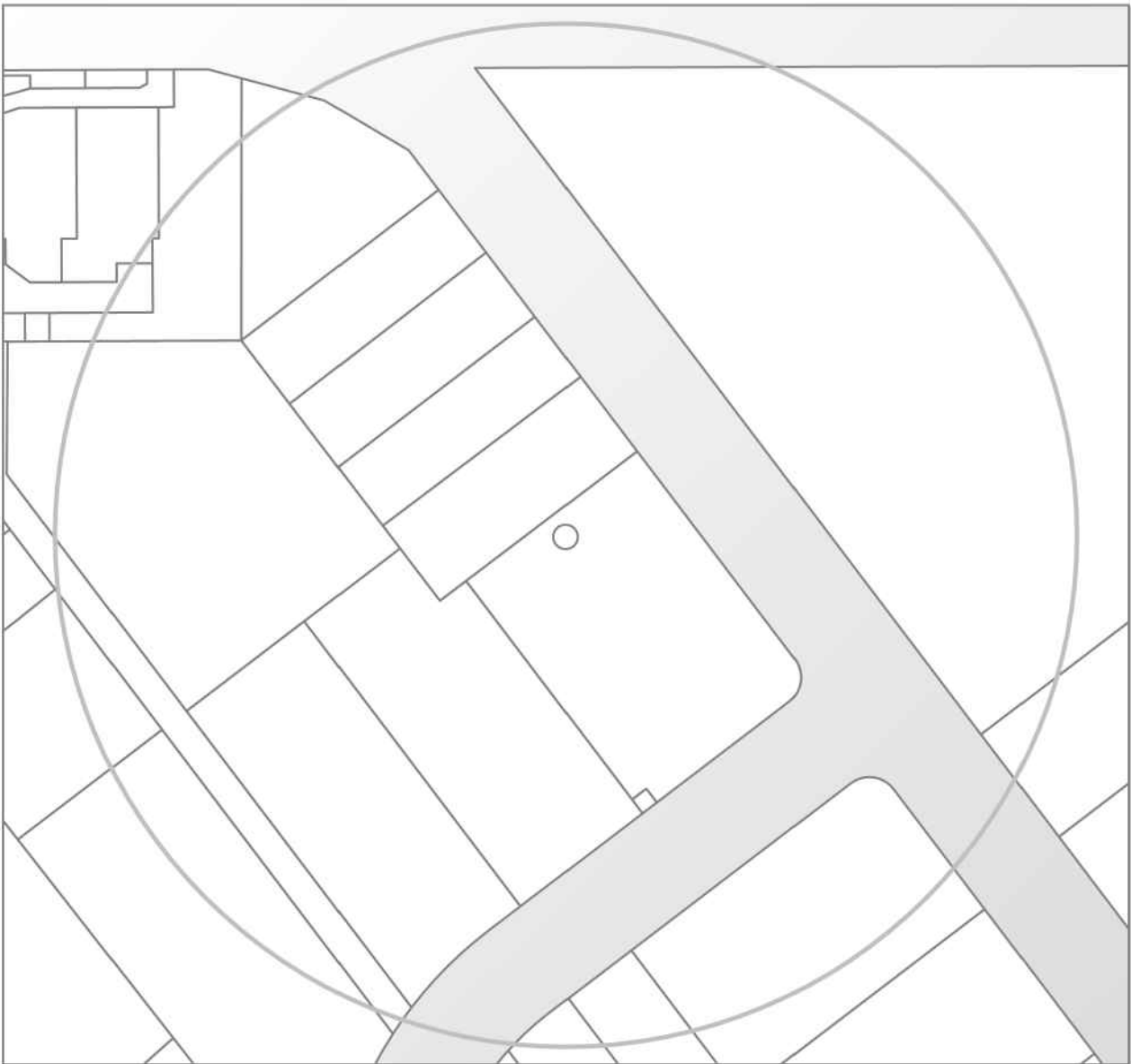


Land Information Memorandum



The contents of this documentation are strictly subject to the terms and conditions of the disclaimer contained at the front of this documentation. Prospective purchasers must accordingly read and acquaint themselves with the disclaimer prior to reading the documentation

Property address:
5/52 Hayton Road

LIM number: H09583920

Page 1

Christchurch City Council
53 Hereford Street, PO Box 73015
Christchurch 8154, New Zealand
Tel 64 3 941 8999
Fax 64 3 941 8984

www.ccc.govt.nz



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Application details

Date issued 6 May 2026
Date received 24 April 2026

Property details

Property address 5/52 Hayton Road, Sockburn, Christchurch
Valuation roll number 23411 37890 E
Valuation information Capital Value: \$730,000
Land Value: \$345,000
Improvements Value: \$385,000
Please note: these values are intended for Rating purposes
Legal description Unit E DP 79398 on Lot 33 DP 76565 having share in 2376 m2
Existing owner

Council references

Rate account ID 73132115
LIM number H09583920
Property ID 1033020

Document information

This Land Information Memorandum (LIM) has been prepared for the purpose of section 44A of the Local Government Official Information and Meetings Act 1987 (LGOIMA). It is a summary of the information that we hold on the property. Each heading or "clause" in this LIM corresponds to a part of section 44A.

Sections 1 to 10 contain all of the information known to the Christchurch City Council that must be included under section 44A(2) LGOIMA. Any other information concerning the land as the Council considers, at its discretion, to be relevant is included at section 11 of this LIM (section 44A(3) LGOIMA). If there are no comments or information provided in these sections this means that the Council does not hold information on the property that corresponds to that part of section 44A.

The information included in this LIM is based on a search of Council records only and there may be other information relating to the land which is unknown to the Council. Please note that other agencies may also hold information relevant to the property, or administer legislation relevant to the use of the land, for example, the Regional Council (Ecan), Heritage New Zealand Pouhere Taonga, and Land Information New Zealand.

Council records may not show illegal or unauthorised building or works on the property. The applicant is solely responsible for ensuring that the land is suitable for a particular purpose.

A LIM is only valid at the date of issue as information is based only upon information the Council held at the time of that LIM request being made. It is essential that the applicant undertakes their own due diligence to verify the suitability of the property for their intended use.

Under Information Privacy Principle 3A (IPP3A) of the Privacy Act 2020, if personal information is collected indirectly (from someone other than the individual concerned), the affected person should be notified. If you are submitting a request on behalf of another individual and providing personal information to Council, please ensure that they are made aware of this prior to submission.

To enable the Council to measure the accuracy of this LIM document based on our current records, we would appreciate your response should you find any information contained therein which may be considered to be incorrect or omitted. Please telephone the Customer Call Centre on (03) 941 8999.

Property address:

5/52 Hayton Road

LIM number: H09583920

Page 3

Christchurch City Council

53 Hereford Street, PO Box 73015
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A search of records held by the Council has revealed the following information:

1. Special features and characteristics of the land

Section 44(A)(2)(aa) LGOIMA. This is information known to the Council but is not apparent from a district plan under the Resource Management Act 1991. It identifies each (if any) special feature or characteristic of the land concerned, including but not limited to the likely presence of hazardous contaminants.

☎ For enquiries, please phone (03) 941 8999 or visit www.ccc.govt.nz.

Natural Hazards

Section 44A(2)(a) LGOIMA. This is information known to the Council about natural hazards that is required by section 44B LGOIMA.

Council's information has primarily been obtained from external specialists with the technical expertise to carry out research, investigation or analysis. Under the Local Government (Natural Hazard Information in Land Information Memoranda) Regulations 2025, the Council isn't required to:

- prepare a risk assessment of the land concerned.
- undertake any further analysis relating to the land.
- conduct additional searches or inquiries about the existence of natural hazard information.

It is the LIM recipient's responsibility to seek qualified advice about any identified natural hazard and/or the suitability of the land for its intended purpose.

This section may also include natural hazard information provided by Environment Canterbury. Christchurch City Council is required to include such information in LIMs where Environment Canterbury considers it meets the criteria under section 44C of LGOIMA.

The following statement has been provided by Environment Canterbury:

This Land Information Memorandum includes natural hazard information deemed by Environment Canterbury to be the most up to date, useful, and relevant, and is provided in accordance with the Local Government (Natural Hazard Information in Land Information Memoranda) Regulations 2025. All due care has been taken to ensure current information required to be provided under the regulations is presented below.

Environment Canterbury may hold superseded or less reliable natural hazards information relating to the land that has not been included in this Land Information Memorandum. Please contact Environment Canterbury if you would like to enquire about this information.

(a) Coastal Hazards

- Regional Hazard Information: Shoreline Modelling

Future shoreline modelling has not been completed for this area, however given the distance of the property from the coast, it will not be susceptible to coastal erosion for at least the next 100 years.

(b) Earthquakes

- Liquefaction Assessment

Christchurch City Council holds indicative information about liquefaction hazards for Christchurch. Information, including an interactive web tool, can be found on the Council's website at ccc.govt.nz/liquefaction

Depending on the potential liquefaction hazard of an area that a property is in, the Council may require site-specific investigations before granting future subdivision or building consent for a property.

Title of report: Christchurch liquefaction vulnerability study

Purpose of report: To provide a district-wide liquefaction vulnerability assessment and to provide expected land performance for a range of potential future earthquake and groundwater scenarios. For use in land use planning, subdivision and building consenting

Scope of report: Christchurch urban area from the Waimakariri River mouth to Godley Head, and inland to the Selwyn District boundary

Where or how to access the report: <https://ccc.govt.nz/assets/Documents/Environment/Land/CCC-Liquefaction-ReportBody.pdf>

Date of report: July 2020

Name of person/entity that commissioned report: Christchurch City Council

Name of person/entity that prepared the report: Tonkin & Taylor Ltd

Title of Report: Geotechnical information on horizontal land movement due to the Canterbury earthquake sequence

Purpose of report: Background geotechnical information about shallow ground movements as a result of the earthquake sequence

Scope of Report: Christchurch City flat area, excluding Port Hills and Banks Peninsula

Where or how to access the report: <https://www.linz.govt.nz/resources/research/geotechnical-information-horizontal-land-movement-due-canterbury-earthquake-sequence>

Date of report: March 2015

Name of person/entity that commissioned report: Land Information New Zealand

The name of person/entity that prepared the report: Tonkin & Taylor Ltd

- Regional Liquefaction Information

Areas where there was evidence of liquefaction were mapped following the 2010/11 Canterbury earthquakes by Tonkin & Taylor for the Earthquake Commission (urban areas) and by a group of researchers for Environment Canterbury (rural, commercial and industrial areas). These are available in the Christchurch Liquefaction Viewer at <https://apps.canterburymaps.govt.nz/ChristchurchLiquefactionViewer/>.

Technical report information:

Title: Review of liquefaction hazard information in eastern Canterbury, including Christchurch City and parts of Selwyn, Waimakariri and Hurunui Districts.

Date: December 2012.

Author: H Brackley (compiler).

Commissioned by: Environment Canterbury.

Purpose of report: To collate liquefaction occurrence during the 2010/11 Canterbury earthquakes, and to determine liquefaction vulnerability. For use in land use planning, subdivision and building consenting.

Study area: Coastal Canterbury from the Waipara River mouth to the Rakaia River mouth, including Banks Peninsula, and inland to Rangiora, Aylesbury, Selwyn and Southbridge.

Accessible at: <https://www.ecan.govt.nz/document/download?uri=1702192>.

- Regional Hazard Information: Earthquake fault deformation

There are no known earthquake faults at the ground surface in Christchurch. However, it is possible there are some faults in Christchurch that are yet to be identified because they are not visible at the ground surface.

More information on fault deformation is available on Environment Canterbury's fault deformation map at <https://mapviewer.canterburymaps.govt.nz/?webmap=b5f859bd18ee4912828cb092b6f6c449>.

(c) Flooding

- Regional Hazard Information: Flood Photographs

Photographs showing the property during or following past flood events may be available. Flood photographs are available on Environment Canterbury's flood imagery register at <https://apps.canterburymaps.govt.nz/FIR>.

Property address:

5/52 Hayton Road

LIM number: H09583920

Page 5

Christchurch City Council

53 Hereford Street, PO Box 73015

Christchurch 8154, New Zealand

Tel 64 3 941 8999

Fax 64 3 941 8984

www.ccc.govt.nz

- **Regional Hazard Information: Site Specific Flood Assessment**
A site specific flood hazard assessment may have been completed for the property by Environment Canterbury. The information contained in this assessment may now be outdated. Please contact Environment Canterbury if you would like to request a copy.
- **Regional Hazard Information: Flood Assessment Request**
You can request a new site-specific flood hazard assessment for the property from Environment Canterbury at: <https://www.ecan.govt.nz/do-it-online/property-information/flood-hazard-assessments>.

(d) Landslides

As at the date of this LIM, Council research found no information under this heading.

(e) Subsidence

- **Consultant Report Available**
Land Information New Zealand (LINZ) engaged Tonkin and Taylor to provide a Geotechnical Report on Ground Movements that occurred as a result of the Canterbury Earthquake Sequence. The report indicates this property may have been effected by a degree of earthquake induced subsidence. The report obtained by LINZ can be accessed on their website at <https://www.linz.govt.nz> and search Information for Canterbury Surveyors.

(f) Tsunamis

As at the date of this LIM, Council research found no information under this heading.

(g) Volcanic and Geothermal Hazards

As at the date of this LIM, Council research found no information under this heading.

(h) Wind

As at the date of this LIM, Council research found no information under this heading.

(i) Any Other Natural Hazards

As at the date of this LIM, Council research found no information under this heading.

(j) District Plan Natural Hazard Information

Please refer to *Section 8. Land use and conditions* of this report for District Plan related natural hazard information.

(k) Building Notices

Please refer to *Section 5. Consents, certificates, notices, orders, or requisitions affecting the land and buildings* of this report for Building Act notice information.

Other Special Features or Characteristics of the Land

- **Contamination Remediation Works carried out**
Action(s) undertaken on this site with the following: part soil excavated
- **Fill**
This property is located in an area known to have been filled. The year the fill occurred is Unknown. The filling was, according to the Councils records carried out in a controlled manner and comprises Engineered Fill.
- **Fill**
This property is located in an area known to have been filled. The year the fill occurred is Unknown. The filling was, according to the Councils records carried out in a controlled manner and comprises Unknown Material.
- **Fill**
This property is located in an area known to have been filled. The year the fill occurred is Unknown. The filling was, according to the Councils records carried out in an uncontrolled manner and comprises Mixed Fill with Rubbish.
- **Potentially Contaminating Activity**
Council have a record showing that an activity has taken place on this site which fits within Group A, " Chemical manufacture, application and bulk storage", of the 2011 Hazardous Activities and Industries List (HAIL) .

Property address:

5/52 Hayton Road

LIM number: H09583920

Page 6

Christchurch City Council

53 Hereford Street, PO Box 73015
Christchurch 8154, New Zealand
Tel 64 3 941 8999
Fax 64 3 941 8984

www.ccc.govt.nz

- Potentially Contaminating Activity - continued

More detail on the HAIL may be found at the Ministry for the Environment. More detail on this specific site may be available on the Listed Land Use Register (LLUR) maintained by Environment Canterbury. There is a potential for contaminants to be present in the ground. Site specific investigations may be required for any proposed land use.

Related Information

- The latest soil investigation report for this property is attached for your information
- There are attached hazard/special site characteristics supplementary sheet/s.

Property address:

5/52 Hayton Road

LIM number: H09583920

Page 7

Christchurch City Council

53 Hereford Street, PO Box 73015
Christchurch 8154, New Zealand
Tel 64 3 941 8999
Fax 64 3 941 8984

www.ccc.govt.nz

2. Private and public stormwater and sewerage drains

Section 44A(2)(b) LGOIMA. This is information about private and public stormwater and sewerage drains as shown in the Council's records.

 For stormwater and sewerage enquiries, please phone (03) 941 8999 or visit www.ccc.govt.nz.

Related Information

- Attached are all drainage plans that Council hold for details of private and public drainage. Not all plans provided are verified by Council, and therefore Council cannot be liable for inaccuracies. Site investigation will be required by owners to determine exact layouts.
- This property is shown to be served by Christchurch City Council Sewer and Stormwater.
- Council Trade Waste Bylaw regulates the use of the sewer system for sources other than domestic sewage. A trade waste consent must be obtained by the new owner or occupier before any wastewater from an industrial or commercial processes including but not limited to wash down grease traps and cooling systems may be discharged to Council sewer system.

Property address:

5/52 Hayton Road

LIM number: H09583920

Page 8

Christchurch City Council

53 Hereford Street, PO Box 73015
Christchurch 8154, New Zealand
Tel 64 3 941 8999
Fax 64 3 941 8984

www.ccc.govt.nz

3. Drinking Water Supply

Section 44A(2)(ba) and (bb) LGOIMA. This is information notified to the Council about whether the land is supplied with drinking water, whether the supplier is the owner of the land or a networked supplier, any conditions that are applicable, and any information the Council has about the supply.

Please note the council does not guarantee a particular water quality to its customers. If you require information on current water quality at this property please contact the Three Waters & Waste Unit.

☎ For water supply queries, please phone (03) 941 8999 or visit www.ccc.govt.nz.

Water supply

Christchurch City Council is the networked supplier of water to this property. This property is connected to the Christchurch City Council Water Supply. The conditions of supply are set out in the Christchurch City Council Water Supply and Wastewater Bylaw (2022), refer to www.ccc.govt.nz.

Related Information

- All Commercial and industrial properties are required to have a Reduced Pressure Zone backflow prevention device at the boundary to protect the Christchurch water supply network. The installation of this device is a condition of supply and is the responsibility of the property owner in accordance with the Christchurch City Council Water Supply and Wastewater Bylaw 2022. For more information visit our website <https://ccc.govt.nz/backflow-prevention/> or contact the backflow installation team on 03 941 8999.

Property address:

5/52 Hayton Road

LIM number: H09583920

Page 9

Christchurch City Council

53 Hereford Street, PO Box 73015
Christchurch 8154, New Zealand
Tel 64 3 941 8999
Fax 64 3 941 8984

www.ccc.govt.nz

4. Rates

Section 44A(2)(c) LGOIMA. This is information on any rates owing in relation to the land.

☎ For rates enquiries, please phone (03) 941 8999 or visit www.ccc.govt.nz.

(a) Annual rates

Annual rates to 30/06/2026: \$6,703.54

	Instalment Amount	Date Due
Instalment 1	\$1,675.83	31/08/2025
Instalment 2	\$1,675.83	30/11/2025
Instalment 3	\$1,675.83	28/02/2026
Instalment 4	\$1,676.05	31/05/2026

Rates owing as at 06/05/2026: \$1,676.05

(b) Excess Water Rates

For excess water charge enquiries, please phone (03) 941 8999 or visit www.ccc.govt.nz/contact-us.

(c) Final water meter reading required at settlement?

Property settlements must ensure all water usage and outstanding debts are accurately accounted for.

To advise of a property settlement, please complete the request for settlement information form at www.ccc.govt.nz/services/rates-and-valuations/solicitors-request.

A settlement statement of accounts will be provided on the expected settlement date advised.

Property address:

5/52 Hayton Road

LIM number: H09583920

Page 10

Christchurch City Council

53 Hereford Street, PO Box 73015
Christchurch 8154, New Zealand
Tel 64 3 941 8999
Fax 64 3 941 8984

www.ccc.govt.nz

5. Consents, certificates, notices, orders, or requisitions affecting the land and buildings

Section 44A(2)(d) LGOIMA. This is information concerning any consent, certificate, notice, order, or requisition, affecting the land or any building on the land, previously issued by the Council.

The information in this section may also cover building consent and/or code compliance information issued by building certifiers under the Building Act 1991 and building consent authorities that are not the Council under the Building Act 2004.

You can check the property file to identify whether any consent or certificate was issued by a building certifier under the Building Act 1991.

The building consents recorded in this LIM are only those that the Council has issued or been notified of by a stand-alone BCA. There may be others if a stand-alone BCA has issued consents without notifying the Council.

Section 44A(2)(da) LGOIMA. The information required to be provided to a territorial authority under section 362T(2) of the Building Act 2004. There is currently no information required to be provided by a building contractor to a territorial authority under section 362T(2) of the Building Act 2004. The Building (Residential Consumer Rights and Remedies) Regulations 2014 only prescribed the information that must be given to the clients of a building contractor.

Sections 71 to 74 of the Building Act 2004 require the Building Consent Authority to consider natural hazards when it receives a building consent application for the construction or major alteration of a building on land that is subject to, or likely to be subject to, a natural hazard. A building consent for this property may have been issued subject to a section 72 or 73 notice. This means at the time of building consent the Building Consent Authority was not satisfied that adequate provision would be made to protect the building and land from the natural hazard and was subsequently required to notify the Registrar-General of Land to record the natural hazard on the Record of Title. The Building Act 2004 defines natural hazards as erosion (including coastal erosion, bank erosion, and sheet erosion), falling debris (including soil, rock, snow, and ice), subsidence, inundation (including flooding, overland flow, storm surge, tidal effects, and ponding), and slippage.

If your property contains a notice under s73 of the Building Act 2004, this will be identified on the building consent decision below (decision under s72 of the Building Act 2004) and on the properties' Record of Title. The Record of Title may also record this as a s36 notice under the Building Act 1991, or a s641A notice under the Local Government Act 1974.

☎ For building enquiries, please phone (03) 941 8999, email EPADutyBCO@ccc.govt.nz or visit www.ccc.govt.nz.

(a) Consents

- BCN/1998/1471 Applied: 11/03/1998 Status: Completed
1/52 Hayton Road Sockburn
Accepted for processing 11/03/1998
Building consent granted 20/04/1998
Building consent issued 21/04/1998
Code Compliance Certificate Granted 11/10/2001
Code Compliance Certificate Issued 11/10/2001
ONE COMMERCIAL & FOUR INDUSTRIAL UNITS UNITS B, C, D & E COMMERCIAL - OCCUPANCY = 50-
Historical Reference CON97009100
- BCN/2014/4195 Applied: 14/05/2014 Status: Completed
3/52 Hayton Road Sockburn
Accepted for processing 28/05/2014
Building consent granted 21/07/2014
Building consent issued 18/08/2014
Code Compliance Certificate Issued 08/08/2016
Commercial alterations - installation of two inter-tenancy doors between units C and D

Property address:

5/52 Hayton Road

LIM number: H09583920

Page 11

Christchurch City Council

53 Hereford Street, PO Box 73015
Christchurch 8154, New Zealand
Tel 64 3 941 8999
Fax 64 3 941 8984

www.ccc.govt.nz

(b) Certificates

Note: Code Compliance Certificates were only issued by the Christchurch City Council since January 1993.

(c) Notices

(d) Orders

(e) Requisitions

Property address:

5/52 Hayton Road

LIM number: H09583920

Page 12

Christchurch City Council

53 Hereford Street, PO Box 73015
Christchurch 8154, New Zealand
Tel 64 3 941 8999
Fax 64 3 941 8984

www.ccc.govt.nz

6. Certificates issued by a building certifier

Section 44A(2)(e) LGOIMA. This is information notified to the Council concerning any certificate issued by a building certifier pursuant to the Building Act 1991 or the Building Act 2004.

