-4-81.

PLANNING & BYLAWS COMMITTEE MEETING TUES 7th APRIL 1981. 1pm.

47

3. NOTIFIED APPLICATION UNDER SECTION 74 AND 75 OF THE TOWN AND COUNTRY PLANNING ACT, 1977 - FRY WILKINSON & WHEELER - OBSERVATORY HILL - 206/40/108

This was an application for consent to carry out earthworks for a subdivision on Observatory Hill.

The Chairman advised those present that there had been a technical omission which was in breach of the provisions for advertising contained in Statutes. He apologised for any inconvenience caused but pointed out that, if the hearing proceeded, it was feasible that the proceedings could be ruled a nullity at a later stage. It would be preferable to re-advertise and ensure that the procedures were directly followed. Every effort would be made to ensure that parties to this application were put to as little inconvenience as possible.

The Chairman also made a statement regarding the media release of the City Planner's report prior to the hearing. He believed that this document was sub judice and was not available for general publication until the meeting. He advised that, in future, town planning reports would not be available to the Nelson Evening Mail until the time of the hearing. A letter will be sent expressing concern at the Mail's action.

NOTE: The confidential section of the report of this meeting is reported separately.

Amended Application

THE TOWN & COUNTRY PLANNING ACT 1977

APPLICATION FOR PANNING CONSENT

RECEIVED
28 NOV. 1980
TOWN & COUNTRY PLANNING DEPARTMENT

TO: The Nelson City Council,

WE, F.R. Fry, R.E. Wilkinson and W.M.L. Wheeler hereby apply for planning consent to carry out the necessary earthworks for the subdivision of Lot 1 and 2 on Deposited Plan 7374 as shown on the attached Surveyors Plan and for consent to remove the soil therefrom and from adjacent unformed legal streets as shown on the plan the major access being via Emano Street extension and Marie Street the secondary access via Princes Drive and to fill various reclamation areas as required UPON THE GROUNDS that such a proposal is of benefit to the public of Nelson AND UPON THE GROUNDS contained in the attached statement.

The property in respect of which this application is made is situated at Observatory Hill, Nelson.

We are the owners of the said property

Fry Wilkinson and Wheeler

DATED at Nelson this 28th day of November, 1980

Signature

To be signed for or
on behalf of applicant

Address for Service: Rout Milner & Fitchett
Solicitors
167 Hardy Street
NELSON.

To be advertised (Public Notice by 5th Dec. 1980 (Wed 3rd our normal date)

Plans received 21/11/80

RECEIVED
20 NOV 1980
TOWN PLANNING DEPARTMENT

THE TOWN & COUNTRY PLANNING ACT 1977

APPLICATION FOR PLANNING CONSENT

TO: The Nelson City Council,

WE, F.R. Fry, R.E. Wilkinson and W.M.L. Wheeler hereby apply for planning consent to carry out the necessary earthworks for the subdivision of Lot 1 and 2 on Deposited Plan 7374 as shown on the attached Surveyors Plan and for consent to remove the soil therefrom and to fill various reclamation areas as required UPON THE GROUNDS that such a proposal is of benefit to the public of Nelson AND UPON THE GROUNDS contained in the attached statement.

The property in respect of which this application is made is situated at Observatory Hill, Nelson.

We are the owners of the said property

Fry Wilkinson and Wheeler

DATED at Nelson this 20th day of November 1980

Signature _____

To be signed for or on behalf of applicant (P.C. Gilbert)

Address For Service: Rout Milner & Fitchett
Solicitors
167 Hardy Street
NELSON.

SEE amended application resulting from discussion with Surveyor Solicitor and staff.

The Applicants make application to carry out extensive earthworks in order to provide a subdivision for residential dwellings over Lots 1 and 2 on Deposited Plan 7374 as shown and described in the attached earthworks plan.

BACKGROUND

In approximately 1975 the Council was supplied by Messrs Truebridge Callender Beach & Co concept plans for possible subdivision of all the land described as Observatory Hill and including that land described as Lots 1 and 2 on Deposited Plan 7374.

This scheme would provide for the cutting of a considerable portion of the high ground and compacting fill for the gullies and natural depressions. The end result being a large and attractive subdivision close to the centre of the city of Nelson which makes the optimum use of marginal land without encroaching further on the flat and good agricultural land between Stoke and Richmond.

The Applicants' proposal is to take at this stage Lots 1 and 2 and develop these areas when zoning permits into a most attractive and reasonably priced residential subdivision. This is made possible by the current demand from the Nelson Harbour Board for suitable fill for their reclamation requirements. The plan as submitted by Truebridge Callender Beech & Co is to be recommended but the economic considerations of such a development would in the Applicants' opinion result in the sections being made available at such prohibitive prices that they would not be available to the ordinary man in the street or young couples looking to establish a family home. However by adopting the proposal for the development of only part of the overall plan coupled with the requirements of the Harbour Board the Applicants can provide reasonable well-graded

and stable sections within the price range of most Nelsonians and combining panoramic views which in the opinion of the Applicants must be of a benefit to Nelson and attract development for the Nelson area as a whole.

METHOD

It is proposed that 495,000 cubic meters of soil be removed from Observatory Hill by bulldozers and loaders working normal hours for such vehicles and then to be trucked initially to the Nelson Harbour Board reclamation site. The extent of these earthworks are shown in the attached plan and coincide approximately with the contour line 168.

Because of the heavy trucks required to remove this spoil from the site to the reclamation it is proposed that the existing track from Emano Street to the site be substantially up-graded and that ingress and egress from the site be predominantly via Emano Street together with the existing access through Marie Street and also to include to a lesser degree Princes Drive. Permission to work over existing legal roads, as shown on the attached plan, would also be required. It is also noted that under the provisional review of the district scheme these roads are designated for possible closure.

The Applicants envisage that the earthworks will take approximately five to seven years to complete as scrapers and large earth moving vehicles are not practicable in this area. However, dependent upon the zoning of the area suitable sections will become available at realistic prices during the development period.

There may be objections to the extent of the earth works as

described but by taking this quantity of scil from the site "cut only" sections can be provided at a much cheaper price than would normally be available from this type of development. The Applicants also draw to the attention of the Council that by lowering the height of Observatory Hill a substantial benefit is gained for water reticulation. The developers are presently discussing water rights with the Catchment Board and obtaining Section 34 approval for this scheme.

CONCLUSION

The developers offer the Council the opportunity of using this erstwhile waste land to provide much sought after fill for the Habour Board reclamation development whilst complementing the development of a need for a subdivision close to the city centre that will provide reasonably priced sections to the public. The development is within the scope of the proposed scheme for the area and the sections will be sound well-graded and cut only sections. Although soil is removed from Lots 1 and 2 it is suggested by the Applicants that the remaining area when developed will provide more than sufficient soil for the compacted fill for gullies and depressions as outlined in the plans submitted by Truebridge Callender Beach & Co.

Because of the appropriate coupling of this development with the immediate requirements of the Nelson Harbour Board the developers will be in a position to provide reasonably priced sections. Should the proposal not receive a favourable hearing then due to the high development costs of a cut and fill type operation this favourable subdivision could never be an economically viable proposition.

ROUT, MILNER & FITCHETT
BARRISTERS & SOLICITORS
P.O. Box 580 Telephone 80063

JOHN M. FITCHETT, LL.B.
GRAEME S. WILLIAMS, LL.B.
~~J. ROBERT F. FARDELL, LL.B. (Hons.)~~

Exchange Buildings,
167 Hardy Street,
NELSON, NZ.

Noted [illegible] 2/12/80

RECEIVED
-1 DEC 1980
TOWN PLANNING DEPARTMENT

In reply please quote 80/1193
or ask for Mr Gilbert

28th November 1980

The Town Clerk,
Nelson City Council,
P.O. Box 645,
NELSON.

Attention: Planning Department

Dear Sirs,

re Specified Departure - F.R. Fry and Others

We write to confirm the recent discussion between the writer and members of your staff regarding the fixing of the level of any road in the subdivision known as Observatory Hill.

On perusing Section 330 of the local Government Amendment Act the writer is of the opinion that the Council may, if it thinks fit, make a map of the district and that either before or after the making of any such map fix the level of any road subject to the conditions set out in the 13th Schedule to the Act.

It is the writer's opinion that the Council is given the discretion as to whether or not they a) make a map of the area or b) set the level of the road either before or after the making of the said map.

Schedule 13 states that the Council shall publish in the district a notice of its intention to fix the level but if no level is fixed prior to the removal of the top soil then in the writer's opinion there is no need for the advertisement. A level need not be fixed until an application for the first dwelling is made and at that stage the Council would then fix the level of the road and comply with the provisions of the 13th Schedule.

Yours faithfully,
ROUT MILNER & FITCHETT

Per: [signature]

AI.

City Engineer - This matter was discussed with Mr Gilbert applicants Solicitor and that he may wish to look into the matter for his satisfaction as whether or not the change of level should be publically advertised (takes < 1 month minimum)

F[illegible]T, MILNER & FITCHETT
BARRISTERS & SOLICITORS

JOHN M. FITCHETT, LL.B.
GRAEME S. WILLIAMS, LL.B.
J. ROBERT F. FARDELL, LL.B.(Hons.)

P.O. Box 580 Telephone 80063

167 Hardy Street
NELSON, NZ.

In reply please quote
or ask for

RECEIVED
20 NOV 1980
TOWN PLANNING
DEPARTMENT

Town Planning Officer
Nelson City Council

Dear Sir Re Frey & Others.

We advise that Wellington Engineers will inspect the property on or before the 8th of December and an appropriate report will be made available

Yours
per Rachel Milner Gilbert
P.C. Gilbert.

Acknowledgement Letter

APPLICATION UNDER SEC. 74 OF THE TOWN & COUNTRY PLANNING ACT 1977 & REGULATIONS 1978

Town Planning Department
Date: 1st December, 1980

Rout, Milner & Fitchett,
Solicitors,
167 Hardy Street
NELSON.

APPLICATION NO: 206/40/108

F.R. Fry, R.E. Wilkinson & W.M.L. Wheeler (Applicant) Observatory Hill, off end of Princes Drive (Address of Property)

Dear Sir,

Your application for consent to Carry out the necessary earthworks for the subdivision of Lots 1 & 2 D.P. 7374 on the above property is to hand.

The application is being processed and a copy of the Notice of Application (Form H) as required by the Town & Country Regulation 37(3) is enclosed.

The Public Notice will appear in the Nelson Evening Mail on 3rd December, 1980

Under the authority of Regulation 37 & 38 Council has resolved to recover reasonable and actual costs incurred in processing and hearing the applications. These costs will be assessed by Council after which an account will be forwarded to you.

At this stage it is estimated your application could be heard at a special meeting in February 1981 but this will be confirmed in accordance with the Regulation 38(2) giving you not less than 10 days notice of the time and place of the meeting.

Should you wish to discuss or clarify any matters concerning this application please contact Miss E. Stewart or Mr P. Meads of the Town Planning Department.

Yours faithfully,
P-L Meads
for Town Planner

Attached for your information :
Extracts from Town & Country Planning Regs 37, 38 concerning costs recoverable by Councils.

Deposit on application $220 *Rept. date* 24/11/80

Receipt attached ✓

Number on MAP.	Lot.	D.P.	Val. no.	Name & Address.
1)	5	7398.	1965/141/2	
2)	3	~~7398~~	1965/141/2.	G & B.M. Bailey 316 Princes Drive Nelson.
3)	4	7398	1965/141/2	~~[illegible]~~
4)	pt 1	6131.	1965/723.	J.N & S.M. Aucutt 12 Rangiora Tce, Nelson.
5)	4	6357	1965/736	S. & M.R Taylor 33 Chamberlain St, Nelson.
6)	5	6357	1965/739	B.J & J.L. Westbrooke, 39 Chamberlain St, Nelson.
7)	8	6357	1965/740	Sealord Products Ltd P.O. Box 11, Nelson.
8)	1	6061	1965/741	J.G. & G.M. Simpson, 43 Chamberlain St Nelson.
9)	2	6061	1965/744	J & D.M. Heginbotham, 57 Cruikshank Rd, Upper Hutt
10)	9	6357	1965/745	E.M^c & J.N. Finlay, 51 Chamberlain St, Nelson.
11)	pt 2	4481	1965/772	M.R. & P.M. Manley, F2/192A Collingwood St, Nelson
12)	pt 11		1963/604.	Bishopdale Potteries Ltd., P.O. Box 372, Nelson.
13)	E 34		1967/348/1	B.C Phillips & T.R. Carter, 5 Lincoln St, Stoke, Nelson
14)	pt E 33		1967/322	Nelson City Council P.O. Box 645, Nelson.

The Town and Country Planning Act 1977
CITY OF NELSON DISTRICT SCHEME

PUBLIC NOTIFICATION OF APPLICATIONS FOR PLANNING CONSENTS

Details of the applications for planning consent listed below may be examined in the office of the Town Planning Department of the Nelson City Council, 295 Trafalgar Street, Nelson during normal office hours (9 a.m. to 4 p.m.):

Objections can be made by notice in writing in form J prescribed in the First Schedule to the Town and Country Planning Regulations 1978 or to the like effect and should be addressed to The Town Clerk, Nelson City Council, P.O. Box 645, Nelson by 4 p.m. December 24th, 1980.

A copy of the objection must also be sent to the applicant as soon as possible.

Application No. 206/40/108.

Property Address: Observatory Hill, off end of Princes Drive.

Applicant: F. R. Fry, R. E. Wilkinson and W. M. L. Wheeler.

Proposal: To carry out the necessary earthworks for the subdivision of Lots 1 and 2 on Deposited Plan 7374 as shown on the attached Surveyors Plan and for consent to remove the soil therefrom and adjacent unformed legal streets as shown on the plan the major access being via Emano Street extension and Marie Street the secondary access via Princes Drive and to fill various reclamation areas as required.

Objections: Address copy to Rout, Milner and Fitchett, Solicitors, 167 Hardy Street, Nelson.
Date — December 3rd, 1980.

Application No. 206/40/109

Property Address: 565 Main Road, Stoke.

Applicant: Ranui Motors Limited.

Proposal: To carry out improvements to a service station and commercial garage premises.

Objections: Address copy to Ranui Motors Ltd., c/- Bell Gully and Co., P.O. Box 1291, Wellington.
Date — December 3rd, 1980.

L. G. ARDELL,
City Manager/Town Clerk

THE TOWN AND COUNTRY PLANNING ACT 1977

CITY OF NELSON DISTRICT SCHEME

PUBLIC NOTIFICATION OF APPLICATION FOR PLANNING CONSENT

DETAILS of the application for planning consent listed below may be examined in the office of the Town Planning Department of the Nelson City Council, 295 Trafalgar Street, Nelson during normal office hours (9.00 a.m. to 4.00 p.m.)

Objections can be made by notice in writing in form J prescribed in the First Schedule to the Town and Country Planning Regulations 1978 or to the like effect and should be addressed to The Town Clerk, Nelson City Council, P.O. Box 645, Nelson by 4.00 p.m. 24th December 1980.

A copy of the objection must also be sent to the applicant as soon as possible.

APPLICATION NO. : 206/40/108

Property Address: Observatory Hill - Off end of Princes Drive

Applicant: F.R. Fry, R.E. Wilkinson and W.M.L. Wheeler

Proposal: To carry out the necessary earthworks for the subdivision of Lots 1 and 2 on Deposited Plan 7374 as shown on the attached Surveyors Plan and for consent to remove the soil therefrom and adjacent unformed legal streets as shown on the plan the major access being via Emano Street extension and Marie Street the secondary access via Princes Drive and to fill various reclamation areas as required.

Objections: Address copy to Rout, Milner and Fitchett, Solicitors, 167 Hardy Street, Nelson.

Date : 3rd December 1980.

CITY MANAGER/ L.G. Ardell,
TOWN CLERK

MAIL OFFICE PLEASE INSERT IN ONE ISSUE ONLY

DATE: 3rd December 1980 DOUBLE COLUMN

DISTRIBUTION: Mail Office, T.C's Advert Book, T.C.'s letter book
Application Files T.P., T.C.

APPLICATION NO. 206/40/108

REFERENCE: Notified Application - Under Sections ~~XXXXXX~~ 74, ~~XX~~ of T. & C. Planning Act, 1977.

APPLICANT: F.R. Fry, R.E. Wilkinson & W.M.L. Wheeler

PROPERTY: Lots 1 & 2 D.P. 7374 Observatory Hill - off end of Princes Drive

ADDRESS FOR SERVICE (Copy of objections to :)

Rout Milner & Fitchett - 167 Hardy Street, Nelson

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF APPLICATION FOR PLANNING CONSENT (Reg. 37 (3) Form H)

TO: Commissioner of Works,
P.O. Box 12041
WELLINGTON

District Commissioner of Works,
Ministry of Works & Development District Office,
Private Bag,
WELLINGTON

Nelson Bays United Council P.O. Box 645 Nelson
G. & B.M. Bailey, 316 Princes Drive Nelson
J.N. & S.M. Aucutt, 12 Rangiora Terrace Nelson
S. & M.R. Taylor, 33 Chamberlain Street, Nelson
B.J. & J.L. Westbrooke, 39 Chamberlain St. Nelson
Sealord Products Ltd. P.O. Box 11, Nelson
J.G. & G.M. Simpson, 43 Chamberlain Street Nelson
J. & D.M. Heiginboham, 57 Cruikshank Rd. Upper Hutt
E.Mc. & J.N. Finlay, 51 Chamberlain St. Nelson
M.R. & P.M. Manley, F2/192A Collingwood St. Nelson
Bishopdale Potteries Ltd, P.O. Box 372 Nelson
B.C. Phillips & T.R. Carter, 5 Lincoln Street Stoke

Copy also to applicants

F.R. Fry, R.E. Wilkinson & W.M.L. Wheeler

C/- Rout Milner & Fitchett, 167 Hardy Street

The attached application for planning consent has been received by the Nelson City Council.

Additional plans or other information are (~~are not~~) held in the Town Planning Department of the Council's office, 295 Trafalgar Street and may be inspected there during normal office hours between 9.00 a.m. and 4.00 p.m.

The application is being advertised and objections will be received by the Council until 4.00 p.m. on 24/12/80. Any objection shall be in writing in form J prescribed in the First Schedule to the Town and Country Planning Regulations 1978 or to the like effect and should be addressed to the Town Clerk, Nelson City Council, P.O. Box 645, Nelson.

A copy of every objection must also be sent to the applicant as soon as possible.

R L Meads

For L.G. Ardell,
Town Clerk,
NELSON CITY COUNCIL

DATE: 2 Dec. 1980

Attachments: Notice of Objection form J
Application for Consent

Distribution: Applicant 1, T.P. T.C. for files
Persons listed above TOTAL COPIES

NELSON CATCHMENT BOARD
& REGIONAL WATER BOARD

14 SELWYN PLACE
NELSON

File 1/10/15/1

REPLY TO:
THE SECRETARY
NELSON CATCHMENT BOARD
P.O. BOX 41, NELSON
NEW ZEALAND
Telephone 88-334

Your Ref: 206/40/108

5 January 1980

RECEIVED
- 6 JAN 1981
NELSON CITY COUNCIL

RECEIVED
6 JAN 1981
TOWN PLANNING
DEPARTMENT

Nelson City Council
P O Box 645
NELSON

ATTENTION: Miss Stewart

Dear Sir

OBSERVATORY HILL EARTHWORKS : SECTION 34 SC&RCC 1959

Thank you for the opportunity to comment upon the above proposal.

There are areas of hillside land within Nelson City which may be subject to soil erosion or have an erosion potential and/or be subject to flooding or the detremental effects of deposits in watercourses. Under Section 34 of the Soil Conservation and Rivers Control Amendment Act 1959 specified areas on hillside land within the City are subject to the written consent of the Nelson Catchment Board before work maybe carried out on land involving:

i) The exposure of soil by removal or burning of vegetative cover.

ii) The exposure of subsoil by the removal of soil.

iii) The execution of earthworks.

The area generally known as Observatory Hill is a specified area under Section 34.

Application for consent or any subsequent consent does not absolve any person from the obligation of obtaining a water right or any building or other permits that are required.

Although a general discussion has been held with Mr Peter Fagan, Consulting Engineer to the applicants, no formal proposal or application has been made to the Board either under Section 34 or for a water right, it is therefore not possible to make specific comment. The Boards "General Conditions" which where applicable would certainly apply are as follows:

1. Adequate provision must be made to ensure that debris (Soil, silt and detritus or vegetation etc) is not deposited in watercourses nor where it may move or wash into watercourses or onto adjoining lands.

2. Watercourses shall not be diverted nor shall the natural flow within watercourses be concentrated or impeded unless specifically authorised.

3. Where borrow and waste areas are used, they should be located and maintained to avoid erosion or movement of spoil into watercourses or adjacent lands.

4. Earthworks are to be avoided on unstable slopes when climatic or soil moisture conditions would aggravate soil erosion and sediment transport. Precautions should be taken to minimise erosion at all stages during earthworks

5. Adequate culverts and cut-offs are to be provided to lead water safely away, and to prevent undue concentrations of flow and the scour of water tables and fills. Similar precautions should also be taken for works temporarily suspended as in 4. above. Debris must be kept well clear of watertables and culvert inlets.

6. All temporary tracks and firebreaks will generally be constructed with minimum soil disturbance. Adequate provision shall be made for dispersal of stormwater by frequent cut offs or diversions. Excessive tracking or firebreaking will not be approved.

7. Firebreaks shall be regularly maintained both to prevent scour and erosion and to ensure the break adequately serves its purpose.

8. Vegetation or humus shall not become buried in fill operations.

9. In all excavation and fill operations the top soil is to be removed, stockpiled and respread over the site at the conclusion of construction and cut and fill slopes shall be promptly sown down with an approved seed and fertilizer mixture or stabilized by other approved measures.

Particular attention would be given to the disposal of runoff water, the ability of watercourses or piped systems to handle the runoff, silt and detritus movement, off site soil erosion hazards, seasonal timing of operations, and access road stability.

I had understood from yourselves and Mr Fagan that no onsite fill operations were involved, if this is not now the case then careful provision to ensure the stability of any such operations will be required.

I would also refer you to the Boards publication "An Urban Land Use Capability Survey for the Undeveloped Urban Area Surrounding Observatory Hill, Nelson City" published in 1977 and "Geology of the Nelson Urban Area" recently published by New Zealand Geological Survey.

Yours faithfully

C W Duck
CHIEF SOIL CONSERVATOR

Miss Stewart

18 December, 1980

The Secretary
Nelson Catchment Board,
NELSON.

Dear Sir,

RE NOTIFIED APPLICATION NO. 206/40/108
F. FRY, R. WILKINSON, & W. WHEELER - OFF PRICES DRIVE

Further to your staff members Mr Chris Cook and Mr. M Dicker with Mr D. Plant of our Works Division and Miss E. Stewart Assistant City Planner, I am enclosing copies of the application and the applicant's background report for the proposal.

It would be appreciated if you would submit comments suitable for quoting in the City Planner's Report under the head of "The Catchment Board Engineer comments as follows :
" quote "

You may also care to make a suggestion for a condition of consent concerning your area should consent be granted to the application. You may prefer to keep such suggested condition/s broad i.e. require Catchment Board approval for ...

Your comments would be appreciated by 10th February 1981.

For your information the process will be :

- All comments for report by 10th February
- Notifications of meeting post 19th February
- Tentative Hearing date. 3rd March.

Yours faithfully,

City Secretary and Dennis Cederman

Observatory Hill
Application 206/40/108

You have complete file of Observatory Hill.

Please read the beginning of the report FOR THE CHAIRMAN

I SUGGEST List and have the objections

① received too late dealt with before the application is heard.

② - In my opinion the letter from the Harbour Board is not an objection but a "statement" and should be accepted as evidence as it is something we would probably have obtained to complete the report.

③ Should we deal with objection 89 - questioning the form. first

④ and Objection 46 - claims Ultra Vires in relation to works on street.

Notice to Councillors -

Should include - A summary of objections has been enclosed to assist Councillors. 2 copies of the 90 objections in book form are available on loan for more detailed information if Councillors wish to read the individual objections in full prior to the hearing.

My notes on your file suggest that the application, a reduced Xerox of the plan & reduced Xerox of the background information submitted with the application should be sent to Councillors & Officers of the press.

Nelson City Council
P.O. BOX 645, NELSON. PHONE: 81-059.

In reply refer to
Mr D. Cederman

ref:
206/40/108

All correspondence should be addressed to The City Secretary.

23 March 1981,

Dear Sir,

NOTIFIED APPLICATION UNDER SECTION 74 OF THE TOWN AND COUNTRY PLANNING ACT, 1977 - FRY, WILKINSON & WHEELER - OBSERVATORY HILL - 206/40/108

I advise that the above application will be considered by the Planning & Bylaws Committee in the Nelson City Council Chamber on 7 April 1981, commencing at 1 p.m. This application will be the third to be heard.

You may wish to present, at the hearing, a written statement to cover your case and to comment or answer questions on the City Planners report. Ten copies of all submissions should be supplied for distribution to Councillors and Officers at the meeting.

If you require any advice on the form of your statement, the Assistant City Planner, (Miss E. Stewart) will be pleased to assist you.

Copies of the City Planners report will be available from the City Planning Division no later than 30 March. One copy will be provided free of charge for each objection and additional copies will be available at cost.

Yours faithfully,

I.P. BARKER
City Secretary
DBC:CJD

ROUT, MILNER & FITCHETT
BARRISTERS & SOLICITORS
P.O. Box 560 Telephone 80063

JOHN M. FITCHETT, LL.B.
GRAEME S. WILLIAMS, LL.B.
~~ROBERT FARDELL, LL.B.~~

Exchange Buildings,
167 Hardy Street,
NELSON, NZ.

In reply please quote 80/1193
or ask for Mr Gilbert

RECEIVED
-6 APR 1981
TOWN PLANNING
DEPARTMENT

3rd April 1981

The City Secretary,
Nelson City Council,
P.O. Box 645,
NELSON.

Dear Sir,

re F.R. Fry, R.E. Wilkinson and W.M.Wheeler
Observatory Hill - Application No. 206/40/108

We write confirming the telephone conversation of todays date and formally request an adjournment for the hearing of the above matter to be heard on Tuesday the 7th of April.

The grounds for seeking an adjournment are that the Engineer and Surveyor who prepared the plans and the application is currently in Australia and will not return in sufficient time to provide the necessary evidence at the hearing. We regret the inconvenience caused to the many objectors but feel in all fairness to our clients that this matter cannot proceed on Tuesday the 7th as planned.

Advice of this applic ation for an adjournment has been forwarded to the other solicitors representing objectors.

Yours faithfully,
ROUT MILNER& FITCHETT

Per:

AI.

This form used for all objectors. 1-90.
Posted or delivered to all objectors. 8/1/81

1 to 90

TOWN AND COUNTRY PLANNING ACT 197X

NOTIFIED APPLICATION

7 January 1981

City Planning Division,
NELSON.

In reply refer to

Miss E. Stewart

Dear Sir/Madam,

APPLICATION: Messrs Fry, Wilkinson, Wheeler Applicant

Observatory hill off Princes Dr Property

APPLICATION NO: 206/40/108

Your objection ot the above application received on

_____ is acknowledged.
(date)

You are reminded that the regulations also require you to send a copy of the objection to the applicant.

The City Manager/Town Clerk will advise you of the special Council meeting at which the case will be heard, at least 10 days prior to the hearing date.

The City Planner will prepare a report after the date objections to the application close, and you will be forwarded a copy of the report.

Yours faithfully,

A.C. ALLEY
For CITY PLANNER

Observatory Hill Earthworks

Summary of Objection Numbers.

Individual or joint objections of two persons only. 85

Joint objections (Three or more persons) 5

Total objections received 89. / 90.

Joint Objections

No. 22 Emano St. 8 signatures
17 of which do not appear on other forms 17.

32 Mairi St. 3 signatures (1 appears also on No 85) 3

44 Princes Drive 3 signatures 3
(1 appears also on No 85.)

85 General Tabunamii - 57 signatures
16 only do not appear on other objections lodged. 16

Additional Individual signatures not appearing in 84 individual objections above 39.

Total individuals interested remembering that some of 84 individual objections may be 2 persons joint objection

85
+ 39
124 people.

