



Aldwin Courts Quantitative Engineering Evaluation

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Christchurch City Council

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# Executive Summary - Block A

This is a summary of the Quantitative Engineering Evaluation for the Aldwin Courts Block A building and is based on the Detailed Engineering Evaluation Procedure document issued by the Engineering Advisory Group on 19 July 2011, visual inspections, available structural documentation and summary calculations as appropriate.

Building Details	Name	Aldwin Courts Block A				
Building Location ID	PRO 0811	B001 Multiple Building Site Y				
Building Address	55 Aldwins	Road, Phillipstown		No. of residential units	3	
Soil Technical Category	N/A	Importance Level	2	Approximate Year Built	1976	
Foot Print (m <sup>2</sup> )	~144	Storeys above ground	1	Storeys below ground	0	
Type of Construction	Corrugated grade floor		ber frame wa	lls, concrete strip footings and	slab on	
Quantitative L5 Repo	ort Resul	ts Summary				
Building Occupied	Y	Aldwin Courts Block A is currently in use.				
Suitable for Continued Occupancy	Y	Aldwin Courts Block A is suitable for continued occupation.				
Key Damage Summary	Y	Refer to summary of building	damage in s	Section 3.1 of this report.		
Critical Structural Weaknesses (CSW)	N	No critical structural weaknesses found.				
Levels Survey Results	Y	Levels are not within the recommended 0.5% grade.				
Building %NBS From Analysis	83%	Based on an analysis of capacity and demand for the bracing and firewall.				
Approval						

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Title	Structural Engineer	Title	Senior Structural Engineer

# **Executive Summary - Block B**

This is a summary of the Quantitative Engineering Evaluation for the Aldwin Courts Block B building and is based on the Detailed Engineering Evaluation Procedure document issued by the Engineering Advisory Group on 19 July 2011, visual inspections, available structural documentation and summary calculations as appropriate.

Building Details	Name	Aldwin Courts Block B			
Building Location ID	PRO 0811	B002 Multiple Building Site Y			
Building Address	55 Aldwins	Road, Phillipstown No. of residential units 3			
Soil Technical Category	N/A	Importance Level	2	Approximate Year Built	1976
Foot Print (m <sup>2</sup> )	~165	Storeys above ground	1	Storeys below ground	0
Type of Construction	Corrugated metal roof, block veneer, timber frame walls, concrete strip footings and slab on grade floor.				
Quantitative L5 Report Results Summary					

Building Occupied	Y	Aldwin Courts Block B is currently in use.		
Suitable for Continued Occupancy	Y	Aldwin Courts Block B building is suitable for continued occupancy.		
Key Damage Summary	Y	Refer to summary of building damage in Section 3.1 of this report.		
Critical Structural Weaknesses (CSW)	N	No critical structural weaknesses were found.		
Levels Survey Results	Y	Levels are not within the recommended 0.5% grade.		
Building %NBS From Analysis	73%	Based on an analysis of capacity and demand for the bracing and firewall.		

#### Approval

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# Executive Summary - Block C

This is a summary of the Quantitative Engineering Evaluation for the Aldwin Courts Block C building and is based on the Detailed Engineering Evaluation Procedure document issued by the Engineering Advisory Group on 19 July 2011, visual inspections, available structural documentation and summary calculations as appropriate.

Building Details	Name	Aldwin Courts Block C				
Building Location ID	PRO 0811	B003		Multiple Building Site	Y	
Building Address	55 Aldwins	Road, Phillipstown		No. of residential units	2	
Soil Technical Category	N/A	Importance Level	2	Approximate Year Built	1976	
Foot Print (m <sup>2</sup> )	~138	Storeys above ground	Storeys above ground     1     Storeys below ground			
Type of Construction	Corrugated grade floor	ated metal roof, block veneer, timber frame walls, concrete strip footings and slab on loor.				
Quantitative L5 Repo	ort Resul	ts Summary				
Building Occupied	Y	Aldwin Courts Block C is curr	ently in use.			
Suitable for Continued Occupancy	Y	Aldwin Courts Block C is suitable for continued occupation.				
Key Damage Summary	Y	Refer to summary of building damage in Section 3.1 of this report.				
Critical Structural Weaknesses (CSW)	N	No critical structural weaknesses found.				
Levels Survey Results	Y	Levels are not within the recommended 0.5% grade.				
Building %NBS From Analysis	80%	Based on an analysis of capacity and demand for the bracing and firewall.				

#### Approval

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### Executive Summary - Block D

This is a summary of the Quantitative Engineering Evaluation for the Aldwin Courts Block D building and is based on the Detailed Engineering Evaluation Procedure document issued by the Engineering Advisory Group on 19 July 2011, visual inspections, available structural documentation and summary calculations as appropriate.

Building Details	Name	Aldwin Courts Block D				
Building Location ID	PRO 0811	B004		Multiple Building Site	Y	
Building Address	55 Aldwins	Road, Phillipstown		No. of residential units	3	
Soil Technical Category	N/A	Importance Level	2	Approximate Year Built	1976	
Foot Print (m <sup>2</sup> )	~144	Storeys above ground	Storeys above ground     1     Storeys below ground			
Type of Construction	Corrugated grade floor	ed metal roof, block veneer, timber frame walls, concrete strip footings and slab on or.				
Quantitative L5 Repo	ort Resul	ts Summary				
Building Occupied	Y	Aldwin Courts Block D is cur	Aldwin Courts Block D is currently in use.			
Suitable for Continued Occupancy	Y	Aldwin Courts Block D building is suitable for continued occupancy.				
Key Damage Summary	Y	Refer to summary of building	damage in S	Section 3.1 of this report.		
Critical Structural Weaknesses (CSW)	N	No critical structural weaknesses found.				
Levels Survey Results	Y	Levels are not within the recommended 0.5% grade.				
Building %NBS From Analysis	83%	Based on an analysis of capacity and demand for the bracing and firewall.				

#### Approval

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# Executive Summary - Block E

This is a summary of the Quantitative Engineering Evaluation for the Aldwin Courts Block E building and is based on the Detailed Engineering Evaluation Procedure document issued by the Engineering Advisory Group on 19 July 2011, visual inspections, available structural documentation and summary calculations as appropriate.

Building Details	Name	Aldwin Courts Block E				
Building Location ID	PRO 0811	B005		Multiple Building Site	Y	
Building Address	55 Aldwins	Road, Phillipstown		No. of residential units	3	
Soil Technical Category	N/A	Importance Level	2	Approximate Year Built	1976	
Foot Print (m²)	~144	Storeys above ground	1	Storeys below ground	0	
Type of Construction	Corrugated grade floor		ber frame wa	Ils, concrete strip footings and	slab on	
Qualitative L5 Report	rt Results	s Summary				
Building Occupied	Y	Aldwin Courts Block E is curr	ently in use.			
Suitable for Continued Occupancy	Y	Aldwin Courts Block E is suitable for continued occupation.				
Key Damage Summary	Y	Refer to summary of building damage in Section 3.1 of this report.				
Critical Structural Weaknesses (CSW)	N	No critical structural weaknes	sses found.			

Levels Survey Results	Y	Floor levels are acceptable.
Building %NBS From Analysis	78%	Based on an analysis of capacity and demand for the bracing and firewall.

#### Approval

Author Signature

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Title	Structural Engineer	Title	Senior Structural Engineer

# **Executive Summary - Block F**

This is a summary of the Quantitative Engineering Evaluation for the Aldwin Courts Block F building and is based on the Detailed Engineering Evaluation Procedure document issued by the Engineering Advisory Group on 19 July 2011, visual inspections, available structural documentation and summary calculations as appropriate.

Building Details	Name	Aldwin Courts Block F				
Building Location ID	PRO 0811	B006		Multiple Building Site	Y	
Building Address	55 Aldwins	Road, Phillipstown		No. of residential units	3	
Soil Technical Category	N/A	Importance Level	2	Approximate Year Built	1976	
Foot Print (m <sup>2</sup> )	~144	Storeys above ground	1	Storeys below ground	0	
Type of Construction		Corrugated metal roof, block veneer, timber frame walls, concrete strip footings and slab on grade floor.				
Qualitative L5 Report	rt Results	s Summary				
Building Occupied	Y	Aldwin Courts Block F is curr	ently in use.			
Suitable for Continued Occupancy	Y	Aldwin Courts Block F is suitable for continued occupation.				
Key Damage Summary	Y	Refer to summary of building	damage in s	Section 3.1 of this report.		
Critical Structural Weaknesses (CSW)	N	No critical structural weaknes	sses found.			
Levels Survey Results	Y	Floor levels are acceptable.	Floor levels are acceptable.			
Building %NBS From Analysis	83%	Based on an analysis of capa	acity and der	nand for the bracing and firewa	all.	

#### Approval

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Title	Structural Engineer	Title	Senior Structural Engineer

# Executive Summary - Block G

This is a summary of the Quantitative Engineering Evaluation for the Aldwin Courts Block G building and is based on the Detailed Engineering Evaluation Procedure document issued by the Engineering Advisory Group on 19 July 2011, visual inspections, available structural documentation and summary calculations as appropriate.

Building Details	Name	Aldwin Courts Block G				
Building Location ID	PRO 0811	B007		Multiple Building Site	Y	
Building Address	55 Aldwins	Road, Phillipstown		No. of residential units	3	
Soil Technical Category	N/A	Importance Level	2	Approximate Year Built	1976	
Foot Print (m <sup>2</sup> )	~144	Storeys above ground	1	Storeys below ground	0	
Type of Construction	Corrugated grade floor	l metal roof, block veneer, timb	ber frame wa	lls, concrete strip footings and	slab on	
Qualitative L5 Report	rt Results	s Summary				
Building Occupied	Y	Aldwin Courts Block G is cur	rently in use			
Suitable for Continued Occupancy	Y	Aldwin Courts Block G is suitable for continued occupation.				
Key Damage Summary	Y	Refer to summary of building damage in Section 3.1 of this report.				
Critical Structural Weaknesses (CSW)	N	No critical structural weaknes	sses found.			

# Levels Survey ResultsYLevels are not within the recommended 0.5% grade.Building %NBS From<br/>Analysis83%Based on an analysis of capacity and demand for the bracing and firewall.

#### Approval

Author Signature

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Title	Structural Engineer	Title	Senior Structural Engineer	

# **Executive Summary - Carport J**

This is a summary of the Quantitative Engineering Evaluation for the Aldwin Courts Carport J and is based on the Detailed Engineering Evaluation Procedure document issued by the Engineering Advisory Group on 19 July 2011, visual inspections, available structural documentation and summary calculations as appropriate.

Building Details	Name	Aldwin Courts- Carport J					
Building Location ID	PRO 0811	B008		Multiple Building Site	Y		
Building Address	55 Aldwins	Road, Phillipstown		No. of residential units	-		
Soil Technical Category	N/A	Importance Level	1	Approximate Year Built	1976		
Foot Print (m <sup>2</sup> )	60	Storeys above ground	1	Storeys below ground	0		
Type of Construction		et roof on timber joists and bear bel pipe corner posts and slab o		inforced concrete masonry wa	ll with strip		
Qualitative L5 Repor	rt Results	s Summary					
Building Occupied	Y	Aldwin Courts Carport J is cu	irrently in us	e.			
Suitable for Continued Occupancy	Y	Aldwin Courts Carport J is su	Aldwin Courts Carport J is suitable for continued use.				
Key Damage Summary	Y	Refer to summary of building	damage in	Section 3.1 of this report.			

Key Damage Summary	Y	Refer to summary of building damage in Section 3.1 of this report.
Critical Structural Weaknesses (CSW)	Ν	No critical structural weaknesses found.
Levels Survey Results	Ν	Floor levels are acceptable.
Building %NBS From Analysis	100%	Strengthening is carried out by OPUS- Refer to OPUS strengthening.

#### Approval

# **Executive Summary- Carport K**

This is a summary of the Quantitative Engineering Evaluation for the Aldwin Courts Carport K building and is based on the Detailed Engineering Evaluation Procedure document issued by the Engineering Advisory Group on 19 July 2011, visual inspections, available structural documentation and summary calculations as appropriate.

Building Details	Name	Aldwin Courts- Carports K					
Building Location ID	PRO 0811	B009		Multiple Building Site	Y		
Building Address	55 Aldwins	Road, Phillipstown		No. of residential units	-		
Soil Technical Category	N/A	Importance Level	2	Approximate Year Built	1976		
Foot Print (m <sup>2</sup> )	60	Storeys above ground	1	Storeys below ground	0		
Type of Construction	Metal sheet roof on timber joists and beams, lightly reinforced concrete masonry wall with strip footing, steel pipe corner posts and slab on grade floor.						
Quantitative L5 Rep	ort Resul	Its Summary					
Building Occupied	Y	Aldwin Courts Carport K is currently in use.					
Suitable for Continued Occupancy	Y	Aldwin Courts Carport K is s	Aldwin Courts Carport K is suitable for continued use.				
Key Damage Summary	Y	Refer to summary of building	damage in s	Section 3.1 of this report			
Critical Structural Weaknesses (CSW)	N	No critical structural weaknes	sses found.				
Levels Survey Results	N	Floor levels are acceptable.					
Building %NBS From Analysis	37%	Based on analysis of the ma	sonry wall ou	ut-of-plane capacity.			
Approval							
Author Signature	MAndaloy Approver Signature				1 <del>11</del>		

Author Signature

Approver Signature

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Title	Structural Engineer	Title	Senior Structural Engineer

# **Executive Summary - Carport L**

This is a summary of the Quantitative Engineering Evaluation for the Aldwin Courts Carport L building and is based on the Detailed Engineering Evaluation Procedure document issued by the Engineering Advisory Group on 19 July 2011, visual inspections, available structural documentation and summary calculations as appropriate.

Building Details	Name	Aldwin Courts Carport L					
Building Location ID	PRO 0811	B010		Multiple Building Site	Y		
Building Address	55 Aldwins	Road, Phillipstown		No. of residential units	-		
Soil Technical Category	N/A	Importance Level	2	Approximate Year Built	1976		
Foot Print (m <sup>2</sup> )	60	Storeys above ground	1	Storeys below ground	0		
Type of Construction	Metal sheet roof on timber joists and beams, lightly reinforced concrete masonry wall with strip footing, steel pipe corner posts and slab on grade floor.						
Qualitative L5 Report	rt Results	s Summary					
Building Occupied	Y	Aldwin Courts Carport L is c	urrently in us	se.			
Suitable for Continued Occupancy	Y	Aldwin Courts Carport L is su	iitable for co	ntinued use.			
Key Damage Summary	Y	Refer to summary of building	damage in S	Section 3.1 of this report			
Critical Structural Weaknesses (CSW)	N	No critical structural weaknes	No critical structural weaknesses found.				
Levels Survey Results	N	Floor levels are acceptable.					

#### Approval

Analysis

**Building %NBS From** 

37%

Author Signature	uthor Signature		Albert
Name	Manoochehr Ardalany	Name	David Elliott
Title	Structural Engineer	Title	Senior Structural Engineer

Based on analysis of the masonry wall out-of-plane capacity.

## Executive Summary - Carport M

This is a summary of the Quantitative Engineering Evaluation for the Aldwin Courts Carport M building and is based on the Detailed Engineering Evaluation Procedure document issued by the Engineering Advisory Group on 19 July 2011, visual inspections, available structural documentation and summary calculations as appropriate.

Building Details	Name	Aldwin Courts Carport M			
Building Location ID	PRO 0811	B011 Multiple Building Site Y			
Building Address	55 Aldwins	s Road, Phillipstown No. of residential units -			
Soil Technical Category	N/A	Importance Level	1	Approximate Year Built	1976
Foot Print (m²)	45	Storeys above ground	1	Storeys below ground	0
Type of Construction		et roof on timber joists and bear eel pipe corner posts and slab o			ll with strip
Quantitative L5 Report Results Summary					
Building Occupied	Y	Aldwin Courts Carport M is currently in use.			
Suitable for Continued Occupancy	Y	Aldwin Courts Carport M is suitable for continued use.			
Key Damage Summary	Y	Refer to summary of building damage in Section 3.1 of this report			
Critical Structural Weaknesses (CSW)	N	No critical structural weaknes	sses found.		
Levels Survey Results	N	Floor levels are acceptable.			
Building %NBS From Analysis	100%	Strengthening is carried out by OPUS- Refer to OPUS strengthening report.			
Approval					

**Author Signature** 

M Ardalow

**Approver Signature** 

Albert

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Name	Manoochehr Ardalany	Name	David Elliott
Title	Structural Engineer	Title	Senior Structural Engineer

# Executive Summary- Carport O

This is a summary of the Quantitative Engineering Evaluation for the Aldwin Courts Carport O building and is based on the Detailed Engineering Evaluation Procedure document issued by the Engineering Advisory Group on 19 July 2011, visual inspections, available structural documentation and summary calculations as appropriate.

Building Details	Name	Aldwin Courts Carport O			
Building Location ID	PRO 0811	B012 Multiple Building Site Y			
Building Address	55 Aldwins	Road, Phillipstown No. of residential units -			
Soil Technical Category	N/A	Importance Level	1	Approximate Year Built	1976
Foot Print (m <sup>2</sup> )	60	Storeys above ground	1	Storeys below ground	0
Type of Construction	Metal sheet roof on timber joists and beams, lightly reinforced concrete masonry wall with strip footing, steel pipe corner posts and slab on grade floor.				
Qualitative L5 Report Results Summary					
Building Occupied	Y	Aldwin Courts Carport O is currently in use.			
Suitable for Continued Occupancy	Y	Aldwin Courts Carport O is suitable for continued use.			
Key Damage Summary	Y	Refer to summary of building damage in Section 3.1 of this report			
Critical Structural Weaknesses (CSW)	N	No critical structural weaknesses found.			

Levels Survey Results	Ν	Floor levels are acceptable.
Building %NBS From Analysis	100%	Strengthening is carried out by OPUS- Refer to OPUS strengthening report.

#### Approval

# 1 Introduction

### 1.1 General

On 14 August 2013 Aurecon engineers visited the Aldwin Courts to carry out a quantitative building damage assessment on behalf of Christchurch City Council. Detailed visual inspections were carried out to assess the damage caused by the earthquakes on 4 September 2010, 22 February 2011, 13 June 2011, 23 December 2011 and related aftershocks.

The scope of work included:

- Assessment of the nature and extent of the building damage;
- Visual assessment of the building strength particularly with respect to safety of occupants if the building is currently occupied; and
- Assessment of requirements for detailed engineering evaluation including geotechnical investigation, level survey and any areas where linings and floor coverings need removal to expose structural damage.

On 11 September 2015 we were informed by the council that the following repair and strengthening works are completed for residential blocks and carports:

- All units reroofed with lightweight metal roofing.
- Internal cosmetic repairs completed.
- Masonry wall veneers have been repaired and painted.
- Perimeter foundation cracks have been repaired.
- Concrete slab cracks have been repaired.
- Stand-alone Carports have been strengthened to 100% NBS based on an Opus design solution.
- Masonry walls have been repaired.
- Concrete slab cracks have been repaired.
- Grout injection under the intertenancy fire wall of Unit 4 and Unit 5 is undertaken.

Aurecon has not revisited Aldwin courts to review the strengthening work and this report is based on information provided by Christchurch City Council. Strengthening work on carports were completed by OPUS and we have updated our previous DEE report (report dated 1 November 2013) in accordance with information provided by the council. In addition, Structural performance factor (Sp) of 0.5 has been recommended in new version of NZSEE (NZSEE 2013) for seismic assessment of timber framed building. We have updated our calculations to include this new information which reflect good performance of the buildings.

This report outlines the updated results of our Quantitative Assessment of damage to Aldwin Courts and is based on the Detailed Engineering Evaluation Procedure document issued by the Structural Advisory Group on 19 July 2011.

# 2 Description of the Building

### 2.1 Building Age and Configuration

Built in 1976 the Aldwin Courts housing development consists of seven residential buildings (each containing multiple units) with five carports. Refer to Figure 1 for a plan arrangement of Aldwin Courts.

#### 2.1.1 Buildings

The buildings are single storey timber frame buildings with plasterboard lining on the interior and a lightly reinforced masonry veneer on the exterior. Reinforced masonry firewalls with gable roofs are located between units and connected into the roof diaphragm. The high-pitched roofs supported by timber purlins and rafters have been replaced with light weight roofs.

All of the Aldwin Courts buildings are similar in construction methodology and materials but differ in layout, as shown in Figure 1. A number of the buildings are connected onto carports through the exterior masonry veneer.

#### 2.1.2 Carports

The carports consist of lightly reinforced masonry walls (D12 @ 2000 mm c/c) with recently upgraded light weight steel sheeting roofing and steel tube posts.

Carports K and L are attached to Blocks C and E (respectively) while the other carports are all independent structures. For carports K and L, a portion of the carport roof is supported by the masonry veneer of the Residential Blocks C and E.

#### 2.2 Building Designations

The labels of the buildings with their unit numbers are presented in Table 1. In addition, the locations of buildings are shown in Figure 1.

Label	Units	Туре		
Block A	1, 2 & 3	Single storey		
Block B	4, 5 & 6	Single storey		
Block C	7 & 8	Single storey		
Block D	9,10 &11	Single storey		
Block E	12,12a & 14	Single storey		
Block F	15,16 & 17	Single storey		
Block G	18, 19 & 20	Single storey		
Carport J	-	Separate carport		
Carport K	-	Attached carport		
Carport L	-	Attached carport		
Carport M	-	Separate carport		
Carport O	-	Separate carport		

#### Table 1: Building Type and Designation



Figure 1. Plan View of Aldwin Courts (55 Aldwins Road, Phillipstown)

### 2.3 Building Structural Systems Vertical and Horizontal

### 2.3.1 Buildings

The single storey buildings of Aldwin Courts are regular structures. The light weight metal roofs are supported on timber trusses that transfer loads to the external timber walls. These timber walls (lined with plasterboard and tied into masonry veneers) take the horizontal earthquake induced forces in the along and across directions.

#### 2.3.2 Carports

The vertical loads in the carports have a simple load path whereby they transfer directly to lightly reinforced masonry walls and steel posts. Lateral loads are taken in the along and across directions through in-plane shear and out-of-plane moment of the masonry walls. Strengthening of the separate carports (by OPUS) may have introduced a new load path for the seismic induced forces for separate carports.

### 2.4 Reference Building Type

The buildings in Aldwin Courts are basic structures with timber framed walls that are lined with plasterboard. This type of building has typically performed well under seismic loading.