☎ For building enquiries, please phone (03) 941 8999, email EPADutyBCO@ccc.govt.nz or visit www.ccc.govt.nz.

Property address:

5/52 Hayton Road

LIM number: H09583920

Page 13

Christchurch City Council

53 Hereford Street, PO Box 73015
Christchurch 8154, New Zealand
Tel 64 3 941 8999
Fax 64 3 941 8984

www.ccc.govt.nz

7. Weathertightness

Section 44A(2)(ea) LGOIMA. This is information notified to the Council under section 124 of the Weathertight Homes Resolution Services Act 2006.

☎ For weathertight homes enquiries, please phone (03) 941 8999 or visit www.ccc.govt.nz.

If there is no information below this means Council is unaware of any formal Weathertight Homes Resolution Services claim lodged against this property.

Property address:

5/52 Hayton Road

LIM number: H09583920

Page 14

Christchurch City Council

53 Hereford Street, PO Box 73015
Christchurch 8154, New Zealand
Tel 64 3 941 8999
Fax 64 3 941 8984

www.ccc.govt.nz

8. Land use and conditions

Section 44A(2)(f) LGOIMA. This is information relating to the use to which the land may be put and conditions attached to that use. The planning information provided below is not exhaustive and reference to the Christchurch District Plan and any notified proposed changes to that plan is recommended: <https://ccc.govt.nz/the-council/plans-strategies-policies-and-bylaws/plans/christchurch-district-plan/>.

There may be some provisions of the Christchurch City Plan or Banks Peninsula District Plan that affect this property that are still operative.

☎ For planning queries, please phone (03) 941 8999, email DutyPlanner@ccc.govt.nz or visit www.ccc.govt.nz.

- **Regional plan or bylaw**

There may be objectives, policies or rules in a regional plan or a regional bylaw that regulate land use and activities on this site. Please direct enquiries to Canterbury Regional Council (Environment Canterbury).

(a)(i) Christchurch City Plan & Banks Peninsula District Plan

(ii) Christchurch District Plan

- **Development Constraint Conditions**

Council records show there is a specific condition on the use of this site: Consent Notice

- **Development Constraint Conditions**

Council records show there is a specific condition on the use of this site: Standard Foundation Design Required

- **Christchurch International Airport Protection Sfc.**

Property or part of property within the Christchurch International Airport Protection Surfaces overlay, which is operative.

- **Liquefaction Management Area (LMA)**

Property or part of property within the Liquefaction Management Area (LMA) Overlay, which is operative.

- **District Plan Zone**

Property or part of property within the Industrial Heavy Zone, which is operative.

(b) Resource consents

If there are any land use resource consents issued for this property the Council recommends that you check those resource consents on the property file. There may be conditions attached to those resource consents for the property that are still required to be complied with.

- RMA/1994/3792 - Subdivision Consent
Fee Simple SUBDIVISION - Historical Reference RMA9563
Status: Processing complete
Applied 30/08/1994
- RMA/1995/3844 - Subdivision Consent

Property address:

5/52 Hayton Road

LIM number: H09583920

Page 15

Christchurch City Council

53 Hereford Street, PO Box 73015
Christchurch 8154, New Zealand
Tel 64 3 941 8999
Fax 64 3 941 8984

www.ccc.govt.nz

Fee Simple SUBDIVISION - Historical Reference RMA13171
Status: Processing complete
Applied 25/05/1995

- RMA/1996/3550 - Subdivision Consent
Fee Simple SUBDIVISION - Historical Reference RMA2996
Status: Processing complete
Applied 28/06/1996
- RMA/1998/611 - Resource consents
1/52 Hayton Road Sockburn
Application for a five unit warehouse development with reduced number of carparks and unit E heavy goods vehicle parking space is unable to manoeuvre on site. - Historical Reference RES980595
Status: Processing complete
Applied 09/03/1998
Granted 08/04/1998
Decision issued 08/04/1998
- RMA/1998/3645 - Subdivision Consent
3/52 Hayton Road Sockburn
Unit Title SUBDIVISION - Historical Reference RMA4654
Status: Processing complete
Applied 28/07/1998

(c) Resource Consents Natural Hazard Information

Related Information

- The Council system shows a Development Constraint/Ongoing Condition Consent notice for this property. The consent notice should be registered against the record of title for the property and a search of that title and the consent notice will provide details in respect of the constraint / condition. If a search of the title does not record the consent notice or the consent notice is not clear then we suggest you contact the duty planner by either calling 941 8999 or emailing DutyPlanner@ccc.govt.nz. The Consent notice is as follows:
For the purposes of interpretation of the district plan lot is treated as a corner site.

Property address:

5/52 Hayton Road

LIM number: H09583920

Page 16

Christchurch City Council

53 Hereford Street, PO Box 73015
Christchurch 8154, New Zealand
Tel 64 3 941 8999
Fax 64 3 941 8984

www.ccc.govt.nz

9. Other land and building classifications

Section 44A(2)(g) LGOIMA. This is information notified to the Council by any statutory organisation having the power to classify land or buildings for any purpose.

 For land and building enquiries, please phone (03) 941 8999 or visit www.ccc.govt.nz.

Please refer to Section 1 for details

Property address:

5/52 Hayton Road

LIM number: H09583920

Page 17

Christchurch City Council

53 Hereford Street, PO Box 73015
Christchurch 8154, New Zealand
Tel 64 3 941 8999
Fax 64 3 941 8984

www.ccc.govt.nz

10. Network utility information

Section 44A(2)(h) LGOIMA. This is information notified to the Council by any network utility operator pursuant to the Building Act 1991 or the Building Act 2004.

 For network enquiries, please phone (03) 941 8999 or visit www.ccc.govt.nz.

- **None recorded for this property**

11. Other information

Section 44A(3) LGOIMA. This is information concerning the land that the Council has the discretion to include if it considers it to be relevant.

☎ For any enquiries, please phone (03) 941 8999 or visit www.ccc.govt.nz.

(a) Kerbside waste collection

- Your organics are collected Weekly on Thursday. Please leave your organics at the Kerbside by 6:00 a.m.
- Your recycling is collected Fortnightly on the Week 1 collection cycle on a Thursday. Please leave your recycling at the Kerbside by 6:00 a.m. Your nearest recycling depot is the Parkhouse Road EcoDrop.
- Your refuse is collected Fortnightly on the Week 1 collection cycle on a Thursday. Please leave your rubbish at the Kerbside by 6:00 a.m. Your nearest rubbish depot is the Parkhouse Road EcoDrop.

(b) Other

• Floor Levels Information

Council holds a variety of information on requirements for building or property development. This includes:

- required minimum finished floor levels, which need to be set to meet the surface water requirements in clause E1.3.2 of the Building Code (where this applies); and
- the requirements of the Christchurch District Plan (where a property is in the Flood Management Area).

Where this information has been processed for your property, you can view it online at <https://ccc.govt.nz/flooding-and-floor-levels>.

Otherwise, if you are building or developing on this land, you can request a calculation on required finished floor levels for your proposed building by emailing us at floorlevels@ccc.govt.nz.

• Community Board

Property located in Halswell-Hornby-Riccarton Community Board.

• Tsunami Evacuation Zone

This property is not in a tsunami evacuation zone. It is not necessary to evacuate in a long or strong earthquake or during an official Civil Defence tsunami warning. Residents may wish to offer to open their home to family or friends who need to evacuate from a tsunami zone, and should plan with potential guests to do so in advance. More information can be found at <https://ccc.govt.nz/services/civil-defence/hazards/tsunami-evacuation-zones-and-routes/>

• Electoral Ward

Property located in Hornby Electoral Ward

• Listed Land Use Register

Hazardous activities and industries involve the use, storage or disposal of hazardous substances. These substances can sometimes contaminate the soil. Environment Canterbury identifies land that is used or has been used for hazardous activities and industries. This information is held on a publically available database called the Listed Land Use Register (LLUR). The Christchurch City Council may not hold information that is held on the LLUR. Therefore, it is recommended that you check Environment Canterbury's online database at www.llur.ecan.govt.nz

• Spatial Query Report

A copy of the spatial query report is attached at the end of this LIM. The spatial query report lists land use resource consents that have been granted within 100 metres of this property.

Property address:

5/52 Hayton Road

LIM number: H09583920

Page 19

Christchurch City Council

53 Hereford Street, PO Box 73015
Christchurch 8154, New Zealand
Tel 64 3 941 8999
Fax 64 3 941 8984

www.ccc.govt.nz

Related Information

- Please see attached a copy of the Detailed Engineering Evaluation (DEE) assessment report.
- Dangerous Goods Licences have been replaced with Location Test Certificates/ Location Compliance Certificates administered by Worksafe. You can contact a local Test Certifier to advise you or to issue the type of test certificate you need.

Property address:

5/52 Hayton Road

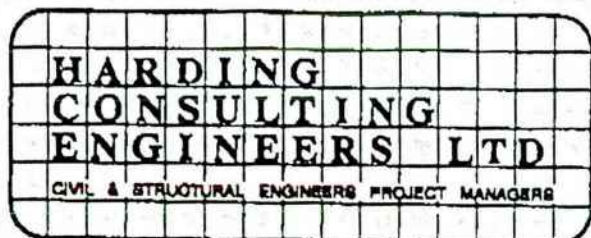
LIM number: H09583920

Page 20

Christchurch City Council

53 Hereford Street, PO Box 73015
Christchurch 8154, New Zealand
Tel 64 3 941 8999
Fax 64 3 941 8984

www.ccc.govt.nz



123 Mt Pleasant Rd
Christchurch 8
New Zealand
Telephone: (03) 384-4086
Fax: (03) 384-4086
Mobile Phone: (025) 320-303

File 2038
10 March 1998

The Environmental Services Manager
Christchurch City Council
P O Box 237
CHRISTCHURCH

Attn Mr P Harrow

Dear Sir,

4 Warehouse Units 28A Haytons Road
Building Consent Application No 97009418

Further to your letter of 4 February, I enclose a copy of our soil test bore logs for the above site.

Five machine auger holes were made on 10/9/97, with results as shown on Construction Details 2038/TB1 to TB6 enclosed.

As shown, the site typically has 200mm of silt overlying compact natural sandy gravels. Along the front of the site, adjacent to Haytons Road, the original open drain has been filled in, using a variety of material from topsoil/silt (Bore 1) to dirty pitrun (Bore 2). The soil below the drain is natural gravel. No other filling was encountered on the site. The pitrun filling and the natural gravels could not be tested with the Scala Penetrometer, but the natural gravels have a bearing capacity well in excess of 150kPa.

All of the soil was dry and natural. None of the soil was considered to be contaminated.

Care will be taken to ensure that all footings adjacent to the old drain are carried down to natural gravels below the old water course.

If you have any queries regarding this work, please contact Dave Harding at this office.

Yours faithfully

Harding Consulting Engineers Ltd

HARDING									
CONSULTING									
ENGINEERS LTD									
CIVIL & STRUCTURAL ENGINEERS PROJECT MANAGERS									
123 MT PLEASANT RD CHRISTCHURCH									
TELEPHONE (03) 844 066									

CONSTRUCTION DETAILS
SOIL TEST - SITE PLAN

TITLE

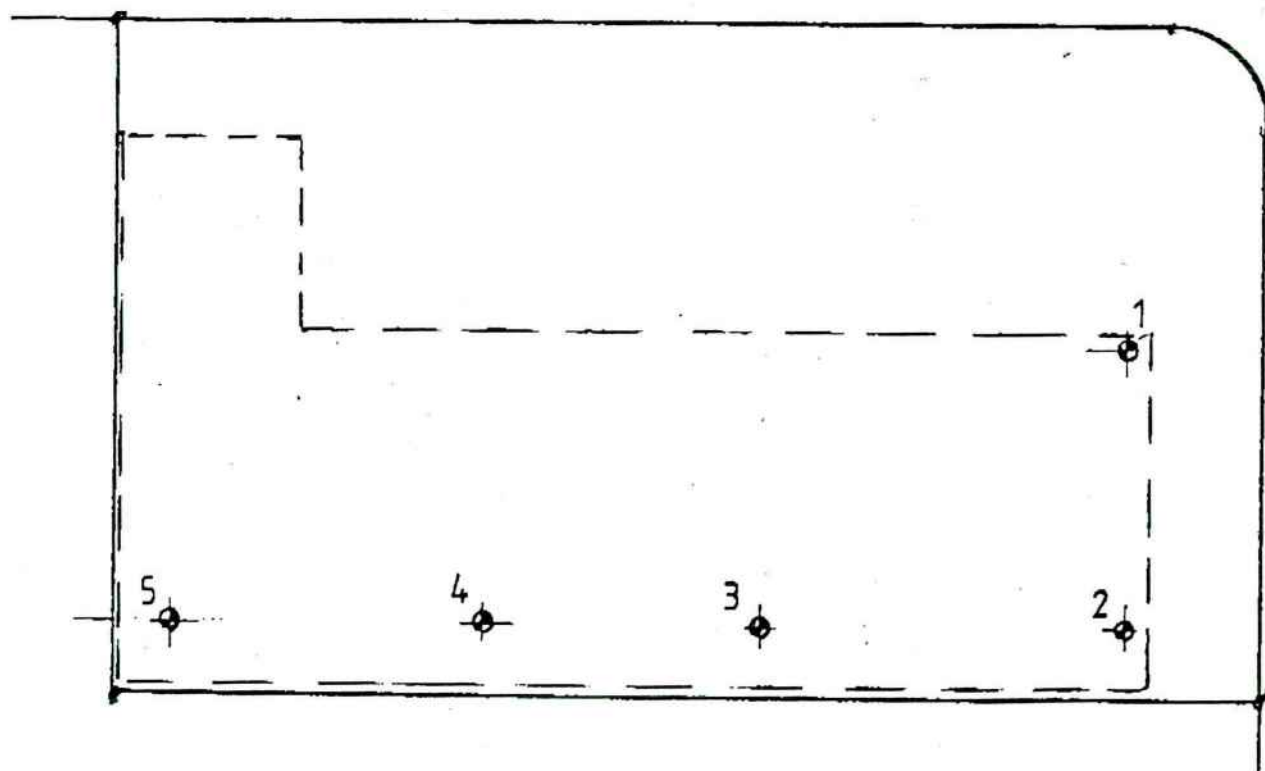
HAYTONS ROAD

SHEET
TB 1

FILE
2038

SCALE
—

DATE
Feb '98

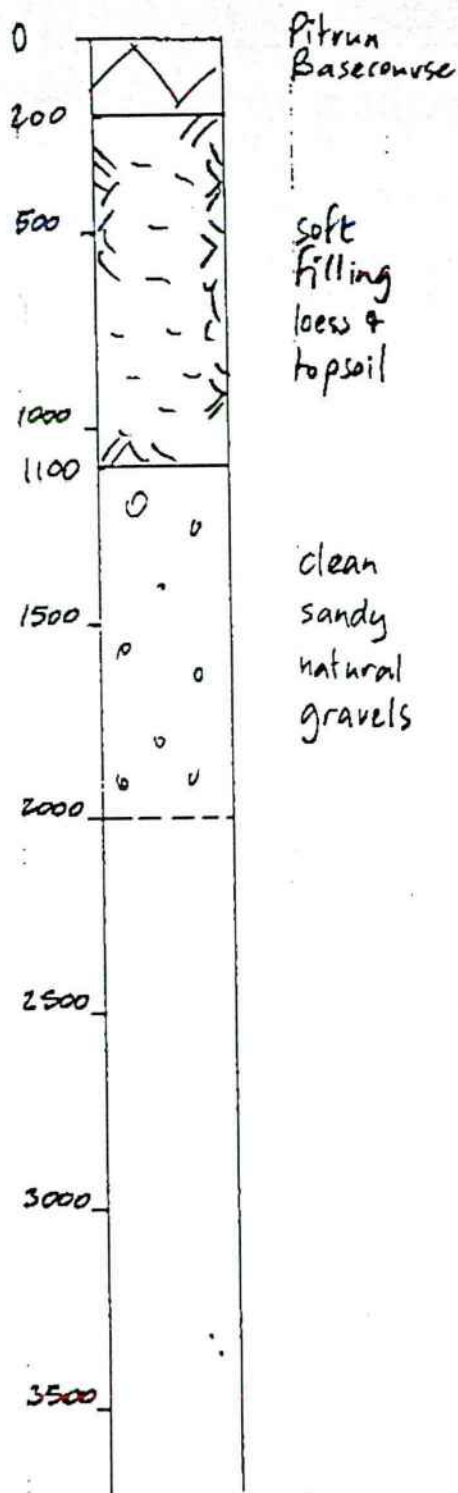


HAYTONS ROAD

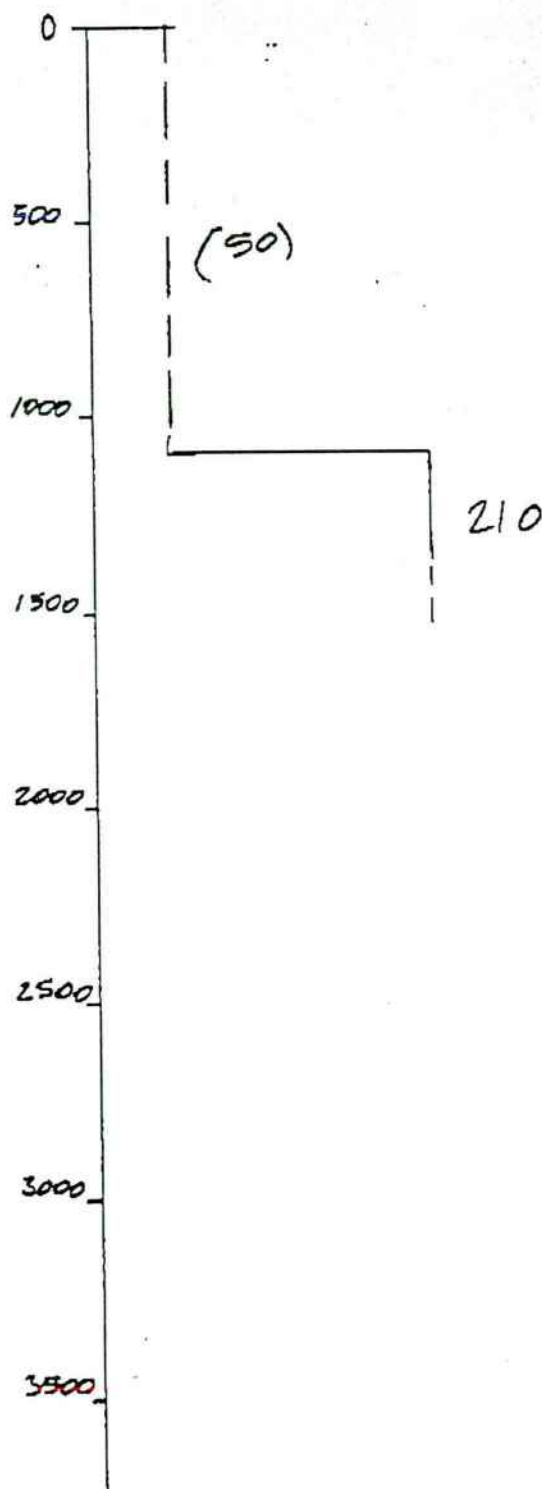
HARDING											
CONSULTING											
ENGINEERS LTD											
CIVIL & STRUCTURAL ENGINEERS PROJECT MANAGERS											
123 MT PLEASANT RD CHRISTCHURCH											
TELEPHONE (03) 844 086											

CONSTRUCTION DETAILS		SHEET TB 2
SOIL TEST		FILE 2038
TITLE HAYTONS ROAD		SCALE 1:20
		DATE Feb '98

BORE NO. 1
SOIL PROFILE



ALLOWABLE BEARING PRESSURE
 q_a by SCALA PENETROMETER



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TELEPHONE (03) 844 086									

CONSTRUCTION DETAILS

SOIL TEST

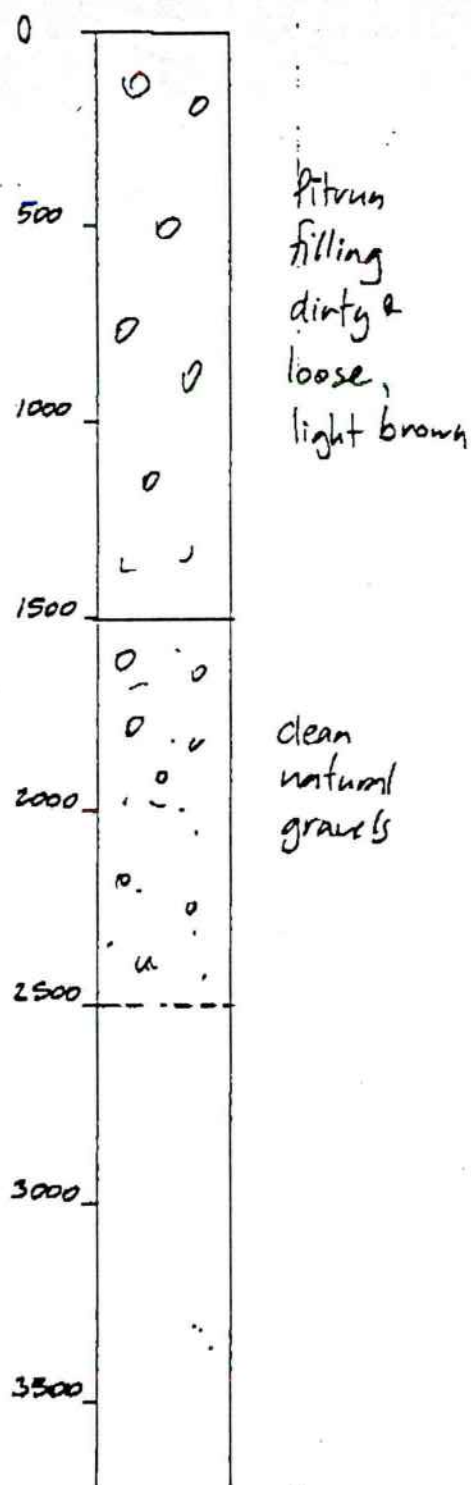
SHEET	TB3
FILE	2038
SCALE	1:20
DATE	Feb '98

TITLE

HAYTONS ROAD

BORE NO. 2

SOIL PROFILE



ALLOWABLE BEARING PRESSURE

q_a by SCALA PENETROMETER



HARDING											
CONSULTING											
ENGINEERS LTD											
CIVIL & STRUCTURAL ENGINEERS PROJECT MANAGERS											
123 MT PLEASANT RD CHRISTCHURCH											
TELEPHONE (03) 844 066											