2 & 5 5

Miscellaneous Group

No. 86.

McKegney. 53 Scotia St.

No 87

Gibbons Ltd. - an adjoining owner

No 88.

Public Trustee for Est. of John Adams

No 89.

Housing Corporation of NZ.

In general on form of application

Total Miscellaneous Group. (4)

~~Numbered objections shown on plans.~~

~~Red.~~ -

Individual objections in letters or forms - 80

Miscellaneous objections. 4

Joint forms/letters. - (~~other than husband~~ other than 2 residents on same property) 5

89

Note in the joint objections

No. 22 (Emano. St. (~~Foote~~) 18 signatures. ~~producing~~ Number of names not appearing on other objections 17

32. Mainie ~~9, 13, 15~~. 3 signatures. objection not signed 3

47. Princes Drive 3 signatures 3

1 ~~already~~ appears on No 85 also. 16

85. Genevieve Tahuna Ave 57. - 16 only have not appeared on other objections Total 39.

Summary of joint applications 40 signatures not appearing individual objections

joint 85 objection 57 signatures (16) which do not appear elsewhere

12 & 13 Both from 65 Chamberlain St.
16 & 17 " " 25 Douglas Rd
35 & 36 " " 2/120 Muritai St.
21 & 22 - Same objectors name included on 22 in joint objections

48-49 Both from 7 Rangoon Tce
70.71 " " 40 Tosswill Rd
76.77 & 85 68 "
24.82 27 - Emano St. (~~Could be 2 different~~ Different names - Note 1 not signed 81.

85 & 47 316 Princes Drive in 2 groups.
85 & (41) 103 Parkes Rd in 2 applies
85 & 4 16 Chamberlain St.
85 66 17 Tamaki St.
85 . 44 214 Princes Drive
85 . 40 88 Parkes Rd.
85 76, 77 68 Tosswill Rd
85 40 88 Parkes Rd
85 14 81 Chamberlain St.
85 84 31 " "
85, 30 25 Mairie St
85 29 33 Mairie St
85 8 39 Chamberlain St
85 10 43 Chamberlain
32 Mairie St - Address for service 29 Mairie St objection 9, 13, 15 - NOT signed (4)

85 27 5 Mairie St
85 12, 13 65 Chamberlain St
85 24 82 27 Emano St
85 35, 36 2/120 Muritai St.
85 39 22 Parkes Rd
85 69 28 Tamaki St
47 3 objections Princes Drive (3)
85 7 1 Chamberlain St.
85 25 92 Green St
85 60 48 Cahuanam Drive
85 34 35 Mairie St.
85 68 32 Tamaki St.
85 64 28 Stansell Ave.
85 73 53 Tosswill Rd
85 72 47 " "
85 56 36 Rangoon Tce
85 54 25 Rangoon Tce.
85 6 35 Chamberlain St
22 18 objections Emano St (Adjudicated Therefore (17)

STATEMENT
NOT OBJECTION

All Communications to be
Addressed to:
THE SECRETARY,
P.O. BOX - 5003
PORT NELSON, N.Z.

Nelson Harbour Board

TELEPHONES:
ALL DEPARTMENTS 82-099
(4 lines)
Telegraphic Address:
"NELHARBOUR"

JFB/UC, N.30

23 December 1980

RECEIVED
24 DEC 1980
NELSON CITY COUNCIL

The Town Clerk
Nelson City Council
P.O Box 645
NELSON

RECEIVED
24 DEC1980
TOWN PLANNING
DEPARTMENT

RE: TOWN AND COUNTRY PLANNING ACT 1977
CITY OF NELSON DISTRICT SCHEME
APPLICATION FOR PLANNING CONSENT NO. 206/40/108 - Observatory Hill Subdivision

Dear Sir,

The Nelson Harbour Board wish to make the following statement in respect to the above application for Planning Consent.

1. The Nelson Harbour Board do not wish to oppose or support the above application, but simply to correct any mistaken impression that may be taken from the application.

2. On page 2 of the application it is stated
"It is proposed that 495,000 cu.m. of soil be removed from Observatory Hill by bulldozers and loaders, working normal hours for such vehicles and then to be trucked initially to the Nelson Harbour Board Reclamation site."

   And this could be read to imply that the Nelson Harbour Board have an arrangement with the applicants to receive this spoil.

3. The Nelson Harbour Board wish to state that at the present time they do not have any arrangement or contract to receive filling from the Observatory Hill site for any part of their reclamation development.

4. It is normal practice for the Nelson Harbour Board to call tenders for such filling contracts, and before any tender is accepted, the Nelson Harbour Board Engineers inspect the quarries or borrow pits of the lowest two or three tenderers to ensure they meet our Engineers' specifications for the particular fill that is needed, after which a contract may be entered into. No such tests have been carried out in respect of the Observatory Hill site.

5. If, however, the Observatory Hill material is

   i. available when the Nelson Harbour Board needs filling for its reclamation development,

   ii. the Observatory Hill material meets our Engineers' specifications for the type of filling required at that time,

   iii. It is available at a suitable supply rate,

iv. the price delivered on site is acceptable,

then the Nelson Harbour Board may be interested in using this material as it will be equally interested in any other supply by any other contractor at the time we require further filling.

We trust that this clarifies the Nelson Harbour Board's position in this matter.

Yours faithfully,,

FRANK BALDWIN
General Manager

Postal Address:

The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:

The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

received after closing date
too late

RECEIVED
7 JAN 1981
TOWN CLERK'S DEPARTMENT

7/1/81

Reg. 37 (6)

FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

RECEIVED
7 JAN 1981
TOWN CLERK'S DEPARTMENT

To The Nelson City Council

Name (State full name) Doris Grace Reynolds

Address 172 Moana Avenue - NELSON.

I object to the application of (state name of applicant)

to (State proposal of applicant)

F.R.Fry - E.E.Wilkinson - W.H.I.Wheeler, to subdivide Observatory Hill, Nelson.

The particular parts of the application I oppose are:

The whole application, and its general concept.

The reasons for my objection are : The access and egress roads - i.e. Emano St., Princes Drive, and Maire St., would have to be upgraded at the ratepayers' expense.

My objection would be met by (State action desired) Deferment of the approval of the application, pending my obtaining legal advice regarding a bond to be lodged by the applicants and compensation for dust pollution affecting my recently repainted houses in Emano St., and Moana Avenue.

I do/~~do not~~ desire to be heard in support of my objection.

Signature : D.G. Reynolds

(To be signed for or on behalf of objector)

Address for Service: 172 Moana Avenue
NELSON

Date : 23rd Dec., 1980

NOTE: The objector must also send a copy of the objection

Postal Address:

The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:

The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

APPLICANTS COPY

Too late

Received too Late 7/1/81

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) Arnold Ewart William McDonald

Address 543 Rocks Rd. Nelson

I object to the application of (state name of applicant) to (State proposal of applicant)

The unstable area of ground that would be appraised by any excavation or dwelling.

The particular parts of the application I oppose are:

The historical nature of the area which is subject to slips

The reasons for my objection are :

As a resident of 543 Rocks Rd we own the slip area.

My objection would be met by (State action desired)

I do/do not desire to be heard in support of my objection.

Signature : Arnold E. W. McDonald

(To be signed for or on behalf of objector)

Address for Service: .....

..... Date : .....

NOTE: The objector must also send a copy of the objection to the applicant

TOO LATE 8

Postal Address:
The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:
The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

Reg. 37 (6)

FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) Arnold Ewart William McDonald

Address 543 Rocks Rd. Nelson.

I object to the application of (state name of applicant) to (State proposal of applicant)

The unstable area of ground would be aggravated by excavation & levelling

The particular parts of the application I oppose are:

The historical nature of the area which is subject to slips

The reasons for my objection are :

As a resident of 543 Rocks Rd. we could be in the slip area.

My objection would be met by (State action desired)

Received

RECEIVED
1981
TOWN PLANNING
DEPARTMENT

I do/do not desire to be heard in support of my objection.

Signature : Arnold E. W. McDonald

(To be signed for or on behalf of objector)

Address for Service: .....

Date : .....

... also send a copy of the objection

Late objection

TOWN AND COUNTRY PLANNING ACT 1977

NOTIFIED APPLICATION

7 January 1981

City Planning Division,
NELSON.

In reply refer to

Miss E. Stewart

Mr. A. W Mc Donald
543 Rocks Rd.
NELSON

Dear Sir/Madam,

APPLICATION: Messrs Fry, Wilkinson, Wheeler Applicant

Observatory hill off Princes Dr Property

APPLICATION NO: 206/40/108

Your objection ~~to~~ the above application received on 6/1/81 (date) is acknowledged, and it is noted that it is too late to include it in the official objections

You are reminded that the regulations also required you to send a copy of the objection to the applicant.

The City Manager/Town Clerk will advise you of the special Council meeting at which the case will be heard, at least 10 days prior to the hearing date.

The City Planner will prepare a report after the date objections to the application close, and you will be forwarded a copy of the report.

Objections closed 24th Dec. 1980. at 4pm.

Yours faithfully,

A.C. ALLEY
For CITY PLANNER

TOO LATE -

Postal Address:

The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:

The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

received after closing date

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7 JAN 1981
TOWN PLANNING DEPARTMENT

RECEIVED
7 JAN 1981
TOWN PLANNING DEPARTMENT

Reg. 37 (6)

FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) Doris Grace Reynolds

Address 172 Moana Avenue - NELSON.

I object to the application of (state name of applicant)

to (State proposal of applicant)

F.R.Fry - R.E.Wilkinson - W.H.I.Wheeler, to subdivide Observatory Hill, Nelson.

The particular parts of the application I oppose are:

The whole application, and its general concept.

The reasons for my objection are : The access and egress roads - i.e. Emano St., Princes Drive, and Maire St., would have to be upgraded at the ratepayers' expense.

My objection would be met by (State action desired) Deferment of the approval of the application, pending my obtaining legal advice regarding a bond to be lodged by the applicants and compensation for dust pollution affecting my recently repainted houses in Emano St., and Moana Avenue.

I do/~~do not~~ desire to be heard in support of my objection.

Signature : D. G. Reynolds

(To be signed for or on behalf of objector)

Address for Service: 172 Moana Avenue

NELSON

Date : 23rd Dec., 1980

Late Objection

TOWN AND COUNTRY PLANNING ACT 1977

NOTIFIED APPLICATION

7 January 1981

City Planning Division,
NELSON.

In reply refer to

Miss E. Stewart

Mrs. D G Reynold
172 Moana Ave
NELSON

Dear Sir/Madam,

APPLICATION: Messrs Fry, Wilkinson, Wheeler Applicant

Observatory hill off Princes Dr Property

APPLICATION NO: 206/40/108

Your objection ot the above application received on 7/1/81 (date) is acknowledged, and it is noted that it is too late to include it with the offered objections

~~You are reminded that~~ The regulations also required you to send a copy of the objection to the applicant.

The City Manager/Town Clerk will advise you of the special Council meeting at which the case will be heard, at least 10 days prior to the hearing date.

The City Planner will prepare a report after the date objections to the application close, and you will be forwarded a copy of the report.

Objections Closed. 24th Dec 1980 at 4pm

Yours faithfully,

A Stewart

A.C. ALLEY
~~A.C.~~ CITY PLANNER

NOTIFIED APPLICATION NO. 206/40/108

OBJECTIONS TO OBSERVATORY HILL OFF PRINCES DRIVE.

EARTHMOVING PROPOSAL FOR A FUTURE SUBDIVISION.

APPLICANTS -

F.R. FRY, R.E. WILKINSON, W.M.L. WHEELER

Postal Address:
The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:
The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

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23 DEC 1980
TOWN PLANNING DEPARTMENT

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) JAMES & AUDREY MCMAHON

Address 10 BISLEY AVE NELSON

I object to the application of (state name of applicant) to (State proposal of applicant)

F.R. FRY R.E. WILKINSON & W.M.L. WHEELER TO CARRY OUT EARTHWORKS ON LOTS 1 & 2 D.P. 7374 & TO REMOVE SOIL THEREFROM

~~The particular parts of the application~~ I oppose ~~are:~~

THE ENTIRE PROPOSAL

The reasons for my objection are :

INCREASING DRAINAGE PROBLEMS FOR HILLSIDE
POSSIBLE DISASTROUS CONSEQUENCES OF EXCAVATION :- LANDSLIP
DEMAND FOR SECTIONS DOES NOT JUSTIFY RISK TO SURROUNDING HOMES

~~My objection would be met by~~ (~~State action desired~~)

OUT OF HARMONY WITH NATURAL SURROUNDS TO DESTROY CONTOUR OF HILLTOP... STRESS FROM NOISE & ADDITIONAL TRAFFIC CONGESTION.

I do/~~do not~~ desire to be heard in support of my objection.

Signature : J. McMahon J. McMahon

(To be signed for or on behalf of objector)

Address for Service: .....

..... Date : 22/12/80

NOTE: The objector must also send a copy of the objection to the applicant

2 8

Postal Address:

The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:

The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

Reg. 37 (6)

FORM J.

RECEIVED
24 DEC 1980
TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) Roy Francis Squire

Address 9 Champion Terrace Tahunanui Nelson

I object to the application of (state name of applicant) to (State proposal of applicant)

Messrs. F.R. Fry, R.E. Wilkinson, W.M.L. Wheeler.
Objection to any Excavations Lowering or Major topographical alterations to Observatory hill.

The particular parts of the application I oppose are:

Any alterations to the Catchment area or interferance with the run off, and the general deterioration of roads etc due to the excavations etc.

The reasons for my objection are :

As a rate payer and land owner situated directly below this hill I feel the resulting drainage and consequent Erosion will be quite desastous to my property.

My objection would be met by (State action desired)

I would require a legal bond from the developer to cover any damage from Storm Water, Erosion or Slippage to my property

I do/~~do not~~ desire to be heard in support of my objection.

Signature : R F Squire

(To be signed for or on behalf of objector)

Address for Service: 9 Champion Terrace
Tahunanui Nelson Date : 2

NOTE: The objector must also send a copy of the obje to the applicant.

3.8

Postal Address:
The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:
The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

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23 DEC 1980
TOWN PLANNING DEPARTMENT

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) ALISTAIR & JOCELYN CLAIRE McCUBBIN

Address 14 CHAMBERLAIN ST NELSON

I object to the application of (state name of applicant) to (State proposal of applicant)

F.R. FRY, R.E. WILKINSON & W.M.L. WHEELER EXCAVATE ON LOT 1 AND 2 ON DP 7574 AND REMOVE MATERIAL VIA ETHAN ST, CLARE ST, AND PRINCES DRIVE

The particular parts of the application I oppose are:

Amount of material removed, duration of works
Disturbance of natural contours and vegetation

The reasons for my objection are :

Destabilising effect on the hillside, noise and dust pollution. Failure of developer to provide drainage to sea which will thus be a cost to the ratepayers

My objection would be met by (State action desired)

Leaving the hill in its natural state

I do/do not desire to be heard in support of my objection.

Signature : [signature]
(To be signed for or on behalf of objector)

Address for Service: 14 Chamberlain St
NELSON 86483 Date : 23.12.80

NOTE: The objector must also send a copy of the objection to the applicant.

4 8

Postal Address:
The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:
The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

Reg. 37 (6) FORM J.

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23 DEC 1980
TOWN PLANNING DEPARTMENT

RECEIVED
23 DEC 1980
TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) ARTHUR REGNALD JORDAN.

Address 16 CHAMBERLAIN ST TAHUNANUI.

I object to the application of (state name of applicant)
to (State proposal of applicant)
E.R.FRY R.E.WILKINSON W.MC.WHEELER
.....
EARTHWORKS ON OBSERVATORY HILL AREA
LOTS 182 DP7374

APPLICANTS COPY.

The particular parts of the application I oppose are:
THE MAJOR EARTHWORKS PROPOSED
.....
.....
.....

The reasons for my objection are :
DISTURBANCE OF A LARGE AREA ABOVE KNOWN AREAS OF INSTABILITY AND THE SERIOUS RUN OFF AND DRAINAGE PROBLEMS RESULTING. THIS HAS ALREADY BEEN EXPERIENCED WHEN MINOR WORK DONE ON HILLSIDE

My objection would be met by (State action desired)
DROPPING OF PROPOSAL
.....

I ~~do~~/do not desire to be heard in support of my objection.

Signature : A.R. Jordan
(To be signed for or on behalf of objector)

Address for Service: .....
16 CHAMBERLAIN ST TAHUNANUI. Date : 23-12-80

NOTE: The objector must also send a copy of the objection to the applicant.

5

Postal Address:

The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:

The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

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22 DEC 1980
NELSON CITY COUNCIL

Reg. 37 (6)

FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) S. and M. R. Taylor

Address 33 Chamberlain st Tahuna

I object to the application of (state name of applicant) to (State proposal of applicant)

F. R. Fry ~~[illegible]~~ R. E. Wilkinson and M. M. L. Meder

The particular parts of the application I oppose are:

All of it

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22 DEC 1980
TOWN CLERK'S
DEPARTMENT

The reasons for my objection are :

The whole area is unsuitable for its sort of development

My objection would be met by (State action desired)

I do/~~do not~~ desire to be heard in support of my objection.

Signature : S. Taylor [illegible]

(To be signed for or on behalf of objector)

Address for Service:

33 Chamberlain st Date : 18 12 80

NOTE: The objector must also send a copy of the objection to the applicant.

6 8

Postal Address:

The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:

The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

RECEIVED
23 DEC 1980
TOWN PLANNING DEPARTMENT

Reg. 37 (6)

FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) ..Gordon Evans BROWN.....

Address ..35 Chamberlain Street, Tahunanui.....

I object to the application of (state name of applicant) F. R. Fry, R. I. Wilkinson, W.M.L. Wheeler Syndicate, C/o Rout Milner & Fitchett, 167 Hardy Street, Nelson to (State proposal of applicant) carry out extensive excavations which they state will provide a subdivision for residential dwellings.....

.....

.....

The particular parts of the application I oppose are:

1. The removal of the proposed 495,000 cu Metres of spoil and lack of provision for the run off of storm water from the area would constitute a threat to persons and property and may create instability in a large area of hillside
2. The long term of 7 years' proposed before completion of the project with little information or prospect of the availibility of building sections in the near future would convert a favoured residential area into the scene of a large noisy, dusty and unattractive industrial quarry.
1.~~3~~. The loss in the value of residential properties, which would be substantial (possibly millions of dollars.

The reasons for my objection are : /

2. I Object to the proposed use of Maire and Emano Streets for heavy truck loads of spoil over a long period of years. These streets are in places narrow and steep, It is doubtful if the road surface would withstand these heavy loads and any loss of control of the vehicles through failure of surface or vehicle must create a threat to persons and property.....

My objection would be met by (State action desired)

A complete indemnity against any loss caused by instability of the hillside resulting in complete or partial destruction or loss of value of my property. ~~by a civic authority~~ Such indemnity to be guaranteed by a civic authority and to be effective whether or not proof can be supplied that instability resulted from the development work.

I ~~do~~/do not desire to be heard in support of my objection., but will do so if requested.

Signature : .....
(G. E. Brown)

(To be signed for or on behalf of objector)

Address for Service: ...35 Chamberlain Street, Tahunanui.

..... Date : 23-12-80

NOTE: The objector must also send a copy of the objection to the applicant

Postal Address:

The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:

The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

7

Reg. 37 (6)

FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) ERIC GRAHAM DAVIES.
JULIE MARION DAVIES

Address 1 Chamberlain St Nelson

I object to the application of (state name of applicant)

to (State proposal of applicant)

Fay Wilkinson & Wheeler
Observatory Hill Excavation

The particular parts of the application I oppose are:

Excavation of Natural Hillside

The reasons for my objection are :

Result of above regarding erosion, slipping of hillside flooding in lower levels Cost to ratepayers of services such an area

My objection would be met by (State action desired)

Total Ban on Excavation

I do/~~do not~~ desire to be heard in support of my objection.

Signature : E.G. & J.M. Davies

(To be signed for or on behalf of objector)

Address for Service: ~~E.G. J.M. Davies~~ as above

Date : 22.12.80

NOTE: The objector must also send a copy of the objection to the applicant.

8 8

Postal Address:

The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:

The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) BROWNLOW JOHN WESTBROOKE
JOANNE LAMIA FRANCIS WESTBROOKE

Address 39 CHAMBERLAIN ST.... NELSON.....

I object to the application of (state name of applicant)

to (State proposal of applicant)
We object to the application of F.R. FRY, R.E. WILKINSON and M.W. WHEELER to carry out earthworks for subdivision of Lots 1 and 2 on Deposited plan 7374 and consent to remove the soil therefrom and from adjacent unformed legal streets to fill various reclamation areas as requested.....

The particular parts of the application I oppose are:

....As set out in appended submissions.....
...The whole of the application is opposed.....
.....
.....

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The reasons for my objection are :

....As set out in appended submissions....
.....
.....

My objection would be met by (State action desired)

...Refusing all of the application.....
.....

I do/~~do not~~ desire to be heard in support of my objection.

Signature : B.J. Westbrooke J.L.F. Westbrooke....

(To be signed for or on behalf of objector)

Address for Service: As above.....

..... Date : 23.12.80.

NOTE: The objector must also send a copy of the objection to the applicant.

5.5 The application envisages work on unformed legal streets which would be ultra vires the Council and contrary to the District Scheme and the Provisional Third Review of the same. It would therefore be contrary to the public interest and have more than a little Town & Country planning significance.

5.6 If the application were granted it would add to traffic dangers in Maire Street which would be contrary to the public interest and have substantial town & Country planning significance for the area.

5.7 Granting of the application would be precedent for quarrying and the removal of spoil and topsoil from all residential zones within the City and as such would be contrary to the public interest and have more than a little town & country planning significance or require a Change to the District Scheme and the Provisional Third Review.

5.8 The applicants have permitted an extension to Maire Street to their property which has given rise to subsidence and slipping. Similar works of a like nature are equally likely to give rise to such consequences contrary to the public interest interest and be of more than a little town & country planning significance.

5.9 Noise and dust would be an inevitable consequence of the works proposed and because of the hill top site the effects would be greater than on an enclosed quarry site or on existing quarry sites outside the City boundary. The granting of the application would therefore be contrary to the public interest and have more than a little town & country planning significance.

5.10 The granting of an application to carry out earthworks for a subdivision would infer consent for such a subdivision notwithstanding that this would be contrary to the District Scheme and to the Provisional Review thereof in the manner already set out contrary to the public interest and with more than a little town & country planning sigificance.

5.12 A consent to remove soil for the purposes of reclamation would be contrary to the public interest. There are numerous alternative sources of fill without somilar consequences for the city.

6. The objection would be met by refusing the application.

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Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) SEALORD PRODUCTS LIMITED .....

Address ..... 41 CHAMBERLAIN STREET, NELSON .....

I object to the application of (state name of applicant) to (State proposal of applicant)

F.R. FRY, R.E. WILKINSON and W.M.L. WHEELER to .....

Carry out earthworks and remove soil as specified. .....

.....

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24 DEC 80

TOWN PLANNING

The particular parts of the application I oppose are:

The removal of the 495,000 m^3 of soil from the specified subdivision.

.....

.....

.....

The reasons for my objection are :

There will be considerable rain-water run-off and silting up of the .....

drainage system. This would affect the general stability of the area. The trucks also present a danger to children and would be a considerable inconvenience to resident ratepayers.

.....

My objection would be met by (State action desired)

The application not being granted. .....

.....

I do/~~do not~~ desire to be heard in support of my objection.

Signature : .....

(To be signed for or on behalf of objector)

Address for Service: McKellar Quay, Port Nelson (P O Box 11, Nelson) .....

..... Date : 24/12/80 .....

NOTE: The objector must also send a copy of the objection to the applicant.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name: Jeffery Gordon Simpson & Gowan Meredith Simpson

Address: 43 Chamberlain Street, Nelson

We object to the application of F.R. Fry, R.E. Wilkinson and W.M.L. Wheeler to carry out earthworks for subdivision of Lots 1 & 2 on Deposited Plan 7374 and for consent to remove the soil therefrom and from adjacent unformed legal streets to fill various reclamation areas as requested.

The particular parts of the application we oppose are the whole of the application.

The reasons for our objections are: That the application is a specified departure and the effect of the departure sought will be contrary to the public interest in that:

1. It involves removal of a substantial amount of topsoil and subsoil from the hillside known for its instability.

2. It would cause a demand for the upgrading of drainage, sewage, roading and water supply services.

3. It would create a precedent for quarrying and the removal of spoil and topsoil from all residential zones in the city.

4. Granting of an application to carry out earthworks for a subdivision would infer consent for that subdivision.

Our objectionswould be met by refusing the application or in the event of the application being granted the imposition of conditions relating to drainage, transportation routes, landscaping, working hours, and control of dust and noise.

We do desire to be heard in support of our objection.

Signature ..... G M Simpson

Address for service 43 Chamberlain Street, Nelson.

Date: 23/12/80

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Reg. 37 (6)

FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) ..Addo Nanno Mulders.. MR and MRS

Address .....53 Chamberlain St Nelson.....

I object to the application of (state name of applicant) to (State proposal of applicant)

..Proposed removal of part of the Observatory Hill.....

.....

.....

The particular parts of the application I oppose are:

..The dust problem it will create.....
The storm water drainage system along side my right of way
..which might be blocked at some stage with mud.....
The noise problem if the spoil is taken behind our house via
..Maire st to its destination.....
The devaluation of our property as a result of the above.
.....

The reasons for my objection are :

.....

See above

.....

.....

My objection would be met by (State action desired)

.....

.....

~~I do~~ WE do not desire to be heard in support of my objection.

Signature : [signature] .....

(To be signed for or on behalf of objector)

Address for Service: Addo Mulders.. Phone 86151..
53 Chamberlain St Nelson.

[signature]

..... Date : 16-12-80

NOTE: ~~The objector must also send a copy of the objection to the applicant.~~

12 8

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TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) AILSA GLADYS CLARKE

Address 65 CHAMBERLAIN ST, TAHUNA, NELSON

I object to the application of (state name of applicant) to (State proposal of applicant)

MESSRS F.R. FRY
" R.E. WILKINSON
" W.M.L. WHEELER
DEVELOPMENT OF OBSERVATORY HILL

The particular parts of the application I oppose are:

REMOVAL LARGE QUANTITIES OF SOIL FROM A NATURAL HILLTOP

The reasons for my objection are :

LACK OF CERTAINTY THAT SLIPPING & FLOODING MAY NOT RESULT, & THE HOPE THAT BY REZONING THE HILL CAN BE RETAINED AS A PUBLIC RESERVE

My objection would be met by (State action desired)

REFUSAL OF APPLICATION

I ~~do~~/do not desire to be heard in support of my objection.

Signature : A.G. Clarke

(To be signed for or on behalf of objector)

Address for Service: 65 Chamberlain St Tahuna, Nelson Date : 22/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

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P.O. Box 645
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Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) DR. DEREK EARLE HISLOP CLARKE

Address 65 CHAMBERLAIN ST. TAHUNANUI, NELSON

I object to the application of (state name of applicant) to (State proposal of applicant)

MESSRS F.R. FRY, R.E. WILKINSON, W.M.L. WHEELER

DEVELOPMENT OF OBSERVATORY HILL

The particular parts of the application I oppose are:

REMOVAL OF 495,000 c. METRES OF SOIL FROM A NATURAL PROMINENCE

The reasons for my objection are :

DESTRUCTION OF AN IMPORTANT NATURAL FEATURE; DANGER OF SLIPPAGE AND WATER DAMAGE TO ESTABLISHED PROPERTIES; NOISE AND DUST POLLUTION. DAMAGE TO EXISTING ROADS PROPOSED FOR ACCESS; INCREASED TRAFFIC PROBLEMS AND HAZARDS.

My objection would be met by (State action desired)

REFUSAL OF APPLICATION

I ~~do~~/do not desire to be heard in support of my objection.

Signature : D H Clarke

(To be signed for or on behalf of objector)

Address for Service: 65 CHAMBERLAIN ST

TAHUNANUI, NELSON Date : 22-12-80

NOTE: The objector must also send a copy of the objection to the applicant.

Postal Address:

The Town Clerk
P.O. Box 645
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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) CHRISTOPHER JOHN KNIGHT.....