### 2.5 Building Foundation System and Soil Conditions

The Aldwin Courts foundations consist of concrete strip footings and concrete slab on grade floor. Aldwin Courts is classified as TC2 based on Canterbury Geotechnical Database, which means "minor to moderate damage from liquefaction is possible in future significant earthquakes". However a significant amount of liquefied silt (sand boils) was observed in and around Blocks A, B and C during the first visit of the site in 2013. In addition, aerial photos taken soon after the 13th June 2011 earthquake show liquefaction in the area. A deep geotechnical investigation is required to indicate the categorisation of soil type.

### 2.6 Available Structural Documentation and Inspection Priorities

Structural and architectural drawings were available for Aldwin Courts. The generic building type for Aldwin Courts is a timber-framed building constructed in the 1970s. This type of structure has performed reasonably well during the Canterbury Earthquakes. To confirm drawings, inspections were undertaken in 2013 to understand the construction of the buildings and identify any likely critical areas. Potential damage such as cracking to the block walls and concrete floor slabs was also inspected.

### 2.7 Available Survey Information

A floor level survey of each building was previously undertaken to establish the level of unevenness across the floors. All levels were measured on top of the existing floor coverings which may have introduced a margin of error.

The Ministry of Business, Innovation and Employment (MBIE) published the guideline "Repairing and rebuilding houses affected by the Canterbury earthquakes" in 2012, which recommends some form of re-levelling or rebuilding of the floor for the following scenarios.

- 1. If the slope is greater than 0.5% for any two points more than 2 m apart; or
- 2. If the variation in level over the floor plan is greater than 50 mm; or
- 3. If there is significant cracking of the floor.

It is important to note that these figures are recommendations and are only intended to be applied to residential buildings. The levels and slopes of the carport slabs were visually inspected and found to be fit for purpose.

The floor levels for a number of buildings of Aldwin Courts were found to be outside of the recommended margins. While a summary of the critical results from the floor level survey is presented in Table 2, a complete level survey can be found in Appendix A.



Block	Residential Unit	Maximum Variation in Level Over The Floor (mm)	Maximum Slope Measured (%)
A	1	28	0.72
А	2	32	0.90
A	3	40	0.75
В	4	50	0.80
В	6	40	0.96
С	8	32	0.90
D	10	36	0.70
D	11	48	0.75
G	18	32	0.60
G	20	34	0.60

#### Table 2: Summary of Critical Slopes

Note: Table 2 shows the residential units with the maximum floor slope variation.

### 3 Structural investigation

### 3.1 Summary of Building Damage

Most units of Aldwin Courts were occupied at the time when the damage assessment was carried out. A damage assessment was performed on 14 August 2013 at the Aldwin Courts and the following damage was observed. Repair of the damage are discussed in section 7 of this report.

#### Table 3: Damage Summary

Building	Damage Observed
Block A	<ul> <li>Cracks in the area around openings (i.e. windows and door frames)</li> <li>Cracks in the window frame</li> <li>Cracks in the ceiling</li> <li>Cracks in the mortar joints</li> <li>Liquefied silt inside the building (unit 2)</li> <li>Cracks in the concrete slab on grade</li> <li>Cracks in the plasterboard walls</li> <li>Cracks in the mortar joints around the windows</li> </ul>
Block B	<ul> <li>Cracks in the foundation</li> <li>Cracks in the area around openings (i.e. windows and door frames)</li> <li>Cracks in the plasterboard walls</li> <li>Cracked glass window panels</li> <li>Considerable amount of liquefied silt inside units 4 and 5 Note: The liquefaction inside units 4 and 5 has caused damage to and deterioration of plasterboard linings.</li> </ul>
Block C	<ul> <li>Cracks in the area around openings (i.e. windows and door frames)</li> <li>Cracks in the plasterboard walls</li> <li>Cracks across the ceiling</li> <li>Step cracks in the masonry veneers</li> </ul>

	<ul> <li>Cracks in the perimeter concrete foundation</li> <li>Cracks in the mortar joints of the masonry veneer</li> <li>Cracks in the concrete slab on grade</li> </ul>
Block D	<ul> <li>Cracks in the area around openings (i.e. windows and door frames)</li> <li>Cracks in the plasterboard walls</li> <li>Cracks in the concrete slab on grade</li> <li>Step cracks in masonry veneers</li> <li>Cracked glass panels in door</li> <li>Cracks in the ceiling</li> </ul>
Block E	<ul> <li>Concrete roof tiles have been displaced and become unattached. A number were missing and some had fallen to the ground.</li> <li>Cracks in the area around openings (i.e. windows and door frames)</li> <li>Cracks in the plasterboard walls</li> <li>Cracks in the perimeter concrete foundation</li> <li>Cracks in the mortar joints of the masonry veneer</li> <li>Step cracks in the masonry veneers</li> </ul>
Block F	<ul> <li>Cracks in the area around openings (i.e. windows and door frames)</li> <li>Cracks in the plasterboard walls</li> <li>Cracks in the door frames</li> <li>Cracks in the perimeter concrete foundation</li> <li>Crack in the concrete slab on grade</li> <li>Step cracks in the masonry veneers</li> <li>Cracks in the mortar joint of the block veneer</li> </ul>
Block G	<ul> <li>Cracks in the ceiling</li> <li>Cracks in the area around openings (i.e. windows and door frames)</li> <li>Large crack in concrete slab</li> <li>Cracks in the door frames</li> <li>Cracks in the plasterboard walls</li> <li>Step cracks in masonry veneer</li> <li>Cracks in the mortar joint of the masonry veneer</li> </ul>
Carport J	<ul> <li>Step cracks in the masonry walls</li> <li>Cracks in the concrete floor</li> <li>Rotation of roof timber joints under the roof</li> <li>Mortar between standalone carport masonry wall and length of masonry wall connected onto Block buildings has come out</li> <li>Split in timber at connection point between timber post attached onto masonry wall and timber beam</li> </ul>
Carports K, L, M and O	<ul> <li>Step cracks in the masonry walls</li> <li>Cracks in the concrete floor</li> <li>Rotation of roof timber joints under the roof</li> <li>Mortar between standalone carport masonry wall and length of masonry wall connected onto Block buildings has come out</li> </ul>

#### 3.2 Record of Intrusive Investigation

The concrete masonry walls of the carports were scanned using a Hilti rebar scanner and this confirmed the presence of reinforcement shown on the as-built drawings. Due to the generic nature of the Aldwin Courts, a significant amount of structural information can be inferred from the building form and construction materials. Because of this, and as there are a good number of structural drawings, no other intrusive investigations were carried out for the buildings at Aldwin Courts.

### 3.3 Damage Discussion

Moderate damage of the buildings was observed at Aldwin Courts. This is expected due to the regular shape and density of the walls in the building. Apart from liquefaction, the main damage noted in the buildings was minor to moderate cracking in the plasterboard walls and ceilings, and in the mortar joints of the masonry veneers. Some damage and separation of the concrete roof tiles was observed with a few tiles having fallen off the roof. The carport walls have moderate to severe cracks due to in-plane and out-of-plane earthquake induced forces.

We note that as a part of repair/strengthening works carried out by council a portion of above damage has been rectified and are discussed in chapter 1 and chapter 7.

# 4 Building Review Summary

### 4.1 Building Review Statement

The finishes of Aldwin Courts obstructed the viewing in some parts of the structure. Nevertheless, a damage assessment was undertaken assuming that the damage to the finishes of the building would indicate a commensurate level of displacement damage on the building's structure.

As no original calculations were available, assumptions had to be made in order to complete calculations using current NZ standards and NZSEE guidelines as referenced in Appendix A.

### 4.2 Critical Structural Weaknesses

No specific Critical Structural Weaknesses (CSW) were identified as a part of the building quantitative assessment.

# 5 Building Strength

(Refer to Appendix C for background information)

### 5.1 General

The Aldwin Courts buildings consist of a timber truss roof on timber framed walls which are lined with plasterboard. They are intrinsically ductile and have stood up well in the recent seismic events. This is evidenced by the low level of damage described in Section 3.1 above.

### 5.2 Existing Building Strength

We consider that the damage to the building has not resulted in any measurable reduction in the strength of the building and so our strength assessment is based on the pre-earthquake condition of the building. Selected assessment seismic parameters are presented in Table 4.

Seismic Parameter	Parameter	Comment/Reference
Site Soil Class	D	NZS 1170.5:2004, Clause 3.1.3, Deep or Soft Soil
Site Hazard Factor, Z	0.30	DBH Info Sheet on Seismicity Changes (Effective 19 May 2011)
Return period Factor, <i>R<sub>u</sub></i>	1.0	NZS 1170.5:2004, Table 3.5

Ductility Factor, $\mu$	1.25	Lightly reinforced masonry walls
Ductility Factor $\mu$	2.00	Timber framed walls lined with plasterboard
Structural performance factor $S_p$	0.93	As per NZS 1170.5 for ductility 1.25
Structural performance factor $S_p$	0.70	As per NZS 1170.5 for ductility 2
Structural performance factor $S_p$	0.50	As per NZSEE (2013) for timber framed buildings*

The seismic demand for Aldwin Courts has been calculated based on the current code requirements of NZS 1170.5 (Structural Design Actions 1170.5:2004). The capacity of the existing walls in the buildings were calculated from the assumed strengths of the existing materials and the number and length of walls present for both the along and across directions. Some assumptions as presented in Appendix B were made to calculate the capacity of the building. These values were compared with the calculated seismic demand for derivation of %NBS values. The %NBS results are summarized in Table 5.

As a part of the strength assessment, we have assumed that the masonry veneers are properly tied to the timber frame walls. This assumption is based on the construction specifications provided by Christchurch City Council and observations made on-site using a Hilti rebar scanner. Accordingly for the buildings no out-of-plane strength analysis was carried out and the strength of the buildings was limited to the in-plane strength of the timber framed walls (lined with plasterboard) in the along and across directions.

Building	Direction	%NBS Original	%NBS after strengthening with Sp = 0.7	%NBS after strengthening with Sp = 0.5	Note
Block A	Along	44	59	83	-
	Across	48	85	100	-
Firewall of Block A	Out of plane	41	85	-	-
Block B	Along	39	52	73	-
	Across	37	63	88	-
Firewall of Block B	Out of plane	41	85	-	-
Block C	Along	66	90	100	-
	Across	37	57	80	-
Firewall of Block C	Out of plane	41	85	-	-
Block D	Along	44	59	83	-
	Across	48	85	100	-
Firewall of Block D	Out of plane	41	85	85	-
Block E	Along	43	56	78	-
	Across	37	81	100	-
Firewall of Block E	Out of plane	41	85	-	-
Block F	Along	44	59	83	-
	Across	48	85	100	-
Firewall of Block F	Out of plane	41	85	-	-
Block G	Along	44	59	83	-
	Across	48	85	100	-

#### **Table 5: Building Strength Summary**

Building	Direction	%NBS Original	%NBS after strengthening with Sp = 0.7	%NBS after strengthening with Sp = 0.5	Note
Firewall of Block G	Out of plane	41	85	-	-
Carport J	Out of plane	26	100	-	Strengthening as per OPUS design works
Carport K	Out of plane	37	37	-	Limited by capacity of timber diaphragm
Carport L	Out of plane	26	37	-	Limited by capacity of timber diaphragm
Carport M	Out of plane	26	100	-	Strengthening as per OPUS design works
Carport O	Out of plane	36	100	-	Strengthening as per OPUS design works

Notes:

- As a part of the strengthening works, roofs are replaced with lightweight material and the new weight of the roof has been included in the calculations (refer to Appendix A for assumptios0.
- NZSEE (2013) has recommended Sp=0.5 to account for good performance of timber framed buildings during earthquake. We have included %NBS values for this upgrade in Table 5.

### 6 Results Discussion

This quantitative analysis was undertaken using the assumed approximate bracing capacity of the timber walls in accordance with the New Zealand Society of Earthquake Engineering (NZSEE) guidelines for the Assessment and Improvement of the Structural Performance of Buildings in Earthquakes and NZS 4230:2004, Design of Reinforced Concrete Masonry Structures.

The buildings had timber walls evenly distributed in both directions which provides a strength between 73% NBS to 100% NBS. The separate carports are strengthened to 100%. There remain two attached carparks (Carport K and L) which are lightly reinforced with the %NBS of 37% which will need to be strengthened to 67% NBS or 100% NBS if possible.

### 7 Conclusions and Recommendations

As noted within the report, moderate levels of visible damage were observed in previous damage assessment for the buildings and no critical structural weaknesses were identified as a part of strength assessment. Therefore, it is considered that Aldwin Courts is suitable for continued occupancy.

We note that following repair/strengthening works are completed for the buildings:

- Crack repair for internal wall and ceiling fibrous plaster linings;
- · Heavy roof tiles of the buildings are replaced with modern light weight roof;
- Cracks in the concrete floor of the units are epoxy injected;
- Some of the joints have been repaired by grout injection;
- A number of external concrete pathways slabs are replaced;
- Plasterboard walls and internal linings for Unit 4 and Unit 5 are replaced;
- Grout injection under the fire wall between Unit 4 and Unit 5 has been completed;
- Some old conservatory are removed from the buildings; and
- Separate carports have been strengthened to 100% NBS by a design works by OPUS.

We understand that no strengthening works are completed for the attached carports (carports K and L). We recommend strengthening of these carport to 67% NBS or 100% NBS if possible. In addition,

as no releveling has completed for the buildings and as per our previous report we recommend releveling of the units 1,2,3,4,5 and 6. Releveling of other units are not recommended because the level differences are limited to small areas and are still within tolerable limits for the buildings.

# 8 Explanatory Statement

The inspections of the building discussed in this report have been undertaken to assess structural earthquake damage. No analysis has been undertaken to assess the strength of the building or to determine whether or not it complies with the relevant building codes, except to the extent that Aurecon expressly indicates otherwise in the report. Aurecon has not made any assessment of structural stability or building safety in connection with future aftershocks or earthquakes – which have the potential to damage the building and to jeopardise the safety of those either inside or adjacent to the building, except to the extent that Aurecon expressly indicates otherwise in the report.

This report is necessarily limited by the restricted ability to carry out inspections due to potential structural instabilities/safety considerations, and the time available to carry out such inspections. The report does not address defects that are not reasonably discoverable on visual inspection, including defects in inaccessible places and latent defects. Where site inspections were made, they were restricted to external inspections and, where practicable, limited internal visual inspections.

To carry out the structural review, existing building drawings were obtained from the Christchurch City Council records. We have assumed that the building has been constructed in accordance with the drawings.

While this report may assist the client in assessing whether the building should be strengthened, that decision is the sole responsibility of the client.

This review has been prepared by Aurecon at the request of its client and is exclusively for the client's use. It is not possible to make a proper assessment of this review without a clear understanding of the terms of engagement under which it has been prepared, including the scope of the instructions and directions given to and the assumptions made by Aurecon. The report will not address issues which would need to be considered for another party if that party's particular circumstances, requirements and experience were known and, further, may make assumptions about matters of which a third party is not aware. No responsibility or liability to any third party is accepted for any loss or damage whatsoever arising out of the use of or reliance on this report by any third party.

Without limiting any of the above, Aurecon's liability, whether under the law of contract, tort, statute, equity or otherwise, is limited as set out in the terms of the engagement with the client.

# Appendices



# Appendix A Site Map, Photos, Levels Survey Results and assumptions



Aerial photograph of Aldwin Courts Showing along and across for buildings



Aldwin Courts (prior to repair/strengthening)		
Building elevation (typical).	<image/>	
Cracks in the ceiling (typical).		

Liquefied silt inside the building (unit 2).	
Liquefied silt inside the building (unit 2).	
Liquefied silt inside the building (unit 2).	

Cracks in the concrete floor (unit 2).	
Cracks in the plasterboard wall (unit2).	
Liquefied silt inside the building (unit 4).	

Liquefied silt inside the building (unit 4).	
Liquefied silt inside the building. Silt has penetrated inside the timber walls (unit 4).	
Damage to the plasterboard and timber walls (unit 4).	



Liquefied silt inside the building (unit 5).	13/08/2013
Damage to the plasterboard walls (unit 5).	
Void under fire wall due to liquefaction (unit 5).	
















### Aldwin Courts Site Photographs

Aldwir	Aldwin Courts (After strengthening)					
General photos of the units						
General photos of the carports						
General photo of the repair woks						

## Assumptions

- External blocks are properly connected to internal timber walls.
- Fire wall between units are reinforced solid blocks.
- Diaphragm of the units are properly connected to the intertenancy fire wall.
- Weight of new light weight roof = 0.3kPa
- Ductility 2 for out of plane of reinforced fire walls between units.
- Attached carports (Carports K and L) have timber diaphragm with nailing 2.50mm @250mm.
- The roof of attached carports (Carports K and L) are properly attached to the building blocks and can transfer earthquake induced loads to the buildings.

## Appendix B References

- 1. Engineering Advisory Group (EAG): Guidance on Detailed Engineering Evaluation of Earthquake Affected Non-residential Buildings in Canterbury: July 2011
- 2. Ministry of Business, Innovation and Employment (MBIE) "Repairing and rebuilding houses affected by the Canterbury earthquakes", December 2012
- 3. New Zealand Society for Earthquake Engineering (NZSEE), "Assessment and Improvement of the Structural Performance of Buildings in Earthquakes", April 2012
- 4. Standards New Zealand, "AS/NZS 1170 Part 0, Structural Design Actions: General Principles", 2002
- 5. Standards New Zealand, "AS/NZS 1170 Part 1, Structural Design Actions: Permanent, imposed and other actions", 2002
- Standards New Zealand, "NZS 1170 Part 5, Structural Design Actions: Earthquake Actions New Zealand", 2004
- 7. Standards New Zealand, "NZS 3101 Part 1, The Design of Concrete Structures", 2006
- 8. Standards New Zealand, "NZS 4230, Design of Reinforced Concrete Masonry Structures", 2004

## Appendix C Strength Assessment Explanation

## New building standard (NBS)

New building standard (NBS) is the term used with reference to the earthquake standard that would apply to a new building of similar type and use if the building was designed to meet the latest design Codes of Practice. If the strength of a building is less than this level, then its strength is expressed as a percentage of NBS.

## Earthquake Prone Buildings

A building can be considered to be earthquake prone if its strength is less than one third of the strength to which an equivalent new building would be designed, that is, less than 33%NBS (as defined by the New Zealand Building Act). If the building strength exceeds 33%NBS but is less than 67%NBS the building is considered at risk.

## Christchurch City Council Earthquake Prone Building Policy 2010

The Christchurch City Council (CCC) already had in place an Earthquake Prone Building Policy (EPB Policy) requiring all earthquake-prone buildings to be strengthened within a timeframe varying from 15 to 30 years. The level to which the buildings were required to be strengthened was 33%NBS.

As a result of the 4 September 2010 Canterbury earthquake the CCC raised the level that a building was required to be strengthened to from 33% to 67% NBS but qualified this as a target level and noted that the actual strengthening level for each building will be determined in conjunction with the owners on a building-by-building basis. Factors that will be taken into account by the Council in determining the strengthening level include the cost of strengthening, the use to which the building is put, the level of danger posed by the building, and the extent of damage and repair involved.

Irrespective of strengthening level, the threshold level that triggers a requirement to strengthen is 33%NBS.

As part of any building consent application fire and disabled access provisions will need to be assessed.

## **Christchurch Seismicity**

The level of seismicity within the current New Zealand loading code (AS/NZS 1170) is related to the seismic zone factor. The zone factor varies depending on the location of the building within NZ. Prior to the 22<sup>nd</sup> February 2011 earthquake the zone factor for Christchurch was 0.22. Following the earthquake the seismic zone factor (level of seismicity) in the Christchurch and surrounding areas has been increased to 0.3. This is a 36% increase.

For this assessment, the building's earthquake resistance is compared with the current New Zealand Building Code requirements for a new building constructed on the site. This is expressed as a percentage of new building standard (%NBS). The new building standard load requirements have been determined in accordance with the current earthquake loading standard (NZS 1170.5:2004 Structural design actions - Earthquake actions - New Zealand).

The likely capacity of this building has been derived in accordance with the New Zealand Society for Earthquake Engineering (NZSEE) guidelines 'Assessment and Improvement of the Structural Performance of Buildings in Earthquakes' (AISPBE), 2006. These guidelines provide an Initial Evaluation Procedure that assesses a buildings capacity based on a comparison of loading codes from when the building was designed and currently. It is a quick high-level procedure that can be used when undertaking a Qualitative analysis of a building. The guidelines also



provide guidance on calculating a modified Ultimate Limit State capacity of the building which is much more accurate and can be used when undertaking a Quantitative analysis.

The New Zealand Society for Earthquake Engineering has proposed a way for classifying earthquake risk for existing buildings in terms of %NBS and this is shown in Figure C1 below.

Description	Grade	Risk	%NBS	Existing Building Structural Performance		Improvement of Structural Performanc	
					_→	Legal Requirement	NZSEE Recommendation
Low Risk Building	A or B	Low	Above 67	Acceptable (improvement may be desirable)		The Building Act sets no required level of structural improvement	100%NBS desirable. Improvement should achieve at least 67%NBS
Moderate Risk Building	B or C	Moderate	34 to 66	Acceptable legally. Improvement recommended		(unless change in use) This is for each TA to decide. Improvement is not limited to 34%NBS.	Not recommended. Acceptable only in exceptional circumstances
High Risk Building	D or E	High	33 or lower	Unacceptable (Improvement		Unacceptable	Unacceptable

Figure C1: NZSEE Risk Classifications Extracted from table 2.2 of the NZSEE 2006 AISPBE Guidelines

Table C1 below compares the percentage NBS to the relative risk of the building failing in a seismic event with a 10% probability of exceedance in 50 years (i.e. 0.2% in the next year). It is noted that the current seismic risk in Christchurch results in a 6% probability of exceedance in the next year.

Percentage of New Building Standard (%NBS)	Relative Risk (Approximate)
>100	<1 time
80-100	1-2 times
67-80	2-5 times
33-67	5-10 times
20-33	10-25 times
<20	>25 times

Table C1: Relative Risk of Building Failure In A

## Appendix D Background and Legal Framework

## Background

Aurecon has been engaged by the Christchurch City Council (CCC) to undertake a detailed engineering evaluation of the building

This report is a Qualitative Assessment of the building structure, and is based on the Detailed Engineering Evaluation Procedure document (draft) issued by the Structural Advisory Group on 19 July 2011.

A qualitative assessment involves inspections of the building and a desktop review of existing structural and geotechnical information, including existing drawings and calculations, if available.

The purpose of the assessment is to determine the likely building performance and damage patterns, to identify any potential critical structural weaknesses or collapse hazards, and to make an initial assessment of the likely building strength in terms of percentage of new building standard (%NBS).

At the time of this report, no intrusive site investigation, detailed analysis, or modelling of the building structure had been carried out. Construction drawings were made available, and these have been considered in our evaluation of the building. The building description below is based on a review of the drawings and our visual inspections.