CONSTRUCTION DETAILS

SOIL TEST

SHEET
TB4FILE
2038

TITLE

HAYTONS ROAD

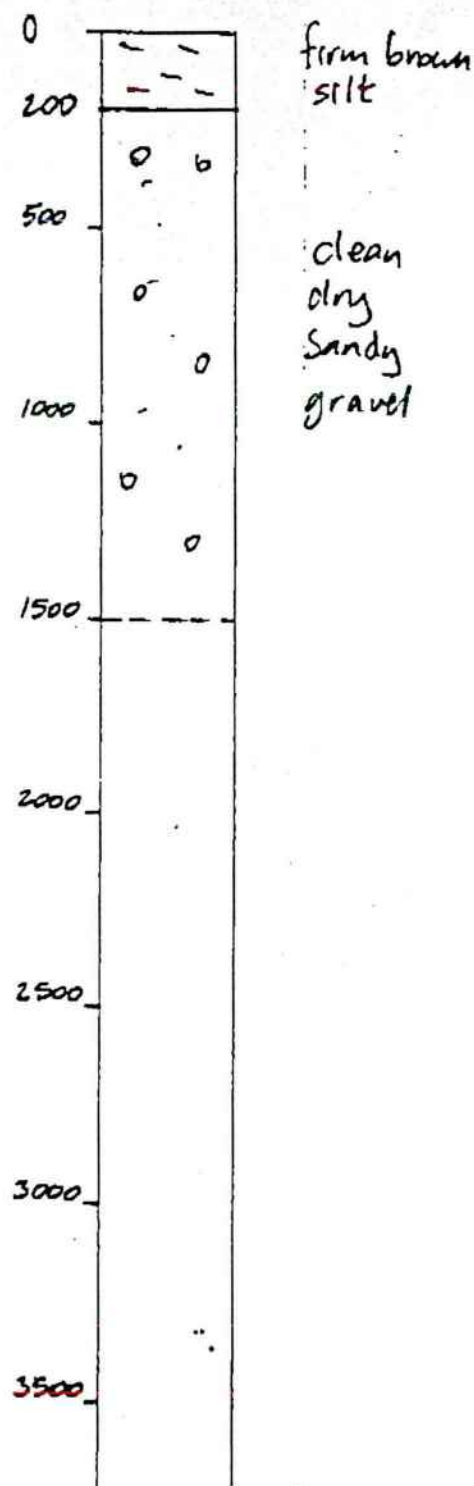
SCALE
1:20DATE
Feb '98

BORE NO. 3

SOIL PROFILE

ALLOWABLE BEARING PRESSURE

q_a by SCALA PENETROMETER

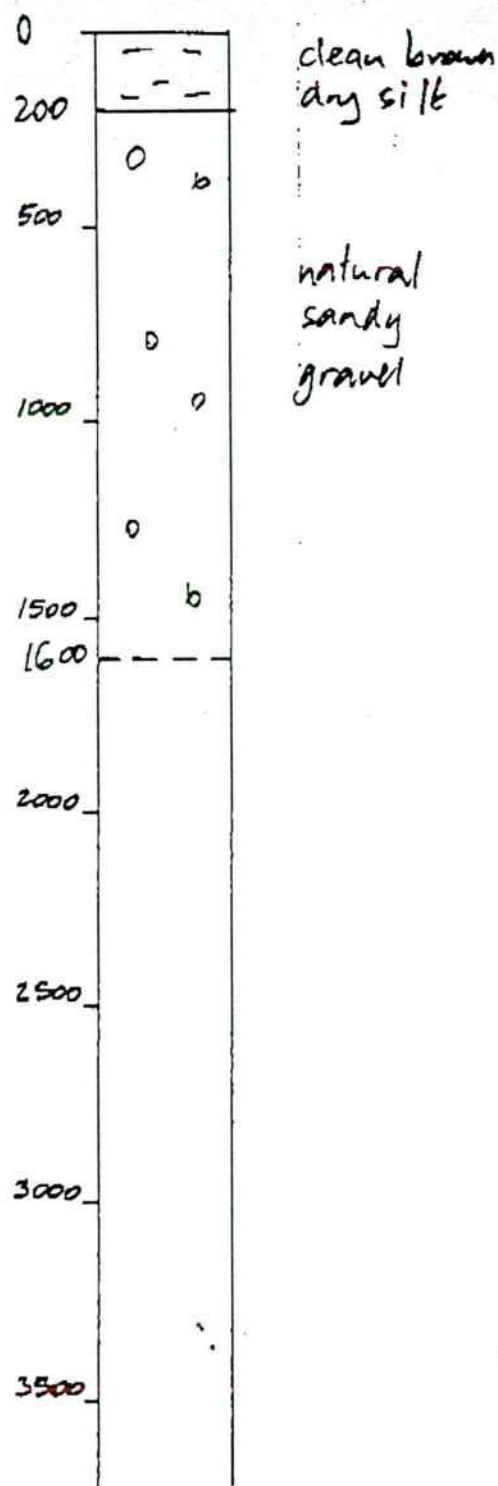


HARDING											
CONSULTING											
ENGINEERS LTD											
CIVIL & STRUCTURAL ENGINEERS PROJECT MANAGERS											
123 MT PLEASANT RD CHRISTCHURCH											
TELEPHONE (03) 844 086											

CONSTRUCTION DETAILS SOIL TEST	SHEET TB5
	FILE 2038
TITLE HAYTONS ROAD	SCALE 1:20
	DATE Feb '98

BORE NO.4
SOIL PROFILE

ALLOWABLE BEARING PRESSURE
 q_a by SCALA PENETROMETER



HARDING											
CONSULTING											
ENGINEERS LTD											
CIVIL & STRUCTURAL ENGINEERS PROJECT MANAGERS											
123 MT PLEASANT RD CHRISTCHURCH											
TELEPHONE (03) 844 288											

CONSTRUCTION DETAILS

SOIL TEST

SHEET
TB6

FILE
2038

SCALE
1:20

DATE
Feb '98

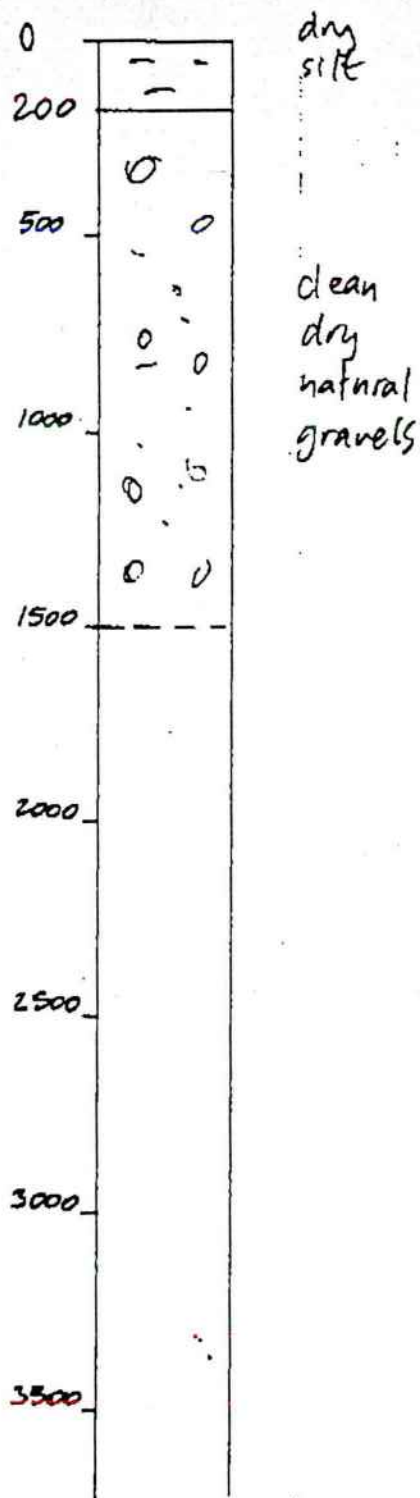
TITLE

HAYTONS ROAD

BORE NO.5

SOIL PROFILE

ALLOWABLE BEARING PRESSURE
 q_a by SCALA PENETROMETER





Resource Management Act 1991/Building Act 1991

Hazards or Special Site Characteristics

SOCKBURN SERVICE CENTRE

Location: H. art Road Number: 28 a
 Legal Description: Lot 18 D.P. 46071 Ward: Wigram

Date Recorded 10.9.93 Severity 3 Accuracy A by George Marsh Computer Entry 11.4.96

DETAILS:

Contaminated Site - soft ground - storm water control

LOCATION OF INFORMATION: Service Centre/Section Sockburn 28 a

File No. or Source of Information Norm Pitt Trade Wastes

Further Details: Previously a pit 3.0m to 4.0m deep containing waste from abbatoir - Blood - ~~lgs~~ - Bones - closed in 1987 covered with hardfill of known quality

Perimeter of pits unknown.

1993 Contaminated earth deposited onto existing concrete pads from Casino site (30 Victoria Street)

Cartage contractor Westway - contaminants may include Mercury - Oil - Diesel - Hydrocarbons.

Date Recorded 10.9.93 Severity 3 Accuracy A by George Marsh Computer Entry 11.4.96

DETAILS:

Stormwater control - Fuel Tanks

LOCATION OF INFORMATION: Service Centre/Section E.H. Unit

A requirement for the catchment area your project falls into is that all stormwater (roof areas) must be returned to the ground via an approved soakage chamber.

A Registered Engineer's Design may be requested.

Exception where the site has been identified as contaminated.

Surface water from sealed or hard standing areas via oil interceptor or silt traps to an approved outlet will be required.

Previously licensed for two underground tanks of flammable liquids. Location and/or removal unknown.

Care to be taken not to locate structures over these vessels, voids or uncompacted ground.

Soil response and bore hole tests required.

HAZARD DATA INFORMATION
CONTAMINATED LAND

KEY Severity ☐ 1 Low ☐ 2 Moderate ☐ 3 Extreme ☐ 4 Unknown

Accuracy ☐ A Confirmed ☐ B Unconfirmed ☐ C Personal Observation

HAZARD DATA INFORMATION
CONTAMINATED LAND

Page 1 of 4

26.7.96



Resource Management Act 1991/Building Act 1991

Hazards or Special Site Characteristics

SOCKBURN SERVICE CENTRE

HAZARD DATA INFORMATION ON CONTAMINATED LAND

LOCATION: Hayton Road NUMBER: 28a

LEGAL DESCRIPTION Lot 18 D.P. 46071 DATE RECORDED: 10.9.93

WARD: Wigram

HAZARD INFORMATION: (GIVE DETAILS, EQUIPMENT HISTORY, GROUND CONDITIONS)

Contaminated Site Options available

- ☒ No excavated material may leave the site
- ☐ Excavated material may be used for landscaping where there is no major contaminate evident.
- ☐ Excavated material may be removed from site following adequate controlled tests for contamination. Providing tests indicate the levels of contaminate are below an acceptable level - removal to a controlled dump site may be an option.
- ☐ The contaminate may be sealed by the building itself, the depth of soil or by hard surface sealing.
- ☐ Contact must be established with CCC Environmental Health Unit (Phone 3711.828) and Department of Labour (OSH) (Phone 3652.600) before disturbing material.

INFORMATION
SOURCE

1.4.90

RECORDED BY
George Marsh

1.4.90

Contamination level p.p.m.

SEVERITY: Nil
Low
Medium
High

ACCURACY: Confirmed
Unknown
Personal observation

DATE ENTERED IN REGISTER

1.4.90

RECORDED BY

GEORGE MARSH

COMPUTER ENTRY

11.4.96

STRUCTURAL ENGINEER'S soil response and bore hole tests are required for any structures on this site. Where necessary, provide design foundation drawings and supporting calculations or "Producer Statements")

24.7.96



Resource Management Act 1991/Building Act 1991

Hazards or Special Site Characteristics

SOCKBURN SERVICE CENTRE

Location Hayton Road Number: 28a
 Legal Description: Lot 18 D.P. 46071 Ward: Wigram

Date Recorded 11.6.96 Severity 3 Accuracy A Recorded by George Marsh Computer Entry 11.6.96
 DETAILS:

Contaminated land - soft ground - stormwater control

LOCATION OF INFORMATION: Service Centre/Section Sockburn 28a

File No. or Source of Information E.H. Unit

Further Details: ... **HAZARD DATA INFORMATION
CONTAMINATED LAND**

Contaminated soil - from Casino site was placed on concrete pads buried with impervious clay - it is not expected that the contaminate would spread outside this area - after remediation the soil reduced to an acceptable level and was trucked to a landfill site.

Note: other contaminates are still buried on site in pits and in furrows. They are subject to removal and compaction of suitable material to the voids. See Scheme Plan W 95/1071

☒ **WATER WAY SETBACK** Papua M. Drain
 LOCATION OF INFORMATION: Service Centre/Section: Sockburn

The site (or part of) is located within the waterway setback requirement of the City Plan as specified below:

- | | |
|--|---|
| ☐ 15 metres for upstream rivers | ☒ 5 metres Utility waterway |
| ☐ 30 metres for downstream rivers | ☐ 12 metres Environmental Waterway |
| ☐ 15 metres Hill waterway (from centreline of waterway) | ☐ 20 metres upstream rural river |

Within this setback, filling, excavation or the erection of buildings is a Discretionary Activity requiring a Resource Consent.

Drain flows both ways from site centre - Haytons Rd Drain & Papua

KEY Severity ☐ 1 Low ☐ 2 Moderate ☐ 3 Extreme ☐ 4 Unknown

Accuracy ☐ A Confirmed ☐ B Unconfirmed ☐ C Personal Observation



Resource Management Act 1991/Building Act 1991

Hazards or Special Site Characteristics

SOCKBURN SERVICE CENTRE

Location Hayton Road Number: 28^a
 Legal Description: Lot 18 D.P. 46071 Ward: Wigram

Date Recorded 10.9.93 Severity 3 Accuracy A by George Marsh Computer Entry 11.4.69

DETAILS:
Stormwater Control - Contaminated land - Soft ground - Uncontrolled
 LOCATION OF INFORMATION: Service Centre/Section Sockburn SP 28^a (fill)
 File No. or Source of Information Trade Waste - E.H. Unit

HAZARD DATA INFORMATION CONTAMINATED LAND

All stormwater must be conveyed to an approved outlet.

Trade Waste Requirements	In place/date
☒ An approved stormwater protection facility is required for this site	
☒ If liquid waste is discharged from this site a consent to discharge trade waste is required	
☒ An environmental management plan	
☐ is required	
☒ may be required dependant on type of operation.	

Note: Trade Waste Consent not transferrable on Change of Ownership

Specific Site Level required for all structures

Paparua Transitional Plan requires a 7.0 metre setback from the Paparua Main Drain
 Please contact Water Services for clarification

Water Services Bylaw requires a 3.0 metre setback from the Paparua Main Drain
 Please contact them for clarification.

Drainage Easements all structures must be sited clear of the easement - no part may overhang (i.e. eaves - gables - box or bay windows). These easements are those without a specific setback requirement.

Public sewer passes through site

KEY Severity ☐ 1 Low ☐ 2 Moderate ☐ 3 Extreme ☐ 4 Unknown
 Accuracy ☒ A Confirmed ☐ B Unconfirmed ☐ C Personal Observation

Property of interest address

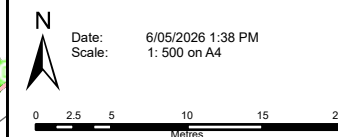
- WwPrivateDrainFieldNo - WwAccess - Type - Flush Manhole - Flushing Point - Trap - Inspection Point - Sealed Manhole - Standard Manhole - Vacuum Storage Manhole - Vented Manhole - WwValve - WwVent - WwAirGapSeparator - WwLocalPressureBoundary - WwLocalPressureControlPa - WwLocalPressureTankSystem - WwOutfall - WwPipeRestrict - WwFitting - Type - Change - End Cap - Junction - WwEye - Type - Eye - Eye (Vertical) - WwLateralFitting - Type - Raised Inspection Point - Lateral Fitting - WwVacuumBreather - WwVacuumChamber - Type - Collector - Interceptor Tank - Valve - Riser - WwVacuumBreatherPip - WwPipeFlowDirection - WwPipeBlockageCount - NumberOfBlockages 2 or less Blockages 3 or more Blockages - WwPipe - NominalDiameter - Diameter is 200mm or smaller - Diameter is greater than 200mm, up to 450mm - Diameter is greater than 450mm - Other (non-circular pipes) - WwPipe (non-gravity) - NominalDiameter - Diameter is 200mm or smaller - Diameter is greater than 200mm, up to 450mm - Diameter is greater than 450mm - Other (non-circular pipes) - WwLateral - WwPipeProtection - WwFlushTank - WwStructure - WwStation - WwPumpStationCatchme - WwPipe (non CCC) - In Service - Abandoned - Removed	- Out of Service - WwLateral (non CCC) - In Service - Abandoned - Removed - Out of Service - Proposed - WwPrivateDrainFieldNot - SwPump - SwFacilityDischargePoint - SwAccess - SwValve - Type - Check - Duck Bill - Flap - Gate - Inline Check - Sluice - Valve - SwHeadwall - Inlet - Outlet - SwFlowRestriction - SwGrill - Inlet - Outlet - SwInlet - Type - Single Sump - Double Sump - Triple Sump - Inlet - Pipe End - Gross Debris Trap - Silt Trap - SwOutlet - SwPipeRestrict - SwFitting - Type - Change - Bend - Junction - End Cap - SwEye - SwPipeFlowDirection - WwLateralFitting - Type - Single Sump - Double Sump - Inspection Point - Manhole - Lateral Fitting - Soak Pit - SwPipe - NominalDiameter - Diameter is 450mm or smaller - Diameter is greater than 450mm, up to 700mm - Diameter is greater than 700mm - Other (non-circular pipes) - SwLateral - SwPipeProtection - SwFacility - SwStructure - SwStation - SwRainGarden - SwPumpStationCatchme - In Service - Abandoned - Removed - Out of Service	- Proposed - SwLateral (non CCC) - In Service - Abandoned - Removed - Out of Service - WwPump - NormalPosition,Type - Air Release - Backflow Prevention - Butterfly - Gate - Non Return - Pressure Activated - Sluice - Sluice, Normally Closed - Valve - Washdrant - Washlet - WwConnection - Type - Fire - Restrictor - Toby - Meter - WwOutlet - WwPipeRestrict - WwFieldNote - WwFitting - Type - Bellows - End Cap - Connector - WwPipeProtection - WwPipe - NominalDiameter - Diameter is 110mm or smaller - Diameter is greater than 110mm, up to 225mm - Diameter is greater than 225mm - Other (non-circular pipes) - WwPipe (non Potable) - NominalDiameter - Diameter is 110mm or smaller - Diameter is greater than 110mm, up to 225mm - Diameter is greater than 225mm - Other (non-circular pipes) - WwLateral - WwStructure - WwReservoir - WwStation - WwPipe (non CCC) - In Service - Abandoned - Removed - Out of Service - Unknown - WwLateral (non CCC) - In Service - Abandoned - Removed - Out of Service - BCConnector - BCDischargeCap - BCValve - BGPipe
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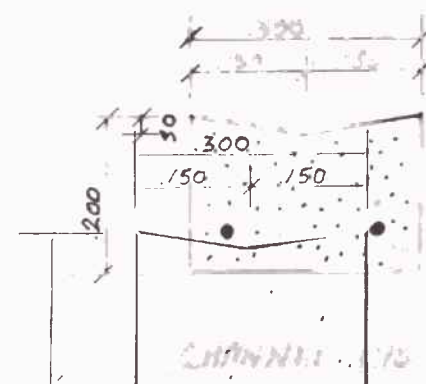


ph: 03 941 8999 web: ccc.govt.nz

Accuracy not guaranteed. Onsite verification required.
Display of data scale dependant.
Client selected legend.

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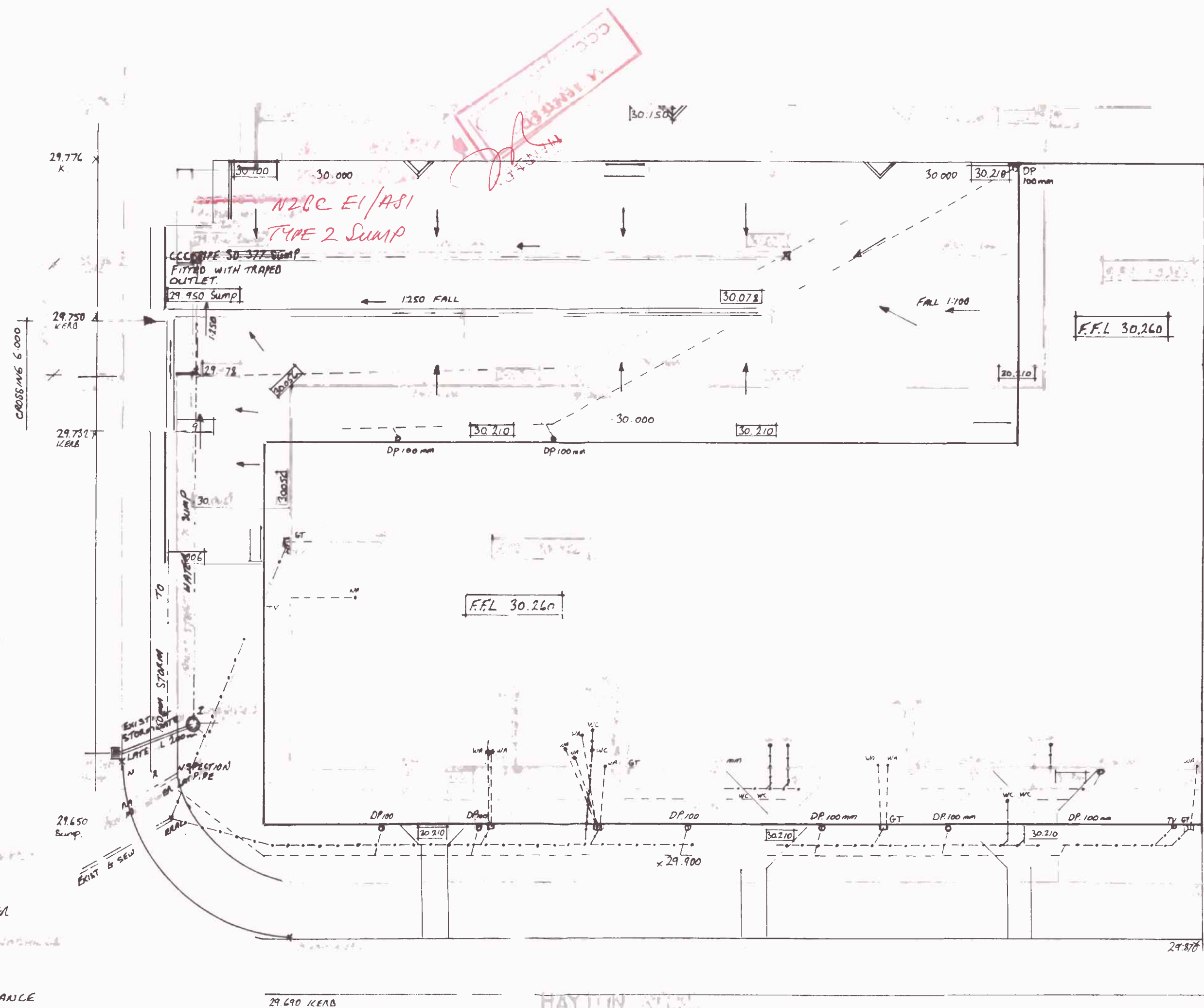


CHANNEL 1:10

- x 29.900 DENOTES AN EXISTING LEVEL
- 30.210 DENOTES FINISHED SURFACE LEVEL
- Sumps TO HAVE HEAVY DUTY GALV LIDS.
- YARD CONSTRUCTION: 125mm 25mpa CONCL.
- 150mm COMPACTED HARDFILL

- SEWER 110mm ϕ
- 150 UPVC GRADE R140 STORMWATER
- 110mm ϕ STORMWATER
- DOWNPIPES 100mm ϕ

ALL STORMWATER & SEWAGE TO BE IN ACCORDANCE WITH THE N.Z. BUILDING CODE.