Address 81 CHAMBERLAIN STREET TAHUNANUI.....

I object to the application of (state name of applicant) to (State proposal of applicant) I OBJECT TO THE APPLICATION OF F.R. FRY, R.E. WILKINSON & W.M.L. WHEELER TO CARRY OUT THE EARTHWORKS FOR THE SUBDIVISION OF LOT 1 AND 2 ON D.P. 7374 AND TO REMOVE THE SOIL THEREFROM AND FROM ADJACENT UNFORMED LEGAL STREETS AND TO FILL VARIOUS RECLAMATION AREAS AS REQUIRED

The particular parts of the application I oppose are:

THE PROPOSED CUTTING AND REMOVAL OF LARGE AMOUNTS OF SOIL FROM OBSERVATORY HILL AND THE RESULTANT FLATTENING OF THE HILL BY 16M

The reasons for my objection are :

(SEE ATTACHED.)

My objection would be met by (State action desired)
THE SUB-DIVISION BEING UNDERTAKEN WITHOUT THE REMOVAL OF SOIL AND WITHOUT INTERFERENCE TO THE NATURAL CONTOURS OF THE HILL BUT PREFERABLY THAT THE UNIQUE SITE BE AQUIRED FOR THE PEOPLE OF NELSON AS A PUBLIC AND RECREATIONAL RESERVE

I ~~do~~/do not desire to be heard in support of my objection.

Signature : C.J. Knight

(To be signed for or on behalf of objector)

Address for Service: 81 Chamberlain Street,
Tahunanui, Nelson Date : 24/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

The reasons for my objection are:

That the levelling of Observatory Hill will interfere with the natural scenic back-drop of Nelson.

That the removal of soil could cause land of already dubious stability to become even more unstable.

That there is no guarantee that the land once flattened will be developed and properly serviced.

That if the land is in fact developed, the Ratepayers of Nelson will be placed in the position of having to subsidise some 80 new sections whilst at the same time many hundreds of existing home owners will have their homes both devalued and placed in jeopardy from slips.

That dust, noise and truck movements will be at an intolerable level for many years. The truck movements will present a serious problem to existing traffic and the danger to pedestrians, particularly children, will be greatly accentuated by the truck movements.

That the suggested roads, for the removal of the soil, are not of suitable standard to take such movements of heavy traffic.

That suitable soil for reclamation is available from other sources.

C.J. Knight
24/12/80

15 8

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) ..GRAHAM UDALL FRANCE.....

Address .....87 CHAMBERLAIN STREET, NELSON.....

I object to the application of (state name of applicant) to (State proposal of applicant)

F.R. FRY, R.E. WILKINSON and W.M.L. WHEELER to .....

Carry out earthworks and remove soil as specified. .....

.....

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TOWN PLANNING

The particular parts of the application I oppose are:

The removal of the 495,000m^3 of soil from the specified subdivision.

.....

.....

.....

The reasons for my objection are :

There will be considerable rain-water run-off and silting up of the drainage system - this would affect the general stability of the area. The trucks also present a danger to children and would be a considerable inconvenience to resident ratepayers.

.....

My objection would be met by (State action desired)

Application not being granted.

.....

.....

I do/~~do not~~ desire to be heard in support of my objection.

Signature : G U France .....

(To be signed for or on behalf of objector)

Address for Service: ..87 Chamberlain Street, Nelson

..... Date : 24/12/80.

NOTE: The objector must also send a copy of the objection to the applicant.

16 8

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TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) DEREK HOWARD GRIFFITHS / MARY GRIFFITHS

Address 25 DOUGLAS ROAD, NELSON

I object to the application of (state name of applicant)
to (State proposal of applicant)
MESSRS F.R. FRY, R.E. WILKINSON, W.H.L. WHEELER
TO EXCAVATE OBSERVATORY HILL

The particular parts of the application I oppose are:
THE LOWERING OF THE HILLSIDE AND THE INFILLING OF GULLIES

The reasons for my objection are :
i. ENVIRONMENTAL DAMAGE IN AN AREA PRONE TO SLIPS
ii. INCONVENIENCE TO EXISTING HOUSEHOLDERS DURING DEVELOPMENT.

My objection would be met by (State action desired)
THE COUNCIL REZONING THE OBSERVATORY HILL AREA AS A RESERVE.

I ~~do~~/do not desire to be heard in support of my objection.

Signature : [signature]
(To be signed for or on behalf of objector)

Address for Service: 25 DOUGLAS RD.
NELSON

Date : 24/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

Postal Address:

The Town Clerk
P.O. Box 645
NELSON

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1st Floor, NELSON CITY COUNCIL

APPLICANTS COPY

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PLANNING DEPARTMENT

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) DEREK HOWARD GRIFFITH

Address 25 DOUGLAS ROAD NELSON.

I object to the application of (state name of applicant) to (State proposal of applicant)

MESSRS F.R. FRY R.E. WILKINSON W.H.L. WHEELER

TO EXCAVATE OBSERVATORY HILL

The particular parts of the application I oppose are:

THE LOWERING OF THE HILLSIDE AND THE INFILLING OF GULLIES

The reasons for my objection are :

i. ENVIRONMENTAL DAMAGE IN AN AREA PRONE TO SLIPS

ii. INCONVENIENCE TO EXISTING HOUSEHOLDERS DURING DEVELOPMENT.

My objection would be met by (State action desired)

THE COUNCIL REZONING THE OBSERVATORY HILL AREA AS A RESERVE.

I ~~do~~/do not desire to be heard in support of my objection.

Signature : D.H. Griffith.

(To be signed for or on behalf of objector)

Address for Service: 25 DOUGLAS RD

NELSON

Date : 24/12/80.

NOTE: The objector must also send a copy of the objection to the applicant.

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TOWN PLANNING DEPARTMENT
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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To ..... The Nelson City Council

Name (State full name) DAVID BUCHAN / IRENE BUCHAN

Address 27 DOUGLAS ROAD, NELSON

I object to the application of (state name of applicant) to (State proposal of applicant)
MESSRS F.R. FRY, R.E. WILKINSON, W.H.L. WHEELER TO EXCAVATE OBSERVATORY HILL

The particular parts of the application I oppose are:
THE LOWERING OF THE HILLSIDE AND THE INFILLING OF GULLIES

The reasons for my objection are :
1. ENVIRONMENTAL DAMAGE IN AN AREA PRONE TO SLIPS
2. INCONVENIENCE TO EXISTING HOUSEHOLDERS DURING DEVELOPMENT

My objection would be met by (State action desired)
THE COUNCIL REZONING THE OBSERVATORY HILL AREA AS A RESERVE

I do/do not desire to be heard in support of my objection.

Signature : D. Buchan
(To be signed for or on behalf of objector)

Address for Service: 27 DOUGLAS RD
NELSON

Date : 24/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) .RODNEY.....WIDDON..

Address 29 CHAMBERLAIN...ST.....NELSON....

I object to the application of (state name of applicant)
to (State proposal of applicant)
The...application...of..F.R.Fry, R.E. Wilkinson...and...
W.M. Wheeler..to carry out..earthworks...for..subdivision
of Lots 1 and 2 Deposited Plan 7374 and for....
consent to remove the soil.

The particular parts of the application I oppose are:
...The...whole..of...the...application...is.....
..opposed:.....
.....
.....

The reasons for my objection are :
a) Instability..of..hill.....b)..Quarrying..in..residential
zone:..c)..Servicing..costs..must..pass...on...to...ratepayers.
d) Noise..and...dust..consequence..e)..Traffic..danger

My objection would be met by (State action desired)
.By...refusing...the...application.....
.....

I do/do not desire to be heard in support of my objection.

Signature : ...R. Widdon.....
(To be signed for or on behalf of objector)

Address for Service: ..As...above...

..... Date : 19-12-80

NOTE: The objector must also send a copy of the objection to the applicant.

20 8

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) Donald Jon Longley

Address 47 Douglas Rd, Annerbrook, Nelson

I object to the application of (state name of applicant) to (State proposal of applicant)
F.R. Fry & R.E. Wilkinson & M.L. Wheeler's proposal to carry out earthworks for subdivision of Lots 1 & 2 on D.P. 7374 (Observatory Hill, Nelson)

The particular parts of the application I oppose are:
① Insufficient information supplied on the nature of truck traffic patterns on access routes (ie Maire St & Enano St)
② Insufficient information supplied on the possible effects of altered drainage from the proposed development area into the Douglas Rd subdivision gully.

The reasons for my objection are :
① I am a resident of the northeastern subdivision of Douglas Rd under the southern end of the development area and access route (Maire St) and am concerned that excessive disruption of stable family life may occur.

My objection would be met by (State action desired) (5) P to →.
① Adequate information being supplied in detail of truck movements daily, noise levels, safety precautions (in what is a high density urban area)
② Catchment Board investigated information regarding drainage factors and soil stability.

I do/~~do not~~ desire to be heard in support of my objection.

Signature : D Longley

(To be signed for or on behalf of objector)

Address for Service: as above

Date : 15/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

Reasons for objections : (continued)

(2) Alteration of established drainage patterns could adversely affect the soil stability in the area to the south and below the propored development area. (It having had a history of instability)

amended

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P.O. Box 645
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TOWN PLANNING DEPARTMENT

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) Harold A.E. and Dora S. Poole

Address 92 Emano St. Nelson

I object to the application of (state name of applicant)
to (State proposal of applicant) Messrs. F.R. Fry
R.I. Wilkinson, W.M.L. Wheeler Syndicate (Montreal Syndicate)
c/o Rout, Milner and Fitchett
167 Hardy Street. Nelson

The particular parts of the application I oppose are:

Proposed use of Emano St. by heavy truckloads of spoil from site
Dangerous traffic hazard over many years.
Future increases in rates to service sections.
Depreciation of our properties due to sustained noise dust etc.
and probable illegal flow of stormwater into sewage, since
all hill is slippery

The reasons for my objection are :
Emano St. is poorly constructed, narrow, dangerous to the many children resident here, also pedestrians and cars parked either side of the narrow street. Future increases in rates to supply services to sections.
Spoil not required by Harbour Board , it is obtainable elsewhere in the city

My objection would be met by (State action desired)

No action is desired. Project is not necessary or practicable
Site should be left as is. Above confirmed by many residents

I do/do not desire to be heard in support of my objection.

Signature : Harold E. Poole and Dora S. Poole
(To be signed for or on behalf of objector)

Address for Service: 92 Emano St
NELSON

Date : 19/12/80.

NOTE: The objector must also send a copy of the objection to the applicant.

Postal Address:
The Town Clerk
P.O. Box 645
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TOWN PLANNING DEPARTMENT
To

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

The Nelson City Council

Name(s) (~~State full name~~) ...See attached sheet...

Address for names and addresses

I object to the application of (state name of applicant) to (State proposal of applicant)

Messrs. F. R. Fry, R. I. Wilkinson, W. M. L. Wheeler

~~Syndicate (Montreal~~

a) The particular parts of the application I oppose are:

see attached sheet for all details

incorporating (a) (b) & (c)

b) The reasons for my objection are :

c) My objection would be met by (State action desired)

as individuals

We ~~I~~ ~~do~~/do not desire to be heard in support of ~~my~~ our objection. but Mr. H. Poole one of the signatories is prepared to speak for us.

Signature : Harold E Poole

(To be signed for or on behalf of objector)

Address for Service: 92 Emano St.

NELSON.

Date : 22/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

OBSERVATORY HILL PROPOSED EARTHWORKS.

19-12-80

OBJECTIONS TO BE AT R.M. FITCHETT BY WEDNESDAY 4 P.M. DECEMBER 24TH. FORMS FROM N.C.C. TOWN PLANNING DEPT.

495,000 cub.metres of spoil to be moved over 5 - 7 year period.
Principally via Emano St., 2nd Marie St. possibly Princes Drive.

We object totally to this operation on grounds that:-
It is not necessary or practicable.
There is no alternative: site should be left as is.
Emano St. is too narrow, unmade for years of use by heavy truckloads of spoil.
Danger to children, residents, cars parked either side of road.
Dangerous traffic hazard over years.
" water run-off, possible flooding, similar to disaster at Abraham Heights
Stormwater to sewage - illegal.
Increase on rates to service debt for services to sections.
Depreciation in value of ratepayers properties due to noise, dust.
Ruin a peaceful residential area.
Could be another Abbotsford.
Conclusion: Operation does not warrant enormous expenditure inconvenience and mental stress imposed.
Objections from the under-signed residents in Emano St. Many at work so could not sign.

No. 88. C. L. Schwass. D. G. Schwass.
Emano St.
71 S. J. Nedhill
66 mr. & mrs R. M. Green.
64. C. Day.
56 R. Ridge
87 C. Cottrell.
44 H. K. & W. M. Clements.
43 I. M. Manera W. Manera
37 R Knighe
41A J. & C. Knight
39 Rutherford (Mrs.)
39A E. Cortzin (Mrs).
32 A. Carson,
32 G Carson
55 S. D. Jope.
54 A. F. Tufer
63 S. A. Newport
79 A. Pickett
92 Harold & E Poole and Dora S. Poole

P.O. Box 645
NELSON

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23 DEC 1980
TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) TAYLOR, Leslie Raymond.

Address 95 Emano St, Nelson

I object to the application of (state name of applicant) Messrs Fry Wilkinson & Wheeler

to (State proposal of applicant)

the proposed development of Observatory Hill

The particular parts of the application I oppose ~~are:~~

relate to ingress and egress via Emano St

The reasons for my objection are :

Please refer to attachment for detailed comments

My objection would be met by (State action desired) If provision not be made to cover, without equivocation, all aspects I have mentioned, so that the residents of Emano St and ratepayers generally are not burdened in any way by the Developers activities then my objections must be specific, that is, to oppose ingress and egress via Emano Street.

I do ~~do not~~ desire to be heard in support of my objection, but only if the N.C.C. requires such action as I consider the matters raised are their responsibility.

Signature : L R Taylor

(To be signed for or on behalf of objector)

Address for Service: 95 Emano St
Nelson

Date : 22.12.80

NOTE: The objector must also send a copy of the objection to the applicant.

would result if we experienced 10 or even 25 year flood conditions let alone the effects of a bigger cycle.

Attachment to "Notice of Objection" under the
Town and Country Planning Act 1977.
To The Nelson City Council.

The reasons for my objection are :-

Emano Street is narrow and especially so from Murphy Street turnoff which is the section of greatest concern to me.

Aspects are: 1. The size of truck required for the economic removal of spoil will undoubtedly lead to road deterioration.

2. Truck movement will be a hazard even with vehicles parked on one side of the road, let alone on both sides. Why should we be saddled with this hazard; it is just 'not on'. This aspect needs to be looked at critically by persons competent in this field.

3. If recent and current spoil removal in St. Vincent Street is a good example, residual spoil drop on the road will become a problem to quite a number of residents.

4. The whole area could well be downgraded as a result of this operation where-as at present the street is being steadily improved. Downgrading under any circumstances cannot be allowed to occur.

5. If the project proceeds I consider "strict and no compromise" safeguards must be imposed to maintain at least the present standard of appearance of Emano Street, also recognising normal expected further regular improvement, during the whole period of this work, 5 - 7 years, with a substantial payment before any work commences, including provision for continuing payments if required, to cover

(a) Regular maintenance for inevitable road deterioration over the whole length of Emano Street.

(b) Damage following torrential downpours which the city experiences a number of times each year, and which have a concentrated effect in the valleys. Such rainfall could well result in substantial movement of metal, soil, etc. once the access ridge from Emano Street to the Observatory Hill is fully exposed and developed for vehicle access purposes. Extensive sedimentation of the creek bed, including the piped section down Emano Street, and damage to a number of residential properties would certainly follow. Greater damage would result if we experienced 10 or even 25 year flood conditions let alone the effects of a bigger cycle.

(contd sheet 2)

(c) Other work required to maintain at least the status quo at all times. In other words a continuing and regular exercise of maintenance to be met entirely by the Developers for all relevant reasons.

It appears as if economics from the Developers' point of view may have dictated their intention to remove the greater bulk of metal etc. via Emano Street, and possibly because the road does not pass through one of the more select residential areas, such as Princess Drive with a consequent greater and perhaps more effective backlash from residents there, than anticipated from residents in Emano Street.

[redacted]

Lowering the hill to about the present level of Princess Drive suggests that Princess Drive itself is a good 'ingress', 'egress' point for vehicle and machinery movement. This road is certainly better and much safer than Emano Street.

Also, what use will the developed access track from the end of Emano Street to Observatory Hill have and by whom once work is completed ? Could there then be a residual problem from flooding with accelerated run-off causing more unnecessary damage even to City Council property ? If so, I consider the Developers should remain liable for quite a period for any damage that might ensue.

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24 DEC 1980
TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To ... The Nelson City Council

Name (State full name) MELANIE THORNTON.

Address 27 Emano St

I object to the application of (state name of applicant)
to (State proposal of applicant)
to the application of person unknown (since no names have been revealed) to the proposed levelling of Observatory Hill

The particular parts of the application I oppose are:
① removal of ½ mill. m^3 of soil
② traffic quantity on roads
③ traffic noise level
④ erosion possibilities

The reasons for my objection are :
① removal of soil → dust clouds
②, ③ & ④ will combine to reduce land values.

My objection would be met by (State action desired)
not approving this development.

I do/do not desire to be heard in support of my objection.

Signature : L. Thornton

(To be signed for or on behalf of objector)

Address for Service: .....

..... Date : .....

NOTE: The objector must also send a copy of the objection to the applicant.

25

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To Messrs Fry, Wilkinson & Wheeler c/o Rout Milner & Fitchett 167 Hardy Street Nelson. The Nelson City Council

Name (State full name) C. F. Chamberlain

Address 92 Green Street Tahunanui Nelson.

I object to the application of (state name of applicant) to (State proposal of applicant) Messrs Fry Wilkinson & Wheeler for a Town Planning Consent to carry out earthworks for eventual subdivision of Lot 1 & 2 on Plan 7374 known as Observatory Hill.

The particular parts of the application I oppose are:

All.

The reasons for my objection are : Removal of such a massive Quantity of material. The after effects of such a scheme. No Safe and viable exit for Heavy Laden Vehicles is available at Present. Ample serviced Sections are already available. Nelson City Council cannot afford such a scheme as eventually a massive rate increase would be necessary to provide additional services.

My objection would be met by (State action desired) The Combination of practically all Citizens and ratepayers in any action that may be desired to protect same.

I ~~do~~/do not desire to be heard in support of my objection. This will be done on behalf of the Ratepayers Assn.

Signature : C. F. Chamberlain

(To be signed for or on behalf of objector)

Address for Service: .....

..... Date : 23.12.80

NOTE: The objector must also send a copy of the objection to the applicant.

26

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RECEIVED 24 DEC 80 TOWN PLANNING DEPARTMENT

NOTICE OF OBJECTION

APPLICANTS COPY

To The Nelson City Council

Name (State full name) ALBERT HENRY JACOBSON

Address 82 Green St

I object to the application of (state name of applicant) to (State proposal of applicant)

?

Observatory Sub Division

The particular parts of the application I oppose are:

Unstable nature of Hill Approx 7 Houses demolished by Steps and one death, between Bisley Ave & Maire St, in last 20 odd years caused by this sort of stupidity

The reasons for my objection are :

Not enough information, extent, who are principles, no time to get information

My objection would be met by (State action desired)

Turning application down, as it is another land speculators quick dollar

I ~~do~~/do not desire to be heard in support of my objection.

Signature : A.H. Jacobson

(To be signed for or on behalf of objector)

Address for Service: 82 Green St

Date : 24/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

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THE TOWN AND COUNTRY PLANNING ACT 1977

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24 DEC 1980
TOWN PLANNING DEPARTMENT

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) Charmian Avril Koed and Aage Koed

Address 5 Maire Street, Nelson.

I object to the application of (state name of applicant) to (State proposal of applicant)

Messrs Fry, Wilkinson & Wheeler

Earthworks for the subdivision of Lot 1 and 2 on Deposited Plan 7374

The particular parts of the application I oppose are:

The use of Maire Street by quarry vehicles.

The reasons for my objection are : The lack of footpath on the northern side of Maire Street, in particular by Nos 5,7 and 9, would cause danger to children and others who must cross here. Vision here is limited, and experience with downhill quarry vehicles in the past has been nerve-racking.

Past spillages on this steep section of street have created slippery and dangerous conditions for other traffic.

Extensive use by heavy vehicles would cause serious damage to road structure and disturb adjacent slopes.

My objection would be met by (State action desired)

Constructing or using alternative access, e.g. to Bishopdale.

I do/~~do not~~ desire to be heard in support of my objection.

Signature : C.A. Koed A. Koed.

(To be signed for or on behalf of objector)

Address for Service: 5 Maire Street, Nelson

Date : 24.12.80

NOTE: The objector must also send a copy of the objection to the applicant.

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Reg. 37 (6)

FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To ... The Nelson City Council

Name (State full name) David & Lynne Griffith

Address 8 Maire Street, Tahunanui

I object to the application of (state name of applicant) to (State proposal of applicant)

Messrs. Fry, Wilkinson & Wheeler

Application No. 206/40/108

The particular parts of the application I oppose are:

1. Use of Maire St. by heavy vehicles.
2. Removal of soil & vegetation.

The reasons for my objection are :

1. Devaluation of our property; Noise, mud, dust, & general danger to children, pets, & other road-users.
2. Increased erosion to our land.

My objection would be met by (State action desired)

1. Refusal to allow Maire St. to be used for removal of soil.
2. Refusal to allow removal of soil and vegetation.

I do/~~do not~~ desire to be heard in support of my objection.

Signature : Griffith L.P. Griffith

(To be signed for or on behalf of objector)

Address for Service: 8 Maire St.
(Ph 85 430) Tahunanui Date : 24.12.80

NOTE: The objector must also send a copy of the objection

29 &

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) John Eric Robinson

Address 33 Maire St., Tahunanui, Nelson

I object to the application of (state name of applicant) ~~to~~ (State proposal of applicant)

F.R. Fry, R.E. Wilkinson & W.M. Wheeler to carry out earthworks on Lots 1 & 2 of deposited plan 7374 removing soil via Emano & Maire Streets also Princes Drive.

The particular parts of the application I oppose are:

Removal of Hilltop — use of unsuitable streets — any work in this area zoned R2d — duration of the proposal.

The reasons for my objection are :

Concern for lower hillside stability — narrowness, gradient etc of Maire St. — I consider that the NCC should continue to upgrade existing areas prior to expensive services required for this proposed future subdivision

My objection would be met by (State action desired)

N.C.C. maintaining deferment and prohibiting any major work

I do/~~do not~~ desire to be heard in support of my objection.

Signature : J. E. Robinson

(To be signed for or on behalf of objector)

Address for Service: 33 Maire St.,
Tahunanui Nelson

Date : 19.12.80

NOTE: The objector must also send a copy of the objection to the applicant. ✓

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TOWN PLANNING DEPARTMENT
To

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

The Nelson City Council

Name (State full name) DEREK NEIL and MARGARET ANNE CLARK of 27 MAIRE ST, TAHUNANUI, NELSON and BENT OVE KOEFOED and MARGARET PAULINE KOEFOED of 25 MAIRE ST TAHUNANUI, NELSON

Address .....

I object to the application of (state name of applicant) to (State proposal of applicant)

F.R. FRY, R.E. WILKINSON and W.M.L. WHEELER to carry out earthworks for the subdivision of Lot 1 and 2 on Deposited Plan 7374 by removing soil and using Maire St as access in carrying out this proposed work.

The particular parts of the application I oppose are:

1/ Proposed removal of large areas of top soil and vegetation from hillside land.

2/ Use of narrow and low grade residential roading for heavy trucking.

3/ Use of bulldozers, loaders and heavy trucks for a period of 5 to 7 years in the vicinity of residential area with attendant noise, dust and spoil pollution.

The reasons for my objection are :

1/ Disturbance of catchment area leading to increased run off through natural gullies and undermining existing slip prone ground.

2/ Use of low grade sub standard roading, ie Maire St, causing traffic hazard for hillside residents, destruction of road and scattering of dust and spoil.

3/ Resultant noise and pollution

My objection would be met by (State action desired)

Deferment of application until access roading is suitably upgraded and catchment run off can be fully controlled.

I do/~~do not~~ desire to be heard in support of my objection.

Signature : D.N. Clark, Margaret Clark, B.O. Koefoed, M.P. Koefoed

(To be signed for or on behalf of objector)

Address for Service: 27 MAIRE ST, TAHUNANUI, NELSON

..... Date : 14/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

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TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) Gary David Williams and Jeanette Ruth Williams

Address 29 Maire Street, Tahunanui, Nelson.

I object to the application of (state name of applicant) to (State proposal of applicant)

Messrs Fry Wilkinson & Wheeler

Earthworks for the subdivision of Lot 1 and 2 on Deposited Plan 7374

The particular parts of the application I oppose are:

1. Use of Maire Street for removal of soil.
2. Noise created by contractors equipment and vehicles.
3. Disturbing natural levels and altering natural water flows.

The reasons for my objection are :

See attached sheet.

My objection would be met by (State action desired)

See attached sheet.

I do/do not desire to be heard in support of my objection.

Signature : G D Williams J R Williams

(To be signed for or on behalf of objector)

Address for Service: 29 Maire Street

Tahunanui, Nelson Date : .....

NOTE: The objector must also send a copy of the objection to the applicant.

The reasons for my objection are as follows:-

1. The upper section of Maire Street is a very narrow stretch of roadway without curbing and channelling and is only one lane in width. At present there is a NO EXIT sign at the entry to this part of Maire Street. The lower part of the street (from Chamberlain Street to Tahunanui Drive) is also very narrow but it is also an extremely steep part. In the event of a truck losing control in this street, there is no way it could pull to the side and stop safely - it would carry on down heading over the Tahunanui Drive and eventually stopping on the flat ground beyond.

2. No detailed hours of work have been submitted apart from the vague comment of "normal hours".

3. Disturbing the top soil and altering water flow. I have already experienced considerable trouble when an earlier developer bulldozed a track up from the end of Maire Street to join up at the Observatory Hill. On three occasions rain washed silt, mud and clay down Maire Street and a large quantity of this remained on my section and had to be removed by me. I contacted the person responsible for cutting the track (Mr Brian Phillips) and apart from promises to do something about it, he took no action until the last flood when I contacted the Catchment Board who, after observing the damage forced Mr Phillips to re-direct the water down towards Douglas Road. At that time the City Council also assisted me in clearing the rubbish and clay from my property.

My objections would be met by:-

1. The upper section of Maire Street should be made a normal two lane road with gutters and footpaths. I can think of no way of overcoming the danger of heavy trucks using the lower section of the street.

2. As the period of work is likely to take five to seven years, the hours of work should be limited to normal work hours of 8 am to 5 pm and Saturday mornings again with an 8 am start and finish at noon. In recommending these hours I would point out that vehicles working on hill areas tend to be noisier because of resonance from valleys etc.

3. Adequate safeguards being imposed by the Catchment Board and the requirement of Council that any clay or rubbish dropped by trucks on Maire Street be removed daily.

In conclusion could I suggest that if the applicants are genuinely serious in wishing their proposals to be of benefit to the public of Nelson, that they develop the area as a parklands with a walkway connecting Maire Street to Emano Street and Princess Drive.

32 8

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To ... The Nelson City Council

Name (State full name) See reverse.

Address C/- 29 Maire St Tahunanui Nelson.

I object to the application of (state name of applicant) to (State proposal of applicant)

Messrs Fry, Wilkinson & Wheeler

Earthworks for the subdivision of Lot 1 and 2 on Deposited Plan 7374

The particular parts of the application I oppose are:

Use of Maire Street by vehicles for the removal of soil.

The reasons for my objection are :

This is a steep street not suited to use by heavily laden vehicles.

It is also a very narrow stretch of roadway.

My objection would be met by (State action desired)

Use of an alternate route.

I do/do not desire to be heard in support of my objection.

Signature : See over. G D Williams AS AGENT

(To be signed for or on behalf of objector)

Address for Service 29 Maire St

Tahunanui Nelson. Date : 24/2/80

NOTE: The objector must also send a copy of the objection to the applicant.

M. Stephenson.
9 Maire St.,

Natalie Burkes
15 Maire St.

J.M. Crisp.
13 Maire St.