### Compliance

This section contains a brief summary of the requirements of the various statutes and authorities that control activities in relation to buildings in Christchurch at present.

## Canterbury Earthquake Recovery Authority (CERA)

CERA was established on 28 March 2011 to take control of the recovery of Christchurch using powers established by the Canterbury Earthquake Recovery Act enacted on 18 April 2011. This act gives the Chief Executive Officer of CERA wide powers in relation to building safety, demolition and repair. Two relevant sections are:

#### Section 38 – Works

This section outlines a process in which the chief executive can give notice that a building is to be demolished and if the owner does not carry out the demolition, the chief executive can commission the demolition and recover the costs from the owner or by placing a charge on the owners' land.

#### Section 51 – Requiring Structural Survey

This section enables the chief executive to require a building owner, insurer or mortgagee carry out a full structural survey before the building is re-occupied.

We understand that CERA will require a detailed engineering evaluation to be carried out for all buildings (other than those exempt from the Earthquake Prone Building definition in the Building Act). It is anticipated that CERA will adopt the Detailed Engineering Evaluation Procedure document (draft) issued by the Structural Advisory Group on 19 July 2011. This document sets out a methodology for both qualitative and quantitative assessments.

The qualitative assessment is a desk-top and site inspection assessment. It is based on a thorough visual inspection of the building coupled with a review of available documentation such as drawings and specifications. The quantitative assessment involves analytical calculation of the buildings strength and may require non-destructive or destructive material testing, geotechnical testing and intrusive investigation.

It is anticipated that factors determining the extent of evaluation and strengthening level required will include:

- The importance level and occupancy of the building
- The placard status and amount of damage
- The age and structural type of the building
- Consideration of any critical structural weaknesses
- The extent of any earthquake damage

### **Building Act**

Several sections of the Building Act are relevant when considering structural requirements:

#### Section 112 – Alterations

This section requires that an existing building complies with the relevant sections of the Building Code to at least the extent that it did prior to any alteration. This effectively means that a building cannot be weakened as a result of an alteration (including partial demolition).

#### Section 115 – Change of Use

This section requires that the territorial authority (in this case Christchurch City Council (CCC)) be satisfied that the building with a new use complies with the relevant sections of the Building Code 'as near as is reasonably practicable'. Regarding seismic capacity 'as near as reasonably practicable' has previously been interpreted by CCC as achieving a minimum of 67%NBS however where practical achieving 100%NBS is desirable. The New Zealand Society for Earthquake Engineering (NZSEE) recommend a minimum of 67%NBS.

#### Section 121 – Dangerous Buildings

The definition of dangerous building in the Act was extended by the Canterbury Earthquake (Building Act) Order 2010, and it now defines a building as dangerous if:

- in the ordinary course of events (excluding the occurrence of an earthquake), the building is likely to cause injury or death or damage to other property; or
- in the event of fire, injury or death to any persons in the building or on other property is likely because of fire hazard or the occupancy of the building; or
- there is a risk that the building could collapse or otherwise cause injury or death as a result of earthquake shaking that is less than a 'moderate earthquake' (refer to Section 122 below); or
- there is a risk that that other property could collapse or otherwise cause injury or death; or
- a territorial authority has not been able to undertake an inspection to determine whether the building is dangerous.

#### Section 122 – Earthquake Prone Buildings

This section defines a building as earthquake prone if its ultimate capacity would be exceeded in a 'moderate earthquake' and it would be likely to collapse causing injury or death, or damage to other property. A moderate

earthquake is defined by the building regulations as one that would generate ground shaking 33% of the shaking used to design an equivalent new building.

#### Section 124 – Powers of Territorial Authorities

This section gives the territorial authority the power to require strengthening work within specified timeframes or to close and prevent occupancy to any building defined as dangerous or earthquake prone.

#### Section 131 – Earthquake Prone Building Policy

This section requires the territorial authority to adopt a specific policy for earthquake prone, dangerous and insanitary buildings.

## Christchurch City Council Policy

Christchurch City Council adopted their Earthquake Prone, Dangerous and Insanitary Building Policy in 2006. This policy was amended immediately following the Darfield Earthquake of the 4th September 2010.

The 2010 amendment includes the following:

- A process for identifying, categorising and prioritising Earthquake Prone Buildings, commencing on 1 July 2012;
- A strengthening target level of 67% of a new building for buildings that are Earthquake Prone;
- A timeframe of 15-30 years for Earthquake Prone Buildings to be strengthened; and,
- Repair works for buildings damaged by earthquakes will be required to comply with the above.

The council has stated their willingness to consider retrofit proposals on a case by case basis, considering the economic impact of such a retrofit.

We anticipate that any building with a capacity of less than 33%NBS (including consideration of critical structural weaknesses) will need to be strengthened to a target of 67%NBS of new building standard as recommended by the Policy.

If strengthening works are undertaken, a building consent will be required. A requirement of the consent will require upgrade of the building to comply 'as near as is reasonably practicable' with:

- The accessibility requirements of the Building Code.
- The fire requirements of the Building Code. This is likely to require a fire report to be submitted with the building consent application.

## Building Code

The building code outlines performance standards for buildings and the Building Act requires that all new buildings comply with this code. Compliance Documents published by The Department of Building and Housing can be used to demonstrate compliance with the Building Code.

After the February Earthquake, on 19 May 2011, Compliance Document B1: Structure was amended to include increased seismic design requirements for Canterbury as follows:

- Hazard Factor increased from 0.22 to 0.3 (36% increase in the basic seismic design load)
- Serviceability Return Period Factor increased from 0.25 to 0.33 (80% increase in the serviceability design loads when combined with the Hazard Factor increase)

The increase in the above factors has resulted in a reduction in the level of compliance of an existing building relative to a new building despite the capacity of the existing building not changing.

## Appendix E Standard Reporting Spread Sheets

Aldwin Courts Block A (Flats 1,2,3) Aldwin Courts Block B (Flats 4,5,6) Aldwin Courts Block C (Flats 7,8) Aldwin Courts Block D (Flats 9,10,11) Aldwin Courts Block E (Flats 12,13,14) Aldwin Courts Block F (Flats 15,16,17) Aldwin Courts Block G (Flats 18,19,20) Aldwin Courts Block G (Carport) Aldwin Courts Block K (Carport) Aldwin Courts Block L (Carport) Aldwin Courts Block M (Carport) Aldwin Courts Block M (Carport) PRO 0811 B001 PRO 0811 B002 PRO 0811 B003 PRO 0811 B004 PRO 0811 B005 PRO 0811 B006 PRO 0811 B007 PRO 0811 B010 PRO 0811 B011 PRO 0811 B012

Detailed Engineering Evaluation Summary Data			V1.14
Location			
	Block A - Aldwins Courts Unit	No: Street CPEng No:	David Elliott 202002
Building Address	: Block A (Units 1, 2 & 3) FLATS 1, 2 & 3	55 Aldwins Road Company:	Aurecon
Legal Description	DP 40879 ON LOTS 1 3 DP 38888	Company project number: Company phone number:	237698
GPS south	Degrees 43		·
GPS east		40 0.57 Inspection Date:	13/08/2013
Building Unique Identifier (CCC)	PRO 0811 BLDG 001	Revision: Is there a full report with this summary?	yes
Site			
Site slope		Max retaining height (m):	
Soil type Site Class (to NZS1170.5)	D	Soil Profile (if available):	
Proximity to waterway (m, if <100m) Proximity to clifftop (m, if < 100m)		If Ground improvement on site, describe:	
Proximity to cliff base (m, if <100m)		Approx site elevation (m):	
Building No. of storeys above ground	· [ 1	single storey = 1 Ground floor elevation (Absolute) (m):	
Ground floor split	no	Ground floor elevation above ground (m):	
Storeys below ground Foundation type	strip footings	if Foundation type is other, describe:	
Building height (m) Floor footprint area (approx)	:	height from ground to level of uppermost seismic mass (for IEP only) (m):	
Age of Building (years)	37	Date of design:	1965-1976
Otron others in a present/		If co, when (wear)?	
Strengthening present		If so, when (year)? And what load level (%g)?	
Use (upper floors)	: multi-unit residential : multi-unit residential	Brief strengthening description:	
Use notes (if required) Importance level (to NZS1170.5)	:		
· · · ·			
	load bearing walls		Markey and the Armony of the
Root Floors	concrete flat slab	truss depth, purlin type and cladding slab thickness (mm)	timber purlins, 1.675m truss depth 100mm slab with 665 mesh - moistop -
Beams Columns			
Walls:			
Lateral load resisting structure			
Lateral system along Ductility assumed, μ	lightweight timber framed walls 2.00	Note: Define along and across in note typical wall length (m) detailed report!	
Period along Total deflection (ULS) (mm)			
maximum interstorey deflection (ULS) (mm)		estimate or calculation?	
Lateral system across	lightweight timber framed walls	note typical wall length (m)	
Ductility assumed, μ Period across		0.00 estimate or calculation?	estimated
Total deflection (ULS) (mm) maximum interstorey deflection (ULS) (mm)	:	estimate or calculation? estimate or calculation?	estimated
	•	estimate of calculation:	
Separations: north (mm)		leave blank if not relevant	
east (mm) south (mm)			
west (mm)			
Non-structural elements Stairs	•		
Wall cladding	brick or tile		Cavity between brick veneer and timber framing
Roof Cladding Glazing	:	describe	
Ceilings Services(list)	plaster, fixed		
· · · ·			
Available documentation			
Architectura Structura	l partial	original designer name/date original designer name/date	Enterprise Homes Ltd/1974 Enterprise Homes Ltd/1974
Mechanica Electrica	I none	original designer name/date original designer name/date	
Geotech repor		original designer name/date	
Demose			
Damage           Site:         Site performance	:	Describe damage:	Tenant has moved out of unit 2 due to damage
(refer DEE Table 4-2) Settlement	: 25-100mm	notes (if applicable):	
Differential settlement	none observed more than 10 m <sup>3</sup> /100m <sup>2</sup>	notes (if applicable):	Considerable liquefaction on-site.
Lateral Spread	none apparent	notes (if applicable):	Considerable inquerabilition on-Sile.
Differential lateral spread Ground cracks	none apparent	notes (if applicable): notes (if applicable):	
Damage to area	moderate to substantial (1 in 5)	notes (if applicable):	Cracks in walls and base slab. Segments of pla
Building: Current Placard Status	green		
Along Damage ratio Describe (summary)	-20%	Describe how damage ratio arrived at:	
Across Damage ratio		$Damage\_Ratio = \frac{(\%NBS(before) - \%NBS(after))}{(\%NBS(after))}$	
Describe (summary)		% NBS(before)	
Diaphragms Damage?	: no	Describe:	
CSWs: Damage?		Describe:	
-			
		Describe:	
Non-structural: Damage?	: yes	Describe:	Carpet removed due to liquefaction damage. C
Recommendations			
Level of repair/strengthening required			Relevel the building, rest of damage is repaired
Building Consent required Interim occupancy recommendations		Describe: Describe:	
Along Assessed %NBS before e'quakes			·
Assessed %NBS after e'quakes		assessment methodology:	
Across Assessed %NBS before e'quakes		#### %NBS from IEP below	
Assessed %NBS after e'quakes	: 100%		

Period of design of b	uilding (from above	e): 1965-1976				hn from abo	ve: m	
Seismic Zone, if designed bet						red for this age of build red for this age of build		
				Period (from above): (%NBS)nom from Fig 3.3:		along 0.4		across 0.4
И	ote:1 for specifically	y design public buildings, to th		965 = 1.25; 1965-1976, Zone A =1.	.33; 1965-1976, ngs designed bet	ween 1976-1984, use 1	.2	
				Final (%NBS)nom:		along 0%		across 0%
2.2 Near Fault S	caling Factor			Near Faul	It scaling factor,	from NZS1170.5, cl 3.1	.6:	
			Near Fault	caling factor (1/N(T,D), Factor A:		along #DIV/0!		across #DIV/0!
2.3 Hazard Scali	ng Factor			Hazard	factor Z for site f	from AS1170.5, Table 3	.3:	
					1	Z1992, from NZS4203:19 d scaling factor, Factor	92	#DIV/0!
2.4 Return Perio	od Scaling Factor			Return Perio	Building Impo d Scaling factor	ortance level (from abov from Table 3.1, <b>Factor</b>	e): C:	2
2.5 Ductility Sca	ling Factor	Ductility scaling factor		ctility (less than max in Table 3.2) or =kµ, if pre-1976, fromTable 3.3:		along	_	across
				Ductiity Scaling Factor, Factor D:		0.00		0.00
						0.00		0.00
2.6 Structural P	erformance Scalin	g Factor:		Sp:				
			Structural Perf	ormance Scaling Factor Factor E:		#DIV/0!		#DIV/0!
2.7 Baseline %N	BS, (NBS%)♭ = (%♪	NBS)nom x A x B x C x D x E		%NBSb:		#DIV/0!		#DIV/0!
Global Critical Str	uctural Weaknesse	es: (refer to NZSEE IEP Table 3	3.4)					
3.1. Plan Irregula	arity, factor A:		1					
3.2. Vertical irre	gularity, Factor B:		1					
3.3. Short colum	ns. Factor C:		1	Table for selection of D1		Severe	Significant	Insignificant/none
3.4. Pounding po	otential	Pounding effect D1, from	n Table to right	Alignment of floors with	Separation	0 <sep<.005h 0.7</sep<.005h 	.005 <sep<.01h 0.8</sep<.01h 	Sep>.01H 1
5.4. Founding p		eight Difference effect D2, from		Alignment of floors not with		0.4	0.8	0.8
		There	efore, Factor D: 0	Table for Selection of D2		Severe	Significant	Insignificant/none
3.5. Site Charact	eristics				Separation	0 <sep<.005h< td=""><td>.005<sep<.01h< td=""><td>Sep&gt;.01H</td></sep<.01h<></td></sep<.005h<>	.005 <sep<.01h< td=""><td>Sep&gt;.01H</td></sep<.01h<>	Sep>.01H
		-		Height difference		0.4	0.7	1
				Height difference 2 Height difference		0.7	0.9 1	1
				<u> </u>		Along		Across
3.6. Other factor	s, Factor F	For ≤ 3 storey		vise max valule =1.5, no minimum nale for choice of F factor, if not 1				
			Raild	nale for envice or Fridetor, if Not T	L		1	
	ructural Weaknesse List an	es: (refer to DEE Procedure ser	ction 6) Refer als	o section 6.3.1 of DEE for discussi	ion of F factor m	odification for other crit	ical structural weak	nesses
Detail Critical Str	ormance Achieven	nent ratio (PAR)				0.00		0.00
				DAD Des all'as 0(NDO)		#DIV/0!		#DIV/0!
	S)b:			PAR x Baselline %NBS:				
3.7. Overall Perf 4.3 PAR x (%NE		dard (%NBS), (before)		PAR X Baselline %NBS:				#DIV/0!
3.7. Overall Perf 4.3 PAR x (%NE		dard (%NBS), (before)		PAR X Baseline %NBS:				#DIV/0!

Detailed Engineering E	valuation Summary Data		V1.14
Location	Building Name:	Block B - Aldwins Courts	Reviewer: David Elliott
		Unit Block B (Units 4, 5 and 6)	No:         Street         CPEng No:         202002           55         Aldwins Road         Company:         Aurecon
	-	FLATS 4, 5 & 6 DP 40879 ON LOTS 1 3 DP 38888	Company project number: 237698
	Legal Description.		Company phone number: 03 371 0761
	GPS south: GPS east:	43	32 25.34 Date of submission: 16/12/2015
	Building Unique Identifier (CCC):		Revision: 3 Is there a full report with this summary? yes
Site			
	Site slope: Soil type:		Max retaining height (m): Soil Profile (if available):
F	Site Class (to NZS1170.5): Proximity to waterway (m. if <100m):	D	If Ground improvement on site, describe:
	Proximity to clifftop (m, if < 100m): Proximity to cliff base (m, if <100m):		Approx site elevation (m):
Building	No. of storeys above ground:		single storey = 1 Ground floor elevation (Absolute) (m):
	Ground floor split? Storeys below ground	0	Ground floor elevation above ground (m):
	Foundation type: Building height (m):	strip footings 2.60	if Foundation type is other, describe: height from ground to level of uppermost seismic mass (for IEP only) (m):
	Floor footprint area (approx): Age of Building (years):	37	Date of design: 1965-1976
	0		Kan when (wen)?
	Strengthening present?	multi-unit residential	If so, when (year)? And what load level (%)?
	Use (upper floors):	multi-unit residential	Brief strengthening description:
	Use notes (if required): Importance level (to NZS1170.5):	IL2	
Gravity Structure	Granita Bard	load bearing walls	1
	Roof: Floors:	timber truss	truss depth, purlin type and cladding timber purlins, 1.675m truss depth slab thickness (mm) 100mm slab with 665 mesh - moistop -
	Beams: Columns:		
	Walls:		
Lateral load resisting strue		lightweight timber framed walls	Note: Define along and across in note typical wall length (m)
	Ductility assumed, µ: Period along:	2.00	detailed report!
maximur	Total deflection (ULS) (mm): m interstorey deflection (ULS) (mm):		estimate or calculation?
		lightweight timber framed walls	note typical wall length (m)
	Ductility assumed, µ: Period across:	2.00	
maximur	Total deflection (ULS) (mm): m interstorey deflection (ULS) (mm):		estimate or calculation?
Separations:			
	north (mm): east (mm):		leave blank if not relevant
	south (mm): west (mm):		
Non-structural elements			
	Stairs: Wall cladding:		describe (note cavity if exists) Cavity between brick veneer and timber framing describe
	Roof Cladding: Glazing:	plaster, fixed	
	Services(list):	plaster, inted	
Available documentatio	20		
	Architectural Structural	partial	original designer name/date Enterprise Homes Ltd/1974 original designer name/date Enterprise Homes Ltd/1974
	Mechanical Electrical	none	original designer name/date
	Geotech report	none	original designer name/date
Damage			
Site: (refer DEE Table 4-2)	Site performance:	Moderate	Describe damage: Tenants have moved out of Units 4 & 5 due to
, , , , , , , , , , , , , , , ,	Differential settlement:	25-100mm none observed	notes (if applicable): notes (if applicable):
	Liquefaction: Lateral Spread:	more than 10 m <sup>3</sup> /100m <sup>2</sup>	notes (if applicable): Considerable liquefaction on-site. This has led notes (if applicable):
	Differential lateral spread: Ground cracks:	none apparent none apparent	notes (if applicable): notes (if applicable):
	Damage to area:	slight	notes (if applicable): Cracks in walls, cracks in glass panels.
Building:	Current Placard Status:	green	]
Along	Damage ratio:		Describe how damage ratio arrived at:
	Describe (summary):		$Damage\_Ratio = \frac{(\%NBS(before) - \%NBS(after))}{(\%NBS(before))}$
Across	Damage ratio: Describe (summary):		$Damage_Ratio = \frac{1}{\%} \frac{1}{$
Diaphragms	Damage?:	no	Describe:
CSWs:	Damage?:	no	Describe:
Pounding:	Damage?:	no	Describe:
Non-structural:	Damage?:	yes	Describe: Large amounts of liquefaction cover floors of u
Recommendations			
	evel of repair/strengthening required:	minor pop-etructural	Relevel the building. Majoirity of the Describe: damage is reapired by Council.
	Building Consent required: Building Consent required: terim occupancy recommendations:	no	Describe: damage is reapired by Council. Describe: Describe:
Along	Assessed %NBS before e'quakes:		
	Assessed %NBS after e'quakes:		
Across	Assessed %NBS before e'quakes: Assessed %NBS after e'quakes:		
		0076	

IEP	Use of this meth	hod is not mandatory - more detailed analysis m	ay give a different answer, which v	vould take precedence. D	o not fill in fields if not us	ing IEP.
F	Period of design of building (from above): 1	965-1976		hn f	rom above: m	
Seismic Zo	one, if designed between 1965 and 1992:			not required for this age not required for this age		
				along		across
			Period (from above): (%NBS)nom from Fig 3.3:	0.4		0.4
	Note:1 for specifically de	esign public buildings, to the code of the day: pre-19	· · · ·	; 1965-1976, Zone B = 1.2;	all else 1.0	
		N	Note 2: for RC buildings lote 3: for buildings designed prior to 1	designed between 1976-198 935 use 0.8, except in Wellin	34, use 1.2 ngton (1.0)	
			Final (%NBS)nom:	along		across
				0%		0%
	2.2 Near Fault Scaling Factor		Near Fault s	caling factor, from NZS1170 along	.5, cl 3.1.6:	across
		Near Fault	scaling factor (1/N(T,D), Factor A:	#DIV/0!		#DIV/0!
	2.3 Hazard Scaling Factor		Hazard fac	tor Z for site from AS1170.5 Z1992, from NZS	4203:1992	
				Hazard scaling factor	, Factor B:	#DIV/0!
	2.4 Return Period Scaling Factor			Building Importance level (fr		2
			Return Period S	Scaling factor from Table 3.1	, Factor C:	
	2.5 Ductility Scaling Factor	Assessed d Ductility scaling factor: =1 from 1976 onwards;	uctility (less than max in Table 3.2)	along		across
		Backing county later Thom for o officiato,	Ductiity Scaling Factor, Factor D:	0.00		0.00
	2.6 Structural Performance Scaling Fa	actor:	Sp:			
		Structural Perf	ormance Scaling Factor Factor E:	#DIV/0!		#DIV/0!
	2.7 Baseline %NBS, (NBS%)b = (%NBS		%NBS6:	#DIV/0!		#DIV/0!
	Global Critical Structural Weaknesses: (i		,		I	
	3.1. Plan Irregularity, factor A:	1				
	3.2. Vertical irregularity, Factor B:	1				
	3.3. Short columns, Factor C:	1	Table for selection of D1	eparation 0 <sep<.005< th=""><th>Significant 6H .005<sep<.01h< th=""><th>Insignificant/none Sep&gt;.01H</th></sep<.01h<></th></sep<.005<>	Significant 6H .005 <sep<.01h< th=""><th>Insignificant/none Sep&gt;.01H</th></sep<.01h<>	Insignificant/none Sep>.01H
	3.4. Pounding potential	Pounding effect D1, from Table to right t Difference effect D2, from Table to right	Alignment of floors within	20% of H 0.7	0.8	1
	. ioigi	Therefore, Factor D: 0	Alignment of floors not within Table for Selection of D2	20% of H 0.4	Significant	0.8 Insignificant/none
	3.5. Site Characteristics	1	S	eparation 0 <sep<.005< td=""><td>6H .005<sep<.01h< td=""><td></td></sep<.01h<></td></sep<.005<>	6H .005 <sep<.01h< td=""><td></td></sep<.01h<>	
	Ľ		Height difference > Height difference 2 to		0.7	1
			Height difference <	2 storeys 1	1	1
	3.6. Other factors, Factor F	For ≤ 3 storeys, max value =2.5, other		Along		Across
		Ratio	onale for choice of F factor, if not 1			
	Detail Critical Structural Weaknesses: (	refer to DEE Procedure section 6)	section 6.3.1 of DEE for discussion	of E factor modification for o	her critical structural weak	000000
	Detail Critical Structural Weaknesses: () List any: 3.7. Overall Performance Achievemen	Refer also	o section 6.3.1 of DEE for discussion	of F factor modification for or 0.00	her critical structural weakr	0.00
	List any:	Refer also	o section 6.3.1 of DEE for discussion		her critical structural weakr	
	List any:	Refer also	o section 6.3.1 of DEE for discussion		her critical structural weakr	