HAYTON ROAD

CHRISTCHURCH CITY COUNCIL
17 APR 1998
CONSENT DOCUMENT

CHRISTCHURCH CITY COUNCIL
APPL. CONTROLLED BY
Rec'd 12 MAR 1998
0700940

LOT 33 DP 76565 AREA 2376

HAYTON ROAD DEVELOPMENT
LOT 33

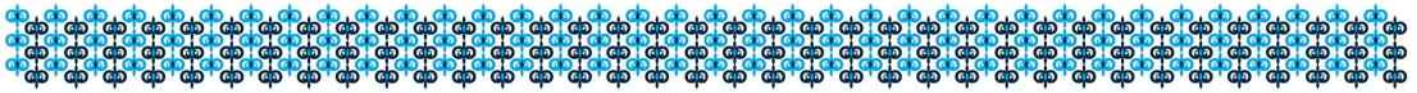
All building work shall comply with the New Zealand Building Code notwithstanding any inconsistencies which may occur in the drawings and specifications.

DRAINAGE PLAN

FILE COPY

12

DRAWN	CHECKED	SCALE	SERIES OF
TRACED	DATE FEB 98	1:200	REF 74



TM Consultants Ltd.

A. 2/7 Burdale Street,
P.O. Box 8874,
Christchurch 8440,
New Zealand

P. 03 348 6066

F. 03 348 6065

E. info@tmco.co.nz

DETAILED ENGINEERING EVALUATION

52 HAYTON ROAD

WIGRAM

CHRISTCHURCH



ISSUE B

13 May 2014

JOB NO: 130329

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CONTENTS

- DEE REPORT
- APPENDIX 1 – BUILDING PLANS
- APPENDIX 2 – LEVELS SURVEY AND EARTHQUAKE DAMAGE REPORT
- APPENDIX 3 – DEE ANALYSIS
- APPENDIX 4 – STANDARDISED REPORT FORM
- APPENDIX 5 – STRENGTHENING WORK TO UPGRADE BUILDING TO 67% NBS

INTRODUCTION

This report has been prepared for Body Corporate #79398 for the property at 52 Hayton Road. The report details the results found from an engineering investigation into the performance of the building in the recent earthquakes, and its likely structural capacity for future events.

The format of the investigation and the reporting is in accordance with the "Guidance on Detailed Engineering Evaluation of Earthquake Affected Non-residential Buildings in Canterbury", Part 2. (Labelled as DEE in future references in this report)

WORK COMPLETED

The work completed consists of:

- The gathering of existing building information. This involved looking at existing plans and checking the structure on site against these plans. The plans were found to be accurate where checked.
- A detailed damage inspection has been carried out checking damage sustained from the recent earthquakes. This included accessing the roof space to inspect for structural damage to roof bracing and purlins.
- A detailed analysis of the building has been carried out. Calculations targeting critical elements of the structure have been performed to determine the earthquake capacity of the building relative to the current code (%NBS).
- No invasive investigation was required as the structure was identifiable from the existing plans and visible on site.

BUILDING INFORMATION

Address	52 Hayton Road Wigram Christchurch 8042
Usage	Commercial- Current tenants are SAI Global, Opus Lab
No. of Storeys	2
Year of construction	1998
Building Dimensions	48m x 21m - Total floor area approx. 1139m ² Unit A – 21m x 18m Floor Area = 378m ² Unit B – 21m x 8.25m Floor Area = 173m ² Unit C – 21m x 4.3m Floor Area = 90m ² Unit D – 21m x 6.9m Floor Area = 145m ² Unit E – 35.825m x 9.85m Floor Area = 353m ²
Foundations	200mm wide x 400mm deep unreinforced concrete perimeter strips supporting wall panels. 1000mm deep reinforced concrete post holes under concrete ground floor slab and wall panels (4/D24 vertical bars and an 6/R10 ties)
Floor	125mm deep reinforced concrete ground slab (12mm Reid Bar reinforcement at 1.0m c/c in both directions) bearing onto reinforced post holes.

Internal Structure

125mm full building height concrete tilt panels in the north/south direction divide the building into 5 separate units. Unit A contains an additional 360UB portal frame in the north/south direction. 350mm x 300mm x3.0m high reinforced concrete columns are positioned at the wall panel joint locations, approximately 7.0m from the external walls in the east/west direction.

Walls

1994 Original Structure

125mm thick, 6.2m – 4.2m high concrete precast internal wall panels reinforced with D10 at 150mm c/c central reinforcement in both directions.

150mm thick, 6.5m – 4.0m high concrete precast external wall panels reinforced with H12 bars around openings and D10 at 150mm c/c central reinforcement in both directions.

Internal partition walls are timber framed with GIB plasterboard linings.

Roof

Zincalume Trimdek cladding on sisalation on galvanised netting on 200/18 DHS purlins at 1.2m c/c.

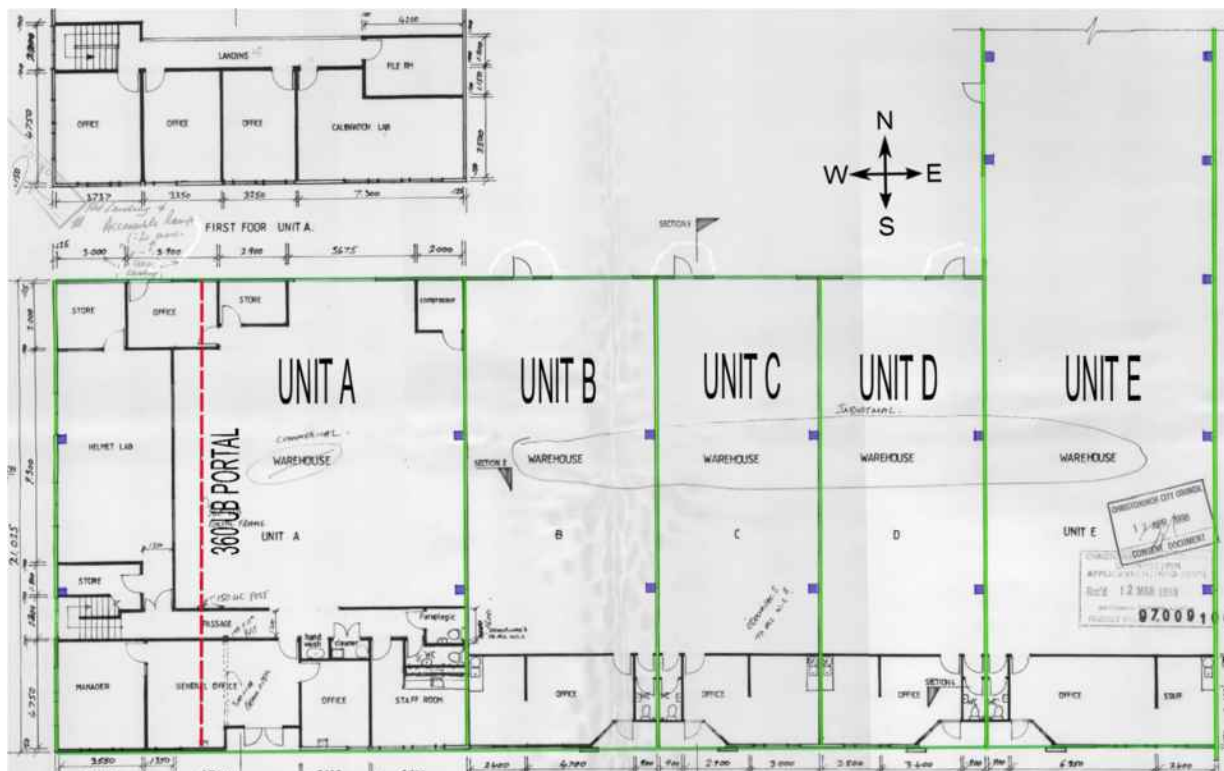
DHS purlins span in the east/west direction between the 360UB portal frame and the concrete wall panels.

Structural System

Gravity loads are transferred from the lightweight roof structure down the portal frame and concrete wall panels into the concrete building foundations.

Lateral loads are resisted in the North/South direction by the in plane actions of the concrete tilt panels and the 360UB portal frame.

Lateral loads in the East/West direction are transferred through the roof purlins and resisted by the reinforced concrete wall panels and reinforced concrete columns.



GENERAL BUILDING LAYOUT – 52 Hayton Road

BUILDING HOT SPOTS

The evaluation has been completed using Appendix A of the DEE guidelines.

The building has been reviewed to determine potential “hot spots” in the structural system. Being a precast concrete wall construction with a portal frame and GIB lined internal timber framed walls, the following areas are of concern:

Potential Issues	Observation of the Performance
Inadequate foundations	The foundations do not show any signs of structural damage. The floors have not settled or spread laterally indicating that the floor slab has performed well.
Brittle panel connections and/or cracked panels at the connection.	Repair work has been carried out to a number of the panel connections throughout the building.
Hard-drawn wire mesh reinforcing or inadequate reinforcing contents making panels prone to non-ductile face loading failure.	Cracking was observed in the concrete walls panels that reflect earthquake face loading, cracks spanning horizontally between the column supports. The cracks observed are of nominal thickness and indicate that the panel reinforcement is performing sufficiently and that the cracks are not of structural concern.
Inadequate shear strength of concrete wall panels.	The concrete panels have performed well resisting in plane shear actions. There has been no diagonal shear cracking around panel openings on the lateral load resisting walls.
Panel/Purlin connections	The purlin connections to the concrete tilt panels have behaved well and do not appear to have suffered any damage. All connections where checked appear in good condition.
Inadequate roof bracing	The roof members do not show any obvious signs of elongation. This indicates that the roof bracing had adequate capacity for the lateral loads experienced during the recent sequence of earthquakes.

BUILDING STRUCTURAL STRENGTH COMPLIANCE

Calculations have been carried out to determine the earthquake capacity of the building relative to the new building standards. The capacities of the following elements are as follows:

North/South Direction

- Portal frame capacity: 80%NBS
- Concrete panel face load capacity: 68%NBS
- Panel connections: 40%NBS (angle bracket capacity)
- Concrete panels in plane: 100%NBS
- Post hole capacity: 100%NBS
- Roof Purlins weak axis bending capacity: 100%NBS

East/West Direction

- Concrete panel face load capacity: 71%NBS
- Purlin compression transfer capacity: 85%NBS
- In plane strength of panels: 100%NBS
- Panel connections: 40%NBS (angle bracket capacity)
- R.C Column Capacity: 94%NBS
- R.C Column Connections: 100%NBS

SUMMARY

The building has behaved exceptionally well sustaining only non-structural cracking to a number of the concrete wall panels. The majority of the cracking has since been repaired.

The floor shows no signs of settlement or lateral spread.

Calculations concluded that the earthquake capacity of the building is approximately 40%NBS. This is governed by the angle bracket connections between the concrete wall panels. A number of the panel connections have already been replaced and repaired in previous work carried out.

A lot of the remediation work has already been carried out to return the building to its pre earthquake condition. This is stated in the damage report (Appendix 2).

The building is not classed as an earthquake prone building.

In the opinion of the writer, the building can continue to be used at full occupancy without restrictions. From the findings in this report and based on the previous performance of the panel connections it would be advise to repair or replace a number of the concrete wall panel connections. Increasing the capacity of the panel connections would increase the overall building's earthquake capacity to over 67% NBS and no further strengthening works would be required. Please refer to appendix 5 for strengthening work carried out on the 13.05.14.



Paul Sweeney

TM CONSULTANTS LTD

Checked and approved by



Matthew B Blyth

CPENG # 237435

Appendix 2

Damage Report & Levels Survey

SITE REPORT

Attn: Body Corporate #79398 attn. Chris Bunn

SR No : 01

File No : 130329

Date : 26/03/2014

Project : 52 Hayton Road

D.E.E. POST EARTHQUAKE INSPECTION

The building was designed in 1998 by Chris Bunn Design and engineered by Engineering & Building Advisory Service. The building is subdivided into 5 units and is constructed of concrete precast tilt panel with a portal frame spanning north to south in unit A. The lateral load resisting structure in the north to south direction is resisted by the in plane actions of the concrete tilt panels and the 360UB portal frame.

Lateral loads in the east to west direction are transferred through the roof purlins and resisted by the reinforced concrete wall panels and reinforced concrete columns.

The wall panels sit on concrete edge beam foundations and on post hole foundations. The floor is a 100mm thick concrete slab. Internal partition walls are timber framed with GIB board linings.

The roof structure comprises of Zinalume trimdek roofing on sisalation on galvanised netting on 200/18 DHS purlins at 1.2m c/c.

DHS purlins span in the east/west direction between the 360UB portal frame and the concrete wall panels.

The inspection was focused on structural elements. The building has been inspected inside and out. The Issues arisen from the inspection are:

LOCATION	DAMAGE	RECOMMENDED REPAIR
Foundations:	No damage was observed to the edge foundation beam where inspection was possible. There is no evidence to suggest damage has occurred to the panel foundation beam or post holes. Given the overall condition of the building after the earthquakes, the foundations are assumed to be intact.	No Repair Recommended
Floor:	The floors should no sign of settlement or lateral spread. No damage was observed to interior floor surfaces.	No Repair Recommended
Roof:	The roof structure was accessed and the purlin connections inspected where the roof load is delivered into the wall panels. The roof purlins seem to be in sound structural condition and the purlin connections appear undamaged.	No Repair Recommended
Walls/Linings:	The concrete panels have sustained minor cracking during the 2010 and 2011 earthquakes. All cracks are less than 5mm in width and are not of structural concern. Damage has occurred to sealant joints between concrete panels due to the shaking movement. Minor cracking and superficial damage to internal wall Gib walls and linings.	Cracking to precast panels requires grinding out and epoxy injection to repair. The surface of the panels is then to be refinished to return to pre-earthquake conditions. Remove sealant and replace to repair. 'V' out the crack, re-plaster and paint to repair.

Panel Connections	A panel connection at rear of unit D and through to unit E has pulled away from concrete wall panels. Damage has occurred to the connections between the portal frame and concrete wall panels and to a panel to panel connection for the spandrel over the roller door in unit A.	Connection has been repaired Repair work has been carried out to these connections, new steel plates have been fitted as of the 19 August 2011. These connections have performed well in the subsequent earthquakes.
Exterior Surroundings:	No damage noted	No Repair Recommended

Summary

The building has performed very well sustaining only minor cracking to the wall panels in the recent sequence of earthquakes. Repair work has been carried out to a number of wall panel connections damaged in previous earthquakes. The floor shows no sign of settlement or lateral spread. There is minor cosmetic damage to some internal wall linings, most of which has been repaired. Relatively easy minor cosmetic repairs are required to restore the building back to its pre-earthquake condition.

Signature:

Paul Sweeney

Appendix 3

DEE Analysis

LOADING

Roof: $G = 0.4 \text{ kN/m}^2$
 $Q = 0.25 \text{ kN/m}^2$

internal G.b walls: $G = 0.4 \text{ kN/m}^2$

125 conc panels: $G = 3.0 \text{ kN/m}^2$

150 conc panels: $G = 3.6 \text{ kN/m}^2$

Wap house 100 floor slabs: $G = 2.4 \text{ kN/m}^2$
 $Q = 5.0 \text{ kN/m}^2$

Wind Loading: $W_u = 0.80 \text{ kN/m}^2$
 $W_s = 0.55 \text{ kN/m}^2$

Snow Loading: $S_u = 0.63 \text{ kN/m}^2$
 $S_s = 0.25 \text{ kN/m}^2$

Seismic Loading

Roof - $G = 0.4 \times 1140 = 456 \text{ kN}$
 $Q = 0.25 \times 1140 = 285 \text{ kN}$

conc panels - $G = 2439.4 \text{ kN}$

internal G.b walls - $G = (0.4 \times 2.4) \times (48 + 18 + 21) = 83.5 \text{ kN}$



Seismic weight $W_{\text{roof}} = 456 + \left(\frac{2439.4 + 83.5}{2} \right) + 0.3 \times 285$
 $W_{\text{roof}} = 1347 \text{ kN}$

Seismic shear $V = 1347 \times 0.73 = 983.3 \text{ kN}$

$F_{\text{roof}} = 983.3 \text{ kN}$

$W_{\text{building}} = 1347 + (2439.4 + 83.5 / 2) = 2608.5 \text{ kN}$

FILE NAME: S2 Haydon Road

DATE: 20.02.14

FILE No: 130329

DESIGNER: PS

SHEET No: 02



TM

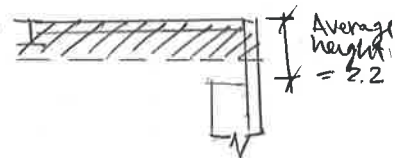
CONSULTANTS
KNOWLEDGE YOU CAN BUILD ON

Purlins Combined Actions

Roof span = 11.6m (Portal + panels grid 6)

Wall 1 - 35% Seismic Load }
Wall 2 - 47% Seismic Load } 82% roof

Roof = 9833kN (conservative)



Concrete panels

$$G = (2.2/2 \times 21 \times 3.0 \times 4.0) + (2.2/2 \times 21 \times 3.6 \times 1.0) + (2.85/2 \times 21 \times 3.0 \times 1.0) = 450 \text{ kN}$$

$$W_{\text{roof}} = 450 + (456 \times 0.82) + (285 \times 0.3 \times 0.82) = 894 \text{ kN}$$

$$F_{\text{roof}} = 894 \times 0.73 = 652.6 \text{ kN}$$

Purlins @ 1.2m c/c

$$\text{Axial load on single purlin } N^* = 652.6 / 21 \times 1.2 = 37.3 \text{ kN}$$

Wall A - 14% Seismic Load } 34% roof
Wall B - 20% Seismic Load }

$$34\% \text{ of } 652.6 = 222 \text{ kN}$$

$$\text{Total NO. of purlins} = 17$$

$$W_{\text{PL}} = 222 / 17 = 12.3 \text{ kN/m}$$

$$W_{\text{PL}} \text{ on single purlin } 12.3 / 17 = 0.73 \text{ kN/m}$$

Lateral Bracing provided @ 1/3 purlin length

$$M_y^* = 0.025 w_e l^2 = 0.3 \text{ kNm}$$

$$M_y^* = w_e l^2 / 8 = 1.4 \text{ kNm (conservative)}$$

Vertical loads

$$W_{\text{dead}} = 0.44 \text{ kN/m}$$

$$W_{\text{G}} = 0.14 \text{ kN/m}$$

$$Q = 0.12 \text{ kN/m}^2$$

$$W_{\text{live}} + 1.5Q = 0.52 \text{ kN/m}$$

$$Q = 0.25 \text{ kN/m}^2$$

Z200/18 DHS Capacity

Load case G + EQ

$$\phi W_{b_x} = 0.57 \text{ kN/m}$$

$$\phi N_c = 40 \text{ kN}$$

$$\phi M_y = 0.9 \times 450 \times 12 \times 10^3 = 4.86 \text{ kNm}$$

$$\frac{N^*}{\phi N_c} + \frac{W^*}{\phi W_{b_x}} = \frac{37.3}{40} + \frac{0.14}{0.52} = 1.178$$

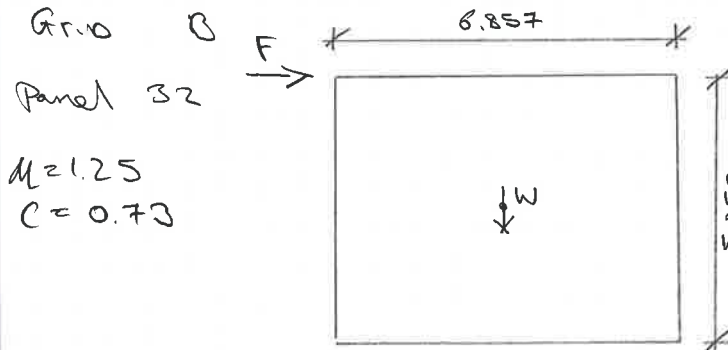
85% NBS

$$\frac{N^*}{\phi N_c} + \frac{M_y^*}{\phi M_y} = \frac{37.3}{40} + \frac{0.3}{4.86} = 0.99$$

100% NBS

Concrete Panels in Plane

(North / South Corridor)



EQ Loading:

$$W_{\text{roof}} = (0.4 \times 9.96 \times 6.857) + (0.3 \times 0.25 \times 9.96 \times 6.857) \times 0.73$$

$$W_{\text{roof}} = 23.7 \text{ kN}$$

$$W_{\text{wall}} = 3.0 \times 6.857 \times 5.85 \times 0.5 \times 0.73$$

$$W_{\text{wall}} = 43.9 \text{ kN}$$

$$F = 67.6 \text{ kN}$$

Overturning Moment

$$M_o = 67.6 \times 5.85 = 395.5 \text{ kNm}$$

Restoring Moment

$$M_{\text{res}} = (3.0 \times 6.857 \times 5.850) \times 6.857 / 2 = 412.6 \text{ kNm}$$

$$M_{\text{res}} \geq M_o$$

OK against Overturning

100% NBS

Shear friction

$$V = 67.6 \text{ kN}$$

$$\tan \delta = 0.6$$

$$V_p = 0.9 \times (3.0 \times 6.857 \times 5.850) \times \tan \delta = 64.98 \text{ kN}$$

Shear resistance provided by 12mm neel bars cast into R.C Columns

4 NO. 12mm neel bars provided per panel edge

Shear capacity reinforcement

$$U_s = 0.8 \times 6 \times 6 \times \pi \times 4 \times 300 = 108.6 \text{ kN}$$