33 8

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Reg. 37 (6)

FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) Arthur James Allam

Address 31 Maire Street, Nelson

I object to the application of (state name of applicant) to (State proposal of applicant)

P. R. Fry, R. E. Wilkinson, W. M. Wheeler
Proposed earthworks at Observatory Hill

The particular parts of the application I oppose are:

Removal of spoil via Maire Street
from earthworks at Observatory Hill

The reasons for my objection are :

Previous excavations have prove to be noisy, dusty polluted when conditions dry & a dangerous, greasy road film deposited when damp or wet conditions exist

My objection would be met by (State action desired)

Some alternative route or method of disposing the spoil

I ~~do~~/do not desire to be heard in support of my objection.

Signature : A J Allam

(To be signed for or on behalf of objector)

Address for Service: 31 Maire Street
Nelson Date : 22/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

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Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) JAMES PAUL DAYMAN

Address 35 MAIRE ST

APPLICAN,S COPY

I object to the application of (state name of applicant) to (State proposal of applicant)

MESSRS FRY, WILKINSON & PARTNER TO DEVELOP OBSERVATORY HILL AS PROPOSED

The particular parts of the application I oppose are:

TO USE MAIRE ST AS ONE OF THE MAIN ROUTES FOR THE TRANSPORTATION OF 495 000 CUBIC METRES OF SOIL

The reasons for my objection are :

1) EXCESSIVE AMOUNTS OF DUST & SOIL BOTH AIRBORNE & ON ROAD.

2) EXCESSIVE NOISE FROM TRUCKS COMING UP & DOWN HILL

) P.T.O.

My objection would be met by (State action desired)

REROUTING OF ALL HEAVY VEHICLES THROUGH AN UNPOPULATED AREA

I do/~~do not~~ desire to be heard in support of my objection.

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Signature : J.P. Dayman

(To be signed for or on behalf of objector)

Address for Service: .....

..... Date : 17-12-80

NOTE: The objector must also send a copy of the objection to the applicant.

FURTHER OBJECTION

3) VIBRATIONS FROM HEAVY ~~VEHICLES~~ VEHICLES CAUSING POSSIBLE EARTH MOVEMENT WITH RESULTING DAMAGE TO HOUSE & RETAINING WALLS.

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) .M.O.N.K.....D.O.R.E.E.N...E.L.S.I.E

Address 2/120...M.U.R.I.T.A.I...S.T.....T.A.H.U.N.A.N.U.I

I object to the application of (state name of applicant) to (State proposal of applicant)

Messrs Fry Williamson & Wheeler
Level top of hill at Tahunanui for a Sub-division & sale of spoil to Harbour Board

The particular parts of the application I oppose are:

The levelling of the top of the hill
Damage to roads and danger of subsidence of the hillside - there have been several instances of this already without creating further hazards

The reasons for my objection are :

My objection would be met by (State action desired)

Cancelling the project

I ~~do~~/do not desire to be heard in support of my objection.

Signature : D. Monk
(To be signed for or on behalf of objector)

Address for Service: .....

..... Date : .....

NOTE: The objector must also send a copy of the objection to the applicant.

36 8

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Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) VERNON FRANK DOUGLAS MONK

Address 2/120 MURITAI ST NELSON

I object to the application of (state name of applicant)
to (State proposal of applicant)
Messrs Jay Wilkinson & Wheeler.
Levelling of top of hillar Tahunanui for
subdivision & sale of spoil to Harbour board.

The particular parts of the application I oppose are:
The levelling of the top of the hill.

The reasons for my objection are :
This could cause dangerous conditions during heavy
rainfall (eg Abbotsford) & will mean heavy damage & road
the cost of repairs falling on ratepayers. There is ample spoil to be had elsewhere.

My objection would be met by (State action desired)
Cancellation of operation

I ~~do~~/do not desire to be heard in support of my objection.

Signature : V. Monk
(To be signed for or on behalf of objector)

Address for Service: .....

..... Date : 23.12.80

NOTE: The objector must also send a copy of the objection to the applicant.

37 &

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THE TOWN AND COUNTRY PLANNING ACT 1977

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24 DEC 1980
TOWN PLANNING DEPARTMENT

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) .NORMAN.KENNETH.MILNE.....

Address ..20.ORAKEI.ST,.TAHUNANUI.....

I object to the application of (state name of applicant) to (State proposal of applicant)

.MESSRS.FRY,.WILKINSON.&.WHEELER.TO.LEVEL.THE.TOP.OF.OBSERVATORY.HILL

.....

.....

The particular parts of the application I oppose are:

.DESTRUCTION.OF.THE.NATURAL.CONTOUR.OF.THE.LAND.....

.....

.....

.....

The reasons for my objection are :

.THE.OPENING.UP.OF.AN.ALREADY.UNSTABLE.HILLSIDE.WILL.LEAD.TO.FURTHER

.SLIPPING.AND.SUBSIDENCE.PROBLEMS.AND.LIKELY.DEVALUATION.OF.NEARBY.PROPERTY

.....

My objection would be met by (State action desired)

LEAVING.THE.CONTOUR.OF.THE.HILL.IN.ITS.NATURAL.SHAPE.....

.....

I ~~do~~/do not desire to be heard in support of my objection.

Signature : N.K.Milne
(To be signed for or on behalf of objector)

Address for Service: 20.ORAKEI.ST,.TAHUNANUI

..... Date : 24 Dec 80

NOTE: The objector must also send a copy of the objection to the applicant.

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) William Herbert Williams.

Address 22 Orakei St, Tahunanui, Nelson.

I object to the application of (state name of applicant) to (State proposal of applicant)
Messrs Fry, Wilkinson & Wheeler
Application N° 206/40/108 earthworks for subdivision, Observatory Hill

The particular parts of the application I oppose are:
① Large scale cut & fill operations
② Access via Princes Drive

The reasons for my objection are :
① The opening of the hill over large area could cause water problems on unstable hillside
② Noise & dust from Princes Drive

My objection would be met by (State action desired)
① Using natural contour development.
② Strict time & noise controls.

I ~~do~~/do not desire to be heard in support of my objection.

Signature : Williams

(To be signed for or on behalf of objector)

Address for Service: 22 Orakei St, Tahunanui, Nelson Date : 23.12.80

NOTE: The objector must also send a copy of the objection to the applicant.

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) HAROLD HARWOOD SOMERFIELD

Address ..22 PARKERS ROAD.....

I object to the application of (state name of applicant) Messrs Fry Wilkinson & Wheeler

to (State proposal of applicant)

..~~Develop~~ Develope Observatory Hill area

.....

.....

The particular parts of the application I oppose are:

The entire conception of developing an area of natural attraction, when areas nearer to the city centre are almost derelict

.....

The reasons for my objection are :

Environmental and apprehension at the resultant cost to ratepayers through inevitable subsidence and road damage

My objection would be met by (State action desired)

Cancellation of project

.....

I ~~do~~/do not desire to be heard in support of my objection.

Signature : H.H. Somerfield
(To be signed for or on behalf of objector)

Address for Service: ..as above...

..... Date : 23/12/80.

NOTE: The objector must also send a copy of the objection to the applicant.

RECEIVED
23 DEC 1980
TOWN CLERK
NELSON

40

Postal Address:
The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:
The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

RECEIVED
24 DEC 1980
TOWN PLANNING DEPARTMENT

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) Dayman MacHell Geo.

Address 88 Parkers Road. Tahunanui

I object to the application of (state name of applicant)
to (State proposal of applicant)
Messrs F.R. Fry - R.E. Wilkinson + H.M.L Wheeler.
Developers - Observatory Park area Tahunanui Hills

The particular parts of the application I oppose are:
By the necessary upgrading of existing roads and also formation of new roads Emano, Marie St areas an increase in rates will become inevetable

The reasons for my objection are :
Flooding could be caused at the western end of Parkers Rd, through excess storm water run off combining with high tides this resulting in property damage Dust Nuisance Particularly with easterly winds this has been proved by past works even now. O

My objection would be met by (State action desired)
with the pipe works in Parkers Rd.

Further action as necessary

I do/~~do not~~ desire to be heard in support of my objection.

Signature : W Dayman

(To be signed for or on behalf of objector)

Address for Service: 88 Parkers Rd.
Tahunanui Date 24-12-80

NOTE: The objector must also send a copy of the objection to the applicant

41

Postal Address:
The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:
The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

Reg. 37 (6) FORM J.

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23 DEC 1980
TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) Terence Casey

Address 103 Parkes Rd Tahunanui

I object to the application of (state name of applicant)
to (State proposal of applicant)
Messrs Fry, Wilkinson & Wheeler
Observatory Hill development

The particular parts of the application I oppose are:
The extent of the excavation
The length of time for which the works will be in progress

The reasons for my objection are :
The noise and dust nuisance from the excavation & machinery.
The possibility of instability

My objection would be met by (State action desired)
That an excavation of this nature and extent be prohibited

I ~~do~~ do not desire to be heard in support of my objection.

Signature : T Casey
(To be signed for or ~~on~~ behalf of objector)

Address for Service:

Date : 23 December 1980

NOTE: The objector must also send a copy of the objection to the applicant.

42 8

Postal Address:

The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:

The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

Applicants copy (objector ~~must~~ ~~mean~~ Councils copy?)

Reg. 37 (6)

FORM J.

RECEIVED
23 DEC 1980
TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) ELIZABETH JOSEPHINE ADAMS

Address 128 MOANA AVE NELSON

I object to the application of (state name of applicant) to (State proposal of applicant)

Messrs F.R. Fry, R.E. Wilkinson & Wm L. Wheeler in Ap 206-40-108 Lots 1 & 2 Observatory Hill

The cut of 495000 cubic metres of soil over 17 hectares to a depth of some 16 metres and removal from the site.

The particular parts of the application I oppose are:

I oppose the proposed interference with the contour of the area. Also any use at all of Princes Drive by heavy traffic in transportation either to or from the site

The reasons for my objection are: Observatory Hill is an integral part of the backbone, or top ridge, of the Moana Hillside. In light of the Dr Zaulkner Report regarding the geological formation, soil type etc. of the whole area it is not inconceivable that such a massive interference with a part might change the long established pattern of natural seepage and subterranean water adversely as regards the Moana Hillside and lead to devaluation of property in the area.

~~My objection would be met by (State action desired)~~ Refusal of the Applicdo

I also object strongly to Princes Drive in this area being used at all in transportation either to or from the site. Again with regard to the geological strata on this ridge, the pounding of heavy traffic could be deleterious to the stability of the area. Area A Zaulkner Report.

As a ratepayer in this area I am concerned by any possible devaluation of the property.

I do/~~do not~~ desire to be heard in support of my objection.

Signature: Elizabeth J. Adams

(To be signed for or on behalf of objector)

Address for Service: 128 Moana Ave

Nelson

Date: 23/12/80

8

Postal Address:
The Town Clerk
P.O. Box 645
NELSON

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The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

Reg. 37 (6)

FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) Katherine Elsner Corbey Cachemaille

Address 208 Prince Drive

I object to the application of (state name of applicant) to (State proposal of applicant)

Fry Wilkinson & Gleeker (206/40/106)
(observatory Hill)

RECEIVED

The particular parts of the application I oppose are:

See Attached Schedule

The reasons for my objection are:

See attached schedule

My objection would be met by (State action desired)

the withdrawal of the application & the area retained as a recreation reserve.

I do/do not desire to be heard in support of my objection.

Signature : K. E. C. Cachemaille

(To be signed for or on behalf of objector) O.B. K. E. C. Cachemaille
C.P. CACHEMAILLE

Address for Service: 208 PRINCES DR.
TEL: 83-930

Date : 24/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

Schedule

RECEIVED
23 DEC 1980
TOWN PLANNING
DEPARTMENT

208 Princes Drive,
NELSON.
Dec. 22nd., 1980

The Town Planning Department,
Nelson City Council.

Dear Sirs,

Please receive my very strong objection to the proposal to level the top of Observatory Hill for the purpose of subdivision for housing.

We have lived on Princes Drive for about 25 years, and have noted how many Nelsonians and visitors have walked or driven to Observatory Hill for the joy of the wide and beautiful view in all directions, probably the best around the city. For the sake of present and future citizens I would be happy to see that area retained for all time as a reserve. I share the concern of other residents for the stability of the hillside, as well as the years of noise and dust which would destroy the peace and beauty for which we chose our properties.

Please give this letter your urgent attention.

Yours sincerely,

Katherine E. C. Cachemaille

C. P. Cachemaille

44 8

Postal Address:
The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:
The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

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TOWN PLANNING
DEPARTMENT

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) RAYMOND DOUGLAS WILSON
CAROLYN ALANNA

Address 214 PRINCES DRIVE NELSON

I object to the application of (state name of applicant)
to (State proposal of applicant) MESSRS F.R. FRY, R.E. WILKINSON
WM. WHEELER

REMOVING AND LEVELLING OBSERVATORY HILL
AND CARTING AWAY ANY SPOIL

The particular parts of the application I oppose are:

(1) CHANGING NATURAL CONTOURS OF THE TAHUNA HILLSIDE

(2) THE USE OF HEAVY MACHINERY ON HILLSIDE OR ROADS
NOT BUILT FOR THE PURPOSE, IN CLOSE PROXIMITY TO
OUR HOME

The reasons for my objection are :

(1) THAT ANY WORK OF THE ABOVE MENTIONED COULD CAUSE
FURTHER INSTABILITY TO TAHUNA HILLSIDE

(2) LARGE MACHINERY AND VEHICLES WOULD CAUSE NOISE, DUST POLLUTION
AND A TRAFFIC HAZARD TO MY HOME AND FAMILY

My objection would be met by (State action desired)

DISALLOWAL OF THE APPLICATION

I do/~~do not~~ desire to be heard in support of my objection.

Signature : R.D. Wilson C.A. Wilson

(To be signed for or on behalf of objector)

Address for Service: 214 PRINCES DRIVE
NELSON

Date : 23:12:80

NOTE: The objector must also send a copy of the objection to the applicant.

45 8

Postal Address:
The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:
The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

Reg. 37 (6) FORM J.

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TOWN PLA
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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) ROBERT MACMAHON BLACK HELEN MARY BLACK

Address 250 PRINCES DRIVE NELSON

I object to the application of (state name of applicant) to (State proposal of applicant)

E.R. FRY R.E. WILKINSON

W.N.L. WHEELER

LOTS 1+2 D.P. 7374

The particular parts of the application I oppose are:

THE REMOVAL OF ANY SPOIL AND THE PROPOSED EARTHWORKS

The reasons for my objection are :

BECAUSE OF INSTABILITY OF THE WHOLE HILL AREA

My objection would be met by (State action desired)

NOT ALLOWING THE PROPOSED DEVELOPMENT TO PROCEED

I ~~do~~/do not desire to be heard in support of my objection.

Signature : R M Black

(To be signed for or on behalf of objector)

Address for Service:

250 PRINCES DRIVE NELSON Date :

NOTE: The objector must also send a copy of the objection to the applicant.

THE TOWN & COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

RECEIVED
24 DEC 1980
NELSON CITY COUNCIL

To: The Nelson City Council

1. NAMES AND ADDRESSES of Objectors:-

WAYNE DUGART LUCAS of Nelson, Managing Director and MARGARET ANN LUCAS his wife as owners and occupiers of the property at 274 Princes Drive being the land in Certificate of Titles 79/31 and 83/100 (Nelson Registry)

2. THE Objectors object to the application of F.R. FRY, R.E. WILKINSON and W.M. WHEELER to carry out earthworks for subdivision of Lots 1 and 2 on Deposited Plan 7374 and for consent to remove the soil therefrom and from adjacent unformed legal streets to fill various reclamation areas as requested.

3. THE whole of the application is opposed.

4. THE reasons for the objection are:-

4.1 The application is a Specified Departure and the effect of the Departure sought will be contrary to the public interest.

4.2 The application is a Specified Departure and the effect of the Departure sought will have town & country planning significance beyond the immediate vicinity of the land concerned.

4.3 The application is a Specified Departure and the provisions of the Scheme can remain without change or variation.

4.4 The application is to carry out works contrary to the Provisional Third Review of the Operative District Scheme and it would be contrary to the provisions of that Scheme to grant consent to it.

5. WITHOUT derogating from the foregoing reasons for objection the particular matters of concern to the objectors are:-

5.1 The application involves the removal of a substantial amount of topsoil and subsoil from a hillside known for its instability. It would be contrary to the public interest, be of more than a little Town Planning significance and require Change to the District Scheme to permit the proposed use of such land.

5.2 The application proposes to remove between 15 to 20 metres or thereabouts from the top of the Observatory

Hill with a total removal of almost half a million cubic metres. Consent to such a proposal would substantially alter the natural skyline of Nelson and as such would be contrary to the public interest and have more than a little Town Planning significance for the City.

5.3 The proposal is contrary to various provisions of the Operative District Scheme and the Provisional Third Review of the District Scheme and as such is contrary to the public interest, and of more than a little Town Planning significance and would require Changes to such Scheme and Review. In particular the proposal is contrary to the following:-

5.3.1 Operative District Scheme Statement provisions

Part III 3.0. (ii) (iv) (v) and (vi)
4.0 (i) (vi) (vii) and (viii)
5.5 (a)
6.0

5.3.2 Operative District Scheme Code of Ordinances:-

Ordinance III Clause 5 - 5.2, 5.3, and 5.4
Clause 6 - 6.3 and 6.9

5.3.3 Review Scheme Statement Provisions:-

5.21 (ii) (iv) (v) (vi)
5.22 (i) (vi) (vii) and (viii)
5.27 (b)
5.29
7.32
7.34
7.45
7.46
7.47
7.70

5.3.4 Review Code of Ordinances:-

91.13
91.14
91.15
92.31

5.4 Approval of the application would cause a demand for the upgrading of drainage, sewage, roading and water supply services all of which would be contrary to the public interest and be of more than a little planning significance.

5.5 The application envisages work on unformed legal streets which would be ultra vires the Council and contrary to the District Scheme and the Provisional Third Review of the same. It would therefore be contrary to the public interest and have more than a little town & country planning significance.

5.6 If the application were granted it would add to traffic dangers in Princes Drive Emano Street and Maire Street which would be contrary to the public interest and have substantial town & country planning significance for the area.

5.7 Granting of the application would be a precedent for quarrying and the removal of spoil and topsoil from all residential zones within the City and as such would be contrary to the public interest and have more than a little town & country planning significance or require a Change to the District Scheme and the Provisional Third Review.

5.8 The applicants have already permitted work upon their property which has been unauthorised which caused damage to Princes Drive and contributed to the lowering of road safety standards in that area and has had detrimental landscaping consequences for the land.
The authorising of works of a like nature would be equally contrary to the public interest and of more than a little town & country planning significance beyond the immediate area.

5.9 The applicants have permitted an extension to Maire Street to their property which has given rise to subsidence and slipping. Similar works of a like nature are equally likely to give rise to such consequences contrary to the public interest and be of more than a little town & country planning significance.

5.10 Noise and dust would be an inevitable consequence of the works proposed and because of the hill top site the effects

would be greater than on an enclosed quarry site or on existing quarry sites outside the City boundary. The granting of the application would therefore be contrary to the public interest and have more than a little town & country planning significance.

5.11 The granting of an application to carry out earthworks for a subdivision would infer consent for such a subdivision notwithstanding that this would be contrary to the District Scheme and to the Provisional Review thereof in the manner already set out and contrary to the public interest and with more than a little town & country planning significance.

5.12 A consent to remove soil for the purposes of reclamation would be contrary to the public interest. There are numerous alternative sources of fill without similar consequences for the City.

5.13 The granting of consent with the possibility of damage to neighbouring landowners could give rise to damages claims against the Council which would be contrary to the public interest.

6. THE Objection would be met by refusing the application. Should the application be granted however then the Objectors would seek the imposition of conditions relating inter alia to drainage, permitted transportation routes, landscaping the extent of the proposed works, working hours, control of dust and noise, and the planting of amenities screening before any work were permitted to commence.

7. THE Objectors desire to be heard in support of their objection.

WAYNE DUGARD LUCAS and
MARGARET ANN LUCAS
by their Solicitors
Pitt & Moore p.p.

THE TOWN & COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

RECEIVED
23 DEC 1980
TOWN PLANNING
DEPARTMENT

To: The Nelson City Council

1. NAMES AND ADDRESSES of Objectors:-

1.1 GEOFFREY BAILEY, of 316 Princes Drive, Nelson

1.2 MILES WILSON HURSTHOUSE, of 306 Princes Drive, Nelson

1.3 RICHARD HENRY POTTON, of 292 Princes Drive, Nelson

2. THE Objectors object to the application of F.R. FRY, R.E. WILKINSON and W.M. WHEELER to carry out earthworks for subdivision of Lots 1 and 2 on Deposited Plan 7374 and for consent to remove the soil therefrom and from adjacent unformed legal streets to fill various reclamation areas as requested.

3. THE whole of the application is opposed.

4. THE reasons for the objection are:-

4.1 The application is a Specified Departure and the effect of the Departure sought will be contrary to the public interest.

4.2 The application is a Specified Departure and the effect of the Departure sought will have town & country planning significance beyond the immediate vicinity of the land concerned.

4.3 The application is a Specified Departure and the provisions of the Scheme can remain without change or variation.

4.4 The application is to carry out works contrary to the Provisional Third Review of the Operative District Scheme and it would be contrary to the provisions of that Scheme to grant consent to it.

5. WITHOUT derogating from the foregoing reasons for objection the particular matters of concern to the objectors are:-

5.1 The application involves the removal of a substantial amount of topsoil and subsoil from a hillside known for its instability. It would be contrary to the public interest, be of more than a little Town Planning significance and require Change to the District Scheme to permit the proposed use of such land.

5.2 The application proposes to remove between 15 to 20 metres or thereabouts from the top of the Observatory

Hill with a total removal of almost half a million cubic metres. Consent to such a proposal would substantially alter the natural skyline of Nelson and as such would be contrary to the public interest and have more than a little Town Planning significance for the City.

5.3 The proposal is contrary to various provisions of the Operative District Scheme and the Provisional Third Review of the District Scheme and as such is contrary to the public interest, and of more than a little Town Planning significance and would require Changes to such Scheme and Review. In particular the proposal is contrary to the following:-

5.3.1 Operative District Scheme Statement provisions:-

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4.0 (i) (vi) (vii) and (viii)
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5.22 (i) (vi) (vii) and (viii)
5.27 (b)
5.29
7.32
7.34
7.45
7.46
7.47
7.70

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91.14
91.15
92.31

5.4 Approval of the application would cause a demand for the upgrading of drainage, sewage, roading and water supply services all of which would be contrary to the public interest and be of more than a little planning significance.

5.5 The application envisages work on unformed legal streets which would be ultra vires the Council and contrary to the District Scheme and the Provisional Third Review of the same. It would therefore be contrary to the public interest and have more than a little town & country planning significance.

5.6 If the application were granted it would add to traffic dangers in Princes Drive Emano Street and Maire Street which would be contrary to the public interest and have substantial town & country planning significance for the area.

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would be greater than on an enclosed quarry site or on existing quarry sites outside the City boundary. The granting of the application would therefore be contrary to the public interest and have more than a little town & country planning significance.

5.11 The granting of an application to carry out earthworks for a subdivision would infer consent for such a subdivision notwithstanding that this would be contrary to the District Scheme and to the Provisional Review thereof in the manner already set out and contrary to the public interest and with more than a little town & country planning significance.

5.12 A consent to remove soil for the purposes of reclamation would be contrary to the public interest. There are numerous alternative sources of fill without similar consequences for the City.

5.13 The granting of consent with the possibility of damage to neighbouring landowners could give rise to damages claims against the Council which would be contrary to the public interest.

6. THE Objection would be met by refusing the application. Should the application be granted however then the Objectors would seek the imposition of conditions relating inter alia to drainage, permitted transportation routes, landscaping the extent of the proposed works, working hours, control of dust and noise, and the planting of amenities screening before any work were permitted to commence.

7. THE Objectors desire to be heard in support of their objection.

THE Objectors by their solicitors
HUNTER, SMITH & CO.

Per: _____
J.A. Doogue

Date: 23 December 1980

Address for Service: C/- Hunter, Smith & Co.
Solicitors
Panama House, 112 Collingwood Street, Nelson
Telephone Nelson 80144 (P.O. Box 49)

48 8

Postal Address:
The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:
The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

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CITY COUNCIL

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

RECEIVED
TOWN PLANNING DEPARTMENT

To The Town Clerk The Nelson City Council

Name (State full name) Reginald Taylor

Address 7 Rangiora Terrace, Nelson

I object to the application of (state name of applicant)
to (State proposal of applicant)
Messrs Rout Milner & Fitchett acting for Messrs F.R.FRY R.E.WILKINSON & W.M.L WHEELER for town planning consent for earthworks to level off about 17 hectares of land between the end of Princes Drive Emano St and Maire St known as Observatory Hill

The particular parts of the application I oppose are:
The whole of the application

The reasons for my objection are : The earthworks will cause further instability on the hills above my property with possible erosion, slipping & silt run off. Noise & dust from earth moving machines will be a major nuisance over a long period

My objection would be met by (State action desired)
Refusing the application in its entirety

I do ~~do not~~ desire to be heard in support of my objection.

Signature : R Taylor
(To be signed for or on behalf of objector)

Address for Service: R.TAYLOR
7 RANGIROA TCE, TAHUNA

Date : 23 December 1980

NOTE: The objector must also send a copy of the objection to the applicant.

Postal Address:	Hand Deliveries to:
The Town Clerk P.O. Box 645 NELSON	The Receptionist Town Clerk's Department, 1st Floor, NELSON CITY COUNCIL

49 8

RECEIVED 22 DEC 1980 NELSON CITY COUNCIL

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

RECEIVED 23 DEC 1980 TOWN CLERK'S DEPARTMENT

To The Town Clerk. The Nelson City Council

Name (State full name) ~~xxxxxxxxxxxxxx~~
Mrs Barbara Ruth Taylor

Address 7 Rangiora Terrace, Nelson

I object to the application of (state name of applicant)
to (State proposal of applicant)
Messrs Rout Milner & Fitchett acting for Messrs F.R.Fry, R.E. Wilkinson & W.M.L.Wheeler for town planning consent for earthworks to level off about 17 hectares of land between the end of Princes Drive, Emano St and Maire St. known as Observatory Hill

The particular parts of the application I oppose are:
The whole of the application

The reasons for my objection are : The earthworks will cause further instability on the hills above my property with possible erosion slipping & silt run off. Noise and dust from earthmoving machines will be a major nuisance over a long period

My objection would be met by (State action desired)
Refusing the application in its entirety.

I do/~~do not~~ desire to be heard in support of my objection.

Signature : Barbara Taylor

(To be signed for or on behalf of objector)

Address for Service: B.R.Taylor
7 Rangiora Terrace, Tahuna

Date 23rd. December 1980

NOTE: The objector must also send a copy of the objection to the applicant

50 8

Postal Address:
The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:
The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

Reg. 37 (6) FORM J.

RECEIVED
24 DEC 1980
TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) IAN DOUGLAS THOMSON

Address 11 RANGIORA TCE, TAHUNA

I object to the application of (state name of applicant) to (State proposal of applicant)

MESSRS, F.R. FRY, R.E. WILKINSON & W.M.L. WHEELER TO LEVEL OFF AND REMOVE SOIL FROM OBSERVATORY HILL

The particular parts of the application I oppose are:

REMOVING & DISTURBING OF SOIL IN AN AREA KNOWN TO BE PRONE TO SLIPS.

The reasons for my objection are :

ANY EARTHWORKS ON THE HILL ABOVE US WILL INEVITABLY CAUSE MUD TO BE WASHED DOWN WHEN IT RAINS & COULD CAUSE SLIPS. WE HAVE A NATURAL STORMWATER DRAIN DOWN THE SIDE OF OUR PROPERTY AND HAD CONSIDERABLE TROUBLE DURING THE FLOODS OF 1970.

My objection would be met by (State action desired)

WILL, IF REQUIRED.

I ~~do/do not desire to~~ be heard in support of my objection.