Detailed Engineering Evaluation Summary Data			V1.14
Location	Block C - Aldwins Courts	Deviewer	David Elliott
	Unit	No: Street CPEng No:	202002
	Block C (Units 7 & 8) FLATS 7 & 8		
Legal Description:	DP 40879 ON LOTS 1 3 DP 38888	Company project number: Company phone number:	237698 03 371 0761
GPS south:	Degrees 43	Min         Sec           32         24.92         Date of submission:	16/12/2015
GPS east:	172	39 59.54 Inspection Date: Revision:	13/08/2013
Building Unique Identifier (CCC):	PRO 0811 BLDG 003	Is there a full report with this summary?	yes
Site			
Site slope: Soil type:		Max retaining height (m): Soil Profile (if available):	
Site Class (to NZS1170.5): Proximity to waterway (m, if <100m):	D	If Ground improvement on site, describe:	
Proximity to clifftop (m, if < 100m): Proximity to cliff base (m, if <100m):		Approx site elevation (m):	
· · · · · · · · · · · · · · · · · · ·		· • • • • • • • • • • • • • • • • • • •	
Building			
No. of storeys above ground: Ground floor split?	no	single storey = 1 Ground floor elevation (Absolute) (m): Ground floor elevation above ground (m):	
Storeys below ground Foundation type:	strip footings	if Foundation type is other, describe:	
Building height (m): Floor footprint area (approx):	2.60	height from ground to level of uppermost seismic mass (for IEP only) (m):	
Age of Building (years):	37	Date of design:	1965-1976
Strengthening present?	no	If so, when (year)?	
	multi-unit residential	And what load level (%g)? Brief strengthening description:	
Use (upper floors):	multi-unit residential		ļl
Use notes (if required): Importance level (to NZS1170.5):			
Gravity Structure			
Gravity System: Roof:	load bearing walls timber truss	truss depth, purlin type and cladding	timber purlins, 1.675m truss depth
Floors: Beams:	concrete flat slab	slab thickness (mm)	100mm slab with 665 mesh - moistop -
Columns: Walls:			
Lateral load resisting structure			
Lateral system along:	lightweight timber framed walls	Note: Define along and across in note typical wall length (m)	
Ductility assumed, μ: Period along:	2.00	detailed report! 0.00 estimate or calculation?	estimated
Total deflection (ULS) (mm): maximum interstorey deflection (ULS) (mm):		estimate or calculation? estimate or calculation?	
	lightweight timber framed walls	note typical wall length (m)	
Ductility assumed, μ: Period across:	2.00 0.40	0.00 estimate or calculation?	
Total deflection (ULS) (mm):		estimate or calculation? estimate or calculation?	
maximum interstorey deflection (ULS) (mm):		estimate or calculation?	ļ
Separations: north (mm):		leave blank if not relevant	
east (mm): south (mm):			
west (mm):			
Non-structural elements Stairs:			
Wall cladding: Roof Cladding:	brick or tile Metal	describe (note cavity if exists) describe	Cavity between brick veneer and timber frami
Glazing:	plaster, fixed		
Services(list):	pidotor, mod		
Available documentation Architectural	partial	original designer name/date	Enterprise Homes Ltd/1974
Structural Mechanical	partial none	original designer name/date original designer name/date	Enterprise Homes Ltd/1974
Electrical Geotech report		original designer name/date original designer name/date	
Damage Site: Site performance:		Describe damage:	
(refer DEE Table 4-2)	25-100mm	notes (if applicable):	
Differential settlement:	none observed	notes (if applicable):	
Lateral Spread:	more than 10 m <sup>3</sup> /100m <sup>2</sup> none apparent	notes (if applicable): notes (if applicable):	
Differential lateral spread: Ground cracks:	none apparent	notes (if applicable): notes (if applicable):	
Damage to area:	slight	notes (if applicable):	Wall cracks in plaster, step cracks in masonny
Building: Current Placard Status:	green		
Along Damage ratio:		Describe how damage ratio arrived at:	
Describe (summary):		-	
Across Damage ratio:		$Damage\_Ratio = \frac{(\%NBS(before) - \%NBS(after))}{\%NBS(before)}$	
Describe (summary):			
Diaphragms Damage?:		Describe:	
CSWs: Damage?:	no	Describe:	
Pounding: Damage?:	no	Describe:	
Non-structural: Damage?:	yes	Describe:	
Recommendations			
Level of repair/strengthening required:			Damage is repaired by council.
Building Consent required: Interim occupancy recommendations:	no full occupancy	Describe: Describe:	
Along Assessed %NBS before e'quakes:	100%	#### %NBS from IEP below If IEP not used, please detail assessment	Quantitative
Assessed %NBS after e'quakes:	100%	methodology:	
Across Assessed %NBS before e'quakes: Assessed %NBS after e'quakes:		#### %NBS from IEP below	
, issessed for the direct e quartes.			

IEP	Use of this meth	hod is not mandatory - more detailed analysis m	ay give a different answer, which v	vould take precedence. D	o not fill in fields if not us	ing IEP.
F	Period of design of building (from above): 1	965-1976		hn f	rom above: m	
Seismic Zo	one, if designed between 1965 and 1992:			not required for this age not required for this age		
				along		across
			Period (from above): (%NBS)nom from Fig 3.3:	0.4		0.4
	Note:1 for specifically de	esign public buildings, to the code of the day: pre-19	· · · ·	; 1965-1976, Zone B = 1.2;	all else 1.0	
		N	Note 2: for RC buildings lote 3: for buildings designed prior to 1	designed between 1976-198 935 use 0.8, except in Wellin	34, use 1.2 ngton (1.0)	
			Final (%NBS)nom:	along		across
				0%		0%
	2.2 Near Fault Scaling Factor		Near Fault s	caling factor, from NZS1170 along	.5, cl 3.1.6:	across
		Near Fault	scaling factor (1/N(T,D), Factor A:	#DIV/0!		#DIV/0!
	2.3 Hazard Scaling Factor		Hazard fac	tor Z for site from AS1170.5 Z1992, from NZS	4203:1992	
				Hazard scaling factor	, Factor B:	#DIV/0!
	2.4 Return Period Scaling Factor			Building Importance level (fr		2
			Return Period S	Scaling factor from Table 3.1	, Factor C:	
	2.5 Ductility Scaling Factor	Assessed d Ductility scaling factor: =1 from 1976 onwards;	uctility (less than max in Table 3.2)	along		across
		Backing county later Thom for o officiato,	Ductiity Scaling Factor, Factor D:	0.00		0.00
	2.6 Structural Performance Scaling Fa	actor:	Sp:			
		Structural Perf	ormance Scaling Factor Factor E:	#DIV/0!		#DIV/0!
	2.7 Baseline %NBS, (NBS%)b = (%NBS		%NBS6:	#DIV/0!		#DIV/0!
	Global Critical Structural Weaknesses: (i		,		I	
	3.1. Plan Irregularity, factor A:	1				
	3.2. Vertical irregularity, Factor B:	1				
	3.3. Short columns, Factor C:	1	Table for selection of D1	eparation 0 <sep<.005< th=""><th>Significant 6H .005<sep<.01h< th=""><th>Insignificant/none Sep&gt;.01H</th></sep<.01h<></th></sep<.005<>	Significant 6H .005 <sep<.01h< th=""><th>Insignificant/none Sep&gt;.01H</th></sep<.01h<>	Insignificant/none Sep>.01H
	3.4. Pounding potential	Pounding effect D1, from Table to right t Difference effect D2, from Table to right	Alignment of floors within	20% of H 0.7	0.8	1
	. ioigi	Therefore, Factor D: 0	Alignment of floors not within Table for Selection of D2	20% of H 0.4	Significant	0.8 Insignificant/none
	3.5. Site Characteristics	1	S	eparation 0 <sep<.005< td=""><td>6H .005<sep<.01h< td=""><td></td></sep<.01h<></td></sep<.005<>	6H .005 <sep<.01h< td=""><td></td></sep<.01h<>	
	Ľ		Height difference > Height difference 2 to		0.7	1
			Height difference <	2 storeys 1	1	1
	3.6. Other factors, Factor F	For ≤ 3 storeys, max value =2.5, other		Along		Across
		Ratio	onale for choice of F factor, if not 1			
	Detail Critical Structural Weaknesses: (	refer to DEE Procedure section 6)	section 6.3.1 of DEE for discussion	of E factor modification for o	her critical structural weak	000000
	Detail Critical Structural Weaknesses: () List any: 3.7. Overall Performance Achievemen	Refer also	o section 6.3.1 of DEE for discussion	of F factor modification for or 0.00	her critical structural weakr	0.00
	List any:	Refer also	o section 6.3.1 of DEE for discussion		her critical structural weakr	
	List any:	Refer also	o section 6.3.1 of DEE for discussion		her critical structural weakr	

Detailed Engineering Evaluation Summary Data			V1.14
Location	Block D - Aldwins Courts	Deviewer	David Elliott
	Unit	No: Street CPEng No:	202002
	Block D (Units 9, 10 & 11) FLATS 9, 10 & 11		
Legal Description:	DP 40879 ON LOTS 1 3 DP 38888	Company project number: Company phone number:	237698 03 371 0761
GPS south:	Degrees 43	Min         Sec           32         25.05         Date of submission:	16/12/2015
GPS east:	172	40 0.85 Inspection Date: Revision:	13/08/2013
Building Unique Identifier (CCC):	PRO 0811 BLDG 004	Is there a full report with this summary?	yes
Site	<b>L</b> -		
Site slope: Soil type:	mixed	Max retaining height (m): Soil Profile (if available):	
Site Class (to NZS1170.5): Proximity to waterway (m, if <100m):		If Ground improvement on site, describe:	
Proximity to clifftop (m, if < 100m): Proximity to cliff base (m, if <100m):		Approx site elevation (m):	
, , , ,	·		<u> </u>
Building No. of storeys above ground:	1	single storey = 1 Ground floor elevation (Absolute) (m):	
Ground floor split?	no	Ground floor elevation above ground (m):	
Storeys below ground Foundation type:	strip footings	if Foundation type is other, describe:	
Building height (m): Floor footprint area (approx):		height from ground to level of uppermost seismic mass (for IEP only) (m):	
Age of Building (years):	37	Date of design:	1965-1976
Strengthening present?	no	If so, when (year)?	
Use (around floor):	multi-unit residential	And what load level (%g)? Brief strengthening description:	
Use (upper floors): Use notes (if required):	multi-unit residential		
Importance level (to NZS1170.5):			
Gravity Structure	load bearing walls		
Roof:	timber truss	truss depth, purlin type and cladding	timber purlins, 1.675m truss depth
Beams:	concrete flat slab	siab (nickness (nim)	100mm slab with 665 mesh - moistop -
Columns: Walls:			
Lateral load resisting structure			
Lateral system along: Ductility assumed, μ:		Note: Define along and across in note typical wall length (m) detailed report!	
Period along: Total deflection (ULS) (mm):	0.40	0.00 estimate or calculation? estimate or calculation?	estimated
maximum interstorey deflection (ULS) (mm):		estimate or calculation?	
Lateral system across: Ductility assumed, µ:	lightweight timber framed walls 2.00	note typical wall length (m)	
Period across:	0.40	0.00 estimate or calculation?	estimated
Total deflection (ULS) (mm): maximum interstorey deflection (ULS) (mm):		estimate or calculation? estimate or calculation?	
Separations:			
north (mm): east (mm):		leave blank if not relevant	
south (mm): west (mm):			
Non-structural elements			
Stairs: Wall cladding:	brick or tile		Cavity between brick veneer and timber frami
Roof Cladding: Glazing:		describe	
Ceilings: Services(list):	plaster, fixed		
Available documentation Architectural	partial	original designer name/date	Enterprise Homes Ltd/1974
Structural Mechanical	partial none	original designer name/date original designer name/date	Enterprise Homes Ltd/1974
Electrical Geotech report		original designer name/date original designer name/date	
Damage Site: Site performance:		Describe damage:	
(refer DEE Table 4-2) Settlement:	25-100mm	notes (if applicable):	
Differential settlement:	none observed more than 10 m <sup>3</sup> /100m <sup>2</sup>	notes (if applicable): notes (if applicable):	
Lateral Spread: Differential lateral spread:	none apparent	notes (if applicable): notes (if applicable):	
Ground cracks: Damage to area:	none apparent	notes (if applicable):	Cracks in walls and base slab, step cracks in
Building:	Longint		
Current Placard Status:	green		
Along Damage ratio: Describe (summary):		Describe how damage ratio arrived at:	
		$Damage_Ratio = \frac{(\%NBS(before) - \%NBS(after))}{(\%NBS(before) - \%NBS(after))}$	
Across Damage ratio: Describe (summary):		%NBS(before)	
Diaphragms Damage?:	no	Describe:	
CSWs: Damage?:	no	Describe:	
Pounding: Damage?:	no	Describe:	
Non-structural: Damage?:		Describe:	
Canage :	<b>.</b>		· ·
Recommendations Level of repair/strengthening required:		Describer	Damage is repaired by council.
Building Consent required: Interim occupancy recommendations:	no	Describe: Describe:	Carriage is repaired by council.
		#### %NBS from IEP below If IEP not used, please detail assessment	Quantitative
Along Assessed %NBS before e'quakes: Assessed %NBS after e'quakes:	83%	#### %NBS from IEP below If IEP not used, please detail assessment methodology:	
Across Assessed %NBS before e'quakes:		#### %NBS from IEP below	
Assessed %NBS after e'quakes:	100%		

IEP	Use of this meth	hod is not mandatory - more detailed analysis m	ay give a different answer, which v	vould take precedence. D	o not fill in fields if not us	ing IEP.
F	Period of design of building (from above): 1	965-1976		hn f	rom above: m	
Seismic Zo	one, if designed between 1965 and 1992:			not required for this age not required for this age		
				along		across
			Period (from above): (%NBS)nom from Fig 3.3:	0.4		0.4
	Note:1 for specifically de	esign public buildings, to the code of the day: pre-19	· · · ·	; 1965-1976, Zone B = 1.2;	all else 1.0	
		N	Note 2: for RC buildings lote 3: for buildings designed prior to 1	designed between 1976-198 935 use 0.8, except in Wellin	34, use 1.2 ngton (1.0)	
			Final (%NBS)nom:	along		across
				0%		0%
	2.2 Near Fault Scaling Factor		Near Fault s	caling factor, from NZS1170 along	.5, cl 3.1.6:	across
		Near Fault	scaling factor (1/N(T,D), Factor A:	#DIV/0!		#DIV/0!
	2.3 Hazard Scaling Factor		Hazard fac	tor Z for site from AS1170.5 Z1992, from NZS	4203:1992	
				Hazard scaling factor	, Factor B:	#DIV/0!
	2.4 Return Period Scaling Factor			Building Importance level (fr		2
			Return Period S	Scaling factor from Table 3.1	, Factor C:	
	2.5 Ductility Scaling Factor	Assessed d Ductility scaling factor: =1 from 1976 onwards;	uctility (less than max in Table 3.2)	along		across
		Backing county later Thom for o officiato,	Ductiity Scaling Factor, Factor D:	0.00		0.00
	2.6 Structural Performance Scaling Fa	actor:	Sp:			
		Structural Perf	ormance Scaling Factor Factor E:	#DIV/0!		#DIV/0!
	2.7 Baseline %NBS, (NBS%)b = (%NBS		%NBS6:	#DIV/0!		#DIV/0!
	Global Critical Structural Weaknesses: (i		,		I	
	3.1. Plan Irregularity, factor A:	1				
	3.2. Vertical irregularity, Factor B:	1				
	3.3. Short columns, Factor C:	1	Table for selection of D1	eparation 0 <sep<.005< th=""><th>Significant 6H .005<sep<.01h< th=""><th>Insignificant/none Sep&gt;.01H</th></sep<.01h<></th></sep<.005<>	Significant 6H .005 <sep<.01h< th=""><th>Insignificant/none Sep&gt;.01H</th></sep<.01h<>	Insignificant/none Sep>.01H
	3.4. Pounding potential	Pounding effect D1, from Table to right t Difference effect D2, from Table to right	Alignment of floors within	20% of H 0.7	0.8	1
	. ioigi	Therefore, Factor D: 0	Alignment of floors not within Table for Selection of D2	20% of H 0.4	Significant	0.8 Insignificant/none
	3.5. Site Characteristics	1	S	eparation 0 <sep<.005< td=""><td>6H .005<sep<.01h< td=""><td></td></sep<.01h<></td></sep<.005<>	6H .005 <sep<.01h< td=""><td></td></sep<.01h<>	
	Ľ		Height difference > Height difference 2 to		0.7	1
			Height difference <	2 storeys 1	1	1
	3.6. Other factors, Factor F	For ≤ 3 storeys, max value =2.5, other		Along		Across
		Ratio	onale for choice of F factor, if not 1			
	Detail Critical Structural Weaknesses: (	refer to DEE Procedure section 6)	section 6.3.1 of DEE for discussion	of E factor modification for o	her critical structural weak	000000
	Detail Critical Structural Weaknesses: () List any: 3.7. Overall Performance Achievemen	Refer also	o section 6.3.1 of DEE for discussion	of F factor modification for or 0.00	her critical structural weakr	0.00
	List any:	Refer also	o section 6.3.1 of DEE for discussion		her critical structural weakr	
	List any:	Refer also	o section 6.3.1 of DEE for discussion		her critical structural weakr	

Detailed Engineering Evaluation Summary Data			V1.14
Location			
		No: Street	Reviewer:         David Elliott           CPEng No:         202002
	Block E (Units 12, 12a & 14) FLATS 12, 12a & 14	55 Aldwins Road	Company: Aurecon
Legal Description:	DP 40879 ON LOTS 1 3 DP 38888	Company   Company	roject number: 237698 phone number: 03 371 0761
		Min Sec	
GPS south: GPS east:	43 172		of submission: 15/12/2016 spection Date: 13/08/2013
Building Unique Identifier (CCC):	PRO 0811 BLDG 005	Is there a full report with	Revision: 3 this summary? yes
Site			
Site slope:	flat	Max retai	ing height (m):
Soil type: Site Class (to NZS1170.5):	D	Soil Pro	le (if available):
Proximity to waterway (m, if <100m): Proximity to clifftop (m, if <100m):		If Ground improvement of	site, describe:
Proximity to cliff base (m,if <100m):		Approx sit	e elevation (m):
Building No. of storeys above ground:	1	single storey = 1 Ground floor elevation	(Absolute) (m):
Ground floor split? Storeys below ground	no	Ground floor elevation abo	ve ground (m):
Foundation type:	strip footings	if Foundation type is	ther, describe:
Building height (m): Floor footprint area (approx):	2.60	height from ground to level of uppermost seismic mass (for	
Age of Building (years):	37		Date of design: 1965-1976
Strengthening present?	20	lf e	o, when (year)?
		And what I	bad level (%g)?
Use (ground floor): Use (upper floors):	multi-unit residential multi-unit residential	Brief strengthen	ng description:
Use notes (if required): Importance level (to NZS1170.5):			
Gravity Structure Gravity System:	load bearing walls		
Roof: Floors:	timber truss concrete flat slab	truss depth, purlin ty slab	e and cladding timber purlins, 1.675m truss depth hickness (mm) 100mm slab with 665 mesh - moistop -
Beams: Columns:			
Walls:			
Lateral load resisting structure			
Lateral system along: Ductility assumed, μ:	lightweight timber framed walls 2.00	Note: Define along and across in note typica detailed report!	wall length (m)
Period along:	0.40	0.00 estimate	or calculation? estimated
Total deflection (ULS) (mm): maximum interstorey deflection (ULS) (mm):			or calculation?
	lightweight timber framed walls		wall length (m)
Ductility assumed, µ:	2.00		
Period across: Total deflection (ULS) (mm):	0.40		or calculation? estimated or calculation?
maximum interstorey deflection (ULS) (mm):		estimate	or calculation?
Separations: north (mm):		leave blank if not relevant	
east (mm):			
south (mm): west (mm):			
Non-structural elements			
Stairs: Wall cladding:	h dah an tik	decord of feed	
Roof Cladding:	Metal	describe (note	cavity if exists) Cavity between brick veneer and timber framin describe
Glazing: Ceilings:	plaster, fixed		
Services(list):			
-			
Available documentation Architectural	partial	original desi	ner name/date Enterprise Homes Ltd/1974
Structural Mechanical	partial none	original desi	ner name/date Enterprise Homes Ltd/1974 ner name/date
Electrical	none	original desi	ner name/date
Geotech report	none	original desi	ner name/date
Damage			
Site performance: (refer DEE Table 4-2)		De	scribe damage:
Settlement:	25-100mm	note	(if applicable):
Differential settlement: Liquefaction:	more than 10 m3/100m2	note	s (if applicable):
Lateral Spread: Differential lateral spread:	none apparent	note	s (if applicable):
Ground cracks:	none apparent	note	(if applicable):
Damage to area:	signt	note	(if applicable): Cracks in walls, step cracks in masonry.
Building: Current Placard Status:	green		
Along Damage ratio:	0%	Describe how damage	ratio arrived at
Along Damage ratio: Describe (summary):			
Across Damage ratio:		$Damage\_Ratio = \frac{(\%NBS(before) - \%NBS(affinition))}{(\%NBS(affinition))}$	er))
Describe (summary):		% NBS (before)	
Diaphragms Damage?:	no		Describe:
CSWs: Damage?:	no		Describe:
Pounding: Damage?:	no		Describe:
Non-structural: Damage?:			Describe: Roof tiles unsecured, a few have fallen off.
Damage?	0.00		Countres directured, a rew have idited the
Recommendations			
Level of repair/strengthening required: Building Consent required:	none		Describe: Damage is repaired by the council. Describe:
Interim occupancy recommendations:	full occupancy		Describe:
Along Assessed %NBS before e'quakes:		#### %NBS from IEP below If IEP not used, please de	ail assessment Quantitative
Assessed %NBS after e'quakes:			methodology:
Across Assessed %NBS before e'quakes: Assessed %NBS after e'quakes:		#### %NBS from IEP below	