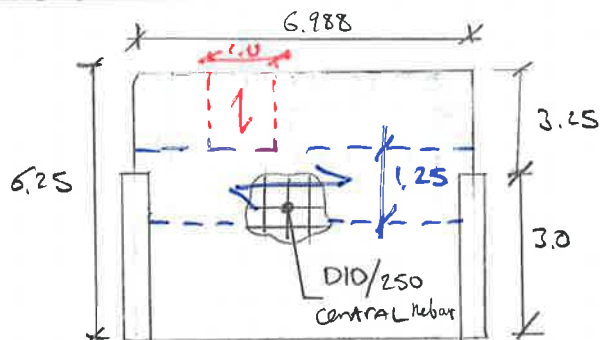
$$108.6 + 64.98 = 173.6 \text{ kN} \geq 67.6 \text{ kN}$$

OK in Shear

100% NBS

Concrete Panels face Loading

(EAST/WEST Loading)

EARTHQUAKE
LOADINGLOAD transferred
from roof purlins
TO TOP OF WALL
panels

EARTHQUAKE LOADING

 $E_{WS} = 653/21 = 31 \text{ kN/m}$ LOAD resisted by 6 rows of
cantilevering wall panels
LOAD on single wall panel
 $E_{WS} = 31 \text{ kN/m} / 6 = 5.2 \text{ kN/m}$
 $M = 2.0 \quad E_{WS} = 5.2 \times 0.4 = 2.08 \text{ kN/m}$

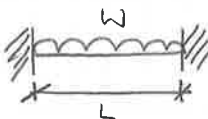
1.0m Cantilever Strip

 $M^* = 2.08 \times (3.25 - 1.25/2) = 5.46 \text{ kNm}$
 $d = 58 \text{ mm}$
 $f_c' = 30 \text{ N/mm}^2$
 $f_y = 300 \text{ N/mm}^2$
 $A_{s, \text{prov}} = 314 \text{ mm}^2 / \text{metre}$ $A_{s, \text{req}} = 385 \text{ mm}^2 / \text{metre}$

82% NBS



1.25m horizontal spanning strip

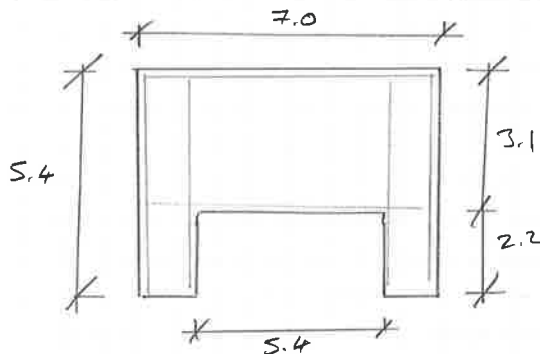
 $M^* = Wl^2/12 = 2.08 \times (6.988 - 0.3)^2 / 12 = 7.75 \text{ kNm}$

 $d = 58 \text{ mm}$
 $f_c' = 30 \text{ N/mm}^2$
 $f_y = 300 \text{ N/mm}^2$
 $A_{s, \text{prov}} = 393 \text{ mm}^2 / 1.25 \text{ m}$ $A_{s, \text{req}} = 550 \text{ mm}^2 / 1.25 \text{ m}$

71% NBS

Shear $M = 1.25$
 $V^* = 5.2 \times (6.988 - 0.3) / 2 = 18 \text{ kN}$
 $V_s = A_v f_y d / s = 393 \times 300 \times 58 / 250 = 27.4 \text{ kN}$
 $V_n = V_c + V_s$
 $V_c = 0.17 \sqrt{f_c'} A_{cv} = 0.83 \times \sqrt{30} \times 1250 \times 125 = 4.5 \text{ kN}$
 $V_n = 27.4 + 4.5 = 31.9 \text{ kN} \quad \underline{\text{OK in shear}}$

Concrete Panel m-plane Loading

(EAST/WEST LOADING)



Grnd 1 Panel 5/7

EQ Loading $\mu = 1.25$
 $C = 0.73$

$$W_{\text{roof}} = (0.4 \times \frac{1}{2} \times 7.0 + 0.3 \times 0.25 \times \frac{1}{2} \times 7.0) \times 0.73$$

$$= 25.5 \text{ kN}$$

$$F = 95.5 \text{ kN}$$

$$W_{\text{wall}} = 3.6 \times (7.0 \times 5.5 - 2.2 \times 5.4) \times 0.73$$

$$= 70 \text{ kN}$$

$$\text{Overturning Moment } M_o = 95.5 \times 5.5 = 525.3 \text{ kNm}$$

$$\text{Restoring Moment } M_r = \{3.6 \times (7.0 \times 5.5 - 2.2 \times 5.4) / 2 \times 0.4\} + \{3.6 \times 26.62 / 2 \times 6.6\} = 3181.6 \text{ kNm}$$

$$M_r \geq M_o \quad \text{ok against overturning} \quad \boxed{100\% \text{ NBS}}$$

Shear

$$V^* = 95.5 \text{ kN}$$

$$\text{Shear friction } V_p = 0.9 \times 3.6 \times 26.62 \times \tan \alpha = 51.75 \text{ kN}$$

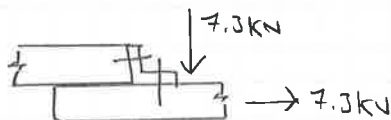
$$\text{Reinforcement } V_s = 0.8 \times 5^2 \times 2 \times 6 \times 300 = 113 \text{ kN}$$

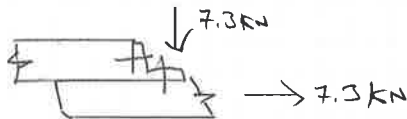
$$V_s > V^* \quad \text{ok against shear} \quad \boxed{100\% \text{ NBS}}$$

Shear transferred to panels $(4+6)/(6+8) + (35)/(41)$
 Through connection 3 No. panels
 2 No. connections per panel

$$\text{Load on single connection } V^* - V_p = 43.75 \text{ kN}$$

$$43.75 / (3 \times 2) = 7.3 \text{ kN}$$



Panel Connection

Safety Bars B15/45/105

tension Capacity = 37 kN

shear Capacity = 38.88 kN

Concrete Strength

$$\phi_c N_{tc} = 0.6 \times k_{nc} h_e 1.5 \sqrt{f_c}$$

$$= 0.6 \times 1.0 \times 65 \times 1.5 \sqrt{30} = 17.2 \text{ kN}$$

tension

$$\phi_c N_{tc} = 0.6 \times 1.0 \times 1.0 \times 0.75 \times 1.0 \times 17.2 = 7.75 \text{ kN}$$

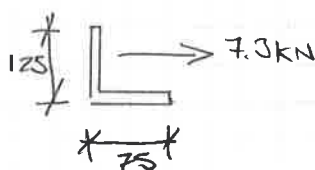
shear

$$\phi_c V_c = 0.6 \times 1.4 \sqrt{D} \sqrt{f_c} e^{1.5} \phi_h$$

$$= 0.6 \times 1.4 \sqrt{15} \times \sqrt{30} \times 1.5 \times 1.0 = 11.6 \text{ kN}$$

Combined tension + shear

$$(N^*/\phi_c N_{tc})^2 + (V^*/\phi_c V_c)^2 = \left(\frac{7.3}{7.75}\right)^2 + \left(\frac{7.3}{11.6}\right)^2 = 1.3 \leq 1.0$$

78% NBSAngle Bracket

long thick Bracket in Drawings

Bending of bracket

$$M^* = 7.3 \times 0.10 = 0.73 \text{ kNm}$$

Bm Bracket

$$Z = bd^2/6 = 200 \times 8^2/6 = 2133$$

$$M = 2133 \times 300 = 0.64 \text{ kNm}$$

$$\frac{M^*}{M} = 1.159 \geq 1.0$$

'Fail'

86% NBS

Shear Capacity of bracket

$$V^* = 7.3 \text{ kN}$$

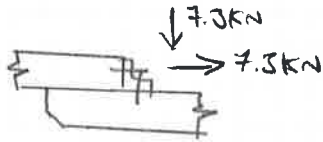
$$V = 0.6 \times 300 \times 200 \times 8$$

$$= 288 \text{ kN}$$

$$\geq V^*$$

100% NBS

Panel Connection - Threaded insert (Tim 16)



Tension Capacity
 $\phi N_{uc} = 29.5 \text{ kN}$

$$\begin{aligned}\psi_c &= 1.12 \\ \phi_{xv} &= 0.67 \\ \phi_{xy} &= 0.77 \\ \psi_{cr} &= 0.75\end{aligned}$$

tension Capacity $\phi N_{us} = 29.5 \times 1.12 \times 0.67 \times 0.77 \times 0.75$
 $= 12.8 \text{ kN}$

tension steel Capacity $\phi N_{us} = 30.2 \text{ kN}$

Shear Capacity $\phi V_s = 5.6 \text{ kN}$

$$\psi_{vc} = 1.22$$

$$\phi V_{cb} = 5.6 \times 1.22 \times 1.2 = 8.2 \text{ kN}$$

$$\psi_s = 1.0$$

$$\psi_6 = 1.0$$

$$\psi_7 = 1.2$$

shear strength of steel
 $\phi V_s = 23.0 \text{ kN}$

tension Capacity $= 7.3 / 12.8 = 0.57 \leq 1.0$ OK

Shear Capacity $= 7.3 / 8.2 = 0.89 \leq 1.0$ OK

Shear + tension

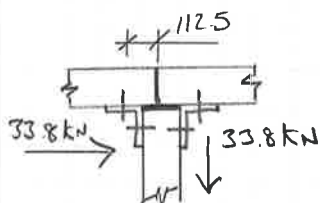
$$\frac{N^*}{\phi N} + \frac{V^*}{\phi V} = 0.57 + 0.89 = 1.46 \geq 1.0$$
 Fail

68% NBS

Panel 32 Connection

$$f = 67.6 \text{ kN} / 2 = 33.8 \text{ kN}$$

4 Bracket Connections to panels 22 + 23 (2 TOP + 2 Centre)



Safety Bolts M15/45/105

tension Capacity	= 37 kN
Shear Capacity	= 38.85 kN

force on single bracket

$$f = 33.8 / 4 = 8.45 \text{ kN}$$

Concrete Strength

$$\phi_c N_{tc} = 0.6 \times k_{nc} k_{ud}^{1.5} \sqrt{f_c} = 0.6 \times 1.0 \times 65^{1.5} \sqrt{30} = 17.2 \text{ kN}$$

tension

$$\phi_c N_{tc} = 0.6 \times 1.0 \times 1.0 \times 1.0 \times 1.0 \times 17.2 = 10.32 \text{ kN}$$

Shear

$$\phi_c V_c = 0.6 \times 1.4 \sqrt{D} \sqrt{f_c} e^{1.5 \psi_n} = 0.6 \times 1.4 \sqrt{15} \times \sqrt{30} \times 112.5^{1.5} \times 0.79 = 16.8 \text{ kN}$$

Combined tension + Shear

$$(N^* / \phi_c N_c)^2 + (V^* / \phi_c V_c)^2 = \left(\frac{8.45}{10.32} \right)^2 + \left(\frac{8.45}{16.8} \right)^2 = 0.92 \leq 1.0$$

OK

Angle Bracket

100% NBS

Bending $M^* = 8.45 \times 0.1 = 0.845 \text{ kNm}$

Plate Capacity $M = 0.64 \text{ kNm}$

(refer to Sheet 6)

$$\frac{M^*}{M} = 1.32 \geq 1.0$$

'fail'

76% NBS

Shear $V^* = 8.45 \text{ kN}$

Capacity $V = 288 \text{ kN}$

(refer to Sheet 7)

$$V^* / V = 0.03 \leq 1.0$$

OK

100% NBS



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KNOWLEDGE YOU CAN BUILD ONConcrete Panel face Loading(North/South Loading)
Grid 1 Panel 5/7Upper Section - $5.4 \times 3.1\text{m}$

$$M = 2.0 \quad A_s = 314\text{mm}^2/\text{m}$$

$$l = 5.4\text{m} \quad b = 1000\text{mm}$$

$$t = 150\text{mm} \quad f'_c = 30\text{N/mm}^2$$

$$f_y = 300\text{N/mm}^2$$

$$W = 0.4 \times 0.15 \times 24 = 1.44\text{kN/m}$$

$$W^* = Wl^2/8 = 5.25\text{kNm}$$

$$A_{s, req} = 302\text{mm}^2/\text{m}$$

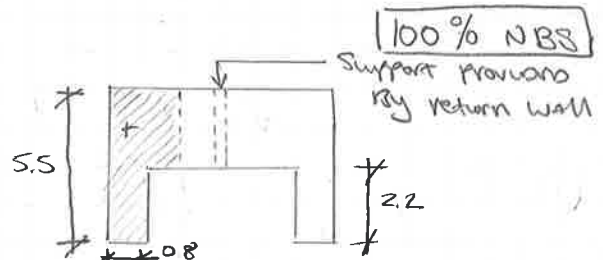
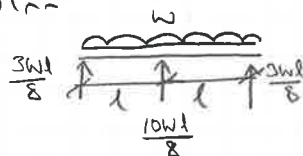
Lower Section - $5.5 \times 0.8\text{m}$

$$M = 2.0 \quad A_s = 4D10 + 2D12 = 540\text{mm}^2$$

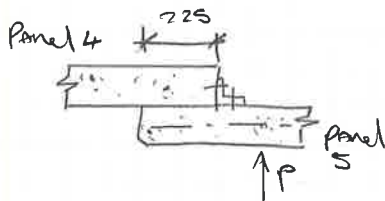
$$l = 5.5\text{m} \quad b = 800\text{mm}$$

$$t = 150\text{mm} \quad f'_c = 30\text{N/mm}^2$$

$$f_y = 300\text{N/mm}^2$$



$$P = 1.3Wl/8 = 3.1 \times \frac{1.44 \times 2.2 \times 3}{8} = 4.5\text{kN}$$



$$M^* = 4.5 \times (0.8 - 0.225) = 2.59\text{kNm}$$

$$A_{s, req} = 90\text{mm}^2$$

100% NBS

Panel 4 Takes 25% 4.5 kN load
 $\Rightarrow 3.375\text{kN}$ Cantilevers

$$M^* = 3.375 \times (2.2 + 3.1/2) = 12.66\text{kNm}$$

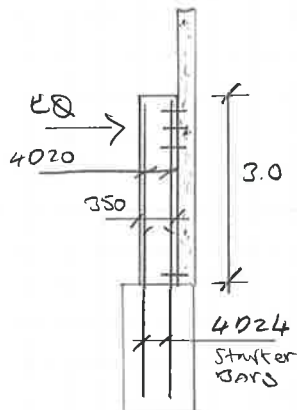
$$A_{s, req} = 796\text{mm}^2$$

$$540/796 = 0.678$$

68% NBS

K.C. Columns

(EAST/WEST LOADING)



Earthquake Loading

$M = 2.0$

$f = 67.6 \text{ kN}$ (refer to sheet 3)

$C = 0.4$

Load acting on K.C. Column

$f_x = 67.3 \times 0.4 / 0.73 = 36.9 \text{ kN}$

$M_x^* = 2.0 \times 36.9 = 73.8 \text{ kNm}$

Axial Load:

Col S.W. $Q = 0.35 \times 0.3 \times 24 \times 3.0 = 7.56 \text{ kN}$

Wall S.W. $Q = 0.125 \times 1.2 \times 24 \times 5.45 = 21.06$

$N^* = 28.62 \text{ kN}$

Moment Capacity

$\phi M_x = 51.5 \text{ kNm}$ (D20)

$\phi M_x = 69.5 \text{ kNm}$ (D24)

$51.5 / 73.8 = 0.697$

$69.5 / 73.8 = 0.94$

70% NBS

94% NBS

Shear Capacity

$V_s = 0.8 \times 12 \times 12 \times 2 \times 4 \times 300 = 434 \text{ kN}$

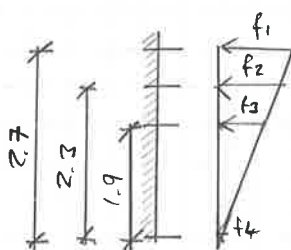
$\mu = 1.25$

$V = 67.3 \text{ kN}$

100% NBS

Connections

$\mu = 1.25$



$M^* = 67.3 \times 1.5 = 100.95 \text{ kNm}$

Raw tension in Connection

$F_t = 100.95 \times 2.7 / (1.9^2 + 2.2^2 + 2.7^2) = 16.8 \text{ kN}$

Headbar Threaded insert

→ RB12T1

Concrete cone pullout Capacity

$= 56.9 \text{ kN}$

tension Capacity RB12 headbar

$f_y = 56.5 \text{ kN}$

tension OK

100% NBS

Job number (or name): 130329
Column number: R.C Column

User name : PaulS

Concrete properties:

Rectangular stress block as defined by NZS 3101:1995.
Concrete cylindrical compressive strength = 30.0 MPa
Concrete compression stress coefficient, $\alpha_1 = 0.85$
Compression zone depth coefficient, $\beta_1 = 0.85$
Concrete maximum strain = 0.0030

Steel properties:

Steel modulus of elasticity = 200 000 MPa
Steel yield strength = 300.0 MPa

Dimensions of the column section:

Rectangular section.
Height of the column section = 350.0 mm
Width of the column section = 300.0 mm
Clear cover to ties parallel to the y-axis = 25.0 mm
Clear cover to ties parallel to the x-axis = 25.0 mm

Results:

Load combination number 1 :
Axial load = 30.7 kN, $M_x = 51.5$ kNm, $M_y = 0.0$ kNm
Strength reduction factor, $\Phi = 0.85$
Required reinforcement ratio = 0.01196, Required reinforcement area = 1255.8 mm²
Initial reinforcement ratio = 0.01196, Initial reinforcement area = 1255.8 mm²
Initial reinforcement ratio scaled by = 1.0000
Moment ratio = 0.00000, Target moment ratio = N/A
Skew angle = 0.0 degrees, NA depth = 43.4 mm
Force (unfactored) carried by concrete = 282.1 kN
Force (unfactored) carried by reinforcement = -246.0 kN
Axial load eccentricity: $e_x = 0.0$ mm, $e_y = 1677.5$ mm

The analysis has been finished.

FILE NAME: S2 haydon ROAD

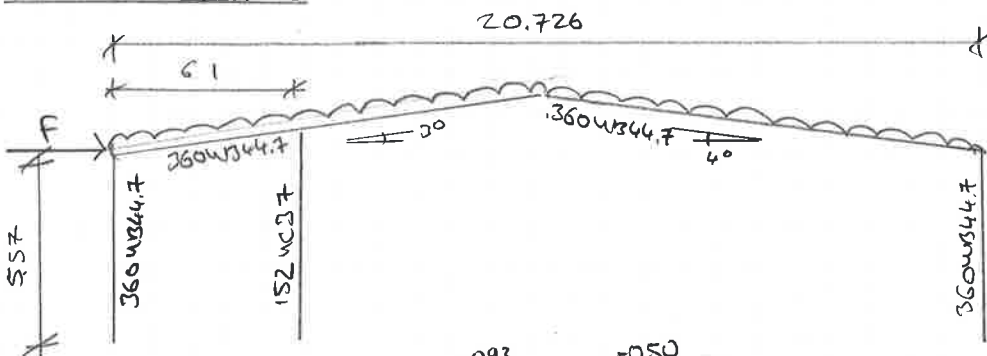
DATE: 20.01.14

FILE No: 130329

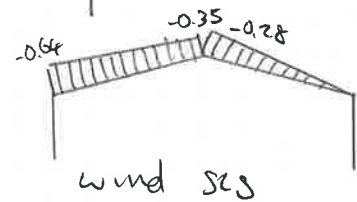
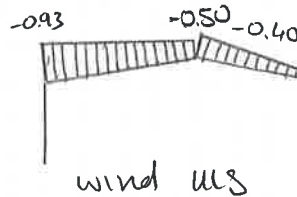
DESIGNER: PS

SHEET No: 10

Portal frame



$$\begin{aligned} G &= 3.6 \text{ kN/m} \\ Q &= 2.25 \text{ kN/m} \\ S_u &= 5.67 \text{ kN/m} \\ S_s &= 2.25 \text{ kN/m} \end{aligned}$$



SEISMIC LOADING
Structure S.W

$$G = 16.1 \text{ kN}$$

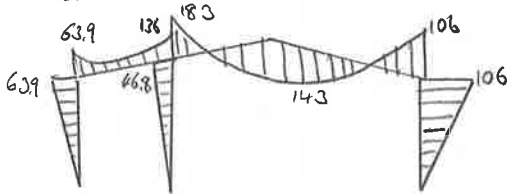
$$W_{\text{roof}} = (3.6 \times 20.726) + (2.25 \times 20.726 \times 0.3) + 16.1/2 = 96.7 \text{ kN}$$

$$\begin{aligned} U &= 2.0, \quad f_{\text{ULS}} = 96.7 \times 0.40 = 38.7 \text{ kN} \\ f_{\text{SLS}} &= 96.7 \times 0.18 = 17.4 \text{ kN} \end{aligned}$$

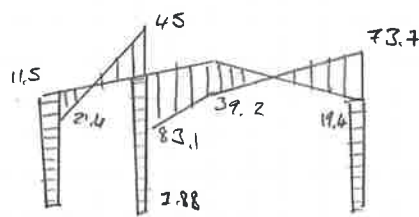
from Microstran Analysis

- worst load case

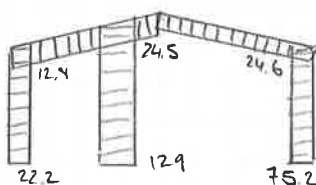
$$1.2G + S_u + 0.4Q$$



BMD



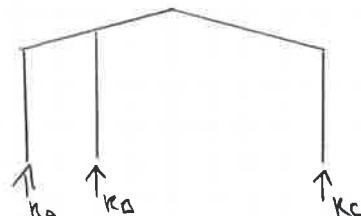
SFD



AXIAL forces

Max deflection Y-axis
 $\Delta = 51 \text{ mm}$ (1.0G + 1.0Q)

Max deflection X-axis
 $\Delta = 35 \text{ mm}$ (1.0G + 1.0Q)



Reactions:

$$\begin{aligned} R_A &= 11.9 \text{ kN} \\ R_B &= 69.2 \text{ kN} \\ R_C &= 40.4 \text{ kN} \end{aligned} \quad \left. \begin{array}{l} \\ \\ \end{array} \right\} 1.0G + 1.0Q$$