Signature : Ian Thomson

(To be signed for or on behalf of objector)

Address for Service: 11 RANGIORA TCE.
TAHUNA

Date : 23.12.80

NOTE: The objector must also send a copy of the objection

57

Postal Address:

The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:

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Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

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23 DEC 1980
TOWN PLANNING DEPARTMENT

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) JACK NICHOLSON AUCUTT and SUSAN MARY AUCUTT

Address 12 Rangiora Terrace, Tahunanui, Nelson

We X object to the application of (state name of applicant)

to (State proposal of applicant) F.R. Fry, R.E. Wilkinson and W.M. Wheeler to carry out earthworks for subdivision of Lots 1 and 2 Deposited Plan 7374 and for consent to remove the soil therefrom and from adjacent unformed legal roads and to fill various reclamation areas as requested .....

.....

The particular parts of the application we X oppose are:

The whole of the application

.....

.....

.....

.....

The reasons for our ~~xx~~ objection are :

1. The proposal is contrary to the spirit and intention of the Town and Country Planning Act 1977 in that it does not comply with Sections 3 and 4 nor does it comply with the criteria of Section 74. It would be bad town planning to allow the application.

(see 2 and 3 over page)

Our ~~xx~~ objection would be met by (State action desired)

Declining the application

.....

I do/~~do not~~ desire to be heard in support of my objection.

J.N. + S.M. Aucutt by their.

Signature : Solicitors Glasgow Son + Tidswell

(To be signed for or on behalf of objector)

Address for Service: Glasgow Son + Tidswell

Solicitors 189 Hardy Street, Nelson. Date : 23-12-80

NOTE: The objector must also send a copy of the objection to the applicant.

52 8

Postal Address:
The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:
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Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

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24 DEC 1980
TOWN PLANNING DEPARTMENT

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) ROGER JOHN & MARILYN DENTON

Address 17 RANGIORA TCE TAHUNANUI

I object to the application of (state name of applicant) to (State proposal of applicant)

F.R. FRY, R.E. WILKINSON & W.N. WHEELER

OBSERVATORY HILL EXCAVATION

The particular parts of the application I oppose are:

EXCAVATION OF NATURAL HILLSIDE

The reasons for my objection are :

RESULT OF ABOVE REGARDING EROSION

SHIFTING OF HILLSIDE & FLOODING OF LOWER LEVELS

My objection would be met by (State action desired)

Total Ban on Excavation

I do/~~do not~~ desire to be heard in support of my objection.

Signature : M.G. & R.J. Denton

(To be signed for or on behalf of objector)

Address for Service: as above

Date : 22/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

53 8

Postal Address:
The Town Clerk
P.O. Box 645
NELSON

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22 DEC 1980
TOWN PLANNING DEPARTMENT

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) GRAEME BALL + PATRICIA BALL

Address 19 RANGIORA TERRACE NELSON.

WE ~~I~~ object to the application of (state name of applicant)

to (State proposal of applicant)

FRY - WILKINSON + WHEELER to SUB DIVISION OF LOT 1 + 2 ON PLAN 7374

The particular parts of the application ~~I~~ WE oppose are:

REMOVAL OF SOIL FROM OBSERVATORY HILL + AREAS ADJACENT TO MY PROPERTY OF ABOVE ADRESS

The reasons for ~~my~~ OUR objection are :

CONCERN OF MOVEMENT OF HILLSIDE THERE IS MOVEMENT NOW.
NOISE FROM EARTH MOVING MACHINES
THAT WILL PLY THERE TRADE FROM DAYLIGHT TO DARK.

OUR ~~MY~~ objection would be met by (State action desired)

CANCELLATION OF PROPOSAL.

I do/do not desire to be heard in support of my objection.

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Signature : G Ball M Ball.

(To be signed for or on behalf of objector)

~~Address for~~ Service: 19 RANGIORA TERRACE NELSON Date :

NOTE: The objector must also send a copy of the objection to the applicant.

APPLICANTS COPY.

54 8

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) HEKKENBERG June OLIVE TOLME

Address 25 Rangiora Tce Tahunanui Nelson

I object to the application of (state name of applicant)
to (State proposal of applicant)
F.R. Fry R.E. Wilkinson + W.M.L. Wheeler
Application No: 206/40/108
Planning permission to carry out earth work on Observatory Hill etc

The particular parts of the application I oppose are:
I am totally opposed to the removal of approx 495,000 cubic meters of soil from Observatory Hill

The reasons for my objection are :
Possible ~~effects~~ on surrounding properties in particular water erosion and expense to council for providing drainage to cope with water run off

My objection would be met by (State action desired)
Storm drainage satisfactorally planned for and coped with before any excavations begi

I do/do not desire to be heard in support of my objection.

Signature : June O.J. Hekkenberg

(To be signed for or on behalf of objector)

Address for Service: .....

..... Date : 23.12.80

NOTE: The objector must also send a copy of the objection to the applicant

55

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Reg. 37 (6)

FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

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TOWN PLANNING DEPARTMENT

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) JOHN S HEED

Address 23 RANGIORA TCE TAHUNANUI.

I object to the application of (state name of applicant)
to (State proposal of applicant)
F R FRY & R E WILKINSON & M L WHEELER
EARTHWORKS FOR SUBDIVISION ON
LOT 1 & LOT 2 D P 7374

The particular parts of the application I oppose are:
the earthworks and the proposed
building of houses on the above
area

The reasons for my objection are :
the increase and the faster run
off of rain water in the direction
of the water course into Rangiora Tce.

My objection would be met by (State action desired)
If the natural contours of the area
were left as is

I ~~do~~/do not desire to be heard in support of my objection.

Signature : J Heed
(To be signed for or on behalf of objector)

Address for Service:
23 RANGIORA TCE TAHUNANUI. Date : 22-12-80

NOTE: The objector must also send a copy of the objection to the applicant.

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) Daryl David James Blair & Maureen Joyce Blair

Address 36 Rangiora Tce Tahunanui

I object to the application of (state name of applicant) to (State proposal of applicant)

F.R. Fry, R.E. Wilkinson, W.M.L. Wheeler
Earthworks & Excavations for Subdivision

The particular parts of the application I oppose are:

Extent of Excavations on Hillside

The reasons for my objection are:

Slipping and Erosion from Excavations
Plus Time Factor Involved.

My objection would be met by (State action desired)

I do/~~do not~~ desire to be heard in support of my objection.

Signature : D. Blair

(To be signed for or on behalf of objector)

Address for Service: 36 Rangiora Tce
Tahunanui

Date : 22-12-80.

NOTE: The objector must also send a copy of the objection to the applicant.

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167 HARDY ST, ROY MILNER FITCHETT. 578

Reg. 37 (6) FORM J.

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TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) RONALD JOHN & JENNIFER EVE AMBERGER

Address 38 RANGIORA TCE TAHUNANUI

I object to the application of (state name of applicant) to (State proposal of applicant)

FRY WILKINSON & WHEELER CARRY OUT EARTHWORKS TO LOT 1 & 2 D.P. 7374

The particular parts of the application I oppose are:

The excavation of the top of the Observatory Hill

The reasons for my objection are :

Slipping, erosion, and dust problems caused by opening up the hill and the extreme top to the elements. cost to the pa

My objection would be met by (State action desired)

total withdrawal of the proposed excavations

I do/~~do not~~ desire to be heard in support of my objection.

Signature : R J Amberger

(To be signed for or on behalf of objector)

Address for Service: 38 RANGIORA TCE TAHUNANUI Date : 22.12.80

NOTE: The objector must also send a copy of the objection to the applicant.

city of Nelson to provide the necessary amendities to the site if the second phase of subdivison is undertaken

58

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) CHARLES YATES GRANT.....

Address 42 RANGIORA TERRACE, TAHUNANUI, NELSON.....

I object to the application of (state name of applicant) to (State proposal of applicant)

F.R. FRY, R.E. WILKINSON, AND W.M.L. WHEELER TO CARRY OUT EARTHWORKS ON LOTS 1& 2 DP 7374.....

.....

The particular parts of the application I oppose are:

THE WHOLE APPLICATION.....

.....

.....

.....

The reasons for my objection are : 1.THE POSSIBLE EFFECTS OF THE PROPOSAL ON PROPETIES LOWER DOWN THE HILLSIDE WITH REGARD TO STORMWATER RUNOFF AND LAND INSTABILITY.

2. THE PROPOSAL WILL DESTROY TRIGONOMETRIC STATION OI AND THUS CONTRAVINES SECTION 108 PUBLIC WORKS ACT 1928.....

My objection would be met by (State action desired)
1. PRODUCTION OF A REPORT FAVOURABLE TO THE APPLICATION FROM AN EXPERIENCED SOILS ENGINEER OR GEOLOGIST.
2. ALTERATION OF THE FINAL CONTOURS TO LEAVE AN ADEQUATELY ELEVATEI KNOB IN A SUITABLE IF NOT THE SAME POSITION TO REPLACETRIG O1. SUCI AN AREA TO BE SET ASIDE AS A RECREATION RESERVE.

I ~~XXX~~ do not desire to be heard in support of my objection.

Signature : T.G. Grant MNZIS.
(To be signed for or on behalf of objector)

Address for Service: AS ABOVE.....

..... Date : 24/12/80.

NOTE: The objector must also send a copy of the objection to the applicant.

59 8

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P.O. Box 645
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Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

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To
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TOWN CLERK'S DEPARTMENT

NOTICE OF OBJECTION

Distributed
Assumed
received
on behalf of

To The Nelson City Council

Name (State full name) BETTY IRIS WARD

Address 2 RANGIORA TERRACE, NELSON

I object to the application of (state name of applicant)
to (State proposal of applicant)
MESSRS F.R. FRY, R.E. WILKINSON, & W.M.L. WHEELER,
TO THEIR PROPOSED SUB-DIVISION WORK ON OBSERVATORY
HILL, TAHUNANUI, NELSON.

The particular parts of the application I oppose are:
THE DANGER ATTACHED TO SO MUCH EARTH REMOVAL IN
AN ALREADY HIGH RISK ZONE AREA AND THE SUBSEQUENT
CATASTROPHIC POSSIBILITIES OF LANDSLIDE.

The reasons for my objection are :
THE SUB-DIVISION IN ITS ENTIRITY.

My objection would be met by (State action desired)
INVESTIGATION OF THE PROPOSAL BY EARTHQUAKE AND WAR
DAMAGE DEPARTMENT OF THE GOVERNMENT.

I do/do not desire to be heard in support of my objection.

Signature : B. I. Ward

(To be signed for or on behalf of objector)

Address for Service:
2 RANGIORA TERRACE, NELSON Date : 23/12/80.

NOTE: The objector must also send a copy of the objection

60 8

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TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) Maarten & Geertruida C. van der Woude

Address 48 Tahunanui Drive, Nelson

I object to the application of (state name of applicant)
to (State proposal of applicant)
FRY, WILKINSON & WHEELER, C/O MESSRS ROUT, MILNER & FITCHETT, TO DEVELOP OBSERVATORY HIL

The particular parts of the application I oppose are:
THOSE THAT AFFECT RATES ON ACCOUNT OF PROHIBITIVE COST OF ESSENTIAL SERVICES, BOTH EXISTING & FUTURE

The reasons for my objection are :
INCREASED TRAFFIC DENSITY DURING AFTER CONSTRUCTION, INCREASED NOISE, DIRT & DUST INCREASED RATES

My objection would be met by (State action desired)
A BOND OF $25,000, increasing at the rate of 15% per annum, for possible loss of value of two affected properties

I do/~~do not~~ desire to be heard in support of my objection.

Signature : G.J. Woude
(To be signed for or on behalf of objector)

Address for Service: 48 Tahunanui Drive
Nelson Date : 22/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

61 8

Postal Address:
The Town Clerk
P.O. Box 645
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Application

Reg. 37 (6) FORM J.

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TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) Clive Scott & Pamela Jeanne Collier

Address 146 Tahunanui Drive Nelson

I object to the application of (state name of applicant) to (State proposal of applicant)
FRFry. R.E.Wilkinson W.M.L. Wheeler to remove 495,000 Cu.M. of Spoil from Observatory Hill

The particular parts of the application I oppose are:
The use of Maire St. and Tahunanui Drive by Uncovered carting spoil to Port Nelson.

The reasons for my objection are :
Noise. — Dust soiling of our Caravan Stock
Mud on damp days soiling " !!
Danger to motorists and affect on business

My objection would be met by (State action desired)
Use Cableway from hill to port area.
Prohibit use of streets for spoil removal.

I ~~do/do not~~ Do Not desire to be heard in support of my objection.

Signature : C.S. Collier P Collier
(To be signed for or on behalf of objector)

Address for Service: 146 Tahunanui Drive
Nelson Date : 24/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

62

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) WILLIAM ERNEST AND MADGE ETHEL FAIRGUHAR

Address 17 STANSELL AVE. NELSON.

I object to the application of (state name of applicant)
to (State proposal of applicant)
FRY, WHEELER AND WILKINSON. 206/40/108
TO REMOVE 16 METERS FROM 17 METRES OF OBSERVATORY HILL TOP

The particular parts of the application I oppose are:
REMOVAL OF ANY SOIL

The reasons for my objection are :
Alteration to the natural skyline and the exposure of underground strata which could affect the whole water bearing nature of the area, with subsequent possibility of loss of stability & consequent detrimental effect on on downhill property owners

My objection would be met by (State action desired)
No earthworks

I do/~~do~~ not desire to be heard in support of my objection.

Signature : W.E. Fairgubar M.E. Fairgubar
(To be signed for or on behalf of objector)

Address for Service: 17 Stansell Ave.
Nelson

Date : 24th Dec 1980

NOTE: The objector must also send a copy of the objection to the applicant.

63

Postal Address:
The Town Clerk
P.O. Box 645
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APPLICANTS COPY

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TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) Barry John & Monica Dewla O'Donnell

Address 25 Stansell Ave

I object to the application of (state name of applicant) to (State proposal of applicant)

Fay Wheeler & Wilkinson 206/80/198
To Remove 16 Metres From 17 Hectares of
Observatory Hill top

The particular parts of the application I oppose are:

Removal of any soil

The reasons for my objection are :

alteration to natural area and exposure of underground strata with subsequent Possibility of loss of Stability

My objection would be met by (State action desired)

I do/~~do not~~ desire to be heard in support of my objection.

Signature : B. O'Donnell M. O'Donnell
(To be signed for or on behalf of objector)

Address for Service: 25 Stansell Ave

..... Date : .....

NOTE: The objector must also send a copy of the objection to the applicant.

64 8

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) ..DOUND STUART MACCREADIE

Address 28 STANSELL AVENUE, NELSON

I object to the application of (state name of applicant) to (State proposal of applicant)

.MESSRS F.R.FRY, R.E. WILKINSON AND W.H.L. WHEELER..
.TO EXCAVATE OBSERVATORY HILL.....
.....

The particular parts of the application I oppose are:

.THE LOWERING OF THE HILLSIDE AND THE...
.INFILLING OF GULLIES.....
.....
.....

The reasons for my objection are :

1). ENVIRONMENTAL DAMAGE IN AN AREA PRONE TO SLIPS
2). INCONVENIENCE TO EXISTING HOUSEHOLDERS...
..DURING DEVELOPMENT.....

My objection would be met by (State action desired)

.THE COUNCIL RESERVING THE OBSERVATORY HILL
.AREA AS A RESERVE.....

I ~~do~~/do not desire to be heard in support of my objection.

Signature : ..D.I. MacCreadie.....
(To be signed for or on behalf of objector)

Address for Service: .28 STANSELL AVE.
....NELSON..... Date : 23/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

658

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) James Meade.

Address 19 Tanaki St Tahuna

I object to the application of (state name of applicant) to (State proposal of applicant)

FRY, WILKINSON AND WHEELER.

The particular parts of the application I oppose are:

The Levelling of the Hill Top

The reasons for my objection are :

Interference of the natural lay of the land.

My objection would be met by (State action desired)

I ~~do~~/do not desire to be heard in support of my objection.

Signature : J Meade.

(To be signed for or on behalf of objector)

Address for Service: .....

Date : 23:12:80

NOTE: The objector must also send a copy of the objection to the applicant.

66 8

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) GUY CLAYTON MORRIS
MARGARET ANNE MORRIS

Address 17 TAMAKI ST., TAHUNANUI

I object to the application of (state name of applicant) to (State proposal of applicant)

MESSRS F.R.FRY, R.E.WILKINSON & W.M.L.WHEELER, LAND DEVELOPERS OF OBSERVATION HILL

The particular parts of the application I oppose are:

Removal of 16 Metres of hilltop

The reasons for my objection are :

The risk of instability of an entire hillside by disturbance of natural land lie Dust nuisance

My objection would be met by (State action desired)

Legal means

I do/do not desire to be heard in support of my objection.

Signature : G C Morris M.A. Morris,
(To be signed for or on behalf of objector)

Address for Service: 17 Tamaki St. Date : 23.12.80.

NOTE: The objector must also send a copy of the objection to the applicant.

Postal Address:

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Reg. 37 (6)

FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) ROYD KESHIE DIXON
MARION DIXON

Address 21 TAMAKI ST TAHUNANUI

I object to the application of (state name of applicant) to (State proposal of applicant)

~~OR~~ MESSRS. F.R. FRY, R.E. WILKINSON & N.M.L. WHEELER.
DEVELOPERS OF OBSERVATION HILL.

The particular parts of the application I oppose are:

REMOVING OF SOIL —
development not required!

The reasons for my objection are :

Instability that could be created by disturbance of natural lie of land & pollution by dust etc;

My objection would be met by (State action desired)

Legal representation

I do/~~do not~~ desire to be heard in support of my objection.

Signature : R Dixon

(To be signed for or on behalf of objector)

Address for Service: 21 Tamaki St. Tahunanui

Date : 22/2/80.

NOTE: The objector must also send a copy of the objection to the applicant.

68 8

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) SAMUEL HERBERT KENNEDY

Address 32 TAMAKI ST., NELSON.

I object to the application of (state name of applicant) to (State proposal of applicant)

F.R. FRY, R.E. WILKINSON, W.M.L. WHEELER OF MOTUEKA TO EXCAVATION ON OBSERVATORY HILL, NELSON

The particular parts of the application I oppose are:

(1) ANY DEVELOPMENT WHICH PUTS AT RISK THE STABILITY OF THE HILLSIDE ABOVE THE CORNER OF TAMAKI, RANGIORA ORAKEI STREETS

(2) THE UNNECESSARY EXPENSE WHICH THIS DEVELOPMENT WOULD PLACE ON THE CITY.

The reasons for my objection are :

(1) EXISTENCE OF PREVIOUS SLIPS IN THIS GULLY INDICATE THAT PRUDENCE IS NECESSARY.

(2) RATEPAYERS CONTRIBUTIONS TO CITY SHOULD NOT BE CHANNELED INDIRECTLY TO SPECULATORS.

My objection would be met by (State action desired)

(1) BOND (OR GUARANTEE) TO REIMBURSE TO COUNCIL FOR ANY LOSS, DAMAGE, OR DEVALUATION TO PROPERTY EFFECTED BY DEVELOPMENT DIRECTLY OR INDIRECTLY

(2) TOTAL COSTS TO RATEPAYERS BEING MET BY DEVELOPERS.

I do/~~do not~~ desire to be heard in support of my objection.

Signature : S.H. Kennedy

(To be signed for or on behalf of objector)

Address for Service: .....

32 Tamaki St., Nelson 8152. Date : 22nd Dec. 1980.

NOTE: The objector must also send a copy of the objection to the applicant.

69 8

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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) Norman Harry Kristoffersen

Address 28 Tamaki St, Tahunanui

I object to the application of (state name of applicant)
to (State proposal of applicant)
J.R. Fry, R.E. Wilkinson, W.N.L. Wheeler
To carry out earthworks on Lot 1 & 2 DP 7374

The particular parts of the application I oppose are:
I wish to see no disturbance of the
unstable hillside

The reasons for my objection are :
Do not wish another
Abbotsford

My objection would be met by (State action desired)
By not subdividing

I do/do not desire to be heard in support of my objection.

Signature : N.H. Kristoffersen.
(To be signed for or on behalf of objector)

Address for Service: 28 Tamaki St
Tahunanui. Date : .....

NOTE: The objector must also send a copy of the objection to the applicant.

70 8

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TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) ..ERNEST..GRAHAM..MARSHALL

Address ..40..TOSSWILL..RD..TAHUNANUI.....

I object to the application of (state name of applicant) to (State proposal of applicant)

..MESSRS...FRY...WILKINSON...WIBRALBA.....

.....

.....

The particular parts of the application I oppose are:

....THE..DEVELOPMENT..AS..A...BUILDING...

..COMPLEX.....

.....

.....

The reasons for my objection are :

....POSSIBLE..DRAINAGE..PROBLEMS..TO..EXISTING.

.HOMES..MAKING..HILLSIDE..UNSTABLE.....

.CONCERN..OVER..DUST..&..HEAVY..TRANSPORT..ROAD..DAMAGE

My objection would be met by (State action desired)

...CANCELLATION..OF..PROJECT.....

.....

I ~~do~~/do not desire to be heard in support of my objection.

Signature : ..E.G. Marshall...

(To be signed for or on behalf of objector)

Address for Service: .....

..... Date : 20/12/1980.

NOTE: The objector must also send a copy of the objection to the applicant.

71 8

Postal Address:
The Town Clerk
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THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) PAMELA, SYLVIA, MARSHALL

Address 40 TOSSWILL RD TAHUNANUI

I object to the application of (state name of applicant) to (State proposal of applicant)

MESSRS FRY, WILKINSON, WHEELER

The particular parts of the application I oppose are:

THE DEVELOPEMENT OF A BUILDING COMPLEX

The reasons for my objection are :

POSSIBLE DRAINAGE PROBLEMS TO EXISTING HOMES MAKING HILLSIDE UNSTABLE, CONCERN OVER DUST & HEAVY TRANSPORT ROAD DAMAGE

My objection would be met by (State action desired)

CANCELLATION OF PROJECT

I do/~~do~~ not desire to be heard in support of my objection.

Signature : P. S. Marshall

(To be signed for or on behalf of objector)

Address for Service: .....

..... Date : 20/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

72

Postal Address:

The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:

The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

RECEIVED
23 DEC 1980
TOWN PLANNING DEPARTMENT

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) ...WILSON - ...ISAAC..MURRAY,
WILSON - CYNTHIA MARGARET.

Address 47..TOSSWILL..RD..TAHUNANUI...NELSON..

I object to the application of (state name of applicant)
to (State proposal of applicant)

..MESSRS...F.R.FRY...R.E..WILKINSON.+..W.M.L..WHEELER.
TO..LEVEL...THE..TOP...OF..THAT..AREA...KNOWN..AS...
"OBSERVATORY..HILL"...AND...ADJOINING..LANDS..FOR..SUBDIVISIO

The particular parts of the application I oppose are:

.....
...THE...COMPLETE..APPLICATION..FOR..PURPOSES.....
.....STATED...AS...ABOVE.....
.....

The reasons for my objection are :

.KNOWN..SLIP...DANGER..ON..TAHUNA..HILLSIDE..AS..
AREA...INCLUDES..3..TRANSVERSE...FAULT..LINES..PUTTING
HILLSIDE..PROPERTIES..AT..RISK..AND..CONSEQUENTLY..LOWERING OF
PROPERTY VALUE

My objection would be met by (State action desired)
..REFUSAL...OF...APPLICATION..FOR..EXCAVATION..AND
...SUBSEQUENT....SUBDIVISION.....

I do/~~do not~~ desire to be heard in support of my objection.

G. M. Wilson

Signature : ..I. M. Wilson.....

(To be signed for or on behalf of objector)

Address for Service: 47..TOSSWILL..RD.
..TAHUNANUI...NELSON..... Date : 22/12/80.

NOTE: The objector must also send a copy of the objection to the applicant.

73 8

Postal Address:
The Town Clerk
P.O. Box 645
NELSON

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Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) Patricia Ellen Stent
J. H. Stent

Address 53 Tosswill Rd Tahunanui

we ~~I~~ object to the application of (state name of applicant)
to (State proposal of applicant)
Messrs R.T. Ivy, R.E. Wilkenson & W.G.L. Wheeler
to level the top of Observatory Hill for a
subdivision

The particular parts of the application I oppose are:
The immense amount of excavation
proposed, and the resulting destruction
of the natural land contours

The reasons for my objection are :
Possible land movement in an already unstable area
Probable pollution of Nelson Haven and Tasman Bay
but large amounts of silt entering the streams, drains etc
and the question of a subdivision where there are possible quake
fault lines

our ~~My~~ objection would be met by (State action desired)
Tahunanui action committee

we ~~I~~ ~~do~~/do not desire to be heard in support of my objection.

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23 DEC 1980
TOWN PLANNING
DEPARTMENT

Signature : P. E. Stent J. H. Stent
(To be signed for or on behalf of objector)

Address for Service: 53 Tosswill Rd.

Date : 23.12.80

NOTE: The objector must also send a copy of the objection to the applicant.

74 8

Postal Address:

The Town Clerk
P.O. Box 645
NELSON

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Reg. 37 (6)

FORM J.

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23 DEC 1980
TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Town Clerk.. The Nelson City Council

Name (State full name) Mrs. Eloa Airini Tomlinson.

Address 66 Tosswill Rd. Tahunanui

I object to the application of (state name of applicant) to (State proposal of applicant)

The syndicate that proposes making a subdivision on Observatory Hill for building purposes.

The particular parts of the application I oppose are:

I strongly oppose this proposition in its present form.

The reasons for my objection are:

1. not enough notice has been given to residents to enable them to give serious consideration to this proposition.
2. Earthworks of this magnitude on this unstable hilltop could cause slips & silt run-off which would endanger the houses below this area.
3. noise, dust, upgrading roads for heavy traffic is an unwanted burden on ratepayers.

My objection would be met by (State action desired)

I ~~do~~/~~do not~~ am willing desire to be heard in support of my objection.

Signature : E. A. Tomlinson

(To be signed for or on behalf of objector)

Address for Service: .....

Date : 22.12.80

NOTE: The objector must also send a copy of the objection to the applicant.

76 8

Postal Address:
The Town Clerk
P.O. Box 645
NELSON

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Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

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TOWN PLANNING DEPARTMENT

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) ARTHUR PATRICK McGRATH

Address 68, TOSSWILL RD, TAHUNANUI

I object to the application of (state name of applicant)
to (State proposal of applicant)
OBSERVATORY HILL DEVELOPMENT SYNDICAT
.....
.....

The particular parts of the application I oppose are:
TOTAL OBJECTION TO THE PROPOSED
SUB DIVISION IN ANY FORM
.....
.....

The reasons for my objection are :
THE INSTABILITY OF THE HILL & NEARBY SLOPES
THE NOISE & DUST OF THE PROPOSED EARTHWORK
THE POSSIBLE SLIDE DANGER TO OTHER PROPERTY
CAUSED BY STORMWATER SEEPAGE DURING QUARRYI
.....

My objection would be met by (State action desired)
LEAVING THE AREA AS A RESERVE
OR USING IT AS A PLANTATION

I do/do not desire to be heard in support of my objection.

Signature : A.P. McGrath
(To be signed for or on behalf of objector)

Address for Service:
68, TOSSWILL RD Date : 22/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

77

Postal Address:
The Town Clerk
P.O. Box 645
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1st Floor, NELSON CITY COUNCIL

Reg. 37 (6) FORM J.

RECEIVED
23 DEC 1980
TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) MICHELE MINOU MCGRATH

Address 68 TOSSWILL ROAD TAHUNANUI

I object to the application of (state name of applicant) to (State proposal of applicant)

OBSERVATORY HILL SUB-DIVISION SYNDICATE

The particular parts of the application I oppose are:

THE WHOLE APPLICATION OF SUB-DIVISION
TOTAL OBJECTION TO ENTIRE PROJECT

The reasons for my objection are :

LACK OF INFORMATION & TIME FOR CONSIDERATION/EXCESS TRAFFIC HAZARD
ADJACENT AREA EFFECTED BY DUST POLLUTION, NOISE, DAMAGING
VIBRATION/ANY QUARRYING WILL INCREASE THE DANGER OF SLIPS.

My objection would be met by (State action desired)

HAVING A RESERVE FOR ALL THE COMMUNITY TO
SHARE & APPRECIATE IS ALSO A POTENTIAL TOURIST ATRACTION.

I do/do not desire to be heard in support of my objection.