IEP	Use of this meth	hod is not mandatory - more detailed analysis m	ay give a different answer, which v	vould take precedence. D	o not fill in fields if not us	ing IEP.
F	Period of design of building (from above): 1	965-1976		hn f	rom above: m	
Seismic Zo	one, if designed between 1965 and 1992:			not required for this age not required for this age		
				along		across
			Period (from above): (%NBS)nom from Fig 3.3:	0.4		0.4
	Note:1 for specifically de	esign public buildings, to the code of the day: pre-19	· · · ·	; 1965-1976, Zone B = 1.2;	all else 1.0	
		N	Note 2: for RC buildings lote 3: for buildings designed prior to 1	designed between 1976-198 935 use 0.8, except in Wellin	34, use 1.2 ngton (1.0)	
			Final (%NBS)nom:	along		across
				0%		0%
	2.2 Near Fault Scaling Factor		Near Fault s	caling factor, from NZS1170 along	.5, cl 3.1.6:	across
		Near Fault	scaling factor (1/N(T,D), Factor A:	#DIV/0!		#DIV/0!
	2.3 Hazard Scaling Factor		Hazard fac	tor Z for site from AS1170.5 Z1992, from NZS	4203:1992	
				Hazard scaling factor	, Factor B:	#DIV/0!
	2.4 Return Period Scaling Factor			Building Importance level (fr		2
			Return Period S	Scaling factor from Table 3.1	, Factor C:	
	2.5 Ductility Scaling Factor	Assessed d Ductility scaling factor: =1 from 1976 onwards;	uctility (less than max in Table 3.2)	along		across
		Basting county factor Thom for o officiato,	Ductiity Scaling Factor, Factor D:	0.00		0.00
	2.6 Structural Performance Scaling Fa	actor:	Sp:			
		Structural Perf	ormance Scaling Factor Factor E:	#DIV/0!		#DIV/0!
	2.7 Baseline %NBS, (NBS%)b = (%NBS		%NBS6:	#DIV/0!		#DIV/0!
	Global Critical Structural Weaknesses: (i		,		I	
	3.1. Plan Irregularity, factor A:	1				
	3.2. Vertical irregularity, Factor B:	1				
	3.3. Short columns, Factor C:	1	Table for selection of D1	eparation 0 <sep<.005< th=""><th>Significant 6H .005<sep<.01h< th=""><th>Insignificant/none Sep&gt;.01H</th></sep<.01h<></th></sep<.005<>	Significant 6H .005 <sep<.01h< th=""><th>Insignificant/none Sep&gt;.01H</th></sep<.01h<>	Insignificant/none Sep>.01H
	3.4. Pounding potential	Pounding effect D1, from Table to right t Difference effect D2, from Table to right	Alignment of floors within	20% of H 0.7	0.8	1
	. ioigi	Therefore, Factor D: 0	Alignment of floors not within Table for Selection of D2	20% of H 0.4	Significant	0.8 Insignificant/none
	3.5. Site Characteristics	1	S	eparation 0 <sep<.005< td=""><td>6H .005<sep<.01h< td=""><td></td></sep<.01h<></td></sep<.005<>	6H .005 <sep<.01h< td=""><td></td></sep<.01h<>	
	Ľ		Height difference > Height difference 2 to		0.7	1
			Height difference <	2 storeys 1	1	1
	3.6. Other factors, Factor F	For ≤ 3 storeys, max value =2.5, other		Along		Across
		Ratio	onale for choice of F factor, if not 1			
	Detail Critical Structural Weaknesses: (	refer to DEE Procedure section 6)	section 6.3.1 of DEE for discussion	of E factor modification for o	her critical structural weak	000000
	Detail Critical Structural Weaknesses: () List any: 3.7. Overall Performance Achievemen	Refer also	o section 6.3.1 of DEE for discussion	of F factor modification for or 0.00	her critical structural weakr	0.00
	List any:	Refer also	o section 6.3.1 of DEE for discussion		her critical structural weakr	
	List any:	Refer also	o section 6.3.1 of DEE for discussion		her critical structural weakr	

Detailed Engineering Evaluation Summary Data			V1.14
Location	Disak E. Alduine Courte	Deviewer	David Ellipt
	Block F - Aldwins Courts Unit	No: Street CPEng No:	David Elliott 202002
-	Block F (Units 15, 16 & 17) FLATS 15, 16 & 17	55 Aldwins Road Company:	
Legal Description:	DP 40879 ON LOTS 1 3 DP 38888	Company project number: Company phone number:	237698 03 371 0761
GPS south:	Degrees 43	Min         Sec           32         23.91         Date of submission:	15/10/2015
GPS east:	172	40 0.32 Inspection Date: Revision:	13/08/2013
Building Unique Identifier (CCC):	PRO 0811 BLDG 006	Is there a full report with this summary?	yes
Site			
Site slope: Soil type:	mixed	Max retaining height (m): Soil Profile (if available):	
Site Class (to NZS1170.5): Proximity to waterway (m, if <100m):		If Ground improvement on site, describe:	
Proximity to clifftop (m, if < 100m): Proximity to cliff base (m, if <100m):		Approx site elevation (m):	
· · · · · · · · · · · · · · · · · · ·			
Building			
No. of storeys above ground: Ground floor split?	no	single storey = 1 Ground floor elevation (Absolute) (m): Ground floor elevation above ground (m):	
Storeys below ground Foundation type:	strip footings	if Foundation type is other, describe:	
Building height (m): Floor footprint area (approx):		height from ground to level of uppermost seismic mass (for IEP only) (m):	
Age of Building (years):	37	Date of design:	1965-1976
Strengthening present?	[no	If so, when (year)?	
		And what load level (%g)?	
Use (upper floors):	multi-unit residential multi-unit residential	Brief strengthening description:	I
Use notes (if required): Importance level (to NZS1170.5):			
Gravity Structure			
Gravity System: Roof:	load bearing walls timber truss	truss depth, purlin type and cladding	timber purlins, 1.675m truss depth
Floors Beams:	concrete flat slab	slab thickness (mm)	100mm slab with 665 mesh - moistop -
Columns:			
Walls:			
	lightweight timber framed walls	Note: Define along and across in note typical wall length (m)	
Ductility assumed, μ: Period along:		detailed report! 0.00 estimate or calculation?	estimated
Total deflection (ULS) (mm): maximum interstorey deflection (ULS) (mm):		estimate or calculation? estimate or calculation?	
Ductility assumed, µ		note typical wall length (m)	
Period across: Total deflection (ULS) (mm):		0.00 estimate or calculation? estimate or calculation?	estimated
maximum interstorey deflection (ULS) (mm):		estimate or calculation?	
Separations: north (mm):		leave blank if not relevant	
east (mm): south (mm):			
west (mm):			
Non-structural elements			
Stairs: Wall cladding:	brick or tile	describe (note cavity if exists)	Cavity between brick veneer and timber framir
Roof Cladding: Glazing:		describe	
Ceilings: Services(list):	plaster, fixed		
Available documentation	Datial		Enterprise Homes Ltd/1974
Architectural Structural	partial	original designer name/date	Enterprise Homes Ltd/1974
Electrica	none	original designer name/date original designer name/date	
Geotech report	none	original designer name/date	
Damage			
Site: Site performance: (refer DEE Table 4-2)		Describe damage:	
Settlement: Differential settlement:	0-25mm	notes (if applicable): notes (if applicable):	
Liquefaction	more than 10 m3/100m2	notes (if applicable):	
Differential lateral spread:		notes (if applicable): notes (if applicable):	
Ground cracks: Damage to area:	none apparent slight	notes (if applicable): notes (if applicable):	Cracks in walls, step cracks in masonry.
Building:			
Current Placard Status	green		
Along Damage ratio: Describe (summary):		Describe how damage ratio arrived at:	
		$Damage\_Ratio = \frac{(\% NBS(before) - \% NBS(after))}{(\% NBS(after))}$	
Across Damage ratio: Describe (summary):		%NBS(before)	
Diaphragms Damage?:	no	Describe:	
CSWs: Damage?:	no	Describe:	
Pounding: Damage?:	no	Describe:	
Non-structural: Damage?:		Describe:	
Damage?		Describe.	
Recommendations			
Level of repair/strengthening required: Building Consent required:	none	Describe: Describe:	Damage is repaired by council
Interim occupancy recommendations:		Describe:	
Along Assessed %NBS before e'quakes: Assessed %NBS after e'quakes:	83%	#### %NBS from IEP below If IEP not used, please detail assessment methodology:	Quantitative
ribboood /intel and o quakes.	. 03%	methodology.	
	100%	#### %NBS from IEP below	
Across Assessed %NBS before e'quakes: Assessed %NBS after e'quakes:		#### %NBS from IEP below	

IEP	Use of this meth	hod is not mandatory - more detailed analysis m	ay give a different answer, which v	vould take precedence. D	o not fill in fields if not us	ing IEP.
F	Period of design of building (from above): 1	965-1976		hn f	rom above: m	
Seismic Zo	one, if designed between 1965 and 1992:			not required for this age not required for this age		
				along		across
			Period (from above): (%NBS)nom from Fig 3.3:	0.4		0.4
	Note:1 for specifically de	esign public buildings, to the code of the day: pre-19	· · · ·	; 1965-1976, Zone B = 1.2;	all else 1.0	
		N	Note 2: for RC buildings lote 3: for buildings designed prior to 1	designed between 1976-198 935 use 0.8, except in Wellin	34, use 1.2 ngton (1.0)	
			Final (%NBS)nom:	along		across
				0%		0%
	2.2 Near Fault Scaling Factor		Near Fault s	caling factor, from NZS1170 along	.5, cl 3.1.6:	across
		Near Fault	scaling factor (1/N(T,D), Factor A:	#DIV/0!		#DIV/0!
	2.3 Hazard Scaling Factor		Hazard fac	tor Z for site from AS1170.5 Z1992, from NZS	4203:1992	
				Hazard scaling factor	, Factor B:	#DIV/0!
	2.4 Return Period Scaling Factor			Building Importance level (fr		2
			Return Period S	Scaling factor from Table 3.1	, Factor C:	
	2.5 Ductility Scaling Factor	Assessed d Ductility scaling factor: =1 from 1976 onwards;	uctility (less than max in Table 3.2)	along		across
		Backing county later Thom for o officiato,	Ductiity Scaling Factor, Factor D:	0.00		0.00
	2.6 Structural Performance Scaling Fa	actor:	Sp:			
		Structural Perf	ormance Scaling Factor Factor E:	#DIV/0!		#DIV/0!
	2.7 Baseline %NBS, (NBS%)b = (%NBS		%NBS6:	#DIV/0!		#DIV/0!
	Global Critical Structural Weaknesses: (i		,		I	
	3.1. Plan Irregularity, factor A:	1				
	3.2. Vertical irregularity, Factor B:	1				
	3.3. Short columns, Factor C:	1	Table for selection of D1	eparation 0 <sep<.005< th=""><th>Significant 6H .005<sep<.01h< th=""><th>Insignificant/none Sep&gt;.01H</th></sep<.01h<></th></sep<.005<>	Significant 6H .005 <sep<.01h< th=""><th>Insignificant/none Sep&gt;.01H</th></sep<.01h<>	Insignificant/none Sep>.01H
	3.4. Pounding potential	Pounding effect D1, from Table to right t Difference effect D2, from Table to right	Alignment of floors within	20% of H 0.7	0.8	1
	. ioigi	Therefore, Factor D: 0	Alignment of floors not within Table for Selection of D2	20% of H 0.4	Significant	0.8 Insignificant/none
	3.5. Site Characteristics	1	S	eparation 0 <sep<.005< td=""><td>6H .005<sep<.01h< td=""><td></td></sep<.01h<></td></sep<.005<>	6H .005 <sep<.01h< td=""><td></td></sep<.01h<>	
	Ľ		Height difference > Height difference 2 to		0.7	1
			Height difference <	2 storeys 1	1	1
	3.6. Other factors, Factor F	For ≤ 3 storeys, max value =2.5, other		Along		Across
		Ratio	onale for choice of F factor, if not 1			
	Detail Critical Structural Weaknesses: (	refer to DEE Procedure section 6)	section 6.3.1 of DEE for discussion	of E factor modification for o	her critical structural weak	000000
	Detail Critical Structural Weaknesses: () List any: 3.7. Overall Performance Achievemen	Refer also	o section 6.3.1 of DEE for discussion	of F factor modification for or 0.00	her critical structural weakr	0.00
	List any:	Refer also	o section 6.3.1 of DEE for discussion		her critical structural weakr	
	List any:	Refer also	o section 6.3.1 of DEE for discussion		her critical structural weakr	

Location			V1.14
Puilding Nome	Block G - Aldwins Courts	Paviawar	David Elliott
	Unit	No: Street CPEng No:	David Elliott 202002
-	Block G (Units 18, 19 & 20) FLATS 18, 19 & 20	55 Aldwins Road Company:	
Legal Description	DP 40879 ON LOTS 1 3 DP 38888	Company project number: Company phone number:	237698 03 371 0761
GPS south	Degrees 43	Min         Sec           32         24.51         Date of submission:	16/12/2015
GPS east	172	40 1.46 Inspection Date: Revision:	13/08/2013
Building Unique Identifier (CCC)	PRO 0811 BLDG 007	Is there a full report with this summary?	yes
Site			
Site slope Soil type	mixed	Max retaining height (m): Soil Profile (if available):	
Site Class (to NZS1170.5) Proximity to waterway (m, if <100m)		If Ground improvement on site, describe:	
Proximity to clifftop (m, if < 100m) Proximity to cliff base (m, if <100m)		Approx site elevation (m):	
· · · · · · · · · · · · · · · · · · ·			
Building No. of storeys above ground		single storey = 1 Ground floor elevation (Absolute) (m):	
Ground floor split	no	Ground floor elevation (Absolute) (in). Ground floor elevation above ground (m):	
Storeys below ground Foundation type	strip footings	if Foundation type is other, describe:	
Building height (m) Floor footprint area (approx)		height from ground to level of uppermost seismic mass (for IEP only) (m):	
Age of Building (years)	37	Date of design:	1965-1976
Strengthening present	no	If so, when (year)?	
	multi-unit residential	And what load level (%g)? Brief strengthening description:	
Use (upper floors)	multi-unit residential	biel strengthening description.	L1
Use notes (if required) Importance level (to NZS1170.5)			
Gravity Structure			
Roof	load bearing walls timber truss	truss depth, purlin type and cladding	timber purlins, 1.675m truss depth
Floors Beams	concrete flat slab		100mm slab with 665 mesh - moistop -
Columns Walls:			
Lateral load resisting structure			
Lateral system along	lightweight timber framed walls	Note: Define along and across in note typical wall length (m)	
Ductility assumed, μ Period along		detailed report! 0.00 estimate or calculation?	estimated
Total deflection (ULS) (mm) maximum interstorey deflection (ULS) (mm)		estimate or calculation? estimate or calculation?	
	lightweight timber framed walls	note typical wall length (m)	
Ductility assumed, µ	2.00		
Period across Total deflection (ULS) (mm)		0.00 estimate or calculation? estimate or calculation?	estimated
maximum interstorey deflection (ULS) (mm)		estimate or calculation?	
Separations: north (mm)		leave blank if not relevant	
east (mm) south (mm)			
west (mm)			
Non-structural elements			
Stairs Wall cladding	brick or tile	describe (note cavity if exists)	Cavity between brick veneer and timber framin
Stairs Wall cladding Roof Cladding Glazing	brick or tile Metal	describe (note cavity if exists) describe	Cavity between brick veneer and timber framin
Stairs Wall cladding Roof Cladding Glazing	brick or tile Metal plaster, fixed	describe (note cavity if exists) describe	Cavity between brick veneer and timber framin
Stairs Wall cladding Roof Cladding Glazing Ceilings	brick or tile Metal plaster, fixed	describe (note cavity il exists) describe	Cavity between brick veneer and timber frami
Stairs Wal clading Roof Clading Glazing Services(kst) Available documentation	brick or tile Metal plaster, fixed	describe	
Stairs Wal Clading Roof Clading Calaring Cealings Services(lst) Available documentation Architecture Structure	brick or tile Metal plaster, fixed partial partial	describe original designer name/date original designer name/date	Cavity between brick veneer and timber frami
Stairs Wal clading Roof Clading Cairing Services(ist) Available documentation Architectura Structure Mechanica Electrice	brick or tile Metal plaster, fixed partial partial none none	describe original designer name/date original designer name/date original designer name/date original designer name/date	Enterprise Hornes Ltd/1974 Enterprise Hornes Ltd/1974
Stairs Wal clading Roof Cladding Caling Services(list) Available documentation Architecture Structure Mechanics	brick or tile Metal plaster, fixed partial partial none none	describe original designer name/date original designer name/date original designer name/date	Enterprise Hornes Ltd/1974 Enterprise Hornes Ltd/1974
Stairs Wal clading Roof Clading Cairing Services(ist) Available documentation Architectura Structure Mechanica Electrice	brick or tile Metal plaster, fixed partial partial none none	describe original designer name/date original designer name/date original designer name/date original designer name/date	Enterprise Hornes Ltd/1974 Enterprise Hornes Ltd/1974
Stairs Wal clading Roof Clading Roof Clading Cellings Services(list) Available documentation Architectura Bectrica Geotech repor Damage Steir St	brick or tile Metal plaster, fixed partial partial none none none	describe original designer name/date original designer name/date original designer name/date original designer name/date	Enterprise Hornes Ltd/1974 Enterprise Hornes Ltd/1974
Stairs Wal clading Roof Clading Roof Clading Caling Services(lst) Available documentation Architecture Betertice Geotech repor Damage Site: Ste performance (refer DEE Table 4-2) Settlement	brick or tile Metal Plaster, fixed partial partial none none Cone Cone Cone Cone Cone Cone	describe original designer name/date original designer name/date	Enterprise Hornes Ltd/1974 Enterprise Hornes Ltd/1974
Stairs Wal clading Roof Clading Roof Clading Roof Clading Caling Services(lst)  Available documentation  Architecture Structure Mechanice Electrice Geotech repor  Damage Site: Site performance (refer DEE Table 4-2)  Settlement Differential settlement Luquefactob	brick or tile Metal Paster, fixed partial partial none none none 25-100mm none observed more han 10 m9/100m²	describe original designer name/date original designer name/date	Enterprise Hornes Ltd/1974 Enterprise Hornes Ltd/1974
Stairs Wall clading Roof Clading Roof Clading Clazing Services(lst)  Available documentation  Architecture Structure Mechanice Geotech repor  Damage Site: Ste performance (refer DEE Table 4-2) Settlement Differential settlement Liquefacton Lateral Spread Differential lateral spread	brick or tile Metal Plaster, fixed Partial partial none none Cone Cone Cone Cone Cone Cone	describe original designer name/date original designer name/date origin	Enterprise Hornes Ltd/1974 Enterprise Hornes Ltd/1974
Stairs Wall clading Roof Clading Roof Clading Clazing Services(lst)  Available documentation  Architecture Structure Mechanice Geotech repor  Damage Site: Ste performance (refer DEE Table 4-2) Settlement Differential settlement Liquefacton Lateral Spread Differential lateral spread	brick or tile Metal Plaster, fixed plaster, fixed partial partial partial none none none torne t	describe original designer name/date original designer name/date origin	Enterprise Homes Ltd/1974 Enterprise Homes Ltd/1974
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Stairs Valid Calding Roof Cladding Calaring Calaring Calings Services(Ist) Available documentation Architectura Structura Mechanice Electrice Geotech repor Damage Site: (refer DEE Table 4-2) Site performance Liquefaction Lique	brick or tile Metal Plaster, fixed Plaster, fixed Partial partial partial none none Cone Cone Cone Cone Cone Cone	describe original designer name/date original designer name/date origin	Enterprise Homes Ltd/1974 Enterprise Homes Ltd/1974
Stairs Wall clading Roof Clading Roof Clading Roof Clading Caling Services(lst)  Available documentation  Architecture Structure Mechanice Electrice Geotech repor  Damage Step Step Step Step Step Step Step Ste	brick or tile Metal Plaster, fixed  partial partial none none none  25-100mm none observed more than 10 m²/100m² none observet sight green  0%	describe original designer name/date original designer name/date origin	Enterprise Homes Ltd/1974 Enterprise Homes Ltd/1974
Stairs Wall clading Roof Clading Roof Clading Calaring Services(lst)  Available documentation  Architecture Structure Mechanice Electrice Geotech repor  Damage State: (refer DEE Table 4-2)  Settlement Differential settlement Liquefactor Electrice Ground cracks Damage to area  Building: Current Placard Status Along Damage ratio Describe (summary)	brick or tile Metal plaster, fixed partial partial none none none none 25-100mm fore observed more than 10 m9/100m <sup>2</sup> more apparent none apparent none apparent none apparent sight green	describe	Enterprise Homes Ltd/1974 Enterprise Homes Ltd/1974
Stairs Wall clading Roof Clading Roof Clading Roof Clading Caling Services(lst)  Available documentation  Architecture Structure Mechanice Electrice Geotech repor  Damage Step Step Step Step Step Step Step Ste	brick or tile Metal plaster, fixed partial partial none none none none tone 25-100mm none observed more than 10 m/100m <sup>2</sup> more than 10 m/100m <sup>2</sup> none apparent none apparent none apparent slight	describe original designer name/date original designer name/date netes (if applicable); notes (if app	Enterprise Homes Ltd/1974 Enterprise Homes Ltd/1974
Stairs Validading Roof Cladding Roof Cladding Calings Services(Ist) Available documentation Architecture Structure Mechanice Electrice Geotech repor  Damage Site: Site performance (refer DEE Table 4-2) Settlement Differential settlement Liquefaction Li	brick or tile Metal plaster, fixed partial partial none none none none tone 25-100mm more than 10 m/100m <sup>2</sup> more than 10 m/100m <sup>2</sup> none apparent none apparent none apparent sight green 0%	describe original designer name/date original designer name/date neme/date neme/date original designer name/date original desi	Enterprise Hornes Ltd/1974 Enterprise Hornes Ltd/1974 Enterprise Hornes Ltd/1974 Cracks in roof & walls, cracks in base slab, str
Stairs Valid clading Roof Clading Roof Clading Calings Services(Ist)  Available documentation  Architecture Structure Mechanice Electrice Geotech repor  Damage Site: (refer DEE Table 4-2) Settlement Differential settlement Liquefaction Liq	brick or tile Metal plaster, fixed partial partial none none none none tone served more than 10 m/100m <sup>2</sup> none apparent none apparent none apparent sight green 0% noe	describe original designer name/date original designer name/date origin	Enterprise Hornes Ltd/1974 Enterprise Hornes Ltd/1974 Enterprise Hornes Ltd/1974 Cracks in roof & walls, cracks in base slab, str
Stairs Wall clading Gaizing Ceilings Services(ist) Available documentation Architecture Structure Mechanice Electrice Geotech repor <u>Bamage</u> <u>Site:</u> (refer DEE Table 4-2) Settlement Differential settlement Differential settlement Differential settlement Differential settlement Electrice Geotech repor Baultion Lateral Spread Differential settlement Current Placard Status Damage tabo Describe (summary) Across Damage?	brick or tile Metal plaster, fixed partial partial none none none none torne none deserved more than 10 m³/100m² more than 10 m³/100m² more apparent none apparent sight green 0% 0% 0%	describe original designer name/date original designer name/date origin	Enterprise Hornes Ltd/1974 Enterprise Hornes Ltd/1974 Enterprise Hornes Ltd/1974 Cracks in roof & walls, cracks in base slab, str
Stairs         Wall clading         Roof Clading         Calings         Services(Ist)         Available documentation         Architecture         Structure         Mechanice         Site:         Geotech         Site:         Current Placard Status         Damage ratio         Describe (summary)         Across       Damage ratio         Describe (summary)         Diaphragms       Damage?         CSWs:       Damage?         Pounding:       Damage?	brick or tile Metal plaster, fixed partial partial none none none none none deserved more than 10 m <sup>3</sup> /100m <sup>2</sup> more than 10 m <sup>3</sup> /100m <sup>2</sup> more apparent none apparent none apparent sight green 0% 0%	describe original designer name/date original designer name/date origin	Enterprise Hornes Ltd/1974 Enterprise Hornes Ltd/1974 Enterprise Hornes Ltd/1974 Cracks in roof & walls, cracks in base slab, str
Stairs Wall clading Gaizing Ceilings Services(ist) Available documentation Architecture Structure Mechanice Electrice Geotech repor <u>Bamage</u> <u>Site:</u> (refer DEE Table 4-2) Settlement Differential settlement Differential settlement Differential settlement Differential settlement Electrice Geotech repor Baultion Lateral Spread Differential settlement Current Placard Status Damage tabo Describe (summary) Across Damage?	brick or tile Metal plaster, fixed partial partial none none none none none deserved more than 10 m <sup>3</sup> /100m <sup>2</sup> more than 10 m <sup>3</sup> /100m <sup>2</sup> more apparent none apparent none apparent sight green 0% 0%	describe original designer name/date original designer name/date origin	Enterprise Homes Ltd/1974 Enterprise Homes Ltd/1974 Enterprise Homes Ltd/1974 Cracks in roof & walls, cracks in base slab, st
Stairs         Wall clading         Roof Clading         Glazing         Ceilings         Services(Ist)         Available documentation         Architecture         Structure         Mechanice         Structure         Geotech report         Damage         Site:         Steperformance         Creater DEE Table 4-2)         Stefferential settlement         Differential settlement         Liquefacton         Lateral Spread         Offerential settlement         Eventor         Differential settlement         Differential settlement         Eventor         Differential settlement         Courtent Placard Status         Damage to area         Building:         Current Placard Status         Damage ratio         Describe (summary)         Diaphragms       Damage?         CSW s:       Damage?         Pounding:       Damage?         Non-structural:       Damage?         Recommendations       Courter	brick or tile Metal plaster, fixed partial partial none none none 25-100mm none observed more than 10 m²/100m² more than 10 m²/100m² more apparent none apparent none apparent none apparent sight green 0% 0% 0%	describe original designer nameldate original designer nameldate origin	Enterprise Homes Ltd/1974 Enterprise Homes Ltd/1974 Enterprise Homes Ltd/1974 Cracks in roof & walls, cracks in base slab, st
Stairs         Wall clading         Roof Clading         Glazing         Ceilings         Services(Ist)         Available documentation         Architecture         Structure         Mechanice         Structure         Geotech report         Damage         Site:         Steperformance         Credition         Lateral Spread         Differential settlement         Literal Spread         Differential settlement         Literal Spread         Ground cracks         Damage to area         Building:         Current Placard Status         Along       Damage ratio         Describe (summary)         Diaphragms       Damage?         CSW s:       Damage?         Pounding:       Damage?         Non-structural:       Damage?         Recommendations       Level of repair/strengthening required         Building Consent required       Status	brick or tile Metal plaster, fixed partial partial none none none come come come come come come come com	describe  original designer nameldate nemeldate original designer nameldate original d	Enterprise Homes Ltd/1974 Enterprise Homes Ltd/1974 Enterprise Homes Ltd/1974 Cracks in roof & walls, cracks in base slab, st
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Stairs         Wall clading         Roof Clading         Glazing         Ceilings         Services(Ist)         Available documentation         Architecture         Structure         Mechanice         Structure         Geotech report         Damage         Site:         Celection         Differential settlement         Literal Spread         Differential settlement         Literal Spread         Differential settlement         Literal Spread         Ground cracks         Damage to area         Building:         Current Placard Status         Along       Damage ratio         Describe (summary)         Diaphragms       Damage?         CSW s:       Damage?         Pounding:       Damage?         Non-structural:       Damage?         Recommendations       Level of repair/strengthening required Building Consent required Building Consent required Interim occupancy recommendations	brick or tile           Metal           partial           partial           partial           none           none           25-100mm           none           none           25-100mm           none apparent           none apparent           none apparent           none apparent           none apparent           none           none           1           green           0%           no	describe original designer name/date original designer name/date origin	Enterprise Homes Ltd/1974