FILE NAME: S2 houghton ROAD

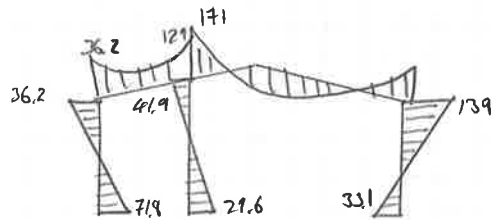
DATE: 24.02.14

FILE No: 130329

DESIGNER: PS

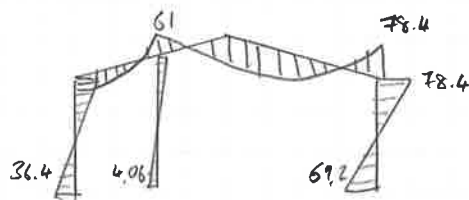
SHEET No: 11

Portal frame - fixed supports



$$1.2K + S_u + 0.4Q$$

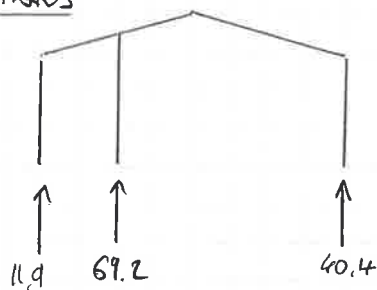
BMD



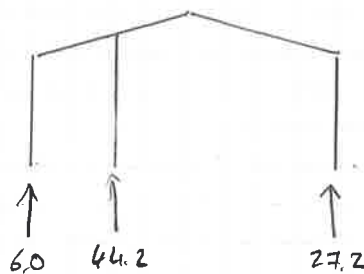
$$1.0G + E_{ult} + 0.4Q$$

BMD

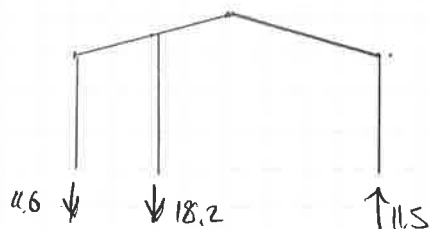
Reactions



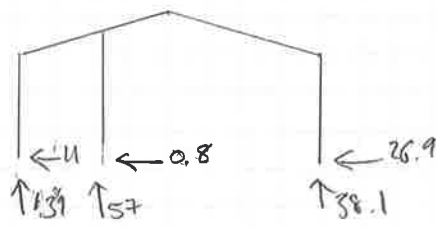
$$1.0G + 1.0Q$$



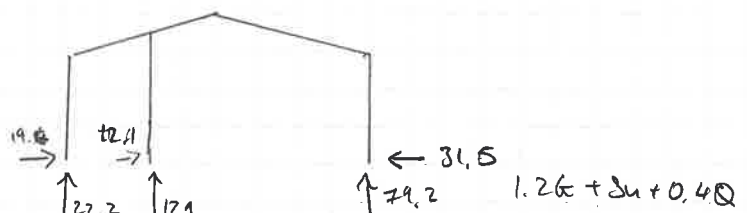
$$1.0G + E_s$$



$$0.9G + W_u$$



$$1.0G + E_u + 0.4Q$$



$$1.2K + S_u + 0.4Q$$

FILE NAME: 52 hapsom 1000

DATE: 24.02.14

FILE No: 130329

DESIGNER: PS

SHEET No: 12

Portal frame - 360 UB 44.7 rafters

$$M^* = 183 \text{ kNm}$$

$$N_c^* = 24.6 \text{ kN}$$

$$V^* = 83.1 \text{ kN}$$

360 UB 44.7

$$\phi M_u = 222 \text{ kNm} \geq 183 \text{ kNm} \quad \text{OK}$$

$$\phi W = 420 \text{ kN} \geq 83.1 \text{ kN} \quad \text{OK}$$

$$\phi N_c = 1100 \text{ kN} \geq 24.6 \text{ kN} \quad \text{OK}$$

deflection $\Delta_{allow} = l/360 = 14.626/360 = 41 \text{ mm}$

$$\Delta = 51 \text{ mm}$$

$$41/51 = 0.8$$

Portal frame - 360 UB 44.7 stanchions

$$M^* = 110 \text{ kNm}$$

$$LC \ 1.0G + EQ_{max} + 0.4Q$$

$$V^* = 20.8 \text{ kN}$$

$$LC \ 1.0G + EQ_{max} + 0.4Q$$

$$N_c^* = 78.2 \text{ kN}$$

Cateral support provided by wall cleats @ 2.4m

360 UB 44.7

$$\phi M_u = 175 \text{ kNm} \geq 110 \text{ kNm} \quad \text{OK}$$

$$\phi W = 420 \text{ kN} \geq 20.8 \text{ kN} \quad \text{OK}$$

$$\phi N_c = 1514 \text{ kN} \geq 78.2 \text{ kN} \quad \text{OK}$$

deflection $\Delta_{allow} = l/150 = 5580/150 = 37 \text{ mm}$

$$\Delta = 35 \text{ mm}$$

$$\leq 37 \text{ mm} \quad \text{OK}$$

100% NBS

Portal frame - 152 UC 37 Post

$$M^* = 46.8 \text{ kNm}$$

$$V^* = 7.88 \text{ kN}$$

152 UC 37

$$\phi M_u = 49.4 \text{ kNm}$$

$$\phi W = 220 \text{ kN}$$

$$\phi N_c = 780 \text{ kN}$$

$$L_e = 5.6 \text{ m} \geq M^* \quad \text{OK}$$

$$\geq V^* \quad \text{OK}$$

$$\geq N_c^* \quad \text{OK}$$

deflection $\Delta_{allow} = l/150 = 37 \text{ mm}$

$$\Delta = 35 \text{ mm}$$

$$\leq 37 \text{ mm} \quad \text{OK}$$

100% NBS

foundations

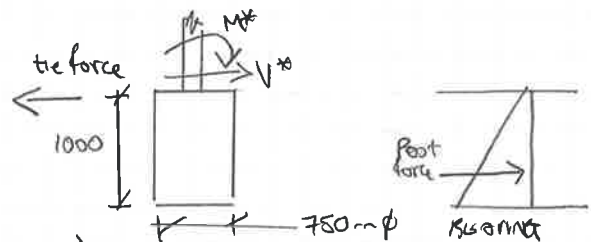
Post hole @ Portal frame

Drawing sheet 2 foundation plan → Post hole C
750mm ϕ Drawing sheet S1 Portal frame details → 100mm ϕ PostholeCheck smaller 750mm ϕ posthole

from Microtran Analysis

$$M^* = 71.8 \text{ kNm}$$

$$V^* = 31.5 \text{ kN}$$



$$\text{tie force} = \left(\frac{3 \times 31.5}{2 \times 1.0} \right) \times \left(\frac{71.8}{31.5} + \frac{2}{3} \times 1.0 \right)$$

$$\text{tie force} = 139.2 \text{ kN}$$

$$\text{Post force} = 71.8 / (2/3 \times 1.0) = 107.7 \text{ kN}$$

$$\text{BEARING} = 2 \times 107.7 / (1.0 \times 0.75) = 287.2 \text{ kPa}$$

tie reinforcement

tie force provided by 2 NO. D20 column ties

$$t_e = 2 \times 1 \times 10^2 \times 300 \times 0.9 = 169 \text{ kN} \geq \text{tie force} = 139.2 \text{ kN}$$

100% NBS

Post hole reinforcement

$$\text{Lap reinforcement } 4D24 \quad A_{s, \text{prov}} = 1809 \text{ mm}^2$$

$$M^* = 71.8 \text{ kNm}$$

$$A_{s, \text{req}} = 414 \text{ mm}^2$$

Sufficient reinforcement provided

100% NBS

Resistance to uplift force

$$\text{uplift force} = 18.2 \text{ kN}$$

$$\text{Resistance to uplift} = (0.75/2)^2 \pi \times 1.0 \times 24 = 10.6 \text{ kN}$$

$$\text{Utilize weight of } 125 \text{ mm slab; Area req} = (18.2 - 10.6) / (0.125 \times 24) = 2.53 \text{ m}^2$$

1.6 x 1.6 Area of slab

$$A_{s, \text{req}} = 960 \text{ mm}^2$$



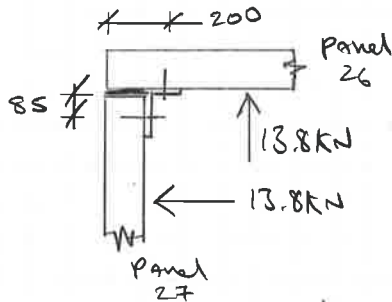
$$M^* = Pl/8 = 1.48 \text{ kNm}$$

$$A_{s, \text{prov}} = 110.12 \text{ mm}^2 \text{ bar} = 110 \text{ mm}^2$$

OK

Connections

Connection between Panel 27 + 26



Panel 26 S.W = 113.8 kN

Panel 27 S.W = 91.5 kN

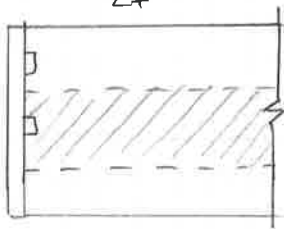
Seismic Loading $\mu = 1.25$ $C = 0.73$

Panel 26

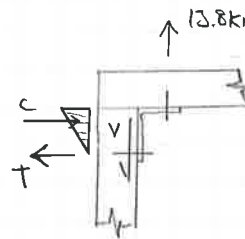
$$0.73 \times 113.8 / 3 \times 0.5 = 13.8 \text{ kN}$$

Panel 27

$$(0.73 \times 91.5 / 3 \times 0.5) + (0.4 \times 50 \times 6.25 / 2 \times 0.73) \times 0.5 + (0.3 \times 0.25 \times 50 \times 6.25 / 2 \times 0.73) \times 0.5 = 13.8 \text{ kN}$$



Safety Bolts B15/45/105
Tension Capacity = 37 kN
Shear Capacity = 38.85 kN



$$V^* = 13.8 \text{ kN}$$

$$N^* = \frac{13.8 \times 0.05}{100(7/8)} = 10.4 \text{ kN}$$

Concrete Strength

$$\phi_c N_{tc} = 0.6 \times k_{nc} h e^{1.5} \sqrt{f_c} = 0.6 \times 10 \times 65^{1.5} \sqrt{30} = 17.2 \text{ kN}$$

Tension

$$\phi_c N_{tc} = 1.0 \times 1.0 \times 1.0 \times (0.3 + 0.7 \times 85 / 1.5 \times 65) \times 17.2 \times 0.6 = 9.39 \text{ kN}$$

$$\frac{9.39}{10.4} = 0.9$$

90% NBS

Shear

$$\phi_c V_c = 1.4 \sqrt{0} \sqrt{f_c} e^{1.5} \psi_h$$

$$= 1.4 \sqrt{15} \sqrt{30} 85^{1.5} \times 1.0 = 23.3 \text{ kN}$$

'OK in Shear'

100% NBS

Combined Shear + tension

$$(N^* / \phi_c N_{tc})^2 + (V^* / \phi_c V_c)^2 = 1.58 \geq 1.0$$

'fail in shear + tension'

83% NBS

Angle Bracket

$$M^* = 13.8 \times 0.05 = 0.69 \text{ kNm}$$

Capacity $M = 0.29 \text{ kNm}$

$$M^* / M = 2.16 \geq 1.0$$

'fail'

40% NBS

Shear $V^* = 13.8 \text{ kN}$

Capacity $V = 288 \text{ kN}$

$$V^* / V = 0.05 \leq 1.0 \text{ OK}$$

100% NBS

Appendix 4

Standardised Report Form

Location		Reviewer: Matthew Blyth	
Building Name:	52 Hayton Road	CPEng No:	237435
Building Address:	A - E 52 Hayton Road	Company project number:	130699
Legal Description:		Company phone number:	03 349 6066
	Degrees Min Sec	Date of submission:	
GPS south:	43 32 32.30	Inspection Date:	19/08/11
GPS east:	172 33 25.90	Revision:	A
Building Unique Identifier (CCC):		Is there a full report with this summary?	yes

Site		Max retaining height (m): 0	
Site slope:	flat	Soil Profile (if available):	
Soil type:	sandy silt		
Site Class (to NZS1170.5):	0	If Ground improvement on site, describe:	
Proximity to waterway (m, if <100m):			
Proximity to cliff top (m, if <100m):			
Proximity to cliff base (m, if <100m):		Approx site elevation (m):	22.00

Building		single storey = 1	
No. of storeys above ground:	1	Ground floor elevation (Absolute) (m):	22.20
Ground floor split (sqm):	22	Ground floor elevation above ground (m):	6.20
Storeys below ground:	0		
Foundation type:	other (describe)	If Foundation type is other, describe:	Post Hole Foundations
Building height (m):	6.50	height from ground to level of uppermost seismic mass (for IEP only) (m):	5.5
Floor footprint area (approx):	1140	Date of design:	1992-2004
Age of Building (years):	16		
Strengthening present?:	no	If so, when (year)?	
Use (ground floor):	public	And what load level (%g)?	
Use (upper floors):	other (specify)	Brief strengthening description:	
Use notes (if required):	Industrial		
Importance level (to NZS1170.5):	IL2		

Gravity Structure		Zincalume Trimdek cladding on 200/18	
Gravity System:	load bearing walls	describe system:	DHS purlins at 1.2m c/c,
Roof:	other (note)	slab thickness (mm):	125
Floors:	concrete flat slab	beam and connector type:	connections
Beams:	steel non-composite	typical dimensions (mm x mm):	350 x 300
Columns:	cast-in situ concrete	Walls:	#N/A

Lateral load resisting structure		Note: Define along and across in detailed report!	
Lateral system along:	single level tilt panel	note total length of wall at ground (m):	48
Ductility assumed, μ :	1.25	estimate or calculation?	estimated
Period along:	0.40	estimate or calculation?	
Total deflection (ULS) (mm):		estimate or calculation?	
maximum interstorey deflection (ULS) (mm):			
Lateral system across:	single level tilt panel	note total length of wall at ground (m):	21
Ductility assumed, μ :	1.25	estimate or calculation?	estimated
Period across:	0.14	estimate or calculation?	
Total deflection (ULS) (mm):		estimate or calculation?	
maximum interstorey deflection (ULS) (mm):		estimate or calculation?	

Separations:		leave blank if not relevant	
north (mm):			
east (mm):			
south (mm):			
west (mm):			

Non-structural elements		describe supports:	
Stairs:	timber	thickness and fixing type:	Stringers supported at ground & 1st floor (Unit A)
Wall cladding:	precast panels	describe:	125mm / 150mm precast concrete panels
Roof Cladding:	Metal		Zincalume Trimdek roof cladding
Glazing:	aluminium frames		
Ceilings:	none		
Services (list):			

Available documentation		original designer name/date:	
Architectural:	partial		Chris Burn Design, 1998
Structural:	partial		Engineering & Building Advisory Service, 1998
Mechanical:	none	original designer name/date:	
Electrical:	none	original designer name/date:	
Geotech report:	none	original designer name/date:	

Damage		Minor cracking to concrete panels & internal Gib partitions. Damage to a number of concrete panel connections.	
Site:		Describe damage:	
(refer DEE Table 4-2)	Site performance: Good	notes (if applicable):	
	Settlement: none observed	notes (if applicable):	
	Differential settlement: none observed	notes (if applicable):	
	Liquefaction: none apparent	notes (if applicable):	
	Lateral Spread: none apparent	notes (if applicable):	
	Differential lateral spread: none apparent	notes (if applicable):	
	Ground cracks: none apparent	notes (if applicable):	
	Damage to areas: slight	notes (if applicable):	

Building:		Current Placard Status: green	
Along:	Damage ratio: 0%	Describe how damage ratio arrived at:	No Structural Damage
Describe (summary):			
Across:	Damage ratio: 0%		
Describe (summary):			
Diaphragms:	Damage?: no	Describe:	
CSWs:	Damage?: no	Describe:	
Pounding:	Damage?: no	Describe:	
Non-structural:	Damage?: no	Describe:	

Recommendations		Describe:	
Level of repair/strengthening required:	minor structural		Additional panel connection brackets installed to increase the panel connections to 67% NBS
Building Consent required:	no		
Interim occupancy recommendations:	full occupancy		
Along:	Assessed %NBS before e'quakes: 67%	0% %NBS from IEP below	If IEP not used, please detail assessment methodology:
	Assessed %NBS after e'quakes: 67%		Detailed analysis undertaken
Across:	Assessed %NBS before e'quakes: 67%	0% %NBS from IEP below	
	Assessed %NBS after e'quakes: 67%		

IEP			
Use of this method is not mandatory - more detailed analysis may give a different answer, which would take precedence. Do not fill in fields if not using IEP.			
Period of design of building (from above): 1992-2004		h _n from above: 5.5m	
Seismic Zone, if designed between 1965 and 1992:		not required for this age of building	
		Design Soil type from NZS4203:1992, cl 4.6.2.2:	
Period (from above):		along	across
(NBS) _{nom} from Fig 3.3:		0.4	0.139
Note 1: for specifically design public buildings, to the code of the day: pre-1965 = 1.25; 1965-1976, Zone A = 1.33; 1965-1976, Zone B = 1.2; all else 1.0		1.00	
Note 2: for RC buildings designed between 1976-1984, use 1.2		1.0	
Note 3: for buildings designed prior to 1935 use 0.8, except in Wellington (1.0)		1.0	
Final (NBS) _{used} :		along	across
		0%	0%
2.2 Near Fault Scaling Factor		Near Fault scaling factor, from NZS1170.5, cl 3.1.6:	
		along	across
		1	1
2.3 Hazard Scaling Factor		Hazard factor Z for site from AS1170.5, Table 3.3:	
		Z _{res} from NZS4203:1992	
		Hazard scaling factor, Factor B:	
		#DIV/0!	
2.4 Return Period Scaling Factor		Building Importance level (from above):	
		Return Period Scaling factor from Table 3.1, Factor C:	
		2	
2.5 Ductility Scaling Factor		Assessed ductility (less than max in Table 3.2):	
		along	across
		1.00	1.00
Ductility scaling factor: =1 from 1978 onwards; or = μ , if pre-1978, from Table 3.3:			
		Ductility Scaling Factor, Factor D:	
		1.00	1.00
2.6 Structural Performance Scaling Factor:		Sp:	
		1,000	1,000
		Structural Performance Scaling Factor Factor E:	
		1	1
2.7 Baseline %NBS, (NBS) ₀ = (NBS) _{nom} x A x B x C x D x E		%NBS ₀ :	
Global Critical Structural Weaknesses: (refer to NZSEE IEP Table 3.4)			
3.1. Plan Irregularity, factor A:			
1			
3.2. Vertical Irregularity, Factor B:			
1			
3.3. Short columns, Factor C:			
1			
3.4. Pounding potential			
Pounding effect D1, from Table to right: 1.0			
Height Difference effect D2, from Table to right: 1.0			
Therefore, Factor D: 1			
3.5. Site Characteristics			
1			
Table for selection of D1			
Separation			
Alignment of floors within 20% of H			
Alignment of floors not within 20% of H			
Table for Selection of D2			
Separation			
Height difference > 4 storeys			
Height difference 2 to 4 storeys			
Height difference < 2 storeys			
Along			
Across			
3.6. Other factors, Factor F			
For < 3 storeys, max value =2.5, otherwise max value =1.5, no minimum			
Rationale for choice of F factor, if not 1			
Detail Critical Structural Weaknesses: (refer to DEE Procedure section 6)			
List any:			
Refer also section 6.3.1 of DEE for discussion of F factor modification for other critical structural weaknesses			
3.7. Overall Performance Achievement ratio (PAR)			
0.00			
0.00			
4.3 PAR x (NBS) ₀ :			
PAR x Baseline %NBS:			
4.4 Percentage New Bulking Standard (NBS), (before)			

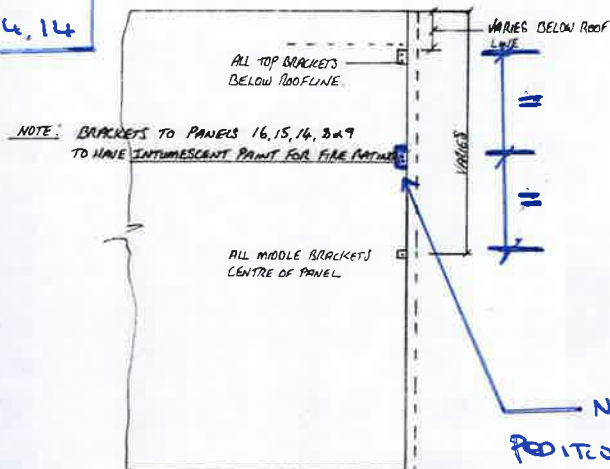
Appendix 5

Strengthening Work to Upgrade Building to 67% NBS

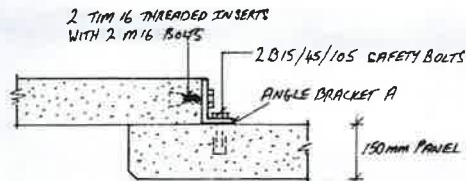
52 HAYTON ROAD JOB NO. 130329

STRENGTHENING WORKS TO PANEL CONNECTIONS

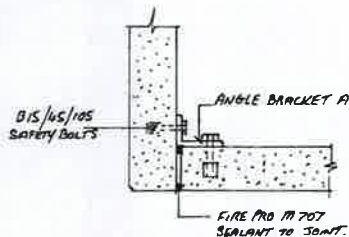
TMCO
15.04.14



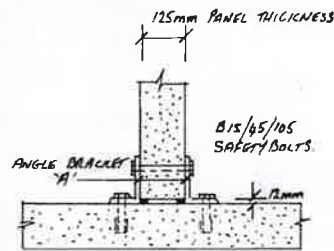
BRACKET FIXINGS TO PANELS.



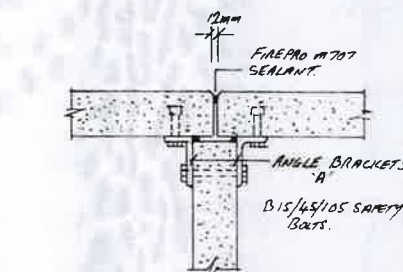
5.



1.