Signature : M McGrath

(To be signed for or on behalf of objector)

Address for Service: AS ABOVE

Date : 22/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

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Postal Address:
The Town Clerk
P.O. Box 645
NELSON

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Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) ALVAN WILLMETTIE WHITE

Address 70 TOSSWILL Rd., TAHUNANUI

I object to the application of (state name of applicant)
to (State proposal of applicant)
the Developer of Observatory Hill

The particular parts of the application I oppose are:
that I do not know sufficient detail of what is to be done and that there is not sufficient time to find out

The reasons for my objection are :
that I want to know more about drainage, roading, abatement of dust nuisance during construction and who pays for it etc.,

My objection would be met by (State action desired)
the giving of more time for these matters to be made public before final approval is given for the work to proceed.

I do/~~do not~~ desire to be heard in support of my objection.

Signature : A.W. White
(To be signed for or on behalf of objector)

Address for Service: as above

Date : 22-12-80

NOTE: The objector must also send a copy of the objection to the applicant.

194 Annesbrook Drive
Nelson
23rd Dec. 1980

RECEIVED
24 DEC 1980
TOWN PLANNING
DEPARTMENT

The Nelson City Council
Nelson.

Objection.

We, Gwy.M.V. Ward-Holmes and Okan Ward-Holmes, ratepayers, strongly object to the levelling of the Observatory Hill.

Many people have short memories.
We have lived here 42½ years at the bottom of Maire Street in Annesbrook Drive.
In the floods of yesteryears that hillside was like a fountain of many openings. Water was spouting out everywhere & the Councillors of the day saw this & were amazed. It was an awesome sight & the water courses must still be under the hill & if interfered with anything could happen.
Predict it will be a Nelson Abbotsford in time. No matter what machinery is used. Nature will not respond.
Lives will be lost in big slips & money can't replace lives.
These developers surely are not local people for we're sure local people would never consider that Observatory Hill being altered.
It is we older residents that know the danger of the hill. It is bad enough knowing that people have built swimming pools upon Maire Street properties which should never have been allowed.

Yours faithfully

Gwy.M.V. Ward-Holmes,
Okan Ward Holmes

80

RECEIVED
24 DEC 1980
NELSON CITY COUNCIL

17 Tosswill Road
Tahunanui
24th December, 1980

The Town Clerk
Nelson City Council
NELSON

Dear Sir

OBSERVATORY HILL PROJECT

We wish to enter our objection to the proposed scheme to alter the conformation of this area on the grounds that our house and property might be subject to the effects of slips and erosion on the higher levels.

Furthermore, the building of houses along the crest of this hill would destroy the natural conformation and aesthetic aspect of this area.

Yours faithfully,

C J Holland

Carol J. Holland

P C F Holland

P.C.F. Holland

RECEIVED
24 DEC 1980
TOWN PLANNING
DEPARTMENT

69 Chamberlain Street
NELSON
23 December, 1980.

The Town Planner,
Nelson City Council,
NELSON.

Dear Sir,

We, the undersigned Chamberlain Street residents, hereby present our strong objection to the proposed levelling and interference with Observatory Hill by a Wellington based Company.

Previous experience with work of this description has proved beyond doubt that engineers cannot be sure of the long term effect of interfering with what has taken nature millions of years to stabilise.

Yours faithfully,

G.C. Pringle

B.H. Pringle

RECEIVED
24 FEB 1981
TOWN PLANNING
DEPARTMENT

To the City Council.

NELSON CITY COUNCIL

27 Emano St,
Nelson,
24 Dec, 1980.

Objection To The Observatory Hill Development.

We object to the application by unknown persons (as they have failed to reveal themselves) to the proposed levelling of Observatory Hill.

The particular parts of the application we object to are :

I) That continuous traffic on already substandard roads will undoubtedly cause further damage to roads in this area.

2) The likelihood of slips occurring on this proposed levelled area as a result of the massive earthworks involved could have serious consequences. The threat to sections in the area may result in decreased land values not to mention the future possibility of house damage.

3) The removal of half a million cubic metres of soil will cause dust clouds, particularly with a view to the dry climate and winds common to the top of the hill. This dust will no doubt settle on the sections of the area, again reducing land values and causing discomfort to residents.

4) Noise levels from trucks and earthmoving machinery is bound to cause discomfort to residents in the area. Monitoring of these levels should be an important aspect of the council's work if this proposal goes ahead.

5) Emano St and Maire St are populated by a number of families with young children. The dangers associated with large numbers of heavy trucks travelling these streets daily would be considerable.

6) Like many newly subdivided areas, trailbike riders will be a common site on the hill area. The addition to traffic flow in the area will add to the dangers of fast vehicles and small children in the area.

Your's sincerely,

Melanie Thornton and Anne Price.

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- 5 JAN 1981
TOWN PLANNING
DEPARTMENT

83 8

Postal Address:

The Town Clerk
P.O. Box 645
NELSON

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1st Floor, NELSON CITY COUNCIL

RECEIVED
24 DEC 1980
TOWN PLANNING DEPARTMENT

Reg. 37 (6)

FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) George & Helen Macpherson

Address 12 Waikare Street, Tahunanui

We object to the application of (state name of applicant)
to (State proposal of applicant)
Messrs Fry, Wilkinson & Wheeler for a Planning consent to carry out earthworks for subdivision of Lot 1 and 2 on Plan 7374 & removal of soil etc. etc.

The particular parts of the application we oppose are:
the removal of soil; the use of Emano St, Princes Drive and Mearie St for such or any other access streets.

The reasons for ~~my~~ our objection are :
The likely erosion of hillside; the ascetic deformation and the impossibility of a guarantee that the work will not cause danger to surrounding properties and residents

~~My~~ Our objection ~~would be~~ met by (State action desired)
could not be met by any alternative design or plan

~~I/We~~ do/~~do not~~ desire to be heard in support of ~~my~~ our objection.

Signature : George & Helen Macpherson

(To be signed for or on behalf of objector)

Address for Service: 12 Waikare St Tahunanui

Date : 22 Dec 1980

NOTE: The objector must also send a copy of the objection to the applicant.

24 8

Postal Address:

The Town Clerk
P.O. Box 645
NELSON

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The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) ...ROY WALTON - SUSAN WALTON

Address ...31 CHAMBERLAIN STREET NELSON

I object to the application of (state name of applicant)
to (State proposal of applicant)

A.R. FRY - R.F. WILKINSON - W.M.L. MILLER
EARTHWORKS & SOIL REMOVAL UPON & FROM
LOTS 1 & 2 DP 7374 OBSERVATORY HILL

The particular parts of the application I oppose are:

THE WHOLE APPLICATION

The reasons for my objection are :

INSTABILITY OF LAND IN QUESTION
TRAFFIC HAZZARDS ESPECIALLY TO CHILDREN.
DUST & NOISE CREATED BY MACHINERY INVOLVED

My objection would be met by (State action desired)

REFUSAL OF APPLICATION

I ~~do~~/do not desire to be heard in support of my objection.

Signature : ....

(To be signed for or on behalf of objector)

Address for Service: .....

..... Date : .....

RECEIVED
23 DEC 1980
TOWN PLANNING

NOTE: The objector must also send a copy of the objection

Attention of	Initials	Date
1.		
2.		
3.		
4.		
5.		
FILE		
BRING UP YES/NO		

RECEIVED
23 DEC 1980
NELSON CITY COUNCIL

I2 Waikare Street,
Tahunanui,
23rd. December, I980

Town Clerk - Manager
Nelson City Council,
NELSON,

Dear Sir,

for attention Chairman Town Planning Committee
re Observatory Hill subdivision & proposed removal
of soil from the apex of the hill

A public meeting, called by the Tahunanui Action Committee of interested persons was held on 22nd. December.
From that meeting a committee comprising Mr. C. Chamberlain chairman Mr. Bailey, Mr. Westbrooke, Councillor Redfearn & Mrs. Macpherson as secretary was formed to represent the people's wishes.
It was the considered opinion of all those present that the above proposal would have serious and far reaching complications, besides which the high cost of servicing the project would be terrific and prohibitive.

Attached are the signatures of fifty-six persons which the sub-committee will represent and on their behalf an objection is lodged in accordance with the official demand.
Other persons are lodging their own individual objections.

Yours sincerely,

Helen Macpherson.

M. T. Goddard. }
John A Goddard }
Bailey
J. Gray
S. Cox
A. R Jordan
A. Morris
R. G. Morris
A P McGall.
R A McGrath
J E. Brinsdon
A McGrath
R E. Brinsdon
2 B. J. Wright
3 R D Vidor
4 M & L. Daymin
5 J. B. Wisanowsky.
6 C. J. Knight
7 R. Watts
8 B. O. Kaefoed
19 J. E. Robinson
20 Chr. Koed
21 B. J. Westbrook
22 J Simpson
23 Mead
24 C. A. Koed
25 A. Koed

278 Princes Drive }
278 Princes Drive }
316 Princes Drive
103 Parkers Rd Tahunanui.
" " "
16 Chamberlain St
17 Tamaki St
17 Tamaki St
68. Tosswill Rd.
68 Tosswill Rd
67 Tosswill Rd.
68 TOSSWILL ROAD TAHUNA.
67 TOSSWILL ROAD
63 Chamberlain St.
214 Princes Drive
88 Parkers Rd. Tah
7 MAIRE ST.
81 Chamberlain St.
31 Chamberlain St.
25 Maire St.
33 Maire St.
33 Rangiora Tce
39 Chamberlain St.
43 Chamberlain St.
38 Chamberlain St.
5 Maire St.
5 Maire St

	Address
6 A. G. Clarke.	65 Chamberlain St.
7 A. Reynolds	172 Moana A.
7 A. Reynolds	27 Enano St.
[illegible] Wagemaker	83 Chamberlain Str.
0 W. H. Burton	157 Tahunanui Drive
1 [illegible] Clarke	65 Chamberlain St
2 D. Monk	2/120 Muritai St.
3 V. Monk	2/120 Muritai St.
34 [illegible] Somerfield	22 Parkers Rd. Tahunanui
35 N. H. Christoffersen	28 Tamaki St Tahunanui
36 E. G. Davies	1 Chamberlain St
37 C. F. Chamberlain	92 Green Street Tahunanui
38 R. R. Wilkes.	39 Stansell Ave, Tahunanui
39 [illegible] van der Loonden	48, Tahunanui Dr.
40 J. P. Dayman.	35 Maire St. Tahunanui
41 [illegible] Kennedy	32 Tamaki St Nelson 85120
42 D. S. MacCreadie	28 Stansell Ave. 86568
43 J. L. E. Gates.	64 Muritai Str. Tahuna.
44 A. G. Eyles	36 CHAMBERLAN ST. TAHUNANUI
45 [illegible] J.P.	57 Tosswill Rd. Tahunanui
46 P. Stent	53 Tosswill Rd Tahunanui
47 J. Murray Wilson.	47 Tosswill Rd Tahunanui
48 Cynthia Lr. Wilson	47 Tosswill Rd., Tahunanui

D. Blair 36 Rangiora Tce.

Ron Amberger. 38 RANGIORA TCE

J. Hellenberg

[illegible] Marston

J. Bishop 44 RANGIORA TERRACE

G. E. Brown

J. B. Bertram

25 Rangiora Tce.

22 Greenhill Rd.

35 Chamberlain ST.

77 Tosswill Road.

Attention of	Initials	Date
1. DCM/CE	[illegible]	17-12-80
2. DCE	[illegible]	18-12-80
3. CP this is part of		
4.	file 206/40/108	
5.		
FILE		
BRING UP YES/NO		

TAHUNANUI RATEPAYERS & CITIZENS
ACTION COMMITTEE

RECEIVED
17 DEC 1980
NELSON CITY COUNCIL

I2 Waikare Street,
Tahunanui,
I5th. December I980

Town Clerk- Manager,
P. O. Box 645
NELSON

Dear Sir,

Re Observatory Hill Subdivision Reg. 37 (6)

Most residents in the vicinity of the area and even further away on the flats of Tahu nanui are aware that certain soils in this district are in danger of slipping where the proposed subdivision is located. Any removal of top-soil or interference with the natural formation is highly dangerous.

A meeting of my Committee and concerned residents is being called. From that meeting you will receive our offical objection to the proposed speculation and manipulation of Observatory Hill.

May I make the personal comment that in my opinion it seems strange that residents have to make objections of the above type when we have a City Council and other Authorative Bodies who should be aware of the risks involved as in this instance of massive soil removal and the present lack of necessary facilities.

Yours sincerely,

Helen Macpherson.

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18 DEC 1980
TOWN PLANNING DEPARTMENT

F 26-01

Should be on 206/40/

86

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P.O. Box 645
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Distributed

RECEIVED
5 JAN 1981
NELSON CITY COUNCIL

assumed received on time

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To .. The Nelson City Council

Name (State full name) McKEGNEY, Margaret Jean, J.P. (Mrs.)

Address 53 Scotia Street, Wakatu, NELSON

I object to the application of (state name of applicant) to (State proposal of applicant)
F.R. Fry, R.E. Wilkinson and W.M.L. Wheeler
to excavate and remove fill from Lots 1 and 2,
D.P. 7374 as per Application No. 206/40/108.

The particular parts of the application I oppose are:
Quarry operation, spoiling of scenic values, transportation over streets of inadequate capacity.

RECEIVED
5 JAN 1981
TOWN PLANNING DEPARTMENT

The reasons for my objection are :
Both noise and air pollution, dust, traffic hazard for the many young children in the area, both walking and cycling.

My objection would be met by (State action desired)
Declining the application.

I ~~do~~/do not desire to be heard in support of my objection.
This should be sufficient.

Signature : M. J. McKegney J.P. (Mrs)
M.J. McKEGNEY, J.P.
(To be signed for or on behalf of objector)

Address for Service: 53 Scotia Street,
Wakatu,
NELSON.

Date : 22.12.80

NOTE: The objector must also send a copy of the objection to the applicant.

27

Postal Address:
The Town Clerk
P.O. Box 645
NELSON

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The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

Reg. 37 (6) FORM J.

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

RECEIVED
19 DEC 1980
TOWN PLANNING DEPARTMENT

To The Nelson City Council

Name (State full name) BISHOPDALE POTTERIES LTD

Address c/- C GIBBONS LTD, 19 PARERE ST, NELSON

I object to the application of (state name of applicant) to (State proposal of applicant)

F R FRY, R E WILKINSON & W M L WHEELER

To excavate and remove fill from Lot 1 & 2 DP 7374

as per Application No. 206/40/108

The particular parts of the application I oppose are:

Quarry operation, spoiling of scenic values, transportation over streets of inadequate capacity.

The reasons for my objection are :

See separate sheets appended

My objection would be met by (State action desired)

Declining the Application.

I do/~~do not~~ desire to be heard in support of my objection.

Signature : R.W. Gibbons

(To be signed for or on behalf of objector)

Address for Service: 19 Parere St

NELSON Date : 19/12/80.

NOTE: The objector must also send a copy of the objection to the applicant.

REASONS FOR OBJECTION:

1) The proposal is to develop a major quarry in and adjoining areas zoned for Residential purposes.

2) The proposal is to truck some 495,000m^3 through residential and other streets of low traffic capability.

3) The Application is not supported by sufficient plans and information to show the true purpose and intent of the Application.

4) The proposal while presented as part of a subdivisional proposal does not demonstrate that it conforms in detail to any of the previously produced proposals of subdivision.

5) The proposal is to remove from the area material that could be better used for filling adjoining areas.

6) It is not demonstrated that the area could not be adequately or better developed without the need to excavate such large volumes in this area.

7) The Application refers to a plan of development by Truebridge Callender Beach & Co. which is not produced.

8) It is unlikely that the excavation removed will make significant difference to future water reticulation proposals.

9) The proposal will have some impact on the drainage pattern.

10) The proposal is environmentally unacceptable in that it drastically alters the skyline of the existing Port Hills and is contrary to the intent expressed in Clause 3.33 (111) of the Provisional Third Review of the City of Nelson District Scheme.

11) The operation if approved would despoil the skyline for seven years or more while the 495,000m^3 is quarried and removed.

12) There is no evidence that there is a need for this particular fill which may be supplied from other more suitable locations at a comparable or lower price.

13) There is no evidence that fill from this source is suitable for the purpose stated or for any other use.

14) The area has a zoning of R2 (deferred) and this does not include for the operation of a quarry as either a Predominant or Conditional use of the area.

15) There are other quarries capable of supplying equal or better material for fill operating in appropriately zoned areas.

.../2

16) If this quarry is permitted to proceed on the grounds that it is the first stage of a sub-division which is located in a R2 (deferred) zone, there is no indication of when the balance of the works associated with the subdivision will proceed.

17) There may be no grounds for lifting the deferrment on the R2 zoning of this land without removing the deferrment on the whole of the similarly zoned areas.

FORM J

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To the Nelson City Council,
P.O. Box 645,
NELSON.

RECEIVED
24 DEC 1980
NELSON CITY COUNCIL

The Public Trustee as Trustee of the estate of John Alexander Adams objects to the application No. 206/40/108 for Lots 1 and 2 Observatory Hill of Messrs F.R. Fry, R.E. Wilkinson and W.M.L. Wheeler to the cut of 495,000 cubic metres of soil over 17 hectares to a depth of some 16 metres and its removal from the site.

The application is opposed in full.

The reasons for the objection are that the removal of the soil would interfere with the structure of the hillside and surrounds with probable permanent detrimental and adverse effect also on the Moana hillside.

The objection would be met by declining the application in full.

The Public Trustee desires to be heard in support of his objection.

The Public Trustee

By

Deputy District Public Trustee
for Nelson.

Address for Service:

Public Trust Office,
P.O. Box 441,
NELSON.

RECEIVED
24 DEC 1980
TOWN PLANNING
DEPARTMENT

TOWN AND COUNTRY PLANNING ACT 1977

TO: The Nelson City Council

NAME: The Housing Corporation of New Zealand,
22 Bridge Street,
NELSON.

The Housing Corporation of New Zealand objects to the application of F.R. Fry, R.E. Wilkinson and N.M.L. Wheeler for consent to carry out the necessary earthworks for the subdivision of Lots 1 and 2, Deposited Plan 7374 and for consent to remove the soil therefrom and from adjacent unformed legal streets.

The particular parts of the application opposed are those relating to the removal of soil from the site.

The reasons for the objection are:

(1) The application does not comply with the requirements as to form laid down by the Town and Country Planning Regulations 1978
   (a) The full names of the applicants have not been given;
   (b) Their addresses have not been given;
   (c) A full statement of what is proposed has not been given;
   (d) The proposed plan of subdivision said to be enclosed has not been shown.

(2) From what the application does disclose it is clear that the proposal goes against the directions of Section 4 of the Town and Country Planning Act 1977.

(3) The applicants cannot satisfy the requirements of Section 74 of the Act as the proposal would have an effect contrary to the public interest and it will have a big town and country planning significance beyond the immediate vicinity of the land concerned.

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23 DEC 1980
TOWN PLANNING
DEPARTMENT

(4) It is demonstrably the wrong way to develop this land for residential use.

(5) It is contrary to general town and country planning principles.

The objection would be met by declining consent to the application.

The objector desires to be heard in support of this objection.

J R Stuart 22.12.80

Signed For and on Behalf of Objector

Address for Service:

Housing Corporation of New Zealand,
R.B.F.C. Building,
22 Bridge Street,
NELSON.

Postal Address:

The Town Clerk
P.O. Box 645
NELSON

Hand Deliveries to:

The Receptionist
Town Clerk's Department,
1st Floor, NELSON CITY COUNCIL

Reg. 37 (6)

FORM J.

RECEIVED
23 DEC 1980
TOWN PLANNING DEPARTMENT

THE TOWN AND COUNTRY PLANNING ACT 1977

NOTICE OF OBJECTION

To The Nelson City Council

Name (State full name) RUTH ANGELA McGRATH

Address 68 TOSSWILL ROAD TAHUNANUI

I object to the application of (state name of applicant) to (State proposal of applicant)

OBSERVATORY SUB-DIVISION SYNDICATE

The particular parts of the application I oppose are:

TOTAL OBJECTION TO ENTIRE PROJECT

The reasons for my objection are :

EXCESS TRAFFIC HAZARDS/DUST & NOISE POLLUTION/DAMAGING VIBRATION/DANGER OF SLIPS/UNNECESSARY & EXTREME METHOD OF PROGRESS WHEN OTHER AREAS ARE AVAILABLE

My objection would be met by (State action desired)

SETTING ASIDE THE AREA AS A RESERVE FOR THE USE OF THE COMMUNITY AND TOURISTS

I do/do not desire to be heard in support of my objection.

Signature : R.A. McGrath

(To be signed for or on behalf of objector)

Address for Service: AS ABOVE

Date : 22/12/80

NOTE: The objector must also send a copy of the objection to the applicant.

20 March 1981

Notified Application
No. 206/40/108

The City Manager/Town Clerk
NELSON.

APPLICATION UNDER SECTIONS 74 AND 75 OF THE TOWN & COUNTRY PLANNING ACT 1977

F.R. FRY: R.E. WILKINSON & W.M.L. WHEELER - VIA PRINCES DRIVE - OBSERVATORY HILL

APPLICANTS	F.R. Fry, R.E. Wilkinson & W.M.L. Wheeler
PROPERTY	Lot 1 & 2 DP 7374 access off Emano Street, Mairie Street and Emano Street
ZONING	Operative District Scheme R2D 3rd Review of the District Scheme R2D Special Subdivisional Area Streets Proposed to be Stopped as Necessary for Subdivisional Purposes

NOTE : LATE OBJECTIONS

Before the application is heard, there are two late objections received and these should be dealt with.

There is also a letter from the Nelson Harbour Board received out of the objection/submission period but it is considered this is factual only (they state they do not oppose or support the application) and the contents which help to clarify some points made by the applicant are included in this report.

1. APPLICATION

1.1 The application is for"planning consent to carry out the necessary earthworks for the subdivision of lots 1 and 2 on Deposited Plan 7374 as shown on the attached surveyors plan and for consent to remove the soil therefrom and from adjacent unformed legal streets as shown on the plan, the major access being via Emano Street extension and Maire Street the secondary access via Princes Drive and to fill various reclamation areas as required."

1.2 The application continues -

"UPON THE GROUNDS that such a proposal is of benefit to the public of Nelson AND UPON THE GROUNDS contained in the attached statement" -

A copy of the statement is attached, and a summary of it is as follows:-

a. The application is to carry out extensive earthworks in order to provide a subdivision (a residential development).

b. Concept plans for possible submission for a greater area of land and including the applicants property, were supplied to Council in 1975.

c. The ultimate residential sites on the applicants land will be achieved by "cut only".

d. The end result would be an attractive subdivision close to the central city making best use of marginal land.

e. The proposal is to take at this stage Lots 1 and 2 and develop these areas when zoning permits into a residential subdivision.

f. This is made possible by the current demand from the Nelson Harbour Board for suitable fill for their reclamation.

g. The 1975 development plan in the applicant's opinion would result in sections being made available at prohibitive prices.

h. The applicants plan developing only part of the overall plan together with the requirements of the Harbour Board, reasonably priced sections can be achieved.

Method

i. It is proposed to remove 495,000 cubic metres of soil from Observatory Hill, by bulldozers and loaders working normal hours and trucked initially to the Nelson Harbour Board Reclamation site.

j. The extent of earthworks coincides approximately with the 168m contour line.

k. The main proposed route for the trucks is from Emano Street and the existing track would be substantially upgraded for ingress and egress to the site. The existing access through Maire Street and to a lesser degree Princes Drive is also to be used.

l. Permission to work over existing legal roads is required and the applicants noted that in the 3rd Review of the District Scheme most of the legal roads within the land covered by the application are designated on the Review Planning Maps, as "Streets to be Stopped". (The maps actually show the additional words "as necessary for subdivisional proposals").

m. The applicants envisage that the earthworks will take approximately 5-7 years.

n. Depending upon the zoning of the area, suitable sections will become available at realistic prices during the development period.

o. There could be objections to the extent of earthworks described but by taking this quantity of soil from the site, "CUT ONLY" sections can be provided at a cheaper price than could normally be produced from this type of development.

p. The developers are discussing water rights and Section 34 approval with the Catchment Board.

Conclusions

q. Developers offer the Council the opportunity of using waste land to provide fill for Harbour Board reclamation development whilst complementing the development of a subdivision with reasonably priced sections.

r. Applicants suggest that the remaining area (i.e. not including lots 1 and 2 being developed) will provide sufficient soil for compacted fill for gullies and depressions in the 1975 concept plan.

s. The proposal becomes economically viable because of the coupling of the providing fill and ultimately a section in a subdivision.

2. THE SITE

The site is located at the end of the present road formation of Princes Drive. It includes in fact, the tops of the highest hills in that vicinity and accommodates a trig station.

Access to the area can also be gained via tracks off the eastern end of the formation off Maire Street. As described in the application it is intended to use the longer but more gradual route of a track on the unformed Emano Street.

The property is a predominant hill feature as seen from the flat areas of Tahunanui. It is undeveloped land and has a rural characteristic providing a green backgrop and scene for residential developments in the neighbourhood.

3. COMMENTS ON THE APPLICATION IN TERMS OF THE DISTRICT SCHEME

3.1 The application is for consent to carry out a massive earthworks actually moving some 495,000 cubic metres of spoil from the area and involving lowering the hill by 20m.

The earthworks to produce the fill material inclusive of work on some unformed legal streets within the site, are planned to produce levels which will assist

in the development of a future subdivision on the applicant's property.

3.2 The "future subdivision" referred to in the application is just that and plans for it and approval of allotments roading and layout are not part of the application.

3.3 The actual subdivision approval would be dealt with at the time of subdivision of a scheme plan. The area is zoned as R2D and is also designated as a "special subdivisional area".

3.4 Some of the legal unformed streets are shown on the 3rd Review Planning Maps as "STREETS PROPOSED TO BE STOPPED" and a further endorsement on the plan is "Existing legal streets in this area to be stopped if necessary for subdivisional proposals." i.e. when an alternative roading pattern is proposed the street stopping procedure would be carried out, and if successful the adjoining owners would purchase the stopped street and incorporate it in the subdivision. The title is not usually changed until the proposed street is vested in Council.

3.5 A "D" or deferrment applied to a zone and in particular R2D zone is explained in Ordinance 5.27:

5.27 DEFERRED ZONES

There exists in the city, areas which cannot be permitted to be fully utilised for their required uses until improvements in stated services are completed.

5.27 THOSE WITH PERMITTED RURAL USES (Residential deferred 2) (b)

Land in this zoning has potential for residential development but drainage services outside these areas are not adequate at present to cater for increased quantities of stormwater or sewage effluents that would be generated by additional residential development. The areas in question have permitted uses in the first instance as if the land were zoned Rural-Residential.

The restraints on residential development of the land are detailed more fully in Part 7 of this scheme statement.

At the time when adequate provision has been made for servicing and the areas can be subdivided for residential development the deferment in this zoning or any part thereof will be removed by resolution of the Council.

3.6 For special subdivisional areas, Ordinance 5.29 is quoted:

5.29 *SPECIAL SUBDIVISIONAL AREAS*

There are areas within the City zoned as Residential 2 and Residential 2 Deferred which are subject to comprehensive subdivisional ordinances. These areas are specifically identified on the planning maps as "Special Subdivisional Areas".

Comprehensive subdivisional controls are necessary in order to eliminate serious access problems which would eventuate if subdivisions are allowed to be carried out in isolation.

The whole area need not be developed at the same period, but any residential subdivision will be required to be planned in accordance with other undeveloped areas so as to achieve the most efficient and effective residential use of the block particularly to ensure that the best practical roading access is provided for all land.

Council would reserve the right under the Local Government Act to accept, reject or impose conditions on subdivisions to achieve the above objectives.

The Observatory Hill area is zoned as Residential 2 Deferred. This zoning requires Council's consent by resolution to remove the deferment, and this will only be granted when Council is satisfied that the conditions detailed in Part 9 of the Ordinances are met.

3.7 Development of an R2D zone is restricted as a predominant use for residential use to one dwelling unit per site which must have been in existence as at April 1976, i.e. At present 2 dwelling units, 1 on each site, could be considered IF the services were adequate - there are no services there at present. Refer Ordinances 26.11, 27.42.