IEP	Use of this meth	hod is not mandatory - more detailed analysis m	ay give a different answer, which v	vould take precedence. D	o not fill in fields if not us	ing IEP.
F	Period of design of building (from above): 1	965-1976		hn f	rom above: m	
Seismic Zo	one, if designed between 1965 and 1992:			not required for this age not required for this age		
				along		across
			Period (from above): (%NBS)nom from Fig 3.3:	0.4		0.4
	Note:1 for specifically de	esign public buildings, to the code of the day: pre-19	· · · ·	; 1965-1976, Zone B = 1.2;	all else 1.0	
		N	Note 2: for RC buildings lote 3: for buildings designed prior to 1	designed between 1976-198 935 use 0.8, except in Wellin	34, use 1.2 ngton (1.0)	
			Final (%NBS)nom:	along		across
				0%		0%
	2.2 Near Fault Scaling Factor		Near Fault s	caling factor, from NZS1170 along	.5, cl 3.1.6:	across
		Near Fault	scaling factor (1/N(T,D), Factor A:	#DIV/0!		#DIV/0!
	2.3 Hazard Scaling Factor		Hazard fac	tor Z for site from AS1170.5 Z1992, from NZS	4203:1992	
				Hazard scaling factor	, Factor B:	#DIV/0!
	2.4 Return Period Scaling Factor			Building Importance level (fr		2
			Return Period S	Scaling factor from Table 3.1	, Factor C:	
	2.5 Ductility Scaling Factor	Assessed d Ductility scaling factor: =1 from 1976 onwards;	uctility (less than max in Table 3.2)	along		across
		Backing county later Thom for o officiato,	Ductiity Scaling Factor, Factor D:	0.00		0.00
	2.6 Structural Performance Scaling Fa	actor:	Sp:			
		Structural Perf	ormance Scaling Factor Factor E:	#DIV/0!		#DIV/0!
	2.7 Baseline %NBS, (NBS%)b = (%NBS		%NBS6:	#DIV/0!		#DIV/0!
	Global Critical Structural Weaknesses: (i		,		I	
	3.1. Plan Irregularity, factor A:	1				
	3.2. Vertical irregularity, Factor B:	1				
	3.3. Short columns, Factor C:	1	Table for selection of D1	eparation 0 <sep<.005< th=""><th>Significant 6H .005<sep<.01h< th=""><th>Insignificant/none Sep&gt;.01H</th></sep<.01h<></th></sep<.005<>	Significant 6H .005 <sep<.01h< th=""><th>Insignificant/none Sep&gt;.01H</th></sep<.01h<>	Insignificant/none Sep>.01H
	3.4. Pounding potential	Pounding effect D1, from Table to right t Difference effect D2, from Table to right	Alignment of floors within	20% of H 0.7	0.8	1
	. ioigi	Therefore, Factor D: 0	Alignment of floors not within Table for Selection of D2	20% of H 0.4	Significant	0.8 Insignificant/none
	3.5. Site Characteristics	1	S	eparation 0 <sep<.005< td=""><td>6H .005<sep<.01h< td=""><td></td></sep<.01h<></td></sep<.005<>	6H .005 <sep<.01h< td=""><td></td></sep<.01h<>	
	Ľ		Height difference > Height difference 2 to		0.7	1
			Height difference <	2 storeys 1	1	1
	3.6. Other factors, Factor F	For ≤ 3 storeys, max value =2.5, other		Along		Across
		Ratio	onale for choice of F factor, if not 1			
	Detail Critical Structural Weaknesses: (	refer to DEE Procedure section 6)	section 6.3.1 of DEE for discussion	of E factor modification for o	her critical structural weak	000000
	Detail Critical Structural Weaknesses: () List any: 3.7. Overall Performance Achievemen	Refer also	o section 6.3.1 of DEE for discussion	of F factor modification for or 0.00	her critical structural weakr	0.00
	List any:	Refer also	o section 6.3.1 of DEE for discussion		her critical structural weakr	
	List any:	Refer also	o section 6.3.1 of DEE for discussion		her critical structural weakr	

Detailed Engineering Evaluation Summary Data			V1.14
Location Building Name:	Carport J - Aldwins Courts	Reviewer:	David Elliott
Building Address:	Unit	No:         Street         CPEng No:           55         Aldwins Road         Company:	202002
Legal Description:	DP 40879 ON LOTS 1 3 DP 38888	Company project number: Company phone number:	237698
GPS south:	Degrees 43	Min Sec 32 25.55 Date of submission:	16/12/2015
GPS east:	172	40 0.29 Inspection Date: Revision:	13/08/2013
Building Unique Identifier (CCC):	PRO 0811 BLDG 008	Is there a full report with this summary?	yes
Site Site slope:		Max retaining height (m):	
Soil type: Site Class (to NZS1170.5):	mixed D	Soil Profile (if available):	
Proximity to waterway (m, if <100m): Proximity to clifftop (m, if <100m):		If Ground improvement on site, describe:	
Proximity to cliff base (m,if <100m):		Approx site elevation (m):	
Building			
No. of storeys above ground: Ground floor split?		single storey = 1 Ground floor elevation (Absolute) (m): Ground floor elevation above ground (m):	
Storeys below ground Foundation type:	0 strip footings	if Foundation type is other, describe:	
Building height (m): Floor footprint area (approx): Age of Building (years):	2.00	height from ground to level of uppermost seismic mass (for IEP only) (m): Date of design:	
Age of Building (years).	37	Date of design.	1965-1976
Strengthening present?	no	If so, when (year)? And what load level (%g)?	
Use (ground floor): Use (upper floors):	other (specify)	Brief strengthening description:	
Use notes (if required): Importance level (to NZ\$1170.5):	Carport (4 No. car spaces)		
Gravity Structure			
Gravity System:	frame system timber framed	rafter type, purlin type and cladding	
Floors: Beams:	concrete flat slab	slab thickness (mm)	100
Columns:	other (note) partially filled concrete masonry	typical dimensions (mm x mm) thickness (mm)	
Lateral load resisting structure	(Farmer)		
Lateral system along: Ductility assumed, µ:	partially filled CMU 1.25	Note: Define along and across in note total length of wall at ground (m): detailed report!	12
Period along: Total deflection (ULS) (mm):	0.40	#### enter height above at H31 estimate or calculation? estimate or calculation?	estimated
maximum interstorey deflection (ULS) (mm):		estimate or calculation?	
Lateral system across:	partially filled CMU	note total length of wall at ground (m):	Out-of-plane (12 m length, 200 mm thick)
Ductility assumed, µ: Period across:	1.25	#### enter height above at H31 estimate or calculation?	
Total deflection (ULS) (mm): maximum interstorey deflection (ULS) (mm):		estimate or calculation? estimate or calculation?	
Separations:	r		
north (mm): east (mm):		leave blank if not relevant	
north (mm):		leave blank if not relevant	
north (rmn): east (rmn): south (rmn): west (rmn): Non-structural elements		leave blank if not relevant	
north (rmn): east (rmn): south (rmn): west (rmn): <u>Non-structural elements</u> Stairs: Wall cladding: Wall cladding:			
north (rmn): east (rmn): south (rmn): west (rmn): <u>Non-structural elements</u> Stairs: Wall cladding: Roof Cladding: Glazing:		leave blank if not relevant describe	
north (rmn): east (rmn): south (rmn): west (rmn): <u>Non-structural elements</u> Stairs: W all cladding: Roof Cladding: Glazing:	Metal		
north (rmn): east (rmn): south (rmn): west (rmn): <u>Non-structural elements</u> Val cladding: Roof Cladding: Glazing: Ceilings: Services(ist):			
north (rmn): east (rmn): south (rmn): west (rmn): Wall cladding: Roof Cladding: Roof Cladding: Services(list): Available documentation Architectural	plaster, fixed	describe original designer name/date	
Available documentation Available documentation Available documentation Available documentation Available documentation Architectural Brood Broo	plaster, fixed	describe original designer name/date original designer name/date original designer name/date	
Non-structural elements Non-structural elements Wal cladding Roof Cladding Cealings: Services(lst): Available documentation Architectural Structural Structurad Structural Structurad Struc	none partial none none none	describe original designer name/date original designer name/date	
Available documentation Available documentation Available documentation	none partial none none none	describe original designer name/date original designer name/date original designer name/date original designer name/date	
Available documentation Available documentation Available documentation	none none partial none none	describe original designer name/date original designer name/date original designer name/date original designer name/date original designer name/date	Enterprise Homes Ltd/1976
north (rmn):         east (rmn):         south (rmn):         wet (rmn):         wet (rmn):         Wall cladding:         Roof Cladding:         Glazing:         Ceilings:         Services(ist):         Available documentation         Architectural         Structural         Geotech report         Site:       Site performance:         (refor DEE Table 4-2)       Settlement:	plaster, fixed	describe original designer name/date original designer name/date	Enterprise Homes Ltd/1976
Available documentation Available documentation Stars: Center Description Control Cont	plaster, fixed none partial none none none none none none	describe original designer name/date original designer name/date origin	Enterprise Homes Ltd/1976
Available documentation Available documentation Banage State: Crefer DEE Table 4-2) Banage Crefer DEE Table 4-2) Crefer ADEE Table 4-2) Crefe	plaster, fixed none partial none none none none 0	describe original designer name/date original designer name/date origin	Enterprise Homes Ltd/1976
north (rmn):         east (rm):         south (rmn):         south (rmn):         west (rmn):         Wal cladding:         Roof Cladding:         Glazing:         Glazing:         Ceiling:         Services(list):         Available documentation         Architectural         Structural         Mechanical         Electrical         Geotech report         Damage         Site:       Site performance:         (refer DEE Table 4-2)       Settlement:         Liquefaction:       Liquefaction:         Literal Spread:       Differential settlement:         Liquefaction:       Liquefaction:         Literal Spread:       Differential settlement:         Liquefaction:       Liquefaction:         Literal Spread:       Differential settlement:         Literal Spread:       Differential settlement: <td>plaster, fixed none partial none none none none 0</td> <td>describe original designer name/date original designer nam</td> <td>Enterprise Homes Ltd/1976</td>	plaster, fixed none partial none none none none 0	describe original designer name/date original designer nam	Enterprise Homes Ltd/1976
Available documentation Available documentation Banage State: Crefer DEE Table 4-2) Banage Crefer DEE Table 4-2) Crefer ADEE Table 4-2) Crefe	plaster, fixed	describe original designer name/date original designer name/date origin	Enterprise Homes Ltd/1976
north (rmn):         east (rmn):         south (rmn):         south (rmn):         west (rmn):         Wal cladding:         Roof Cladding:         Glazing:         Glazing:         Cellings:         Services(ist):         Available documentation         Architectural         Structural         Geotech report         Site:       Site performance:         (refer DEE Table 4-2)       Settlement:         Differential settlement:       Liguefaction:         Lateral Spread:       Differential settlement:         Upurgletion:       Lateral Spread:         Differential settlement:       Liguefaction:         Building:       Current Placard Status:         Along       Damage ratio:	plaster, fixed	describe original designer name/date original designer name/date origin	Enterprise Homes Ltd/1976 Enterprise Homes Ltd/1976 Cracks in concrete floor stab, step cracks in me
north (rmn):         east (rmn):         south (rmn):         south (rmn):         west (rmn):         Wal cladding:         Roof Cladding:         Glazing:         Glazing:         Cellings:         Services(list):         Available documentation         Architectural         Structural         Geotech report         Bamage         Site:         (ref DEE Table 4-2)         Settlement:         Differential settlement:         Liguradition:         Lateral Spread:         Differential settlement:         Liguradition:         Lateral Spread:         Differential settlement:         Building:         Current Placard Status:         Along       Damage ratio:         Describe (summary):	plaster, fixed  none partial none none none  0-25mm none 0-25mm none observed more apparent none apparent none apparent sight  green  0%	describe original designer nameldate original designer nameldate origin	Enterprise Homes Ltd/1976 Enterprise Homes Ltd/1976 Cracks in concrete floor slab, step cracks in me
north (rmn):         east (rmn):         south (rmn):         south (rmn):         west (rmn):         Wal cladding:         Roof Cladding:         Glazing:         Glazing:         Cellings:         Services(ist):         Available documentation         Architectural         Structural         Geotech report         Site:       Site performance:         (refer DEE Table 4-2)       Settlement:         Differential settlement:       Liguefaction:         Lateral Spread:       Differential settlement:         Upurgletion:       Lateral Spread:         Differential settlement:       Liguefaction:         Building:       Current Placard Status:         Along       Damage ratio:	plaster, fixed	describe original designer name/date original designer name/date origin	Enterprise Homes Ltd/1976 Enterprise Homes Ltd/1976 Cracks in concrete floor stab, step cracks in me
north (rmn):         east (rmn):         south (rmn):         south (rmn):         west (rmn):         Wal claiding:         Roof Claiding:         Glaizing:         Geotech report         Damage         Site:         Site performance:         (refer DEE Table 4-2)         Settlement:         Differential stertal spread:         Damage to area:         Building:         Current Placard Status:         Along       Damage ratio:         Describe (summary):         Across       Damage ratio:	plaster, fixed  none partial none none none  0-25mm none beserved none apparent none apparent none apparent slight  green  0%	describe original designer name/date original designer name/date notes (if applicable): notes (if app	Enterprise Homes Ltd/1976  Enterprise Homes Ltd/1976  Cracks in concrete floor slab, step cracks in me
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north (rmn):         east (rmn):         south (rmn):         south (rmn):         west (rmn):         Wal claiding:         Read Carling:         Read Carling:         Ceilings:         Services(lat):         Available documentation         Architectural         Structural         Mechanical         Geotech report         Damage         Site:         (refer DEE Table 4-2)         Settement:         Differential settlement:         Damage to area;         Damage to area;         Damage to area;         Damage to area;         Describe (summary);         Describe (summary);         Diaphragms       Damage?;         CSWs;       Damage?;	plaster, fixed  none partial none none none  C-25mm none  C-25mm none observed more than 10 m?/100m² none apparent none apparent none apparent slight green  0%  0%  0%  0%  0%  0%  0%  0%  0%  0	describe original designer name/date original designer name/date origin	Enterprise Homes Ltd/1976  Cracks in concrete floor slab, step cracks in m
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north (rmn):         south (rmn):         south (rmn):         south (rmn):         west (rmn):         Wal claiding:         Roof Cladding:         Glaizing:         Geotech report         Damage         Site:         Site performance:         Ligerial settlement:         Ligerial settlement:         Differential settlement:         Damage to area:         Damage to area:         Damage to area:         Describe (summary):	plaster, fixed	describe  original designer name/date notes (if applicable): no	Enterprise Homes Ltd/1976 Enterprise Homes Ltd/1976 Cracks in concrete floor slab, step cracks in mit
north (rmn):         east (rmn):         south (rmn):         south (rmn):         west (rmn):         Wal claiding:         Roof Claiding:         Glaizing:         Geotech report         Damage         Site:         Geotech report         Differential settlement:         Liquefaction:         Lateral Spread:         Differential settlement:         Liquefaction:         Current Placard Status:         Damage to area:         Building:         Current Placard Status:         Along       Damage ratio:         Describe (summary):         Daphragms       Damage?         CSWs:       Damage?         Pounding:       Damage?         Non-structural:       Damage?         Recommendations       Level of repair/strengthening required:	plaster, fixed	describe original designer name/date original designer name/date origin	Enterprise Homes Ltd/1976 Enterprise Homes Ltd/1976 Cracks in concrete floor slab, step cracks in me Cracks in concrete floor slab, ste
north (rmn):         south (rmn):         south (rmn):         south (rmn):         west (rmn):         Wal claiding:         Roof Claiding:         Glazing:         Ceilings:         Services(lst):         Available documentation         Architectural         Structural         Geotech report         Damage         Site:         Strettrail         Ceffer DEE Table 4-2)         Stetlement:         Differential settlement:         Differential settlement: <td< td=""><td>plaster, fixed  none partial none none none  0-25mm one biseved  0-25mm one biseved owne biseved</td><td>describe          original designer name/date         original designer name</td><td>Enterprise Homes Ltd/1976 Enterprise Homes Ltd/1976 Cracks in concrete floor slab, step cracks in me Cracks in concrete floor slab, ste</td></td<>	plaster, fixed  none partial none none none  0-25mm one biseved  0-25mm one biseved owne biseved	describe          original designer name/date         original designer name	Enterprise Homes Ltd/1976 Enterprise Homes Ltd/1976 Cracks in concrete floor slab, step cracks in me Cracks in concrete floor slab, ste