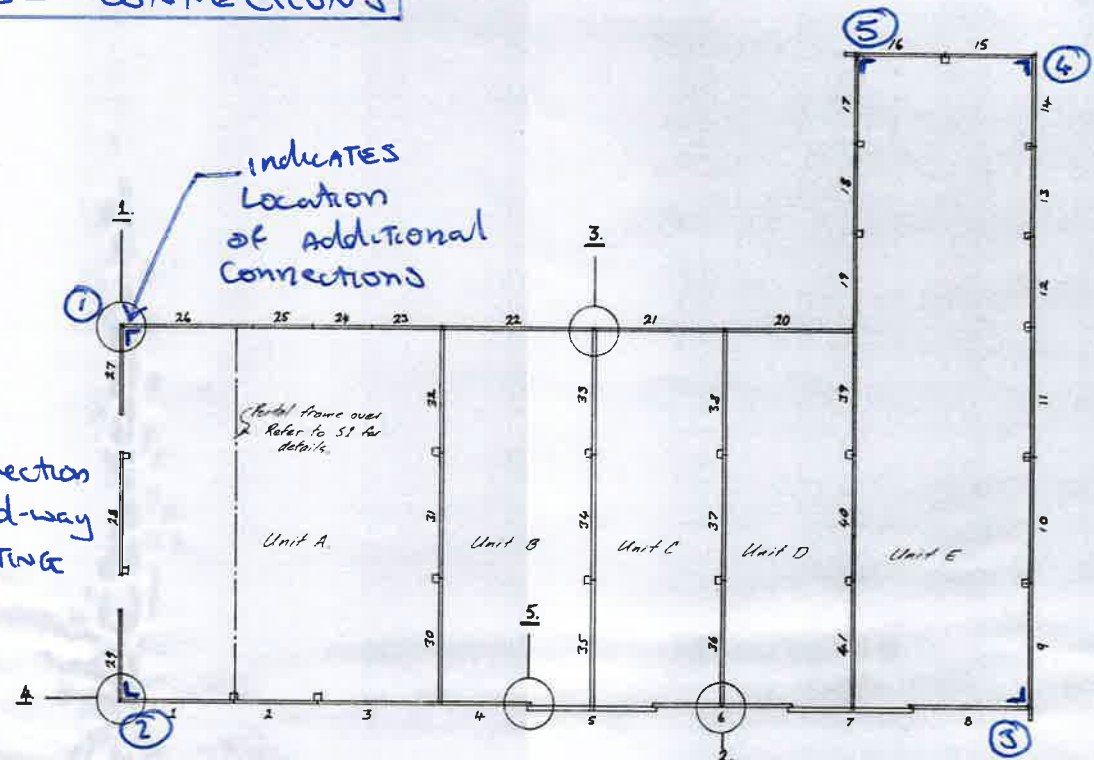


2.



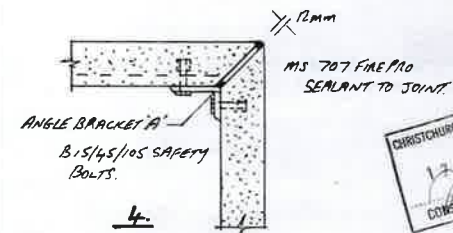
3.

BRACKET FIXINGS



PANEL LOCATION PLAN

CHRISTCHURCH CITY COUNCIL
APPROVED FOR THE
12 MAR 1998
97009100



4.

CHRISTCHURCH CITY COUNCIL
12 APR 1998
CONSENT DOCUMENT

FILE COPY

All building work shall comply with the New Zealand Building Code notwithstanding any inconsistencies which may occur in the drawings and specifications.

HAYTON ROAD DEVELOPMENT
LOT 33

PANEL LOCATION PLAN & DETAILS & BRACKET FIXINGS.

DRAWN	CHECKED	SCALE 1200 110	SHEET 4
TRACED	DATE JAN 98	150	REV 74

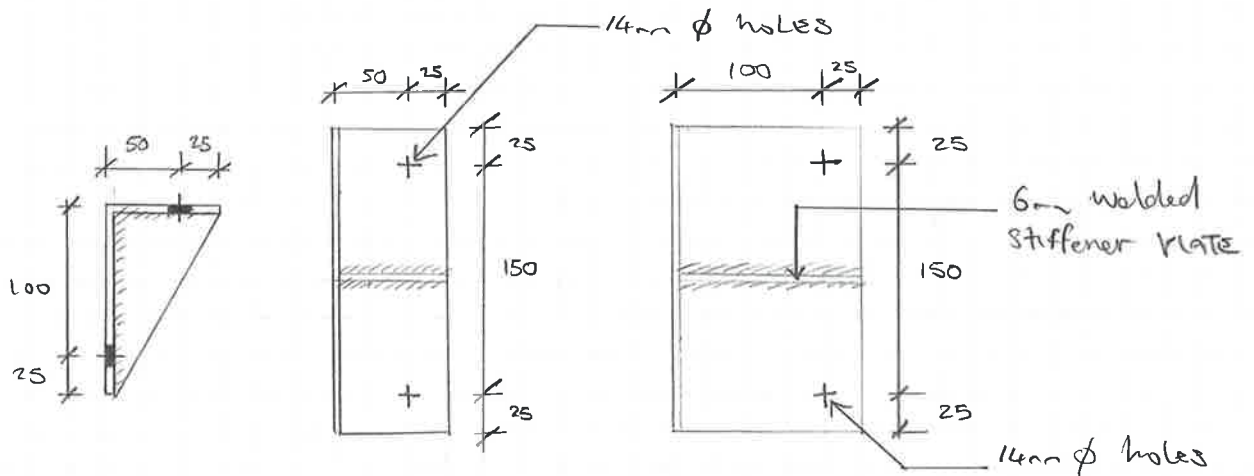
FILE NAME: 52 Hayton ROAD

DATE: 15.04.14

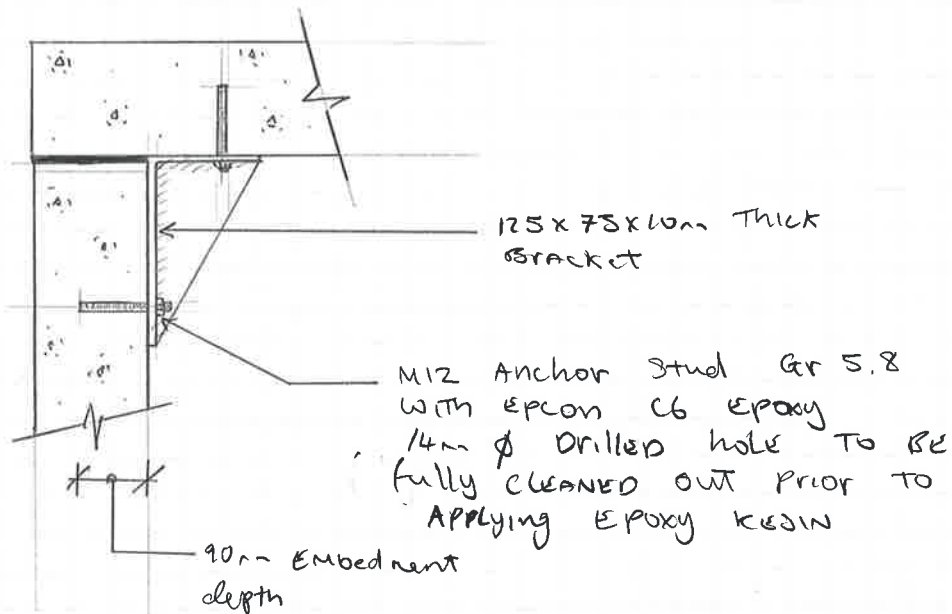
FILE No: 130329

DESIGNER: PS

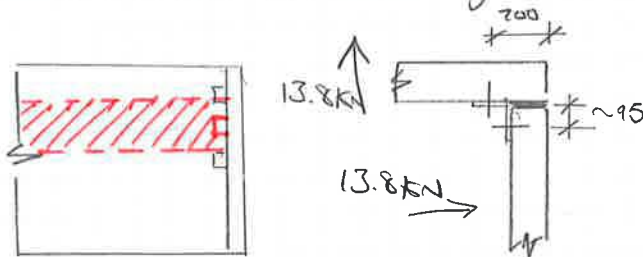
SHEET No: 01



New 125x75x10mm Thick Brackets 200mm long
(Total No. required = 5)



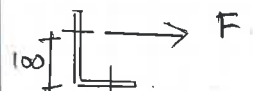
Connection Strengthening To Achieve 67% NBS



Capacity of EXISTING Connections:

- Anchors tension = 9.39 kN (40% NBS)
- Anchors Shear = 23.8 kN (100% NBS)
- Anchors tension + Shear $1.58 \geq 1.0$ (63% NBS)
- Bracket Capacity $\phi M = 0.9 \times 320 \times 100 \times 10^2 / 6 = 0.48 \text{ kNm}$ (35% NBS)
- Bracket Shear Capacity $\phi V = 0.9 \times 320 \times (100 - 22) \times 10 = 225 \text{ kN}$ (100% NBS)

New Connection

	<u>67% NBS</u>	<u>100% NBS</u>
	$F = ((13.8 \times 2) - (4.8 \times 2)) \times 0.67$ $F = 12.1 \text{ kN}$	$F = (13.8 \times 2) - (4.8 \times 2)$ $F = 18 \text{ kN}$
(100mm long Bracket)	$M^* = 1.21 \text{ kNm}$ Bracket Thickness $t = \sqrt{\frac{(1.21 \times 10^6) \times 6}{0.9 \times 320 \times 100}}$ $t = 16 \text{ mm}$	$M^* = 1.8 \text{ kNm}$ Bracket Thickness $t = \sqrt{\frac{1.8 \times 10^6 \times 6}{0.9 \times 320 \times 100}}$ $t = 20 \text{ mm}$

provide 16mm Thick Angle Bracket (conservative)

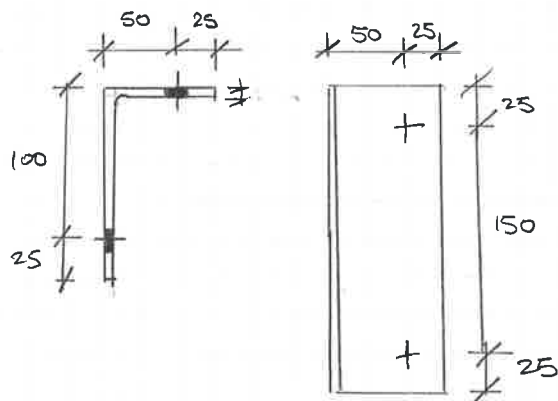
- Capacity of Top Bracket $\phi M = 0.9 \times 320 \times 200 \times 10^2 / 6 = 0.96 \text{ kNm}$ (70% NBS)

$$F = ((13.8 \times 2) - (4.83 + 9.66)) \times 0.67 = 8.8 \text{ kN} \quad M^* = 0.9 \text{ kNm}$$

$$\text{Bracket thickness} = \sqrt{\frac{0.9 \times 10^6 \times 6}{0.9 \times 320 \times 100}} = 14 \text{ mm}$$

$$\text{Wanted 12mm Bracket required length} = \frac{0.9 \times 10^6 \times 6}{0.9 \times 320 \times 12^2} = 130 \text{ mm}$$

Provide 125x75x12 unequal Angle 200mm long
 or 125x75x10 unequal Angle 200mm long



Bracket Capacity:
 $\phi M = 0.9 \times 300 \times 200 \times 12^2 / 6$
 $\phi M = 1.296 \text{ kNm}$

$\phi V = 0.9 \times 300 \times 200 \times 12$
 $\phi V = 648 \text{ kN}$

Anchor Capacity: (Single Anchor) M12 Anchor Stud
 Gr 5.8 Epton CG
 Tension $\phi N_{ur} = 23.0 \text{ kN}$
 Shear $\phi V_{ur} = 10.3 \text{ kN}$

Combined Shear + tension
 $N^* / \phi N_{ur} + V^* / \phi V_{ur} = 0.98 \leq 1.0$

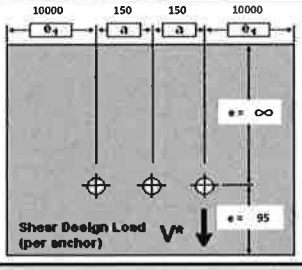
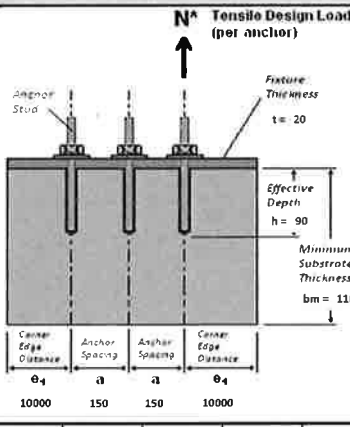
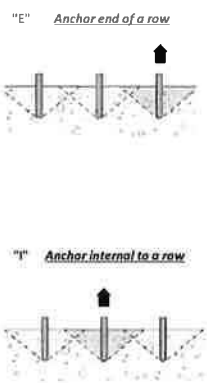
Applied force = 8.8 kN
 $M^* = 0.88 \text{ kNm}$
 $V^* = 8.8 \text{ kN}$

Connection achieves 147% NBS (12mm Bracket)

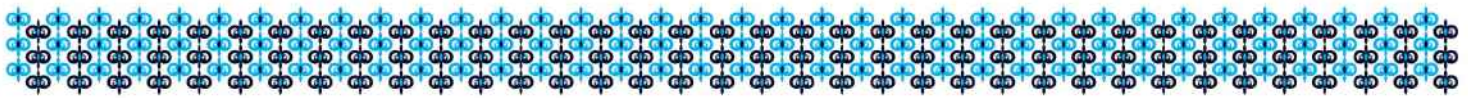
using long Angl Bracket $\rightarrow \phi M = 0.9 \text{ kNm}$
 $\phi V = 560 \text{ kN}$

Connection achieves 102% NBS (long Bracket)

Chemical Anchoring - ChemSet Anchor Stud Design Calculator

		Injection Sys:  Epcon™ C6 Series									
Anchor Type: Anchor Stud - Gr 5.8		Anchor Size: d_b = M 12									
Input Description (Strength Limit State Design)		Input Data (per anchor)		Plan View - Generic Dimensions in (mm)		Project Details					
1. Number of anchors (n)		n = 2				Project Name:-					
2. Anchor Spacing (a)		a = 150 mm				52 Hayton Road					
3. Concrete Edge Distance (e)		e = 95 mm				Project Site Address:-					
4. Concrete Cylinder Strength (f'c)		f'c = 25 MPa				Company Name:-					
5. Concrete Cube Strength (β)		β = 31 MPa				TMCO					
6. Effective Depth (h>6xdh)		h = 90 mm				Design Identification:-					
7. Anchor Stud size (d _b) - M8 → M24		d _b = 12 mm				Additional Panel Connections					
8. Concrete Edge Distance Corner (e ₁)		e ₁ = 10000 mm				Date:-					
9. Internal to a row (I) or end of row (E)		I or E				14.04.14					
10. Dry Hole (D) or Wet hole (W)		D or W									
11. Min Concrete Sub'te Thickness (b _m)		b _m = 118 mm		ChemSet™ Anchor Stud "Specification"		Epcon™ C6 Series "Specification"					
12. Anchor Stud Grade (5.8, 8.8, 316 SS)		Grade = 5.8 Gr		Part No. CS12160 or CS12160GH		C6-18					
13. Fixture Thickness (t)		t = 20 mm		Hole Diameters (mm)		Capacity Reduction Factors					
14. Effective Length (L _e)		L _e = 110 mm		Drill d _h = 14		Conc. Tension/Shear φ = 0.6					
15. Design Tensile Load-per anchor (N*)		N* = 7 kN		Fixture d _f = 15		Steel Tension/Shear φ = 0.8					
16. Design Shear Load-per anchor (V*)		V* = 7 kN									
17. Direction of Shear design load (α)		α = 0 °				α = 0° - towards edge α = 180° - away from edge					
Output Description (Strength Limit State Design)		Output Data (per anchor)		Elevation View - Generic Dimensions in (mm)		Anchor Loaded					
DESIGN O.K.											
Des. Red. Ult. CONC. Tensile Capacity		φN _{urc} = 23.0 kN									
Red. Char. Ult. STEEL Tensile Capacity		φN _{us} = 33.8 kN									
Des. Red. Ult. CONC. Shear Capacity		φV _{urc} = 10.3 kN									
Red. Char. Ult. STEEL Shear Capacity		φV _{us} = 21.0 kN									
Drill hole diameter		d _h = 14 mm									
TENSION O.K.											
Design Red. Ult. Tensile Capacity		φN _{ur} = 23.0 kN									
Tension Design Check		N*/φN _{ur} = 0.30 < 1									
SHEAR O.K.											
Design Red. Ult. Shear Capacity		φV _{ur} = 10.3 kN									
Shear Design Check		V*/φV _{ur} = 0.68 < 1									
COMBINED TENSION SHEAR O.K.											
Combined Check - N*/φN _{ur} + V*/φV _{ur} =		0.98 < 1.2									
Anchor Size		d _b	Metric	8	10	12	16	20	24	30	36
Drill hole diameter		d _h	(mm)	10	12	14	18	24	26	N/A	N/A
Stressed Area		A _b	(mm ²)	33	53	79	154	232	337	N/A	N/A
Anchor Stud Yield Strength		f _y	(MPa)	430	430	430	420	420	420	N/A	N/A
Red Char. Ult. Steel Tensile Capacity		φN _{us}	(kN)	14.3	22.7	33.8	64.7	97.6	141.3	N/A	N/A
Red Char. Ult. Steel Shear capacity		φV _{us}	(kN)	8.9	14.1	21.0	39.7	59.9	86.8	N/A	N/A
Edge distance for no conc.cone reduction		e _c	(mm)	35	40	50	65	80	100	N/A	N/A
Anchor spacing for no conc.cone reduction		a _c	(mm)	50	60	75	100	120	145	N/A	N/A
Absolute Minimum edge dist. & anc'r spac.		e _m & a _m	(mm)	25	30	35	50	60	75	N/A	N/A
Effective Depth - h				Design Reduced Ultimate tensile capacity φN_{ur} (kN per anchor) Based on edge distance (e _c) and anchor spacing (a _c) for no conc.cone reduction							
60		(mm)		10.8							
65		(mm)		12.0							
70		(mm)		13.4	14.6						
80		(mm)		14.3	17.9						
90		(mm)		14.3	21.4	23.0					
100		(mm)		14.3	22.7	26.9					
110		(mm)		14.3	22.7	31.0	34.8				
125		(mm)		14.3	22.7	33.8	42.2				
140		(mm)		14.3	22.7	33.8	50.0				
150		(mm)		14.3	22.7	33.8	55.5	60.7			
160		(mm)		14.3	22.7	33.8	61.1	66.8	71.9		
170		(mm)		14.3	22.7	33.8	64.7	73.2	78.7		
180		(mm)		14.3	22.7	33.8	64.7	79.7	85.8		
190		(mm)		14.3	22.7	33.8	64.7	86.5	93.0	N/A	
220		(mm)		14.3	22.7	33.8	64.7	97.6	115.9	N/A	
240		(mm)		14.3	22.7	33.8	64.7	97.6	132.1	N/A	N/A
270		(mm)		14.3	22.7	33.8	64.7	97.6	141.3	N/A	N/A
330		(mm)		14.3	22.7	33.8	64.7	97.6	141.3	N/A	N/A
350		(mm)		14.3	22.7	33.8	64.7	97.6	141.3	N/A	N/A

The design engineer should ensure the structural element is capable of supporting these loads. Refer to Ramset™ Specifiers Anchoring Resource Book Version 5 for more information or explanation of technical data. ITW Australia Pty. Ltd. ABN 63 004 235 063 trading as Ramset™ New Zealand. © Copyright 2014



TM Consultants Ltd.

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P.O. Box 8874,
Christchurch 8440,
New Zealand

P. 03 348 6066
F. 03 348 6065
E. info@tmco.co.nz

To: Chris Bunn

SR No: 01

File No: 130329

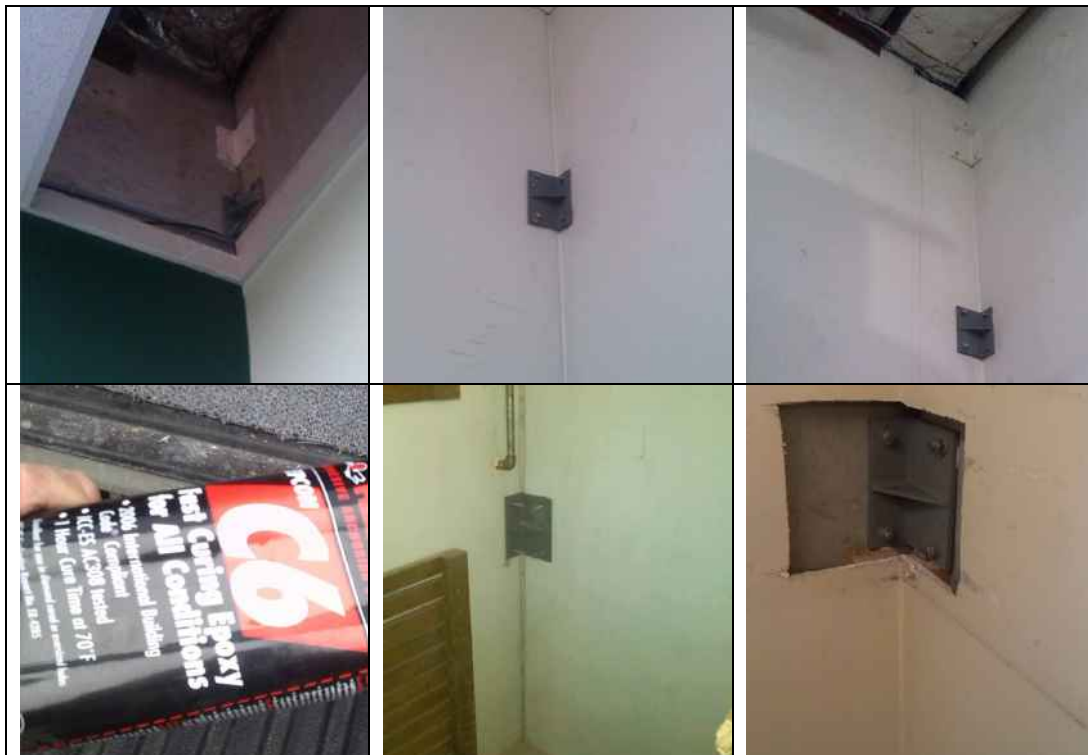
Date: 13.05.14

Project: 52 Hayton Road

SITE REPORT

Inspection of Strengthening Work Undertaken at 52 Hayton Road to Upgrade Building to 67% NBS

- All 5 additional brackets installed as per TMCO sketches dated 15.04.14.
- Bracket size & dimensions as per TMCO sketches.
- Brackets fixed with Epcon C6 epoxy as per TMCO sketches.



Following the installation & fixing of the additional brackets, the building at 52 Hayton Road achieves 67% NBS.

Signature on behalf of TM Consultants Limited:

Paul Sweeney

28 October 2014

SCB Ltd - Body Corporate 79398
C/- Chris Bunn
301b Burwood Road
Christchurch 8083

scbltd@clear.net.nz

Dear Chris

Acceptance of Detailed Engineering Evaluation Report

The Canterbury Earthquake Recovery Authority (CERA) has received your Detailed Engineering Evaluation, titled Detailed Engineering Evaluation – 52 Hayton Road, Wigram, Christchurch – Issue B, by Matthew Blyth (TM Consultants) dated 13 May 2014, for the building (Units 1-5) at 52 Hayton Road (AKA 1/52 Hayton Road) Unit A – Unit E DP 79398 on Lot 33 DP 76565 provided under the Canterbury Earthquake Recovery Act.

CERA has reviewed the report and found that the report does not contain all of the information requested for a Detailed Engineering Evaluation in that the following has not been provided.