3.8 The significance of 5.29 for special subdivisional areas is that by virtue of its inclusion in the Scheme Statement (Residential Development Section) of the 3rd Review of the District Scheme, the public have been notified that the planned use of the land is for residential development and that when services are satisfactory under R2D requirements, and the deferment is removed by Council resolution, subdivision and development is automatic in terms of R2 requirements, providing that regard has been given to roading patterns.

4. GENERAL

4.1 The application is for consent to carry out earthworks for the subdivision of Lots 1 and 2. The purposes of the application appears to be "the earthworks" which involve moving a large amount of fill material from the site and leaving levels for land which in the future would have subdivision potential.

The approach if the prime purpose was for subdivision, would normally be submission of a concept plan, then a scheme plan supported by earthworks engineering plans.

Generally, the operation would be expected to achieve a balance cut and fill operation and no material would be transported from the site.

Recognising the fact the land in the application is incorporated in a "special subdivisional area" which requires any development of the land shall have regard to the potential development of that area as a whole, whether under single ownership or not, the plans do not demonstrate the proposed earthworks would fit in with earthworks necessary to provide a viable subdivision of the residue of the land in the special area.

5. IF THE PROPOSAL IS CONSIDERED AS A SUBDIVISION

5.1 One Scheme Plan for the "Special Area"

a. The ideal development method for the whole special subdivisional area would be to proceed with a subdivision scheme covering the entire area, with disregard to property boundaries and ownerships. In that case, it would be likely that the top of Observatory Hill would be used for fill material in adjoining gullies.

b. The Truebridge, Callendar & Beach concept (8) (which incidently is not a plan approved by Council), was a scheme covering the whole area, and the earthworks plan was not related to property boundaries.

c. The City Engineer's department comments that if excavations went to the levels shown on the applicants plan in terms of T.C. & B's plan the same achievements or better could be reached by further excavation on the applicants land for use on adjoining property. However alternatively the ridges on adjoining land could be lowered to provide the equivalent fill, or the required amount of fill material could be left unexcavated and rounded off for aesthetic reasons, in readiness for use on the adjoining land. Compensation or payment for the fill is another question.

d. Unless all property owners within the special subdivisional area were prepared to develop at the same time the overall scheme would not work with respect to surplus material from one site being required for use within fill areas on another site. Hence progress in stages related to property ownership should be considered.

5.2 Subdivision in Stages - (i.e.) Several scheme plans each being considered as a separate plan but any one plan having regard for the overall situation as required in the "special subdivisional area."

a. It is believed that if the special subdivisional area were covered by several scheme plans, the extent of each being land within different ownerships, that if the applicants land were the first stage scheme plan, and fill material was taken from the site as proposed, later when other stages

proceeded, fill required for gullies could possibly be provided from the ridges within the remainder of the 'special area'.

b. However before any scheme plan of subdivision or any stage could be considered a concept plan, showing that the scheme in question had regard for the overall area for roading and levels would be required. It may be possible for each property owner to progress independantly when this is done.

c. If this were shown to be feasible it could be that the development of the applicant's land as Stage 1 would be advantageous to adjoining properties and open up their options for development.

d. At this time there is no approved concept plan as required since 1978 by the Local Government Act.

6. REQUIREMENTS ASSOCIATED WITH SUBDIVISION

6.1 Subdivision - Cost of Services

Notwithstanding any plans for earthworks, one of the major costs of subdividing would be the developers contributions towards provision of services, without which in terms of Council policy, the zoning of the land would remain R2D and the subdivisions for residential development would not be consented to.

6.2 Stopping of Streets within the Subdivisional Area

Another aspect of subdivision development of the special area is that consideration to the stopping of legal streets would be given if the subdivisions provide an adequate roading system and this fact is endorsed on the planning maps. However, the road stopping procedures of the Local Government Act are required to achieve it and to transfer the land resulting to the adjoining owners.

6.3 Earthworks for a Subdivision

Earthworks for a subdivision usually entail only earthworks essential to achieve the subdivision unless material exists unsuited to filling operations.

6.4 Engineering Requirements including Stability

Matters concerning engineering works and stability are normal considerations covered by conditions of approval in any subdivision scheme plan.

6.5 Reserves

Provision of actual reserves or a contribution to Council's Reserve Fund or a combination of both are considered with all

subdivision approvals.

6.6 Conclusion on Subdivision

The applicant has not supported the application with sufficient information to justify consideration of a subdivision and if the application were granted, approval of a subdivision scheme plan would be considered at the time of submission. The timing of such a scheme would be dependant on the availability of services.

An approved concept plan for any scheme would be required.

7. IF THE PROPOSAL IS CONSIDERED AS AN EARTHWORKS PROJECT

7.1 If the "earthworks" operation is the prime concern of the applicants, the subdivisional aspect being a bonus resulting from it, but with no guarantee of it being a stage of the development because of the unknown cost of services required for such a subdivision scheme, then the "earthworks" could be said to be a quarry.

Quarry use is a specified departure from both the operative and the 3rd Review of the District Scheme.

It could be said that providing the levels achieved worked towards the future subdivision of adjoining land as well as the applicants land, there is some justification in the application.

7.2 Points of Concern are:

i. The use of the present inadequate roading to carry heavy vehicular traffic transporting material from the site;

ii. The safety aspect of road use, extra noise of traffic through residential areas;

iii. The standard of existing formation of roading in the vicinity being adequate for residential traffic, but not for heavy traffic associated with quarry operations;

iv. The effect of noise and dust from the operation of the quarry on the present residential developments in the vicinity. Much of the land is undeveloped and the area has the quiet characteristics of a rural area.

v. The work is within an impermeable area on the top of a hill and extreme care will be needed to ensure that the original runoff pattern is maintained, such that there is no concentration of runoff water to the surrounding area. It is virtually impossible to achieve this without provision of a piped system. The diversion of water from one catchment to another is not permitted.

vi. The aesthetic effect of an unsightly scar and unnatural contours should the full extent of the proposed works not be completed within the specified time.

vii. The application has no regard for possible works outside the applicants land or legal street, necessary to carry out the proposals., i.e.

a. Encroachment onto land not in the ownership of the applicants for vehicular access to carriageway formation of Emano Street;

b. For easements or stormwater disposal systems outside the applicants land;

viii. Earthworks planned on legal road as shown on the applicant's plan involve excavation of some 31,000 cubic metres of fill material from unformed street. The change of levels of the street would not materially effect the potential roading pattern, keeping in mind that in a future subdivision some of the present legal streets are likely to be closed as indicated on the District Review Planning Maps. However, the question of ownership and/or compensation or arrangements covering the value of materials proposed to be removed from legal City streets would have to be negotiated.

8. WORK INVOLVED

The applicant proposes to move 495,000m^3 from the site over routes - in the main Emano Street, and to a lesser degree Maire Street and Princes Drive.

9. ACCESS ROUTES

9.1 The City Engineers comments on roading are:

The removal of 495,000 cubic metres of material from the site would have a drastic effect on both existing and proposed streets in the City.

Trucking material at a constant rate over a maximum 7 year period would average 24 loads per normal working day and this figure could be higher, depending on the machinery used. Using one route the rate is one load per 20 minutes.

Whatever ingress or egress routes were used, the increase in heavy traffic loading on minor residential streets would create major maintenance demands leading ultimately to a total complete reconstruction.

9.2 Comments on the Failings of Each of the 3 Routes Covered in the Application

a. Emano Street - suggested by the applicant as the main route to and from the site - From Murphy Street to the southern end, extremely narrow, structurally not very sound, upgrading required before constant use by heavy traffic. (Emano Street is not even listed in the Council's works programme Ord 7.70 to 7.73 in the Review of the District Scheme).

The route passes through 1.1km of a residential street (Toi Toi Street) before reaching St. Vincent Street. Heavy vehicles would have considerable

difficulty in negotiating Emano Street/Toi Toi Street intersection and the turn into St. Vincent Street. This area is a busy community shopping centre, and with shops on two street corners generates a lot of pedestrians and traffic parking outside the shops.

b. Maire Street - under no circumstances can this route be considered a safe route for fully laden earth moving traffic. The grade of 1:5.25 is extremely steep and the safety hazard of trucks failing to stop at the intersection with Annesbrook Drive is unacceptable.

If it were used, the maintenance of Maire Street would increase markedly because the braking trucks would shove the asphaltic surface, especially at the bottom where they would invariably have to stop.

c. Princes Drive - This route is also considered unsuitable because of the long length of residential streets that trucks would have to follow to reach a major arterial route. Along the 3.5km of residential streets, the trucks would have to negotiate some extremely narrow (less than 5m at the southern end (top)) and windy sections, as well as unsatisfactory intersections for heavy traffic at Moana Ave and Washington Road.

Princes Drive itself is a "scenic drive" route and is much used by visitors and a mixture of industrial and tourist traffic would be undesirable.

9.3 The Conclusion on Possible Routes is Therefore:

Princes Drive and Maire Street are routes that should not be used for the cartage of spoil should the application be allowed.

The reconstruction of Emano Street is not on the list of 1st, 2nd or possible priority works in the Third Review of the District Scheme. This work is then, not likely to occur within the 20 year planning period.

Should the application be allowed, a condition of approval should be that the Emano Street be upgraded at the applicants expense before the commencement of the removal of spoil.

This would then reduce the Town of Country planning significance of the departure to properties in Emano Street.

The current estimate for the reconstruction of Emano Street $350,000.

9.4 Coverage of Estimates

a The work envisaged in Emano Street is reconstruction from Toi Toi Street to the turning area at the end. This would include excavation, kerb & channel, base course, sealing and the position of 2 x asphaltic concrete footpaths 1.4m wide. The carriageway width would be 12.5m between Toi Toi and Murphy Street and 11.5m between Murphy Street and the end.

b. The kerb and channel are an integral part of the road and required to ensure that proper drainage is facilitated. It also acts as a safety barrier to footpaths serving the residential properties on each side of the street. Footpaths on both sides of the road are necessary to provide safe pedestrian access, clear of the increased volumes of traffic associated with the trucking of material off site.

c. The applicant should be required to pay to the Council or enter into a bond to pay $350,000. The Council would then carry out the reconstruction and on completion refund to the applicant or the guarantor, such balance as is outstanding.

In terms of 495,000m^3 to be taken from the site this then is a 'levy' of approximately 70 cents per m^3 excavated, but is required as a lump sum to reconstruct Emano Street before the work commences.

10. FILL MATERIAL AND MARKET

The applicants inference is that the potential major market for the fill material would be the Nelson Harbour Board for reclamation works. If the fill were suitable, it is understood that remaining contracts for bund material for current Harbour Board reclamation require only 75,000m^3 of material. There may be a potential for a further 40,000m^3.

This poses the question as to whether the applicants have been realistic in their proposal for taking 495,000m^3 from the site and in view of the upgrading requirements and costs for Emano Street, from the applicants point of view, the cost per cubic metre would be considerably greater than 70c per cubic metre quoted previously in this report..

11. ACCESS OUTSIDE THE SITE

A further cost to the applicants would be the upgrading of the track formation of the access south of Emano Street proper. This access is not included in the Council's estimate of $350,000 The location of access to achieve a satisfactory gradient could well encroach on private land.

No application has been recorded by the City Engineer for approval to develop access up the unformed section of Emano Street. Plans would need to be submitted for consideration and approvals obtained from adjacent property owners similarly affected.

12. WATER SUPPLY

12.1 In their submission the applicants state:

"The applicants also draw to the attention of the Council that by lowering the height of Observatory Hill a substantial benefit is gained for water reticulation."

The land is proposed to be reshaped from a maximum height of 184 metres so as to range between the 162 to 168 metre contours.

Councils "Standard Requirements for Engineering Works" states -

"Mains water is supplied up to the 120 metre contour level (Nelson City Council datum).

Development above this level would require the Council's agreement to special arrangements."

12.2 And the "Provisional Third Review of the District Scheme" states:

7.24 The Council is continuously making improvements to the reticulation system to ensure an adequate water supply is available below the 120 metre contour (Nelson City datum) from existing sources in other rural areas. The rural zone boundary has generally been drawn at the 120 metre contour but some land above this height has been included in residential zones where it has been anticipated that earthworks may result in such areas being lowered below 120 metres in height.

Unless this is the case subdivision will not be permitted for residential development except where the area is sufficiently large to justify the Council agreeing to the subdivider providing pumping facilities and long term storage.

7.25 In parts of the City where extensive subdivision is involved, particularly Observatory Hill, the special subdivisional area adjacent to Waterhouse Street, land east of The Ridgeway, north of Marsden Valley, Atawhai hillside, south of Dodson Valley and the special industrial subdivision area off Nayland Road an adequate reticulation system may not be available at the boundaries of proposed subdivisions. In such cases, developers will be required to contribute to the laying of water mains beyond the subdivision.

12.3 Therefore, there is no benefit to the City water reticulation by the lowering of the height of the hill. It is preferred that a reservoir be sited on a rise rather than level land in order that acceptable water pressures can be maintained to adjacent properties.

There is limited benefit to any future subdivider who would still have to contribute to the laying of water mains beyond the subdivision and provide pumping facilities to a reservoir sited within the subdivision.

13. NOISE

13.1 The City Health Inspector recommends "that, if the application is allowed, all machinery and vehicles used in conjunction with the excavation and earth-moving be fitted with the silencer approved by the manufacturers for that type of machine or vehicle and that the machine or vehicle be operated so as to cause no undue noise."

13.2 The Town Planner adds that no explosives should be employed in winning material from the site except with the express approval of Council and under such conditions deemed necessary.

13.3 If the application were granted in no way could the performance standards of the Review be met in relation to noise. The only means of control would therefore be limitations on the hours of operation.

13.4 The City Health Inspector recommends that, if the application is allowed, the hours of work should be restricted to:

7 a.m. to 7 p.m.	week days
8 a.m. to 12 noon	Saturdays

14. DUST

Freshly excavated Port Hills gravel material has a natural moisture content which prevents the formation of dust. Most dust is generated by vehicular movement on material that has dried, and the crushing of larger particles that may fall from a loaded truck. The problem would be minimised by metalling of internal haulroads, regular sweeping of routes on public roads and, if necessary, watering of internal haul roads and loading areas.

15. STABILITY

The applicant has furnished a report from a firm of consulting engineers experienced in land stability. They foresee no particularly adverse effects on stability providing the cut area is carefully contoured to avoid ponding or concentration of surface flow.

This supports a previous report from another firm commissioned by the Council.

16. LOCAL AUTHORITIES

16.1 Nelson Catchment Board
Water Rights and Section 34 of Soil Conservation & Rivers Control Amendment Act 1959 : Specified areas on hillside land within the City are subject to written consent of the Nelson Catchment Board before work may be carried out on land involving:

i. The exposure of soil by removal or burning of vegetative cover.

ii. The exposure of subsoil by the removal of soil.

iii. The execution of earthworks.

The area generally known as Observatory Hill is a specified area under Section 34.

Application for consent or any subsequent consent does not absolve any person from the obligation of obtaining a water right or any building or other permits that are required.

The Boards "General Conditions" which where applicable would certainly apply are as follows:

i. Adequate provision must be made to ensure that debris (soil, silt and detritus or vegetation etc) is not deposited in watercourses nor where it may move or wash into watercourses or onto adjoining lands.

ii. Watercourses shall not be diverted nor shall the natural flow within watercourses be concentrated or impeded unless specifically authorised.

iii. Where borrow and waste areas are used, they should be located and maintained to avoid erosion or movement of spoil into watercourses or adjacent lands.

iv. Earthworks are to be avoided on unstable slopes when climatic or soil moisture conditions would aggravate soil erosion and sediment transport. Precautions should be taken to minimise erosion at all stages during earthworks.

v. Adequate culverts and cut-offs are to be provided to lead water safely away, and to prevent undue concentrations of flow and the scour of water tables and fills. Similar precautions should also be taken for works temporarily suspended as in iv. above. Debris must be kept well clear of water-tables and culvert inlets.

vi. All temporary tracks and firebreaks will generally be constructed with minimum soil disturbance. Adequate provision shall be made for dispersal of stormwater by frequent cut-offs or diversions. Excessive tracking or firebreaking will not be approved.

vii. Firebreaks shall be regularly maintained both to prevent scour and erosion and to ensure the break adequately serves its purpose.

viii. Vegetation or humus shall not become buried in fill operations.

ix. In all excavation and fill operations, the top soil is to be removed, stockpiled and respread over the site at the conclusion of construction and cut and fill slopes shall be promptly sown down with an approved seed and fertiliser mixture or stabilised by other approved measures.

The Catchment Board comments further:

a. "Particular attention would be given to the disposal of runoff water, the ability of watercourses or piped systems to handle the runoff, silt and detritus movement, off site soil erosion hazards, seasonal timing of operations and access road stability.

I had understood from yourselves, Mr Fagan (the applicants surveyor) that no onsite fill operations were involved, if this is not now the case then careful provision to ensure the stability of any such operations will be required."

b. Water Rights - i.e. discharge of water into streams and diversion or discharge into catchment area is subject to the Catchment Board's approval.

16.2 Nelson Harbour Board

A letter from the Nelson Harbour Board was received after the closing date for objections/submissions.

However, the information contained in the letter could hardly be termed as a submission - it is factual information, that is useful to clarify any impressions that may be taken from the applicants background information submitted with the applications.

The letter, dated 23 December 1980, basically points out that at the time of writing the Harbour Board had no arrangement or contract to receive filling from Observatory Hill, for any part of their reclamation.

No tests have been carried out on Observatory Hill site to ensure that the fill would meet the requirements of the Harbour Board. However if the material is:

i. available when the Nelson Harbour Board needs filling for its reclamation development;

ii. the Observatory Hill meets Nelson Harbour Board engineers specifications for the type of filling required at that time;

iii. it is available at a suitable supply date;

iv. the price delivered on the site acceptable,

then the Nelson Harbour Board may be interested in using this material as it will be equally interested in any other supply by any other contractor at the time they require further filling.

17. OBJECTIONS

Ninety objections to the application were received on time.

a. Summarising - Individual or joint objections of

(1)	not more than 2 persons	85
(2)	Joint objections , more than 2 persons	5
		90

b. Joint Objections

Objection No.	22 Emano St 18 signatures, 17 of which do not appear on other objection forms.	17
	32 Maire St. 3 signatures (1 also appears on Obj 85)	3
	47 Princes Drive, 3 signatures 1 appears on 85.	3
	85 General Tahunanui 57 signatures. Only 16 do not appear on other objection forms lodged	16
	From joint objections approximately additional signatures not Group 1.	39

This means 124 individuals or joint objections of not more than 2 people have been received.

c. A separate attachment listing a summary of objections lodged and subject matter with comments is forwarded with this report.

18. CONCLUSIONS

i. The extent of earthworks not being carried out in conjunction with a subdivision scheme plan deem the application as a quarry use.

ii. If a potential subdivision were to proceed in stages, the most economical means of subdividing would mean normally no spoil would leave the site.

iii. It could be argued by removing material from the site and earning royalties, places the owners in a better financial position to carry out a potential subdivision.

iv. However, there is no guarantee that such revenue would be devoted to the potential subdivision where major criteria for approval would be provision of or availability of services.

v. In terms of the planning consequences as a quarry, there is only one potential acceptable route to and from the site and that is Emano Street.

vi. This means any potential consequences are thrust largely on Emano Street and inevitably means greater potential traffic noise and disturbance.

vii. It would cost $350,000 to upgrade Emano Street to a sufficient standard to carry the heavy traffic generated by the proposal to lessenthe Town & Planning Country planning significance in the area.

viii. Emano St is not on Council's list for priority works and no major upgrading is intended by Council in the next 20 years.

ix. Short of providing the amount estimated or a short term bond until the upgrading is completed, there appears no practical means available to ensure this work could be achieved before quarrying commences.

x. A manner of obtaining finance would be to require an initial lump sum then charge a royalty on material as excavated and reconstruct the street as it became available but in the meantime the road surface would be likely to deteriorate to such an extent that adjoining properties would suffer greater potential dust and traffic generated noise, i.e. It would be an unsatisfactory solution.

It is difficult to determine at this time that the rate of carting material off site would contribute sufficient monies by way of a royalty to cover the cost of upgrading the road within a reasonable period of time.

xi. The frequency of trucks is likely to be a minimum of 1 per 20 minutes if a constant rate is maintained over 7 years. However, no indication has been given of the estimated rate of excavation and over what periods. It could well not be constant and be concentrated on certain periods.

19. <u>The Hearing</u>

After hearing the evidence if Council decided to consent to the application appropriate conditions covering matters of concern in this report would have to be considered and include the following items;

a. The applicants shall provide adequate facilities so that no dirt, mud or stones are tracked onto or dropped onto any part of public streets.

b. Any such debris that does reach the street shall be removed immediately by the applicant or may be done so by the Council at the applicant's expense.

c. Silt and stormwater from the site and private haul roads shall be collected to the satisfaction of the Council and the Nelson Catchment Board and not run into public streets. This may involve work on privately owned land for the provision of silt trays etc and approval shall have to be obtained from these owners.

d. The applicant shall deposit with the Council a continuing sum of $5,000 as security for clearing of public streets and public and private drains to the satisfaction of the City Engineer. If the applicant fails to do so the work shall be carried out by the Council and the cost thereof deducted from the deposit held. The applicant shall then deposit further money with the Council to maintain the balance on deposit at $5,000.

e. Engineering requirements including stability stormwater and water rights and approval from the Catchment Board under Section 34 of the Soil Conservation & Rivers Control Amendment Act 1959 shall be required.

Council should determine conditions concerning:

f. Excavation of fill material on legal street as opposed to private property (to whom is the material or its value credited)

g. Limitations of hours for quarry operations.

h. Confining the route to Emano Street and subsequent related conditions to upgrading.

20. SECTION 74 TOWN & COUNTRY PLANNING ACT

a. Specified Departure From District Scheme

Under Section 74 of the Act an application may be made for the grant by the Council of an exception to any provision of an operative district scheme by consenting to a specified departure. Every such application shall be by way of a notified application.

Subject to Section 3 of the Act (Matters of National Importance) the Council may consent to such a specified departure only if:

i. The effect of the departure will not be contrary to the public interest and will have little town and country planning significance beyond the immediate vicinity of the land concerned, and the provisions of the scheme can remain without change or variation.

b. Although it can be considered of considerable public interest to win material for construction purposes, as well as facilitating future subdivision of land zoned for that purpose, these aspects of the public interest must be weighed up against the potential adverse effects particularly on land adjacent to the trucking route.

c. Although Section 74 of the Act requires regard shall be had to Section 3 of the Act, there are only items 3a and 3b which have relevance to the application.

"a. The conservation, protection and enhancement of the physical, cultural and social environment.

b. The wise use and management of New Zealand's resources."

It could be argued that it is of National and considerable local interest that exploitable materials for construction should be used to advantage.

However these facts must be weighed up against the consequences of winning the materials and its impact, particularly in the physical environment and amenities which could be affected by the works.

d. On balance, considering the elements of public interest raised and in the absence of more definitive and supporting evidence from the applicants and having regard to planning consequences immediately beyond the site, it is considered that the application should be refused within the criteria of Section 74 of the Town & Country Planning Act.

A.C. ALLEY
City Planner
DGP:CS
EVS

G.A. TOYNBEE
Deputy City Manager/City Engineer

NOTIFIED APPLICATION NO. 206/40/108

F.R. FRY, R.E. WILKINSON & W.M.L. WHEELER - OBSERVATORY HILL OFF PRINCES DRIVE

SUMMARY OF OBJECTIONS

This summary of objections is related to the subject matter of the objections rather than the number of objectors. It will hopefully show the areas of greatest concern from the objectors point of view.

The attached chart shows specific areas of concern covered by each objection and the conclusions resulting are summarised and commented on, the number of objections for the aspect are stated after the sub heading thus 17.

1. Lowering the Hill

   a. Aesthetics 9

   b. Want Natural State 16

   a. Aesthetics - It should be kept in mind that the land may well be for residential use and it will not always have its present rural characteristics. The lowering of the hill is likely to have less significance on the neighbourhood when it becomes a residential development.

      However, cuts and scars IF the development proceeds should be rounded off to improve the vista.

   b. The 3rd Review of the District Scheme has set out clearly that eventually the land in the application would become residential. It has always been known that earthworks would be involved for a subdivision.

      However the extent of earthworks and the fact that the excavations and the subdivision are not being carried out as one project brings up the degree of earthworks which should be considered.

      A concept plan would give a greater opportunity to look at the overall situation for the whole of the special subdivision area.

2. Stability 59

   Tahunanui Hillside has a history of stability problems, and it is natural that the greatest concern is on this subject.

   A likely requirement before any subdivision scheme plan is considered for approval, is that "the Council will require a certificate certifying that there is a site on each lot suitable for the erection of a building and written in the

standard form shall be submitted by a Registered Engineer experienced in the field of soils engineering and, more particularly land slope and foundation stability.

The certificate shall define on each lot the area suitable for the erection of residential buildings."

It is also likely that a suitable report supporting any engineering plans would be required by the City Engineer before such massive earthworks could proceed, i.e. The stability and measures to protect both the land in question and adjoining land are automatic considerations before any development takes place.

3. DUST - 35 AND NOISE - 31

Both dust and noise could result from two sources:

a. Operations on the site.
b. In transporting the materials gained.

Dust - The site of operation is some distance from any residential development. Except on occasions when there is a strong south westerly wind blowing, the major amount of dust created should only affect land with a rural character.

If consent were granted a condition excluding operations when there was a strong south westerly wind could be considered as a control measure.

Dust created from transporting material from the site can be controlled by use of a water cart.

Noise - The City Health Inspector comments in the Council Officers report that the performance standards of the 3rd Review of the District Scheme, and which are designed to keep noise at an acceptable level for residents in a residential development, could not be met and if the earthworks operation were approved and proceeded.

In practical terms, the only means of controlling such an operation would be by limiting the hours of work, and requiring all machinery to be fitted with silencers approved by the manufacturers for that type of machine or vehicle and that the machine or vehicles be operated so as to cause no undue noise.

4. ENGINEERING

a. Effects of Drainage Alterations to Catchment areas 20

It is not permitted to divert stormwater or surface water from one catchment to another. The Catchment Board's approval is required for Water Rights and Section 34 of the Soil Conservation & Rivers Control

Amendment Act 1959 as described in 16.1 of the Council Officers report.

b. Services

i.	Demand for more services	8
ii.	Extra cost to ratepayer	12

The Council Officers report points out the potential subdivisional development for R2 (Deferred zones) and that subdivision is not possible until services are available in the area and the deferrment is removed by Council resolution.

The Local Government Act sets out the proportion of contributions for services which may extend beyond the boundaries of the subdividers land, that is expected from the subdividers.

If services are not available, and the Council cannot foresee their availability within 5 years, the Local Government Act makes provision for refusing consent to subdivide the land, i.e. The subdivision would not proceed until services were available and if it were not economic to do so the subdivision would be refused.

The application at present covers "earthworks" and the subdivision would require a separate approval with far greater details if it were to proceed later.

5. TRAFFIC

a. Existing Roading Inadequate

Maire 18, Emano 10, Princes Drive	7

b.	Questioning safety	19
c.	Effect of traffic on existing road structure	7
d.	Traffic patterns not detailed sufficiently	2
e.	Inconvenience to properties for a long period	16

The Council Officers report covers in detail the routes and effect of heavy traffic and concludes that Emano Street would be the only acceptable route subject to considerable upgrading being carried out.

There is no doubt that the consequential operations would inconvenience properties fronting the route for a long period but the standard of the actual roading formation would be a vast improvement to that of the present formation.

A possible concern relating to "traffic hazards" is there could be problems for heavy traffic manoeuvres negotiating the intersections of Emano St, Toi Toi Street and St Vincent Street and this could effect the present parking for the shopping area and pedestrian traffic in general.

6. LOSS OF VALUE TO LAND 13

The immediate effect if the proposition were approved, would be the inconvenience and associated consequences to properties along the transport route and the likely prolonged effect over the long period of 5-7 years.

However, in the long term Emano Street, which was not even listed for priority works within the planning period would have been upgraded to a very high standard which would not normally have been carried out without such a project.

7. OWNERSHIP OF LAND 1

One objection questions the form of application presented in relation to ownership and addresses.