ıg IEP.	fields if not using	recedence. Do not fill in f	h would take p	ay give a different answer, which	d is not mandatory - more detailed analysis n	Use of this m	IEP
	m	hn from above:			65-1976	Period of design of building (from above)	
		uired for this age of building uired for this age of building				one, if designed between 1965 and 1992	Seismic Z
across		along	norrequ				
0.4		0.4	-	Period (from above): (%NBS)nom from Fig 3.3:			
		, Zone B = 1.2; all else 1.0			ign public buildings, to the code of the day: pre-1	Note:1 for specifically	
		tween 1976-1984, use 1.2 except in Wellington (1.0)	gs designed be o 1935 use 0.8,	Note 2: for RC building lote 3: for buildings designed prior to	,		
across		along					
0%		0%		Final (%NBS)nom:			
		from NZS1170.5, cl 3.1.6:	It scaling factor,	Near Fau		2.2 Near Fault Scaling Factor	
across #DIV/0!		along #DIV/0!		scaling factor (1/N(T,D), Factor A:	Near Fault		
		from AS1170.5, Table 3.3: Z1992, from NZS4203:1992		Hazard		2.3 Hazard Scaling Factor	
#DIV/0!	#	rd scaling factor, Factor B:	Haza				
1		ortance level (from above):	Building Imp			2.4 Return Period Scaling Factor	
		r from Table 3.1, Factor C:		Return Perio			
across	<u>a</u>	along		uctility (less than max in Table 3.2)	Assessed	2.5 Ductility Scaling Factor	
					Ductility scaling factor: =1 from 1976 onwards;		
0.00		0.00		Ductiity Scaling Factor, Factor D:			
				Sp:		2.6 Structural Performance Scaling	
#DIV/0!	#	#DIV/0!		ormance Scaling Factor Factor E:	Structural Per		
#DIV/0!	#	#DIV/0!		%NBS <sub>b</sub> :	om x A x B x C x D x E	2.7 Baseline %NBS, (NBS%)b = (%N	
					fer to NZSEE IEP Table 3.4)	Global Critical Structural Weaknesses	
					1	3.1. Plan Irregularity, factor A:	
Insignificant/none	Significant	Severe		Table for selection of D1	1	3.2. Vertical irregularity, Factor B:	
Sep>.01H	005 <sep<.01h< th=""><th>0<sep<.005h .00<="" th=""><th>Separation</th><th></th><th>1</th><th>3.3. Short columns, Factor C:</th><th></th></sep<.005h></th></sep<.01h<>	0 <sep<.005h .00<="" th=""><th>Separation</th><th></th><th>1</th><th>3.3. Short columns, Factor C:</th><th></th></sep<.005h>	Separation		1	3.3. Short columns, Factor C:	
1 0.8	0.8 0.7	0.7 0.4		Alignment of floors with Alignment of floors not with	Pounding effect D1, from Table to right Difference effect D2, from Table to right	3.4. Pounding potential Hei	
Insignificant/none	Significant	Severe		Table for Selection of D2	Therefore, Factor D: 0		
Sep>.01H	005 <sep<.01h 0.7</sep<.01h 	0 <sep<.005h .00<br="">0.4</sep<.005h>	Separation	Height difference	1	3.5. Site Characteristics	
1	0.9	0.7	to 4 storeys	Height difference 2			
1	1	1	e < 2 storeys	Height difference			
Across		Along		wise max valule =1.5, no minimum onale for choice of F factor, if not 1	For ≤ 3 storeys, max value =2.5, othe	3.6. Other factors, Factor F	
	1				i van		
sses	structural weakness	odification for other critical s	on of F factor m	o section 6.3.1 of DEE for discussion	fer to DEE Procedure section 6) Refer als	Detail Critical Structural Weaknesses List any	
0.00		0.00				3.7. Overall Performance Achievem	
#DIV/0!	#	#DIV/0!		PAR x Baselline %NBS:		4.3 PAR x (%NBS)b:	
#DIV/0!	#	[			%NBS), (before)	4.4 Percentage New Building Stand	
				PAR x Baselline %NBS:		4.3 PAR x (%NBS)b:	Official Use only:

Detailed Engineering Evaluation Summary Data			V1.14
Location Building Name:	Carport K - Aldwins Courts	Reviewer	David Elliott
	Unit	No: Street CPEng No: 55 Aldwins Road Company:	202002
Legal Description:	Carport K - Aldwins Courts DP 40879 ON LOTS 1 3 DP 38888	Company project number: Company project number:	237698
000	Degrees	Min Sec	
GPS south: GPS east:	43	32         25.31         Date of submission:           39         59.84         Inspection Date:	13/08/2013
Building Unique Identifier (CCC):	PRO 0811 BLDG 009	Revision: Is there a full report with this summary?	yes
Site			
Site slope: Soil type:		Max retaining height (m): Soil Profile (if available):	
Site Class (to NZS1170.5): Proximity to waterway (m, if <100m):	D	If Ground improvement on site, describe:	
Proximity to clifftop (m, if < 100m):		i Ground improvement on site, describe. Approx site elevation (m):	
Proximity to cliff base (m,if <100m):		Approx sile elevation (m).	
Building			
No. of storeys above ground: Ground floor split?	1 no	single storey = 1 Ground floor elevation (Absolute) (m): Ground floor elevation above ground (m):	
Storeys below ground Foundation type:	0 strip footings	if Foundation type is other, describe:	
Building height (m): Floor footprint area (approx):	2.00	height from ground to level of uppermost seismic mass (for IEP only) (m):	
Age of Building (years):	37	Date of design:	1965-1976
Strengthening present?	no	If so, when (year)?	
Use (ground floor):		And what load level (%g)? Brief strengthening description:	
Use (upper floors):	Carport (4 No. car spaces)	Dier dreigerening deserption.	
Importance level (to NZS1170.5):			
Gravity Structure	<b></b>		
	timber framed	rafter type, purlin type and cladding	
Floors: Beams:	concrete flat slab	slab thickness (mm)	
	other (note) partially filled concrete masonry	typical dimensions (mm x mm) thickness (mm)	
Lateral load resisting structure			
Lateral system along: Ductility assumed, µ:	partially filled CMU 1.25	Note: Define along and across in note total length of wall at ground (m): detailed report!	12
Period along Total deflection (ULS) (mm):		#### enter height above at H31 estimate or calculation?	estimated
maximum interstorey deflection (ULS) (mm):		estimate or calculation? estimate or calculation?	
		note total length of wall at ground (m):	
Lateral system across: Ductility assumed, µ:	1.25		Out-of-plane (12 m length, 200 mm thick)
Period across: Total deflection (ULS) (mm):	0.40	#### enter height above at H31 estimate or calculation? estimate or calculation?	estimated
maximum interstorey deflection (ULS) (mm):		estimate or calculation?	
Separations: north (mm):		leave blank if not relevant	
north (mm): east (mm):		leave blank if not relevant	
north (mm):		leave blank if not relevant	
north (rmn): east (rmn): south (rmn): west (rmn): Non-structural elements		leave blank if not relevant	
north (rmn): east (rmn): south (rmn): west (rmn): <u>Non-structural elements</u> Stairs: Wall cladding: Wall cladding:	Level Leve Leve		
north (rmn): east (rmn): south (rmn): west (rmn): Non-structural elements Stairs: Wall cladding: Roof Cladding: Glazding:		leave blank if not relevant describe	
north (rmn): east (rmn): south (rmn): west (rmn): <u>Non-structural elements</u> Stairs: Wall cladding: Roof Cladding: Roof Cladding:			
north (rmn): east (rmn): south (rmn): west (rmn): Non-structural elements Val i cladding: Roof Cladding: Glazing: Ceilings: Services(ist):			
north (rmn): east (rm): south (rmn): south (rmn): west (rmn):       Non-structural elements       Stairs: Wall cladding: Roof Cladding: Cellings: Services(list):       Available documentation       Architectural	plaster, fixed	describe original designer name/date	
Non-structural elements Non-structural elements Wall clacking: Roof Cladding: Cellings: Services(tst): Available documentation	plaster, fixed	describe original designer name/date original designer name/date	
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Available documentation Architectural	none parial none none none	describe original designer name/date original designer name/date original designer name/date	Enterprise Homes Ltd/1976
Available documentation Available documentation  Available documentation  Available documentation  Available documentation  Available documentation  Available documentation  Architectural  Geotech report  Damage	none parial none none none	describe original designer name/date original designer name/date original designer name/date original designer name/date original designer name/date	Enterprise Homes Ltd/1976
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north (rmn): east (rmn): south (rmn): west (rmn): west (rmn): Wal cladding: Roof Cladding: Roof Cladding: Cellings: Services(list):         Available documentation         Available documentation         Architectural Structural Geotech report         Damage Site: (refer DEE Table 4-2)         Settlement: Differential settlement:	plaster, fixed none partial none none none	describe original designer name/date original designer name/date	Enterprise Homes Ltd/1976
north (rmn): east (rmn): south (rmn): west (rmn):       Non-structural elements       Statis:       Wal cladding: Roof Cladding: Calings: Services(lst):       Available documentation       Architectural Structural Geotech report       Damage       Site: (refer DEE Table 4-2)       Setterment: Differential settlement: Differential settlement: Liquefaction: Liquefaction:	plaster, fixed none partial none none none none none	describe original designer name/date original designer nam	Enterprise Homes Ltd/1976
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IEP	Use of this method is not mandatory - more detailed analysis may giv	e a different answer, which would take	precedence. Do not fill in	fields if not usin	g IEP.
	Period of design of building (from above): 1965-1976		hn from above:	m	
	Seismic Zone, if designed between 1965 and 1992:		uired for this age of building		
		not rec	uired for this age of building	L	
		Period (from above):	along 0.4		across 0.4
		(%NBS)nom from Fig 3.3:			
	Note:1 for specifically design public buildings, to the code of the day: pre-1965 = 1	Note 2: for RC buildings designed be	etween 1976-1984, use 1.2		
	Note 3:	for buildngs designed prior to 1935 use 0.8	s, except in Wellington (1.0)		
		Final (%NBS)nom:	along 0%		across 0%
	2.2 Near Fault Scaling Factor	Near Fault scaling facto	r, from NZS1170.5, cl 3.1.6: along		across
	Near Fault scaling	factor (1/N(T,D), Factor A:	#DIV/0!		#DIV/0!
	2.3 Hazard Scaling Factor	Hazard factor Z for site	e from AS1170.5, Table 3.3: Z1992, from NZS4203:1992		
		Haza	ard scaling factor, Factor B:		#DIV/0!
	2.4 Datum Davied Scaling Factor	Duilding las			
	2.4 Return Period Scaling Factor	Return Period Scaling factor	portance level (from above): or from Table 3.1, Factor C:		
			along	T	across
	2.5 Ductility Scaling Factor Assessed ductility Ductility scaling factor: =1 from 1976 onwards; or =kµ	(less than max in Table 3.2) , if pre-1976, fromTable 3.3:			
	Ductii	ty Scaling Factor, Factor D:	0.00	<u> </u>	0.00
	2.6 Structural Performance Scaling Factor:	Sp:		[	
	Structural Performan	ce Scaling Factor Factor E:	#DIV/0!		#DIV/0!
				T	
	2.7 Baseline %NBS, (NBS%)b = (%NBS)nom x A x B x C x D x E	%NBSb:	#DIV/0!		#DIV/0!
	Global Critical Structural Weaknesses: (refer to NZSEE IEP Table 3.4)				
	3.1. Plan Irregularity, factor A:				
	3.2. Vertical irregularity, Factor B:	able for selection of D1	Severe	Significant	Insignificant/none
		Separation		05 <sep<.01h< th=""><th>Sep&gt;.01H</th></sep<.01h<>	Sep>.01H
	3.4. Pounding potential Pounding effect D1, from Table to right Height Difference effect D2, from Table to right	Alignment of floors within 20% of H lignment of floors not within 20% of H	0.7 0.4	0.8 0.7	1 0.8
		able for Selection of D2		Significant	Insignificant/none
	3.5. Site Characteristics	Separation	0 <sep<.005h .0<="" th=""><th>05<sep<.01h< th=""><th>Sep&gt;.01H</th></sep<.01h<></th></sep<.005h>	05 <sep<.01h< th=""><th>Sep&gt;.01H</th></sep<.01h<>	Sep>.01H
		Height difference > 4 storeys Height difference 2 to 4 storeys	0.4 0.7	0.7 0.9	1
		Height difference < 2 storeys	1	1	1
		unality of a substance	Along	1	Across
	3.6. Other factors, Factor F For ≤ 3 storeys, max value =2.5, otherwise m Rationale fi	or choice of F factor, if not 1			
	Detail Critical Structural Weaknesses: (refer to DEE Procedure section 6) List any:Refer also section	on 6.3.1 of DEE for discussion of F factor n	nodification for other critical	structural weaknes	sses
	3.7. Overall Performance Achievement ratio (PAR)		0.00		0.00
	4.3 PAR x (%NBS)b:	PAR x Baselline %NBS:	#DIV/0!		#DIV/0!
	4.4 Percentage New Building Standard (%NBS), (before)				#DIV/0!
Officia	al Use only:				
	Accepted By Date:				

ocation Building Name:	Carport L - Aldwins Courts	Periowar	David Elliott
	Unit	No: Street CPEng No:	20200
Building Address: Legal Description:	Carport L - Aldwins Courts DP 40879 ON LOTS 1 3 DP 38888	55 Aldwins Road Company: Company project number:	23769
	Degrees	Min Sec	
GPS south: GPS east:	43 172	32         24.54         Date of submission:           40         0.44         Inspection Date:	26/08/2014 13/08/2013
Building Unique Identifier (CCC):	PRO 0811 BLDG 010	Revision: Is there a full report with this summary?	yes
ite			
Site slope: Soil type:	flat mixed	Max retaining height (m): Soil Profile (if available):	
Site Class (to NZS1170.5): Proximity to waterway (m, if <100m):	D	If Ground improvement on site, describe:	
Proximity to clifftop (m, if < 100m):			
Proximity to cliff base (m,if <100m):		Approx site elevation (m):	
luilding			
No. of storeys above ground:	1	single storey = 1 Ground floor elevation (Absolute) (m):	
Ground floor split? Storeys below ground	no0	Ground floor elevation above ground (m):	
Foundation type: Building height (m):	strip footings 2.00	if Foundation type is other, describe: height from ground to level of uppermost seismic mass (for IEP only) (m):	
Floor footprint area (approx): Age of Building (years):	37	Date of design:	
Age of Building (years).	37	Date of design.	1903-1970
Strengthening present?	no	If so, when (year)?	
Use (ground floor):		And what load level (%g)? Brief strengthening description:	
Use (upper floors):		Diel Stengthening description.	
Use notes (if required): Importance level (to NZS1170.5):	Carport (4 No. car spaces) IL2		
Gravity Structure			
Gravity System:	frame system timber framed	rafter type, purlin type and cladding	
Floors:	concrete flat slab	slab thickness (mm)	10
Beams: Columns:	other (note)	typical dimensions (mm x mm)	50 mm OD pipe posts
Walls:	partially filled concrete masonry	thickness (mm)	20
ateral load resisting structure			
Lateral system along: Ductility assumed, μ:	partially filled CMU 1.25	Note: Define along and across in note total length of wall at ground (m): detailed report!	1
Period along: Total deflection (ULS) (mm):	0.40	##### enter height above at H31 estimate or calculation? estimate or calculation?	estimated
maximum interstorey deflection (ULS) (mm):		estimate or calculation?	
		note total length of wall at ground (m):	
Lateral system across: Ductility assumed, μ:	partially filled CMU 1.25		Out-of-plane (12 m length, 200 mm thick
Period across:	0.40	##### enter height above at H31 estimate or calculation?	estimated
Total deflection (ULS) (mm): maximum interstorey deflection (ULS) (mm):	0.40	##### enter height above at H31 estimate or calculation? estimate or calculation? estimate or calculation?	estimated
Total deflection (ULS) (mm): maximum interstorey deflection (ULS) (mm):	0.40	estimate or calculation?	estimated
Total deflection (ULS) (mm): maximum interstorey deflection (ULS) (mm): ieparations: north (mm):	0.40	estimate or calculation?	estimated
Total deflection (ULS) (rm): maximum interstorey deflection (ULS) (rmn): ieparations: north (rmn): east (rmn): south (rmn):	0.40	estimate or calculation? estimate or calculation?	estimated
Total deflection (ULS) (rmn): maximum interstorey deflection (ULS) (rmn): ieparations: north (rmn): east (rmn): south (rmn); west (rmn);	0.40	estimate or calculation? estimate or calculation?	estimated
Total deflection (ULS) (rm): maximum interstorey deflection (ULS) (rmn): ieparations: north (rmn): east (rmn): south (rmn):	0.40	estimate or calculation? estimate or calculation?	estimated
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	Use of this method is not mandatory - more	e detailed analysis ma	y give a different answer, which would take	precedence. Do not fil	I in fields if not using	IEP.
	Period of design of building (from above): 1965-1976			h₀ from ab	iove: m	
Seismic	Zone, if designed between 1965 and 1992:			equired for this age of bui equired for this age of bui		
			norm			across
			Period (from above): (%NBS)nom from Fig 3.3:	along 0.4		across 0.4
	Note:1 for specifically design public buildings, to the	code of the day: pre-19	965 = 1.25; 1965-1976, Zone A =1.33; 1965-19	76, Zone B = 1.2; all else	1.0	
		N	Note 2: for RC buildings designed ote 3: for buildings designed prior to 1935 use 0			
			Final (%NBS)nom:	along 0%		across 0%
	2.2 Near Fault Scaling Factor		Near Fault scaling fact	or, from NZS1170.5, cl 3 along	.1.6:	across
		Near Fault se	caling factor (1/N(T,D), Factor A:	#DIV/0!		#DIV/0!
	2.3 Hazard Scaling Factor		Hazard factor Z for s	ite from AS1170.5, Table		
			Ha	Z <sub>1992</sub> , from NZS4203: zard scaling factor, <b>Facto</b>		#DIV/0!
					-	
	2.4 Return Period Scaling Factor			mportance level (from abo		1
			Return Period Scaling fac		я с:	
	2.5 Ductility Scaling Factor	Assessed du	ctility (less than max in Table 3.2)	along		across
	Ductility scaling factor: =1	from 1976 onwards; o	r =kµ, if pre-1976, fromTable 3.3:			
		1	Ductiity Scaling Factor, Factor D:	0.00		0.00
	2.6 Structural Performance Scaling Factor:		Sp:			
		Structural Perfo	rmance Scaling Factor Factor E:	#DIV/0!		#DIV/0!
	2.7 Baseline %NBS, (NBS%)b = (%NBS)nom x A x B x C x D x E		%NBS6:	#DIV/0!		#DIV/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:					
	3.3. Short columns, Factor C:		Table for selection of D1	Severe	Significant	Insignificant/none
			Separation	0 <sep<.005h< td=""><td>.005<sep<.01h< td=""><td>Sep&gt;.01H</td></sep<.01h<></td></sep<.005h<>	.005 <sep<.01h< td=""><td>Sep&gt;.01H</td></sep<.01h<>	Sep>.01H
	3.4. Pounding potential Pounding effect D1, from Ta Height Difference effect D2, from Ta		Alignment of floors within 20% of H Alignment of floors not within 20% of H	0.7 0.4	0.8 0.7	1 0.8
	Therefore	, Factor D: 0	Table for Selection of D2	Severe	Significant	Insignificant/none
	3.5. Site Characteristics		Separation	0 <sep<.005h< td=""><td>.005<sep<.01h< td=""><td>Sep&gt;.01H</td></sep<.01h<></td></sep<.005h<>	.005 <sep<.01h< td=""><td>Sep&gt;.01H</td></sep<.01h<>	Sep>.01H
	3.5. Site Characteristics		Height difference > 4 storeys	0.4	0.7	1
	5.5. Site Unaracteristics				0.7 0.9 1	1 1 1
	5.5. Site Unaracteristics		Height difference > 4 storeys Height difference 2 to 4 storeys	0.4 0.7 1	0.9	1
			Height difference > 4 storeys Height difference 2 to 4 storeys Height difference < 2 storeys	0.4 0.7	0.9	1
			Height difference > 4 storeys Height difference 2 to 4 storeys Height difference < 2 storeys	0.4 0.7 1	0.9	1
	3.6. Other factors, Factor F For ≤ 3 storeys,           Detail Critical Structural Weaknesses:	Ratio	Height difference > 4 storeys Height difference 2 to 4 storeys Height difference < 2 storeys ise max value =1.5, no minimum nale for choice of F factor, if not 1	0.4 0.7 1 Along	0.9	1 1 Across
	3.6. Other factors, Factor F     For ≤ 3 storeys,       Detail Critical Structural Weaknesses: List any:     [refer to DEE Procedure section]	Ratio	Height difference > 4 storeys Height difference 2 to 4 storeys Height difference < 2 storeys	0.4 0.7 1 Along	0.9	1 1 Across
	3.6. Other factors, Factor F For ≤ 3 storeys,           Detail Critical Structural Weaknesses:	Ratio	Height difference > 4 storeys Height difference 2 to 4 storeys Height difference < 2 storeys ise max value =1.5, no minimum nale for choice of F factor, if not 1	0.4 0.7 1 Along	0.9	1 1 Across
	3.6. Other factors, Factor F     For ≤ 3 storeys,       Detail Critical Structural Weaknesses: List any:     [refer to DEE Procedure section]	Ratio	Height difference > 4 storeys Height difference 2 to 4 storeys Height difference < 2 storeys ise max value =1.5, no minimum nale for choice of F factor, if not 1	0.4 0.7 1 Along	0.9	1 1 Across
	3.6. Other factors, Factor F     For ≤ 3 storeys,       Detail Critical Structural Weaknesses: List any:     (refer to DEE Procedure section List any:       3.7. Overall Performance Achievement ratio (PAR)	Ratio	Height difference > 4 storeys Height difference 2 to 4 storeys Height difference < 2 storeys ise max valule =1.5, no minimum nale for choice of F factor, if not 1 section 6.3.1 of DEE for discussion of F factor	0.4 0.7 1 Along nodification for other critic	0.9	1 1 Across ses 0.00