- Detailed Engineering Evaluation Summary Data spread sheet in Excel format that provides the pre and post-earthquake %NBS prior to strengthening

However, your report is considered to meet the requirements of a Detailed Damage Evaluation and on the basis of this CERA has no structural engineering concerns with occupancy of this building.

Your report will be forwarded to the Christchurch City Council for the Council's information. The Council may use the information to assist with its responsibilities such as issuing a building warrant of fitness. Any occupation of the building for the purposes of carrying out business activity may be subject to the appropriate permissions and certification required by the Christchurch City Council.

While CERA has no structural engineering concerns regarding occupation of the building there may be other hazards that make occupation of the building unsafe. You as the building owner are required to take all practical steps to ensure the safety of the building and the people in and around it. These steps may include restricting access, placing warning signs and other actions.

Further earthquakes after your engineer carried out the inspection for the engineering evaluation you have provided may trigger the need for further engineering inspections and reporting. If you or anyone else has noticed or suspect any damage resulting from earthquakes after your engineer's inspection then your engineer needs to re-inspect your building. If this re-inspection by your

engineer identifies significant change has taken place an updated Detailed Engineering Evaluation needs to be done and supplied to CERA.

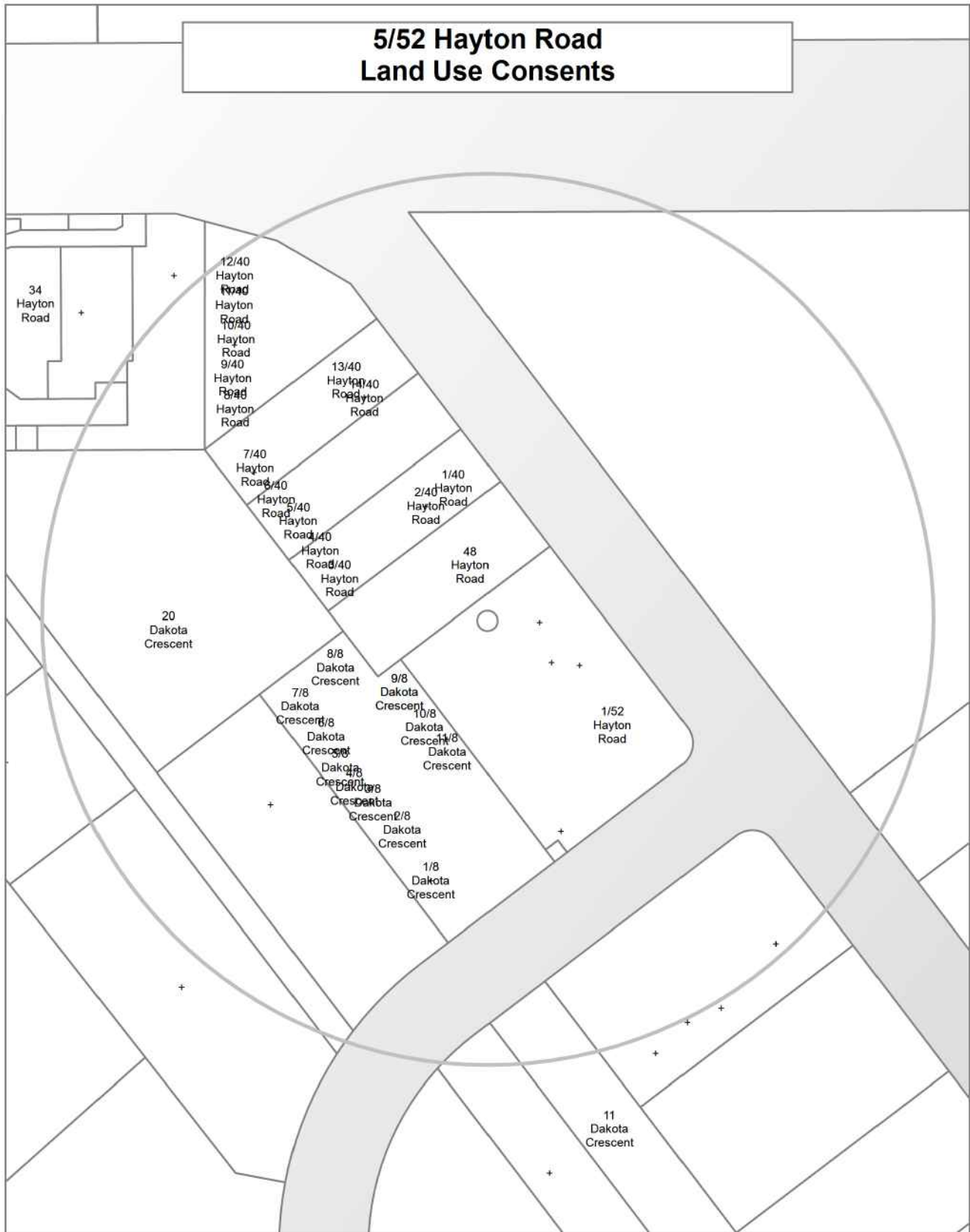
Further information on the requirements for the structural engineering reporting are available by contacting CERA at engineeringassessments@cera.govt.nz or on 03 354 2600.

Yours sincerely,

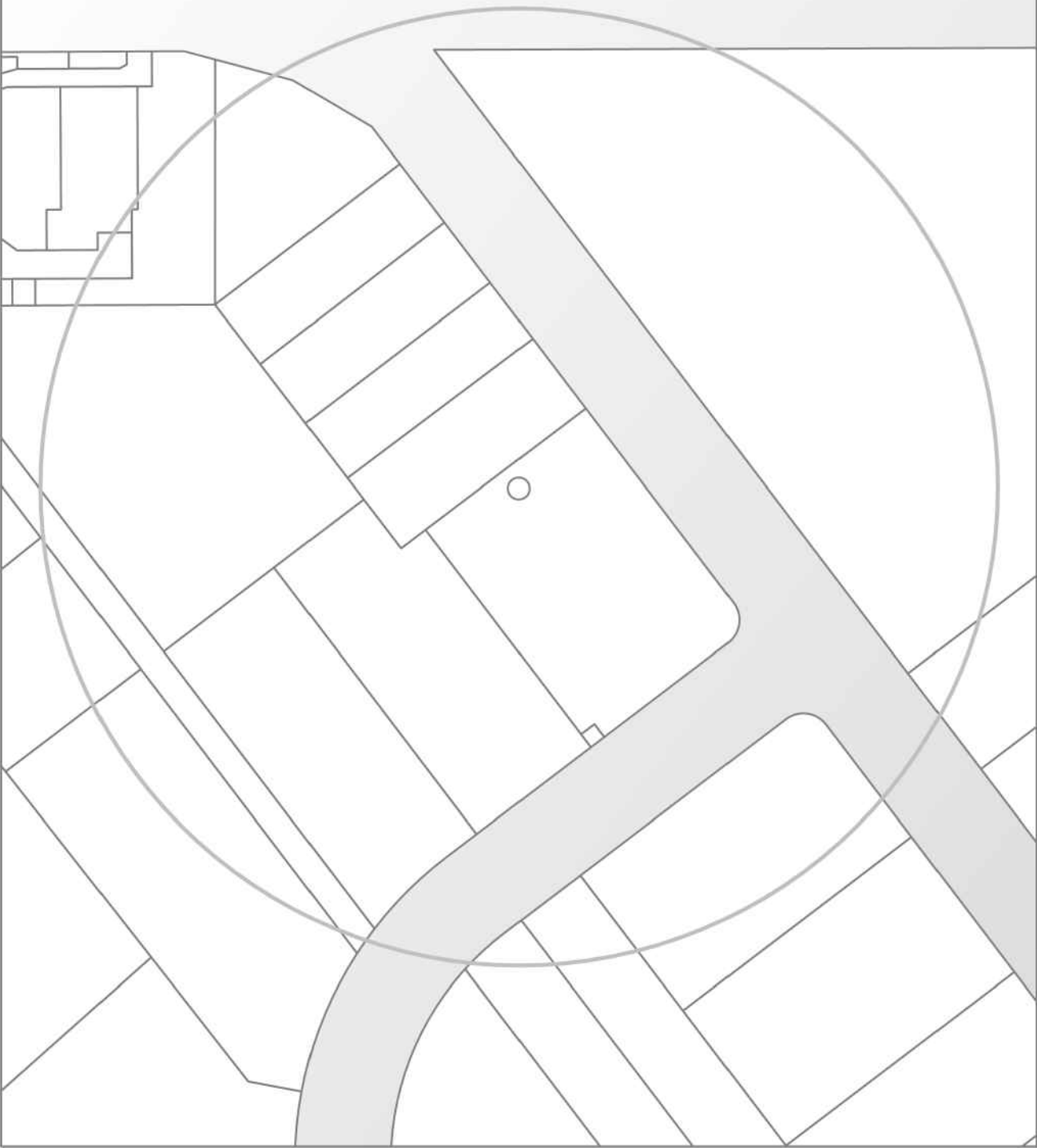


John Cumberpatch
General Manager Operations

5/52 Hayton Road Land Use Consents



**5/52 Hayton Road
Subdivision Consents**



Land Use Resource Consents within 100 metres of 5/52 Hayton Road

Note: This list does not include subdivision Consents and Certificates of Compliance issued under the Resource Management Act.

1/40 Hayton Road

RMA/2004/1024

Application to erect 14 industrial units with accommodation for management and security purposes - Historical Reference RMA20016616

Processing complete

Applied 15/04/2004

Decision issued 21/05/2004

Granted 19/05/2004

1/52 Hayton Road

RMA/1998/611

Application for a five unit warehouse development with reduced number of car parks and unit E heavy goods vehicle parking space is unable to manoeuvre on site. - Historical Reference RES980595

Processing complete

Applied 09/03/1998

Decision issued 08/04/1998

Granted 08/04/1998

1/8 Dakota Crescent

RMA/1999/4257

Application to erect 11 storage and light manufacturing units on the site with non-compliances. - Historical Reference RMA1169

Processing complete

Applied 22/10/1999

Decision issued 26/11/1999

Granted 25/11/1999

10/40 Hayton Road

RMA/2004/1024

Application to erect 14 industrial units with accommodation for management and security purposes - Historical Reference RMA20016616

Processing complete

Applied 15/04/2004

Decision issued 21/05/2004

Granted 19/05/2004

10/8 Dakota Crescent

RMA/1999/4257

Application to erect 11 storage and light manufacturing units on the site with non-compliances. - Historical Reference RMA1169

Processing complete

Applied 22/10/1999

Decision issued 26/11/1999

Granted 25/11/1999

11 Dakota Crescent

RMA/2000/186

Application for reduction in frontage of landscaping. - Historical Reference RMA20000590

Processing complete

Applied 14/01/2000

Decision issued 28/01/2000

Granted 26/01/2000

11/40 Hayton Road

RMA/2004/1024

Application to erect 14 industrial units with accommodation for management and security purposes - Historical Reference RMA20016616

Processing complete

Applied 15/04/2004

Decision issued 21/05/2004

Granted 19/05/2004

11/8 Dakota Crescent

RMA/1999/4257

Application to erect 11 storage and light manufacturing units on the site with non-compliances. - Historical Reference RMA1169

Processing complete

Applied 22/10/1999

Decision issued 26/11/1999

Granted 25/11/1999

12/40 Hayton Road

RMA/2004/1024

Application to erect 14 industrial units with accommodation for management and security purposes - Historical
Reference RMA20016616

Processing complete

Applied 15/04/2004

Decision issued 21/05/2004

Granted 19/05/2004

13/40 Hayton Road

RMA/2004/1024

Application to erect 14 industrial units with accommodation for management and security purposes - Historical
Reference RMA20016616

Processing complete

Applied 15/04/2004

Decision issued 21/05/2004

Granted 19/05/2004

14/40 Hayton Road

RMA/2004/1024

Application to erect 14 industrial units with accommodation for management and security purposes - Historical
Reference RMA20016616

Processing complete

Applied 15/04/2004

Decision issued 21/05/2004

Granted 19/05/2004

2/40 Hayton Road

RMA/2004/1024

Application to erect 14 industrial units with accommodation for management and security purposes - Historical
Reference RMA20016616

Processing complete

Applied 15/04/2004

Decision issued 21/05/2004

Granted 19/05/2004

2/8 Dakota Crescent

RMA/1999/4257

Application to erect 11 storage and light manufacturing units on the site with non-compliances. - Historical Reference RMA1169

Processing complete

Applied 22/10/1999

Decision issued 26/11/1999

Granted 25/11/1999

20 Dakota Crescent

RMA/2005/539

Application for the erection of 2 buildings that contain 6 industrial units, with associated offices, vehicle parking & Manoeuvring areas & landscaping - Historical Reference RMA20019376

Processing complete

Applied 04/03/2005

Decision issued 05/04/2005

Granted 05/04/2005

22D Dakota Crescent

RMA/2007/1107

Construction of driveway and access area for vehicular and truck access (change to the 'yard' and parking area) - Historical Reference RMA92008359

Processing complete

Applied 15/05/2007

Decision issued 14/08/2007

Granted 14/08/2007

3/40 Hayton Road

RMA/2004/1024

Application to erect 14 industrial units with accommodation for management and security purposes - Historical Reference RMA20016616

Processing complete

Applied 15/04/2004

Decision issued 21/05/2004

Granted 19/05/2004

3/8 Dakota Crescent

RMA/1999/4257

Application to erect 11 storage and light manufacturing units on the site with non-compliances. - Historical Reference RMA1169

Processing complete

Applied 22/10/1999

Decision issued 26/11/1999

Granted 25/11/1999

32 Hayton Road

RMA/1997/2393

A boundary adjustment where lots 2 and 3 do not meet the site area size under the Paparua Transitional Plan. - Historical Reference RES972750

Processing complete

Applied 02/10/1997

Decision issued 03/10/1997

Granted 03/10/1997

RMA/2006/505

Application to construct 2 buildings containing a total of 6 industrial units with associated offices & for installation of parking areas and landscaping - Historical Reference RMA20022494

Processing complete

Applied 14/03/2006

Decision issued 24/08/2006

Granted 24/08/2006

32A Hayton Road

RMA/1997/2393

A boundary adjustment where lots 2 and 3 do not meet the site area size under the Paparua Transitional Plan. - Historical Reference RES972750

Processing complete

Applied 02/10/1997

Decision issued 03/10/1997

Granted 03/10/1997

RMA/2007/1369

Application for managers accommodation in Unit 2 - Historical Reference RMA92008630

Processing complete

Applied 08/06/2007

Decision issued 31/08/2007

Granted 29/08/2007

RMA/2018/948

Establish an appointment only Gymnasium

Processing complete

Applied 20/04/2018

Decision issued 17/05/2018

Granted 17/05/2018

32B Hayton Road

RMA/1997/2393

A boundary adjustment where lots 2 and 3 do not meet the site area size under the Paparua Transitional Plan. - Historical Reference RES972750

Processing complete

Applied 02/10/1997

Decision issued 03/10/1997

Granted 03/10/1997

34 Hayton Road

RMA/1996/580

Application to reduce the front setback of a garage to 6 metres in terms of the Transitional District Plan. - Historical Reference RES960681

Processing complete

Applied 21/03/1996

Decision issued 23/04/1996

Granted 23/04/1996

4/40 Hayton Road

RMA/2004/1024

Application to erect 14 industrial units with accommodation for management and security purposes - Historical Reference RMA20016616

Processing complete

Applied 15/04/2004

Decision issued 21/05/2004

Granted 19/05/2004

4/8 Dakota Crescent

RMA/1999/4257

Application to erect 11 storage and light manufacturing units on the site with non-compliances. - Historical Reference RMA1169

Processing complete

Applied 22/10/1999

Decision issued 26/11/1999

Granted 25/11/1999

48 Hayton Road

RMA/2005/835

Application for the erection of a commercial building that contains a warehouse, laboratory, offices and associated amenities - Historical Reference RMA20019678

Processing complete

Applied 08/04/2005

Decision issued 26/04/2005

Granted 26/04/2005

48 McAlpine Street

RMA/1971/226

Construct of plant its manufacture formaldehyde and formaldehyde-based resin for the timber, ply wood and particte broad industry. - Historical Reference RES953709

Processing complete

Applied 10/05/1971

Decision issued 10/05/1971

Declined 10/05/1971

RMA/1985/434

Consent to a car wrecking operation in an industrial 3 zone - Historical Reference RES9207636

Processing complete

Applied 24/10/1985

Decision issued 14/11/1985

Declined 14/11/1985

RMA/1987/355

Consent to the non-provision of carparking - Historical Reference RES9207637

Processing complete

Applied 24/06/1987

Decision issued 25/06/1987

Granted 25/06/1987

RMA/1987/356

Consent to reduced landscaping of 8% - Historical Reference RES9207639

Processing complete

Applied 24/06/1987

Decision issued 25/06/1987

Granted 25/06/1987

RMA/1987/357

Consent to reduce 10m setback to 8.297m - Historical Reference RES9207640

Processing complete

Applied 24/06/1987

Decision issued 25/06/1987

Granted 25/06/1987

RMA/1988/311

Consent to reduce the front yard setback, reduced landscaping, and the non-provision of carparking - Historical Reference RES9207631

Processing complete

Applied 16/08/1988

Decision issued 02/09/1988

Granted 02/09/1988

RMA/1991/1265

Locate front edge of loading area canopy 5.5 to front boundary and 2.1m to the fine wall. - Historical Reference RES953715

Processing complete

Applied 04/03/1991

Decision issued 12/03/1991

Granted 12/03/1991

RMA/1996/114

Application to reduce landscaping and parking requirement under Transitional Plan and parking and loading bay under Proposed Plan. - Historical Reference RES960067

Withdrawn

Applied 10/01/1996

RMA/2001/485

Application to store quantities of hazardous substances in quantities that exceed the limits as specified in the Proposed City Plan. - Historical Reference RMA20004345

Processing complete

Applied 23/02/2001

Decision issued 05/04/2001

Granted 04/04/2001

RMA/2008/1250

Application for a waste treatment facility - Historical Reference RMA92012093

Processing complete

Applied 17/06/2008

Decision issued 08/08/2008

Granted 08/08/2008

RMA/2012/472

Re-development of Mainfreight Terminal & Warehouse - Historical Reference RMA92019808

Processing complete

Applied 02/04/2012

Decision issued 05/06/2012

Granted 05/06/2012

RMA/2012/962

Within scope amendment to RMA92019808 - Historical Reference RMA92020329

Processing complete

Applied 27/06/2012

Decision issued 03/07/2012

Granted 03/07/2012

RMA/2016/207

Within Scope Amendment [RMA92030659] - Historical Reference RMA92032272

Processing complete

Applied 26/01/2016

Decision issued 01/02/2016

Granted 01/02/2016

RMA/2022/3064

NES Earthworks

Processing complete

Applied 28/09/2022

Decision issued 20/10/2022

Granted 20/10/2022

5/40 Hayton Road

RMA/2004/1024

Application to erect 14 industrial units with accommodation for management and security purposes - Historical Reference RMA20016616

Processing complete

Applied 15/04/2004

Decision issued 21/05/2004

Granted 19/05/2004

5/8 Dakota Crescent

RMA/1999/4257

Application to erect 11 storage and light manufacturing units on the site with non-compliances. - Historical Reference RMA1169

Processing complete

Applied 22/10/1999

Decision issued 26/11/1999

Granted 25/11/1999

6/40 Hayton Road

RMA/2004/1024

Application to erect 14 industrial units with accommodation for management and security purposes - Historical Reference RMA20016616

Processing complete

Applied 15/04/2004

Decision issued 21/05/2004

Granted 19/05/2004

6/8 Dakota Crescent

RMA/1999/4257

Application to erect 11 storage and light manufacturing units on the site with non-compliances. - Historical Reference RMA1169

Processing complete

Applied 22/10/1999

Decision issued 26/11/1999

Granted 25/11/1999

7/40 Hayton Road

RMA/2004/1024

Application to erect 14 industrial units with accommodation for management and security purposes - Historical Reference RMA20016616

Processing complete

Applied 15/04/2004

Decision issued 21/05/2004

Granted 19/05/2004

7/8 Dakota Crescent

RMA/1999/4257

Application to erect 11 storage and light manufacturing units on the site with non-compliances. - Historical Reference RMA1169

Processing complete

Applied 22/10/1999

Decision issued 26/11/1999

Granted 25/11/1999

8/40 Hayton Road

RMA/2004/1024

Application to erect 14 industrial units with accommodation for management and security purposes - Historical Reference RMA20016616

Processing complete

Applied 15/04/2004

Decision issued 21/05/2004

Granted 19/05/2004

8/8 Dakota Crescent

RMA/1999/4257

Application to erect 11 storage and light manufacturing units on the site with non-compliances. - Historical Reference RMA1169

Processing complete

Applied 22/10/1999

Decision issued 26/11/1999

Granted 25/11/1999

9/40 Hayton Road

RMA/2004/1024

Application to erect 14 industrial units with accommodation for management and security purposes - Historical Reference RMA20016616

Processing complete

Applied 15/04/2004

Decision issued 21/05/2004

Granted 19/05/2004

9/8 Dakota Crescent

RMA/1999/4257

Application to erect 11 storage and light manufacturing units on the site with non-compliances. - Historical Reference RMA1169

Processing complete

Applied 22/10/1999

Decision issued 26/11/1999

Granted 25/11/1999

Decision issued 26/11/1999

Granted 25/11/1999

Data Quality Statement

Land Use Consents

All resource consents are shown for sites that have been labelled with an address. For sites that have been labelled with a cross (+) no resource consents have been found. Sites that have no label have not been checked for resource consents. This will be particularly noticeable on the margins of the search radius. If there are such sites and you would like them included in the check, please ask for the LIM spatial query to be rerun accordingly. This will be done free of charge although there may be a short delay. Resource consents which are on land occupied by roads, railways or rivers are not, and currently cannot be displayed, either on the map or in the list. Resource consents that relate to land that has since been subdivided, will be shown in the list, but not on the map. They will be under the address of the land as it was at the time the resource consent was applied for. Resource consents that are listed as Non-notified and are current, may in fact be notified resource consents that have not yet been through the notification process. If in doubt. Please phone (03)941 8999.

The term “resource consents” in this context means land use consents. Subdivision consents and certificates of compliance are excluded.

Subdivision Consents

All subdivision consents are shown for the sites that have been labelled with consent details. For Sites that have been labelled with a cross (+) no records have been found. Sites that have no label have not been checked for subdivision consents. This will be particularly noticeable on the margins of the search radius. If there are such sites and you would like them included in the check, please ask for the LIM spatial query to be rerun accordingly. This will be done free of charge although there may be a short delay.

The term “subdivision consents” in this context means a resource consent application to subdivide land. Non subdivision land use resource consents and certificates of compliance are excluded.

This report will only record those subdivision applications which have not been completed i.e once a subdivision has been given effect to and the new lots/properties have been established the application which created those lots will not be shown

All subdivision consent information is contained on the map and no separate list is supplied