This matter will be discussed prior to evidence being presented at the hearing.

However, the actual purpose of application under consideration is the use of the land proposed, i.e. earthworks on applicants land and legal street for subdivision.

8. SUBDIVISION 6

In general object to the land use for residential development.

9. OTHER GENERAL OBJECTIONS

These covered the facts that:

a. other material suitable for fill is available elsewhere;
b. possible flooding would result;
c. work on legal streets;
d. destruction of a trig station;
e. zone the area as a reserve; 5
f. pollution of the Bay with silt;
g. insufficient notice given (the statutory time was given);
h. vibrations which would occur from operations.

10. The objectors suggested that their objections would be met if

a. the status quo were maintained 40
b. controls were imposed covering drainage, transport, landscaping, work hours, dust, noise, etc. 7

c.	alternative access to and from the site	8
d.	further investigation before work commences	3
e.	Hill be created as a Reserve	9
f.	Bond for damage to property (the developer would be liable)	4
g.	Defer the application.	

E.V. Stewart

for A.C. ALLEY
City Planner
EVS:CS

SUMMARY OF OBJECTIONS (amended 20th March 1981)

OBSERVATORY HILL Notified Applic. No. 206/40/108

(6)

Objection No.	Lowering Hill (a) Aesthetics	(b) Want Natural State	Engineering (a) Effect of damage & alterations to catchment areas	(b) Services (i) Demand for more service	(ii) Extra cost to rate payer	Stability	Traffic (a) Exist. Roading inadequate (i) Maire	(ii) Erano	(iii) Princes Drive	(b) Questioning safety	(c) Effect of heavy traffic on existing road structure (i) Maire, Erano	(ii) Princes Drive	(d) Traffic Patterns not detailed sufficient	(e) Inconvenience to properties (users) for a long period	Noise	Dust	Subdivision	Ownership of land	Loss of value to land	Other	Maintain statusquo	Apply controls to drainage, transport, land scraping, work hours noise etc.	Alternative access to & from site	Further investigation before work commences	Hill created a reserve	Bond for damage to property	Defer application	Other
1		X	X			X								X	X		X											Nil
2			X																							X		
3		X			X	X								X	X	X					X							
4			X			X															X							
5																				Whole Proposal								Nil
6						X	X	X		X				X	X	X			X							X		
7					X	X															X							
8	X			X		X	X								X	X	X				X							
9			X							X											X							
10				X		X							X		X	X					X	2nd Choice						
11															X	X			X									Nil
12		X				X															X							
13		X				X				X	X				X	X					X							
14	X	X			X	X	X	X	X	X				X	X	X			X	NCC to obtain as reserve					X			2nd choice. Sub[illegible] without altering contains
15			X							X											X							
16						X								X						Rezone as reserve					X			
17						X								X						Rezone as reserve					X			
18						X								X						Rezone as reserve					X			
19					X	X				X											X							
20			X							X			X		X									X				
21			X		X					X					X	X			X		X							
22		X	X		X			X		X				X	X	X			X									Nil
23			X					X		X	X								X				X note Emano					
24						X					X				X	X			X		X							
25					X	X				X																		XConciliation of citizens & rate-payers in any action taken.
26						X												X			X							
27							X			X	X												X not Maire					
28		X				X	X			X					X	X			X				X not Maire					XRefusal to allow removal of soil & vegetation.
29				X		X	X							X													X	Defer till services are adequate.
30			X				X							X	X	X											X	Defer till services are adequate
31		X	X				X								X							X						
32							X																X not Maire					
33							X								X	X							X not Maire					
34							X								X	X				Vibrations			X not Maire					
35						X															X							
36				X		X															X							
37		X				X													X		X							

CONSERVATION HILL NOTIFIED APPLICATION NO. 206/40/108.

Objection No.	Lowering Hill (a) Aesthetics	(b) Want Natural State	Engineering (a) Effect of damage & alterations to catchment areas	(b) Services (i) Demand for more service	(ii) Extra cost to ratepayer	Stability	Traffic (a) Exist. Roading inadequate (i) Maire	(ii) Evans	(iii) Princes Drive	(b) Questioning safety	(c) Effect of heavy traffic on existing road structure (i) Maire, Evans	(ii) Princes Drive	(d) Traffic Patterns not detailed sufficiently	(e) Inconvenience to properties (users for a long period)	Noise	Dust	Subdivision	Ownership of Land	Devaluations	Other	Maintain Statusquo	Apply controls to drainage, transport, land scraping, work hours Noise etc.	Alternative access to & from site	Further investigation before work commences	Hill created a reserve	Bond for damage to property	Defer application	Other
38		X				X			X						X	X						X					X Use natural contour devlpm
39					X	X															X						
40					X			X	X							X				Flooding							XFurther action necessary.
41						X								X	X	X					X						
42		X				X			X										X		X						
43		X													X	X	X								X		
44		X				X		X							X	X					X						
45						X															X						
46	X			X		X	X	X	X											Work on legal Street ultra Vires council	X	X Second Choice					
47	X			X		X	X	X	X											" "	X	Second Choice					
48						X								X	X	X					X						
49						X								X	X	X					X						
50						X																					NIL
51																				Does not comply Sec. 394 S & C Act.	X						
52						X															X						
53						X								X							X						
54				X	X																	X Storm Drainage.					
55		X		X																	X						
56						X								X													NIL
57					X	X										X					X						
58				X		X														Destruction of Fire station contrary to Sec.106 P.W. Act.		X		X			Provide suitable alternative trig/ area created a reserve.
59						X																		X			
60					X		X			X					X	X										X	
61									X	X						X											XCableway from hi to port. No carta along streets.
62	X			X		X															X						
63	X					X																					NIL
64						X								X						Zone area as Reserve					X		
65		X																									NIL
66						X										X											X Legal means
67						X										X											X Legal Representation
68					X	X													X							X	X No cost to Ratepayers
69		X															X										X No subdivision
70			X			X					X					X					X						
71			X			X					X						X				X						
72						X													X		X						
73						X											X			Pollution of bay with silt							X Tahuna Action Committee?
74						X	X								X	X				Not enough detail.							NIL

Objection No.	Lowering Hill	(a) Aesthetics	(b) Want Natural State	Engineering	(a) Adequate/cost of drainage/alter.	(b) Services	(i) Do not bid for more services	(ii) Extra cost to ratepayer	Stability	Traffic	(a) Exist. Roading inadequate	(i) Mayfair	(ii) Emano	(iii) Princes Drive	(b) Questioning safety	(c) Effecting road use/safe	(i) Mayfair Emano	(ii) Princes Drive	(d) Traffic patterns not detailed sufficient	(e) Inconvenience to properties (users for a long period)	Noise	Dust	Subdivision	Ownership of land	Loss of value to land	Other	Maintain Statusquo	Apply controls to drainage, landscaping, and screening, earthworks, noise, etc.	Alternative access to a from site.	Further investigation before work commences	Hill created a reserve	Bond for damage to property	Defer application	Other
76				X					X												X	X									X			
77									X						X						X	X									X			
78				X							X											X												Klomjer public notification.
79				X					X																									NIL
80	X								X																									NIL
81									X																									NIL
82									X		X		X		X		X				X	X			X									NIL
83	X										X		X		X												X							
84									X						X						X	X					X							
85																																		NIL
86															X						X	X					X							
87	X			X							X		X		X											other entries capable of subdivision referred to HIL.	X							
88									X																		X							
89																								X		Full names & addresses of applicants not given no subdivision given.	X							
90									X						X						X	X									X			
	9	16	20	8	12	59	13		10	7	19	7	0	2	16	31	35	6	2	13		40	7	6	3	9	4	2					

TONKIN & TAYLOR
CONSULTING ENGINEERS
REGISTERED SURVEYORS AND TOWN PLANNERS
Molesworth House, 101 Molesworth Street, Wellington 1, New Zealand.
Telephone: 726-997 P.O. Box 12152 Cable: TONTAY

Our Ref: W/ 241

11 December 1980

Staig and Smith
Registered Surveyors
280 Trafalgar Street
NELSON

Attention: Mr P. Fagan

Dear Sirs,

PROPOSED OBSERVATORY HILL DEVELOPMENT

EARTHWORKS FOR SUBDIVISION OF LOTS 1 and 2 DP 7374.

We comment on stability aspects of the above proposed development, as shown on your Drawing, dated November 1980, as follows:

We previously examined the area in 1975, as part of a larger appraisal for development in the Observatory Hill area.

The proposed subdivision area is underlain by Port Hills Gravels of Tertiary Age, consisting of boulders in a compact matrix of clay and silt. A residual layer of silt and clay, two to three metres thick, generally overlies the gravels on the hillslopes.

Stability problems are confined to soil creep and shallow instability in the residual soil layers, both of which are quite prevalent. No obvious signs of deep seated instability were noted in our earlier examination, which included aerial photograph assessment.

The proposed development involves removal of up to about 18 metres from the top of the ridge, which extends south from Princes Drive. We can foresee no particularly adverse effects on stability resulting from such earthworks, other than possible increase of infiltration from rainfall. The gravel layers are relatively impermeable so infiltration is unlikely to be excessive. There may be a tendency in the short term for increased infiltration or localised runoff to effect near surface instability round the margins of the cut area, but this could be largely overcome by careful contouring to avoid ponding or concentration of surface flow.

.../2

PRINCIPALS: Ralph M. Tonkin, B.E., F.N.Z.I.E., M.I.C.E., M.A.S.C.E. Donald K. Taylor, B.Sc., D.I.C., F.N.Z.I.E., M.I.C.E. G. Alan Pickens, B.E., B.A., M.N.Z.I.E. Peter B. Nissen, B.E., B.Sc., D.I.C., F.N.Z.I.E., M.I.C.E. Gerald E. Kelly, M.N.Z.I.S., A.R.I.C.S., Dip. T.P. Terence J. Kayes, M.E., M.N.Z.I.E., M.I.C.E., M.A.S.C.E.
ASSOCIATES: John N. Duder, B.E., M.N.Z.I.E., M.I.C.E. Christopher P. Gulliver, B.Sc.(Geol.), B.E., M.N.Z.I.E. Michael A. W. Taylor, M.E., M.N.Z.I.E. Laurence D. Wesley, M.E., M.Sc.(Eng.), Ph.D., D.I.C., M.A.S.C.E.
CONSULTANTS: Peter W. Taylor, B.Sc., B.E., Ph.D., M.N.Z.I.E., M.I.C.E., M.A.S.C.E. F.W.O. Jones, B.E., M.N.Z.I.E., M.I.C.E., M.N.Z.P.I.

As part of the preparation of scheme plans for the subdivision it would be necessary to check slope conditions around the cut margins to decide to what extent building line restrictions are warranted.

Yours faithfully,
TONKIN & TAYLOR

C.P. Gulliver

per pro:

City Planner Copy
old opinion.

FLETCHER & MOORE
BARRISTERS, SOLICITORS
and
NOTARIES PUBLIC

WALTER VERNON ROY FLETCHER, LL.M., Notary Public
IAN LESLIE MOORE
RONALD ALAN FLETCHER, LL.B.
ANTHONY BRIDGE BEATSON, LL.B.

Telephone - 81-469
P.O. Box - 90

288 TRAFALGAR STREET,
NELSON, NZ.

When calling or telephoning with reference to this letter, please ask for . . .
Mr. WVR Fletcher

16 December 1975

The Town Clerk
Nelson City Council
PO Box 645
NELSON

Dear Sir

re: Proposal to lower level of Princes Drive

I am in receipt of your memo of the 27 ultimo.

I have perused Messrs Hunter Smith & Co's letter of the 21st ultimo. They do not give any legal authority for their statement in the third paragraph of their letter but I think they have in mind three decisions to which I will later refer the effect of which is that a public body in the exercise of its statutory powers must act in good faith and for the public benefit and not for the private benefit of some individual or set of individuals.

The first case was a decision of the Court of Appeal in Adams v Hutt County (1957) N.Z.L.R. 774. In that case one Bowie had legal access to his property along an old road along the sea coast which had suffered from sea erosion and was at certain times impassable to motor vehicles. He approached a neighbour Adams to obtain a right of way over her land but was refused. He then approached the Hutt County Council to get them to compulsorily take part of Adams' property as service land and thus give him practicable vehicular access to his land. He agreed to pay all the County's legal costs and expenses and to indemnify it for any compensation Adams might be awarded. The Council was authorised to take land for a service land "for the purpose of providing the public with side or rear access for vehicular traffic to any land". From the evidence the land was being taken to give rear vehicular access to Bowie's land for himself and members of his household their visitors and occasional tradesmen but not for the public and therefore the Council were acting ultra vires and an injunction granted.

The second case was a decision of the Supreme Court in Bartrum V Manurewa Borough (1962) N.Z.L.R. 21. In that case one Lomas sought to subdivide his property but could only provide a strip of 40 feet of his own land for street and the Ministry of Works would only agree to an underwidth street provided he obtain a further 10 foot strip from his neighbour Mrs Bartrum. She refused to sell and Lomas approached the Borough Council to enlist their aid to take the land compulsorily under the Public Works Act he undertaking to indemnify the Borough for all its expenses and what compensation it would have to pay Mrs Bartrum. Mrs Bartrum applied to the Court for an injunction

to prohibit the Borough Council proceeding with the taking. The Court granted the injunction on the ground that the Council was not acting in good faith for the purposes of the Municipal Corporations Act in that instead of promoting the public interest they were promoting private benefit. In the course of argument in that case reference was made to a Court of Appeal decision in Wellington City Corporation v Dealy (1929) N.Z.L.R. 352 where the City Corporation proposed to take part of Dealy's land not for the actual widening of a street but to compensate a neighbour from whom land was actually taken for the widening and it was held they were entitled to do so. It was distinguished from Bartrum's case in that in Dealy's case there was no antecedent bargain and therefore the City Council had acted in good faith within the Act.

The third case is a recent Court of Appeal decision in Lower Hutt City Council v Bank (1974) 1 N.Z.L.R. 545 affirming an earlier decision by the Chief Justice. That case dealt with the stopping of a street and involved a consideration of the provisions of the Sixth Schedule of the Municipal Corporations Act 1954. The matter at present under review may entail both a lowering of the street which involves the provisions of the Eighth Schedule which is in similar terms to the Soxth Schedule which however also comes into consideration as the Syndicate's proposal involves the partial stopping of a street.

The facts in Bank's case are that in September 1971 the Lower Hutt City Council entered into an Agreement with Challenge Properties Ltd in relation to an area of a little over eight acres which was to be leased by the City to the Company for 99 years at an annual rental over the first nine years of more than $60,000.00. In order to provide the area it was necessary for the City Council to stop parts of Queens Road and Bloomfield Terrace and the Council undertook to forthwith take the necessary steps to do this and gave the necessary public notice and had plans prepared. There were several objections lodged and the City Council gave notice that it would hear objections on the 23rd July 1973 but before that date one Bank issued proceedings claiming a Writ of Prohibition. The matter came before the Chief Justice on the 2nd August 1973 and he granted prohibition "on the ground that the Council as a result of the contract with Challenge Properties Ltd had so situated themselves that it appeared there was little likelihood that they would fail to disallow the objections. He did not doubt the good faith or integrity of the Mayor and Councillors byt the appearance of justice required that the Council should be prohibited". The Council appealed against that decision to the Court of Appeal who dismissed the appeal.

Unlike the other cases I have examined the question of good faith or otherwise on the part of the Council did not appear to have weighed with either Court in Duke's case. Nor did the fact that the Council's decision on the stopping was not final. Under the 6th Schedule if after hearing the objections a Council reaffirms its decision to stop the street it must forward the plans and papers to either the Town and Country Planning Appeal Board or the Magistrates Court depending on the circumstances for its decision but the Court of Appeal answered

this by holding that the Schedule clearly contemplated two distinct independent and fair hearings one by the Council and a later one if necessary by the Appeal Board or a Magistrates Court.

In the 8th Schedule dealing with fixing of levels of street instead of the onus being placed on the Council if it reaffirms its decision to refer the matter to the Appeal Board or a Magistrates Court there is instead a right of appeal to a Magistrate's Court. Despite this difference in procedure between the two Schedules I am of the opinion the Court would apply the same principles as in Duke's case.

I have perused the files herein so that I could get a better appreciation of the situation. Put briefly the Syndicate desire to erect two high rise buildings each containing 12 apartments. To achieve this the Council's consents under the Town and Country Planning Act, 1953 to both Conditional Use and Specified Departure is necessary but also it is necessary to persuade the Council (a) to lower part of Princes Drive and (b) to stop part of Princes Drive and sell same to the Syndicate.

The Council is empowered to do these things under Section 170(4)(g) and (h) of the Municipal Corporations Act, 1954 subject to rights of objection. In exercising those powers the Council must act reasonably and do so only for a public purpose and not for a private benefit (Bartrum v Manurewa Borough (1962) N.Z.L.R. 21 At page 29 l 35) It must satisfy itself that such lowering and closing of the street is required for the benefit of the public. That is the sole object for which the legislature has vested these powers in the Council. If an objector can show that the Public benefit is nil or minimal and that the powers if exercised will be mainly or wholly for the benefit of the Syndicate then it is possible that as in Bartrum's case the Council may find itself faced with proceedings against it for an Injunction.

Looking at the Syndicate's proposals as impartially as I can they involve a large capital outlay on the part of the Council that it would require to be reimbursed by the Syndicate. The Syndicate would no doubt agree to this but if the Council entered into any agreement concerning this it would immediately lay itself open to Injunction proceeding's by an aggrieved party. So far as I can gather from the files the Council has not committed itself as yet to an Agreement with the Syndicate. Consideration of the decision in Duke's case and the other cases I have discussed makes it quite apparent that in negotiating with the Syndicate on the lines they suggest the Council is treading on very delicate ground. If as in Duke's case the Council considers there will be some financial benefit to the City by adopting the scheme proposed that should not be considered necessarily as being in the public interest. In the concluding sentence in his judgment in Bank v Lower Hutt City Council ((1974) 1 N.Z.L.R. 385 At page 390) the Chief Justice said (when considering a submission that the effect of his judgment would be that the redevelopment project could not proceed in its existing form)

- "I have no doubt that the plans for redevelopment are important to the Lower Hutt City Council but in the long run they are not more important than that the rights of private citizens should be and be seen to be protected".

Yours faithfully

Town Planning Memo for ACTION

Nelson City Council
P.O. BOX 645, NELSON. PHONE: 81-059.

In reply refer to
Miss Stewart
ref:

4 December 1980

Attention Mr. D Plant.
Attached - application and covering report.
You already have the plan, a hand written note concerning a report to be available at a later date.

MEMO FOR: The City Engineer

NOTIFIED APPLICATION NO. 20/40/108
FRY WILKINSON WHEELER
PRINCES DRIVE - OBSERVATORY HILL - EARTHWORKS

Your comments are required for inclusion in the City Planner's report for this application.

OBJECTIONS CLOSE - 24 December 1980

HEARING DATE - Not set until we know implications and possible delays in producing report

BUT Applicants and Objectors must receive notice of the hearing 10 days before the hearing

GENERAL INFORMATION AND THOUGHTS

The use or proposal - facts to assist you.

Council must be satisfied that this work or proposal will not compromise the subdivisional development potential of the subdivision area (defined on scheme) as a whole.

It is noted that approval of a subdivision is not being asked - only earthworks and possible road.

It could be said that a variation of the road position would be acceptable providing it fitted in with a future roading pattern for the whole area, i.e. more concerned that lowering the hill would not compromise options.

The future development of the land, whether erection of residential buildings or subdivision, can be controlled by the District Scheme. e.g.

a. building permit not issued for buildings if land not suitable - Local Government Act 641, Section 51.30 of Review or 6.2 of Operative Scheme. "Services" would be one of the matters considered in determining if the site were suitable.

b. Subdivision - apply normal controls for special subdivision area.

questions of work on the legal roads -

- it is likely that these roads would be closed when a new practical roading system is provided for the area;

- change of levels of existing roads - see Applicant's Solicitors opinion;

- the inclusion of the streets and reference to work on them could well be considered sufficient with no further public notice. Staff perhaps should discuss this point to see if we need advice of the City Solicitor BEFORE THEIR CHRISTMAS BREAK.

- Although not a matter of concern of the actual application, which is asking consent to do work - there may be some negotiating on spoil being taken from legal road;

- Conditions could include work outside the area - ie on the standard of access on legal streets;

- Catchment Board comments should be obtained will your Division please be responsible;

} Town Planning first letter to Catch Bd 17/12/80

- Noise performance standards;

- City Health Inspector should be in the picture for working hours. Should CP or Se discuss this with Mr Davidson.

E.V. STEWART
Assistant City Planner
EVS:CS

18 DEC1980

Reference No. 2B/1430
Prior [illegible] 60/118

Transfer No.
N/C. Order No. 125436

3B/45

REGISTER

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

This Certificate dated the 10th day of February one thousand nine hundred and SEVENTY under the seal of the District Land Registrar of the Land Registration District of NELSON

WITNESSETH that THE CAWTHRON INSTITUTE TRUST BOARD having its registered office at Nelson –

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 40 acres 2 roods 23.1 perches more or less situated in the City of Nelson being Lot 1 Deposited Plan 7374.

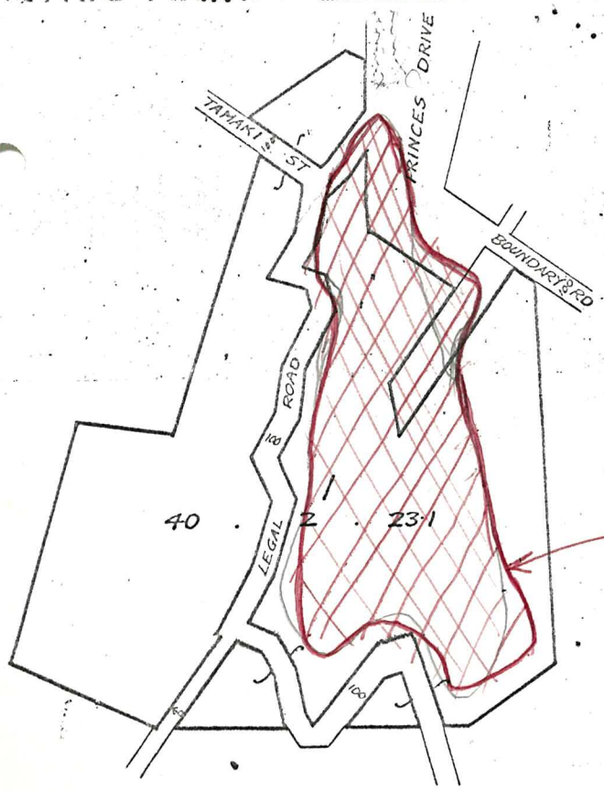
DISTRICT LAND REGISTRAR

District Land Registrar

METRIC AREA IS 16.4482 ha

Subject to a water easement over part appurtenant to the land in C.T. 121/51 created by Conveyance 41276 (51/204).

D.L.R.



Scale: 1 inch = 80 Chains

D.P. 7374

No. 3B/45

Register copy for L. & D. 69, 71, 72

NOTIFIED APPLIC. 204/40/108

Observatory Hill - Off Princes Drive.

1	A & J. McMahon	10 Bisley Ave	
2	R F Squire	c/o 9 Champion Tce	
3	A & J. McCubbin	14 Chamberlain St.	
4	A R Jordan	16 "	
5	G M Taylor.	33 "	
6	G E Brown	35	
7	E G. & V Davies	1 "	
8	B.J. Westbrook	39 "	
9	Scalords Products.	41 "	
10	J & G. Simpson	43 "	
11	A & - Mulders	53 "	
12	A G Clarke	65	
13	Dr. D E Clarke	65	
14	C J Knight	81	
15	G V. France	87	
16	D H & M Griffith	25 Douglas Rd.	
17	D H "	25 "	
18	D & I Buchan	27 "	
19	R Widdow	29 "	
20	D J Longley	47 "	
21	H & D Poole	92 Emano St	
22	H E Poole	on behalf of Emano St Residents	
23.	L R Taylor	95 Emano St	
24	M Thornton	27 " "	
25	C Chamberlain	92 Green St	
26	A. H Jacobson	82 " "	
27	C & A Kool	5 Main St	
28	D & L Griffith	8 Main St	
29	J E Robinson	33 "	
30	D & M Clark	27 "	
31	G D & J Williams	29 "	
32	(Stapleton, Burke & Crisp.	c/29. "	
33	A J Allan	31 "	
34	J P Dayman	35	
35	D Monk	2/120 Moritai St.	
36	V F Monk	" " "	
37.	N Milne.	20 Orakei St.	
38	W H. Williams	22 "	
39	H Somerfield	22 " "	

40.	M G Dagman	88 Parkers Rd.	[signature]
41	T. Casey.	103 " "	
42	E J Adams	128 Moana Ave	E. J Adams.
43	K. Cashmaille	208 Princes Drive	
× 44	R & C Wilson	214 "	on behalf of C. Wilson H.M. Black ×
45	R & H Black	250 " "	H M Black ×
46	L Neas (Hollyeur Pitt & Moore	PO Box 18 Nelson	[signature]
47	Bailey Hurst House Potton — Hunter Smith & Co.	(Princes Drive) 112 Collingwood St	[signature] × R Butterworth
48	R Taylor	7 Rangiora Te.	R Taylor
49	B Taylor	" "	
50	I D Thomson	11 "	M. Thomson.
51	J & S Aucutt Glasgow Tidswell & Son	12 Rangiora Tce. —	[signature]
52	R Denton.	17 Rangiora Tce	
53	G. B P Ball	19 " "	
54	J Hekkenberg.	25	
55	J. Sheed	23	
56	D & M Blair	36	
57	R & J Amiberger	38	
58	C. Y GRANT	42 " "	
59	B Ward	2	
60	J Van der Wouden	48 Tahunanui Drive	
61	C & P Collier	146 " "	
62	W & M Farquhar	17 Stansell Ave.	× W.E. Farquhar.
63	B & M O'Donnel	25 " "	
64	D S MacCreadie	28 " "	
65	J Meade	19 Tamaki St	
66	G & M Morris	17 Tamaki "	
67	R M Dixon	21 "	
68	S Kennedy	32 "	
69	N Christofferson	28	
70	E Marshall	40 Toswill Rd	
71	P Marshall	40 "	
72	I & C Wilson	47 "	C. Fr. Wilson
73	P E Stent	53 "	
74	E Tomlinson	66 "	
76	A P McGrath	65 "	
75	? ?	?	

~~77~~	R McGrath	68 Tosswill Rd
78	A White	70
79	I Ward Holmes	194 Annesbrook Rd
80	C Holland.	17 Tosswill Rd
81	C Pringle	69 Chamberlain St
82	M Thornton Anne Price	27 Emano St
~~83~~	G & H. Macpherson.	12 Waikare St H. Macpherson.
~~84~~	R Walton & S.	31 Chamberlain St
85	Joint Tahunanui	H Macpherson. Chamberlain Chairman
86	M McKegney	53 Scotia St pp M J McKegney.
87	R W Gibbons Bishopdale Pottery	19 Parane St
88	Dist. Public Trustee	Po Box ~~665~~ 441
89.	Housing Corp. N 2 (Stuart)	22 Bridge St
90	R McGrath	68 Tosswill Rd

Copy to Applicants - Rout Milner & Fulchett

Catchment Bd. — — (assisted with application)

Harbour Bd. — " " application.

to Hemain St check on field

296 000 mE.

296 200 mE.

698 200 mN.

698 000 mN.

697 800 mN.

PROPOSED EARTHWORKS FOR SUBDIVISION OF LOTS 1 & 2 DP7374

RECEIVED
21 NOV 1980
TOWN PLANNING
DEPARTMENT

Comprised in C.T's 3A/1118, 3B/45

PREPARED BY STAIG & SMITH - REGISTERED SURVEYORS
NOVEMBER 1980

SCALE 1 : 1000
CONTOUR INTERVAL 2 Meters

PRINCES DRIVE

TAMAKI ST. (Not Formed)

LEGAL ROAD (Not Formed)

EMANO ST. (Not Formed)

LEGAL ROAD (Not Formed)

PROPOSED

ROADING

LEGAL ROAD (Not Formed)

EXTENT OF EARTHWORKS

TOTAL CUT 495,000m3