Location			V1.14
	Carport M - Aldwins Courts	Reviewer:	David Elliott
	Unit	No:         Street         CPEng No:           55         Aldwins Road         Company:	202002
Legal Description:	Carport M - Aldwins Courts DP 40879 ON LOTS 1 3 DP 38888	Company project number: Company phone number:	237698
GPS south:	Degrees 43	Min Sec 32 23.96 Date of submission:	16/12/2015
GPS east:	172	40 1.12 Inspection Date: Revision:	13/08/2013
Building Unique Identifier (CCC):	PRO 0811 BLDG 011	Is there a full report with this summary?	yes
Site Slope:	flat	Max retaining height (m):	
Soil type: Site Class (to NZS1170.5):	mixed	Soil Profile (if available):	
Proximity to waterway (m, if <100m): Proximity to clifftop (m, if <100m):		If Ground improvement on site, describe:	
Proximity to cliff base (m,if <100m):		Approx site elevation (m):	
Building			
No. of storeys above ground: Ground floor split?	1 no	single storey = 1 Ground floor elevation (Absolute) (m): Ground floor elevation above ground (m):	
Storeys below ground Foundation type:	strip footings	if Foundation type is other, describe:	
Building height (m): Floor footprint area (approx):	2.00	height from ground to level of uppermost seismic mass (for IEP only) (m):	
Age of Building (years):	37	Date of design:	1965-1976
Strengthening present?	no	If so, when (year)?	
Use (ground floor):	other (specify)	And what load level (%g)? Brief strengthening description:	
	Carport (3 No. car spaces)		
Importance level (to NZS1170.5):			
Gravity Structure Gravity System:	frame system timber framed	refer time in which the and electric	
Floors Beams:	concrete flat slab	rafter type, purlin type and cladding slab thickness (mm)	100
Columns:	other (note) partially filled concrete masonry	typical dimensions (mm x mm) thickness (mm)	
Lateral load resisting structure			
Lateral system along: Ductility assumed, µ:	partially filled CMU 1.25	Note: Define along and across in note total length of wall at ground (m): detailed report!	9
Period along: Total deflection (ULS) (mm):		#### enter height above at H31 estimate or calculation? estimate or calculation?	estimated
maximum interstorey deflection (ULS) (mm):		estimate or calculation?	
Lateral system across:	partially filled CMU	note total length of wall at ground (m):	Out-of-plane (9 m length, 200 mm thick)
Ductilitý assumed, μ: Period across:	1.25	#### enter height above at H31 estimate or calculation?	
Total deflection (ULS) (mm): maximum interstorey deflection (ULS) (mm):		estimate or calculation? estimate or calculation?	
Separations:			
north (mm): east (mm):		leave blank if not relevant	
south (mm): west (mm):			
Non-structural elements Stoire			
Stairs: Wall cladding:	Metal	describe	
Stairs: Wall cladding: Roof Cladding: Glazing:		describe	
Stairs: Wall cladding: Roof Cladding:		describe	
Stairs: Wall dadding: Roof Cladding: Glazing: Ceilings:		describe	
Stairs Wall cladding Roof Cladding Glazing Ceilings Services(list)	plaster, fixed	original designer name/date	
Stairs: Wall cladding: Roof Cladding: Ceilings: Services(ist): Available documentation Architectural Structural Mechanica	plaster, fixed	original designer name/date original designer name/date original designer name/date	
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Available documentation Available documentation  Available documentation  Architectural Structural Batter (refer DEE Table 4-2) Batter (refer DEE Table 4-2) Batter	plaster, fixed	original designer name/date original designer name/date or	Enterprise Homes Ltd/1976 Enterprise Homes Ltd/1976 Cracks in concrete floor stab, step cracks in me
Available documentation Available documentation Available documentation Architectural Structural Geatings Geatings Geatech report Batter Street Geatech report Differential settlement Liquefaction Lateral Spread. Differential settlement Liquefaction Lateral Spread. Differential settlement Liquefaction Building: Current Placard Status Along Damage ratio Describe (summary):	plaster, fixed	original designer name/date original designer name/date notes (if applicable): notes (if applicab	Enterprise Homes Ltd/1976 Enterprise Homes Ltd/1976 Cracks in concrete floor slab, step cracks in me
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States:       Wail cladding:         Roof Cladding:       Clazing:         Commentation       Architectural         Available documentation       Architectural         Structural       Mechanica         Electrica       Geotech         Geotech       Structural         Mechanica       Electrica         Geotech       Structural         Mechanica       Structural         Geotech       Structural         Mechanica       Structural         Geotech       Feorica         Geotech       Structural         Mechanica       Structural         Damage       Geotech         Site:       Ste performance:         Liquedaction:       Liquedaction         Liguedaction:       Liquedaction         Liguedaction:       Liquedaction         Differential settlement:       Damage to area         Describe (summary):       Describe (summary): </td <td>plaster, fixed</td> <td>original designer name/date original designer name/date original designer name/date original designer name/date original designer name/date         Describe damage:         notes (if applicable):         notes (if applicable):&lt;</td> <td>Enterprise Homes Ltd/1976 Enterprise Homes Ltd/1976 Cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in m</td>	plaster, fixed	original designer name/date original designer name/date original designer name/date original designer name/date original designer name/date         Describe damage:         notes (if applicable):         notes (if applicable):<	Enterprise Homes Ltd/1976 Enterprise Homes Ltd/1976 Cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in ma Cracks in concrete floor slab, step cracks in m
States:       Wail claiding:         Roof Claiding:       Claiding:         Available documentation       Architectural         Structural:       Structural         Barage       Site         Site:       Ste performance:         Greating:       Ste performance:         Damage       Site         Site:       Ste performance:         Creft DEE Table 4-2)       Ste performance:         Differential settlement:       Liquefaction:         Differential settlement:       Differential settlement:         Liquefaction:       Datage to area:         Building:       Current Placard Status:         Atong       Describe (summary):         Across       Damage?         Disprages       Damage?         CSW s:       Damage?         Pounding:       Damage?         Non-structural:       Damage?	plaster, fixed	$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	Enterprise Homes Ltd/1976 Enterprise Homes Ltd/1976 Cracks in concrete floor slab, step cracks in me Cracks in concrete floor slab, step cracks in me Cracks in concrete floor slab, step cracks in me Damage is repaired by council and Carpant is strengthned by OPUS minor repaires
States:       Wail cladding:         Roof Cladding:       Glazing:         Ceilings:       Services(lst):         Available documentation       Architectural         Structural:       Structural:         Damage       Site:         Site:       Steperformance:         Users:       Settlement:         Differential settlement:       Literal Spread:         Differential settlement:       Differential settlement:         Curond cracks:       Damage:      <	plaster, fixed	original designer name/date original designer name/date notes (# applicable): notes	Enterprise Homes Ltd/1976 Enterprise Homes Ltd/1976 Cracks in concrete floor slab, step cracks in me Cracks in concrete floor slab, ste
Statis:       Wail cladding:         Roof Cladding:       Clazing:         Cellings:       Services(ist):         Available documentation       Architectural         Structural:       Structural:         Damage       Site:         Site:       Site performance:         (refer DEE Table 4-2)       Settlement:         Differential settlement:       Literal Spread:         Differential settlement:       Damage to area:         Damage       Structural:         Damage to area:       Damage to area:         Building:       Current Placard Status:         Along       Describe (summary):         Disphragms       Damage?         CSWs:       Damage?         Pounding:       Damage?         Non-structural:       Damage?         Recommendations       Level of repair/strengthening required:         Building Consent required:       Building Consent required:	plaster, fixed           none           partial           none           0-25mm           none apparent           none apparent           none apparent           none apparent           none apparent           0% </td <td>original designer name/date original designer name/date original designer name/date original designer name/date original designer name/date         Describe damage:         notes (f applicable):         <t< td=""><td>Enterprise Homes Ltd/1976 Enterprise Homes Ltd/1976 Cracks in concrete floor slab, step cracks in me Cracks in concrete floor slab, ste</td></t<></td>	original designer name/date original designer name/date original designer name/date original designer name/date original designer name/date         Describe damage:         notes (f applicable):         notes (f applicable): <t< td=""><td>Enterprise Homes Ltd/1976 Enterprise Homes Ltd/1976 Cracks in concrete floor slab, step cracks in me Cracks in concrete floor slab, ste</td></t<>	Enterprise Homes Ltd/1976 Enterprise Homes Ltd/1976 Cracks in concrete floor slab, step cracks in me Cracks in concrete floor slab, ste

EP	Use of this met	hod is not mandatory - more detailed analysis m	ay give a different answer, which wo	uld take precedence. Do not fi	II in fields if not usir	ıg IEP.
Per	riod of design of building (from above):	965-1976		hn from ab	ove: m	
Seismic Zone	e, if designed between 1965 and 1992:			not required for this age of buil not required for this age of buil		
				along		across
			Period (from above): (%NBS)nom from Fig 3.3:	0.4		0.4
	Note:1 for specifically d	esign public buildings, to the code of the day: pre-19				
		N	Note 2: for RC buildings de ote 3: for buildings designed prior to 193	esigned between 1976-1984, use 35 use 0.8, except in Wellington (*	1.2 1.0)	
			Final (%NBS)nom:	along 0%		across 0%
				078		078
2	2.2 Near Fault Scaling Factor		Near Fault sca	ling factor, from NZS1170.5, cl 3. along	1.6:	across
		Near Fault	scaling factor (1/N(T,D), Factor A:	#DIV/0!		#DIV/0!
2	2.3 Hazard Scaling Factor		Hazard facto	r Z for site from AS1170.5, Table Z1992, from NZS4203:1	992	
				Hazard scaling factor, Facto	r B:	#DIV/0!
2	2.4 Return Period Scaling Factor			uilding Importance level (from abo		1
			Return Period Sc	aling factor from Table 3.1, Factoral along	rc:	across
2	2.5 Ductility Scaling Factor	Assessed de Ductility scaling factor: =1 from 1976 onwards; d	uctility (less than max in Table 3.2)	along		acioss
			Ductiity Scaling Factor, Factor D:	0.00		0.00
2	2.6 Structural Performance Scaling F	actor:	Sp:			
		Structural Perfe	ormance Scaling Factor Factor E:	#DIV/0!		#DIV/0!
2	2.7 Baseline %NBS, (NBS%)₅ = (%NBS	S)nom x A x B x C x D x E	%NBS6:	#DIV/0!		#DIV/0!
	Global Critical Structural Weaknesses: (					
3	3.1. Plan Irregularity, factor A:	1				
3	3.2. Vertical irregularity, Factor B:	1				
3	3.3. Short columns, Factor C:	1	Table for selection of D1 Sep	Severe oaration 0 <sep<.005h< th=""><th>Significant .005<sep<.01h< th=""><th>Insignificant/none Sep&gt;.01H</th></sep<.01h<></th></sep<.005h<>	Significant .005 <sep<.01h< th=""><th>Insignificant/none Sep&gt;.01H</th></sep<.01h<>	Insignificant/none Sep>.01H
3	3.4. Pounding potential Heigh	Pounding effect D1, from Table to right at Difference effect D2, from Table to right	Alignment of floors within 20 Alignment of floors not within 20		0.8 0.7	1 0.8
		Therefore, Factor D: 0	Table for Selection of D2	Severe	Significant	Insignificant/none
3	3.5. Site Characteristics	1	Sep	paration 0 <sep<.005h< td=""><td>.005<sep<.01h 0.7</sep<.01h </td><td>Sep&gt;.01H</td></sep<.005h<>	.005 <sep<.01h 0.7</sep<.01h 	Sep>.01H
			Height difference > 4 Height difference 2 to 4	storeys 0.7	0.9	1
			Height difference < 2		1	1
3	3.6. Other factors, Factor F	For ≤ 3 storeys, max value =2.5, other	wise max valule =1.5, no minimum onale for choice of F factor, if not 1	Along		Across
		TVCH.				
	Detail Critical Structural Weaknesses: ( List any:	refer to DEE Procedure section 6) Refer also	section 6.3.1 of DEE for discussion of	F factor modification for other crit	ical structural weakne	sses
	3.7. Overall Performance Achievemen	t ratio (PAR)		0.00		0.00
			PAR x Baselline %NBS:	#DIN//01		
				#DIV/0!		#DIV/0!
4	4.3 PAR x (%NBS)b: 4.4 Percentage New Building Standar		PAR X Dasemine /mbb3.			#DIV/0!

Detailed Engineering Evaluation Summary Data			V1.14
Location Building Name:	Carport O - Aldwins Courts	Reviewer	David Elliott
	Unit	No: Street CPEng No: 55 Aldwins Road Company:	202002
Legal Description:	Carport O - Aldwins Courts DP 40879 ON LOTS 1 3 DP 38888	Company project number: Company project number:	237698
GPS south:	Degrees 43	Min Sec 32 24.40 Date of submission:	
GPS south. GPS east:	43	40 1.10 Inspection Date:	16/12/2015 13/08/2013
Building Unique Identifier (CCC):	PRO 0811 BLDG 011	Revision: Is there a full report with this summary?	yes 3
Site	<b></b>		
Site slope: Soil type:	mixed	Max retaining height (m): Soil Profile (if available):	
Site Class (to NZS1170.5): Proximity to waterway (m, if <100m):	D	If Ground improvement on site, describe:	
Proximity to clifftop (m, if < 100m): Proximity to cliff base (m, if <100m):		Approx site elevation (m):	
,,			
Building No. of storeys above ground:	1	single storey = 1 Ground floor elevation (Absolute) (m):	
Ground floor split? Storeys below ground	no	Ground floor elevation (Ausolide) (III). Ground floor elevation above ground (III):	
Foundation type:	strip footings	if Foundation type is other, describe:	
Building height (m): Floor footprint area (approx):	2.00	height from ground to level of uppermost seismic mass (for IEP only) (m):	
Age of Building (years):	37	Date of design:	1965-1976
Strengthening present?	no	If so, when (year)?	
Use (ground floor):	other (specify)	And what load level (%g)? Brief strengthening description:	
Use (upper floors): Use notes (if required):	Carport (4 No. car spaces)		
Importance level (to NZS1170.5):			
Gravity Structure Gravity System:	frame system		
Roof: Floors:	timber framed concrete flat slab	rafter type, purlin type and cladding slab thickness (mm)	100
Beams:	other (note)	typical dimensions (mm x mm)	
	partially filled concrete masonry	thickness (mm)	200
Lateral load resisting structure		Note: Define a low or discusses the state total low attack of well at another (m)	
Lateral system along: Ductility assumed, µ:	1.25	Note: Define along and across in note total length of wall at ground (m): detailed report!	12
Period along: Total deflection (ULS) (mm):	0.40	#### enter height above at H31 estimate or calculation? estimate or calculation?	estimated
maximum interstorey deflection (ULS) (mm):		estimate or calculation?	
Lateral system across:	partially filled CMU	note total length of wall at ground (m):	Out-of-plane (12 m length, 200 mm thick)
Ductilitý assumed, μ: Period across:	1.25	#### enter height above at H31 estimate or calculation?	
Total deflection (ULS) (mm): maximum interstorey deflection (ULS) (mm):	0.10	estimate or calculation? estimate or calculation?	
Separations:	Ļ		ļl
north (mm):		leave blank if not relevant	
north (mm): east (mm): south (mm):		leave blank if not relevant	
north (mm); east (mm); south (mm); west (mm);		leave blank if not relevant	
north (rmn): east (rmn): south (rmn): west (rmn): <u>Non-structural elements</u> Stairs:		leave blank if not relevant	
north (rmn): east (rmn): south (rmn): west (rmn): <u>Non-structural elements</u> Stairs: Wall cladding: Roof Cladding: Roof Cladding:	Metal	leave blank if not relevant	
north (rmn): east (rmn): south (rmn): west (rmn): West (rmn): Vali cladding: Roof Cladding: Glazing: Celings: Celings:			
north (rmn): east (rmn): south (rmn): west (rmn): <u>Non-structural elements</u> Stairs: Wall cladding: Roof Cladding: Glazding:			
Non-structural elements Non-structural elements Wall cladding: Roof Cladding: Cellings: Services(tst): Available documentation	plaster, fixed	describe	
north (rmn): east (rmn): south (rmn): west (rmn): Non-structural elements Val i cladding: Roof Cladding: Calings: Services(ist):	plaster, fixed	describe original designer name/date	Enterprise Homes Ltd/1976
Available documentation Architectural	plaster, fixed	describe original designer name/date original designer name/date original designer name/date	Enterprise Homes Ltd/1976
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Available documentation Available documentation  Available documentation  Available documentation  Available documentation  Available documentation  Architectural  Betrical  Geotech report  Damage Site: Site: Site performance:	none partial none none none	describe original designer name/date original designer name/date original designer name/date original designer name/date original designer name/date	
north (rmn):         east (rm):         south (rmn):         south (rmn):         west (rmn):         West (rmn):         West (rmn):         West (rmn):         Wall cladding:         Roof Cladding:         Glazing:         Cellings:         Services(list):         Available documentation         Architectural         Bectrical         Geotech report         Damage         Site:       Site performance:         (refer DEE Table 4-2)       Settlement:	plaster, fixed	describe original designer name/date original designer nam	
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north (rmn):         east (rm):         south (rmn):         south (rmn):         west (rmn):         Non-structural elements         Statis:         Wall cladding:         Roof Cladding:         Glazing:         Cellings:         Services(tst):         Available documentation         Architectural         Structural         Geotech report         Damage         Site:         (refer DEE Table 4-2)         Settlement:         Differential settlement:         Liquefactors:         Lateral Spread:         Differential lateral spread:         Differential lateral spread:         Differential lateral spread:	plaster, fixed none partial none none none  0-25mm none baserved more than 10 m <sup>2</sup> /100m <sup>2</sup> none apparent none apparent none apparent none apparent none apparent	describe original designer name/date original designer particular designer name/date original designer name/date original designer name/date original designer name/date original designer name/date original designer particular designer	
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north (rmn):         east (rmn):         south (rmn):         south (rmn):         west (rmn):         Wall claiding:         Roof Claiding:         Roof Claiding:         Available documentation         Architectural         Structural         Mechanical         Geotech report         Damage         Site:         Geotech report         Differential settlement:         Differential settleme	plaster, fixed	describe original designer name/date original designer name/date origin	
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north (rmn):         east (rmn):         south (rmn):         south (rmn):         west (rmn):         Wall claiding:         Roof Claiding:         Roof Claiding:         Available documentation         Architectural         Structural         Mechanical         Geotech report         Damage         Site:         Geotech report         Differential settlement:         Differential settleme	plaster, fixed	describe original designer name/date original designer name/date origin	Cracks in concrete floor slab, step cracks in m
north (rmn):         east (rmn):         south (rmn):         south (rmn):         south (rmn):         west (rmn):         Wal cladding:         Roof Cladding:         Gaizing:         Celings:         Services(is):         Available documentation         Architectural         Structural         Mechanical         Electrical         Geotech report         Damage         Site:         (refer DEE Table 4-2)         Stetement:         Differential settlement:         Ligetactorn:         Lateral Spread:         Differential settlement:         Differential settlement:         Ligetactorn:         Lateral Spread:         Differential settlement:         Differential settlement:         Differential settlement:         Damage to aread:         Differential settlement:         Differential settlement:         Differential settlement:         Damage to aread:         Differential settlement:         Damage to aread:         Building:         Current Placard Status:	plaster, fixed           none           partial           none           none           none           none           0.25mm           none observed           more than 10 mV100m²           none apparent           none apparent           sight           green           0%           no           no <t< td=""><td>describe original designer name/date original designer name/date origin</td><td>Cracks in concrete floor slab, step cracks in ma Cracks in concent in the cracks in ma Cracks in the cracks in the</td></t<>	describe original designer name/date original designer name/date origin	Cracks in concrete floor slab, step cracks in ma Cracks in concent in the cracks in ma Cracks in the

EP	Use of this met	hod is not mandatory - more detailed analysis m	ay give a different answer, which wo	uld take precedence. Do not fi	II in fields if not usir	ıg IEP.
Per	riod of design of building (from above):	965-1976		hn from ab	ove: m	
Seismic Zone	e, if designed between 1965 and 1992:			not required for this age of buil not required for this age of buil		
				along		across
			Period (from above): (%NBS)nom from Fig 3.3:	0.4		0.4
	Note:1 for specifically d	esign public buildings, to the code of the day: pre-19				
		N	Note 2: for RC buildings de ote 3: for buildings designed prior to 193	esigned between 1976-1984, use 35 use 0.8, except in Wellington (*	1.2 1.0)	
			Final (%NBS)nom:	along 0%		across 0%
				078		078
2	2.2 Near Fault Scaling Factor		Near Fault sca	ling factor, from NZS1170.5, cl 3. along	1.6:	across
		Near Fault	scaling factor (1/N(T,D), Factor A:	#DIV/0!		#DIV/0!
2	2.3 Hazard Scaling Factor		Hazard facto	r Z for site from AS1170.5, Table Z1992, from NZS4203:1	992	
				Hazard scaling factor, Facto	r B:	#DIV/0!
2	2.4 Return Period Scaling Factor			uilding Importance level (from abo		1
			Return Period Sc	aling factor from Table 3.1, Factoral along	rc:	across
2	2.5 Ductility Scaling Factor	Assessed de Ductility scaling factor: =1 from 1976 onwards; d	uctility (less than max in Table 3.2)	along		acioss
			Ductiity Scaling Factor, Factor D:	0.00		0.00
2	2.6 Structural Performance Scaling F	actor:	Sp:			
		Structural Perfe	ormance Scaling Factor Factor E:	#DIV/0!		#DIV/0!
2	2.7 Baseline %NBS, (NBS%)₅ = (%NBS	S)nom x A x B x C x D x E	%NBS6:	#DIV/0!		#DIV/0!
	Global Critical Structural Weaknesses: (					
3	3.1. Plan Irregularity, factor A:	1				
3	3.2. Vertical irregularity, Factor B:	1				
3	3.3. Short columns, Factor C:	1	Table for selection of D1 Sep	Severe oaration 0 <sep<.005h< th=""><th>Significant .005<sep<.01h< th=""><th>Insignificant/none Sep&gt;.01H</th></sep<.01h<></th></sep<.005h<>	Significant .005 <sep<.01h< th=""><th>Insignificant/none Sep&gt;.01H</th></sep<.01h<>	Insignificant/none Sep>.01H
3	3.4. Pounding potential Heigh	Pounding effect D1, from Table to right at Difference effect D2, from Table to right	Alignment of floors within 20 Alignment of floors not within 20		0.8 0.7	1 0.8
		Therefore, Factor D: 0	Table for Selection of D2	Severe	Significant	Insignificant/none
3	3.5. Site Characteristics	1	Sep	paration 0 <sep<.005h< td=""><td>.005<sep<.01h 0.7</sep<.01h </td><td>Sep&gt;.01H</td></sep<.005h<>	.005 <sep<.01h 0.7</sep<.01h 	Sep>.01H
			Height difference > 4 Height difference 2 to 4	storeys 0.7	0.9	1
			Height difference < 2		1	1
3	3.6. Other factors, Factor F	For ≤ 3 storeys, max value =2.5, other	wise max valule =1.5, no minimum onale for choice of F factor, if not 1	Along		Across
		TVCH.				
	Detail Critical Structural Weaknesses: ( List any:	refer to DEE Procedure section 6) Refer also	section 6.3.1 of DEE for discussion of	F factor modification for other crit	ical structural weakne	sses
	3.7. Overall Performance Achievemen	t ratio (PAR)		0.00		0.00
			PAR x Baselline %NBS:	#DIN//01		
				#DIV/0!		#DIV/0!
4	4.3 PAR x (%NBS)b: 4.4 Percentage New Building Standar		PAR X Dasemine /mbb3.			#DIV/0!

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